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Final
**Sediment Monitoring
Summary Report
2008 Remedial Dredging**



**Environmental Monitoring, Sampling, and
Analysis**

**New Bedford Harbor Superfund Site
New Bedford Harbor, MA**

**Final Report
Sediment Monitoring Summary Report
2008 Remedial Dredging**

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New Bedford Harbor Superfund Site
New Bedford Harbor, MA**

Submitted to:

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- Appendix A: Field Sample Data
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ACRONYMS AND ABBREVIATIONS

ANOVA	analysis of variance
CAD	confined aquatic disposal
DMU	dredge management unit
ID	identification
IS	internal standard
LCS	laboratory control sample
mg/kg	milligrams per kilogram
MPC	measurement performance criteria
MS/MSD	matrix spike/matrix spike duplicate
NS&T	National Status and Trends
NWS	North of Wood Street
PCB	polychlorinated biphenyl
QA	quality assurance
QC	quality control
ROD	Record of Decision
TTFW	Tetra Tech Foster Wheeler, Inc.
USACE NAE	U.S. Army Corps of Engineers, New England District
USCS	United Soil Classification System
USEPA	United States Environmental Protection Agency



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EXECUTIVE SUMMARY

Sediment monitoring was performed in 2008 at the New Bedford Harbor Superfund Site (site), located in New Bedford, Massachusetts. Sediment samples were collected at three areas of the site to characterize polychlorinated biphenyl (PCB) contamination in surface sediments: Pierce Mill Cove, North of Wood Street (NWS), and the OU3 pilot cap site.

Pierce Mill Cove

Pierce Mill Cove is located in the upper harbor north of Sawyer Street. Remedial dredging was performed at Pierce Mill Cove from August 18 through October 21, 2008, resulting in the removal of approximately 20,000 cubic yards of contaminated sediments. Dredging activities targeted removal of sediments to the approximate depth of the target dredge elevation (where, based on modeling, PCB concentrations are predicted to be less than the 10 milligrams per kilogram [mg/kg] remediation criteria). Sediment monitoring activities in 2008 included: 1) the collection of pre-dredge cores to determine the elevation of the visual transition and sediment thickness of the OL layer ('OL' in the United Soil Classification System [USCS], defined as 'organic silt, organic clay') to assist dredge planning; and 2) post-dredge coring to assess the overall performance of the dredging operation and support future needs.

Pre- and post-dredge sediment cores were typically comprised of two layers. The surface layer was characterized by fine-grained loose black organic silt with high moisture content ('OL'). Below this layer, the sediment type was generally comprised of moderately firm olive-gray clay ('OH' in the USCS, defined as organic clay, organic silt). In many cases the post-dredge cores had less distinct visual transitions compared to pre-dredge cores, and the transition occurred over a relatively broad band (>0.5 ft) of mixed sediment. The overall thickness of the OL layer was reduced as a result of dredging. That is, the thickness of the OL layer in the pre-dredge cores ranged from 0.5 to 2.2 ft and the thickness of the OL layer in the post-dredge cores ranged from 0.3 to 1.6 ft.

Concentrations of total PCB in the post-dredge cores ranged from 10 to 47 mg/kg. Post-dredge cores with a thicker OL layer generally had higher concentrations of total PCB, except stations bb28 and T38 where the total PCB concentrations were low relative to other sediments with similar sediment thickness.

North of Wood Street

The NWS area is located at the far northern end of the upper harbor. This area was prioritized for restoration activities based on its proximity to shoreline residential and recreational land use areas. The NWS area was remediated in 2002-2003, and again (in a small shoreline area missed in 2002-2003) in 2005. Long-term sediment monitoring has been performed since 2004 to assess the effectiveness of prior remediation and potential recontamination of this area due to sediment transport from unremediated areas of the Harbor. In 2008, sediment cores were collected at 21 locations, including 14 in-river locations and seven shoreline soil locations. Sediment cores were visually characterized and the 0 to 0.5 ft of surface analyzed for PCBs.

Many of the river sediments had similar physical characteristics, characterized by a layer of fine black silt underlain by sand, clay or silt. Sediment samples closer to the shore and further



upstream typically contained more sand. Shoreline soils were generally comprised of brown sand and/or organic silt underlain by sand.

Concentrations of total PCB ranged from 0.98 to 180 mg/kg in surface sediments sampled at the NWS area in 2008. The highest concentrations (>100 mg/kg) were measured in sediment at subtidal stations 055 and 039, located in the vicinity of the Wood Street bridge. Lower concentrations of total PCB (<10 mg/kg) were typically measured in sediment sampled further upstream and closer to the shore.

Total PCB concentrations were substantially lower in the shoreline soil samples, ranging from 0.076 to 0.67 mg/kg. Total PCB concentrations were below the applicable recreational cleanup criteria (25 mg/kg) at all shoreline locations sampled at the NWS area in 2008.

Long-term monitoring data suggest that post-remediation concentrations of total PCB have increased in river sediment, but not in shoreline soils. The post-remediation increase at river sediment locations could be associated with contaminant transport from the upper harbor during dredging activities or from natural transport (e.g., sediment resuspension and transport during tidal cycles or high winds) of contaminated sediment from unremediated areas of the Harbor. Annual sediment monitoring will continue at the NWS area as needed to assess the potential for recontamination from the unremediated areas of the Harbor immediately to the south.

OU3 Pilot Cap Site

The OU3 Pilot Cap site is a localized area of elevated PCB contamination located outside the hurricane barrier in New Bedford, Massachusetts. In 2005, this area was capped with parent material dredged during the construction of a confined aquatic disposal (CAD) cell in New Bedford Harbor. Annual monitoring has been performed since 2005 (shortly after completion of the capping activity) to determine the effectiveness of cap placement in lowering surficial sediment PCB concentrations, as well as the extent of change in PCB concentrations over time. In 2008, sediment grab samples were collected at 17 locations, encompassing a series of stations representative of ridge and valley locations at the pilot cap site. Sediment grabs were visually characterized and the 0 to 0.3 ft of surface was analyzed for PCBs.

All of the OU3 surface sediment samples had similar physical characteristics, characterized by fine sand with some silt. Based on the visual examination of the sediment grabs, sediment at the valley locations often contained more silt compared to sediment at the ridge locations. Concentrations of total PCB were also slightly higher at the valley locations (concentrations ranged from 0.23 to 6.0 mg/kg) compared to ridge locations (concentrations ranged from 0.26 to 2.2 mg/kg).

Long-term monitoring data suggest that there have been no significant differences in total PCB concentrations at the ridge locations, whereas total PCB concentrations at valley locations decreased significantly in 2008 compared 2005. The 2008 decrease at valley locations could reflect the deposition of cleaner material at these locations. Overall, the long-term monitoring data suggest that the cap remains effective in terms of lowering surficial PCB contamination.



1.0 INTRODUCTION

1.1 Site Description

The New Bedford Harbor Superfund Site (hereafter referred to as the site), located in Bristol County, Massachusetts, extends from the shallow northern reaches of the Acushnet River estuary south through the commercial harbor of New Bedford and into 17,000 adjacent acres of Buzzards Bay (Figure 1). Industrial and urban development surrounding the Harbor has resulted in sediments becoming contaminated with high concentrations of many pollutants, notably polychlorinated biphenyls (PCBs) and heavy metals. Two manufacturers in the area used PCBs while producing electronic devices from the 1940s to the late 1970s, when the use of PCBs was banned by the U.S. Environmental Protection Agency (USEPA). Based on human health concerns and ecological risk assessments, USEPA added New Bedford Harbor to the National Priorities List in 1983 as a designated Superfund Site. Through an Interagency Agreement between the USEPA and the U.S. Army Corps of Engineers, New England District (USACE NAE), the USACE is responsible for carrying out the design and implementation of the remedial measures at the site. The site has been divided into three areas – the upper, lower and outer harbors – consistent with geographical features of the area and gradients of contamination (Figure 2).



Figure 1. Location of the Site in Southeastern Massachusetts.

The shoreline Aerovox manufacturing facility located in New Bedford, Massachusetts, used PCBs in the manufacture of electrical capacitors from approximately 1940 to 1977. This facility is located in the upper harbor (Figure 2) and is considered one of the major sources of historic PCB contamination to New Bedford Harbor. The highest concentrations of PCBs were found in sediments in a 5-acre area in the northern portion of the Acushnet River Estuary adjacent to the Aerovox facility. These ‘hot spot’ sediments, which contained PCBs upwards of 100,000 milligrams per kilogram (mg/kg), were removed between 1994 and 1995 as part of USEPA’s 1990 “Hot Spot” Record of Decision (ROD). Full scale remediation dredging per the 1998 Upper and Lower Harbor ROD was initiated in 2004 and has continued with annual funding every year since.



Another known source of PCB contamination in New Bedford Harbor is related to activities at the Cornell-Dubilier mill on the western shore of the outer harbor (Figure 2). In 2005, a 15 acre underwater cap pilot project was implemented near Cornell-Dubilier to cap PCB-contaminated sediments.

The remediation of this site per the 1998 ROD involves the excavation and dredging of approximately 900,000 cubic yards (cy) of PCB contaminated sediment. The majority of contaminated material is being removed utilizing a hydraulic dredge that pumps dredge slurry to the project's Sawyer Street facility where it is mechanically processed to remove all sand, gravel, and debris material. The silt and clay size materials are then pumped to the Area D Dewatering Facility located on Herman Melville Boulevard, where it is mechanically dewatered and transported off-site for disposal.

The site is divided into a series of Dredge Management Units (DMU) based on contamination levels, contamination sources, topography, and other factors. In 2008, remediation activities at the site included shoreline excavation adjacent to the Aerovox facility and hydraulic dredging at Pierce Mill Cove. This report presents results from sediment monitoring performed during dredging activities at Pierce Mill Cove, which encompasses sections of DMU-19, DMU-20, DMU-21, DMU-23, DMU-24, and DMU-25 (Figure 3). Monitoring results associated with shoreline excavation activities conducted adjacent to the Aerovox facility are reported in Jacobs (2009).

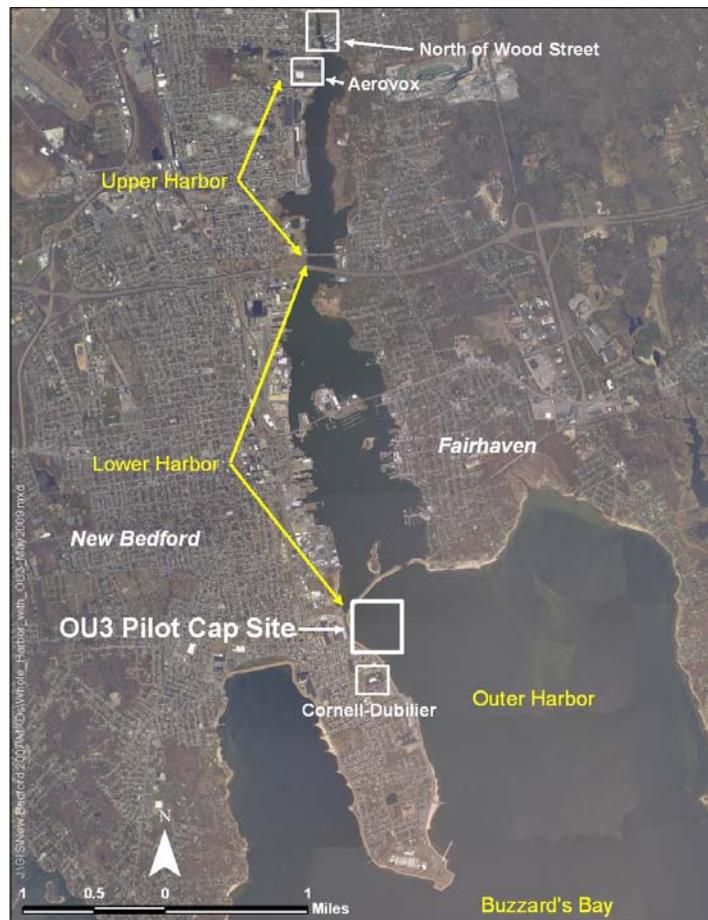


Figure 2. New Bedford Harbor.

This report also presents results from sediment monitoring performed in 2008 at the North of Wood Street (NWS) and OU3 pilot cap areas. The NWS area is located at the far northern end of the upper harbor (Figure 2). This area was remediated in 2002-2003 and again (for an area missed initially in 2002-2003) in 2005. Annual sediment monitoring has been performed at the NWS area since 2004 to assess the effectiveness of prior remediation and potential recontamination of this area due to sediment transport from unremediated areas of the Harbor. The OU3 area is located in the outer harbor (Figure 2). An underwater cap was placed over PCB-contaminated sediments at this area in 2005 and annual monitoring has been performed since then to assess the effectiveness of the underwater cap.

1.2 Project Objectives

The objectives of the 2008 sediment monitoring program were to perform monitoring in support of the remedial dredging activities at the Pierce Mill Cove dredge area and to characterize PCB contamination in surface sediments at the Pierce Mill Cove, NWS and OU3 areas of the site.

1.2.1 Pierce Mill Cove

Sediment monitoring at the Pierce Mill Cove dredge area (Figure 3) included pre-dredge coring to determine the elevation of the visual transition and sediment thickness of the OL layer ('OL' in the United Soil Classification System [USCS], defined as 'organic silt, organic clay') to assist dredge planning and post-dredge coring to assess the overall performance of the dredging operation and support future needs.

Pre-dredge Sediment Sampling. The entire upper harbor, including the planned Pierce Mill Cove dredge area depicted in Figure 4, have been parceled into discrete 25-foot by 25-foot 'z-blocks'. During remedial design, a geostatistical model was used to predict a target elevation for dredging each z-block. This target dredge elevation, as shown in Figure 4, represents the elevation below which PCB concentrations are predicted to be less than the 10 mg/kg remediation criteria at the Pierce Mill Cove dredge area. Using target dredge elevations in combination with bathymetric data, a preliminary dredge plan was developed, which estimated the required depth of dredging and the thickness of the overlying sediment to be removed. The pre-dredge sediment sampling plan was designed to confirm these estimates or adjust elevations as needed. Coring locations were placed onto the z-block map to achieve sufficient spatial coverage for making an evaluation of the target dredge elevations (Figure 4). Visual characterization data from the pre-dredge cores was used by USACE NAE and Jacobs Engineering Group (Jacobs) to prepare the final 2008 dredge plan (Jacobs, 2009).

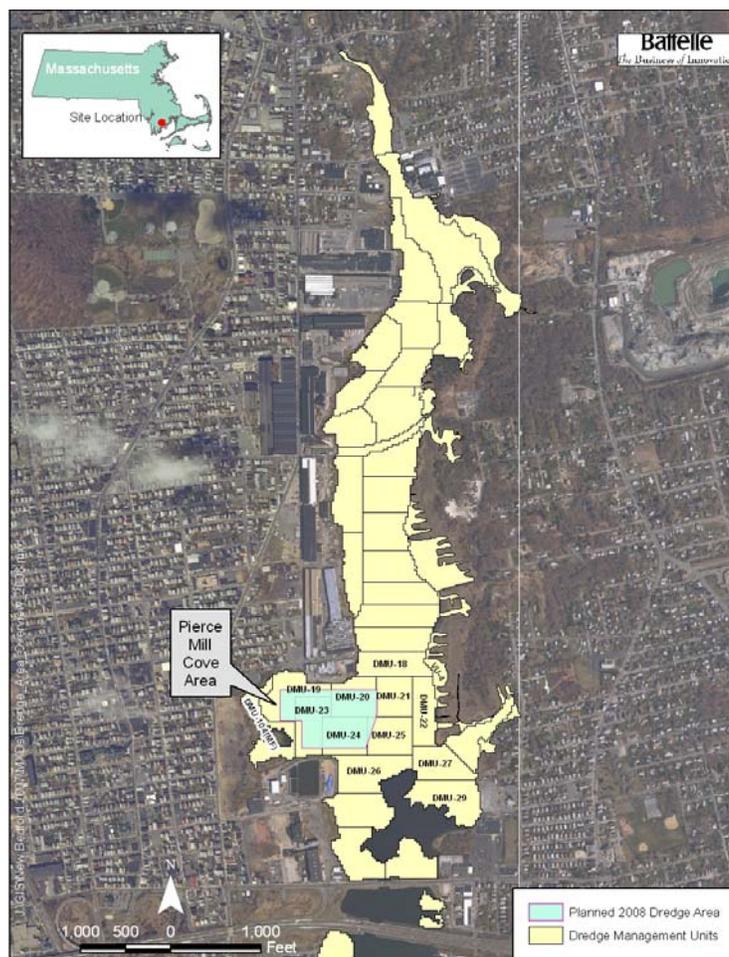


Figure 3. 2008 Dredge Area.

Post-dredge Sediment Sampling. Post-dredge sediment sampling was conducted to assess the sediment condition relative to the target dredge elevation for the 2008 dredging event and to assist with future site needs. Post-dredge cores were visually characterized to determine the elevation



and thickness of overlying material remaining after the completion of dredging. Samples selected by USACE NAE were chemically tested to assess PCB concentrations remaining in the sediments following the completion of dredge activities; samples tested were selected based on location, color change, and core stratigraphy.

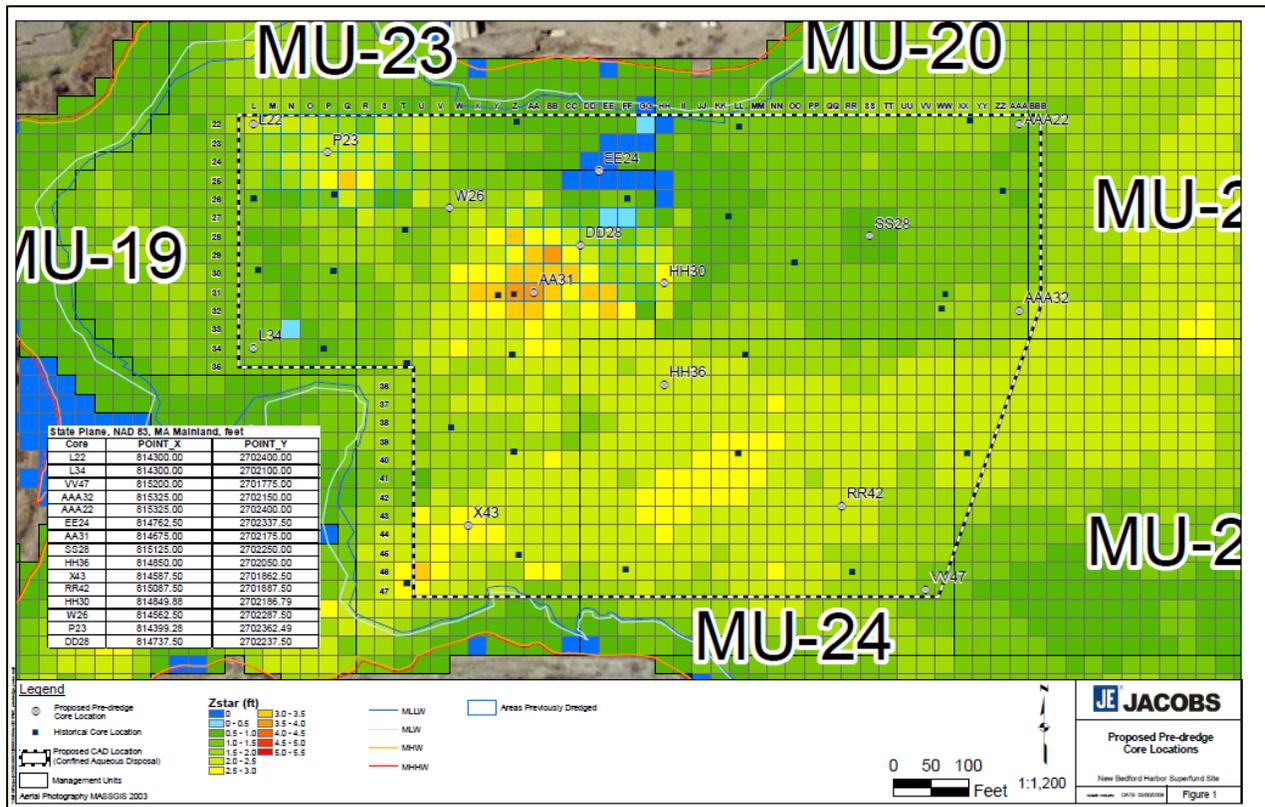


Figure 4. Pierce Mill Cove Planned Dredge Area with Z-blocks and Target Dredge Elevations. (Source: Jacobs, 2009)

1.2.2 North of Wood Street

Long-term sediment monitoring has been performed at the NWS area since 2004 to assess the effectiveness of prior remediation and potential recontamination of this area due to sediment transport from unremediated areas of the Harbor. The objectives of the 2008 monitoring activities were to characterize PCB contamination in surficial river sediment and shoreline soils at the NWS area, and evaluate the 2008 data in context of the larger monitoring period and the cleanup criteria established in the 1998 ROD: 1 mg/kg for residential shoreline areas, 10 mg/kg for the sub-tidal sediments, 25 mg/kg for the top foot of recreational land use shoreline soils, and 50 mg/kg for shoreline soils deeper than the top foot in residential and recreational land use areas.

1.2.3 OU3 Pilot Cap Site

Long-term monitoring has been performed at the OU3 pilot cap area since 2005 to assess the effectiveness of the cap. The objectives of the 2008 monitoring activities were to characterize PCB contamination in surface sediments collected at the OU3 cap area, and to evaluate the 2008 data in context of the larger monitoring period (2005-2007).

2.0 METHODS

Methods used to collect and analyze sediment samples are summarized below and described in detail in the project Field Sampling Plan (Battelle 2008a) and Quality Assurance Project Plan (Battelle, 2008b).

2.1 Sediment Collections

2.1.1 Pierce Mill Cove

Pre- and post-dredge core samples were collected at the Pierce Mill Cove dredge area (Figure 5). Sediment cores were collected with a push-core sampling device utilizing 3-inch diameter Lexan™ core barrels. The sampling device was designed to securely hold one end of a pre-cut length of core barrel. Core lengths were targeted so that penetration exceeded the expected depth of the target dredge elevation by at least one foot. A piston assembly inside the core barrel was used to create suction during retrieval of the sample to prevent sediment loss from the bottom of the barrel.

Once the individual components of the push-core sampler were assembled, sample collection was achieved as follows. The core assembly was measured from the bottom of the core to the top of the assembly. The piston assembly was positioned just inside the leading end of the core liner and the piston line was held loosely on deck. The device was lowered into the water until the leading end of the core bore barrel contacted the sediment surface. The piston attachment line was then tied off securely on the deck of the survey vessel, thus fixing the elevation of the piston assembly. In driving the push-core into the sediment, the piston created a syringe effect as the core liner was driven past the fixed elevation of the piston. The core liner was then driven to the maximum depth of either refusal or the limiting depth allowed by the length of the piston attachment line. When retrieving the core assembly (with sample), tension was held on the piston line so that the piston and

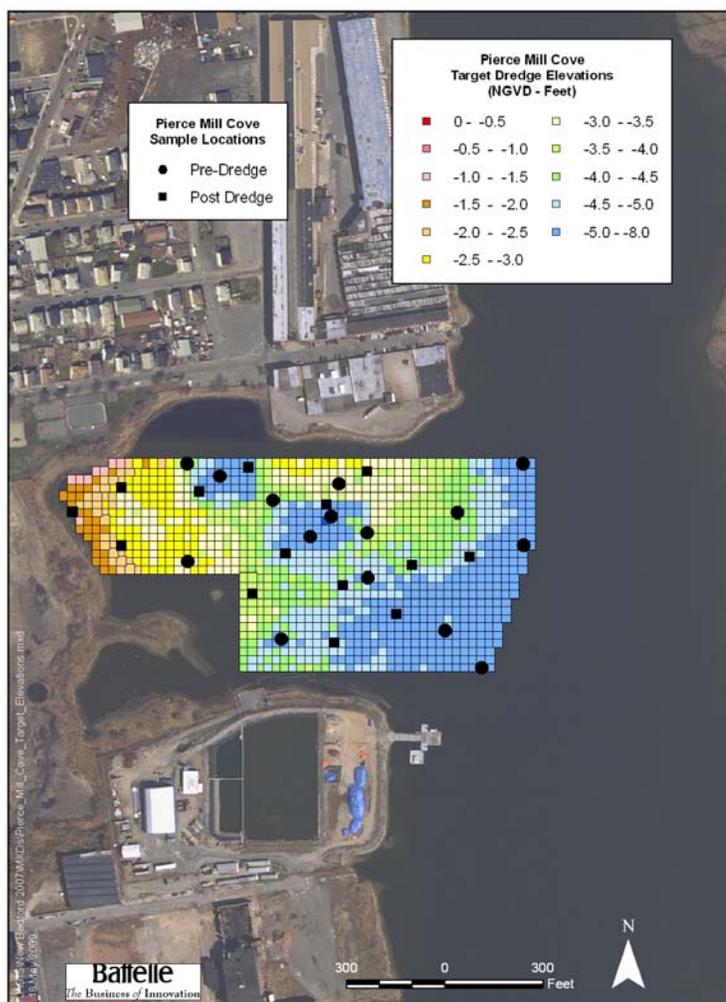


Figure 5. Pre- and Post-dredge Sample Locations, Pierce Mill Cove. (Sample locations shown with respect to Z-blocks and target dredge elevations)



sample were not pulled back down the core liner by suction from the sediments. The sampler was recovered onto the deck of the survey vessel. The bottom end of the core barrel was fitted with a plastic cap, after which the sediment on the external body of the sampler was rinsed off. After thoroughly cleaning the sampling device, the core liner was removed from the socket assembly, the piston assembly was removed, and the top of the core liner was fitted with a plastic end cap.

Upon recovery, the core was examined for acceptability. The goal of the sampling was to identify visual transitions in the field. If it did not appear that a clear transition layer was captured, the field team used professional judgment to determine the cause. Possible causes included: 1) the core was not long/deep enough to capture transition layers; 2) smearing of overlying sediments obscured the transition; and 3) the entire core was composed of the characteristic native material. For the first two causes the collection of a second core (longer for cause 1) at the same location was conducted. For the third cause the field team repositioned slightly and collected a second core. Other factors that were considered in determining acceptability included: 1) too much water at the top of the core; 2) signs of significant compaction at the top of the core; and 3) signs of loss of sediment from the bottom of the core. Because of the wide range of possible scenarios, overall core acceptability was based on the experience and judgment of the Chief Scientist and the field team. All decision making was documented on the Sediment Sampling Log sheets (Appendix A).

Determination of the accurate vertical elevation of the samples was critical in achieving the objectives of the project. Elevation of the water levels, sediment-water interface, apparent target dredge elevation, and other sediment transition zones were all critical measurements for this project (see Section 3 and Appendix A). The project elevation datum is MLW NGVD-29. A series of measurements were conducted for each sample to correct elevations for tidal fluctuations. All measurements were recorded as ± 0.1 feet. The required measurements and techniques are listed below. See Figure 6 for graphical depiction of the measurements.

A = Water depth. The water depth was recorded using a measuring pole.

B = Length of push-core assembly. Prior to deployment, the full length of the push-core assembly from the top of the handle to the bottom edge of the core liner was recorded.

C = Water surface to top of core assembly handle. Once the core assembly was fully inserted (refusal or full core penetration), the length of the assembly remaining above the water surface was recorded.

D = Core Length. The core length, from bottom to top, was measured and recorded.

E = Surveyed elevation. Prior to operations, the dredge contractor installed a fixed sheet pile with markings indicating a survey elevation (NGVD 29). This elevation was recorded and served as the reference point for all elevation calculations.

F = Water surface from surveyed elevation. After sample collection, the survey vessel navigated to the fixed sheet pile with surveyed elevations (position to be determined) and the distance from the water surface to the surveyed elevation was recorded.



From these measurements a number of calculations were made to determine true elevations:

$E - F =$ **Elevation of water surface (G).**

$G - (B - C) =$ **Elevation of bottom of core (H).**

The H elevation (bottom of core) was used to determine the elevation of all visual transitions, including apparent target dredge elevation, i.e.:

$H + (\text{distance to visual transition}) =$ **Elevation of visual transition** (target dredge elevation)

$H + D =$ **Elevation of sediment-water interface (I).**

The elevation of the sediment-water interface was also calculated from:

$G - A =$ **Elevation of sediment-water interface (I_2).**

I and I_2 were compared at each station. In soft sediments the sediment-water interface may have been difficult to discern from soundings (i.e., it is difficult to feel). Additionally, the sediment-water interface within a core was subject to compaction during collection, settling after recovery, and other factors that may have impacted the accuracy of elevation measurements. If I and I_2 varied by more than 1.0 foot, the core was discarded and a new sample collected.

Once the core was deemed acceptable, a Sediment Sampling Log sheet was completed. Sample collection data, including collection date and time, station coordinates, and sample identification (ID), were documented on Sediment Sampling Log forms. The field measurements required for determining vertical elevation of the sediment-water interface and each transitional layer was also included on the Sediment Sampling Log sheet. The core barrel was labeled with a sample ID, date, and the orientation for the top of the core. Chain of Custody for each core section was initiated in the field. Core samples were capped tightly, stored on ice in the field, and transferred to the Sawyer Street field trailer for processing (Section 2.2).

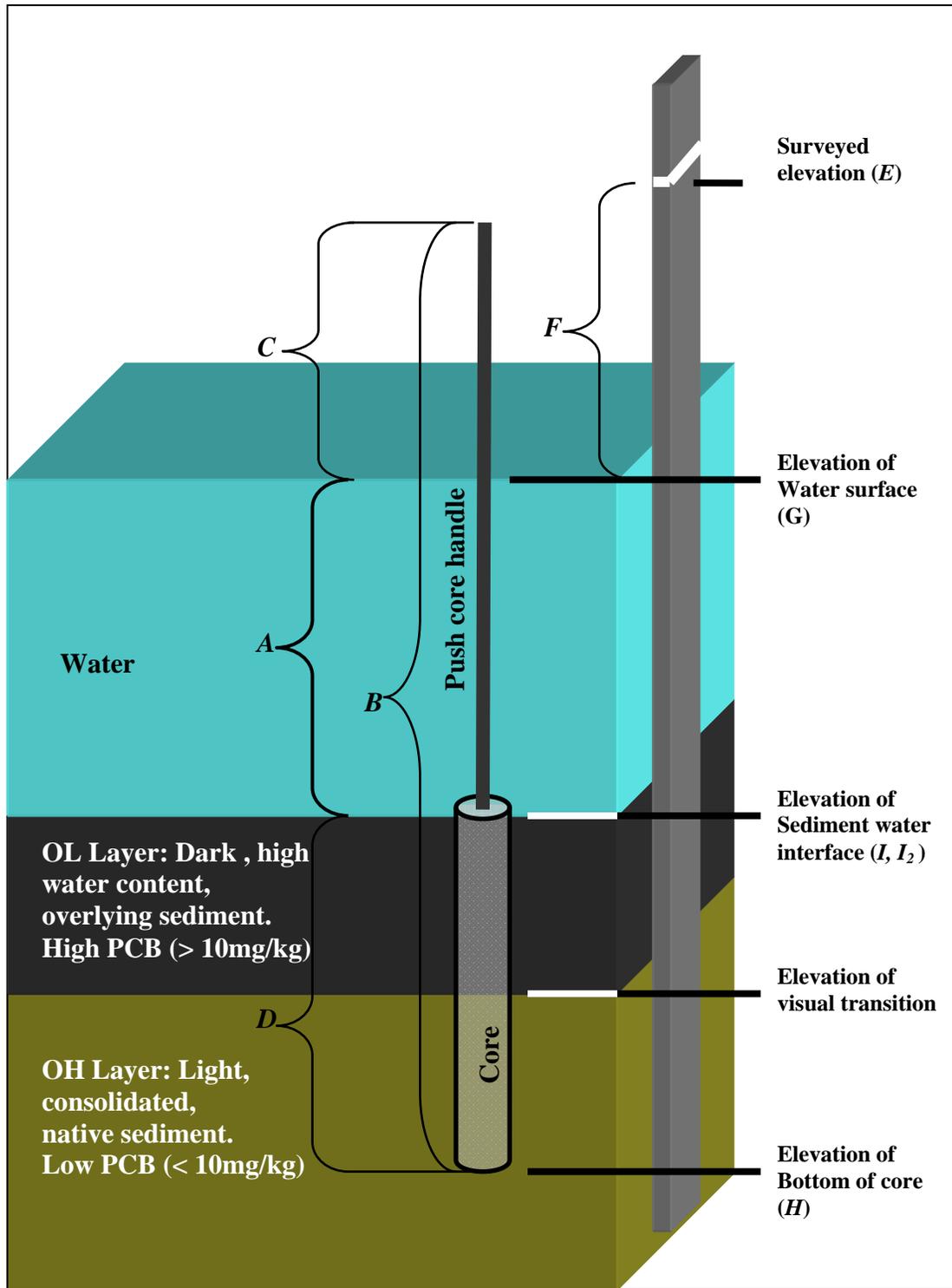


Figure 6. Graphical Depiction of Sediment Core Measurements.



2.1.2 North of Wood Street

Twenty-one (21) locations were sampled in 2008, including 14 sediment stations in the river and seven soil stations located at recreational and residential land use shoreline soil areas along the east and west side of the river (Figure 7). Station locations were based on locations sampled previously in 2006 and 2007 (Battelle, 2007 and 2008c).

In-river sediments were collected in Lexan™ core barrels attached to a stainless steel push-core sampler. In all cases, a one foot core was targeted. Samples in deeper waters were collected from a boat, while shallow water samples were collected by wading. The push-core sampler is designed to securely hold one end of a pre-cut length of core barrel. The stainless steel socket which holds the core liner was attached to a suitable length of push rod based on the water depths for the sampling effort. A piston assembly inside the core barrel was used to create suction during retrieval of the sample so that no sediment was lost from the bottom the barrel. The piston assembly was positioned just inside the leading end of the core liner and the piston line was held loosely on deck. The device was lowered into the water until the leading end of the core bore barrel contacted the sediment surface. The piston attachment line was then tied off securely on the deck, thus fixing the elevation of the piston assembly. In driving the push-core into the sediment, the piston created a syringe effect as the core liner was driven past the fixed elevation of the piston. The sampler was recovered onto the deck of the survey vessel. The bottom end of the core barrel was fitted with a plastic cap, after which the sediment on the external body of the sampler was rinsed off. After thoroughly cleaning the sampling device, the core liner was removed from the socket assembly, the piston assembly was then removed, and the top of the core liner was fitted with a plastic end cap. Shoreline soil samples were collected in Lexan™ core barrels inserted into a soil auger. Sample collection data, including collection date and time, station coordinates, and sample ID, were documented on Sediment Sampling Log forms (Appendix A). All cores were kept intact in the liners and returned to the Sawyer Street field trailer for processing (Section 2.2).



Figure 7. North of Wood Street Sampling Locations.

2.1.3 OU3 Pilot Cap Site

Sediment sampling was conducted at 17 locations at the OU3 Pilot Cap site to collect surficial sediments for PCB analysis. Sample locations are consistent with previous investigations (ENSR, 2006), and encompass a series of stations representative of ridge and valley locations at the pilot cap site (Figure 8).

The vessel transited to the target locations and the surface feature (i.e., ridge and valley) was assessed using the fathometer. Clearly discernable features (ridges and valleys) were evident at some stations (i.e., OU01, OU12 and OU16), but not others. Surface grab samples were collected at the target coordinates using a 0.04m² modified Van Veen grab sampler. Sample collection data, including collection date and time, station coordinates, and sample ID, were documented on Sediment Sampling Log forms (Appendix A). All samples were returned to the Sawyer Street field trailer for processing (Section 2.2).

2.1.4 Quality Control

A routine set of quality control (QC) samples, including field duplicates, equipment blanks, and quality assurance (QA) splits, were collected to evaluate the sampling and analytical data quality. One field duplicate and one equipment blank were collected during the NWS and OU3 sampling events. One QA split was collected for each event (Pierce Mill Cove, NWS and OU3); QA splits were shipped to ESS Laboratory, an independent testing laboratory identified by USACE NAE.

2.2 Sample Processing

Sediment samples were kept on ice and transferred to the Sawyer Street field trailer for processing. Sediment samples were photo-documented, visually characterized, and sub-sampled for chemical testing as described below.

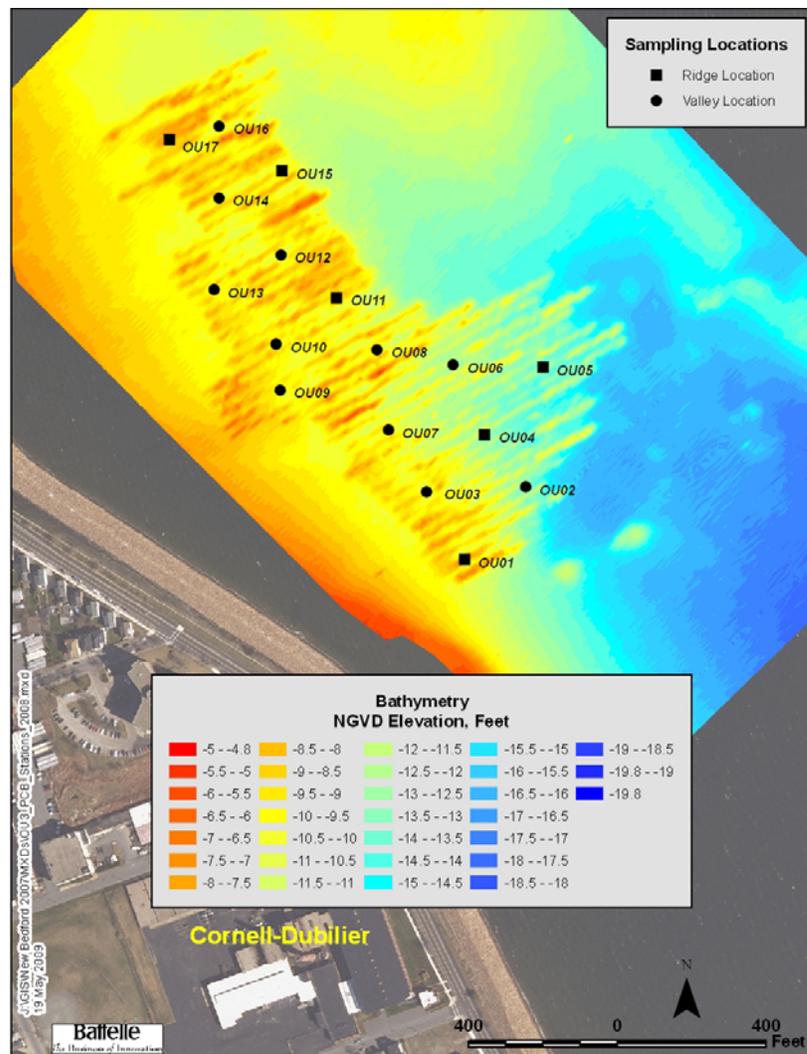


Figure 8. OU3 Pilot Cap Site Sampling Locations.
(Bathymetry conducted by Jacobs in March 2009)



2.2.1 Photo documentation

In general, previous investigations have shown that dark, high water content, organic silts in the surface sediment are associated with elevated PCBs (Foster Wheeler Environmental Corporation, 2001 and 2002; ENSR, 2004 and 2005). These sediments fall under the “OL” description in the USCS (organic silt, organic clay). At the site these contaminated OL sediments generally overlie lighter colored, more consolidated native clays which have lower PCBs concentrations. The use of this visual transition as a general indicator of the vertical location of contamination provides a rapid and inexpensive method to assess dredge targets and performance.

To document this visual transition, all sediment cores were documented with digital photographs. Each photograph contained the following elements in the frame:

- *The sediment core.* Photographing was done through the clear liner.
- *Measurement reference.* A tape measure (or equivalent) marked in decimal feet ran parallel to length of the core.
- *Sample identifier.* A card, paper, whiteboard, or equivalent was placed next to the core with the following written information:
 - Sample ID – an alpha numeric code that identifies sample matrix, sampling year, station location, and depth interval sampled
 - Sample Collection Date

2.2.2 Visual Characterization and Sub-sampling for Chemical Testing

Following photo documentation, all sediment samples were visually characterized and sub-sampled for chemical testing as described below. Copies of the sample field logs and custody records are maintained with the project files at Battelle.

Pierce Mill Cove, Pre-dredge Cores. Each sediment core was visually characterized and the physical characteristics (i.e., material type, color, consistency, particle size and odor) documented on the Sediment Sampling Log forms (Appendix A). Sediment cores were not sub-sampled for chemical testing, but were archived frozen at the site for possible analysis at a later date.

Pierce Mill Cove, Post-dredge Cores. Each sediment core was visually characterized and the physical characteristics (i.e., material type, color, consistency, particle size and odor) documented on the Sediment Sampling Log forms (Appendix A). A sub-set of the cores were sub-sampled for PCB analysis (i.e., stations X33, T38, CC27, T22, D32, D25, and bb28); core segments tested were selected based on location, color change, and core stratigraphy. Cores not selected for chemical testing were archived frozen at the site.

Based on the visual characterization, a segment from top of the core to the visual interface was collected for analysis. A 6-inch segment below the visual interface was also sampled and archived frozen at the site for potential future analysis. The sediment was removed from the core using a decontaminated metal spoon and homogenized in a disposable aluminum bowl. Dedicated processing equipment was used for each sample to minimize the potential for cross-contamination and reduce the use of solvents. Samples were collected into pre-cleaned, 8-oz glass jars with Teflon[®] lined lids and transferred on ice to Battelle for chemical testing.



North of Wood Street Cores. Each core was visually characterized and physical characteristics (i.e., material type, color, consistency, particle size and odor) documented on the Sediment Sampling Log forms (Appendix A). All sediment cores were sub-sampled for chemical testing. Two samples were taken from each core (i.e., depth intervals 0 to 0.5 ft and 0.5 to 1.0 ft), homogenized, and placed into sample containers. The sample from the 0.0 to 0.5 foot interval was submitted for PCB analysis. The sample from the 0.5 to 1.0-foot interval was frozen and archived at the site until further notice. Samples were collected into pre-cleaned, 8-oz glass jars with Teflon[®] lined lids and transferred on ice to Battelle for PCB analysis.

OU3 Pilot Cap Sediment Grabs. The material type for each sediment grab was documented on the Sediment Sampling Log forms (Appendix A). The surface 0.3 ft from each sample was homogenized and sub-sampled for PCB analysis. Samples were collected into pre-cleaned, 8-oz glass jars with Teflon[®] lined lids and transferred on ice to Battelle for chemical testing.

2.3 Chemical Testing

2.3.1 Polychlorinated Biphenyls

Chemical testing of the sediment samples for PCB congeners and homologues was performed by Battelle, located in Duxbury, MA. Prior to analysis, samples were air-dried overnight to ensure percent solids in the samples were >50%. Approximately 5 g of the air-dried sample was spiked with surrogates and extracted using accelerated solvent extraction following modified USEPA Method 3545. The extracts were processed through activated copper for sulfur removal and then received disposable Florisil column clean-up. The post-Florisil extract was concentrated, fortified with internal standards (IS), and submitted for analysis.

All sample extracts were analyzed for the 18 National Status and Trends (NS&T) congeners using gas chromatography/electron capture detection by dual column confirmation, following modified USEPA Method 8082. Sample data were quantified by the method of internal standards, using the IS compounds. Positive congener results were confirmed by a secondary column confirmation analysis with the higher of the two results reported, unless analyst discretion required otherwise (e.g., the result without an interference signal was reported). Congener results that were greater than 40% different between the first and second column analysis were 'p' qualified.

The project requires that a minimum of 7.5% of the samples be analyzed for PCB homologues to evaluate the comparability of the PCB congener-homologue data, and verify the relationship between congeners and homologue groups as a defensible means of performing total PCB analysis (Jacobs, 2005). For the 2008 dredge season, approximately 13% of the sediment samples (6 out of 45 total samples) were analyzed for PCB homologues using gas chromatography/mass spectrometry, following modified USEPA Method 8270C. Specifically, two samples were selected at random from each of the collection areas: Pierce Mill Cove, NWS, and OU3. The homologue analysis was performed using the sample extract from the congener analysis (i.e., the same extract was analyzed by two methods to determine PCB congener [Method 8082] and homologue [Method 8270C] data). Sample data were quantified by the method of internal standards, using the IS compounds.



Concentrations of total PCB were calculated using the congener and homologue results to assess how comparable the methods (i.e., congeners vs. homologues) are with respect to determining the concentration of total PCB in sediment sampled at the site. Based on a previous site-specific correlation study, total PCB was calculated as the sum of the 18 NS&T congeners multiplied by the project-specific factor for upper and lower harbor sediments of 2.6. Total PCB was also calculated as the sum of the homologues. Total PCB was also calculated as the sum of the homologues. A value of zero (0) was used in the summation for non-detects. PCB congener and homologue results are reported in mg/kg dry weight to two significant figures in this report.

2.3.2 Quality Control

A routine set of QC samples were prepared with each batch of 20 or fewer project samples to monitor data quality in terms of accuracy and precision. Each batch of project samples included one method blank, one laboratory control sample (LCS), and one matrix spike and matrix spike duplicate (MS/MSD). For the post-dredge core samples, a laboratory duplicate was analyzed in place of a field duplicate.

2.4 Data Analysis

Microsoft[®] Excel 2003 and JMP (The Statistical Discovery Software, a business unit of SAS Institute, Inc.) were used to characterize the sediment PCB data and assess potential trends in the long-term monitoring data. Total concentrations of PCB were used in all data evaluations. XY scatter plots were prepared in Excel to evaluate the correlation between sediment thickness and PCBs. Box plots were prepared in JMP to illustrate the sample distribution for total PCB. Figure 9A shows a sample box plot, where the box plot displays the median (represented by the center horizontal line), the 25th percentile (represented by the bottom of the box), and the 75th percentile (represented by the top of the box). The vertical lines, or whiskers, are drawn from the box to the most extreme point within 1.5 interquartile range. (An interquartile range is the distance between the 25th and the 75th percentiles). Values above or below the whiskers represent potential outliers.

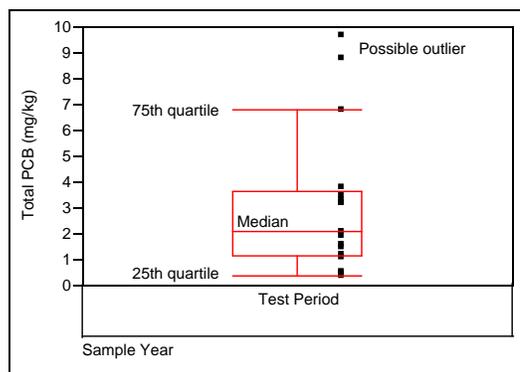


Figure 9A. Example Box Plot.

PCB data were also evaluated statistically in JMP by using the one way analysis of variance (ANOVA) to determine if there were significant differences among the sampling periods. The ANOVA used the natural logarithms of the total PCB data because this transformation stabilized the variance and better represented the apparent trends in the data. Figure 9B shows an example of the output from the ANOVA, where the diamonds illustrates a sample mean and 95% confidence interval. Overlap marks are drawn above and below the group mean. For groups with equal sample sizes, overlapping marks indicate that the

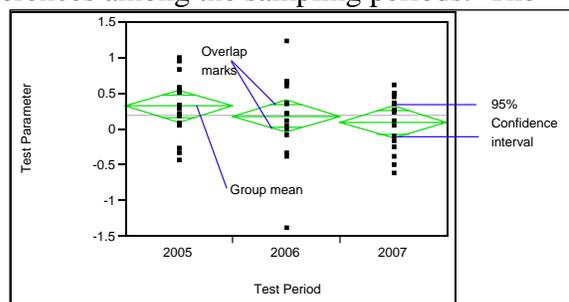


Figure 9B. Example Output from ANOVA.



two group means are not significantly different at the 95% confidence level. The line across the chart represents the overall response mean (arithmetic mean of all data). Wherever the ANOVA results indicated there was a significant difference among the sampling periods, a Tukey least significant difference test was performed to characterize the relationships among the periods.

3.0 RESULTS

3.1 Field Activities

Results from the sediment monitoring activities performed at the Pierce Mill Cove, NWS and OU3 areas of the site are described below. Complete field data including sample collection information and digital photographs of the sediment cores are provided in Appendix A. Digital photographs of the cores were uploaded to the New Bedford Harbor project database. These photographs are linked in the database to the location information and to the analytical results and can be viewed individually.

3.1.1 Pierce Mill Cove

Sediment monitoring activities conducted in support of the remedial dredging at Pierce Mill Cove included pre- and post-dredge core sampling. Pre-dredge coring was performed to determine the elevation of the visual transition and sediment thickness of the OL layer to assist dredge planning. Post-dredge coring was performed to assess the overall performance of the dredging operation and support future needs.

Pre-dredge Core Sampling. Pre-dredge cores were collected on May 30, 2008 at 15 locations identified by Jacobs. Sediment cores were examined to determine the elevation of the visual transition and sediment thickness of the OL layer. The thickness of the OL layer ranged from 0.5 to 2.2 ft (Table 1, Figure 10). These data were used by USACE NAE and Jacobs to refine the target dredge elevations for the final 2008 dredge plan (Jacobs, 2009).

The physical characteristics of the pre-dredge cores were typical of sediments previously described at the site, although surface sediments were generally more sandy compared to other dredge areas sampled in previous years. The cores were generally comprised of two distinct layers. The surface layer was characterized by fine-grained, loose black organic silt ('OL' in the USCS) with some sand. This surface layer ranged from about 0.5 to 2.2-ft of OL (Table 1). The thickness of the OL layer was generally higher in the northwest region of the cove and lower to the east near the river (Figure 10). Below this OL layer the sediment type was generally comprised of moderately firm olive-gray clay ('OH' in the USCS, defined as organic clay, organic silt).

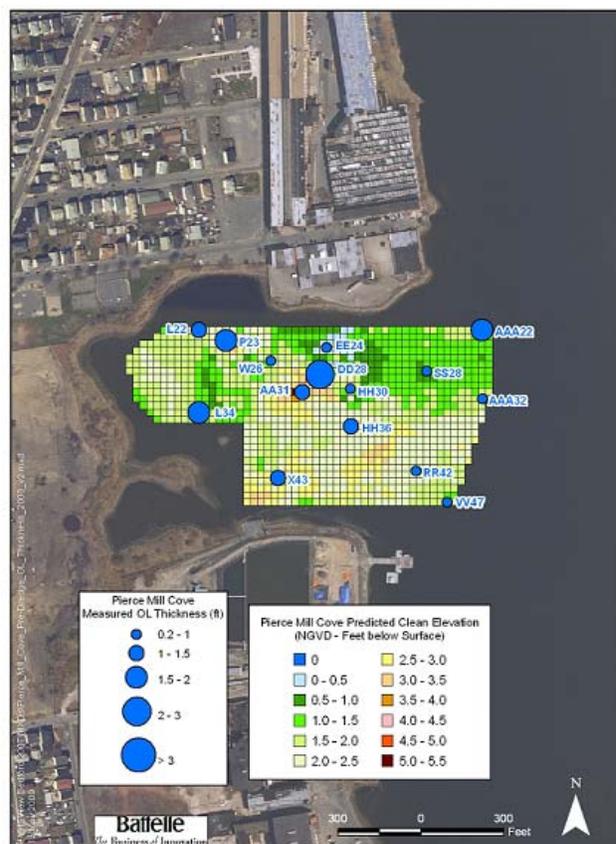


Figure 10. Pre-dredge Thickness of OL Layer at Pierce Mill Cove.



Table 1. Elevation Data From the 2008 Pre-dredge Sampling Event^a, Pierce Mill Cove.

Station	Northing NAD 83 MA, ft	Easting NAD 83 MA, ft	Elevation of visual transition (native to OL) (NVGD, ft)	Measured Sediment Thickness of OL Layer (ft)
VV47	2701774.17	815199.91	-5.8	0.70
VV47 (duplicate)	2701774.17	815199.91	-5.8	0.80
RR42	2701887.10	815088.07	-4.6	0.90
AAA32	2702149.76	815326.76	-5.7	0.80
SS28	2702249.43	815125.35	-4.2	0.80
AAA22	2702399.18	815324.55	-6.2	1.70
HH30	2702186.76	814849.38	-4.1	0.60
HH36	2702049.74	814850.42	-4.2	1.10
DD28	2702238.06	814738.27	-7.6	2.20
W26	2702288.30	814561.37	-3.8	0.80
AA31	2702174.42	814675.76	-5.7	1.40
EE24	2702336.82	814762.41	-3.1	0.50
L34	2702099.57	814300.54	-3.7	1.60
P23	2702361.75	814399.16	-6.4	1.90
L22	2702399.44	814300.16	-3.6	1.30
X43	2701862.15	814586.72	-4.1	1.50

^a Samples collected on May 30, 2008.

Post-Dredge Sediment Sampling. Post-dredge sediment cores were collected on December 5, 2008 to verify the final sediment condition at the end of the 2008 dredge season. Post-dredge cores were collected at 14 locations identified by Jacobs; none of which represented locations sampled during the pre-dredge coring event. Post-dredge cores were examined to determine the elevation of the visual transition and sediment thickness of the OL layer (Table 2). The thickness of the OL layer remaining in the sediment after completion of dredging activities at Pierce Mill Cove ranged from 0.3 to 1.6-ft (Table 2).

The post-dredge cores had the same general physical characteristics as was observed in the pre-dredge events. Nearly all of the post-dredge cores were comprised of two distinct layers (OL overlying OH); no clear transition was evident for the post-dredge cores collected at stations DD44 and T38. The visual transition zone in many of the post-dredge cores was noticeably different from the pre-dredge cores. That is, there were fewer cores with sharp demarcations between the OL and OH layers, and these blurred transitions tended to be thicker (>0.5-ft) compared to the pre-dredge cores.



Table 2. Elevation Data from the 2008 Post-dredge Sampling Event^a, Pierce Mill Cove.

Station	Northing NAD 83 MA, ft	Easting NAD 83 MA, ft	Elevation Measurements (NGVD ft)			Measured Sediment Thickness of OL Layer (ft)	Actual vs. Predicted Transition Elevation (ft) ^c
			Target Dredge Elevation ^b	Measured Elevation of Visual Transition (Native to OL)	Measured Elevation of Sediment Surface		
DD44	2701849.68	814748.15	-4.9	-6.7	-5.4	1.3	-1.8
EE37	2702026.51	814773.70	-4.6	-5.1	-4.8	0.3	-0.5
X33	2702123.59	814599.03	-4.8	-5.3	-4.2	1.1	-0.5
T38 ^d	2701999.16	814510.51	-3.7	-5.3	-3.9	1.4	-1.6
CC27	2702273.74	814726.35	-5.6	-7.3	-6.4	0.9	-1.7
T22	2702387.21	814486.89	-5.5	-5.2	-4.8	0.4	0.3
N25	2702310.66	814338.21	-4.7	-3.0	-2.6	0.4	1.7
N25(duplicate)	2702310.66	814338.21	-4.7	-3.5	-2.7	0.8	1.2
D32	2702147.00	814099.75	-2.1	-3.7	-3.2	0.5	-1.6
D25	2702324.58	814100.24	-3.0	-3.2	-2.5	0.7	-0.2
bb28	2702250.56	813949.35	-1.6	-3.9	-2.9	1.0	-2.3
HH23	2702375.29	814850.30	-3.1	-4.8	-3.2	1.6	-1.7
NN34	2702089.21	814987.03	-4.4	-3.7	-3.0	0.7	0.7
LL40	2701936.86	814939.77	-5.6	-4.0	-2.9	1.1	1.6
UU33	2702113.75	815162.06	-4.5	-4.7	-3.7	1.0	-0.2

^a Samples collected on December 5, 2008.

^b Source: Jacobs (2009).

^c Actual vs. Predicted = Measured Elevation of Visual Transition (ft) – Target Dredge Elevation (ft).

^d QA split collected and sent to independent testing laboratory.

3.1.2 North of Wood Street

River sediment and shoreline soil samples were collected at the NWS area in November and December, 2008 (Table 3). All samples were visually examined to characterize the physical characteristics of the one foot of surface sediment/soil (Appendix A).

River Sediment. Many of the river sediments had similar physical characteristics, characterized by a layer (0.2 to 0.8 feet) of fine black silt underlain by sand, clay or silt. The physical characteristics of sediment located closer to the shoreline and further upstream were different compared to in-river sediment locations. For example, station 030W, located near the western shore of the river, was comprised of brown sand with organic material underlain by sand and gravel. Station 030E, located near the eastern shore of the river, was uniformly comprised of medium sand throughout the entire one foot core. Station 010, located at the northern boundary of the NWS area, was comprised of medium to coarse, grey-black sand and gravel.

Shoreline Soil. Soils located along the western shore were generally comprised of sand underlain by sand and gravel. Soils located along the eastern shore were generally comprised of fine to coarse, loose brown organic silt and sand underlain by gravel, silt and sand. Shoreline soils at stations NWS-34, NWS-35, NWS-36, and NWS-37 had a more uniform composition within the top one foot.



Table 3. Summary of Samples Collected at the North of Wood Street, 2008.

Station	Sample Type	Collection Date	Collection Time	Northing (NAD 83 MA ft)	Easting (NAD 83 MA ft)	
<i>Study Samples</i>						
010	River Sediment	12/3/08	1204	2709128.94	815353.74	
016		12/3/08	1140	2708949.2	815397.87	
023		12/3/08	1126	2708814.59	815412.09	
028		12/3/08	1112	2708704.43	815400.22	
030E		11/20/08	0905	2708683.7	815498.6	
030W		11/20/08	1004	2708653.30	815363.80	
033		12/3/08	1102	2708613.29	815412.90	
038 ^a		12/3/08	1050	2708517.71	815383.18	
039		12/3/08	1028	2708513.84	815410.39	
040		12/3/08	1017	2708514.69	815462.20	
048		12/3/08	0950	2708387.52	815414.40	
049		12/3/08	1002	2708405.78	815468.41	
055		12/3/08	0924	2708266.99	815461.10	
055 REP		12/3/08	0935	2708266.99	815461.10	
062		12/3/08	0915	2708165.92	815567.28	
NWS-33		Shoreline Soil	11/20/08	1109	2709039.40	815330.20
NWS-34			11/20/08	1100	2708923.90	815338.80
NWS-35	11/20/08		0922	2708759.89	815508.68	
NWS-36	11/20/08		0932	2708761.25	815516.12	
NWS-37	11/20/08		0913	2708682.25	815534.72	
NWS-38	11/20/08		0940	2708819.27	815503.15	
NWS-39	11/20/08		0944	2708820.21	815508.55	
<i>QC Samples</i>						
055 REP	Field duplicate	12/3/2008	9:35:00	2708266.99	815461.1	
038	QA Split	12/3/2008	10:50:00	2708517.71	815383.18	
EB	Equipment blank	11/20/2008	13:35:00	—	—	

^a QA split collected and sent to independent testing laboratory.

3.1.3 OU3 Pilot Cap Site

Sediment grab samples were collected in October 2008 at 17 locations at the OU3 Pilot Cap site (Table 4). Based on a visual characterization of the surface sediments (Appendix A), sediments were generally comprised of fine sand with some silt. Sediments from valley locations often had more silt compared to ridge locations. Algal mats and seaweed were observed at many of the locations (Appendix A).



Table 4. Summary of Samples Collected at the OU3 Pilot Cap Site, 2008.

Station	Collection Date	Collection Time	Northing (NAD 83 MA ft)	Easting (NAD 83 MA ft)
<i>Study Samples</i>				
OU01	10/6/2008	14:00	2685668.74	817983.57
OU02 ^a	10/6/2008	14:49	2685864.94	818148.87
OU03	10/6/2008	14:26	2685852.81	817883.21
OU04	10/7/2008	10:09	2686006.17	818038.56
OU05	10/7/2008	9:45	2686187.28	818195.19
OU06	10/7/2008	9:25	2686192.94	817953.68
OU07	10/7/2008	10:43	2686017.93	817778.95
OU08	10/7/2008	8:57	2686233.99	817749.23
OU09	10/6/2008	12:47	2686125.16	817487.92
OU10	10/6/2008	12:14	2686249.50	817478.51
OU11	10/6/2008	11:53	2686374.39	817641.09
OU12	10/6/2008	11:08	2686489.87	817490.14
OU13	10/6/2008	11:27	2686395.40	817310.32
OU14	10/6/2008	10:46	2686643.80	817323.85
OU15	10/6/2008	10:26	2686715.37	817494.27
OU16	10/6/2008	9:54	2686837.18	817325.12
OU17	10/6/2008	9:34	2686800.94	817191.41
<i>QC Samples</i>				
OU16 (field duplicate)	10/6/2008	10:05	2686837.18	817325.12
OU02 (QA Split)	10/6/2008	14:49	2685864.94	818148.87
EB (Equipment blank)	10/6/2008	13:05	—	—

^a QA split collected and sent to independent testing laboratory.

3.2 Chemical Testing

This section summarizes the PCB results for sediment samples collected at the Pierce Mill Cove, NWS, and OU3 pilot cap areas in 2008. Total PCB results are summarized in Table 5. Complete test results, along with results from the analysis of field- and laboratory-based QC samples, are provided in Appendix B. Results from the analysis of field-based QA split samples were reported directly to USACE NAE by the independent testing laboratory.

3.2.1 Pierce Mill Cove

Post-dredge concentrations of total PCB in the surface OL layer ranged from 10 mg/kg to 47 mg/kg (Table 5, Figure 11). These data suggest that PCB concentrations in surface sediment after dredging were within an order of magnitude of the predicted concentrations based on the geostatistical model.

3.2.2 North of Wood Street

Total PCB concentrations in surface (0 to 0.5 ft) sediment samples at the NWS area ranged from 0.98 to 180 mg/kg (Table 5). The highest concentrations of total PCB (>100 mg/kg) were measured at subtidal stations 055 and 039 (Figure 12). Lower concentrations of total PCB (<10



mg/kg) were measured in sediment collected closer to the shoreline (stations 030W and 030E) and further upstream (station 010) (Figure 12, Table 5).

Total PCB concentrations were substantially lower in the shoreline soils compared to the river sediments, with concentrations ranging from 0.076 to 0.67 mg/kg (Table 5). Total PCB concentrations were below the residential cleanup criteria (1 mg/kg) at all shoreline locations sampled at the NWS area in 2008.

3.2.3 OU3 Pilot Cap Site

Concentrations of total PCB measured in surface sediment sampled in 2008 at the OU3 pilot cap site are shown in Figure 13 and summarized in Table 5. Overall, concentrations of total PCB were slightly higher at the valley locations (concentrations ranged from 0.23 to 6.0 mg/kg, Table 5) compared to ridge locations (concentrations ranged from 0.26 to 2.2 mg/kg, Table 5).

3.3 Quality Control

Results from the field- and laboratory-based QC samples are reported with the sample data provided in Appendix B. Results from the analysis of the field- and laboratory-based QC samples were evaluated against the measurement performance criteria (MPC) to evaluate the data quality in terms of accuracy and precision.

3.3.1 Field Activities

Results from the field-based QC samples were acceptable with respect to the MPC, indicating that the sampling methods were in control. That is, PCBs were undetected in the equipment blanks (Appendix B) and total PCB concentrations were comparable between the field replicates (Table 5).

3.3.2 Chemical Testing

QA/QC narratives that summarize the results from the laboratory-based QC samples against the MPC are provided in Appendix B. Results from the laboratory-based QC samples met the MPC, indicating that the laboratory methods were in control and that these data are useable. For example, the target compounds were undetected in the method blanks, indicating that the methods were free of contamination. In addition, recovery and precision results for the laboratory-based QC samples (i.e., LCS, MS, MSD and laboratory duplicate) were acceptable for all target compounds, indicating that the methods were in control.

A sub-set of the sediment samples were also analyzed for PCB homologues. Total PCB concentrations, calculated using both the congener and homologue data, are summarized in Table 5. The relative percent difference between the total PCB values, calculated using both the congener and homologue data, was within 15%, indicating that the two methods are comparable. Total PCB calculated by the homologue method was biased high compared to the congener method in five of the six samples (Table 5).



Table 5. Total PCB Concentrations in Surface Sediment at the Site, 2008.

Study Area	Sample Type	Station	Depth Interval (ft)	Total PCB ^a (mg/kg)
Pierce Mill Cove	Post-dredge cores	X33	0.0-1.1	45/49 ^b
		T38	0.0-1.0	12
		CC27	0.0-0.9	47
		T22	0.0-0.4	37
		D32	0.0-0.5	19
		D25	0.0-0.7	24
		bb28	0.0-1.0	10/11 ^b
North of Wood Street	River sediment	010	0.0-0.5	2.3
		016	0.0-0.5	29
		023	0.0-0.5	44/51 ^b
		028	0.0-0.5	76
		030E	0.0-0.5	1.1
		030W	0.0-0.5	0.98
		033	0.0-0.5	74
		038	0.0-0.5	33
		039	0.0-0.5	140
		040	0.0-0.5	24
		048	0.0-0.5	46
		049	0.0-0.5	23/26 ^b
		055	0.0-0.5	180/150 ^c
		062	0.0-0.5	58
	Shoreline soil	NWS-33	0.0-0.5	0.19
		NWS-34	0.0-0.5	0.2
		NWS-35	0.0-0.5	0.67
		NWS-36	0.0-0.5	0.18
		NWS-37	0.0-0.5	0.13
		NWS-38	0.0-0.5	0.076
OU3 Pilot Cap Site	Sediment grabs – Ridge locations	OU1	0.0-0.3	1.1
		OU4	0.0-0.3	1.6
		OU5	0.0-0.3	0.28
		OU11	0.0-0.3	0.26
		OU15	0.0-0.3	2.2
		OU17	0.0-0.3	0.57
	Sediment grabs – Valley locations	OU2	0.0-0.3	3.5
		OU3	0.0-0.3	0.23
		OU6	0.0-0.3	1.3
		OU7	0.0-0.3	0.99
		OU8	0.0-0.3	0.5
		OU9	0.0-0.3	0.84
		OU10	0.0-0.3	0.54
		OU12	0.0-0.3	0.73/0.85 ^b
		OU13	0.0-0.3	6/5.8 ^b
		OU14	0.0-0.3	0.9
OU16	0.0-0.3	2.2/1.8 ^c		

^a Total PCB = sum 18 NS&T congeners * 2.6.

^b Total PCB based on sum of homologues.

^c Total PCB result for field duplicate.

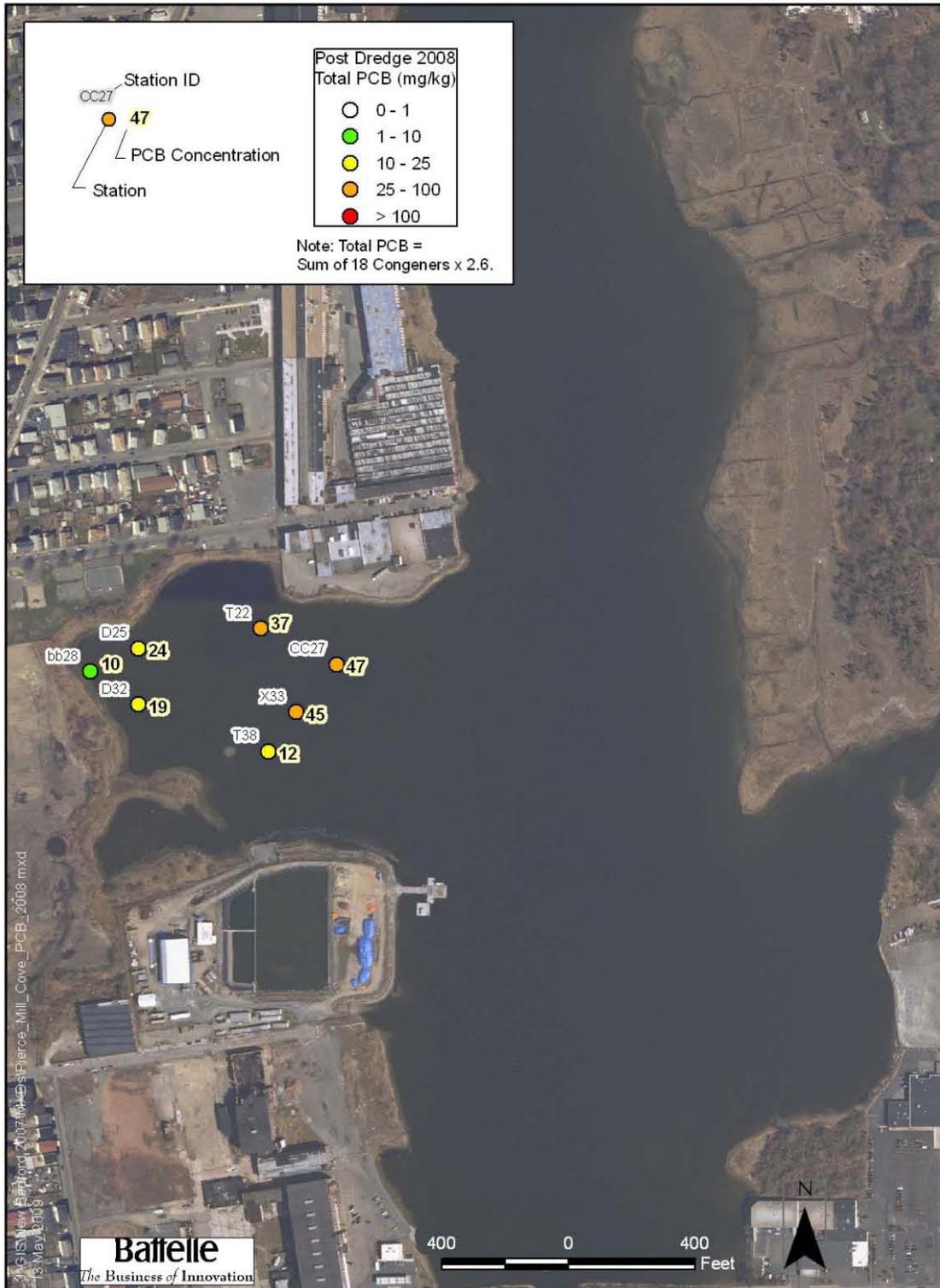


Figure 11. Total PCB Concentrations in Post-dredge Sediment at Pierce Mill Cove, 2008.

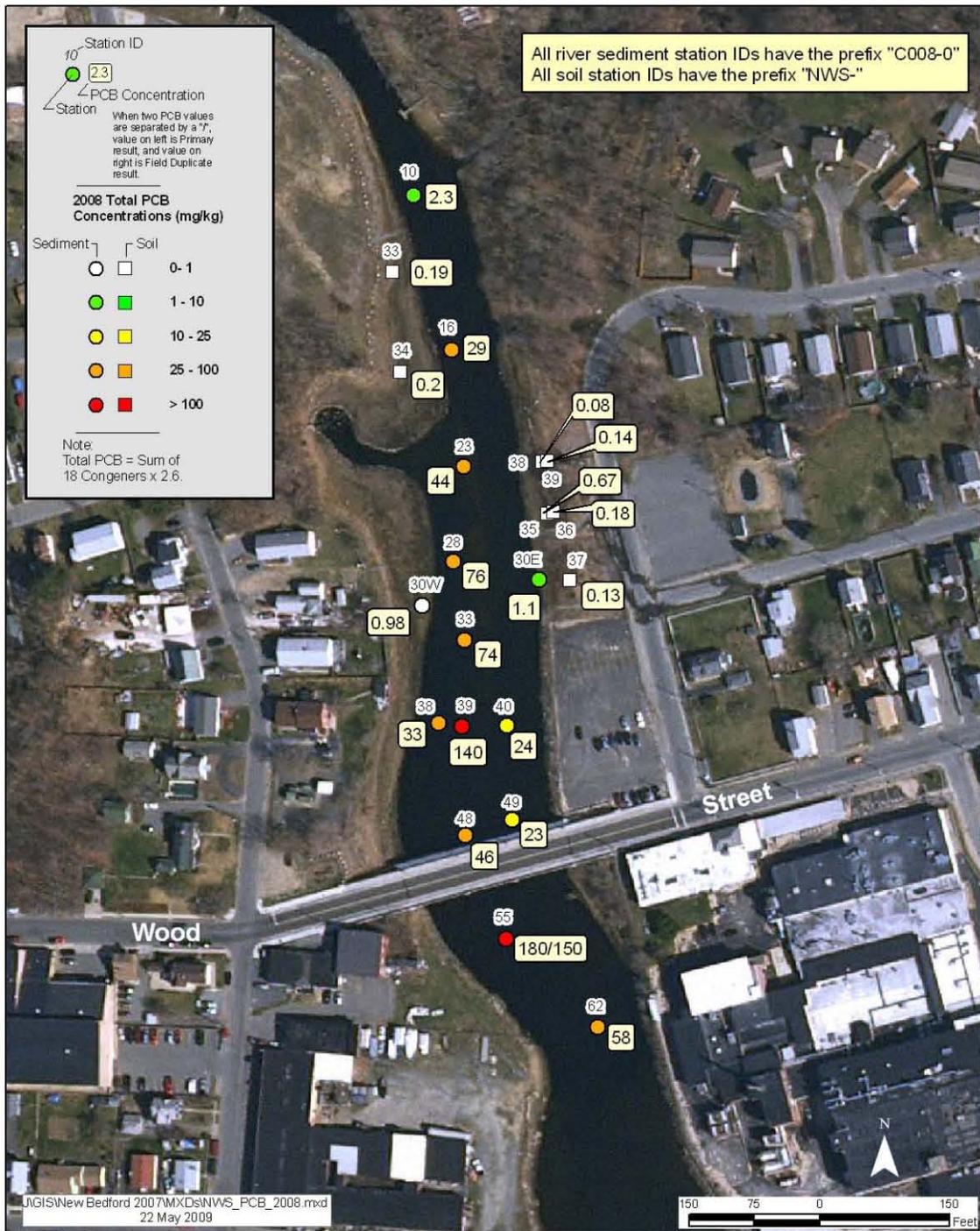


Figure 12. Total PCB Concentrations in Sediment/Soil at North of Wood Street, 2008.

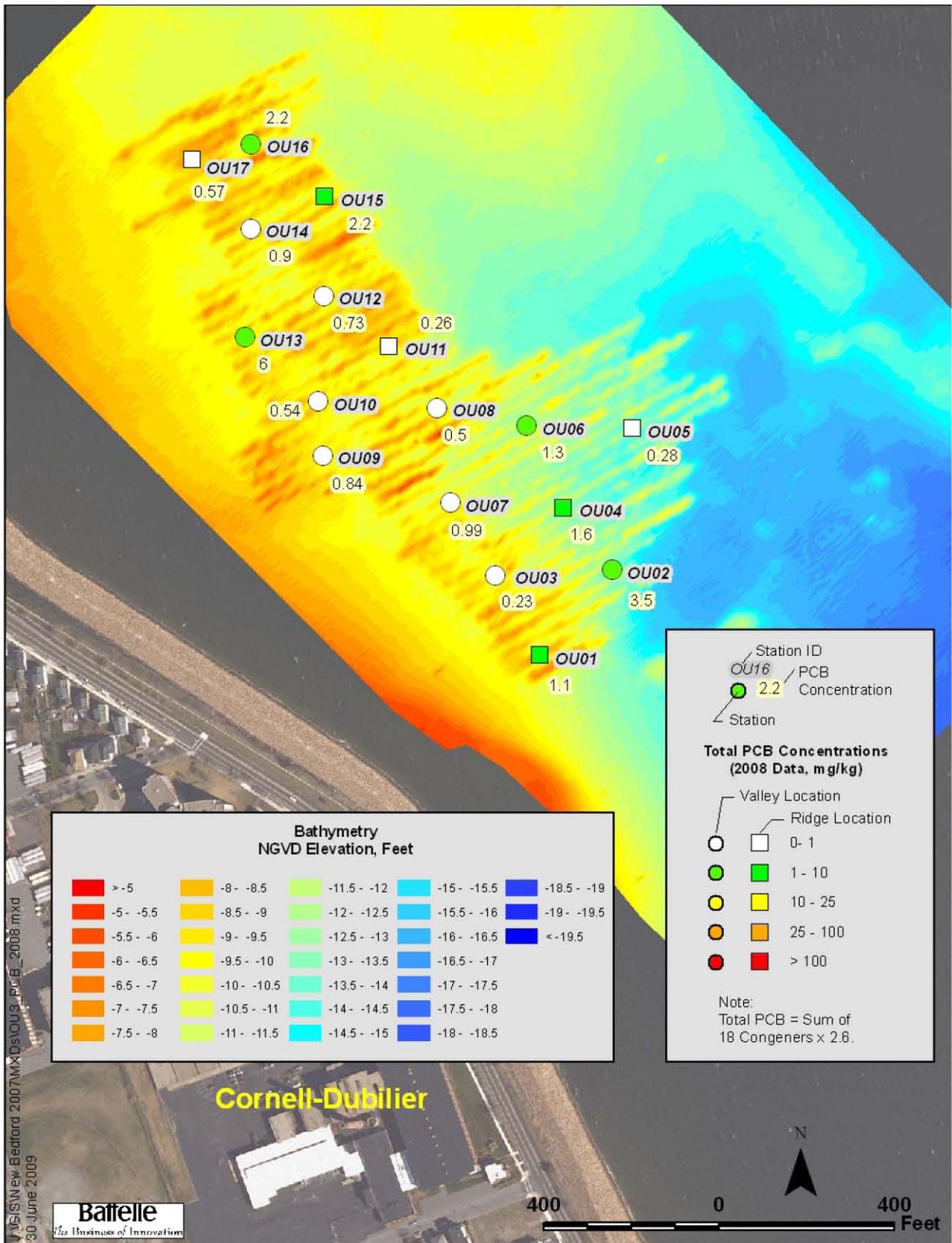


Figure 13. Total PCB Concentrations in Sediment at the OU3 Pilot Cap Site, 2008.
(Bathymetry conducted by Jacobs in March 2009)



4.0 DISCUSSION

4.1 Vertical Elevation Results Related to Dredging

The collection of post-dredge cores provided a characterization of the post-dredge sediment condition relative to the pre-dredge condition as well as setting a baseline for recently dredged areas. This baseline informs the planning process for subsequent years and provides feedback regarding re-deposition of sediments from dredging or natural processes.

Comparison of the visual characterization of the pre- and post-dredge cores revealed that the depth of the sediment surface and the overall thickness of OL layers were reduced at the Pierce Mill Cove dredge area. These were clear and expected results of the dredging. The thickness of the OL layer in pre-dredge cores ranged from 0.5 to 2.2 ft, with a median thickness of 1.0 ft. The thickness of the OL layer in the post-dredge cores ranged from 0.3 to 1.6 ft, with a median thickness of 0.85 ft.

Other post-dredge observations related to the visual transition between sediment types were also apparent. For example, in many cases, the post-dredge cores had less distinct visual transitions. In these cases, the transitions occurred over a relatively broad band (>0.5-ft) of mixed sediment. In most of these cases it appeared that the visual transition zone may have been disturbed during dredge related activities. In many cases (10 out of 15), the elevation of the post-dredge visual transition also occurred at a deeper elevation than predicted (Table 2).

There was an insufficient number of observations from the 2008 dredge season ($n = 7$) to meaningfully evaluate the correlation between the thickness of the OL layer and total PCB concentrations in the Pierce Mill Cove post-dredge sediments. The limited data suggest that sediments with a thicker OL layer have higher concentrations of total PCB, except at stations T38 and bb28 where the total PCB concentrations were relatively low compared to other sediments with similar sediment thickness (Figure 14).

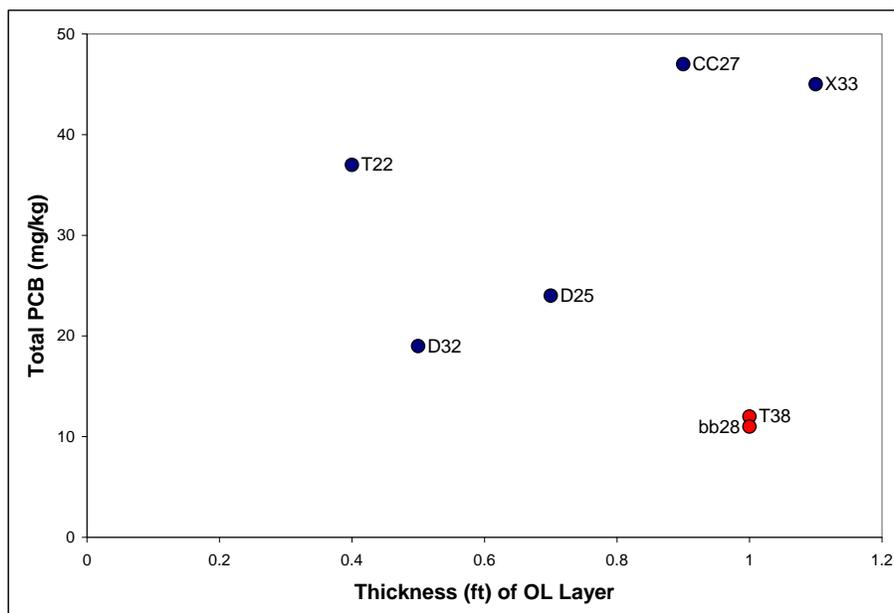


Figure 14. Correlation between Sediment Thickness of the OL Layer and Total PCB in Post-dredge Sediment, Pierce Mill Cove.



4.2 PCB Trends at the North of Wood Street

Several investigations have been conducted to characterize PCB contamination at the NWS area following remediation activities conducted in 2002-2003 to remove PCB-contaminated sediments and soils from the river and surrounding shoreline (Tetra Tech FW, Inc. [TTFW], 2004). A confirmatory sampling event was conducted by TTFW immediately following the remediation in February 2003 (North of Wood Street Cleanup Zone Map, USEPA, 2009). ENSR conducted four sampling events in the area to evaluate changes in river sediment PCB concentrations that may have occurred due to seasonal influence and/or remediation activities, as follows: August 2004 (pre-dredging), May 2005 (spring flow conditions), September 2005 (pre-dredging, late summer flow), and January 2006 (post-dredging). Annual monitoring has been performed since 2006 to further assess potential recontamination of the NWS area; sampling events were conducted in the late fall (November/December) after completion of dredging activities for the season.

4.2.1 River Sediments

The long-term monitoring data indicate that total PCB concentrations in river sediment at the NWS area are spatially and temporally variable (Figures 15 and 16). The variability among the PCB data may reflect differences in bulk sediment characteristics (e.g., grain size and organic carbon content), the highly dynamic nature of the system (e.g., tides, storm waves, high spring river flows), which can influence resuspension and transport of bottom sediment in the area, or a combination of these factors. In general, median concentrations of total PCB are lower and the distribution of the data less variable in surface sediment sampled at the upstream boundary of the study area (i.e., stations 010, 016, and 023) and near the shore (i.e., station 030E and 030W) compared to downstream locations (Figure 15).

Concentrations of total PCB (log transformed) in sediment sampled at a common group of locations (stations 023, 028, 033, 040, 049) across all sampling periods from 2003 to

2008 are shown in Figure 16. The lowest concentrations of total PCB in river sediment were measured in 2003, immediately following the remediation of the NWS area in the winter of 2002-2003. A post-remediation increase was observed in 2004 (Figure 16). While total PCB

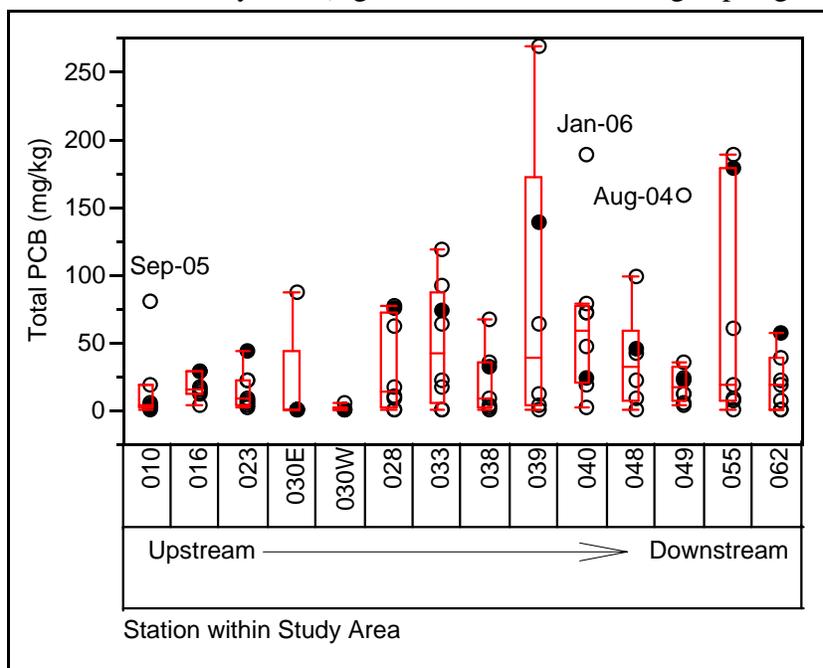


Figure 15. Distribution of Total PCB in River Sediment at the North of Wood Street, 2003-2008. (open circles represent 2003-2007 data and filled circles represent 2008 data)



concentrations decreased in the two subsequent sampling periods, post-remediation levels in recent years remain elevated compared to 2003 (Figure 16). Statistical analysis indicates that the post-remediation data from the August 2004, May 2005, and November 2006 to 2008 sampling periods are significantly high than that seen in February 2003 and September 2005 ($p = 0.001$)¹. The post-remediation increase could have resulted from contaminant transport from the upper harbor during dredging activities, natural transport of contaminated sediment from unremediated areas of the Harbor during tidal cycles, storms or high winds, or a combination of these factors. A sediment trap study conducted in the vicinity of the Wood Street bridge also showed that natural transport processes and human activities such as remedial dredging can influence the deposition of PCB-contaminated sediment material at the NWS area (Battelle, 2009).

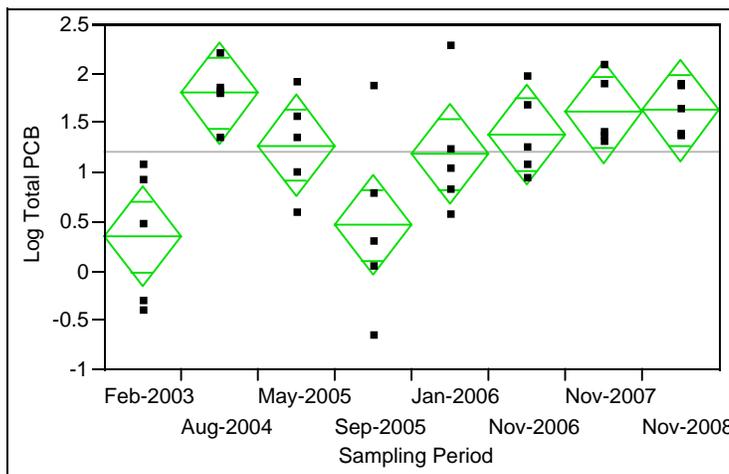


Figure 16. Temporal Trends in Total PCB (log normalized) in River Sediment at the North of Wood Street, 2003-2008. (common stations 023, 028, 033, 040 and 049; symbols represent the individual data points, diamonds illustrates the sample mean and 95% confidence interval)

Annual sediment monitoring will continue at the NWS area as needed to assess the potential for recontamination from the unremediated Harbor areas immediately to the south.

4.2.2 Shoreline Soils

In December 2005, Jacobs Engineering performed additional remediation at the eastern shoreline of the NWS area to remove contaminated soils that were inadvertently missed during the 2002-2003 remediation. Post-remediation concentrations of total PCB have been below the recreational cleanup criteria (25 mg/kg recreational shoreline land use criteria) at all shoreline locations since 2006 (Figure 17), suggesting that the remediation was effective in terms of achieving the cleanup criteria.

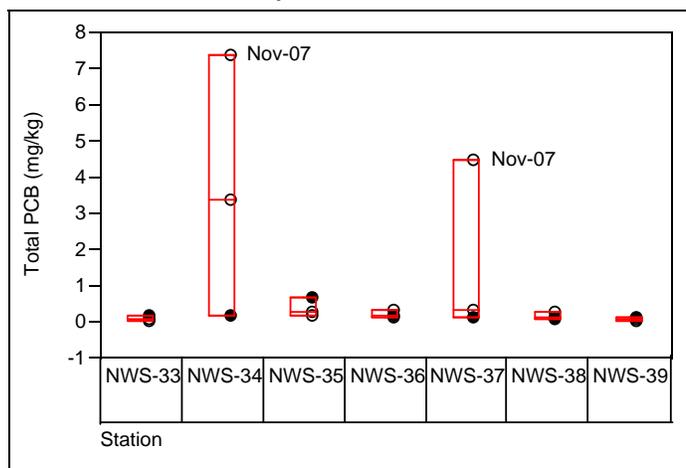


Figure 17. Distribution of Total PCB in Shoreline Soil at the North of Wood Street, 2006-2008. (open circles represent the 2006-2007 data and filled circles represent the 2008 data)

¹ The post-remediation data (i.e., means) from the following sampling periods are not significantly different:
Group A: August 2004, May 2005, January 2006, and November 2006 through 2008;
Group B: January 2006 and September 2005; and
Group C: February 2003 and September 2005.



The monitoring data indicate that concentrations of total PCB in shoreline soils have been uniformly low over space and time, except at stations NWS-34 and NWS-37 (Figure 17). Total PCB concentrations at these locations were elevated in 2007, but decreased in 2008 returning to low levels representative of other shoreline locations (Figure 17). There were no significant differences in total PCB concentrations among the sampling periods (Figure 18).

4.3 PCB Trends OU3 Pilot Cap Site

The OU3 Pilot Cap site is a localized area of elevated PCB contamination located outside the hurricane barrier in New Bedford, MA (Figure 2). In 2005, this area was capped with parent material dredged during the construction of a CAD cell in New Bedford Harbor. Annual monitoring has been performed since 2005 (shortly after completion of the capping activity) to determine the effectiveness of cap placement in lowering surficial sediment PCB concentrations, as well as the extent of change in PCB concentrations over time.

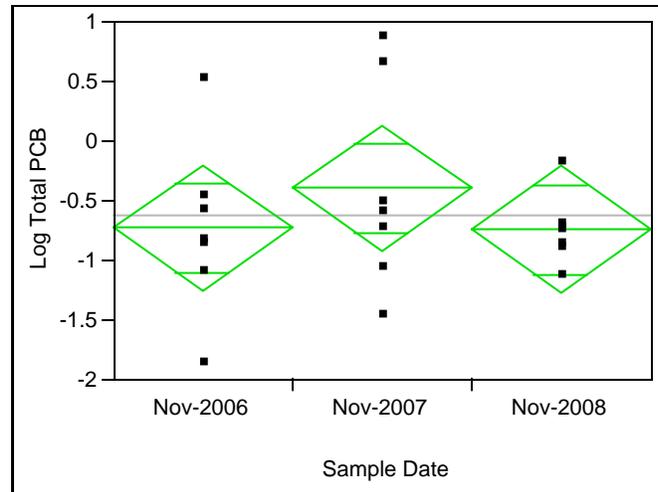


Figure 18. Temporal Trends in Total PCB (log normalized) in Shoreline Soil at the North of Wood Street, 2006-2008. (symbols represent the individual data points, diamonds illustrates the sample mean and 95% confidence interval)

The long-term monitoring data indicate that total PCB concentrations are uniformly low over space and time at most locations sampled at the OU3 pilot cap (Figure 19). Total PCB concentrations are spatially and temporally variable at valley stations OU12, OU13, and OU14 (Figure 19). Total PCB concentrations in surface sediments sampled in 2008 were among the lowest measured over the monitoring period, especially at valley locations (Figure 19).

There were no significant differences in total PCB concentrations (log transformed) among the sampling periods at ridge locations (Figure 20A). However, concentrations of total PCB were significantly lower ($p = 0.04$) at valley locations in 2008 compared to 2005 (Figure 20B). The decrease could reflect the deposition of cleaner material at these locations.

Overall, the long-term monitoring data suggest that the cap remains effective in terms of the surficial PCB data (i.e., no change and/or increase in surficial PCB contamination).

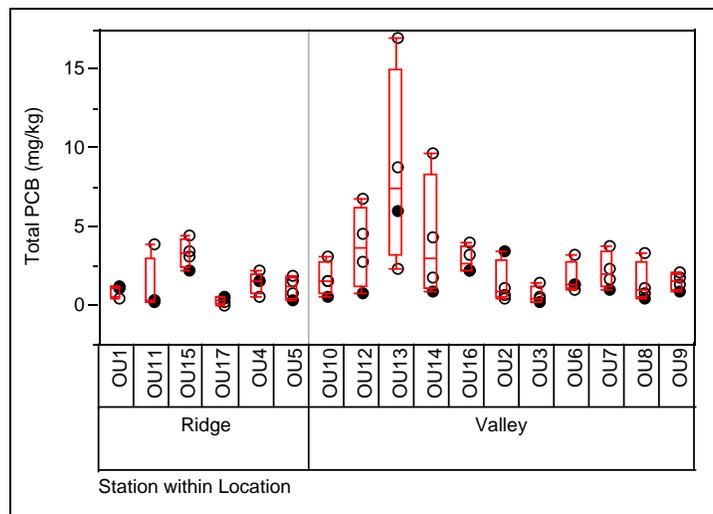


Figure 19. Distribution of Total PCB in Sediment at the OU3 Pilot Cap Site, 2005-2008. (open circles represent 2005-2007 data and filled circles represent 2008 data)

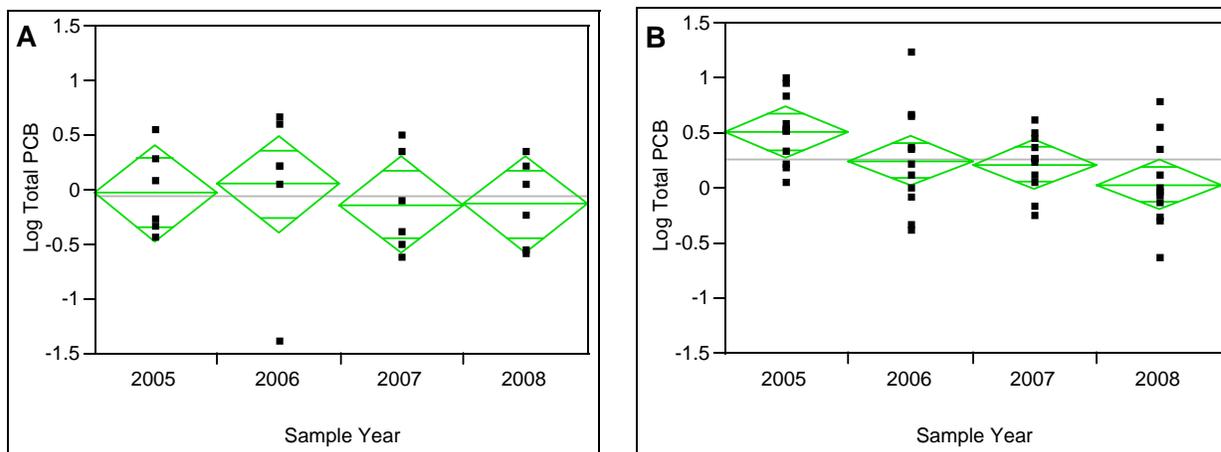


Figure 20. Temporal Trends in Total PCB (log normalized) in Sediment at Ridge (A) and Valley (B) Locations at the OU3 Pilot Cap, 2005-2008. (symbols represent individual data points (log normalized) and diamonds illustrates the sample mean and 95% confidence interval)



5.0 REFERENCES

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Tetra Tech FW, Inc. (TTFW) 2004. *North of Wood Street Confirmatory Sampling Report, New Bedford Harbor Superfund Site*. August.

USEPA. 2009. North of Wood Street Cleanup Zone Map, available at <http://www.epa.gov/ne/nbh/>).

Appendix A
Field Sample Data

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Pierce Mill Cove
Pre-dredge Sediment Cores

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Station ID: <u>VV47</u>	Time On Station: <u>0914</u>	All measurements are ±0.1 feet	
Core Sample ID: <u>S-08A-VV47-00-15</u>	Northing (NAD 83): <u>2701774.17</u>	Water Depth (A): <u>3.6</u>	① <u>3.6</u>
Logged by: <u>MW/AM</u>	Easting (NAD 83): <u>815199.91</u>	Length of push core assembly (B): <u>6.0</u>	① <u>6.0</u>
Collection Mechanism: <u>Push-Core</u>	GPS Accuracy: <u>2.37</u>	Water surface to top of handle (C): <u>1.8</u>	① <u>1.8</u>
Date: <u>5/30/08</u>	Predicted Tide (ft): <u>—</u>	Length of core (from bottom) (D): <u>1.5</u>	① <u>1.5</u>
	Time of Collection: ① <u>0922 0926 0931 0933</u>	Surveyed elevation (NVGD 29) (E): <u>—</u>	
	Time Depart Station: <u>1600</u>	Water surface from surveyed elevation (F): <u>-1.4</u>	

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): $E - F$	<u>-1.4</u>
(H) Elevation of the bottom of the core (NVGD): $G - (B - C)$	<u>-6.6</u>
(Z*) Elevation of visual transition (NVGD): $H + (\text{distance to visual transition})$	<u>-5.8</u>
(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$	<u>-5.1</u>
(I ₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$	<u>-5.0</u>
(Note if I ≠ I ₂ within ± 1.0 feet, discard and resample)	<u>—</u>

Elevation (NVGD) (i.e. Bottom = H)	Lithology - include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.5		Soft Sand	Black gray	loose	fine to med			Heavy streaking
0.8		Clay sand	olive	firm	fine to med			
0.0								

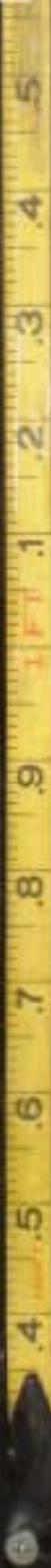
File ID of digital photograph(s):

Comments:

① 1st Attempt 1/6
2nd Attempt 1/6
3rd Attempt 1/6

S-08A-VV47-~~08~~-15

5/30/08



Battelle <i>The Business of Innovation</i>	Project Name: <i>New Bedford Harbor Environmental Monitoring</i>	Project #: <i>G606422</i>
	Location: <i>New Bedford, MA</i>	Vessel: <i>R/V Gale Force</i>
	Client: <i>USACE NAE</i>	Chief Scientist: <i>Mike Walsh</i>

Station ID: <u> VV47 </u>	Time On Station: <u> 0914 </u>	All measurements are ±0.1 feet
Core Sample ID: <u> S-08A-VV47-00 22-PW </u>	Northing (NAD 83): <u> 2701774.17 </u>	Water Depth (A): <u> 3.5 </u>
Logged by: <u> MW/AM </u>	Easting (NAD 83): <u> 515199.91 </u>	Length of push core assembly (B): <u> 2.0 </u>
Collection Mechanism: <u> Push-Core </u>	GPS Accuracy: <u> 2.37 </u>	Water surface to top of handle (C): <u> 1.2 </u>
Date: <u> 5/30/08 </u>	Predicted Tide (ft): <u> </u>	Length of core (from bottom) (D): <u> 2.2 </u>
	Time of Collection: <u> 0945 </u>	Surveyed elevation (NVGD 29) (E): <u> </u>
	Time Depart Station: <u> 1000 </u>	Water surface from surveyed elevation (F): <u> -1.4 </u>

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): $E - F$	<u> -1.4 </u>
(H) Elevation of the bottom of the core (NVGD): $G - (B - C)$	<u> -7.2 </u>
(z*) Elevation of visual transition (NVGD): $H + (\text{distance to visual transition})$	<u> -5.8 </u>
(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$	<u> -5.0 </u>
(I ₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$	<u> -4.9 </u>
(Note if I ≠ I ₂ within ± 1.0 feet, discard and resample)	<u> — </u>

Elevation (NVGD) (I.e. Bottom = 0)	Lithology - include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
2.2		Silt sand shells	gray black	loose				marbled silt/sand/shells ↓ streaking
1.4		clay some sand shells	olive gray	firm				
0.0								

File ID of digital photograph(s):

Comments:

5/30/08

S-08A-V47-00-22-DUP



4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33

Battelle <i>The Business of Innovation</i>	Project Name: New Bedford Harbor Environmental Monitoring	Project #: G606422
	Location: New Bedford, MA	Vessel: R/V Gale Force
	Client: USACE NAE	Chief Scientist: Mike Walsh
Station ID: <u>RR 42</u>	Time On Station: <u>1006</u>	All measurements are ± 0.1 feet
Core Sample ID: <u>S-08A-RR42-00-19</u>	Northing (NAD 83): <u>2701887.10</u>	Water Depth (A): <u>2.2</u>
Logged by: <u>MW/AM</u>	Easting (NAD 83): <u>815058.07</u>	Length of push core assembly (B): <u>7.0</u>
Collection Mechanism: <u>Push-Core</u>	GPS Accuracy: <u>2.08</u>	Water surface to top of handle (C): <u>2.8</u>
Date: <u>5/30/08</u>	Predicted Tide (ft): _____	Length of core (from bottom) (D): <u>1.9</u>
	Time of Collection: <u>1006</u>	Surveyed elevation (NVGD 29) (E): _____
	Time Depart Station: <u>1016</u>	Water surface from surveyed elevation (F): <u>-1.4</u>

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): $E - F$	<u>-1.4</u>
(H) Elevation of the bottom of the core (NVGD): $G - (B - C)$	<u>-5.6</u>
(Z*) Elevation of visual transition (NVGD): $H + (\text{distance to visual transition})$	<u>-4.6</u>
(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$	<u>-3.7</u>
(I ₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$	<u>-3.6</u>
(Note if I \neq I ₂ within ± 1.0 feet, discard and resample)	

Elevation (NVGD) (i.e. Bottom = H)	Lithology - include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.9		Silt sand	gray black	loose	fine to med			Marbled silt/sand over silt
1.0		Clay sand sand	olive gray	firm	fine to med			Clay ↓ streaking
0.0								

File ID of digital photograph(s): _____

Comments: _____

5/30/08

S-08A-KR42-00-19

9
8
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4
3
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1
9
8
7
6
5
4



Battelle <small>The Business of Innovation</small>	Project Name: <i>New Bedford Harbor Environmental Monitoring</i>		Project #: <i>G606422</i>	
	Location: <i>New Bedford, MA</i>		Vessel: <i>R/V Gale Force</i>	
	Client: <i>USACE NAE</i>		Chief Scientist: <i>Mike Walsh</i>	
Station ID: <u><i>AAA32</i></u>	Time On Station: <u><i>1026</i></u>	All measurements are ± 0.1 feet		
Core Sample ID: <u><i>S-08A-AAA32-00-15</i></u>	Northing (NAD 83): <u><i>2702149.76</i></u>	Water Depth (A): <u><i>3.4</i></u>		
Logged by: <u><i>MW/AM</i></u>	Easting (NAD 83): <u><i>815326.76</i></u>	Length of push core assembly (B): <u><i>6.7</i></u>		
Collection Mechanism: <u><i>Push-Core</i></u>	GPS Accuracy: <u><i>2.4</i></u>	Water surface to top of handle (C): <u><i>1.5</i></u>		
Date: <u><i>5/30/08</i></u>	Predicted Tide (ft): _____	Length of core (from bottom) (D): <u><i>1.5</i></u>		
	Time of Collection: <u><i>1032</i></u>	Surveyed elevation (NVGD 29) (E): _____		
	Time Depart Station: <u><i>1034</i></u>	Water surface from surveyed elevation (F): <u><i>-1.2</i></u>		

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): $E - F$	<u><i>-1.2</i></u>
(H) Elevation of the bottom of the core (NVGD): $G - (B - C)$	<u><i>-6.4</i></u>
(z*) Elevation of visual transition (NVGD): $H + (\text{distance to visual transition})$	<u><i>-5.7</i></u>
(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$	<u><i>-4.9</i></u>
(I ₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$	<u><i>-4.6</i></u>
(Note if I \neq I ₂ within ± 1.0 feet, discard and resample)	

	Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
	<u><i>1.5</i></u>		<u><i>silt sand shells</i></u>	<u><i>Black</i></u>	<u><i>loose</i></u>	<u><i>fine to large</i></u>			
	<u><i>0.7</i></u>		<u><i>Sand shells clay silt</i></u>	<u><i>olive gray</i></u>	<u><i>loose</i></u>	<u><i>fine to large</i></u>			
	<u><i>0.0</i></u>								

File ID of digital photograph(s): _____

Comments: _____

5/30/08

S-08A-AMH32-00-15



Station ID: <u>5528</u>	Time On Station: <u>1039</u>	All measurements are ±0.1 feet	
Core Sample ID: <u>S-08A-5528-00-14</u>	Northing (NAD 83): <u>2702249.43</u>	Water Depth (A): <u>2.1</u>	
Logged by: <u>MW/AM</u>	Easting (NAD 83): <u>815125.35</u>	Length of push core assembly (B): <u>7.0</u>	
Collection Mechanism: <u>Push-Core</u>	GPS Accuracy: <u>4.14</u>	Water surface to top of handle (C): <u>0.34 3.4</u>	
Date: <u>5/30/08</u>	Predicted Tide (ft): _____	Length of core (from bottom) (D): <u>1.4</u>	
	Time of Collection: <u>1047 1057</u>	Surveyed elevation (NVGD 29) (E): _____	
	Time Depart Station: <u>1107</u>	Water surface from surveyed elevation (F): <u>-1.2</u>	

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): $E - F$	<u>-1.2</u>
(H) Elevation of the bottom of the core (NVGD): $G - (B - C)$	<u>-4.8</u>
(z*) Elevation of visual transition (NVGD): $H + (\text{distance to visual transition})$	<u>-4.2</u>
(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$	<u>-3.4</u>
(I ₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$	<u>-3.3</u>
(Note if I ≠ I ₂ within ± 1.0 feet, discard and resample)	<u>—</u>

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Includes USCS code	Type	Color	Consistency	Maximum particle size	Color	Sample IDs	Comments
1.4		Sand Silt	Dark gray	loose	Fine to med			Sand/shells well mixed throughout
1.1		Silt sand	Black	loose	Fine to large			
0.6		Sand clay shells	olive gray	loose	Fine to large			
0.0								

File ID of digital photograph(s):

Comments:

① 1st Attempt, N/G

5/30/08

S-Ø8A-SS28-ØØ-14



Battelle <i>The Business of Innovation</i>		Project Name: New Bedford Harbor Environmental Monitoring		Project #: G606422	
Location: New Bedford, MA		Client: USACE NAE		Vessel: R/V Gale Force	
Station ID: AAA22		Time On Station: 1120		All measurements are ± 0.1 feet	
Core Sample ID: S-08A-AAA22-00-24		Northing (NAD 83): 2702399.18		Water Depth (A): 3.3	
Logged by: MW/AM		Easting (NAD 83): 815374.55		Length of push core assembly (B): 7.0	
Collection Mechanism: Push-Core		GPS Accuracy: 2.49		Water surface to top of handle (C): 1.3	
Date: 5/30/08		Predicted Tide (ft):		Length of core (from bottom) (D): 2.4	
		Time of Collection: 1122		Surveyed elevation (NVGD 29) (E):	
		Time Depart Station: 1128		Water surface from surveyed elevation (F): -1.2	

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): $E - F$	<u>-1.2</u>
(H) Elevation of the bottom of the core (NVGD): $G - (B - C)$	<u>-6.9</u>
(Z*) Elevation of visual transition (NVGD): $H + (\text{distance to visual transition})$	<u>-6.2</u>
(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$	<u>-4.5</u>
(I ₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$	<u>-4.5</u>
(Note if I \neq I ₂ within ± 1.0 feet, discard and resample)	<u>—</u>

Elevation (NVGD) (i.e. Bottom = 0)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
2.4		Silt	Black	loose	fine to med			Sand mixed throughout Blurred transition
1.3		clay silt	gray black	firm	fine			
0.7		clay	olive gray	firm	fine			
0.0								

File ID of digital photograph(s):

Comments:

5/30/08

S-08A-PPA22-00-24



Station ID: <u>HH30</u>	Time On Station: <u>1134</u>	All measurements are ±0.1 feet
Core Sample ID: <u>S-084-HH30-00-19</u>	Northing (NAD 83): <u>2702186.76</u>	Water Depth (A): <u>2.3</u>
Logged by: <u>MW/Am</u>	Easting (NAD 83): <u>814849.38</u>	Length of push core assembly (B): <u>7.0</u>
Collection Mechanism: <u>Push-Core</u>	GPS Accuracy: <u>1.78</u>	Water surface to top of handle (C): <u>2.5</u>
Date: <u>5/30/08</u>	Predicted Tide (ft): _____	Length of core (from bottom) (D): <u>1.9</u>
	Time of Collection: <u>1142</u>	Surveyed elevation (NVGD 29) (E): _____
	Time Depart Station: <u>1155</u>	Water surface from surveyed elevation (F): <u>-0.9</u>

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): $E - F$	<u>-0.9</u>
(H) Elevation of the bottom of the core (NVGD): $G - (B - C)$	<u>-5.4</u>
(Z*) Elevation of visual transition (NVGD): $H + (\text{distance to visual transition})$	<u>-4.1</u>
(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$	<u>-3.5</u>
(I ₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$	<u>-3.2</u>
(Note if I ≠ I ₂ within ± 1.0 feet, discard and resample)	<u>—</u>

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.9		Silt sand	Black	loose	fine			Trace Sand Throughout
1.3		Clay shells sand	olive gray	firm	fine			
0.0								

File ID of digital photograph(s):

Comments:

5/30/08

S-08A-HH30-00-19



Battelle The Business of Innovation		Project Name: <i>New Bedford Harbor Environmental Monitoring</i>		Project #: <i>G606422</i>	
Location: <i>New Bedford, MA</i>		Client: <i>USACE NAE</i>		Vessel: <i>R/V Gale Force</i>	
Station ID: <i>HH36</i>		Time On Station: <i>1201</i>		All measurements are ± 0.1 feet	
Core Sample ID: <i>S-08A-HH36-00-22</i>		Northing (NAD 83): <i>2702049.74</i>		Water Depth (A): <i>2.1</i>	
Logged by: <i>MW/Am</i>		Easting (NAD 83): <i>814850.42</i>		Length of push core assembly (B): <i>5.6</i>	
Collection Mechanism: <i>Push-Core</i>		GPS Accuracy: <i>2.39</i>		Water surface to top of handle (C): <i>1.1</i>	
Date: <i>5/30/08</i>		Predicted Tide (ft):		Length of core (from bottom) (D): <i>2.2</i>	
		Time of Collection: <i>1203</i>		Surveyed elevation (NVGD 29) (E):	
		Time Depart Station: <i>1212</i>		Water surface from surveyed elevation (F): <i>-0.8</i>	

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): $E - F$	<i>-0.8</i>
(H) Elevation of the bottom of the core (NVGD): $G - (B - C)$	<i>-5.3</i>
(z*) Elevation of visual transition (NVGD): $H + (\text{distance to visual transition})$	<i>-4.2</i>
(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$	<i>-3.1</i>
(I ₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$	<i>-2.9</i>
(Note if I \neq I ₂ within ± 1.0 feet, discard and resample)	<i>-</i>

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
2.2		silt	Black	loose	fine			
1.4		clay/silt	gray	firm	fine			<i>blurred Transition</i>
1.1		Clay some shells	olive gray	firm	fine to med			
0.0								

File ID of digital photograph(s):

Comments:

S-08A-MH36-00-22

5/30/08

4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34



Battelle <i>The Business of Innovation</i>		Project Name: New Bedford Harbor Environmental Monitoring		Project #: G606422	
Location: New Bedford, MA		Client: USACE NAE		Vessel: R/V Gale Force	
Station ID: DD 28		Time On Station: 1218		All measurements are ± 0.1 feet	
Core Sample ID: S-08A-DD28-00-27		Northing (NAD 83): 2702238.06		Water Depth (A): 8.2	
Logged by: MW/AM		Easting (NAD 83): 814738.77		Length of push core assembly (B): 8.0 10.0	
Collection Mechanism: Push-Core		GPS Accuracy: 2.3		Water surface to top of handle (C): 16 2.2	
Date: 5/30/08		Predicted Tide (ft):		Length of core (from bottom) (D): 2.7	
		Time of Collection: 1220 1228		Surveyed elevation (NVGD 29) (E):	
		Time Depart Station: 1238		Water surface from surveyed elevation (F): -0.3	

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): $E - F$	-0.3
(H) Elevation of the bottom of the core (NVGD): $G - (B - C)$	-8.1
(Z*) Elevation of visual transition (NVGD): $H + (\text{distance to visual transition})$	-7.6
(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$	-5.4
(I ₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$	-5.5
(Note if I \neq I ₂ within ± 1.0 feet, discard and resample)	-

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
2.7	Silt fine sand	Silt fine sand	Black	loose	fine to med			
0.5		Clay	olive gray	firm	fine			
0.0								

File ID of digital photograph(s):

Comments:

① 1st Attempt w/6 strong H₂S odor

② WL MW 5/30

S-08A-DD28-00-27

5/30/08



Station ID: <u>W26</u>	Time On Station: <u>1246</u>	All measurements are ±0.1 feet
Core Sample ID: <u>S-08A-OW26-00-20</u>	Northing (NAD 83): <u>2702288.3</u>	Water Depth (A): <u>28.26</u>
Logged by: <u>MV/AM</u>	Easting (NAD 83): <u>814561.37</u>	Length of push core assembly (B): <u>7.0</u>
Collection Mechanism: <u>Push-Core</u>	GPS Accuracy: <u>3.12</u>	Water surface to top of handle (C): <u>28.21</u>
Date: <u>5/30/08</u>	Predicted Tide (ft): _____	Length of core (from bottom) (D): <u>2.0</u>
	Time of Collection: <u>1248 1251</u>	Surveyed elevation (NVGD 29) (E): _____
	Time Depart Station: <u>1301</u>	Water surface from surveyed elevation (F): <u>-0.1</u>

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): $E - F$	<u>-0.1</u>
(H) Elevation of the bottom of the core (NVGD): $G - (B - C)$	<u>-5.0</u>
(z*) Elevation of visual transition (NVGD): $H + (\text{distance to visual transition})$	<u>-3.8</u>
(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$	<u>-3.0</u>
(I ₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$	<u>-2.7</u>
(Note if I ≠ I ₂ within ± 1.0 feet, discard and resample)	<u>-</u>

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
2.0		Silt some sand	Black	loose	fine			some sand on surface
1.2		Clay	olive gray	firm	fine			
0.0								

File ID of digital photograph(s):

Comments:

① 1st Attempt N/G

5/30/08

S-Ø8A-DUAL-ØØ-20

4 .5 6 7 8 9 2 FT 1



Station ID: <u>AA31</u>	Time On Station: <u>1311</u>	All measurements are ±0.1 feet	
Core Sample ID: <u>S-08A-AA31-00-23</u>	Northing (NAD 83): <u>2702174.42</u>	Water Depth (A): <u>4.2</u>	
Logged by: <u>MW/AM</u>	Easting (NAD 83): <u>814675.76</u>	Length of push core assembly (B): <u>7.0</u>	
Collection Mechanism: <u>Push-Core</u>	GPS Accuracy: <u>3.25</u>	Water surface to top of handle (C): <u>0.3</u>	
Date: <u>5/30/08</u>	Predicted Tide (ft): _____	Length of core (from bottom) (D): <u>2.3</u>	
	Time of Collection: <u>1313</u>	Surveyed elevation (NVGD 29) (E): _____	
	Time Depart Station: <u>1318</u>	Water surface from surveyed elevation (F): <u>+0.1</u>	

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): E - F	+0.1
(H) Elevation of the bottom of the core (NVGD): G - (B - C)	-6.6
(Z*) Elevation of visual transition (NVGD): H + (distance to visual transition)	-5.7
(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): H + D	-4.3
(I ₂) Elevation of the sediment-water interface as measured from water depth (NVGD): G - A	-4.1
(Note if I ≠ I ₂ within ± 1.0 feet, discard and resample)	—

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
2.3		Silt	Black	loose	fine			
0.9		Clay Flecks of Silt	Olive gray	firm	fine			
0.0								

File ID of digital photograph(s): _____

Comments: _____

Battelle <i>The Business of Innovation</i>		Project Name: New Bedford Harbor Environmental Monitoring		Project #: G606422	
Location: New Bedford, MA		Client: USACE NAE		Vessel: R/V Gale Force	
Station ID: <u>EE24</u>		Time On Station: <u>1325</u>		All measurements are ± 0.1 feet	
Core Sample ID: <u>S-08A-EE24-00-14</u>		Northing (NAD 83): <u>2702336.82</u>		Water Depth (A): <u>0 28 30</u>	
Logged by: <u>MW/AM</u>		Easting (NAD 83): <u>814762.41</u>		Length of push core assembly (B): <u>0 58 6.1</u>	
Collection Mechanism: <u>Push-Core</u>		GPS Accuracy: <u>3.19</u>		Water surface to top of handle (C): <u>0 1.7 1.6</u>	
Date: <u>5/30/08</u>		Predicted Tide (ft): _____		Length of core (from bottom) (D): <u>1.4</u>	
		Time of Collection: <u>1325 1336</u>		Surveyed elevation (NVGD 29) (E): _____	
		Time Depart Station: <u>1343</u>		Water surface from surveyed elevation (F): <u>0.5</u>	

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): $E - F$	<u>+0.5</u>
(H) Elevation of the bottom of the core (NVGD): $G - (B - C)$	<u>-4.0</u>
(z*) Elevation of visual transition (NVGD): $H + (\text{distance to visual transition})$	<u>-3.1</u>
(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$	<u>-2.6</u>
(I ₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$	<u>-2.5</u>
(Note if I \neq I ₂ within ± 1.0 feet, discard and resample)	<u>—</u>

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.4		silt sand	gray/blk over black	loose	fine to med			marbled silt/sand on top
0.9		clay sand	olive	firm	fine to med			SAND throughout
0.0								

File ID of digital photograph(s):

Comments:

① 1st Attempt N/G

S-08A-EE24-00-14

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



Station ID:	<u>L34</u>	Time On Station:	<u>1351</u>	All measurements are ±0.1 feet	
Core Sample ID:	<u>S-08A-0234-00-24</u>	Northing (NAD 83):	<u>2702099.57</u>	Water Depth (A):	<u>2.6</u>
Logged by:	<u>MW/AM</u>	Easting (NAD 83):	<u>814300.54</u>	Length of push core assembly (B):	<u>7.0</u>
Collection Mechanism:	<u>Push-Core</u>	GPS Accuracy:	<u>2.29</u>	Water surface to top of handle (C):	<u>1.8</u>
Date:	<u>5/30/08</u>	Predicted Tide (ft):		Length of core (from bottom) (D):	<u>2.4</u>
		Time of Collection:	<u>1354</u>	Surveyed elevation (NVGD 29) (E):	
		Time Depart Station:	<u>1404</u>	Water surface from surveyed elevation (F):	<u>+0.7</u>

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): $E - F$	<u>+0.7</u>
(H) Elevation of the bottom of the core (NVGD): $G - (B - C)$	<u>-4.5</u>
(Z*) Elevation of visual transition (NVGD): $H + (distance\ to\ visual\ transition)$	<u>-3.7</u>
(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$	<u>-2.1</u>
(I ₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$	<u>-1.9</u>
(Note if I ≠ I ₂ within ± 1.0 feet, discard and resample)	<u>-</u>

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
2.4		Silt sand	Black gray	loose	fine to med			marbled silt sand on surface
1.6		Clay silt	gray	firm	fine			Blurred/mixed Transition
0.8		Clay	dark gray	firm	fine			
0.0								

File ID of digital photograph(s):

Comments:

5/30/08

S-08A-DL34-00-211

4 5 6 7 8 9 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5
FT



Station ID: <u>P23</u>	Time On Station: <u>1410</u>	All measurements are ±0.1 feet	
Core Sample ID: <u>S-08A-0P23-00-30</u>	Northing (NAD 83): <u>2702361.75</u>	Water Depth (A): <u>5.4</u>	
Logged by: <u>MW/AM</u>	Easting (NAD 83): <u>814399.16</u>	Length of push core assembly (B): <u>9.7</u>	
Collection Mechanism: <u>Push-Core</u>	GPS Accuracy: <u>1.92</u>	Water surface to top of handle (C): <u>1.2</u>	
Date: <u>5/30/08</u>	Predicted Tide (ft): _____	Length of core (from bottom) (D): <u>3.0</u>	
	Time of Collection: <u>1412</u>	Surveyed elevation (NVGD 29) (E): _____	
	Time Depart Station: <u>1419</u>	Water surface from surveyed elevation (F): <u>+1.0</u>	

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): E - F

+1.0

(H) Elevation of the bottom of the core (NVGD): G - (B - C)

-7.5

(Z*) Elevation of visual transition (NVGD): H + (distance to visual transition)

-6.4

(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): H + D

-4.5

(I₂) Elevation of the sediment-water interface as measured from water depth (NVGD): G - A

-4.4

(Note if I ≠ I₂ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
3.0		Silt some shells	Black	loose	fine to med			
1.8		clay silt	gray black	firm	fine			Blurred/mixed Transition ↓ some streaking
1.1		clay	olive gray	firm	fine			
0.0								

File ID of digital photograph(s):

Comments:

S-08A-0023-00-30

5/30/08

1 2 3 4 5 6 7 8 9 10 11 12

Station ID: <u>222</u>	Time On Station: <u>1422</u>	All measurements are ±0.1 feet	
Core Sample ID: <u>S-08A-0222-00-25</u>	Northing (NAD 83): <u>2702399.44</u>	Water Depth (A): <u>3.6</u>	
Logged by: <u>MW/AM</u>	Easting (NAD 83): <u>814300.16</u>	Length of push core assembly (B): <u>8.5</u>	
Collection Mechanism: <u>Push-Core</u>	GPS Accuracy: <u>1.95</u>	Water surface to top of handle (C): <u>2.4</u>	
Date: <u>5/30/08</u>	Predicted Tide (ft): _____	Length of core (from bottom) (D): <u>2.5</u>	
	Time of Collection: <u>1424</u>	Surveyed elevation (NVGD 29) (E): _____	
	Time Depart Station: <u>1432</u>	Water surface from surveyed elevation (F): <u>+1.3</u>	

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): $E - F$	<u>+1.3</u>
(H) Elevation of the bottom of the core (NVGD): $G - (B - C)$	<u>-4.8</u>
(z*) Elevation of visual transition (NVGD): $H + (\text{distance to visual transition})$	<u>-3.6</u>
(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$	<u>-2.3</u>
(I ₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$	<u>-2.3</u>
(Note if I ≠ I ₂ within ± 1.0 feet, discard and resample)	<u>—</u>

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
2.5		Silt sand	Black	loose	fine to med			Sea lettuce on surface
1.6		Clay silt sand	gray black	firm	fine to med			Blurred/mixed transition
1.2		Clay some sand and shells	olive gray	firm	fine to med			
0.0								

File ID of digital photograph(s):

Comments:

5/30/08

S-Q8A-022-08-25

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



Station ID: <u>X43</u>	Time On Station: <u>1441</u>	All measurements are ±0.1 feet	
Core Sample ID: <u>S-08A-BX43-00-24</u>	Northing (NAD 83): <u>2701862.15</u>	Water Depth (A): <u>3.8</u>	
Logged by: <u>MW/AM</u>	Easting (NAD 83): <u>814586.72</u>	Length of push core assembly (B): <u>8.0</u>	
Collection Mechanism: <u>Push-Core</u>	GPS Accuracy: <u>2.3</u>	Water surface to top of handle (C): <u>1.5</u>	
Date: <u>5/30/08</u>	Predicted Tide (ft): _____	Length of core (from bottom) (D): <u>2.4</u>	
	Time of Collection: <u>1443</u>	Surveyed elevation (NVGD 29) (E): _____	
	Time Depart Station: <u>1451</u>	Water surface from surveyed elevation (F): <u>7.5</u>	

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): $E - F$	<u>+1.5</u>
(H) Elevation of the bottom of the core (NVGD): $G - (B - C)$	<u>-5.0</u>
(z*) Elevation of visual transition (NVGD): $H + (\text{distance to visual transition})$	<u>-4.1</u>
(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$	<u>-2.6</u>
(I ₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$	<u>-2.3</u>
(Note if I ≠ I ₂ within ± 1.0 feet, discard and resample)	<u>—</u>

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
2.4		Silt	Black	loose	fine			
1.7		Clay silt	Black to gray	firm	fine			
0.9		Clay	Olive gray	firm	fine to med			
0.0		some shells						

File ID of digital photograph(s):

Comments:

5/30/08

S-08A--DY1B-00-24



Pierce Mill Cove
Post-dredge Sediment Cores

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Battelle
The Business of Innovation

Project Name: **New Bedford Harbor Environmental Monitoring** Project #: **G606422**
 Location: **New Bedford, MA** Vessel: **R/V Gale Force**
 Client: **USACE NAE** Chief Scientist:

Station ID: DD44 Time On Station: 0901 All measurements are ±0.1 feet
 Core Sample ID: S-08C-DD44-00-13 Northing (NAD 83): 270184.68 Water Depth (A): 5.0
 Logged by: AEM/MRF Easting (NAD 83): 314748.15 Length of push core assembly (B): 8.0
 Collection Mechanism: Push-Core GPS Accuracy: 3.15 Water surface to top of handle (C): 1.50 1.5
 Date: 12/5/08 Predicted Tide (ft): _____ Length of core (from bottom) (D): 1.3
 Time of Collection: 0910 Surveyed elevation (NVGD 29) (E): _____
 Survey Type: Pre-Dredge Prog-Dredge Post-Dredge Time Depart Station: 0914 Water surface from surveyed elevation (F): -0.2
PNC

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): E - F	-0.2
(H) Elevation of the bottom of the core (NVGD): G - (B - C)	-6.7
(Z*) Elevation of visual transition (NVGD): H + (distance to visual transition)	-6.7
(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): H + D	-5.4
(I ₂) Elevation of the sediment-water interface as measured from water depth (NVGD): G - A	-5.2
(Note if I ≠ I ₂ within ± 1.0 feet, discard and resample)	-0.2 ✓

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.5 0.0	mudstone transition	→ clay ←	brownish gray w/ streaks of black	firm	fine			

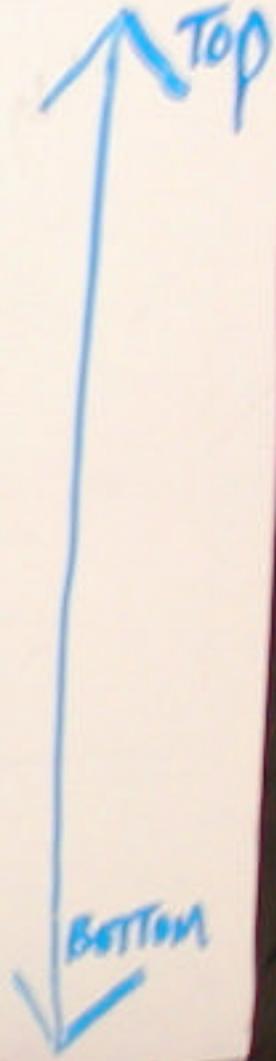
File ID of digital photograph(s): S-08C-DD44-00-13.JPG

Comments: 1st attempt NS AEM 12/5/08 No samples taken for PCB analysis
SMT 1/14/09



S08C-DD44-00-13

12/5/08



Station ID: EE37 Time On Station: 0918 All measurements are ± 0.1 feet
 Core Sample ID: S-08C-EE37-00-13 Northing (NAD 83): 2702026.51 Water Depth (A): 4.7 4.5
 Logged by: MEM/MRF Easting (NAD 83): 84773.70 Length of push core assembly (B): 8.0
 Collection Mechanism: Push-Core GPS Accuracy: 3.37 Water surface to top of handle (C): 0.5 0.4 2.0
 Date: 12/5/08 Predicted Tide (ft): _____ Length of core (from bottom) (D): 1.3
 Time of Collection: 935 Surveyed elevation (NVGD 29) (E): _____
 Survey Type: Pre-Dredge Prog-Dredge Post-Dredge Time Depart Station: 0939 Water surface from surveyed elevation (F): -0.1

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): $E - F$ -0.1
 (H) Elevation of the bottom of the core (NVGD): $G - (B - C)$ -6.1
 (Z*) Elevation of visual transition (NVGD): $H + (\text{distance to visual transition})$ -5.1
 (I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$ -4.8
 (I₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$ -4.6
 (Note if I \neq I₂ within ± 1.0 feet, discard and resample) -0.2 ✓

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.3								
1.0		silty sand	dark brown	loose	med small			No Sample taken for PCB analysis 1/14/09 SMIT
0.0		clay	gray	firm	fine			

File ID of digital photograph(s): S-08C-EE37-00-13.JPG

Comments:

① 1st Attempt N/A
 ② 2nd Attempt is good core but calculations don't add up; water depth re-measured; calculations now correct



S08C-EE37-00-13

12/5/08



Station ID: X33 Time On Station: 0942 All measurements are ±0.1 feet
 Core Sample ID: S-08C-X33-00-16 Northing (NAD 83): 2702123.59 Water Depth (A): 4.1
 Logged by: NEM/MRF Easting (NAD 83): 814599.03 Length of push core assembly (B): 3.0
 Collection Mechanism: Push-Core GPS Accuracy: 2.2 Water surface to top of handle (C): 2.2
 Date: 12/5/08 Predicted Tide (ft): _____ Length of core (from bottom) (D): 1.6
 Time of Collection: 0946 Surveyed elevation (NVGD 29) (E): 0
 Survey Type: Pre-Dredge Prog-Dredge Post-Dredge Time Depart Station: 0950 Water surface from surveyed elevation (F): 0.0
 PML

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): $E - F$ 0.0
 (H) Elevation of the bottom of the core (NVGD): $G - (B - C)$ -5.8
 (z*) Elevation of visual transition (NVGD): $H +$ (distance to visual transition) -5.3
 (I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$ -4.2
 (I₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$ -4.1
 (Note if I ≠ I₂ within ± 1.0 feet, discard and resample) -0.1 ✓

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.6		silt	brassy black	fine loose				11/15/09 - Core cut - top 1.1' feet throwed bottom 1.1' - 1.6' frozen archived JMT
0.5		clay	light gray	firm	fine			1/16/09 - top 1.1' subsampled ID: S-08C-X33-00-11 JMT
0.0								

File ID of digital photograph(s): S-08C-0X33-00-16-5PG

Comments:



S-08C-0X33-00-16

12/5/08





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

S08C-0T38-00-14

12/5/08



Station ID: CC27 Time On Station: 1045 All measurements are ±0.1 feet
 Core Sample ID: S-08C-CC27-00-19 Northing (NAD 83): 2702273.74 Water Depth (A): 6.9707
 Logged by: AEM/MRF Easting (NAD 83): 814726.35 Length of push core assembly (B): 4.2103
 Collection Mechanism: Push-Core GPS Accuracy: 2.3 Water surface to top of handle (C): 4.0204
 Date: 12/5/08 Predicted Tide (ft): _____ Length of core (from bottom) (D): 1.9
 Time of Collection: 1120 Surveyed elevation (NVGD 29) (E): _____
 Survey Type: Pre-Dredge Prog-Dredge Post-Dredge Time Depart Station: 1120 Water surface from surveyed elevation (F): 1.0

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): E - F	<u>1.0</u>
(H) Elevation of the bottom of the core (NVGD): G - (B - C)	<u>-8.3</u>
(Z*) Elevation of visual transition (NVGD): H + (distance to visual transition)	<u>-7.3</u>
(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): H + D	<u>-6.4</u>
(I ₂) Elevation of the sediment-water interface as measured from water depth (NVGD): G - A	<u>-6.1</u>
(Note if I ≠ I ₂ within ± 1.0 feet, discard and resample)	<u>-0.3 ✓</u>

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.9		silt	Black	loose	↑ fine			1/16/09 - top 0.9 feet subsampled *
1.0		clay			↓			bottom 0.9-1.9' archived SMT
0.0			light gray	firm				* sample dropped lost top ~ 1 inch of core S-08C-CC27-00-09' SMT
								1/15/09 - core cut + analyzed top 0.9'

File ID of digital photograph(s): S-08C-CC27-00-19_SPG

Comments:
 ① 1st 3 attempts N/G, try w/ 3 ft. tube
 ② some streaking



508C-CC27-00-19

12/5/08



Station ID: <u>T22</u>	Time On Station: <u>1131</u>	All measurements are ±0.1 feet	
Core Sample ID: <u>S-08C-0T22-00-13</u>	Northing (NAD 83): <u>2702387.21</u>	Water Depth (A): <u>6.0</u>	
Logged by: <u>AEM/MRF</u>	Easting (NAD 83): <u>814486.89</u>	Length of push core assembly (B): <u>8.0</u>	
Collection Mechanism: <u>Push-Core</u>	GPS Accuracy: <u>3.22</u>	Water surface to top of handle (C): <u>0.4</u>	
Date: <u>12/5/08</u>	Predicted Tide (ft): <u>1.45</u>	Length of core (from bottom) (D): <u>1.3</u>	
	Time of Collection: <u>1156</u>	Surveyed elevation (NVGD 29) (E): <u>1.3</u>	
Survey Type: <u>Pre-Dredge Prog-Dredge</u>	Time Depart Station: <u>1156</u>	Water surface from surveyed elevation (F): <u>1.3</u>	

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): $E - F$	<u>1.3</u>
(H) Elevation of the bottom of the core (NVGD): $G - (B - C)$	<u>-6.1</u>
(z*) Elevation of visual transition (NVGD): $H + (\text{distance to visual transition})$	<u>-5.2</u>
(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$	<u>-4.8</u>
(I ₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$	<u>-4.7</u>
(Note if I ≠ I ₂ within ± 1.0 feet, discard and resample)	<u>-0.1 ✓</u>

Elevation (NVGD) (I.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
0.9		silt	black					1/15/09 - core cut top 0-0.4' thawed bottom 0.4' - 1.3' frozen archive 1/16/09 - top 0.4' subsampled for PCB Congener analysis ID: S-08C-F22-00-04
0.0		silt clay	streaking black	firm	fine			

File ID of digital photograph(s): S-08C-0T22-00-13.JPG

Comments:
 ① 1st attempt n/g
 ② A lot of streaking, transition most likely close to top

S08C-0T22-00-13

12/5/08



Station ID: <u>N25</u>	Time On Station: <u>1155</u>	All measurements are ± 0.1 feet	
Core Sample ID: <u>S-08C-0N25-00-13</u>	Northing (NAD 83): <u>2702310.66</u>	Water Depth (A): <u>4.1</u>	
Logged by: <u>AEM/MRF</u>	Easting (NAD 83): <u>814338.21</u>	Length of push core assembly (B): <u>3.0</u>	
Collection Mechanism: <u>Push-Core</u>	GPS Accuracy: <u>2.69</u>	Water surface to top of handle (C): <u>2.0 2.6</u>	
Date: <u>12/5/08</u>	Predicted Tide (ft): <u> </u>	Length of core (from bottom) (D): <u>1.3 1.3</u>	
	Time of Collection: <u>1200</u>	Surveyed elevation (NVGD 29) (E): <u> </u>	
Survey Type: <u>Pre-Dredge</u> <u>Prog-Dredge</u> <u>Post-Dredge</u>	Time Depart Station: <u>1204 1215</u>	Water surface from surveyed elevation (F): <u>1.5</u>	

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): $E - F$	<u>1.5</u>
(H) Elevation of the bottom of the core (NVGD): $G - (B - C)$	<u>-3.9</u>
(z*) Elevation of visual transition (NVGD): $H + (\text{distance to visual transition})$	<u>-3.0</u>
(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$	<u>-2.6</u>
(I ₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$	<u>-2.6</u>
(Note if I \neq I ₂ within ± 1.0 feet, discard and resample)	<u>0.0</u> ✓

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
0.9		silt	dark brown	loose	fine			No sample taken for PCB analysis SMR 1/15/09
0.0		clay	gray	firm	fine			

File ID of digital photograph(s): S-08C-0N25-00-13.JPG

Comments:
 ① need longer barrel to collect sufficient amount of sediment.
 ② disregard AEM 12/5/08
 ③ A lot of streaking in transition @ 0.9 AEM 12/5/08



S-08C-0N25-00-13

12/5/08

↓
BOTTOM

↑
TOP

Station ID: N25 Time On Station: 1155 All measurements are ±0.1 feet

Core Sample ID: S-08C-0N25-00-15-12EP Northing (NAD 83): 2707310.66 Water Depth (A): 4.1

Logged by: AEM/MRF Easting (NAD 83): 814338.21 Length of push core assembly (B): 8.0

Collection Mechanism: Push-Core GPS Accuracy: 2.69 Water surface to top of handle (C): 2.3

Date: 12/5/08 Predicted Tide (ft): _____ Length of core (from bottom) (D): 1.5

Time of Collection: 1209 Surveyed elevation (NVGD 29) (E): _____

Survey Type: Pre-Dredge Prog-Dredge Post-Dredge PMC Time Depart Station: 1215 Water surface from surveyed elevation (F): 1.5

Calculations for Determination of Z* Elevation

- (G) Elevation of Water Surface (NVGD): $E - F$ 1.5
 - (H) Elevation of the bottom of the core (NVGD): $G - (B - C)$ -4.2
 - (Z*) Elevation of visual transition (NVGD): $H + (\text{distance to visual transition})$ -3.5
 - (I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$ -2.7
 - (I₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$ -2.6
- (Note if I ≠ I₂ within ± 1.0 feet, discard and resample) 0.1 ✓

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.5		silt	brownish black	loose	fine			No Sample taken for PCB analysis JMT/1/15/07
0.7		clay	gray	firm	fine			
0.0			dark black					

File ID of digital photograph(s): S-08C-0N25-00-15-REP.JPG

Comments:



S-08C-0N25-00-15-

REP

12/5/08



Station ID: D32 Time On Station: 1225 All measurements are ± 0.1 feet
 Core Sample ID: S-08C-0D32-00-14 Northing (NAD 83): 2702147.00 Water Depth (A): 4.8
 Logged by: AEM/MRF Easting (NAD 83): 814099.75 Length of push core assembly (B): 8.0
 Collection Mechanism: Push-Core GPS Accuracy: 3.19 Water surface to top of handle (C): 1.7
 Date: 12/5/08 Predicted Tide (ft): _____ Length of core (from bottom) (D): 1.9
 Time of Collection: 1227 Surveyed elevation (NVGD 29) (E): _____
 Survey Type: Pre-Dredge Prog-Dredge Post-Dredge Time Depart Station: 1234 Water surface from surveyed elevation (F): 1.7
 Pmc

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): $E - F$ 1.7
 (H) Elevation of the bottom of the core (NVGD): $G - (B - C)$ -4.6
 (Z*) Elevation of visual transition (NVGD): $H + (\text{distance to visual transition})$ -3.7
 (I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$ -3.2
 (I₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$ -3.1
 (Note if I \neq I₂ within ± 1.0 feet, discard and resample) -0.1 ✓

Elevation (NVGD) (I.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
0.9		silt	dark gray	loose	fine			11/15/09 - core cut top 0.5' thrown bottom 0.5-1.4' frozen/archived JMT
0.0		clay w/ small shell wash	gray	firm	fine			11/16/09 - top 0.5' subsampled for PCB congeners analysis S-08C-D32-00-05 JMT

File ID of digital photograph(s): S-08C-0D32-00-14.JPG

Comments: ① streaking; top of horizon most likely @ 0.9 AEM 12/5/08

S-08C-0D32-00-14

12/5/08



Station ID: <u>D25</u>	Time On Station: <u>1238</u>	All measurements are ± 0.1 feet
Core Sample ID: <u>S-08C-0025-00-15</u>	Northing (NAD 83): <u>2702324.58</u>	Water Depth (A): <u>4.2</u>
Logged by: <u>AEM/MRF</u>	Easting (NAD 83): <u>814100.24</u>	Length of push core assembly (B): <u>8.0</u>
Collection Mechanism: <u>Push-Core</u>	GPS Accuracy: <u>3.31</u>	Water surface to top of handle (C): <u>2.522</u>
Date: <u>12/5/08</u>	Predicted Tide (ft): <u>1244</u>	Length of core (from bottom) (D): <u>1.5</u>
	Time of Collection: <u>1248</u>	Surveyed elevation (NVGD 29) (E): <u>-</u>
Survey Type: <u>Pre-Dredge</u> <u>Prog-Dredge</u> <u>Post-Dredge</u> <u>Pmc</u>	Time Depart Station: <u>1248</u>	Water surface from surveyed elevation (F): <u>1.8</u>

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): $E - F$	<u>1.8</u>
(H) Elevation of the bottom of the core (NVGD): $G - (B - C)$	<u>-4.0</u>
(z*) Elevation of visual transition (NVGD): $H +$ (distance to visual transition)	<u>-3.2</u>
(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$	<u>-2.5</u>
(I ₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$	<u>-2.4</u>
(Note if I \neq I ₂ within ± 1.0 feet, discard and resample)	<u>-0.1 ✓</u>

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.5		silty sand	dark gray	loose	med			
0.8		clayey sand	grayish brown	firm	med			1/16/09 - top 0.7' subsampled for PCB congeners analysis (S-08C-025-00-07)
0.0								Bottom 0.7' - 1.5' archived frozen 1/15/09 - core cut SNT

File ID of digital photograph(s): S-08C-0025-00-15-518

Comments:

- ① Hammered in and remeasured AEM 12/5/08
- ② 3/b C ; ID: S-08C-025-00-07 AEM 1/20/09



S-08C-0D25-00-15

12/5/08



Station ID: <u>bb28</u>	Time On Station: <u>12.50</u>	All measurements are ±0.1 feet	
Core Sample ID: <u>S-08C-bb28-00-15</u>	Northing (NAD 83): <u>2702250.56</u>	Water Depth (A): <u>4.5</u>	
Logged by: <u>AEM/MRF</u>	Easting (NAD 83): <u>813949.35</u>	Length of push core assembly (B): <u>8.0</u>	
Collection Mechanism: <u>Push-Core</u>	GPS Accuracy: <u>2.38</u>	Water surface to top of handle (C): <u>1.8</u>	
Date: <u>12/5/08</u>	Predicted Tide (ft): _____	Length of core (from bottom) (D): <u>1.5</u>	
	Time of Collection: <u>1253</u>	Surveyed elevation (NVGD 29) (E): _____	
Survey Type: <u>Pre-Dredge</u> <u>Prog-Dredge</u> <u>Post-Dredge</u>	Time Depart Station: <u>1300</u>	Water surface from surveyed elevation (F): <u>1.8</u>	

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): E - F	<u>1.8</u>
(H) Elevation of the bottom of the core (NVGD): G - (B - C)	<u>-4.4</u>
(Z*) Elevation of visual transition (NVGD): H + (distance to visual transition)	<u>-3.9</u>
(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): H + D	<u>-2.9</u>
(I ₂) Elevation of the sediment-water interface as measured from water depth (NVGD): G - A	<u>-2.7</u>
(Note if I ≠ I ₂ within ± 1.0 feet, discard and resample)	<u>-0.2 ✓</u>

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.5		silt	black	loose	fine			1/15/09 - core cut top 1.6' thrown bottom 1.0-1.5' region archived
0.5	see weeds	clay	gray	firm	fine			1/16/09 - top 1.0' subsampled for PCB congenet Monologue analysis S-08C-bb28-00-10 JMI
0.0								

File ID of digital photograph(s): S-08C-bb28-00-15.JPG
Comments:

S08C-bb28-00-15

12/5/08

↓
BOTTOM

↑
TOP

0 1 2 3 4 5

Station ID: HH23 Time On Station: 1306 All measurements are ± 0.1 feet
 Core Sample ID: S-08C-HH23-00-16 Northing (NAD 83): 2702375.29 Water Depth (A): 4.9
 Logged by: AEM/MRF Easting (NAD 83): 814850.3 Length of push core assembly (B): 3.0
 Collection Mechanism: Push-Core GPS Accuracy: 2.42 Water surface to top of handle (C): 1.4
 Date: 12/5/05 Predicted Tide (ft): _____ Length of core (from bottom) (D): 1.6
 Time of Collection: 1310 Surveyed elevation (NVGD 29) (E): _____
 Survey Type: Pre-Dredge Prog-Dredge Post-Dredge Time Depart Station: 1313 Water surface from surveyed elevation (F): 1.8

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): $E - F$ 1.8
 (H) Elevation of the bottom of the core (NVGD): $G - (B - C)$ -4.8
 (z*) Elevation of visual transition (NVGD): $H +$ (distance to visual transition) -4.8
 (I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$ -3.2
 (I₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$ -3.1
 (Note if I \neq I₂ within ± 1.0 feet, discard and resample) -0.1 ✓

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
160		some sand → fine sandy clay ←	brown ↓ grayish light gray	firm	small- fine			no clear transition No sample taken for FB analysis diston JMT
00								

File ID of digital photograph(s): S-08C-HH23-00-16-5PG

Comments:

S08C-HH23-00-16

12/5/08

Bottom

Top



Station ID: <u>NW34</u>	Time On Station: <u>1321</u>	All measurements are ± 0.1 feet	
Core Sample ID: <u>S-08C-NW34-00-12</u>	Northing (NAD 83): <u>2702089.21</u>	Water Depth (A): <u>4.6</u>	
Logged by: <u>NEM/MRF</u>	Easting (NAD 83): <u>814947.03</u>	Length of push core assembly (B): <u>8.0</u>	
Collection Mechanism: <u>Push-Core</u>	GPS Accuracy: <u>2.20</u>	Water surface to top of handle (C): <u>2.0</u>	
Date: <u>12/5/09</u>	Predicted Tide (ft):	Length of core (from bottom) (D): <u>1.2</u>	
	Time of Collection: <u>1325</u>	Surveyed elevation (NVGD 29) (E):	
Survey Type: <u>Pre-Dredge Prog-Dredge Post-Dredge</u>	Time Depart Station: <u>1331</u>	Water surface from surveyed elevation (F): <u>1.8</u>	

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): $E - F$	<u>1.8</u>
(H) Elevation of the bottom of the core (NVGD): $G - (B - C)$	<u>-4.2</u>
(Z*) Elevation of visual transition (NVGD): $H + (\text{distance to visual transition})$	<u>-3.7</u>
(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$	<u>-3.0</u>
(I ₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$	<u>-2.8</u>
(Note if I \neq I ₂ within ± 1.0 feet, discard and resample)	<u>-0.2</u> ✓

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.2		black silt	black	coarse	fine			No sample taken for PCB analysis JMR 1/15/09
0.5		clay	olive gray	firm	fine			
0.0								

File ID of digital photograph(s): S-08C-NW34-00-12-SPG

Comments:

S-08C-NN34-∞-12

12/5/08

←
BOTTOM

TOP
→

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

Station ID: <u>LL40</u>	Time On Station: <u>1335</u>	All measurements are ± 0.1 feet	
Core Sample ID: <u>S-080-LL40-00-16</u>	Northing (NAD 83): <u>2701936.86</u>	Water Depth (A): <u>4.6</u>	
Logged by: <u>AEM/MRF</u>	Easting (NAD 83): <u>814939.77</u>	Length of push core assembly (B): <u>8.1</u>	
Collection Mechanism: <u>Push-Core</u>	GPS Accuracy: <u>2.12</u>	Water surface to top of handle (C): <u>1.6-01.9</u>	
Date: <u>12/5/08</u>	Predicted Tide (ft): _____	Length of core (from bottom) (D): <u>1.6</u>	
	Time of Collection: <u>1347</u>	Surveyed elevation (NVGD 29) (E): _____	
Survey Type: Pre-Dredge Prog-Dredge Post-Dredge <u>ARC</u>	Time Depart Station: <u>1351</u>	Water surface from surveyed elevation (F): <u>1.7</u>	

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): $E - F$	<u>1.7</u>
(H) Elevation of the bottom of the core (NVGD): $G - (B - C)$	<u>-4.5</u>
(z*) Elevation of visual transition (NVGD): $H + (\text{distance to visual transition})$	<u>-4.0</u>
(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$	<u>-2.9</u>
(I ₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$	<u>-2.9</u>
(Note if I \neq I ₂ within ± 1.0 feet, discard and resample)	<u>0.0</u> ✓

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.6		Silt	brassy black	loose	fine			
0.5		clay	gray	firm	fine			No sample taken for PCB analysis JMT 1/15/09
0.0								

File ID of digital photograph(s): S-080-LL40-00-16.5PG

Comments:

① 1st Attempt N/G AEM 12/5/08

S-08C-LL40-00-16

12/5/08



Station ID: UU33 Time On Station: 1355 All measurements are ± 0.1 feet
 Core Sample ID: S-08C-UU33-00-17 Northing (NAD 83): 2702113.75 Water Depth (A): 5.2
 Logged by: AEM/MRF Easting (NAD 83): 815162.06 Length of push core assembly (B): 9.0
 Collection Mechanism: Push-Core GPS Accuracy: 2.01 Water surface to top of handle (C): 1.9
 Date: 12/5/05 Predicted Tide (ft): _____ Length of core (from bottom) (D): 1.7
 Time of Collection: 1359 Surveyed elevation (NVGD 29) (E): _____
 Survey Type: Pre-Dredge Prog-Dredge Post-Dredge Time Depart Station: 1403 Water surface from surveyed elevation (F): 1.7

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): $E - F$ 1.7
 (H) Elevation of the bottom of the core (NVGD): $G - (B - C)$ -5.4
 (Z*) Elevation of visual transition (NVGD): $H + (\text{distance to visual transition})$ -4.7
 (I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$ -3.7
 (I₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$ -3.5
 (Note if I \neq I₂ within ± 1.0 feet, discard and resample) -0.2 ✓

Elevation (NVGD) (I.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.7		silt	black	bose	fine			
0.7		clay w/ shell fragments	gray	firm	fine			
0.0								* Sample taken for PCB analysis JMT 1/15/06

File ID of digital photograph(s): S-08C-UU33-00-17-SPG

Comments:



S08C-UU33-00-17

12/5/08



North of Wood Street Sediments

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Station ID: 0008-30E Time On Station: 9:03 All measurements are ± 0.1 feet
 Core Sample ID: S-08D-0008-30E-09-10 Northing (NAD 83): 2708683.7 Water Depth (A): NA
 Logged by: AFM Easting (NAD 83): 815498.6 Length of push core assembly (B): NA
 Collection Mechanism: Push-Core Auger GPS Accuracy: 1.91 Water surface to top of handle (C): NA
 Date: 11/20/08 Predicted Tide (ft): _____ Length of core (from bottom) (D): 1.0
 Time of Collection: 9:05 Surveyed elevation (NVGD 29) (E): NA
 Survey Type: Pre-Dredge Prog-Dredge Post-Dredge Time Depart Station: 9:10 Water surface from surveyed elevation (F): NA
NWS

Calculations for Determination of Z* Elevation

- (G) Elevation of Water Surface (NVGD): $E - F$ _____
 - (H) Elevation of the bottom of the core (NVGD): $G - (B - C)$ _____
 - (z*) Elevation of visual transition (NVGD): $H +$ (distance to visual transition) _____
 - (I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$ _____
 - (I₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$ _____
- (Note if I \neq I₂ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (I.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.0		sand	yellowish brown olive		med			uniform - no transition line seen
0.0								

File ID of digital photograph(s): S-08D-0008-30E-00-10

Comments:



S-08D-C008-30E

-00-10

11/20/08

Station ID: NWS-037 Time On Station: 7:12 All measurements are ±0.1 feet

Core Sample ID: S-08D-NWS-037-00-10 Northing (NAD 83): 2708692.34 Water Depth (A): NA

Logged by: AEM Easting (NAD 83): 315534.77 Length of push core assembly (B): ↓

Collection Mechanism: Push-Core Auger GPS Accuracy: 7.0 1.93 Water surface to top of handle (C): ↓

Date: 11/20/08 Predicted Tide (ft): Length of core (from bottom) (D): 1.0

Time of Collection: 9:13 Surveyed elevation (NVGD 29) (E):

Survey Type: Pre-Dredge Prog-Dredge Post-Dredge Time Depart Station: 9:20 Water surface from surveyed elevation (F):

NWS

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): $E - F$ _____

(H) Elevation of the bottom of the core (NVGD): $G - (B - C)$ _____

(z*) Elevation of visual transition (NVGD): $H + (\text{distance to visual transition})$ _____

(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$ _____

(I₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$ _____

(Note if I ≠ I₂ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.0		organics						
		silty sand through out	muddy brown					
0.0		gravel			large			uniform - no transition seen

File ID of digital photograph(s): S-08D-NWS-37-00-10.SP5

Comments:



S-08D-MWS-37

00-10

11/20/08

Station ID: NWS-35 Time On Station: 0921 All measurements are ±0.1 feet

Core Sample ID: S-08D-NWS-35-00-10 Northing (NAD 83): 2708754.5 Water Depth (A): NA

Logged by: AEM Easting (NAD 83): 815508.68 Length of push core assembly (B): ↓

Collection Mechanism: Push Core Auger GPS Accuracy: 2.08 Water surface to top of handle (C): ↓

Date: 11/20/08 Predicted Tide (ft): ↓ Length of core (from bottom) (D): 1.0

Survey Type: Pre-Dredge Prog-Dredge Post-Dredge Time Depart Station: 9:29 Surveyed elevation (NVGD 29) (E): ↓

NWS

Calculations for Determination of Z* Elevation

- (G) Elevation of Water Surface (NVGD): $E - F$
 - (H) Elevation of the bottom of the core (NVGD): $G - (B - C)$
 - (Z*) Elevation of visual transition (NVGD): $H + (\text{distance to visual transition})$
 - (I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$
 - (I₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$
- (Note if I ≠ I₂ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.0	<u>2</u>	<u>sand w/organic material</u>	<u>mottled brown and grey</u>	<u>firm throughout</u>	<u>fine to large throughout</u>			<u>No transition seen - uniform core</u>
0.0		<u>Silty Sand some gravel</u>						

File ID of digital photograph(s): S-08D-NWS-35-00-10.JPG

Comments:



S-08D-WWS35-

00-10

11/20/08

Station ID: NWS-36 Time On Station: 0931 All measurements are ± 0.1 feet
 Core Sample ID: S-08D-NWS36-00-10 Northing (NAD 83): 2706761.25 Water Depth (A): NA
 Logged by: AEM Easting (NAD 83): 815516.12 Length of push core assembly (B): ↓
 Collection Mechanism: Push-Core Auger GPS Accuracy: 1.90 Water surface to top of handle (C): ↓
 Date: 11/20/08 Predicted Tide (ft): _____ Length of core (from bottom) (D): 1.0
 Time of Collection: 0932 Surveyed elevation (NVGD 29) (E): _____
 Survey Type: Pre-Dredge Prog-Dredge Post-Dredge Time Depart Station: 0937 Water surface from surveyed elevation (F): ↓

Calculations for Determination of Z* Elevation

- (G) Elevation of Water Surface (NVGD): $E - F$ _____
 (H) Elevation of the bottom of the core (NVGD): $G - (B - C)$ _____
 (Z*) Elevation of visual transition (NVGD): $H + (\text{distance to visual transition})$ _____
 (I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$ _____
 (I₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$ _____
 (Note if I \neq I₂ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.0		sand + silt w/organic			large			no transition seen uniform core slight tan color @ bottom
0		gravel + sand	mostly brown some grey					

File ID of digital photograph(s): S-08D-NWS-36-00-10-SPG

Comments:



S-08D-MWS36-

00-10

11/20/08

Station ID: NWS-38 Time On Station: 9:39 All measurements are ±0.1 feet

Core Sample ID: S-08D-NWS38-00-10 Northing (NAD 83): 2708894.27 Water Depth (A): NA

Logged by: AEM Easting (NAD 83): 815503.15 Length of push core assembly (B): _____

Collection Mechanism: Push-Core GPS Accuracy: 3.3 Water surface to top of handle (C): _____

Date: 11/20/08 Predicted Tide (ft): _____ Length of core (from bottom) (D): 1.0

Survey Type: Pre-Dredge Prog-Dredge Post-Dredge Time Depart Station: 9:40 Surveyed elevation (NVGD 29) (E): _____

NWS Water surface from surveyed elevation (F): _____

Calculations for Determination of Z* Elevation

- (G) Elevation of Water Surface (NVGD): E - F _____
 - (H) Elevation of the bottom of the core (NVGD): G - (B - C) _____
 - (z*) Elevation of visual transition (NVGD): H + (distance to visual transition) _____
 - (I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): H + D _____
 - (I₂) Elevation of the sediment-water interface as measured from water depth (NVGD): G - A _____
- (Note if I ≠ I₂ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.0		sand	brown		med.			
0.0	0.5	silty sand	light gray					

File ID of digital photograph(s): S-08D-NWS-38-00-10.JPG

Comments:



S-08D-WWS-38

00-10

11/20/08

Station ID: NWS-39 Time On Station: 943 All measurements are ±0.1 feet
 Core Sample ID: S-08D-NWS39-00-10 Northing (NAD 83): 2705520.34 Water Depth (A): NA
 Logged by: AEM Easting (NAD 83): 815508.55 Length of push core assembly (B): NA
 Collection Mechanism: Push-Core Auger GPS Accuracy: 1.96 Water surface to top of handle (C): NA
 Date: 11/20/08 Predicted Tide (ft): _____ Length of core (from bottom) (D): 1.0
 Time of Collection: 0944 Surveyed elevation (NVGD 29) (E): NA
 Survey Type: Pre-Dredge Prog-Dredge Post-Dredge Time Depart Station: 0947 Water surface from surveyed elevation (F): NA
NWS

Calculations for Determination of Z* Elevation

- (G) Elevation of Water Surface (NVGD): $E - F$ _____
 - (H) Elevation of the bottom of the core (NVGD): $G - (B - C)$ _____
 - (z*) Elevation of visual transition (NVGD): $H + (\text{distance to visual transition})$ _____
 - (I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$ _____
 - (I₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$ _____
- (Note if I ≠ I₂ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.0		Silty sand	dark brown		large			
0.0		gravel	light gray					

File ID of digital photograph(s): S-08D-NWS-39-00-10.JPG

Comments:



1 FT .1
.9
.8
.7
.6
.5
.4

S-08D-MWS-39
00-10

11/20/08

Station ID: <i>C008-30W</i>	Time On Station: <i>10:03</i>	All measurements are ±0.1 feet	
Core Sample ID: <i>S-08D-C008-30W-00-1A</i>	Northing (NAD 83): <i>2708653.3</i>	Water Depth (A): <i>NA</i>	
Logged by: <i>AEM</i>	Easting (NAD 83): <i>815363.8</i>	Length of push core assembly (B): <i>NA</i>	
Collection Mechanism: <i>Push-Core Auger</i>	GPS Accuracy: <i>2.52</i>	Water surface to top of handle (C): <i>NA</i>	
Date: <i>11/20/08</i>	Predicted Tide (ft):	Length of core (from bottom) (D): <i>1.0</i>	
	Time of Collection: <i>10:04</i>	Surveyed elevation (NVGD 29) (E): <i>NA</i>	
Survey Type: <input type="checkbox"/> Pre-Dredge <input type="checkbox"/> Prog-Dredge <input checked="" type="checkbox"/> Post-Dredge	Time Depart Station: <i>10:07</i>	Water surface from surveyed elevation (F): <i>NA</i>	

Calculations for Determination of Z* Elevation

- (G) Elevation of Water Surface (NVGD): $E - F$ _____
 - (H) Elevation of the bottom of the core (NVGD): $G - (B - C)$ _____
 - (z*) Elevation of visual transition (NVGD): $H + (\text{distance to visual transition})$ _____
 - (I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$ _____
 - (I₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$ _____
- (Note if I ≠ I₂ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.0		organic material	brown		large			Bottom 0-0.3 5 in color
0.0	organics	sandy	light gray					

File ID of digital photograph(s): *S-08D-C008-30W-00-10.JPG*

Comments:



S-08D-C008-30W

-00-10

11/20/08

Station ID: NWS-34 Time On Station: 10:59 All measurements are ± 0.1 feet
 Core Sample ID: S-08D-NWS34-00-10 Northing (NAD 83): 2708923.9 Water Depth (A): NA
 Logged by: AEM Easting (NAD 83): 315338.8 Length of push core assembly (B): NA
 Collection Mechanism: Push-Core Auger GPS Accuracy: 3.75 Water surface to top of handle (C): NA
 Date: 11/20/06 Predicted Tide (ft): _____ Length of core (from bottom) (D): 1.0
 Time of Collection: 11:00 Surveyed elevation (NVGD 29) (E): NA
 Survey Type: Pre-Dredge Prog-Dredge Post-Dredge Time Depart Station: 11:06 Water surface from surveyed elevation (F): NA
 NWS

Calculations for Determination of Z* Elevation

- (G) Elevation of Water Surface (NVGD): $E - F$ _____
 - (H) Elevation of the bottom of the core (NVGD): $G - (B - C)$ _____
 - (Z*) Elevation of visual transition (NVGD): $H + (\text{distance to visual transition})$ _____
 - (I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$ _____
 - (I₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$ _____
- (Note if I \neq I₂ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.0								
0.0		sand big gravel	brown		large			uniform throughout core

File ID of digital photograph(s): S-08D-NWS-34-00-10.JPG

Comments: Rect



S-08D-MWS-34

00-10

11/20/08

Station ID: NWS-33 Time On Station: 11:08 All measurements are ±0.1 feet

Core Sample ID: S-08D-NWS33-0010 Northing (NAD 83): 2709039.40 Water Depth (A): NA

Logged by: AEM Easting (NAD 83): 315330.20 Length of push core assembly (B): ↓

Collection Mechanism: Push-Core GPS Accuracy: 3.0+ Water surface to top of handle (C): ↓

Date: 11/20/06 Predicted Tide (ft): ↓ Length of core (from bottom) (D): 1.0

Survey Type: Pre-Dredge Prog-Dredge (Post-Dredge) Time Depart Station: 11:11 Surveyed elevation (NVGD 29) (E): ↓

NWS

Calculations for Determination of Z* Elevation

- (G) Elevation of Water Surface (NVGD): $E - F$ _____
 - (H) Elevation of the bottom of the core (NVGD): $G - (B - C)$ _____
 - (z*) Elevation of visual transition (NVGD): $H + (\text{distance to visual transition})$ _____
 - (I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$ _____
 - (I₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$ _____
- (Note if I ≠ I₂ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.0		sand	muddy brown					
Horizontal @ 0.4		-0.4						
0.0		dry sand	gray					

File ID of digital photograph(s): S-08D-NWS-33-00-10.JPG

Comments:



S-08D-WWS-33

00-10

11/20/08

Station ID: C008-062 Time On Station: 1:44 All measurements are ±0.1 feet
 Core Sample ID: S-08D-C008-062-00-16 Northing (NAD 83): 2705165.92 Water Depth (A): 3.335
 Logged by: PC Easting (NAD 83): 815567.28 Length of push core assembly (B): 8.2
 Collection Mechanism: Push-Core GPS Accuracy: 3.01 Water surface to top of handle (C): *40.33*
 Date: 12/3/08 Predicted Tide (ft): _____ Length of core (from bottom) (D): 1.6
 Time of Collection: 9:15 Surveyed elevation (NVGD 29) (E): NA
 Survey Type: Pre-Dredge Prog-Dredge (Post-Dredge) Time Depart Station: 9:17 Water surface from surveyed elevation (F): NA

Calculations for Determination of Z* Elevation

- (G) Elevation of Water Surface (NVGD): $E - F$
 - (H) Elevation of the bottom of the core (NVGD): $G - (B - C)$
 - (z*) Elevation of visual transition (NVGD): $H + (\text{distance to visual transition})$
 - (I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$
 - (I₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$
- (Note if I ≠ I₂ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.6		silt w/ sand	dark brown/ black	firm	sm- fine			
0.6		clay w/ sand	light brown	firm	fine			
0.0								

File ID of digital photograph(s): S-08D-C008-062-00-16.SPG

Comments:
 * Not a good core
 ** Not a good core

S-08D-C008-062-00-16

12/3/08

TOP



Bottom



Station ID: 0008-055 Time On Station: 0921 All measurements are ± 0.1 feet
 Core Sample ID: S-USD-0008-055-00-15 Northing (NAD 83): 2708266.99 Water Depth (A): 5.5
 Logged by: AEM Easting (NAD 83): 815461.10 Length of push core assembly (B): 8.0
 Collection Mechanism: Push-Core GPS Accuracy: 2.52 Water surface to top of handle (C): 0.9
 Date: 12/3/08 Predicted Tide (ft): _____ Length of core (from bottom) (D): 1.5
 Time of Collection: 0934 Surveyed elevation (NVGD 29) (E): NA
 Survey Type: Pre-Dredge Prog-Dredge Post-Dredge Time Depart Station: 0940 Water surface from surveyed elevation (F) NA
 NWS

Calculations for Determination of Z* Elevation

- (G) Elevation of Water Surface (NVGD): $E - F$ _____
 - (H) Elevation of the bottom of the core (NVGD): $G - (B - C)$ _____
 - (z*) Elevation of visual transition (NVGD): $H + (\text{distance to visual transition})$ _____
 - (I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$ _____
 - (I₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$ _____
- (Note if I \neq I₂ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.5		fine sandy silt	Dark Brown/Black	silt/loam	fine			
0.5		organic mat.						
0.0		clay	light brown	firm	fine			

File ID of digital photograph(s): S-USD-0008-055-00-15.JPG

Comments:



S-08D-C008-055-00-15

12/3/08

Bottom

TOP



Station ID: <u>1008-055</u>	Time On Station: <u>0931</u>	All measurements are ± 0.1 feet	
Core Sample ID: <u>S-08D-1008-055-00-16-REP</u>	Northing (NAD 83): <u>2708266.99</u>	Water Depth (A): <u>5.6</u>	
Logged by: <u>AEM</u>	Easting (NAD 83): <u>515461.10</u>	Length of push core assembly (B): <u>3.0</u>	
Collection Mechanism: <u>Push-Core</u>	GPS Accuracy: <u>2.52</u>	Water surface to top of handle (C): <u>0.7</u>	
Date: <u>12/3/08</u>	Predicted Tide (ft):	Length of core (from bottom) (D): <u>1.6</u>	
	Time of Collection: <u>9:35</u>	Surveyed elevation (NVGD 29) (E): <u>NA</u>	
Survey Type: <u>Post-Dredge</u>	Time Depart Station: <u>940</u>	Water surface from surveyed elevation (F): <u>NA</u>	

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): $E - F$ _____

(H) Elevation of the bottom of the core (NVGD): $G - (B - C)$ _____

(z*) Elevation of visual transition (NVGD): $H + (\text{distance to visual transition})$ _____

(I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$ _____

(I₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$ _____

(Note if I \neq I₂ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
7.6		sandy silt	dark brown/black	loose	fine			
0.5-0.6	(sea surface) organic mat.	silt	light brown	firm	fine			
0.0								

File ID of digital photograph(s): S-08D-1008-055-00-16-REP.SPG

Comments:
① S/B - REP
AEM 12/3/08

S-08D-C008-055-00-16-

REP

12/3/08

Bottom

TOP



Station ID: <u>C008-048</u>	Time On Station: <u>0946</u>	All measurements are ± 0.1 feet
Core Sample ID: <u>S-08D-C008-048-00-16</u>	Northing (NAD 83): <u>2708387.52</u>	Water Depth (A): <u>5.0</u>
Logged by: <u>AEM</u>	Easting (NAD 83): <u>915414.40</u>	Length of push core assembly (B): <u>8.0</u>
Collection Mechanism: <u>Push-Core</u>	GPS Accuracy: <u>2.58</u>	Water surface to top of handle (C): <u>1.2</u>
Date: <u>12/3/08</u>	Predicted Tide (ft):	Length of core (from bottom) (D): <u>1.6</u>
	Time of Collection: <u>0950</u>	Surveyed elevation (NVGD 29) (E): <u>NA</u>
Survey Type: <u>Pre-Dredge</u> <u>Prog-Dredge</u> <u>Post-Dredge</u>	Time Depart Station: <u>0955</u>	Water surface from surveyed elevation (F): <u>NA</u>

Calculations for Determination of Z* Elevation

- (G) Elevation of Water Surface (NVGD): $E - F$
 - (H) Elevation of the bottom of the core (NVGD): $G - (B - C)$
 - (Z*) Elevation of visual transition (NVGD): $H + (\text{distance to visual transition})$
 - (I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$
 - (I₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$
- (Note if I ≠ I₂ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.6	oo	shaly organic mud	dark brown black	loose	small	-		
0.5-6		clay	light brown	firm	small	-		shaly transition
0.0								

File ID of digital photograph(s): S-08D-C008-048-00-16 SP6

Comments: Close GPS signal under bridge

S-08D-C008-048-00-16

12/3/08

Bottom

TOP



Station ID: C008-049 Time On Station: 0958 All measurements are ±0.1 feet

Core Sample ID: S-08D-C008-049-00-12 Northing (NAD 83): 2768405.78 Water Depth (A): 4.2

Logged by: HEM Easting (NAD 83): 315468.41 Length of push core assembly (B): 8.0

Collection Mechanism: Push-Core GPS Accuracy: 2.77 Water surface to top of handle (C): 2.5

Date: 12/1/03 Predicted Tide (ft): _____ Length of core (from bottom) (D): 1.2

Survey Type: Pre-Dredge Prog-Dredge Post-Dredge Time Depart Station: 1006 Surveyed elevation (NVGD 29) (E): NA

NWS

Calculations for Determination of Z* Elevation

- (G) Elevation of Water Surface (NVGD): $E - F$ _____
 - (H) Elevation of the bottom of the core (NVGD): $G - (B - C)$ _____
 - (z*) Elevation of visual transition (NVGD): $H + (\text{distance to visual transition})$ _____
 - (I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$ _____
 - (I₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$ _____
- (Note if I ≠ I₂ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.0		sand	Dark Black	loose	fine- med			
0.9								
0.7								
0.2		clay	light gray brown	firm	small			
0.0								

File ID of digital photograph(s): S-08D-C008-049-00-12.JPG

Comments:



S-08D-C008-049-00-12

12/3/08

Bottom

TOP

Station ID: C008-040 Time On Station: 1014 All measurements are ± 0.1 feet
 Core Sample ID: S-08D-C008-040-00-17 Northing (NAD 83): 2708514.69 Water Depth (A): 5.7
 Logged by: AEM Easting (NAD 83): 815462.20 Length of push core assembly (B): 3.0
 Collection Mechanism: Push-Core GPS Accuracy: 2.09 Water surface to top of handle (C): 1.0
 Date: 12/3/08 Predicted Tide (ft): _____ Length of core (from bottom) (D): 1.2
 Time of Collection: 1017 Surveyed elevation (NVGD 29) (E): NA
 Survey Type: Pre-Dredge Prog-Dredge Post-Dredge Time Depart Station: 1030 Water surface from surveyed elevation (F): NA
 NWS

Calculations for Determination of Z* Elevation

- (G) Elevation of Water Surface (NVGD): $E - F$ _____
 - (H) Elevation of the bottom of the core (NVGD): $G - (B - C)$ _____
 - (z*) Elevation of visual transition (NVGD): $H + (\text{distance to visual transition})$ _____
 - (I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$ _____
 - (I₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$ _____
- (Note if I \neq I₂ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
5.7		fine sandy silt	dark brown		fine			
0.2		clay	light brown	firm	fine			
0.0								

File ID of digital photograph(s): S-08D-C008-040-00-17-SPG

Comments:



S-08D-C008-040-00-12

12/3/08

Bottom

TOP



Station ID: C008-039 Time On Station: 1024 All measurements are ± 0.1 feet
 Core Sample ID: S-08D-C008-039-00-12 Northing (NAD 83): 2708573.84 Water Depth (A): 4.8
 Logged by: AEM Easting (NAD 83): 815410.39 Length of push core assembly (B): 8.0
 Collection Mechanism: Push-Core GPS Accuracy: 2.07 Water surface to top of handle (C): 1.9
 Date: 12/3/08 Predicted Tide (ft): _____ Length of core (from bottom) (D): 1.2
 Time of Collection: 1028 Surveyed elevation (NVGD 29) (E): NA
 Survey Type: Pre-Dredge Prog-Dredge Post-Dredge Time Depart Station: 1034 Water surface from surveyed elevation (F): NA

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): $E - F$ _____
 (H) Elevation of the bottom of the core (NVGD): $G - (B - C)$ _____
 (z*) Elevation of visual transition (NVGD): $H + (\text{distance to visual transition})$ _____
 (I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$ _____
 (I₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$ _____
 (Note if I \neq I₂ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.2		Fine sandy silt	dark brown/ black	loose	Fine			
0.2	w/sand → shell → clays	→ shell → clays	light brown		Fine			
0.0								

File ID of digital photograph(s): S-08D-C008-039-00-12.JPG

Comments:

Large shell and coarse sand @ bottom.



S-08D-C008-039-00-1Z

12/3/08

Bottom

TOP



Station ID: 0008-038 Time On Station: 1035 All measurements are ±0.1 feet
 Core Sample ID: S-08D-0008-038-00-13 Northing (NAD 83): 2709517.71 Water Depth (A): 4.0
 Logged by: AEM Easting (NAD 83): 815383.18 Length of push core assembly (B): 8.0
 Collection Mechanism: Push-Core GPS Accuracy: 2.35 Water surface to top of handle (C): 2.5
 Date: 12/3/08 Predicted Tide (ft): _____ Length of core (from bottom) (D): 1.3
 Time of Collection: 1035 / 1050 Surveyed elevation (NVGD 29) (E): NA
 Survey Type: Pre-Dredge Prog-Dredge Post-Dredge Time Depart Station: 1055 Water surface from surveyed elevation (F): NA

Calculations for Determination of Z* Elevation

(G) Elevation of Water Surface (NVGD): $E - F$ _____
 (H) Elevation of the bottom of the core (NVGD): $G - (B - C)$ _____
 (Z*) Elevation of visual transition (NVGD): $H + (\text{distance to visual transition})$ _____
 (I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$ _____
 (I₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$ _____
 (Note if I ≠ I₂ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.5 some settling	organic silt	sand w/silt	dark brown	loose	fine			
9.50 ft gradual transition		heavy clay	light gray brown	firm	fine			
0.0								

File ID of digital photograph(s): S-08D-0008-038-00-13.JPG

Comments:
 ① 2 attempts; 1st was no good AEM 12/3/08

S-08D-0008-038-00-13

12/3/08

Bottom

TOP

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

Station ID: C008-033 Time On Station: 1058 All measurements are ± 0.1 feet
 Core Sample ID: S-08D-C008-033-00-12 Northing (NAD 83): 2708613.29 Water Depth (A): 4.2
 Logged by: AEM Easting (NAD 83): 815412.90 Length of push core assembly (B): 3.0
 Collection Mechanism: Push-Core GPS Accuracy: 2.34 Water surface to top of handle (C): 2.4
 Date: 12/3/08 Predicted Tide (ft): _____ Length of core (from bottom) (D): 1.2
 Time of Collection: 1102 Surveyed elevation (NVGD 29) (E): NA
 Survey Type: Pre-Dredge Prog-Dredge Post-Dredge Time Depart Station: 1106 Water surface from surveyed elevation (F): NA
 NWS

Calculations for Determination of Z* Elevation

- (G) Elevation of Water Surface (NVGD): $E - F$
 - (H) Elevation of the bottom of the core (NVGD): $G - (B - C)$
 - (z*) Elevation of visual transition (NVGD): $H +$ (distance to visual transition)
 - (I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$
 - (I₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$
- (Note if I \neq I₂ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.2	organic brackish	silty sand	dark black	loose	small			
0.5		sand/ gravel	light brown	loose	med			
0.0								

File ID of digital photograph(s): S-08D-C008-033-00-12 JPG

Comments:



S-08D-0008-033-00-12

12/3/08

TOP



Bottom

Station ID: 008-028 Time On Station: 1108 All measurements are ±0.1 feet
 Core Sample ID: S-08D-008-028-0-15 Northing (NAD 83): 2708704.43 Water Depth (A): 4.1
 Logged by: AEM Easting (NAD 83): 815400.27 Length of push core assembly (B): 8.0
 Collection Mechanism: Push-Core GPS Accuracy: 3.68 Water surface to top of handle (C): 2.4
 Date: 12/3/08 Predicted Tide (ft): _____ Length of core (from bottom) (D): 1.5
 Time of Collection: 1112 Surveyed elevation (NVGD 29) (E): NA
 Survey Type: Pre-Dredge Prog-Dredge Post-Dredge Time Depart Station: 1116 Water surface from surveyed elevation (F): NA
 AWS

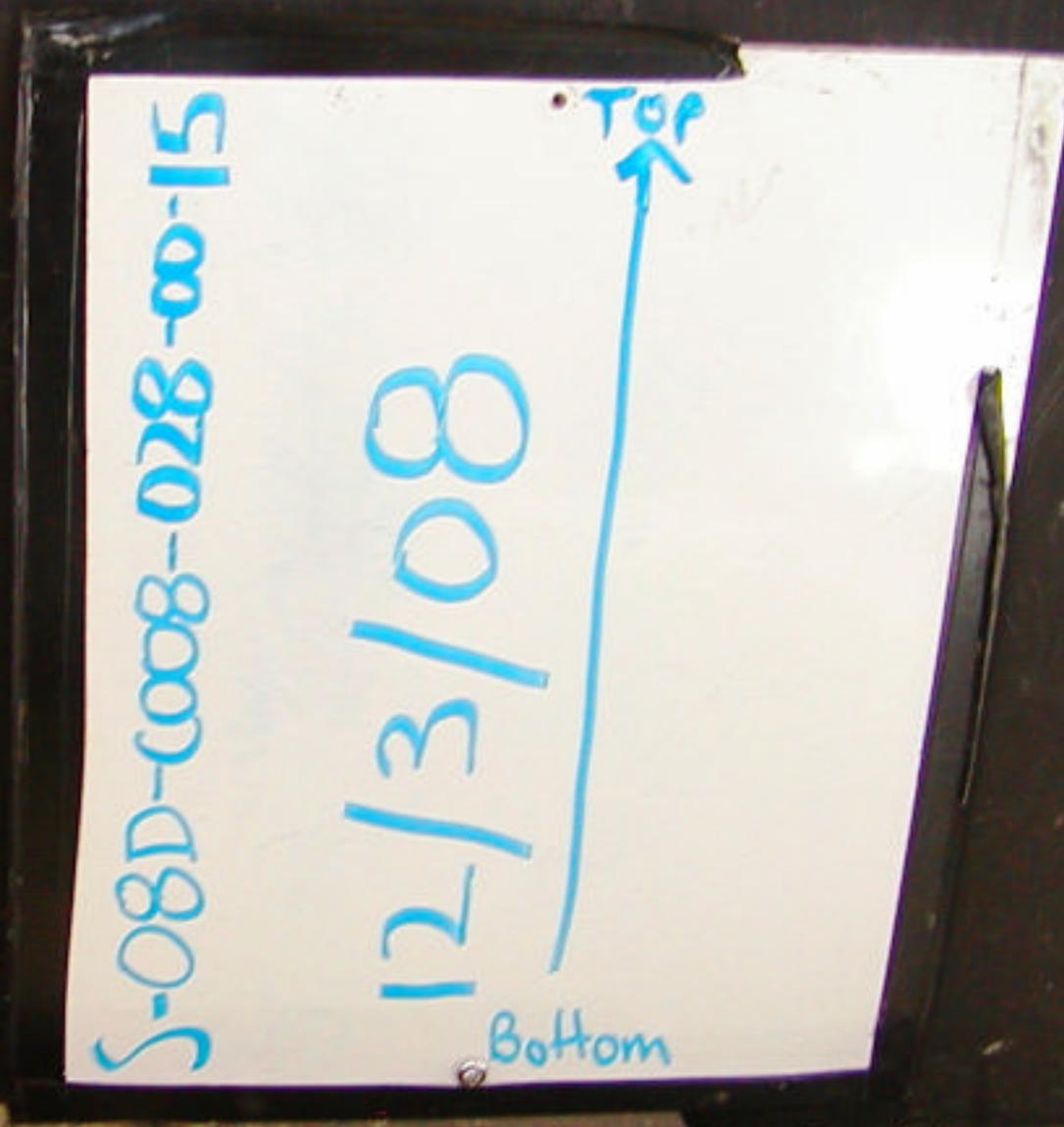
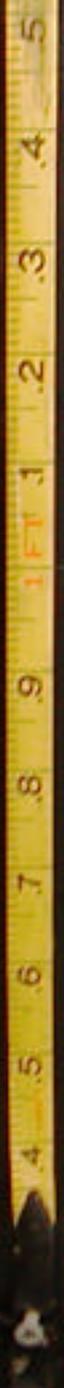
Calculations for Determination of Z* Elevation

- (G) Elevation of Water Surface (NVGD): $E - F$ _____
 (H) Elevation of the bottom of the core (NVGD): $G - (B - C)$ _____
 (z*) Elevation of visual transition (NVGD): $H + (\text{distance to visual transition})$ _____
 (I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$ _____
 (I₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$ _____
 (Note if I ≠ I₂ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
0.7		silt organic mat.	dark black	loose	small			
0.0		sand + clay	light gray Bottom firm		med			

File ID of digital photograph(s): S-08D-008-028-00-15-5PG

Comments:



S-08D-C008-028-00-15

12/3/08

TOP

Bottom



Battelle <i>The Business of Innovation</i>	Project Name: New Bedford Harbor Environmental Monitoring	Project #: G606422
	Location: New Bedford, MA	Vessel: R/V Gale Force
	Client: USACE NAE	Chief Scientist:

Station ID: <u>008-023</u>	Time On Station: <u>11:19</u>	All measurements are ±0.1 feet
Core Sample ID: <u>S-08D-008-023-00-14</u>	Northing (NAD 83): <u>2708814.59</u>	Water Depth (A): <u>4.3</u>
Logged by: <u>AEM</u>	Easting (NAD 83): <u>815412.09</u>	Length of push core assembly (B): <u>8.0</u>
Collection Mechanism: <u>Push-Core</u>	GPS Accuracy: <u>3.99</u>	Water surface to top of handle (C): <u>2.1</u>
Date: <u>12/3/08</u>	Predicted Tide (ft):	Length of core (from bottom) (D): <u>1.4</u>
	Time of Collection: <u>11:26</u>	Surveyed elevation (NVGD 29) (E): <u>NA</u>
Survey Type: Pre-Dredge Prog-Dredge <u>Post-Dredge</u>	Time Depart Station: <u>11:29</u>	Water surface from surveyed elevation (F): <u>NA</u>

NWS

Calculations for Determination of Z* Elevation

- (G) Elevation of Water Surface (NVGD): $E - F$
 - (H) Elevation of the bottom of the core (NVGD): $G - (B - C)$
 - (Z*) Elevation of visual transition (NVGD): $H + (\text{distance to visual transition})$
 - (I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$
 - (I₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$
- (Note if I ≠ I₂ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
		sandy silt clay	dark Black/Brown	loose firm	small			

File ID of digital photograph(s): S-08D-008-023-00-14.5PG
 Comments:



S-08D-C008-023-00-14

12/3/08

Bottom

TOP

Station ID: 0008-016 Time On Station: 1132 All measurements are ± 0.1 feet
 Core Sample ID: S-08D-0008-016-00-11 Northing (NAD 83): 2708949.2 Water Depth (A): 4.0
 Logged by: NEM Easting (NAD 83): 915397.87 Length of push core assembly (B): 8.1
 Collection Mechanism: Push-Core GPS Accuracy: 3.52 Water surface to top of handle (C): 28
 Date: 12/3/08 Predicted Tide (ft): _____ Length of core (from bottom) (D): 1.1
 Time of Collection: 1140 Surveyed elevation (NVGD 29) (E): NA
 Survey Type: Pre-Dredge Prog-Dredge Post-Dredge Time Depart Station: 1145 Water surface from surveyed elevation (F): NA

Calculations for Determination of Z* Elevation

- (G) Elevation of Water Surface (NVGD): $E - F$
 - (H) Elevation of the bottom of the core (NVGD): $G - (B - C)$
 - (z*) Elevation of visual transition (NVGD): $H +$ (distance to visual transition)
 - (I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$
 - (I₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$
- (Note if I \neq I₂ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (i.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.1		sand	grayish black		med.			
0.9								
0.0		silty clay some sand	not well mixed light brown	firm	fine			

File ID of digital photograph(s): S-08D-0008-016-00-11.JPG

Comments:



S-08D-C008-016-00-11

12/3/08

Bottom

TOP
↑

Battelle The Business of Innovation		Project Name: New Bedford Harbor Environmental Monitoring		Project #: G606422	
Location: New Bedford, MA		Client: USACE NAE		Vessel: R/V Gale Force	
Chief Scientist:					
Station ID: <u>0008-010</u>	Time On Station: <u>1151</u>	All measurements are ±0.1 feet			
Core Sample ID: <u>S-08D-0008-010-00-11</u>	Northing (NAD 83): <u>2709128.94</u>	Water Depth (A): <u>3.3</u>			
Logged by: <u>AEM</u>	Easting (NAD 83): <u>815353.74</u>	Length of push core assembly (B): <u>8.0</u>			
Collection Mechanism: <u>Push-Core</u>	GPS Accuracy: <u>2.98</u>	Water surface to top of handle (C): <u>3.3</u>			
Date: <u>12/3/08</u>	Predicted Tide (ft): _____	Length of core (from bottom) (D): <u>1.1</u>			
	Time of Collection: <u>1204</u>	Surveyed elevation (NVGD 29) (E): <u>NA</u>			
Survey Type: <u>Pre-Dredge</u> <u>Prog-Dredge</u> <u>Post-Dredge</u>	Time Depart Station: <u>1210</u>	Water surface from surveyed elevation (F): <u>NA</u>			

Calculations for Determination of Z* Elevation

- (G) Elevation of Water Surface (NVGD): $E - F$
 - (H) Elevation of the bottom of the core (NVGD): $G - (B - C)$
 - (z*) Elevation of visual transition (NVGD): $H + (\text{distance to visual transition})$
 - (I) Elevation of the sediment-water interface as measured from bottom of core (NVGD): $H + D$
 - (I₂) Elevation of the sediment-water interface as measured from water depth (NVGD): $G - A$
- (Note if I ≠ I₂ within ± 1.0 feet, discard and resample)

Elevation (NVGD) (I.e. Bottom = H)	Lithology - Include USCS code	Type	Color	Consistency	Maximum particle size	Odor	Sample IDs	Comments
1.1		→ sand (coarse) ← silt	dark gray black	firm	med-large coarse			uniform color
0.0								

File ID of digital photograph(s): S-08D-0008-010-00-11.JPG

Comments:



S-08D-C008-010-00-11

12/3/08

Bottom

TOP

OU3 Pilot Cap Samples

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Station Log for Benthic Sediment Grab Samples

Project Name: New Bedford Harbor Environmental Monitoring
Project Number: G606422
Client: USACE NAE

Location: New Bedford MA
Chief Scientist: Matt Fitzpatrick
Vessel: Gale Force

Field Measurements

Survey ID: 2008 OU3	Station Depth (ft): <u>8.2</u>	Grab Size: 0.1-m ²
Station ID: <u>0017</u>	Time on Station: <u>0925</u>	Analyses: PCB
Date: <u>10/6/08</u>	Time off Station: <u>0940</u>	
Recorded by: <u>JMT</u>		
① Attempt #1		
Northing: 2686803.33 <u>2686800.94</u>		
Easting: 817188.6 <u>817191.41</u>		
Collection Time: <u>0934</u>		
Sample ID: <u>S-08B-0017-00-03</u>		
Sample Description: <u>Grey f. sand some algal mat tubes some shell husk</u>		

Attempt #2		Grab Size: 0.1-m ²
Northing:		Analyses: PCB
Easting:		
Collection Time:		
Sample ID:		
Sample Description:		

Additional Comments:

Field Measurements

Survey ID: 2008 OU3	Station Depth (ft): <u>10.1</u>	Grab Size: 0.1-m ²
Station ID: <u>0016</u>	Time on Station: <u>0951</u>	Analyses: PCB
Date: <u>10/6/08</u>	Time off Station: <u>1010</u>	
Recorded by: <u>MRF</u>		
Attempt #1		
Northing: <u>2686837.18</u>		
Easting: <u>817325.12</u>		
Collection Time: <u>0954</u>		
Sample ID: <u>S-08B-0016-00-03</u>		
Sample Description: <u>grey/brown lots of seaweed slipper limpet shells</u>		
<u>Valley location</u>		

Attempt #2		Grab Size: 0.1-m ²
Northing: <u>2686837.18</u>		Analyses: PCB
Easting: <u>817325.12</u>		
Collection Time: <u>1005</u>		
Sample ID: <u>S-08B-0016-00-03-REP</u>		
Sample Description: <u>seaweed slipper limpets</u>		

Additional Comments: ① repositioned

Station Log for Benthic Sediment Grab Samples

Project Name: New Bedford Harbor Environmental Monitoring
Project Number: G606422
Client: USACE NAE

Location: New Bedford MA
Chief Scientist: Matt Fitzpatrick
Vessel: Gale Force

Field Measurements

Survey ID: 2008 OU3	Station Depth (ft): <u>9.1</u>	
Station ID: <u>0U15</u>	Time on Station: <u>1020</u>	
Date:	Time off Station: <u>1031</u>	
Recorded by: <u>MRF</u>		
Attempt #1		Grab Size: 0.1-m ²
Northing: <u>2686715.37</u>		Analyses: PCB
Easting: <u>817494.27</u>		
Collection Time: <u>1023</u> <u>1026</u>		
Sample ID: <u>S-08B-0U15-00-03</u>		
Sample Description: <u>olive brown silty f. sand, some tubes, shellfish + seaweed</u>		

Attempt #2		Grab Size: 0.1-m ²
Northing:		Analyses: PCB
Easting:		
Collection Time:		
Sample ID:		
Sample Description:		

Additional Comments:

Field Measurements

Survey ID: 2008 OU3	Station Depth (ft): <u>9.0</u>	
Station ID: <u>0U14</u>	Time on Station: <u>1043</u>	
Date: <u>10/4/09</u>	Time off Station: <u>1049</u>	
Recorded by: <u>MRF</u>		
Attempt #1		Grab Size: 0.1-m ²
Northing: <u>2686643.80</u>		Analyses: PCB
Easting: <u>817323.85</u>		
Collection Time: <u>1046</u>		
Sample ID: <u>S-08B-0U14-00-03</u>		
Sample Description: <u>light tan very f. sand seaweed minor shell trash</u>		

Attempt #2		Grab Size: 0.1-m ²
Northing:		Analyses: PCB
Easting:		
Collection Time:		
Sample ID:		
Sample Description:		

Additional Comments:

Station Log for Benthic Sediment Grab Samples

Project Name: New Bedford Harbor Environmental Monitoring
Project Number: G606422
Client: USACE NAE

Location: New Bedford MA
Chief Scientist: Matt Fitzpatrick
Vessel: Gale Force

Field Measurements

Survey ID: 2008 OU3	Station Depth (ft): <u>11.1</u>	Grab Size: 0.1-m ²
Station ID: <u>OU12</u>	Time on Station: <u>1107</u>	Analyses: PCB
Date: <u>10/6/08</u>	Time off Station: <u>1114</u>	
Recorded by: <u>MRF</u>		
Attempt #1		
Northing: <u>2686489.87</u>		
Easting: <u>817490.14</u>		
Collection Time: <u>1108</u>		
Sample ID: <u>S-088-OU12-00-03</u>		
Sample Description: <u>lots of seaweed slipper limpets</u> <u># 1 ft. grey brown very f. silty sand</u>		
<u>Valley location</u>		

Attempt #2		Grab Size: 0.1-m ²
Northing:		Analyses: PCB
Easting:		
Collection Time:		
Sample ID:		
Sample Description:		

Additional Comments:

Field Measurements

Survey ID: 2008 OU3	Station Depth (ft): <u>9.1</u>	Grab Size: 0.1-m ²
Station ID: <u>OU13</u>	Time on Station: <u>1125</u>	Analyses: PCB
Date: <u>10/6/08</u>	Time off Station:	
Recorded by: <u>MRF</u>		
Attempt #1		
Northing: <u>2686395.40</u>		
Easting: <u>817310.32</u>		
Collection Time: <u>1127</u>		
Sample ID: <u>S-088-OU13-00-03</u>		
Sample Description: <u>shell hash thin algae mat a few small tubes</u> <u>very f. silty sandy silt</u> <u>more silt than sand. MRF 10/6/08</u>		

Attempt #2		Grab Size: 0.1-m ²
Northing:		Analyses: PCB
Easting:		
Collection Time:		
Sample ID:		
Sample Description:		

Additional Comments:

Station Log for Benthic Sediment Grab Samples

Project Name: New Bedford Harbor Environmental Monitoring
Project Number: G606422
Client: USACE NAE

Location: New Bedford MA
Chief Scientist: Matt Fitzpatrick
Vessel: Gale Force

Field Measurements

Survey ID: 2008 OU3	Station Depth (ft): <u>9.1</u>	
Station ID: <u>OU11</u>	Time on Station: <u>1142</u>	
Date: <u>10/6/08</u>	Time off Station: <u>1158</u>	
Recorded by: <u>MCF</u>		
Attempt #1		Grab Size: 0.1-m ²
1st grab NG 2 rak	Northing: <u>2686374.39</u>	Analyses: PCB
2nd grab VG washout	Easting: <u>817641.09</u>	
3rd grab washout	Collection Time: <u>1146 1148 1151 1153</u>	
	Sample ID: <u>S-08B-OU11-00-03</u>	

Sample Description: f-m sand tubases

Attempt #2		Grab Size: 0.1-m ²
	Northing:	Analyses: PCB
	Easting:	
	Collection Time:	
	Sample ID:	

Sample Description:

Additional Comments:

Field Measurements

Survey ID: 2008 OU3	Station Depth (ft): <u>10.9</u>	
Station ID: <u>OU10</u>	Time on Station: <u>12:11</u>	
Date: <u>10/6/08</u>	Time off Station: <u>1223</u>	
Recorded by: <u>MRF</u>		
Attempt #1		Grab Size: 0.1-m ²
	Northing: <u>2686249.50</u>	Analyses: PCB
	Easting: <u>817478.51</u>	
	Collection Time: <u>1214</u>	
	Sample ID: <u>S-08B-OU10-00-03</u>	

Sample Description: limpets, rats, f. sand brown, seaweed

Attempt #2		Grab Size: 0.1-m ²
	Northing:	Analyses: PCB
	Easting:	
	Collection Time:	
	Sample ID:	

Sample Description:

Additional Comments:

Station Log for Benthic Sediment Grab Samples

Project Name: New Bedford Harbor Environmental Monitoring
Project Number: G606422
Client: USACE NAE

Location: New Bedford MA
Chief Scientist: Matt Fitzpatrick
Vessel: Gale Force

Field Measurements

Survey ID: **2008 OU3** Station Depth (ft): 10.9
 Station ID: 0009 Time on Station: 1245
 Date: 10/6/08 Time off Station: 1253
 Recorded by: mrf

Attempt #1

Grab Size: 0.1-m²

Northing: 2686125.16 Analyses: PCB
 Easting: 817487.92
 Collection Time: 1247
 Sample ID: S-08B-0009-00-03

Sample Description: seaweed skull hash
light brown f. sand

Attempt #2

Grab Size: 0.1-m²

Northing: Analyses: PCB
 Easting:
 Collection Time:
 Sample ID:

Sample Description:

Additional Comments:

Collect blanks @ 1305

Field Measurements

Survey ID: **2008 OU3** Station Depth (ft): 8.6
 Station ID: 0001 Time on Station: 1349
 Date: 10/6/08 Time off Station: 1405
 Recorded by:

Attempt #1

Grab Size: 0.1-m²

1350 - No grab
1353 - " " Northing: 2685668.74 Analyses: PCB
1356 - No grab Easting: 817983.57
 Collection Time: 1350 1400
 Sample ID: S-08B-0001-00-03

Sample Description: light grey tan f. sandy silt w/ pebbles some algae +
sample from ridge biocrusts

Attempt #2

Grab Size: 0.1-m²

Northing: Analyses: PCB
 Easting:
 Collection Time:
 Sample ID:

Sample Description:

Additional Comments:

Station Log for Benthic Sediment Grab Samples

Project Name: New Bedford Harbor Environmental Monitoring
Project Number: G606422
Client: USACE NAE

Location: New Bedford MA
Chief Scientist: Matt Fitzpatrick
Vessel: *Gale Force*

Field Measurements

Survey ID: 2008 OU3	Station Depth (ft): <u>11.0</u>	
Station ID: <u>0U03</u>	Time on Station: <u>1421</u>	
Date: <u>10/6/03</u>	Time off Station: <u>1430</u>	
Recorded by: <u>MRF</u>		
<u>H24-06-0P</u>	Attempt #1	Grab Size: 0.1-m ²
	Northing: <u>2685852.81</u>	Analyses: PCB
	Easting: 817888.21 <u>817883.21</u>	
	Collection Time: <u>1424</u> <u>1426</u>	
	Sample ID: <u>S-08B-0U03-00-03</u>	

Sample Description: F. sand
limpits, worm tubes, shell hash, + seaweed

Attempt #2

		Grab Size: 0.1-m ²
	Northing:	Analyses: PCB
	Easting:	
	Collection Time:	
	Sample ID:	

Sample Description:

Additional Comments:

Field Measurements

Survey ID: 2008 OU3	Station Depth (ft): <u>13.2</u>	
Station ID: <u>0U02</u>	Time on Station: <u>1448</u>	
Date: <u>10/6/08</u>	Time off Station: <u>1510</u>	
Recorded by: <u>MRF</u>		
<u>10/6/08</u>	Attempt #1	Grab Size: 0.1-m ²
	Northing: <u>2685869.99</u>	Analyses: PCB
	Easting: <u>818148.87</u>	
	Collection Time: <u>1449</u>	
	Sample ID: <u>S-08B-0U02-00-03</u>	

Sample Description: F. Sandy silt seaweed
anoxic small QA Split Collected
sm shrimp

Attempt #2

		Grab Size: 0.1-m ²
	Northing:	Analyses: PCB
	Easting:	
	Collection Time:	
	Sample ID:	

Sample Description:

Additional Comments:
① S/B 10/6/08 MRF

Station Log for Benthic Sediment Grab Samples

Project Name: New Bedford Harbor Environmental Monitoring
Project Number: G606422
Client: USACE NAE

Location: New Bedford MA
Chief Scientist: Matt Fitzpatrick
Vessel: Gale Force

Field Measurements

Survey ID: 2008 OU3	Station Depth (ft): <u>9.3</u>	
Station ID: <u>0U08</u>	Time on Station: <u>0843</u>	
Date: <u>10/7/08</u>	Time off Station: <u>0904</u>	
Recorded by: <u>MRF</u>		
<u>0851 - NG w/short</u>	Attempt #1	Grab Size: 0.1-m ²
<u>0852 "</u>	Northing: <u>2686233.99</u>	Analyses: PCB
	Easting: <u>817749.23</u>	
	Collection Time: <u>0851 0852 0857</u>	
	Sample ID: <u>S-08B-0U08-00-03</u>	
Sample Description: <u>dark brown f-m sand w/ pebbles + shell hash</u>		

	Attempt #2	Grab Size: 0.1-m ²
	Northing:	Analyses: PCB
	Easting:	
	Collection Time:	
	Sample ID:	
Sample Description:		

Additional Comments:

Field Measurements

Survey ID: 2008 OU3	Station Depth (ft): <u>11.8</u>	
Station ID: <u>0U06</u>	Time on Station: <u>0911</u>	
Date: <u>10/7/08</u>	Time off Station:	
Recorded by: <u>MRF</u>		
<u>0912 - NG OP</u>	Attempt #1	Grab Size: 0.1-m ²
<u>0915 "</u>	Northing: <u>2686142.94</u>	Analyses: PCB
<u>0920 - NG-H1</u>	Easting: <u>817983.68</u>	
<u>the same spot</u>	Collection Time: <u>0912 0915 0925</u>	
	Sample ID: <u>S-08B-0U06-00-03</u>	
Sample Description: <u>algae, limpts</u> <u>grey brown f. sandy silt w/ algal mat</u>		

	Attempt #2	Grab Size: 0.1-m ²
	Northing:	Analyses: PCB
	Easting:	
	Collection Time:	
	Sample ID:	
Sample Description:		

Additional Comments:

Station Log for Benthic Sediment Grab Samples

Project Name: New Bedford Harbor Environmental Monitoring
Project Number: G606422
Client: USACE NAE

Location: New Bedford MA
Chief Scientist: Matt Fitzpatrick
Vessel: *Gale Force*

Field Measurements

Survey ID: 2008 OU3	Station Depth (ft): <u>11.7</u>	Grab Size: 0.1-m ²
Station ID: <u>0U05</u>	Time on Station: <u>0944</u>	
Date: <u>10/7/08</u>	Time off Station: _____	Analyses: PCB
Recorded by: <u>MRF</u>		
<u>0945</u>	Attempt #1	
	Northing: <u>2686187.28</u>	
	Easting: <u>818195.19</u>	
	Collection Time: <u>0945</u>	
	Sample ID: <u>S-08B-0U05-00-03</u>	

Sample Description: F-M sand brown tubes + Algal mat

	Attempt #2	Grab Size: 0.1-m ²
	Northing:	Analyses: PCB
	Easting:	
	Collection Time:	
	Sample ID:	

Sample Description: _____

Additional Comments: _____

Field Measurements

Survey ID: 2008 OU3	Station Depth (ft): <u>12.4</u>	Grab Size: 0.1-m ² <u>0.04m²</u>
Station ID: <u>0U04</u>	Time on Station: <u>1008</u>	
Date: <u>10/7/08</u>	Time off Station: _____	Analyses: PCB
Recorded by: <u>MRF</u>		
<u>1009</u>	Attempt #1	
	Northing: <u>2686006.17</u>	
	Easting: <u>818038.56</u>	
	Collection Time: <u>1009</u>	
	Sample ID: <u>S-08B-0U04-00-03</u>	

Sample Description: brown/grey very f. sandy silt sea lettuce

	Attempt #2	Grab Size: 0.1-m ² <u>0.04m²</u>
	Northing:	Analyses: PCB
	Easting:	
	Collection Time:	
	Sample ID:	

Sample Description: _____

Additional Comments: _____

Station Log for Benthic Sediment Grab Samples

Project Name: New Bedford Harbor Environmental Monitoring
Project Number: G606422
Client: USACE NAE

Location: New Bedford MA
Chief Scientist: Matt Fitzpatrick
Vessel: Gale Force

Field Measurements

Survey ID: 2008 OU3	Station Depth (ft): <u>9.3</u>	Grab Size: 0.1-m ² <u>(0.04m²)</u>
Station ID: <u>0007</u>	Time on Station: <u>1041</u>	Analyses: PCB
Date: <u>10/7/08</u>	Time off Station: <u>1648</u>	
Recorded by: <u>MRF</u>		
Attempt #1		
Northing: <u>2686017.39</u>		
Easting: <u>817778.95</u>		
Collection Time: <u>1043</u>		
Sample ID: <u>S-08B-0007-00-03</u>		

Sample Description:
Grey/brown w/ algal mat sloped on 1 side
P. sandy silt

Attempt #2		Grab Size: 0.1-m ²
Northing:		Analyses: PCB
Easting:		
Collection Time:		
Sample ID:		

Sample Description:

Additional Comments:

Field Measurements

Survey ID: 2008 OU3	Station Depth (ft): _____	Grab Size: 0.1-m ²
Station ID: _____	Time on Station: _____	Analyses: PCB
Date: _____	Time off Station: _____	
Recorded by: _____		
Attempt #1		
Northing:		
Easting:		
Collection Time:		
Sample ID:		

Sample Description:

Attempt #2		Grab Size: 0.1-m ²
Northing:		Analyses: PCB
Easting:		
Collection Time:		
Sample ID:		

Sample Description:

Additional Comments:

Appendix B

PCB Analytical Data

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Pierce Mill Cove

Post-dredge Sediment Cores

- PCB Analytical Results**
- QA/QC Summaries and Data**
 - Lab Qualifiers**
 - Chain of Custodies**

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Appendix B

2008 Post-Dredge Sediment PCB Analytical Results

Station Id	bb28			CC27			D25		
Collection Date	12/05/2008			12/05/2008			12/05/2008		
Fraction	TOTAL			TOTAL			TOTAL		
Field Qc Code	SA			SA			SA		
Samp Id	S-08C-bb28-00-10			S-08C-CC27-00-09			S-08C-D25-00-07		
Description	Result	Final Qual	Unit	Result	Final Qual	Unit	Result	Final Qual	Unit
2,4'-Dicb	0.14		MG/KG_DRYWT	0.53		MG/KG_DRYWT	0.29		MG/KG_DRYWT
2,2',5'-Tricb	0.27		MG/KG_DRYWT	1.24		MG/KG_DRYWT	0.6		MG/KG_DRYWT
2,4,4'-Tricb	0.65		MG/KG_DRYWT	3.01		MG/KG_DRYWT	1.3		MG/KG_DRYWT
2,2',3,5'-Tetracb	0.35		MG/KG_DRYWT	2.4	p	MG/KG_DRYWT	0.83		MG/KG_DRYWT
2,2',5,5'-Tetracb	0.67		MG/KG_DRYWT	4.2		MG/KG_DRYWT	1.44		MG/KG_DRYWT
2,3',4,4'-Tetracb	0.26		MG/KG_DRYWT	0.69		MG/KG_DRYWT	0.62		MG/KG_DRYWT
2,2',4,5,5'-Pentacb	0.36		MG/KG_DRYWT	1.25		MG/KG_DRYWT	0.97		MG/KG_DRYWT
2,3,3',4,4'-Pentacb	0.08		MG/KG_DRYWT	0.21		MG/KG_DRYWT	0.24		MG/KG_DRYWT
2,3',4,4',5'-Pentacb	0.36		MG/KG_DRYWT	1.15		MG/KG_DRYWT	0.93		MG/KG_DRYWT
2,2',3,3',4,4'-Hexacb	0.05		MG/KG_DRYWT	0.2		MG/KG_DRYWT	0.15		MG/KG_DRYWT
2,2',3,4,4',5'-Hexacb	0.24		MG/KG_DRYWT	1.13		MG/KG_DRYWT	0.73		MG/KG_DRYWT
2,2',4,4',5,5'-Hexacb	0.33		MG/KG_DRYWT	1.54		MG/KG_DRYWT	0.88		MG/KG_DRYWT
2,2',3,3',4,4',5'-Heptacb	0.04		MG/KG_DRYWT	0.17		MG/KG_DRYWT	0.09		MG/KG_DRYWT
2,2',3,4,4',5,5'-Heptacb	0.04		MG/KG_DRYWT	0.23		MG/KG_DRYWT	0.12		MG/KG_DRYWT
2,2',3,4',5,5',6-Heptacb	0.03		MG/KG_DRYWT	0.22		MG/KG_DRYWT	0.08		MG/KG_DRYWT
2,2',3,3',4,4',5,6-Octacb	0.02	U	MG/KG_DRYWT	0.03	p	MG/KG_DRYWT	0.01	pJ	MG/KG_DRYWT
2,2',3,3',4,4',5,5',6-Nonacb	0.02	U	MG/KG_DRYWT	0.02	J	MG/KG_DRYWT	0.01	J	MG/KG_DRYWT
Decacb - Congener	0.02	U	MG/KG_DRYWT	0.03	U	MG/KG_DRYWT	0.02	U	MG/KG_DRYWT
Total PCB Congeners (sum CONG x factor)	10.		MG/KG_DRYWT	47.		MG/KG_DRYWT	24.		MG/KG_DRYWT
Total MonoCB	0.04	U	MG/KG_DRYWT						
Total DiCB	0.59		MG/KG_DRYWT						
Total TriCB	2.88		MG/KG_DRYWT						
Total TetraCB	3.6		MG/KG_DRYWT						
Total PentaCB	2.58		MG/KG_DRYWT						
Total HexaCB	1.43		MG/KG_DRYWT						
Total HeptaCB	0.3	J	MG/KG_DRYWT						
Total OctaCB	0.01	J	MG/KG_DRYWT						
Total NonaCB	0.06	U	MG/KG_DRYWT						
DecaCB - Homologue	0.02	U	MG/KG_DRYWT						
Total PCB Homologues (sum HOM)	11.		MG/KG_DRYWT						

Appendix B

2008 Post-Dredge Sediment PCB Analytical Results

Station Id	X33		
Collection Date	12/05/2008		
Fraction	TOTAL		
Field Qc Code	SA		
Samp Id	S-08C-X33-00-11		
Description	Result	Final Qual	Unit
2,4'-Dicb	0.5		MG/KG_DRYWT
2,2',5'-Tricb	1.08		MG/KG_DRYWT
2,4,4'-Tricb	2.3		MG/KG_DRYWT
2,2',3,5'-Tetracb	1.39		MG/KG_DRYWT
2,2',5,5'-Tetracb	2.38		MG/KG_DRYWT
2,3',4,4'-Tetracb	1.29		MG/KG_DRYWT
2,2',4,5,5'-Pentacb	2.17		MG/KG_DRYWT
2,3,3',4,4'-Pentacb	0.37		MG/KG_DRYWT
2,3',4,4',5'-Pentacb	1.93		MG/KG_DRYWT
2,2',3,3',4,4'-Hexacb	0.22		MG/KG_DRYWT
2,2',3,4,4',5'-Hexacb	1.24		MG/KG_DRYWT
2,2',4,4',5,5'-Hexacb	1.67		MG/KG_DRYWT
2,2',3,3',4,4',5'-Heptacb	0.17		MG/KG_DRYWT
2,2',3,4,4',5,5'-Heptacb	0.23		MG/KG_DRYWT
2,2',3,4',5,5',6'-Heptacb	0.16		MG/KG_DRYWT
2,2',3,3',4,4',5,6'-Octacb	0.02	pJ	MG/KG_DRYWT
2,2',3,3',4,4',5,5',6'-Nonacb	0.02	J	MG/KG_DRYWT
Decacb - Congener	0.03	U	MG/KG_DRYWT
Total PCB Congeners (sum CONG x factor)	45.		MG/KG_DRYWT
Total MonoCB	0.05	J	MG/KG_DRYWT
Total DiCB	1.83		MG/KG_DRYWT
Total TriCB	10.79		MG/KG_DRYWT
Total TetraCB	14.81		MG/KG_DRYWT
Total PentaCB	13.52		MG/KG_DRYWT
Total HexaCB	6.31		MG/KG_DRYWT
Total HeptaCB	1.28		MG/KG_DRYWT
Total OctaCB	0.22	J	MG/KG_DRYWT
Total NonaCB	0.04	J	MG/KG_DRYWT
DecaCB - Homologue	0.01	J	MG/KG_DRYWT
Total PCB Homologues (sum HOM)	49.		MG/KG_DRYWT

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PCB Congeners – Sediment QA/QC Summary
Batch 09-0015

PROJECT: USACE – New Bedford Harbor Environmental Monitoring
PARAMETER: PCB Congeners
LABORATORY: Battelle, Duxbury, MA
MATRIX: Sediment
SAMPLE CUSTODY: Sediment samples were collected between 12/3/2008 – 12/5/2008 and hand delivered to the Battelle Duxbury Chemistry Sample Custodian on 1/14/2009. The samples were received in good condition and no custody issues were noted. Samples were logged into Battelle LIMS and received unique IDs. They were stored in the walk-in freezer until preparation could begin.

	Reference Method	Method Blank	Surrogate Recovery	LCS Recovery	MS Recovery	MS/MSD Relative Percent Difference	Detection Limits (mg/kg dry wt)
PCB Congeners	EPA 8082M	<ssRL	40-120% Recovery	40-120% Recovery	40-120% Recovery	≤30% RPD (analyte conc. in MS must be >5x background) (analytes must be > 5x MDL to be used for data quality assessment)	RL: 0.03

METHOD: Sediment samples were extracted for PCB congeners following modified EPA Method 3545. Sediments were air-dried overnight, and approximately 5 g of sediment was spiked with surrogates and extracted using an Accelerated Solvent Extractor (ASE). The extract was concentrated, processed through activated copper, florisil cleanup column, and concentrated. Next, the extract was concentrated, fortified with internal standards (IS), and then analyzed using gas chromatography/electron capture detector (GC/ECD), following modified EPA Method 8082. Sample data were quantified by the method of internal standards, using the spiked IS compounds.

HOLDING TIMES: Sediments of this batch were extracted within 1 year of sample holding time for frozen sediments. All extracts were analyzed within 40 days of extract holding time.

Batch	Collection Date	Extraction Date	Analysis Date
09-0015	12/03/2008 – 12/05/2008	1/29/2009	2/13/2009 – 2/15/2009

09-0015

Sample ID	Battelle ID
S-08D-C008-049-00-05	Q6160
S-08D-C008-023-00-05	Q6161
S-08C-X33-00-11	Q6171
S-08C-T38-00-10	Q6172
S-08C-CC27-00-09	Q6173
S-08C-T22-00-04	Q6174
S-08C-D32-00-05	Q6175
S-08C-D25-00-07	Q6176
S-08C-bb28-00-10	Q6177

PCB Congeners – Sediment QA/QC Summary

Batch 09-0015

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.

09-0015 – No target analytes were detected in the procedural blank.

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.

09-0015 – No exceedences noted. All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%).

MATRIX SPIKE/MATRIX SPIKE DUPLICATE: A pair of matrix spike (MS) and matrix spike duplicate samples (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 was calculated to measure the data quality in terms of precision.

09-0015 – No exceedences noted. All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%). All RPDs met the criteria of <30%.

REPLICATES: Laboratory duplicate analysis was performed with this analytical batch. RPDs between duplicate analyses were calculated to measure data quality in terms of precision.

09-0015 – No exceedences noted. All RPDs between duplicate samples met the criteria of <30%.

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).

09-0015 – No exceedences noted. All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%).

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 %D between the initial calibration (ICAL) and the continuing calibration samples should be <20% for each compound, <15% on average. Additionally an Initial Calibration Check (ICC) sample is run immediately following the ICAL. The ICC is to have a percent difference < 20%.

09-0015 – All calibration criteria were met.



The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID 060208-03: Sand,
White Quartz, -50+70

Battelle ID BM761LCS-P
Sample Type LCS
Collection Date 01/29/09
Extraction Date 01/29/09
Analysis Date 02/14/09
Analytical Instrument ECD
% Moisture NA
% Lipid NA
Matrix SEDIMENT
Sample Size 10.51
Size Unit-Basis G_DRY
Units MG/KG_DRY

Target % Recovery Qualifier

Units	MG/KG_DRY	Target	% Recovery	Qualifier
Cl2(8)	0.31	0.38	81	
Cl3(18)	0.3	0.38	79	
Cl3(28)	0.29	0.38	76	
Cl4(44)	0.29	0.38	76	
Cl4(52)	0.28	0.38	74	
Cl4(66)	0.27	0.38	71	
Cl5(101)	0.28	0.38	73	
Cl5(105)	0.32	0.38	84	
Cl5(118)	0.29	0.38	76	
Cl6(128)	0.29	0.38	76	
Cl6(138)	0.28	0.38	73	
Cl6(153)	0.31	0.38	81	
Cl7(170)	0.3	0.38	78	
Cl7(180)	0.3	0.38	79	
Cl7(187)	0.29	0.38	76	
Cl8(195)	0.3	0.38	79	
Cl9(206)	0.31	0.38	81	
Cl10(209)	0.32	0.38	84	

Surrogate Recoveries (%)

Cl3(34) 76
Cl6(152) 80



The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Table with columns: Client ID, Battelle ID, Sample Type, Collection Date, Extraction Date, Analysis Date, Analytical Instrument, % Moisture, % Lipid, Matrix, Sample Size, Size Unit-Basis, Units, MG/KG_DRY, Target, % Recovery, Qualifier. Rows include various PCB congeners (CI2-10) and their respective measurements and recovery percentages.

Surrogate Recoveries (%)

Table with columns: Congener ID, Value 1, Value 2. Rows: CI3(34) with values 71 and 77; CI6(152) with values 77 and 82.



The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID S-08C-T38-00-10

Battelle ID Q6172MSD-P
Sample Type MSD
Collection Date 12/5/2008
Extraction Date 1/29/2009
Analysis Date 2/14/2009
Analytical Instrument ECD
% Moisture 39.01
% Lipid NA
Matrix SEDIMENT
Sample Size 6.51
Size Unit-Basis G_DRY

Units	MG/KG_DRY		Target	% Recovery	Qualifier	RPD (%)	Qualifier
Cl2(8)	0.65		0.62	83		2.4	
Cl3(18)	0.77	E	0.62	80		0.0	
Cl3(28)	1.17	E	0.62	91		9.2	
Cl4(44)	0.85	E	0.62	80		1.2	
Cl4(52)	1.07	E	0.61	76		6.4	
Cl4(66)	0.9	E	0.62	83		27.1	
Cl5(101)	1.06	E	0.62	78		6.2	
Cl5(105)	0.61		0.62	81		3.6	
Cl5(118)	1.05	E	0.62	81		3.6	
Cl6(128)	0.53		0.62	74		2.7	
Cl6(138)	0.81	E	0.62	76		6.4	
Cl6(153)	0.94	E	0.62	78		6.2	
Cl7(170)	0.53		0.62	79		2.5	
Cl7(180)	0.55		0.62	79		2.5	
Cl7(187)	0.5		0.62	75		3.9	
Cl8(195)	0.5		0.62	81		2.4	
Cl9(206)	0.52		0.62	83		1.2	
Cl10(209)	0.53		0.62	86		0.0	

Surrogate Recoveries (%)

Cl3(34) 82
Cl6(152) 78



The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Table with columns: Client ID, Battelle ID, Sample Type, Collection Date, Extraction Date, Analysis Date, Analytical Instrument, % Moisture, % Lipid, Matrix, Sample Size, Size Unit-Basis, Units, and RPD/Qualifier. It compares data for two samples: S-08C-bb28-00-10 and S-08C-bb28-00-10.

Surrogate Recoveries (%)

Table showing surrogate recoveries for Cl3(34) and Cl6(152) across the two samples, with values 84 and 85 for the first sample, and 92 and 80 for the second.

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PCB Homologues – SEDIMENT QA/QC SUMMARY
Batch 09-0015

PROJECT: New Bedford Harbor Water Quality Monitoring
PARAMETER: PCB Homologues
LABORATORY: Battelle, Duxbury, MA
MATRIX: Sediment
SAMPLE CUSTODY: Sediment samples were collected between 12/3/2008 – 12/5/2008 and hand delivered to the Battelle Duxbury Chemistry Sample Custodian on 1/14/2009. The samples were received in good condition and no custody issues were noted. Samples were logged into Battelle LIMS and received unique IDs. They were stored in the walk-in freezer until preparation could begin. All sediment samples were extracted for PCB congener analyses by GC/ECD. 7.5% percent of the sediment samples were chosen for PCB homologue analysis. From this batch samples S-08D-C008-049-00-05, S-08D-C008-023-00-05, S-08C-X33-00-11, and S-08C-bb28-00-10 were analyzed for PCB homologues.

	Reference Method	Method Blank	Surrogate Recovery	LCS/MS/MSD Recovery	Sample Replicate Relative Precision	Reporting Limits (mg/Kg dry wt)
PCB Homologues	1668A & 8270D	< ss-RL	40-120%	40-120%	<30% RPD MS spike must be >5 x background MS spike must be >5 x background	0.03 – 0.84

METHOD: Sediment samples were extracted for PCBs following modified EPA Method 3545. Sediments were air-dried overnight, and approximately 5 g of sediment was spiked with surrogates and extracted using an Accelerated Solvent Extractor (ASE). The extract was concentrated, processed through activated copper, florisil cleanup column, and concentrated. Extracts were then fortified with internal standards (IS). Extracts designated for PCB homologue analysis were analyzed using gas chromatography/mass spectrometry (GC/MS), following Battelle SOP 5-315 which is based on key components of EPA Methods 1668A and 8270D. Sample data were quantified by the method of internal standards, using the IS compounds.

HOLDING TIMES: These frozen sediment samples were extracted within 1-year holding time. Extracts were analyzed within 40 days of extraction. All holding times were met.

<u>Batch</u>	<u>Collection Date</u>	<u>Extraction Date</u>	<u>Analysis Date</u>
09-0015	12/03/08-12/05/08	1/29/09	2/07/09-2/08/09

09-0015	Battelle ID
Sample ID	
S-08D-C008-049-00-05	Q6160
S-08D-C008-023-00-05	Q6161
S-08C-X33-00-11	Q6171
S-08C-bb28-00-10	Q6177

PCB Homologues – SEDIMENT QA/QC SUMMARY
Batch 09-0015

- 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.
- 09-0015** – No exceedences noted. No target analytes were detected in the procedural blank at a concentration greater than the sample-specific reporting limit.
- 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.
- 09-0015** – No exceedences noted. All recoveries were within the laboratory control limits (40%-120%).
- MATRIX SPIKE/MATRIX SPIKE DUPLICATE:** A pair of matrix spike (MS) and matrix spike duplicate samples (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 was calculated to measure the data quality in terms of precision.
- 09-0015** – No exceedences noted. All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%). All RPDs met the criteria of <30%.
- REPLICATES:** Laboratory duplicate analysis was performed with this analytical batch. RPDs between duplicate analyses were calculated to measure data quality in terms of precision.
- 09-0015** – No exceedences noted. All RPDs between duplicate samples met the criteria of <30%.
- 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).
- 09-0015** – No exceedences noted. All recoveries were within the laboratory control limits (40%-120%).
- CALIBRATION:** The GC/MS is calibrated with a minimum of a 6-point curve. The co-efficient of determination must be > 0.995 for each target analyte in the initial calibration (ICAL). Each batch of samples analyzed is bracketed by a continuing calibration verification (CCV) sample, run at a frequency of every 12 hours (minimally). This percent difference (PD) for the CCV should be <25% for individual analytes. Additionally an instrument calibration check (ICC) sample was run with the initial calibration. The PD for the ICC should be < 25% for each analyte.
- 09-0015** – No initial calibration exceedences noted.
No CCV exceedence.
No ICC exceedence.

Battelle

The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	060208-03: Sand, White Quartz, -50+70			
Battelle ID	BM760LCS-P			
Sample Type	LCS			
Collection Date	01/29/09			
Extraction Date	01/29/09			
Analysis Date	02/07/09			
Analytical Instrument	MS			
% Moisture	NA			
% Lipid	NA			
Matrix	SEDIMENT			
Sample Size	10.24			
Size Unit-Basis	G_DRY			
Units	MG/KG_DRY	Target	% Recovery	Qualifier
LOC 1	0.1	0.10	100	
LOC 2	0.17	0.15	115	
LOC 3	0.26	0.25	104	
LOC 4	0.47	0.45	105	
LOC 5	0.58	0.55	106	
LOC 6	0.57	0.55	104	
LOC 7	0.35	0.33	105	
LOC 8	0.28	0.30	94	
LOC 9	0.09	0.10	90	
LOC 10	0.04	0.05	79	

Surrogate Recoveries (%)

Cl3(34)	88
Cl6(152)	98

Battelle

The Business of Innovation

Project Client: USACE - North Atlantic Division

Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)

Project Number: G606422

Client ID	S-08C-X33-00-11	S-08C-X33-00-11			
Battelle ID	Q6171-P	Q6171MS-P			
Sample Type	SA	MS			
Collection Date	12/05/08	12/5/2008			
Extraction Date	01/29/09	1/29/2009			
Analysis Date	02/07/09	2/7/2009			
Analytical Instrument	MS	MS			
% Moisture	60.51	60.55			
% Lipid	NA	NA			
Matrix	SEDIMENT	SEDIMENT			
Sample Size	4.01	4.06			
Size Unit-Basis	G_DRY	G_DRY			
Units	MG/KG_DRY	MG/KG_DRY	Target	% Recovery	Qualifier
LOC 1	0.05 J	0.24	0.25	76	
LOC 2	1.83	2.16	0.37	89	
LOC 3	10.79	11.57	0.63	124	
LOC 4	14.81	15.85	1.13	92	
LOC 5	13.52	14.91	1.38	101	
LOC 6	6.31	7.57	1.38	92	
LOC 7	1.28	2.04	0.84	90	
LOC 8	0.22 J	0.91	0.75	92	
LOC 9	0.04 J	0.24	0.25	80	
LOC 10	0.01 J	0.1	0.13	70	

Surrogate Recoveries (%)

Cl3(34)	84	83
Cl6(152)	81	79

Battelle

The Business of Innovation

Project Client: USACE - North Atlantic Division

Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)

Project Number: G606422

Client ID S-08C-X33-00-11

Battelle ID Q6171MSD-P

Sample Type MSD

Collection Date 12/5/2008

Extraction Date 1/29/2009

Analysis Date 2/7/2009

Analytical Instrument MS

% Moisture 60.44

% Lipid NA

Matrix SEDIMENT

Sample Size 3.97

Size Unit-Basis G_DRY

Units	MG/KG_DRY	Target	% Recovery	Qualifier	RPD (%)	Qualifier
LOC 1	0.25	0.26	78		2.6	
LOC 2	3.02	0.38	313		111.4	
LOC 3	17.73	0.64	1080		158.8	
LOC 4	24.33	1.15	827		160.0	
LOC 5	22.62	1.41	644		145.8	
LOC 6	10.97	1.41	331		113.0	
LOC 7	2.65	0.86	159		55.4	
LOC 8	1.1	0.77	115		22.2	
LOC 9	0.27	0.26	90		11.8	
LOC 10	0.12	0.13	84		18.2	

Surrogate Recoveries (%)

Cl3(34) 88

Cl6(152) 81

Battelle

The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	S-08C-bb28-00-10	S-08C-bb28-00-10		
Battelle ID	Q6177-P	Q6177DUP-P		
Sample Type	SA	QADU		
Collection Date	12/05/08	12/5/2008		
Extraction Date	01/29/09	1/29/2009		
Analysis Date	02/08/09	2/8/2009		
Analytical Instrument	MS	MS		
% Moisture	50.17	50.8		
% Lipid	NA	NA		
Matrix	SEDIMENT	SEDIMENT		
Sample Size	5.15	5		
Size Unit-Basis	G_DRY	G_DRY		
Units	MG/KG_DRY	MG/KG_DRY	RPD	Qualifier
LOC 1	0.04 U	0.06 U	NA	
LOC 2	0.59	0.56	5.2	
LOC 3	2.88	2.97	3.1	
LOC 4	3.6	3.9	8.0	
LOC 5	2.58	2.64	2.3	
LOC 6	1.43	1.46	2.1	
LOC 7	0.3 J	0.3 J	NA	
LOC 8	0.01 J	0.01 J	NA	
LOC 9	0.06 U	0.09 U	NA	
LOC 10	0.02 U	0.03 U	NA	

Surrogate Recoveries (%)

Cl3(34)	82	82
Cl6(152)	76	76

Qualifiers:

B	Analyte concentration found in the sample at < 5 x the level detected in the procedural blank
D	Dilution run. Initial run outside linear range of instrument
E	Estimate, result is greater than the highest concentration level in the calibration
H	Surrogate diluted out. Used when surrogate recovery is affected by excessive dilution of the sample extract
J	Analyte detected below the sample specific reporting limit
ME	Significant Matrix Interference - Estimated value
N	Quality Control value is outside the accuracy or precision data quality objective (DQO)
NA	Not applicable
T	Holding time exceeded
U	Analyte not detected at 3:1 signal:noise ratio. Reporting limit is reported.
p	The relative percent difference (RPD) between the values obtained from the dual columns is >40%.

Sample Receipt Form

Approved: Authorized

Project Number: G606422

Client: USACE - NED

Received by: Thorn, Jonathan

Date/Time Received: Friday, January 16, 2009 12:00 AM

No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Hand Delivered

Tracking Number: Not Recorded

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		None	Not Applicable	Not Applicable	Ambient	29

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): Ambient 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: Q6149 - Q6177

Samples logged in by: Thorn, Jonathan Date/Time: 01/16/2009 12:00 AM

Approved By: _____ Approved On: _____

Authorized By: _____ Authorized On: _____

Sample Receipt Form Details

Approved: Authorized:

Project Number: G606422 Client: USACE - NED

Received by: Thorn, Jonathan Date/Time Received: Friday, January 16, 2009 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:
Q6149	S-08D-C008-30W-00-05	11/20/08 0:00	01/21/09 8:33	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6150	S-08D-C008-30E-00-05	11/20/08 0:00	01/21/09 8:40	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6151	S-08D-NWS-35-00-05	11/20/08 0:00	01/21/09 9:00	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6152	S-08D-NWS-34-00-05	11/20/08 0:00	01/21/09 9:03	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6153	S-08D-NWS-36-00-05	11/20/08 0:00	01/21/09 9:03	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6154	S-08D-NWS-33-00-05	11/20/08 0:00	01/21/09 9:03	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6155	S-08D-NWS-37-00-05	11/20/08 0:00	01/21/09 9:04	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6156	S-08D-NWS-38-00-05	11/20/08 0:00	01/21/09 9:04	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6157	S-08D-NWS-39-00-05	11/20/08 0:00	01/21/09 9:06	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6158	S-08D-C008-038-00-05	12/03/08 0:00	01/21/09 9:07	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6159	S-08D-C008-028-00-05	12/03/08 0:00	01/21/09 9:08	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6160	S-08D-C008-049-00-05	12/03/08 0:00	01/21/09 9:09	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6161	S-08D-C008-023-00-05	12/03/08 0:00	01/21/09 9:10	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6162	S-08D-C008-016-00-05	12/03/08 0:00	01/21/09 9:12	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6163	S-08D-C008-039-00-05	12/03/08 0:00	01/21/09 9:12	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6164	S-08D-C008-040-00-05	12/03/08 0:00	01/21/09 9:13	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6165	S-08D-C008-062-00-05	12/03/08 0:00	01/21/09 9:13	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6166	S-08D-C008-048-00-05	12/03/08 0:00	01/21/09 9:14	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6167	S-08D-C008-033-00-05	12/03/08 0:00	01/21/09 9:14	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6168	S-08D-C008-055-00-05	12/03/08 0:00	01/21/09 9:15	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6169	S-08D-C008-055-00-05-REP	12/03/08 0:00	01/21/09 9:15	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6170	S-08D-C008-010-00-05	12/03/08 0:00	01/21/09 9:16	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6171	S-08C-X33-00-11	12/05/08 0:00	01/21/09 9:16	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6172	S-08C-T38-00-10	12/05/08 0:00	01/21/09 9:17	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6173	S-08C-CC27-00-09	12/05/08 0:00	01/21/09 9:17	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6174	S-08C-T22-00-04	12/05/08 0:00	01/21/09 9:17	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6175	S-08C-D32-00-05	12/05/08 0:00	01/21/09 9:18	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6176	S-08C-D25-00-07	12/05/08 0:00	01/21/09 9:18	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	

Sample Receipt Form Details

Approved: Authorized

Project Number: G606422 Client: USACE - NED

Received by: Thorn, Jonathan Date/Time Received: Friday, January 16, 2009 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:
Q6177	S-08C-bb28-00-10	12/05/08 0:00	01/21/09 9:19	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	

Total Samples: 29

Proj. No: **G606422**
Proj. Name: **NBH - NWS + Post-Dredge**

SAMPLERS: Signature
Jessica Tenzau + Patrick Curran

ANALYSIS REQUESTED →
"NUMBER OF CONTAINERS"

DATE	TIME	LAB BATTLE ID	FIELD ID CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB Congeners	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER PCB Homologues	ACIDIFIED	PRESERVED	Total Number of Containers
11/20/08		Q6149	S-08D-C008-30W-00-05	Sediment		✓									1
		Q6150	S-08D-C008-30E-00-05		✓										1
		Q6151	S-08D-NWS-35-00-05		✓										1
		Q6152	S-08D-NWS-34-00-05		✓										1
		Q6153	S-08D-NWS-36-00-05		✓										1
		Q6154	S-08D-NWS-33-00-05		✓										1
		Q6155	S-08D-NWS-37-00-05		✓										1
		Q6156	S-08D-NWS-38-00-05		✓										1
		Q6157	S-08D-NWS-39-00-05		✓										1
12/3/08		Q6158	S-08D-C008-038-00-05		✓										1
		Q6159	S-08D-C008-038-00-05		✓										1
		Q6160	S-08D-C008-049-00-05		✓								✓		1
		Q6161	S-08D-C008-023-00-05		✓								✓		1
		Q6162	S-08D-C008-016-00-05		✓										1
		Q6163	S-08D-C008-039-00-05		✓										1
		Q6164	S-08D-C008-040-00-05	✓										1	
		Q6165	S-08D-C008-062-00-05	✓										1	

Relinquished by: <i>Jessica M Tenzau</i>	Date/Time		Received by: 	Date/Time	
	1/16/09	1410		1/16/09	1410
Relinquished by:	Date/Time		Received by:	Date/Time	

Comments: all samples were frozen from date of collection to until 1/14/09.

Proj. No: 5606422
Proj. Name: NBH-NWS + Post Dredge

SAMPLERS: Signature: Jessica Tenzer + Patrick Cavanaugh

ANALYSIS REQUESTED →
"NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID LAB	Field ID CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB <i>Cavanaugh</i>	TBT FINGERPRINT	PAH	VOA	TBT	METALS	OTHER <i>Hoffe Logans</i>	ACIDIFIED	PRESERVED	Total Number of Containers
<u>2/3/08</u>		<u>Q6166</u>	<u>S-08D-C008-048-00-05</u>	<u>Sediment</u>		<input checked="" type="checkbox"/>									<u>1</u>
		<u>Q6167</u>	<u>S-08D-C008-033-00-05</u>			<input checked="" type="checkbox"/>									<u>1</u>
		<u>Q6168</u>	<u>S-08D-C008-055-00-05</u>			<input checked="" type="checkbox"/>									<u>1</u>
		<u>Q6169</u>	<u>S-08D-C008-055-00-05-REP</u>			<input checked="" type="checkbox"/>									<u>1</u>
		<u>Q6170</u>	<u>S-08D-C008-010-00-05</u>			<input checked="" type="checkbox"/>									<u>1</u>
<u>12/5/08</u>		<u>Q6171</u>	<u>S-08C-X33-00-11</u>			<input checked="" type="checkbox"/>									<u>1</u>
		<u>Q6172</u>	<u>S-08C-T38-00-10</u>			<input checked="" type="checkbox"/>									<u>1</u>
		<u>Q6173</u>	<u>S-08C-CC27-00-09</u>			<input checked="" type="checkbox"/>									<u>1</u>
		<u>Q6174</u>	<u>S-08C-T22-00-04</u>			<input checked="" type="checkbox"/>									<u>1</u>
		<u>Q6175</u>	<u>S-08C-D32-00-05</u>			<input checked="" type="checkbox"/>									<u>1</u>
		<u>Q6176</u>	<u>S-08C-D25-00-07</u>			<input checked="" type="checkbox"/>									<u>1</u>
		<u>Q6177</u>	<u>S-08C-bb28-00-10</u>			<input checked="" type="checkbox"/>						<input checked="" type="checkbox"/>			<u>1</u>

Relinquished by: Jessi M. Tenzer

Date/Time: 1/16/09 1410

Received by: 

Date/Time: 1/16/09 1410

Relinquished by:

Date/Time:

Received by:

Date/Time:

Comments: Samples collected on 12/3/08 were frozen until 1/14/09
Samples collected on 12/5/08 were frozen until 1/15/09

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OU3 Pilot Cap

Sediment Grabs

- PCB Analytical Results**
- QA/QC Summaries and Data**
 - Lab Qualifiers**
 - Chain of Custodies**

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Appendix B

2008 OU3 Pilot Cap Sediment PCB Analytical Results

Station Id	OU12			OU13			OU14		
Start Date	10/06/2008			10/06/2008			10/06/2008		
Fraction	TOTAL			TOTAL			TOTAL		
Field Qc Code	SA			SA			SA		
Samp Id	S-08B-OU12-00-03			S-08B-OU13-00-03			S-08B-OU14-00-03		
Description	Result	Final Qual	Unit	Result	Final Qual	Unit	Result	Final Qual	Unit
2,4'-Dicb	0.02881		MG/KG_DRYWT	0.34404		MG/KG_DRYWT	0.05948		MG/KG_DRYWT
2,2',5'-Tricb	0.02164		MG/KG_DRYWT	0.27833		MG/KG_DRYWT	0.03142		MG/KG_DRYWT
2,4,4'-Tricb	0.04527		MG/KG_DRYWT	0.4354		MG/KG_DRYWT	0.08066		MG/KG_DRYWT
2,2',3,5'-Tetracb	0.0156		MG/KG_DRYWT	0.15072		MG/KG_DRYWT	0.01433	pJ	MG/KG_DRYWT
2,2',5,5'-Tetracb	0.03347		MG/KG_DRYWT	0.31096		MG/KG_DRYWT	0.04643		MG/KG_DRYWT
2,3',4,4'-Tetracb	0.0217		MG/KG_DRYWT	0.1504		MG/KG_DRYWT	0.02378	pJ	MG/KG_DRYWT
2,2',4,5,5'-Pentacb	0.02193		MG/KG_DRYWT	0.1444		MG/KG_DRYWT	0.01735	pJ	MG/KG_DRYWT
2,3,3',4,4'-Pentacb	0.01085		MG/KG_DRYWT	0.06395		MG/KG_DRYWT	0.01422	pJ	MG/KG_DRYWT
2,3',4,4',5'-Pentacb	0.03244		MG/KG_DRYWT	0.17853		MG/KG_DRYWT	0.03689		MG/KG_DRYWT
2,2',3,3',4,4'-Hexacb	0.00343		MG/KG_DRYWT	0.01267	pJ	MG/KG_DRYWT	0.02795	U	MG/KG_DRYWT
2,2',3,4,4',5'-Hexacb	0.02014		MG/KG_DRYWT	0.10781		MG/KG_DRYWT	0.01096	pJ	MG/KG_DRYWT
2,2',4,4',5,5'-Hexacb	0.02368		MG/KG_DRYWT	0.12869		MG/KG_DRYWT	0.0093	pJ	MG/KG_DRYWT
2,2',3,3',4,4',5'-Heptacb	0.00132	pJ	MG/KG_DRYWT	0.00104	pJ	MG/KG_DRYWT	0.0022	pJ	MG/KG_DRYWT
2,2',3,4,4',5,5'-Heptacb	0.00135	J	MG/KG_DRYWT	0.00146	pJ	MG/KG_DRYWT	0.02795	U	MG/KG_DRYWT
2,2',3,4',5,5',6'-Heptacb	0.00085	pJ	MG/KG_DRYWT	0.02864	U	MG/KG_DRYWT	0.02783	U	MG/KG_DRYWT
2,2',3,3',4,4',5,6'-Octacb	0.00275	U	MG/KG_DRYWT	0.02876	U	MG/KG_DRYWT	0.02795	U	MG/KG_DRYWT
2,2',3,3',4,4',5,5',6'-Nonacb	0.00275	U	MG/KG_DRYWT	0.02876	U	MG/KG_DRYWT	0.02795	U	MG/KG_DRYWT
Decacb - Congener	0.00275	U	MG/KG_DRYWT	0.02876	U	MG/KG_DRYWT	0.02795	U	MG/KG_DRYWT
Total MonoCB	0.02	U	MG/KG_DRYWT	0.12	U	MG/KG_DRYWT			
Total DiCB	0.07	J	MG/KG_DRYWT	0.67		MG/KG_DRYWT			
Total TriCB	0.21		MG/KG_DRYWT	2.15		MG/KG_DRYWT			
Total TetraCB	0.24	J	MG/KG_DRYWT	1.39	J	MG/KG_DRYWT			
Total PentaCB	0.22	J	MG/KG_DRYWT	1.22	J	MG/KG_DRYWT			
Total HexaCB	0.1	J	MG/KG_DRYWT	0.38	J	MG/KG_DRYWT			
Total HeptaCB	0.01	J	MG/KG_DRYWT	1.2	U	MG/KG_DRYWT			
Total OctaCB	0.1	U	MG/KG_DRYWT	0.6	U	MG/KG_DRYWT			
Total NonaCB	0.03	U	MG/KG_DRYWT	0.18	U	MG/KG_DRYWT			
DecaCB - Homologue	0.01	U	MG/KG_DRYWT	0.06	U	MG/KG_DRYWT			
Total PCB Congeners (sum CONG x factor)	0.73		MG/KG_DRYWT	6.		MG/KG_DRYWT	0.9		MG/KG_DRYWT
Total PCB Homologues (sum HOM)	0.85		MG/KG_DRYWT	5.8		MG/KG_DRYWT			

Appendix B

2008 OU3 Pilot Cap Sediment PCB Analytical Results

Station Id	OU17		
Start Date	10/06/2008		
Fraction	TOTAL		
Field Qc Code	SA		
Samp Id	S-08B-OU17-00-03		
Description	Result	Final Qual	Unit
2,4'-Dicb	0.03165		MG/KG_DRYWT
2,2',5'-Tricb	0.02004		MG/KG_DRYWT
2,4,4'-Tricb	0.03798		MG/KG_DRYWT
2,2',3,5'-Tetracb	0.01121		MG/KG_DRYWT
2,2',5,5'-Tetracb	0.0243		MG/KG_DRYWT
2,3',4,4'-Tetracb	0.01678		MG/KG_DRYWT
2,2',4,5,5'-Pentacb	0.01357		MG/KG_DRYWT
2,3,3',4,4'-Pentacb	0.00776		MG/KG_DRYWT
2,3',4,4',5'-Pentacb	0.02241		MG/KG_DRYWT
2,2',3,3',4,4'-Hexacb	0.00179	J	MG/KG_DRYWT
2,2',3,4,4',5'-Hexacb	0.01442		MG/KG_DRYWT
2,2',4,4',5,5'-Hexacb	0.01723		MG/KG_DRYWT
2,2',3,3',4,4',5'-Heptacb	0.00039	pJ	MG/KG_DRYWT
2,2',3,4,4',5,5'-Heptacb	0.00046	pJ	MG/KG_DRYWT
2,2',3,4',5,5',6'-Heptacb	0.00023	pJ	MG/KG_DRYWT
2,2',3,3',4,4',5,6'-Octacb	0.00275	U	MG/KG_DRYWT
2,2',3,3',4,4',5,5',6'-Nonacb	0.00275	U	MG/KG_DRYWT
Decacb - Congener	0.00275	U	MG/KG_DRYWT
Total MonoCB			
Total DiCB			
Total TriCB			
Total TetraCB			
Total PentaCB			
Total HexaCB			
Total HeptaCB			
Total OctaCB			
Total NonaCB			
DecaCB - Homologue			
Total PCB Congeners (sum CONG x factor)	0.57		MG/KG_DRYWT
Total PCB Homologues (sum HOM)			

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PCB Congeners – Sediment QA/QC Summary
Batch 08-0284

PROJECT: USACE – New Bedford Harbor Environmental Monitoring
PARAMETER: PCB Congeners
LABORATORY: Battelle, Duxbury, MA
MATRIX: Sediment
SAMPLE CUSTODY: Sediment samples were collected on 10/6/2008 – 10/7/2008 and hand delivered to the Battelle Duxbury Chemistry Sample Custodian on 10/7/2008. The samples were received in good condition and no custody issues were noted. Samples were logged into Battelle LIMS and received unique IDs. They were stored in the walk-in freezer until preparation could begin.

	Reference Method	Method Blank	Surrogate Recovery	LCS Recovery	MS Recovery	MS/MSD Relative Percent Difference	Detection Limits (ng/g dry wt)
PCB Congeners	EPA 8082M	<ssRL	40-120% Recovery	40-120% Recovery	40-120% Recovery	≤30% RPD (analyte conc. in MS must be >5x background) (analytes must be > 5x MDL to be used for data quality assessment)	RL: 2.73

METHOD: Sediment samples were extracted for PCB congeners following modified EPA Method 3545. Sediments were air-dried overnight, and approximately 10 g of sediment was spiked with surrogates and extracted using an Accelerated Solvent Extractor (ASE). The extract was concentrated, processed through activated copper, florisil cleanup column, and concentrated. Next, the extract was concentrated, fortified with internal standards (IS), and then analyzed using gas chromatography/electron capture detector (GC/ECD), following modified EPA Method 8082. Sample data were quantified by the method of internal standards, using the spiked IS compounds.

HOLDING TIMES: Sediments of this batch were extracted within 1 year of sample holding time for frozen sediments. All extracts were analyzed within 40 days of extract holding time.

Batch	Collection Date	Extraction Date	Analysis Date
08/0284	10/6/08-10/7/08	10/13/08	10/21/2008 – 10/24/2008

08-0284

Sample ID	Battelle ID
S-08B-OU17-00-03	Q5020
S-08B-OU16-00-03	Q5021
S-08B-OU16-00-03-REP	Q5022
S-08B-OU15-00-03	Q5023
S-08B-OU14-00-03	Q5024
S-08B-OU12-00-03	Q5025
S-08B-OU13-00-03	Q5026
S-08B-OU11-00-03	Q5027
S-08B-OU10-00-03	Q5028
S-08B-OU09-00-03	Q5029
S-08B-OU01-00-03	Q5031

PCB Congeners – Sediment QA/QC Summary
Batch 08-0284

S-08B-OU03-00-03	Q5032
S-08B-OU02-00-03	Q5033
S-08B-OU08-00-03	Q5034
S-08B-OU06-00-03	Q5035
S-08B-OU05-00-03	Q5036
S-08B-OU04-00-03	Q5037
S-08B-OU07-00-03	Q5038

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.

08-0284 – No target analytes were detected in the procedural blank.

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.

08-0284 – No exceedences noted. All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%).

MATRIX SPIKE/MATRIX SPIKE DUPLICATE: A pair of matrix spike (MS) and matrix spike duplicate samples (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 was calculated to measure the data quality in terms of precision.

08-0284 – No exceedences noted. All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%). All RPDs met the criteria of <30%.

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).

08-0284 – No exceedences noted. All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%).

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 %D between the initial calibration (ICAL) and the continuing calibration samples should be <25% for each compound. Additionally an Initial Calibration Check (ICC) sample is run immediately following the ICAL. The ICC is to have a percent difference < 20%.

08-0284 – All calibration criteria were met.



The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	Laboratory Control	Sample		
Battelle ID	BM493LCS-P			
Sample Type	LCS			
Collection Date	10/13/08			
Extraction Date	10/13/08			
Analysis Date	10/21/08			
Analytical Instrument	ECD			
% Moisture	NA			
% Lipid	NA			
Matrix	SEDIMENT			
Sample Size	5.03			
Size Unit-Basis	G_DRY			
Units	NG/G_DRY	Target	% Recovery	Qualifier
CI2(8)	765.74	899.01	85	
CI3(18)	768.4	899.01	85	
CI3(28)	690.74	897.42	77	
CI4(44)	775.58	898.21	86	
CI4(52)	772.06	896.62	86	
CI4(66)	840.65	897.42	94	
CI5(101)	792.32	898.21	88	
CI5(105)	809.46	897.42	90	
CI5(118)	816.32	897.42	91	
CI6(128)	813.22	901.39	90	
CI6(138)	792.12	898.21	88	
CI6(153)	816.92	897.42	91	
CI7(170)	818.93	900.60	91	
CI7(180)	792.94	899.80	88	
CI7(187)	797.49	899.01	89	
CI8(195)	848.18	899.01	94	
CI9(206)	801.3	899.01	89	
CI10(209)	805.3	899.40	90	

Surrogate Recoveries (%)

CI3(34)	86
CI6(152)	93



The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Table with columns: Client ID, Battelle ID, Sample Type, Collection Date, Extraction Date, Analysis Date, Analytical Instrument, % Moisture, % Lipid, Matrix, Sample Size, Size Unit-Basis, Units, and Target % Recovery Qualifier. Rows include various PCB congeners (CI2-10) with their respective values and recovery percentages.

Surrogate Recoveries (%)

Table with 3 columns: Congener ID (CI3, CI6), Value (63, 84), and Recovery Percentage (92, 94).



The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID S-08B-OU17-00-03

Battelle ID Q5020MSD-P
Sample Type MSD
Collection Date 10/6/2008
Extraction Date 10/13/2008
Analysis Date 10/22/2008
Analytical Instrument ECD
% Moisture 0.86
% Lipid NA
Matrix SEDIMENT
Sample Size 2.49
Size Unit-Basis G_DRY

Units	NG/G_DRY		Target	% Recovery	Qualifier	RPD (%)	Qualifier
CI2(8)	1703.41	E	1816.06	92		1.1	
CI3(18)	1695.31	E	1816.06	92		1.1	
CI3(28)	1618.51	E	1812.85	87		3.5	
CI4(44)	1765.22	E	1814.46	97		5.3	
CI4(52)	1762.97	E	1811.24	96		4.3	
CI4(66)	1954.44	E	1812.85	107		6.8	
CI5(101)	1790.78	E	1814.46	98		6.3	
CI5(105)	1850.16	E	1812.85	102		5.0	
CI5(118)	1806.62	E	1812.85	98		4.2	
CI6(128)	1796.08	E	1820.88	99		4.1	
CI6(138)	1743.75	E	1814.46	95		4.3	
CI6(153)	1793.73	E	1812.85	98		4.2	
CI7(170)	1819.79	E	1819.28	100		4.1	
CI7(180)	1792.46	E	1817.67	99		4.1	
CI7(187)	1744.56	E	1816.06	96		4.3	
CI8(195)	1985.3	E	1816.06	109		3.7	
CI9(206)	1797.61	E	1816.06	99		2.0	
CI10(209)	1772.7	E	1816.87	98		3.1	

Surrogate Recoveries (%)

CI3(34) 93
CI6(152) 95

PCB Homologues – SEDIMENT QA/QC SUMMARY
Batch 08-0284

PROJECT: New Bedford Harbor Water Quality Monitoring
PARAMETER: PCB Homologues
LABORATORY: Battelle, Duxbury, MA
MATRIX: Sediment
SAMPLE CUSTODY: Sediment samples were collected on 10/6/2008 – 10/7/2008 and hand delivered to the Battelle Duxbury Chemistry Sample Custodian on 10/7/2008. The samples were received in good condition and no custody issues were noted. Samples were logged into Battelle LIMS and received unique IDs. They were stored in the walk-in freezer until preparation could begin. All sediment samples were extracted for PCB congener analyses by GC/ECD. 7.5% percent of the sediment samples were chosen for PCB homologue analysis. From this batch samples S-08B-OU12-00-03 and S-08B-OU13-00-03 were analyzed for PCB homologues

	Reference Method	Method Blank	Surrogate Recovery	LCS/MS/MSD Recovery	Sample Replicate Relative Precision	Reporting Limits (mg/Kg dry wt)
PCB Homologues	1668A & 8270D	< ss-RL	40-120%	40-120%	<30% RPD MS spike must be >5 x background	0.18 – 4.02

METHOD: Sediment samples were extracted for PCBs following modified EPA Method 3545. Sediments were air-dried overnight, and approximately 5 g of sediment was spiked with surrogates and extracted using an Accelerated Solvent Extractor (ASE). The extract was concentrated, processed through activated copper, florisil cleanup column, and concentrated. Extracts were then fortified with internal standards (IS). Extracts designated for PCB homologue analysis were analyzed using gas chromatography/mass spectrometry (GC/MS), following Battelle SOP 5-315 which is based on key components of EPA Methods 1668A and 8270D. Sample data were quantified by the method of internal standards, using the IS compounds.

HOLDING TIMES: These frozen sediment samples were extracted within 1-year holding time. Extracts were analyzed within 40 days of extraction. All holding times were met.

<u>Batch</u>	<u>Collection Date</u>	<u>Extraction Date</u>	<u>Analysis Date</u>
08-0284	10/6/08	10/13/08	11/3/08

PCB Homologues – SEDIMENT QA/QC SUMMARY

Batch 08-0284

08-0284

Sample ID

S-08B-OU12-00-03

S-08B-OU13-00-03

Battelle ID

Q5025

Q5026

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.

08-0284 – No exceedences noted.

Comments – No target analytes were detected in the procedural blank at a concentration greater than the sample-specific reporting limit.

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.

08-0284 – No exceedences noted. All recoveries were within the laboratory control limits (40%-120%).

Comments – None.

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).

08-0284 – No exceedences noted. All recoveries were within the laboratory control limits (40%-120%).

Comments – None.

CALIBRATION:

The GC/MS is calibrated with a minimum of a 6-point curve. The co-efficient of determination must be > 0.995 for each target analyte in the initial calibration (ICAL). Each batch of samples analyzed is bracketed by a continuing calibration verification (CCV) sample, run at a frequency of every 12 hours (minimally). This percent difference (PD) for the CCV should be <25% for individual analytes. Additionally an instrument calibration check (ICC) sample was run with the initial calibration. The PD for the ICC should be < 25% for each analyte.

08-0284 – No initial calibration exceedences noted.

No CCV exceedence.

No ICC exceedence.

Comments – None.



The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	Laboratory Control	Sample		
Battelle ID	BM493LCS-P			
Sample Type	LCS			
Collection Date	10/13/08			
Extraction Date	10/13/08			
Analysis Date	11/03/08			
Analytical Instrument	MS			
% Moisture	NA			
% Lipid	NA			
Matrix	SEDIMENT			
Sample Size	5.03			
Size Unit-Basis	G_DRY			
Units	MG/KG_DRY	Target	% Recovery	Qualifier
LOC 1	0.18	0.20	89	
LOC 2	0.99	1.10	90	
LOC 3	1.87	2.10	89	
LOC 4	3.66	4.09	89	
LOC 5	4.02	4.30	93	
LOC 6	3.23	3.50	92	
LOC 7	2.86	3.08	93	
LOC 8	1.32	1.40	94	
LOC 9	0.9	1.00	90	
CI10(209)	0.73	0.90	81	

Surrogate Recoveries (%)

CI3(34)	92
CI6(152)	115

PCB Congeners – Water QA/QC Summary
Batch 08-0282

PROJECT: USACE-NAE – New Bedford Harbor Environmental Monitoring
PARAMETER: PCB Congeners
LABORATORY: Battelle, Duxbury, MA
MATRIX: Equipment Blank
SAMPLE CUSTODY: The equipment blank sample was collected on 10/6/2008 and hand delivered to the Chemistry Department by the Battelle Field Group. No custody issues were noted. The sample was logged into LIMS and received unique Battelle ID. The sample was stored at 4°C in an access controlled walk-in refrigerator until sample preparation could begin.

	Reference Method	Method Blank	Surrogate Recovery	LCS Recovery	MS Recovery	MS/MSD Relative Percent Difference	Detection Limits (ug/L)
PCB Congeners	EPA 8082M	<ssRL	40-120% Recovery	40-120% Recovery	40-120% Recovery	<30% RPD (analyte conc. in MS must be >5x background) (analytes must be > 5x MDL to be used for data quality assessment)	RL: ~ 0.0013

METHOD: The equipment blank was extracted for PCB Congeners following modified EPA Method 3510C. Approximately 1 liter of water was spiked with surrogates and extracted three times with dichloromethane using separatory funnel techniques. Combined extract was dried over anhydrous sodium sulfate, concentrated, fortified with internal standards (IS), and then analyzed using gas chromatography/electron capture detector (GC/ECD), following modified EPA Method 8082. Sample data were quantified by the method of internal standards, using the spiked IS compounds.

HOLDING TIMES: Water samples were extracted within 7 days of sample collection. All extracts were analyzed within 40 days of extract holding time.

<u>Batch</u>	<u>Collection Date</u>	<u>Extraction Date</u>	<u>Analysis Date</u>
08-0282	10/6/2008	10/9/2008	10/13/2008

PCB Congeners – Water QA/QC Summary

Batch 08-0282

LIST OF SAMPLES:

08-0282

Sample ID
EB-100608-01

Battelle ID
Q5030

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.

08-0282 – No exceedences noted. No target PCBs 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.

08-0282 – All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%).

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).

08-0282 – No exceedence noted. All percent recoveries were within the laboratory control limit (40%-120%).

CALIBRATIONS: The GC/ECD was calibrated with a minimum 6 level curve, with a linear 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 %D between the initial calibration (ICAL) and the continuing calibration samples should be <20% for each compound. Additionally an Initial Calibration Check (ICC) sample is run immediately following the ICAL. The ICC is to have a percent difference < 20%.

08-0282 – Some compounds were over-responding in the CCVs. However, because no compound was detected in the authentic sample, no corrective action was taken.

Battelle

The Business of Innovation

Project Client: USACE - North Atlantic Division

Project Name: NBH Equipment Blank Sample PCB Congener Analysis (ECD)

Project Number: G606422

Client ID	Laboratory Control Sample			
Battelle ID	BM488LCS-P			
Sample Type	LCS			
Collection Date	10/09/08			
Extraction Date	10/09/08			
Analysis Date	10/13/08			
Analytical Instrument	ECD			
% Moisture	NA			
% Lipid	NA			
Matrix	WATER			
Sample Size	1.00			
Size Unit-Basis	L_LIQUID			
Units	UG/L_LIQUID	Target	% Recovery	Qualifier
CI2(8)	0.0499	0.05	100	
CI3(18)	0.0487	0.05	97	
CI3(28)	0.0409	0.05	82	
CI4(44)	0.0481	0.05	96	
CI4(52)	0.0476	0.05	95	
CI4(66)	0.0495	0.05	99	
CI5(101)	0.0484	0.05	97	
CI5(105)	0.0483	0.05	97	
CI5(118)	0.0511	0.05	102	
CI6(128)	0.0498	0.05	99	
CI6(138)	0.0492	0.05	98	
CI6(153)	0.0498	0.05	100	
CI7(170)	0.0526	0.05	105	
CI7(180)	0.0516	0.05	103	
CI7(187)	0.0508	0.05	101	
CI8(195)	0.0521	0.05	104	
CI9(206)	0.0529	0.05	105	
CI10(209)	0.054	0.05	108	

Surrogate Recoveries (%)

CI3(34)	106
CI6(152)	113

Qualifiers:

B	Analyte concentration found in the sample at < 5 x the level detected in the procedural blank
D	Dilution run. Initial run outside linear range of instrument
E	Estimate, result is greater than the highest concentration level in the calibration
H	Surrogate diluted out. Used when surrogate recovery is affected by excessive dilution of the sample extract
J	Analyte detected below the sample specific reporting limit
ME	Significant Matrix Interference - Estimated value
N	Quality Control value is outside the accuracy or precision data quality objective (DQO)
NA	Not applicable
T	Holding time exceeded
U	Analyte not detected at 3:1 signal:noise ratio. Reporting limit is reported.
p	The relative percent difference (RPD) between the values obtained from the dual columns is >40%.

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Sample Receipt FormApproved: Authorized

Project Number: G606422 **Client:** _____
Received by: Seyfert, Jeannine **Date/Time Received:** Tuesday, October 07, 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	Cooler	NA	None	Not Applicable	Intact	4.0	19

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): 4 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 South: Refrigerator - R0003 (Upper Cold) **BDO IDs Assigned:** Q5020 - Q5038

Samples logged in by: Seyfert, Jeannine **Date/Time:** 10/07/2008 12:00 AM

Approved By: _____ **Approved On:** _____

Authorized By: _____ **Authorized On:** _____

Sample Receipt Form Details

Approved: Authorized

Project Number: G606422 Client: _____

Received by: Seyfert, Jeannine Date/Time Received: Tuesday, October 07, 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:
Q5020	S-08B-OU17-00-03	10/06/08 9:34	10/08/08 13:40	1	SEDIMENT	4	NA	NA	NA	R0003 (Upper C			MS/MSD
Q5021	S-08B-OU16-00-03	10/06/08 9:54	10/08/08 13:41	1	SEDIMENT	4	NA	NA	NA	R0003 (Upper C			
Q5022	S-08B-OU16-00-03-REP	10/06/08 10:05	10/08/08 13:41	1	SEDIMENT	4	NA	NA	NA	R0003 (Upper C			
Q5023	S-08B-OU15-00-03	10/06/08 10:26	10/08/08 13:42	1	SEDIMENT	4	NA	NA	NA	R0003 (Upper C			
Q5024	S-08B-OU14-00-03	10/06/08 10:46	10/08/08 13:42	1	SEDIMENT	4	NA	NA	NA	R0003 (Upper C			
Q5025	S-08B-OU12-00-03	10/06/08 11:08	10/08/08 13:43	1	SEDIMENT	4	NA	NA	NA	R0003 (Upper C			
Q5026	S-08B-OU13-00-03	10/06/08 11:27	10/08/08 13:43	1	SEDIMENT	4	NA	NA	NA	R0003 (Upper C			
Q5027	S-08B-OU11-00-03	10/06/08 11:53	10/08/08 13:43	1	SEDIMENT	4	NA	NA	NA	R0003 (Upper C			
Q5028	S-08B-OU10-00-03	10/06/08 12:14	10/08/08 13:44	1	SEDIMENT	4	NA	NA	NA	R0003 (Upper C			
Q5029	S-08B-OU09-00-03	10/06/08 12:47	10/08/08 13:50	1	SEDIMENT	4	NA	NA	NA	R0003 (Upper C			
Q5030	EB-100608-01	10/06/08 13:05	10/08/08 13:51	1	WATER	4	NA	NA	NA	R0003 (Upper C			EQUIPMENT BLANK
Q5031	S-08B-OU01-00-03	10/06/08 14:00	10/08/08 13:52	1	SEDIMENT	4	NA	NA	NA	R0003 (Upper C			
Q5032	S-08B-OU03-00-03	10/06/08 14:26	10/08/08 13:53	1	SEDIMENT	4	NA	NA	NA	R0003 (Upper C			
Q5033	S-08B-OU02-00-03	10/06/08 14:49	10/08/08 13:53	1	SEDIMENT	4	NA	NA	NA	R0003 (Upper C			
Q5034	S-08B-OU08-00-03	10/07/08 8:57	10/08/08 13:53	1	SEDIMENT	4	NA	NA	NA	R0003 (Upper C			
Q5035	S-08B-OU06-00-03	10/07/08 9:25	10/08/08 13:54	1	SEDIMENT	4	NA	NA	NA	R0003 (Upper C			
Q5036	S-08B-OU05-00-03	10/07/08 9:45	10/08/08 13:54	1	SEDIMENT	4	NA	NA	NA	R0003 (Upper C			
Q5037	S-08B-OU04-00-03	10/07/08 10:09	10/08/08 13:55	1	SEDIMENT	4	NA	NA	NA	R0003 (Upper C			
Q5038	S-08B-OU07-00-03	10/07/08 10:43	10/08/08 13:56	1	SEDIMENT	4	NA	NA	NA	R0003 (Upper C			

Total Samples: 19

Proj. No: G606422
Proj. Name: New Bedford Harbor 003

SAMPLERS: Signature: J. Fahey, A. Murphy, + M. Fitzpatrick

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	LAB ID BATTELLE ID	FIELD ID CLIENT ID	SAMPLE DESCRIPTION STATION #	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
10/6/08	0934	Q5020	S-08B-0017-00-03	Sediment 0017 ex Matucia MS/MSD		✓									1
	0954	Q5021	S-08B-0016-00-03	0016		✓									1
	1005	Q5022	S-08B-0016-00-03-REP	0016 Field DUP		✓									1
	1026	Q5023	S-08B-0015-00-03	0015		✓									1
	1046	Q5024	S-08B-0014-00-03	0014		✓									1
	1108	Q5025	S-08B-0012-00-03	0012 <u>extra for homogen</u>		✓									1
	1127	Q5026	S-08B-0013-00-03	0013 ↓		✓									1
	1153	Q5027	S-08B-0011-00-03	0011		✓									1
	1214	Q5028	S-08B-0010-00-03	0010		✓									1
	1247	Q5029	S-08B-0009-00-03	0009		✓									1
	1305	Q5030	EB-100608-01	Equipment Blank water		✓									2
	1400	Q5031	S-08B-0001-00-03	Sediment 0001		✓									1
	1426	Q5032	S-08B-0003-00-03	0003		✓									1
✓	1449	Q5033	S-08B-0002-00-03	0002		✓									1
10/7/08	0857	Q5034	S-08B-0008-00-03	0008		✓									1
	0925	Q5035	S-08B-0006-00-03	0006		✓									1
✓	0945	Q5036	S-08B-0005-00-03	0005		✓									1

Relinquished by: <i>Matthew K. Lynch</i>	Date/Time		Received by: <i>Jeannine Seyfert</i>	Date/Time	
	10/4/08	1400		10-7-08	14:00
Relinquished by:	Date/Time		Received by:	Date/Time	

Comments:

Proj. No G606422	Proj. Name NBH-003
----------------------------	------------------------------

SAMPLERS: Signature
J. Foley, M. Fitzpatrick, A. Murphy

ANALYSIS REQUESTED →
"NUMBER OF CONTAINERS"

PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
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DATE	TIME	LAB ID BATTELLE ID	FIELD ID CLIENT ID	SAMPLE DESCRIPTION		PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers	
10/7/08	1009	Q5037	S-08B-0004-00-03	STATION													
↓	1043	Q5038	S-08B-0007-00-03	0014	Sediment		✓										1
				0007	↓		✓										1

Relinquished by:
M. Murphy

Date/Time	
10/7/08	1400

Received by:
Jeannie Seyfert

Date/Time	
10-7-08	14:00

Relinquished by:

Date/Time	

Received by:

Date/Time	

Comments:

North of Wood Street

River Sediment and Marsh Soil Cores

- PCB Analytical Results**
- QA/QC Summaries and Data**
- Lab Qualifiers**
- Chain of Custodies**

Appendix B
North of Wood Street Sediment PCB Analytical Results

Station Id	C008-010			C008-016		
Start Date	12/03/2008			12/03/2008		
Fraction	TOTAL			TOTAL		
Samp Id	S-08D-C008-010-00-05			S-08D-C008-016-00-05		
Field Qc Code	SA			SA		
Description	Result	Final Qual	Unit	Result	Final Qual	Unit
2,4'-Dicb	0.113		MG/KG_DRYWT	0.812	D	MG/KG_DRYWT
2,2',5'-Tricb	0.213		MG/KG_DRYWT	2.065	D	MG/KG_DRYWT
2,4,4'-Tricb	0.204		MG/KG_DRYWT	2.185	D	MG/KG_DRYWT
2,2',3,5'-Tetracb	0.075		MG/KG_DRYWT	0.777	D	MG/KG_DRYWT
2,2',5,5'-Tetracb	0.140		MG/KG_DRYWT	2.471	D	MG/KG_DRYWT
2,3',4,4'-Tetracb	0.032		MG/KG_DRYWT	0.374		MG/KG_DRYWT
2,2',4,5,5'-Pentacb	0.025		MG/KG_DRYWT	0.579		MG/KG_DRYWT
2,3,3',4,4'-Pentacb	0.009	pJ	MG/KG_DRYWT	0.074		MG/KG_DRYWT
2,3',4,4',5'-Pentacb	0.021		MG/KG_DRYWT	0.451		MG/KG_DRYWT
2,2',3,3',4,4'-Hexacb	0.004	J	MG/KG_DRYWT	0.070		MG/KG_DRYWT
2,2',3,4,4',5'-Hexacb	0.016		MG/KG_DRYWT	0.411		MG/KG_DRYWT
2,2',4,4',5,5'-Hexacb	0.017		MG/KG_DRYWT	0.624		MG/KG_DRYWT
2,2',3,3',4,4',5'-Heptacb	0.001	J	MG/KG_DRYWT	0.058		MG/KG_DRYWT
2,2',3,4,4',5,5'-Heptacb	0.002	J	MG/KG_DRYWT	0.079		MG/KG_DRYWT
2,2',3,4',5,5',6'-Heptacb	0.014	U	MG/KG_DRYWT	0.068		MG/KG_DRYWT
2,2',3,3',4,4',5,6'-Octacb	0.014	U	MG/KG_DRYWT	0.007	pJ	MG/KG_DRYWT
2,2',3,3',4,4',5,5',6'-Nonacb	0.014	U	MG/KG_DRYWT	0.009	J	MG/KG_DRYWT
Decacb - Congener	0.014	U	MG/KG_DRYWT	0.016	U	MG/KG_DRYWT
Total MonoCB						
Total DiCB						
Total TriCB						
Total TetraCB						
Total PentaCB						
Total HexaCB						
Total HeptaCB						
Total OctaCB						
Total NonaCB						
DecaCB - Homologue						
Total PCB Congeners (sum CONG x factor)	2.3		MG/KG_DRYWT	29.		MG/KG_DRYWT
Total PCB Homologues (sum HOM)						

Appendix B
North of Wood Street Sediment PCB Analytical Results

Station Id	C008-023			C008-028		
Start Date	12/03/2008			12/03/2008		
Fraction	TOTAL			TOTAL		
Samp Id	S-08D-C008-023-00-05			S-08D-C008-028-00-05		
Field Qc Code	SA			SA		
Description	Result	Final Qual	Unit	Result	Final Qual	Unit
2,4'-Dicb	1.190		MG/KG_DRYWT	1.726	D	MG/KG_DRYWT
2,2',5'-Tricb	2.040		MG/KG_DRYWT	3.885	D	MG/KG_DRYWT
2,4,4'-Tricb	3.460		MG/KG_DRYWT	5.868	D	MG/KG_DRYWT
2,2',3,5'-Tetracb	1.320		MG/KG_DRYWT	2.021	D	MG/KG_DRYWT
2,2',5,5'-Tetracb	3.900		MG/KG_DRYWT	7.463	D	MG/KG_DRYWT
2,3',4,4'-Tetracb	0.670		MG/KG_DRYWT	1.442		MG/KG_DRYWT
2,2',4,5,5'-Pentacb	1.160		MG/KG_DRYWT	1.875	D	MG/KG_DRYWT
2,3,3',4,4'-Pentacb	0.130		MG/KG_DRYWT	0.207		MG/KG_DRYWT
2,3',4,4',5'-Pentacb	0.880		MG/KG_DRYWT	1.268	D	MG/KG_DRYWT
2,2',3,3',4,4'-Hexacb	0.090		MG/KG_DRYWT	0.152		MG/KG_DRYWT
2,2',3,4,4',5'-Hexacb	0.670		MG/KG_DRYWT	0.929	D	MG/KG_DRYWT
2,2',4,4',5,5'-Hexacb	1.130		MG/KG_DRYWT	1.576	D	MG/KG_DRYWT
2,2',3,3',4,4',5'-Heptacb	0.090		MG/KG_DRYWT	0.203		MG/KG_DRYWT
2,2',3,4,4',5,5'-Heptacb	0.120		MG/KG_DRYWT	0.290		MG/KG_DRYWT
2,2',3,4',5,5',6'-Heptacb	0.140		MG/KG_DRYWT	0.353		MG/KG_DRYWT
2,2',3,3',4,4',5,6'-Octacb	0.010	pJ	MG/KG_DRYWT	0.036	pJ	MG/KG_DRYWT
2,2',3,3',4,4',5,5',6'-Nonacb	0.020	pJ	MG/KG_DRYWT	0.045		MG/KG_DRYWT
Decacb - Congener	0.040	U	MG/KG_DRYWT	0.000	J	MG/KG_DRYWT
Total MonoCB	0.1		MG/KG_DRYWT			
Total DiCB	3.42		MG/KG_DRYWT			
Total TriCB	16.52		MG/KG_DRYWT			
Total TetraCB	16.48		MG/KG_DRYWT			
Total PentaCB	8.84		MG/KG_DRYWT			
Total HexaCB	4.4		MG/KG_DRYWT			
Total HeptaCB	1.02		MG/KG_DRYWT			
Total OctaCB	0.24	J	MG/KG_DRYWT			
Total NonaCB	0.03	J	MG/KG_DRYWT			
DecaCB - Homologue	0.04	U	MG/KG_DRYWT			
Total PCB Congeners (sum CONG x factor)	44.		MG/KG_DRYWT	76.		MG/KG_DRYWT
Total PCB Homologues (sum HOM)	51.		MG/KG_DRYWT			

Appendix B
North of Wood Street Sediment PCB Analytical Results

Station Id	C008-030E			C008-30W		
Start Date	11/20/2008			11/20/2008		
Fraction	TOTAL			TOTAL		
Samp Id	S-08D-C008-30E-00-05			S-08D-C008-30W-00-05		
Field Qc Code	SA			SA		
Description	Result	Final Qual	Unit	Result	Final Qual	Unit
2,4'-Dicb	0.005	J	MG/KG_DRYWT	0.015	U	MG/KG_DRYWT
2,2',5'-Tricb	0.039		MG/KG_DRYWT	0.029		MG/KG_DRYWT
2,4,4'-Tricb	0.082		MG/KG_DRYWT	0.068		MG/KG_DRYWT
2,2',3,5'-Tetracb	0.026		MG/KG_DRYWT	0.021		MG/KG_DRYWT
2,2',5,5'-Tetracb	0.101		MG/KG_DRYWT	0.085		MG/KG_DRYWT
2,3',4,4'-Tetracb	0.016		MG/KG_DRYWT	0.022		MG/KG_DRYWT
2,2',4,5,5'-Pentacb	0.032		MG/KG_DRYWT	0.038		MG/KG_DRYWT
2,3,3',4,4'-Pentacb	0.008	pJ	MG/KG_DRYWT	0.007	J	MG/KG_DRYWT
2,3',4,4',5'-Pentacb	0.033		MG/KG_DRYWT	0.038		MG/KG_DRYWT
2,2',3,3',4,4'-Hexacb	0.002	J	MG/KG_DRYWT	0.001	J	MG/KG_DRYWT
2,2',3,4,4',5'-Hexacb	0.025		MG/KG_DRYWT	0.022		MG/KG_DRYWT
2,2',4,4',5,5'-Hexacb	0.035		MG/KG_DRYWT	0.040		MG/KG_DRYWT
2,2',3,3',4,4',5'-Heptacb	0.003	pJ	MG/KG_DRYWT	0.003	pJ	MG/KG_DRYWT
2,2',3,4,4',5,5'-Heptacb	0.004	J	MG/KG_DRYWT	0.004	J	MG/KG_DRYWT
2,2',3,4',5,5',6'-Heptacb	0.000	pJ	MG/KG_DRYWT	0.002	pJ	MG/KG_DRYWT
2,2',3,3',4,4',5,6'-Octacb	0.014	U	MG/KG_DRYWT	0.015	U	MG/KG_DRYWT
2,2',3,3',4,4',5,5',6'-Nonacb	0.001	pJ	MG/KG_DRYWT	0.001	pJ	MG/KG_DRYWT
Decacb - Congener	0.014	U	MG/KG_DRYWT	0.015	U	MG/KG_DRYWT
Total MonoCB						
Total DiCB						
Total TriCB						
Total TetraCB						
Total PentaCB						
Total HexaCB						
Total HeptaCB						
Total OctaCB						
Total NonaCB						
DecaCB - Homologue						
Total PCB Congeners (sum CONG x factor)	1.1		MG/KG_DRYWT	0.98		MG/KG_DRYWT
Total PCB Homologues (sum HOM)						

Appendix B
North of Wood Street Sediment PCB Analytical Results

Station Id	C008-033			C008-038		
Start Date	12/03/2008			12/03/2008		
Fraction	TOTAL			TOTAL		
Samp Id	S-08D-C008-033-00-05			S-08D-C008-038-00-05		
Field Qc Code	SA			SA		
Description	Result	Final Qual	Unit	Result	Final Qual	Unit
2,4'-Dicb	1.508	D	MG/KG_DRYWT	0.416	D	MG/KG_DRYWT
2,2',5'-Tricb	3.497	D	MG/KG_DRYWT	1.334	D	MG/KG_DRYWT
2,4,4'-Tricb	5.780	D	MG/KG_DRYWT	2.460	D	MG/KG_DRYWT
2,2',3,5'-Tetracb	1.904	D	MG/KG_DRYWT	0.832	D	MG/KG_DRYWT
2,2',5,5'-Tetracb	7.265	D	MG/KG_DRYWT	3.488	D	MG/KG_DRYWT
2,3',4,4'-Tetracb	1.470		MG/KG_DRYWT	0.599		MG/KG_DRYWT
2,2',4,5,5'-Pentacb	1.903	D	MG/KG_DRYWT	0.962	D	MG/KG_DRYWT
2,3,3',4,4'-Pentacb	0.212		MG/KG_DRYWT	0.122		MG/KG_DRYWT
2,3',4,4',5'-Pentacb	1.247	D	MG/KG_DRYWT	0.687	D	MG/KG_DRYWT
2,2',3,3',4,4'-Hexacb	0.163		MG/KG_DRYWT	0.095		MG/KG_DRYWT
2,2',3,4,4',5'-Hexacb	0.968	D	MG/KG_DRYWT	0.501	D	MG/KG_DRYWT
2,2',4,4',5,5'-Hexacb	1.643	D	MG/KG_DRYWT	0.885	D	MG/KG_DRYWT
2,2',3,3',4,4',5'-Heptacb	0.206		MG/KG_DRYWT	0.106		MG/KG_DRYWT
2,2',3,4,4',5,5'-Heptacb	0.291		MG/KG_DRYWT	0.147		MG/KG_DRYWT
2,2',3,4',5,5',6'-Heptacb	0.360		MG/KG_DRYWT	0.182		MG/KG_DRYWT
2,2',3,3',4,4',5,6'-Octacb	0.043	p	MG/KG_DRYWT	0.016	pJ	MG/KG_DRYWT
2,2',3,3',4,4',5,5',6'-Nonacb	0.048		MG/KG_DRYWT	0.020		MG/KG_DRYWT
Decacb - Congener	0.002	pJ	MG/KG_DRYWT	0.001	J	MG/KG_DRYWT
Total MonoCB						
Total DiCB						
Total TriCB						
Total TetraCB						
Total PentaCB						
Total HexaCB						
Total HeptaCB						
Total OctaCB						
Total NonaCB						
DecaCB - Homologue						
Total PCB Congeners (sum CONG x factor)	74.		MG/KG_DRYWT	33.		MG/KG_DRYWT
Total PCB Homologues (sum HOM)						

Appendix B
North of Wood Street Sediment PCB Analytical Results

Station Id	C008-039			C008-040		
Start Date	12/03/2008			12/03/2008		
Fraction	TOTAL			TOTAL		
Samp Id	S-08D-C008-039-00-05			S-08D-C008-040-00-05		
Field Qc Code	SA			SA		
Description	Result	Final Qual	Unit	Result	Final Qual	Unit
2,4'-Dicb	3.369	D	MG/KG_DRYWT	0.409	D	MG/KG_DRYWT
2,2',5'-Tricb	6.985	D	MG/KG_DRYWT	0.972	D	MG/KG_DRYWT
2,4,4'-Tricb	10.554	D	MG/KG_DRYWT	1.944	D	MG/KG_DRYWT
2,2',3,5'-Tetracb	3.792	D	MG/KG_DRYWT	0.576	D	MG/KG_DRYWT
2,2',5,5'-Tetracb	13.780	D	MG/KG_DRYWT	2.193	D	MG/KG_DRYWT
2,3',4,4'-Tetracb	1.582	D	MG/KG_DRYWT	0.618		MG/KG_DRYWT
2,2',4,5,5'-Pentacb	3.586	D	MG/KG_DRYWT	0.568	D	MG/KG_DRYWT
2,3,3',4,4'-Pentacb	0.344		MG/KG_DRYWT	0.097		MG/KG_DRYWT
2,3',4,4',5'-Pentacb	2.298	D	MG/KG_DRYWT	0.405	D	MG/KG_DRYWT
2,2',3,3',4,4'-Hexacb	0.279		MG/KG_DRYWT	0.093		MG/KG_DRYWT
2,2',3,4,4',5'-Hexacb	1.844	D	MG/KG_DRYWT	0.505		MG/KG_DRYWT
2,2',4,4',5,5'-Hexacb	3.237	D	MG/KG_DRYWT	0.445	D	MG/KG_DRYWT
2,2',3,3',4,4',5'-Heptacb	0.374		MG/KG_DRYWT	0.068		MG/KG_DRYWT
2,2',3,4,4',5,5'-Heptacb	0.530		MG/KG_DRYWT	0.095		MG/KG_DRYWT
2,2',3,4',5,5',6'-Heptacb	0.674		MG/KG_DRYWT	0.132		MG/KG_DRYWT
2,2',3,3',4,4',5,6'-Octacb	0.072	p	MG/KG_DRYWT	0.011	pJ	MG/KG_DRYWT
2,2',3,3',4,4',5,5',6'-Nonacb	0.097		MG/KG_DRYWT	0.017	J	MG/KG_DRYWT
Decacb - Congener	0.019	pJ	MG/KG_DRYWT	0.007	pJ	MG/KG_DRYWT
Total MonoCB						
Total DiCB						
Total TriCB						
Total TetraCB						
Total PentaCB						
Total HexaCB						
Total HeptaCB						
Total OctaCB						
Total NonaCB						
DecaCB - Homologue						
Total PCB Congeners (sum CONG x factor)	140.		MG/KG_DRYWT	24.		MG/KG_DRYWT
Total PCB Homologues (sum HOM)						

Appendix B
North of Wood Street Sediment PCB Analytical Results

Station Id	C008-048			C008-049		
Start Date	12/03/2008			12/03/2008		
Fraction	TOTAL			TOTAL		
Samp Id	S-08D-C008-048-00-05			S-08D-C008-049-00-05		
Field Qc Code	SA			SA		
Description	Result	Final Qual	Unit	Result	Final Qual	Unit
2,4'-Dicb	0.741	D	MG/KG_DRYWT	0.450		MG/KG_DRYWT
2,2',5'-Tricb	1.967	D	MG/KG_DRYWT	0.910		MG/KG_DRYWT
2,4,4'-Tricb	3.715	D	MG/KG_DRYWT	1.760		MG/KG_DRYWT
2,2',3,5'-Tetracb	1.136	D	MG/KG_DRYWT	0.670		MG/KG_DRYWT
2,2',5,5'-Tetracb	4.556	D	MG/KG_DRYWT	2.160		MG/KG_DRYWT
2,3',4,4'-Tetracb	0.651	D	MG/KG_DRYWT	0.320		MG/KG_DRYWT
2,2',4,5,5'-Pentacb	1.271	D	MG/KG_DRYWT	0.650		MG/KG_DRYWT
2,3,3',4,4'-Pentacb	0.187		MG/KG_DRYWT	0.060		MG/KG_DRYWT
2,3',4,4',5'-Pentacb	0.875	D	MG/KG_DRYWT	0.480		MG/KG_DRYWT
2,2',3,3',4,4'-Hexacb	0.130		MG/KG_DRYWT	0.040		MG/KG_DRYWT
2,2',3,4,4',5'-Hexacb	0.646	D	MG/KG_DRYWT	0.380		MG/KG_DRYWT
2,2',4,4',5,5'-Hexacb	1.046	D	MG/KG_DRYWT	0.660		MG/KG_DRYWT
2,2',3,3',4,4',5'-Heptacb	0.149		MG/KG_DRYWT	0.050		MG/KG_DRYWT
2,2',3,4,4',5,5'-Heptacb	0.208		MG/KG_DRYWT	0.070		MG/KG_DRYWT
2,2',3,4',5,5',6'-Heptacb	0.249		MG/KG_DRYWT	0.090		MG/KG_DRYWT
2,2',3,3',4,4',5,6'-Octacb	0.025	pJ	MG/KG_DRYWT	0.010	pJ	MG/KG_DRYWT
2,2',3,3',4,4',5,5',6'-Nonacb	0.030		MG/KG_DRYWT	0.010	J	MG/KG_DRYWT
Decacb - Congener	0.028	U	MG/KG_DRYWT	0.020	U	MG/KG_DRYWT
Total MonoCB				0.06		MG/KG_DRYWT
Total DiCB				1.43		MG/KG_DRYWT
Total TriCB				7.76		MG/KG_DRYWT
Total TetraCB				8.48		MG/KG_DRYWT
Total PentaCB				4.93		MG/KG_DRYWT
Total HexaCB				2.68		MG/KG_DRYWT
Total HeptaCB				0.58		MG/KG_DRYWT
Total OctaCB				0.1	J	MG/KG_DRYWT
Total NonaCB				0.01	J	MG/KG_DRYWT
DecaCB - Homologue				0.02	U	MG/KG_DRYWT
Total PCB Congeners (sum CONG x factor)	46.		MG/KG_DRYWT	23.		MG/KG_DRYWT
Total PCB Homologues (sum HOM)				26.		MG/KG_DRYWT

Appendix B
North of Wood Street Sediment PCB Analytical Results

Station Id	C008-055			C008-055		
Start Date	12/03/2008			12/03/2008		
Fraction	TOTAL			TOTAL		
Samp Id	S-08D-C008-055-00-05			S-08D-C008-055-00-05-REP		
Field Qc Code	SA			REP		
Description	Result	Final Qual	Unit	Result	Final Qual	Unit
2,4'-Dicb	3.945	D	MG/KG_DRYWT	3.004	D	MG/KG_DRYWT
2,2',5'-Tricb	9.068	D	MG/KG_DRYWT	7.081	D	MG/KG_DRYWT
2,4,4'-Tricb	13.736	D	MG/KG_DRYWT	11.265	D	MG/KG_DRYWT
2,2',3,5'-Tetracb	5.731	D	MG/KG_DRYWT	4.315	D	MG/KG_DRYWT
2,2',5,5'-Tetracb	19.691	D	MG/KG_DRYWT	15.233	D	MG/KG_DRYWT
2,3',4,4'-Tetracb	1.434	D	MG/KG_DRYWT	1.280	D	MG/KG_DRYWT
2,2',4,5,5'-Pentacb	4.125	D	MG/KG_DRYWT	3.553	D	MG/KG_DRYWT
2,3,3',4,4'-Pentacb	0.451		MG/KG_DRYWT	0.287		MG/KG_DRYWT
2,3',4,4',5'-Pentacb	2.751	D	MG/KG_DRYWT	2.314	D	MG/KG_DRYWT
2,2',3,3',4,4'-Hexacb	0.352		MG/KG_DRYWT	0.234		MG/KG_DRYWT
2,2',3,4,4',5'-Hexacb	2.586	D	MG/KG_DRYWT	2.045	D	MG/KG_DRYWT
2,2',4,4',5,5'-Hexacb	4.497	D	MG/KG_DRYWT	3.685	D	MG/KG_DRYWT
2,2',3,3',4,4',5'-Heptacb	0.457		MG/KG_DRYWT	0.304		MG/KG_DRYWT
2,2',3,4,4',5,5'-Heptacb	0.644		MG/KG_DRYWT	0.428		MG/KG_DRYWT
2,2',3,4',5,5',6'-Heptacb	0.861		MG/KG_DRYWT	0.577		MG/KG_DRYWT
2,2',3,3',4,4',5,6'-Octacb	0.090	p	MG/KG_DRYWT	0.056	p	MG/KG_DRYWT
2,2',3,3',4,4',5,5',6'-Nonacb	0.117	p	MG/KG_DRYWT	0.074		MG/KG_DRYWT
Decacb - Congener	0.023	pJ	MG/KG_DRYWT	0.007	J	MG/KG_DRYWT
Total MonoCB						
Total DiCB						
Total TriCB						
Total TetraCB						
Total PentaCB						
Total HexaCB						
Total HeptaCB						
Total OctaCB						
Total NonaCB						
DecaCB - Homologue						
Total PCB Congeners (sum CONG x factor)	180.		MG/KG_DRYWT	150.		MG/KG_DRYWT
Total PCB Homologues (sum HOM)						

Appendix B
North of Wood Street Sediment PCB Analytical Results

Station Id	C008-062			FIELDQC		
Start Date	12/03/2008			11/20/2008		
Fraction	TOTAL			TOTAL		
Samp Id	S-08D-C008-062-00-05			EB-112008-EB1		
Field Qc Code	SA			EB		
Description	Result	Final Qual	Unit	Result	Final Qual	Unit
2,4'-Dicb	2.070	D	MG/KG_DRYWT	0.001	U	UG/L
2,2',5'-Tricb	4.607	D	MG/KG_DRYWT	0.001	U	UG/L
2,4,4'-Tricb	4.425	D	MG/KG_DRYWT	0.001	U	UG/L
2,2',3,5'-Tetracb	0.750	D	MG/KG_DRYWT	0.001	U	UG/L
2,2',5,5'-Tetracb	6.223	D	MG/KG_DRYWT	0.001	U	UG/L
2,3',4,4'-Tetracb	0.615		MG/KG_DRYWT	0.001	U	UG/L
2,2',4,5,5'-Pentacb	0.903	D	MG/KG_DRYWT	0.001	U	UG/L
2,3,3',4,4'-Pentacb	0.086		MG/KG_DRYWT	0.001	U	UG/L
2,3',4,4',5'-Pentacb	0.626	D	MG/KG_DRYWT	0.001	U	UG/L
2,2',3,3',4,4'-Hexacb	0.084		MG/KG_DRYWT	0.001	U	UG/L
2,2',3,4,4',5'-Hexacb	0.432	D	MG/KG_DRYWT	0.001	U	UG/L
2,2',4,4',5,5'-Hexacb	0.931	D	MG/KG_DRYWT	0.001	U	UG/L
2,2',3,3',4,4',5'-Heptacb	0.122		MG/KG_DRYWT	0.001	U	UG/L
2,2',3,4,4',5,5'-Heptacb	0.173		MG/KG_DRYWT	0.001	U	UG/L
2,2',3,4',5,5',6'-Heptacb	0.248		MG/KG_DRYWT	0.001	U	UG/L
2,2',3,3',4,4',5,6'-Octacb	0.024	p	MG/KG_DRYWT	0.001	U	UG/L
2,2',3,3',4,4',5,5',6'-Nonacb	0.035		MG/KG_DRYWT	0.001	U	UG/L
Decacb - Congener	0.003	pJ	MG/KG_DRYWT	0.001	U	UG/L
Total MonoCB						
Total DiCB						
Total TriCB						
Total TetraCB						
Total PentaCB						
Total HexaCB						
Total HeptaCB						
Total OctaCB						
Total NonaCB						
DecaCB - Homologue						
Total PCB Congeners (sum CONG x factor)	58.		MG/KG_DRYWT		U	UG/L
Total PCB Homologues (sum HOM)						

Appendix B
North of Wood Street Sediment PCB Analytical Results

Station Id	NWS-33			NWS-34		
Start Date	11/20/2008			11/20/2008		
Fraction	TOTAL			TOTAL		
Samp Id	S-08D-NWS-33-00-05			S-08D-NWS-34-00-05		
Field Qc Code	SA			SA		
Description	Result	Final Qual	Unit	Result	Final Qual	Unit
2,4'-Dicb	0.003		MG/KG_DRYWT	0.004		MG/KG_DRYWT
2,2',5'-Tricb	0.007		MG/KG_DRYWT	0.008		MG/KG_DRYWT
2,4,4'-Tricb	0.011		MG/KG_DRYWT	0.011		MG/KG_DRYWT
2,2',3,5'-Tetracb	0.005		MG/KG_DRYWT	0.004		MG/KG_DRYWT
2,2',5,5'-Tetracb	0.017		MG/KG_DRYWT	0.015		MG/KG_DRYWT
2,3',4,4'-Tetracb	0.004		MG/KG_DRYWT	0.004		MG/KG_DRYWT
2,2',4,5,5'-Pentacb	0.005		MG/KG_DRYWT	0.006		MG/KG_DRYWT
2,3,3',4,4'-Pentacb	0.002		MG/KG_DRYWT	0.002		MG/KG_DRYWT
2,3',4,4',5'-Pentacb	0.006		MG/KG_DRYWT	0.008		MG/KG_DRYWT
2,2',3,3',4,4'-Hexacb	0.001	J	MG/KG_DRYWT	0.001	J	MG/KG_DRYWT
2,2',3,4,4',5'-Hexacb	0.005		MG/KG_DRYWT	0.006		MG/KG_DRYWT
2,2',4,4',5,5'-Hexacb	0.006		MG/KG_DRYWT	0.007		MG/KG_DRYWT
2,2',3,3',4,4',5'-Heptacb	0.001	J	MG/KG_DRYWT	0.001	J	MG/KG_DRYWT
2,2',3,4,4',5,5'-Heptacb	0.001	J	MG/KG_DRYWT	0.001	J	MG/KG_DRYWT
2,2',3,4',5,5',6'-Heptacb	0.000	pJ	MG/KG_DRYWT	0.000	J	MG/KG_DRYWT
2,2',3,3',4,4',5,6'-Octacb	0.002	U	MG/KG_DRYWT	0.002	U	MG/KG_DRYWT
2,2',3,3',4,4',5,5',6'-Nonacb	0.000	pJ	MG/KG_DRYWT	0.000	pJ	MG/KG_DRYWT
Decacb - Congener	0.002	U	MG/KG_DRYWT	0.002	U	MG/KG_DRYWT
Total MonoCB						
Total DiCB						
Total TriCB						
Total TetraCB						
Total PentaCB						
Total HexaCB						
Total HeptaCB						
Total OctaCB						
Total NonaCB						
DecaCB - Homologue						
Total PCB Congeners (sum CONG x factor)	0.19		MG/KG_DRYWT	0.2		MG/KG_DRYWT
Total PCB Homologues (sum HOM)						

Appendix B
North of Wood Street Sediment PCB Analytical Results

Station Id	NWS-35			NWS-36		
Start Date	11/20/2008			11/20/2008		
Fraction	TOTAL			TOTAL		
Samp Id	S-08D-NWS-35-00-05			S-08D-NWS-36-00-05		
Field Qc Code	SA			SA		
Description	Result	Final Qual	Unit	Result	Final Qual	Unit
2,4'-Dicb	0.010		MG/KG_DRYWT	0.004		MG/KG_DRYWT
2,2',5'-Tricb	0.017		MG/KG_DRYWT	0.008		MG/KG_DRYWT
2,4,4'-Tricb	0.031		MG/KG_DRYWT	0.010		MG/KG_DRYWT
2,2',3,5'-Tetracb	0.018		MG/KG_DRYWT	0.004		MG/KG_DRYWT
2,2',5,5'-Tetracb	0.040		MG/KG_DRYWT	0.012		MG/KG_DRYWT
2,3',4,4'-Tetracb	0.018		MG/KG_DRYWT	0.003		MG/KG_DRYWT
2,2',4,5,5'-Pentacb	0.024		MG/KG_DRYWT	0.004		MG/KG_DRYWT
2,3,3',4,4'-Pentacb	0.006		MG/KG_DRYWT	0.001	J	MG/KG_DRYWT
2,3',4,4',5'-Pentacb	0.029		MG/KG_DRYWT	0.006		MG/KG_DRYWT
2,2',3,3',4,4'-Hexacb	0.004		MG/KG_DRYWT	0.000	J	MG/KG_DRYWT
2,2',3,4,4',5'-Hexacb	0.021		MG/KG_DRYWT	0.004		MG/KG_DRYWT
2,2',4,4',5,5'-Hexacb	0.028		MG/KG_DRYWT	0.006		MG/KG_DRYWT
2,2',3,3',4,4',5'-Heptacb	0.003		MG/KG_DRYWT	0.001	J	MG/KG_DRYWT
2,2',3,4,4',5,5'-Heptacb	0.005		MG/KG_DRYWT	0.006	p	MG/KG_DRYWT
2,2',3,4',5,5',6'-Heptacb	0.002		MG/KG_DRYWT	0.001	J	MG/KG_DRYWT
2,2',3,3',4,4',5,6'-Octacb	0.000	pJ	MG/KG_DRYWT	0.000	pJ	MG/KG_DRYWT
2,2',3,3',4,4',5,5',6'-Nonacb	0.000	pJ	MG/KG_DRYWT	0.000	pJ	MG/KG_DRYWT
Decacb - Congener	0.002	U	MG/KG_DRYWT	0.002	U	MG/KG_DRYWT
Total MonoCB						
Total DiCB						
Total TriCB						
Total TetraCB						
Total PentaCB						
Total HexaCB						
Total HeptaCB						
Total OctaCB						
Total NonaCB						
DecaCB - Homologue						
Total PCB Congeners (sum CONG x factor)	0.67		MG/KG_DRYWT	0.18		MG/KG_DRYWT
Total PCB Homologues (sum HOM)						

Appendix B
North of Wood Street Sediment PCB Analytical Results

Station Id	NWS-37			NWS-38		
Start Date	11/20/2008			11/20/2008		
Fraction	TOTAL			TOTAL		
Samp Id	S-08D-NWS-37-00-05			S-08D-NWS-38-00-05		
Field Qc Code	SA			SA		
Description	Result	Final Qual	Unit	Result	Final Qual	Unit
2,4'-Dicb	0.002	U	MG/KG_DRYWT	0.000	pJ	MG/KG_DRYWT
2,2',5'-Tricb	0.001	J	MG/KG_DRYWT	0.001	J	MG/KG_DRYWT
2,4,4'-Tricb	0.004		MG/KG_DRYWT	0.004		MG/KG_DRYWT
2,2',3,5'-Tetracb	0.002	J	MG/KG_DRYWT	0.002	J	MG/KG_DRYWT
2,2',5,5'-Tetracb	0.010		MG/KG_DRYWT	0.006		MG/KG_DRYWT
2,3',4,4'-Tetracb	0.004		MG/KG_DRYWT	0.002		MG/KG_DRYWT
2,2',4,5,5'-Pentacb	0.005		MG/KG_DRYWT	0.002		MG/KG_DRYWT
2,3,3',4,4'-Pentacb	0.002		MG/KG_DRYWT	0.001	J	MG/KG_DRYWT
2,3',4,4',5'-Pentacb	0.006		MG/KG_DRYWT	0.003		MG/KG_DRYWT
2,2',3,3',4,4'-Hexacb	0.001	J	MG/KG_DRYWT	0.000	J	MG/KG_DRYWT
2,2',3,4,4',5'-Hexacb	0.005		MG/KG_DRYWT	0.003		MG/KG_DRYWT
2,2',4,4',5,5'-Hexacb	0.007		MG/KG_DRYWT	0.003		MG/KG_DRYWT
2,2',3,3',4,4',5'-Heptacb	0.001	J	MG/KG_DRYWT	0.001	pJ	MG/KG_DRYWT
2,2',3,4,4',5,5'-Heptacb	0.002	J	MG/KG_DRYWT	0.001	J	MG/KG_DRYWT
2,2',3,4',5,5',6'-Heptacb	0.000	J	MG/KG_DRYWT	0.002	U	MG/KG_DRYWT
2,2',3,3',4,4',5,6'-Octacb	0.000	pJ	MG/KG_DRYWT	0.002	U	MG/KG_DRYWT
2,2',3,3',4,4',5,5',6'-Nonacb	0.000	pJ	MG/KG_DRYWT	0.000	pJ	MG/KG_DRYWT
Decacb - Congener	0.002	U	MG/KG_DRYWT	0.002	U	MG/KG_DRYWT
Total MonoCB						
Total DiCB						
Total TriCB						
Total TetraCB						
Total PentaCB						
Total HexaCB						
Total HeptaCB						
Total OctaCB						
Total NonaCB						
DecaCB - Homologue						
Total PCB Congeners (sum CONG x factor)	0.13		MG/KG_DRYWT	0.076		MG/KG_DRYWT
Total PCB Homologues (sum HOM)						

Appendix B
North of Wood Street Sediment PCB Analytical Results

Station Id	NWS-39		
Start Date	11/20/2008		
Fraction	TOTAL		
Samp Id	S-08D-NWS-39-00-05		
Field Qc Code	SA		
Description	Result	Final Qual	Unit
2,4'-Dicb	0.002	U	MG/KG_DRYWT
2,2',5-Tricb	0.001	J	MG/KG_DRYWT
2,4,4'-Tricb	0.006		MG/KG_DRYWT
2,2',3,5'-Tetracb	0.004		MG/KG_DRYWT
2,2',5,5'-Tetracb	0.008		MG/KG_DRYWT
2,3',4,4'-Tetracb	0.005		MG/KG_DRYWT
2,2',4,5,5'-Pentacb	0.005		MG/KG_DRYWT
2,3,3',4,4'-Pentacb	0.002	J	MG/KG_DRYWT
2,3',4,4',5-Pentacb	0.006		MG/KG_DRYWT
2,2',3,3',4,4'-Hexacb	0.001	J	MG/KG_DRYWT
2,2',3,4,4',5'-Hexacb	0.005		MG/KG_DRYWT
2,2',4,4',5,5'-Hexacb	0.006		MG/KG_DRYWT
2,2',3,3',4,4',5-Heptacb	0.001	J	MG/KG_DRYWT
2,2',3,4,4',5,5'-Heptacb	0.003	p	MG/KG_DRYWT
2,2',3,4',5,5',6-Heptacb	0.000	J	MG/KG_DRYWT
2,2',3,3',4,4',5,6-Octacb	0.002	U	MG/KG_DRYWT
2,2',3,3',4,4',5,5',6-Nonacb	0.000	pJ	MG/KG_DRYWT
Decacb - Congener	0.002	U	MG/KG_DRYWT
Total MonoCB			
Total DiCB			
Total TriCB			
Total TetraCB			
Total PentaCB			
Total HexaCB			
Total HeptaCB			
Total OctaCB			
Total NonaCB			
DecaCB - Homologue			
Total PCB Congeners (sum CONG x factor)	0.14		MG/KG_DRYWT
Total PCB Homologues (sum HOM)			

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PCB Congeners – Sediment QA/QC Summary

Batch 09-0014

PROJECT: USACE – New Bedford Harbor Environmental Monitoring
PARAMETER: PCB Congeners
LABORATORY: Battelle, Duxbury, MA
MATRIX: Sediment
SAMPLE CUSTODY: Sediment samples were collected between 12/3/2008 – 12/5/2008 and hand delivered to the Battelle Duxbury Chemistry Sample Custodian on 1/14/2009. The samples were received in good condition and no custody issues were noted. Samples were logged into Battelle LIMS and received unique IDs. They were stored in the walk-in freezer until preparation could begin.

	Reference Method	Method Blank	Surrogate Recovery	LCS Recovery	MS Recovery	MS/MSD Relative Percent Difference	Detection Limits (mg/kg dry wt)
PCB Congeners	EPA 8082M	<ssRL	40-120% Recovery	40-120% Recovery	40-120% Recovery	≤30% RPD (analyte conc. in MS must be >5x background) (analytes must be > 5x MDL to be used for data quality assessment)	RL: 0.0013

METHOD: Sediment samples were extracted for PCB congeners following modified EPA Method 3545. Sediments were weighed, air-dried overnight, spiked with surrogates and extracted using an Accelerated Solvent Extractor (ASE). The extract was concentrated, processed through activated copper, florisil cleanup column, and concentrated. Next, the extract was concentrated, fortified with internal standards (IS), and then analyzed using gas chromatography/electron capture detector (GC/ECD), following modified EPA Method 8082. Sample data were quantified by the method of internal standards, using the spiked IS compounds.

HOLDING TIMES: Sediments of this batch were extracted within 1 year of sample holding time for frozen sediments. All extracts were analyzed within 40 days of extract holding time.

Batch	Collection Date	Extraction Date	Analysis Date
09-0014	12/03/2008 – 12/05/2008	1/27/2009	2/11/2009 – 2/25/2009

09-0014

Sample ID	Battelle ID
S-08D-C008-30W-00-05	Q6149
S-08D-C008-30E-00-05	Q6150
S-08D-NWS-35-00-05	Q6151
S-08D-NWS-34-00-05	Q6152
S-08D-NWS-36-00-05	Q6153
S-08D-NWS-33-00-05	Q6154
S-08D-NWS-37-00-05	Q6155
S-08D-NWS-38-00-05	Q6156
S-08D-NWS-39-00-05	Q6157
S-08D-C008-038-00-05	Q6158
S-08D-C008-028-00-05	Q6159

PCB Congeners – Sediment QA/QC Summary

Batch 09-0014

S-08D-C008-016-00-05	Q6162
S-08D-C008-039-00-05	Q6163
S-08D-C008-040-00-05	Q6164
S-08D-C008-062-00-05	Q6165
S-08D-C008-048-00-05	Q6166
S-08D-C008-033-00-05	Q6167
S-08D-C008-055-00-05	Q6168
S-08D-C008-055-00-05-REP	Q6169
S-08D-C008-010-00-05	Q6170

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.

09-0014 – No target analytes were detected in the procedural blank.

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.

09-0014 – No exceedences noted. All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%).

MATRIX SPIKE/MATRIX SPIKE DUPLICATE: A pair of matrix spike (MS) and matrix spike duplicate samples (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 was calculated to measure the data quality in terms of precision.

09-0014 – No exceedences noted. All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%). All RPDs met the criteria of <30%.

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).

09-0014 – No exceedences noted. All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%).

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 %D between the initial calibration (ICAL) and the continuing calibration samples should be <20% for each compound, <15% on average. Additionally an Initial Calibration Check (ICC) sample is run immediately following the ICAL. The ICC is to have a percent difference < 20%.

09-0014 – All calibration criteria were met.

Battelle

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Project Client: USACE - North Atlantic Division

Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)

Project Number: G606422

Client ID	Procedural Blank
Battelle ID	BM757PB-P
Sample Type	PB
Collection Date	01/27/09
Extraction Date	01/27/09
Analysis Date	02/23/09
Analytical Instrument	ECD
% Moisture	NA
% Lipid	NA
Matrix	SEDIMENT
Sample Size	10.79
Size Unit-Basis	G_DRY
Units	MG/KG_DRY

CI2(8)	0.0013 U
CI3(18)	0.0013 U
CI3(28)	0.0013 U
CI4(44)	0.0013 U
CI4(52)	0.0013 U
CI4(66)	0.0013 U
CI5(101)	0.0013 U
CI5(105)	0.0013 U
CI5(118)	0.0013 U
CI6(128)	0.0013 U
CI6(138)	0.0013 U
CI6(153)	0.0013 U
CI7(170)	0.0013 U
CI7(180)	0.0013 U
CI7(187)	0.0013 U
CI8(195)	0.0013 U
CI9(206)	0.0013 U
CI10(209)	0.0013 U

Surrogate Recoveries (%)

CI3(34)	71
CI6(152)	84

Battelle

The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	Laboratory Control Sample			
Battelle ID	BM758LCS-P			
Sample Type	LCS			
Collection Date	01/27/09			
Extraction Date	01/27/09			
Analysis Date	02/11/09			
Analytical Instrument	ECD			
% Moisture	NA			
% Lipid	NA			
Matrix	SEDIMENT			
Sample Size	10.84			
Size Unit-Basis	G_DRY			
Units	MG/KG_DRY	Target	% Recovery	Qualifier
CI2(8)	0.2789	0.37	75	
CI3(18)	0.2682	0.37	72	
CI3(28)	0.2494	0.37	68	
CI4(44)	0.2613	0.37	71	
CI4(52)	0.2595	0.37	70	
CI4(66)	0.2629	0.37	71	
CI5(101)	0.2583	0.37	70	
CI5(105)	0.2762	0.37	75	
CI5(118)	0.2656	0.37	72	
CI6(128)	0.2567	0.37	69	
CI6(138)	0.2546	0.37	69	
CI6(153)	0.2744	0.37	74	
CI7(170)	0.2788	0.37	75	
CI7(180)	0.2696	0.37	73	
CI7(187)	0.2609	0.37	70	
CI8(195)	0.2713	0.37	73	
CI9(206)	0.2783	0.37	75	
CI10(209)	0.2835	0.37	77	

Surrogate Recoveries (%)

CI3(34)	75
CI6(152)	74



The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Table with columns: Client ID, Battelle ID, Sample Type, Collection Date, Extraction Date, Analysis Date, Analytical Instrument, % Moisture, % Lipid, Matrix, Sample Size, Size Unit-Basis, Units, MG/KG_DRY, MG/KG_DRY, Target, % Recovery, Qualifier. Rows include various PCB congeners like Cl2(8), Cl3(18), etc.

Surrogate Recoveries (%)

Table with columns: Congener ID, Value 1, Value 2. Rows: Cl3(34) with values 69 and 90; Cl6(152) with values 83 and 92.

Battelle

The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID S-08D-NWS-33-00-05

Battelle ID Q6154MSD-P
Sample Type MSD
Collection Date 11/20/2008
Extraction Date 1/27/2009
Analysis Date 2/12/2009
Analytical Instrument ECD
% Moisture 15.38
% Lipid NA
Matrix SEDIMENT
Sample Size 8.47
Size Unit-Basis G_DRY

Units	MG/KG_DRY	Target	% Recovery	Qualifier	RPD (%)	Qualifier
CI2(8)	0.4117	0.47	86		8.9	
CI3(18)	0.4058	0.47	84		10.2	
CI3(28)	0.3613	0.47	74		16.1	
CI4(44)	0.393	0.47	82		8.2	
CI4(52)	0.4031	0.47	82		9.3	
CI4(66)	0.3899	0.47	82		5.9	
CI5(101)	0.3848	0.47	80		9.5	
CI5(105)	0.4768	0.47	100		1.0	
CI5(118)	0.3986	0.47	83		9.2	
CI6(128)	0.3838	0.48	81		8.3	
CI6(138)	0.3895	0.47	81		10.5	
CI6(153)	0.4117	0.47	86		9.9	
CI7(170)	0.4215	0.47	89		7.6	
CI7(180)	0.4119	0.47	87		6.7	
CI7(187)	0.3963	0.47	84		8.0	
CI8(195)	0.4102	0.47	87		6.7	
CI9(206)	0.418	0.47	88		6.6	
CI10(209)	0.419	0.47	89		6.5	

Surrogate Recoveries (%)

CI3(34) 83
CI6(152) 83

PCB Congeners – Sediment QA/QC Summary
Batch 09-0015

PROJECT: USACE – New Bedford Harbor Environmental Monitoring
PARAMETER: PCB Congeners
LABORATORY: Battelle, Duxbury, MA
MATRIX: Sediment
SAMPLE CUSTODY: Sediment samples were collected between 12/3/2008 – 12/5/2008 and hand delivered to the Battelle Duxbury Chemistry Sample Custodian on 1/14/2009. The samples were received in good condition and no custody issues were noted. Samples were logged into Battelle LIMS and received unique IDs. They were stored in the walk-in freezer until preparation could begin.

	Reference Method	Method Blank	Surrogate Recovery	LCS Recovery	MS Recovery	MS/MSD Relative Percent Difference	Detection Limits (mg/kg dry wt)
PCB Congeners	EPA 8082M	<ssRL	40-120% Recovery	40-120% Recovery	40-120% Recovery	≤30% RPD (analyte conc. in MS must be >5x background) > 5x MDL to be used for data quality assessment)	RL: 0.03

METHOD: Sediment samples were extracted for PCB congeners following modified EPA Method 3545. Sediments were air-dried overnight, and approximately 5 g of sediment was spiked with surrogates and extracted using an Accelerated Solvent Extractor (ASE). The extract was concentrated, processed through activated copper, florisil cleanup column, and concentrated. Next, the extract was concentrated, fortified with internal standards (IS), and then analyzed using gas chromatography/electron capture detector (GC/ECD), following modified EPA Method 8082. Sample data were quantified by the method of internal standards, using the spiked IS compounds.

HOLDING TIMES: Sediments of this batch were extracted within 1 year of sample holding time for frozen sediments. All extracts were analyzed within 40 days of extract holding time.

Batch	Collection Date	Extraction Date	Analysis Date
09-0015	12/03/2008 – 12/05/2008	1/29/2009	2/13/2009 – 2/15/2009

09-0015

Sample ID	Battelle ID
S-08D-C008-049-00-05	Q6160
S-08D-C008-023-00-05	Q6161
S-08C-X33-00-11	Q6171
S-08C-T38-00-10	Q6172
S-08C-CC27-00-09	Q6173
S-08C-T22-00-04	Q6174
S-08C-D32-00-05	Q6175
S-08C-D25-00-07	Q6176
S-08C-bb28-00-10	Q6177

PCB Congeners – Sediment QA/QC Summary

Batch 09-0015

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.

09-0015 – No target analytes were detected in the procedural blank.

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.

09-0015 – No exceedences noted. All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%).

MATRIX SPIKE/MATRIX SPIKE DUPLICATE: A pair of matrix spike (MS) and matrix spike duplicate samples (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 was calculated to measure the data quality in terms of precision.

09-0015 – No exceedences noted. All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%). All RPDs met the criteria of <30%.

REPLICATES: Laboratory duplicate analysis was performed with this analytical batch. RPDs between duplicate analyses were calculated to measure data quality in terms of precision.

09-0015 – No exceedences noted. All RPDs between duplicate samples met the criteria of <30%.

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).

09-0015 – No exceedences noted. All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%).

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 %D between the initial calibration (ICAL) and the continuing calibration samples should be <20% for each compound, <15% on average. Additionally an Initial Calibration Check (ICC) sample is run immediately following the ICAL. The ICC is to have a percent difference < 20%.

09-0015 – All calibration criteria were met.

Battelle

The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	060208-03: Sand, White Quartz, -50+70			
Battelle ID	BM761LCS-P			
Sample Type	LCS			
Collection Date	01/29/09			
Extraction Date	01/29/09			
Analysis Date	02/14/09			
Analytical Instrument	ECD			
% Moisture	NA			
% Lipid	NA			
Matrix	SEDIMENT			
Sample Size	10.51			
Size Unit-Basis	G_DRY			
Units	MG/KG_DRY	Target	% Recovery	Qualifier
CI2(8)	0.31	0.38	81	
CI3(18)	0.3	0.38	79	
CI3(28)	0.29	0.38	76	
CI4(44)	0.29	0.38	76	
CI4(52)	0.28	0.38	74	
CI4(66)	0.27	0.38	71	
CI5(101)	0.28	0.38	73	
CI5(105)	0.32	0.38	84	
CI5(118)	0.29	0.38	76	
CI6(128)	0.29	0.38	76	
CI6(138)	0.28	0.38	73	
CI6(153)	0.31	0.38	81	
CI7(170)	0.3	0.38	78	
CI7(180)	0.3	0.38	79	
CI7(187)	0.29	0.38	76	
CI8(195)	0.3	0.38	79	
CI9(206)	0.31	0.38	81	
CI10(209)	0.32	0.38	84	

Surrogate Recoveries (%)

CI3(34)	76
CI6(152)	80



The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Table with columns: Client ID, Battelle ID, Sample Type, Collection Date, Extraction Date, Analysis Date, Analytical Instrument, % Moisture, % Lipid, Matrix, Sample Size, Size Unit-Basis, Units, MG/KG_DRY, S-08C-T38-00-10, S-08C-T38-00-10, MG/KG_DRY, Target, % Recovery, Qualifier. Rows include congeners CI2(8) through CI10(209).

Surrogate Recoveries (%)

Table with columns: Congener ID, Value 1, Value 2. Rows: CI3(34) with values 71 and 77; CI6(152) with values 77 and 82.



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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID S-08C-T38-00-10

Battelle ID Q6172MSD-P
Sample Type MSD
Collection Date 12/5/2008
Extraction Date 1/29/2009
Analysis Date 2/14/2009
Analytical Instrument ECD
% Moisture 39.01
% Lipid NA
Matrix SEDIMENT
Sample Size 6.51
Size Unit-Basis G_DRY

Units	MG/KG_DRY		Target	% Recovery	Qualifier	RPD (%)	Qualifier
Cl2(8)	0.65		0.62	83		2.4	
Cl3(18)	0.77	E	0.62	80		0.0	
Cl3(28)	1.17	E	0.62	91		9.2	
Cl4(44)	0.85	E	0.62	80		1.2	
Cl4(52)	1.07	E	0.61	76		6.4	
Cl4(66)	0.9	E	0.62	83		27.1	
Cl5(101)	1.06	E	0.62	78		6.2	
Cl5(105)	0.61		0.62	81		3.6	
Cl5(118)	1.05	E	0.62	81		3.6	
Cl6(128)	0.53		0.62	74		2.7	
Cl6(138)	0.81	E	0.62	76		6.4	
Cl6(153)	0.94	E	0.62	78		6.2	
Cl7(170)	0.53		0.62	79		2.5	
Cl7(180)	0.55		0.62	79		2.5	
Cl7(187)	0.5		0.62	75		3.9	
Cl8(195)	0.5		0.62	81		2.4	
Cl9(206)	0.52		0.62	83		1.2	
Cl10(209)	0.53		0.62	86		0.0	

Surrogate Recoveries (%)

Cl3(34) 82
Cl6(152) 78



The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Table with columns: Client ID, Battelle ID, Sample Type, Collection Date, Extraction Date, Analysis Date, Analytical Instrument, % Moisture, % Lipid, Matrix, Sample Size, Size Unit-Basis, Units, and RPD/Qualifier. Rows include various PCB congeners (CI2-10) and their respective values for two samples (S-08C-bb28-00-10 and S-08C-bb28-00-10).

Surrogate Recoveries (%)

Table with columns: Congener ID, Sample 1 Value, Sample 2 Value. Rows: CI3(34) with values 84 and 92; CI6(152) with values 85 and 80.

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PCB Homologues – SEDIMENT QA/QC SUMMARY
Batch 09-0015

PROJECT: New Bedford Harbor Water Quality Monitoring
PARAMETER: PCB Homologues
LABORATORY: Battelle, Duxbury, MA
MATRIX: Sediment
SAMPLE CUSTODY: Sediment samples were collected between 12/3/2008 – 12/5/2008 and hand delivered to the Battelle Duxbury Chemistry Sample Custodian on 1/14/2009. The samples were received in good condition and no custody issues were noted. Samples were logged into Battelle LIMS and received unique IDs. They were stored in the walk-in freezer until preparation could begin. All sediment samples were extracted for PCB congener analyses by GC/ECD. 7.5% percent of the sediment samples were chosen for PCB homologue analysis. From this batch samples S-08D-C008-049-00-05, S-08D-C008-023-00-05, S-08C-X33-00-11, and S-08C-bb28-00-10 were analyzed for PCB homologues.

	Reference Method	Method Blank	Surrogate Recovery	LCS/MS/MSD Recovery	Sample Replicate Relative Precision	Reporting Limits (mg/Kg dry wt)
PCB Homologues	1668A & 8270D	< ss-RL	40-120%	40-120%	<30% RPD MS spike must be >5 x background MS spike must be >5 x background	0.03 – 0.84

METHOD: Sediment samples were extracted for PCBs following modified EPA Method 3545. Sediments were air-dried overnight, and approximately 5 g of sediment was spiked with surrogates and extracted using an Accelerated Solvent Extractor (ASE). The extract was concentrated, processed through activated copper, florisil cleanup column, and concentrated. Extracts were then fortified with internal standards (IS). Extracts designated for PCB homologue analysis were analyzed using gas chromatography/mass spectrometry (GC/MS), following Battelle SOP 5-315 which is based on key components of EPA Methods 1668A and 8270D. Sample data were quantified by the method of internal standards, using the IS compounds.

HOLDING TIMES: These frozen sediment samples were extracted within 1-year holding time. Extracts were analyzed within 40 days of extraction. All holding times were met.

<u>Batch</u>	<u>Collection Date</u>	<u>Extraction Date</u>	<u>Analysis Date</u>
09-0015	12/03/08-12/05/08	1/29/09	2/07/09-2/08/09

09-0015	Battelle ID
Sample ID	
S-08D-C008-049-00-05	Q6160
S-08D-C008-023-00-05	Q6161
S-08C-X33-00-11	Q6171
S-08C-bb28-00-10	Q6177

PCB Homologues – SEDIMENT QA/QC SUMMARY
Batch 09-0015

- 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.
- 09-0015** – No exceedences noted. No target analytes were detected in the procedural blank at a concentration greater than the sample-specific reporting limit.
- 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.
- 09-0015** – No exceedences noted. All recoveries were within the laboratory control limits (40%-120%).
- MATRIX SPIKE/MATRIX SPIKE DUPLICATE:** A pair of matrix spike (MS) and matrix spike duplicate samples (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 was calculated to measure the data quality in terms of precision.
- 09-0015** – No exceedences noted. All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%). All RPDs met the criteria of <30%.
- REPLICATES:** Laboratory duplicate analysis was performed with this analytical batch. RPDs between duplicate analyses were calculated to measure data quality in terms of precision.
- 09-0015** – No exceedences noted. All RPDs between duplicate samples met the criteria of <30%.
- 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).
- 09-0015** – No exceedences noted. All recoveries were within the laboratory control limits (40%-120%).
- CALIBRATION:** The GC/MS is calibrated with a minimum of a 6-point curve. The co-efficient of determination must be > 0.995 for each target analyte in the initial calibration (ICAL). Each batch of samples analyzed is bracketed by a continuing calibration verification (CCV) sample, run at a frequency of every 12 hours (minimally). This percent difference (PD) for the CCV should be <25% for individual analytes. Additionally an instrument calibration check (ICC) sample was run with the initial calibration. The PD for the ICC should be < 25% for each analyte.
- 09-0015** – No initial calibration exceedences noted.
No CCV exceedence.
No ICC exceedence.

Battelle

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Project Client: USACE - North Atlantic Division

Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)

Project Number: G606422

Client ID Procedural Blank

Battelle ID	BM759PB-P
Sample Type	PB
Collection Date	01/29/09
Extraction Date	01/29/09
Analysis Date	02/07/09
Analytical Instrument	MS
% Moisture	54.07
% Lipid	NA
Matrix	SEDIMENT
Sample Size	4.67
Size Unit-Basis	G_DRY
Units	MG/KG_DRY

LOC 1	0.06 U
LOC 2	0.3 U
LOC 3	0.45 U
LOC 4	0.84 U
LOC 5	0.69 U
LOC 6	0.78 U
LOC 7	0.6 U
LOC 8	0.3 U
LOC 9	0.09 U
LOC 10	0.03 U

Surrogate Recoveries (%)

Cl3(34)	72
Cl6(152)	79

Battelle

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Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	060208-03: Sand, White Quartz, -50+70			
Battelle ID	BM760LCS-P			
Sample Type	LCS			
Collection Date	01/29/09			
Extraction Date	01/29/09			
Analysis Date	02/07/09			
Analytical Instrument	MS			
% Moisture	NA			
% Lipid	NA			
Matrix	SEDIMENT			
Sample Size	10.24			
Size Unit-Basis	G_DRY			
Units	MG/KG_DRY	Target	% Recovery	Qualifier
LOC 1	0.1	0.10	100	
LOC 2	0.17	0.15	115	
LOC 3	0.26	0.25	104	
LOC 4	0.47	0.45	105	
LOC 5	0.58	0.55	106	
LOC 6	0.57	0.55	104	
LOC 7	0.35	0.33	105	
LOC 8	0.28	0.30	94	
LOC 9	0.09	0.10	90	
LOC 10	0.04	0.05	79	

Surrogate Recoveries (%)

Cl3(34)	88
Cl6(152)	98

Battelle

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Project Client: USACE - North Atlantic Division

Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)

Project Number: G606422

Client ID	S-08C-X33-00-11	S-08C-X33-00-11			
Battelle ID	Q6171-P	Q6171MS-P			
Sample Type	SA	MS			
Collection Date	12/05/08	12/5/2008			
Extraction Date	01/29/09	1/29/2009			
Analysis Date	02/07/09	2/7/2009			
Analytical Instrument	MS	MS			
% Moisture	60.51	60.55			
% Lipid	NA	NA			
Matrix	SEDIMENT	SEDIMENT			
Sample Size	4.01	4.06			
Size Unit-Basis	G_DRY	G_DRY			
Units	MG/KG_DRY	MG/KG_DRY	Target	% Recovery	Qualifier
LOC 1	0.05 J	0.24	0.25	76	
LOC 2	1.83	2.16	0.37	89	
LOC 3	10.79	11.57	0.63	124	
LOC 4	14.81	15.85	1.13	92	
LOC 5	13.52	14.91	1.38	101	
LOC 6	6.31	7.57	1.38	92	
LOC 7	1.28	2.04	0.84	90	
LOC 8	0.22 J	0.91	0.75	92	
LOC 9	0.04 J	0.24	0.25	80	
LOC 10	0.01 J	0.1	0.13	70	

Surrogate Recoveries (%)

Cl3(34)	84	83
Cl6(152)	81	79

Battelle

The Business of Innovation

Project Client: USACE - North Atlantic Division

Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)

Project Number: G606422

Client ID S-08C-X33-00-11

Battelle ID Q6171MSD-P

Sample Type MSD

Collection Date 12/5/2008

Extraction Date 1/29/2009

Analysis Date 2/7/2009

Analytical Instrument MS

% Moisture 60.44

% Lipid NA

Matrix SEDIMENT

Sample Size 3.97

Size Unit-Basis G_DRY

Units	MG/KG_DRY	Target	% Recovery	Qualifier	RPD (%)	Qualifier
LOC 1	0.25	0.26	78		2.6	
LOC 2	3.02	0.38	313		111.4	
LOC 3	17.73	0.64	1080		158.8	
LOC 4	24.33	1.15	827		160.0	
LOC 5	22.62	1.41	644		145.8	
LOC 6	10.97	1.41	331		113.0	
LOC 7	2.65	0.86	159		55.4	
LOC 8	1.1	0.77	115		22.2	
LOC 9	0.27	0.26	90		11.8	
LOC 10	0.12	0.13	84		18.2	

Surrogate Recoveries (%)

Cl3(34) 88

Cl6(152) 81

Battelle

The Business of Innovation

Project Client: USACE - North Atlantic Division

Project Name: NBH Sediment Sample PCB Congener Analysis (ECD)

Project Number: G606422

Client ID	S-08C-bb28-00-10	S-08C-bb28-00-10		
Battelle ID	Q6177-P	Q6177DUP-P		
Sample Type	SA	QADU		
Collection Date	12/05/08	12/5/2008		
Extraction Date	01/29/09	1/29/2009		
Analysis Date	02/08/09	2/8/2009		
Analytical Instrument	MS	MS		
% Moisture	50.17	50.8		
% Lipid	NA	NA		
Matrix	SEDIMENT	SEDIMENT		
Sample Size	5.15	5		
Size Unit-Basis	G_DRY	G_DRY		
Units	MG/KG_DRY	MG/KG_DRY	RPD	Qualifier
LOC 1	0.04 U	0.06 U	NA	
LOC 2	0.59	0.56	5.2	
LOC 3	2.88	2.97	3.1	
LOC 4	3.6	3.9	8.0	
LOC 5	2.58	2.64	2.3	
LOC 6	1.43	1.46	2.1	
LOC 7	0.3 J	0.3 J	NA	
LOC 8	0.01 J	0.01 J	NA	
LOC 9	0.06 U	0.09 U	NA	
LOC 10	0.02 U	0.03 U	NA	

Surrogate Recoveries (%)

Cl3(34)	82	82
Cl6(152)	76	76

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PCB Congeners – Water QA/QC Summary
Batch 08-0314

PROJECT: USACE-NAE – New Bedford Harbor Environmental Monitoring
PARAMETER: PCB Congeners
LABORATORY: Battelle, Duxbury, MA
MATRIX: Equipment Blank
SAMPLE CUSTODY: The equipment blank sample was collected on 11/20/2008 and hand delivered to the Chemistry Department by the Battelle Field Group. No custody issues were noted. The sample was logged into LIMS and received unique Battelle ID. The sample was stored at 4°C in an access controlled walk-in refrigerator until sample preparation could begin.

	Reference Method	Method Blank	Surrogate Recovery	LCS Recovery	MS Recovery	MS/MSD Relative Percent Difference	Detection Limits (ug/L)
PCB Congeners	EPA 8082M	<ssRL	40-120% Recovery	40-120% Recovery	40-120% Recovery	<30% RPD (analytes must be > 5x MDL to be used for data quality assessment)	RL: ~ 0.0013

METHOD: The equipment blank was extracted for PCB Congeners following modified EPA Method 3510C. Approximately 1 liter of water was spiked with surrogates and extracted three times with dichloromethane using separatory funnel techniques. Combined extract was dried over anhydrous sodium sulfate, concentrated, fortified with internal standards (IS), and then analyzed using gas chromatography/electron capture detector (GC/ECD), following modified EPA Method 8082. Sample data were quantified by the method of internal standards, using the spiked IS compounds.

HOLDING TIMES: Water samples were extracted within 7 days of sample collection. All extracts were analyzed within 40 days of extract holding time.

Batch	Collection Date	Extraction Date	Analysis Date
08-0314	11/20/2008	11/24/2008	12/06/2008

PCB Congeners – Water QA/QC Summary

Batch 08-0314

LIST OF SAMPLES:

08-0314

Sample ID
EB-112008-EB1

Battelle ID
Q5585

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.

08-0314 – No exceedences noted. No target PCBs 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.

08-0314 – All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%).

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).

08-0314 – No exceedence noted. All percent recoveries were within the laboratory control limit (40%-120%).

CALIBRATIONS: The GC/ECD was calibrated with a minimum 6 level curve, with a linear 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 %D between the initial calibration (ICAL) and the continuing calibration samples should be $<20\%$ for each compound. Additionally an Initial Calibration Check (ICC) sample is run immediately following the ICAL. The ICC is to have a percent difference $< 20\%$.

08-0314 – All calibration criteria were met.



The Business of Innovation

Project Client: USACE - North Atlantic Division

Project Name: NBH Equipment Blank Sample PCB Congener Analysis (ECD)

Project Number: G606422

Client ID	Laboratory Control		Target	% Recovery	Qualifier
	Sample				
Battelle ID	BM624LCS-P				
Sample Type	LCS				
Collection Date	11/24/08				
Extraction Date	11/24/08				
Analysis Date	12/06/08				
Analytical Instrument	ECD				
% Moisture	NA				
% Lipid	NA				
Matrix	WATER				
Sample Size	1.00				
Size Unit-Basis	L_LIQUID				
Units	UG/L_LIQUID		Target	% Recovery	Qualifier
CI2(8)	0.037		0.05	74	
CI3(18)	0.0385	E	0.05	77	
CI3(28)	0.0363		0.05	73	
CI4(44)	0.0422	E	0.05	84	
CI4(52)	0.0415	E	0.05	83	
CI4(66)	0.042	E	0.05	84	
CI5(101)	0.0416	E	0.05	83	
CI5(105)	0.042	E	0.05	84	
CI5(118)	0.0417	E	0.05	83	
CI6(128)	0.0409	E	0.05	81	
CI6(138)	0.0413	E	0.05	82	
CI6(153)	0.0424	E	0.05	85	
CI7(170)	0.0425	E	0.05	85	
CI7(180)	0.0415	E	0.05	83	
CI7(187)	0.0418	E	0.05	83	
CI8(195)	0.0406	E	0.05	81	
CI9(206)	0.0402	E	0.05	80	
CI10(209)	0.0403	E	0.05	81	

Surrogate Recoveries (%)

CI3(34)	82
CI6(152)	84

Qualifiers:

B	Analyte concentration found in the sample at < 5 x the level detected in the procedural blank
D	Dilution run. Initial run outside linear range of instrument
E	Estimate, result is greater than the highest concentration level in the calibration
H	Surrogate diluted out. Used when surrogate recovery is affected by excessive dilution of the sample extract
J	Analyte detected below the sample specific reporting limit
ME	Significant Matrix Interference - Estimated value
N	Quality Control value is outside the accuracy or precision data quality objective (DQO)
NA	Not applicable
T	Holding time exceeded
U	Analyte not detected at 3:1 signal:noise ratio. Reporting limit is reported.
p	The relative percent difference (RPD) between the values obtained from the dual columns is >40%.

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Sample Receipt Form

Approved: Authorized

Project Number: G606422

Client: USACE - NED

Received by: Thorn, Jonathan

Date/Time Received: Friday, January 16, 2009 12:00 AM

No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Hand Delivered

Tracking Number: Not Recorded

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		None	Not Applicable	Not Applicable	Ambient	29

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): Ambient 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: Q6149 - Q6177

Samples logged in by: Thorn, Jonathan Date/Time: 01/16/2009 12:00 AM

Approved By: _____ Approved On: _____

Authorized By: _____ Authorized On: _____

Sample Receipt Form Details

Approved: Authorized:

Project Number: G606422 Client: USACE - NED

Received by: Thorn, Jonathan Date/Time Received: Friday, January 16, 2009 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:
Q6149	S-08D-C008-30W-00-05	11/20/08 0:00	01/21/09 8:33	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6150	S-08D-C008-30E-00-05	11/20/08 0:00	01/21/09 8:40	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6151	S-08D-NWS-35-00-05	11/20/08 0:00	01/21/09 9:00	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6152	S-08D-NWS-34-00-05	11/20/08 0:00	01/21/09 9:03	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6153	S-08D-NWS-36-00-05	11/20/08 0:00	01/21/09 9:03	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6154	S-08D-NWS-33-00-05	11/20/08 0:00	01/21/09 9:03	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6155	S-08D-NWS-37-00-05	11/20/08 0:00	01/21/09 9:04	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6156	S-08D-NWS-38-00-05	11/20/08 0:00	01/21/09 9:04	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6157	S-08D-NWS-39-00-05	11/20/08 0:00	01/21/09 9:06	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6158	S-08D-C008-038-00-05	12/03/08 0:00	01/21/09 9:07	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6159	S-08D-C008-028-00-05	12/03/08 0:00	01/21/09 9:08	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6160	S-08D-C008-049-00-05	12/03/08 0:00	01/21/09 9:09	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6161	S-08D-C008-023-00-05	12/03/08 0:00	01/21/09 9:10	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6162	S-08D-C008-016-00-05	12/03/08 0:00	01/21/09 9:12	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6163	S-08D-C008-039-00-05	12/03/08 0:00	01/21/09 9:12	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6164	S-08D-C008-040-00-05	12/03/08 0:00	01/21/09 9:13	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6165	S-08D-C008-062-00-05	12/03/08 0:00	01/21/09 9:13	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6166	S-08D-C008-048-00-05	12/03/08 0:00	01/21/09 9:14	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6167	S-08D-C008-033-00-05	12/03/08 0:00	01/21/09 9:14	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6168	S-08D-C008-055-00-05	12/03/08 0:00	01/21/09 9:15	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6169	S-08D-C008-055-00-05-REP	12/03/08 0:00	01/21/09 9:15	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6170	S-08D-C008-010-00-05	12/03/08 0:00	01/21/09 9:16	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6171	S-08C-X33-00-11	12/05/08 0:00	01/21/09 9:16	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6172	S-08C-T38-00-10	12/05/08 0:00	01/21/09 9:17	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6173	S-08C-CC27-00-09	12/05/08 0:00	01/21/09 9:17	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6174	S-08C-T22-00-04	12/05/08 0:00	01/21/09 9:17	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6175	S-08C-D32-00-05	12/05/08 0:00	01/21/09 9:18	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	
Q6176	S-08C-D25-00-07	12/05/08 0:00	01/21/09 9:18	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	

Sample Receipt Form Details

Approved: Authorized

Project Number: G606422 Client: USACE - NED

Received by: Thorn, Jonathan Date/Time Received: Friday, January 16, 2009 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:
Q6177	S-08C-bb28-00-10	12/05/08 0:00	01/21/09 9:19	1	SEDIMENT		NA	NA	NA	F0002 (Walk-in)	BIN	48	

Total Samples: 29

Proj. No: **G606422** Proj. Name: **NBH - NWS + Post-Dredge**

SAMPLERS: Signature

Jessica Tenzou + Patrick Curran

ANALYSIS REQUESTED →
"NUMBER OF CONTAINERS"

DATE	TIME	LAB BATTLELLE ID	FIELD ID CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB Congeners	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER PCB Homologs	ACIDIFIED	PRESERVED	Total Number of Containers	
11/20/08		Q6149	S-08D-C008-30W-00-05	Sediment		✓									1	
		Q6150	S-08D-C008-30E-00-05			✓										1
		Q6151	S-08D-NWS-35-00-05			✓										1
		Q6152	S-08D-NWS-34-00-05			✓										1
		Q6153	S-08D-NWS-36-00-05			✓										1
		Q6154	S-08D-NWS-33-00-05			✓										1
		Q6155	S-08D-NWS-37-00-05			✓										1
		Q6156	S-08D-NWS-38-00-05			✓										1
		Q6157	S-08D-NWS-39-00-05			✓										1
12/3/08		Q6158	S-08D-C008-038-00-05			✓										1
		Q6159	S-08D-C008-028-00-05			✓										1
		Q6160	S-08D-C008-049-00-05			✓							✓			1
		Q6161	S-08D-C008-023-00-05			✓							✓			1
		Q6162	S-08D-C008-016-00-05			✓										1
		Q6163	S-08D-C008-039-00-05			✓										1
		Q6164	S-08D-C008-040-00-05		✓										1	
		Q6165	S-08D-C008-062-00-05		✓										1	

Relinquished by: *Jessica M Tenzou*

Date/Time: 1/16/09 1410

Received by: *[Signature]*

Date/Time: 1/16/09 1410

Relinquished by:

Date/Time:

Received by:

Date/Time:

Comments: all samples were frozen from date of collection to until 1/14/09.

Proj. No: 5606422 Proj. Name: NBH-NWS + Post Dredge

SAMPLERS: Signature

Jessica Tenzer + Patrick Cavanaugh

ANALYSIS REQUESTED →
"NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID LAB	Field ID CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB Cavanaugh	TBT FINGERPRINT	PAH	VOA	TBT	METALS	OTHER Hazardous	ACIDIFIED	PRESERVED	Total Number of Containers	
2/3/08		Q6166	S-08D-C008-048-00-05	Sediment		✓									1	
		Q6167	S-08D-C008-033-00-05			✓										1
		Q6168	S-08D-C008-055-00-05			✓										1
		Q6169	S-08D-C008-055-00-05-REP			✓										1
		Q6170	S-08D-C008-010-00-05			✓										1
12/5/08		Q6171	S-08C-X33-00-11			✓										1
		Q6172	S-08C-T38-00-10			✓										1
		Q6173	S-08C-CC27-00-09			✓										1
		Q6174	S-08C-T22-00-04			✓										1
		Q6175	S-08C-D32-00-05			✓										1
		Q6176	S-08C-D25-00-07		✓										1	
		Q6177	S-08C-bb28-00-10		✓							✓			1	

Relinquished by: <i>Jessi M. Jorgensen</i>	Date/Time		Received by: 	Date/Time	
	1/16/09	1410		1/16/09	1410
Relinquished by:	Date/Time		Received by:	Date/Time	

Comments:
 Samples collected on 12/3/08 were frozen until 1/14/09
 Samples collected on 12/5/08 were frozen until 1/15/09

Sample Receipt FormApproved: Authorized

Project Number: G606422 **Client:** _____
Received by: Seyfert, Jeannine **Date/Time Received:** Thursday, November 20, 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	Cooler	NA	None	Not Applicable	Intact	4.0	1

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): 4 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 South: Refrigerator - R0003 (Upper Cold **BDO IDs Assigned:** Q5585 - Q5585

Samples logged in by: Seyfert, Jeannine **Date/Time:** 11/20/2008 12:00 AM

Approved By: _____ **Approved On:** _____

Authorized By: _____ **Authorized On:** _____

Sample Receipt Form Details

Approved: Authorized

Project Number: G606422 Client: _____

Received by: Seyfert, Jeannine Date/Time Received: Thursday, November 20, 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:
Q5585	EB-112008-EB1	11/20/08 13:35	11/21/08 8:36	2	WATER	4	NA	NA	NA	R0003 (Upper C			Equipment blank - Auge

Total Samples: 1



US ARMY CORPS
OF ENGINEERS
New England District

Contract No. DACW33-03-D-0004

Delivery Order No. 22

June 2009

Final
**Water Quality Monitoring
Summary Report
2008 Remedial Dredging**



**Environmental Monitoring, Sampling, and
Analysis**

**New Bedford Harbor Superfund Site
New Bedford Harbor, MA**

**Final Report
Water Quality Monitoring Summary Report
2008 Remedial Dredging**

**Environmental Monitoring, Sampling, and Analysis
New Bedford Harbor Superfund Site
New Bedford Harbor, Massachusetts**

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: 22**

Prepared by:

**Battelle
397 Washington Street
Duxbury, MA 02332
(781) 934-0571**

June 2009

Battelle
The Business of Innovation

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APPENDICES

- Appendix A:** Water Quality Monitoring Field Logs and Tide Data
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- Appendix C:** Total Suspended Solids and Turbidity Analytical Data
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EXECUTIVE SUMMARY

In 2008, remediation activities at the New Bedford Harbor Superfund site included shoreline excavation adjacent the Aerovox facility and hydraulic dredging at the Pierce Mill Cove to remove contaminated sediments. Water quality monitoring was performed during remediation activities to provide field reconnaissance information to gauge the extent of potential water quality impacts that may result from remediation operations and to ensure that the dredging activities were conducted in a manner that did not hinder the seasonal migration of anadromous fish to and from the Acushnet River. This report presents key findings from the water quality monitoring performed at the Pierce Mill Cove dredge area; water quality monitoring performed during shoreline excavation activities at the Aerovox facility is reported in Jacobs (2009).

Remediation dredging was performed at the Pierce Mill Cove dredge area from August 18 through October 21, 2008, resulting in the removal of approximately 20,000 cubic yards of contaminated sediments. Water quality monitoring was performed prior to the onset of dredging to establish baseline conditions and during dredging to verify the protectiveness of the project-based turbidity criterion. Water quality monitoring was performed each day during the first week of dredging and one day a week thereafter until dredging was complete. The monitoring program included boat-based monitoring to monitor *in-situ* turbidity and observe the dredge area for sediment plumes and fish and wildlife passage; deployment of moored sensors to collect continuous, *in-situ* water quality data to supplement boat-based monitoring data; and collection of discrete water samples for physical, chemical, and biological testing to assess the protectiveness of the project-based turbidity criterion. Boat-based *in-situ* turbidity measurements were evaluated against the project criteria, including the *project criterion* defined as 50 Nephelometric Turbidity Units (NTU) above background measured 600 feet (ft) down-current of the dredging and associated activities and the *warning level* defined as an exceedance of 50 NTU above background at 300 ft down-current of the dredging and associated activities. The monitoring protocol required that if the warning level was exceeded, the USACE was contacted immediately to determine what, if any, operational modifications might be warranted to abate the condition and to reduce the potential for a criteria exceedance at the 600-ft transect. During the 2008 dredging period, neither the warning level nor the project criterion was exceeded at any time during the boat-based monitoring.

Prior to the onset of dredging activities at the Pierce Mill Cove dredge area, *in-situ* turbidity readings were low (<2 NTU) both inside the dredge area and at the reference stations located approximately 1,000 ft north and south of the dredge boundary. During dredging, *in-situ* turbidity readings remained low at the reference locations and increased at the dredge area compared to baseline conditions. The highest *in-situ* turbidity readings were generally observed in close proximity (<200 ft) to the debris removal and dredging activities, but were of short duration.

Neither the boat-based monitoring nor the continuous *in-situ* turbidity data revealed frequent or substantive turbidity plumes during dredging activities. When turbidity plumes were observed, they often occurred south of the Pierce Mill Cove dredge area and were generally weak. Turbidity plumes to the north were rarely observed, probably because water flow was generally to the south and the land mass to the north acted as a barrier to reduce the migration of a north-



flowing plume. The continuous *in-situ* turbidity data revealed some weak turbidity plumes, which were sustained only under certain tidal and wind conditions. Generally, if the dredge or debris removal barge was working during a flood tide with the wind from the south or southwest, the north mooring data showed some peaks in turbidity. Conversely, a turbidity plume was apparent in the south mooring data when dredge activities occurred during an ebbing tide with wind from the north or northeast. The wind appeared to have had less of an effect during an ebbing tide because both the tide and the flow of the Acushnet River forced the plume south. Overall, lack of substantive plumes observed during dredging may be attributed to the physical setting of the dredge area, which is relatively isolated from the physical processes of the upper harbor (i.e., currents and particularly the resulting flushing). Additionally, the physical properties of the dredged material, which had a high percentage of sand, could also explain the limited extent and duration of the observed plumes.

Throughout the dredge season large numbers of fish were observed. Lower trophic level baitfish were consistently observed moving throughout the river from Sawyer Street to Wood Street. Larger predatory fish were also sporadically seen. Birds such as great blue herons, gulls, swans, cormorants, egrets, osprey, and other wading birds were observed feeding along the shoreline during these weeks. During this time period, when fish were most abundant, there appeared to be no restriction of movement past the dredge area.

Discrete water samples were collected at locations representing a full range of turbidities to evaluate the relationships, if any, among turbidity, total suspended solids (TSS) content, polychlorinated biphenyls (PCB), and toxicity data, and to confirm the protectiveness of the project turbidity criterion. PCB concentrations in whole water (unfiltered) samples increased with increasing TSS and proximity to the dredging operations. While site water near the dredge area had elevated TSS, turbidity, and PCBs (whole water), levels decreased with increasing distance from the dredging activities. More importantly, dissolved PCBs, which are thought to be the fraction that causes direct toxicity to marine organisms and may be subjected to long range transport, remained low regardless of the TSS levels or proximity to or from the dredging activities. While measurable water column impacts were observed based on toxicity testing, these effects were either limited to samples collected well within the dredging boundary or did not appear to be directly associated with elevated TSS and turbidity and subsequent increase in PCBs. Overall, the PCB and toxicity data confirmed that the project criterion continues to be ecologically protective, while still allowing remediation efforts to progress.



1.0 INTRODUCTION

1.1 Site Description

The New Bedford Harbor Superfund Site (Site), located in Bristol County, Massachusetts (MA), extends from the shallow northern reaches of the Acushnet River estuary south through the commercial harbor of New Bedford and into 17,000 adjacent acres of Buzzards Bay (Figure 1). Industrial and urban development surrounding the harbor has resulted in sediments becoming contaminated with high concentrations of many pollutants, notably polychlorinated biphenyls (PCBs) and heavy metals. Two manufacturers in the area used PCBs while producing electronic devices from 1940s to the late 1970s, when the use of PCBs was banned by the U.S. Environmental Protection Agency (USEPA). Based on human health concerns and ecological risk assessments, USEPA added New Bedford Harbor to the National Priorities List in 1983 as a designated Superfund Site. Through an Interagency Agreement between the USEPA and the U.S. Army Corps of Engineers, New England District (USACE NAE), the USACE is responsible for carrying out the design and implementation of the remedial measures at the Site. The Site has been divided into three areas – the upper, lower and outer harbors – consistent with geographical features of the area and gradients of contamination (Figure 2).



Figure 1. Location of the Site in Southeastern, MA

The shoreline Aerovox manufacturing facility located in New Bedford, MA used PCBs in the manufacture of electrical capacitors from approximately 1940 to 1977. This facility is located in the upper harbor and is considered one of the major sources of historic PCB contamination to New Bedford Harbor. The highest concentrations of PCBs were found in sediments in a 5-acre area in the northern portion of the Acushnet River Estuary adjacent to the Aerovox facility. These ‘hot spot’ sediments, which contained PCBs upwards of 100,000 milligrams per kilogram (mg/kg), were removed between 1994 and 1995 as part of USEPA’s 1990 “Hot Spot” Record of Decision (ROD). Full scale remediation dredging per the 1998 Upper and Lower Harbor ROD was initiated in 2004 and has continued with annual funding every year since. Another known source of PCB contamination in New Bedford Harbor is related to activities at the Cornell-Dubilier mill on the western shore of the outer harbor. In 2005, a 15 acre underwater cap pilot project (Figure 2) was implemented near Cornell-Dubilier to cap PCB contaminated sediments.



Figure 2. Overview of New Bedford Harbor Superfund Site



The remediation of this site per the 1998 ROD involves the excavation and dredging of approximately 900,000 cubic yards of PCB contaminated sediment. The majority of contaminated material is being removed utilizing a hydraulic dredge that pumps dredge slurry to the project's Sawyer Street facility where it is mechanically processed to remove all sand, gravel, and debris material. The silt and clay size materials are then pumped to the Area D Dewatering Facility located on Herman Melville Boulevard where it is mechanically dewatered and transported off-site for disposal.

The Site is divided into a series of Dredge Management Units (DMU) based on contamination levels, contamination sources, topography, and other factors. In 2008, remediation activities at the Site included shoreline excavation adjacent to the Aerovox facility and hydraulic dredging at the Pierce Mill Cove. This report presents results from water quality monitoring performed during dredging activities at Pierce Mill Cove, which encompasses sections of DMU-19, DMU-20, DMU-21, DMU-23, DMU-24, and DMU-25 (Figure 3). Water quality monitoring results associated with shoreline excavation activities conducted adjacent to the Aerovox facility are reported in Jacobs (2009).



Figure 3. 2008 Dredge Areas

1.2 Project Objectives

The resuspension of sediments during dredging, and dredging related activities, can transport contaminated sediments away from the dredge area. Additionally, contaminated sediments suspended in the water column present a concern for potential toxicity to aquatic organisms in the project area. The primary objective of the 2008 monitoring effort was to conduct boat-based field monitoring to provide field reconnaissance information to the USACE, USEPA and dredging operators, to gauge the extent of water quality impacts resulting from dredging operations. Field reconnaissance information primarily included *in-situ* turbidity monitoring and visual observations of the dredge area for sediment plumes resulting from dredging operations. *In-situ* turbidity monitoring results were evaluated against project-specific values, including 1) the *project criterion* defined as an exceedance of 50 Nephelometric Turbidity Units (NTU) above background measured 600 feet (ft) down-current of dredging and associated activities and 2) the *warning level* defined as an exceedance of 50 NTU above background at 300 ft down-current of dredging and associated activities. If the warning criteria was exceeded, the USACE was contacted immediately to determine what, if any, operational modifications may be warranted to abate the condition and to reduce the potential for a criteria exceedance at the 600-ft transect.



The field reconnaissance information was used to make operational adjustments needed to limit the dispersal of suspended sediments and their associated contaminants as well as limit the extent of biological impacts to the water column. An additional objective was to ensure that the dredging activities were conducted in a manner which did not hinder the seasonal migration of anadromous fish in the Acushnet River (i.e., fish are able to successfully navigate past dredging operations).

1.3 Water Quality Monitoring Program

The focus of the 2008 water quality monitoring program was to assess near-field water column impacts as well as the extent of sediment resuspension and transport away from the dredging operation. These data were used to guide project operations to minimize environmental impacts, limit potential recontamination of previously dredged areas, ensure that the dredging activities were conducted in a manner that did not hinder the seasonal migration of anadromous fish to and from the Acushnet River, and to determine the degree and extent of sediment plumes advecting away from the site during dredging operations. To meet this objective, a tiered monitoring approach was employed which incorporated field measurements of turbidity and water quality parameters. Additionally, discrete water samples were collected for physical, chemical, and biological testing on a periodic basis as needed. Water column measurements were conducted along four transects of the dredge area described below and illustrated in Figure 4. As dredging operations moved throughout the dredge area, the monitoring locations moved relative to those activities as follows:

- **Reference:** A reference station 1,000 ft up-current of dredging operations provided background conditions. A reference station was identified for the Pierce Mill Cove dredge area for both ebb and flood tide conditions.
- **Dredge Boundary:** Measurements were made at the edge of the dredge area. This is defined as a down-current location as close as practicable and as safety allows.
- **300 ft Down-current:** Defined as a set of transects, 300 ft down-current from the dredging operation (ebb and flood).
- **600 ft Down-current:** Defined as a set of transects, 600 ft down-current from the dredging operation (ebb and flood).



Figure 4. Water Quality Monitoring Locations at the Pierce Mill Cove Dredge Area



2.0 METHODS

Methods used to establish the sampling approach, conduct *in-situ* monitoring, and collect and analyze discrete samples are summarized below and described in detail in the project Quality Assurance Project Plan (QAPP; Battelle, 2008a) and Field Sampling Plan (FSP; Battelle 2008b).

2.1 Monitoring and Sampling Approach

The established monitoring and sampling approach for this program employs a variety of methods to characterize sediment resuspension, sediment transport, and its potential impact on water quality. As with previous monitoring efforts, a tiered approach is employed using varying levels of monitoring intensity to assess and gauge dredging related water quality impacts as described in Section 2.1.2. Throughout the monitoring period, water quality monitoring was performed along transects immediately adjacent to the dredge operation, at defined distances down-current, and at an up-current reference station as described in Section 2.1.3.

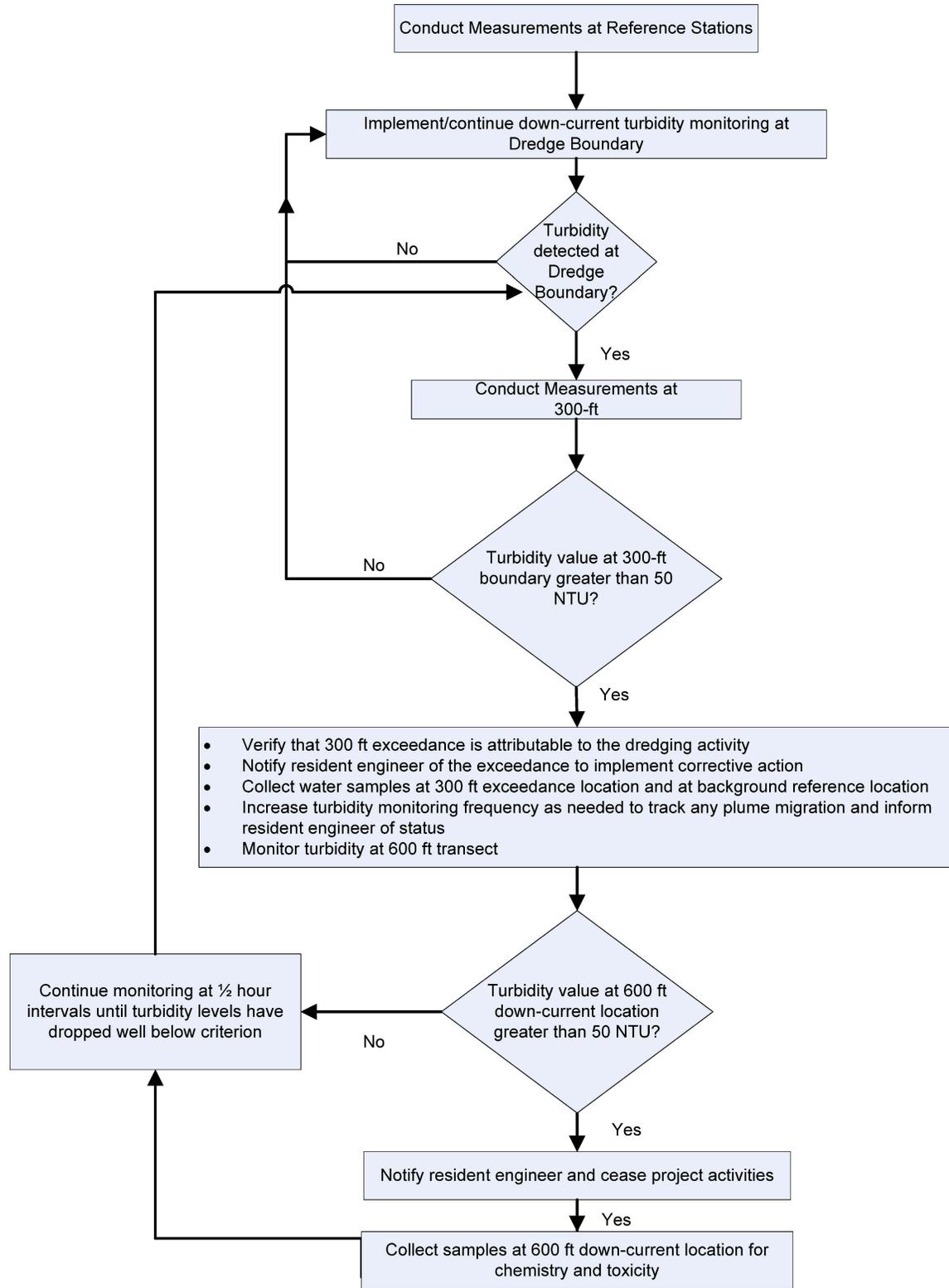
2.1.1 Study Area

The Acushnet River is tidally influenced. The tide, together with variability in freshwater flow, determines the current direction and its influence on the transport of suspended sediments. On ebb tides, “down-current” is always to the south. However, on flood tides flow is often, though not always, to the north. Occasionally the flow is southward during times of flood tide because a strong freshwater inflow overpowers the flood. Several times throughout the 2008 monitoring program a clear stratification of the water column was observed. In these cases higher density, saline tidal waters were overlain by lower density freshwater. Frequently the incoming tidal water was moving north, while the freshwater lens was flowing south. These physical water properties were closely monitored throughout the day, and adjustments were made in the sampling design to accurately assess sediment resuspension and its transport in all directions. Throughout this report the term “down-current” always refer to the direction of water movement relative to the dredging operations at that point in time regardless of geographical direction (north or south).

In 2008, remedial dredging was performed at the Pierce Mill Cove area, located in the upper harbor north of Sawyer Street. The cove is a unique area in that it is relatively isolated from the physical processes of the upper harbor (i.e., current and particularly the resulting flushing). During low tides, the intertidal bottom is generally exposed at the western region of the cove.

2.1.2 Sampling Design

The overall approach utilized an adaptive, criteria-based sampling scheme to monitor project-related water quality impacts (Figure 5). This was divided into a series of sampling ‘levels’ which varied in analytical sample collection intensity. The more intensive levels were utilized when there was greater potential for a specific dredging activity to have an impact on water quality. This was particularly true for new activities or activities in new areas. Based on information from these sampling levels, sampling was reduced to the lower intensity levels when appropriate. Sampling Levels I, II, and III were designed to collect water samples at designated distances away from the dredge operation to limit the extent of impact (Boundary, 300 ft, and 600 ft). A reference station located 1,000 feet up-current from the dredge area (see Section 2.1.3) was used to establish background turbidity readings.



Notes: 1:50 NTU value was defined as 50 NTU above background turbidity level

Figure 5. Decision Sequence for Level III Water Quality Monitoring



Sampling Levels include:

- **Level I** represents a sampling approach for discrete samples and was conducted for those activities considered to have the greatest potential to impact water quality or when new conditions were encountered. Level I sampling included collection of discrete water samples at designated locations: Reference, Dredge Boundary, 300 ft down-current, and 600 ft down-current. At each station discrete water samples were collected for all test parameters from the depth of highest turbidity, based on the *in situ* readings.

Since 2006, Level I sampling has been modified to also collect discrete samples at locations representing a full range of turbidities (25-100 NTU) to evaluate relationships, if any, among the turbidity, PCB, and toxicity data and to confirm that the current criteria were adequately protective of the aquatic environment. Sampling was often performed in close proximity (<300 ft) to the dredging operations in order to capture elevated turbidity levels. The modified Level I sampling did not represent exceedances of the water quality criteria (i.e., project criterion or warning levels).

- **Level II** represents a lower level of monitoring intensity compared to Level I, and was performed when there was decreased concern for water quality impacts from dredging activities. Similar to Level I, Level II was designed to collect samples based on distance from dredge activities although 600 ft samples were not required due to the decreased concern for far-field impact(s).
- **Level III** represents routine, boat-based monitoring performed during dredging activities to evaluate *in situ* turbidity readings against the project-specific water quality criteria (i.e., project criterion and warning level). Collection of discrete water samples for laboratory testing was conditional based on results of *in situ* turbidity monitoring and/or visual observations of sheens or sediment plumes advecting away from the dredge area.

2.1.3 *In-situ* Water Quality Monitoring

Water quality monitoring was conducted prior to the onset of dredging at Pierce Mill Cove and throughout the dredge season to collect *in-situ* measurements of depth, turbidity, temperature, salinity, and dissolved oxygen at the following locations:

- **Reference Station** – At the start of each sampling day the vessel transited to the reference station located 1,000 ft up-current from the active dredge area. This location was outside the influence of any localized turbidity sources (e.g., combined sewer overflow discharges or storm water drains), and was representative of the water flowing through the deeper channel areas up-current of the dredge area. Water depth was measured with a lead-line or stadia rod and the result recorded in the field log. The *in situ* sensors were lowered slowly and allowed to equilibrate at one foot intervals through the water column with care taken to avoid placing the instruments on the sediment bottom. As the sensors were lowered, the sampling personnel observed the turbidity readings and identified the depth of the highest turbidity values. After the full “downcast” was completed, the sensors were pulled back up through the water column and held at the location of highest turbidity. The *in situ* readings for all parameters at this depth were recorded on the Field Log Sheet. This reading served as the background value for subsequent turbidity readings taken throughout the day. Discrete samples were collected as required (see Section 2.1.2). Reference locations were revisited to



obtain new turbidity readings if conditions changed during the day. Examples of relevant changes include change in tidal flow; change in dredge operations; and changing weather conditions such as rain events which can dramatically alter ambient water quality conditions.

- **Dredge Boundary** – Following the collection of *in situ* readings at the reference location, the sampling team transited to the down-current side of dredging operations. Downcast *in situ* readings were collected as close to the dredge and/or debris removal rig as safety allowed to identify the turbidity maximum and collect *in-situ* measurements at that location during the upcast, in the same manner described above for the reference location. Discrete samples were collected depending on the sampling requirements for that survey day (i.e., Levels I, II, and III).
- **300 ft Down-current** – From the dredge operations, the sampling vessel operated along a transect (Figure 4) across the width of the harbor collecting *in situ* readings. Real-time data was used to identify any suspended sediment plumes. The focus was on identifying the centroid of the plume (highest turbidity readings) as well as the plume boundaries (lowest turbidity readings above background). High and low readings along the transects were recorded to show the relative intensity of the plume as well as its spatial dimensions. Once the centroid was identified, subsequent readings were concentrated at this location to identify fluctuations in the plume intensity and potential exceedances of the warning criterion. Discrete samples were collected depending on the sampling requirements for that survey day (i.e., Levels I, II, and III).
- **600 ft Down-current** – From the dredge operations, *in situ* readings were collected along a transect across the width of the river (Figure 4). Discrete samples were collected, if required based on the sampling requirements for that survey day (i.e., Levels I, II, and III).
- **Fixed Point Stations** – YSI (Yellow Springs Instruments) sondes (6920 water quality sensors), with internal data logging units, were deployed at fixed locations approximately 300 to 400-ft up-current and down-current of the Pierce Mill Cove dredge boundary (Figure 6). Continuous, *in-situ* water quality data, including water temperature, salinity, dissolved oxygen,



Figure 6. Location of Fixed Point YSI Sensors



and turbidity, were recorded (sensors programmed to collect a thirty second sample every 10 minutes) over the entire dredge season to supplement boat-based monitoring data.

The sensor suite was suspended horizontally below two surface buoys (one highflier and one mooring ball) to capture near-surface turbidity readings (Figure 7). The sensor suite was attached to an anchor using a weighted line to prevent the line from wrapping around the sensors during changes in the tide.

The sensors remained approximately 1.5 ft below the water surface as the tide rose and fell. The water depth was never less than 1.5 ft so that the sensors never rested on the bottom at low tide. Routine maintenance was performed on the sensors approximately every two weeks: the sensors were cleaned, recalibrated, data downloaded, and the batteries replaced, as needed.

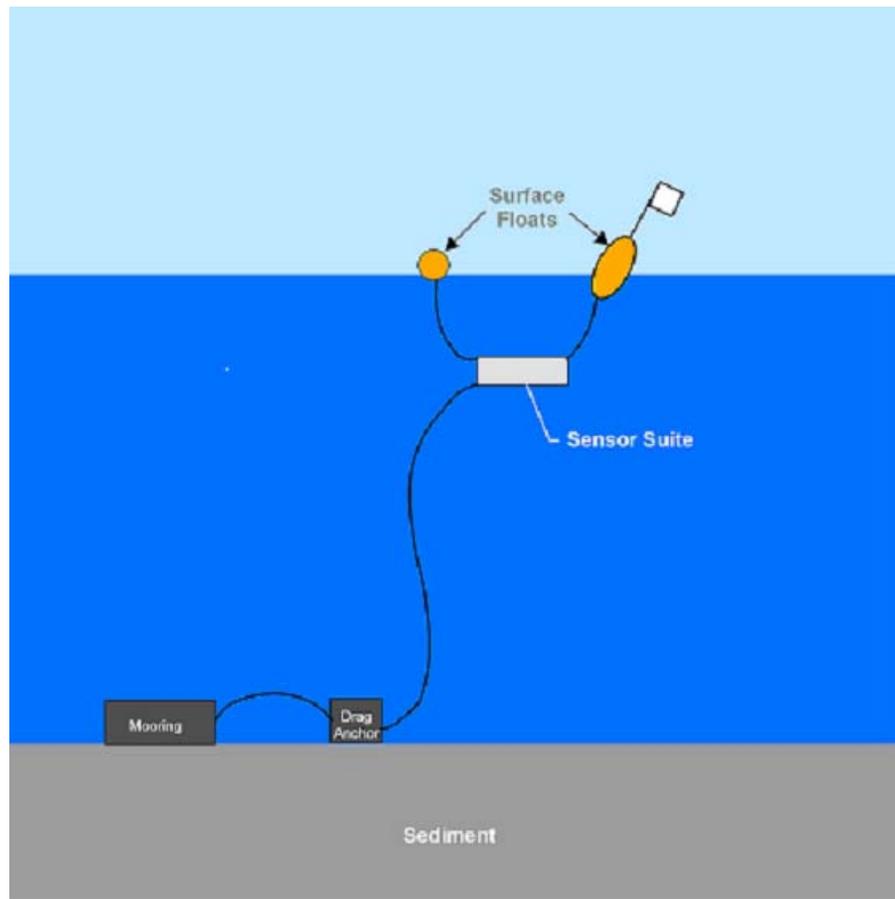


Figure 7. Fixed Point YSI Mooring Configuration

2.1.4 Discrete Water Sampling

Discrete water samples were collected using a 12-volt Teflon diaphragm pump equipped with tygon tubing. Prior to collecting samples at each location, water was pumped continuously through the system for approximately two to three minutes to flush the equipment. This purging ensured that the system was cleared prior to actual sample collection to avoid potential site to site cross-contamination. The YSI *in situ* sensor was placed in the water near the tubing inlet during collection to ensure that the sensor measurements and the analytical results were representative of the same parcel of water.

Following purging, water from the pump outlet was collected directly into the appropriate sample containers for laboratory testing (Table 1). Following collection, samples were stored cold (on ice in coolers or in field trailer refrigerator) until delivery to the participating laboratories (Table 1).



A routine set of field-based quality control (QC) samples were collected to monitor data quality. Field samples included one equipment blank and one field replicate with each set of 20 or fewer field samples. Field QC samples were collected for all test parameters (Table 1), except toxicity testing.

Table 1. Sample Collection Requirements and Participating Laboratories.

Test Parameter	Sample Volume	Sample Container	Preservation	Storage Condition	Holding Times ¹	Analytical Lab
Total Suspended Solids	1 L	HDPE Bottle	Ice	4 ± 2 °C	7 Days	Alpha Analytical 320 Forbes Blvd. Mansfield, MA 02048 508-822-9300
Turbidity					48 Hours	
Polychlorinated Biphenyls (unfiltered and dissolved ² phase samples)	1-L each	Amber Glass Bottle	Ice	4 ± 2 °C	7 Days	Battelle Duxbury 397 Washington Street Duxbury, MA 02332 781-952-5200
Metals ³	500 mL	HDPE Bottle	HN0 ₃	4 ± 2 °C	6 Months	
Toxicity	5 gal	2.5 gallon Cubitainer	Ice	4 ± 2 °C	24 Hours	EnviroSystems, Inc One Lafayette Road P.O. Box 778 Hampton, NH 03843 603-926-3345

¹ Holding time to initial lab preparation.

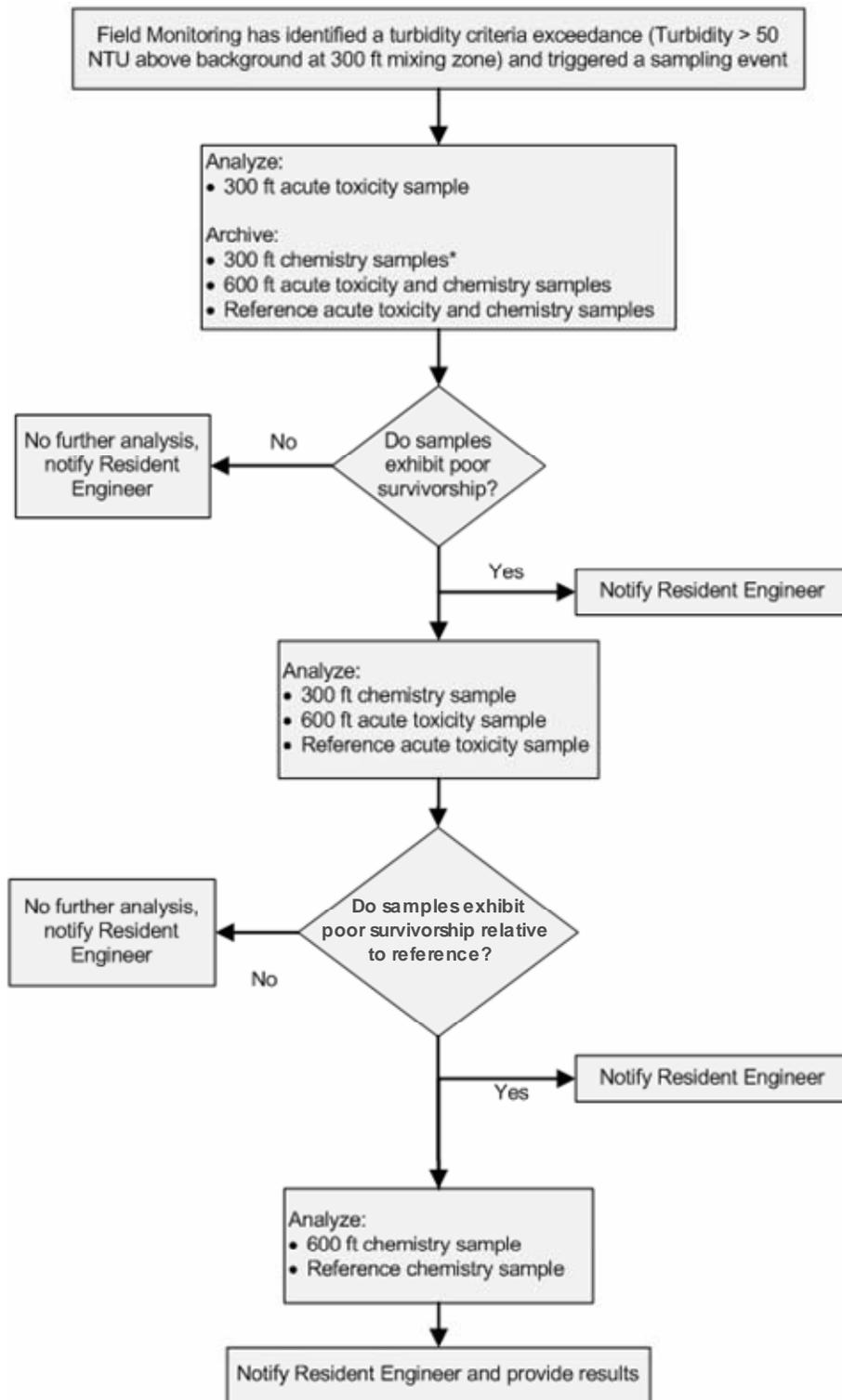
² Samples for dissolved analysis were filtered at the analytical laboratory.

³ Metals samples were archived at Battelle, Duxbury.

2.2 Laboratory Testing

Laboratory testing was performed on contingency based and/or preplanned discrete water samples. Contingency based samples, collected in the event of an exceedance to the warning level (i.e., turbidity in excess of the 50 NTU above background at 300-ft down-current of the dredge activity), were analyzed according to the program's decision sequence for sample analysis (Figure 8). At the direction of USACE NAE, Level I planned samples were submitted for total suspended solids (TSS), turbidity, PCB (total and dissolved phases), and toxicity testing (analysis of archived samples for metals was not requested). Laboratory testing methods are summarized below and described in detail in the project QAPP (Battelle, 2008a).

A routine set of laboratory-based QC samples was prepared with the project samples designated for physical and chemical testing to monitor data quality in terms of accuracy and precision. Depending upon the analysis, QC samples included a procedural blank, laboratory control sample (LCS), matrix spike (MS), matrix spike duplicate (MSD), and laboratory duplicate. Specific QC samples and the associated measurement quality objectives are discussed in the project QAPP (Battelle, 2008a).



*Note: "chemistry samples" = Total and Dissolved PCB samples.

Figure 8. Decision Sequence for Sample Analysis



2.2.1 Total Suspended Solids and Turbidity Analyses

In addition to real-time *in-situ* turbidity monitoring, lab-based analyses of discrete water samples for TSS and turbidity were conducted by Alpha Analytical. Water samples were analyzed for TSS following Alpha Analytical SOP *Total Suspended Solids (TSS) Non-Filterable Residue, Rev. 5.0*, which is based on a modified USEPA Method 160.2. Briefly, a well-mixed sample was filtered through a 0.45 μ membrane filter and the residual retained on the filter was dried and weighed. Results were reported on a milligram dry-weight basis per volume of water filtered (mg/L). Water samples were analyzed for turbidity following Alpha Analytical SOP *Turbidity 180.1, Rev. 2.2*, which is based on USEPA Method 180.1. Sample results were reported in NTU.

For each batch of 20 or fewer samples, a laboratory method blank, LCS, and laboratory duplicate, was processed and analyzed with the field samples for TSS and turbidity.

2.2.2 Polychlorinated Biphenyl Analyses

PCB analyses for the 18 National Status and Trends (NS&T) congeners were conducted by Battelle, using both whole water (unfiltered) and dissolved (filtered) samples. Water samples designated for dissolved PCB analysis were filtered through solvent-rinsed glass fiber filters (1 micron pore size) at the analytical laboratory. Generally, the sample filtration was conducted within 24 hours of sample collection.

Water samples (unfiltered and filtered) were extracted following modified USEPA Method 3510C (Battelle SOP 5-200). Approximately one liter of the water sample (whole water or filtered) was spiked with surrogate internal standards and extracted three times with dichloromethane using separatory funnel techniques. The combined extract was dried over anhydrous sodium sulfate, concentrated, treated with copper for sulfur removal, and solvent exchanged into hexane. The extract was then processed through disposable Florisil columns for further clean-up. The post Florisil extract was concentrated, fortified with internal standards (IS), and analyzed for 18 PCB congeners by gas chromatography/electron capture detector (GC/ECD) using dual column confirmation, following modified USEPA Method 8082 (Battelle SOP 5-128). Sample data were quantified by the method of internal standards, using the IS compounds. Sample extracts were diluted and re-analyzed, as needed, so that the congener response was within the linear range of the calibration.

For each batch of 20 or fewer samples, a laboratory method blank, LCS, MS, and MSD was processed and analyzed with the field samples. Insufficient water was available to prepare a MS and MSD with the water samples collected on August 21, 2008.

Sample results were reported in micrograms per liter ($\mu\text{g/L}$) for the individual congeners and as total PCB, calculated as the sum of 18 NS&T congeners and referred to as "SUM 18 CONG". A value of zero was used in the summation for non-detects. Because no appropriate multiplier is available from previous studies to correlate SUM 18 CONG to total PCB concentration in the water samples of the New Bedford Harbor, SUM 18 CONG is used in this report as an indicator of the relative level of PCB contamination in the water samples. Note that SUM 18 CONG only represents a fraction of the total PCB concentration in the water samples.



2.2.3 Toxicity Analyses

Acute and chronic (sub-lethal) exposure screening assays were performed on discrete water samples collected from New Bedford Harbor to evaluate the potential toxicity of the water samples associated with dredging activities. Assay design included a laboratory control treatment and one or more discrete water samples, generally including a site reference sample. Samples were evaluated “As Received” without dilutions. Testing was based on programs and protocols developed by the USEPA (2002a and 2002b) primarily designed to provide standard approaches for the evaluation of toxicological effects of discharges on aquatic organisms, and for the analysis of water samples. Testing included the following assays: modified 2 day acute and 7 day chronic assays conducted with the mysid shrimp, *Americamysis bahia*, and the red macro alga, *Champia parvula*, and 60 minute chronic fertilization assays conducted with the purple sea urchin, *Arbacia punctulata*. All mysid and urchin fertilization assays and the acute survival portion of the algal assays were conducted by EnviroSystems, Inc. (ESI) located in Hampton, New Hampshire. Additionally, the algal assays were also conducted by the Saskatchewan Research Council, SRC, Saskatoon, Saskatchewan, Canada in order to provide data in the event that the assay conducted by ESI failed to meet all acceptability criteria.

2.2.3.1 Test Species

A. bahia, ≤ 5 days old, were obtained from cultures maintained by Aquatic Research Organisms (ARO), Hampton, New Hampshire. Juvenile shrimp were collected daily, isolated, and placed in a rearing tank for up to 6 days. Holding tanks were maintained in a flow-through culture mode at a temperature of $25 \leq 2^\circ\text{C}$. At the start of the assays the mysids were 7 days old. Juveniles were fed ≤ 24 hour old brine shrimp on a daily basis. Water temperature, salinity, and pH were monitored on a daily basis. Prior to testing organisms were siphoned from the rearing tanks to a holding vessel, and then transferred to test chambers using a large bore pipet, minimizing the amount of water added to test solutions.

A. punctulata adults were obtained from cultures maintained by ESI. The original stock was obtained from a commercial supplier. Male and female urchins were maintained in separate chambers as recommended by protocol (USEPA 2002a and 2002b). Adult urchins were induced to spawn by the injection of a potassium chloride solution. The viability of gametes obtained was determined prior to their addition to the test solutions. Eggs and/or sperm that would not result in a fertilized egg were rejected from the pool of gametes used in the assay.

C. parvula specimens were obtained from stock cultures maintained by the Saskatchewan Research Council. Original stocks were obtained from the University of Texas algal collection. The male and female plants were maintained in separate culture vessels under sterile conditions. Algal cultures were maintained on an orbital shaker (100 revolutions per minute) at $23 \pm 2^\circ\text{C}$ under 16 hour light: 8 hours dark at 40 to 75 foot candles light intensity. Cultures are “cropped” and transferred to fresh nutrient solutions on a weekly basis.

2.2.3.2 Site Water Samples and Laboratory Control Water

Prior to testing in the laboratory, samples were evaluated to document salinity, conductivity, and total residual chlorine. Total residual chlorine was measured by amperometric titration (MDL 0.05 mg/L). Prior to use in the assays the salinity of the samples was adjusted, if necessary, to



predetermined levels using artificial sea salts for *A. bahia* and *A. punctulata* assays, and GP-2 salts (USEPA 2002a and 2002b) for the *C. parvula* assays. The salinity of samples for the *A. bahia* acute and chronic exposure assays was adjusted to $25 \pm 2\text{‰}$ while the salinity for samples used for the *A. punctulata* and *C. parvula* assays was adjusted to $30 \pm 2\text{‰}$. Samples with initial salinity measurements above these levels were not adjusted.

Laboratory control water used for mysid and sea urchin assays was collected from the Hampton/Seabrook Estuary. This water is classified as SA-1 and has been used to culture marine test organisms since 1981. The laboratory control water used in the algal assay, collected from Rye, New Hampshire, is the same water used in culture maintenance. Prior to use, seawater used in the algal assays was filtered through glass fiber filters and sterilized. Dilution water used in the algal assays conducted by SRC was natural seawater collected from the West Coast of Canada. Salinity of the water samples was adjusted using commercial sea salts.

2.2.3.3 Bioassay Tests

***Americamysis bahia* Modified Acute and Chronic Exposure Bioassays**

Modified acute and chronic exposure screening assays were conducted in a static renewal test mode with renewals made at 24-hour intervals. The 7 day assays were conducted at a temperature of $26 \pm 1^\circ\text{C}$ with a photoperiod of 16:8 hours light:dark. Mysids were maintained in 250 mL beakers containing 150 mL of test solution. Approximately 100 mL of the test solution were replaced each day. The assay incorporated 8 replicates with 5 organisms/replicate. Survival and dissolved oxygen were measured daily in each replicate prior to test solution renewal. Salinity, temperature and pH were recorded in a composite sample of the “old” test solution and in the “new” test solution prior to being added to the test chamber. Incubator temperatures were also recorded on a daily basis.

During the test, mysids were fed ≤ 24 hour old *Artemia* nauplii. On Day 7 of the assay, surviving mysids were removed from test solutions, rinsed to remove any surface detritus and salts, and transferred to tared foils and dried for 24 hours at 103°C . Foils were weighed to the nearest 0.01 mg. Mean dry weights per individual were obtained by dividing the net dry weight of all surviving organisms by the number of organisms added at the start of the assay.

***Arbacia punctulata* Chronic Exposure Fertilization Assays**

Gametes were obtained by potassium chloride injection to induce spawning. Sperm were collected dry, diluted to achieve a concentration of approximately 5.0×10^7 sperm/mL in the site water treatments. Sperm solutions were added to 5 mL aliquots of each sample being evaluated and allowed to remain in the test solutions for 60 minutes before the addition of unfertilized eggs. Each treatment incorporated a total of four replicates. After 20 minutes of exposure the assay was terminated by the addition of 0.2 mL of preservative. Aliquots of preserved solution were counted to determine numbers of fertilized and unfertilized eggs. Fertilization was accepted based on the presence or absence of a fertilization membrane around the egg.



***Champia parvula* Modified Acute and Chronic Exposure Assays**

The 7 day red algae assay was conducted with a 2 day exposure period to the site waters and laboratory control treatments. Each treatment used four replicates with five female branches and one male branch per replicate. Temperature was maintained at $23\pm 1^{\circ}\text{C}$. The light source was cool white and fluorescent bulbs set on a 16:8 hours light:dark cycle, with a light intensity of 40 to 75 foot candles. Light intensity was checked at the start of each assay. Temperatures were monitored on a daily basis. Test chambers were 200 mL borosilicate glass beakers. After 2 days exposure, female branch tips were transferred to approximately 100 mL of recovery medium with added nutrients and allowed to recover and mature for 5 days. During transfer, plants were examined to determine the physical condition of the individual branches. Branches showing signs of degeneration were noted and used to establish an acute endpoint. After the recovery period, the number of cystocarps (reproductive bodies) on each female branch were counted.

2.2.3.4 Data Analysis

Statistical analysis of acute and chronic exposure data was completed using CETIS (Comprehensive Environmental Toxicity Testing System) software. The program computes acute and chronic exposure endpoints based on USEPA decision tree guidelines specified in individual test methods. For chronic exposure endpoints statistical significance was accepted at $\alpha < 0.05$.

2.2.3.5 Quality Control

As part of the toxicity testing laboratory quality control program, standard reference toxicant assays are conducted on a regular basis for each test species to provide relative health and response data while allowing for comparison with historic data sets.



3.0 SURVEY CHRONOLOGY AND DAILY OBSERVATIONS

Water quality monitoring was performed prior to the onset of dredging activities at Pierce Mill Cove to establish baseline conditions. Following the onset of dredging, water quality monitoring was performed every day during week one and one day a week thereafter until completion of dredging activities. All turbidity readings referenced in this section are the actual values from the sensor and are not corrected for background levels. High and low tide data for each day that water quality monitoring was performed during operations is summarized below; all times are Eastern Daylight Time (EDT). Complete tide data over the course of the entire 2008 dredge season are provided in Appendix A.

Week of June 2, 2008 (Baseline)

June 5, 2008:

- **Tidal stage:** High tide at 0945 and 2208 EDT; low tide at 0327 and 1524 EDT.
- **Dredge activity:** No active dredging at the Pierce Mill Cove area.
- **Monitoring activity:** Baseline water quality monitoring. Shakedown of equipment and *in situ* measurements of depth, turbidity, temperature, salinity, and dissolved oxygen at nearfield (dredge area) and farfield (300-ft, 600-ft, and 1000-ft north and south of dredge boundary) reference) locations based on flood and ebb tides. Baseline water quality monitoring was conducted to represent a typical monitoring day under normal dredging or debris removal conditions through two tidal cycles.
- **Fishery and Wildlife Observations:** No fin fish passage noted. Other wildlife observations consisted of numerous jellyfish, and occasional swans, gulls and egrets.
- **Results summary:** In general, turbidity readings ranged between 0.1 and 2.2 NTU throughout the nearfield and farfield areas and over both tidal cycles. Lower turbidity values 0.1-0.5 NTU were observed in the western portion of the dredge area, while slightly higher values 0.6-2 NTU were observed in the eastern portion of the dredge area adjacent to the Acushnet River. Discrete water samples were collected for total suspended solids (TSS) and turbidity analyses based on tide (i.e., 2 tidal cycles) and location (i.e., central location within dredge area, 300-ft and 600-ft down-current of dredge boundary) to establish baseline conditions and as a calibration of water quality monitoring equipment.

Week of August 18, 2008 (Week 1)

August 18, 2008:

- **Tidal stage:** High tide at 09:35 and 21:52 EDT; low tide at 2:54 and 15:10 EDT.
- **Dredge activity:** Debris removal and active dredging at Pierce Mill Cove.
- **Monitoring activity:** Week 1, Day 1 of Level III monitoring. Deployed moorings equipped with *in situ* water quality meters at two locations: approximately 300 ft up-current and down-current of the eastern dredge boundary. Monitored low water and flood tide.
- **Fishery and Wildlife Observations:** Bait fish and larger fish moving in channel. Gulls and cormorants also observed feeding throughout the area.
- **Results summary:** Readings collected at reference location, value of 1.75 NTU. Dissolved oxygen values throughout the survey area ranged from 4.19 mg/L to 8.59 mg/L, with lower values to the south and higher values to the north. Several transects run



along the outside of the eastern boundary. Turbidity values ranged from 2 NTU to 7.8 NTU in the morning and from 2 NTU to 18 NTU in the afternoon. Turbidity plume (8 NTU to 18 NTU) observed along eastern boundary of dredge area (within approximately 600-ft of debris removal/dredging activities); higher turbidity readings only observed for approximately 3-4 minutes. No oil sheens observed. No samples collected.

August 19, 2008:

- **Tidal stage:** High tide at 10:16 and 22:33 EDT; low tide at 03:29 and 15:52 EDT.
- **Dredge activity:** Debris removal and active dredging in central cove area. Debris removal barge moved at approximately 10:30 EDT.
- **Monitoring activity:** Week 1, Day 2 of Level III monitoring. Monitored low water and flood tide.
- **Fishery and Wildlife Observations:** Fish (bait fish and predatory fish) observed throughout the dredge area and near the dock. Gulls, osprey, and cormorants also observed feeding in the dredge area. A yellow spotted turtle was also observed near the mid channel area.
- **Results summary:** Readings collected at reference location, values of 1.9–2.5 NTU. Dissolved oxygen values throughout the survey area ranged from 4.84 mg/L to 10.4 mg/L, with lower values to the south (<5 mg/L) and higher values to the north (>5 mg/L). Several transects run along the outside of the eastern boundary. Turbidity values ranged from 2 NTU to 27 NTU in the morning and from 2 NTU to 10 NTU in the afternoon. Short duration, turbidity plumes up to 15 NTU observed at the southeast corner of the dredge area. Higher turbidity values (20 to 27 NTU) observed along the eastern boundary of the dredge area during the ebb tide; dredge operations ceased for approximately 15 to 20 minutes and turbidity values decreased to 1–3 NTU. No oil sheens observed. No samples collected.

August 20, 2008:

- **Tidal stage:** High tide at 10:59 and 23:17 EDT; low tide at 04:07 and 16:37 EDT.
- **Dredge activity:** Debris removal and active dredging at Pierce Mill Cove.
- **Monitoring activity:** Week 1, Day 3 of Level III monitoring. Monitored low water and flood tide.
- **Fishery and Wildlife Observations:** Predatory fish observed feeding on bait fish near dock. Fish observed jumping throughout the survey area and four swans observed inside the dredge boundary.
- **Results summary:** Readings collected at reference location, values of 1.25 to 1.65 NTU. Dissolved oxygen values throughout the survey area ranged from 3.82 mg/L to 4.98 mg/L. Several transects run along the outside of the eastern boundary. Turbidity values ranged from 2 NTU to 13 NTU in the morning and from 2 NTU to 18 NTU in the afternoon. Higher turbidity values of 9–18 NTU were observed near southeast boundary of the dredge area; turbidity values were sporadic and of short duration. A notable plume was observed dissipating south from the dredge area (see Section 4.2.1). No oil sheens observed. No samples collected.



August 21, 2008:

- **Tidal stage:** High tide at 11:46 EDT; low tide at 04:47 and 17:25 EDT.
- **Dredge activity:** Debris removal and active dredging at Pierce Mill Cove.
- **Monitoring activity:** Week 1, Day 4 of Level III monitoring. Monitored low water and flood tide.
- **Fishery and Wildlife Observations:** Cormorants, gulls, and fish observed feeding throughout the dredge area. One large (approximately 24 inch length) dead fish observed near the outside of the boom.
- **Results summary:** Readings collected at reference location, values of 0.2–0.3 NTU. Dissolved oxygen values throughout the survey area ranged from 5.42 mg/L to 7.09 mg/L. Several transects run along the outside of the eastern boundary. Turbidity readings were less than 3 NTU during the morning. A well defined, light brown plume with turbidity readings up to 32 NTU was observed outside the southern dredge boundary during the ebb tide. Conducted Level I planned sampling during ebb tide and along turbidity gradient; samples (14-20 NTU sample, 25-32 NTU sample, and reference sample) collected for toxicity, TSS, turbidity, total and dissolved PCBs, and metals. No oil sheens observed.

August 22, 2008:

- **Tidal stage:** High tide at 00:06 and 12:39 EDT; low tide at 05:23 and 18:19 EDT.
- **Dredge activity:** Debris removal and active dredging at Pierce Mill Cove.
- **Monitoring activity:** Week 1, Day 5 of Level III monitoring. Monitored low water and flood tide.
- **Fishery and Wildlife Observations:** Fish, gulls and cormorants observed throughout the survey area.
- **Results summary:** Readings collected at reference location, values of 4.0–4.3 NTU. Dissolved oxygen values throughout the area ranged from 4.72 mg/L to 5.79 mg/L. Several transects run along the outside of the eastern boundary. No turbidity plumes observed; turbidity readings ranged from 2.1 NTU to 4.6 NTU. No oil sheens observed. No samples collected.

Week of August 25, 2008 (Week 2)

August 28, 2008:

- **Tidal stage:** High tide at 06:20 and 18:47 EDT; low tide at 00:23 and 12:24 EDT.
- **Dredge activity:** Debris removal and active dredging at Pierce Mill Cove throughout the morning. Debris removal was stopped for the early afternoon.
- **Monitoring activity:** Week 2, Day 1 of Level III monitoring. Monitored ebb tide through low water and the beginning of flood tide.
- **Fishery and Wildlife Observations:** Bait fish and predatory fish observed along the eastern boundary of the dredge area and near the dock. Gulls and cormorants also observed throughout the area.
- **Results summary:** Readings collected at reference locations, values of 1.9 NTU to 2.05 NTU. Dissolved oxygen values throughout the survey area ranged from 3.80 mg/L to 4.73 mg/L, with slightly lower values to the south compared to the north. Several transects run along the outside of the eastern boundary. Turbidity values ranged from 2



NTU to 30 NTU in the morning and from 2 NTU to 12 NTU in the afternoon. Poorly defined turbidity plume (8 NTU to 30 NTU) observed south of the southern boundary of dredge area (within approximately 800-ft of debris removal/dredging activities); higher turbidity readings of 18 NTU to 30 NTU were very short lived. As the tide started to come in and debris removal stopped, all readings dropped back to less than 6.2 NTU. No oil sheens observed. No samples collected.

Week of September 1, 2008 (Week 3)

September 3, 2008:

- **Monitoring activity:** None. The sensors deployed at the moorings were serviced. The sensors were cleaned, recalibrated, and the batteries replaced.

September 4, 2008:

- **Tidal stage:** High tide at 11:38 and 23:55 EDT; low tide at 04:40 and 17:18 EDT.
- **Dredge activity:** Debris removal and active dredging at Pierce Mill Cove throughout the morning. Debris removal and dredging was stopped for most of the early afternoon.
- **Monitoring activity:** Week 3, Day 1 of Level III monitoring. Monitored ebb tide through low water and the beginning of flood tide.
- **Fishery and Wildlife Observations:** Bait fish and predatory fish observed at the south reference area, along the eastern boundary of the dredge area, and near the dock. Small predatory fish were observed feeding in the afternoon along the eastern boundary. Gulls and cormorants also observed throughout the area.
- **Results summary:** Readings collected at reference locations, values of 1.75 NTU to 2.5 NTU. Dissolved oxygen values throughout the survey area ranged from 4.80 mg/L to 5.68 mg/L. Several transects run along the outside of the eastern boundary. Turbidity values ranged from 1.5 NTU to 7 NTU in the morning and from 1.5 NTU to 12 NTU in the afternoon. Poorly defined turbidity plume (4 NTU to 12 NTU) observed east of the eastern boundary of dredge area while dredging and debris removal were inactive and the tide was changing directions. Some small (1 to 3 inch) patches of oil sheens were observed just outside the northeast dredge boundary in the morning. No samples collected.

Week of September 8, 2008 (Week 4)

September 11, 2008:

- **Tidal stage:** High tide at 05:34 and 17:55 EDT; low tide at 11:05 EDT.
- **Dredge activity:** Debris removal in the morning until about 10:00 when the tide was too low for the barge to move. Active dredging at Pierce Mill Cove throughout the morning and afternoon- dredging activity was occasionally down for 15-30 minute intervals.
- **Monitoring activity:** Week 4, Day 1 of Level III monitoring. Monitored ebb tide through low water and the beginning of flood tide.
- **Fishery and Wildlife Observations:** Bait fish and predatory fish observed throughout the area that was monitored. Gulls observed resting on the floating pipeline.
- **Results summary:** Readings collected at reference locations, values of 2.4 NTU to 4.0 NTU. Dissolved oxygen values throughout the survey area ranged from 5.41 mg/L to 8.97 mg/L. Monitoring inside the dredge boundary showed 20 NTU to 30 NTU in the



vicinity of the dredge and support boats. In very close proximity to the debris removal barge (30-50 feet east), readings of 35 NTU to 45 NTU were observed but of short duration. Water depths in the monitoring area around the barge ranged from less than 1 foot to about 2 feet. Several transects were run along the outside of the eastern boundary following cessation of debris removal activities. Turbidity values ranged from 2 NTU to 10 NTU. A poorly defined turbidity plume (4 NTU to 10 NTU) was observed north east of the boundary area while dredging was active. No oil sheens observed. No samples collected.

Week of September 15, 2008 (Week 5)

September 16, 2008:

- **Monitoring activity:** None. The sensors deployed at the moorings were serviced. The sensors were cleaned, recalibrated, and the batteries replaced.

September 17, 2008:

- **Monitoring activity:** None. Boat-based *in-situ* water quality monitoring was not performed because dredging and debris removal activities were terminated from September 17 to 19 to perform repairs to the pipeline.

Week of September 22, 2008 (Week 6)

September 23, 2008:

- **Tidal stage:** High tide at 03:03 and 15:37 EDT; low tide at 08:34 and 22:07 EDT.
- **Dredge activity:** Debris removal and active dredging at Pierce Mill Cove throughout the morning and afternoon; dredging activity was occasionally down for 15-30 minute intervals and debris removal was not operational until approximately 09:15 EDT.
- **Monitoring activity:** Week 6, Day 1 of Level III monitoring. Monitored slack low tide through most of the flood tide.
- **Fishery and Wildlife Observations:** Bait fish and predatory fish observed throughout the area that was monitored. Gulls observed resting on the floating pipeline.
- **Results summary:** Readings collected at reference locations, values of 2.8 NTU to 3.4 NTU. Dissolved oxygen values throughout the survey area ranged from 5.28 mg/L to 6.25 mg/L. Several transects were run along the outside of the eastern boundary. Turbidity values ranged from 2 NTU to 18 NTU in the morning with the highest readings observed just south of the south-eastern boundary near the dock. In the afternoon, readings ranged from 3.4 to 38 NTU. A well defined turbidity plume was observed in the surface water near the edge of the western shoreline south of the dredge boundary. The plume was short lived (approximately 15 to 20 minutes) and occurred 50 minutes after the debris removal barge was moved from the central dredge area into the western dredge area. No oil sheen was observed and no samples were collected.

Week of September 29, 2008 (Week 7)

September 29, 2008:

- **Monitoring activity:** None. The sensors deployed at the moorings were serviced. The sensors were cleaned, recalibrated, and the batteries replaced.



October 1, 2008:

- **Tidal stage:** High tide at 09:41 EDT and 21:59 EDT; low tide at 15:37 EDT.
- **Dredge activity:** Debris removal and active dredging at Pierce Mill Cove; dredging activity and debris removal was occasionally down for 15-30 minute until approximately 11:00 EDT.
- **Monitoring activity:** Week 7, Day 1 of Level III monitoring and Level I planned sampling. Monitored end of slack flood tide through part of the ebb tide.
- **Fishery and Wildlife Observations:** Small fish observed jumping near the boundary of the dredge area that was monitored. Gulls and cormorants observed resting on the floating pipeline.
- **Results summary:** Readings collected at reference locations had values of 3.8 NTU to 4.5 NTU. Dissolved oxygen values throughout the survey area ranged from 5.38 mg/L to 7.42 mg/L. Transects were run along the outside of the eastern boundary before entering the dredge area. Transects were also run inside the dredge area; higher, sustained turbidity readings were recorded approximately 125 feet from the debris removal activities located in the northwest corner next to the dredge. Level I planned samples were collected during the ebb tide along a turbidity gradient ranging from 3.8 NTU to 65 NTU. Samples were collected for total suspended solids, turbidity, toxicity, and PCBs; archived samples were also collected for metals. The first set of samples was collected at 11:23 EDT approximately 125 feet from the debris removal. The average turbidity level was 57 NTU with a range between 50-65 NTU. The second set of samples was collected at 11:50 EDT approximately 200 feet from the debris removal. The average turbidity was 24 NTU with a range of between 19-26 NTU. The final set was collected at the north reference location with a turbidity value of 3.8 NTU. Field QC samples were also collected, including a field replicate, equipment blank, and 'extra' water for lab-based QC samples. No oil sheen was observed.

Week of October 6, 2008 (Week 8)

October 8, 2008:

- **Tidal stage:** High tide at 3:08 EDT and 15:34 EDT; low tide at 7:58 EDT and 21:07 EDT.
- **Dredge activity:** Debris removal and active dredging at Pierce Mill Cove; dredging activity and debris removal was down periodically throughout the morning.
- **Monitoring activity:** Week 8, Day 1 of Level III monitoring; monitored flood tide throughout the day.
- **Fishery and Wildlife Observations:** Small fish observed jumping near the boundary of the dredge area that was monitored. Birds, including great blue heron, gulls, swans, and cormorants observed in the area.
- **Results summary:** Readings collected at reference locations had values of 0.5 NTU to 1.6 NTU. Dissolved oxygen values throughout the survey area ranged from 3.90 mg/L to 6.16 mg/L. Transects were run inside the dredge boundary in the eastern most section. Turbidity values ranged from 1.5 NTU to 13.6 NTU in the morning with the highest readings observed about 50-100 feet east of the dredge activity. In the afternoon, readings ranged from 1.0 NTU to 11.0 NTU; higher turbidity readings were again measured due east of the dredge activity. At 13:45 EDT the dredge activity was moved to the western most portion of the dredge area. All turbidity levels decreased to 2-3 NTU



in the survey area (eastern portion of dredge area). A small oil sheen was observed due east of the dredge in the morning. No samples were collected.

October 9, 2008:

- **Monitoring activity:** None. The sensors deployed at the moorings were serviced. The sensors were cleaned, recalibrated, and the batteries replaced.

Week of October 13, 2008 (Week 9)

October 15, 2008:

- **Tidal stage:** High tide at 08:39 EDT and 21:01 EDT; low tide at 14:33 EDT.
- **Dredge activity:** Debris removal throughout the morning in the south west corner of the middle dredge area of Pierce Mill Cove. Active dredging in the morning in the far northwest corner of the western most area. No debris removal was performed in the afternoon; dredging occurred in the southern portion of the middle dredge area.
- **Monitoring activity:** Week 9, Day 1 of Level III monitoring; monitored ebb tide throughout the day.
- **Fishery and Wildlife Observations:** Birds, including great blue heron, gulls, swans, and cormorants observed in the area.
- **Results summary:** Readings collected at reference locations had values of 3.7 NTU to 4.2 NTU. Dissolved oxygen values throughout the survey area ranged from 5.80 mg/L to 7.31 mg/L. During the morning, transects were run inside the dredge boundary in the eastern most section. Turbidity values ranged from 3.6 NTU to 33.4 NTU in the morning with the highest readings observed about 50-100 feet east of the debris removal. During the afternoon, transects were run just outside the southeast dredge boundary (low tide prevented access to inside the dredge boundary). In the afternoon during low tide, there was a period of high turbidity readings due east and southeast of the dredge activity. Turbidity readings were higher in close proximity to the dredge activity (i.e., 60-80 NTU 50-100 feet east of dredge) and decreased with increasing distance from the dredge activity (i.e., 20-30 NTU about 200 feet southeast of dredge activity (next to the dock) and 10-12 NTU about 325 feet southeast of dredge activity). The turbidity plume was sustained for about 45 minutes and abated when dredging stopped around 14:00 EDT. By 14:40 EDT, the turbidity plume had diminished and turbidity levels about 20 feet east of the dock (about 200 feet from dredging activity) dropped to 6.8 NTU. No oil sheens were observed. No samples were collected.

Week of October 20, 2008 (Week 10)

October 20, 2008:

- **Tidal stage:** Low tide at 05:59 EDT and 19:07 EDT; high tide at 13:06 EDT.
- **Dredge activity:** Active dredging in southern area of the middle section of Pierce Mill Cove throughout the day. Debris removal in northeast area of the western-most section in the afternoon.
- **Monitoring activity:** Week 10, Day 1 of Level III monitoring. Monitored flood tide in the morning and ebb tide in the afternoon.
- **Fishery and Wildlife Observations:** Birds, including gulls, cormorants, and swans observed near dredge area and resting along pipeline.



- **Results summary:** The background turbidity readings at the reference sites ranged from 1.3 NTU (at the northern reference in the afternoon) to 1.8 NTU (at the southern reference in the morning). Transects were run along the eastern boundary of the Pierce Mill Cove dredge area throughout the morning; turbidity readings ranged from 1.3-3.2 NTU. In the afternoon, transects were run inside the eastern dredge boundary; turbidity readings ranged from 4.4-8.2 NTU, with the highest turbidity (8.2 NTU) observed approximately 150 feet due east of the debris removal. A low level turbidity plume was visible in the afternoon from the debris removal south just past the southern mooring. No oil sheens observed. No samples were collected.

Week of October 27, 2008 (Week 11)

October 30, 2008:

- **Monitoring activity:** None. The sensors deployed at the moorings were retrieved for the last time.



4.0 RESULTS

Results from the field reconnaissance activities performed at and around the Pierce Mill Cove dredge area and the laboratory testing of discrete water quality samples are presented in this section. Complete results are provided as appendices to this report.

4.1 Dredging Summary

Remedial dredging at the Pierce Mill Cove area was initiated on August 18, 2008 and completed on October 21, 2008. The Pierce Mill Cove dredging area was divided into three sections with sheet pilings running north to south. The western most section, which includes parts of DMU-19 and DMU-23, is intertidal and therefore dredging could not always be conducted during low tides. To maintain efficiency a second dredge was set up. When low water prevented dredging in the western most section of the cove, dredge crews moved over to the second dredge. This approach meant that the dredging location was variable from day to day and even within one work day. The middle section of the cove area included DMU-23, DMU-20, and DMU-24 and the eastern portion encompassed sections of DMU-20, DMU-24, DM-25, and DMU-21. Dredging in all three parts of the Pierce Mill Cove Area was conducted in a West-East orientation during most of the dredging season.

Once the dredge areas were determined, sheet piling was placed around the perimeter of each section, at approximately 50 ft spacing. A perimeter cable was run around the sheet piles at approximately the high tide mark. Also along the perimeter, floating, absorbent oil booms were placed to contain any surface oil slicks. A ‘gate’ in the south eastern end of the dredge area was used for all vessels entering or leaving the operation. However, navigating from the dredge boundary at the gate to the reference areas was hindered by floating pipelines.

Dredging was performed using a Mud Cat™ hydraulic dredge equipped with a horizontal auger (Figure 9). The dredge was propelled by winching itself along a transverse cable which spans the dredge area. As a pass was completed, support crews relocated the cable to position for the next pass. Dredged material was pumped through a pipeline to a booster pump, then to the desanding facility at Sawyer Street. Following desanding, the remaining fine material was pumped via a separate pipeline to the dewatering, treatment, and handling facility in the Lower Harbor. In total, Jacobs estimated that dredging removed approximately 20,000 cubic yards of material from Pierce Mill Cove in 2008.



Figure 9. Mud Cat™ Hydraulic Dredge

Because hydraulic dredges can not process large debris it was necessary to conduct separate removal operations prior to the dredging of a particular area. Debris removal was accomplished by ‘raking’ the bottom with a barge-mounted excavator with two forked jaws that opened and



closed (Figure 10). The two jaws scraped the bottom and closed into each other to capture the debris. Debris scows secured to the side of the debris removal platform stored the debris and were moved offsite as needed. Support boats were used throughout the operation to transport crews, maintain dredges, handle the pipeline, and move barges.

4.2 Field Monitoring Summary

Water quality monitoring was conducted in an adaptive manner to assess potential impacts to water quality in response to changing operational and weather related conditions. The monitoring

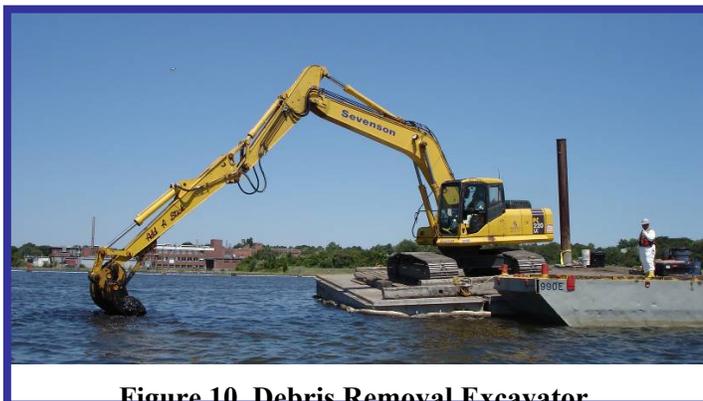


Figure 10. Debris Removal Excavator

approach was modified as tides and winds changed; as dredges changed areas; as debris removal activities changed; and as warranted based on support activities. The proximity of the monitoring activities to the dredging operations was also largely influenced by tidal conditions, safety concerns, and access issues. For example, during the first three weeks of dredging, access to the dredge area was limited due to safety concerns and the pipeline, which depending upon the degree to which it was submerged, obstructed access to the interior of the dredge area. As a result, water quality monitoring was primarily performed along the eastern dredge boundary during the first three weeks of dredging. Depending on the location of the dredge activities inside the dredge area, the distance between the monitoring vessel and dredge operations ranged from 200 ft to 800 ft. During the last seven weeks of dredging, the monitoring vessel was able to access the interior of the dredge area, thereby ensuring that water quality monitoring was often performed in close proximity (<200 ft) to the dredge activities. When safety allowed, the monitoring team also worked in tight radiuses (50-100 ft) around the active dredges.

Overall, neither the warning level nor the project criterion was exceeded during the 2008 monitoring at the Pierce Mill Cove dredge area. Level I planned discrete water samples were collected, however, to assess the potential effects of dredging and related activities on water quality during dredge operations. Water quality monitoring and sampling activities are described below and summarized in Table 2.

4.2.1 Boat-based Monitoring

Boat-based water quality monitoring was performed daily during the first week of dredging at the Pierce Mill Cove and once a week thereafter until dredging was completed on October 21, 2008. Site conditions and *in-situ* water quality measurements collected during boat-based monitoring are summarized in Section 3.0 and documented in the field logs provided in Appendix A. Water quality monitoring was performed primarily along the eastern dredge boundary, and to a lesser extent inside the dredge area. Access to the dredge area was limited due to the pipeline configuration and safety concerns.

Prior to the onset of dredging activities at the Pierce Mill Cove dredge area, *in-situ* turbidity readings were low (<2 NTU) both inside the dredge area and at the reference stations located 1,000 ft north and south of the dredge boundary. During dredging, *in-situ* turbidity readings at



the dredge area increased compared to baseline conditions, with readings ranging from 1 to 80 NTU depending upon the proximity to dredging activities and tide conditions. For example, the maximum reading of 80 NTU was recorded on October 15, 2008 during an ebbing tide and within approximately 50- to 100-ft from dredge activities; turbidity readings decreased with increasing distance from the dredge operations. On this occasion, dredge activities were ceased due to low tide and the plume subsided. A high turbidity reading of 46.5 NTU was also recorded less than 200 ft from debris removal activities during a low tide on September 11, 2008. On this occasion, debris removal activities were ceased and turbidity readings returned to background conditions (Appendix A). *In-situ* turbidity readings along the eastern boundary of the dredge area were frequently less than 10 NTU during dredging activities. Readings as high as 32 NTU also occurred, but were of short duration (<5 minutes). During dredging, *in-situ* turbidity readings at the north and south reference stations were less than 5 NTU.

Turbidity plumes observed during boat-based monitoring were generally weak (frequently <20 NTU) and infrequent. When turbidity plumes were observed, they often occurred south of the cove area. Turbidity plumes to the north were rarely observed, probably because water flow was generally to the south and the land mass to the north acts as a barrier to reduce the migration of a north-flowing plume.

Notable plumes were observed on August 20, 21, and 28, September 23, and October 15 and 20, 2008. All of these observations occurred during an ebb tide. Among these plumes, the maximum turbidity reading of 80 NTU was recorded within 50- to 100-ft of the active dredge on October 15, 2008. Dredging activity was ceased due to low tide and the turbidity readings returned to near background levels. Figure 11 is a photograph taken on August 20, 2008 and shows the visible plume dissipating south from the dredge area.

Weak, yet notable, turbidity plumes were also observed due east of the dredge area on August 18 and 19, and September 4, 2008. Among these plumes, the maximum turbidity reading was 27 NTU. These particular observations all occurred at slack tides when the wind was blowing from the west southwest.



Figure 11. Photograph of August 20, 2008 Plume. (south mooring located in upper right quadrant)



Table 2. Boat-based Monitoring and Sampling Activities at Pierce Mill Cove (PMC), 2008. (a)

Week	Date	Sampling Level	Sample Description	Sample ID ^(b)	Test Parameters
NA	6/5/2008	Baseline	Center of PMC, flood	WQ-XXX-001-060508	TSS, TUR
			300-ft north of dredge boundary	WQ-XXX-002-060508	
			600-ft north of dredge boundary	WQ-XXX-003-060508	
			Center of PMC, ebb	WQ-XXX-004-060508	
			300-ft south of dredge boundary	WQ-XXX-005-060508	
			600-ft south of dredge boundary	WQ-XXX-006-060508	
1	8/18/2008	III	NA	NA	NA
	8/19/2008	III	NA	NA	NA
	8/20/2008	III	NA	NA	NA
	8/21/2008	I (planned)	40-ft north dock; 25-32 NTU	WQ-XXX-01-082108	DPC, TPC, TSS, TUR, TOX, MET
			Southeast of dock; 14-20 NTU	WQ-XXX-02-082108	
	8/22/2008	III	PMC north reference	WQ-XXX-03-082108	NA
2	8/28/2008	III	NA	NA	NA
3	9/4/2008	III	NA	NA	NA
4	9/11/2008	III	NA	NA	NA
6	9/23/2008	III	NA	NA	NA
7	10/1/2008	I (planned)	125-ft east of debris removal; 50-65 NTU	WQ-XXX-001-100108 WQ-XXX-001-100108-REP	DPC, TPC, TSS, TUR, TOX, MET
			200-ft east of debris removal; 19-27 NTU	WQ-XXX-002-100108	
			PMC north reference	WQ-XXX-003-100108	
8	10/8/2008	III	NA	NA	NA
9	10/15/2008	III	NA	NA	NA
10	10/20/2008	III	NA	NA	NA

(a) See Section 3.0 for description of monitoring activities, site conditions and deployment and servicing of fixed-point moorings.

(b) See Key for description of the “XXX” in the Sample ID.

Key

“XXX” = DPC (Dissolved PCB), TPC (Total PCB), TSS (Total Suspended Solids), TUR (Turbidity), TOX (Toxicity) or MET (Metals). NA – Not Applicable

4.2.2 Fixed-point Continuous Monitoring

Water quality sensors were deployed on the first day of active dredging (August 18, 2008) and remained in service until October 30, 2008, approximately one week after dredging was completed. The deployment of the continuously recording water quality sensors provided additional information that complimented the adaptive monitoring approach discussed above. The location of sensors both northeast and southeast of the dredge area provides information regarding tidal influences on sediment suspension and transport. Continuous readings provided water quality data for periods when adaptive sampling was not performed, such as inactive dredge periods (nights and weekends), thereby providing background condition for data comparison. Dredging operations frequently stopped and started due to mechanical or physical



issues and the location of activities was highly variable. Moreover, the Pierce Mill Cove dredge area was divided into three sections, which were actively dredged at various times depending on the tides and other factors. As a result, it is not always possible to ascertain how specific time periods in the continuous record relate to dredge activities. However, because dredging did not occur on nights or weekends it is appropriate to use these time periods to define ‘inactivity’ and to use daytime to define ‘activity’ of the dredging operation. In this way, it is possible to distinguish dredging related water characteristics from background conditions.

Continuous *in-situ* turbidity data collected at the fixed point moorings located approximately 300- to 400-ft north and south of the Pierce Mill Cove dredge boundary are provided in Appendix B. Data from a representative period during the monitoring season are shown in Figure 12; turbidity data are shown along with tidal elevation and a 50 NTU reference value. The 50 NTU reference value is provided as a guideline only, and does not represent the project criterion (50 NTU above background at the 600-ft from dredging activity). The turbidity data as plotted have not been corrected for background. The background turbidity signal in the river is influenced by tidal conditions, stream flow, wind, and other factors. As a result the background turbidity signal can fluctuate on scales from minutes to days. In general, the background turbidity signal at the reference stations ranged from <1 to 5 NTU (Appendix A). A value of 50 NTU from the moored sensors represents a turbidity reading that is approximately 45-49 NTU above background.

Turbidity signals related to dredge activity were clearly observed in the continuous *in situ* data (Figure 12 and Appendix B). These signals manifest as peaks in turbidity above background. The influences of tidal height and flow direction on sediment plume transport are also evident in these data (Figure 12 and Appendix B). Figure 12 shows the turbidity record from both moorings during Week 1 of dredging, including the following weekend. Nights and weekends are shaded on the figure to indicate periods of inactivity in the dredging operation. The following details water quality characteristics observed in the continuous record during this first week of dredging. The letters below correspond to the letters shown in Figure 12.

- A.** On an incoming tide, current flow is predominately towards the north. As a result, any suspended sediment plumes related to dredging would be expected to be evident at the northern mooring and would not be expected at the southern mooring. This was observed to some extent during the first week of dredging where, during the rising tide, the northern turbidity was greater than the southern turbidity (labeled ‘A’). The peaks observed on August 19, 2008 (approximately 25 NTU) provide the clearest example of this, as dredging operations were active for a complete tide cycle.
- B.** During the outgoing tide, the effect is reversed such that the southern mooring registers a turbidity peak (‘B’) while the turbidity measured at the northern mooring returns to background.
- C.** Weak turbidity peaks (labeled ‘C’, <5 NTU) observed on days with no dredging activities (August 23-25, 2008) are indicative of background levels of turbidity.
- D.** Throughout the record, occasional spurious readings are evident (labeled ‘D’, narrow peaks such as the >50 NTU reading on August 23, 2008). These are typically a single reading likely caused by momentary blockage of the turbidity sensor and do not indicate actual water column turbidity.

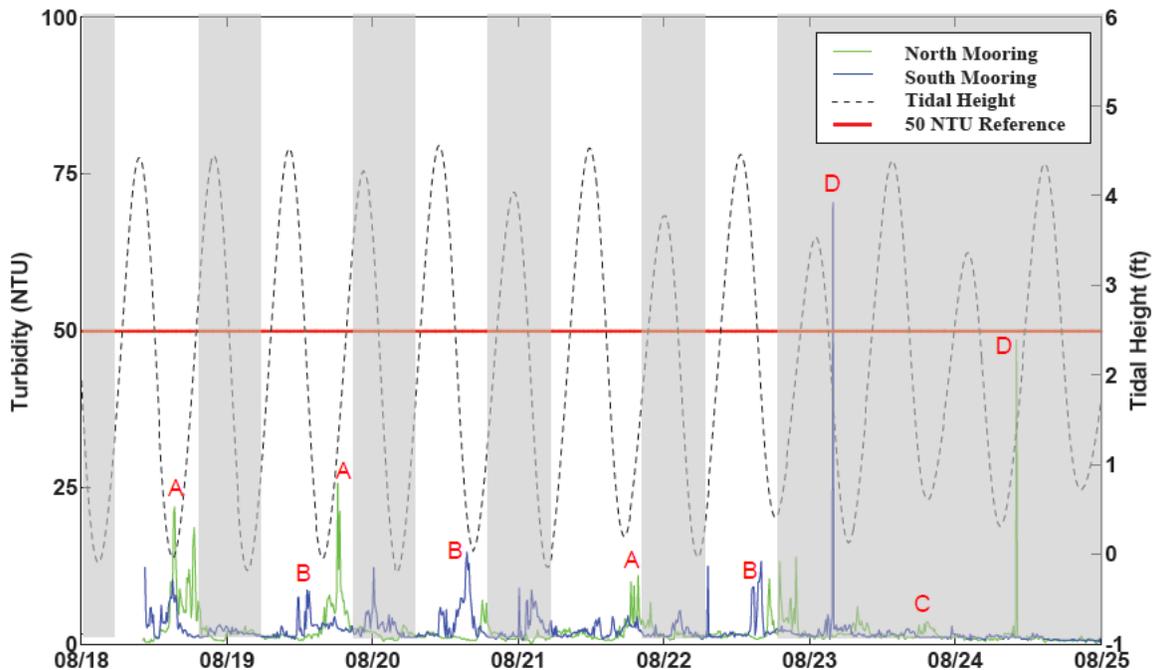


Figure 12. Example of Turbidity Signals Related to Dredging and Tidal Direction during Week 1 of Dredging at the Pierce Mill Cove (shaded areas indicated nights and weekends).

Statistical summaries of the continuous *in-situ* turbidity data from the moored sensors during dredging and non-dredging periods are summarized in Table 3. The statistical summaries include the following information for turbidity at each mooring: number of records, minimum reading, maximum reading, average reading, standard deviation, and date and time of the maximum reading. Overall, the average turbidity readings at both the north and south moorings were representative of background conditions, during both dredging and non-dredging periods. Turbidity readings on average were slightly higher at the south mooring compared to the north mooring.

Table 3. Summary Statistics Continuous *In-situ* Turbidity Data, August 18 to October 22, 2008.

Mooring	Activity ¹	Continuous <i>In-situ</i> Turbidity (NTU) Record					Date/Time of Maximum
		Number of Records ²	Minimum	Maximum	Average	Standard Deviation	
North mooring	Dredging	2906	0	38	2.7	3.7	September 11, 2008, 10:00 EDT
	Non-dredging	6474	0	95	2.3	3.6	September 22, 2008, 0:00 EDT
South mooring	Dredging	2740	0.1	92	3.5	4.1	September 25, 2008, 09:10 EDT
	Non-dredging	6356	0	84	3.5	3.6	October 1, 2008, 01:36 EDT

¹ Dredging period includes data from Mondays through Fridays, 07:00 EDT to 18:00 EDT. Non-dredging period includes data from nights (between 18:00 EDT and 07:00 EDT), weekends, and September 16, 2008 at 13:00 EDT through September 19, 2008 when dredging activities were ceased to repair the pipeline.

² Spurious readings were excluded from the statistical summaries; where spurious readings are single readings with anomalously high values (>100 NTU) likely caused by momentary blockage of the turbidity sensor.



The continuous *in-situ* turbidity data are similar to the boat-based monitoring data in that these data did not reveal substantive (above 50 NTU) or sustained turbidity plumes (Figure 12 and Appendix B). During dredging activities, turbidity readings above 50 NTU were recorded at the south mooring on September 25, 2008 (92 NTU at 09:10 EDT, Appendix B, Figure B-6) and on October 22, 2008 (83 NTU at 10:20 EDT, Appendix B, Figure B-10). While turbidity readings were somewhat elevated in the subsequent samples¹, values decreased and returned to near background levels within 30 minutes. There was no unusual weather on these dates that could explain the elevated readings. For example, there was little to no rain and temperatures and wind speeds were moderate (during the mornings of September 25 and October 22, 2008 air temperatures were approximately 15° C and 7° C, respectively, and average wind speeds were 7-8 meters per second [m/s] and 10-11 m/s, respectively [NOAA, 2009a and Weather Underground, 2009]).

Boat-based monitoring was not performed on September 25 or October 22, 2008, and there are no field reconnaissance data to better understand why the turbidity readings at the south mooring were elevated on these occasions. Even so, the elevated turbidity readings at the south mooring do not appear to represent an exceedance of the project criterion, primarily because the elevated turbidity values are based on a single sensor reading, rather than multiple sustained high readings. Sensor data from previous monitoring years suggests that a single high reading could be associated with a temporary blockage of the sensor, rather than indicative of a turbidity plume. Moreover, the fixed point sensor at the south mooring was located approximately 300 ft from the dredge boundary, whereas the project criterion is based on turbidity readings 50 NTU or higher above background 600 ft down-current from the dredging activity. Overall, the elevated turbidity readings (>50 NTU) recorded at the south mooring on September 25 and October 22, 2008 may have been associated with a local phenomena or possibly caused by a temporary blockage of the turbidity sensor.

The lack of substantive plumes (>50 NTU) observed in 2008 dredge season data from the moored sensors may be attributed to the physical setting of the dredge area, which is relatively isolated from the physical processes of the upper harbor (i.e., currents and particularly the resulting flushing). Additionally, the physical properties of the dredged material, which according to Jacobs had a high percentage of sand, could also explain the limited extent and duration of the observed plumes. The continuous *in-situ* turbidity data did reveal some weak turbidity plumes, which were sustained only under certain tidal and wind conditions. Generally, if the dredge or debris removal barge was working during a flood tide with the wind from the south or southwest, the north mooring data showed some peaks in turbidity. For example on the afternoon of August 19, 2008, the turbidity plume (approximately 25 NTU) detected by the north mooring (Figure 12, 'A' data) correlates with the incoming tide and the wind from the southwest (winds 7-9 m/s; NOAA, 2009b). Conversely, a turbidity plume (approximately 9 NTU) is apparent in the south mooring data when dredge activities occurred during an ebbing tide (Figure 12, 'B' data) with wind from the north or northeast. The wind appears to have less of an effect during an ebbing tide because both the tide and the flow of the Acushnet river force the plume

¹ September 25, 2008 readings from south sensor: 92 NTU at 09:10 EDT, followed by 20 NTU at 09:20 EDT, 33 NTU at 09:30 EDT, and 8 NTU at 09:40 EDT.

October 22, 2008 readings from south sensor: 83 NTU at 10:20 EDT, followed by 23 NTU at 10:30 EDT, 10 NTU at 10:40 EDT, and 0.9 NTU at 10:50 EDT.



south. For example, the wind was from the south-southwest (winds 8-10 m/s) during the ebbing tide on October 16, 2008, the south mooring data show a sustained plume (approximately 23 NTU; Appendix B, Figure B-9).

Continuous *in-situ* dissolved oxygen data were collected at both moorings throughout the majority of the deployments (Figure 13). The dissolved oxygen values remained relatively steady throughout dredge operations in 2008, generally ranging from 5-10 mg/L at both the north and south moorings. As in 2007, dissolved oxygen readings were typically higher during midday and decreased throughout the night and early morning. Some of these diurnal fluctuations were as much as 4 mg/L while others were less than 1 mg/L. The magnitude of these fluctuations in dissolved oxygen may be attributed to the productivity rates of the phytoplankton.

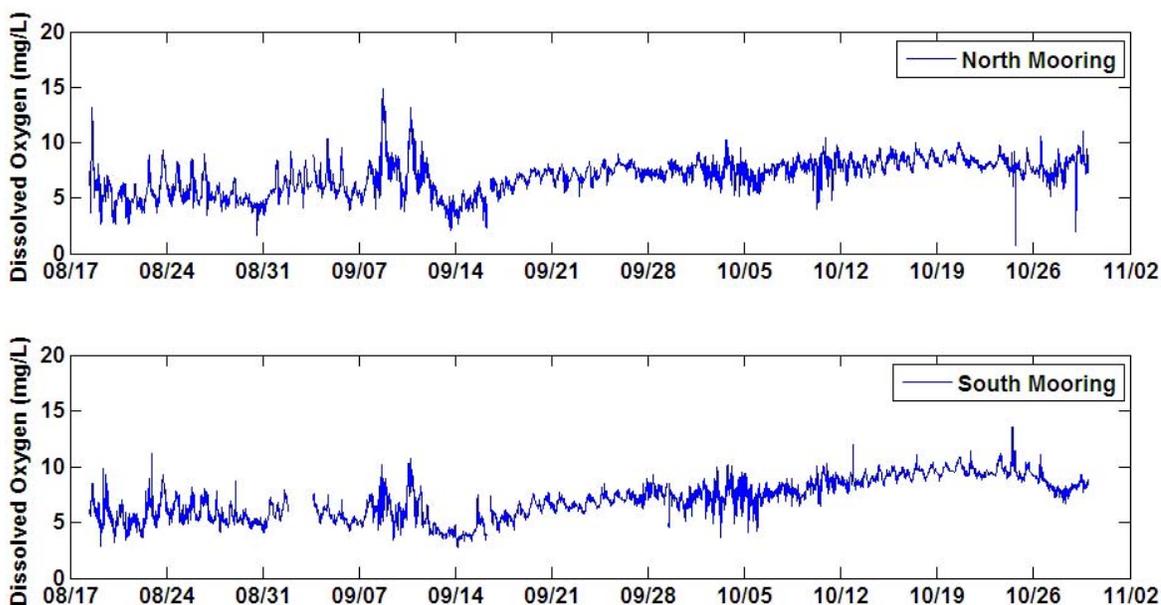


Figure 13. Continuous Dissolved Oxygen Data at the North (top) and South (bottom) Moorings, August through October 2008

4.2.3 Collection of Discrete Water Samples

Discrete water samples were collected during three events throughout the 2008 monitoring season (Table 2). Samples were not collected in response to an exceedance of the warning level or project criterion. Rather, planned samples were collected either to establish baseline conditions prior to the onset of dredging or to verify the protectiveness of the project criterion during dredging activities. Sampling to establish baseline conditions was performed on June 5, 2008; discrete water samples were collected at three locations (center region of the dredge area during flood and ebb tide and 300-ft and 600-ft north and south of the dredge boundary) for TSS and turbidity. During dredging activities, Level I planned samples were collected on August 21, 2008 and again on October 1, 2008. Sampling was performed over a turbidity gradient during the ebb tide. Sampling was performed in close proximity (<300-ft) to the dredging operations to collect water representative of higher turbidity levels. Level I planned samples were collected for TSS, turbidity, PCBs (total and dissolved), and toxicity. Results from the analysis of discrete water samples are presented in Section 4.3.



4.3 Laboratory Testing Summary

This section includes the results from the analysis of discrete water samples collected (Table 2) to establish baseline conditions prior to the onset of dredging and to verify the protectiveness of the project criterion during dredging activities. Discrete water samples collected to establish baseline conditions were analyzed for TSS and turbidity. Discrete water samples collected during dredging activities (weeks 1 and 7) were analyzed for TSS, turbidity, PCBs and toxicity. Sample results are summarized in Tables 3 and 4; complete test results are provided as appendices to the report (Appendix C includes TSS and turbidity data; Appendix D includes PCB data; and Appendix E includes toxicity test results).

4.3.1 Total Suspended Solids and Turbidity

Total suspended solids concentrations in site water samples ranged from 5.1 mg/L to 15.4 mg/L during baseline conditions and from 6.5 mg/L to 76.5 mg/L during dredging activities (Table 4). Turbidity values in site water samples were less than 2 NTU during baseline conditions and ranged from 2.21 NTU to 32.5 NTU during dredging activities (Table 4). Turbidity values in site water samples generally decreased with increasing distance from the dredging activity (Table 4 and Figure 14), with the lowest values (<3 NTU) measured at the reference station located approximately 1,000-ft north of the dredge boundary.

Lab-based turbidity values in discrete water samples were generally comparable to *in-situ* readings measured in the field during boat-based monitoring (Table 4). Lab-based TSS and turbidity results were also comparable between the field replicate samples (Table 4), indicating that the sampling and analytical methods were reproducible.

Table 4. Summary of Total Suspended Solids (TSS) and Turbidity Results.

Sample Period	Sampling Level	Sample ID WQ-TSS/TURB-	Sample Description ¹	Lab-based		Field-based
				TSS	Turbidity	Turbidity
				(mg/L)	(NTU)	(NTU)
6/5/2008 Baseline	NA	001-060508	Center of PMC, flood	7.3	1.62	1.9-2.2
		002-060508	300-ft north of dredge boundary, flood	15.4	1.92	0.8
		003-060508	600-ft north of dredge boundary, flood	5.1	1.68	0.9-1.1
		004-060508	Center of PMC, ebb	6.1	1.45	0.3
		005-060508	300-ft south of dredge boundary, ebb	13.5	1.6	0.6-0.9
		006-060508	600-ft south of dredge boundary, ebb	5.6	1.52	0.6-1.1
8/21/2008 Week 1	Level I planned	01-082108	40-ft north dock; (600-ft from debris removal and dredge activity)	36	26.5	25-32
		02-082108	Southeast of dock; (800-ft from debris removal and dredge activity)	29.7	20.1	14-20
		03-082108	PMC north reference	6.5	2.44	0.2-0.3
10/1/2008 Week 7	Level I planned	001-100108	125-ft east of debris removal	76.5 (61.2 ²)	32.5 (29.8 ²)	50-65
		002-100108	200-ft east of debris removal	55.2	28.1	19-27
		003-100108	PMC north reference	33.4	2.21	3.7-3.8

¹ Samples are collected either based on distance (e.g., 300 ft north of Dredge Boundary) or turbidity levels (e.g., 14-20NTU), see Section 4.2 for further discussion on sample locations.

² Field replicate value.



Figure 14. Total Suspended Solids and Turbidity Results in Site Water Samples Collected Prior to and During Dredging Activities.



4.3.2 Polychlorinated Biphenyls

PCB results are presented as total concentrations (i.e., SUM 18 CONG) in Table 5; results for individual congeners are reported with the complete analytical data provided in Appendix D. Concentrations of the SUM 18 CONG ranged from 0.22 µg/L to 1.7 µg/L in the total (unfiltered) water samples, and from 0.14 µg/L to 0.31 µg/L in the dissolved phase samples (Table 5). The dissolved phase samples contained the lowest PCB concentrations, and were uniformly low throughout the sampling area. In contrast, PCB concentrations in the total (unfiltered) samples were higher in water sampled in close proximity to the dredging activities and lower in water sampled further away (i.e., north reference station) (Table 5).

Results from the field-based QC samples indicate that the sampling and analytical methods were reproducible (PCB results were similar between the original and replicate samples, Table 5) and free of contamination (i.e., PCBs were undetected at levels above the sample reporting limit in the equipment blank).

4.3.3 Toxicity

Toxicity results from the acute and chronic (sub-lethal) exposure assays performed on site water samples collected during dredging activities at the Pierce Mill Cove are summarized in Table 5. Results are presented for the test endpoints: survival, growth, development and reproduction. Results for test endpoints for each sample were statistically compared to those from both the event-specific site reference sample and the laboratory control sample.

4.3.3.1 Sea Urchin (*Arbacia punctulata*)

60-min sperm cell fertilization –All three site water samples collected during week 1 of dredging (August 21, 2008 event) showed low percent fertilization, ranging from 34.1% in the site reference sample to 56.2% in the 25-32 NTU sample. Fertilization rates for all samples were significantly lower compared to the laboratory control (88.7%). Fertilization rates for the 14-20 NTU and 25-32 NTU samples were also significantly different (higher) compared to the site reference sample.

Percent fertilization values in the three samples collected during week 7 of dredging (October 1, 2008 event) ranged from 83.9% in the 19-26 NTU sample to 95.6% in the 50-65 NTU sample. Percent fertilization values for all samples were significantly lower compared to the laboratory control (98.8%). Percent fertilization values for the 19-26 NTU sample was significantly lower compared to the site reference sample. In general, mean percent fertilization in the samples collected during week 7 was greater than 80%, indicating that while some impact relative to the laboratory control and site reference samples was observed, the impact was relatively small.

4.3.3.2 Mysid (*Americamysis bahia*)

48-hr survival – Mean percent survival in the site water samples collected during week 1 of dredging (August 21, 2008 event) ranged from 87.5% in the site reference sample to 100% in the 14-20 NTU and 25-32 NTU samples. Percent survival in the site reference sample was significantly lower compared to the laboratory control. Percent survival in the 14-20 NTU and 25-32 NTU samples was not statistically different compared to the site reference sample.



Mean percent survival in the site water samples collected during week 7 of dredging (October 1, 2008 event) ranged from 92.5% in the 50-65 NTU sample to 100% in the site reference samples. Mean percent survival values were not significantly different compared either to the laboratory control or the site reference sample. Moreover, mean percent survival values in all samples (collected on October 1, 2008) were within 5% of the laboratory control sample, indicating overall survival was excellent.

7-day mean survival – Mean percent survival in the site water samples collected during week 1 of the dredging (August 21, 2008 event) ranged from 85% in the site reference sample to 92.5% in the 14-20 NTU sample. Percent survival values were not significantly different compared either to the laboratory control or the site reference sample.

Mean percent survival in the site water samples collected during week 7 of the dredging (October 1, 2008 event) ranged from 87.5% in the 50-65 NTU sample to 97.5% in the 19-26 NTU and site reference samples. Percent survival values were not significantly different compared either to the laboratory control or the site reference sample.

7-day mean biomass – The 7-day mean biomass in the three site water samples collected during week 1 of the dredging (August 21, 2008 event) ranged from 0.2630 mg/mysid in the 14-20 NTU sample to 0.3215 mg/mysid in the site reference sample. Biomass values were not significantly different compared either to the laboratory control or the site reference sample.

Biomass measurements could not be performed on the site water samples collected during week 7 of dredging (October 1, 2008 event) because the dry organism samples were inadvertently lost in the laboratory.

4.4.3.3 Red alga (*Champia parvula*)

48-hr mean survival – All site water samples collected during weeks 1 and 7 of the dredging (August 21 and October 1, 2008 events) had 100% survival, indicating no acute impact to the alga.

7-day mean reproduction – Mean reproduction in the site water samples collected during week 1 of the dredging (August 21, 2008 event) ranged from 0.0 cystocarp/tip in the 25-32 NTU sample to 4.9 cystocarp/tip in the site reference sample. Mean reproduction values in all three samples were significantly lower compared to the laboratory control. Mean reproduction values in the 14-20 NTU and 25-32 NTU samples were also significantly lower compared to the site reference sample, and showed no or limited cystocarp production.

Mean reproduction in the site water samples collected during week 7 of the dredging (October 1, 2008 event) ranged from 2.7 cystocarp/tip in the 50-65 NTU sample to 17.1 cystocarp/tip in the site reference sample. Mean reproduction values in all three samples were significantly lower compared to the laboratory control. Mean reproduction values in the 50-65 NTU and 19-26 NTU samples were also significantly lower compared to the site reference sample.

Table 5. Summary of Total Suspended Solids, Turbidity, PCB and Toxicity Sample Results in Discrete Water Samples Collected at the Pierce Mill Cove (PMC) Dredge Area, 2008.

Sample Period	Estimated Distance from Dredge (ft)	Sample Description	TSS (mg/L)	Turbidity (NTU)	Total PCB ¹ Results (µg/L)		Toxicity Results					
					Total	Dissolved	Sea Urchin (<i>A. punctulata</i>) mean fertilization (%)	Mysid (<i>A. bahia</i>)		Red alga (<i>C. parvula</i>)		
								48-hr mean survival (%)	7-day mean survival (%)	7-day mean biomass (mg/mysid)	48-hr mean survival (%)	7-day mean reproduction (cystocarp/tip)
Week 1 8/21/08	NA	Toxicity Lab Control	N/A	N/A	N/A	N/A	88.7	97.5	95.0	0.217	100	10.53
	40-ft north dock; 600-ft from debris removal and dredge activity	25-32NTU	36	26.5	0.98	0.22	56.2^{2,3}	100	87.5	0.3012	100	0.00^{2,3}
	Southeast of dock; 800-ft from debris removal and dredge activity	14-20NTU	29.7	20.1	0.88	0.2	36.2^{2,3}	100	92.5	0.2630	100	0.10^{2,3}
	1000-ft	PMC North Reference	6.5	2.44	0.42	0.31	34.1²	87.5²	85.0	0.3215	100	4.90²
Week 7 10/1/08	NA	Toxicity Lab Control	NA	NA	NA	NA	98.8	97.5	97.5	No data ⁵	100	33.10
	125-ft East of debris removal	50-65NTU	76.5 (61.2 ⁴)	32.5 (29.8 ⁴)	1.7 (1.84 ⁴)	0.26 (0.25 ⁴)	95.6²	92.5	87.5	No data ⁵	100	2.70^{2,3}
	200-ft East of debris removal	19-26NTU	55.2	28.1	1.1	0.22	83.9^{2,3}	97.5	97.5	No data ⁵	100	6.15^{2,3}
	1,000-ft	PMC North Reference	33.4	2.21	0.22	0.14	93.3²	100	97.5	No data ⁵	100	17.10²
	NA	Equipment Blank	NA	NA	Not detected	NA	NA	NA	NA	NA	NA	NA

NA – Not Applicable

¹ Sum of 18 NS&T congeners.

² **Bold values** are significantly different from associated laboratory control sample.

³ **Bold values** are significantly different from associated reference sample.

⁴ Replicate value.

⁵ 7-day *a. bahia* biomass measurement for 10/1/08 samples could not be performed because of inadvertent loss of dry organism samples occurred in the toxicity laboratory.





4.3.4 Quality Control

The review of the laboratory QC data is documented in case or QA/QC narratives, which are provided with the sample data as appendices to this report. In general, the quality of the data is acceptable and the analytical methods are in control. For example, target parameters were undetected in the method/procedural blanks, indicating that the methods were free of contamination. Moreover, recovery and precision results for the laboratory-based QC samples (i.e., LCS, MS, MSD, and duplicates) were acceptable for all test parameters, indicating that the methods are in control.



5.0 DISCUSSION

The field monitoring program was designed to assess the potential impacts of dredging on water quality with an ultimate goal of minimizing harm to biological components of the system. To achieve that goal the monitoring was carried out in several ways:

- Adaptive *in situ* monitoring was used to track sediment plumes in real-time. This design allowed for immediate feedback to the dredging operation so that potential issues could be addressed before ecological harm was incurred.
- Pre-defined sampling provided guidelines for collection of analytical samples. The results of these analyses provide critical data regarding the chemical and biological impacts of dredging related activities on the system.
- Continuous *in-situ* data collection provided detailed information during periods when human-based sampling was not possible and when potential anthropogenic disturbances to the systems were minimal.
- Observational monitoring was conducted during all aspects of the program. This included anecdotal observations of fish passage and behavior, and observations of non-targeted parameters such as oil sheens and weather conditions. Like the adaptive *in situ* monitoring, observational monitoring provides rapid feedback to managers and operators and can help to minimize ecological risk.

5.1 Fishery and Wildlife Observations

Information pertaining to fish passage and behavior are based on visual observations recorded by field staff throughout the 2008 monitoring season. Throughout the dredge season large numbers of fish were observed in the study area. Lower trophic level baitfish were consistently observed moving throughout the river from Sawyer Street to Wood Street. Larger predatory fish such as striped bass and bluefish were also sporadically seen. Birds such as great blue herons, gulls, swans, cormorants, egrets, osprey, and other wading birds were observed feeding along the shoreline during these weeks (Figure 15). During this time period, when fish were most abundant, there appeared to be no restriction of movement past the dredge area. No fish kill events were observed during the 2008 dredge season.



Figure 15. Swans Observed Along Pierce Mill Cove Dredge Boundary During Dredging Operations



5.2 Suspended Sediment and Sediment Transport from Dredging Activities

As in previous years a project-specific warning level of 50 NTUs above background 300 ft down current of dredging operations was set as a threshold for sample collection and assessment of operations. A project criterion of 50 NTUs above background at 600 ft down current was set as a threshold for immediate cessation of operations related to the exceedance. During the 2008 dredge season there were no exceedances of either the warning level or the project criterion.

During operations there were three general activities with potential to generate suspended sediment plumes; 1) dredging, 2) debris removal, and 3) support activities. Access to the interior of the dredge area was limited during the 2008 dredging season due to safety concerns and the pipeline configuration (e.g., pipeline was not submerged and obstructed access). As a result, there was less direct field reconnaissance information collected in close proximity to the dredging operations compared to previous monitoring years from which to draw conclusions regarding which of these activities (dredging, debris removal, and/or support activities) contributed to the most significant plumes. Even so, key findings from the 2008 field reconnaissance activities were generally consistent with previous monitoring years (Battelle, 2007 and 2008c). That is, dredging itself created virtually no measurable or sustained sediment plumes above 50 NTU as evidenced by the boat-based and continuous *in-situ* turbidity monitoring data (Sections 4.2.1 and 4.2.2). Next, sediment plumes and higher turbidity readings tended to be observed in close proximity to the dredging operations and dissipated with increasing distance from the operations. Among the 2008 boat-based, *in-situ* turbidity data, the highest readings (>30 NTU) were more often observed within 200 ft of the dredging or debris removal activities. Elevated turbidity readings (upwards of 40 NTU) were also occasionally observed further away from the dredge operations, especially near the dock located immediately south of the dredge boundary. Finally, when turbidity plumes were observed, they tended to be extremely short lived, both spatially and temporally. In cases where the plume extended past the dredge boundary, the turbidity readings would generally persist for less than 5-10 minutes before returning to levels near background. The physical properties of the dredged material (i.e., high sand content) likely contributed to the limited extent and duration of the observed plumes.

Suspended sediment plumes related to debris removal activities tended to be pulsed in nature. That is, as the debris removal bucket would come up through the water column turbidity would quickly begin to increase. Turbidity plumes associated with both debris removal and active dredging tended to be more prominent during an ebbing or slack tide. When observed, turbidity plumes tended to dissipate in a southerly direction from the dredge area. Turbidity plumes to the north were rarely observed, probably because water flow was generally to the south and the land mass to the north acts as a barrier to reduce the migration of a north-flowing plume.

The short term, pulsed nature of the suspended sediment plumes was also observed in the continuous *in situ* data record. Excluding spurious readings, turbidity peaks at the northern and southern mooring locations between the 300 ft and 600 ft transects were always below 50 NTU when compared to background. On an incoming tide, current flow was predominately towards the north and as a result, any suspended sediment plumes related to dredging was observed at the northern mooring. During the outgoing tide, the effect was reversed so that any suspended sediment plumes were observed at the southern mooring. Weak turbidity peaks seen on days with no dredging activities were indicative of background levels of turbidity (<5 NTU).



Individual spikes were visible in the record above 50 NTU, but as discussed earlier, these are spurious single readings likely caused by momentary blockage of the turbidity sensor and not representative of water column turbidity.

5.3 Impacts to the Water Column

Overall, the observed trends among the 2008 site water data for TSS, turbidity, and PCB data are similar to trends observed in the 2006 and 2007 water quality monitoring programs (Battelle, 2007 and 2008c). For example, there was a strong, positive correlation between TSS and turbidity and between TSS and total PCBs (Figure 16) in the water samples (whole-water, unfiltered) collected during the 2008 dredge season, suggesting that turbidity and PCB levels increase with increasing TSS.

The correlation analysis revealed that one of the water samples (sample WQ-003-100108, collected at the north reference station on October 1, 2008) had an unusually high TSS value relative to both the turbidity and PCB results (Figure 16). These data, together with the good agreement between the *in-situ* and lab-based measurements of turbidity in this sample (see Table 5, sample WQ-003-

100108) suggest that the TSS value measured in the discrete water sample may be an outlier. The correlation between TSS and turbidity and between TSS and total PCBs is considerably stronger if sample WQ-003-100108 is excluded from the analysis².

TSS did not correlate well with total PCBs in the dissolved phase (filtered) samples (Figure 16, bottom). The poor correlation likely reflects that

PCB's in general are hydrophobic and not very soluble in water. The chlorination level and

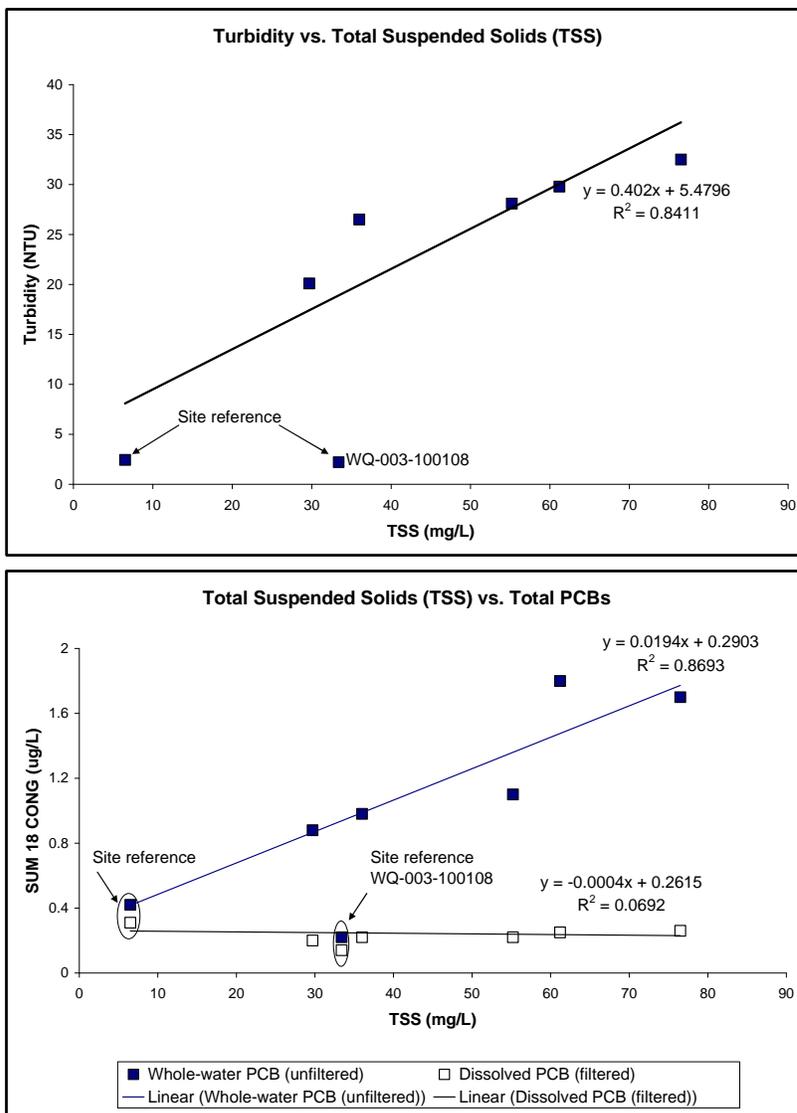


Figure 16. Correlation between TSS and Turbidity (top) and between TSS and total PCBs (bottom) in Discrete Water Sampled in 2008 at the Pierce Mill Cove Dredge Area

² Figure 16 (top), TSS by turbidity – $R^2 = 0.67$ with sample WQ-003-100108 or $R^2 = 0.84$ if sample excluded. Figure 16 (bottom), TSS by total PCB – $R^2 = 0.71$ with sample WQ-003-100108 or $R^2 = 0.87$ if sample excluded.



molecular weight can also influence the solubility of PCB's in water (e.g., lower chlorination level, lower molecular weight PCBs are more soluble than higher chlorination level, higher molecular weight PCBs), which in turn can influence the PCB distribution pattern in the dissolved phase.

There was a strong, negative correlation between distance from the dredging activities and whole-water levels of TSS, turbidity, and PCBs (Figure 17), suggesting that TSS, turbidity and PCB levels decrease with increasing distance from the dredging activity. In contrast, PCB concentrations in the dissolved phase samples did not correlate well with distance from the dredging activities (Figure 17, bottom). Instead, dissolved PCB concentrations were similar across the study area regardless of the proximity to or from the dredging activities (Figure 17, bottom). Dissolved PCBs in the water column is considered a direct indicator of water quality, and the dissolved fraction may be subjected to long range transport. The relatively constant dissolved PCB concentrations at the reference sites and targeted turbidity locations (sampled in close proximity to the dredging activities) suggested that dredging-derived resuspended sediments did not result in substantial increase in dissolved PCB levels, and therefore had limited impact on water quality.

Unlike the 2006 and 2007 monitoring program, whole-water PCB concentrations in water sampled at the Pierce Mill Cove dredge area varied within a relatively low and narrow concentration range (0.22 µg/L to 1.8 µg/L). The slope of the correlation between TSS and total PCBs for the 2008 program was 0.019 (Figure 16, bottom), which is approximately one-tenth of the slope observed in the 2007 program for Area G (Battelle 2008c) and one-

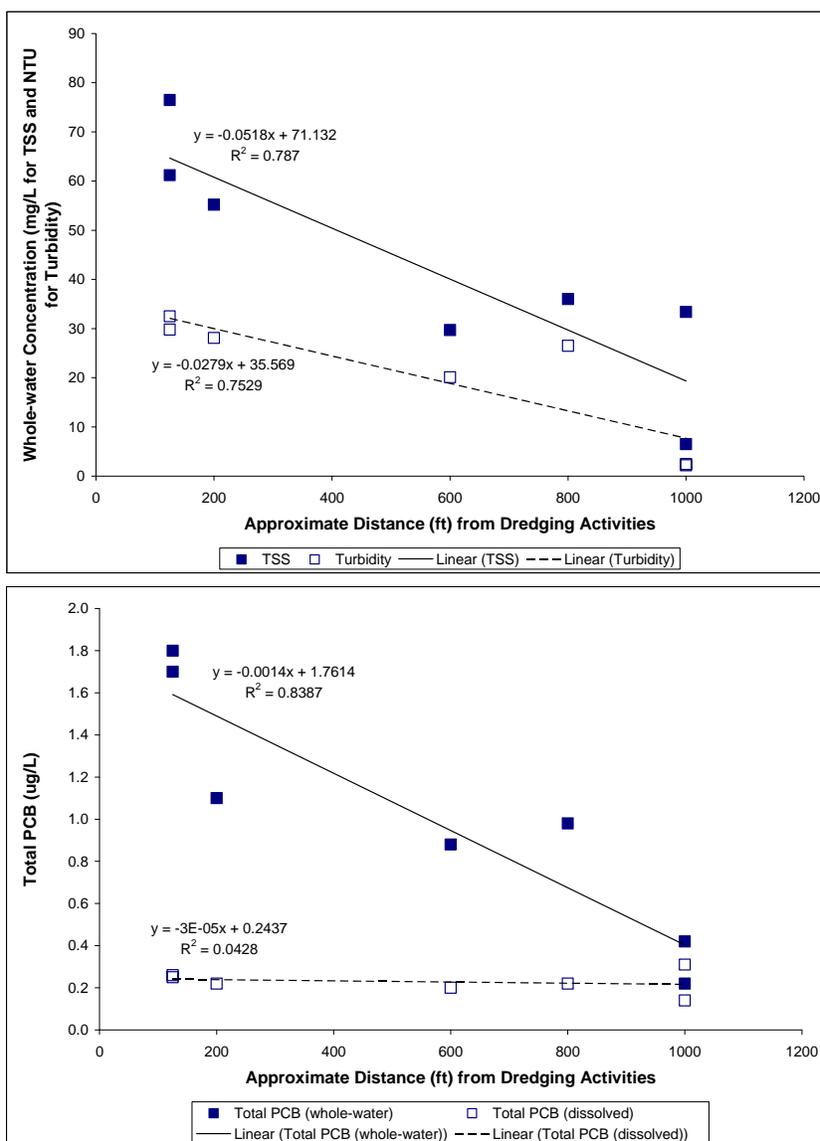


Figure 17. Correlation between Distance from Dredging Activity and TSS and Turbidity (top) and total PCB (bottom) in Discrete Water Sampled in 2008 at the Pierce Mill Cove Dredge Area



thirtieth of the slope observed in the 2006 program for Areas A and B (Battelle, 2007). These results suggest that the resuspended sediment particles at the Pierce Mill Cove dredge area may be less contaminated compared to sediments in other dredge areas at the Site (monitored during previous years). This is consistent with dredging observations that indicated the sediment material removed from Pierce Mill Cove had a high sand content. Coarse, sandy sediments presumably with low organic carbon content are generally expected to be less 'contaminated' compared to silty sediments with higher organic carbon content. This supposition will be further evaluated once PCB results are available from the post-dredge sediment cores collected at the Pierce Mill Cove dredge area.

Toxicity testing showed limited significant reduction in endpoints for all species (Table 5). Mean survival in the 48-hr mysid and red alga tests were not significantly different compared to the reference, indicating that there were no measurable acute impacts from exposure of the test species, *A. bahia* and *C. parvula*, to water collected at Pierce Mill Cove during dredging activities. In contrast, sublethal effects were observed for the 60-minute fertilization and 7-day reproduction tests. For example, *A. punctulata* fertilization rates were generally low for the site water samples collected on August 21, 2008, and were significantly different compared to the reference for all but one of the site water samples collected during dredging activities (Table 5). In addition, *C. parvula* mean reproduction was significantly lower than reference (and control) for all water samples collected at the Pierce Mill Cove dredge area (Table 5). *Champia parvula* exposed to site water collected 600-ft down-current of debris removal and dredging activities on August 21, 2008 had the lowest cystocarp production. While there do appear to be measurable water column impacts, especially with respect to sublethal effect endpoints (*A. punctulata* fertilization and *C. parvula* mean reproduction), they are generally limited to samples containing elevated TSS, turbidity and PCBs. Among the samples collected on August 21, 2008, the sample with the highest dissolved concentrations of PCBs (reference site sample) also had the lowest *A. bahia* survival and *C. parvula* mean reproduction rates. Interestingly, this sample did not have elevated TSS or turbidity, nor was it sampled in close proximity to the dredging activities, suggesting that that other factors could have contributed to the observed water column impacts. Among the samples collected on October 1, 2008, the sample with the highest TSS, turbidity, and PCBs (total and dissolved) also had the lowest *A. bahia* survival and *C. parvula* mean reproduction rates.

In conclusion, turbidity plumes observed during the 2008 water quality monitoring program were generally limited to areas immediately adjacent to dredging and debris removal. The majority of turbidity plumes were relatively short lived and isolated to the surface of the water column. While site water near the dredge area had elevated TSS, turbidity, and PCBs (total phase), levels decreased with increasing distance from the dredging activities. More importantly, dissolved PCBs, which are thought to be the fraction that causes direct toxicity to marine organisms and may be subjected to long range transport, remained low regardless of the TSS levels or proximity to or from the dredging activities. While measurable water column impacts were observed based on toxicity testing, these effects were either limited to samples collected well within the dredging boundary or did not appear to be directly associated with elevated TSS and turbidity and subsequent increase in PCBs (i.e., reference sample collected on August 21, 2008). Overall, data collected confirmed that the project criterion continues to be ecologically protective, while still allowing remediation efforts to progress.



6.0 REFERENCES

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Appendix A

Water Quality Monitoring Field Logs and Tide Data

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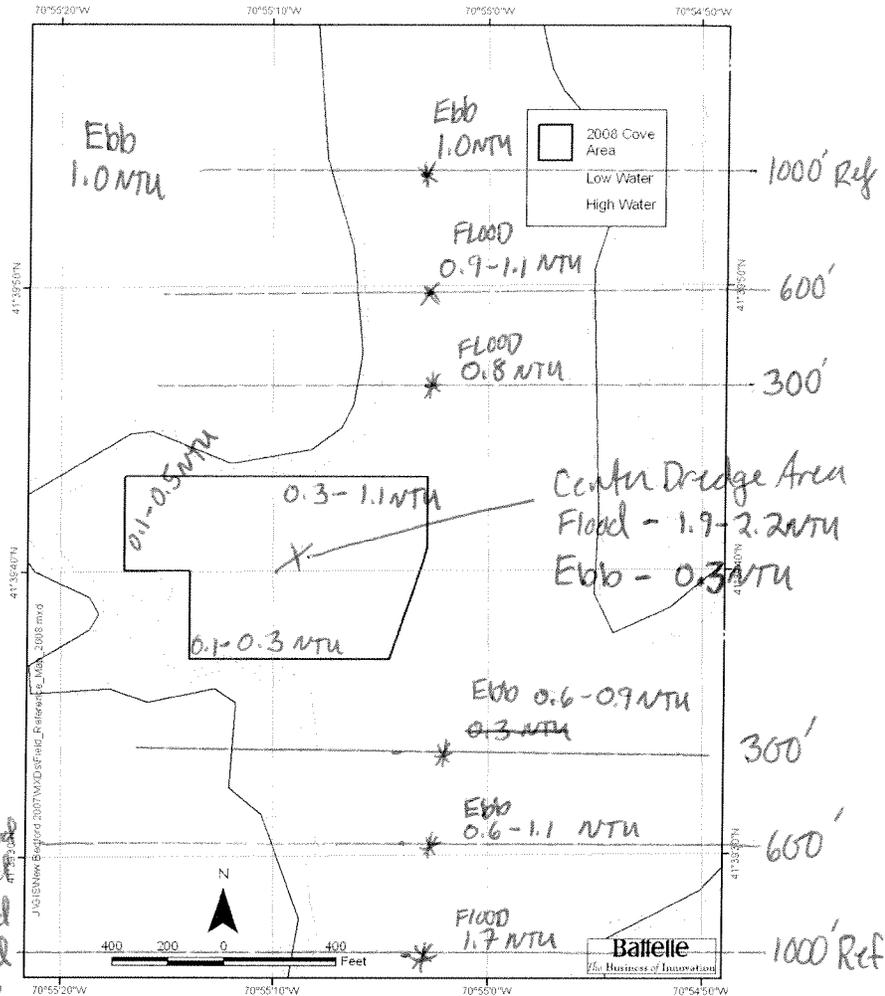
Date: 6/5/08
 Weather: overcast / wind North 10-15
 Tides:
 High @ 0945
 Low @ 1524
 High @ 2258

Monitoring Period:
 From: 0700 To: 1230

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
No dredge / Debris Removal

Baseline Monitoring



Turbidity Summary

Location	Turbidity (NTU)	Depth (ft)
Ref south 1000'	1.7	8.0' and 1.1' Flood
300' North	0.8	1.0' to 5.0' Flood
Center Dredge Area	2.0 - 2.2	1.0' to 4.8' Flood
600' North	0.9 - 1.0	1.0' to 5.0' Flood
1000' North	1.0	1.0 to 5.0 EBB
Center of Dredge Area	0.3	2.2 EBB
300' South of Dredge	0.6 - 0.9	2.4 - 5.0 EBB
600' South	0.6 - 1.1	1.0 - 5.0 EBB

Oil sheen/ Debris:

None

Wildlife observations: many Jellyfish, Swans, Egrets, Gulls

Samples Collected for Laboratory Analysis – Sample IDs:

TSS (1L) WQ-TSS-001(006)-060508 Turbidity (500ml) WQ-TURB-001(006)-060508
 Total PCB (1L) _____ Dissolved PCB (2x1L) _____
 Toxicity (21L) _____ Metals (500ml) _____

Notes: Baseline Water Quality - Samples taken at the Center of the dredge Area, the 300' north and south points and the 600' north and south points. Turbidity Ranged from 0.6 NTU to 2.2 NTU throughout the Area and through the Tide Cycle.

Sampling Crew: M. Walsh, M. Fitzpatrick
 Chief Scientist Signature: Mike Walsh

Dredging Location	Pierce Mill Cove
Dredging Description	None / Baseline Water Quality
Survey Vessel	Gale Force
Chief Scientist	M. Walsh
Sampling Technician	M. Fitzpatrick
Vessel Captain	M. Walsh
Other Personnel	—
Weather conditions	Overcast / wind North @ 10-15

Date	6/5/08
Page	1 of 2

Tide information	
High	0945
Low	1524
High	2208
Low	

Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity NTU	Salinity	DO mg/l	Temp °C	Notes
1000' south Reference	0919	2700746.99	815228.68	10.000'	8.124	1.7	30.82	6.43	17.80	NEAR BOTTOM - PH 7.54
1000' south Reference	0923	2700746.99	815228.68	10'	1.135	1.7	30.56	6.38	17.78	PH 7.54 NEAR SURFACE
~ Center of Dredge Area	0934	2702123.86	814993.92	6'	4.807	2.0	30.70	6.24	17.81	PH 7.56 NEAR BOTTOM
				6'	1.045	1.9	30.68	6.22	17.80	PH 7.56 NEAR SURFACE
				6'	2.008	2.2	30.68	6.18	17.81	PH 7.56 SAMPLES TAKEN 1.5-2.2 NTU
~ 300' North of Dredge Area	1000	2702756.32	815289.77	6.2'	2.490	0.8	30.21	5.84	17.78	PH 7.50 SAMPLES TAKEN 0.7 NTU
				6.2'	5.005	0.8	30.26	5.72	17.81	PH 7.49 NEAR BOTTOM
				6.2'	1.008	0.8	30.22	5.76	17.78	PH 7.49 NEAR SURFACE
~ 600' North of Dredge Area	1006	2703005.30	815290.56	6.2'	2.515	0.9	30.23	6.07	17.72	PH 7.52 SAMPLES TAKEN 1.0 NTU
				6.2'	5.012	1.1	30.25	6.14	17.71	PH 7.53 NEAR BOTTOM
				6.2'	1.041	1.0	30.24	6.4	17.70	PH 7.52 NEAR SURFACE
~ 1000' North of Dredge Area	1025	2703433.92	815213.48	6.3'	5.014	1.0	30.23	6.10	17.73	PH 7.52 NEAR BOTTOM
				6.3'	1.067	1.0	30.20	6.15	17.70	PH 7.52 NEAR SURFACE

Date: 08/18/2008
 Weather: Sunny clear, mid-80's
 Tides: sw with
high @ 8:50 AM
low @ 1:50 PM
high @ 2:52

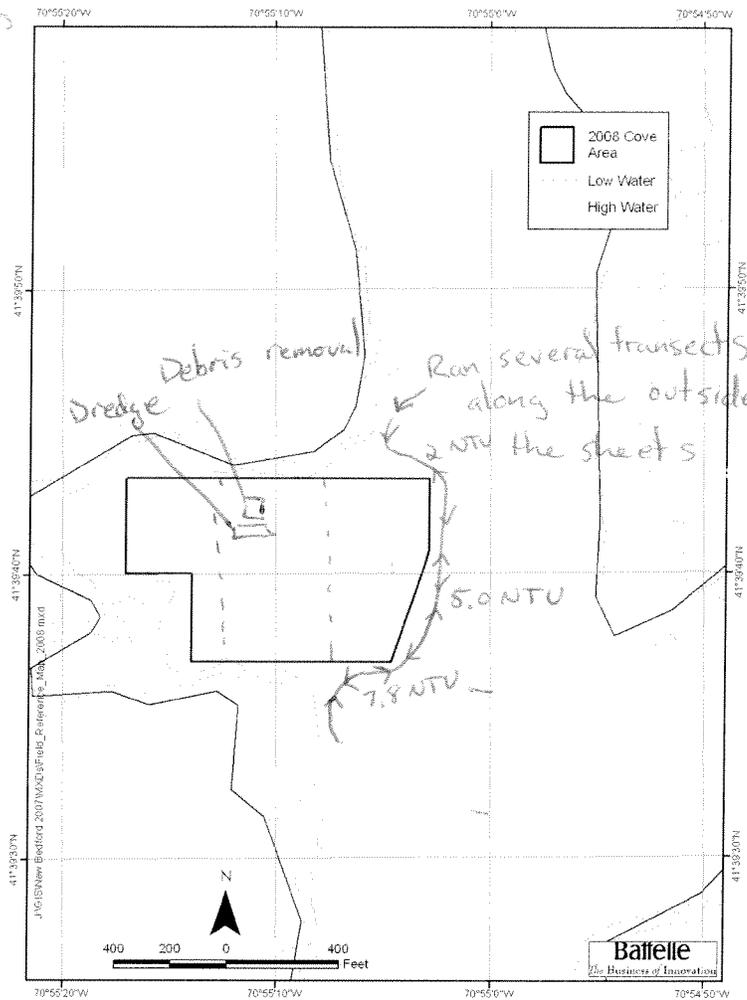
Monitoring Period:
 From: 930 To: 1200

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
Debris removal
actively dredging

Turbidity Summary

Location	Turbidity	Sensor/water
Sensor/water	(NTU)	Depth (ft)
<u>1.0 / 1.5</u>	<u>1.75</u>	<u>1.0 / 1.5</u>
<u>Ref N</u>	<u>1.75</u>	<u>1.0 / 1.5</u>



Oil sheen/ Debris: None

Wildlife observations: bait fish + larger fish moving in channel

Samples Collected for Laboratory Analysis – Sample IDs: None
 TSS (1L) _____ Turbidity (500ml) _____
 Total PCB (1L) _____ Dissolved PCB (2x1L) _____
 Toxicity (21L) _____ Metals (500ml) _____

Notes: Deployed moorings @ ~0945 and ~1010

Sampling Crew: Matt Fitzpatrick
 Chief Scientist Signature: Matt Fitzpatrick Amanda Maxemchuk

Date: 8/18/08
 Weather: Sunny + hot
 Tides: SW wind ~ 15 kts
 high @ 0935
 low @ 1510
 high @ 2152

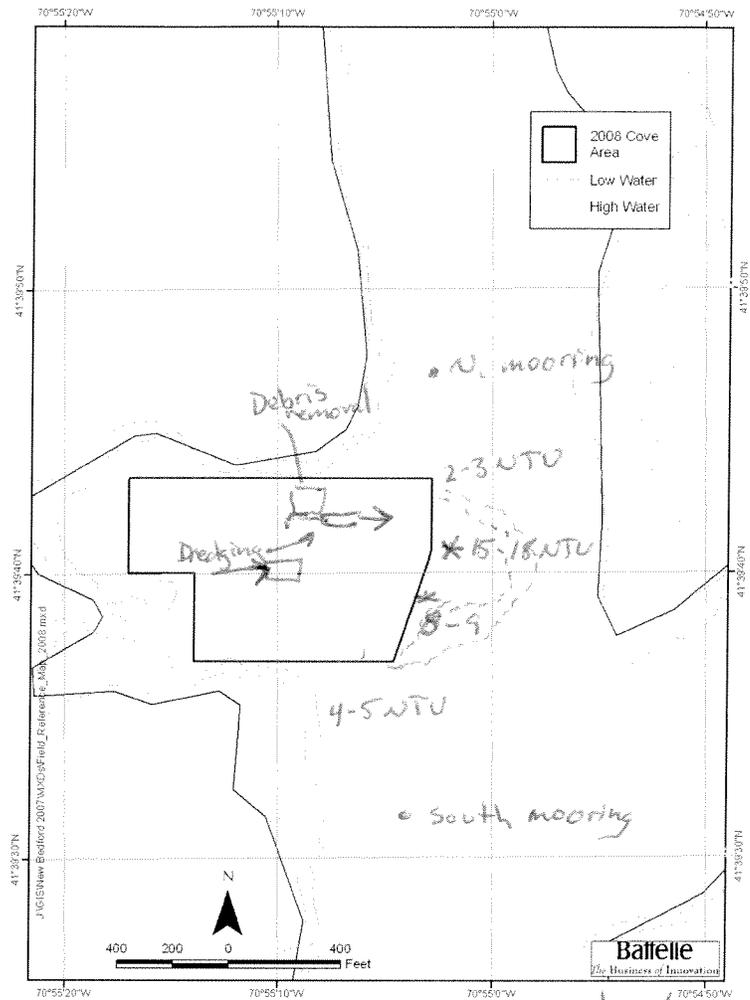
Monitoring Period:
 From: 1300 To: 1500

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
Debris removal
dredging

Turbidity Summary

Location	Turbidity	Depth (ft)
Sensor/water	(NTU)	
<u>NE Boundary</u>	<u>2-3 NTU</u>	<u>1.5'</u>
<u>E Boundary</u>	<u>8-15</u>	<u>1.5'</u>
<u>SE Boundary</u>	<u>4-5 NTU</u>	<u>1.5'</u>



* Higher readings were only observed for 3-4 minutes of 2 transects

Oil sheen/ Debris: None

Wildlife observations: Gulls + cormorants

Samples Collected for Laboratory Analysis – Sample IDs: None
 TSS (1L) _____ Turbidity (500ml) _____
 Total PCB (1L) _____ Dissolved PCB (2x1L) _____
 Toxicity (21L) _____ Metals (500ml) _____

Notes:

Sampling Crew: Matthew Fitzpatrick Amanda Maxemchuk
 Chief Scientist Signature: Matthew Fitzpatrick

Date: 8/19/08
 Weather: sunny light west wind
 Tides:
 Low @ 0329
 high @ 1016
 low @ 1552

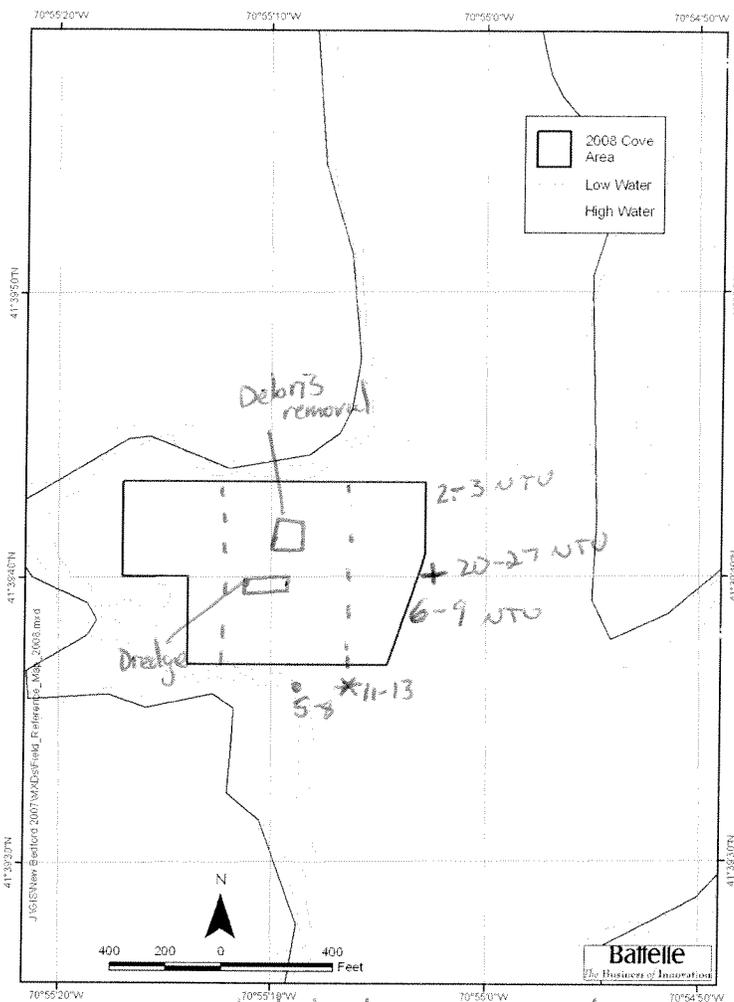
Monitoring Period:
 From: 0800 To: 1200

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
Debris Removal + Dredging
in central cove area
1030- Debris removal
barge being moved.

Turbidity Summary

Location	Turbidity	Depth (ft)
Sensor/water	(NTU)	
<u>NE corner</u>	<u>2-3</u>	<u>Surface ~ 1'</u>
<u>Eastern edge</u>	<u>6-9 NTU</u>	<u>1.0'</u>
<u>SE corner</u>	<u>11-13</u>	<u>1.0</u>



* very short lived plumes up to 15 NTU to
 + Near slack tide (1030) readings increased to 20-27 NTU
 - @ 1130 dredge opps stopped for ~ 15-20 min; readings along transect dropped to 1-3 NTU

Oil sheen/ Debris:

Wildlife observations: fish (bait fish + predatory fish) spotted near dock, S. Ref, NE corner of boundary and most of the area. Yellow spotted turtle near mud channel

Samples Collected for Laboratory Analysis – Sample IDs: None

TSS (1L) _____ Turbidity (500ml) _____
 Total PCB (1L) _____ Dissolved PCB (2x1L) _____
 Toxicity (21L) _____ Metals (500ml) _____

Notes: See comments under map

Sampling Crew: Matt Fitzpatrick, Amanda Maxemchuk
 Chief Scientist Signature: Matthew R. Fitzpatrick

Date: 8/19/08
 Weather: partly cloudy a large front appears to be moving in
 Tides:
 Low @ 0329
 high @ 1016
 Low @ 1552

WS wind 10-15 w/ gusts to 20

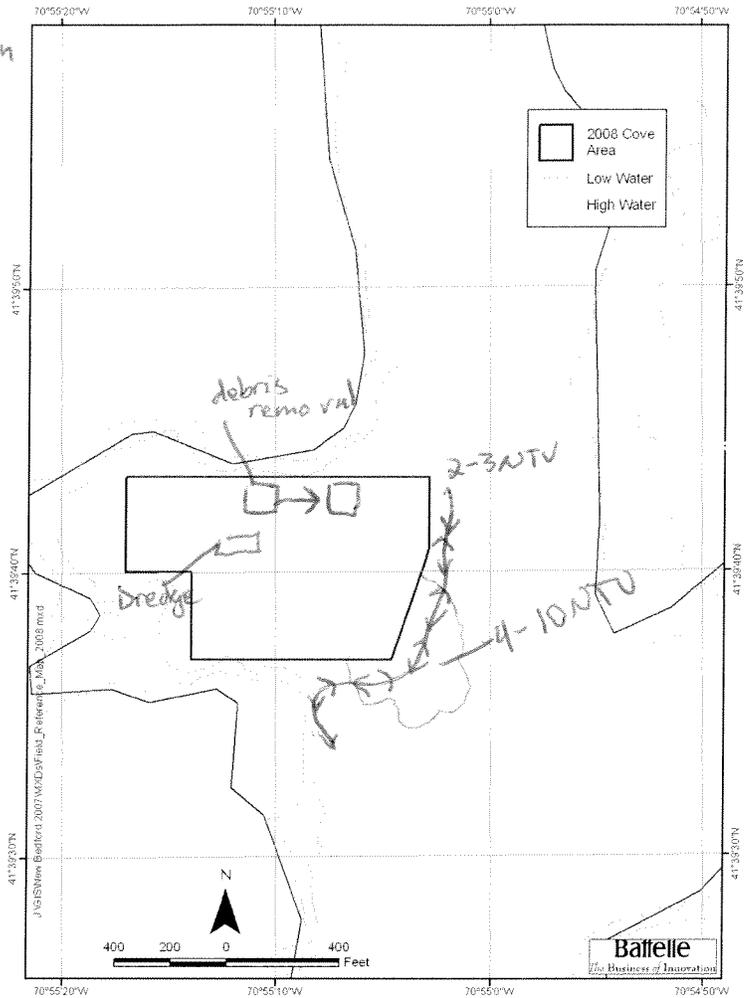
Monitoring Period:
 From: 1300 To: 1430

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
Debris Removal and active dredging in central cove area
Debris Barge moved to eastern side @ 1400

Turbidity Summary

Location	Turbidity	Depth (ft)
Sensor/water	(NTU)	
N. Reference	1.9-2.5	1' / 5.8'
NE Boundary	2-3	1.2'
E Boundary	4-10	1.2' / 6.2'
SE Boundary	4-6	1.2' / 6.0'



Oil sheen/ Debris: None

Wildlife observations: Gulls, Osprey, cormorants fishing in dredge area

Samples Collected for Laboratory Analysis – Sample IDs: None
 TSS (1L) _____ Turbidity (500ml) _____
 Total PCB (1L) _____ Dissolved PCB (2x1L) _____
 Toxicity (21L) _____ Metals (500ml) _____

Notes: low turbidity throughout the eastern dredge boundary
no noticeable increase in turbidity when the debris removal was moved east

Sampling Crew: Math Fitzpatrick Amanda Maxemchuk
 Chief Scientist Signature: [Signature]

Dredging Location	Cove Area
Dredging Description	Debris removal + Dredging in central cove area
Survey Vessel	Gale Force
Chief Scientist	Matt Fitzpatrick
Sampling Technician	Amanda Maxemchuk
Vessel Captain	Matt Fitzpatrick
Other Personnel	
Weather conditions	Sunny light west wind

Date	8/19/08
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Tide information	
High	
Low	0329
High	1016
Low	1552

Station Number	Time	Latitude Northings	Longitude Eastings	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes
S. Ref	0830	2700669.55	815082.14	5.7	4.5	3.3	28.69	4.44 67.6%	23.89	pH = 7.78
S. Ref	0837	2700667.71	815085.13	5.7	4.6	3.0	28.67	4.85 67.8%	23.89	pH = 7.78
SE Boundary	0920	2701777.79	815342.51	9.2	1.8	11.2 ⊕	28.14	5.18 72.4%	24.06	pH = 7.81
Woodst bridge	0942	2700845.77	815517.05	8.4	7.2	20.0	25.2	3.32 4.5%	25.44	pH = 7.23 water is red w/ lg algal clumps @ 5'
"	0948	"	"	8.4	3.05	7.5	7.1	10.4	23.9	pH = 8.0
4th Street from SE corner	1029	2701910.18	815321.26	9.2	0.65	27.6		129.7		
		↓	↓	↓	↓	↓	28.15	5.22 73.0%	24.63	pH = 7.74; Debris remove
mid channel	1047	2701841.06	8156374.09	12	1.0	14.2	28.05	5.42 76.7%	24.81	pH = 7.81
N. Ref	1111	2703446.01	815380.99	11.0	1.2	1.1-1.3	23.8	6.63 91.5%	24.83	pH = 8.14
N. Ref	1118	↓	↓	11.0	1.2	1.3	23.25	7.32 101.7%	24.8	pH = 8.35

⊕ very short lived plume followed by 2.8 NTU

Date: 8/20/08
 Weather: Sunny NW wind ~ 10kts
 Tides:
 Low @ 0407
 High @ 1059
 Low @ 1637

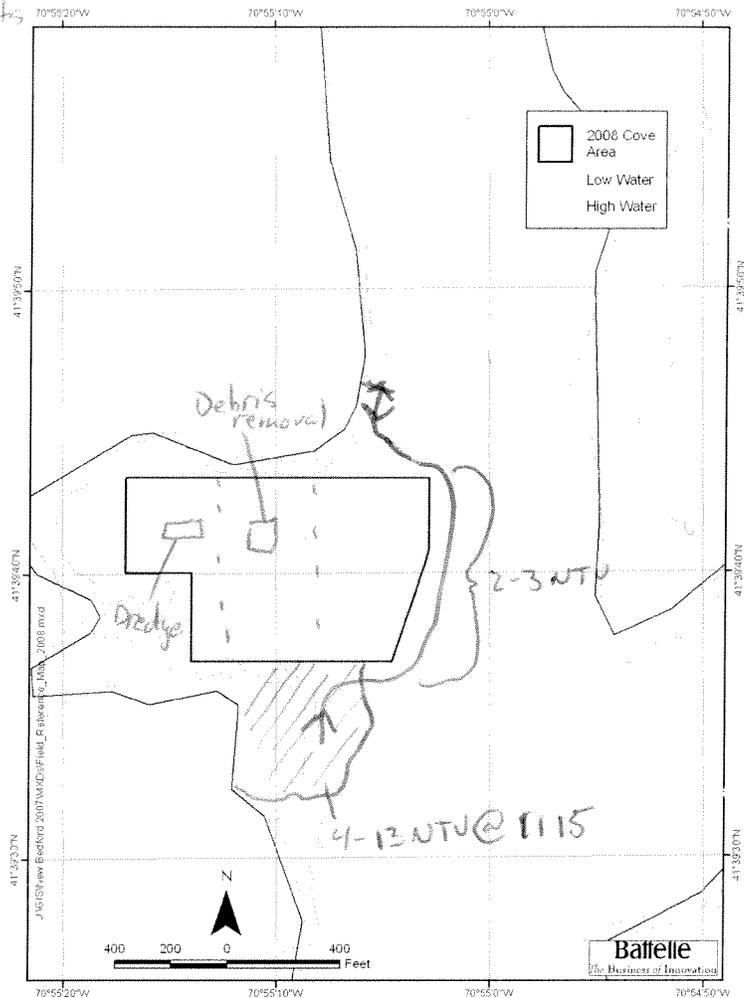
Monitoring Period:
 From: 0815 To: 1200

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
Debris removal and dredging
in cove area

Turbidity Summary

Location	Turbidity	Depth (ft)
Sensor/water	(NTU)	
S. Ref	4	2.2' / 5.5'
S. Ref	1.65	1.0' / 6.5'
40' east of dock	4-10 NTU	1.0' / 7.8'



1030
 from 0945 to 1045 no readings exceeded
 3 NTU along the transect line

Oil sheen/ Debris:

Wildlife observations: predatory fish feeding on baitfish near dock

Samples Collected for Laboratory Analysis – Sample IDs:

TSS (1L) _____ Turbidity (500ml) _____
 Total PCB (1L) _____ Dissolved PCB (2x1L) _____
 Toxicity (21L) _____ Metals (500ml) _____

Notes: Returned to dock @ 0900; turbidity probe was giving slightly negative values (-.1 to -.3). recalibrate the probe.

At 1130 readings briefly spiked to 18 NTU while debris barge was being moved

Sampling Crew: Matthew Fitzpatrick, Amanda Maxemchuk

Chief Scientist Signature: Matthew R. Fitzpatrick

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Date: 8/20/08
 Weather: Sunny NW wind ~5 kts
 Tides:
 Low @ 0407
 High @ 1059
 Low @ 1637

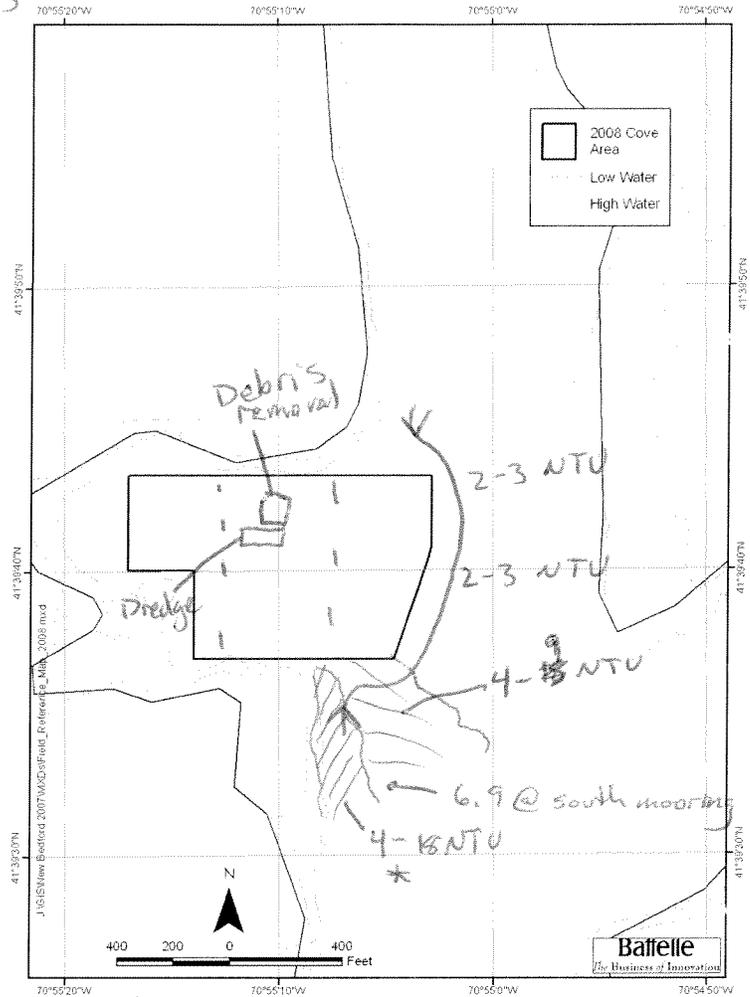
Monitoring Period:
 From: 1300 To: 1500

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
Debris removal + active
Dredging

Turbidity Summary

Location	Turbidity	Depth (ft)
Sensor/water	(NTU)	
<u>N Ref</u>	<u>1.3</u>	<u>1.0/6.3</u>
<u>UE Boundary</u>	<u>2-3</u>	<u>~1.0'</u>
<u>E Boundary</u>	<u>2-3</u>	<u>~1.0'</u>
<u>SE Boundary</u>	<u>~3-5</u>	<u>~1.0'</u>
<u>Southern Boundary</u>	<u>4-18</u>	<u>~1.0'</u>
<u>near dock</u>		



* readings of 9-18 NTU were sporadic and short in duration.

Oil sheen/ Debris:

None

Wildlife observations: fish + baitfish jumping throughout the survey area, 4 Swans inside dredge boundary

Samples Collected for Laboratory Analysis – Sample IDs: None

TSS (1L) _____ Turbidity (500ml) _____
 Total PCB (1L) _____ Dissolved PCB (2x1L) _____
 Toxicity (21L) _____ Metals (500ml) _____

Notes:

Sampling Crew: Matthew Fitzpatrick, Amanda Maxemchuk
 Chief Scientist Signature: Matthew K. Fitzpatrick

Dredging Location	Cove Area
Dredging Description	Debris removal and dredging
Survey Vessel	Gale Force
Chief Scientist	Matt Fitzpatrick
Sampling Technician	Amanda Maxemchuk
Vessel Captain	Matt Fitzpatrick
Other Personnel	
Weather conditions	Sunny NW wind 10-15 kts

Date	8/20/08
Page	1 of 1

Tide information	
High	—
Low	0407
High	1059
Low	1637

Station Number	Time	Latitude Northing	Longitude Easting	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes
S. Ref	0829	2700760.18	815115.41	5.5'	2.2'	.4	28.8	4.13	22.81	pH=7.76
								56.7%		
S. Ref	0835	↓	↓	5.5'	2.2'	.4	28.79	4.12	22.82	pH=7.76
								56.4%		
* S. Ref	0935	2700757.76	815104.93	6.5'	1.0'	1.7	29.16	4.03	22.97	pH=7.78
								55.5%		
S. Ref	0940	↓	↓	6.5'	1.0'	1.6	29.13	4.05	22.95	pH=7.77
								55.7%		
near dock	1047	2701571.48	815140.16	7.6'	1.2'	9.5	28.24	3.82	22.71	pH=7.67
								52.2%		
N. Ref	1138	2703482.88	815292.64	8.4'	1.1'	.8	27.18	4.31	22.64	pH=7.71
								58.6%		
N. Ref	1142	↓	↓	8.4'	1.1'	.8	27.07	4.42	22.65	pH=7.71
								59.9%		
N. Ref	1307	2703460.85	815269.62	6.6'	1.0'	1.2	26.08	4.98	23.58	pH=7.76
								68.1%		
N. Ref	1312	↓	↓	6.6'	1.0'	1.3	25.83	4.89	23.68	pH=7.76
								67.4%		
Near dock	1418	2701645.60	815157.79	4.8'	1.2'	8.8-15.4	27.48	4.38	23.98	pH=7.72
								60.9%		

* turbidity probe recalibrated @ 0900. MRF 8/20/08

Date: 8/21/08 8/21/08 ^{MRF 8/26/08}

Weather: Sunny Light N wind

Tides:
 Low @ 0947
 High @ 1146
 Low @ 1725

Monitoring Period:

From: 0900 To: 1200
1245 to 1520 ⓐ

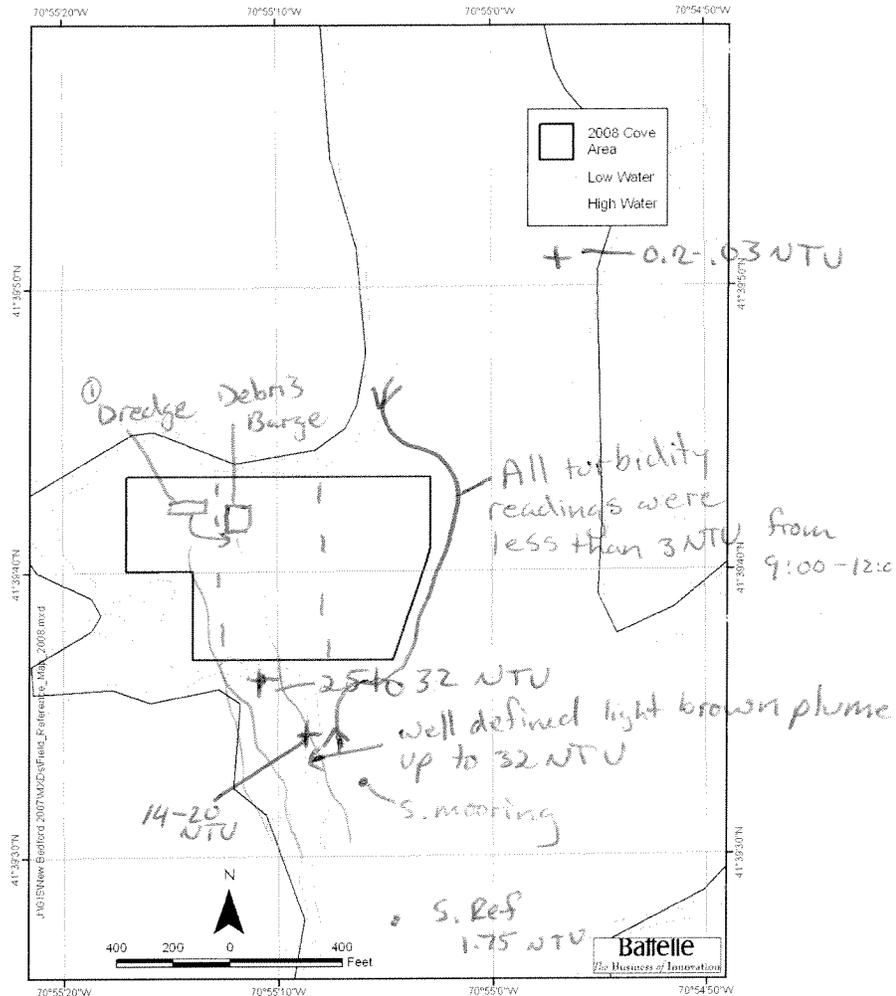
Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:

Debris removal and active dredging

Turbidity Summary

Location	Turbidity	Depth (ft)
Sensor/water	(NTU)	
S. Ref	1.75	1.6' / 5.0'
NE Boundary	1.0	1.0' / 8.6
E Boundary	1.2	1.0' / 8.6
SE Boundary	1.1	1.0' / 8.3
40' N of Dock	25-32 NTU	1.3' / 4.9
50' of Dock	14-20.5 NTU	1.28' / 4.4
N. Ref	2-3 NTU	1.4' / 4.6



ⓐ Dredging was in the central area of the Cove
 + = where samples were collected

Oil sheen/ Debris:

None

Wildlife observations:

cormorants, gulls, lots of baitfish and larger predatory fish feeding from the N. Ref area to the S. Ref area (y/g) dead eel near the outside of the boom

Samples Collected for Laboratory Analysis - Sample IDs:

TSS (1L) _____ Turbidity (500ml) _____
 Total PCB (1L) _____ Dissolved PCB (2x1L) _____
 Toxicity (21L) _____ Metals (500ml) _____

Notes:

Sample IDs:
 WQ-XXX-01-082108
 WQ-XXX-02-082108
 WQ-XXX-03-082108

xxx indicates sample type
 TUR = Turbidity TSS = TSS
 TOX = Toxicity PCB = Total PCB
 MET = metals DCB = Dissolved PCB

Sampling Crew:

Matt Fitzpatrick Amanda Muxenichuk

Chief Scientist Signature:

Matthew R. Hyler

ⓐ Time was the collection time of the final sample. MRF 8/26/08

Dredging Location Cove area
Dredging Description
Survey Vessel Gale Force
Chief Scientist Matt Rzeputrick
Sampling Technician Amanda Maxemchuk
Vessel Captain Matt Rzeputrick
Other Personnel
Weather conditions Sunny light north wind becoming S 10-15 around noon

Date 8/21/08
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Tide information
High
Low 0447
High 1146
Low 1725

Station Number	Time	Latitude Northing	Longitude Easting	Water depth (ft)	Sample Depth (ft)	Turbidity NTU	Salinity PSU	DO mg/L	Temp °C	Notes
S. Ref	0907	2700748.6	815103.43	5.0	1.6'	1.7	29.15	6.70/91.6%	22.61	No pH is available for the day
S. Ref	0919	↓	↓	5.0	1.6'	1.8	29.08	6.65/91.8%	22.58	
E Bound	1103	2702129.3	815389.7	8.6	1.0'	1.2	29.76	6.76/92.0%	22.76	
SE Bound	1109	2701704.61	815253.09	8.3	1.0'	1.1	29.64	6.74/93.8%	22.91	
	1112	↓	↓	8.3	8.4'	2.1 → 1.8	29.85	6.65/91.8%	22.63	
NE Bound	1122	2702483.72	815417.56	8.6	1.0'	0.9 → 1.2	29.49	6.58	22.49	90.9% salt
N. Ref	1255	2703449.81	815267.3	7.4	1.0	.4	29.08	6.78	23.62	94.6%
N. Ref	1259	↓	↓	7.4	1.0	.2	29.08	6.69	23.61	93.2%
40' N of dock	1420	2701682.97	814988.46	4.9	1.3	32.4 → 25	29.35	5.42	23.51	75.5% - sample collected
S. East end of Dock	1445	2701490.0	815081.9	4.4	1.28	14.1 → 15.6	29.43	6.03	23.51	83.2% - sample collected
	1502									WQ-XXX-02-082108
N. Ref	1520	2703449.3	815031.3	4.6	1.4	0.2 - 0.3	28.42	7.09	24.14	99.3% - sample collected
										WQ-XXX-03-082108

Date: 8/22/08

Weather: Sunny light variable wind

Tides:

High @ 0:06

Low @ 5:23

High @ 12:39

Low @ 18:19

Monitoring Period:

From: 0830 To: 1215

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:

Active dredging and Debris removal

Turbidity Summary

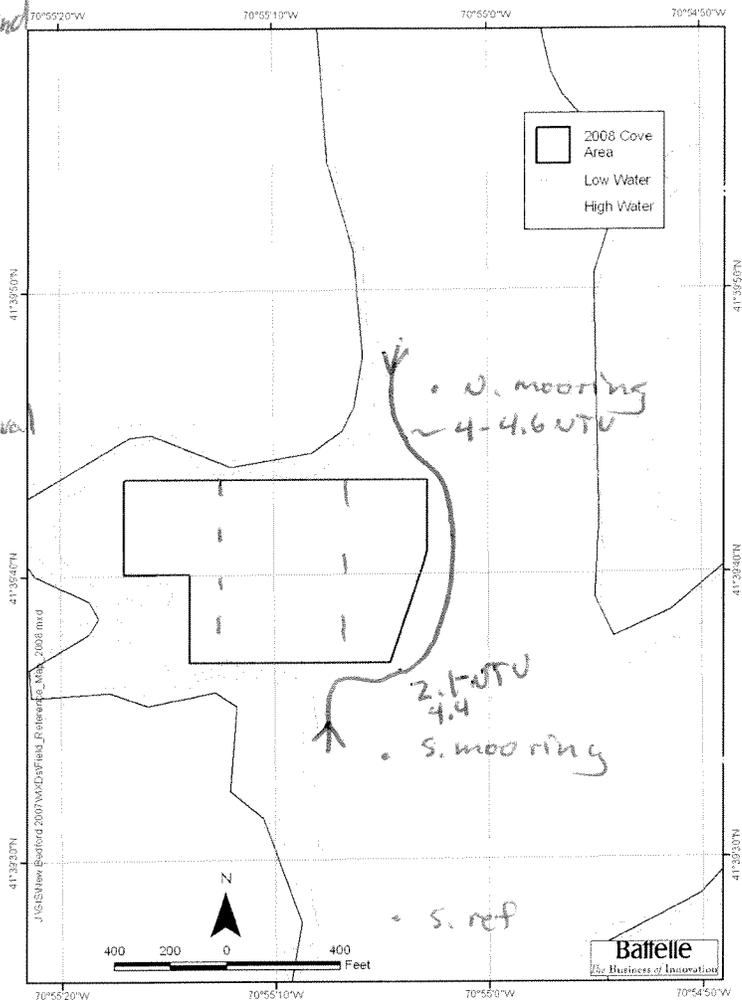
Location Turbidity

Sensor/water

(NTU)

Depth (ft)

Location	Turbidity (NTU)	Depth (ft)
S. Ref	4.1	3.0/3.8
NE of Boundary	3.5-4.4	3.5-4.4 / 4.4
E of Boundary	3.0-4.2	1.7-6.4 / 7.9
SE of Boundary	2.9-3.5	1.3-6.6 / 7.8
40' W of dock	3.8-4.5	1.2-9.8 / 6.4



Oil sheen/ Debris:

None

Wildlife observations: large predatory fish (~24") + baitfish from N. Ref to S. Ref area
Numerous Gulls and Cormorants in the area

Samples Collected for Laboratory Analysis - Sample IDs: None

TSS (1L) _____ Turbidity (500ml) _____

Total PCB (1L) _____ Dissolved PCB (2x1L) _____

Toxicity (21L) _____ Metals (500ml) _____

Notes:

No readings above 4.6 NTU were observed

Sampling Crew: Rich Restuchi Matt Fitzpatrick

Chief Scientist Signature: Matthew A. J. [Signature]

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Date: 8/28/08
 Weather: Sunny light W wind
 Tides:
 high @ 0620
 low @ 1224
 high @ 1847

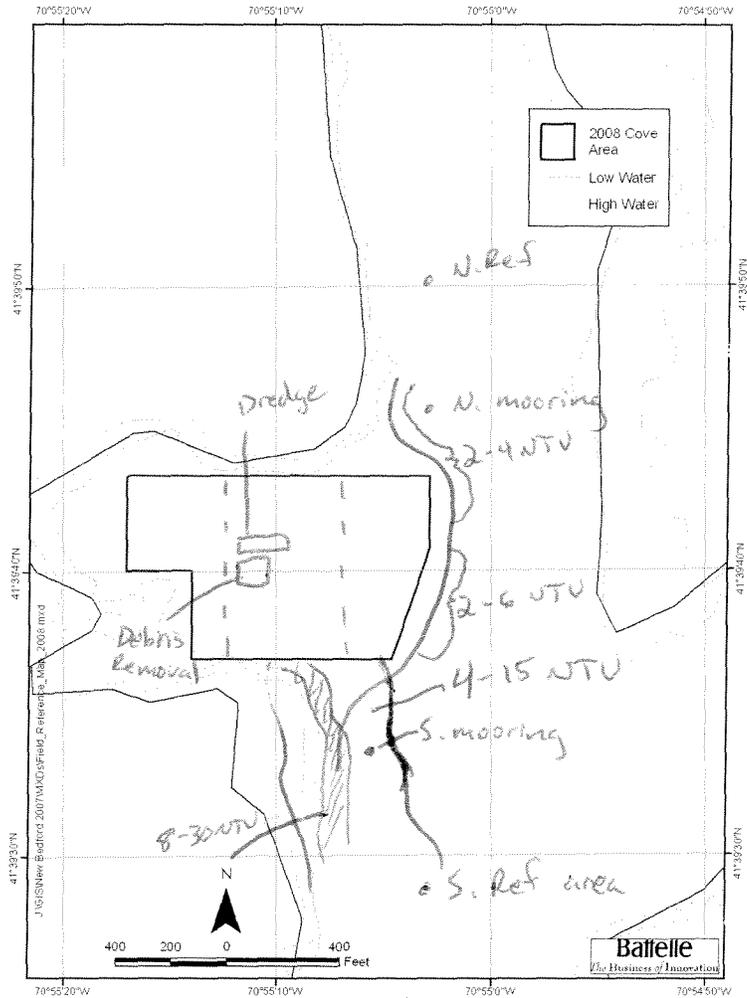
Monitoring Period:
 From: 0750 To: 1150

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
Active Dredging + Debris Removal

Turbidity Summary

Location Sensor/water	Turbidity (NTU)	Depth (ft)
N. Ref	2.05	3.99 / 6.8
NE Bound	3.4 → 2	1-5.6 / 6.8
E Bound	1.9 → 6.4	11-65 / 7.3
SE Bound	1.05 → 3.3	1.05-5.3 / 6.8
40' NE of Dock	10.2 - 23.3	9-2.95 / 4.1
10' SE of mooring	8.4 - 10.5	10-5.4 / 7.7



poorly defined turbidity plume w/ average values around 10 NTU. a few very short lived plumes of 18-30 NTU observed.

Oil sheen/ Debris:

None

Wildlife observations: Gulls + Cormorants throughout the area. Predatory fish + Bitfish seen @: the dock, NE Boundary

Samples Collected for Laboratory Analysis – Sample IDs: None

TSS (1L) _____ Turbidity (500ml) _____
 Total PCB (1L) _____ Dissolved PCB (2x1L) _____
 Toxicity (21L) _____ Metals (500ml) _____

Notes:

Sampling Crew: Matt Hepburn + Jessica Fisher
 Chief Scientist Signature: Matthew R. Fisher

Date: 8/28

Weather: Partly cloudy NE Wind ~ 10-15

Tides:

high @ 0620
 low @ 1224
 high @ 1847

Monitoring Period:

From: 1230 To: 1440

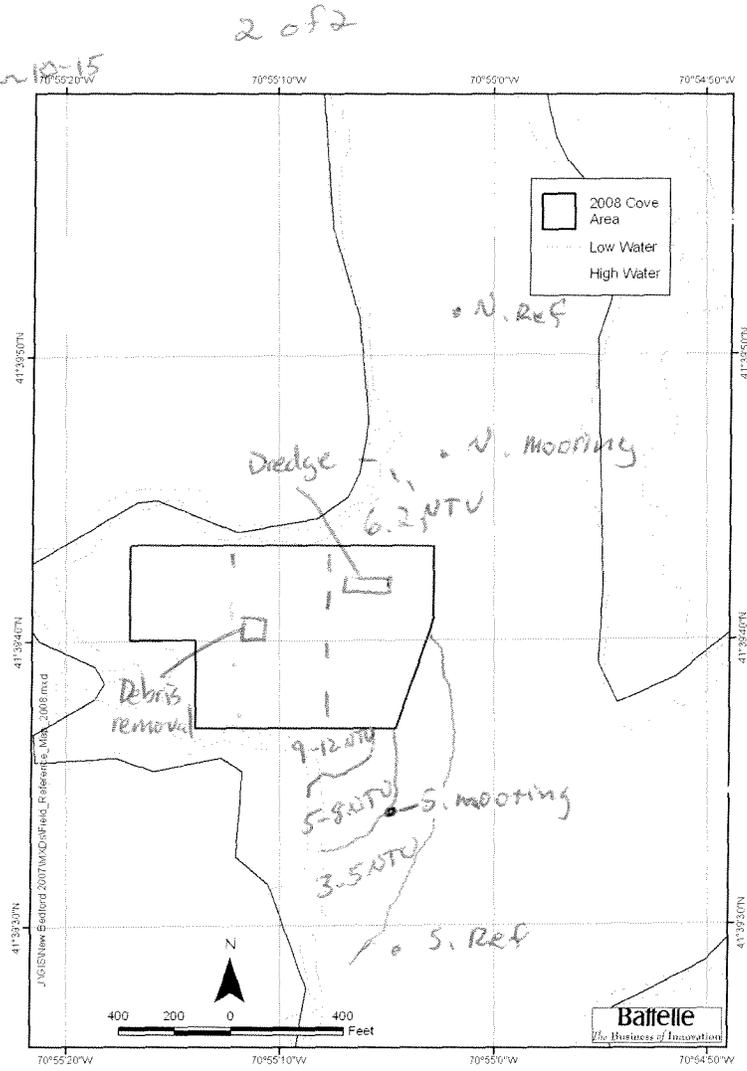
Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:

Active dredging
to debris removal from
1230 to 1400

Turbidity Summary

Location	Turbidity	Depth (ft)
Sensor/water	(NTU)	
10' E of dock	9-12	1.0
West of S. mooring	5-8	1.0
S. Ref	4.5-4.7	1.5 / 5.8
N. Ref	1.9	7.7 / 3.5



all readings dropped below 5 NTU by 1345
 except just north of the boundary where readings
 increased slightly

Oil sheen/ Debris:

None

Wildlife observations: Small predatory fish feeding on baitfish near SE boundary

Samples Collected for Laboratory Analysis – Sample IDs: None

TSS (1L) _____ Turbidity (500ml) _____

Total PCB (1L) _____ Dissolved PCB (2x1L) _____

Toxicity (21L) _____ Metals (500ml) _____

Notes:

Sampling Crew: Matthew Fitzpatrick Jessica Fahy
 Chief Scientist Signature: Matthew R. Fitzpatrick

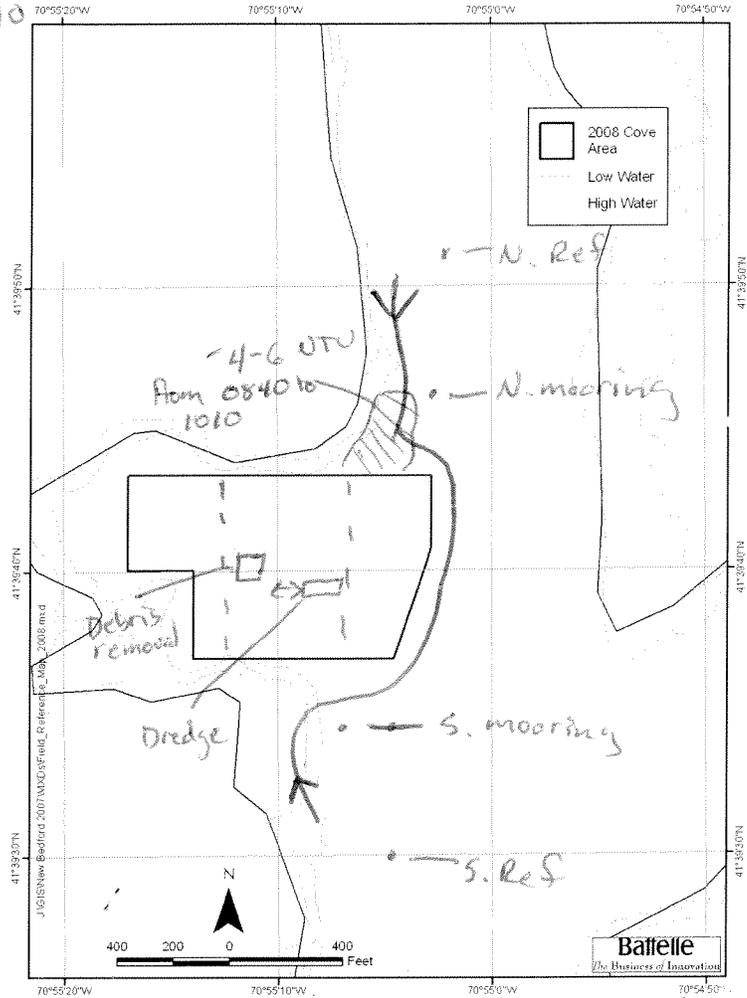
Date: 9/4/08
 Weather: partly Sunny SW wind @ 5-10

Tides:
 Low @ 440
 high @ 1138
 low @ 1718
 high @ 2355

Monitoring Period:
 From: 0745 To: 1145

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
Active Dredging + Debris removal in central cove area



Turbidity Summary

Location	Turbidity	Depth (ft)
Sensor/water	(NTU)	
South Ref.	2.9/2.9	2.5/4.25
North Ref.	4.3/3.3	4.8/0.86
N. Mooring	3.1/3.0	5.6/1.0
S. Mooring	2.9/2.2	1.5/1.6/2.2
580' W of Boundary	4.5/4.7	1.9-3.9/5.0
270' W of Boundary	3.4/4.1	1-3.6/4.7

After ~1030 no readings exceeded 3.5 NTU

Oil sheen/ Debris:

Minor sheen near NE Boundary

Wildlife observations: Predatory fish and baitfish observed near S. Reference, near the dock and along the eastern boundary. Cormorants + gulls throughout the area

Samples Collected for Laboratory Analysis – Sample IDs: None

TSS (1L) _____ Turbidity (500ml) _____
 Total PCB (1L) _____ Dissolved PCB (2x1L) _____
 Toxicity (21L) _____ Metals (500ml) _____

Notes: Very low turbidity observed from 0745 to 1145. All readings were within 1.5 to 7 NTU

Sampling Crew: Matt Fitzpatrick Jess Fahy Annie Murphy
 Chief Scientist Signature: Matthew R. Fitzpatrick

Date: 9/4/08

Weather: partly sunny

Tides:

Low @ 0440
 high @ 1138
 Low @ 1718
 high @ 2355

Monitoring Period:

From: 1230 To: 1330

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:

Dredging and Debris removal inactive until ~1315

Turbidity Summary

Location	Turbidity	Depth (ft)
Sensor/water	(NTU)	
<u>N. Ref.</u>	<u>1.75</u>	<u>3.2 / 6.5</u>
<u>100' from SE corner (towards the NE)</u>	<u>7.4</u>	<u>1-8.4 / 9.5</u>

Oil sheen/ Debris:

None

Wildlife observations: Numerous small predatory fish feeding on small baitfish near the eastern boundary

Samples Collected for Laboratory Analysis – Sample IDs: None

TSS (1L) _____ Turbidity (500ml) _____

Total PCB (1L) _____ Dissolved PCB (2x1L) _____

Toxicity (21L) _____ Metals (500ml) _____

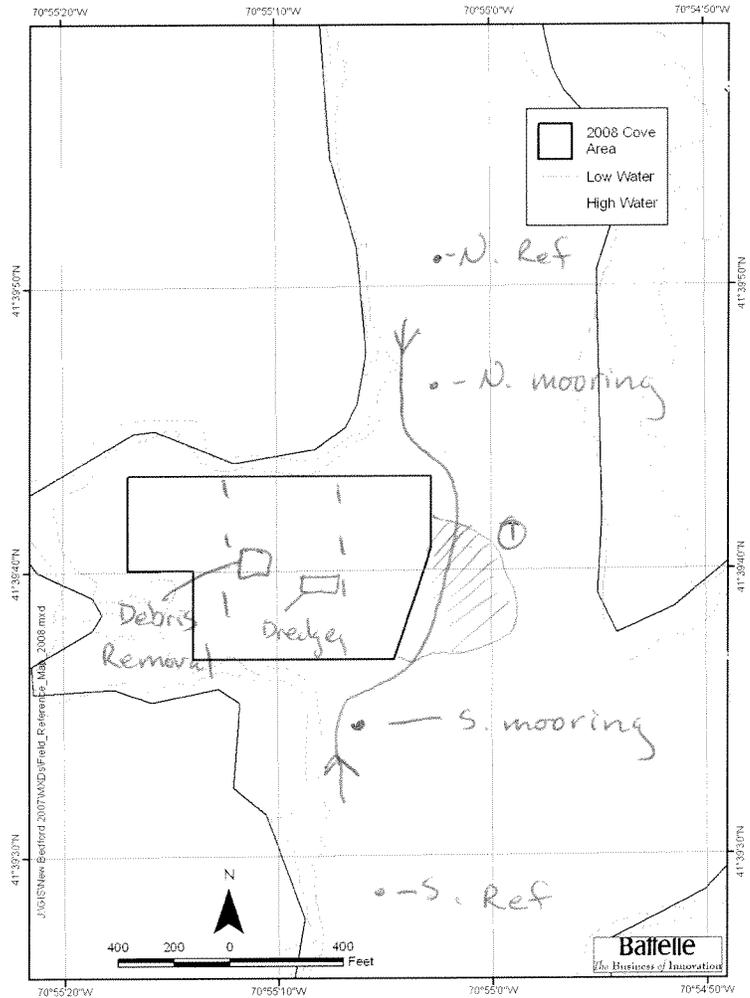
Notes:

Start dredging + debris removal @ 1:15 PM

Sampling Crew: Matthew Fitzpatrick, Jessica Fahay, Annie Murphy

Chief Scientist Signature: Matthew R Fitzpatrick

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① Poorly defined low turbidity plume, values ranged from 4-12 NTU - the average was 6-7. All other observed readings ranged from 1.5 to 9.0

Dredging Location	Cove Area
Dredging Description	Dredging + Debris removal
Survey Vessel	Gale Force
Chief Scientist	Matt Fitzpatrick
Sampling Technician	Jess Fahy
Vessel Captain	Annie Murphy
Other Personnel	
Weather conditions	mostly cloudy S wind 5-10kts

Date	9/4/08
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Tide information	
High	
Low	0440
High	1138
Low	1718
High	2355

Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	pH	DO % sat.	Notes
South Ref.	08:05	2700738.80	815078.50	4.25	2.5	2.7 NTU	30.93	5.5mg	22.05	7.81	75.5%	
↓	↓	↓	↓	↓	2.5	2.3 NTU	30.91	5.6	22.05	7.83	77.4%	
North Ref.	08:40	2703517.31	815263.81	5.8	4.8	4.3 NTU	30.79	4.8	22.15	7.80	65.5%	
↓	↓	↓	↓	↓	0.80	3.3 NTU	30.67	5.18	22.08	7.85	71%	
N. Mooring	09:15	2702791.82	815405.28	6.7	5.6	3.1 NTU	30.94	5.07	22.09	7.82	69.6%	
↓	↓	↓	↓	6.7	1.0	3.0 NTU	30.84	5.16	22.13	7.83	70.8%	
S. Mooring	09:33	2701420.47	815152.00	6.2	5.1	2.9 NTU	31.01	5.14	22.05	7.82	70.5%	
↓	↓	↓	↓	↓	1.0	2.2 NTU	31.01	5.19	22.09	7.82	71.1%	
580ft North Point	09:57	2703040.72	815205.39	5.0	3.9	4.5 NTU	30.93	5.14	22.16	7.82	70.2%	
↓	↓	↓	↓	↓	0.9	4.7 NTU	30.88	5.04	22.23	7.81	69.3%	
290ft North Point	10:09	2702695.59	815243.48	4.7	3.6	3.4 NTU	30.90	5.23	22.31	7.83	72%	
↓	10:06	↓	↓	↓	1.0	4.1 NTU	30.83	5.35	22.36	7.85	73.1%	
North Ref.	12:47	2703517.91	815203.38	6.5	3.2	1.7 NTU	30.95	5.68	22.72	7.64	78.8	
↓	↓	↓	↓	↓	3.2	1.8 NTU	30.98	5.5	22.76	7.63	76.3	
100ft. SE Ref.	1:20	2701826.17	819351.19	9.5	1.0	9.4 NTU	30.98	5.36	23.35	7.78	75.3	
↓	1:23	↓	↓	↓	8.4	7.4 NTU	31.36	4.97	22.40	7.75	68.7	

Date: 9/11/08

Weather: SSW wind 5-10 sunny, some clouds

Tides:
 High @ 5:34
 Low @ 11:05
 High @ 17:55

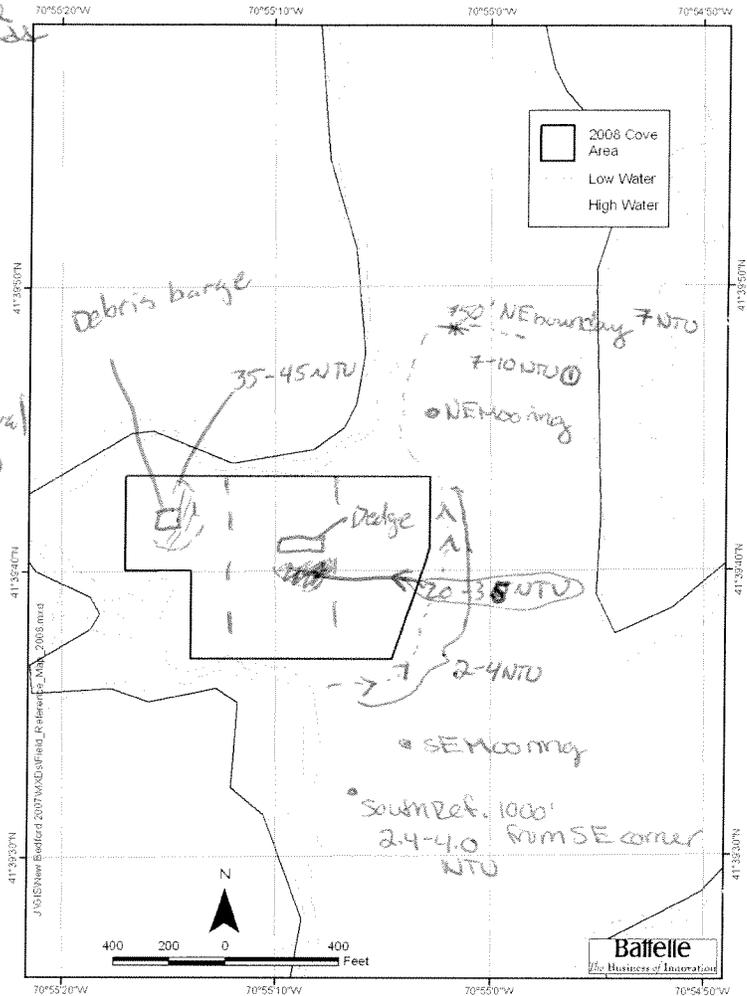
Monitoring Period:
 From: 0915 To: 1400

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
Active dredging / debris removal
1000 Debris Removed Stopped (low tide)
1230 Dredging stopped until ~ 1pm
Resumed dredging

Turbidity Summary

Location	Turbidity	Depth (ft)
Sensor/water	(NTU)	
S. Ref	2.4-4.0	2.69
N. Mooring	2.5-8.7	3.38-0.73
500' Not boundary	5.1	0.73
near dredge	35.6	0.65
near debris removal	35-46.5	1.30



2702224.4 814212.0 - Debris barge
 ~ 2702120 ~ 814797.0 - Dredge

Oil sheen/ Debris:

None

Wildlife observations: Gulls on ppe; baitfish + small predatory fish

Samples Collected for Laboratory Analysis – Sample IDs: NA

TSS (1L) _____ Turbidity (500ml) _____
 Total PCB (1L) _____ Dissolved PCB (2x1L) _____
 Toxicity (21L) _____ Metals (500ml) _____

Notes:

① Fell to background ~1250 while dredge was inactive

Sampling Crew: Matt Fitzpatrick Annie Murphy

Chief Scientist Signature: Matt Fitzpatrick

Date: 9/23/08
 Weather: Sunny, Brisk, Wind N ~5-15 -NE
 Tides:
 Low @ 8:34
 High @ 15:37
 Low @ 22:07

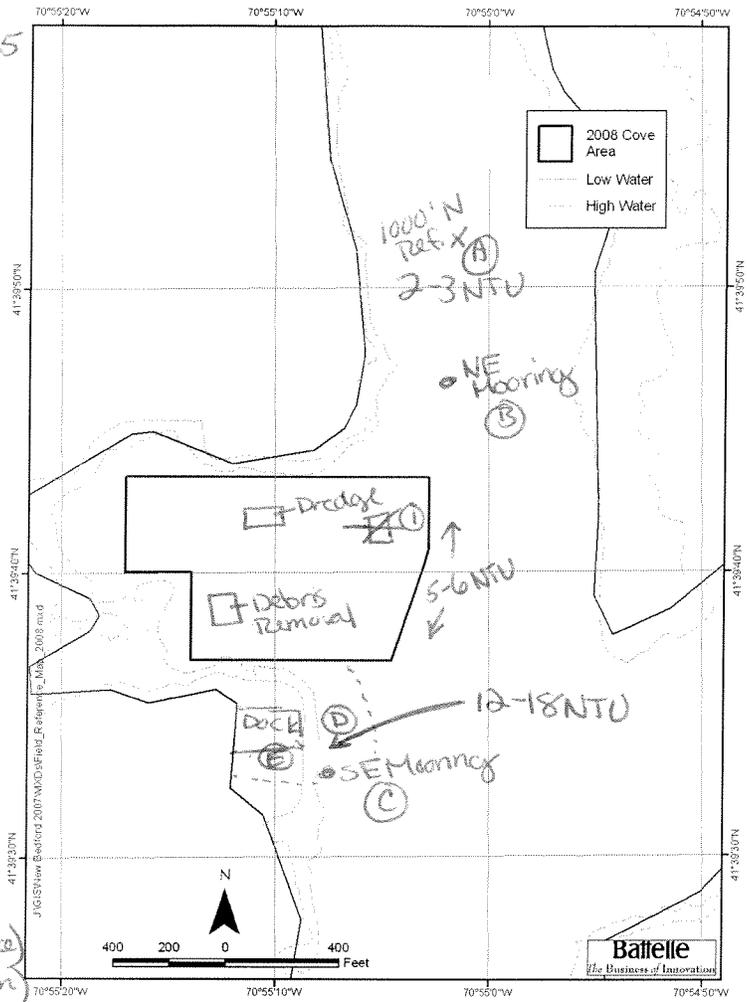
Monitoring Period:
 From: 830 To: 1130

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
Debris Removal Minimal 830-900
started up ~915
Dredge Active 845-11
(on and off)

Turbidity Summary

Location	Turbidity range (NTU)	Sensor/water Depth (ft)
① 1000' N Ref	2.8-3.4	2.3/4.2
② NE Mooring	2.2	0.6/4.6
③ SE Mooring	6.8	1.1/4.0
④ 40' east dock	13.0	1.0/3.5 (surface)
⑤ 40' east dock	16.0	2.5/3.5 (bottom)
⑥ S. side dock	18.3	0.8/4.2 (surface)
⑦ S. side dock	18.5	3.2/4.2 (bottom)



① Disregard AEM 9/23/08

Oil sheen/ Debris: _____

Wildlife observations: Gulls + Cormorants observed on pipeline, baitfish jumping around southern boundary

Samples Collected for Laboratory Analysis – Sample IDs: NA
 TSS (1L) _____ Turbidity (1 L) _____
 Total PCB (1L) _____ Dissolved PCB (2x1L) _____
 Toxicity (5 gal) _____ Metals (500ml) _____

Notes: Low water slack for majority of monitoring time
wind picked up ~930 to ~15 knots

Sampling Crew: Annie Murphy + Matt Fitzpatrick
 Chief Scientist Signature: [Signature]

Date: 9/23/08
 Weather: Sunny, wind NE 5-10
 Tides: turning East
 Low @ 8:34
 High @ 15:37
 Low @ 22:07

Monitoring Period:
 From: 10:05 To: 2:35 PM

Tidal Stage: HWS Ebb LWS Flood

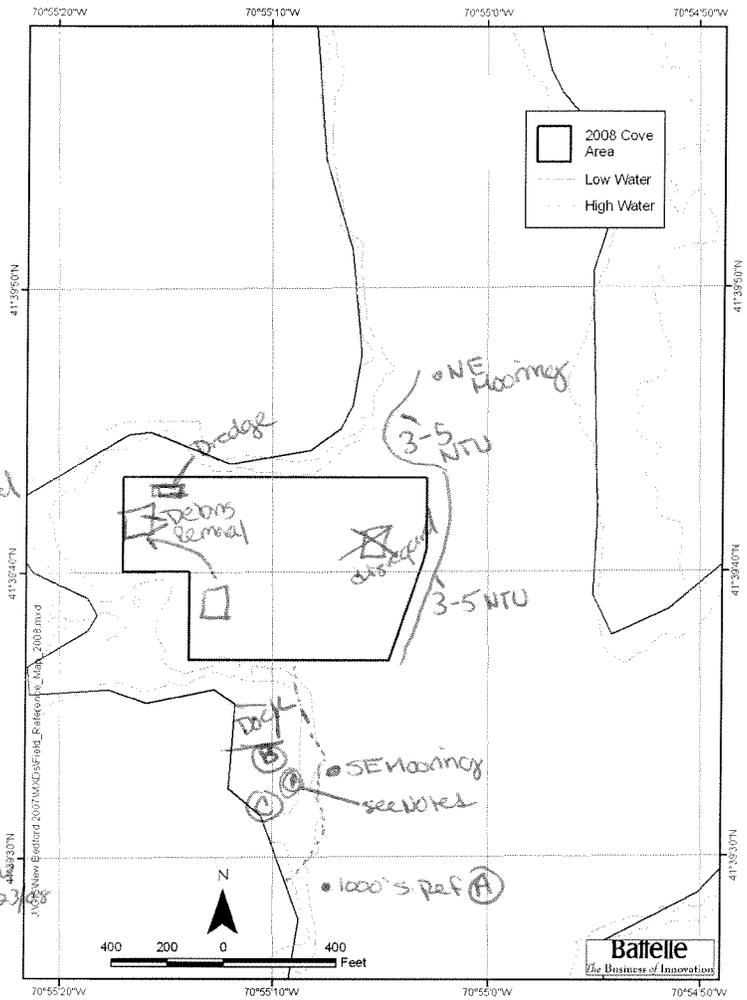
Dredging Activity:

- Debris Removal Moved to NW corner @ 1 PM active throughout monitoring time period
- Dredge active just north of debris removal

Turbidity Summary

Location	Turbidity range (NTU)	Sensor/water Depth (ft)
① 1000's Ref. (surface)	3.4-3.6	3.5/4.5
② south side of dock (mid)	35-38	0.38/6.5
③ " (bottom)	6.5	3.0/6.5
④ south of dock	5.3	5.5/6.5
⑤ south of dock	15.0	0.6/5.3

AEI 9/23/08



Oil sheen/ Debris: _____

Wildlife observations: Gulls on pipeline, baitfish jumping

Samples Collected for Laboratory Analysis – Sample IDs: NA

TSS (1L) _____ Turbidity (1 L) _____
 Total PCB (1L) _____ Dissolved PCB (2x1L) _____
 Toxicity (5 gal) _____ Metals (500ml) _____

Notes:

① Visible turbidity plume around dock area moving/dissipating south w/wind (NE 10 knots) for ~15-20 min. brightest on surface (38-40 NTU) 1:45 - 2:15 PM

Sampling Crew: Annie Murphy + Matt Fitzpatrick

Chief Scientist Signature: [Signature]

Pierce Mill

Dredging Location	COVE Area
Dredging Description	Debris Removal
Survey Vessel	Gale Force
Chief Scientist	Annie Murphy
Sampling Technician	Matt Fitzpatrick
Vessel Captain	Annie Murphy
Other Personnel	
Weather conditions	Sunny, Brist

Date	9/23/08
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Tide information	
High	3:03
Low	8:34
High	15:37
Low	22:07

Station Name	Time	Latitude	Longitude	Water depth (ft)	Sample Depth (ft)	Turbidity (NTU)	Salinity (PSU)	DO (mg/L)	DO (% sat)	Temp (° C)	ph	Notes
100' N Ref	8:34	2703471.0	81526674	4.2	2.3	2.8 3.4	29.27	5.30	68.4%	19.21	7.61	Ebb/LWS
↓	8:39	↓	↓	4.2	2.3	3.4	29.19	5.39	69.4%	19.23	7.64	↓
NEM Mooring		270774926	815397160	4.6	0.6	2.2	28.44	5.72	71.6%	18.35	7.59	Ebb/LWS
SEM Mooring	9:24	270136384	81512657	4.0	1.1	6.8	28.69	5.41	67.7%	17.89	7.57	
10' E of dock	9:33	270581.14	81514097	3.5	1.0	13.0	28.76	5.30	66.6%	18.05	7.57	LWS
↓	9:35	↓	↓	3.5	2.5	16.0	28.77	5.28	66.3%	18.06	7.57	N. Richas picked up N-S-U
Dock-S	11:14	270154204	81505257	4.2	0.8	18.3	28.95	5.33	67.9%	18.73	7.57	south side of dock
↓	11:16	↓	↓	4.2	3.2	18.5	28.96	5.26	66.9%	18.67	7.56	
100' S Ref.	12:31	2700748.11	815069.92	4.4	3.5	3.6	29.58	6.23	80.4%	19.25	7.74	Flood
↓	12:34	↓	↓	↓	↓	3.4	29.61	6.28	80.8%	19.27	7.74	↓
Dock-S	1:53	270153767	815060216	6.5	0.38	35-38	29.01	5.3	68.6%	19.48	7.57	
↓	1:55	↓	↓	↓	3.0	6.5	29.68	6.06	78.6%	19.41	7.70	
↓	1:57	↓	↓	↓	5.5	5.3	29.9	6.16	80.2%	19.5	7.73	visible plume
incal 5' South of Dock	2:23	270114883	815044.65	5.3	0.6	15.0	29.5	6.07	78.6	19.58	7.67	

① 9/6 2.8 AEM 9/23/08
 ② dropped down to <7 @ 12:20 PM

Dredging Location	Pierce Mill Core Area
Dredging Description	Active in NW corner in AM
Survey Vessel	Gale Force
Chief Scientist	Annie Murphy
Sampling Technician	Jessica Tenzar
Vessel Captain	Annie Murphy
Other Personnel	_____
Weather conditions	overcast wind from S ~5 knots

Date	10/1/08
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Tide information	
High	941
Low	1537
High	2159
Low	

Station Number	Time	Latitude Northings (ft)	Longitude Eastings (ft)	Water depth (ft)	Sample Depth (ft)	Turbidity NTU	Salinity psi	DO mg/liter	Temp °C	PH	Notes
5. Ref	843	2700722.79	815149.31	10.3	1.1 ft	4.5	18.96	7.09	18.87	7.43	85.5%
↓	853	↓	↓	↓	1.1	4.5	20.92	6.54	18.99	7.47	79.9
600' SE corner	940	2701919.44	814602.71	6.4	5.1	5.5	24.15	5.55	19.18	7.58	69.7-3 inside core area
↓	941	↓	↓	6.4	3.0	7.1	21.85	5.38	19.18	7.47	66.4 but no dredge activity
1000' East of SE corner	1030	2702096.74	814319.37	6.4	1.0	6.9	16.45	6.38	18.92	7.36	75.1
↓	1031	↓	↓	6.0	4.0	5.9	23.38	6.0	19.08	7.59	74.7
↓	1032	↓	↓	6.0	2.5	8.7	21.60	5.79	19.12	7.49	71.1
③ ↓ 57 NTU	1123	↓	↓	6.0	1.0	9.8	11.40	7.38	18.99	7.34	85.1
④ ↓ 24 NTU	1150	2702085.16	814349.06	5.8	1.86	19.27 (ave 33)	17.67	6.01	19.13	7.36	72.7 - active debris removal
1000' ⑤ N Ref	1215	2703514.83	815210.02	6.3	1.18	3.8	15.25	7.42	19.30	7.23	87.7

② samples collected @ range of 50-65 NTU
AEM 10/1/08

③ samples collected (80-65 NTU)
④ " (19-27 NTU)
⑤ " (N. Ref, 3.8 NTU)

Date: 10/1/08

Weather: overcast

Tides:
 High @ 941
 Low @ 1537
 High @ 2159

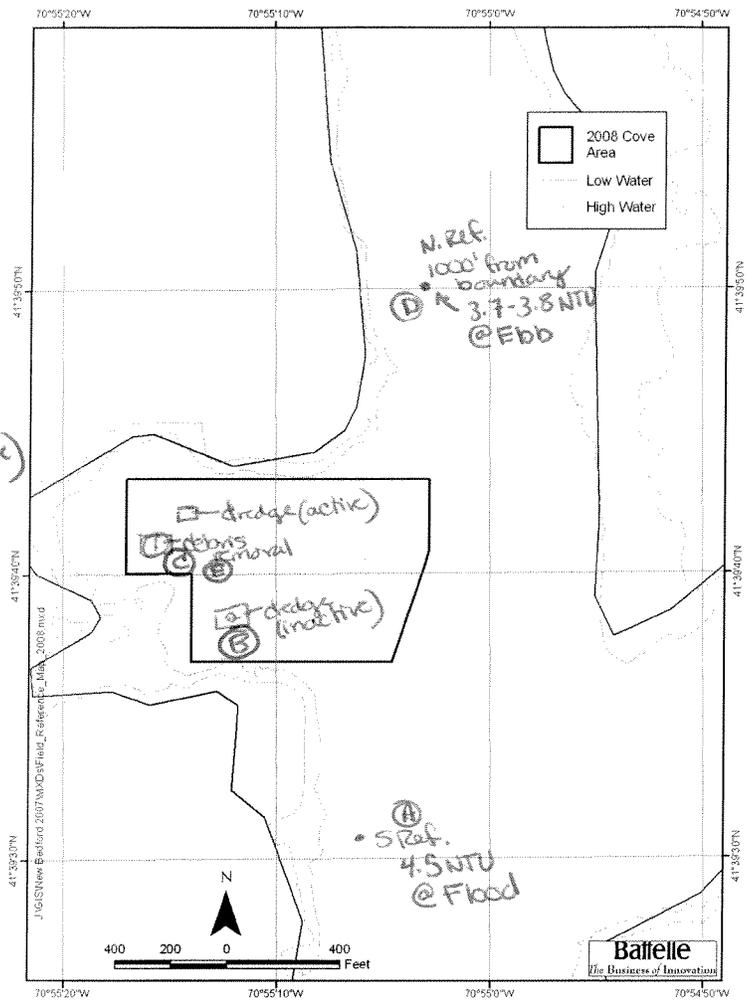
Monitoring Period:
 From: 830 To: 1230

Tidal Stage: (HWS) (Ebb) LWS (Flood)

Dredging Activity:
Dredging in NW corner
Debris Removed in NW corner (S of dredge)
starting ~ 11

Turbidity Summary

Location	Turbidity range (NTU)	Sensor/water Depth (ft)
Ⓐ S. Ref.	4.5	1.1/10.3
Ⓑ	7.1-5.5	1.0-5.1/6.4
Ⓒ*	9.8-5.9	1.0-4.0/6.0
Ⓒ*	50-65	1.86/6.0
Ⓓ N. Ref.	3.7-3.8	1.18/6.3
Ⓔ	19-27	1.86/5.8



* no debris removed @ this reading; debris removal began and another set of readings taken + sample

Oil sheen/ Debris: _____

Wildlife observations: Birds along pipeline, small fish jumping near boundary

Samples Collected for Laboratory Analysis – Sample IDs:
 TSS (1L) WQ-TSS-XXX-100108 Turbidity (1 L) WQ-TUR-XXX-100108
 Total PCB (1L) WQ-TPC-XXX-100108 Dissolved PCB (2x1L) WQ-DPC-XXX-100108
 Toxicity (5 gal) WQ-TOX-XXX-100108 Metals (500ml) WQ-MET-XXX-100108

Notes: 3 sets of samples collected @ Ebb tide event.
 ① samples collected @ 50-65 NTU, duplicates collected
 ② samples collected @ 19-27 NTU
 ③ samples collected @ N. Ref, MS + MSD collected

Sampling Crew: Jessica Tenzar, Annie Murphy
 Chief Scientist Signature: [Signature]

Date: 10/8/08

Weather: Clear, sunny, light breeze

Tides:
 Low @ 7:58
 High @ 15:34
 Low @ 21:07

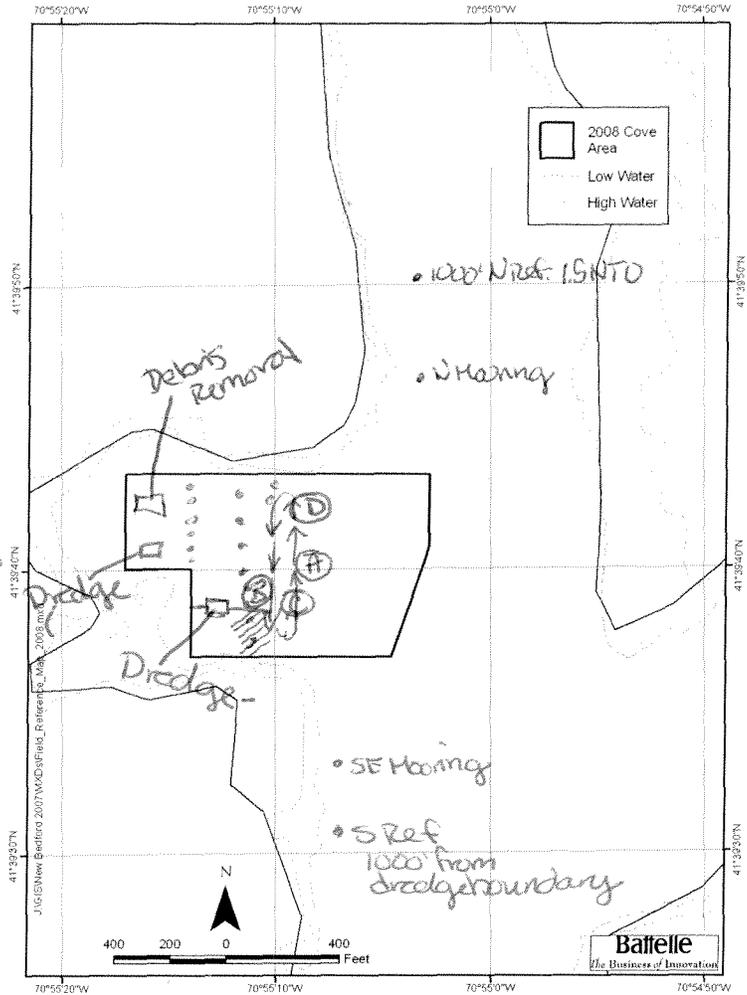
Monitoring Period:
 From: 8:00 To: 2:15

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:
Debris Removal in NW corner
for most of the morning
and afternoon
Dredge active (on and off) in
middle of area; SW, until ~1330
Around 13:45 dredging began
in far west corner, south of
debris removal

Turbidity Summary

Location	Turbidity range (NTU)	Sensor/water Depth (ft)
1000' N Ref	1.5-1.6	1.1/6.0
Ⓐ <u>outlet dredge area</u>	<u>12.4-2.2</u>	<u>2.2-0.4/3.5</u>
Ⓑ <u>50' E of dredge</u>	<u>13.6-9.5</u>	<u>2.0-0.4/3.2</u>
1000' S Ref	1.4-0.5	3.6-1.0/4.8
Ⓒ <u>200' NE of dredge</u>	<u>3.0-1.4</u>	<u>3.1-0.9/4.2</u>
Ⓓ <u>550' N of debris removal</u>	<u>1.9-1.0</u>	<u>3.1-1.0/3.8</u>



Oil sheen/ Debris: slight oil sheen on east of the dredge (depicted as // on map above)
in morning.

Wildlife observations: birds and some fish outside dredge boundary.

Samples Collected for Laboratory Analysis – Sample IDs:

TSS (1L) _____ Turbidity (1 L) _____
 Total PCB (1L) _____ Dissolved PCB (2x1L) _____
 Toxicity (5 gal) _____ Metals (500ml) _____

Notes: Ran transects along boom due east of dredge area
Due east of active dredging turbidity values peaked 8-12 NTU
Turbidity levels remained 3-5 NTU along rest of transect

Sampling Crew: Jessica Faboy, Tenzan

Chief Scientist Signature: [Signature]

Dredging Location	Pierce Mill Cove Area
Dredging Description	Dredge in s. Middle area, Debris Removal NW corner
Survey Vessel	Gale Force
Chief Scientist	Annie Murphy
Sampling Technician	Jessica Farley
Vessel Captain	Annie Murphy
Other Personnel	
Weather conditions	Clear, sunny, light wind NNE in morning turning SW w/4-5kts

Date	10/8/08
Page	of 1

Tide information	
High	3:08
Low	7:58
High	15:34
Low	21:07

Station Name	Time	Latitude	Longitude	Water depth (ft)	Sample Depth (ft)	Turbidity (NTU)	Salinity (PSU)	DO (mg/L)	DO (% sat)	Temp (°C)	ph	Notes
1000' N. Ref.	8:18	2703467.04	815323.27	6.0	1.1	1.6	25.48	5.72	68.9	16.94	7.75	Low slack tide
↓	8:27	↓	↓	↓	1.1	1.5	25.71	5.16	61.9	16.98	7.77	"
ⓐ Outer dredge Area	9:55	2702006.98	815019.43	3.5	2.2	12.4	26.44	4.36	53.2	17.25	7.77	Flood tide
↓	9:57	↓	↓	↓	1.3	2.2	24.23	5.55	64.7	15.88	7.82	
↓	9:59	↓	↓	↓	0.4	2.2	22.44	5.79	65.4	14.6	7.79	
ⓑ East Edge of mid boundary	11:26	2701996.97	814907.78	2.2	2.0	13.6	25.05	5.20	62.0	16.75	7.74	
↓	11:28	↓	↓	↓	1.0	11.5	22.51	5.33	62.6	15.70	7.74	
↓	11:29	↓	↓	↓	0.4	9.5	22.30	5.53	63.9	15.94	7.74	
5 Ref	12:52	2700757.97	815069.67	4.8	3.6	1.4	27.81	6.08	75.7	17.92	7.84	↓
↓	12:53	↓	↓	↓	2.2	1.2	26.74	5.93	73.2	17.75	7.80	
↓	12:54	↓	↓	↓	1.0	0.9	25.33	6.16	74.7	17.39	7.78	
↓	12:59	↓	↓	↓	1.0	0.5	24.19	5.91	70.8	16.92	7.75	
Ⓐ 200' NE of dredge	1:23	2702150.88	814947.98	4.2	3.1	3.0	26.60	4.28	52.8	18.14	7.80	
↓	1:24	↓	↓	↓	2.0	1.7	24.98	4.93	59.6	17.25	7.82	
↓	1:25	↓	↓	↓	0.9	1.4	24.67	5.18	62.5	17.34	7.83	
ⓑ 50' N of debris removal	2:00	2702329.31	814974.40	3.8	3.1	1.9	28.25	4.58	57.3	17.87	7.88	
↓	2:01	↓	↓	↓	2.0	1.0	27.83	4.29	54.0	17.97	7.87	
↓	2:02	↓	↓	↓	1.0	1.8	27.46	3.90	48.9	18.12	7.82	✓

ⓐ Letters reference diagram on other sheet
AEM 10/8/08

Date: 10/15/08

Weather: Clear, wind 5-10 NE in morning

Tides:

High @ 8:39
 Low @ 14:33
 High @ 21:01

Monitoring Period:

From: 8:00 To: 15:00

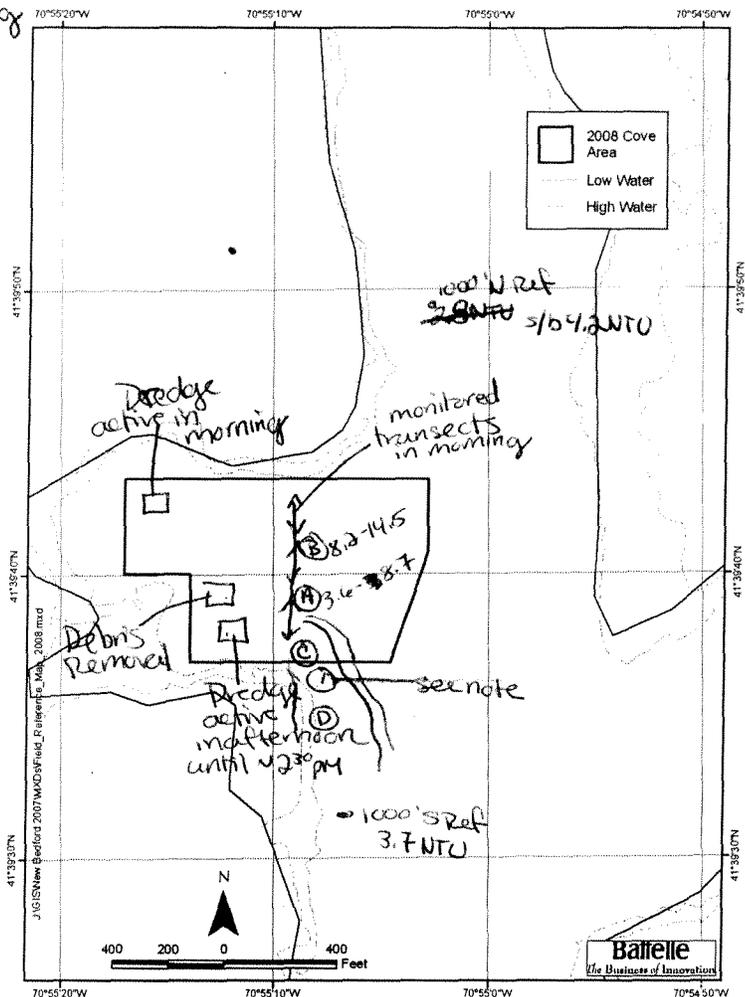
Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:

Debris Removal in morning
 Dredging in NW corner in morning
 No debris removed in afternoon
 Dredging in SW corner in afternoon

Turbidity Summary

Location	Turbidity range (NTU)	Sensor/water Depth (ft)
S. Ref	3.7 - 3.8 NTU	1.0
AM monitoring ① 150' E of Debris Removal	3.6 - 8.7 NTU	5.0 - 1.0
PM monitoring ② ~200' NE of Debris Removal	8.2 - 14.5 NTU	1.0 - 3.25
③ SW Corner	33.4	1.0
N. Ref	4.7	1.0
④ 20' E of dock	6.8	1.0



Oil sheen/ Debris: some sheen seen on surface in AM near dredge boundary

Wildlife observations: Birds - gulls + cormorants along pipeline

Samples Collected for Laboratory Analysis - Sample IDs: N/A

TSS (1L) _____ Turbidity (1 L) _____
 Total PCB (1L) _____ Dissolved PCB (2x1L) _____
 Toxicity (5 gal) _____ Metals (500ml) _____

Notes:

① ~1:15 pm when monitoring resumed, visible plume was detected from dredge south towards dock; readings ^{within} ~200' of dredge activity were 60-80 NTU sustained, readings directly next to dock (east) were 30 NTU and ~100' south of dock was 12 NTU. By 2 pm the plume had subsided. Dredge activity was stopped due to low tide. Plume most likely a result of low water.

Sampling Crew: Annie Murphy + Jessica Tenear

Chief Scientist Signature: *A. Murphy*

② CC - 60-80 NTU readings observed in close proximity of dredge; ~50-100 ft from dredge activity, readings decreased w/increasing distance from dredge activity
 AEM 10/16/08

10/15/08

Dredging Location: Pierce Mill Cove Area
 Dredging Description: Dredge in NW corner, Debris Removal
 Survey Vessel: Gale Force
 Chief Scientist: Annie Murphy
 Sampling Technician: Jessica Tenear
 Vessel Captain: Annie Murphy
 Other Personnel: _____
 Weather conditions: Mostly sunny, winds 5-10 knots NE in morning, died down by afternoon

Date: 10/15/08
 Page: 1 of 1

Tide information
 High: 839
 Low: 1433
 High: 2101
 Low: _____

Station Name	Time	Latitude	Longitude	Water depth (ft)	Sample Depth (ft)	Turbidity (NTU)	Salinity (PSU)	DO (mg/L)	DO (% sat)	Temp (°C)	ph	Notes
1000' S Ref.	8:57	2700708.04	815103.79	8.2	1.0	3.7	27.32	7.24	88.3%	17.00	7.93	
↓	8:59	↓	↓	8.2	1.0	3.8	26.57	7.21	87.4%	16.95	7.96	
150' E of Debris Removal	10:06	2701930.20	814920.64	6.0	1.0	5.9	29.08	6.44	80.0%	17.34	7.99	} during debris removal
↓	10:07	↓	↓	↓	3.0	8.7	30.13	6.24	78.1%	17.38	7.97	
↓	10:08	↓	↓	↓	5.0	3.6	30.68	6.47	80.9%	17.35	8.03	
400' NE of Debris Removal	11:05	2702138.21	814908.20	4.7	3.25	12.7	30.36	6.12	76.8%	17.62	7.98	} 500' from dredge
↓	11:07	↓	↓	↓	2.0	10.8	30.19	6.11	76.9%	17.72	7.97	
↓	11:21	↓	↓	↓	1.0	8.2	30.00	6.15	77.2%	17.72	7.99	
SW corner ①	11:47	2701835.1	814934.00	3.9	1.0	14.5	30.14	6.0	75.5%	17.70	7.95	spiked to 18 NTU
1000' N Ref	1:19	2703446.17	8152116.22	2.8	1.0	33.4	29.46	5.8	72.8%	17.69	7.93	
↓	1:24	↓	↓	↓	1.0	4.2	28.35	7.31	92.6%	18.50	8.11	
20' E dock	2:40	2701544.8	815117.17	3.3	1.0	4.2	28.11	7.22	91.3%	18.59	8.02	
						6.8	28.86	6.33	80.6	18.68	7.97	- after dredging had stopped after high turbidity plume ②

① SW corner of outer dredge area
 TEM 10/15/08

② see note on Field summary sheet

Date: 10/20/08

Weather: Windy, Sunny ~50°F

Tides:
 Low @ 5:59
 High @ 13:06
 Low @ 19:07

Monitoring Period:

From: 0830 To: 0310

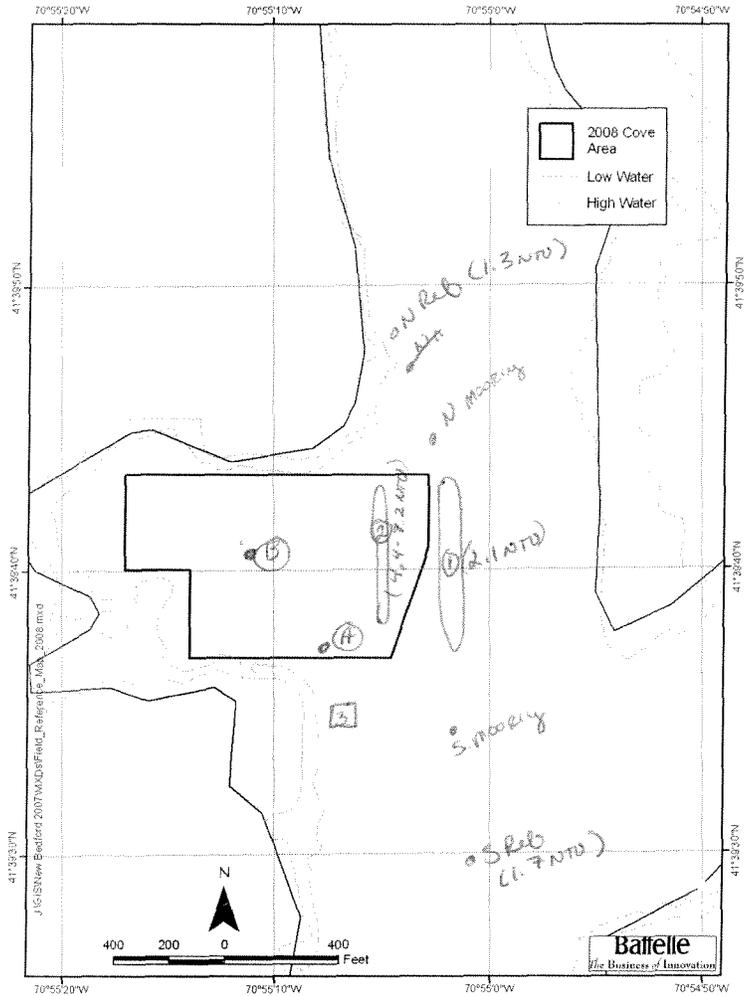
Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:

- (A) Dredging in south area of middle section
- (B) Debris removal in North east part of western most section

Turbidity Summary

Location	Turbidity range (NTU)	Sensor/water Depth (ft)
① <u>East edge (AM)</u> <u>Dredge area</u>	<u>1.3-3.2</u> <u>average 2.1</u>	<u>1-4 ft</u> <u>(~1.0 fave)</u>
② <u>East edge (PM)</u> <u>Dredge area</u>	<u>3.3-8.3</u>	<u>~1-2 ft</u>
③ <u>Dock (S. side)</u>	<u>9.7</u>	<u>1.1 ft</u>



① outside boundary ② inside boundary
 Oil sheen/Debris: No sheen seen

Wildlife observations: gulls, cormorants, swan near dredge area + on perimeter

Samples Collected for Laboratory Analysis – Sample IDs:

TSS (1L) NA Turbidity (1 L) NA
 Total PCB (1L) NA Dissolved PCB (2x1L) NA
 Toxicity (5 gal) NA Metals (500ml) NA

Notes:

→ Morning was spent running transects along outer edge of dredge area (East Edge). Turbidity was low; ~2.1 NTU on average

→ Afternoon was ebb tide; turbidity plume seen from debris removal south just past mooring. Monitoring within eastern most portion of dredge area. Highest NTU was 8.3 due east of debris removal.

Sampling Crew: Annie Murphy

Chief Scientist Signature: Jesse M. Jorja

Dredging Location Pierce Mill Cove
Dredging Description Dredge Removal + Debris Removal
Survey Vessel Gale Force
Chief Scientist Jessica Tenbar
Sampling Technician Annie Murphy
Vessel Captain Annie Murphy
Other Personnel _____
Weather conditions Windy, Sunny, Cold

Date 10/20/08
Page 1 of 1

Tide information
High _____
Low 5:59
High 13:06
Low 19:07

Station Name	Time	Latitude	Longitude	Water depth (ft)	Sample Depth (ft)	Turbidity (NTU)	Salinity (PSU)	DO (mg/L)	DO (% sat)	Temp (°C)	ph	Notes
S Ref	0330	2815721.00	270749.49	4.5	1.67	1.5	28.62	7.59	94.2	12.54	8.03	
S Ref	0335	"	"	"	"	1.6	28.53	8.30	93.4	12.60	8.02	
Dock V	0941	2701505.04	815075.89	5.45	4.3	2.2	30.12	7.81	89.5	13.03	8.13	Morning Summary Range of Turbidity 1.4 - 3.3 2.1 average NTU
"	0942	"	"	"	2.0	1.8	29.99	7.84	89.4	12.81	8.14	
"	0943	"	"	"	2.0	1.8	29.92	7.84	89.2	12.78	8.13	
"	0944	"	"	"	1.0	2.3	29.9	7.83	89.1	12.75	8.13	
NE corner	1200	2702243.68	815509.52	7.14	1.209	2.8	30.93	7.90	93.0	14.08	8.21	due east of debris
West edge	1336	2701863.72	814990.11	6.8	1.01	3.0	30.02	8.25	95.1	13.37	8.18	②
150ft Edge Debris	1425	2702161.99	814938.2	6.3	1.4	8.2	29.99	7.49	86.4	13.38	8.15	highest pt w/ debris
N Ref	1450	2703516.64	815273.10	7.7	2.5	1.3	30.14	7.54	87.3	13.53	8.18	
N Ref	1453	"	"	"	"	1.3	29.99	7.54	87.1	13.50	8.18	
Dock (S. side)	1507	2701539.13	815050.11	7.1	1.1	9.7	30.04	7.31	81.3	13.43	8.16	

① West edge of East Dredge Area
~200ft from Debris Removal

② Low level Turbidity, please
Visible (~4.6 at 1336)
(10-11)

Belleville, Acushnet River, Buzzards Bay, Massachusetts
 Newport, Rhode Island + Corrections: High(+0:07 *1.08) Low(+0:09 *1.08)
 Units are feet
 Mark level: 0.00

Day/Date and Tidal Stage	Time	Time Zone	Tidal Height (ft)
Thursday	5/1/2008		
High Tide:	5:00	EDT	3.5
Low Tide:	10:30	EDT	0.1
High Tide:	17:27	EDT	4.1
Low Tide:	23:16	EDT	0.1
Friday	5/2/2008		
High Tide:	5:51	EDT	3.8
Low Tide:	11:25	EDT	-0.2
High Tide:	18:16	EDT	4.5
Saturday	5/3/2008		
Low Tide:	0:13	EDT	-0.3
High Tide:	6:41	EDT	4
Low Tide:	12:16	EDT	-0.4
High Tide:	19:04	EDT	4.9
Sunday	5/4/2008		
Low Tide:	1:06	EDT	-0.6
High Tide:	7:30	EDT	4.1
Low Tide:	13:05	EDT	-0.7
High Tide:	19:52	EDT	5.2
Monday	5/5/2008	New Moon	
Low Tide:	1:56	EDT	-0.8
High Tide:	8:19	EDT	4.2
Low Tide:	13:54	EDT	-0.8
High Tide:	20:41	EDT	5.4
Tuesday	5/6/2008		
Low Tide:	2:47	EDT	-0.8
High Tide:	9:09	EDT	4.2
Low Tide:	14:44	EDT	-0.8
High Tide:	21:32	EDT	5.3
Wednesday	5/7/2008		
Low Tide:	3:37	EDT	-0.8
High Tide:	10:01	EDT	4.1
Low Tide:	15:34	EDT	-0.6
High Tide:	22:24	EDT	5.1
Thursday	5/8/2008		
Low Tide:	4:30	EDT	-0.6
High Tide:	10:55	EDT	4
Low Tide:	16:28	EDT	-0.4
High Tide:	23:19	EDT	4.8
Friday	5/9/2008		
Low Tide:	5:25	EDT	-0.3
High Tide:	11:52	EDT	3.9
Low Tide:	17:26	EDT	-0.1
Saturday	5/10/2008		
High Tide:	0:17	EDT	4.5
Low Tide:	6:23	EDT	0
High Tide:	12:52	EDT	3.7
Low Tide:	18:31	EDT	0.2
Sunday	5/11/2008	First Quarter Moon	
High Tide:	1:17	EDT	4.1
Low Tide:	7:28	EDT	0.2
High Tide:	13:54	EDT	3.7
Low Tide:	19:50	EDT	0.5
Monday	5/12/2008		
High Tide:	2:20	EDT	3.8
Low Tide:	8:38	EDT	0.4
High Tide:	14:55	EDT	3.7
Low Tide:	21:20	EDT	0.5
Tuesday	5/13/2008		
High Tide:	3:21	EDT	3.6
Low Tide:	9:45	EDT	0.4
High Tide:	15:54	EDT	3.8
Low Tide:	22:38	EDT	0.5
Wednesday	5/14/2008		
High Tide:	4:18	EDT	3.5
Low Tide:	10:41	EDT	0.4
High Tide:	16:47	EDT	4
Low Tide:	23:37	EDT	0.4
Thursday	5/15/2008		
High Tide:	5:11	EDT	3.5
Low Tide:	11:25	EDT	0.4
High Tide:	17:36	EDT	4.2

Day/Date and Tidal Stage	Time	Time Zone	Tidal Height (ft)
Friday	5/16/2008		
Low Tide:	0:24	EDT	0.3
High Tide:	5:58	EDT	3.5
Low Tide:	12:01	EDT	0.3
High Tide:	18:21	EDT	4.3
Saturday	5/17/2008		
Low Tide:	1:02	EDT	0.3
High Tide:	6:42	EDT	3.5
Low Tide:	12:33	EDT	0.3
High Tide:	19:03	EDT	4.4
Sunday	5/18/2008		
Low Tide:	1:34	EDT	0.2
High Tide:	7:24	EDT	3.5
Low Tide:	13:04	EDT	0.2
High Tide:	19:43	EDT	4.4
Monday	5/19/2008	Full Moon	
Low Tide:	2:02	EDT	0.2
High Tide:	8:05	EDT	3.5
Low Tide:	13:35	EDT	0.2
High Tide:	20:24	EDT	4.4
Tuesday	5/20/2008		
Low Tide:	2:30	EDT	0.2
High Tide:	8:46	EDT	3.5
Low Tide:	14:08	EDT	0.2
High Tide:	21:03	EDT	4.4
Wednesday	5/21/2008		
Low Tide:	3:00	EDT	0.2
High Tide:	9:27	EDT	3.5
Low Tide:	14:43	EDT	0.2
High Tide:	21:43	EDT	4.2
Thursday	5/22/2008		
Low Tide:	3:32	EDT	0.2
High Tide:	10:09	EDT	3.4
Low Tide:	15:19	EDT	0.3
High Tide:	22:24	EDT	4.1
Friday	5/23/2008		
Low Tide:	4:06	EDT	0.3
High Tide:	10:52	EDT	3.3
Low Tide:	15:58	EDT	0.4
High Tide:	23:06	EDT	3.9
Saturday	5/24/2008		
Low Tide:	4:42	EDT	0.4
High Tide:	11:37	EDT	3.2
Low Tide:	16:40	EDT	0.5
High Tide:	23:50	EDT	3.7
Sunday	5/25/2008		
Low Tide:	5:22	EDT	0.4
High Tide:	12:25	EDT	3.2
Low Tide:	17:27	EDT	0.6
Monday	5/26/2008		
High Tide:	0:38	EDT	3.5
Low Tide:	6:06	EDT	0.5
High Tide:	13:17	EDT	3.2
Low Tide:	18:21	EDT	0.7
Tuesday	5/27/2008	Last Quarter Moon	
High Tide:	1:31	EDT	3.4
Low Tide:	6:55	EDT	0.4
High Tide:	14:10	EDT	3.4
Low Tide:	19:22	EDT	0.7
Wednesday	5/28/2008		
High Tide:	2:28	EDT	3.3
Low Tide:	7:50	EDT	0.4
High Tide:	15:06	EDT	3.6
Low Tide:	20:29	EDT	0.6
Thursday	5/29/2008		
High Tide:	3:26	EDT	3.4
Low Tide:	8:48	EDT	0.3
High Tide:	16:01	EDT	4
Low Tide:	21:39	EDT	0.4
Friday	5/30/2008		
High Tide:	4:23	EDT	3.5
Low Tide:	9:48	EDT	0.1
High Tide:	16:55	EDT	4.4
Low Tide:	22:47	EDT	0.2
Saturday	5/31/2008		
High Tide:	5:19	EDT	3.7
Low Tide:	10:47	EDT	-0.1
High Tide:	17:47	EDT	4.8
Low Tide:	23:49	EDT	-0.1

Belleville, Acushnet River, Buzzards Bay, Massachusetts
 Newport, Rhode Island + Corrections: High(+0:07 *1.08) Low(+0:09 *1.08)
 Units are feet
 Mark level: 0.00

Day/Date and Tidal Stage	Time	Time Zone	Tidal Height (ft)
Sunday 6/1/2008			
High Tide:	6:13	EDT	3.8
Low Tide:	11:44	EDT	-0.3
High Tide:	18:40	EDT	5.1
Monday 6/2/2008			
Low Tide:	0:47	EDT	-0.4
High Tide:	7:07	EDT	4
Low Tide:	12:40	EDT	-0.5
High Tide:	19:32	EDT	5.4
Tuesday 6/3/2008	New Moon		
Low Tide:	1:42	EDT	-0.5
High Tide:	7:59	EDT	4.2
Low Tide:	13:35	EDT	-0.6
High Tide:	20:24	EDT	5.5
Wednesday 6/4/2008			
Low Tide:	2:35	EDT	-0.6
High Tide:	8:52	EDT	4.3
Low Tide:	14:29	EDT	-0.6
High Tide:	21:16	EDT	5.4
Thursday 6/5/2008			
Low Tide:	3:27	EDT	-0.6
High Tide:	9:45	EDT	4.3
Low Tide:	15:24	EDT	-0.5
High Tide:	22:08	EDT	5.2
Friday 6/6/2008			
Low Tide:	4:19	EDT	-0.5
High Tide:	10:39	EDT	4.2
Low Tide:	16:20	EDT	-0.3
High Tide:	23:02	EDT	4.9
Saturday 6/7/2008			
Low Tide:	5:11	EDT	-0.3
High Tide:	11:34	EDT	4.2
Low Tide:	17:18	EDT	0
High Tide:	23:57	EDT	4.5
Sunday 6/8/2008			
Low Tide:	6:03	EDT	0
High Tide:	12:30	EDT	4.1
Low Tide:	18:20	EDT	0.3
Monday 6/9/2008			
High Tide:	0:52	EDT	4.2
Low Tide:	6:57	EDT	0.2
High Tide:	13:27	EDT	4
Low Tide:	19:29	EDT	0.5
Tuesday 6/10/2008	First Quarter Moon		
High Tide:	1:49	EDT	3.8
Low Tide:	7:51	EDT	0.4
High Tide:	14:24	EDT	4
Low Tide:	20:45	EDT	0.7
Wednesday 6/11/2008			
High Tide:	2:46	EDT	3.5
Low Tide:	8:46	EDT	0.5
High Tide:	15:19	EDT	4
Low Tide:	22:00	EDT	0.8
Thursday 6/12/2008			
High Tide:	3:41	EDT	3.3
Low Tide:	9:38	EDT	0.6
High Tide:	16:13	EDT	4
Low Tide:	23:05	EDT	0.8
Friday 6/13/2008			
High Tide:	4:34	EDT	3.3
Low Tide:	10:26	EDT	0.7
High Tide:	17:03	EDT	4.1
Low Tide:	23:56	EDT	0.7
Saturday 6/14/2008			
High Tide:	5:24	EDT	3.2
Low Tide:	11:09	EDT	0.6
High Tide:	17:50	EDT	4.2
Sunday 6/15/2008			
Low Tide:	0:37	EDT	0.7
High Tide:	6:11	EDT	3.3
Low Tide:	11:49	EDT	0.6
High Tide:	18:34	EDT	4.3

Day/Date and Tidal Stage	Time	Time Zone	Tidal Height (ft)
Monday 6/16/2008			
Low Tide:	1:11	EDT	0.6
High Tide:	6:56	EDT	3.4
Low Tide:	12:28	EDT	0.5
High Tide:	19:17	EDT	4.4
Tuesday 6/17/2008			
Low Tide:	1:41	EDT	0.5
High Tide:	7:40	EDT	3.4
Low Tide:	13:06	EDT	0.4
High Tide:	19:59	EDT	4.4
Wednesday 6/18/2008	Full Moon		
Low Tide:	2:11	EDT	0.4
High Tide:	8:23	EDT	3.5
Low Tide:	13:45	EDT	0.4
High Tide:	20:41	EDT	4.4
Thursday 6/19/2008			
Low Tide:	2:42	EDT	0.3
High Tide:	9:06	EDT	3.5
Low Tide:	14:23	EDT	0.4
High Tide:	21:21	EDT	4.4
Friday 6/20/2008			
Low Tide:	3:14	EDT	0.3
High Tide:	9:48	EDT	3.6
Low Tide:	15:02	EDT	0.4
High Tide:	22:02	EDT	4.2
Saturday 6/21/2008			
Low Tide:	3:47	EDT	0.3
High Tide:	10:30	EDT	3.6
Low Tide:	15:43	EDT	0.4
High Tide:	22:43	EDT	4.1
Sunday 6/22/2008			
Low Tide:	4:22	EDT	0.3
High Tide:	11:13	EDT	3.6
Low Tide:	16:25	EDT	0.5
High Tide:	23:25	EDT	3.9
Monday 6/23/2008			
Low Tide:	5:00	EDT	0.3
High Tide:	11:57	EDT	3.6
Low Tide:	17:11	EDT	0.5
Tuesday 6/24/2008			
High Tide:	0:09	EDT	3.8
Low Tide:	5:40	EDT	0.3
High Tide:	12:44	EDT	3.7
Low Tide:	18:02	EDT	0.6
Wednesday 6/25/2008			
High Tide:	0:58	EDT	3.6
Low Tide:	6:26	EDT	0.2
High Tide:	13:36	EDT	3.8
Low Tide:	18:58	EDT	0.6
Thursday 6/26/2008	Last Quarter Moon		
High Tide:	1:52	EDT	3.5
Low Tide:	7:16	EDT	0.2
High Tide:	14:31	EDT	4
Low Tide:	20:02	EDT	0.6
Friday 6/27/2008			
High Tide:	2:51	EDT	3.4
Low Tide:	8:12	EDT	0.2
High Tide:	15:28	EDT	4.3
Low Tide:	21:11	EDT	0.5
Saturday 6/28/2008			
High Tide:	3:52	EDT	3.4
Low Tide:	9:13	EDT	0.1
High Tide:	16:27	EDT	4.5
Low Tide:	22:23	EDT	0.4
Sunday 6/29/2008			
High Tide:	4:52	EDT	3.6
Low Tide:	10:17	EDT	0
High Tide:	17:25	EDT	4.8
Low Tide:	23:32	EDT	0.1
Monday 6/30/2008			
High Tide:	5:52	EDT	3.7
Low Tide:	11:22	EDT	-0.1
High Tide:	18:21	EDT	5.1

Belleville, Acushnet River, Buzzards Bay, Massachusetts
 Newport, Rhode Island + Corrections: High(+0:07 *1.08) Low(+0:09 *1.08)
 Units are feet
 Mark level: 0.00

Day/Date and Tidal Stage	Time	Time Zone	Tidal Height (ft)
Tuesday	7/1/2008		
Low Tide:	0:35	EDT	-0.1
High Tide:	6:48	EDT	4
Low Tide:	12:24	EDT	-0.3
High Tide:	19:15	EDT	5.3
Wednesday	7/2/2008	New Moon	
Low Tide:	1:32	EDT	-0.3
High Tide:	7:43	EDT	4.2
Low Tide:	13:24	EDT	-0.4
High Tide:	20:08	EDT	5.4
Thursday	7/3/2008		
Low Tide:	2:25	EDT	-0.4
High Tide:	8:36	EDT	4.4
Low Tide:	14:21	EDT	-0.4
High Tide:	21:00	EDT	5.4
Friday	7/4/2008		
Low Tide:	3:15	EDT	-0.5
High Tide:	9:28	EDT	4.5
Low Tide:	15:16	EDT	-0.4
High Tide:	21:51	EDT	5.2
Saturday	7/5/2008		
Low Tide:	4:02	EDT	-0.4
High Tide:	10:20	EDT	4.5
Low Tide:	16:10	EDT	-0.2
High Tide:	22:41	EDT	4.9
Sunday	7/6/2008		
Low Tide:	4:48	EDT	-0.2
High Tide:	11:11	EDT	4.5
Low Tide:	17:03	EDT	0
High Tide:	23:32	EDT	4.5
Monday	7/7/2008		
Low Tide:	5:31	EDT	0
High Tide:	12:02	EDT	4.4
Low Tide:	17:56	EDT	0.3
Tuesday	7/8/2008		
High Tide:	0:22	EDT	4.1
Low Tide:	6:14	EDT	0.2
High Tide:	12:54	EDT	4.2
Low Tide:	18:50	EDT	0.6
Wednesday	7/9/2008		
High Tide:	1:13	EDT	3.8
Low Tide:	6:56	EDT	0.4
High Tide:	13:46	EDT	4.1
Low Tide:	19:49	EDT	0.9
Thursday	7/10/2008	Full Moon	
High Tide:	2:05	EDT	3.4
Low Tide:	7:39	EDT	0.6
High Tide:	14:40	EDT	4
Low Tide:	20:58	EDT	1.1
Friday	7/11/2008		
High Tide:	2:59	EDT	3.2
Low Tide:	8:25	EDT	0.8
High Tide:	15:34	EDT	3.9
Low Tide:	22:15	EDT	1.1
Saturday	7/12/2008		
High Tide:	3:54	EDT	3.1
Low Tide:	9:17	EDT	0.9
High Tide:	16:28	EDT	3.9
Low Tide:	23:21	EDT	1.1
Sunday	7/13/2008		
High Tide:	4:49	EDT	3.1
Low Tide:	10:13	EDT	0.9
High Tide:	17:19	EDT	4
Monday	7/14/2008		
Low Tide:	0:10	EDT	1
High Tide:	5:40	EDT	3.1
Low Tide:	11:08	EDT	0.8
High Tide:	18:07	EDT	4.1
Tuesday	7/15/2008		
Low Tide:	0:47	EDT	0.8
High Tide:	6:30	EDT	3.3
Low Tide:	11:58	EDT	0.7
High Tide:	18:52	EDT	4.2

Day/Date and Tidal Stage	Time	Time Zone	Tidal Height (ft)
Wednesday	7/16/2008		
Low Tide:	1:19	EDT	0.7
High Tide:	7:16	EDT	3.5
Low Tide:	12:44	EDT	0.6
High Tide:	19:35	EDT	4.4
Thursday	7/17/2008		
Low Tide:	1:49	EDT	0.5
High Tide:	8:00	EDT	3.6
Low Tide:	13:27	EDT	0.5
High Tide:	20:17	EDT	4.4
Friday	7/18/2008	Full Moon	
Low Tide:	2:20	EDT	0.3
High Tide:	8:42	EDT	3.8
Low Tide:	14:07	EDT	0.4
High Tide:	20:58	EDT	4.5
Saturday	7/19/2008		
Low Tide:	2:51	EDT	0.2
High Tide:	9:23	EDT	3.9
Low Tide:	14:47	EDT	0.3
High Tide:	21:38	EDT	4.4
Sunday	7/20/2008		
Low Tide:	3:24	EDT	0.1
High Tide:	10:04	EDT	4
Low Tide:	15:28	EDT	0.2
High Tide:	22:18	EDT	4.3
Monday	7/21/2008		
Low Tide:	3:58	EDT	0.1
High Tide:	10:45	EDT	4
Low Tide:	16:09	EDT	0.2
High Tide:	22:59	EDT	4.2
Tuesday	7/22/2008		
Low Tide:	4:34	EDT	0
High Tide:	11:28	EDT	4.1
Low Tide:	16:54	EDT	0.3
High Tide:	23:42	EDT	4
Wednesday	7/23/2008		
Low Tide:	5:13	EDT	0
High Tide:	12:14	EDT	4.1
Low Tide:	17:43	EDT	0.4
Thursday	7/24/2008		
High Tide:	0:29	EDT	3.7
Low Tide:	5:57	EDT	0.1
High Tide:	13:05	EDT	4.2
Low Tide:	18:37	EDT	0.5
Friday	7/25/2008	Last Quarter Moon	
High Tide:	1:23	EDT	3.5
Low Tide:	6:46	EDT	0.1
High Tide:	14:02	EDT	4.3
Low Tide:	19:39	EDT	0.6
Saturday	7/26/2008		
High Tide:	2:24	EDT	3.4
Low Tide:	7:43	EDT	0.2
High Tide:	15:03	EDT	4.4
Low Tide:	20:50	EDT	0.6
Sunday	7/27/2008		
High Tide:	3:29	EDT	3.4
Low Tide:	8:47	EDT	0.2
High Tide:	16:06	EDT	4.5
Low Tide:	22:09	EDT	0.6
Monday	7/28/2008		
High Tide:	4:34	EDT	3.5
Low Tide:	9:59	EDT	0.2
High Tide:	17:08	EDT	4.8
Low Tide:	23:25	EDT	0.4
Tuesday	7/29/2008		
High Tide:	5:36	EDT	3.7
Low Tide:	11:12	EDT	0.1
High Tide:	18:06	EDT	5
Wednesday	7/30/2008		
Low Tide:	0:29	EDT	0.1
High Tide:	6:34	EDT	4
Low Tide:	12:20	EDT	-0.1
High Tide:	19:01	EDT	5.1
Thursday	7/31/2008		
Low Tide:	1:24	EDT	-0.1
High Tide:	7:28	EDT	4.3
Low Tide:	13:21	EDT	-0.3
High Tide:	19:53	EDT	5.2

Belleville, Acushnet River, Buzzards Bay, Massachusetts
 Newport, Rhode Island + Corrections: High(+0:07 *1.08) Low(+0:09 *1.08)
 Units are feet
 Mark level: 0.00

Day/Date and Tidal Stage	Time	Time Zone	Tidal Height (ft)
Friday 8/1/2008 New Moon			
Low Tide:	2:12	EDT	-0.3
High Tide:	8:19	EDT	4.6
Low Tide:	14:16	EDT	-0.4
High Tide:	20:43	EDT	5.2
Saturday 8/2/2008			
Low Tide:	2:56	EDT	-0.4
High Tide:	9:08	EDT	4.7
Low Tide:	15:06	EDT	-0.3
High Tide:	21:30	EDT	5
Sunday 8/3/2008			
Low Tide:	3:37	EDT	-0.3
High Tide:	9:55	EDT	4.8
Low Tide:	15:53	EDT	-0.2
High Tide:	22:16	EDT	4.8
Monday 8/4/2008			
Low Tide:	4:15	EDT	-0.2
High Tide:	10:42	EDT	4.7
Low Tide:	16:38	EDT	0
High Tide:	23:02	EDT	4.4
Tuesday 8/5/2008			
Low Tide:	4:52	EDT	0
High Tide:	11:29	EDT	4.5
Low Tide:	17:21	EDT	0.3
High Tide:	23:47	EDT	4
Wednesday 8/6/2008			
Low Tide:	5:26	EDT	0.2
High Tide:	12:16	EDT	4.3
Low Tide:	18:04	EDT	0.7
Thursday 8/7/2008			
High Tide:	0:33	EDT	3.7
Low Tide:	6:01	EDT	0.5
High Tide:	13:06	EDT	4.1
Low Tide:	18:48	EDT	1
Friday 8/8/2008 First Quarter Moon			
High Tide:	1:23	EDT	3.3
Low Tide:	6:39	EDT	0.7
High Tide:	13:59	EDT	3.9
Low Tide:	19:39	EDT	1.2
Saturday 8/9/2008			
High Tide:	2:17	EDT	3.1
Low Tide:	7:23	EDT	0.9
High Tide:	14:54	EDT	3.7
Low Tide:	20:45	EDT	1.4
Sunday 8/10/2008			
High Tide:	3:16	EDT	2.9
Low Tide:	8:16	EDT	1
High Tide:	15:51	EDT	3.7
Low Tide:	22:25	EDT	1.3
Monday 8/11/2008			
High Tide:	4:15	EDT	2.9
Low Tide:	9:21	EDT	1.1
High Tide:	16:47	EDT	3.8
Low Tide:	23:36	EDT	1.2
Tuesday 8/12/2008			
High Tide:	5:12	EDT	3.1
Low Tide:	10:31	EDT	1
High Tide:	17:38	EDT	3.9
Wednesday 8/13/2008			
Low Tide:	0:16	EDT	1
High Tide:	6:03	EDT	3.3
Low Tide:	11:34	EDT	0.9
High Tide:	18:25	EDT	4.1
Thursday 8/14/2008			
Low Tide:	0:48	EDT	0.7
High Tide:	6:50	EDT	3.6
Low Tide:	12:24	EDT	0.6
High Tide:	19:09	EDT	4.3
Friday 8/15/2008			
Low Tide:	1:18	EDT	0.5
High Tide:	7:33	EDT	3.8
Low Tide:	13:08	EDT	0.4
High Tide:	19:51	EDT	4.5

Day/Date and Tidal Stage	Time	Time Zone	Tidal Height (ft)
Saturday 8/16/2008 Full Moon			
Low Tide:	1:49	EDT	0.2
High Tide:	8:15	EDT	4.1
Low Tide:	13:50	EDT	0.2
High Tide:	20:32	EDT	4.5
Sunday 8/17/2008			
Low Tide:	2:21	EDT	0.1
High Tide:	8:55	EDT	4.3
Low Tide:	14:30	EDT	0.1
High Tide:	21:12	EDT	4.5
Monday 8/18/2008			
Low Tide:	2:54	EDT	-0.1
High Tide:	9:35	EDT	4.4
Low Tide:	15:10	EDT	0
High Tide:	21:52	EDT	4.4
Tuesday 8/19/2008			
Low Tide:	3:29	EDT	-0.2
High Tide:	10:16	EDT	4.5
Low Tide:	15:52	EDT	0
High Tide:	22:33	EDT	4.3
Wednesday 8/20/2008			
Low Tide:	4:07	EDT	-0.2
High Tide:	10:59	EDT	4.6
Low Tide:	16:37	EDT	0
High Tide:	23:17	EDT	4
Thursday 8/21/2008			
Low Tide:	4:47	EDT	-0.1
High Tide:	11:46	EDT	4.5
Low Tide:	17:25	EDT	0.2
Friday 8/22/2008			
High Tide:	0:06	EDT	3.8
Low Tide:	5:32	EDT	0
High Tide:	12:39	EDT	4.5
Low Tide:	18:19	EDT	0.4
Saturday 8/23/2008 Last Quarter Moon			
High Tide:	1:02	EDT	3.5
Low Tide:	6:23	EDT	0.1
High Tide:	13:39	EDT	4.4
Low Tide:	19:22	EDT	0.6
Sunday 8/24/2008			
High Tide:	2:06	EDT	3.4
Low Tide:	7:22	EDT	0.3
High Tide:	14:44	EDT	4.4
Low Tide:	20:39	EDT	0.7
Monday 8/25/2008			
High Tide:	3:14	EDT	3.3
Low Tide:	8:34	EDT	0.4
High Tide:	15:51	EDT	4.4
Low Tide:	22:07	EDT	0.7
Tuesday 8/26/2008			
High Tide:	4:22	EDT	3.5
Low Tide:	9:56	EDT	0.4
High Tide:	16:55	EDT	4.6
Low Tide:	23:25	EDT	0.5
Wednesday 8/27/2008			
High Tide:	5:24	EDT	3.8
Low Tide:	11:17	EDT	0.2
High Tide:	17:53	EDT	4.7
Thursday 8/28/2008			
Low Tide:	0:23	EDT	0.2
High Tide:	6:20	EDT	4.1
Low Tide:	12:24	EDT	0
High Tide:	18:47	EDT	4.9
Friday 8/29/2008			
Low Tide:	1:11	EDT	0
High Tide:	7:11	EDT	4.5
Low Tide:	13:19	EDT	-0.2
High Tide:	19:36	EDT	4.9
Saturday 8/30/2008 New Moon			
Low Tide:	1:52	EDT	-0.2
High Tide:	7:59	EDT	4.7
Low Tide:	14:07	EDT	-0.3
High Tide:	20:22	EDT	4.9
Sunday 8/31/2008			
Low Tide:	2:30	EDT	-0.3
High Tide:	8:45	EDT	4.9
Low Tide:	14:51	EDT	-0.3
High Tide:	21:06	EDT	4.8

Belleville, Acushnet River, Buzzards Bay, Massachusetts
 Newport, Rhode Island + Corrections: High(+0:07 *1.08) Low(+0:09 *1.08)
 Units are feet
 Mark level: 0.00

Day/Date and Tidal Stage	Time	Time Zone	Tidal Height (ft)
Monday 9/1/2008			
Low Tide:	3:05	EDT	-0.3
High Tide:	9:28	EDT	4.9
Low Tide:	15:31	EDT	-0.2
High Tide:	21:48	EDT	4.5
Tuesday 9/2/2008			
Low Tide:	3:38	EDT	-0.2
High Tide:	10:11	EDT	4.8
Low Tide:	16:08	EDT	0.1
High Tide:	22:30	EDT	4.2
Wednesday 9/3/2008			
Low Tide:	4:09	EDT	0
High Tide:	10:54	EDT	4.6
Low Tide:	16:43	EDT	0.3
High Tide:	23:11	EDT	3.9
Thursday 9/4/2008			
Low Tide:	4:40	EDT	0.2
High Tide:	11:38	EDT	4.3
Low Tide:	17:18	EDT	0.6
High Tide:	23:55	EDT	3.5
Friday 9/5/2008			
Low Tide:	5:13	EDT	0.4
High Tide:	12:25	EDT	4
Low Tide:	17:55	EDT	0.9
Saturday 9/6/2008			
High Tide:	0:43	EDT	3.2
Low Tide:	5:50	EDT	0.7
High Tide:	13:16	EDT	3.7
Low Tide:	18:39	EDT	1.2
Sunday 9/7/2008 First Quarter Moon			
High Tide:	1:38	EDT	3
Low Tide:	6:33	EDT	0.9
High Tide:	14:13	EDT	3.5
Low Tide:	19:35	EDT	1.3
Monday 9/8/2008			
High Tide:	2:39	EDT	2.8
Low Tide:	7:28	EDT	1.1
High Tide:	15:13	EDT	3.5
Low Tide:	20:50	EDT	1.4
Tuesday 9/9/2008			
High Tide:	3:43	EDT	2.9
Low Tide:	8:36	EDT	1.2
High Tide:	16:12	EDT	3.6
Low Tide:	22:27	EDT	1.2
Wednesday 9/10/2008			
High Tide:	4:42	EDT	3.1
Low Tide:	9:55	EDT	1.1
High Tide:	17:06	EDT	3.7
Low Tide:	23:24	EDT	1
Thursday 9/11/2008			
High Tide:	5:34	EDT	3.3
Low Tide:	11:05	EDT	0.9
High Tide:	17:55	EDT	4
Friday 9/12/2008			
Low Tide:	0:01	EDT	0.7
High Tide:	6:20	EDT	3.7
Low Tide:	11:59	EDT	0.6
High Tide:	18:39	EDT	4.2
Saturday 9/13/2008			
Low Tide:	0:36	EDT	0.4
High Tide:	7:03	EDT	4
Low Tide:	12:44	EDT	0.3
High Tide:	19:21	EDT	4.4
Sunday 9/14/2008			
Low Tide:	1:10	EDT	0.1
High Tide:	7:44	EDT	4.4
Low Tide:	13:27	EDT	0
High Tide:	20:02	EDT	4.5
Monday 9/15/2008 Full Moon			
Low Tide:	1:46	EDT	-0.2
High Tide:	8:24	EDT	4.7
Low Tide:	14:09	EDT	-0.2
High Tide:	20:44	EDT	4.5

Day/Date and Tidal Stage	Time	Time Zone	Tidal Height (ft)
Tuesday 9/16/2008			
Low Tide:	2:23	EDT	-0.3
High Tide:	9:05	EDT	4.9
Low Tide:	14:51	EDT	-0.3
High Tide:	21:25	EDT	4.4
Wednesday 9/17/2008			
Low Tide:	3:01	EDT	-0.4
High Tide:	9:48	EDT	4.9
Low Tide:	15:35	EDT	-0.3
High Tide:	22:09	EDT	4.3
Thursday 9/18/2008			
Low Tide:	3:41	EDT	-0.4
High Tide:	10:34	EDT	4.9
Low Tide:	16:21	EDT	-0.2
High Tide:	22:56	EDT	4
Friday 9/19/2008			
Low Tide:	4:24	EDT	-0.3
High Tide:	11:24	EDT	4.8
Low Tide:	17:11	EDT	0
High Tide:	23:48	EDT	3.8
Saturday 9/20/2008			
Low Tide:	5:12	EDT	-0.1
High Tide:	12:19	EDT	4.6
Low Tide:	18:07	EDT	0.3
Sunday 9/21/2008			
High Tide:	0:47	EDT	3.5
Low Tide:	6:06	EDT	0.2
High Tide:	13:21	EDT	4.4
Low Tide:	19:13	EDT	0.6
Monday 9/22/2008 New Moon			
High Tide:	1:53	EDT	3.4
Low Tide:	7:12	EDT	0.4
High Tide:	14:29	EDT	4.3
Low Tide:	20:36	EDT	0.7
Tuesday 9/23/2008			
High Tide:	3:03	EDT	3.4
Low Tide:	8:34	EDT	0.6
High Tide:	15:37	EDT	4.2
Low Tide:	22:07	EDT	0.6
Wednesday 9/24/2008			
High Tide:	4:10	EDT	3.6
Low Tide:	10:08	EDT	0.5
High Tide:	16:40	EDT	4.3
Low Tide:	23:17	EDT	0.4
Thursday 9/25/2008			
High Tide:	5:10	EDT	3.9
Low Tide:	11:26	EDT	0.3
High Tide:	17:37	EDT	4.4
Friday 9/26/2008			
Low Tide:	0:08	EDT	0.2
High Tide:	6:03	EDT	4.3
Low Tide:	12:25	EDT	0
High Tide:	18:28	EDT	4.5
Saturday 9/27/2008			
Low Tide:	0:50	EDT	0
High Tide:	6:52	EDT	4.6
Low Tide:	13:13	EDT	-0.1
High Tide:	19:15	EDT	4.5
Sunday 9/28/2008			
Low Tide:	1:27	EDT	-0.1
High Tide:	7:36	EDT	4.8
Low Tide:	13:54	EDT	-0.2
High Tide:	19:58	EDT	4.5
Monday 9/29/2008 New Moon			
Low Tide:	2:00	EDT	-0.2
High Tide:	8:19	EDT	4.9
Low Tide:	14:31	EDT	-0.2
High Tide:	20:39	EDT	4.4
Tuesday 9/30/2008			
Low Tide:	2:30	EDT	-0.2
High Tide:	9:00	EDT	4.9
Low Tide:	15:05	EDT	-0.1
High Tide:	21:19	EDT	4.2

Belleville, Acushnet River, Buzzards Bay, Massachusetts
 Newport, Rhode Island + Corrections: High(+0:07 *1.08) Low(+0:09 *1.08)
 Units are feet
 Mark level: 0.00

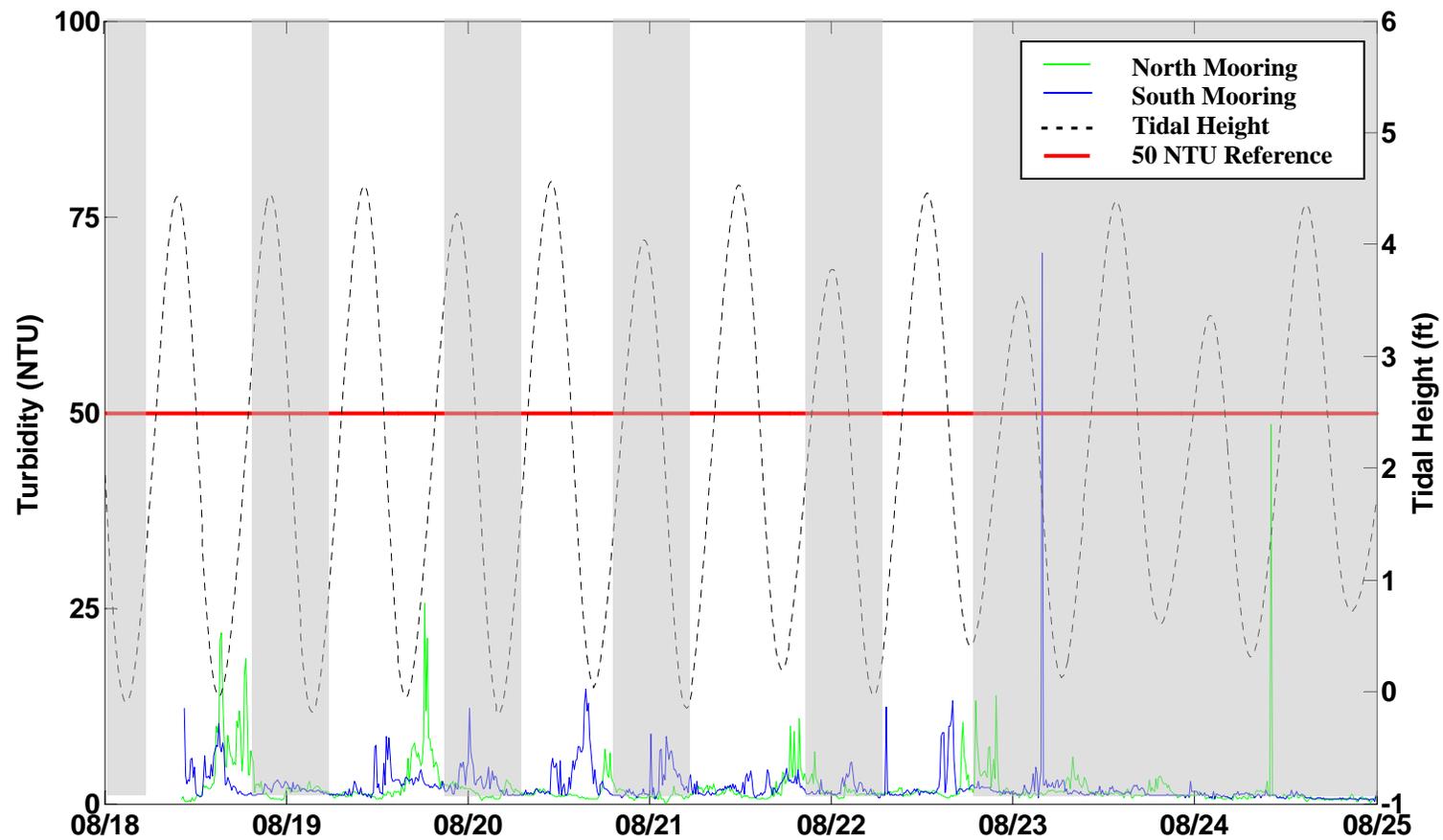
Day/Date and Tidal Stage	Time	Time Zone	Tidal Height (ft)
Wednesday	10/1/2008		
Low Tide:	3:00	EDT	-0.1
High Tide:	9:41	EDT	4.7
Low Tide:	15:37	EDT	0.1
High Tide:	21:59	EDT	3.9
Thursday	10/2/2008		
Low Tide:	3:30	EDT	0
High Tide:	10:21	EDT	4.5
Low Tide:	16:08	EDT	0.3
High Tide:	22:39	EDT	3.7
Friday	10/3/2008		
Low Tide:	4:01	EDT	0.2
High Tide:	11:03	EDT	4.2
Low Tide:	16:41	EDT	0.6
High Tide:	23:22	EDT	3.4
Saturday	10/4/2008		
Low Tide:	4:34	EDT	0.4
High Tide:	11:48	EDT	3.9
Low Tide:	17:16	EDT	0.8
Sunday	10/5/2008		
High Tide:	0:09	EDT	3.1
Low Tide:	5:11	EDT	0.7
High Tide:	12:37	EDT	3.6
Low Tide:	17:58	EDT	1
Monday	10/6/2008		
High Tide:	1:03	EDT	2.9
Low Tide:	5:56	EDT	0.9
High Tide:	13:33	EDT	3.4
Low Tide:	18:49	EDT	1.1
Tuesday	10/7/2008	First Quarter	Moon
High Tide:	2:05	EDT	2.8
Low Tide:	6:50	EDT	1.1
High Tide:	14:33	EDT	3.3
Low Tide:	19:53	EDT	1.2
Wednesday	10/8/2008		
High Tide:	3:08	EDT	2.9
Low Tide:	7:58	EDT	1.1
High Tide:	15:34	EDT	3.4
Low Tide:	21:07	EDT	1.1
Thursday	10/9/2008		
High Tide:	4:07	EDT	3.1
Low Tide:	9:16	EDT	1.1
High Tide:	16:29	EDT	3.5
Low Tide:	22:13	EDT	0.9
Friday	10/10/2008		
High Tide:	4:58	EDT	3.4
Low Tide:	10:28	EDT	0.8
High Tide:	17:19	EDT	3.7
Low Tide:	23:04	EDT	0.6
Saturday	10/11/2008		
High Tide:	5:45	EDT	3.8
Low Tide:	11:27	EDT	0.5
High Tide:	18:05	EDT	4
Low Tide:	23:48	EDT	0.2
Sunday	10/12/2008		
High Tide:	6:29	EDT	4.2
Low Tide:	12:16	EDT	0.1
High Tide:	18:49	EDT	4.2
Monday	10/13/2008		
Low Tide:	0:30	EDT	-0.1
High Tide:	7:12	EDT	4.6
Low Tide:	13:02	EDT	-0.2
High Tide:	19:33	EDT	4.3
Tuesday	10/14/2008	Full Moon	
Low Tide:	1:11	EDT	-0.4
High Tide:	7:55	EDT	4.9
Low Tide:	13:47	EDT	-0.4
High Tide:	20:16	EDT	4.4
Wednesday	10/15/2008		
Low Tide:	1:52	EDT	-0.6
High Tide:	8:39	EDT	5.1
Low Tide:	14:33	EDT	-0.5
High Tide:	21:01	EDT	4.3

Day/Date and Tidal Stage	Time	Time Zone	Tidal Height (ft)
Thursday	10/16/2008		
Low Tide:	2:35	EDT	-0.6
High Tide:	9:25	EDT	5.2
Low Tide:	15:20	EDT	-0.5
High Tide:	21:48	EDT	4.2
Friday	10/17/2008		
Low Tide:	3:20	EDT	-0.6
High Tide:	10:13	EDT	5.1
Low Tide:	16:08	EDT	-0.4
High Tide:	22:39	EDT	4
Saturday	10/18/2008		
Low Tide:	4:08	EDT	-0.4
High Tide:	11:06	EDT	4.9
Low Tide:	17:01	EDT	-0.1
High Tide:	23:34	EDT	3.8
Sunday	10/19/2008		
Low Tide:	4:59	EDT	-0.2
High Tide:	12:03	EDT	4.6
Low Tide:	17:59	EDT	0.1
Monday	10/20/2008		
High Tide:	0:34	EDT	3.6
Low Tide:	5:59	EDT	0.1
High Tide:	13:06	EDT	4.4
Low Tide:	19:07	EDT	0.4
Tuesday	10/21/2008	Last Quarter	Moon
High Tide:	1:40	EDT	3.5
Low Tide:	7:10	EDT	0.4
High Tide:	14:12	EDT	4.1
Low Tide:	20:28	EDT	0.5
Wednesday	10/22/2008		
High Tide:	2:48	EDT	3.6
Low Tide:	8:40	EDT	0.5
High Tide:	15:18	EDT	4
Low Tide:	21:49	EDT	0.5
Thursday	10/23/2008		
High Tide:	3:52	EDT	3.7
Low Tide:	10:13	EDT	0.5
High Tide:	16:20	EDT	4
Low Tide:	22:53	EDT	0.3
Friday	10/24/2008		
High Tide:	4:50	EDT	4
Low Tide:	11:23	EDT	0.3
High Tide:	17:15	EDT	4
Low Tide:	23:42	EDT	0.2
Saturday	10/25/2008		
High Tide:	5:41	EDT	4.3
Low Tide:	12:17	EDT	0.1
High Tide:	18:05	EDT	4
Sunday	10/26/2008		
Low Tide:	0:22	EDT	0.1
High Tide:	6:28	EDT	4.5
Low Tide:	13:01	EDT	0
High Tide:	18:50	EDT	4
Monday	10/27/2008		
Low Tide:	0:56	EDT	0
High Tide:	7:12	EDT	4.7
Low Tide:	13:38	EDT	-0.1
High Tide:	19:32	EDT	4
Tuesday	10/28/2008	New Moon	
Low Tide:	1:27	EDT	-0.1
High Tide:	7:53	EDT	4.7
Low Tide:	14:11	EDT	0
High Tide:	20:12	EDT	4
Wednesday	10/29/2008		
Low Tide:	1:56	EDT	-0.1
High Tide:	8:33	EDT	4.7
Low Tide:	14:41	EDT	0
High Tide:	20:52	EDT	3.8
Thursday	10/30/2008		
Low Tide:	2:26	EDT	0
High Tide:	9:13	EDT	4.6
Low Tide:	15:10	EDT	0.2
High Tide:	21:32	EDT	3.7
Friday	10/31/2008		
Low Tide:	2:57	EDT	0
High Tide:	9:53	EDT	4.4
Low Tide:	15:40	EDT	0.3
High Tide:	22:12	EDT	3.5

Appendix B

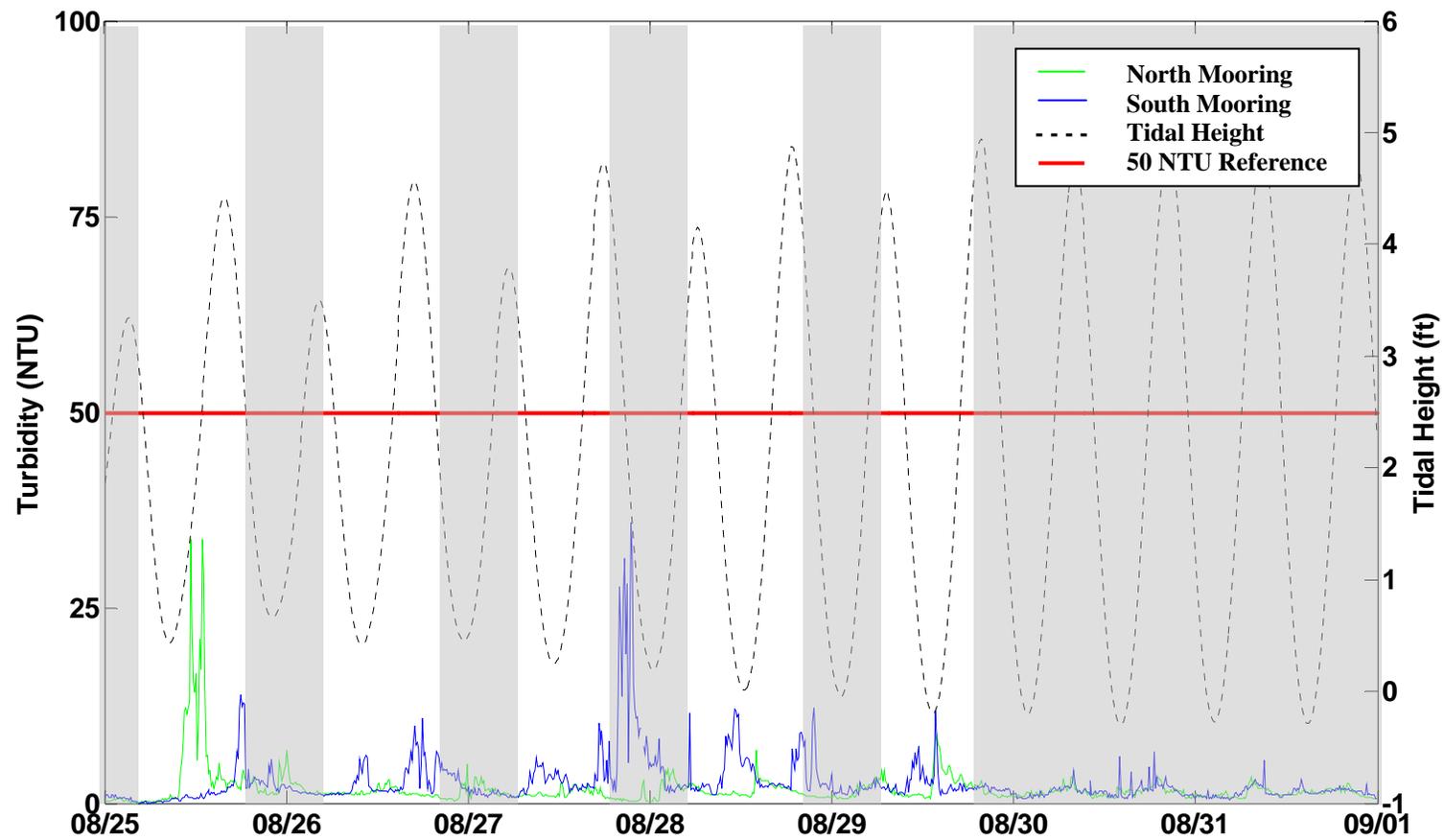
Continuous *In Situ* Water Quality Data

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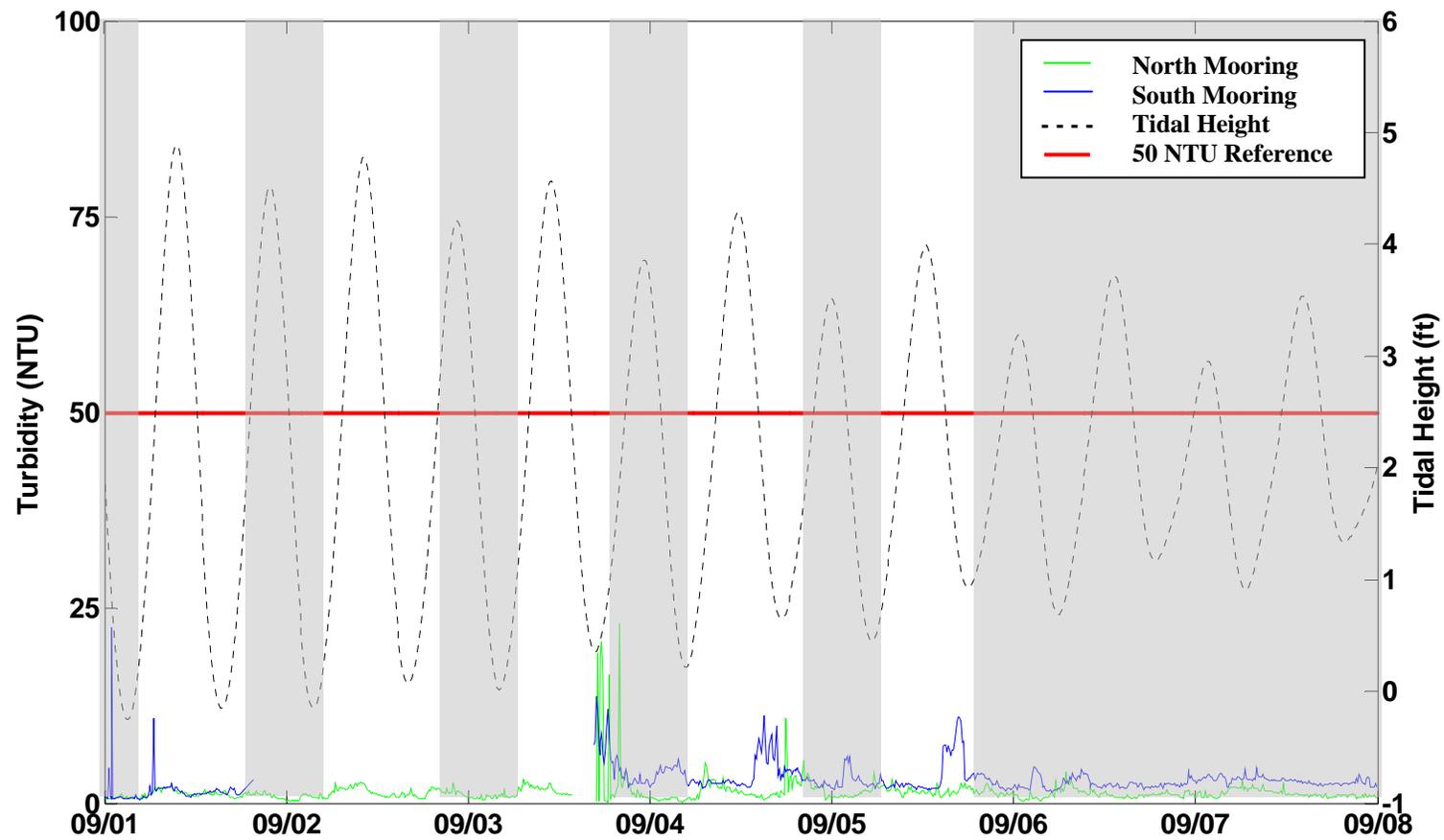
*Shaded areas represent nights and weekends.

Figure B-1. Turbidity Monitoring at New Bedford Harbor Superfund Site 8/18/2008 to 8/25/2008.



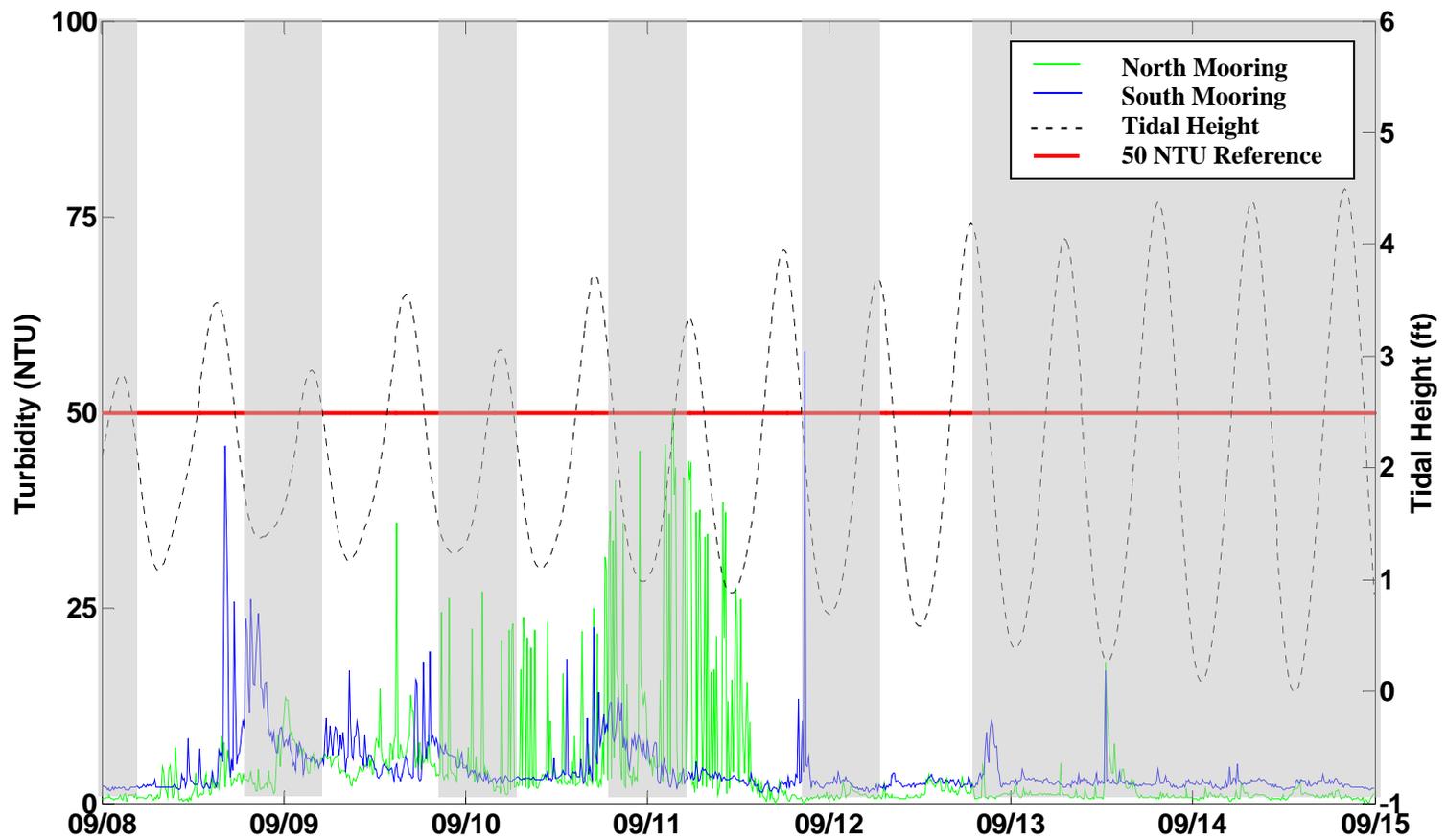
*Shaded areas represent nights and weekends.

Figure B-2. Turbidity Monitoring at New Bedford Harbor Superfund Site 8/25/2008 to 9/1/2008.



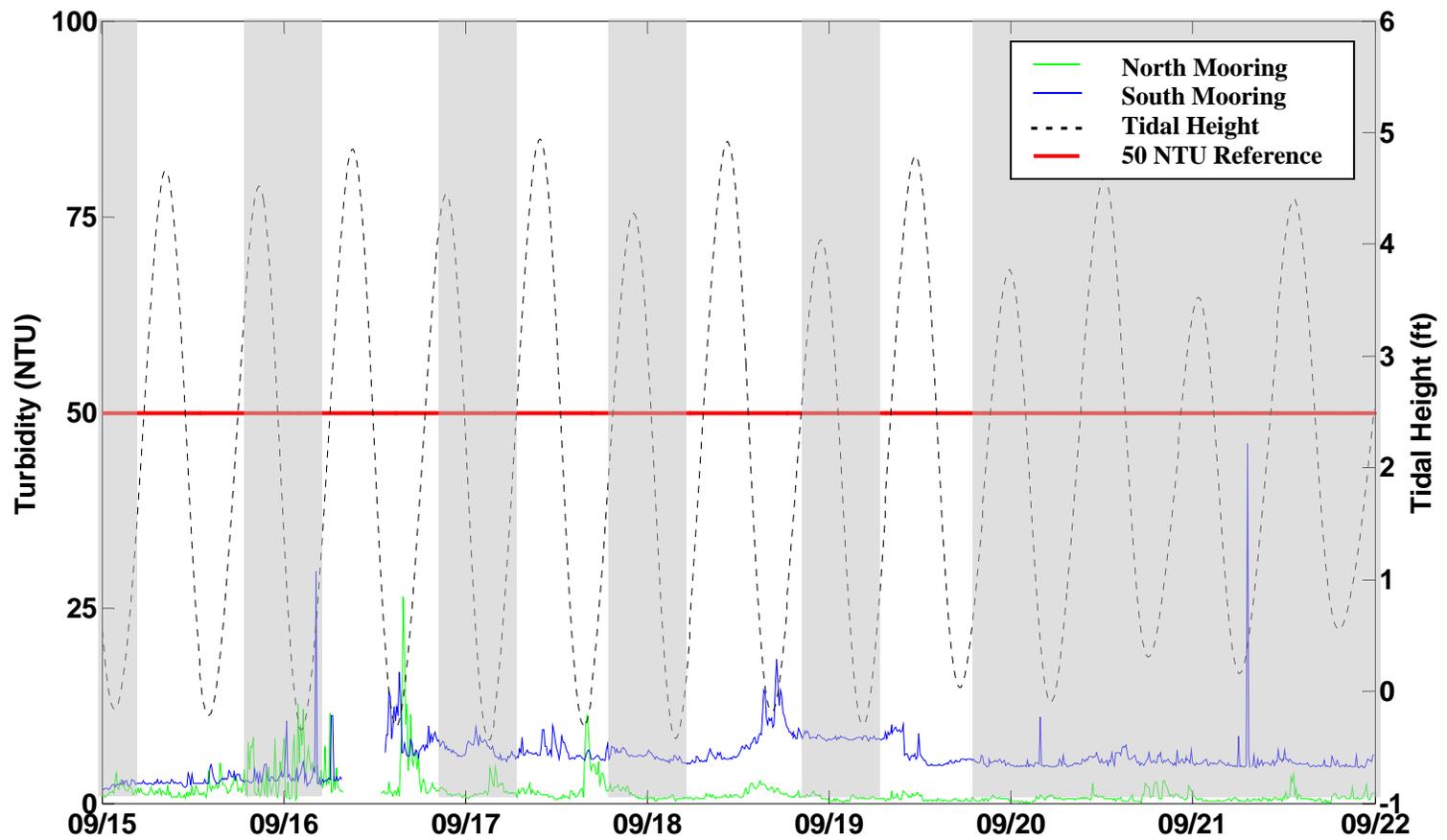
*Shaded areas represent nights and weekends.

Figure B-3. Turbidity Monitoring at New Bedford Harbor Superfund Site 9/1/2008 to 9/8/2008.



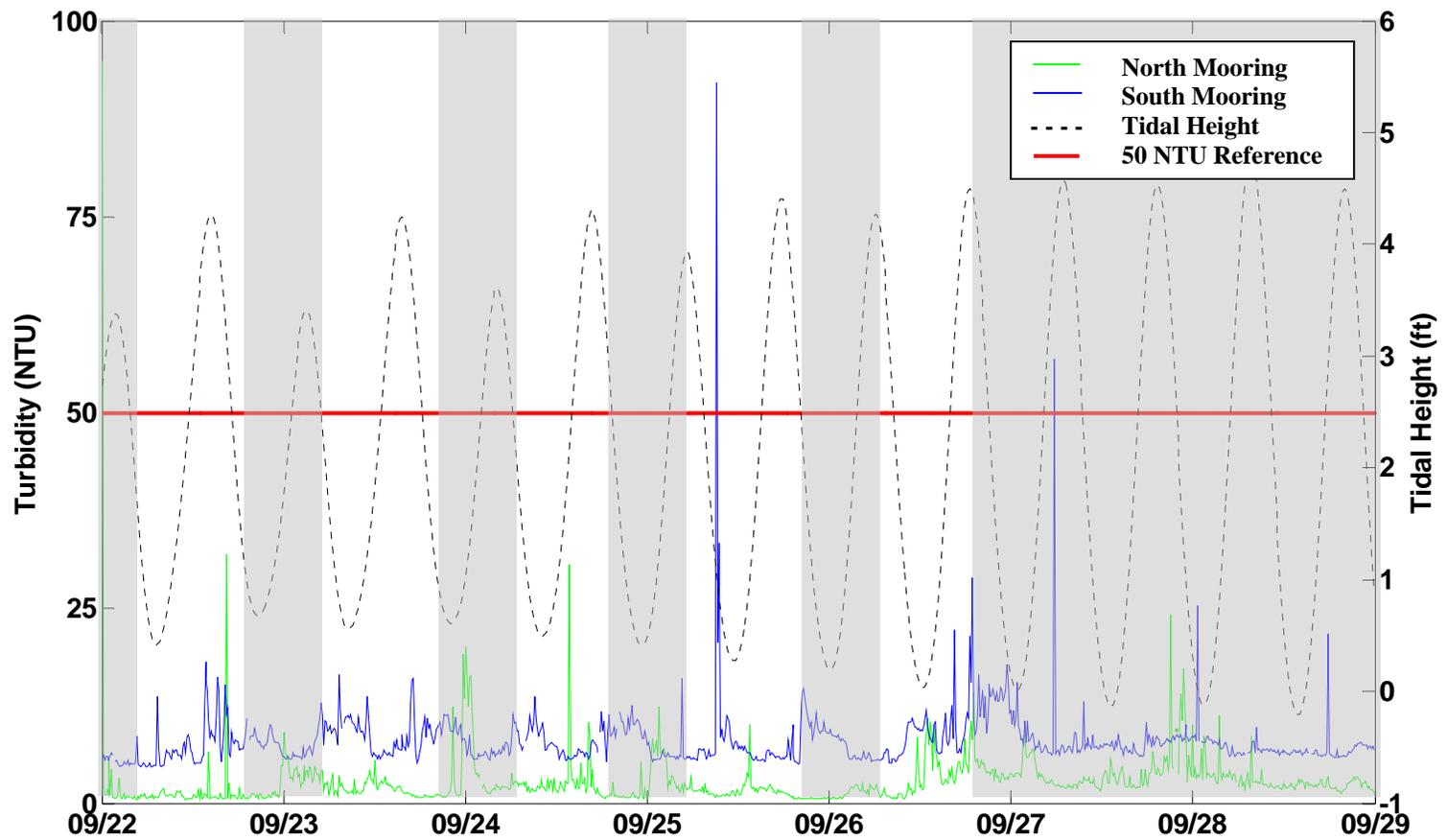
*Shaded areas represent nights and weekends.

Figure B-4. Turbidity Monitoring at New Bedford Harbor Superfund Site 9/8/2008 to 9/15/2008.



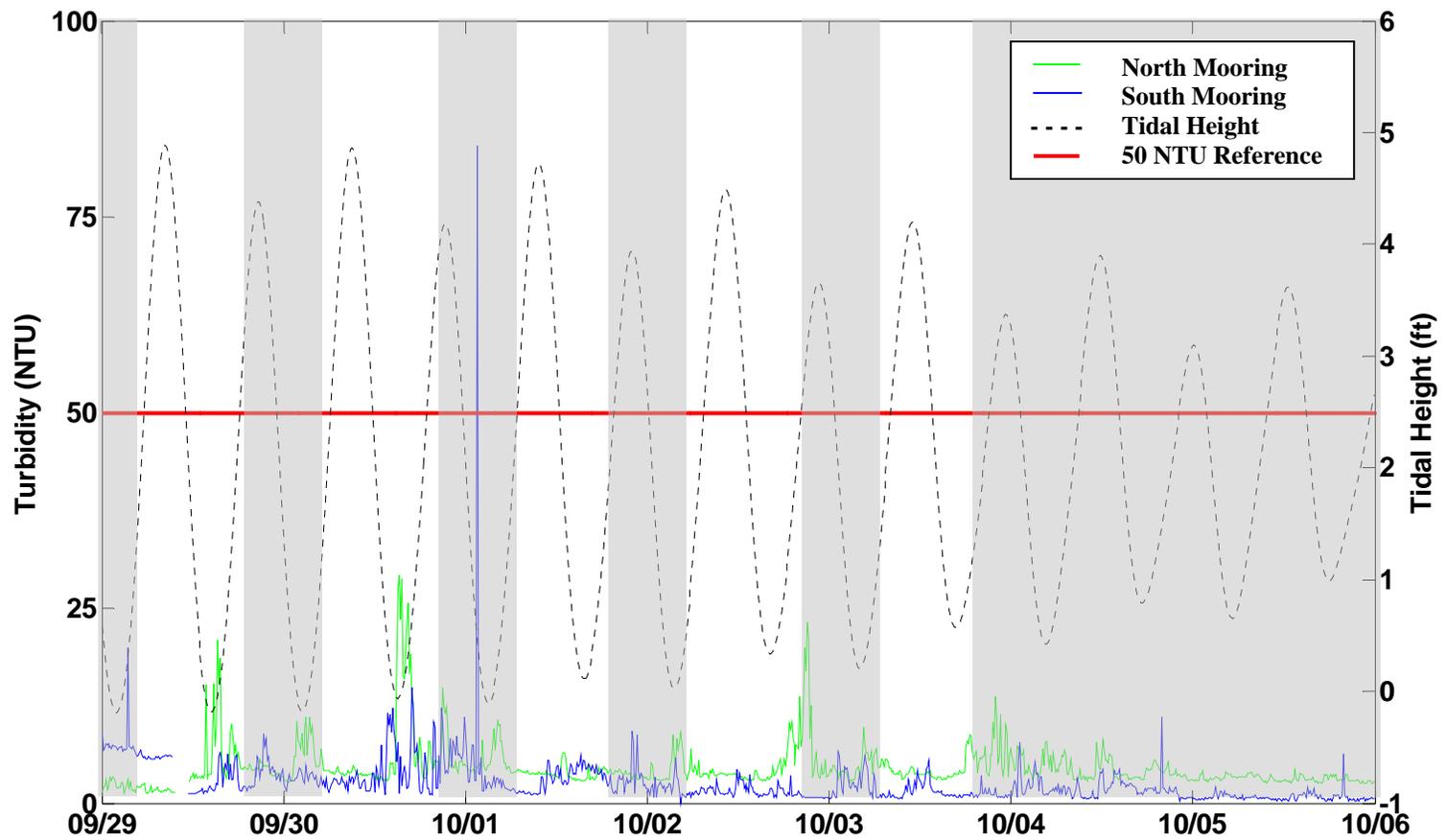
*Shaded areas represent nights and weekends.

Figure B-5. Turbidity Monitoring at New Bedford Harbor Superfund Site 9/15/2008 to 9/22/2008.



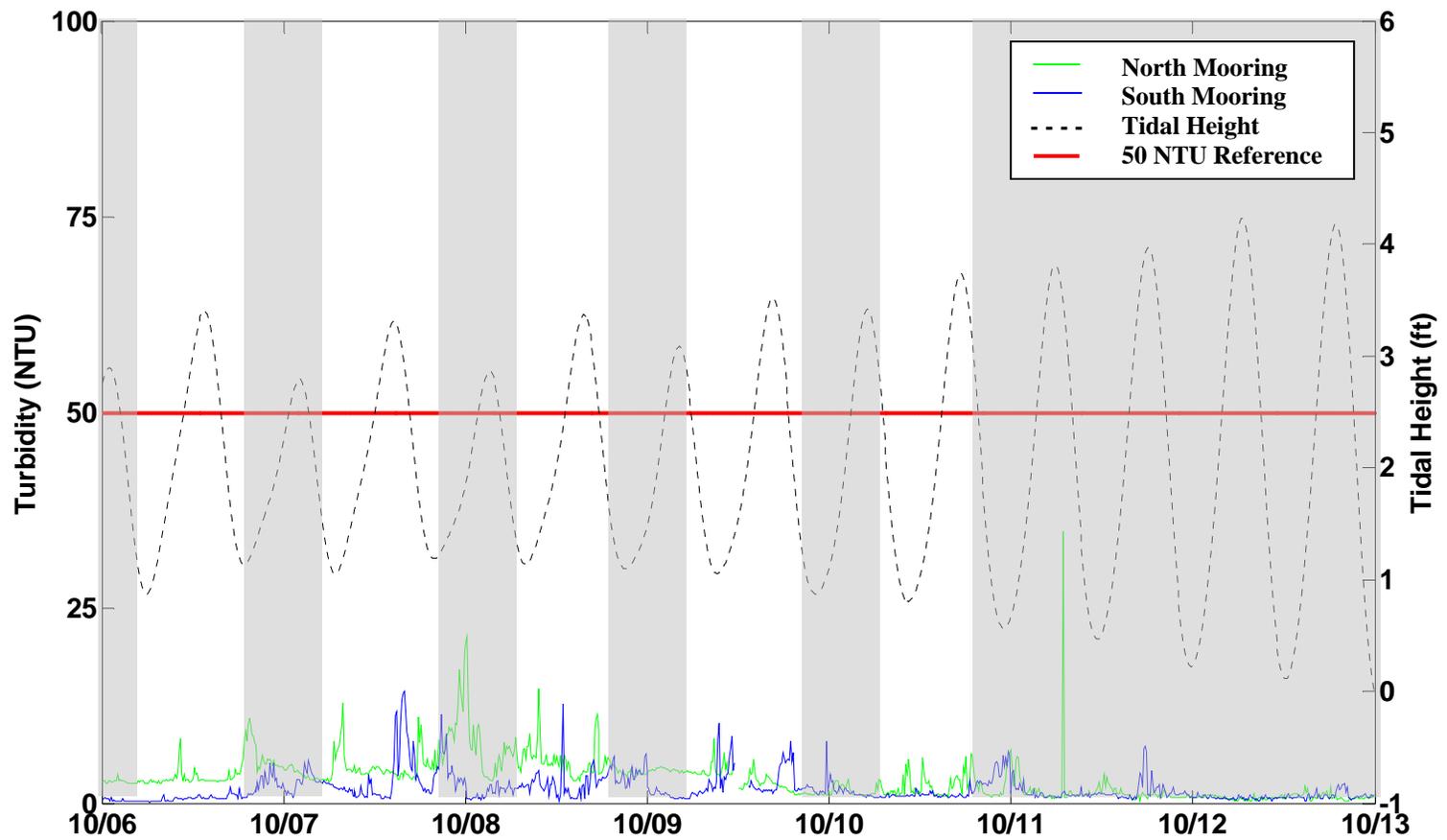
*Shaded areas represent nights and weekends.

Figure B-6. Turbidity Monitoring at New Bedford Harbor Superfund Site 9/22/2008 to 9/29/2008.



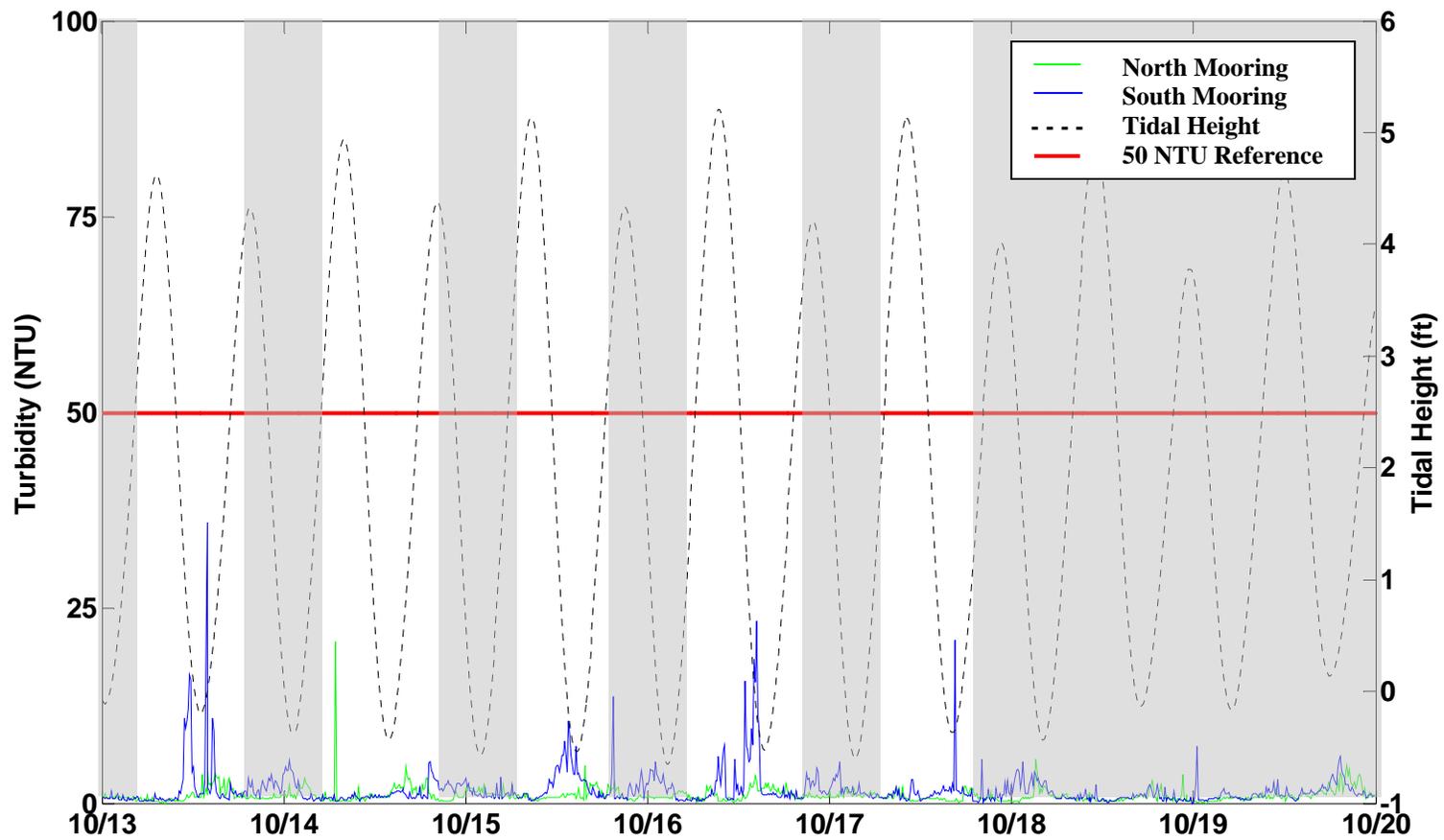
*Shaded areas represent nights and weekends.

Figure B-7. Turbidity Monitoring at New Bedford Harbor Superfund Site 9/29/2008 to 10/6/2008.



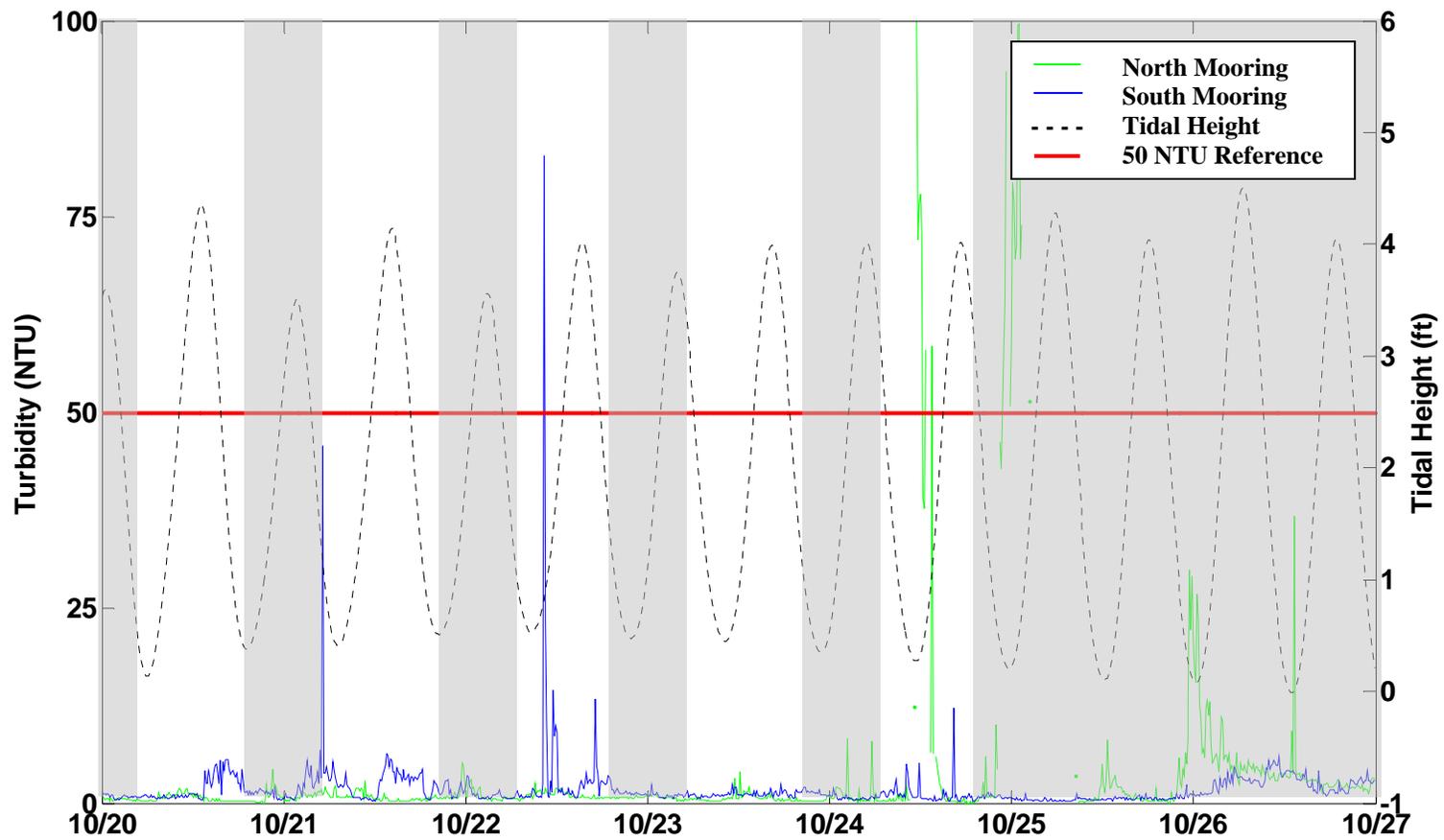
*Shaded areas represent nights and weekends.

Figure B-8. Turbidity Monitoring at New Bedford Harbor Superfund Site 10/6/2008 to 10/13/2008.



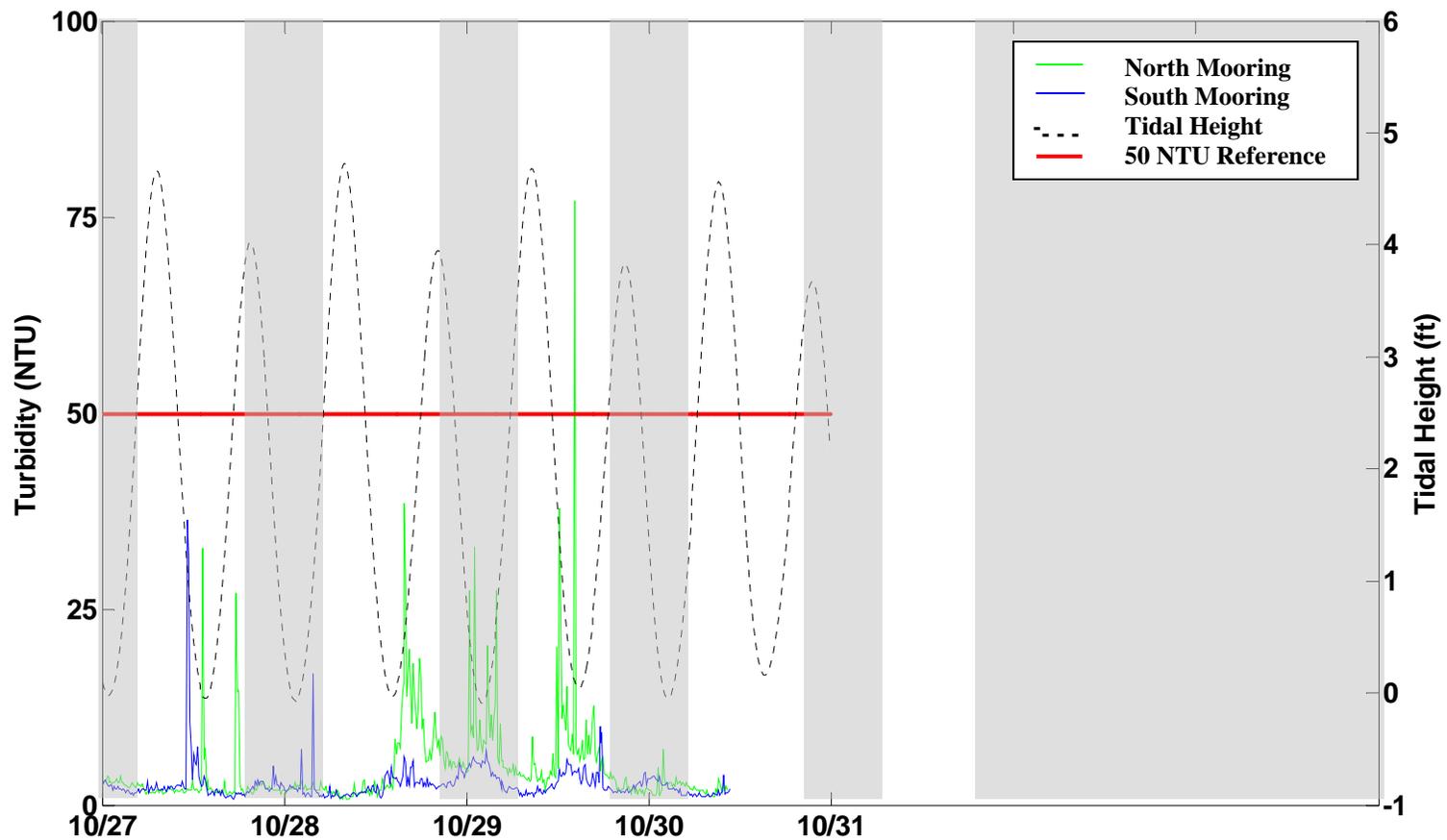
*Shaded areas represent nights and weekends.

Figure B-9. Turbidity Monitoring at New Bedford Harbor Superfund Site 10/13/2008 to 10/20/2008.



*Shaded areas represent nights and weekends.

Figure B-10. Turbidity Monitoring at New Bedford Harbor Superfund Site 10/20/2008 to 10/27/2008.



*Shaded areas represent nights and weekends.

Figure B-11. Turbidity Monitoring at New Bedford Harbor Superfund Site 10/27/2008 to 10/30/2008.

Appendix C

Total Suspended Solids and Turbidity Analytical Data

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ANALYTICAL REPORT

Prepared for:

Battelle

Duxbury Operations

397 Washington Street

Duxbury, MA 02332

Project: New Bedford Harbor

ETR: 0806024

Report Date: June 16, 2008

Certifications and Accreditations

Massachusetts M-MA030

Connecticut PH-0141

New Hampshire 2206

Rhode Island LAO00289

New Jersey MA015

Maine MA0030

New York 11627

Louisiana 03090

Florida E87814

Pennsylvania 68-02089

Army Corps of Engineers

Department of the Navy

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CASE NARRATIVE

Alpha Analytical

ETR: 0806024

Project: New Bedford Harbor

All analyses were performed according to Alpha Analytical quality assurance program and documented Standard Operating Procedures (SOPs). The analytical results contained in this report were performed within holding time, and with appropriate quality control measures, except where noted. All soil/sediment results are reported on a dry weight basis unless otherwise noted. A summary of all state and federal accreditations is provided within this report. Blank correction of results is not performed in the laboratory for any parameter. Alpha Analytical certifies that the test results within meet all of the requirements of NELAC, for all NELAC accredited parameters.

The enclosed results of analyses are representative of the samples as received by the laboratory. Alpha Analytical makes no representations or certifications as to the method of sample collection, sample identification, or transporting/handling procedures used prior to the receipt of samples by Alpha Analytical. To the best of my knowledge, the information contained in this report is accurate and complete. For any questions regarding this report, please contact the signatory below at 508-822-9300.

Approved by: Nancy a Rose Title: Project Manager Date: 6/16/08
Nancy Rose Project Manager

Sample ID Cross Reference



Client: **Battelle**
Project: **New Bedford Harbor**

Lab Code: **MA00030**
ETR: **0806024**

Lab Sample ID	Client Sample ID
0806024-01	WQ-TUR/TSS-001-060508
0806024-02	WQ-TUR/TSS-002-060508
0806024-03	WQ-TUR/TSS-003-060508
0806024-04	WQ-TUR/TSS-004-060508
0806024-05	WQ-TUR/TSS-005-060508
0806024-06	WQ-TUR/TSS-006-060508

Inorganics



Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TUR/TSS-001-060508**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0806024**
Lab ID: **0806024-01**
Date Collected: **06/05/08**
Date Received: **06/05/08**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	7.30		1.00	1	06/12/08	mg/L	160.2	NAR
Turbidity - 180.1	1.62		0.400	1	06/05/08	NTU	180.1	ES

N/A - Not Applicable

Duplicate Inorganics



Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TUR/TSS-001-060508**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0806024**
Lab ID: **0806024-01 D**
Date Collected: **06/05/08**
Date Received: **06/05/08**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	8.00		1.00	1	06/12/08	mg/L	160.2	NAR

TSS Duplicate Report not included
with lab submission.
Original sample = 7.3 mg/L (pg 4 of 21)
Duplicate = 8.0 mg/L (pg 5 of 21)
RPD = 9.2%
DTDahlen 2/6/09

N/A - Not Applicable

Inorganics



Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TUR/TSS-002-060508**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0806024**
Lab ID: **0806024-02**
Date Collected: **06/05/08**
Date Received: **06/05/08**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	15.4		1.00	1	06/12/08	mg/L	160.2	NAR
Turbidity - 180.1	1.92		0.400	1	06/05/08	NTU	180.1	ES

N/A - Not Applicable

Inorganics



Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TUR/TSS-003-060508**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0806024**
Lab ID: **0806024-03**
Date Collected: **06/05/08**
Date Received: **06/05/08**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	5.10		1.00	1	06/12/08	mg/L	160.2	NAR
Turbidity - 180.1	1.68		0.400	1	06/05/08	NTU	180.1	ES

N/A - Not Applicable

Inorganics



Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TUR/TSS-004-060508**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0806024**
Lab ID: **0806024-04**
Date Collected: **06/05/08**
Date Received: **06/05/08**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	6.10		1.00	1	06/12/08	mg/L	160.2	NAR
Turbidity - 180.1	1.45		0.400	1	06/05/08	NTU	180.1	ES

N/A - Not Applicable

Inorganics



Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TUR/TSS-005-060508**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0806024**
Lab ID: **0806024-05**
Date Collected: **06/05/08**
Date Received: **06/05/08**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	13.5		1.00	1	06/12/08	mg/L	160.2	NAR
Turbidity - 180.1	1.60		0.400	1	06/05/08	NTU	180.1	ES

N/A - Not Applicable

Inorganics



Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TUR/TSS-006-060508**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0806024**
Lab ID: **0806024-06**
Date Collected: **06/05/08**
Date Received: **06/05/08**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	5.60		1.00	1	06/12/08	mg/L	160.2	NAR
Turbidity - 180.1	1.52		0.400	1	06/05/08	NTU	180.1	ES

N/A - Not Applicable

Duplicate Inorganics



Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TUR/TSS-006-060508**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0806024**
Lab ID: **0806024-06 D**
Date Collected: **06/05/08**
Date Received: **06/05/08**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
Turbidity - 180.1	1.62		0.400	1	06/05/08	NTU	180.1	ES

N/A - Not Applicable

Blank Inorganics



Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Blank**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0806024**
Lab ID: **WW061208B16**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
Turbidity - 180.1	0.400	U	0.400	1	06/05/08	NTU	180.1	ES

N/A - Not Applicable

U - The analyte was analyzed for but not detected at the sample specific level reported.

Blank Inorganics



Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Blank**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0806024**
Lab ID: **WW061208B18**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	1.00	U	1.00	1	06/12/08	mg/L	160.2	NAR

N/A - Not Applicable

U - The analyte was analyzed for but not detected at the sample specific level reported.

Laboratory Control Sample Inorganics



Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Laboratory Control Sample**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0806024**
Lab ID: **WW061208L01**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
Turbidity - 180.1	19.1	S	0.400	1	06/05/08	NTU	180.1	ES

N/A - Not Applicable
S - Spike compound.

Laboratory Control Sample Inorganics



Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Laboratory Control Sample**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0806024**
Lab ID: **WW061208L02**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	425	S	1.00	1	06/12/08	mg/L	160.2	NAR

N/A - Not Applicable
S - Spike compound.

Duplicate Inorganics



Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-TUR/TSS-006-060508**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0806024**
Lab ID: **0806024-06 D**
Date Collected: **06/05/08**
Date Received: **06/05/08**

Parameter	Sample Result	Duplicate Result	Unit	Percent RPD	RPD Limit
Turbidity - 180.1	1.52	1.62	NTU	6	20

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. RPD values are reported based on the unrounded calculated result.

Laboratory Control Sample Inorganics



Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Laboratory Control Sample**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0806024**
Lab ID: **WW061208L01**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Conc.	% Recovery	% Recovery Limits
Turbidity - 180.1	19.1	96	80-120

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded results.

17 of 21 3/08 19:17

Laboratory Control Sample Inorganics



Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Laboratory Control Sample**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0806024**
Lab ID: **WW061208L02**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Conc.	% Recovery	% Recovery Limits
TSS - Membrane	425	85	80-120

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded results.

Sample Receipt Checklist

Client: <u>BATDUX</u>	Receipt Date: <u>6/5/08</u>
Project: <u>New Bedford</u>	Log-in Date: <u>7</u>
ETR #: <u>0806024</u>	Inspection by: <u>W</u> Login by: <u>h</u>

ALL SECTIONS BELOW MUST BE COMPLETED

Comments / Notes

Were samples shipped? Yes, FedEx / UPS / Other: _____ No, Alpha Analytical Courier pick-up <u>Hand delivered</u>	Sample storage refrigerator #: <u>A2</u>
Is bill of lading retained? Yes, Tracking #: _____ No, Unavailable / <u>NA</u>	Sample storage freezer #: _____
Number of coolers received for this project delivery: <u>2</u>	Cooler 2: <u>3°/3°</u> Cooler 3: _____ Cooler 4: _____ Cooler 5: _____ Cooler 6: _____ Cooler 7: _____ More: _____
Indicate cooler temperature upon opening (if multiple coolers, record all temps): Note: If all coolers are 2-6°C, use one checklist, if NOT, use separate checklists and note all samples received above 6°C. Cooler 1: Temperature(s) taken from: <u>3°</u> IR Gun, (Circle one) SN 460647143 or 94031 <u>3°</u> Temp. Blank, / NA	
Were samples received on ice? <u>Yes</u> / No	
Chain-of-Custody present? <u>Yes</u> / No Complete? <u>Yes</u> / No	
Custody seals present on Cooler? Yes / <u>No</u> on Bottles? Yes / <u>No</u> Intact? Yes / No / <u>NA</u> Note: Affix custody seals to back of this page.	
Were sample containers intact? <u>Yes</u> / No If No, list samples: →	
Did VOA/VPH waters contain headspace (>5mm)? Yes / No / <u>NA</u> If Yes, list samples: →	
Were 5035 VOA soils, or VPH soils, covered with MeOH? Yes / No / <u>NA</u> If No, list samples: →	
Was a sufficient amount of sample received for each test indicated on the COC? <u>Yes</u> / No If No, list samples: →	
If chemical preservation is appropriate - Were samples field preserved? Yes / No / <u>NA</u> <input type="checkbox"/> C=HCl <input type="checkbox"/> M=MeOH <input type="checkbox"/> S=H ₂ SO ₄ <input type="checkbox"/> H=NaOH <input type="checkbox"/> N=HNO ₃ <input type="checkbox"/> Other: _____ <input type="checkbox"/> U= Unknown	Chemical preservation OK for ALL samples? Yes / No / <u>NA</u> If No, list samples below:
Preservation (pH) verified at lab for EVERY bottle? (Not: VOA / VPH / Sulfide) YES: <2 or >12 (CN) or NO <u>NA</u> If No, why?:	
Were samples received within hold time? <u>Yes</u> / No If No, list samples: →	
Discrepancy between samples rec'd & COC? Yes / <u>No</u> If Yes, list samples: →	
Was the Project Manager notified of any other problems? Yes / No / NA	
Project Manager Acknowledgement: _____ Date: _____	Please use back for any additional notes!

Battelle

The Business of Innovation

Chain of Custody

0806024
 397 Washington Street
 Duxbury, MA 02332
 Phone: 781-952-5200
 Fax: 781-934-2124

Proj. No: **6606422**
 Proj. Name: **New Bedford Harbor**

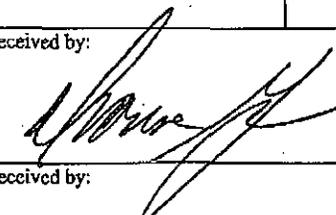
SAMPLERS: Signature
Mike Walsh **Matt Fitzpatrick**

ANALYSIS REQUESTED →
 "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS-TSS	OTHER-Turbidity	ACIDIFIED	PRESERVED	Total Number of Containers
6/5/08	0933	WA-TUR-001-060508		Center of Dredge area Flood Tide (2.2) NTU								X			2
	0957	-002-060508		300' North (.8 NTU)								X			2
	1007	-003-060508		600' North (1.0 NTU)								X			2
	1120	-004-060508		Center of Dredge area ebb tide (3 NTU)								X			2
	1135	-005-060508		300' South (.9 NTU)								X			2
	1150	-006-060508		600' South (.9 NTU)								X			2
	0933	WA-TSS-001-060508		Center of Dredge area Flood Tide (2.2 NTU)							X				2
	0957	-002-060508		300' North (.8 NTU)							X				2
	1007	-003-060508		600' North (1.0 NTU)							X				2
	1120	-004-060508		Center of Dredge area ebb tide (3 NTU)							X				2
	1135	-005-060508		300' South (.9 NTU)							X				2
	1150	-006-060508		600' South (.9 NTU)							X				2

Relinquished by:


Date/Time
 6/5/08 1450

Received by:


Date/Time
 6/5/08 1450

Relinquished by:

Date/Time

Received by:

Date/Time

Comments:
 Baseline water quality samples.

20 of 21

ORIGINAL



ANALYTICAL REPORT

Prepared for:
Battelle
Duxbury Operations
397 Washington Street
Duxbury, MA 02332

Project: New Bedford Harbor
ETR: 0808106
Report Date: August 26, 2008

Certifications and Accreditations

Massachusetts M-MA030
Connecticut PH-0141
New Hampshire 2206
Rhode Island LAO00289
New Jersey MA015
Maine MA0030
New York 11627
Louisiana 03090
Florida E87814
Pennsylvania 68-02089
Army Corps of Engineers
Department of the Navy

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Sample ID Cross Reference

Client: **Battelle**
Project: **New Bedford Harbor**

Lab Code: **MA00030**
ETR: **0808106**



Lab Sample ID	Client Sample ID
0808106-01	WQ-01-082108
0808106-02	WQ-02-082108
0808106-03	WQ-03-082108

CASE NARRATIVE

Alpha Analytical

ETR: 0808106

Project: New Bedford Harbor Project

All analyses were performed according to Alpha Analytical quality assurance program and documented Standard Operating Procedures (SOPs). The analytical results contained in this report were performed within holding time, and with appropriate quality control measures, except where noted. All soil/sediment results are reported on a dry weight basis unless otherwise noted. A summary of all state and federal accreditations is provided within this report. Blank correction of results is not performed in the laboratory for any parameter. Alpha Analytical certifies that the test results within meet all of the requirements of NELAC, for all NELAC accredited parameters.

Wet Chemistry:

No problems were encountered during the analysis of TSS and Turbidity

The enclosed results of analyses are representative of the samples as received by the laboratory. Alpha Analytical makes no representations or certifications as to the method of sample collection, sample identification, or transporting/handling procedures used prior to the receipt of samples by Alpha Analytical. To the best of my knowledge, the information contained in this report is accurate and complete. For any questions regarding this report, please contact the signatory below at 508-822-9300.

Approved by:


Peter Henriksen

Title: Project Manager

Date: 8/26/08

Wet Chemistry

Inorganics



Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-01-082108**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0808106**
Lab ID: **0808106-01**
Date Collected: **08/21/08**
Date Received: **08/21/08**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	36.0		1.00	1	08/25/08	mg/L	160.2	ES
Turbidity - 180.1	26.5		0.400	1	08/25/08	NTU	180.1	ES

N/A - Not Applicable

Duplicate Inorganics



Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-01-082108**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0808106**
Lab ID: **0808106-01 D**
Date Collected: **08/21/08**
Date Received: **08/21/08**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	35.7		1.00	1	08/25/08	mg/L	160.2	ES

N/A - Not Applicable

Inorganics



Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-02-082108**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0808106**
Lab ID: **0808106-02**
Date Collected: **08/21/08**
Date Received: **08/21/08**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	29.7		1.00	1	08/25/08	mg/L	160.2	ES
Turbidity - 180.1	20.1		0.400	1	08/25/08	NTU	180.1	ES

N/A - Not Applicable

Inorganics



Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-03-082108**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0808106**
Lab ID: **0808106-03**
Date Collected: **08/21/08**
Date Received: **08/21/08**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	6.50		1.00	1	08/25/08	mg/L	160.2	ES
Turbidity - 180.1	2.44		0.400	1	08/25/08	NTU	180.1	ES

N/A - Not Applicable

Duplicate Inorganics



Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-03-082108**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0808106**
Lab ID: **0808106-03 D**
Date Collected: **08/21/08**
Date Received: **08/21/08**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
Turbidity - 180.1	2.35		0.400	1	08/25/08	NTU	180.1	ES

N/A - Not Applicable

Blank Inorganics



Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Blank**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0808106**
Lab ID: **WW082508B16**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
Turbidity - 180.1	0.400	U	0.400	1	08/25/08	NTU	180.1	ES

N/A - Not Applicable

U - The analyte was analyzed for but not detected at the sample specific level reported.

Blank Inorganics



Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Blank**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0808106**
Lab ID: **WW082508B17**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	1.00	U	1.00	1	08/25/08	mg/L	160.2	ES

N/A - Not Applicable

U - The analyte was analyzed for but not detected at the sample specific level reported.

Laboratory Control Sample Inorganics



Client: **Battelle**
 Project: **New Bedford Harbor**
 Case: **N/A** SDG: **N/A**
 Client ID: **Laboratory Control Sample**
 Matrix: **Water**

Lab Code: **MA00030**
 ETR: **0808106**
 Lab ID: **WW082508L07**
 Date Collected: **N/A**
 Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
Turbidity - 180.1	21.6	S	0.400	1	08/25/08	NTU	180.1	ES

N/A - Not Applicable
 S - Spike compound.

Laboratory Control Sample Inorganics



Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Laboratory Control Sample**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0808106**
Lab ID: **WW082508L08**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	469	S	1.00	1	08/25/08	mg/L	160.2	ES

N/A - Not Applicable
S - Spike compound.

Duplicate Inorganics



Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-01-082108**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0808106**
Lab ID: **0808106-01 D**
Date Collected: **08/21/08**
Date Received: **08/21/08**

Parameter	Sample Result	Duplicate Result	Unit	Percent RPD	RPD Limit
TSS - Membrane	36.0	35.7	mg/L	200 ^a	20

RPD value incorrect.
Should be 0.84%
DTDahlen 2/6/2009

N/A - Not Applicable

^a - Value outside of QC Limits.

Concentrations reported as calculated values, which includes rounding for significant figures. RPD values are reported based on the unrounded calculated result.

08/26/08 06:43

Duplicate Inorganics



Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-03-082108**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0808106**
Lab ID: **0808106-03 D**
Date Collected: **08/21/08**
Date Received: **08/21/08**

Parameter	Sample Result	Duplicate Result	Unit	Percent RPD	RPD Limit
Turbidity - 180.1	2.44	2.35	NTU	4	20

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. RPD values are reported based on the unrounded calculated result.

08/26/08 06:43

Laboratory Control Sample Inorganics



Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Laboratory Control Sample**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0808106**
Lab ID: **WW082508L07**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Conc.	% Recovery	% Recovery Limits
Turbidity - 180.1	21.6	108	80-120

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded results.

08/26/08 06:43

Laboratory Control Sample Inorganics



Client: **Battelle**
 Project: **New Bedford Harbor**
 Case: **N/A** SDG: **N/A**
 Client ID: **Laboratory Control Sample**
 Matrix: **Water**

Lab Code: **MA00030**
 ETR: **0808106**
 Lab ID: **WW082508L08**
 Date Collected: **N/A**
 Date Received: **N/A**

Parameter	Conc.	% Recovery	% Recovery Limits
TSS - Membrane	469	94	80-120

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded results.

08/26/08 06.43

Chain of Custody Records

Chain of Custody

0808106

Proj. No 6606422	Proj. Name New Bedford Harbor Water Quality
----------------------------	---

SAMPLERS: Signature Matthew Atypinski	Amanda Maxemchuk	ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"
---	-------------------------	--

DATE	TIME	Field BATTLE ID	Lab CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
8/21/08	1420	WB-TSS-01-082108		TSS from 25 to 32 NTU										X	1
	1502	WB-TSS-02-082108		TSS from 14 to 20 NTU										X	1
	1520	WB-TSS-03-082108		TSS from 2 to .3 NTU										X	1
	1420	WB-TUR-01-082108		Turbidity from 25 to 32 NTU										X	1
	1502	WB-TUR-02-082108		Turbidity from 25 14 to 20 NTU										X	1
	1520	WB-TUR-03-082108		Turbidity from 2 to .3 NTU										X	1

Relinquished by: Matthew L Atypinski	Date/Time 8/21/08 1740		Received by: 	Date/Time 8/21/08 1740	
	Date/Time			Date/Time	

Comments:

Sample Receipt Checklist

Page 1 of 1

Client: <u>BATDUX</u>	Receipt Date: <u>8/21/08</u>
Project: <u>NBH</u>	Log-in Date: <u>8/22/08</u>
ETR #: <u>0808106</u>	Inspection by: <u>ur</u> Login by: <u>ur</u>

ALL SECTIONS BELOW MUST BE COMPLETED

Comments / Notes

Were samples shipped? Yes, FedEx / UPS / Other: _____ No, Alpha Analytical Courier pick-up <u>Hand delivered</u>	Sample storage refrigerator #: <u>03</u>
Is bill of lading retained? Yes, Tracking #: _____ No, Unavailable <u>NA</u>	Sample storage freezer #: _____
Number of coolers received for this project delivery: <u>1</u>	Cooler 2: _____ Cooler 3: _____ Cooler 4: _____ Cooler 5: _____ Cooler 6: _____ Cooler 7: _____ More: _____
Indicate cooler temperature upon opening (if multiple coolers, record <u>all</u> temps): Note: If <u>all</u> coolers are 2-6°C, use one checklist, if NOT, use separate checklists and note <u>all</u> samples received <u>above</u> 6°C. Cooler 1: Temperature(s) taken from: <u>15</u> IR Gun, (Circle one) SN 460647143 or 94031 _____ Temp. Blank, / NA	Cooler 2: _____ Cooler 3: _____ Cooler 4: _____ Cooler 5: _____ Cooler 6: _____ Cooler 7: _____ More: _____
Were samples received on ice? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	More: _____
Chain-of-Custody present? <input checked="" type="checkbox"/> Yes / No Complete? <input checked="" type="checkbox"/> Yes / No	More: _____
Custody seals present on Cooler? Yes / <input checked="" type="checkbox"/> No on Bottles? Yes / <input checked="" type="checkbox"/> No Intact? Yes / No / <input checked="" type="checkbox"/> NA	More: _____
Note: Affix custody seals to back of this page.	More: _____
Were sample containers intact? <input checked="" type="checkbox"/> Yes / No If No, list samples: →	Chemical preservation OK for ALL samples? Yes / No / <input checked="" type="checkbox"/> NA
Did VOA/VPH waters contain headspace (>5mm)? Yes / No <input checked="" type="checkbox"/> NA If Yes, list samples: →	If No, list samples below:
Were 5035 VOA soils, or VPH soils, covered with MeOH? Yes / No / <input checked="" type="checkbox"/> NA If No, list samples: →	If No, list samples below:
Was a sufficient amount of sample received for each test indicated on the COC? <input checked="" type="checkbox"/> Yes / No If No, list samples: →	If No, list samples below:
If chemical preservation is appropriate - Were samples field preserved? Yes / No / <input checked="" type="checkbox"/> NA <input type="checkbox"/> C=HCl <input type="checkbox"/> M=MeOH <input type="checkbox"/> S=H ₂ SO ₄ <input type="checkbox"/> H=NaOH <input type="checkbox"/> N=HNO ₃ <input type="checkbox"/> Other: _____ <input type="checkbox"/> U= Unknown	If No, list samples below:
Preservation (pH) verified at lab for EVERY bottle? (Not: VOA / VPH / Sulfide) YES: <2 or >12 (CN) or NO <input checked="" type="checkbox"/> NA If No, why?:	If No, list samples below:
Were samples received within hold time? <input checked="" type="checkbox"/> Yes / No If No, list samples: →	If No, list samples below:
Discrepancy between samples rec'd & COC? Yes / <input checked="" type="checkbox"/> No If Yes, list samples: →	If No, list samples below:
Was the Project Manager notified of any other problems? Yes / No / NA	If No, list samples below:
Project Manager Acknowledgement: _____ Date: _____	Please use back for any additional notes!

Certificate/Approval Program Summary



Method numbers assume the most recent EPA revisions. For a complete listing of analytes for the referenced methods please contact your Alpha Woods Hole Lab Project Manager or the Quality Assurance Manager.

Connecticut Department of Public Health Certificate/Lab ID : PH-0141 - *Wastewater* (General Chemistry: EPA 120.1, 150.1, 160.1, 160.2, 180.1, 300.0, 310.1, 335.2; Metals: 200.8, 245.1; Organics: 608-PCB, ETPH)
Solid Waste/Soil (General Chemistry: 1010, 9010/9014, 9045, 9060; Metals: 6020, 7470, 7471; Organics: 8081, 8082, 8260, 8270, ETPH).

Florida Department of Health Certificate/Lab ID : E87814 - Primary NELAP Accreditation Authority for Air & Emissions. Secondary NELAP Accreditation for Wastewater and Solid & Hazardous Waste. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 335.2, SM2320B, SM2340B, SM2540G, SM4500NH₃; Metals: 245.1; Organics: 608-PCB). *Solid and Hazardous Waste* (General Chemistry: 9010/9014, 9045, 9050, 9056, 9065, Reactivity 7.3; Metals: 6020, 7470, 7471; Organics: 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

Louisiana Department of Environmental Quality Certificate/Lab ID : 03090 - Primary NELAP Accrediting Authority for Wastewater, Solid & Hazardous Waste. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 376.2, 9010/9014, 9056, SM2540G; Metals: 200.8, 245.1, 6020; Organics: 608-PCB, 8015-DRO, 8081, 8082, 8260, 8270). *Solid and Hazardous Waste* (General Chemistry: 1010, 1311, 9010/9014, 9040, 9045, 9056, 9060, Reactivity 7.3; Metals: 6020, 7196, 7470, 7471; Organics: 8015-DRO, 8081, 8082, 8260, 8270).

Maine Department of Human Services Certificate/Lab ID : MA0030 - *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 335.2; Metals: EPA 245.1; Organics: 608-PCB).

Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA030 - *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 335.2; Metals: EPA 245.1; Organics: EPA 608-PCB).

New Hampshire Department of Environmental Services Certificate/Lab ID: 2206 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 376.2, SM2540G; Metals: 200.8, 245.4; Organics: 608-PCB).

New Jersey Department of Environmental Protection Certificate/Lab ID : MA015 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 376.2, 9010/9014, 9056, SM2540G; Metals: 200.8, 245.1 6020; Organics: 608-PCB, 8081, 8082, 8260, 8270). *Solid & Hazardous Waste* (General Chemistry: EPA 1010, 1311, 9010/9014, 9040, 9045, 9056, 9060; Metals: 6020, 7196, 7470, 7471; Organics: 8015-DRO, 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

New York Department of Health Certificate/Lab ID : 11627 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 376.2; Metals: 200.8, 245.1; Organics: 608-PCB). *Solid and Hazardous Waste* (General Chemistry: EPA 1010, 1311; : 200.8; 6020; 7041; Organics: 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

Rhode Island Department of Health Certificate/Lab ID : LAO00289 - Chemistry: *Organic and Inorganic in Non-Portable Water, Wastewater/Sewage and Soil* (Refer to LADEQ and MADEP certificates for method numbers.)

Pennsylvania Department of Environmental Protection Certificate/Lab ID : 68-02089 - Registered laboratory

U.S. Army Corps of Engineers

Department of the Navy

Certificate/Approval Program Summary



Method numbers assume the most recent EPA revisions. For a complete listing of analytes for the referenced methods please contact your Alpha Woods Hole Lab Project Manager or the Quality Assurance Manager.

Connecticut Department of Public Health Certificate/Lab ID: PH-0141 - *Wastewater* (General Chemistry: EPA 120.1, 150.1, 160.1, 160.2, 180.1, 300.0, 310.1, 335.2, 365.2; Metals: 200.8, 245.1; Organics: 608, 624, 625, ETPH) *Solid Waste/Soil* (General Chemistry: 1010, 9010/9014, 9045, 9060; Metals: 6020, 7470, 7471; Organics: 8081, 8082, 8260, 8270, ETPH).

Florida Department of Health Certificate/Lab ID: E87814 - Primary NELAP Accreditation Authority for Air & Emissions. Secondary NELAP Accreditation for Wastewater and Solid & Hazardous Waste. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 335.2, 365.2, SM2320B, SM2340B, SM2540G, SM4500NH3; Metals: 245.1; Organics: 608, 624, 625). *Solid and Hazardous Waste* (General Chemistry: 9010/9014, 9045, 9050, 9056, 9065, Reactivity 7.3; Metals: 6020, 7470, 7471; Organics: 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

Louisiana Department of Environmental Quality Certificate/Lab ID: 03090 - Primary NELAP Accrediting Authority for Wastewater, Solid & Hazardous Waste. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 365.2, 376.2, 9010/9014, 9056, SM2540G; Metals: 200.8, 245.1, 6020; Organics: 608, 624, 625, 8015-DRO/GRO, 8081, 8082, 8260, 8270). *Solid and Hazardous Waste* (General Chemistry: 1010, 1311, 9010/9014, 9040, 9045, 9056, 9060, Reactivity 7.3; Metals: 6020, 7196, 7470, 7471; Organics: 8015-DRO/GRO, 8081, 8082, 8260, 8270).

Maine Department of Human Services Certificate/Lab ID: MA0030 - *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 335.2, 365.2; Metals: EPA 245.1; Organics: 608, 624).

Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA030 - *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 335.2, 365.2; Metals: EPA 245.1; Organics: EPA 608, 624).

New Hampshire Department of Environmental Services Certificate/Lab ID: 2206 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 365.2, 376.2, SM2540G; Metals: 200.8, 245.4; Organics: 608, 624, 625).

New Jersey Department of Environmental Protection Certificate/Lab ID: MA015 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 376.2, 9010/9014, 9056, SM2540G; Metals: 200.8, 245.1 6020; Organics: 608, 624, 625, 8081, 8082, 8260, 8270). *Solid & Hazardous Waste* (General Chemistry: EPA 1010, 1311, 9010/9014, 9040, 9045, 9056, 9060; Metals: 6020, 7196, 7470, 7471; Organics: 8015-DRO/GRO, 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

New York Department of Health Certificate/Lab ID: 11627 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 365.2, 376.2; Metals: 245.1; Organics: 608, 624, 625). *Solid and Hazardous Waste* (General Chemistry: EPA 1010, 1311; : 245.1; 6020, 7041; Organics: 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

Rhode Island Department of Health Certificate/Lab ID: LAO00289 - Chemistry: *Organic and Inorganic in Non-Poratable Water, Wastewater/Sewage and Soil* (Refer to LADEQ and MADEP certificates for method numbers.)

Pennsylvania Department of Environmental Protection Certificate/Lab ID: 68-02089 - Registered laboratory

U.S. Army Corps of Engineers

Department of the Navy



ANALYTICAL REPORT

Prepared for:

Battelle

Duxbury Operations

397 Washington Street

Duxbury, MA 02332

Project: New Bedford Harbor

ETR: 0810006

Report Date: October 02, 2008

Certifications and Accreditations

Massachusetts M-MA030

Connecticut PH-0141

New Hampshire 2206

Rhode Island LAO00289

New Jersey MA015

Maine MA0030

New York 11627

Louisiana 03090

Florida E87814

Pennsylvania 68-02089

Army Corps of Engineers

Department of the Navy

This report shall not be reproduced except in full, without written approval from the laboratory.



CASE NARRATIVE

Alpha Analytical

ETR: 0810006

Project: New Bedford Harbor

All analyses were performed according to Alpha Analytical quality assurance program and documented Standard Operating Procedures (SOPs). The analytical results contained in this report were performed within holding time, and with appropriate quality control measures, except where noted. All soil/sediment results are reported on a dry weight basis unless otherwise noted. A summary of all state and federal accreditations is provided within this report. Blank correction of results is not performed in the laboratory for any parameter. Alpha Analytical certifies that the test results within meet all of the requirements of NELAC, for all NELAC accredited parameters.

The enclosed results of analyses are representative of the samples as received by the laboratory. Alpha Analytical makes no representations or certifications as to the method of sample collection, sample identification, or transporting/handling procedures used prior to the receipt of samples by Alpha Analytical. To the best of my knowledge, the information contained in this report is accurate and complete. For any questions regarding this report, please contact the signatory below at 508-822-9300.

Approved by:  Title: PROJECT MANAGER Date: 10/2/08
Pete Henriksen **Project Manager**

Sample ID Cross Reference



Client: **Battelle**
Project: **New Bedford Harbor**

Lab Code: **MA00030**
ETR: **0810006**

Lab Sample ID	Client Sample ID
0810006-01	WQ-001-100108
0810006-02	WQ-001-100108-REP
0810006-03	WQ-002-100108
0810006-04	WQ-003-100108

Wet Chemistry

Inorganics



Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-001-100108**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0810006**
Lab ID: **0810006-01**
Date Collected: **10/01/08**
Date Received: **10/01/08**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	76.5		1.00	1	10/01/08	mg/L	160.2	ES
Turbidity - 180.1	32.5		0.400	1	10/01/08	NTU	180.1	ES

N/A - Not Applicable

Duplicate Inorganics



Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-001-100108**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0810006**
Lab ID: **0810006-01 D**
Date Collected: **10/01/08**
Date Received: **10/01/08**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	71.0		1.00	1	10/01/08	mg/L	160.2	ES
Turbidity - 180.1	32.4		0.400	1	10/01/08	NTU	180.1	ES

N/A - Not Applicable

Inorganics



Client: **Battelle**
Project: **New Bedford Harbor**
Case: N/A SDG: N/A
Client ID: **WQ-001-100108-REP**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0810006**
Lab ID: **0810006-02**
Date Collected: **10/01/08**
Date Received: **10/01/08**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	61.2		1.00	1	10/01/08	mg/L	160.2	ES
Turbidity - 180.1	29.8		0.400	1	10/01/08	NTU	180.1	ES

N/A - Not Applicable

Inorganics



Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-002-100108**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0810006**
Lab ID: **0810006-03**
Date Collected: **10/01/08**
Date Received: **10/01/08**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	55.2		1.00	1	10/01/08	mg/L	160.2	ES
Turbidity - 180.1	28.1		0.400	1	10/01/08	NTU	180.1	ES

N/A - Not Applicable

Inorganics



Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-003-100108**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0810006**
Lab ID: **0810006-04**
Date Collected: **10/01/08**
Date Received: **10/01/08**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	33.4		1.00	1	10/01/08	mg/L	160.2	ES
Turbidity - 180.1	2.21		0.400	1	10/01/08	NTU	180.1	ES

N/A - Not Applicable

Blank Inorganics



Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Blank**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0810006**
Lab ID: **WW100108B23**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	1.00	U	1.00	1	10/01/08	mg/L	160.2	ES

N/A - Not Applicable

U - The analyte was analyzed for but not detected at the sample specific level reported.

Blank Inorganics



Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Blank**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0810006**
Lab ID: **WW100108B24**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
Turbidity - 180.1	0.400	U	0.400	1	10/01/08	NTU	180.1	ES

N/A - Not Applicable

U - The analyte was analyzed for but not detected at the sample specific level reported.

Laboratory Control Sample Inorganics



Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Laboratory Control Sample**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0810006**
Lab ID: **WW100108L07**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
TSS - Membrane	546	S	1.00	1	10/01/08	mg/L	I60.2	ES

N/A - Not Applicable
S - Spike compound.

Laboratory Control Sample Inorganics



Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Laboratory Control Sample**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0810006**
Lab ID: **WW100108L08**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Result	Qualifier	Reporting Limit	Dilution	Date Analyzed	Unit	Analytical Method	Analyst
Turbidity - 180.1	20.3	S	0.400	1	10/01/08	NTU	180.1	ES

N/A - Not Applicable
S - Spike compound.

Duplicate Inorganics



Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **WQ-001-100108**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0810006**
Lab ID: **0810006-01 D**
Date Collected: **10/01/08**
Date Received: **10/01/08**

Parameter	Sample Result	Duplicate Result	Unit	Percent RPD	RPD Limit
TSS - Membrane	76.5	71.0	mg/L	7	20
Turbidity - 180.1	32.5	32.4	NTU	0	20

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. RPD values are reported based on the unrounded calculated result.

Laboratory Control Sample Inorganics



Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Laboratory Control Sample**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0810006**
Lab ID: **WW100108L07**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Conc.	% Recovery	% Recovery Limits
TSS - Membrane	546	109	80-120

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded results.

Laboratory Control Sample Inorganics



Client: **Battelle**
Project: **New Bedford Harbor**
Case: **N/A** SDG: **N/A**
Client ID: **Laboratory Control Sample**
Matrix: **Water**

Lab Code: **MA00030**
ETR: **0810006**
Lab ID: **-WW100108L08**
Date Collected: **N/A**
Date Received: **N/A**

Parameter	Conc.	% Recovery	% Recovery Limits
Turbidity - 180.1	20.3	101	80-120

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded results.

Chain of Custody Records

Proj. No 6606422	Proj. Name New Bedford Harbor Water Quality
SAMPLERS: Signature Annie Murphy	
ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"	

DATE	TIME	Field BATTLE ID	Lab CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS Turbidity	OTHER TSS	ACIDIFIED	PRESERVED	Total Number of Containers
10/1/08	1123	WQ-TSS-001-100108		50-65NTU station ID: 57NTU								✓			1
		WQ-TSS-001-100108-REP										✓			1
		WQ-TUR-001-100108										✓			1
		WQ-TUR-001-100108-REP										✓			1
10/1/08	1150	WQ-TSS-002-100108		19-27NTU station ID: 24NTU								✓			1
		WQ-TUR-002-100108										✓			1
	1205	WQ-TSS-003-100108		3.8 NTU station ID: NREF								✓			1
		WQ-TUR-003-100108										✓			1

Relinquished by: 	Date/Time		Received by: 	Date/Time	
	10/1/08	1556		10/1/08	1556
Relinquished by:	Date/Time		Received by:	Date/Time	

Comments: 18 of 20

Sample Receipt Checklist

Client: <u>BATDOX</u>	Receipt Date: <u>10/1/08</u>
Project: <u>New Bedford Harbor</u>	Log-in Date: <u>↓</u>
ETR #: <u>0810006</u>	Inspection by: <u>W</u> Login by: <u>W</u>

ALL SECTIONS BELOW MUST BE COMPLETED

Comments / Notes

Were samples shipped? Yes, FedEx / UPS / Other: _____ No, Alpha Analytical Courier pick-up / <u>Hand delivered</u>	Sample storage refrigerator #: <u>01</u>
Is bill of lading retained? Yes, Tracking #: _____ No, Unavailable / <u>NA</u>	Sample storage freezer #: _____
Number of coolers received for this project delivery: <u>1</u>	Cooler 2: _____ Cooler 3: _____ Cooler 4: _____ Cooler 5: _____ Cooler 6: _____ Cooler 7: _____ More: _____
Indicate cooler temperature upon opening (if multiple coolers, record <u>all</u> temps): Note: If <u>all</u> coolers are 2-6°C, use one checklist, if NOT, use separate checklists and note <u>all</u> samples received <u>above</u> 6°C. Cooler 1: Temperature(s) taken from: <u>3</u> IR Gun, (Circle one) SN 460647143 or <u>94031</u> <u>2.5</u> Temp. Blank, / NA	
Were samples received on ice? <u>Yes</u> / No	
Chain-of-Custody present? <u>Yes</u> / No Complete? <u>Yes</u> / No	
Custody seals present on Cooler? Yes / <u>No</u> on Bottles? Yes / <u>No</u> Intact? Yes / No / <u>NA</u>	
<i>Note: Affix custody seals to back of this page.</i>	
Were sample containers intact? <u>Yes</u> / No If No, list samples: →	
Did VOA/VPH waters contain headspace (>5mm)? Yes / No <u>NA</u> If Yes, list samples: →	
Were 5035 VOA soils, or VPH soils, covered with MeOH? Yes / No / <u>NA</u> If No, list samples: →	
Was a <u>sufficient</u> amount of sample received for each test indicated on the COC? <u>Yes</u> / No If No, list samples: →	
If chemical preservation is appropriate - Were samples field preserved? Yes / No / <u>NA</u> <input type="checkbox"/> C=HCl <input type="checkbox"/> M=MeOH <input type="checkbox"/> S=H ₂ SO ₄ <input type="checkbox"/> H=NaOH <input type="checkbox"/> N=HNO ₃ <input type="checkbox"/> Other: _____ <input type="checkbox"/> U= Unknown	Chemical preservation OK for ALL samples? Yes / No / <u>N/A</u>
Preservation (pH) verified at lab for <i>EVERY</i> bottle? (Not: VOA / VPH / Sulfide) YES: <2 or >12 (CN) or NO <u>NA</u> If No, why?:	If No, list samples below:
Were samples received within hold time? <u>Yes</u> No If No, list samples: →	
Discrepancy between samples rec'd & COC? Yes <u>No</u> If Yes, list samples: →	
Was the Project Manager notified of any other problems? Yes / No / NA	
Project Manager Acknowledgement: _____ Date: _____	Please use back for any additional notes!

Certificate/Approval Program Summary



Method numbers assume the most recent EPA revisions. For a complete listing of analytes for the referenced methods please contact your Alpha Woods Hole Lab Project Manager or the Quality Assurance Manager.

Connecticut Department of Public Health Certificate/Lab ID : PH-0141 - *Wastewater* (General Chemistry: EPA 120.1, 150.1, 160.1, 160.2, 180.1, 300.0, 310.1, 335.2; Metals: 200.8, 245.1; Organics: 608-PCB, ETPH) *Solid Waste/Soil* (General Chemistry: 1010, 9010/9014, 9045, 9060; Metals: 6020, 7470, 7471; Organics: 8081, 8082, 8260, 8270, ETPH).

Florida Department of Health Certificate/Lab ID : E87814 - Primary NELAP Accreditation Authority for Air & Emissions. Secondary NELAP Accreditation for Wastewater and Solid & Hazardous Waste. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 335.2, SM2320B, SM2340B, SM2540G, SM4500NH3; Metals: 245.1; Organics: 608-PCB). *Solid and Hazardous Waste* (General Chemistry: 9010/9014, 9045, 9050, 9056, 9065, Reactivity 7.3; Metals: 6020, 7470, 7471; Organics: 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

Louisiana Department of Environmental Quality Certificate/Lab ID : 03090 - Primary NELAP Accrediting Authority for Wastewater, Solid & Hazardous Waste. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 376.2, 9010/9014, 9056, SM2540G; Metals: 200.8, 245.1, 6020; Organics: 608-PCB, 8015-DRO, 8081, 8082, 8260, 8270). *Solid and Hazardous Waste* (General Chemistry: 1010, 1311, 9010/9014, 9040, 9045, 9056, 9060, Reactivity 7.3; Metals: 6020, 7196, 7470, 7471; Organics: 8015-DRO, 8081, 8082, 8260, 8270).

Maine Department of Human Services Certificate/Lab ID : MA0030 - *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 335.2; Metals: EPA 245.1; Organics: 608-PCB).

Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA030 - *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 335.2; Metals: EPA 245.1; Organics: EPA 608-PCB).

New Hampshire Department of Environmental Services Certificate/Lab ID: 2206 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 376.2, SM2540G; Metals: 200.8, 245.4; Organics: 608-PCB).

New Jersey Department of Environmental Protection Certificate/Lab ID : MA015 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 376.2, 9010/9014, 9056, SM2540G; Metals: 200.8, 245.1 6020; Organics: 608-PCB, 8081, 8082, 8260, 8270). *Solid & Hazardous Waste* (General Chemistry: EPA 1010, 1311, 9010/9014, 9040, 9045, 9056, 9060; Metals: 6020, 7196, 7470, 7471; Organics: 8015-DRO, 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

New York Department of Health Certificate/Lab ID : 11627 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 376.2; Metals: 200.8, 245.1; Organics: 608-PCB). *Solid and Hazardous Waste* (General Chemistry: EPA 1010, 1311; Metals: 200.8, 6020; 7041; Organics: 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

Rhode Island Department of Health Certificate/Lab ID : LAO00289 - Chemistry: *Organic and Inorganic in Non-Portable Water, Wastewater/Sewage and Soil* (Refer to LADEQ and MADEP certificates for method numbers.)

Pennsylvania Department of Environmental Protection Certificate/Lab ID : 68-02089 - Registered laboratory

U.S. Army Corps of Engineers

Department of the Navy

Appendix D

Total and Dissolved PCB Analytical Data

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APPENDIX D

Individual Congener and Sum of Congeners Results

Station ID	PMCNDock0821			PMCSedock821			PMCNRef0821			PMCNDock0821			PMCSedock821		
Collected	8/21/2008			8/21/2008			8/21/2008			8/21/2008			8/21/2008		
Fraction	DISS			DISS			DISS			TOTAL			TOTAL		
QC Code	SA														
Sample ID	WQ-DPC-001-082108			WQ-DPC-002-082108			WQ-DPC-003-082108			WQ-TPC-001-082108			WQ-TPC-002-082108		
Param Name	Result	Unit	Final Q												
2,4'-Dicb (PCB 8)	0.035	UG/L		0.034	UG/L		0.056	UG/L		0.069	UG/L		0.067	UG/L	
2,2',5'-Tricb (PCB 18)	0.061	UG/L		0.057	UG/L		0.094	UG/L		0.123	UG/L		0.119	UG/L	
2,4,4'-Tricb (PCB 28)	0.044	UG/L		0.038	UG/L		0.068	UG/L		0.149	UG/L		0.133	UG/L	
2,2',3,5'-Tetracb (PCB 44)	0.02	UG/L		0.017	UG/L		0.02	UG/L		0.093	UG/L		0.08	UG/L	
2,2',5,5'-Tetracb (PCB 52)	0.045	UG/L		0.038	UG/L		0.057	UG/L		0.191	UG/L		0.173	UG/L	
2,3',4,4'-Tetracb (PCB 66)	0.0045	UG/L		0.0045	UG/L		0.0044	UG/L		0.036	UG/L		0.031	UG/L	
2,2',4,5,5'-Pentacb (PCB 101)	0.0065	UG/L		0.0054	UG/L		0.0043	UG/L		0.081	UG/L		0.071	UG/L	
2,3,3',4,4'-Pentacb (PCB 105)	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.011	UG/L		0.0097	UG/L	
2,3',4,4',5'-Pentacb (PCB 118)	0.0038	UG/L		0.0033	UG/L		0.0022	UG/L		0.071	UG/L		0.06	UG/L	
2,2',3,3',4,4'-Hexacb (PCB 128)	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0092	UG/L		0.0076	UG/L	
2,2',3,4,4',5'-Hexacb (PCB 138)	0.0016	UG/L		0.0012	UG/L		0.0004	UG/L	J	0.052	UG/L		0.043	UG/L	
2,2',4,4',5,5'-Hexacb (PCB 153)	0.0027	UG/L		0.0021	UG/L		0.001	UG/L	J	0.073	UG/L		0.062	UG/L	
2,2',3,3',4,4',5'-Heptacb (PCB 170)	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.007	UG/L		0.0058	UG/L	
2,2',3,4,4',5,5'-Heptacb (PCB 180)	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0095	UG/L		0.0079	UG/L	
2,2',3,4',5,5',6'-Heptacb (PCB 187)	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.007	UG/L		0.0058	UG/L	
2,2',3,3',4,4',5,6'-Octacb (PCB 195)	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0004	UG/L	pJ	0.0002	UG/L	pJ
2,2',3,3',4,4',5,5',6'-Nonacb (PCB 206)	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0007	UG/L	J	0.0005	UG/L	J
DecaCB (PCB 209)	0.0012	UG/L	U												
Sum of 18 NOAA Congeners (SUM 18 CONG)	0.22	UG/L		0.2	UG/L		0.31	UG/L		0.98	UG/L		0.88	UG/L	

APPENDIX D

Individual Congener and Sum of Congeners Results

Station ID	PMCNRef0821						PMC57NTU1001			PMC57NTU1001			PMC24NTU1001		
Collected	8/21/2008			10/1/2008			10/1/2008			10/1/2008			10/1/2008		
Fraction	TOTAL			TOTAL			DISS			DISS			DISS		
QC Code	SA			SA			REP			SA			SA		
Sample ID	WQ-TPC-003-082108			EB-100108-01			WQ-DPC-001-100108-REP			WQ-DPC-001-100108			WQ-DPC-002-100108		
Param Name	Result	Unit	Final Q	Result	Unit	Final Q	Result	Unit	Final Q	Result	Unit	Final Q	Result	Unit	Final Q
2,4'-Dicb (PCB 8)	0.063	UG/L		0.0012	UG/L	U	0.039	UG/L		0.038	UG/L		0.031	UG/L	
2,2',5'-Tricb (PCB 18)	0.111	UG/L		0.0012	UG/L	U	0.063	UG/L		0.07	UG/L		0.056	UG/L	
2,4,4'-Tricb (PCB 28)	0.089	UG/L		0.0012	UG/L	U	0.053	UG/L		0.057	UG/L		0.047	UG/L	
2,2',3,5'-Tetracb (PCB 44)	0.027	UG/L		0.0012	UG/L	U	0.024	UG/L		0.024	UG/L		0.021	UG/L	
2,2',5,5'-Tetracb (PCB 52)	0.087	UG/L		0.0012	UG/L	U	0.043	UG/L		0.047	UG/L		0.038	UG/L	
2,3',4,4'-Tetracb (PCB 66)	0.0073	UG/L		0.0012	UG/L	U	0.0083	UG/L		0.0083	UG/L		0.0078	UG/L	
2,2',4,5,5'-Pentacb (PCB 101)	0.012	UG/L		0.0012	UG/L	U	0.0073	UG/L		0.0072	UG/L		0.0069	UG/L	
2,3,3',4,4'-Pentacb (PCB 105)	0.0005	UG/L	pJ	0.0012	UG/L	U	0.0011	UG/L	pJ	0.001	UG/L	pJ	0.001	UG/L	pJ
2,3',4,4',5'-Pentacb (PCB 118)	0.008	UG/L		0.0012	UG/L	U	0.0051	UG/L		0.0051	UG/L		0.0046	UG/L	
2,2',3,3',4,4'-Hexacb (PCB 128)	0.0001	UG/L	pJ	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U
2,2',3,4,4',5'-Hexacb (PCB 138)	0.0045	UG/L		0.0012	UG/L	U	0.002	UG/L		0.0017	UG/L		0.0016	UG/L	
2,2',4,4',5,5'-Hexacb (PCB 153)	0.0076	UG/L		0.0012	UG/L	U	0.0031	UG/L		0.0027	UG/L		0.0028	UG/L	
2,2',3,3',4,4',5'-Heptacb (PCB 170)	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U
2,2',3,4,4',5,5'-Heptacb (PCB 180)	0.0001	UG/L	pJ	0.0012	UG/L	U	0.0001	UG/L	pJ	0.0012	UG/L	U	0.0012	UG/L	U
2,2',3,4',5,5',6-Heptacb (PCB 187)	0.0001	UG/L	pJ	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U
2,2',3,3',4,4',5,6-Octacb (PCB 195)	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U
2,2',3,3',4,4',5,5',6-Nonacb (PCB 206)	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U
DecaCB (PCB 209)	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U
Sum of 18 NOAA Congeners (SUM 18 CONG)	0.42	UG/L					0.25	UG/L		0.26	UG/L		0.22	UG/L	

APPENDIX D

Individual Congener and Sum of Congeners Results

Station ID	PMCNREF10010			PMC57NTU1001			PMC57NTU1001			PMC24NTU1001			PMCNREF10010		
Collected	10/1/2008			10/1/2008			10/1/2008			10/1/2008			10/1/2008		
Fraction	DISS			TOTAL			TOTAL			TOTAL			TOTAL		
QC Code	SA			REP			SA			SA			SA		
Sample ID	WQ-DPC-003-100108			WQ-TPC-001-100108-REP			WQ-TPC-001-100108			WQ-TPC-002-100108			WQ-TPC-003-100108		
Param Name	Result	Unit	Final Q	Result	Unit	Final Q	Result	Unit	Final Q	Result	Unit	Final Q	Result	Unit	Final Q
2,4'-Dicb (PCB 8)	0.02	UG/L		0.086	UG/L		0.085	UG/L		0.063	UG/L		0.025	UG/L	
2,2',5'-Tricb (PCB 18)	0.034	UG/L		0.193	UG/L	D	0.209	UG/L	D	0.128	UG/L		0.045	UG/L	
2,4,4'-Tricb (PCB 28)	0.03	UG/L		0.265	UG/L	D	0.263	UG/L	D	0.163	UG/L	D	0.045	UG/L	
2,2',3,5'-Tetracb (PCB 44)	0.011	UG/L		0.195	UG/L		0.182	UG/L		0.112	UG/L		0.017	UG/L	
2,2',5,5'-Tetracb (PCB 52)	0.028	UG/L		0.303	UG/L	D	0.298	UG/L	D	0.184	UG/L	D	0.047	UG/L	
2,3',4,4'-Tetracb (PCB 66)	0.005	UG/L	p	0.112	UG/L		0.105	UG/L		0.064	UG/L		0.0073	UG/L	
2,2',4,5,5'-Pentacb (PCB 101)	0.004	UG/L		0.125	UG/L	D	0.111	UG/L	D	0.099	UG/L		0.011	UG/L	
2,3,3',4,4'-Pentacb (PCB 105)	0.0004	UG/L	pJ	0.029	UG/L		0.029	UG/L		0.018	UG/L		0.0016	UG/L	p
2,3',4,4',5'-Pentacb (PCB 118)	0.0027	UG/L		0.136	UG/L	D	0.128	UG/L	D	0.088	UG/L		0.0089	UG/L	
2,2',3,3',4,4'-Hexacb (PCB 128)	0.0013	UG/L	U	0.019	UG/L		0.018	UG/L		0.01	UG/L		0.0002	UG/L	pJ
2,2',3,4,4',5'-Hexacb (PCB 138)	0.0006	UG/L	J	0.106	UG/L		0.104	UG/L		0.059	UG/L		0.005	UG/L	
2,2',4,4',5,5'-Hexacb (PCB 153)	0.0016	UG/L		0.148	UG/L	p	0.146	UG/L	p	0.083	UG/L		0.0081	UG/L	
2,2',3,3',4,4',5'-Heptacb (PCB 170)	0.0013	UG/L	U	0.015	UG/L		0.014	UG/L		0.0074	UG/L		0.0001	UG/L	pJ
2,2',3,4,4',5,5'-Heptacb (PCB 180)	0.0013	UG/L	U	0.022	UG/L		0.021	UG/L		0.012	UG/L		0.0004	UG/L	J
2,2',3,4',5,5',6'-Heptacb (PCB 187)	0.0012	UG/L	U	0.016	UG/L		0.016	UG/L		0.0091	UG/L		0.0012	UG/L	U
2,2',3,3',4,4',5,6'-Octacb (PCB 195)	0.0013	UG/L	U	0.0012	UG/L	p	0.0012	UG/L	p	0.0003	UG/L	pJ	0.0013	UG/L	U
2,2',3,3',4,4',5,5',6'-Nonacb (PCB 206)	0.0013	UG/L	U	0.0017	UG/L		0.0016	UG/L		0.0006	UG/L	J	0.0013	UG/L	U
DecaCB (PCB 209)	0.0013	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0013	UG/L	U
Sum of 18 NOAA Congeners (SUM 18 CONG)	0.14	UG/L		1.8	UG/L		1.7	UG/L		1.1	UG/L		0.22	UG/L	

APPENDIX D

PCB Data Qualifiers

Qualifiers:

- D Dilution run. Initial run outside linear range of instrument
- J Analyte detected below the sample specific reporting limit
- p The relative percent difference (RPD) between the values obtained from the dual columns is >40%.
- U Analyte not detected at 3:1 signal:noise ratio. Reporting limit is reported.

PCB QA/QC Summaries and QC Data

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PCB Congeners – Water QA/QC Summary

Batch 08-0212

PROJECT: USACE-NAE – New Bedford Harbor Environmental Monitoring
PARAMETER: PCB Congeners
LABORATORY: Battelle, Duxbury, MA
MATRIX: Water
SAMPLE CUSTODY: Water samples were collected on 8/21/2008 and hand delivered to the Chemistry Department by the Battelle Field Group. No custody issues were noted. The samples were logged into LIMS and received unique Battelle IDs. The samples were stored at 4°C in an access controlled walk-in refrigerator until sample preparation could begin. Prior to sample extraction, water samples that were designated for dissolved PCB analysis were filtered through glass fiber filters with 1 µm pore size.

	Reference Method	Method Blank	Surrogate Recovery	LCS Recovery	MS Recovery	MS/MSD Relative Percent Difference	Detection Limits (ug/L)
PCB Congeners	EPA 8082M	<ssRL	40-120% Recovery	40-120% Recovery	40-120% Recovery	<30% RPD (analyte must be in MS must be >5x background) > 5x MDL to be used for data quality assessment)	RL: ~ 0.0012

METHOD: Water samples were extracted for PCB Congeners following modified EPA Method 3510C. Approximately 1 liter of water was spiked with surrogates and extracted three times with dichloromethane using separatory funnel techniques. Combined extract was dried over anhydrous sodium sulfate, concentrated, cleaned up with copper for sulfur removal, and then further cleaned by disposable Florisil columns. The extract was concentrated, fortified with internal standards (IS), and then analyzed using gas chromatography/electron capture detector (GC/ECD), following modified EPA Method 8082. Sample data were quantified by the method of internal standards, using the spiked IS compounds.

HOLDING TIMES: Water samples were extracted within 7 days of sample collection. All extracts were analyzed within 40 days of extract holding time.

Batch	Collection Date	Extraction Date	Analysis Date
08-0212	8/21/2008	8/27/2008	9/8/2008

PCB Congeners – Water QA/QC Summary

Batch 08-0212

LIST OF SAMPLES:

08-0212

Sample ID	Battelle ID
WQ-TPC-01-082108	Q3976
WQ-TPC-02-082108	Q3977
WQ-TPC-03-082108	Q3978
WQ-DPC-01-082108	Q3979
WQ-DPC-03-082108	Q3980
WQ-DPC-02-082108	Q3981

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.

08-0212 – No exceedences noted. No target PCBs 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.

08-0212 – All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%).

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).

08-0212 – No exceedence noted. All percent recoveries were within the laboratory control limit (40%-120%).

CALIBRATIONS: The GC/ECD was calibrated with a minimum 6 level curve, with a linear 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 %D between the initial calibration (ICAL) and the continuing calibration samples should be $<20\%$ for each compound. Additionally an Initial Calibration Check (ICC) sample is run immediately following the ICAL. The ICC is to have a percent difference $< 20\%$.

08-0212 – All calibration criteria were met.

Battelle

The Business of Innovation

Project Client: USACE - North Atlantic Division

Project Name: NBH Water Sample PCB Congener Analysis (ECD)

Project Number: G606422

Client ID	Procedural Blank
Battelle ID	BM217PB-P
Sample Type	PB
Collection Date	08/27/08
Extraction Date	08/27/08
Analysis Date	09/08/08
Analytical Instrument	ECD
% Moisture	NA
% Lipid	NA
Matrix	WATER
Sample Size	1.00
Size Unit-Basis	L_LIQUID
Units	UG/L_LIQUID

CI2(8)	0.0012 U
CI3(18)	0.0013 U
CI3(28)	0.0013 U
CI4(44)	0.0012 U
CI4(52)	0.0013 U
CI4(66)	0.0013 U
CI5(101)	0.0012 U
CI5(105)	0.0013 U
CI5(118)	0.0013 U
CI6(128)	0.0013 U
CI6(138)	0.0013 U
CI6(153)	0.0012 U
CI7(170)	0.0013 U
CI7(180)	0.0013 U
CI7(187)	0.0012 U
CI8(195)	0.0013 U
CI9(206)	0.0013 U
CI10(209)	0.0013 U

Surrogate Recoveries (%)

CI3(34)	75
CI6(152)	76



The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Water Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	Laboratory Control Sample			
Battelle ID	BM218LCS-P			
Sample Type	LCS			
Collection Date	08/27/08			
Extraction Date	08/27/08			
Analysis Date	09/08/08			
Analytical Instrument	ECD			
% Moisture	NA			
% Lipid	NA			
Matrix	WATER			
Sample Size	1.00			
Size Unit-Basis	L_LIQUID			
Units	UG/L_LIQUID	Target	% Recovery	Qualifier
CI2(8)	0.0379	0.05	76	
CI3(18)	0.0374	0.05	75	
CI3(28)	0.0362	0.05	72	
CI4(44)	0.0387	0.05	77	
CI4(52)	0.0388	0.05	76	
CI4(66)	0.04	0.05	80	
CI5(101)	0.0397	0.05	79	
CI5(105)	0.0416	0.05	83	
CI5(118)	0.0414	0.05	83	
CI6(128)	0.0407	0.05	81	
CI6(138)	0.0398	0.05	79	
CI6(153)	0.0404	0.05	81	
CI7(170)	0.0415	0.05	83	
CI7(180)	0.0411	0.05	82	
CI7(187)	0.0399	0.05	80	
CI8(195)	0.0406	0.05	81	
CI9(206)	0.04	0.05	80	
CI10(209)	0.0405	0.05	81	

Surrogate Recoveries (%)

CI3(34)	78
CI6(152)	78

PCB Congeners – Water QA/QC Summary

Batch 08-0274

PROJECT: USACE-NAE – New Bedford Harbor Environmental Monitoring
PARAMETER: PCB Congeners
LABORATORY: Battelle, Duxbury, MA
MATRIX: Water
SAMPLE CUSTODY: Water samples were collected on 10/1/2008 and hand delivered to the Chemistry Department by the Battelle Field Group. No custody issues were noted. The samples were logged into LIMS and received unique Battelle IDs. The samples were stored at 4°C in an access controlled walk-in refrigerator until sample preparation could begin. Prior to sample extraction, water samples that were designated for dissolved PCB analysis were filtered through glass fiber filters with 1 µm pore size.

	Reference Method	Method Blank	Surrogate Recovery	LCS Recovery	MS Recovery	MS/MSD Relative Percent Difference	Detection Limits (ug/L)
PCB Congeners	EPA 8082M	<ssRL	40-120% Recovery	40-120% Recovery	40-120% Recovery (analyte conc. in MS must be >5x background)	<30% RPD (analytes must be > 5x MDL to be used for data quality assessment)	RL: ~ 0.0013

METHOD: Water samples were extracted for PCB Congeners following modified EPA Method 3510C. Approximately 1 liter of water was spiked with surrogates and extracted three times with dichloromethane using separatory funnel techniques. Combined extract was dried over anhydrous sodium sulfate, concentrated, cleaned up with copper for sulfur removal, and then further cleaned by disposable Florisil columns. The extract was concentrated, fortified with internal standards (IS), and then analyzed using gas chromatography/electron capture detector (GC/ECD), following modified EPA Method 8082. Sample data were quantified by the method of internal standards, using the spiked IS compounds.

HOLDING TIMES: Water samples were extracted within 7 days of sample collection. All extracts were analyzed within 40 days of extract holding time.

<u>Batch</u>	<u>Collection Date</u>	<u>Extraction Date</u>	<u>Analysis Date</u>
08-0274	10/1/2008	10/2/2008	10/7/2008 - 10/9/2008

PCB Congeners – Water QA/QC Summary
Batch 08-0274

LIST OF SAMPLES:

08-0274

Sample ID	Battelle ID
WQ-DPC-001-100108	Q4839
WQ-DPC-001-100108REP	Q4840
WQ-TPC-001-100108	Q4841
WQ-TPC-001-100108REP	Q4842
WQ-DPC-002-100108	Q4843
WQ-TPC-002-100108	Q4844
WQ-DPC-003-100108	Q4845
WQ-TPC-003-100108	Q4846
EB-100108-01	Q4847

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.

08-0274 – No exceedences noted. No target PCBs 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.

08-0274 – All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%).

MATRIX SPIKE/MATRIX SPIKE DUPLICATE: Two pairs of matrix spike (MS) and matrix spike duplicate samples (MSD) were 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 was calculated to measure the data quality in terms of precision.

08-0274 – All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%). All RRDs met the <30% criteria.

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).

08-0274 – No exceedence noted. All percent recoveries were within the laboratory control limit (40%-120%).

CALIBRATIONS: The GC/ECD was calibrated with a minimum 6 level curve, with a linear 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 %D between the initial calibration (ICAL) and the continuing calibration samples should be <20% for each compound. Additionally an Initial Calibration Check (ICC) sample is run immediately following the ICAL. The ICC is to have a percent difference < 20%.

08-0274 – All calibration criteria were met.



The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Water Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	Laboratory Control Sample			
Battelle ID	BM434LCS-P			
Sample Type	LCS			
Collection Date	10/02/08			
Extraction Date	10/02/08			
Analysis Date	10/07/08			
Analytical Instrument	ECD			
% Moisture	NA			
% Lipid	NA			
Matrix	WATER			
Sample Size	1.00			
Size Unit-Basis	L_LIQUID			
Units	UG/L_LIQUID	Target	% Recovery	Qualifier
Cl2(8)	0.04	0.05	80	
Cl3(18)	0.0411	0.05	82	
Cl3(28)	0.0375	0.05	75	
Cl4(44)	0.0441	0.05	88	
Cl4(52)	0.0426	0.05	85	
Cl4(66)	0.0477	0.05	95	
Cl5(101)	0.0452	0.05	90	
Cl5(105)	0.0442	0.05	88	
Cl5(118)	0.0506	0.05	101	
Cl6(128)	0.0447	0.05	89	
Cl6(138)	0.0444	0.05	89	
Cl6(153)	0.0493	0.05	99	
Cl7(170)	0.0482	0.05	96	
Cl7(180)	0.0497	0.05	99	
Cl7(187)	0.0476	0.05	95	
Cl8(195)	0.0473	0.05	94	
Cl9(206)	0.0452	0.05	90	
Cl10(209)	0.0446	0.05	89	

Surrogate Recoveries (%)

Cl3(34)	89
Cl6(152)	93



The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Water Sample PCB Congener Analysis (ECD)
Project Number: G606422

Table with columns: Client ID, Battelle ID, Sample Type, Collection Date, Extraction Date, Analysis Date, Analytical Instrument, % Moisture, % Lipid, Matrix, Sample Size, Size Unit-Basis, Units, and Target % Recovery. It lists various PCB congeners (CI2 to CI10) and their recovery percentages for two different sample types (Q4845-P and Q4845MS-P).

Surrogate Recoveries (%)

Table showing surrogate recoveries for CI3(34) and CI6(152) with values 86, 95 and 87, 93 respectively.



The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Water Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID WQ-DPC-003-100108

Battelle ID Q4845MSD-P
Sample Type MSD
Collection Date 10/1/2008
Extraction Date 10/2/2008
Analysis Date 10/8/2008
Analytical Instrument ECD
% Moisture NA
% Lipid NA
Matrix WATER
Sample Size 0.5
Size Unit-Basis L_LIQUID

Units	UG/L_LIQUID	Target	% Recovery	Qualifier	RPD (%)	Qualifier
Cl2(8)	0.109	0.10	89		2.3	
Cl3(18)	0.1257	0.10	92		6.7	
Cl3(28)	0.1152	0.10	85		2.4	
Cl4(44)	0.1055	0.10	95		4.3	
Cl4(52)	0.1231	0.10	95		2.1	
Cl4(66)	0.1075	0.10	102		4.0	
Cl5(101)	0.1021	0.10	98		3.1	
Cl5(105)	0.0918	0.10	91		6.8	
Cl5(118)	0.1028	0.10	100		4.1	
Cl6(128)	0.0883	0.10	88		4.7	
Cl6(138)	0.0894	0.10	89		4.6	
Cl6(153)	0.0975	0.10	96		4.3	
Cl7(170)	0.096	0.10	96		4.3	
Cl7(180)	0.1026	0.10	102		4.0	
Cl7(187)	0.1001	0.10	100		5.1	
Cl8(195)	0.0967	0.10	96		6.5	
Cl9(206)	0.094	0.10	94		3.2	
Cl10(209)	0.0944	0.10	94		4.3	

Surrogate Recoveries (%)

Cl3(34) 95
Cl6(152) 94



The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Water Sample PCB Congener Analysis (ECD)
Project Number: G606422

Table with columns: Client ID, Battelle ID, Sample Type, Collection Date, Extraction Date, Analysis Date, Analytical Instrument, % Moisture, % Lipid, Matrix, Sample Size, Size Unit-Basis, Units, and Target % Recovery. It lists various PCB congeners (CI2 to CI10) and their recovery percentages for two different sample types (Q4846-P and Q4846MS-P).

Surrogate Recoveries (%)

Table showing surrogate recoveries for CI3(34) and CI6(152) with values 93, 85, 94, and 87.



The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Water Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID WQ-TPC-003-100108

Battelle ID Q4846MSD-P
Sample Type MSD
Collection Date 10/1/2008
Extraction Date 10/2/2008
Analysis Date 10/9/2008
Analytical Instrument ECD
% Moisture NA
% Lipid NA
Matrix WATER
Sample Size 0.5
Size Unit-Basis L_LIQUID

Units	UG/L_LIQUID	Target	% Recovery	Qualifier	RPD (%)	Qualifier
Cl2(8)	0.109	0.10	84		4.9	
Cl3(18)	0.1289	0.10	83		2.4	
Cl3(28)	0.1255	0.10	81		9.0	
Cl4(44)	0.1107	0.10	94		11.2	
Cl4(52)	0.1402	0.10	94		13.6	
Cl4(66)	0.1066	0.10	99		8.4	
Cl5(101)	0.1086	0.10	98		11.9	
Cl5(105)	0.1049	0.10	103		20.3	
Cl5(118)	0.1094	0.10	100		6.2	
Cl6(128)	0.091	0.10	90		9.3	
Cl6(138)	0.0944	0.10	89		10.7	
Cl6(153)	0.1052	0.10	97		7.5	
Cl7(170)	0.0997	0.10	99		10.6	
Cl7(180)	0.1034	0.10	103		10.2	
Cl7(187)	0.0999	0.10	100		10.5	
Cl8(195)	0.0969	0.10	97		8.6	
Cl9(206)	0.0976	0.10	97		10.9	
Cl10(209)	0.0964	0.10	96		11.0	

Surrogate Recoveries (%)

Cl3(34) 81
Cl6(152) 90

Chain-of-custody

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Sample Receipt Form

Approved: Authorized

Project Number: _____ **Client:** NBH WATER QUALITY
Received by: Arsenault, Joanne **Date/Time Received:** Friday, August 22, 2008 12:00 AM
No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Hand Delivered **Tracking Number:** Not Recorded
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		None	Not Applicable	Not Applicable	Ambient	6

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): Ambient 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 South: Refrigerator - R0003 (Upper Cold) **BDO IDs Assigned:** Q3976 - Q3981

Samples logged in by: Arsenault, Joanne **Date/Time:** 08/22/2008 12:00 AM

Approved By: _____ **Approved On:** _____

Authorized By: _____ **Authorized On:** _____

Sample Receipt Form Details

Approved: Authorized:

Project Number: _____ Client: NBH WATER QUALITY

Received by: Arsenault, Joanne Date/Time Received: Friday, August 22, 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:
Q3976	WQ-TPC-01-082108	08/21/08 0:00	08/22/08 17:10	1	WATER		NA	NA	NA	R0003 (Upper C			
Q3977	WQ-TPC-02-082108	08/21/08 0:00	08/22/08 17:11	1	WATER		NA	NA	NA	R0003 (Upper C			
Q3978	WQ-TPC-03-082108	08/21/08 0:00	08/22/08 17:11	1	WATER		NA	NA	NA	R0003 (Upper C			
Q3979	WQ-DPC-01-082108	08/21/08 0:00	08/22/08 17:11	1	WATER		NA	NA	NA	R0003 (Upper C			
Q3980	WQ-DPC-03-082108	08/21/08 0:00	08/22/08 17:11	1	WATER		NA	NA	NA	R0003 (Upper C			
Q3981	WQ-DPC-02-082108	08/21/08 0:00	08/22/08 17:12	1	WATER		NA	NA	NA	R0003 (Upper C			

Total Samples: 6

Chain of Custody

sj. No 3606422	Proj. Name New Bedford Harbor Water Quality	ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"
MPLERS: Signature <i>Matthew R. Lytle</i> <i>Amanda Maxemchuk</i>		4°C PRESERVED Total Number of Containers

DATE	TIME	Field BATTLE ID	Lab CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
8/21/08	1420	WQ-TPC-01-082108	Q3976	Total PCB From 25-32 NTU		Total PCB								X	1
	1522	WQ-TPC-02-082108	Q3977	Total PCB From 14-20 NTU		Total PCB								X	1
	1520	WQ-TPC-03-082108	Q3978	Total PCB From 2-3 NTU		Total PCB								X	1
	1420	WQ-DPC-01-082108	Q3979	Total PCB From 25-32 NTU		Dissolved PCB								X	1
	1520	WQ-DPC-03-082108	Q3980	Total PCB From 2-3 NTU		Dissolved PCB								X	1
	1522	WQ-DPC-02-082108	Q3981	Total PCB From 14-20 NTU		Dissolved PCB								X	1

Relinquished by: <i>Matthew R. Lytle</i>	Date/Time 8/21/08 2030		Received by: <i>Joanne Donovan</i>	Date/Time 8/22/08 1700	
	Date/Time			Date/Time	

Comments:

Sample Receipt FormApproved: Authorized: Project Number: G606422

Client: _____

Received by: Seyfert, JeannineDate/Time Received: Wednesday, October 01, 2008 12:00 AMNo. of Shipping Containers: 1**SHIPMENT**Method of Delivery: Hand DeliveredTracking Number: NACOC 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	Cooler	NA	None	Not Applicable	Intact	4.0	9

SamplesSample 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): 4 Temperature Blank used Yes No
*(Note: If temperature upon receipt differs from required conditions, see sample log comment field)*Samples Acidified: Yes No UnknownInitial 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.: UnknownStorage Location: Field Room II: Refrigerator - R0004 (Lower Col BDO IDs Assigned: Q4839 - Q4847Samples logged in by: Seyfert, Jeannine Date/Time: 10/01/2008 12:00 AM

Approved By: _____ Approved On: _____

Authorized By: _____ Authorized On: _____

Sample Receipt Form Details

Approved: Authorized

Project Number: G606422 Client: _____

Received by: Seyfert, Jeannine Date/Time Received: Wednesday, October 01, 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:
Q4839	WQ-DPC-001-100108	10/01/08 11:23	10/02/08 8:45	2	WATER	4	NA	NA	NA	R0004 (Lower C			
Q4840	WQ-DPC-001-100108-REP	10/01/08 11:23	10/02/08 8:46	2	WATER	4	NA	NA	NA	R0004 (Lower C			
Q4841	WQ-TPC-001-100108	10/01/08 11:23	10/02/08 8:46	2	WATER	4	NA	NA	NA	R0004 (Lower C			
Q4842	WQ-TPC-001-100108-REP	10/01/08 11:23	10/02/08 8:47	2	WATER	4	NA	NA	NA	R0004 (Lower C			
Q4843	WQ-DPC-002-100108	10/01/08 11:50	10/02/08 8:47	2	WATER	4	NA	NA	NA	R0004 (Lower C			
Q4844	WQ-TPC-002-100108	10/01/08 11:50	10/02/08 8:48	2	WATER	4	NA	NA	NA	R0004 (Lower C			
Q4845	WQ-DPC-003-100108	10/01/08 12:15	10/02/08 8:48	5	WATER	4	NA	NA	NA	R0004 (Lower C			
Q4846	WQ-TPC-003-100108	10/01/08 12:15	10/02/08 8:48	5	WATER	4	NA	NA	NA	R0004 (Lower C			
Q4847	EB-100108-01	10/01/08 12:05	10/02/08 8:49	4	WATER	4	NA	NA	NA	R0004 (Lower C			

Total Samples: 9

Chain of Custody

Proj. No
G606422

Proj. Name
NBH - Water Quality

SAMPLERS: Signature

Jessica Tenzer + Anna Murphy

ANALYSIS REQUESTED →
"NUMBER OF CONTAINERS"

DATE	TIME	FIELD ID BATTELLE ID	Lab ID CLIENT ID	BPO LINKS ID	SAMPLE DESCRIPTION	PCB TOTAL	PCB -Dissolved	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
<i>10/1/08</i>	<i>1123</i>	<i>WG-DPC-001-100108</i>		<i>Q4839</i>	<i>50-65 NTU STATION ID: 57 NTU</i>		<input checked="" type="checkbox"/>									<i>2</i>
	↓	<i>WG-DPC-001-100108-REP</i>		<i>Q4840</i>			<input checked="" type="checkbox"/>									<i>2</i>
	↓	<i>WG-TPC-001-100108</i>		<i>Q4841</i>		<input checked="" type="checkbox"/>										<i>2</i>
	↓	<i>WG-TPC-001-100108-REP</i>		<i>Q4842</i>		<input checked="" type="checkbox"/>										<i>2</i>
	<i>1150</i>	<i>WG-DPC-002-100108</i>		<i>Q4843</i>	<i>19-27 NTU, STATION ID: 24 NTU</i>		<input checked="" type="checkbox"/>									<i>2</i>
	↓	<i>WG-TPC-002-100108</i>		<i>Q4844</i>		<input checked="" type="checkbox"/>										<i>2</i>
	<i>1215</i>	<i>WG-DPC-003-100108</i>		<i>Q4845</i>	<i>3.8 NTU, STATION ID: N. Ref</i>		<input checked="" type="checkbox"/>									<i>5</i>
	↓	<i>WG-TPC-003-100108</i>		<i>Q4846</i>	<i>ex volume for MS/MSD</i>	<input checked="" type="checkbox"/>										<i>5</i>
	<i>1205</i>	<i>EB-100108-01</i>		<i>Q4847</i>	<i>Equipment BLANK</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>									<i>4</i>

Relinquished by: <i>Jessie M Tenzer</i>	Date/Time		Received by: <i>Jeannine Seyfert</i>	Date/Time	
	<i>10/1/08</i>	<i>1612</i>		<i>10/1/08</i>	<i>1612</i>
Relinquished by:	Date/Time		Received by:	Date/Time	

Comments:

Appendix E

Toxicity Testing Data

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**Biomonitoring of Surface Water Samples
New Bedford Harbor
New Bedford, Massachusetts**

Fall 2008

Prepared for

Battelle
397 Washington Street
Duxbury, Massachusetts 02332

Prepared by

EnviroSystems, Incorporated
1 Lafayette Road
Hampton, New Hampshire 03843

August-October 2008
Reference Number: Battele 17629, 17699

Biomonitoring of Surface Water Samples New Bedford Harbor, New Bedford, Massachusetts

Fall 2008

1.0 INTRODUCTION

This report provides a summarization of data generated from a series of acute and chronic exposure screening assays evaluating surface water samples collected from New Bedford Harbor. Toxicity tests were conducted on grab surface water samples collected from the specified areas in the harbor. Assay design included a laboratory control treatment and one or more surface water samples. Samples were evaluated "As Received" without dilutions. Assays were conducted based on water quality levels in the vicinity of dredging operations. Samples were collected by Battelle personnel from the Duxbury, Massachusetts office. Testing was based on programs and protocols developed by the US EPA (2002) and included the following assays; modified 2 day acute and 7 day chronic assays conducted with the mysid shrimp, *Americamysis bahia*, and the red macro alga, *Champia parvula*, and 60 minute chronic fertilization assays conducted with the purple sea urchin, *Arbacia punctulata*. All mysid and urchin fertilization assays and the acute survival portion of the algal assays were conducted by ESI at its Hampton, New Hampshire facility. Additionally, the algal assays were repeated by the Saskatchewan Research Council, SRC, Saskatoon, Saskatchewan, Canada.

2.0 MATERIALS AND METHODS

2.1 General Methods

Toxicological and analytical protocols used in this program followed procedures primarily designed by the EPA to provide standard approaches for the evaluation of toxicological effects of discharges on aquatic organisms, and for the analysis of water samples.

2.2 Test Species

A. bahia, ≤ 5 days, were obtained from cultures maintained by Aquatic Research Organisms (ARO), Hampton, New Hampshire. Juvenile shrimp were collected daily, isolated, and placed in a rearing tank for up to 6 days. Holding tanks were maintained in a flow-through culture mode at a temperature of $25 \pm 2^\circ\text{C}$. At the start of the assays the mysids were 7 days old. Juveniles were fed ≤ 24 hour old brine shrimp on a daily basis. Water temperature, salinity, and pH were monitored on a daily basis. Prior to testing, organisms were siphoned from the rearing tanks to a holding vessel, and then transferred to test chambers using a large bore pipet, minimizing the amount of water added to test solutions.

A. punctulata adults were from cultures maintained by ESI. Original stock was obtained from commercial supply. Male and female urchins are maintained in separate chambers as recommended by protocol (EPA 2002) and ESI. Adult urchins were induced to spawn by the injection of a potassium chloride solution. The viability of gametes obtained was determined prior to their addition to the test solutions. Eggs and/or sperm that would not result in a fertilized egg were rejected from the pool of gametes used in the assay.

C. parvula biomass was obtained from stock cultures maintained by the Saskatchewan Research Council. Original stocks were obtained from the University of Texas algal collection. The male and female plants are maintained in separate culture vessels under sterile conditions. Algal cultures were maintained on an orbital shaker (100 rpm) at $23 \pm 2^\circ\text{C}$ under 16 hour light : 8 hours dark at 40 to 75 foot candles light intensity. Cultures are "cropped" and transferred to fresh nutrient solutions on a weekly basis.

2.3 Surface Water Samples and Laboratory Control Water

Grab surface water samples were collected by Battelle staff on three occasions in the Harbor, Table 1. Samples were placed in polyethylene cubitainers for shipment to the laboratory. Two, 2.5 gallon cubitainers were collected for each of the chronic assays. Prior to testing, samples were evaluated to document salinity, conductivity, and total residual chlorine. Total residual chlorine was measured by amperometric titration (MDL

0.05 mg/L). Prior to use in the assays, the salinity of the samples was adjusted, if necessary, to predetermined levels using artificial sea salts for *A. bahia* and *A. punctulata* assays, and GP-2 salts (EPA 2002) for the *C. parvula* assays. The salinity of samples for the *A. bahia* acute and chronic exposure assays were adjusted to $25 \pm 2\text{‰}$ while samples used for the *A. punctulata* and *C. parvula* assays were adjusted to $30 \pm 2\text{‰}$. Samples with “as received” salinity above these levels were not adjusted.

Laboratory control water used for mysid and sea urchin assays was collected from the Hampton/Seabrook Estuary. This water is classified as SA-1 and has been used to culture marine test organisms since 1981. The laboratory control water used in the algal assay, collected from Rye, New Hampshire, is the same water used in culture maintenance. Prior to use, seawater used in the algal assays was filtered through glass fiber filters and sterilized. Dilution water used in the algal assays conducted by SRC was natural seawater collected from the West Coast of Canada. Salinity of the surface water samples was adjusted using commercial sea salts.

2.4 Bioassays

2.4.1 *Americamysis bahia* Modified Acute and Chronic Exposure Bioassays

Modified acute and chronic exposure screening assays were conducted in a static renewal test mode with renewals made at 24-hour intervals. The 7 day assays were conducted at a temperature of $26 \pm 1^\circ\text{C}$ with a photoperiod of 16:8 hours light:dark. Mysids were maintained in 250 mL beakers containing 150 mL of test solution. Approximately 100 mL of the test solution were replaced each day. The assay incorporated 8 replicates with 5 organisms/replicate. Survival and dissolved oxygen were measured daily in each replicate prior to test solution renewal. Salinity, temperature and pH were recorded in a composite sample of the “old” test solution and in the “new” test solution prior to being added to the test chamber. Incubator temperatures were also recorded on a daily basis.

During the test, mysids were fed ≤ 24 hour old *Artemia* nauplii. On Day 7 of the assay, surviving mysids were removed from test solutions, rinsed to remove any surface detritus and salts, and transferred to tared foils and dried for 24 hours at 103°C . Foils were weighed to the nearest 0.01 mg. Mean dry weights per individual were obtained by dividing the net dry weight of all surviving organisms by the number of organisms added at the start of the assay.

2.4.2 *Arbacia punctulata* Chronic Exposure Fertilization Assays

Gametes were obtained by potassium chloride injection to induce spawning. Sperm were collected dry, diluted to achieve a concentration of approximately 5.0×10^7 sperm/mL in the surface water treatments. Actual sperm concentrations are provided on laboratory bench sheets in Appendix A. Sperm solutions were added to 5 mL aliquots of each sample being evaluated and allowed to remain in the test solutions for 60 minutes before the addition of unfertilized eggs. Each treatment incorporated a total of four (4) replicates. After 20 minutes exposure, the assay was terminated by the addition of 0.2 mL of preservative. Aliquots of preserved solution were counted to determine numbers of fertilized and unfertilized eggs. Fertilization was accepted based on the presence or absence of a fertilization membrane around the egg.

2.4.3 *Champia parvula* Modified Acute and Chronic Exposure Assays

The 7 day red algae assay was conducted with a 2 day exposure period to the surface waters and laboratory control treatments. Each treatment used four replicates with five female branches and one male branch per replicate. Temperature was maintained at $23 \pm 1^\circ\text{C}$. The light source was cool white and fluorescent bulbs set on a 16:8 hours light:dark cycle, with a light intensity of 40 to 75 foot candles. Light intensity was checked at the start of each assay. Temperatures were monitored on a daily basis. Test chambers were 200 mL borosilicate glass fleakers. After 2 days exposure, female branch tips were transferred to approximately 100 mL of recovery medium with added nutrients and allowed to recover and mature for 5 days. During transfer, plants were examined to determine the physical condition of the individual branches. Branches showing signs of degeneration were noted and used to establish an acute endpoint. After the recovery period, the number of cystocarps (reproductive bodies) on each female branch were counted.

2.5 Data Analysis

Statistical analysis of acute and chronic exposure data was completed using CETIS, Comprehensive Environmental Toxicity Testing System, software. The program computes acute and chronic exposure endpoints based on EPA decision tree guidelines specified in individual test methods. For chronic exposure endpoints statistical significance was accepted at $\alpha < 0.05$.

2.6 Quality Control

As part of the laboratory quality control program, standard reference toxicant assays are conducted on a regular basis for each test species. These results, summarized in Table 7, provide relative health and response data while allowing for comparison with historic data sets.

2.7 Protocol Deviations and Unacceptable Assays

Review of data collected from the three sets of assays conducted during the monitoring period documented no protocol deviations.

3.0 RESULTS SUMMARY

Table 2 provides a summary of test acceptability for the three rounds of assays conducted during this monitoring period. Tables 3-5 provide summaries of survival, growth, development and reproduction endpoints and associated statistical analyses. Table 6 provides a summary of basic water quality data associated with the assays. Support data, including laboratory bench sheets, are provided in Appendix A.

4.0 REFERENCES

- APHA. 1998. *Standard Methods for the Examination of Water and Wastewater*, 20th edition. Washington D.C.
- USEPA. 2002. *Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms*. Fourth Edition. EPA-821-R-02-012.
- US EPA. 2002. *Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*. Fourth Edition. EPA-821-R-02-013.

Table 1. Summary of Sample Collection Data. New Bedford Harbor Surface Water Monitoring Program. Fall 2008.

Sample ID	Turbidity (NTU)	Lab Code	Collected	Received	Temperature °C
WQ-TOX-001-082108	25-32	17629-001	08/21/07 1420	08/21/07 1640	4
WQ-TOX-002-082108	14-20	17629-002	08/21/07 1502	08/21/07 1640	4
WQ-TOX-003-082108	0.2-0.3	17629-003	08/21/07 1520	08/21/07 1640	4
WQ-TOX-001-100108	57	17699-001	10/01/08 1123	10/01/08 1630	4
WQ-TOX-002-100108	24	17699-002	10/01/08 1150	10/01/08 1630	4
WQ-TOX-003-100108	3.8	17699-003	10/01/08 1215	10/01/08 1630	4

Table 2. Summary of Assay Acceptability. New Bedford Harbor Surface Water Monitoring Program. Fall 2008.

Lab Code	<i>Americamysis bahia</i>		<i>Arbacia punctulata</i>	<i>Champia parvula</i>	
	Acute Exposure	Chronic Exposure	Chronic Exposure	Acute Exposure	Chronic Exposure
17629-001	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
17629-002	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
17629-003	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
17699-001	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
17699-002	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
17699-003	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable

Table 3. Endpoint Summary Table - New Bedford Harbor Water Quality Monitoring August 21, 2008 Sampling Event. New Bedford Harbor Surface Water Monitoring Program. Fall 2008.

Sample ID	Reps	Mean	Min	Max	CV	Significant Difference vs			
						p Value	Lab	p Value	Ref
<i>Arbacia punctulata</i>									
Portion Fertilized									
Lab Control		88.7%	87.7%	90.1%	1.12%	-	-	-	-
WQ-TOX-003 Ref	4	34.1%	19.7%	44.9%	33.21%		YES	-	-
WQ-TOX-002		36.2%	32.5%	41.3%	10.26%		YES		YES
WQ-TOX-001		56.2%	55.1%	58.0%	2.41%		YES		YES
<i>Americamysis bahia</i>									
Day 2 Survival									
Lab Control		97.5%	80.0%	100.0%	7.25%	-	-	-	-
WQ-TOX-003 Ref	8	87.5%	80.0%	100.0%	11.83%	0.0203	YES	-	-
WQ-TOX-002		100.0%	100.0%	100.0%	0.00%	1.0000	NO	1.0000	NO
WQ-TOX-001		100.0%	100.0%	100.0%	0.00%	1.0000	NO	1.0000	NO
Day 7 Survival									
Lab Control		95.0%	80.0%	100.0%	9.75%	-	-	-	-
WQ-TOX-003 Ref	8	85.0%	60.0%	100.0%	16.64%	0.0583	NO	-	-
WQ-TOX-002		92.5%	80.0%	100.0%	11.19%	0.4992	NO	0.8752	NO
WQ-TOX-001		87.5%	60.0%	100.0%	20.94%	0.2538	NO	0.7292	NO
Day 7 Dry Weight Biomass - mg									
Lab Control		0.2170	0.1840	0.2420	9.51%	-	-	-	-
WQ-TOX-003 Ref	8	0.3215	0.2080	0.5980	45.37%	0.9677	NO	-	-
WQ-TOX-002		0.2630	0.1920	0.3640	22.80%	0.9703	NO	0.1559	NO
WQ-TOX-001		0.3012	0.2120	0.3840	18.79%	0.9993	NO	0.3599	NO
<i>Champia parvula</i>									
Day 2 Survival									
Lab Control		100.0%	100.0%	100.0%	0.00%	-	-	-	-
WQ-TOX-003 Ref	4	100.0%	100.0%	100.0%	0.00%	0.5000	NO	-	-
WQ-TOX-002		100.0%	100.0%	100.0%	0.00%	0.5000	NO	0.5000	NO
WQ-TOX-001		100.0%	100.0%	100.0%	0.00%	0.5000	NO	0.5000	NO
Day 7 Mean # Cystocarps									
Lab Control		10.53	9.4	11.4	9.74%	-	-	-	-
WQ-TOX-003 Ref	4	4.90	3.8	6.4	23.68%	0.0006	YES	-	-
WQ-TOX-002		0.10	0.0	0.2	115.50%	0.0016	YES	0.0001	YES
WQ-TOX-001		0.00	0.0	0.0	0.00%	0.0016	YES	0.0001	YES

Table 3. Endpoint Summary Table - New Bedford Harbor Water Quality Monitoring October 01, 2008 Sampling Event. New Bedford Harbor Surface Water Monitoring Program. Fall 2008.

Sample ID	Reps	Mean	Min	Max	CV	Significant Difference vs			
						p Value	Lab	p Value	Ref
<i>Arbacia punctulata</i>									
Portion Fertilized									
Lab Control		98.8%	97.1%	100.0%	1.24%	-	-	-	-
WQ-TOX-003 Ref	4	93.3%	91.7%	95.3%	1.64%	0.0010	YES	-	-
WQ-TOX-002		83.9%	80.4%	87.3%	3.93%	0.0000	YES	0.0007	YES
WQ-TOX-001		95.6%	94.4%	97.1%	1.33%	0.0060	YES	0.9659	NO
<i>Americamysis bahia</i>									
Day 2 Survival									
Lab Control		97.5%	80.0%	100.0%	7.25%	-	-	-	-
WQ-TOX-003 Ref	8	100.0%	100.0%	100.0%	0.00%	0.6395	NO	-	-
WQ-TOX-002		97.5%	80.0%	100.0%	7.25%	0.4796	NO	0.3605	NO
WQ-TOX-001		92.5%	60.0%	100.0%	16.09%	0.3227	NO	0.2209	NO
Day 7 Survival									
Lab Control		97.5%	80.0%	100.0%	7.25%	-	-	-	-
WQ-TOX-003 Ref	8	97.5%	80.0%	100.0%	7.25%	0.4796	NO	-	-
WQ-TOX-002		97.5%	80.0%	100.0%	7.25%	0.4796	NO	0.4796	NO
WQ-TOX-001		87.5%	40.0%	100.0%	24.24%	0.1911	NO	0.1911	NO
Day 7 Dry Weight Biomass - mg									
Lab Control						-	-	-	-
WQ-TOX-003 Ref	8	No data available - see note 1 below				-	-	-	-
WQ-TOX-002		-	-	-	-	-	-	-	-
WQ-TOX-001		-	-	-	-	-	-	-	-
<i>Champia parvula</i>									
Day 2 Survival									
Lab Control		100.0%	100.0%	100.0%	0.00%	-	-	-	-
WQ-TOX-003 Ref	4	100.0%	100.0%	100.0%	0.00%	0.5000	NO	-	-
WQ-TOX-002		100.0%	100.0%	100.0%	0.00%	0.5000	NO	0.5000	NO
WQ-TOX-001		100.0%	100.0%	100.0%	0.00%	0.5000	NO	0.5000	NO
Day 7 Mean # Cystocarps									
Lab Control		33.10	27.4	39.4	18.10%	-	-	-	-
WQ-TOX-003 Ref	4	17.10	6.4	24.6	46.87%	0.0186	YES	-	-
WQ-TOX-002		6.15	1.8	8.8	53.35%	0.0001	YES	0.0024	YES
WQ-TOX-001		2.70	1.0	4.6	59.72%	0.0000	YES	0.0062	YES

Note 1. No data available, weight boats with dry organisms dropped by technician prior to obtaining dry weights. Not able to recover dry organisms for weighing.

Table 4. Summary of “As Received” Sample Physical and Chemical Characteristics. New Bedford Harbor Surface Water Monitoring Program. Fall 2008.

Sample ID	Lab Code	Ammonia (mg/L)	pH (SU)	Salinity (‰)	Total Residual Chlorine (mg/L)
WQ-TOX-001-082108	17629-001	<0.1	7.49	29	<0.05
WQ-TOX-002-082108	17629-002	0.22	7.42	29	<0.05
WQ-TOX-003-082108	17629-003	<0.1	7.43	28	<0.05
WQ-TOX-001-100108	17699-001	<0.1	7.58	25	<0.05
WQ-TOX-002-100108	17699-002	<0.1	7.68	25	<0.05
WQ-TOX-003-100108	17699-003	<0.1	7.78	24	<0.05

Table 5. Reference Toxicant Summary. New Bedford Harbor Surface Water Monitoring Program. Fall 2008.

Date	Endpoint	Value	Historic Mean/ Central Tendency	Acceptable Range	Reference Toxicant	
<i>A. bahia</i>						
08/28/08	Survival	LC-50	20.2	20.9	15.6 - 26.2	SDS (mg/L)
09/10/08	Survival	LC-50	19.1	21.1	15.8 - 26.4	SDS (mg/L)
10/09/08	Survival	LC-50	20.7	20.7	16.1 - 25.3	SDS (mg/L)
07/22/08	Survival	C-NOEC	5.0	5.0	2.5 - 10.0	SDS (mg/L)
07/22/08	Growth	C-NOEC	5.0	5.0	2.5 - 10.0	SDS (mg/L)
10/07/08	Survival	C-NOEC	5.0	5.0	2.5 - 10.0	SDS (mg/L)
10/07/08	Growth	C-NOEC	5.0	5.0	2.5 - 10.0	SDS (mg/L)
<i>A. Punctulata</i>						
08/28/08	Fertilization	C-NOEC	1.0	10.0	5.0 - 20.0	Copper (µg/L)
09/25/08	Fertilization	C-NOEC	1.0	10.0	5.0 - 20.0	Copper (µg/L)
10/16/08	Fertilization	C-NOEC	1.0	10.0	5.0 - 20.0	Copper (µg/L)
08/28/08	Fertilization	IC-25	3.8	29.7	0.0 - 74.8	Copper (µg/L)
09/25/08	Fertilization	IC-25	8.3	28.9	0.0 - 76.2	Copper (µg/L)
10/16/08	Fertilization	IC-25	9.5	26.8	0.0 - 74.9	Copper (µg/L)
<i>Champia parvula</i>						
10/10/08	Reproduction	IC-50	1.05	1.25	1.05 - 1.48	SDS (mg/L)

Mean and Acceptable Ranges based on most recent 20 reference toxicant assays (NELAP standard)

**APPENDIX A
SUPPORT DATA**

Contents	# Pages
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METHODS USED IN NPDES PERMIT BIOMONITORING TESTING

Parameter	Method
Acute Exposure Bioassays:	
<i>Ceriodaphnia dubia, Daphnia pulex</i>	EPA-821-R-02-012
<i>Pimephales promelas</i>	EPA-821-R-02-012
<i>Americamysis bahia</i>	EPA-821-R-02-012
<i>Menidia beryllina, Cyprinodon variegatus</i>	EPA-821-R-02-012
Chronic Exposure Bioassays:	
<i>Ceriodaphnia dubia</i>	EPA-821-R-02-013 1002.0
<i>Pimephales promelas</i>	EPA-821-R-02-013 1000.0
<i>Cyprinodon variegatus</i>	EPA-821-R-02-014 1004.0
<i>Menidia beryllina</i>	EPA-821-R-02-014 1006.0
<i>Arbacia punctulata</i>	EPA-821-R-02-014 1008.0
<i>Champia parvula</i>	EPA-821-R-02-014 1009.0
Trace Metals:	
Trace Metals	EPA 200.7/SW 6010 and EPA 200.8/SW 6020
Hardness	Standard Methods 20 th Edition - Method 2340 B
Wet Chemistries:	
Alkalinity	EPA 310.2
Chlorine, Residual	Standard Methods 20 th Edition - Method 4500CLD
Total Organic Carbon	Standard Methods 20 th Edition - Method 5310C
Specific Conductance	Standard Methods 20 th Edition - Method 2510B
Nitrogen - Ammonia	Standard Methods 20 th Edition - Method 4500NH3G
pH	Standard Methods 20 th Edition - Method 4500H+B
Solids, Total (TS)	Standard Methods 20 th Edition - Method 2540 B
Solids, Total Suspended (TSS)	Standard Methods 20 th Edition - Method 2540 D
Solids, Total Dissolved (TDS)	Standard Methods 20 th Edition - Method 2540 C
Dissolved Oxygen	Standard Methods 20 th Edition - Method 4500-O G

**Americamysis bahia 7 DAY CHRONIC ASSAY
SURVIVAL & OLD WATER QUALITIES**

STUDY: 17629		CLIENT: Battelle			LOCATION: NEW BEDFORD					LAB CONTROL: HAMPTON ESTUARY				ORGANISM BATCH/LOT#			
		NUMBER OF SURVIVORS								OLD DISSOLVED OXYGEN (mg/L)							
SAMPLE	Rep	0	1	2	3	4	5	6	7	1	2	3	4	5	6	7	
Lab Control	A	5	5	5	5	5	5	5	5	5.7	5.9	5.5	5.0	6.1	5.4	5.7	
	B	5	5	5	5	5	5	5	5	5.7	6.1	5.5	4.8	6.1	5.2	5.5	
	C	5	5	5	5	5	5	5	4	5.2	6.3	5.5	4.9	6.0	5.3	5.4	
	D	5	5	5	5	5	5	5	5	5.1	6.3	5.5	5.0	5.9	5.4	5.4	
	E	5	5	5	5	5	5	5	5	4.6	6.2	5.5	5.2	5.9	5.5	5.4	
	F	5	5	5	5	5	5	5	5	4.7	6.0	5.4	5.1	5.7	5.5	5.4	
	G	5	5	5	5	5	5	5	5	4.6	6.1	5.2	5.2	5.7	5.5	5.3	
	H	5	4	4	4	4	4	4	4	4.6	6.1	5.1	5.4	5.8	5.6	5.4	
-001	A	5	5	5	5	5	5	5	5	4.4	6.0	5.1	4.5	6.1	5.7	5.5	
	B	5	5	5	4	4	4	3	3	4.4	5.9	5.2	4.9	5.8	5.5	5.3	
	C	5	5	5	5	5	5	5	5	4.4	5.9	5.2	4.9	5.8	5.5	5.2	
	D	5	5	5	5	5	5	4	4	4.5	6.0	5.2	5.0	5.7	5.5	5.2	
	E	5	5	5	4	4	3	3	3	4.4	5.6	5.2	4.8	5.9	5.7	5.3	
	F	5	5	5	5	5	5	5	5	4.4	5.8	5.3	5.0	5.8	5.5	5.1	
	G	5	5	5	5	5	5	5	5	4.5	5.8	5.2	5.0	5.7	5.3	5.1	
	H	5	5	5	5	5	5	5	5	4.4	5.8	5.3	5.2	5.8	5.5	5.1	
-002	A	5	5	5	5	5	5	5	5	4.9	6.0	5.5	5.5	6.0	5.7	5.0	
	B	5	5	5	5	5	5	5	5	4.8	6.0	5.3	5.3	6.0	5.6	5.3	
	C	5	5	5	5	5	5	5	5	4.5	5.8	5.2	4.8	5.9	5.6	5.3	
	D	5	5	5	5	5	5	5	4	4.6	5.8	5.1	5.1	5.8	5.6	5.2	
	E	5	5	5	5	5	5	5	5	4.9	6.0	5.2	4.3	5.7	5.7	5.4	
	F	5	5	5	5	5	5	5	5	4.8	6.1	5.1	4.4	5.5	5.6	5.4	
	G	5	5	5	5	5	5	5	4	4.6	6.2	5.0	4.7	5.5	5.6	5.1	
	H	5	5	5	4	4	4	4	4	5.0	6.1	5.1	5.1	5.5	5.6	5.2	
INC TEMP:		25	25	25	25	25	25	25	25								
DATE:		8/24/08	8/23	8/24	8/25	8/26	8/27	8/28	8/29								
TIME:		1305	1530	1055	1550	0930	1215	1200	1555								
INITIALS:		SJ	OR	LB	SJ	APL	SJ	APL	LB								

Americamysis bahia 7 DAY CHRONIC ASSAY SURVIVAL & OLD WATER QUALITIES

STUDY:		CLIENT:			LOCATION:					LAB CONTROL:				ORGANISM			
H629		Battelle			NEW BEDFORD					HAMPTON ESTUARY				BATCH/LOT#			
		NUMBER OF SURVIVORS								OLD DISSOLVED OXYGEN (mg/L)							
SAMPLE	Rep	0	1	2	3	4	5	6	7	1	2	3	4	5	6	7	
-003	A	5	5	4	4	4	4	4 3	4 3	5.8	6.1	5.1	4.4	5.6	5.7	5.3	
	B	5	5	5	5	5	5	5	5	5.8	6.0	5.0	4.3	5.6	5.7	5.2	
	C	5	4	4	4	4	4	4	4	4.8	6.0	5.0	4.3	5.8	5.8	5.2	
	D	5	5	4	4	4	4	4	4	4.6	6.1	4.9	4.6	5.7	5.9	4.9	
	E	5	5	4	4	4	4	4	4	5.6	6.1	5.1	5.0	5.8	5.9	5.1	
	F	5	5	4	4	4	4	4	4	4.2	6.0	5.2	5.1	5.7	6.0	5.3	
	G	5	5	5	5	5	5	5	5	4.9	5.9	5.1	4.1	5.6	5.8	5.3	
	H	5	5	5	5	5	5	5	5	5.7	5.8	4.8	4.4	5.5	5.9	5.2	
	A																
	B																
	C																
	D																
	E																
	F																
	G																
	H																
INC TEMP:		25	25	25	25	25	25	25	25								
DATE:		8/24/08	8/23	8/24	8-25	8-26	8/27	8-28	8/29								
TIME:		1305	1530	1655	0930	0930	1215	1200	1555								
INITIALS:		SJ	DM	LB	APL	APL	SJ	APL	LB								

CETIS Summary Report

Report Date: 18 Nov-08 09:27 (p 1 of 2)
Link/Link Code: 12-8828-8740

Americamysis 7-d Survival, Growth and Fecundity Test **EnviroSystems, Inc.**

Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample No	Sample Date	Receive Date	Sample Age	Client Name	Project
17629-000	01-6030-3695	22 Aug-08 14:00	22 Aug-08 14:00	N/A	Battelle Labs	Ecological Risk Assessme
17629-003	05-4158-6637	21 Aug-08 15:20	21 Aug-08 18:40	22h		
17629-002	08-5309-8454	21 Aug-08 15:02	21 Aug-08 18:40	22h		
17629-001	09-2317-4687	21 Aug-08 14:20	21 Aug-08 18:40	23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
17629-000	Marine Monitoring Samp	New Bedford Harbor Dredge	Moni Laboratory Water Control		
17629-003	Marine Monitoring Samp	New Bedford Harbor Dredge	Moni WQ-TOX-003		
17629-002	Marine Monitoring Samp	New Bedford Harbor Dredge	Moni WQ-TOX-002		
17629-001	Marine Monitoring Samp	New Bedford Harbor Dredge	Moni WQ-TOX-001		

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Test Acceptability						
Analysis No	Endpoint	Attribute	Test Stat	Acceptability Limits	Overlap	Decision
01-1164-5507	7d Proportion Survived	Control Resp	0.95	0.8 - NL	Yes	Passes acceptability criteria
12-8117-9100	7d Proportion Survived	Control Resp	0.95	0.8 - NL	Yes	Passes acceptability criteria
20-9815-6064	7d Proportion Survived	Control Resp	0.95	0.8 - NL	Yes	Passes acceptability criteria
06-0667-4011	Mean Dry Biomass-mg	Control Resp	0.217	0.2 - NL	Yes	Passes acceptability criteria
12-1684-2765	Mean Dry Biomass-mg	Control Resp	0.217	0.2 - NL	Yes	Passes acceptability criteria
12-3514-5195	Mean Dry Biomass-mg	Control Resp	0.217	0.2 - NL	Yes	Passes acceptability criteria
01-0309-5887	Mean Dry Biomass-mg	PMSD	0.3055	0.11 - 0.37	Yes	Passes acceptability criteria
01-1989-7363	Mean Dry Biomass-mg	PMSD	0.3031	0.11 - 0.37	Yes	Passes acceptability criteria
06-0667-4011	Mean Dry Biomass-mg	PMSD	0.182	0.11 - 0.37	Yes	Passes acceptability criteria
12-1684-2765	Mean Dry Biomass-mg	PMSD	0.1729	0.11 - 0.37	Yes	Passes acceptability criteria
12-3514-5195	Mean Dry Biomass-mg	PMSD	0.4228	0.11 - 0.37	Yes	Fails acceptability criteria

2d Proportion Survived Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.975	0.9486	1	0.8	1	0.01291	0.07071	7.25%	0.0%
17629-003	8	0.875	0.8363	0.9137	0.8	1	0.0189	0.1035	11.83%	10.26%
17629-002	8	1	1	1	1	1	0	0	0.0%	-2.56%
17629-001	8	1	1	1	1	1	0	0	0.0%	-2.56%

7d Proportion Survived Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.95	0.9154	0.9846	0.8	1	0.0169	0.09258	9.75%	0.0%
17629-003	8	0.85	0.7972	0.9028	0.6	1	0.02582	0.1414	16.64%	10.53%
17629-002	8	0.925	0.8863	0.9637	0.8	1	0.0189	0.1035	11.19%	2.63%
17629-001	8	0.875	0.8066	0.9434	0.6	1	0.03345	0.1832	20.94%	7.9%

Mean Dry Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.217	0.2093	0.2247	0.184	0.242	0.003769	0.02065	9.51%	0.0%
17629-003	8	0.3215	0.267	0.376	0.208	0.598	0.02663	0.1459	45.37%	-48.16%
17629-002	8	0.263	0.2406	0.2854	0.192	0.364	0.01095	0.05997	22.8%	-21.2%
17629-001	8	0.3012	0.2801	0.3224	0.212	0.384	0.01033	0.0566	18.79%	-38.82%

CETIS Summary Report

Report Date: 18 Nov-08 09:27 (p 2 of 2)
Link/Link Code: 12-8828-8740

Americamysis 7-d Survival, Growth and Fecundity Test										EnviroSystems, Inc.
Mean Dry Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.2299	0.2194	0.2404	0.194	0.2875	0.00513	0.0281	12.22%	0.0%
17629-003	8	0.3744	0.3232	0.4257	0.212	0.598	0.02507	0.1373	36.67%	-62.84%
17629-002	8	0.2844	0.2637	0.3051	0.21	0.364	0.01013	0.05548	19.51%	-23.68%
17629-001	8	0.3524	0.3262	0.3786	0.254	0.4525	0.01279	0.07008	19.89%	-53.26%
2d Proportion Survived Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
17629-000	1	1	1	1	1	1	1	0.8		
17629-003	0.8	1	0.8	0.8	0.8	0.8	1	1		
17629-002	1	1	1	1	1	1	1	1		
17629-001	1	1	1	1	1	1	1	1		
7d Proportion Survived Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
17629-000	1	1	0.8	1	1	1	1	0.8		
17629-003	0.6	1	0.8	0.8	0.8	0.8	1	1		
17629-002	1	1	1	0.8	1	1	0.8	0.8		
17629-001	1	0.6	1	0.8	0.6	1	1	1		
Mean Dry Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
17629-000	0.224	0.194	0.23	0.216	0.242	0.238	0.208	0.184		
17629-003	0.21	0.212	0.268	0.208	0.222	0.436	0.598	0.418		
17629-002	0.238	0.364	0.288	0.192	0.21	0.32	0.214	0.278		
17629-001	0.318	0.266	0.254	0.362	0.212	0.384	0.314	0.3		
Mean Dry Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
17629-000	0.224	0.194	0.2875	0.216	0.242	0.238	0.208	0.23		
17629-003	0.35	0.212	0.335	0.26	0.2775	0.545	0.598	0.418		
17629-002	0.238	0.364	0.288	0.24	0.21	0.32	0.2675	0.3475		
17629-001	0.318	0.4433	0.254	0.4525	0.3533	0.384	0.314	0.3		

CETIS Analytical Report

Report Date: 18 Nov-08 09:30 (p 1 of 23)
 Link/Link Code: 12-8828-8740

Americamysis 7-d Survival, Growth and Fecundity Test			EnviroSystems, Inc.
Analysis No: 03-0969-9106	Endpoint: Mean Dry Weight-mg	CETIS Version: CETISv1.6.4	
Analyzed: 02 Sep-08 11:16	Analysis: Parametric-Two Sample	Official Results: Yes	
Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:	
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable	
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable	
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

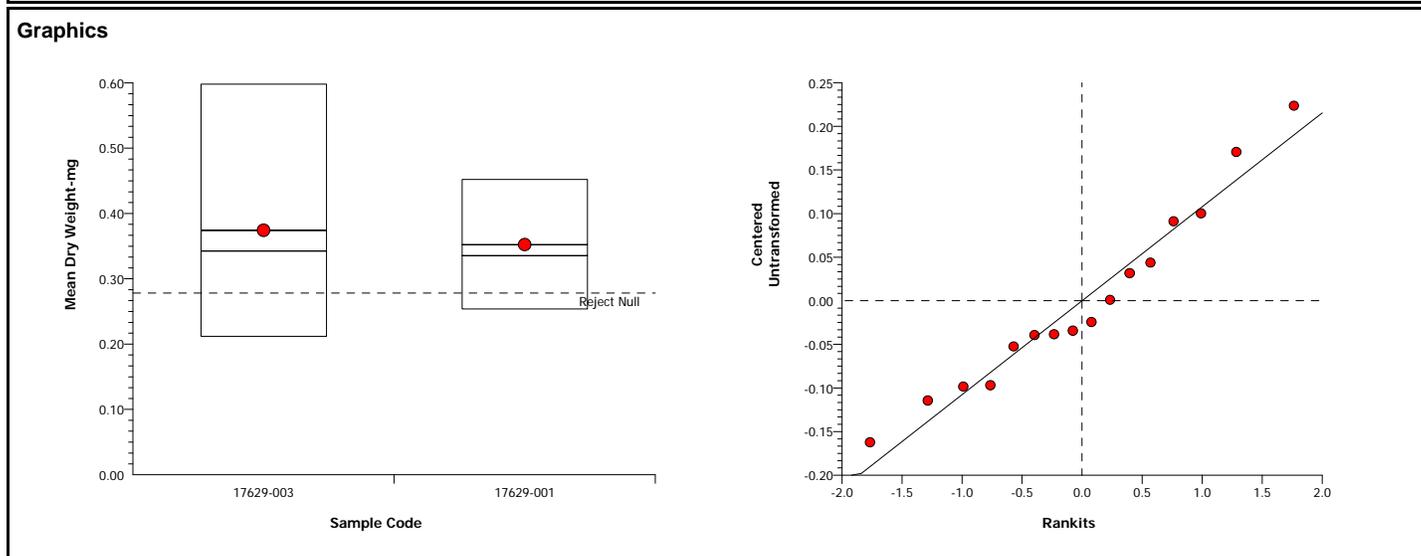
Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					25.64%

Equal Variance t Two-Sample Test							
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-003		17629-001	0.4044	1.761	0.096	0.3460	Non-Significant Effect

ANOVA Table						
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0019435	0.0019435	1	0.1635	0.6920	Non-Significant Effect
Error	0.1663766	0.0118840	14			
Total	0.1683201	0.0138275	15			

ANOVA Assumptions						
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)	
Variances	Variance Ratio F	3.84	8.885	0.0967	Equal Variances	
Distribution	Shapiro-Wilk Normality	0.9567		0.6031	Normal Distribution	

Mean Dry Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	0.3744	0.3222	0.4267	0.212	0.598	0.0255	0.1373	36.67%	0.0%
17629-001	8	0.3524	0.3257	0.3791	0.254	0.4525	0.01301	0.07008	19.89%	5.89%



CETIS Analytical Report

Report Date: 18 Nov-08 09:30 (p 2 of 23)
 Link/Link Code: 12-8828-8740

Americamysis 7-d Survival, Growth and Fecundity Test			EnviroSystems, Inc.
Analysis No: 05-9215-7737	Endpoint: Mean Dry Weight-mg	CETIS Version: CETISv1.6.4	
Analyzed: 02 Sep-08 11:16	Analysis: Parametric-Two Sample	Official Results: Yes	
Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:	
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable	
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable	
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

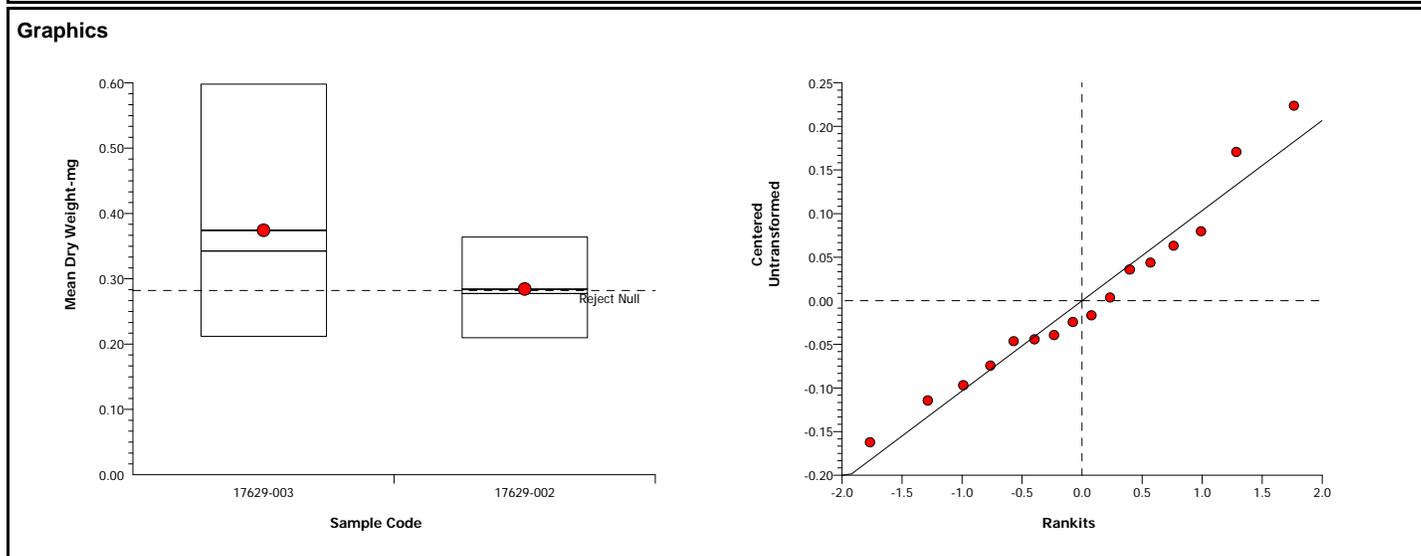
Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					24.63%

Equal Variance t Two-Sample Test							
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-003		17629-002	1.72	1.761	0.09223	0.0537	Non-Significant Effect

ANOVA Table						
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.032445	0.032445	1	2.958	0.1075	Non-Significant Effect
Error	0.1535449	0.0109675	14			
Total	0.1859899	0.0434125	15			

ANOVA Assumptions						
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)	
Variances	Variance Ratio F	6.127	8.885	0.0289	Equal Variances	
Distribution	Shapiro-Wilk Normality	0.9598		0.6584	Normal Distribution	

Mean Dry Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	0.3744	0.3222	0.4267	0.212	0.598	0.0255	0.1373	36.67%	0.0%
17629-002	8	0.2844	0.2633	0.3055	0.21	0.364	0.0103	0.05548	19.51%	24.05%



CETIS Analytical Report

Report Date: 18 Nov-08 09:31 (p 3 of 23)
Link/Link Code: 12-8828-8740

Americamysis 7-d Survival, Growth and Fecundity Test **EnviroSystems, Inc.**

Analysis No: 15-7062-5725	Endpoint: Mean Dry Weight-mg	CETIS Version: CETISv1.6.4
Analyzed: 02 Sep-08 11:15	Analysis: Parametric-Two Sample	Official Results: Yes

Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					20.45%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-001	-4.588	1.761	0.04701	0.9998	Non-Significant Effect

ANOVA Table

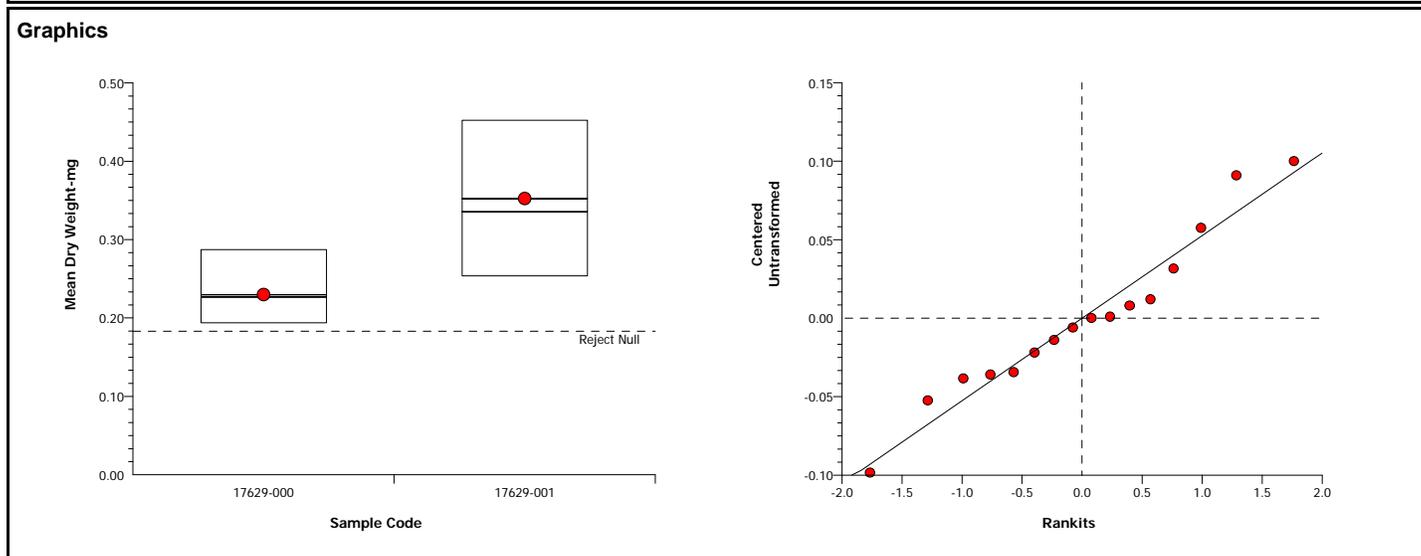
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.059984	0.059984	1	21.05	0.0004	Significant Effect
Error	0.0399006	0.0028500	14			
Total	0.0998846	0.0628340	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	6.22	8.885	0.0277	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9584		0.6332	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.2299	0.2192	0.2406	0.194	0.2875	0.005217	0.0281	12.22%	0.0%
17629-001	8	0.3524	0.3257	0.3791	0.254	0.4525	0.01301	0.07008	19.89%	-53.26%



CETIS Analytical Report

Report Date: 18 Nov-08 09:31 (p 4 of 23)
 Link/Link Code: 12-8828-8740

Americamysis 7-d Survival, Growth and Fecundity Test			EnviroSystems, Inc.
Analysis No: 08-6048-2432	Endpoint: Mean Dry Weight-mg	CETIS Version: CETISv1.6.4	
Analyzed: 02 Sep-08 11:15	Analysis: Parametric-Two Sample	Official Results: Yes	
Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:	
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable	
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable	
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:	

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

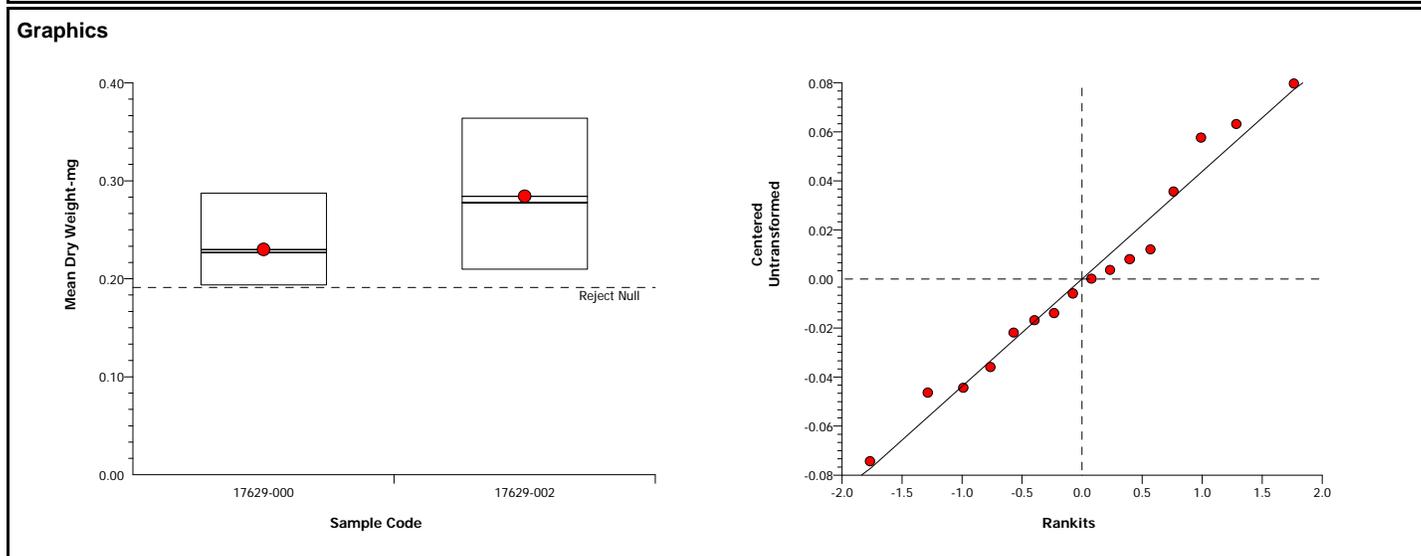
Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					16.84%

Equal Variance t Two-Sample Test							
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-002	-2.476	1.761	0.03872	0.9867	Non-Significant Effect

ANOVA Table						
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0118541	0.0118541	1	6.131	0.0267	Significant Effect
Error	0.0270689	0.0019335	14			
Total	0.038923	0.0137876	15			

ANOVA Assumptions						
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)	
Variances	Variance Ratio F	3.898	8.885	0.0933	Equal Variances	
Distribution	Shapiro-Wilk Normality	0.97		0.8379	Normal Distribution	

Mean Dry Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.2299	0.2192	0.2406	0.194	0.2875	0.005217	0.0281	12.22%	0.0%
17629-002	8	0.2844	0.2633	0.3055	0.21	0.364	0.0103	0.05548	19.51%	-23.68%



CETIS Analytical Report

Report Date: 18 Nov-08 09:31 (p 5 of 23)
 Link/Link Code: 12-8828-8740

Americamysis 7-d Survival, Growth and Fecundity Test EnviroSystems, Inc.

Analysis No: 20-6063-8926	Endpoint: Mean Dry Weight-mg	CETIS Version: CETISv1.6.4
Analyzed: 02 Sep-08 11:15	Analysis: Parametric-Two Sample	Official Results: Yes

Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					37.96%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-003	-2.916	1.761	0.08728	0.9944	Non-Significant Effect

ANOVA Table

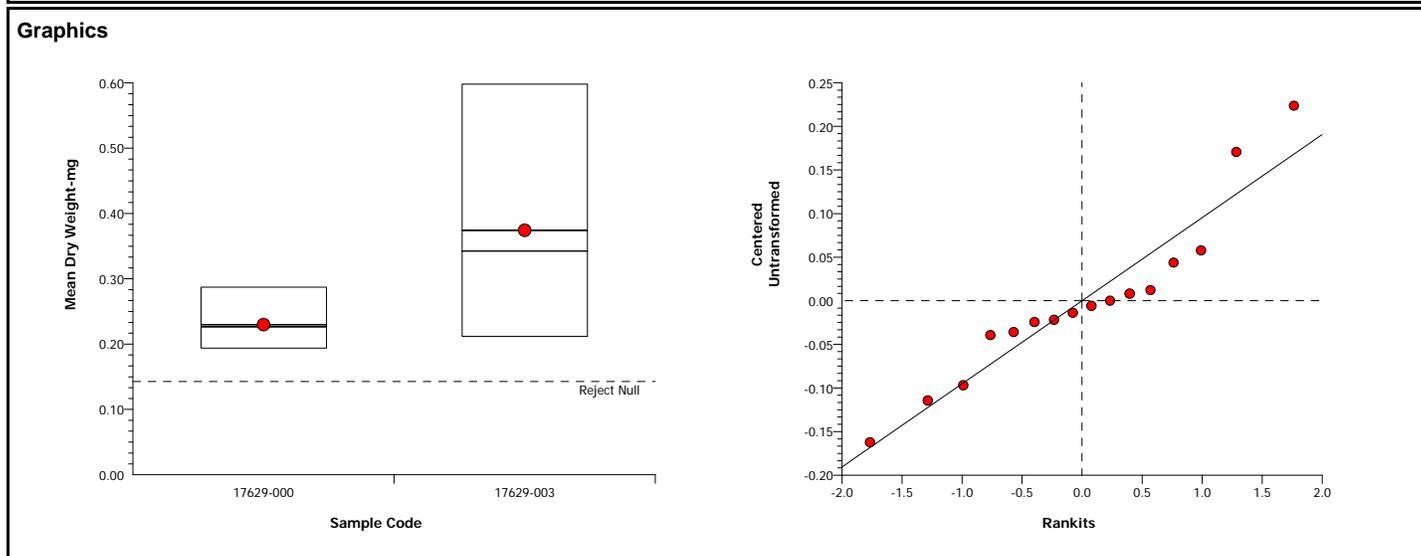
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0835218	0.0835218	1	8.502	0.0113	Significant Effect
Error	0.1375281	0.0098234	14			
Total	0.2210499	0.0933452	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	23.89	8.885	0.0004	Unequal Variances
Distribution	Shapiro-Wilk Normality	0.9199		0.1679	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.2299	0.2192	0.2406	0.194	0.2875	0.005217	0.0281	12.22%	0.0%
17629-003	8	0.3744	0.3222	0.4267	0.212	0.598	0.0255	0.1373	36.67%	-62.84%



CETIS Analytical Report

Report Date: 18 Nov-08 09:31 (p 6 of 23)
 Link/Link Code: 12-8828-8740

Americamysis 7-d Survival, Growth and Fecundity Test **EnviroSystems, Inc.**

Analysis No: 01-1989-7363	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv1.6.4
Analyzed: 02 Sep-08 11:13	Analysis: Parametric-Two Sample	Official Results: Yes

Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					30.31%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-003		17629-001	0.3661	1.761	0.09743	0.3599	Non-Significant Effect

Test Acceptability

Attribute	Test Stat	Acceptability Limits	Overlap	Decision
PMSD	0.3031	0.11 - 0.37	Yes	Passes acceptability criteria

ANOVA Table

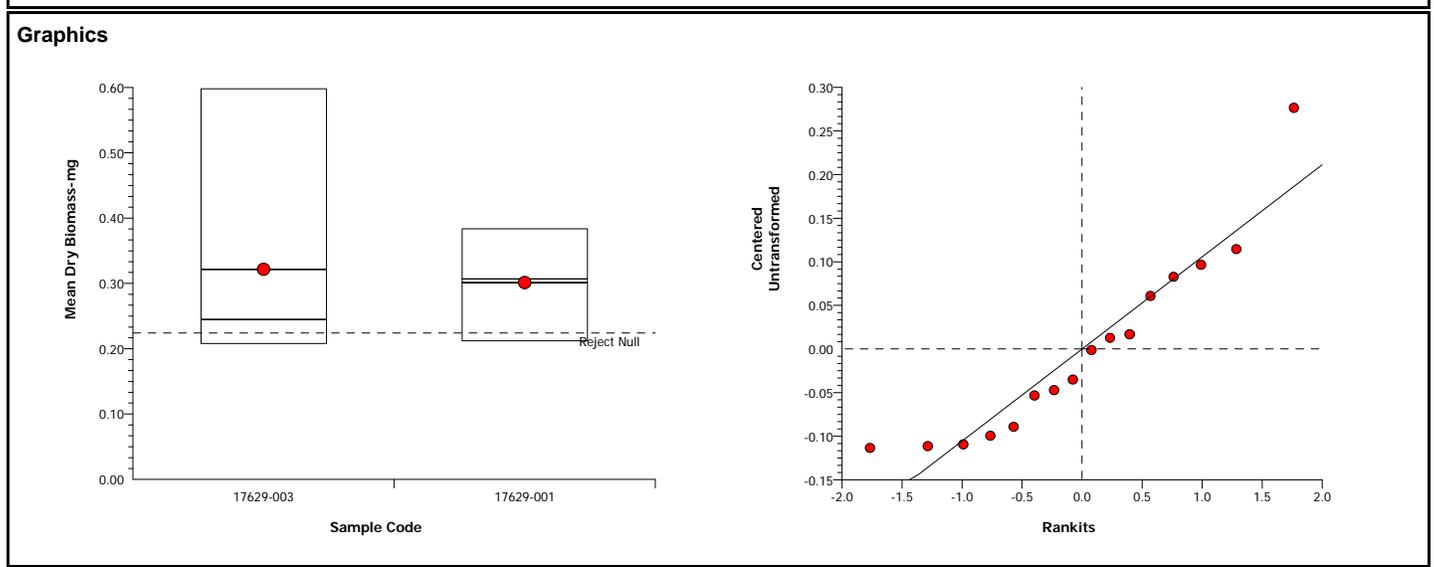
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0016404	0.0016404	1	0.134	0.7198	Non-Significant Effect
Error	0.1713662	0.0122404	14			
Total	0.1730065	0.0138808	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	6.642	8.885	0.0231	Equal Variances
Distribution	Shapiro-Wilk Normality	0.8958		0.0688	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	0.3215	0.266	0.377	0.208	0.598	0.02709	0.1459	45.37%	0.0%
17629-001	8	0.3012	0.2797	0.3228	0.212	0.384	0.01051	0.0566	18.79%	6.3%



CETIS Analytical Report

Report Date: 18 Nov-08 09:31 (p 7 of 23)
 Link/Link Code: 12-8828-8740

Americamysis 7-d Survival, Growth and Fecundity Test EnviroSystems, Inc.

Analysis No: 01-0309-5887	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv1.6.4
Analyzed: 02 Sep-08 11:13	Analysis: Parametric-Two Sample	Official Results: Yes

Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					30.55%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-003		17629-002	1.049	1.761	0.09821	0.1559	Non-Significant Effect

Test Acceptability

Attribute	Test Stat	Acceptability Limits	Overlap	Decision
PMSD	0.3055	0.11 - 0.37	Yes	Passes acceptability criteria

ANOVA Table

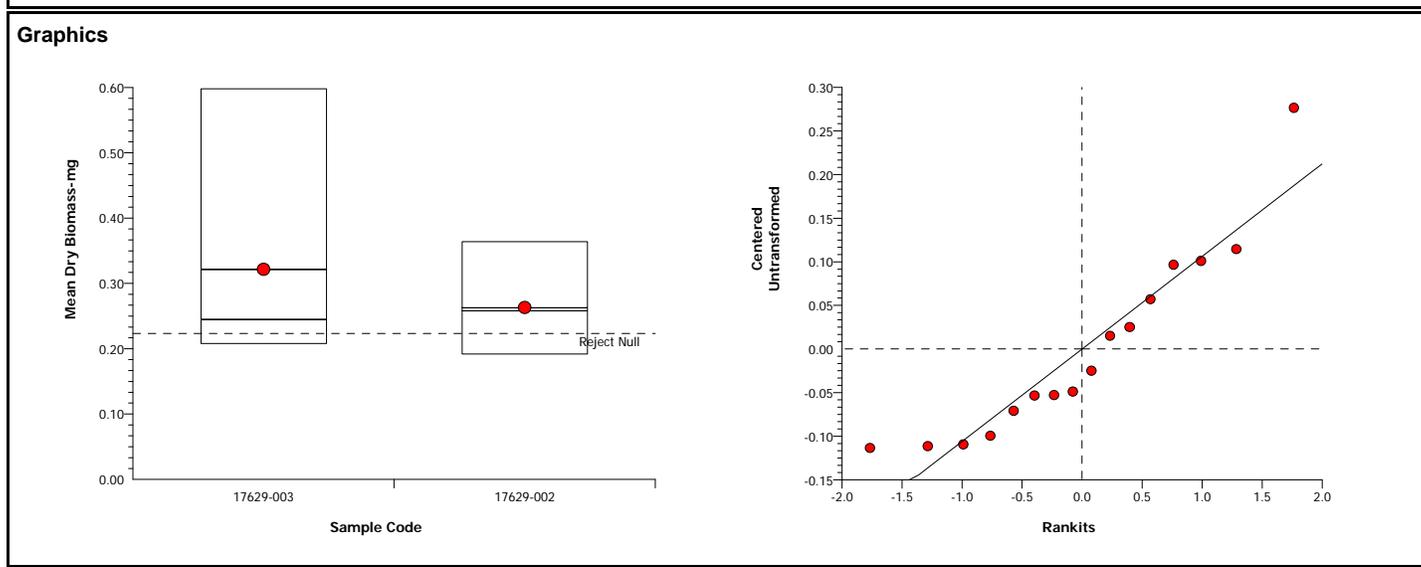
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.013689	0.013689	1	1.101	0.3119	Non-Significant Effect
Error	0.1741183	0.0124370	14			
Total	0.1878072	0.026126	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	5.916	8.885	0.0318	Equal Variances
Distribution	Shapiro-Wilk Normality	0.8894		0.0545	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	0.3215	0.266	0.377	0.208	0.598	0.02709	0.1459	45.37%	0.0%
17629-002	8	0.263	0.2402	0.2858	0.192	0.364	0.01114	0.05997	22.8%	18.2%



CETIS Analytical Report

Report Date: 18 Nov-08 09:31 (p 8 of 23)
Link/Link Code: 12-8828-8740

Americamysis 7-d Survival, Growth and Fecundity Test **EnviroSystems, Inc.**

Analysis No: 12-1684-2765	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv1.6.4
Analyzed: 02 Sep-08 11:12	Analysis: Parametric-Two Sample	Official Results: Yes

Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					17.29%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-001	-3.955	1.761	0.03752	0.9993	Non-Significant Effect

Test Acceptability

Attribute	Test Stat	Acceptability Limits	Overlap	Decision
Control Resp	0.217	0.2 - NL	Yes	Passes acceptability criteria
PMSD	0.1729	0.11 - 0.37	Yes	Passes acceptability criteria

ANOVA Table

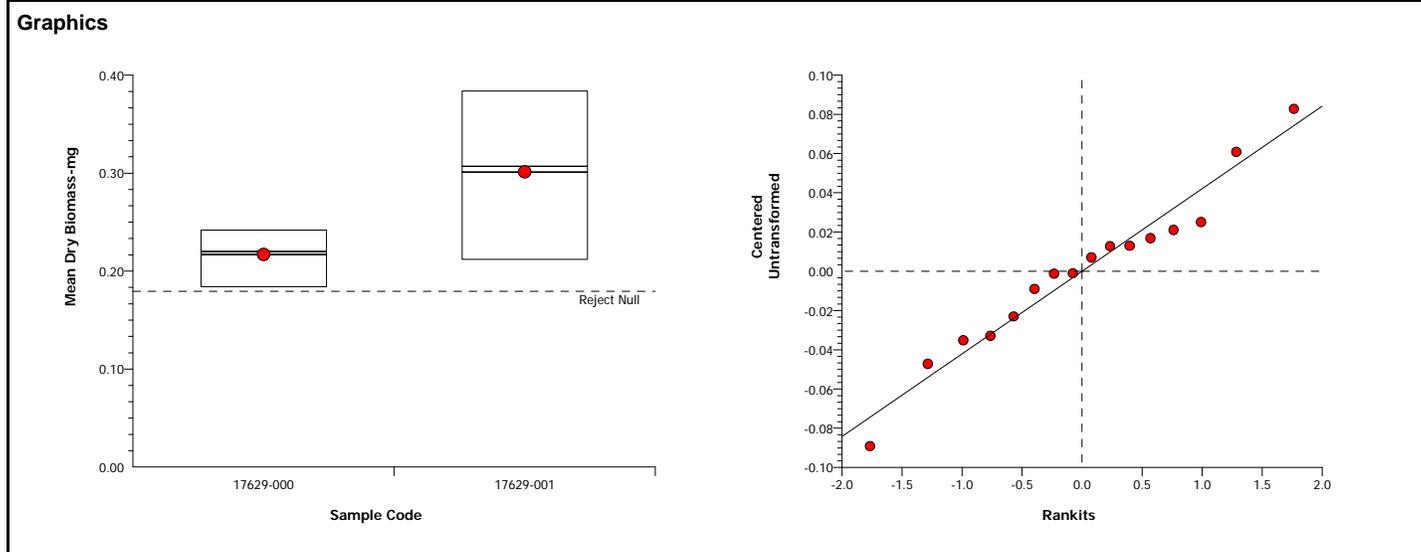
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0283922	0.0283922	1	15.64	0.0014	Significant Effect
Error	0.0254070	0.0018148	14			
Total	0.0537992	0.030207	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	7.515	8.885	0.0163	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9717		0.8646	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.217	0.2091	0.2249	0.184	0.242	0.003834	0.02065	9.51%	0.0%
17629-001	8	0.3012	0.2797	0.3228	0.212	0.384	0.01051	0.0566	18.79%	-38.82%



CETIS Analytical Report

Report Date: 18 Nov-08 09:31 (p 9 of 23)
 Link/Link Code: 12-8828-8740

Americamysis 7-d Survival, Growth and Fecundity Test EnviroSystems, Inc.

Analysis No: 06-0667-4011	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv1.6.4
Analyzed: 02 Sep-08 11:12	Analysis: Parametric-Two Sample	Official Results: Yes

Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					18.2%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-002	-2.051	1.761	0.0395	0.9703	Non-Significant Effect

Test Acceptability

Attribute	Test Stat	Acceptability Limits	Overlap	Decision
Control Resp	0.217	0.2 - NL	Yes	Passes acceptability criteria
PMSD	0.182	0.11 - 0.37	Yes	Passes acceptability criteria

ANOVA Table

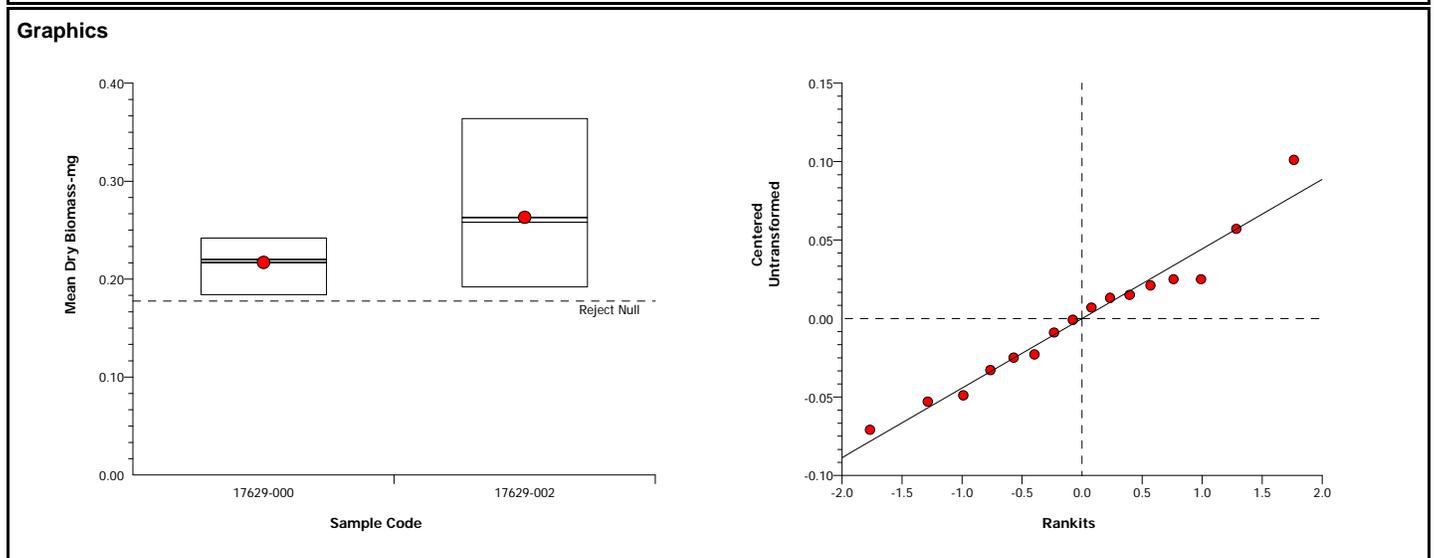
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0084642	0.0084642	1	4.208	0.0594	Non-Significant Effect
Error	0.0281591	0.0020114	14			
Total	0.0366234	0.0104756	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	8.438	8.885	0.0116	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9669		0.7855	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.217	0.2091	0.2249	0.184	0.242	0.003834	0.02065	9.51%	0.0%
17629-002	8	0.263	0.2402	0.2858	0.192	0.364	0.01114	0.05997	22.8%	-21.2%



CETIS Analytical Report

Report Date: 8 Nov-08 09:31 (p 10 of 23)
 Link/Link Code: 12-8828-8740

Americamysis 7-d Survival, Growth and Fecundity Test EnviroSystems, Inc.

Analysis No: 12-3514-5195	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv1.6.4
Analyzed: 02 Sep-08 11:12	Analysis: Parametric-Two Sample	Official Results: Yes

Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					42.28%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-003	-2.006	1.761	0.09174	0.9677	Non-Significant Effect

Test Acceptability

Attribute	Test Stat	Acceptability Limits	Overlap	Decision
Control Resp	0.217	0.2 - NL	Yes	Passes acceptability criteria
PMSD	0.4228	0.11 - 0.37	Yes	Fails acceptability criteria

ANOVA Table

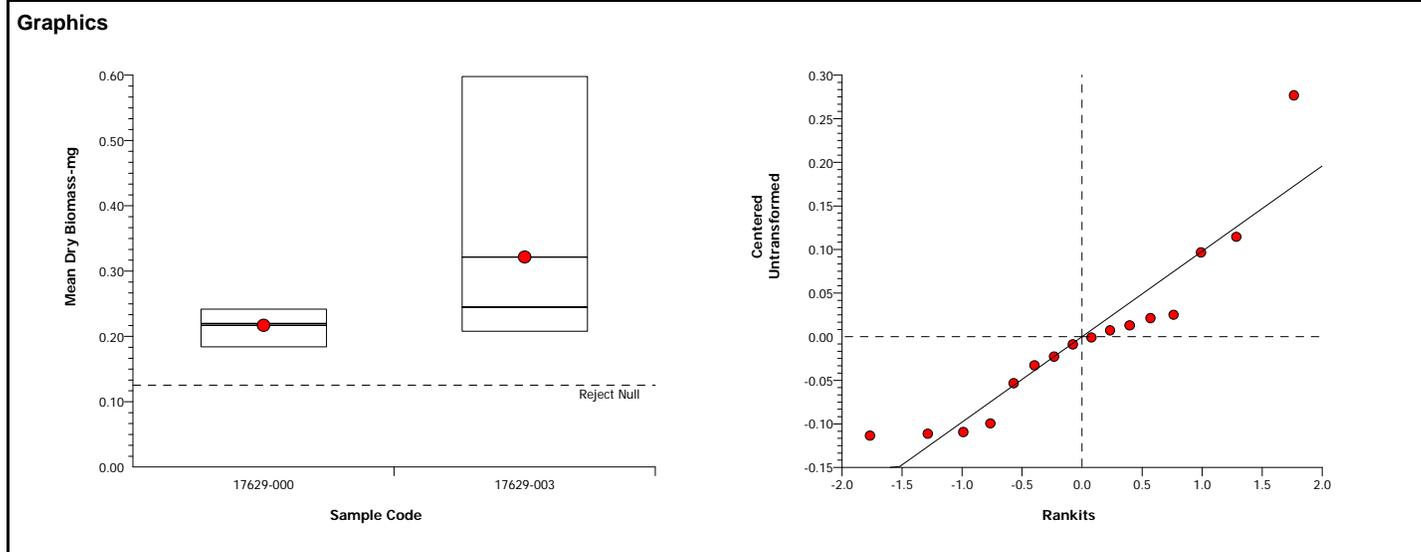
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0436815	0.0436815	1	4.025	0.0645	Non-Significant Effect
Error	0.1519266	0.0108519	14			
Total	0.1956081	0.0545334	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	49.92	8.885	0.0000	Unequal Variances
Distribution	Shapiro-Wilk Normality	0.8766		0.0343	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.217	0.2091	0.2249	0.184	0.242	0.003834	0.02065	9.51%	0.0%
17629-003	8	0.3215	0.266	0.377	0.208	0.598	0.02709	0.1459	45.37%	-48.16%



CETIS Analytical Report

Report Date: 8 Nov-08 09:31 (p 11 of 23)
 Link/Link Code: 12-8828-8740

Americamysis 7-d Survival, Growth and Fecundity Test EnviroSystems, Inc.

Analysis No: 14-9000-0868	Endpoint: 7d Proportion Survived	CETIS Version: CETISv1.6.4
Analyzed: 29 Aug-08 17:27	Analysis: Nonparametric-Two Sample	Official Results: Yes

Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	10000 Trial					16.44%

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	P-Value	Decision(5%)
17629-003		17629-001	72.5		3	0.7292	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0040703	0.0040703	1	0.114	0.7406	Non-Significant Effect
Error	0.4998225	0.0357016	14			
Total	0.5038928	0.0397719	15			

ANOVA Assumptions

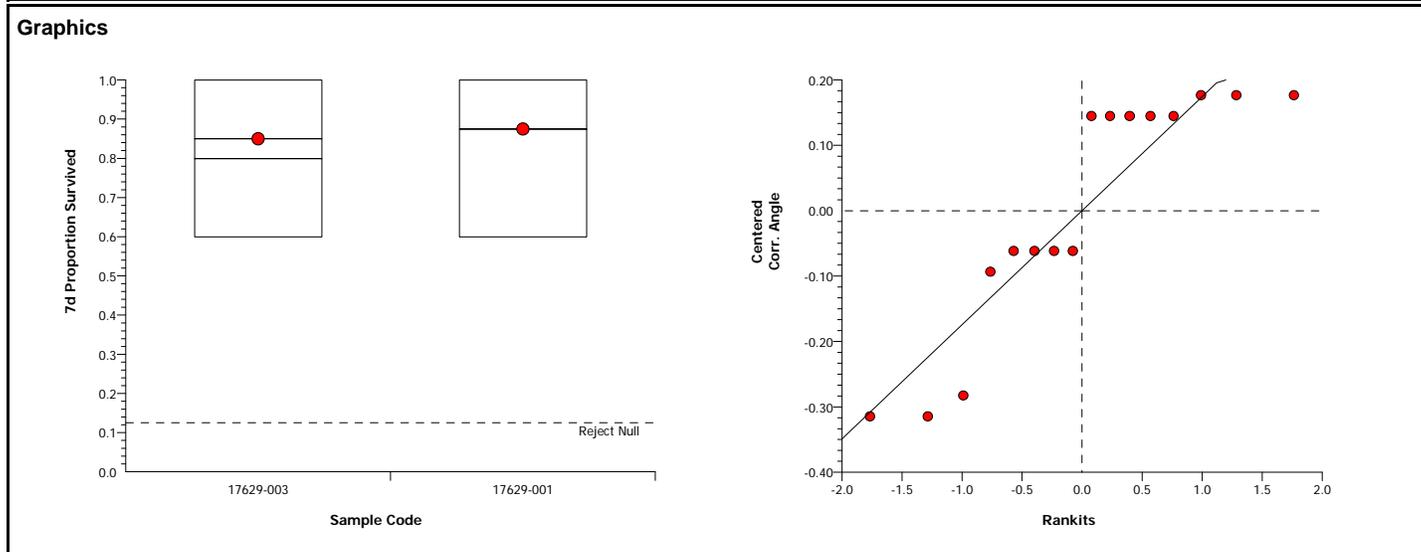
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	1.651	8.885	0.5244	Equal Variances
Distribution	Shapiro-Wilk Normality	0.8161		0.0045	Non-normal Distribution

7d Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	0.85	0.7962	0.9038	0.6	1	0.02626	0.1414	16.64%	0.0%
17629-001	8	0.875	0.8053	0.9447	0.6	1	0.03402	0.1832	20.94%	-2.94%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	1.169	1.106	1.231	0.8861	1.345	0.03048	0.1641	14.04%	0.0%
17629-001	8	1.201	1.121	1.281	0.8861	1.345	0.03916	0.2109	17.56%	-2.73%



CETIS Analytical Report

Report Date: 8 Nov-08 09:31 (p 12 of 23)
 Link/Link Code: 12-8828-8740

Americamysis 7-d Survival, Growth and Fecundity Test EnviroSystems, Inc.

Analysis No: 18-1670-2733	Endpoint: 7d Proportion Survived	CETIS Version: CETISv1.6.4
Analyzed: 29 Aug-08 17:27	Analysis: Parametric-Two Sample	Official Results: Yes

Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	Not Run					12.4%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-003		17629-002	-1.201	1.761	0.1278	0.8752	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0303927	0.0303927	1	1.443	0.2496	Non-Significant Effect
Error	0.2949017	0.0210644	14			
Total	0.3252944	0.0514571	15			

ANOVA Assumptions

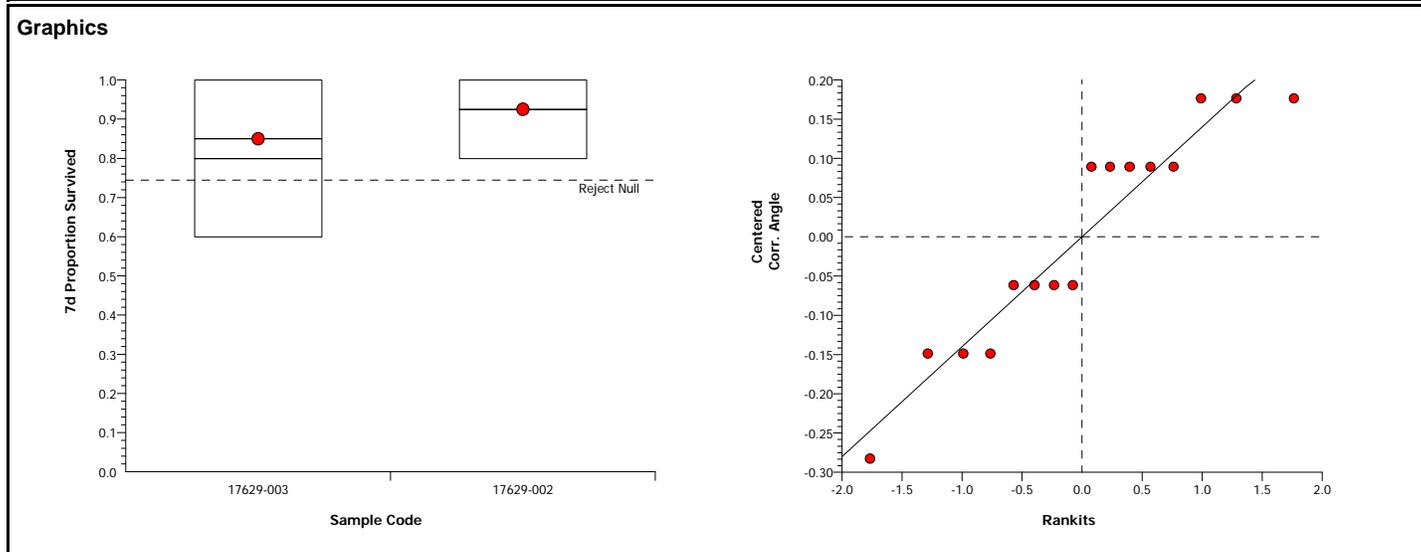
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	1.774	8.885	0.4674	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9039		0.0929	Normal Distribution

7d Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	0.85	0.7962	0.9038	0.6	1	0.02626	0.1414	16.64%	0.0%
17629-002	8	0.925	0.8856	0.9644	0.8	1	0.01922	0.1035	11.19%	-8.82%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	1.169	1.106	1.231	0.8861	1.345	0.03048	0.1641	14.04%	0.0%
17629-002	8	1.256	1.209	1.303	1.107	1.345	0.02289	0.1232	9.81%	-7.46%



CETIS Analytical Report

Report Date: 8 Nov-08 09:31 (p 13 of 23)
Link/Link Code: 12-8828-8740

Americamysis 7-d Survival, Growth and Fecundity Test **EnviroSystems, Inc.**

Analysis No: 20-9815-6064	Endpoint: 7d Proportion Survived	CETIS Version: CETISv1.6.4
Analyzed: 29 Aug-08 17:27	Analysis: Nonparametric-Two Sample	Official Results: Yes

Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	10000 Trial					13.29%

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	P-Value	Decision(5%)
17629-000		17629-001	62		2	0.2538	Non-Significant Effect

Test Acceptability

Attribute	Test Stat	Acceptability Limits	Overlap	Decision
Control Resp	0.95	0.8 - NL	Yes	Passes acceptability criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0289236	0.0289236	1	1.022	0.3293	Non-Significant Effect
Error	0.3963099	0.0283079	14			
Total	0.4252335	0.0572314	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	3.659	8.885	0.1085	Equal Variances
Distribution	Shapiro-Wilk Normality	0.7966		0.0025	Non-normal Distribution

7d Proportion Survived Summary

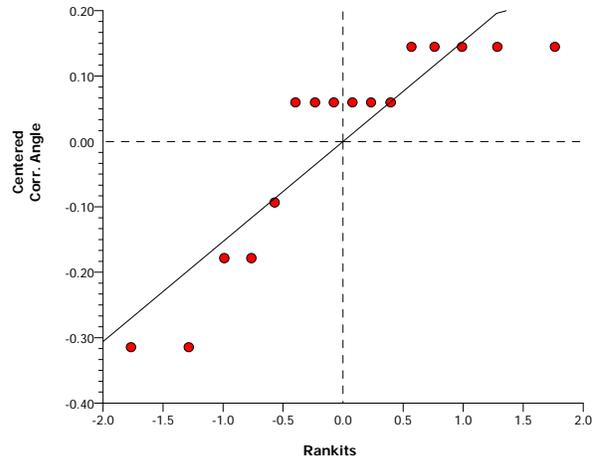
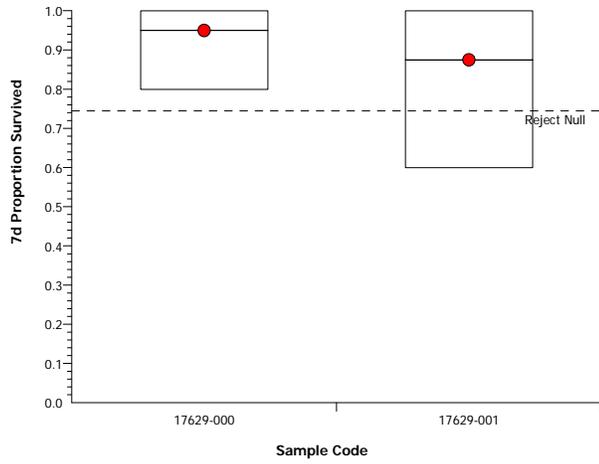
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.95	0.9148	0.9852	0.8	1	0.01719	0.09258	9.75%	0.0%
17629-001	8	0.875	0.8053	0.9447	0.6	1	0.03402	0.1832	20.94%	7.9%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	1.286	1.244	1.328	1.107	1.345	0.02047	0.1102	8.57%	0.0%
17629-001	8	1.201	1.121	1.281	0.8861	1.345	0.03916	0.2109	17.56%	6.61%

Americamysis 7-d Survival, Growth and Fecundity Test		EnviroSystems, Inc.
Analysis No: 20-9815-6064	Endpoint: 7d Proportion Survived	CETIS Version: CETISv1.6.4
Analyzed: 29 Aug-08 17:27	Analysis: Nonparametric-Two Sample	Official Results: Yes

Graphics



CETIS Analytical Report

Report Date: 8 Nov-08 09:31 (p 15 of 23)
Link/Link Code: 12-8828-8740

Americamysis 7-d Survival, Growth and Fecundity Test **EnviroSystems, Inc.**

Analysis No: 01-1164-5507	Endpoint: 7d Proportion Survived	CETIS Version: CETISv1.6.4
Analyzed: 29 Aug-08 17:27	Analysis: Nonparametric-Two Sample	Official Results: Yes

Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	10000 Trial					9.8%

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	P-Value	Decision(5%)
17629-000		17629-002	64		2	0.4992	Non-Significant Effect

Test Acceptability

Attribute	Test Stat	Acceptability Limits	Overlap	Decision
Control Resp	0.95	0.8 - NL	Yes	Passes acceptability criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0035442	0.0035442	1	0.2593	0.6186	Non-Significant Effect
Error	0.1913892	0.0136707	14			
Total	0.1949334	0.0172149	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	1.25	8.885	0.7760	Equal Variances
Distribution	Shapiro-Wilk Normality	0.6932		0.0001	Non-normal Distribution

7d Proportion Survived Summary

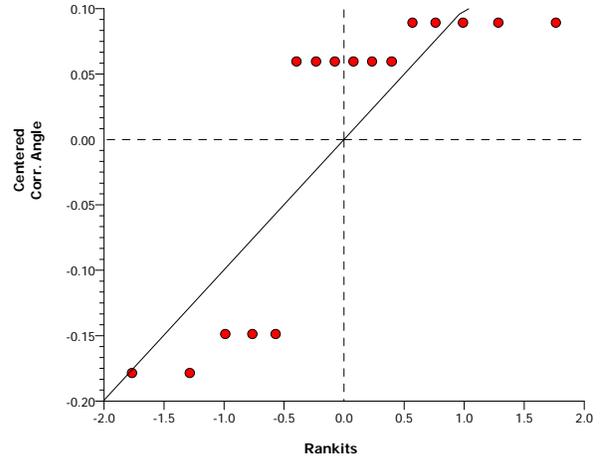
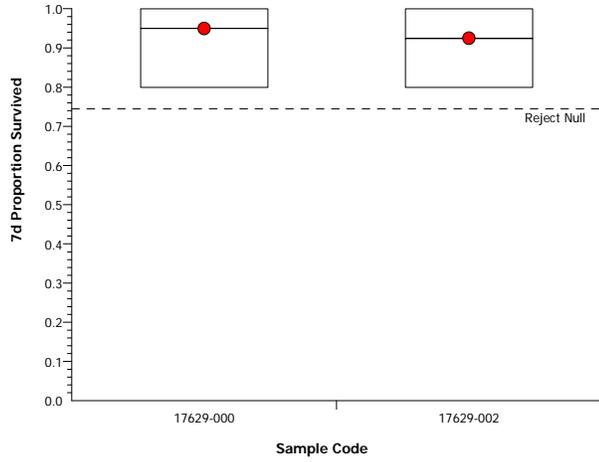
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.95	0.9148	0.9852	0.8	1	0.01719	0.09258	9.75%	0.0%
17629-002	8	0.925	0.8856	0.9644	0.8	1	0.01922	0.1035	11.19%	2.63%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	1.286	1.244	1.328	1.107	1.345	0.02047	0.1102	8.57%	0.0%
17629-002	8	1.256	1.209	1.303	1.107	1.345	0.02289	0.1232	9.81%	2.32%

Americamysis 7-d Survival, Growth and Fecundity Test		EnviroSystems, Inc.
Analysis No: 01-1164-5507	Endpoint: 7d Proportion Survived	CETIS Version: CETISv1.6.4
Analyzed: 29 Aug-08 17:27	Analysis: Nonparametric-Two Sample	Official Results: Yes

Graphics



CETIS Analytical Report

Report Date: 8 Nov-08 09:31 (p 17 of 23)
Link/Link Code: 12-8828-8740

Americamysis 7-d Survival, Growth and Fecundity Test **EnviroSystems, Inc.**

Analysis No: 12-8117-9100	Endpoint: 7d Proportion Survived	CETIS Version: CETISv1.6.4
Analyzed: 29 Aug-08 17:27	Analysis: Parametric-Two Sample	Official Results: Yes

Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	Not Run					11.32%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-003	1.673	1.761	0.1231	0.0583	Non-Significant Effect

Test Acceptability

Attribute	Test Stat	Acceptability Limits	Overlap	Decision
Control Resp	0.95	0.8 - NL	Yes	Passes acceptability criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0546945	0.0546945	1	2.798	0.1166	Non-Significant Effect
Error	0.2736363	0.0195455	14			
Total	0.3283308	0.07424	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	2.217	8.885	0.3154	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9095		0.1144	Normal Distribution

7d Proportion Survived Summary

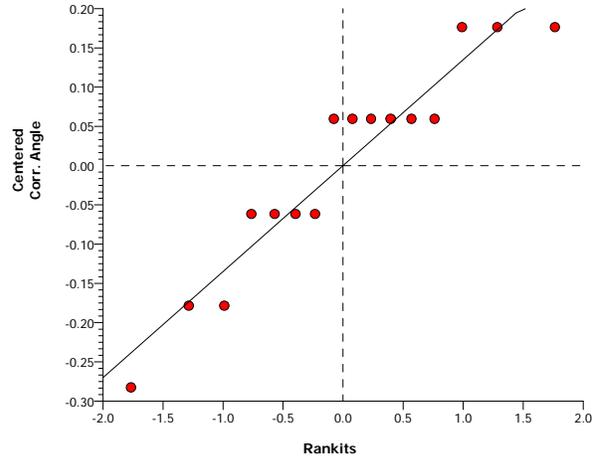
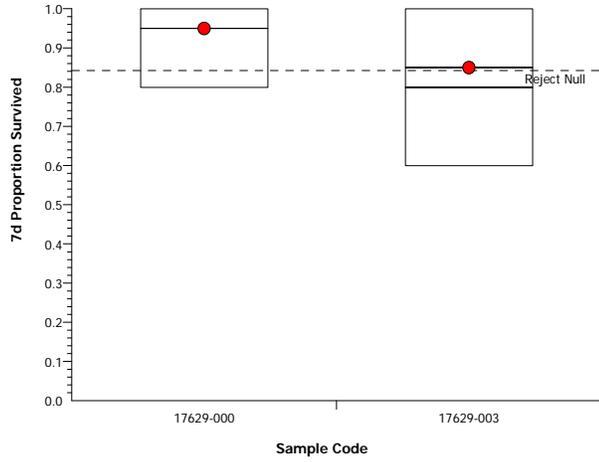
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.95	0.9148	0.9852	0.8	1	0.01719	0.09258	9.75%	0.0%
17629-003	8	0.85	0.7962	0.9038	0.6	1	0.02626	0.1414	16.64%	10.53%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	1.286	1.244	1.328	1.107	1.345	0.02047	0.1102	8.57%	0.0%
17629-003	8	1.169	1.106	1.231	0.8861	1.345	0.03048	0.1641	14.04%	9.09%

Americamysis 7-d Survival, Growth and Fecundity Test		EnviroSystems, Inc.
Analysis No: 12-8117-9100	Endpoint: 7d Proportion Survived	CETIS Version: CETISv1.6.4
Analyzed: 29 Aug-08 17:27	Analysis: Parametric-Two Sample	Official Results: Yes

Graphics



Americamysis 7-d Survival, Growth and Fecundity Test **EnviroSystems, Inc.**

Analysis No: 00-2491-7286	Endpoint: 2d Proportion Survived	CETIS Version: CETISv1.6.4
Analyzed: 29 Aug-08 17:27	Analysis: Nonparametric-Two Sample	Official Results: Yes

Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	10000 Trial					7.43%

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	P-Value	Decision(5%)
17629-003		17629-001	88		1	1.0000	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0886061	0.0886061	1	11.67	0.0042	Significant Effect
Error	0.1063273	0.0075948	14			
Total	0.1949334	0.0962009	15			

ANOVA Assumptions

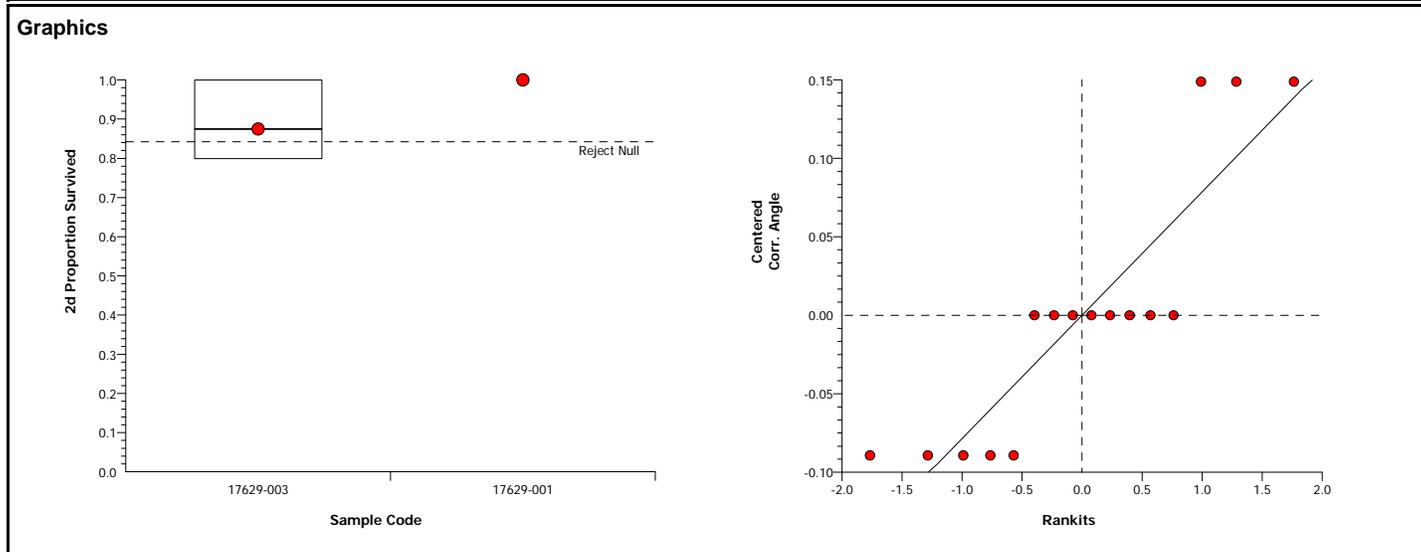
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Varianc	4.2	8.862	0.0597	Equal Variances
Distribution	Shapiro-Wilk Normality	0.7854		0.0018	Non-normal Distribution

2d Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	0.875	0.8356	0.9144	0.8	1	0.01922	0.1035	11.83%	0.0%
17629-001	8	1	1	1	1	1	0	0	0.0%	-14.29%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	1.196	1.15	1.243	1.107	1.345	0.02289	0.1232	10.3%	0.0%
17629-001	8	1.345	1.345	1.345	1.345	1.345	0	0	0.0%	-12.44%



Americamysis 7-d Survival, Growth and Fecundity Test EnviroSystems, Inc.

Analysis No: 02-1154-2686	Endpoint: 2d Proportion Survived	CETIS Version: CETISv1.6.4
Analyzed: 29 Aug-08 17:27	Analysis: Nonparametric-Two Sample	Official Results: Yes

Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	10000 Trial					7.43%

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	P-Value	Decision(5%)
17629-003		17629-002	88		1	1.0000	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0886061	0.0886061	1	11.67	0.0042	Significant Effect
Error	0.1063273	0.0075948	14			
Total	0.1949334	0.0962009	15			

ANOVA Assumptions

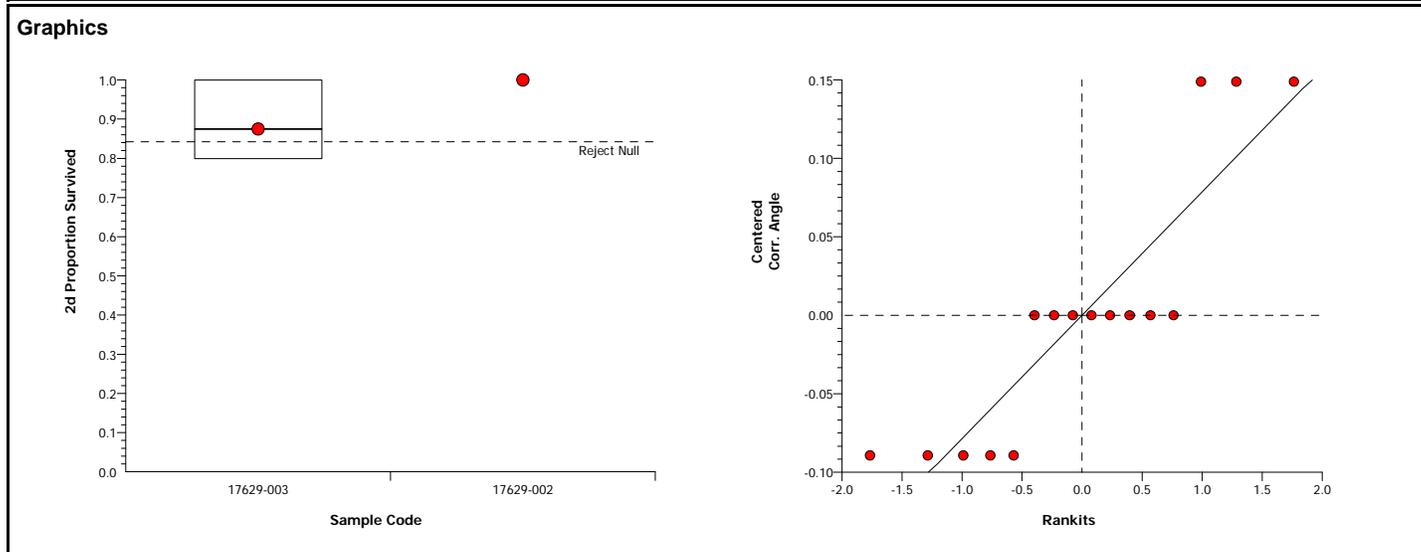
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Varianc	4.2	8.862	0.0597	Equal Variances
Distribution	Shapiro-Wilk Normality	0.7854		0.0018	Non-normal Distribution

2d Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	0.875	0.8356	0.9144	0.8	1	0.01922	0.1035	11.83%	0.0%
17629-002	8	1	1	1	1	1	0	0	0.0%	-14.29%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	1.196	1.15	1.243	1.107	1.345	0.02289	0.1232	10.3%	0.0%
17629-002	8	1.345	1.345	1.345	1.345	1.345	0	0	0.0%	-12.44%



CETIS Analytical Report

Report Date: 8 Nov-08 09:31 (p 21 of 23)
 Link/Link Code: 12-8828-8740

Americamysis 7-d Survival, Growth and Fecundity Test								EnviroSystems, Inc.													
Analysis No: 09-5397-8859		Endpoint: 2d Proportion Survived		CETIS Version: CETISv1.6.4																	
Analyzed: 29 Aug-08 17:26		Analysis: Nonparametric-Two Sample		Official Results: Yes																	
Test Run No: 05-6477-7504		Test Type: Growth-Survival-Fec (7d)		Analyst:																	
Start Date: 22 Aug-08 13:05		Protocol: EPA/821/R-02-014 (2002)		Diluent: Not Applicable																	
Ending Date: 29 Aug-08 15:55		Species: Americamysis bahia		Brine: Not Applicable																	
Duration: 7d 3h		Source: ARO - Aquatic Research Organisms, NH		Age:																	
Sample Code		Sample Comments																			
17629-003		0.2 - 0.3 NTU.																			
17629-002		14-20 NTU.																			
17629-001		25-32 NTU.																			
Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD													
Angular (Corrected)		C > T		10000 Trial						6.84%											
Wilcoxon Rank Sum Two-Sample Test																					
Sample Code	vs	Sample Code	Test Stat	Critical	Ties	P-Value	Decision(5%)														
17629-000		17629-001		72		1		1.0000				Non-Significant Effect									
ANOVA Table																					
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)															
Between		0.0035442		0.0035442		1		1		0.3343		Non-Significant Effect									
Error		0.0496194		0.0035442		14															
Total		0.0531637		0.0070885		15															
ANOVA Assumptions																					
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)																
Variances		Mod Levene Equality of Varianc		1		8.862		0.3343		Equal Variances											
Distribution		Shapiro-Wilk Normality		0.4689		0.0000		Non-normal Distribution													
2d Proportion Survived Summary																					
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%											
17629-000		8		0.975		0.9481		1		0.8		1		0.01313		0.07071		7.25%		0.0%	
17629-001		8		1		1		1		1		1		0		0		0.0%		-2.56%	
Angular (Corrected) Transformed Summary																					
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%											
17629-000		8		1.316		1.283		1.348		1.107		1.345		0.01563		0.08419		6.4%		0.0%	
17629-001		8		1.345		1.345		1.345		1.345		1.345		0		0		0.0%		-2.26%	
Graphics																					

CETIS Analytical Report

Report Date: 8 Nov-08 09:31 (p 22 of 23)
 Link/Link Code: 12-8828-8740

Americamysis 7-d Survival, Growth and Fecundity Test EnviroSystems, Inc.

Analysis No: 18-2611-3572	Endpoint: 2d Proportion Survived	CETIS Version: CETISv1.6.4
Analyzed: 29 Aug-08 17:26	Analysis: Nonparametric-Two Sample	Official Results: Yes

Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	10000 Trial					6.84%

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	P-Value	Decision(5%)
17629-000		17629-002	72		1	1.0000	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0035442	0.0035442	1	1	0.3343	Non-Significant Effect
Error	0.0496194	0.0035442	14			
Total	0.0531637	0.0070885	15			

ANOVA Assumptions

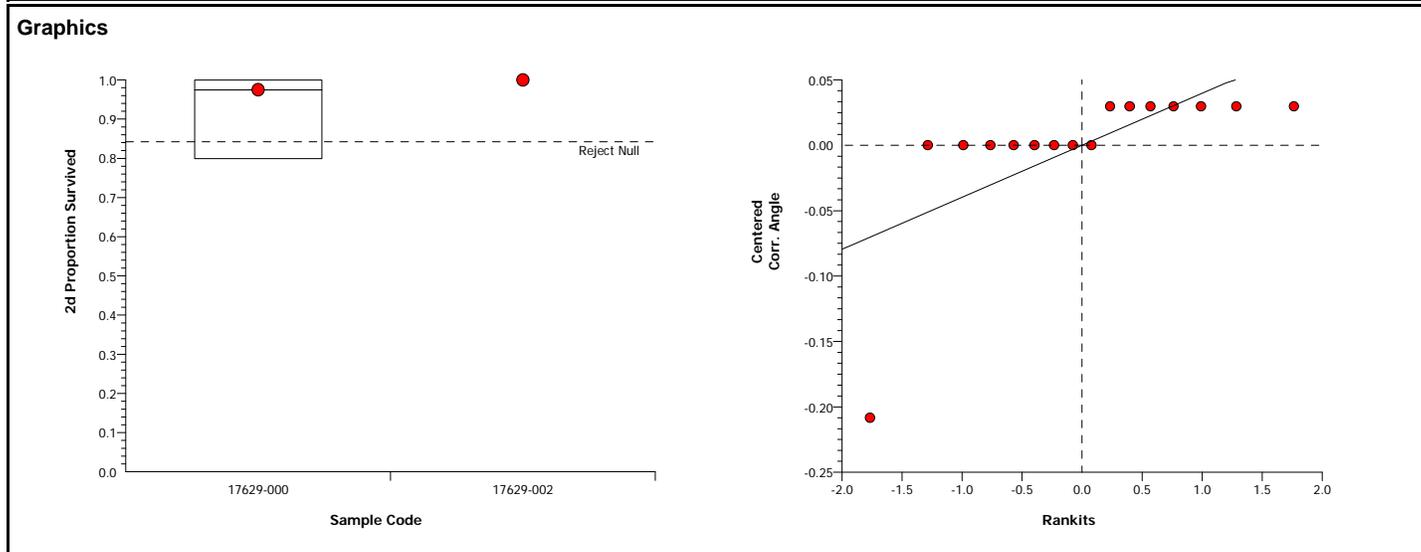
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Varianc	1	8.862	0.3343	Equal Variances
Distribution	Shapiro-Wilk Normality	0.4689		0.0000	Non-normal Distribution

2d Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.975	0.9481	1	0.8	1	0.01313	0.07071	7.25%	0.0%
17629-002	8	1	1	1	1	1	0	0	0.0%	-2.56%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	1.316	1.283	1.348	1.107	1.345	0.01563	0.08419	6.4%	0.0%
17629-002	8	1.345	1.345	1.345	1.345	1.345	0	0	0.0%	-2.26%



CETIS Analytical Report

Report Date: 8 Nov-08 09:31 (p 23 of 23)
 Link/Link Code: 12-8828-8740

Americamysis 7-d Survival, Growth and Fecundity Test EnviroSystems, Inc.

Analysis No: 20-8833-8706	Endpoint: 2d Proportion Survived	CETIS Version: CETISv1.6.4
Analyzed: 29 Aug-08 17:26	Analysis: Parametric-Two Sample	Official Results: Yes

Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	Not Run					9.38%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-003	2.256	1.761	0.09295	0.0203	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0567079	0.0567079	1	5.091	0.0406	Significant Effect
Error	0.1559467	0.0111391	14			
Total	0.2126546	0.067847	15			

ANOVA Assumptions

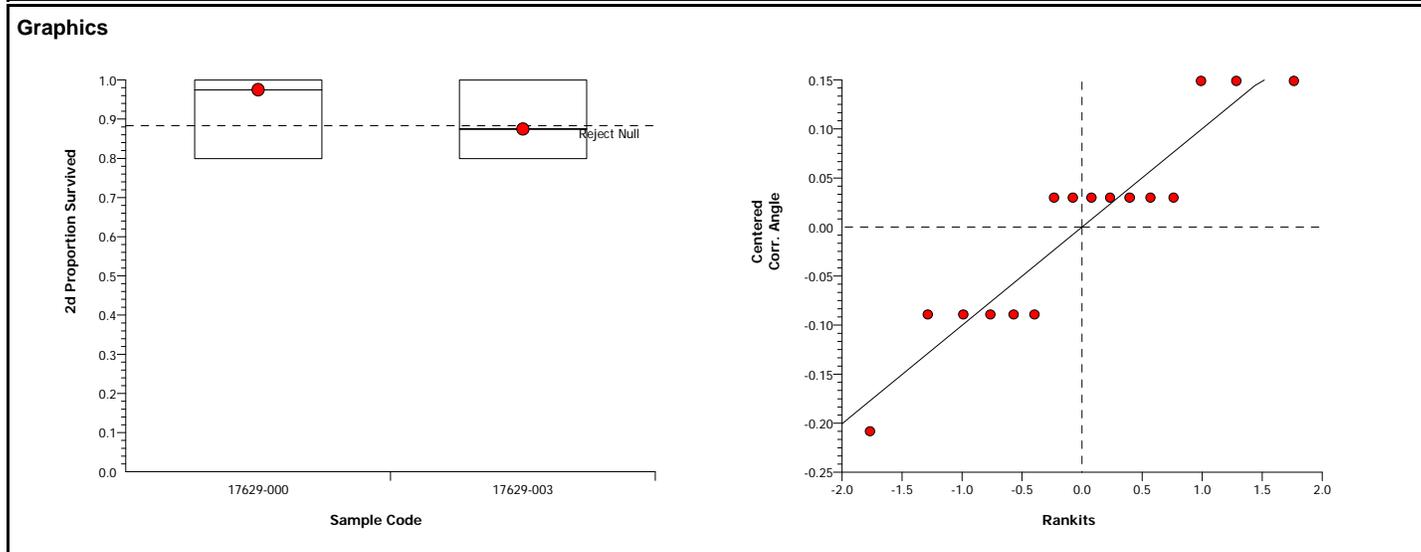
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	2.143	8.885	0.3361	Equal Variances
Distribution	Shapiro-Wilk Normality	0.8838		0.0445	Normal Distribution

2d Proportion Survived Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.975	0.9481	1	0.8	1	0.01313	0.07071	7.25%	0.0%
17629-003	8	0.875	0.8356	0.9144	0.8	1	0.01922	0.1035	11.83%	10.26%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	1.316	1.283	1.348	1.107	1.345	0.01563	0.08419	6.4%	0.0%
17629-003	8	1.196	1.15	1.243	1.107	1.345	0.02289	0.1232	10.3%	9.05%



**Arbacia punctulata Chronic Fertilization Assay
Water Quality and Gamete Preparation Data**

STUDY: <u>17629</u>	CLIENT: BATTELLE	LOCATION: New Bedford	DATE: <u>8/22/08</u> INITIALS: <u>SJ</u>		
SALINITY ADJUSTMENT RECORD: <u>200</u> mL -001 + <u>0</u> g SALT					
SALINITY ADJUSTMENT RECORD: <u>200</u> mL -002 + <u>0</u> g SALT					
SALINITY ADJUSTMENT RECORD: <u>200</u> mL -003 + <u>0</u> g SALT					
SALINITY ADJUSTED SAMPLE	D.O. (mg/L)	pH (SU)	SPEC COND (µmhos)	TEMP (°C)	SALINITY (ppt)
Lab Control	<u>7.4</u>	<u>7.94</u>	<u>43100</u>	<u>20</u>	<u>29</u>
-001	<u>6.2</u>	<u>7.49</u>	<u>43570</u>	<u>20</u>	<u>29</u>
-002	<u>6.3</u>	<u>7.42</u>	<u>43950</u>	<u>20</u>	<u>29</u>
-003	<u>6.6</u>	<u>7.43</u>	<u>43710</u>	<u>20</u>	<u>28</u>

METERS USED

DO meter # 20 DO probe # 23 pH meter # 470 pH probe # 83 S/C meter # YS130C S/C probe # YS130C
SALINITY meter # YS130C

DATE & INITIALS FOR GAMETE PREPARATION: 8/22/08 UB
SPERM DILUTIONS:

HEMACYTOMETER COUNT, E: 114 X 10⁴ = SPM SOLUTION E = 1.14 X 10⁶
SPERM CONCENTRATIONS: SOLUTION E X 40 = SOLUTION A = _____ SPM
SOLUTION E X 20 = SOLUTION B = _____ SPM
SOLUTION E X 5 = SOLUTION C = _____ SPM

FINAL COUNTS:

FINAL SPERM COUNT: _____
FINAL EGG COUNT: 2200

TEST TIMES:

SPERM COLLECTED: 1430
EGGS COLLECTED: 1545
SPERM ADDED: 1500
EGGS ADDED: 11000
FIXATIVE ADDED: 11020

See ESI SOP #1412 for additional information

Arbacia punctulata Chronic Fertilization Assay

SAMPLE USE RECORD

STUDY: 17629		CLIENT: Battelle - New Bedford	
SPECIES: <i>A. punctulata</i>			
Day: 0			
SAMPLE	Volume Used (mL)	ESI Cube ID	
Lab Control			
-001			
-002			
-003			
INITIALS:			
TIME:			
DATE:			

FERTILIZATION COUNTS

STUDY	CLIENT	LOCATION	DATE	INITIALS
	BATTELLE	New Bedford	8/22/08	OK
	REPLICATE VIAL			
	1	2	3	4
SAMPLE	FERT/TOTAL	FERT/TOTAL	FERT/TOTAL	FERT/TOTAL
Lab Control	100/113	100/111	100/114	100/113
-001	64/116	65/118	71/126	69/119
-002	57/138	39/112	41/126	52/144
-003	31/701	48/117	57/127	24/122

1800

CETIS Summary Report

Report Date: 24 Aug-08 21:56 (p 1 of 1)
Link/Link Code: 09-3716-1892

Arbacia Sperm Cell Fertilization Test	EnviroSystems, Inc.
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Test Run No: 21-0223-1936	Test Type: Fertilization	Analyst:
Start Date: 22 Aug-08 15:00	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 22 Aug-08 16:20	Species: Arbacia punctulata	Brine: Not Applicable
Duration: 80m	Source: In-House Culture	Age:

Sample Code	Sample No	Sample Date	Receive Date	Sample Age	Client Name	Project
17629-000	01-6030-3695	22 Aug-08 14:00	22 Aug-08 14:00	60m	Battelle Labs	Ecological Risk Assessm
17629-003	05-4158-6637	21 Aug-08 15:20	21 Aug-08 18:40	24h		
17629-002	08-5309-8454	21 Aug-08 15:02	21 Aug-08 18:40	24h		
17629-001	09-2317-4687	21 Aug-08 14:20	21 Aug-08 18:40	25h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
17629-000	Marine Monitoring Samp	New Bedford Harbor Dredge Mon	Laboratory Water Control		
17629-003	Marine Monitoring Samp	New Bedford Harbor Dredge Mon	WQ-TOX-003		
17629-002	Marine Monitoring Samp	New Bedford Harbor Dredge Mon	WQ-TOX-002		
17629-001	Marine Monitoring Samp	New Bedford Harbor Dredge Mon	WQ-TOX-001		

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Proportion Fertilized Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	4	0.887	0.8833	0.8907	0.8772	0.9009	0.001819	0.009962	1.12%	0.0%
17629-003	4	0.3407	0.2984	0.3829	0.1967	0.4488	0.02066	0.1131	33.21%	61.59%
17629-002	4	0.3619	0.3481	0.3758	0.3254	0.413	0.006779	0.03713	10.26%	59.19%
17629-001	4	0.5615	0.5564	0.5665	0.5508	0.5798	0.00247	0.01353	2.41%	36.7%

Proportion Fertilized Detail				
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4
17629-000	0.885	0.9009	0.8772	0.885
17629-003	0.3069	0.4103	0.4488	0.1967
17629-002	0.413	0.3482	0.3254	0.3611
17629-001	0.5517	0.5508	0.5635	0.5798

CETIS Analytical Report

Report Date: 24 Aug-08 21:58 (p 5 of 5)
 Link/Link Code: 09-3716-1892

Arbacia Sperm Cell Fertilization Test		EnviroSystems, Inc.
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Analysis No: 03-6359-0486	Endpoint: Proportion Fertilized	CETIS Version: CETISv1.6.4
Analyzed: 24 Aug-08 21:54	Analysis: Parametric-Two Sample	Official Results: Yes

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	Not Run					9.77%

Equal Variance t Two-Sample Test							
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-003	9.812	1.943	0.1206	0.0000	Significant Effect

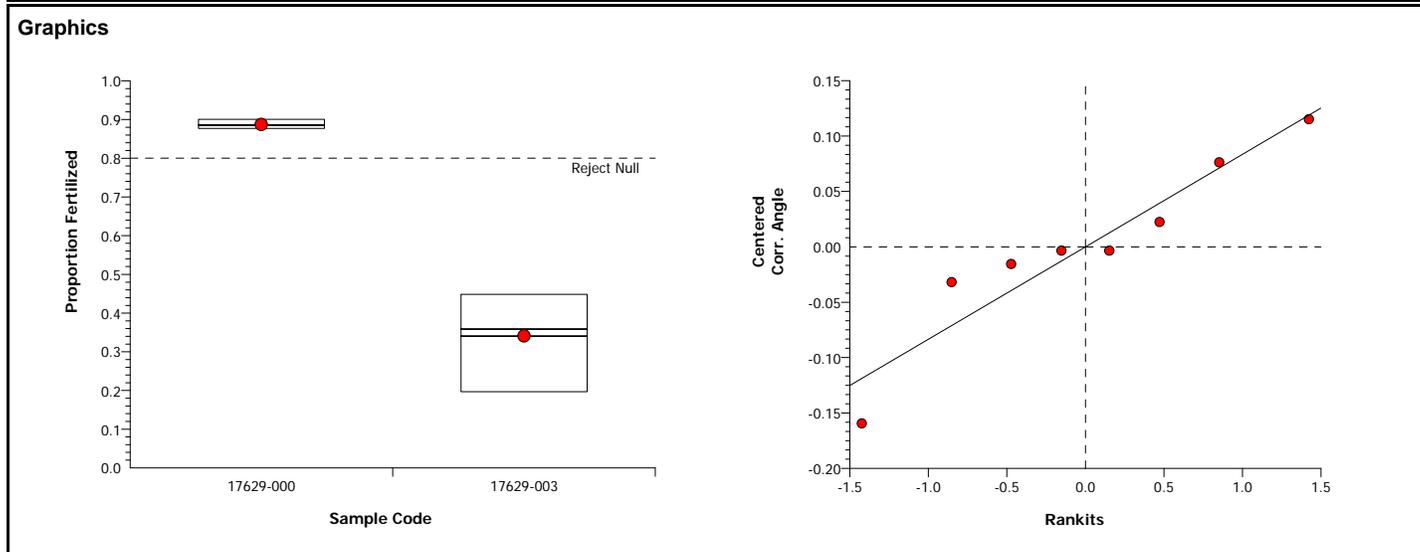
ANOVA Table						
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.742249	0.742249	1	96.27	0.0001	Significant Effect
Error	0.046259	0.00771	6			
Total	0.788508	0.749959	7			

ANOVA Assumptions						
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)	
Variances	Variance Ratio F	59.72	47.47	0.0071	Unequal Variances	
Distribution	Shapiro-Wilk Normality	0.9256		0.4766	Normal Distribution	

Proportion Fertilized Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%	
17629-000	4	0.887	0.8832	0.8908	0.8772	0.9009	0.00185	0.009962	1.12%	0.0%	
17629-003	4	0.3407	0.2976	0.3837	0.1967	0.4488	0.02101	0.1131	33.21%	61.59%	

Angular (Corrected) Transformed Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%	
17629-000	4	1.228	1.222	1.234	1.213	1.251	0.002959	0.01594	1.3%	0.0%	
17629-003	4	0.619	0.5722	0.6658	0.4595	0.7341	0.02287	0.1231	19.89%	49.6%	

Proportion Fertilized Detail					
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	
17629-000	0.9009	0.885	0.885	0.8772	
17629-003	0.4488	0.4103	0.3069	0.1967	



CETIS Analytical Report

Report Date: 24 Aug-08 21:58 (p 4 of 5)
 Link/Link Code: 09-3716-1892

Arbacia Sperm Cell Fertilization Test		EnviroSystems, Inc.
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Analysis No: 15-9648-4212	Endpoint: Proportion Fertilized	CETIS Version: CETISv1.6.4
Analyzed: 24 Aug-08 21:54	Analysis: Parametric-Two Sample	Official Results: Yes

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	Not Run					3.01%

Equal Variance t Two-Sample Test							
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-002	28	1.943	0.04046	0.0000	Significant Effect

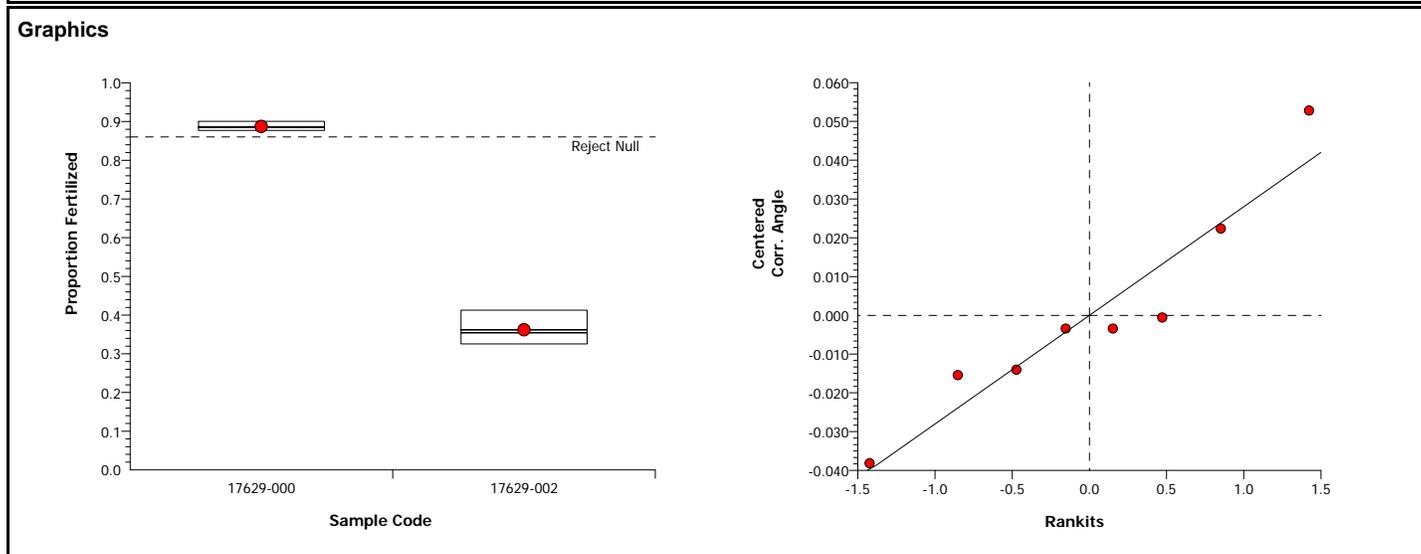
ANOVA Table						
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.679741	0.679741	1	783.9	0.0000	Significant Effect
Error	0.005203	0.000867	6			
Total	0.684943	0.680608	7			

ANOVA Assumptions						
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)	
Variances	Variance Ratio F	5.829	47.47	0.1817	Equal Variances	
Distribution	Shapiro-Wilk Normality	0.9244		0.4669	Normal Distribution	

Proportion Fertilized Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	4	0.887	0.8832	0.8908	0.8772	0.9009	0.00185	0.009962	1.12%	0.0%
17629-002	4	0.3619	0.3478	0.3761	0.3254	0.413	0.006895	0.03713	10.26%	59.19%

Angular (Corrected) Transformed Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	4	1.228	1.222	1.234	1.213	1.251	0.002959	0.01594	1.3%	0.0%
17629-002	4	0.6452	0.6306	0.6599	0.607	0.698	0.007145	0.03847	5.96%	47.47%

Proportion Fertilized Detail				
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4
17629-000	0.9009	0.885	0.885	0.8772
17629-002	0.413	0.3611	0.3482	0.3254



CETIS Analytical Report

Report Date: 24 Aug-08 21:58 (p 3 of 5)
 Link/Link Code: 09-3716-1892

Arbacia Sperm Cell Fertilization Test		EnviroSystems, Inc.
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Analysis No: 12-2981-5646	Endpoint: Proportion Fertilized	CETIS Version: CETISv1.6.4
Analyzed: 24 Aug-08 21:54	Analysis: Parametric-Two Sample	Official Results: Yes

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	Not Run					1.47%

Equal Variance t Two-Sample Test							
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-001	36.33	1.943	0.02038	0.0000	Significant Effect

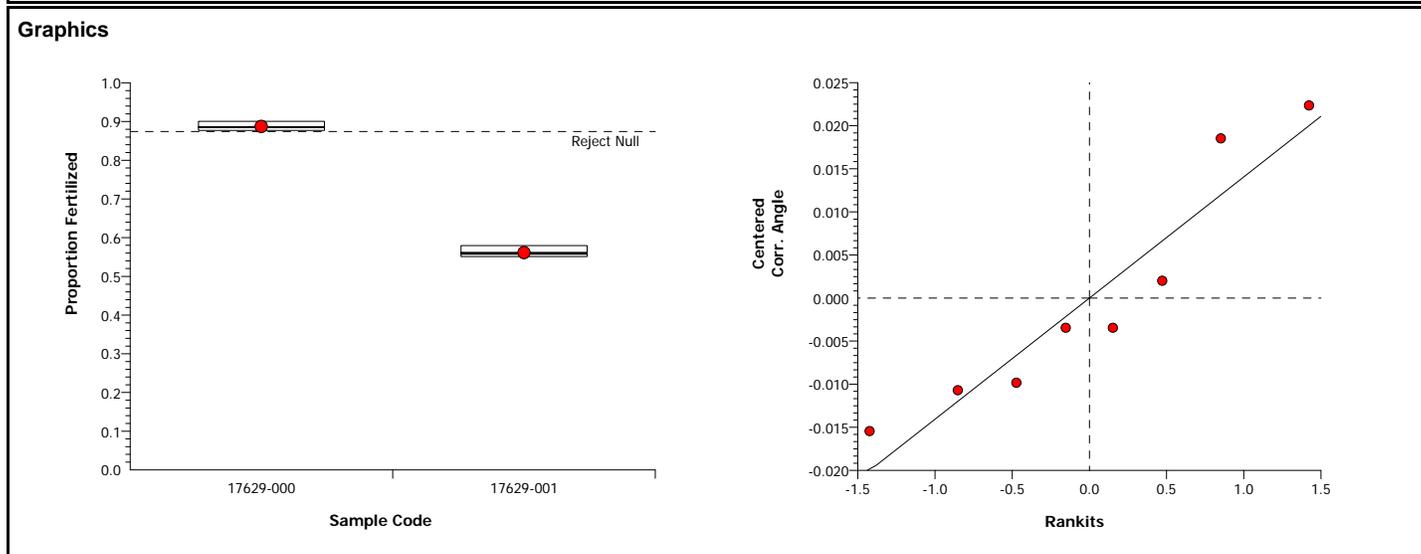
ANOVA Table						
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.290559	0.290559	1	1320	0.0000	Significant Effect
Error	0.001321	0.000220	6			
Total	0.29188	0.290779	7			

ANOVA Assumptions						
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)	
Variances	Variance Ratio F	1.364	47.47	0.8050	Equal Variances	
Distribution	Shapiro-Wilk Normality	0.8852		0.2111	Normal Distribution	

Proportion Fertilized Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%	
17629-000	4	0.887	0.8832	0.8908	0.8772	0.9009	0.00185	0.009962	1.12%	0.0%	
17629-001	4	0.5615	0.5563	0.5666	0.5508	0.5798	0.002512	0.01353	2.41%	36.7%	

Angular (Corrected) Transformed Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%	
17629-000	4	1.228	1.222	1.234	1.213	1.251	0.002959	0.01594	1.3%	0.0%	
17629-001	4	0.847	0.8419	0.8522	0.8363	0.8656	0.002534	0.01365	1.61%	31.03%	

Proportion Fertilized Detail					
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	
17629-000	0.9009	0.885	0.885	0.8772	
17629-001	0.5798	0.5635	0.5517	0.5508	



CETIS Analytical Report

Report Date: 24 Aug-08 21:58 (p 2 of 5)
 Link/Link Code: 09-3716-1892

Arbacia Sperm Cell Fertilization Test		EnviroSystems, Inc.
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Analysis No: 13-9467-0508	Endpoint: Proportion Fertilized	CETIS Version: CETISv1.6.4
Analyzed: 24 Aug-08 21:54	Analysis: Parametric-Two Sample	Official Results: Yes

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	Not Run					34.1%

Equal Variance t Two-Sample Test							
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-003		17629-002	-0.4064	1.943	0.1254	0.6507	Non-Significant Effect

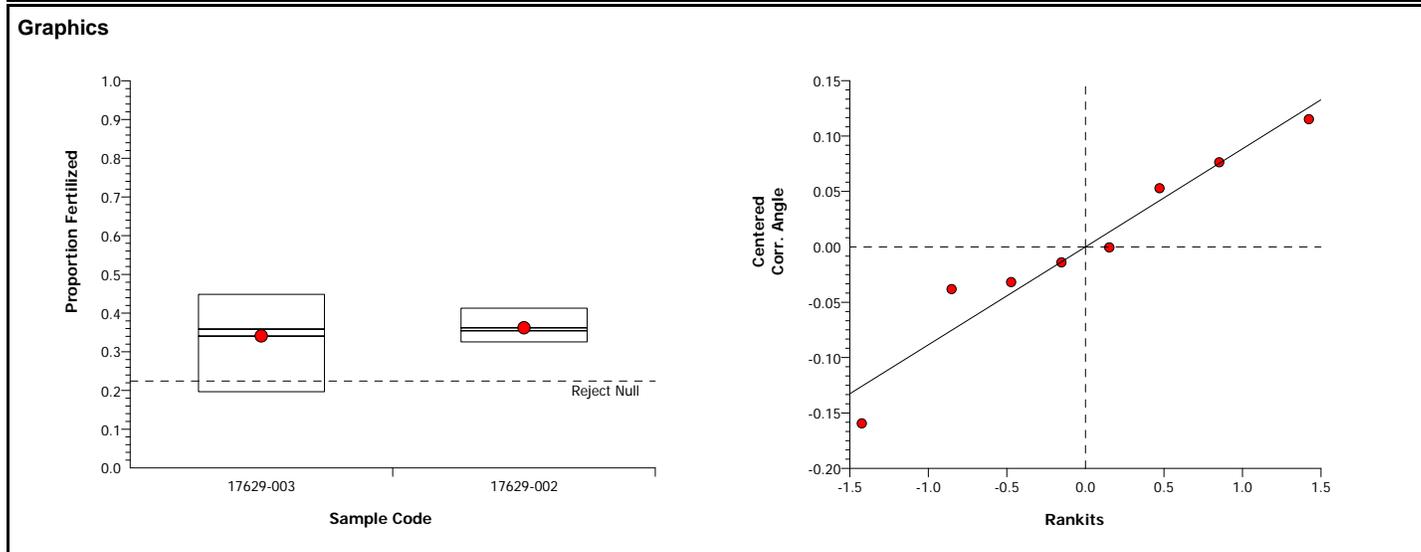
ANOVA Table						
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.001375	0.001375	1	0.1652	0.6986	Non-Significant Effect
Error	0.049938	0.008323	6			
Total	0.051312	0.009697	7			

ANOVA Assumptions						
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)	
Variances	Variance Ratio F	10.24	47.47	0.0876	Equal Variances	
Distribution	Shapiro-Wilk Normality	0.9507		0.7182	Normal Distribution	

Proportion Fertilized Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%	
17629-003	4	0.3407	0.2976	0.3837	0.1967	0.4488	0.02101	0.1131	33.21%	0.0%	
17629-002	4	0.3619	0.3478	0.3761	0.3254	0.413	0.006895	0.03713	10.26%	-6.24%	

Angular (Corrected) Transformed Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%	
17629-003	4	0.619	0.5722	0.6658	0.4595	0.7341	0.02287	0.1231	19.89%	0.0%	
17629-002	4	0.6452	0.6306	0.6599	0.607	0.698	0.007145	0.03847	5.96%	-4.24%	

Proportion Fertilized Detail					
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	
17629-003	0.4488	0.4103	0.3069	0.1967	
17629-002	0.413	0.3611	0.3482	0.3254	



CETIS Analytical Report

Report Date: 24 Aug-08 21:58 (p 1 of 5)
 Link/Link Code: 09-3716-1892

Arbacia Sperm Cell Fertilization Test		EnviroSystems, Inc.
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Analysis No: 11-9401-6946	Endpoint: Proportion Fertilized	CETIS Version: CETISv1.6.4
Analyzed: 24 Aug-08 21:54	Analysis: Parametric-Two Sample	Official Results: Yes

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	Not Run					32.87%

Equal Variance t Two-Sample Test							
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-003		17629-001	-3.681	1.943	0.1204	0.9948	Non-Significant Effect

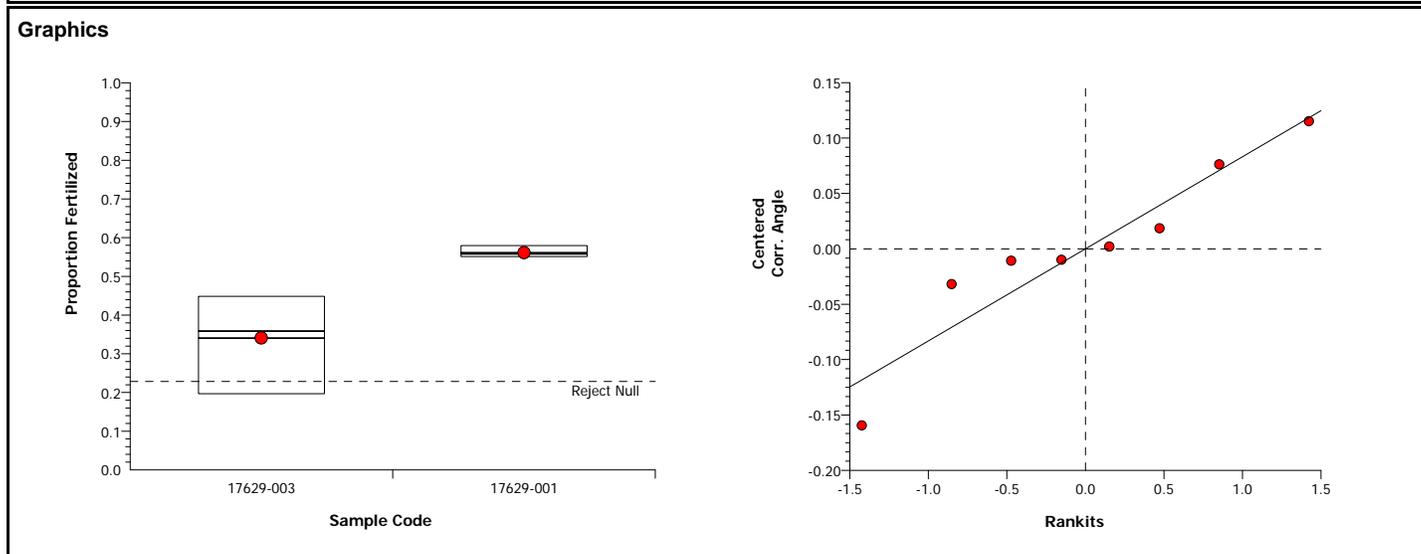
ANOVA Table						
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.104009	0.104009	1	13.55	0.0103	Significant Effect
Error	0.046056	0.007676	6			
Total	0.150064	0.111684	7			

ANOVA Assumptions						
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)	
Variances	Variance Ratio F	81.43	47.47	0.0045	Unequal Variances	
Distribution	Shapiro-Wilk Normality	0.9222		0.4481	Normal Distribution	

Proportion Fertilized Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%	
17629-003	4	0.3407	0.2976	0.3837	0.1967	0.4488	0.02101	0.1131	33.21%	0.0%	
17629-001	4	0.5615	0.5563	0.5666	0.5508	0.5798	0.002512	0.01353	2.41%	-64.81%	

Angular (Corrected) Transformed Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%	
17629-003	4	0.619	0.5722	0.6658	0.4595	0.7341	0.02287	0.1231	19.89%	0.0%	
17629-001	4	0.847	0.8419	0.8522	0.8363	0.8656	0.002534	0.01365	1.61%	-36.84%	

Proportion Fertilized Detail					
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	
17629-003	0.4488	0.4103	0.3069	0.1967	
17629-001	0.5798	0.5635	0.5517	0.5508	





Test Data Summary

SAMPLE		SRC#	598, 599, 600
Identification/Name	001, 002, 003 (also labeled Batelle)		
Date Shipped	Aug 22/08		
Date/Time Received	Aug 25/08 4 pm	Test Initiation Date	Aug 25/08
Temperature Upon Receipt (°C)	21	Test Completion Date	Sept 2/08

ORGANISM INFORMATION			
Species	<i>Champia parvula</i>	Appearance/Health of Champia	excellent
Source	sexually mature male and female branches, obtained from USEPA, Hatfield Marine Science Center, Newport, Oregon in 1995		
Females, Presence of Trichognes	yes	Males, Presence of Sori with Spermatia	yes

TEST CONDITIONS			
Test Method	EPA 821-R-02-014, Method 1009.0 Third edition, October 2002	Dilution water	Natural seawater from Pacific Environmental Science Centre, North Vancouver B.C. as described on page 1
Test Type	static, non-renewal; two day effluent exposure followed by five to seven day recovery period in control medium for cystocarp development		
Test Vessels (Exposure & Recovery)	270 mL transparent polystyrene cups, transparent polystyrene lids		
Exposure Vessel Volume / Depth	100 mL / 4.5 cm	Recovery Vessel Volume /Depth	200 mL / 7.3 cm
Replicates/Conc.	3	No. of organisms (female/male)	5/2
Number and Concentrations of Test Solutions (%v/v)	Controls: (two) natural sea water, salt Tests: all samples tested at 100%		
Chemicals added to control/dilution water	Test Nutrients as described in method cited at 10 mL/L, analytical grade		

SAMPLE TREATMENT					
D.O. on sample without salinity adjustment (mg/L)	See pg 3	D.O. after salinity adjustment (mg/L)	Page 3		
Aeration (duration/rate)	none	Filtration	none	pH Adjustments	none
Salinity Adjustment*	Not required				
Dry Salt for Salinity Adjustment*					
* as per EC guidance document on salinity adjustment, Dec 2001					

EXPOSURE PERIOD (48 h) and RECOVERY PERIOD (5-7 days)			
Temperature, pH, D.O. and Salinity of test solutions and controls on following page			
Photoperiod (L:D h)	16:8	Agitation of tests and controls during exposure	gentle rotary shaking
Recovery Medium: natural sea water containing 10 mL/L Culture Nutrients (section 16.10.1.3 of cited method), prepared from analytical grade chemicals			
Aeration during recovery: gentle aeration supplied			

Date/Initial Aug 7/08 SM



Water Quality Data

Sample Identification/Name	001, 002, 003 (also labeled Batelle)	598, 599, 600
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INITIAL WATER QUALITY	SAMPLE at test start, without salinity adjustment			TEST MEDIUM	RECOVERY MEDIUM
	598	599	600		
Sample #	598	599	600		
Temperature (°C)	22	22	22	22	22
Dissolved Oxygen (mg/L)	7.6	7.6	7.6	7.8	7.8
pH	7.56	7.56	7.52	8.52	8.55
Salinity (ppt)	30	30	30	30	30
Sample Description	Clear liquid	Clear liquid	Clear liquid	Length of Recovery Period (days)	5

Water Quality Data during Exposure Period (0, 24, 48 hr)

Concentration % (v/v)	Temperature (°C)			Dissolved Oxygen (mg/L)			pH			Salinity (ppt)		
	exposure			exposure			exposure			exposure		
	0	24	48	0	24	48	0	24	48	0	24	48
Control NSW ¹	23	23	23	7.8	8.3	7.9	8.52	8.98	8.84	30	30	30
598	23	23	23	7.6	8.1	7.7	7.56	8.55	8.41	30	30	30
599	22	23	23	7.6	8.1	7.7	7.56	8.58	8.41	30	30	30
600	22	23	23	7.6	8.2	7.7	7.52	8.65	8.80	29	30	30

Recovery Period – Temperature Monitoring (initial daily entries)

Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
23	23	23	23	23	23	-	-

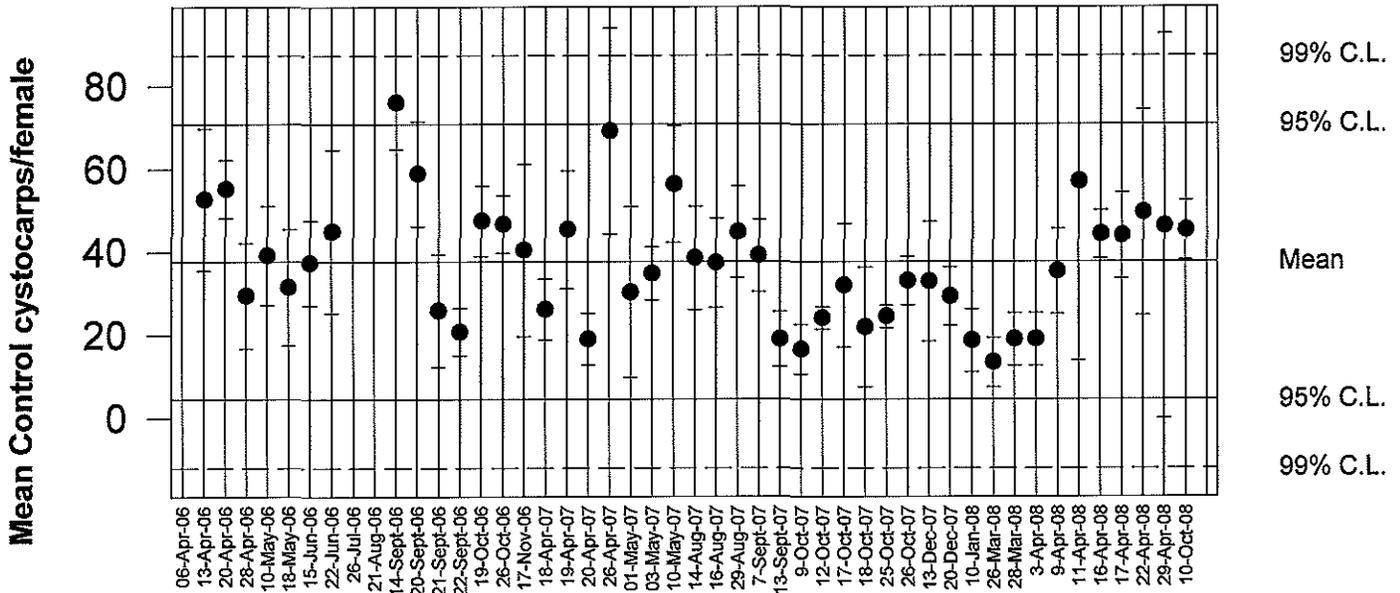
Champia (female) Mortality at end of Recovery Period

Concentration %v/v	control	598	599	600
	NSW ¹	100%	100%	100%
# Females dead ²	0	0	0	0
% Mortality ²	0	0	0	0
Description	Normal red	Green with red tips	Green with red tips	Normal red

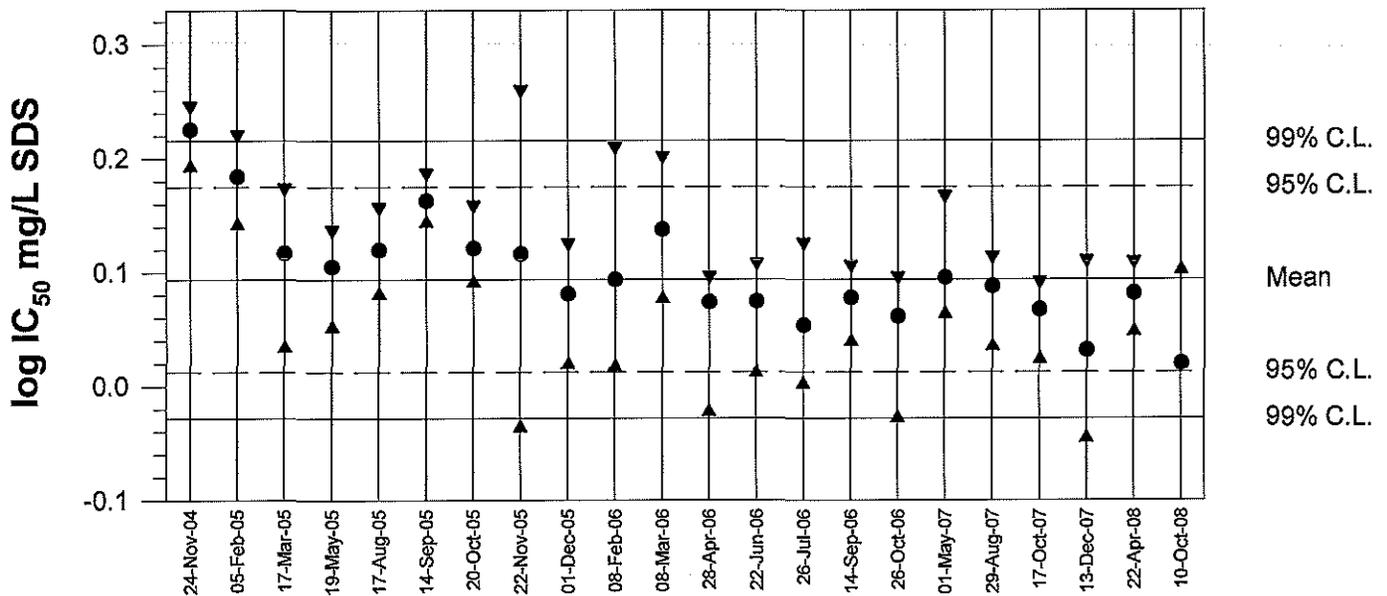
¹ NSW natural sea water
² same for all test units at each concentration

Date/Initial Nov 7/08 SM

Saskatchewan Research Council *Champia parvula* Reproduction Test Control Charts



Control cystocarp count per female *Champia parvula* for tests from Apr 2006 to Oct 2008. Mean and 95% control limits for each test and cumulative mean, 95% and 99% control limits for all tests.
Cumulative mean: 37.7 (95% CL: 4-71)



Reference Toxicant Tests using Sodium dodecyl sulfate mg/L
Historical value (previous 20 tests) and 95% confidence limits 1.25 (1.05 - 1.48) mg/L
Data for most recent test
Oct 10/08: mean and 95% confidence limits 1.05 (0.83 - 1.26) mg/L

CETIS Summary Report

Report Date: 04 Sep-08 14:38 (p 1 of 1)
Link/Link Code: 10-0154-2522

Champia parvula Red Macroalga Sexual Reproduction Test **Saskatchewan Research Council**

Test Run No: 06-5260-4165	Test Type: Champia	Analyst:
Start Date: 26 Aug-08 12:00	Protocol: EPA/600/4-91/003 (1994)	Diluent: Not Applicable
Ending Date: 01 Sep-08 12:00	Species: Champia parvula	Brine: Not Applicable
Duration: 6d 0h	Source: In-House Culture	Age:

Sample Code	Sample No	Sample Date	Receive Date	Sample Age	Client Name	Project
17629-000	01-6030-3695	22 Aug-08 14:00	22 Aug-08 14:00	94h	Battelle Labs	Ecological Risk Assessme
17629-003	05-4158-6637	21 Aug-08 15:20	21 Aug-08 18:40	4d 21h		
17629-002	08-5309-8454	21 Aug-08 15:02	21 Aug-08 18:40	4d 21h		
17629-001	09-2317-4687	21 Aug-08 14:20	21 Aug-08 18:40	4d 22h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
17629-000	Marine Monitoring Samp	New Bedford Harbor Dredge	Moni Laboratory Water Control		
17629-003	Marine Monitoring Samp	New Bedford Harbor Dredge	Moni WQ-TOX-003		
17629-002	Marine Monitoring Samp	New Bedford Harbor Dredge	Moni WQ-TOX-002		
17629-001	Marine Monitoring Samp	New Bedford Harbor Dredge	Moni WQ-TOX-001		

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Mean Cystocarps Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%	
17629-000	3	10.53	10.15	10.92	9.4	11.4	0.1874	1.026	9.74%	0.0%	
17629-003	4	4.9	4.467	5.333	3.8	6.4	0.2119	1.16	23.68%	53.48%	
17629-002	4	0.1	0.05688	0.1431	0	0.2	0.02108	0.1155	115.5%	99.05%	
17629-001	4	0	0	0	0	0	0	0		100.0%	

Mean Cystocarps Detail					
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	
17629-000	11.4	9.4	10.8		
17629-003	4.2	6.4	5.2	3.8	
17629-002	0.2	0.2	0	0	
17629-001	0	0	0	0	

Champia parvula Red Macroalga Sexual Reproduction Test **Saskatchewan Research Council**

Analysis No: 20-5412-1382	Endpoint: Mean Cystocarps	CETIS Version: CETISv1.6.4
Analyzed: 04 Sep-08 14:36	Analysis: Parametric-Two Sample	Official Results: Yes

Test Run No: 06-5260-4165	Test Type: Champia	Analyst:
Start Date: 26 Aug-08 12:00	Protocol: EPA/600/4-91/003 (1994)	Diluent: Not Applicable
Ending Date: 01 Sep-08 12:00	Species: Champia parvula	Brine: Not Applicable
Duration: 6d 0h	Source: In-House Culture	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					23.01%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-003		17629-001	8.445	1.943	1.127	0.0001	Significant Effect

ANOVA Table

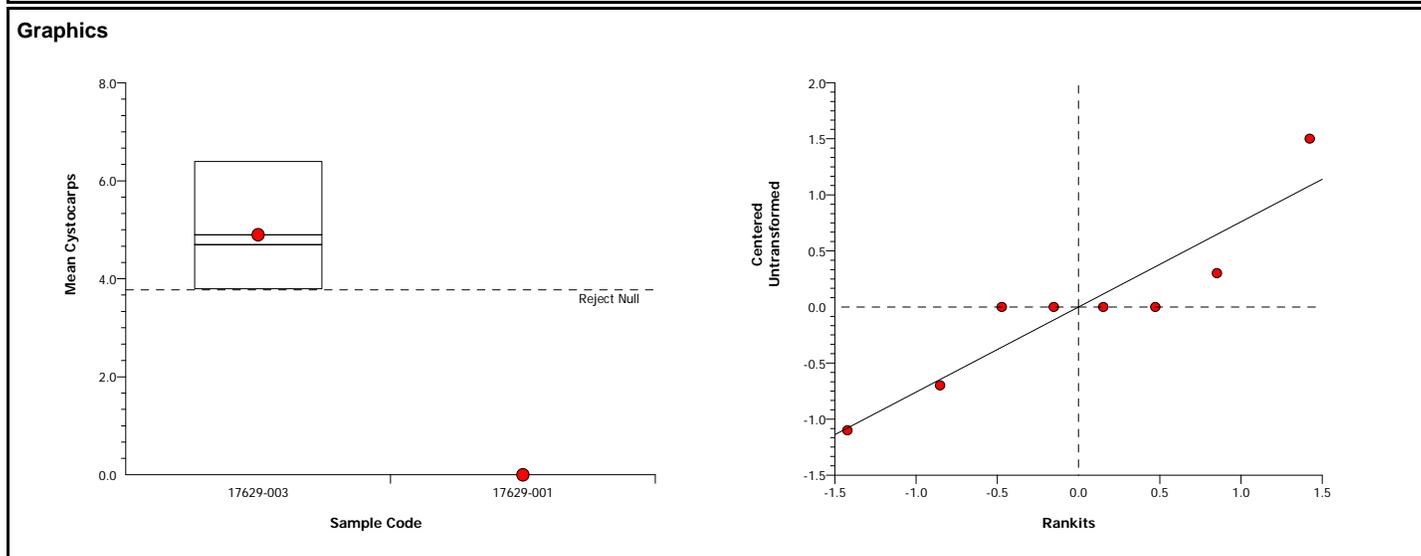
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	48.02	48.02	1	71.32	0.0002	Significant Effect
Error	4.04	0.6733333	6			
Total	52.06	48.69333	7			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Varianc	10.13	13.75	0.0190	Equal Variances
Distribution	Shapiro-Wilk Normality	0.8837		0.2041	Normal Distribution

Mean Cystocarps Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	4	4.9	4.459	5.341	3.8	6.4	0.2155	1.16	23.68%	0.0%
17629-001	4	0	0	0	0	0	0	0	100.0%	



Champia parvula Red Macroalga Sexual Reproduction Test **Saskatchewan Research Council**

Analysis No: 17-5336-3770	Endpoint: Mean Cystocarps	CETIS Version: CETISv1.6.4
Analyzed: 04 Sep-08 14:36	Analysis: Parametric-Two Sample	Official Results: Yes

Test Run No: 06-5260-4165	Test Type: Champia	Analyst:
Start Date: 26 Aug-08 12:00	Protocol: EPA/600/4-91/003 (1994)	Diluent: Not Applicable
Ending Date: 01 Sep-08 12:00	Species: Champia parvula	Brine: Not Applicable
Duration: 6d 0h	Source: In-House Culture	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					23.12%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-003		17629-002	8.232	1.943	1.133	0.0001	Significant Effect

ANOVA Table

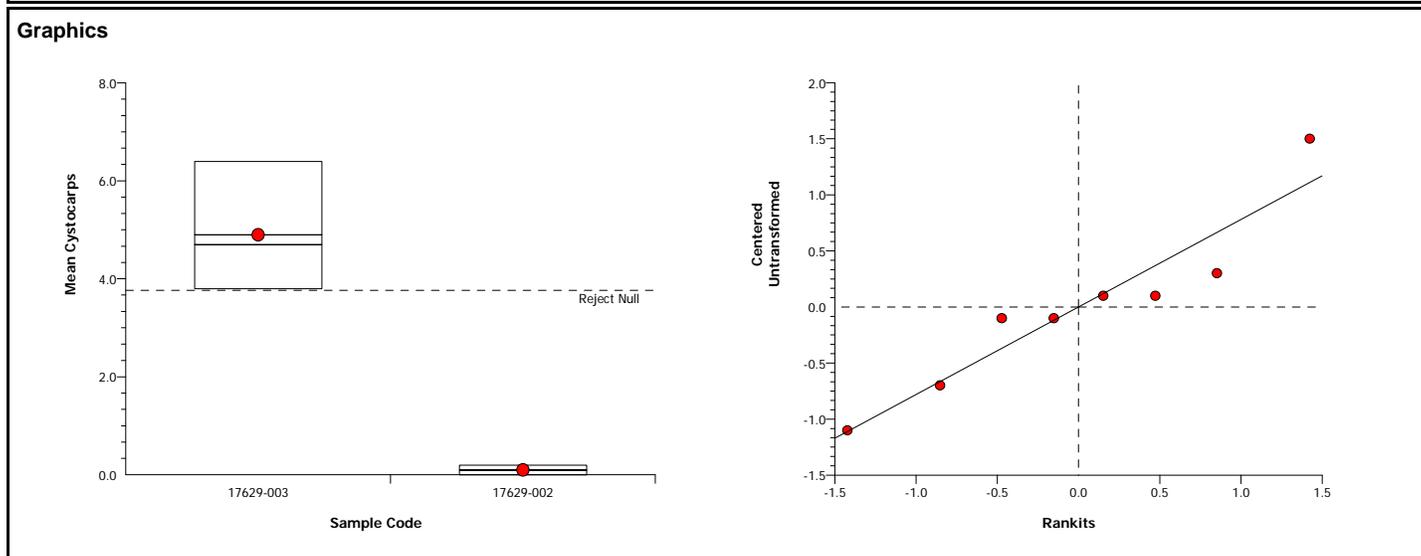
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	46.08	46.08	1	67.76	0.0002	Significant Effect
Error	4.08	0.68	6			
Total	50.16	46.76	7			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	101	47.47	0.0033	Unequal Variances
Distribution	Shapiro-Wilk Normality	0.9184		0.4174	Normal Distribution

Mean Cystocarps Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	4	4.9	4.459	5.341	3.8	6.4	0.2155	1.16	23.68%	0.0%
17629-002	4	0.1	0.05608	0.1439	0	0.2	0.02144	0.1155	115.5%	97.96%



Champia parvula Red Macroalga Sexual Reproduction Test **Saskatchewan Research Council**

Analysis No: 06-4939-5819	Endpoint: Mean Cystocarps	CETIS Version: CETISv1.6.4
Analyzed: 04 Sep-08 14:36	Analysis: Parametric-Two Sample	Official Results: Yes

Test Run No: 06-5260-4165	Test Type: Champia	Analyst:
Start Date: 26 Aug-08 12:00	Protocol: EPA/600/4-91/003 (1994)	Diluent: Not Applicable
Ending Date: 01 Sep-08 12:00	Species: Champia parvula	Brine: Not Applicable
Duration: 6d 0h	Source: In-House Culture	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					16.43%

Unequal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-001	17.78	2.92	1.73	0.0016	Significant Effect

ANOVA Table

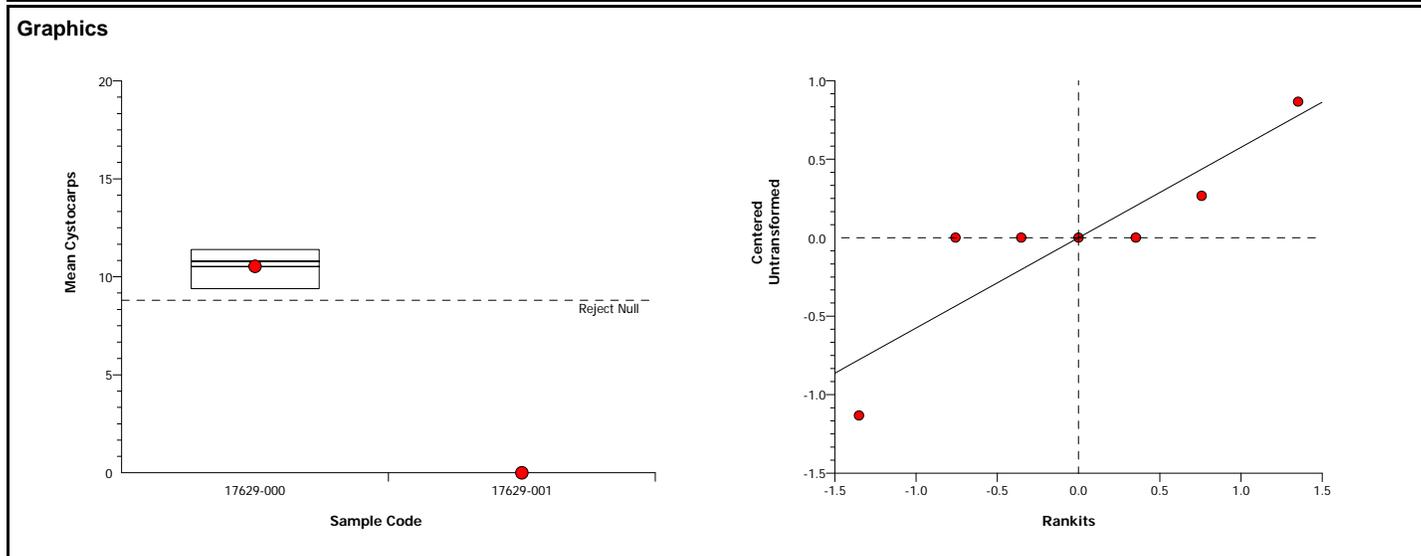
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	190.2019	190.2019	1	451.4	0.0000	Significant Effect
Error	2.106667	0.4213333	5			
Total	192.3086	190.6232	6			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Varianc	22.32	16.26	0.0052	Unequal Variances
Distribution	Shapiro-Wilk Normality	0.8359		0.0910	Normal Distribution

Mean Cystocarps Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	3	10.53	10.14	10.92	9.4	11.4	0.1906	1.026	9.74%	0.0%
17629-001	4	0	0	0	0	0	0	0		100.0%



Champia parvula Red Macroalga Sexual Reproduction Test			Saskatchewan Research Council		
Analysis No: 09-1907-8467	Endpoint: Mean Cystocarps	CETIS Version: CETISv1.6.4			
Analyzed: 04 Sep-08 14:36	Analysis: Parametric-Two Sample	Official Results: Yes			
Test Run No: 06-5260-4165	Test Type: Champia	Analyst:			
Start Date: 26 Aug-08 12:00	Protocol: EPA/600/4-91/003 (1994)	Diluent: Not Applicable			
Ending Date: 01 Sep-08 12:00	Species: Champia parvula	Brine: Not Applicable			
Duration: 6d 0h	Source: In-House Culture	Age:			

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

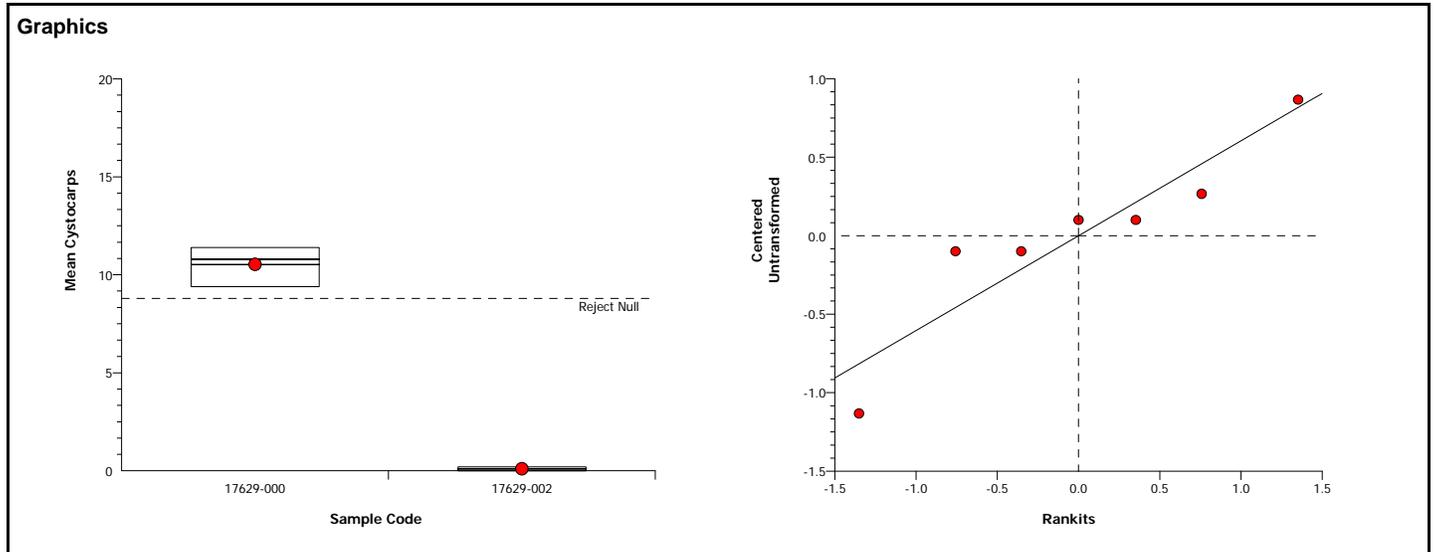
Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					16.5%

Unequal Variance t Two-Sample Test							
Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-002	17.52	2.92	1.738	0.0016	Significant Effect

ANOVA Table						
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	186.6076	186.6076	1	434.6	0.0000	Significant Effect
Error	2.146667	0.4293333	5			
Total	188.7543	187.037	6			

ANOVA Assumptions						
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)	
Variances	Variance Ratio F	79	49.8	0.0051	Unequal Variances	
Distribution	Shapiro-Wilk Normality	0.8943		0.2978	Normal Distribution	

Mean Cystocarps Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	3	10.53	10.14	10.92	9.4	11.4	0.1906	1.026	9.74%	0.0%
17629-002	4	0.1	0.05608	0.1439	0	0.2	0.02144	0.1155	115.5%	99.05%



Champia parvula Red Macroalga Sexual Reproduction Test **Saskatchewan Research Council**

Analysis No: 12-0365-3524	Endpoint: Mean Cystocarps	CETIS Version: CETISv1.6.4
Analyzed: 04 Sep-08 14:36	Analysis: Parametric-Two Sample	Official Results: Yes

Test Run No: 06-5260-4165	Test Type: Champia	Analyst:
Start Date: 26 Aug-08 12:00	Protocol: EPA/600/4-91/003 (1994)	Diluent: Not Applicable
Ending Date: 01 Sep-08 12:00	Species: Champia parvula	Brine: Not Applicable
Duration: 6d 0h	Source: In-House Culture	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					16.2%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-003	6.652	2.015	1.706	0.0006	Significant Effect

ANOVA Table

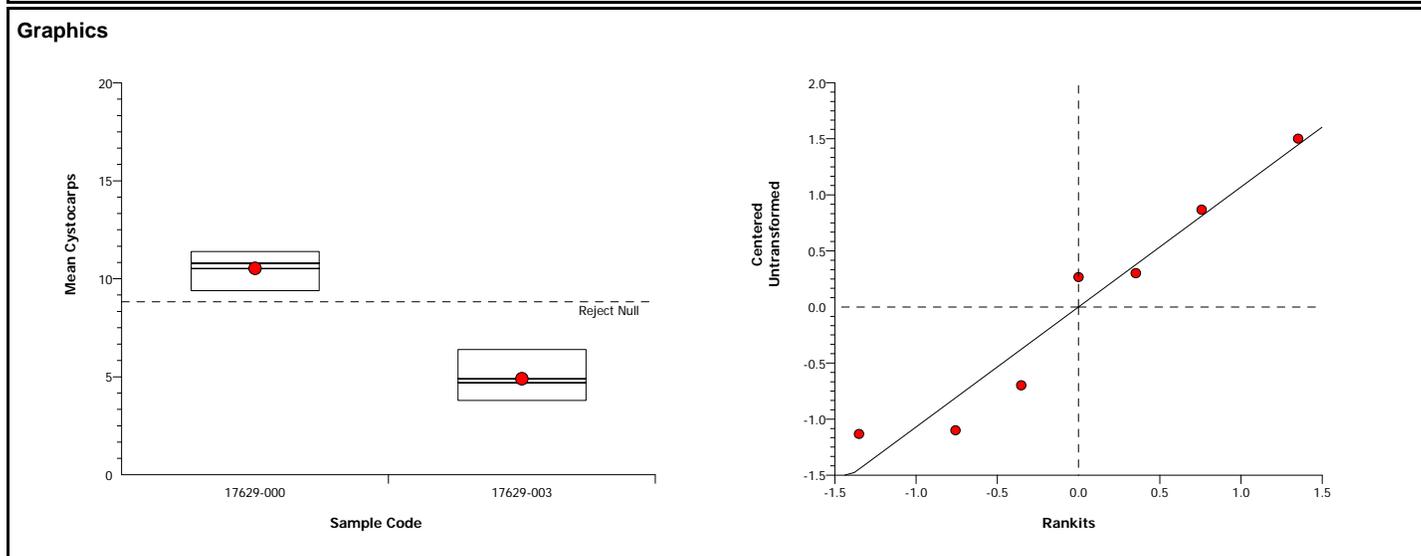
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	54.40191	54.40191	1	44.25	0.0012	Significant Effect
Error	6.146667	1.229333	5			
Total	60.54857	55.63124	6			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	1.278	199.2	0.9343	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9199		0.4688	Normal Distribution

Mean Cystocarps Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	3	10.53	10.14	10.92	9.4	11.4	0.1906	1.026	9.74%	0.0%
17629-003	4	4.9	4.459	5.341	3.8	6.4	0.2155	1.16	23.68%	53.48%



**Americamysis bahia 7 DAY CHRONIC ASSAY
NEW WATER QUALITIES**

STUDY: 17629		CLIENT: BATTELLE				LOCATION: NEW BEDFORD				LAB CONTROL: HAMPTON ESTUARY					
		NEW DISSOLVED OXYGEN (mg/L)							NEW SALINITY (ppt)						
CONC	REP	0	1	2	3	4	5	6	0	1	2	3	4	5	6
LAB	A	7.4	6.6	7.3	6.8	7.1	7.0	7.2	29	28	28	29	30	29	29
-001	A	6.2	6.6	7.4	6.8	7.0	7.1	7.3	29	29	29	29	29	29	29
-002	A	6.3	6.0	7.5	6.9	7.1	6.8	7.3	29	29	29	29	29	29	29
-003	A	6.6	6.3	7.6	6.9	7.0	6.9	7.6	28	28	28	28	28	29	28
		NEW pH (SU)							NEW TEMPERATURE (°C)						
CONC	REP	0	1	2	3	4	5	6	0	1	2	3	4	5	6
LAB	A	7.94	8.10	8.22	8.25	7.91	7.86	7.86	24	24	24	24	24	24	24
-001	A	7.49	7.64	7.78	7.62	7.39	7.37	7.42	24	24	24	24	24	24	24
-002	A	7.42	7.62	7.76	7.69	7.42	7.46	7.68	24	25	24	24	24	24	24
-003	A	7.43	7.66	7.75	7.73	7.44	7.48	7.70	24	25	24	24	24	24	24
INC TEMP:		25	25	25	25	25	25	25							
DATE:		8/22/08	8/23	8/24	8/25	8/26	8/27	8/28							
TIME:		1206	1600	1710	1005	1015	1300	1230							
INIT:		SJ	DM	UB	SJ	APC	SJ	APC							

**WATER QUALITY METERS USED
NEW WATER QUALITIES**

	0	1	2	3	4	5	6	7
Water Quality Station #	///	1	1	1	2	2	1	
Initials	///	DM	UB	SJ	APC	SJ	APC	
Date	8/22/08	8/23	8/24	8/25	8/26	8/27	8/28	

**Americamysis bahia 7 DAY CHRONIC ASSAY
OLD WATER QUALITIES**

STUDY: 17629		CLIENT: BATTELLE			LOCATION: NEW BEDFORD				LAB CONTROL: HAMPTON ESTUARY						
OLD SALINITY (ppt)									OLD pH (SU)						
Conc	Rep	1	2	3	4	5	6	7	1	2	3	4	5	6	7
Control	A	28	28	28	28	31	29	29	8.01	8.03	7.79	7.71	7.93	7.93	7.79
-001	A	30	29	30	29	30	30	30	7.67	7.88	7.69	7.53	7.76	7.77	7.77
-002	A	30	30	30	30	30	30	30	7.76	7.93	7.67	7.65	7.70	7.81	7.81
-003	A	29	29	30	29	29	29	29	7.90	7.93	7.68	7.55	7.73	7.86	7.80
OLD TEMPERATURE (°C)															
Conc	Rep	1	2	3	4	5	6	7							
Control	A	25	24	24	24	24	24	24							
-001	A	25	24	24	24	24	24	24							
-002	A	25	24	24	24	24	24	24							
-003	A	25	24	24	24	24	24	24							
INC TEMP:		25	25	25	25	25	25	25							
DATE:		8/23/08	8/24	8/25	8/26	8/27	8/28	8/29							
TIME:		1530	1045	1515	0920	1200	1445	1540							
INITIALS:		DM	LB	SJ	APC	SJ	APC	LB							

GENERAL NOTES - for additional information refer to SOP #1411 or EPA manual 600/4-91/003

- Test vessels will be 250 mL glass beakers containing a minimum of 150 mL of solution
- 8 replicates per site with 5 organisms each
- Test Temperature: 26±1°C
- Salinity: 25 ±2ppt
- Dissolved Oxygen: >4.3 mg/L
- Photoperiod will be 16 hours light and 8 hours dark.
- Passing criteria require ≥80% survival and average dry weight of ≥0.20 mg/organism in the control vessels.

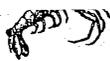
WATER QUALITY METERS USED OLD WATER QUALITIES								
	0	1	2	3	4	5	6	7
Water Quality Station #	///	1	1	2	2	1	1	1
Initials	///	DM	LB	SJ	APC	SJ	APC	LB
Date	8/22/08	8/23/08	8/24	8/25	8/26	8/27	8/28	8/29

SALTWATER ASSAYS

A. bahia, *A. punctulata*, *C. parvula*

STUDY: 17629	LOCATION: New Bedford Harbor				
CHEMISTRY	Lab Salt Control	-001	-002	-003	
	17594				
AMMONIA	-001	-004	-005	-006	
AS RECEIVED WATER QUALITIES					
	Lab Salt Control	-001	-002	-003	
SALINITY (ppt)	29	28.6	29.2	28.2	
pH (SU)	7.94	7.42	7.45	7.55	
TRC (mg/L)	20.02	20.02	20.02	20.02	
DO (mg/L)	7.4	6.2	6.1	6.6	
S/C (µmhos/cm)	43100	43570	43950	43710	
WQ STATION USED	2	2	2	2	
INITIALS	SJ	SJ	SJ	SJ	
<i>A. bahia</i> SALINITY ADJUSTMENT RECORD					
	Lab Salt Control	-001	-002	-003	
SAMPLE (mLs)	/	/	/	/	
SEA SALT (g)	/	/	/	/	
DATE:	8/22/08	8/22/08	8/22/08	8/22/08	
TIME:	1030	1030	1030	1030	
INITIALS:	SJ	SJ	SJ	SJ	

Sample ID	ESI Cube ID
17629-001	17629
17629-002	17629
17629-003	17629



Aquatic Research Organisms

DATA SHEET

I. Organism History

Species Americamysis bahia

Source: Lab reared Hatchery reared _____ Field collected _____

Hatch date 08/15/08 Receipt date _____

Lot number 081508MS Strain ARO

Brood origination FL

II. Water Quality

Temperature 25 °C Salinity 28 ppt D.O. SAT ppm

pH 8.3 su Hardness — ppm Alkalinity — ppm

III. Culture Conditions

Freshwater _____ Saltwater Other _____

Recirculating _____ Flow through Static _____

DIET: Flake food _____ Phytoplankton _____ Trout chow _____

Artemia Rotifers _____ YCT _____ Other _____

Prophylactic treatments: _____

Comments: 7 DAYS

IV. Shipping Information

Client: ESI # of Organisms 300

Carrier: PICK UP Date shipped 8/22/08

Biologist: Stan Luntaki

**Americamysis bahia 7 DAY CHRONIC ASSAY
SURVIVAL & OLD WATER QUALITIES**

STUDY: 17699		CLIENT: Battelle			LOCATION: NEW BEDFORD					LAB CONTROL: HAMPTON ESTUARY			ORGANISM BATCH/LOT#			
		NUMBER OF SURVIVORS								OLD DISSOLVED OXYGEN (mg/L)						
SAMPLE	Rep	0	1	2	3	4	5	6	7	1	2	3	4	5	6	7
Lab Control	A	5	5	5	5	5	5	5	5	6.7	5.2	6.0	6.2	6.5	6.4	6.3
	B	5	5	5	5	5	5	5	5	6.6	5.6	5.9	6.2	6.3	6.3	6.2
	C	5	5	4	4	4	4	4	4	6.6	5.8	5.9	6.1	6.3	6.3	6.1
	D	5	5	5	5	5	5	5	5	6.6	5.8	5.8	6.0	6.2	6.3	6.2
	E	5	5	5	5	5	5	5	5	6.6	5.6	5.9	6.2	6.0	6.3	6.2
	F	5	5	5	5	5	5	5	5	6.6	5.6	5.9	6.1	6.1	6.2	6.0
	G	5	5	5	5	5	5	5	5	6.6	5.4	5.8	6.2	6.2	6.2	5.8
	H	5	5	5	5	5	5	5	5	6.6	5.7	5.6	6.0	6.3	6.2	5.8
-001	A	5	5	5	4	4	4	4	4	6.6	6.1	6.2	6.1	5.7	6.3	5.9
	B	5	5	5	5	5	5	5	5	6.6	6.0	6.1	6.1	5.8	6.2	5.9
	C	5	5	5	5	5	5	5	5	6.6	6.0	6.1	6.2	5.9	6.2	5.9
	D	5	5	5	5	5	5	5	5	6.5	6.0	6.0	6.1	5.9	6.2	5.8
	E	5	5	4	4	4	4	4	4	6.5	6.1	6.0	6.1	5.9	6.1	5.7
	F	5	5	3	3	3	3	3	2	6.6	5.9	5.9	6.0	5.8	6.1	5.7
	G	5	5	5	5	5	5	5	5	6.5	6.0	5.9	6.1	5.4	6.0	5.7
	H	5	5	5	5	5	5	5	5	6.5	6.0	5.9	6.1	5.5	6.1	5.7
-002	A	5	5	5	5	5	5	5	5	6.3	5.9	5.9	6.0	5.7	6.2	5.8
	B	5	5	5	5	5	5	5	5	6.4	5.8	5.9	5.9	5.6	6.0	5.8
	C	5	5	5	5	5	5	5	5	6.5	5.8	5.9	5.9	5.7	6.0	5.8
	D	5	5	5	5	5	5	5	5	6.5	5.8	6.0	6.0	5.7	6.0	5.9
	E	5	5	4	4	4	4	4	4	6.5	6.1	6.0	6.0	5.9	6.1	5.9
	F	5	5	5	5	5	5	5	5	6.6	5.9	6.0	6.1	5.9	6.1	5.8
	G	5	5	5	5	5	5	5	5	6.4	5.8	6.0	6.1	5.9	6.1	5.7
	H	5	5	5	5	5	5	5	5	6.5	5.9	6.0	6.1	5.9	6.1	5.6
INC TEMP:		25	25	25	25	25	25	25	25							
DATE:		10/2/08	10/3	10/4	10-5	10/6	10.7	10.8	10.9							
TIME:		1415	1030	0930	1045	1040	0930	1005	0900							
INITIALS:		WM	SJ	DM	DM	STJ	APL	APL	APL							

**Americamysis bahia 7 DAY CHRONIC ASSAY
SURVIVAL & OLD WATER QUALITIES**

STUDY: 17699		CLIENT: Battelle			LOCATION: NEW BEDFORD					LAB CONTROL: HAMPTON ESTUARY			ORGANISM BATCH/LOT#			
		NUMBER OF SURVIVORS								OLD DISSOLVED OXYGEN (mg/L)						
SAMPLE	Rep	0	1	2	3	4	5	6	7	1	2	3	4	5	6	7
-003	A	5	5	5	5	5	5	5	5	6.4	5.8	6.0	6.1	6.1	6.1	5.6
	B	5	5	5	5	5	5	5	5	6.4	5.7	6.0	6.0	6.1	6.0	6.7
	C	5	5	5	5	5	5	5	5	6.4	5.9	6.1	6.1	6.0	6.1	5.9
	D	5	5	5	5	5	5	5	5	6.4	6.0	6.1	6.1	6.1	6.1	5.9
	E	5	5	5	5	5	3	3	3	6.5	6.1	6.1	5.8	6.0	6.1	5.9
	F	5	5	5	5	5	5	5	5	6.4	5.8	5.9	5.6	6.0	6.1	5.8
	G	5	5	5	5	5	5	5	5	6.4	5.9	5.8	5.4	5.9	6.0	5.9
	H	5	5	5	5	5	5	4	4	6.4	5.9	5.9	5.8	5.9	6.1	6.0
-004	A															
	B															
	C															
	D															
	E															
	F															
	G															
	H															
INC TEMP:		25	25	25	25	25	25	25	25							
DATE:		10/2/08	10/3	10/4	10/5	10/6	10/7	10/8	10/9							
TIME:		1915	1030	1010	1045	1040	0930	1005	0900							
INITIALS:		WM	SJ	DM	JM	LB	APL	APL	APL							

CAR 144 - spilled beaker lost 2 organisms

CETIS Summary Report

Report Date: 26 Nov-08 10:55 (p 1 of 2)
Link/Link Code: 12-8828-8740/17629Ab

Americamysis 7-d Survival, Growth and Fecundity Test **EnviroSystems, Inc.**

Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample No	Sample Date	Receive Date	Sample Age	Client Name	Project
17629-000	01-6030-3695	22 Aug-08 14:00	22 Aug-08 14:00	N/A	Battelle Labs	Ecological Risk Assessme
17629-003	05-4158-6637	21 Aug-08 15:20	21 Aug-08 18:40	22h		
17629-002	08-5309-8454	21 Aug-08 15:02	21 Aug-08 18:40	22h		
17629-001	09-2317-4687	21 Aug-08 14:20	21 Aug-08 18:40	23h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
17629-000	Marine Monitoring Samp	New Bedford Harbor Dredge	Moni Laboratory Water Control		
17629-003	Marine Monitoring Samp	New Bedford Harbor Dredge	Moni WQ-TOX-003		
17629-002	Marine Monitoring Samp	New Bedford Harbor Dredge	Moni WQ-TOX-002		
17629-001	Marine Monitoring Samp	New Bedford Harbor Dredge	Moni WQ-TOX-001		

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Test Acceptability						
Analysis No	Endpoint	Attribute	Test Stat	Acceptability Limits	Overlap	Decision
01-1164-5507	7d Proportion Survived	Control Resp	0.95	0.8 - NL	Yes	Passes acceptability criteria
12-8117-9100	7d Proportion Survived	Control Resp	0.95	0.8 - NL	Yes	Passes acceptability criteria
20-9815-6064	7d Proportion Survived	Control Resp	0.95	0.8 - NL	Yes	Passes acceptability criteria
06-0667-4011	Mean Dry Biomass-mg	Control Resp	0.217	0.2 - NL	Yes	Passes acceptability criteria
12-1684-2765	Mean Dry Biomass-mg	Control Resp	0.217	0.2 - NL	Yes	Passes acceptability criteria
12-3514-5195	Mean Dry Biomass-mg	Control Resp	0.217	0.2 - NL	Yes	Passes acceptability criteria
01-0309-5887	Mean Dry Biomass-mg	PMSD	0.3055	0.11 - 0.37	Yes	Passes acceptability criteria
01-1989-7363	Mean Dry Biomass-mg	PMSD	0.3031	0.11 - 0.37	Yes	Passes acceptability criteria
06-0667-4011	Mean Dry Biomass-mg	PMSD	0.182	0.11 - 0.37	Yes	Passes acceptability criteria
12-1684-2765	Mean Dry Biomass-mg	PMSD	0.1729	0.11 - 0.37	Yes	Passes acceptability criteria
12-3514-5195	Mean Dry Biomass-mg	PMSD	0.4228	0.11 - 0.37	Yes	Fails acceptability criteria

2d Proportion Survived Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.975	0.9486	1	0.8	1	0.01291	0.07071	7.25%	0.0%
17629-003	8	0.875	0.8363	0.9137	0.8	1	0.0189	0.1035	11.83%	10.26%
17629-002	8	1	1	1	1	1	0	0	0.0%	-2.56%
17629-001	8	1	1	1	1	1	0	0	0.0%	-2.56%

7d Proportion Survived Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.95	0.9154	0.9846	0.8	1	0.0169	0.09258	9.75%	0.0%
17629-003	8	0.85	0.7972	0.9028	0.6	1	0.02582	0.1414	16.64%	10.53%
17629-002	8	0.925	0.8863	0.9637	0.8	1	0.0189	0.1035	11.19%	2.63%
17629-001	8	0.875	0.8066	0.9434	0.6	1	0.03345	0.1832	20.94%	7.9%

Mean Dry Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.217	0.2093	0.2247	0.184	0.242	0.003769	0.02065	9.51%	0.0%
17629-003	8	0.3215	0.267	0.376	0.208	0.598	0.02663	0.1459	45.37%	-48.16%
17629-002	8	0.263	0.2406	0.2854	0.192	0.364	0.01095	0.05997	22.8%	-21.2%
17629-001	8	0.3012	0.2801	0.3224	0.212	0.384	0.01033	0.0566	18.79%	-38.82%

CETIS Summary Report

Report Date: 26 Nov-08 10:55 (p 2 of 2)
Link/Link Code: 12-8828-8740/17629Ab

Americamysis 7-d Survival, Growth and Fecundity Test										EnviroSystems, Inc.
Mean Dry Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.2299	0.2194	0.2404	0.194	0.2875	0.00513	0.0281	12.22%	0.0%
17629-003	8	0.3744	0.3232	0.4257	0.212	0.598	0.02507	0.1373	36.67%	-62.84%
17629-002	8	0.2844	0.2637	0.3051	0.21	0.364	0.01013	0.05548	19.51%	-23.68%
17629-001	8	0.3524	0.3262	0.3786	0.254	0.4525	0.01279	0.07008	19.89%	-53.26%
2d Proportion Survived Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
17629-000	1	1	1	1	1	1	1	0.8		
17629-003	0.8	1	0.8	0.8	0.8	0.8	1	1		
17629-002	1	1	1	1	1	1	1	1		
17629-001	1	1	1	1	1	1	1	1		
7d Proportion Survived Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
17629-000	1	1	0.8	1	1	1	1	0.8		
17629-003	0.6	1	0.8	0.8	0.8	0.8	1	1		
17629-002	1	1	1	0.8	1	1	0.8	0.8		
17629-001	1	0.6	1	0.8	0.6	1	1	1		
Mean Dry Biomass-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
17629-000	0.224	0.194	0.23	0.216	0.242	0.238	0.208	0.184		
17629-003	0.21	0.212	0.268	0.208	0.222	0.436	0.598	0.418		
17629-002	0.238	0.364	0.288	0.192	0.21	0.32	0.214	0.278		
17629-001	0.318	0.266	0.254	0.362	0.212	0.384	0.314	0.3		
Mean Dry Weight-mg Detail										
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
17629-000	0.224	0.194	0.2875	0.216	0.242	0.238	0.208	0.23		
17629-003	0.35	0.212	0.335	0.26	0.2775	0.545	0.598	0.418		
17629-002	0.238	0.364	0.288	0.24	0.21	0.32	0.2675	0.3475		
17629-001	0.318	0.4433	0.254	0.4525	0.3533	0.384	0.314	0.3		

CETIS Analytical Report

Report Date: 26 Nov-08 10:57 (p 1 of 30)
 Link/Link Code: 12-8828-8740/17629Ab

Americamysis 7-d Survival, Growth and Fecundity Test **EnviroSystems, Inc.**

Analysis No: 03-0969-9106	Endpoint: Mean Dry Weight-mg	CETIS Version: CETISv1.6.4
Analyzed: 02 Sep-08 11:16	Analysis: Parametric-Two Sample	Official Results: Yes

Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					25.64%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-003		17629-001	0.4044	1.761	0.096	0.3460	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0019435	0.0019435	1	0.1635	0.6920	Non-Significant Effect
Error	0.1663766	0.0118840	14			
Total	0.1683201	0.0138275	15			

ANOVA Assumptions

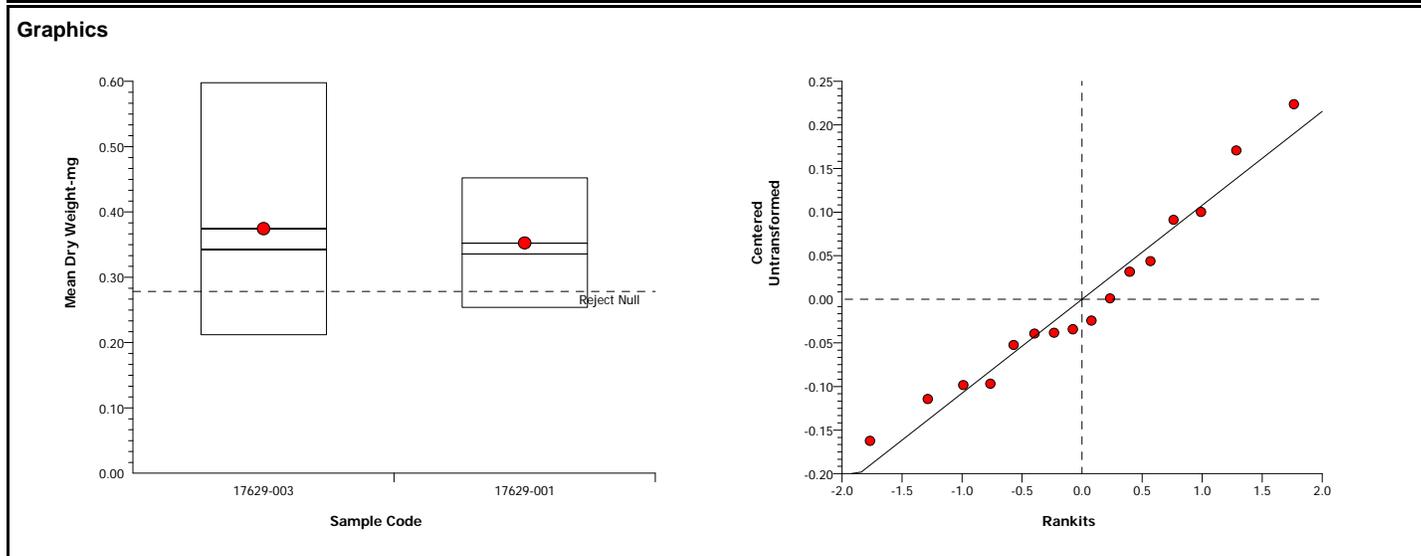
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	3.84	8.885	0.0967	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9567		0.6031	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	0.3744	0.3222	0.4267	0.212	0.598	0.0255	0.1373	36.67%	0.0%
17629-001	8	0.3524	0.3257	0.3791	0.254	0.4525	0.01301	0.07008	19.89%	5.89%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-003	0.598	0.545	0.418	0.35	0.335	0.2775	0.26	0.212
17629-001	0.4525	0.4433	0.384	0.3533	0.318	0.314	0.3	0.254



CETIS Analytical Report

Report Date: 26 Nov-08 10:57 (p 2 of 30)
 Link/Link Code: 12-8828-8740/17629Ab

Americamysis 7-d Survival, Growth and Fecundity Test EnviroSystems, Inc.

Analysis No: 05-9215-7737	Endpoint: Mean Dry Weight-mg	CETIS Version: CETISv1.6.4
Analyzed: 02 Sep-08 11:16	Analysis: Parametric-Two Sample	Official Results: Yes

Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					24.63%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-003		17629-002	1.72	1.761	0.09223	0.0537	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.032445	0.032445	1	2.958	0.1075	Non-Significant Effect
Error	0.1535449	0.0109675	14			
Total	0.1859899	0.0434125	15			

ANOVA Assumptions

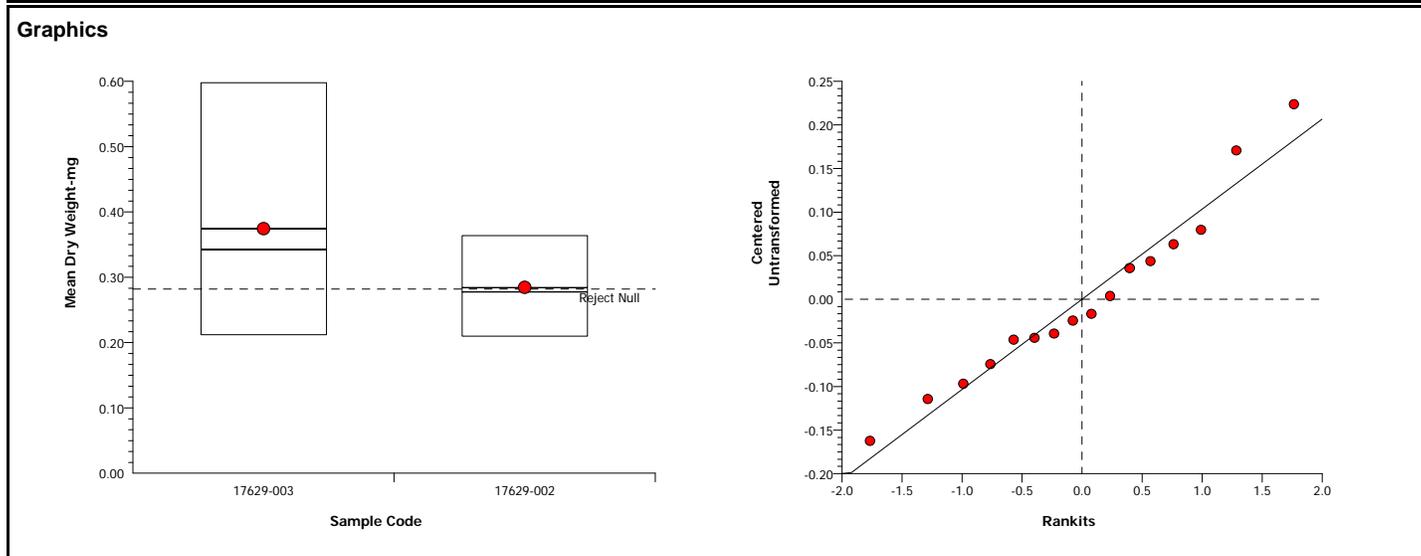
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	6.127	8.885	0.0289	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9598		0.6584	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	0.3744	0.3222	0.4267	0.212	0.598	0.0255	0.1373	36.67%	0.0%
17629-002	8	0.2844	0.2633	0.3055	0.21	0.364	0.0103	0.05548	19.51%	24.05%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-003	0.598	0.545	0.418	0.35	0.335	0.2775	0.26	0.212
17629-002	0.364	0.3475	0.32	0.288	0.2675	0.24	0.238	0.21



CETIS Analytical Report

Report Date: 26 Nov-08 10:57 (p 3 of 30)
 Link/Link Code: 12-8828-8740/17629Ab

Americamysis 7-d Survival, Growth and Fecundity Test EnviroSystems, Inc.

Analysis No: 15-7062-5725	Endpoint: Mean Dry Weight-mg	CETIS Version: CETISv1.6.4
Analyzed: 02 Sep-08 11:15	Analysis: Parametric-Two Sample	Official Results: Yes

Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					20.45%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-001	-4.588	1.761	0.04701	0.9998	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.059984	0.059984	1	21.05	0.0004	Significant Effect
Error	0.0399006	0.0028500	14			
Total	0.0998846	0.0628340	15			

ANOVA Assumptions

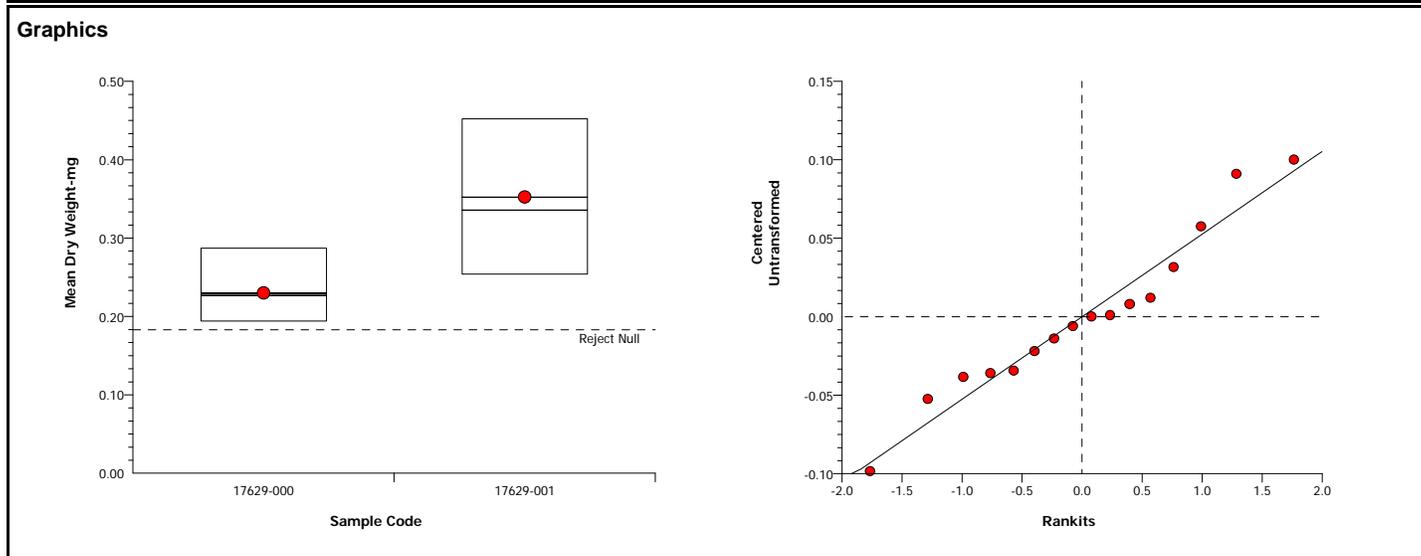
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	6.22	8.885	0.0277	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9584		0.6332	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.2299	0.2192	0.2406	0.194	0.2875	0.005217	0.0281	12.22%	0.0%
17629-001	8	0.3524	0.3257	0.3791	0.254	0.4525	0.01301	0.07008	19.89%	-53.26%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-000	0.2875	0.242	0.238	0.23	0.224	0.216	0.208	0.194
17629-001	0.4525	0.4433	0.384	0.3533	0.318	0.314	0.3	0.254



CETIS Analytical Report

Report Date: 26 Nov-08 10:57 (p 4 of 30)
 Link/Link Code: 12-8828-8740/17629Ab

Americamysis 7-d Survival, Growth and Fecundity Test EnviroSystems, Inc.

Analysis No: 08-6048-2432	Endpoint: Mean Dry Weight-mg	CETIS Version: CETISv1.6.4
Analyzed: 02 Sep-08 11:15	Analysis: Parametric-Two Sample	Official Results: Yes

Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					16.84%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-002	-2.476	1.761	0.03872	0.9867	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0118541	0.0118541	1	6.131	0.0267	Significant Effect
Error	0.0270689	0.0019335	14			
Total	0.038923	0.0137876	15			

ANOVA Assumptions

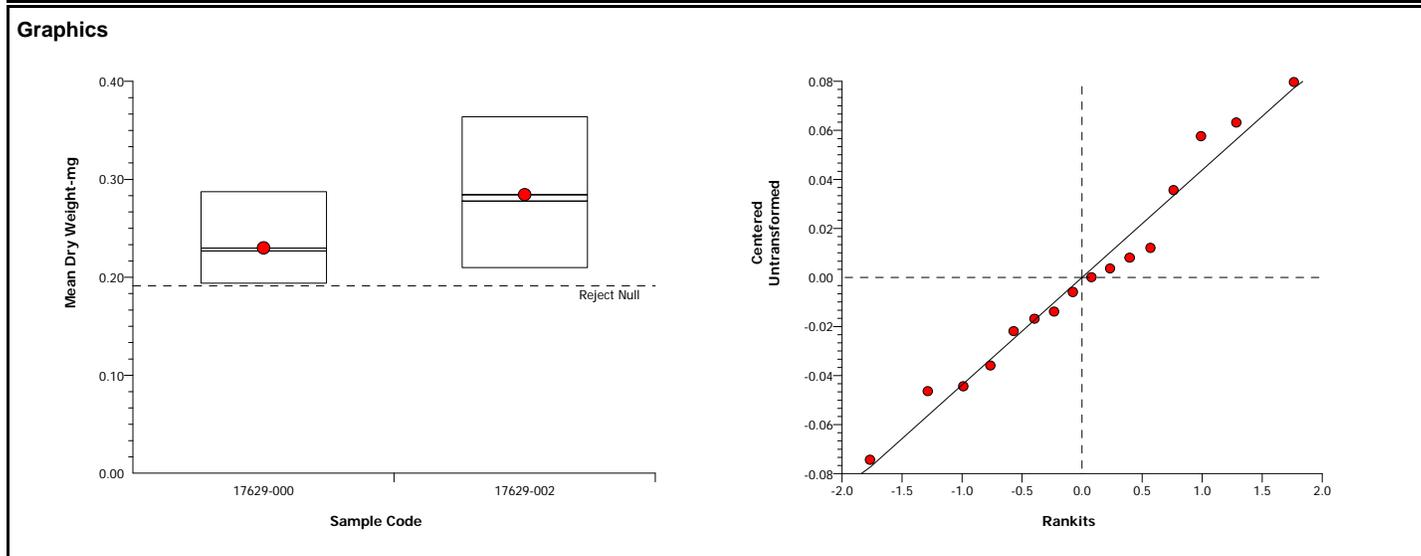
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	3.898	8.885	0.0933	Equal Variances
Distribution	Shapiro-Wilk Normality	0.97		0.8379	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.2299	0.2192	0.2406	0.194	0.2875	0.005217	0.0281	12.22%	0.0%
17629-002	8	0.2844	0.2633	0.3055	0.21	0.364	0.0103	0.05548	19.51%	-23.68%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-000	0.2875	0.242	0.238	0.23	0.224	0.216	0.208	0.194
17629-002	0.364	0.3475	0.32	0.288	0.2675	0.24	0.238	0.21



CETIS Analytical Report

Report Date: 26 Nov-08 10:57 (p 5 of 30)
 Link/Link Code: 12-8828-8740/17629Ab

Americamysis 7-d Survival, Growth and Fecundity Test EnviroSystems, Inc.

Analysis No: 20-6063-8926	Endpoint: Mean Dry Weight-mg	CETIS Version: CETISv1.6.4
Analyzed: 02 Sep-08 11:15	Analysis: Parametric-Two Sample	Official Results: Yes

Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					37.96%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-003	-2.916	1.761	0.08728	0.9944	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0835218	0.0835218	1	8.502	0.0113	Significant Effect
Error	0.1375281	0.0098234	14			
Total	0.2210499	0.0933452	15			

ANOVA Assumptions

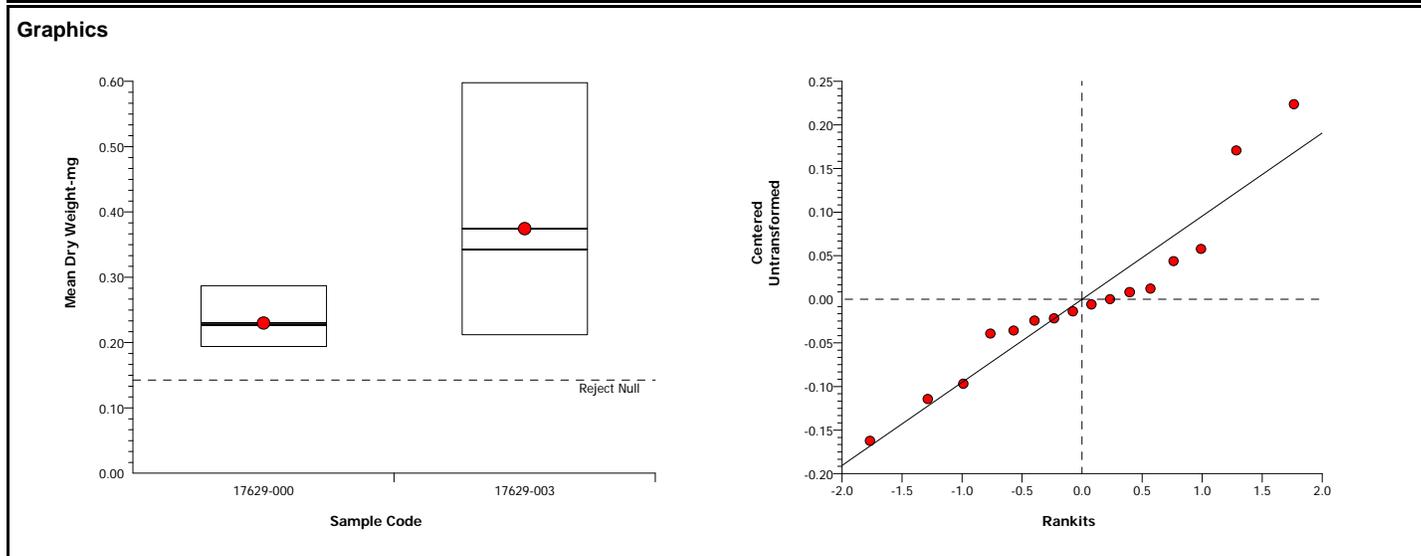
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	23.89	8.885	0.0004	Unequal Variances
Distribution	Shapiro-Wilk Normality	0.9199		0.1679	Normal Distribution

Mean Dry Weight-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.2299	0.2192	0.2406	0.194	0.2875	0.005217	0.0281	12.22%	0.0%
17629-003	8	0.3744	0.3222	0.4267	0.212	0.598	0.0255	0.1373	36.67%	-62.84%

Mean Dry Weight-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-000	0.2875	0.242	0.238	0.23	0.224	0.216	0.208	0.194
17629-003	0.598	0.545	0.418	0.35	0.335	0.2775	0.26	0.212



CETIS Analytical Report

Report Date: 26 Nov-08 10:57 (p 6 of 30)
 Link/Link Code: 12-8828-8740/17629Ab

Americamysis 7-d Survival, Growth and Fecundity Test EnviroSystems, Inc.

Analysis No: 01-1989-7363	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv1.6.4
Analyzed: 02 Sep-08 11:13	Analysis: Parametric-Two Sample	Official Results: Yes

Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					30.31%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-003		17629-001	0.3661	1.761	0.09743	0.3599	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0016404	0.0016404	1	0.134	0.7198	Non-Significant Effect
Error	0.1713662	0.0122404	14			
Total	0.1730065	0.0138808	15			

ANOVA Assumptions

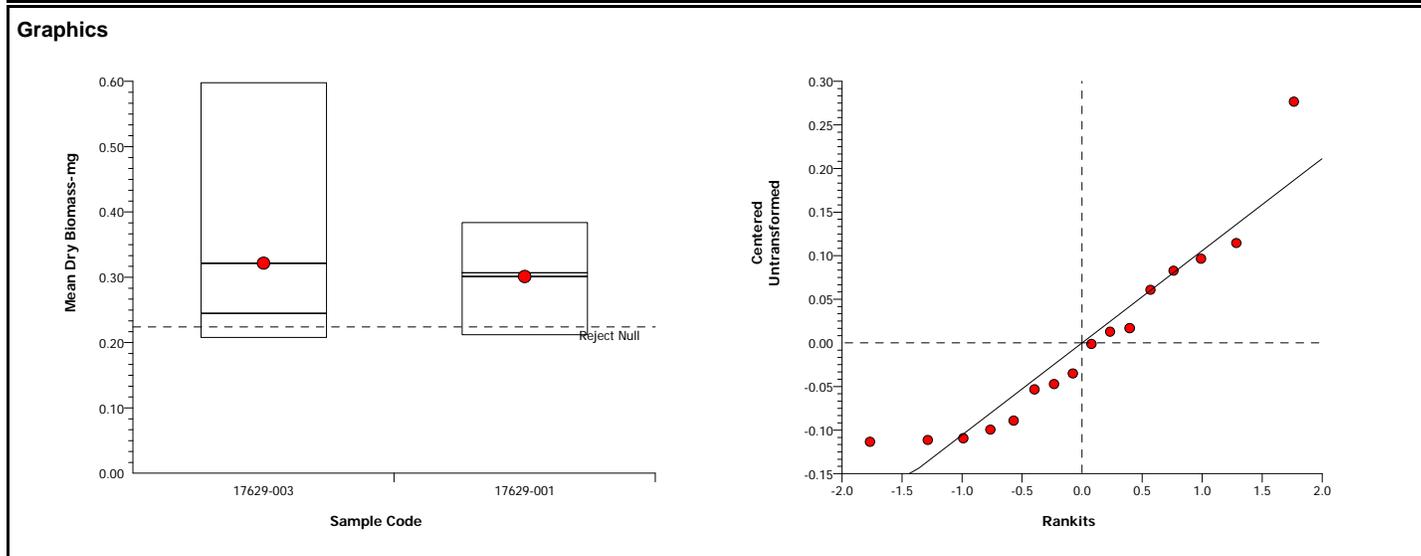
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	6.642	8.885	0.0231	Equal Variances
Distribution	Shapiro-Wilk Normality	0.8958		0.0688	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	0.3215	0.266	0.377	0.208	0.598	0.02709	0.1459	45.37%	0.0%
17629-001	8	0.3012	0.2797	0.3228	0.212	0.384	0.01051	0.0566	18.79%	6.3%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-003	0.598	0.436	0.418	0.268	0.222	0.212	0.21	0.208
17629-001	0.384	0.362	0.318	0.314	0.3	0.266	0.254	0.212



CETIS Analytical Report

Report Date: 26 Nov-08 10:57 (p 7 of 30)
Link/Link Code: 12-8828-8740/17629Ab

Americamysis 7-d Survival, Growth and Fecundity Test **EnviroSystems, Inc.**

Analysis No: 01-0309-5887	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv1.6.4
Analyzed: 02 Sep-08 11:13	Analysis: Parametric-Two Sample	Official Results: Yes

Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					30.55%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-003		17629-002	1.049	1.761	0.09821	0.1559	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.013689	0.013689	1	1.101	0.3119	Non-Significant Effect
Error	0.1741183	0.0124370	14			
Total	0.1878072	0.026126	15			

ANOVA Assumptions

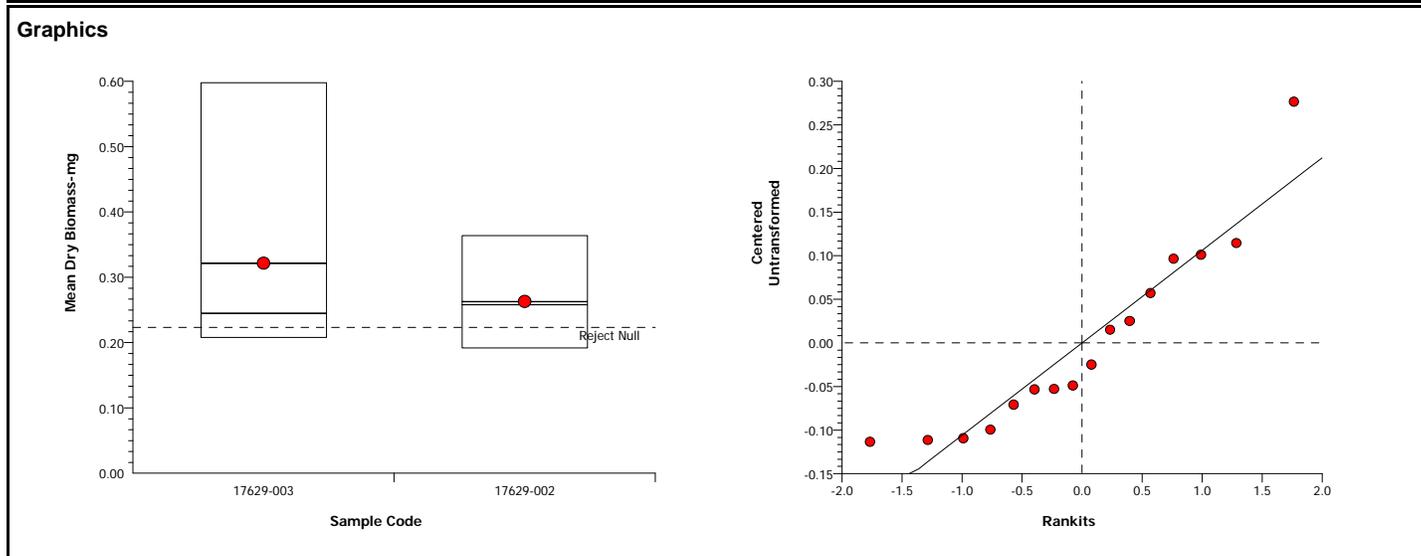
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	5.916	8.885	0.0318	Equal Variances
Distribution	Shapiro-Wilk Normality	0.8894		0.0545	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	0.3215	0.266	0.377	0.208	0.598	0.02709	0.1459	45.37%	0.0%
17629-002	8	0.263	0.2402	0.2858	0.192	0.364	0.01114	0.05997	22.8%	18.2%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-003	0.598	0.436	0.418	0.268	0.222	0.212	0.21	0.208
17629-002	0.364	0.32	0.288	0.278	0.238	0.214	0.21	0.192



CETIS Analytical Report

Report Date: 26 Nov-08 10:57 (p 8 of 30)
 Link/Link Code: 12-8828-8740/17629Ab

Americamysis 7-d Survival, Growth and Fecundity Test EnviroSystems, Inc.

Analysis No: 12-1684-2765	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv1.6.4
Analyzed: 02 Sep-08 11:12	Analysis: Parametric-Two Sample	Official Results: Yes

Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					17.29%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-001	-3.955	1.761	0.03752	0.9993	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0283922	0.0283922	1	15.64	0.0014	Significant Effect
Error	0.0254070	0.0018148	14			
Total	0.0537992	0.030207	15			

ANOVA Assumptions

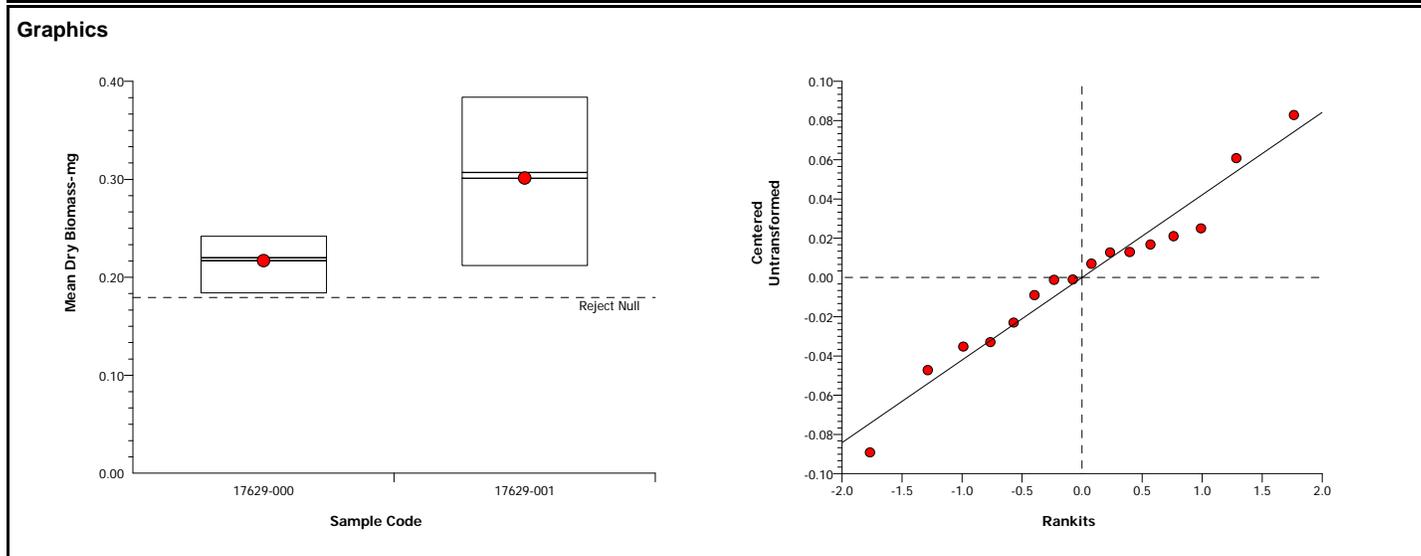
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	7.515	8.885	0.0163	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9717		0.8646	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.217	0.2091	0.2249	0.184	0.242	0.003834	0.02065	9.51%	0.0%
17629-001	8	0.3012	0.2797	0.3228	0.212	0.384	0.01051	0.0566	18.79%	-38.82%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-000	0.242	0.238	0.23	0.224	0.216	0.208	0.194	0.184
17629-001	0.384	0.362	0.318	0.314	0.3	0.266	0.254	0.212



CETIS Analytical Report

Report Date: 26 Nov-08 10:58 (p 9 of 30)
 Link/Link Code: 12-8828-8740/17629Ab

Americamysis 7-d Survival, Growth and Fecundity Test **EnviroSystems, Inc.**

Analysis No: 06-0667-4011	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv1.6.4
Analyzed: 02 Sep-08 11:12	Analysis: Parametric-Two Sample	Official Results: Yes

Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					18.2%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-002	-2.051	1.761	0.0395	0.9703	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0084642	0.0084642	1	4.208	0.0594	Non-Significant Effect
Error	0.0281591	0.0020114	14			
Total	0.0366234	0.0104756	15			

ANOVA Assumptions

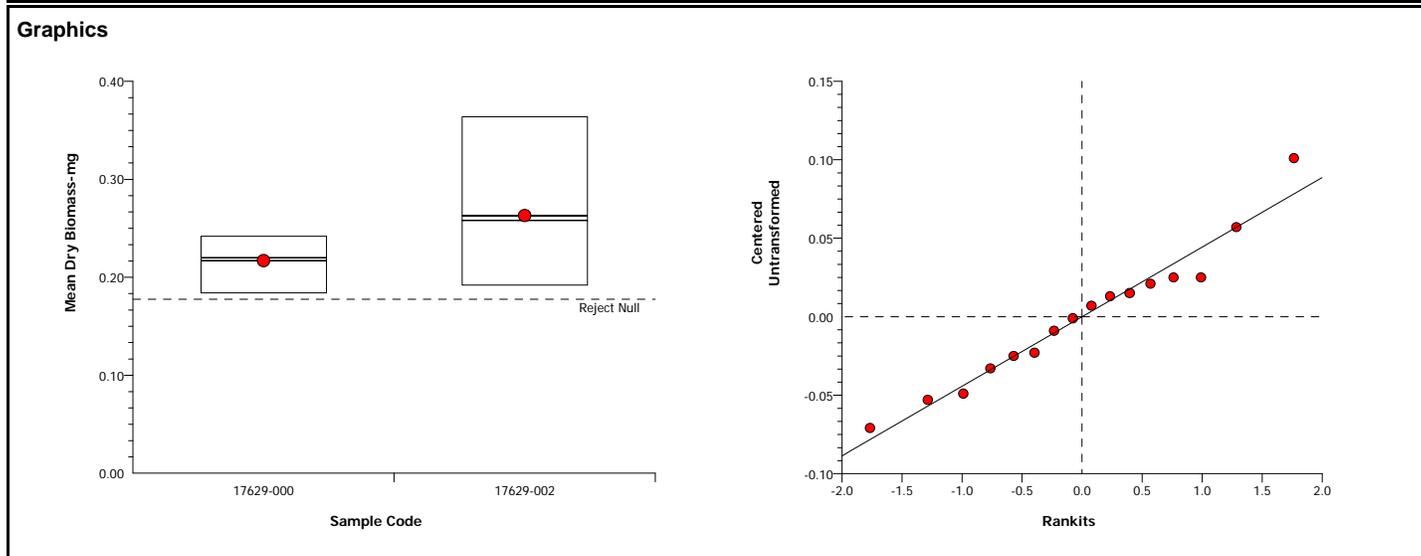
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	8.438	8.885	0.0116	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9669		0.7855	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.217	0.2091	0.2249	0.184	0.242	0.003834	0.02065	9.51%	0.0%
17629-002	8	0.263	0.2402	0.2858	0.192	0.364	0.01114	0.05997	22.8%	-21.2%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-000	0.242	0.238	0.23	0.224	0.216	0.208	0.194	0.184
17629-002	0.364	0.32	0.288	0.278	0.238	0.214	0.21	0.192



CETIS Analytical Report

Report Date: 6 Nov-08 10:58 (p 10 of 30)
 Link/Link Code: 12-8828-8740/17629Ab

Americamysis 7-d Survival, Growth and Fecundity Test EnviroSystems, Inc.

Analysis No: 12-3514-5195	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv1.6.4
Analyzed: 02 Sep-08 11:12	Analysis: Parametric-Two Sample	Official Results: Yes

Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					42.28%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-003	-2.006	1.761	0.09174	0.9677	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0436815	0.0436815	1	4.025	0.0645	Non-Significant Effect
Error	0.1519266	0.0108519	14			
Total	0.1956081	0.0545334	15			

ANOVA Assumptions

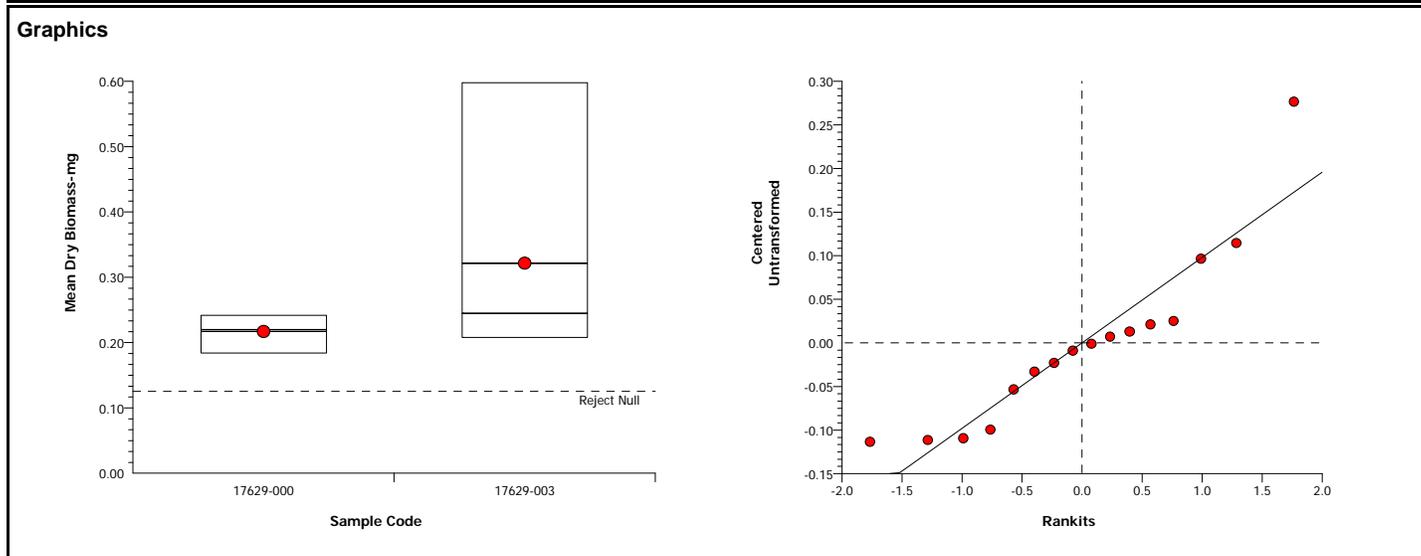
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	49.92	8.885	0.0000	Unequal Variances
Distribution	Shapiro-Wilk Normality	0.8766		0.0343	Normal Distribution

Mean Dry Biomass-mg Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.217	0.2091	0.2249	0.184	0.242	0.003834	0.02065	9.51%	0.0%
17629-003	8	0.3215	0.266	0.377	0.208	0.598	0.02709	0.1459	45.37%	-48.16%

Mean Dry Biomass-mg Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-000	0.242	0.238	0.23	0.224	0.216	0.208	0.194	0.184
17629-003	0.598	0.436	0.418	0.268	0.222	0.212	0.21	0.208



CETIS Analytical Report

Report Date: 6 Nov-08 10:58 (p 11 of 30)
Link/Link Code: 12-8828-8740/17629Ab

Americamysis 7-d Survival, Growth and Fecundity Test **EnviroSystems, Inc.**

Analysis No: 14-9000-0868	Endpoint: 7d Proportion Survived	CETIS Version: CETISv1.6.4
Analyzed: 29 Aug-08 17:27	Analysis: Nonparametric-Two Sample	Official Results: Yes

Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	10000 Trial					16.44%

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	P-Value	Decision(5%)
17629-003		17629-001	72.5		3	0.7292	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0040703	0.0040703	1	0.114	0.7406	Non-Significant Effect
Error	0.4998225	0.0357016	14			
Total	0.5038928	0.0397719	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	1.651	8.885	0.5244	Equal Variances
Distribution	Shapiro-Wilk Normality	0.8161		0.0045	Non-normal Distribution

7d Proportion Survived Summary

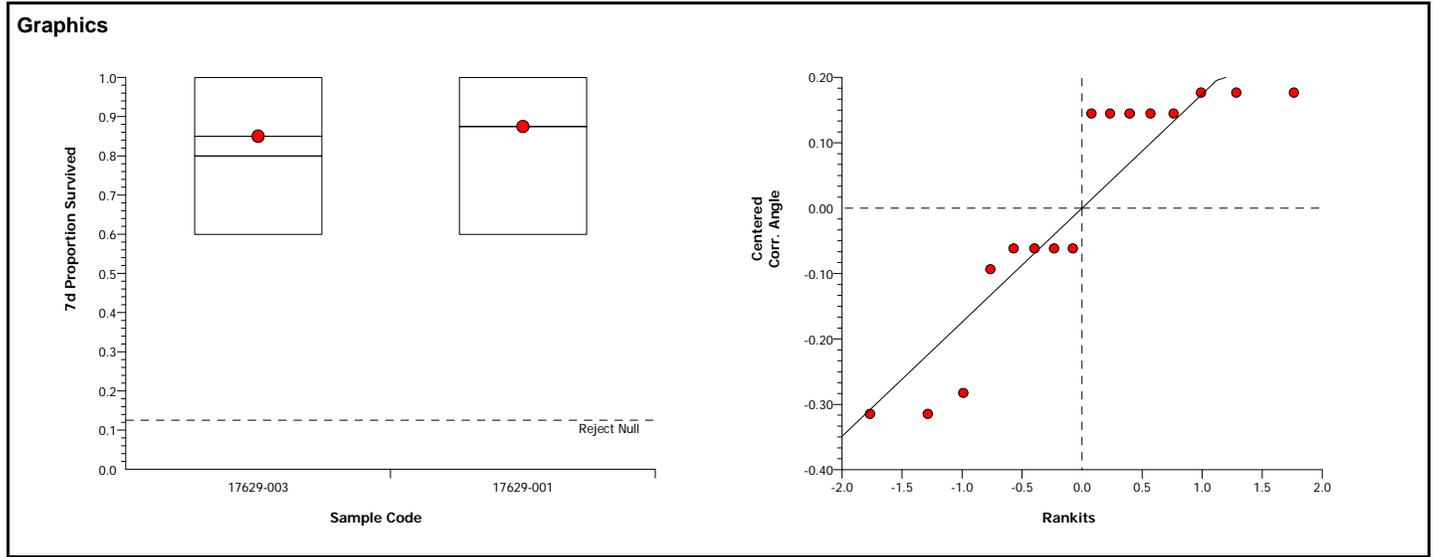
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	0.85	0.7962	0.9038	0.6	1	0.02626	0.1414	16.64%	0.0%
17629-001	8	0.875	0.8053	0.9447	0.6	1	0.03402	0.1832	20.94%	-2.94%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	1.169	1.106	1.231	0.8861	1.345	0.03048	0.1641	14.04%	0.0%
17629-001	8	1.201	1.121	1.281	0.8861	1.345	0.03916	0.2109	17.56%	-2.73%

Americamysis 7-d Survival, Growth and Fecundity Test			EnviroSystems, Inc.
Analysis No: 14-9000-0868	Endpoint: 7d Proportion Survived	CETIS Version: CETISv1.6.4	
Analyzed: 29 Aug-08 17:27	Analysis: Nonparametric-Two Sample	Official Results: Yes	

7d Proportion Survived Detail								
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-003	1	1	1	0.8	0.8	0.8	0.8	0.6
17629-001	1	1	1	1	1	0.8	0.6	0.6



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Link/Link Code: 12-8828-8740/17629Ab

Americamysis 7-d Survival, Growth and Fecundity Test **EnviroSystems, Inc.**

Analysis No: 18-1670-2733	Endpoint: 7d Proportion Survived	CETIS Version: CETISv1.6.4
Analyzed: 29 Aug-08 17:27	Analysis: Parametric-Two Sample	Official Results: Yes

Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	Not Run					12.4%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-003		17629-002	-1.201	1.761	0.1278	0.8752	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0303927	0.0303927	1	1.443	0.2496	Non-Significant Effect
Error	0.2949017	0.0210644	14			
Total	0.3252944	0.0514571	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	1.774	8.885	0.4674	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9039		0.0929	Normal Distribution

7d Proportion Survived Summary

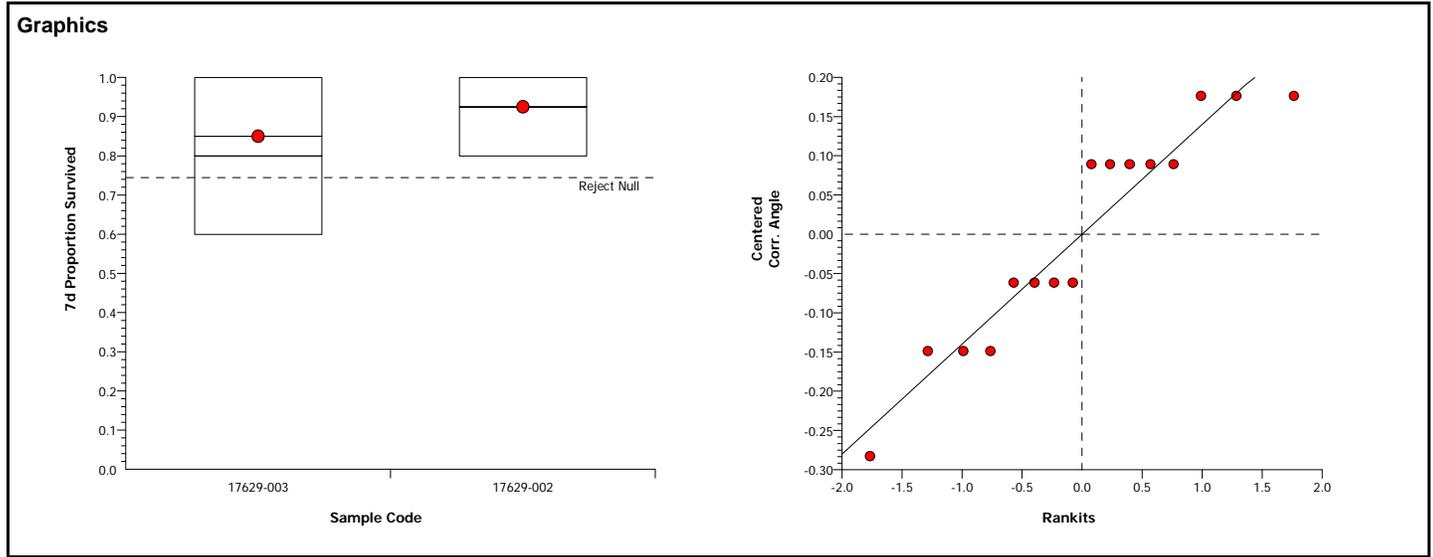
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	0.85	0.7962	0.9038	0.6	1	0.02626	0.1414	16.64%	0.0%
17629-002	8	0.925	0.8856	0.9644	0.8	1	0.01922	0.1035	11.19%	-8.82%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	1.169	1.106	1.231	0.8861	1.345	0.03048	0.1641	14.04%	0.0%
17629-002	8	1.256	1.209	1.303	1.107	1.345	0.02289	0.1232	9.81%	-7.46%

Americamysis 7-d Survival, Growth and Fecundity Test			EnviroSystems, Inc.
Analysis No: 18-1670-2733	Endpoint: 7d Proportion Survived	CETIS Version: CETISv1.6.4	
Analyzed: 29 Aug-08 17:27	Analysis: Parametric-Two Sample	Official Results: Yes	

7d Proportion Survived Detail								
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-003	1	1	1	0.8	0.8	0.8	0.8	0.6
17629-002	1	1	1	1	1	0.8	0.8	0.8



CETIS Analytical Report

Report Date: 6 Nov-08 10:58 (p 15 of 30)
Link/Link Code: 12-8828-8740/17629Ab

Americamysis 7-d Survival, Growth and Fecundity Test **EnviroSystems, Inc.**

Analysis No: 20-9815-6064	Endpoint: 7d Proportion Survived	CETIS Version: CETISv1.6.4
Analyzed: 29 Aug-08 17:27	Analysis: Nonparametric-Two Sample	Official Results: Yes

Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	10000 Trial					13.29%

Wilcoxon Rank Sum Two-Sample Test							
Sample Code	vs	Sample Code	Test Stat	Critical	Ties	P-Value	Decision(5%)
17629-000		17629-001	62		2	0.2538	Non-Significant Effect

ANOVA Table						
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0289236	0.0289236	1	1.022	0.3293	Non-Significant Effect
Error	0.3963099	0.0283079	14			
Total	0.4252335	0.0572314	15			

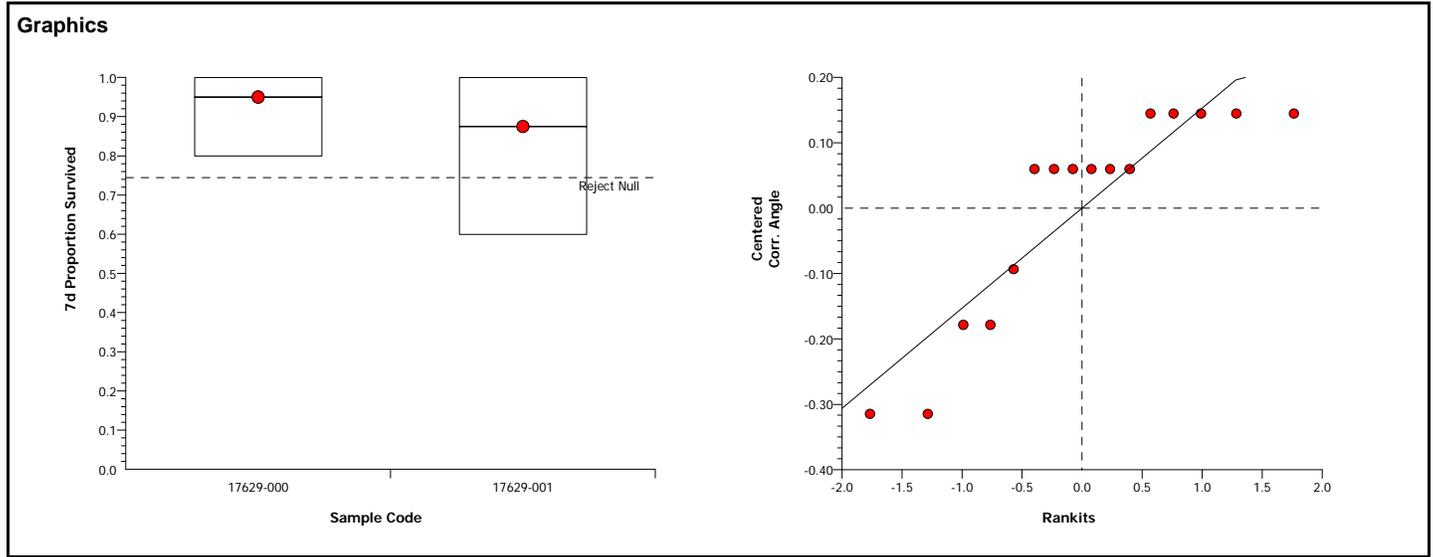
ANOVA Assumptions						
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)	
Variances	Variance Ratio F	3.659	8.885	0.1085	Equal Variances	
Distribution	Shapiro-Wilk Normality	0.7966		0.0025	Non-normal Distribution	

7d Proportion Survived Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.95	0.9148	0.9852	0.8	1	0.01719	0.09258	9.75%	0.0%
17629-001	8	0.875	0.8053	0.9447	0.6	1	0.03402	0.1832	20.94%	7.9%

Angular (Corrected) Transformed Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	1.286	1.244	1.328	1.107	1.345	0.02047	0.1102	8.57%	0.0%
17629-001	8	1.201	1.121	1.281	0.8861	1.345	0.03916	0.2109	17.56%	6.61%

Americamysis 7-d Survival, Growth and Fecundity Test			EnviroSystems, Inc.
Analysis No: 20-9815-6064	Endpoint: 7d Proportion Survived	CETIS Version: CETISv1.6.4	
Analyzed: 29 Aug-08 17:27	Analysis: Nonparametric-Two Sample	Official Results: Yes	

7d Proportion Survived Detail								
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-000	1	1	1	1	1	1	0.8	0.8
17629-001	1	1	1	1	1	0.8	0.6	0.6



CETIS Analytical Report

Report Date: 6 Nov-08 10:58 (p 17 of 30)
Link/Link Code: 12-8828-8740/17629Ab

Americamysis 7-d Survival, Growth and Fecundity Test **EnviroSystems, Inc.**

Analysis No: 01-1164-5507	Endpoint: 7d Proportion Survived	CETIS Version: CETISv1.6.4
Analyzed: 29 Aug-08 17:27	Analysis: Nonparametric-Two Sample	Official Results: Yes

Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	10000 Trial					9.8%

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	P-Value	Decision(5%)
17629-000		17629-002	64		2	0.4992	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0035442	0.0035442	1	0.2593	0.6186	Non-Significant Effect
Error	0.1913892	0.0136707	14			
Total	0.1949334	0.0172149	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	1.25	8.885	0.7760	Equal Variances
Distribution	Shapiro-Wilk Normality	0.6932		0.0001	Non-normal Distribution

7d Proportion Survived Summary

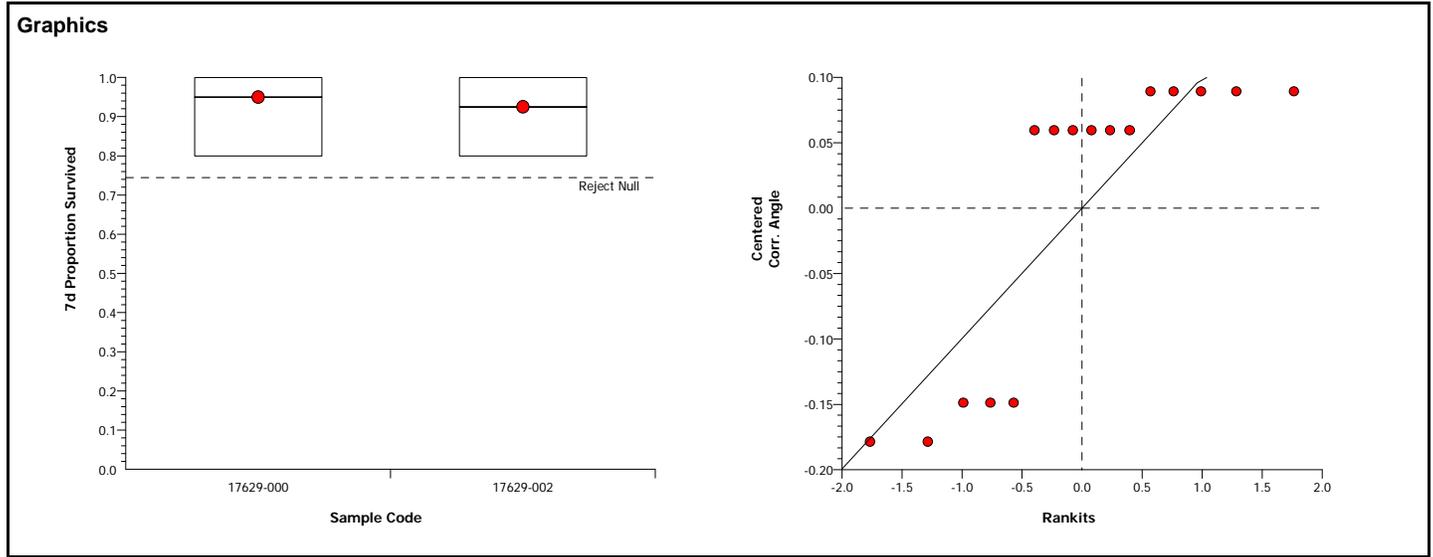
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.95	0.9148	0.9852	0.8	1	0.01719	0.09258	9.75%	0.0%
17629-002	8	0.925	0.8856	0.9644	0.8	1	0.01922	0.1035	11.19%	2.63%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	1.286	1.244	1.328	1.107	1.345	0.02047	0.1102	8.57%	0.0%
17629-002	8	1.256	1.209	1.303	1.107	1.345	0.02289	0.1232	9.81%	2.32%

Americamysis 7-d Survival, Growth and Fecundity Test			EnviroSystems, Inc.
Analysis No: 01-1164-5507	Endpoint: 7d Proportion Survived	CETIS Version: CETISv1.6.4	
Analyzed: 29 Aug-08 17:27	Analysis: Nonparametric-Two Sample	Official Results: Yes	

7d Proportion Survived Detail								
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-000	1	1	1	1	1	1	0.8	0.8
17629-002	1	1	1	1	1	0.8	0.8	0.8



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Link/Link Code: 12-8828-8740/17629Ab

Americamysis 7-d Survival, Growth and Fecundity Test **EnviroSystems, Inc.**

Analysis No: 12-8117-9100	Endpoint: 7d Proportion Survived	CETIS Version: CETISv1.6.4
Analyzed: 29 Aug-08 17:27	Analysis: Parametric-Two Sample	Official Results: Yes

Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	Not Run					11.32%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-003	1.673	1.761	0.1231	0.0583	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0546945	0.0546945	1	2.798	0.1166	Non-Significant Effect
Error	0.2736363	0.0195455	14			
Total	0.3283308	0.07424	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	2.217	8.885	0.3154	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9095		0.1144	Normal Distribution

7d Proportion Survived Summary

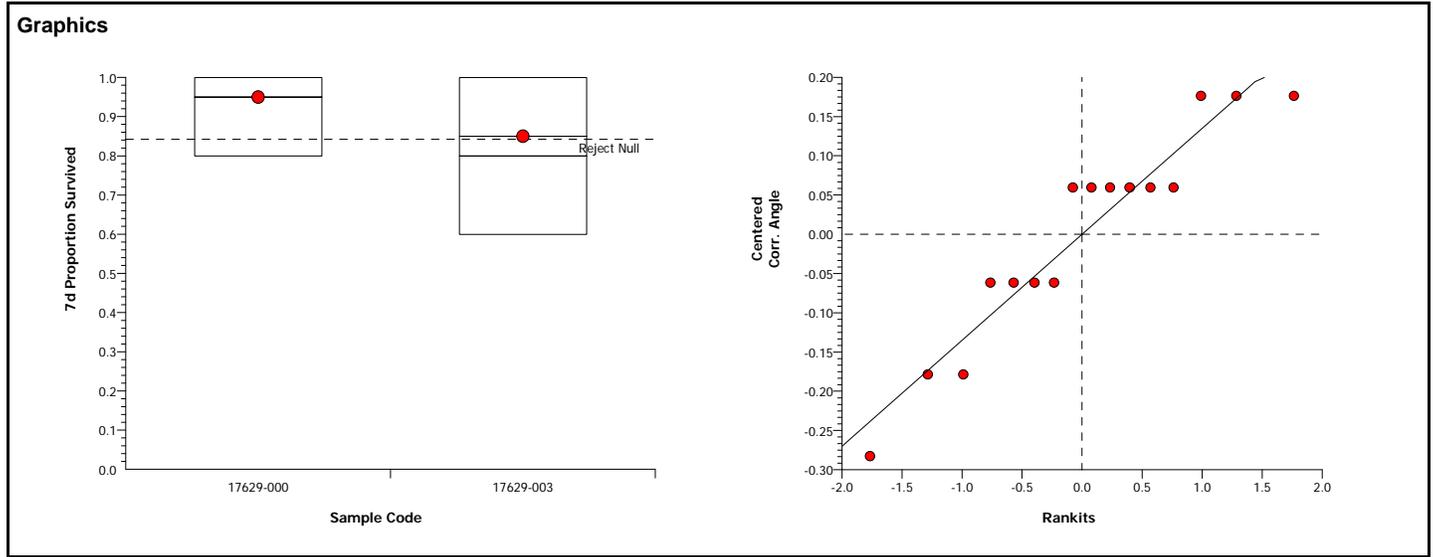
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.95	0.9148	0.9852	0.8	1	0.01719	0.09258	9.75%	0.0%
17629-003	8	0.85	0.7962	0.9038	0.6	1	0.02626	0.1414	16.64%	10.53%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	1.286	1.244	1.328	1.107	1.345	0.02047	0.1102	8.57%	0.0%
17629-003	8	1.169	1.106	1.231	0.8861	1.345	0.03048	0.1641	14.04%	9.09%

Americamysis 7-d Survival, Growth and Fecundity Test			EnviroSystems, Inc.
Analysis No: 12-8117-9100	Endpoint: 7d Proportion Survived	CETIS Version: CETISv1.6.4	
Analyzed: 29 Aug-08 17:27	Analysis: Parametric-Two Sample	Official Results: Yes	

7d Proportion Survived Detail								
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-000	1	1	1	1	1	1	0.8	0.8
17629-003	1	1	1	0.8	0.8	0.8	0.8	0.6



CETIS Analytical Report

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Link/Link Code: 12-8828-8740/17629Ab

Americamysis 7-d Survival, Growth and Fecundity Test **EnviroSystems, Inc.**

Analysis No: 00-2491-7286	Endpoint: 2d Proportion Survived	CETIS Version: CETISv1.6.4
Analyzed: 29 Aug-08 17:27	Analysis: Nonparametric-Two Sample	Official Results: Yes

Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	10000 Trial					7.43%

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	P-Value	Decision(5%)
17629-003		17629-001	88		1	1.0000	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0886061	0.0886061	1	11.67	0.0042	Significant Effect
Error	0.1063273	0.0075948	14			
Total	0.1949334	0.0962009	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Varianc	4.2	8.862	0.0597	Equal Variances
Distribution	Shapiro-Wilk Normality	0.7854		0.0018	Non-normal Distribution

2d Proportion Survived Summary

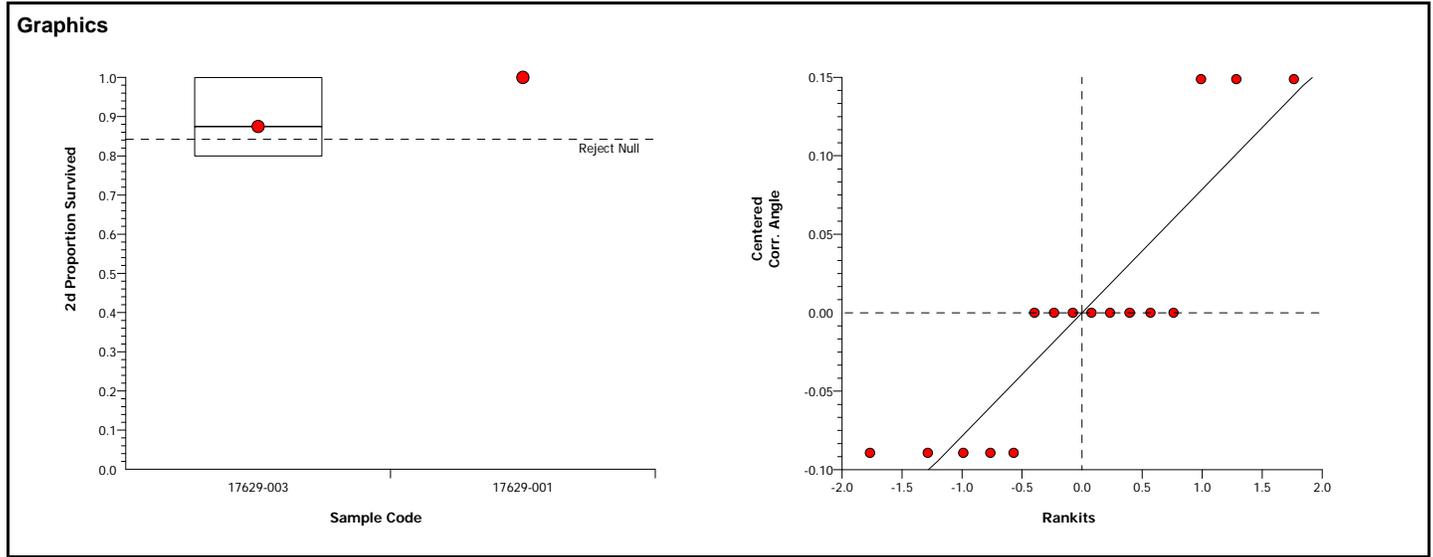
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	0.875	0.8356	0.9144	0.8	1	0.01922	0.1035	11.83%	0.0%
17629-001	8	1	1	1	1	1	0	0	0.0%	-14.29%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	1.196	1.15	1.243	1.107	1.345	0.02289	0.1232	10.3%	0.0%
17629-001	8	1.345	1.345	1.345	1.345	1.345	0	0	0.0%	-12.44%

Americamysis 7-d Survival, Growth and Fecundity Test			EnviroSystems, Inc.
Analysis No: 00-2491-7286	Endpoint: 2d Proportion Survived	CETIS Version: CETISv1.6.4	
Analyzed: 29 Aug-08 17:27	Analysis: Nonparametric-Two Sample	Official Results: Yes	

2d Proportion Survived Detail								
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-003	1	1	1	0.8	0.8	0.8	0.8	0.8
17629-001	1	1	1	1	1	1	1	1



CETIS Analytical Report

Report Date: 6 Nov-08 10:58 (p 23 of 30)
Link/Link Code: 12-8828-8740/17629Ab

Americamysis 7-d Survival, Growth and Fecundity Test **EnviroSystems, Inc.**

Analysis No: 02-1154-2686	Endpoint: 2d Proportion Survived	CETIS Version: CETISv1.6.4
Analyzed: 29 Aug-08 17:27	Analysis: Nonparametric-Two Sample	Official Results: Yes

Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	10000 Trial					7.43%

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	P-Value	Decision(5%)
17629-003		17629-002	88		1	1.0000	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0886061	0.0886061	1	11.67	0.0042	Significant Effect
Error	0.1063273	0.0075948	14			
Total	0.1949334	0.0962009	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Varianc	4.2	8.862	0.0597	Equal Variances
Distribution	Shapiro-Wilk Normality	0.7854		0.0018	Non-normal Distribution

2d Proportion Survived Summary

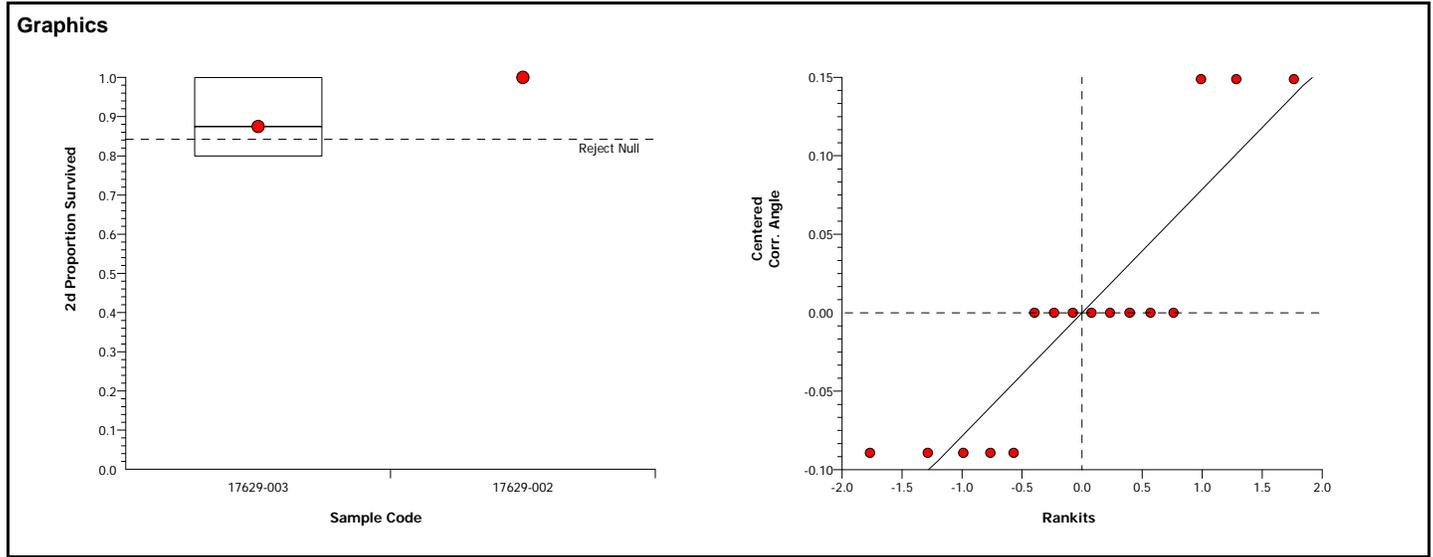
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	0.875	0.8356	0.9144	0.8	1	0.01922	0.1035	11.83%	0.0%
17629-002	8	1	1	1	1	1	0	0	0.0%	-14.29%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-003	8	1.196	1.15	1.243	1.107	1.345	0.02289	0.1232	10.3%	0.0%
17629-002	8	1.345	1.345	1.345	1.345	1.345	0	0	0.0%	-12.44%

Americamysis 7-d Survival, Growth and Fecundity Test			EnviroSystems, Inc.
Analysis No: 02-1154-2686	Endpoint: 2d Proportion Survived	CETIS Version: CETISv1.6.4	
Analyzed: 29 Aug-08 17:27	Analysis: Nonparametric-Two Sample	Official Results: Yes	

2d Proportion Survived Detail								
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-003	1	1	1	0.8	0.8	0.8	0.8	0.8
17629-002	1	1	1	1	1	1	1	1



CETIS Analytical Report

Report Date: 6 Nov-08 10:58 (p 25 of 30)
Link/Link Code: 12-8828-8740/17629Ab

Americamysis 7-d Survival, Growth and Fecundity Test **EnviroSystems, Inc.**

Analysis No: 09-5397-8859	Endpoint: 2d Proportion Survived	CETIS Version: CETISv1.6.4
Analyzed: 29 Aug-08 17:26	Analysis: Nonparametric-Two Sample	Official Results: Yes

Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	10000 Trial					6.84%

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	P-Value	Decision(5%)
17629-000		17629-001	72		1	1.0000	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0035442	0.0035442	1	1	0.3343	Non-Significant Effect
Error	0.0496194	0.0035442	14			
Total	0.0531637	0.0070885	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Varianc	1	8.862	0.3343	Equal Variances
Distribution	Shapiro-Wilk Normality	0.4689		0.0000	Non-normal Distribution

2d Proportion Survived Summary

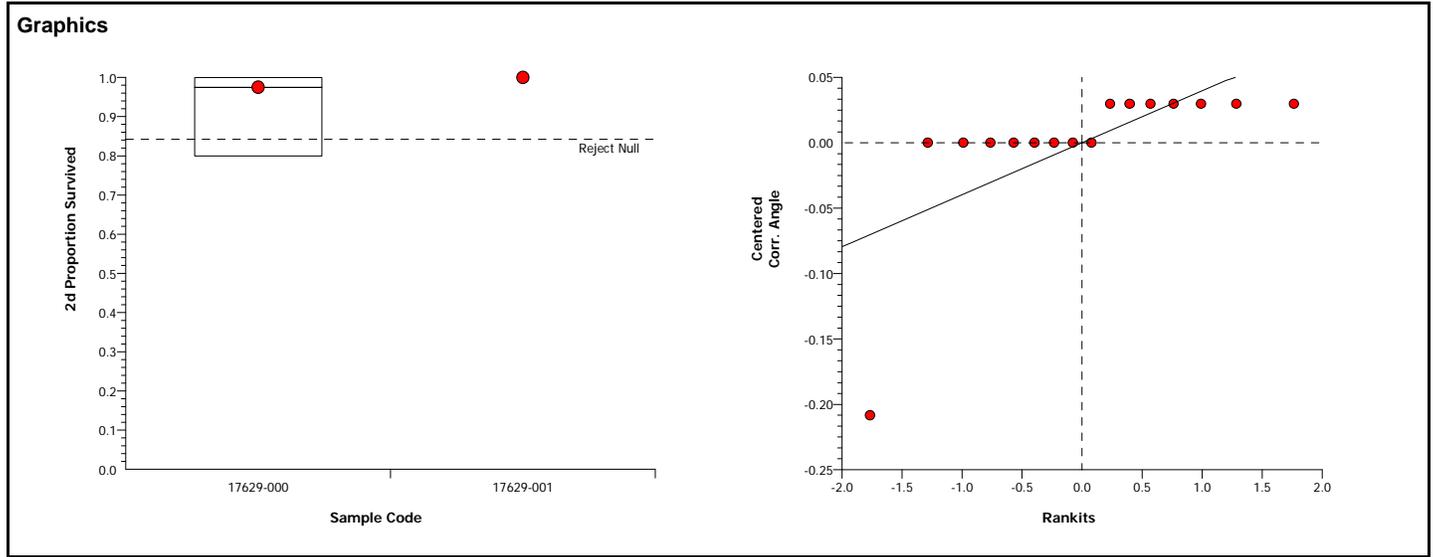
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.975	0.9481	1	0.8	1	0.01313	0.07071	7.25%	0.0%
17629-001	8	1	1	1	1	1	0	0	0.0%	-2.56%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	1.316	1.283	1.348	1.107	1.345	0.01563	0.08419	6.4%	0.0%
17629-001	8	1.345	1.345	1.345	1.345	1.345	0	0	0.0%	-2.26%

Americamysis 7-d Survival, Growth and Fecundity Test			EnviroSystems, Inc.
Analysis No: 09-5397-8859	Endpoint: 2d Proportion Survived	CETIS Version: CETISv1.6.4	
Analyzed: 29 Aug-08 17:26	Analysis: Nonparametric-Two Sample	Official Results: Yes	

2d Proportion Survived Detail								
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-000	1	1	1	1	1	1	1	0.8
17629-001	1	1	1	1	1	1	1	1



CETIS Analytical Report

Report Date: 6 Nov-08 10:58 (p 27 of 30)
Link/Link Code: 12-8828-8740/17629Ab

Americamysis 7-d Survival, Growth and Fecundity Test **EnviroSystems, Inc.**

Analysis No: 18-2611-3572	Endpoint: 2d Proportion Survived	CETIS Version: CETISv1.6.4
Analyzed: 29 Aug-08 17:26	Analysis: Nonparametric-Two Sample	Official Results: Yes

Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	10000 Trial					6.84%

Wilcoxon Rank Sum Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	Ties	P-Value	Decision(5%)
17629-000		17629-002	72		1	1.0000	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0035442	0.0035442	1	1	0.3343	Non-Significant Effect
Error	0.0496194	0.0035442	14			
Total	0.0531637	0.0070885	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Varianc	1	8.862	0.3343	Equal Variances
Distribution	Shapiro-Wilk Normality	0.4689		0.0000	Non-normal Distribution

2d Proportion Survived Summary

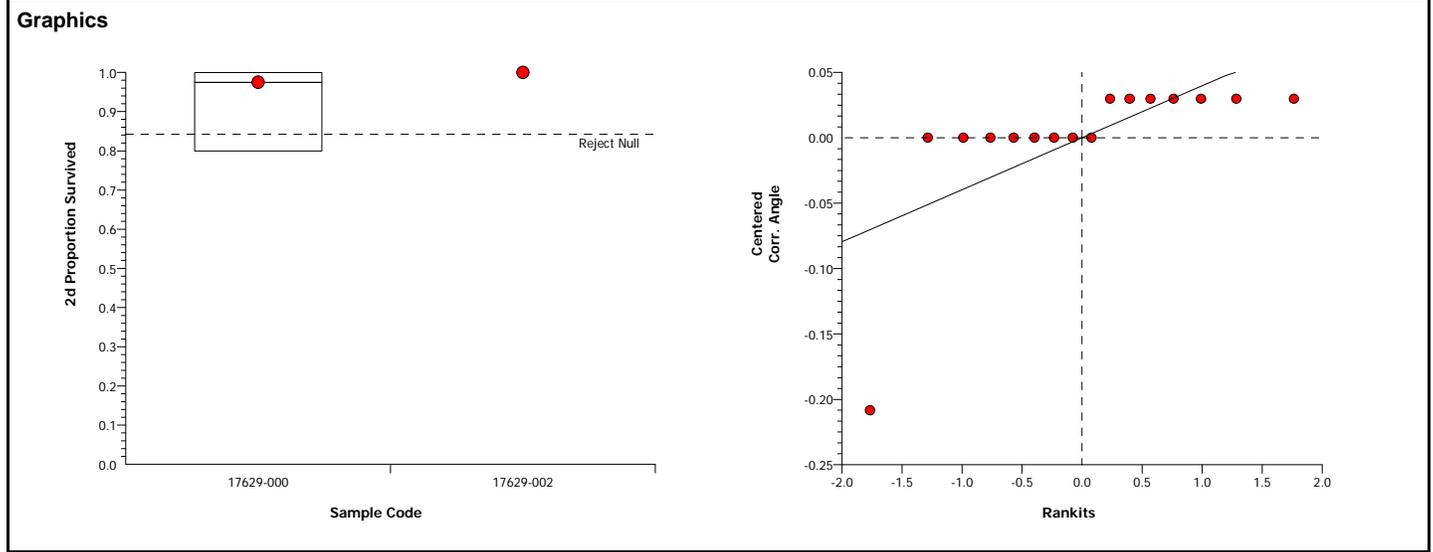
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.975	0.9481	1	0.8	1	0.01313	0.07071	7.25%	0.0%
17629-002	8	1	1	1	1	1	0	0	0.0%	-2.56%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	1.316	1.283	1.348	1.107	1.345	0.01563	0.08419	6.4%	0.0%
17629-002	8	1.345	1.345	1.345	1.345	1.345	0	0	0.0%	-2.26%

Americamysis 7-d Survival, Growth and Fecundity Test			EnviroSystems, Inc.
Analysis No: 18-2611-3572	Endpoint: 2d Proportion Survived	CETIS Version: CETISv1.6.4	
Analyzed: 29 Aug-08 17:26	Analysis: Nonparametric-Two Sample	Official Results: Yes	

2d Proportion Survived Detail								
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-000	1	1	1	1	1	1	1	0.8
17629-002	1	1	1	1	1	1	1	1



CETIS Analytical Report

Report Date: 6 Nov-08 10:58 (p 29 of 30)
Link/Link Code: 12-8828-8740/17629Ab

Americamysis 7-d Survival, Growth and Fecundity Test **EnviroSystems, Inc.**

Analysis No: 20-8833-8706	Endpoint: 2d Proportion Survived	CETIS Version: CETISv1.6.4
Analyzed: 29 Aug-08 17:26	Analysis: Parametric-Two Sample	Official Results: Yes

Test Run No: 05-6477-7504	Test Type: Growth-Survival-Fec (7d)	Analyst:
Start Date: 22 Aug-08 13:05	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 29 Aug-08 15:55	Species: Americamysis bahia	Brine: Not Applicable
Duration: 7d 3h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample Comments
17629-003	0.2 - 0.3 NTU.
17629-002	14-20 NTU.
17629-001	25-32 NTU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	Not Run					9.38%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17629-000		17629-003	2.256	1.761	0.09295	0.0203	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0567079	0.0567079	1	5.091	0.0406	Significant Effect
Error	0.1559467	0.0111391	14			
Total	0.2126546	0.067847	15			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	2.143	8.885	0.3361	Equal Variances
Distribution	Shapiro-Wilk Normality	0.8838		0.0445	Normal Distribution

2d Proportion Survived Summary

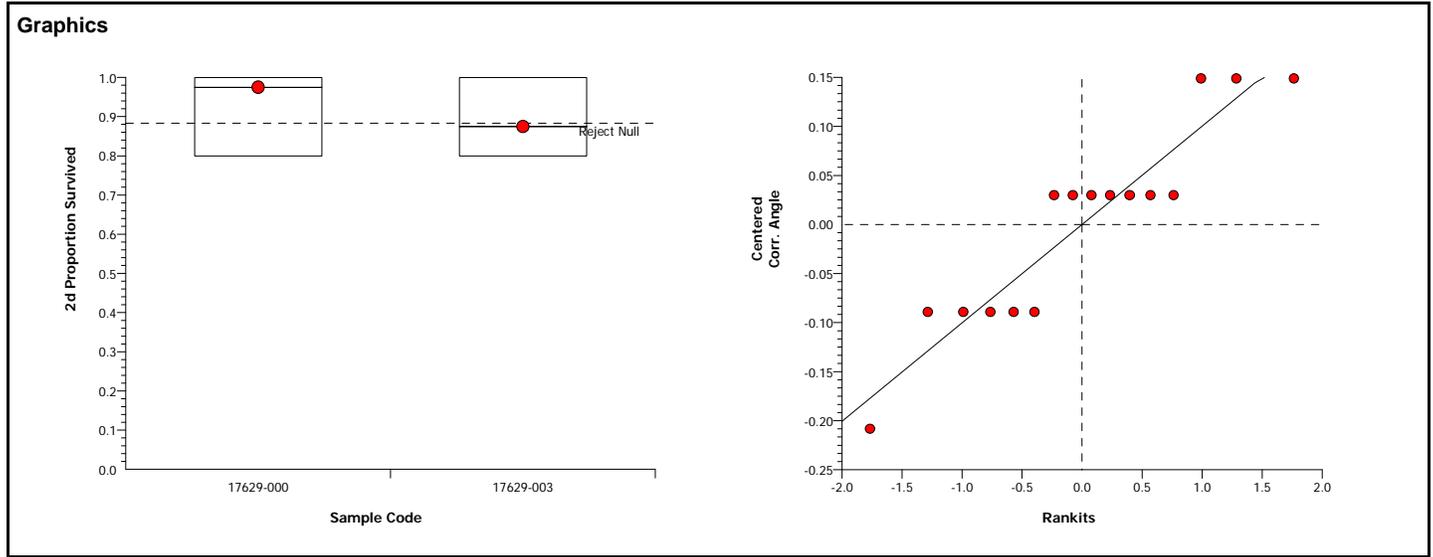
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	0.975	0.9481	1	0.8	1	0.01313	0.07071	7.25%	0.0%
17629-003	8	0.875	0.8356	0.9144	0.8	1	0.01922	0.1035	11.83%	10.26%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17629-000	8	1.316	1.283	1.348	1.107	1.345	0.01563	0.08419	6.4%	0.0%
17629-003	8	1.196	1.15	1.243	1.107	1.345	0.02289	0.1232	10.3%	9.05%

Americamysis 7-d Survival, Growth and Fecundity Test			EnviroSystems, Inc.
Analysis No: 20-8833-8706	Endpoint: 2d Proportion Survived	CETIS Version: CETISv1.6.4	
Analyzed: 29 Aug-08 17:26	Analysis: Parametric-Two Sample	Official Results: Yes	

2d Proportion Survived Detail								
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
17629-000	1	1	1	1	1	1	1	0.8
17629-003	1	1	1	0.8	0.8	0.8	0.8	0.8



**Arbacia punctulata Chronic Fertilization Assay
Water Quality and Gamete Preparation Data**

STUDY: <u>17699</u>	CLIENT: <u>BATTELLE</u>	LOCATION: <u>New Bedford</u>	DATE: <u>10/2/08</u>		
SALINITY ADJUSTMENT RECORD: <u>1000</u> mL -001 + <u>11</u> g SALT					
SALINITY ADJUSTMENT RECORD: <u>1000</u> mL -002 + <u>11</u> g SALT					
SALINITY ADJUSTMENT RECORD: <u>1000</u> mL -003 + <u>24</u> g SALT					
SALINITY ADJUSTMENT RECORD: _____ mL -004 + _____ g SALT					
SALINITY ADJUSTED SAMPLE	D.O. (mg/L)	pH (SU)	SPEC COND (µmhos)	TEMP (°C)	SALINITY (ppt)
Lab Control	25 ^{7.2} 7.1	7.92 ^{8.19}	39200 ⁴³⁸⁰⁰	4 ²¹ 24	25 ²⁸
-001	9.2 ^{7.2}	7.13 ^{7.84}	32460 ⁴⁴³⁷⁰	4 ²¹	20.7 ²⁹
-002	7.7 ^{7.1}	7.47 ^{7.91}	31550 ⁴⁵¹⁴⁰	4 ²¹	20.4 ²⁹
-003	9.4 ^{7.2}	6.80 ^{7.95}	14930 ⁴⁴⁴¹⁰	4 ²¹	9.0 ²⁹
-004					

METERS USED

DO meter # 3 DO probe # 82 pH meter # 1097 pH probe # 83 S/C meter # 45130C S/C probe # 45130C
SALINITY meter # 45130C

DATE & INITIALS FOR GAMETE PREPARATION: ~~137~~ 10/2/08 LB

SPERM DILUTIONS:

HEMACYTOMETER COUNT, E: ~~1.37~~¹³⁷ X 10⁴ = SPM SOLUTION E = 1.37 X 10⁶
SPERM CONCENTRATIONS: SOLUTION E X 40 = SOLUTION A = 5.48 X 10⁷ SPM
SOLUTION E X 20 = SOLUTION B = 2.74 X 10⁷ SPM
SOLUTION E X 5 = SOLUTION C = 0.85 X 10⁶ SPM

FINAL COUNTS:

FINAL SPERM COUNT: 1.37 X 10⁶
FINAL EGG COUNT: 2000

TEST TIMES:

SPERM COLLECTED: 1515
EGGS COLLECTED: 1600
SPERM ADDED: 1525
EGGS ADDED: 1625
FIXATIVE ADDED: 1645

Arbacia punctulata Chronic Fertilization Assay

SAMPLE USE RECORD

STUDY: 17699		CLIENT: Battelle - New Bedford	
SPECIES: <i>A. punctulata</i>			
		Day: 0	
SAMPLE	Volume Used (mL)	ESI Cube ID	
Lab Control	100	E 02 1778	
-001	100	001	
-002	100	002	
-003	100	003	
-004	100	004	
INITIALS: LB	LB		
TIME:	1450		
DATE:	10/2/08		

FERTILIZATION COUNTS

STUDY	CLIENT	LOCATION			DATE	INITIALS
	BATTELLE	New Bedford			10/3/08	SJ
	REPLICATE VIAL					
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>		
SAMPLE	FERT/TOTAL	FERT/TOTAL	FERT/TOTAL	FERT/TOTAL		
Lab Control	100 / 101	100 / 103	100 / 100	101 / 102		
-001	101 / 106	104 / 111	100 / 108	100 / 109		
-002	90 / 112	96 / 110	92 / 107	90 / 110		
-003	105 / 111	102 / 108	100 / 103	100 / 104		
-004 (E3)	100 / 100	100 / 100	100 / 100	100 / 100		

CETIS Summary Report

Report Date: 03 Oct-08 13:05 (p 1 of 1)
Link/Link Code: 14-5978-8516

Arbacia Sperm Cell Fertilization Test	EnviroSystems, Inc.
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Test Run No: 19-1583-5511	Test Type: Fertilization	Analyst:
Start Date: 02 Oct-08 15:25	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 02 Oct-08 16:45	Species: Arbacia punctulata	Brine: Not Applicable
Duration: 80m	Source: In-House Culture	Age:

Sample Code	Sample No	Sample Date	Receive Date	Sample Age	Client Name	Project
17699-000	17-1203-2644	02 Oct-08 16:00	02 Oct-08 16:00	N/A	Battelle Labs	Ecological Risk Assessme
17699-003 Ref	01-0238-7777	01 Oct-08 12:15	01 Oct-08 16:30	27h		
17699-002	01-5675-2759	01 Oct-08 11:50	01 Oct-08 16:30	28h		
17699-001	01-3219-1912	01 Oct-08 11:23	01 Oct-08 16:30	28h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
17699-000	Surface Water	New Bedford Harbor Dredge Moni	WQ-TOX-Lab Control		
17699-003 Ref	Surface Water	New Bedford Harbor Dredge Moni	WQ-TOX-003		
17699-002	Surface Water	New Bedford Harbor Dredge Moni	WQ-TOX-002		
17699-001	Surface Water	New Bedford Harbor Dredge Moni	WQ-TOX-001		

Sample Code	Sample Comments
17699-003 Ref	3.8 NTU.
17699-002	24 NTU.
17699-001	57 NU.

Test Acceptability						
Analysis No	Endpoint	Attribute	Test Stat	Acceptability Limits	Overlap	Decision
09-8209-7467	Proportion Fertilized	Control Resp	0.9878	0.7 - 1	Yes	Passes acceptability criteria
13-8798-2870	Proportion Fertilized	Control Resp	0.9878	0.7 - 1	Yes	Passes acceptability criteria
17-2081-3871	Proportion Fertilized	Control Resp	0.9878	0.7 - 1	Yes	Passes acceptability criteria
08-6652-4166	Proportion Fertilized	PMSD	0.03026	NL - 0.25	No	Passes acceptability criteria
09-8209-7467	Proportion Fertilized	PMSD	0.01413	NL - 0.25	No	Passes acceptability criteria
13-8798-2870	Proportion Fertilized	PMSD	0.01419	NL - 0.25	No	Passes acceptability criteria
17-2081-3871	Proportion Fertilized	PMSD	0.01677	NL - 0.25	No	Passes acceptability criteria
18-9923-5252	Proportion Fertilized	PMSD	0.02414	NL - 0.25	No	Passes acceptability criteria

Proportion Fertilized Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17699-000	4	0.9878	0.9832	0.9923	0.9709	1	0.002227	0.0122	1.24%	0.0%
17699-003 Ref	4	0.9333	0.9276	0.939	0.9174	0.9528	0.002791	0.01528	1.64%	5.52%
17699-002	4	0.8386	0.8263	0.8509	0.8036	0.8727	0.006017	0.03296	3.93%	15.11%
17699-001	4	0.9557	0.9509	0.9605	0.9444	0.9709	0.002324	0.01273	1.33%	3.25%

Proportion Fertilized Detail				
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4
17699-000	0.9901	0.9709	1	0.9902
17699-003 Ref	0.9528	0.9369	0.9259	0.9174
17699-002	0.8036	0.8727	0.8598	0.8182
17699-001	0.9459	0.9444	0.9709	0.9615

CETIS Analytical Report

Report Date: 03 Oct-08 13:05 (p 1 of 5)
 Link/Link Code: 14-5978-8516

Arbacia Sperm Cell Fertilization Test EnviroSystems, Inc.

Analysis No: 18-9923-5252	Endpoint: Proportion Fertilized	CETIS Version: CETISv1.6.4
Analyzed: 03 Oct-08 13:01	Analysis: Parametric-Two Sample	Official Results: Yes

Test Run No: 19-1583-5511	Test Type: Fertilization	Analyst:
Start Date: 02 Oct-08 15:25	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 02 Oct-08 16:45	Species: Arbacia punctulata	Brine: Not Applicable
Duration: 80m	Source: In-House Culture	Age:

Sample Code	Sample Comments
17699-003 Ref	3.8 NTU.
17699-002	24 NTU.
17699-001	57 NU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	Not Run					2.41%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17699-003 Ref		17699-001	-2.22	1.943	0.0434	0.9659	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0049197	0.0049197	1	4.93	0.0682	Non-Significant Effect
Error	0.0059871	0.0009978	6			
Total	0.0109068	0.0059176	7			

ANOVA Assumptions

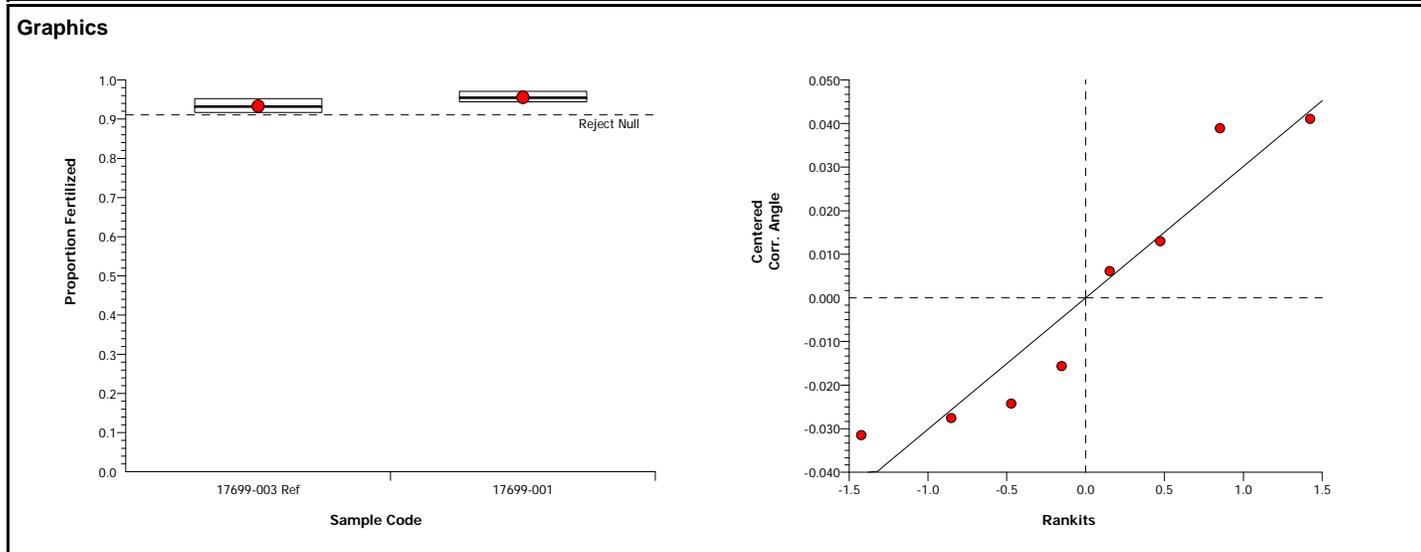
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	1.023	47.47	0.9852	Equal Variances
Distribution	Shapiro-Wilk Normality	0.8816		0.1950	Normal Distribution

Proportion Fertilized Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17699-003 Ref	4	0.9333	0.9275	0.9391	0.9174	0.9528	0.002838	0.01528	1.64%	0.0%
17699-001	4	0.9557	0.9509	0.9605	0.9444	0.9709	0.002364	0.01273	1.33%	-2.4%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17699-003 Ref	4	1.311	1.299	1.323	1.279	1.352	0.005832	0.03141	2.4%	0.0%
17699-001	4	1.36	1.348	1.373	1.333	1.399	0.0059	0.03177	2.34%	-3.78%



CETIS Analytical Report

Report Date: 03 Oct-08 13:05 (p 2 of 5)
 Link/Link Code: 14-5978-8516

Arbacia Sperm Cell Fertilization Test EnviroSystems, Inc.

Analysis No: 08-6652-4166	Endpoint: Proportion Fertilized	CETIS Version: CETISv1.6.4
Analyzed: 03 Oct-08 13:01	Analysis: Parametric-Two Sample	Official Results: Yes

Test Run No: 19-1583-5511	Test Type: Fertilization	Analyst:
Start Date: 02 Oct-08 15:25	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 02 Oct-08 16:45	Species: Arbacia punctulata	Brine: Not Applicable
Duration: 80m	Source: In-House Culture	Age:

Sample Code	Sample Comments
17699-003 Ref	3.8 NTU.
17699-002	24 NTU.
17699-001	57 NU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	Not Run					3.03%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17699-003 Ref		17699-002	5.547	1.943	0.05328	0.0007	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0462633	0.0462633	1	30.77	0.0015	Significant Effect
Error	0.0090225	0.0015037	6			
Total	0.0552858	0.0477670	7			

ANOVA Assumptions

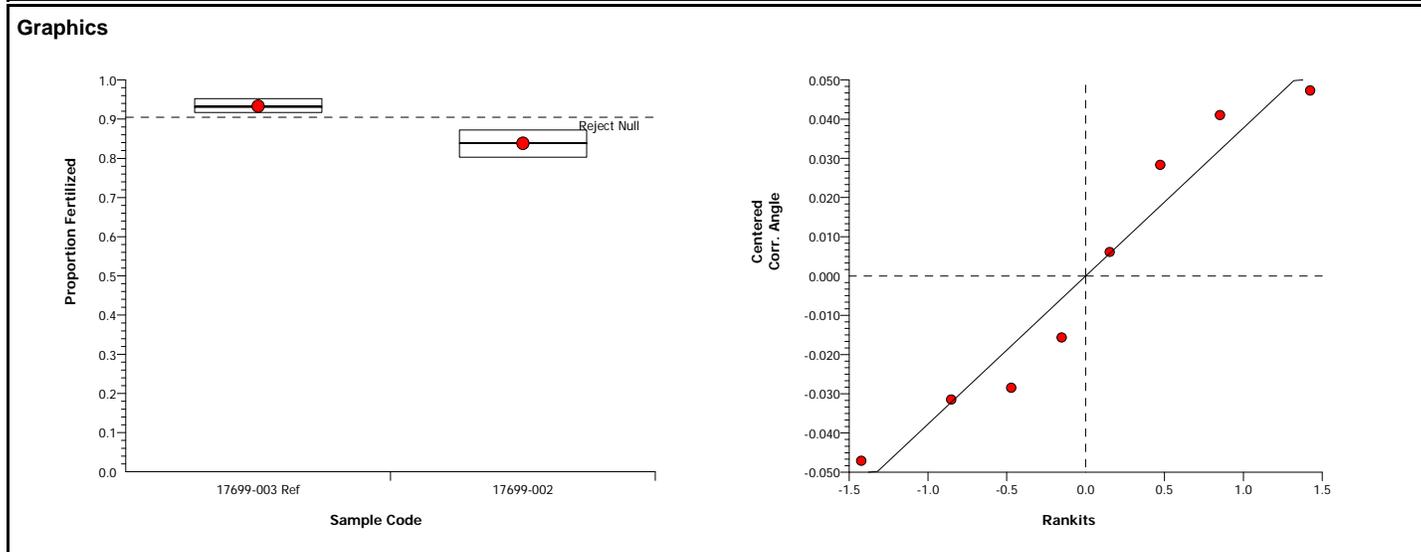
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	2.049	47.47	0.5707	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9221		0.4473	Normal Distribution

Proportion Fertilized Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17699-003 Ref	4	0.9333	0.9275	0.9391	0.9174	0.9528	0.002838	0.01528	1.64%	0.0%
17699-002	4	0.8386	0.826	0.8511	0.8036	0.8727	0.00612	0.03296	3.93%	10.15%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17699-003 Ref	4	1.311	1.299	1.323	1.279	1.352	0.005832	0.03141	2.4%	0.0%
17699-002	4	1.159	1.142	1.176	1.112	1.206	0.008348	0.04496	3.88%	11.6%



CETIS Analytical Report

Report Date: 03 Oct-08 13:05 (p 3 of 5)
 Link/Link Code: 14-5978-8516

Arbacia Sperm Cell Fertilization Test EnviroSystems, Inc.

Analysis No: 13-8798-2870	Endpoint: Proportion Fertilized	CETIS Version: CETISv1.6.4
Analyzed: 03 Oct-08 13:01	Analysis: Parametric-Two Sample	Official Results: Yes

Test Run No: 19-1583-5511	Test Type: Fertilization	Analyst:
Start Date: 02 Oct-08 15:25	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 02 Oct-08 16:45	Species: Arbacia punctulata	Brine: Not Applicable
Duration: 80m	Source: In-House Culture	Age:

Sample Code	Sample Comments
17699-003 Ref	3.8 NTU.
17699-002	24 NTU.
17699-001	57 NU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	Not Run					1.42%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17699-000		17699-001	3.553	1.943	0.05758	0.0060	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.022167	0.022167	1	12.62	0.0120	Significant Effect
Error	0.010536	0.001756	6			
Total	0.032703	0.023923	7			

ANOVA Assumptions

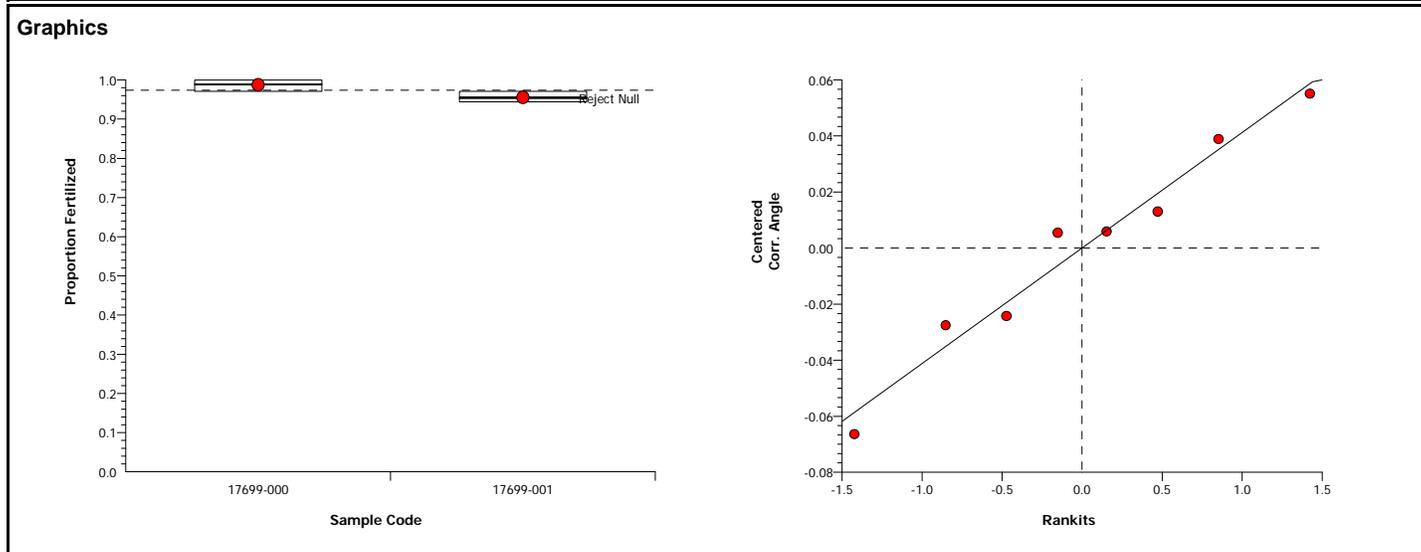
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	2.479	47.47	0.4755	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9695		0.8943	Normal Distribution

Proportion Fertilized Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17699-000	4	0.9878	0.9832	0.9924	0.9709	1	0.002265	0.0122	1.24%	0.0%
17699-001	4	0.9557	0.9509	0.9605	0.9444	0.9709	0.002364	0.01273	1.33%	3.25%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17699-000	4	1.466	1.447	1.485	1.399	1.521	0.009289	0.05003	3.41%	0.0%
17699-001	4	1.36	1.348	1.373	1.333	1.399	0.0059	0.03177	2.34%	7.18%



CETIS Analytical Report

Report Date: 03 Oct-08 13:05 (p 4 of 5)
 Link/Link Code: 14-5978-8516

Arbacia Sperm Cell Fertilization Test EnviroSystems, Inc.

Analysis No: 17-2081-3871	Endpoint: Proportion Fertilized	CETIS Version: CETISv1.6.4
Analyzed: 03 Oct-08 13:01	Analysis: Parametric-Two Sample	Official Results: Yes

Test Run No: 19-1583-5511	Test Type: Fertilization	Analyst:
Start Date: 02 Oct-08 15:25	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 02 Oct-08 16:45	Species: Arbacia punctulata	Brine: Not Applicable
Duration: 80m	Source: In-House Culture	Age:

Sample Code	Sample Comments
17699-003 Ref	3.8 NTU.
17699-002	24 NTU.
17699-001	57 NU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	Not Run					1.68%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17699-000		17699-002	9.128	1.943	0.06535	0.0000	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.1884564	0.1884564	1	83.32	0.0001	Significant Effect
Error	0.0135714	0.0022619	6			
Total	0.2020278	0.1907183	7			

ANOVA Assumptions

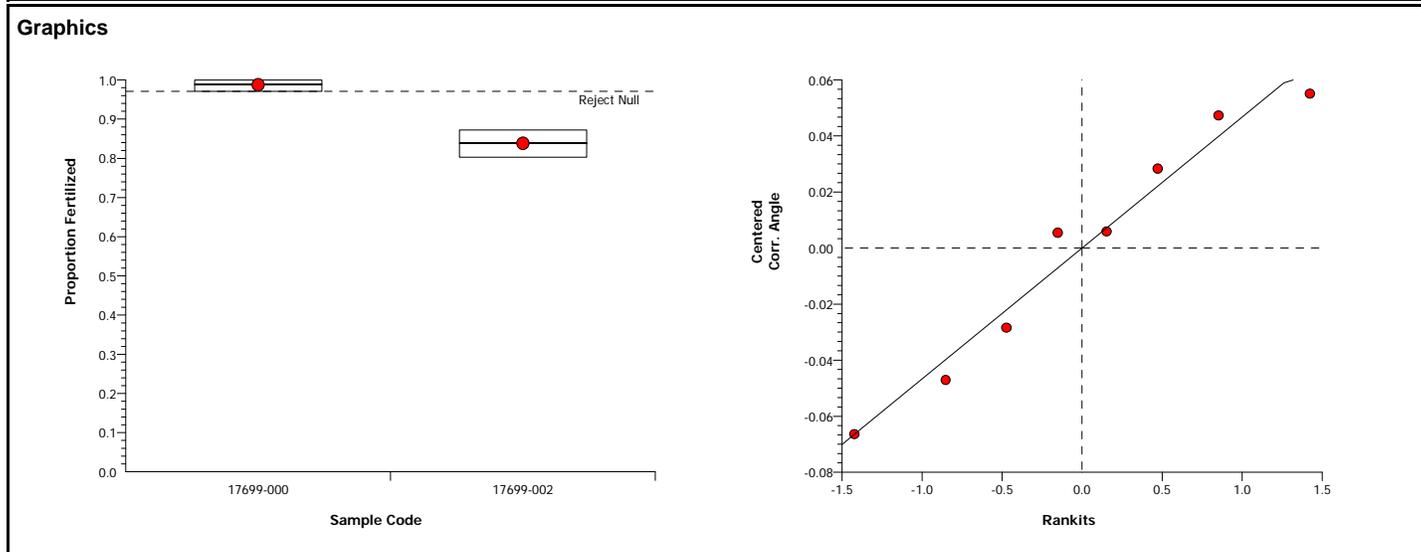
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	1.238	47.47	0.8648	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9462		0.6732	Normal Distribution

Proportion Fertilized Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17699-000	4	0.9878	0.9832	0.9924	0.9709	1	0.002265	0.0122	1.24%	0.0%
17699-002	4	0.8386	0.826	0.8511	0.8036	0.8727	0.00612	0.03296	3.93%	15.11%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17699-000	4	1.466	1.447	1.485	1.399	1.521	0.009289	0.05003	3.41%	0.0%
17699-002	4	1.159	1.142	1.176	1.112	1.206	0.008348	0.04496	3.88%	20.94%



CETIS Analytical Report

Report Date: 03 Oct-08 13:05 (p 5 of 5)
 Link/Link Code: 14-5978-8516

Arbacia Sperm Cell Fertilization Test EnviroSystems, Inc.

Analysis No: 09-8209-7467	Endpoint: Proportion Fertilized	CETIS Version: CETISv1.6.4
Analyzed: 03 Oct-08 13:01	Analysis: Parametric-Two Sample	Official Results: Yes

Test Run No: 19-1583-5511	Test Type: Fertilization	Analyst:
Start Date: 02 Oct-08 15:25	Protocol: EPA/821/R-02-014 (2002)	Diluent: Not Applicable
Ending Date: 02 Oct-08 16:45	Species: Arbacia punctulata	Brine: Not Applicable
Duration: 80m	Source: In-House Culture	Age:

Sample Code	Sample Comments
17699-003 Ref	3.8 NTU.
17699-002	24 NTU.
17699-001	57 NU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)		C > T	Not Run					1.41%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17699-000		17699-003 Ref	5.244	1.943	0.05739	0.0010	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0.0479727	0.0479727	1	27.5	0.0019	Significant Effect
Error	0.0104666	0.0017444	6			
Total	0.0584392	0.0497171	7			

ANOVA Assumptions

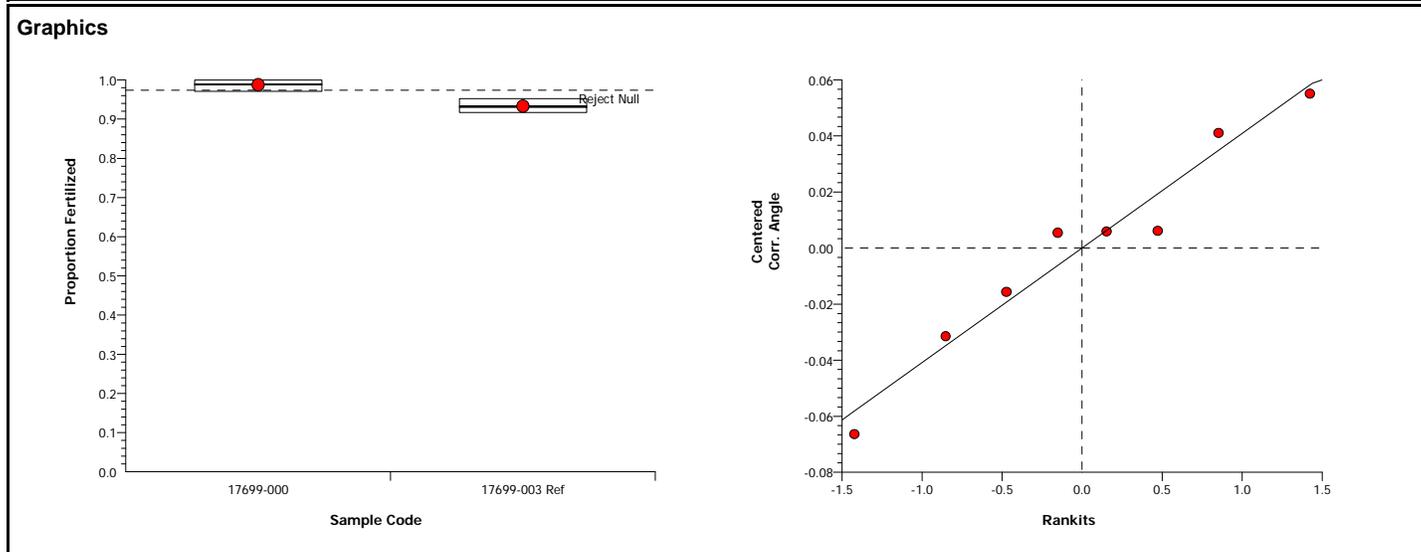
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	2.537	47.47	0.4646	Equal Variances
Distribution	Shapiro-Wilk Normality	0.961		0.8193	Normal Distribution

Proportion Fertilized Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17699-000	4	0.9878	0.9832	0.9924	0.9709	1	0.002265	0.0122	1.24%	0.0%
17699-003 Ref	4	0.9333	0.9275	0.9391	0.9174	0.9528	0.002838	0.01528	1.64%	5.52%

Angular (Corrected) Transformed Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17699-000	4	1.466	1.447	1.485	1.399	1.521	0.009289	0.05003	3.41%	0.0%
17699-003 Ref	4	1.311	1.299	1.323	1.279	1.352	0.005832	0.03141	2.4%	10.57%





Champia parvula Sexual Reproduction Test Quality Assurance Summary

Client	ESI Ltd		
SRC Publication No.	11020-14C08	Test Initiation Date	Oct 2/08
Analyst	M. Moody, D. Bolin	Test Completion Date	Oct 9/08
Sample Identification/Name	WQ-TOX-001, WQ-TOX-002, WQ-TOX-003		

This report is based on the Environment Canada Guidance Document: Report Assessment Checklist for the Pulp and Paper and Metal Mining EEM Programs, April 2005.

Test Organisms, Method and Conditions - Species: *Champia parvula*, sexually mature male and female branches, in good health, males having sori with spermatia, females having trichogynes. Method: EPA 821-R-02-014, Method 1009.0 (Third edition, October 2002), static, non-renewal; 2-day effluent exposure followed by 5 to 7 day recovery period in control medium for cystocarp development. Exposure/Dilution Medium: natural seawater collected at Pacific Environmental Science Centre, Environment Canada, North Vancouver, B.C., filtered to 1 µm and autoclaved before use, adjusted as necessary to salinity 30 ppt. with brine* at 90 ppt prepared from commercial sea salts (Instant Ocean). Natural seawater is enriched with 10 ml/L Test Nutrient Solution. Recovery Medium: natural seawater as above, enriched with 10 ml/L Culture Nutrient Solution (method section 16.10.1.3).

Reference Toxicant Test - Method: EPA/600/4-91/003, Method 1009.0, static, non-renewal; 2-day toxicant exposure followed by 5 to 7 day recovery period in control medium for cystocarp development. Test conditions: performed under same experimental conditions as effluent sample. Compound: sodium dodecyl sulphate mg/L

Date of test: Oct 10/08	Historic value, warning limits ±2SD
IC ₅₀ (95 % CL) mg/L 1.05 (0.83 – 1.26)	1.25 (1.05 – 1.48)

Quality Control Data - There was no unusual appearance or treatment of test organisms before their use in the test. There was nothing unusual about the test, no deviation from the test method or problems encountered. No control mortality was observed in any control solution during observation periods. The mean number of cystocarps per plant counted in this test must be >10 to be acceptable. Data for this test is as follows.

Natural seawater controls	46.6
Dry salt controls	33.1
Pooled control cystocarp count*	39.9

* as in EC guidance document on salinity adjustment, Dec 2001

Toxicity Test Results: Cystocarps per female branch as mean (standard deviation)

WQ-TOX-001	2.7 (2.8)
WQ-TOX-002	6.2 (6.3)
WQ-TOX-003	17.1 (8.7)
Signature <i>M. Moody</i>	Date <i>Nov 7/08</i>



Test Data Summary

SAMPLE			
Identification/Name	WQ-TOX-001, WQ-TOX-002, WQ-TOX-003		
Date Sampled	Oct 1/08		
Date/Time Received	Oct 2/08 4 pm	Test Initiation Date	Oct 2/08
Temperature Upon Receipt (°C)	7	Test Completion Date	Oct 9/08

ORGANISM INFORMATION			
Species	Champia parvula	Appearance/Health of Champia	excellent
Source	sexually mature male and female branches, obtained from USEPA, Hatfield Marine Science Center, Newport, Oregon in 1995		
Females, Presence of Trichognes	yes	Males, Presence of Sori with Spermatia	yes

TEST CONDITIONS			
Test Method	EPA 821-R-02-014, Method 1009.0 Third edition, October 2002	Dilution water	Natural seawater from Pacific Environmental Science Centre, North Vancouver B.C. as described on page 1
Test Type	static, non-renewal; two day effluent exposure followed by five to seven day recovery period in control medium for cystocarp development		
Test Vessels (Exposure & Recovery)	270 mL transparent polystyrene cups, transparent polystyrene lids		
Exposure Vessel Volume / Depth	100 mL / 4.5 cm	Recovery Vessel Volume / Depth	200 mL / 7.3 cm
Replicates/Conc.	3	No. of organisms (female/male)	5/2
Number and Concentrations of Test Solutions (%v/v)	Controls: (two) natural sea water, salt Tests: all samples tested at 100%		
Chemicals added to control/dilution water	Test Nutrients as described in method cited at 10 mL/L, analytical grade		

SAMPLE TREATMENT					
D.O. on sample without salinity adjustment (mg/L)	See pg 3	D.O. after salinity adjustment (mg/L)	Page 3		
Aeration (duration/rate)	none	Filtration	none	pH Adjustments	none
Salinity Adjustment*	Not required				
Dry Salt for Salinity Adjustment*					
* as per EC guidance document on salinity adjustment, Dec 2001					

EXPOSURE PERIOD (48 h) and RECOVERY PERIOD (5-7 days)			
Temperature, pH, D.O. and Salinity of test solutions and controls on following page			
Photoperiod (L:D h)	16:8	Agitation of tests and controls during exposure	gentle rotary shaking
Recovery Medium: natural sea water containing 10 mL/L Culture Nutrients (section 16.10.1.3 of cited method), prepared from analytical grade chemicals			
Aeration during recovery: gentle aeration supplied			

Date/Initial Nov 7/08 SM



Water Quality Data

Sample Identification/Name	WQ-TOX-001, WQ-TOX-002, WQ-TOX-003
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INITIAL WATER QUALITY	SAMPLE at test start, without salinity adjustment			TEST MEDIUM	RECOVERY MEDIUM
	001	002	003		
Sample #	001	002	003		
Temperature (°C)	24	25	25	22	23
Dissolved Oxygen (mg/L)	9.2	9.1	9.6	7.8	7.7
pH	7.06	6.91	6.84	8.35	8.40
Salinity (ppt)	21	20	8	30	30
Sample Description	Sl. cloudy pale yellow liquid			Length of Recovery Period (days)	5

Water Quality Data during Exposure Period (0, 24, 48 hr)

Concentration % (v/v)	Temperature (°C)			Dissolved Oxygen (mg/L)			pH			Salinity (ppt)		
	exposure			exposure			exposure			exposure		
	0	24	48	0	24	48	0	24	48	0	24	48
Control NSW ¹	22	23	23	7.3	8.0	8.3	8.48	8.53	8.43	30	30	30
Control IO	24	23	23	7.9	8.0	8.3	8.45	8.23	8.62	30	30	30
WQ-TOX-001	24	23	23	7.6	8.1	8.1	7.50	8.28	8.72	29	29	29
WQ-TOX-002	23	23	23	7.8	8.0	8.2	7.41	8.29	8.37	29	29	29
WQ-TOX-003	24	23	23	7.6	8.0	8.2	7.73	8.32	8.45	30	30	30

Recovery Period – Temperature Monitoring (initial daily entries)

Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
23	23	23	23	23	23	-	-

Champia (female) Mortality at end of Recovery Period

Concentration %v/v	control	001	002	003
	NSW ¹	100%	100%	100%
# Females dead ²	0	0	0	0
% Mortality ²	0	0	0	0
Description	Normal red	Fragile, some green areas	Red, slightly fragile, limp	Red, good condition

¹ NSW natural sea water, IO: Instant Ocean dry salts
² same for all test units at each concentration

Date/Initial Nov 7/08 LM



Test Data

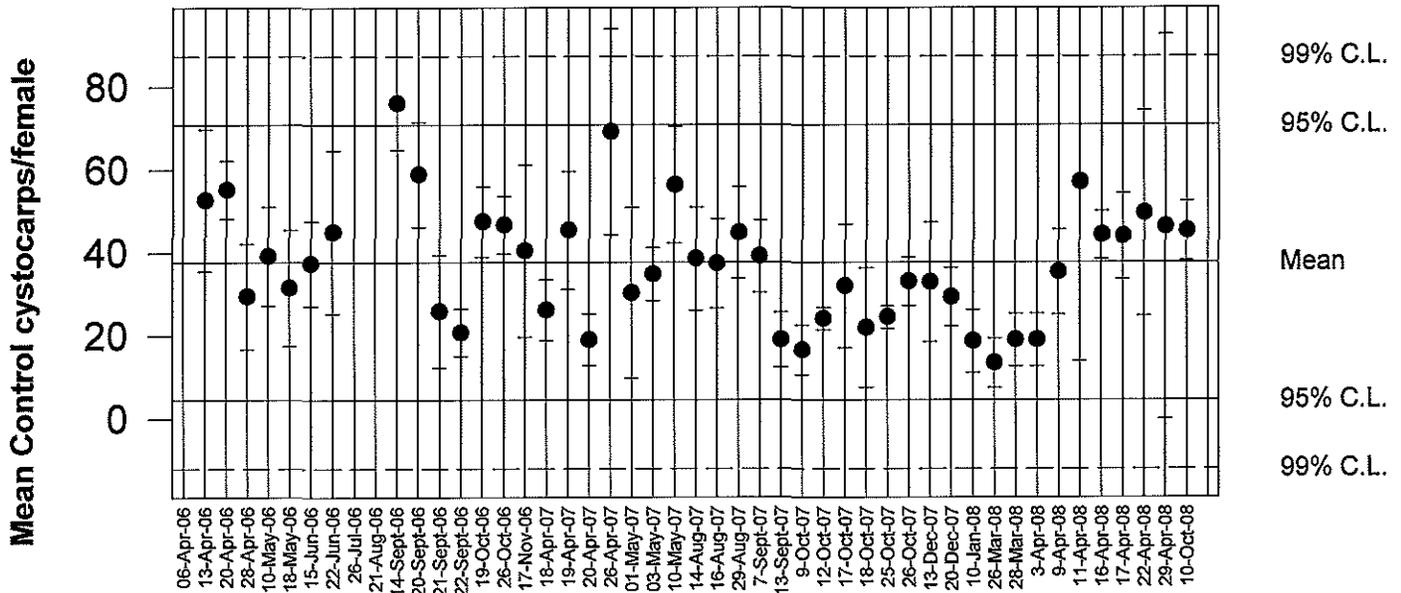
Sample Identification/Name	WQ-TOX-001, WQ-TOX-002, WQ-TOX-003	
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		Champia Cystocarp Counts					replicate		group		Comments
date of sampling: Oct 1/08 date received: Oct 2/08							mean	SD	mean, SD		
Control	57	47	46	55	41	49.2	6.6	46.6	13.1	healthy red color normal growth	
Natural Seawater	23	34	32	37	42	33.6	7.0				
	62	37	40	71	44	50.8	14.9				
	60	50	32	51	71	52.8	14.4				
Control	16	49	35	18	19	27.4	14.3	33.1	11.5	healthy red color normal growth	
Instant Ocean	22	25	30	32	34	28.6	5.0				
	33	31	54	42	25	37	11.3				
	21	45	35	52	44	39.4	11.9				
WQ-TOX-001	0	0	0	5	0	1	2.2	2.7	2.8	branches fragmented	
	4	6	5	2	0	3.4	2.4				
	0	6	0	2	1	1.8	2.5				
	2	6	7	8	0	4.6	3.4				
WQ-TOX-002	1	0	6	2	0	1.8	2.5	6.2	6.3	branches fragmented	
	23	7	1	2	10	8.6	8.8				
	2	0	14	4	7	5.4	5.5				
	5	4	12	17	6	8.8	5.5				
WQ-TOX-003	30	17	16	26	34	24.6	7.9	17.1	8.7	healthy red color normal growth	
	18	25	26	12	27	21.6	6.4				
	19	17	12	17	14	15.8	2.8				
	3	6	10	9	4	6.4	3.0				

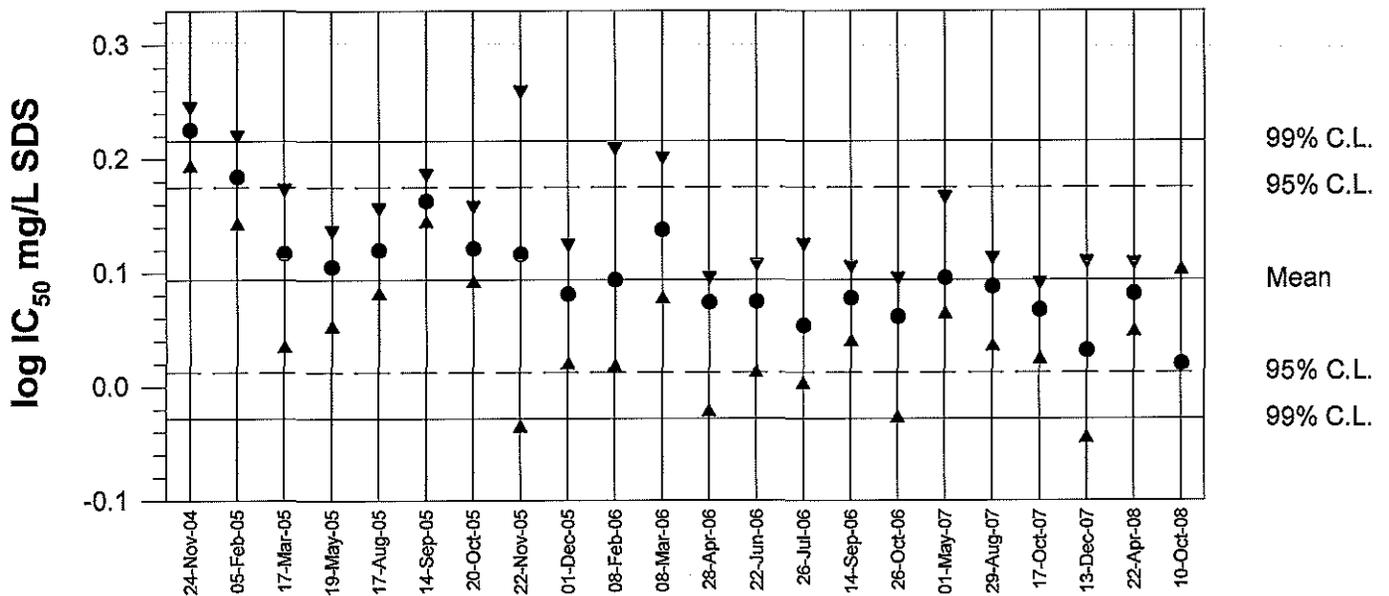
SD: Standard Deviation

Date/Initial _____

Saskatchewan Research Council
Champia parvula Reproduction Test Control Charts



Control cystocarp count per female *Champia parvula* for tests from Apr 2006 to Oct 2008. Mean and 95% control limits for each test and cumulative mean, 95% and 99% control limits for all tests. Cumulative mean: 37.7 (95% CL: 4-71)



Reference Toxicant Tests using Sodium dodecyl sulfate mg/L
 Historical value (previous 20 tests) and 95% confidence limits 1.25 (1.05 - 1.48) mg/L
 Data for most recent test
 Oct 10/08: mean and 95% confidence limits 1.05 (0.83 - 1.26) mg/L

CETIS Summary Report

Report Date: 26 Nov-08 11:02 (p 1 of 1)
 Link/Link Code: 05-2962-5884/17699Cp

Champia parvula Red Macroalga Sexual Reproduction Test	Saskatchewan Research Council
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Test Run No: 00-9672-4144	Test Type: Champia	Analyst:
Start Date: 02 Oct-08 12:00	Protocol: EPA/600/4-91/003 (1994)	Diluent: Laboratory Seawater
Ending Date: 09 Oct-08 12:00	Species: Champia parvula	Brine: Not Applicable
Duration: 7d 0h	Source: In-House Culture	Age:

Sample Code	Sample No	Sample Date	Receive Date	Sample Age	Client Name	Project
17699-000	17-1203-2644	02 Oct-08 16:00	02 Oct-08 16:00	N/A	Battelle Labs	Ecological Risk Assessme
17699-003 Ref	01-0238-7777	01 Oct-08 12:15	01 Oct-08 16:30	24h		
17699-002	01-5675-2759	01 Oct-08 11:50	01 Oct-08 16:30	24h		
17699-001	01-3219-1912	01 Oct-08 11:23	01 Oct-08 16:30	25h		

Sample Code	Material Type	Sample Source	Station Location	Latitude	Longitude
17699-000	Surface Water	New Bedford Harbor Dredge Moni WQ-TOX-Lab Control			
17699-003 Ref	Surface Water	New Bedford Harbor Dredge Moni WQ-TOX-003			
17699-002	Surface Water	New Bedford Harbor Dredge Moni WQ-TOX-002			
17699-001	Surface Water	New Bedford Harbor Dredge Moni WQ-TOX-001			

Sample Code	Sample Comments
17699-003 Ref	3.8 NTU.
17699-002	24 NTU.
17699-001	57 NU.

Mean Cystocarps Summary											
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%	
17699-000	4	33.1	30.86	35.34	27.4	39.4	1.094	5.99	18.1%	0.0%	
17699-003 Ref	4	17.1	14.11	20.09	6.4	24.6	1.463	8.014	46.87%	48.34%	
17699-002	4	6.15	4.921	7.379	1.8	8.8	0.601	3.292	53.53%	81.42%	
17699-001	4	2.7	2.098	3.302	1	4.6	0.2944	1.612	59.72%	91.84%	

Mean Cystocarps Detail					
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	
17699-000	27.4	28.6	37	39.4	
17699-003 Ref	24.6	21.6	15.8	6.4	
17699-002	1.8	8.6	5.4	8.8	
17699-001	1	3.4	1.8	4.6	

CETIS Analytical Report

Report Date: 26 Nov-08 11:02 (p 1 of 5)
 Link/Link Code: 05-2962-5884/17699Cp

Champia parvula Red Macroalga Sexual Reproduction Test **Saskatchewan Research Council**

Analysis No: 02-2859-6096	Endpoint: Mean Cystocarps	CETIS Version: CETISv1.6.4
Analyzed: 10 Nov-08 7:59	Analysis: Parametric-Two Sample	Official Results: Yes

Test Run No: 00-9672-4144	Test Type: Champia	Analyst:
Start Date: 02 Oct-08 12:00	Protocol: EPA/600/4-91/003 (1994)	Diluent: Laboratory Seawater
Ending Date: 09 Oct-08 12:00	Species: Champia parvula	Brine: Not Applicable
Duration: 7d 0h	Source: In-House Culture	Age:

Sample Code	Sample Comments
17699-003 Ref	3.8 NTU.
17699-002	24 NTU.
17699-001	57 NU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					46.45%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17699-003 Ref		17699-001	3.523	1.943	7.943	0.0062	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	414.72	414.72	1	12.41	0.0125	Significant Effect
Error	200.48	33.41333	6			
Total	615.2	448.1333	7			

ANOVA Assumptions

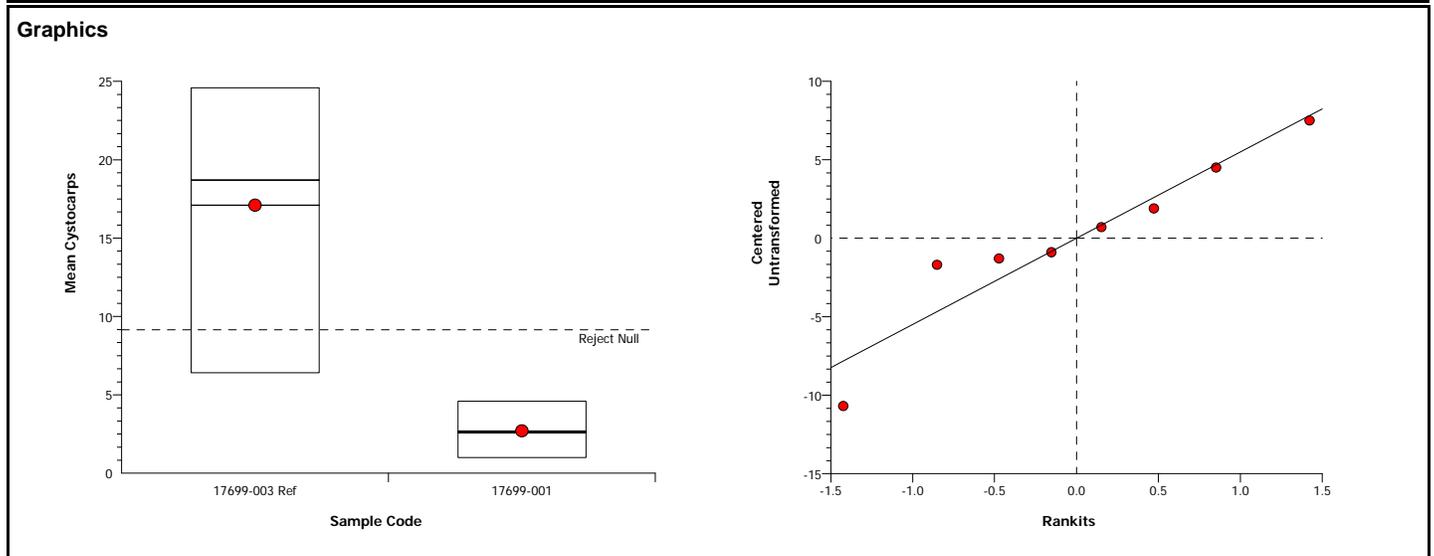
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	24.7	47.47	0.0258	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9258		0.4789	Normal Distribution

Mean Cystocarps Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17699-003 Ref	4	17.1	14.05	20.15	6.4	24.6	1.488	8.014	46.87%	0.0%
17699-001	4	2.7	2.087	3.313	1	4.6	0.2994	1.612	59.72%	84.21%

Mean Cystocarps Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4
17699-003 Ref	24.6	21.6	15.8	6.4
17699-001	4.6	3.4	1.8	1



CETIS Analytical Report

Report Date: 26 Nov-08 11:02 (p 2 of 5)
 Link/Link Code: 05-2962-5884/17699Cp

Champia parvula Red Macroalga Sexual Reproduction Test **Saskatchewan Research Council**

Analysis No: 19-9725-2564	Endpoint: Mean Cystocarps	CETIS Version: CETISv1.6.4
Analyzed: 10 Nov-08 7:59	Analysis: Parametric-Two Sample	Official Results: Yes

Test Run No: 00-9672-4144	Test Type: Champia	Analyst:
Start Date: 02 Oct-08 12:00	Protocol: EPA/600/4-91/003 (1994)	Diluent: Laboratory Seawater
Ending Date: 09 Oct-08 12:00	Species: Champia parvula	Brine: Not Applicable
Duration: 7d 0h	Source: In-House Culture	Age:

Sample Code	Sample Comments
17699-003 Ref	3.8 NTU.
17699-002	24 NTU.
17699-001	57 NU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					49.23%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17699-003 Ref		17699-002	2.528	1.943	8.418	0.0224	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	239.805	239.805	1	6.389	0.0448	Significant Effect
Error	225.19	37.53167	6			
Total	464.995	277.3367	7			

ANOVA Assumptions

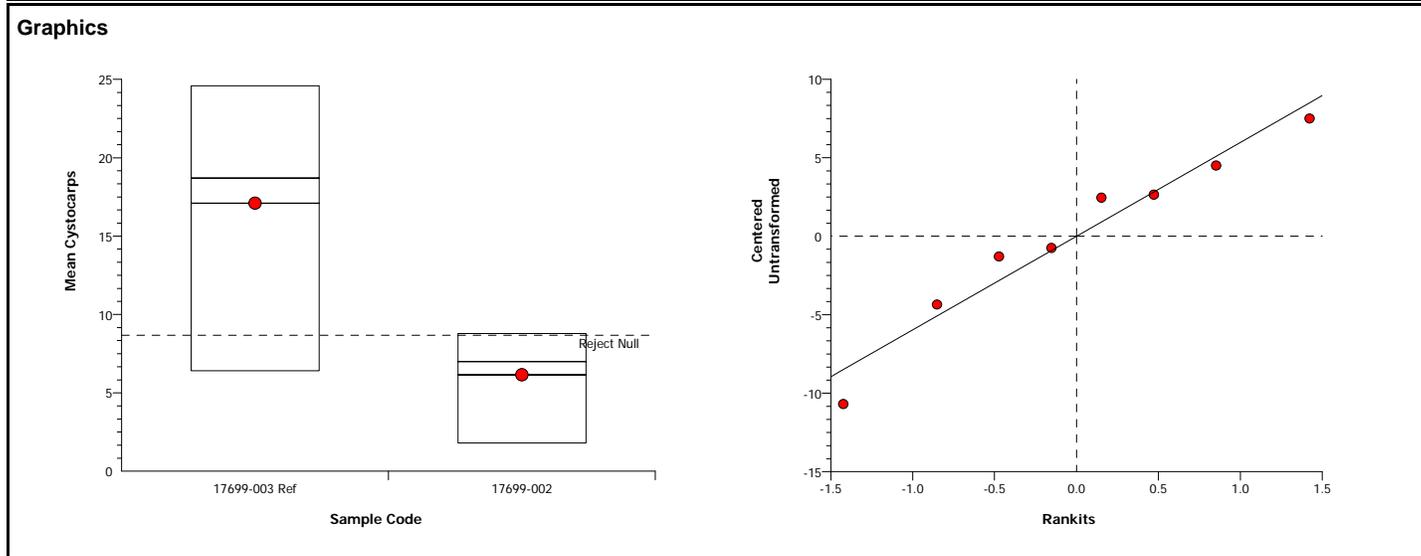
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	5.927	47.47	0.1780	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9575		0.7858	Normal Distribution

Mean Cystocarps Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17699-003 Ref	4	17.1	14.05	20.15	6.4	24.6	1.488	8.014	46.87%	0.0%
17699-002	4	6.15	4.898	7.402	1.8	8.8	0.6113	3.292	53.53%	64.04%

Mean Cystocarps Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4
17699-003 Ref	24.6	21.6	15.8	6.4
17699-002	8.8	8.6	5.4	1.8



CETIS Analytical Report

Report Date: 26 Nov-08 11:02 (p 3 of 5)
 Link/Link Code: 05-2962-5884/17699Cp

Champia parvula Red Macroalga Sexual Reproduction Test **Saskatchewan Research Council**

Analysis No: 04-8620-3807	Endpoint: Mean Cystocarps	CETIS Version: CETISv1.6.4
Analyzed: 10 Nov-08 7:59	Analysis: Parametric-Two Sample	Official Results: Yes

Test Run No: 00-9672-4144	Test Type: Champia	Analyst:
Start Date: 02 Oct-08 12:00	Protocol: EPA/600/4-91/003 (1994)	Diluent: Laboratory Seawater
Ending Date: 09 Oct-08 12:00	Species: Champia parvula	Brine: Not Applicable
Duration: 7d 0h	Source: In-House Culture	Age:

Sample Code	Sample Comments
17699-003 Ref	3.8 NTU.
17699-002	24 NTU.
17699-001	57 NU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					18.21%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17699-000		17699-001	9.801	1.943	6.027	0.0000	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	1848.32	1848.32	1	96.07	0.0001	Significant Effect
Error	115.44	19.24	6			
Total	1963.76	1867.56	7			

ANOVA Assumptions

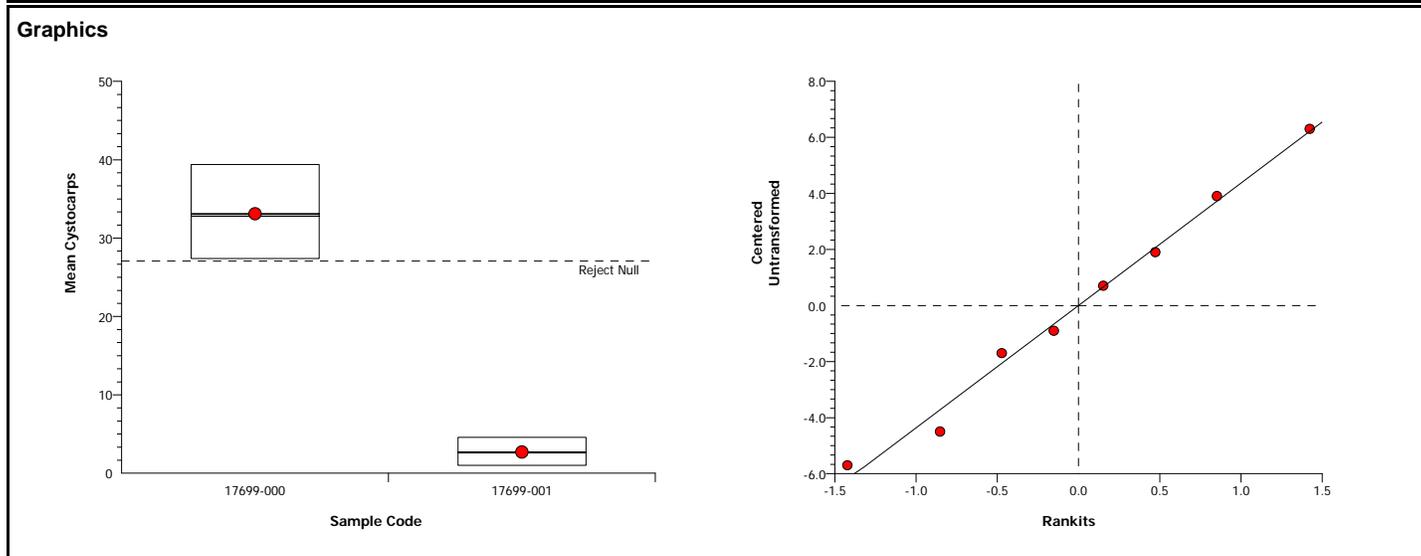
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	13.8	47.47	0.0584	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9804		0.9648	Normal Distribution

Mean Cystocarps Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17699-000	4	33.1	30.82	35.38	27.4	39.4	1.112	5.99	18.1%	0.0%
17699-001	4	2.7	2.087	3.313	1	4.6	0.2994	1.612	59.72%	91.84%

Mean Cystocarps Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4
17699-000	39.4	37	28.6	27.4
17699-001	4.6	3.4	1.8	1



CETIS Analytical Report

Report Date: 26 Nov-08 11:02 (p 4 of 5)
 Link/Link Code: 05-2962-5884/17699Cp

Champia parvula Red Macroalga Sexual Reproduction Test **Saskatchewan Research Council**

Analysis No: 08-4995-6877	Endpoint: Mean Cystocarps	CETIS Version: CETISv1.6.4
Analyzed: 10 Nov-08 7:59	Analysis: Parametric-Two Sample	Official Results: Yes

Test Run No: 00-9672-4144	Test Type: Champia	Analyst:
Start Date: 02 Oct-08 12:00	Protocol: EPA/600/4-91/003 (1994)	Diluent: Laboratory Seawater
Ending Date: 09 Oct-08 12:00	Species: Champia parvula	Brine: Not Applicable
Duration: 7d 0h	Source: In-House Culture	Age:

Sample Code	Sample Comments
17699-003 Ref	3.8 NTU.
17699-002	24 NTU.
17699-001	57 NU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					20.06%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17699-000		17699-002	7.886	1.943	6.641	0.0001	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	1452.605	1452.605	1	62.19	0.0002	Significant Effect
Error	140.15	23.35833	6			
Total	1592.755	1475.963	7			

ANOVA Assumptions

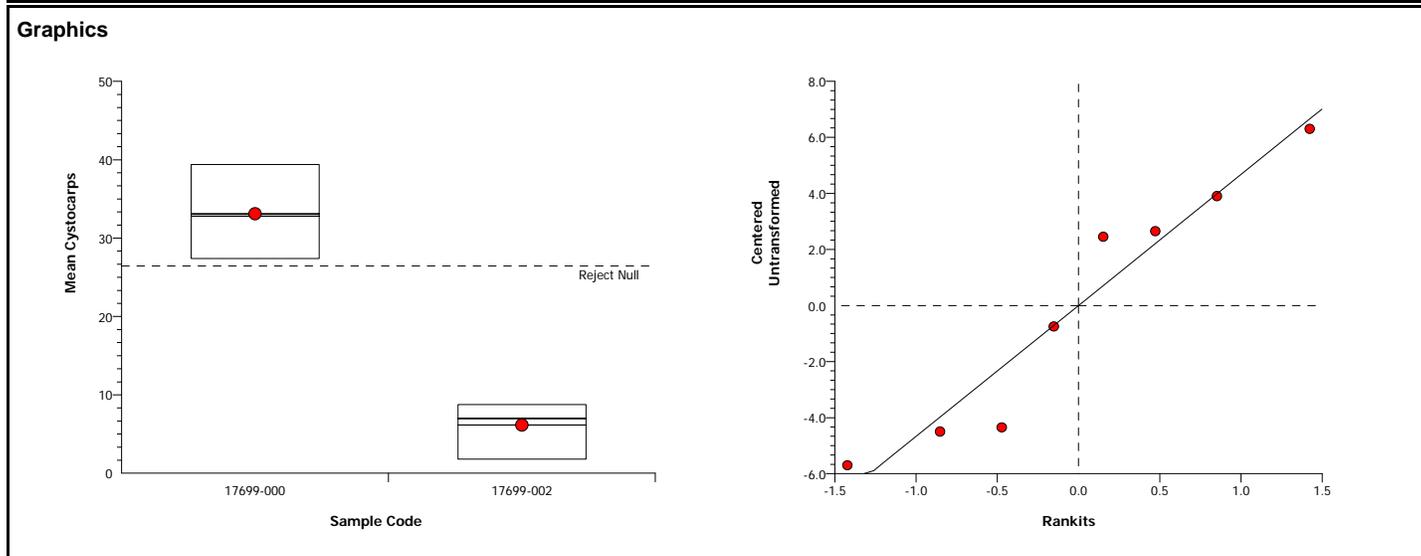
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	3.311	47.47	0.3517	Equal Variances
Distribution	Shapiro-Wilk Normality	0.915		0.3906	Normal Distribution

Mean Cystocarps Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17699-000	4	33.1	30.82	35.38	27.4	39.4	1.112	5.99	18.1%	0.0%
17699-002	4	6.15	4.898	7.402	1.8	8.8	0.6113	3.292	53.53%	81.42%

Mean Cystocarps Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4
17699-000	39.4	37	28.6	27.4
17699-002	8.8	8.6	5.4	1.8



CETIS Analytical Report

Report Date: 26 Nov-08 11:03 (p 5 of 5)
 Link/Link Code: 05-2962-5884/17699Cp

Champia parvula Red Macroalga Sexual Reproduction Test **Saskatchewan Research Council**

Analysis No: 19-5691-1601	Endpoint: Mean Cystocarps	CETIS Version: CETISv1.6.4
Analyzed: 10 Nov-08 7:59	Analysis: Parametric-Two Sample	Official Results: Yes

Test Run No: 00-9672-4144	Test Type: Champia	Analyst:
Start Date: 02 Oct-08 12:00	Protocol: EPA/600/4-91/003 (1994)	Diluent: Laboratory Seawater
Ending Date: 09 Oct-08 12:00	Species: Champia parvula	Brine: Not Applicable
Duration: 7d 0h	Source: In-House Culture	Age:

Sample Code	Sample Comments
17699-003 Ref	3.8 NTU.
17699-002	24 NTU.
17699-001	57 NU.

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run					29.37%

Equal Variance t Two-Sample Test

Sample Code	vs	Sample Code	Test Stat	Critical	MSD	P-Value	Decision(5%)
17699-000		17699-003 Ref	3.198	1.943	9.721	0.0093	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	512	512	1	10.23	0.0186	Significant Effect
Error	300.32	50.05333	6			
Total	812.32	562.0533	7			

ANOVA Assumptions

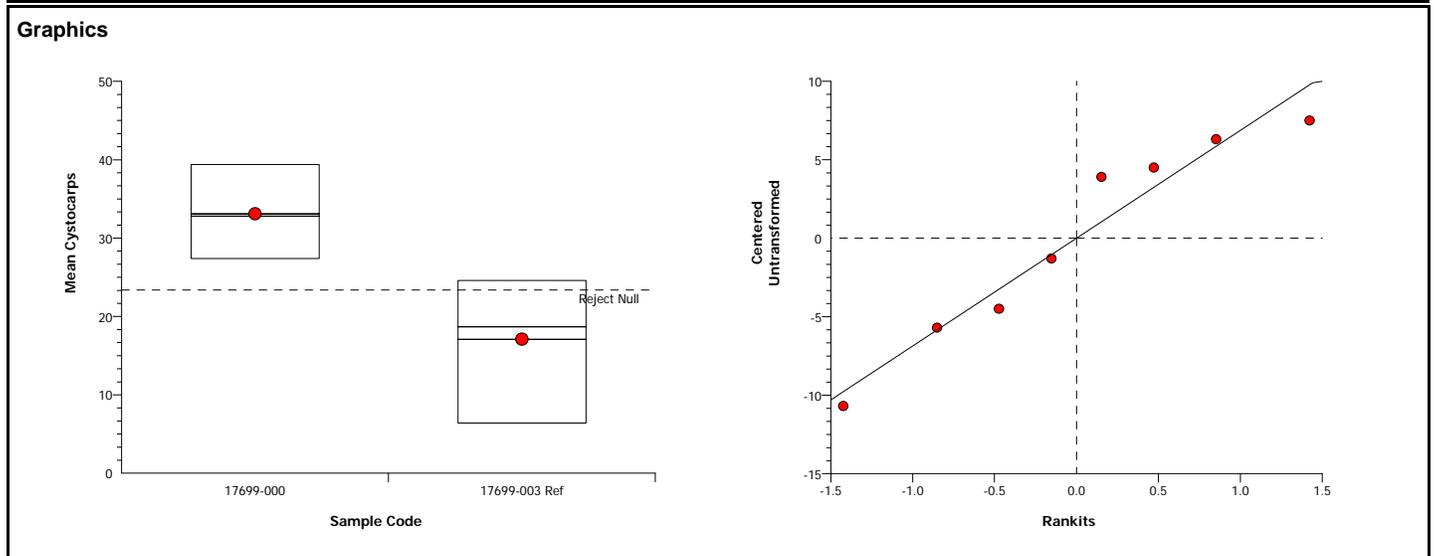
Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Variance Ratio F	1.79	47.47	0.6443	Equal Variances
Distribution	Shapiro-Wilk Normality	0.9261		0.4816	Normal Distribution

Mean Cystocarps Summary

Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
17699-000	4	33.1	30.82	35.38	27.4	39.4	1.112	5.99	18.1%	0.0%
17699-003 Ref	4	17.1	14.05	20.15	6.4	24.6	1.488	8.014	46.87%	48.34%

Mean Cystocarps Detail

Sample Code	Rep 1	Rep 2	Rep 3	Rep 4
17699-000	39.4	37	28.6	27.4
17699-003 Ref	24.6	21.6	15.8	6.4



SALTWATER ASSAYS

A. bahia, *A. punctulata*, *C. parvula*

STUDY: 17699	LOCATION: New Bedford Harbor				
CHEMISTRY	Lab Salt Control	-001	-002	-003	-004
	AMMONIA	17724-015	004	005	006
AS RECEIVED WATER QUALITIES	Lab Salt Control	-001	-002	-003	-004
	SALINITY (ppt)	25.0	20.7	20.4	9.0
pH (SU)	7.92	7.13	7.47	6.80	
TRC (mg/L)	<0.02	<0.02	<0.02	<0.02	
DO (mg/L)	7.1	9.2	7.7	9.4	
S/C (µmhos/cm)	39200	32460	31550	14930	
WQ STATION USED	1	1	1	1	
INITIALS	APL	APL	APL	APL	
<i>A. bahia</i> SALINITY ADJUSTMENT RECORD	Lab Salt Control	-001	-002	-003	-004
	SAMPLE (mLs)	—	12000	16000	16000
SEA SALT (g)	—	59	84	294	
DATE:	10-2-08	10-2-08	10-2-08	10-2-08	
TIME:	0900	0910	1000	1010	
INITIALS:	APL	APL	APL	APL	

Sample ID	ESI Cube ID
-001	-001
-002	-002
-003	-003
-004	-004

**Americamysis bahia 7 DAY CHRONIC ASSAY
NEW WATER QUALITIES**

STUDY: 17699		CLIENT: BATTELLE				LOCATION: NEW BEDFORD				LAB CONTROL: HAMPTON ESTUARY					
		NEW DISSOLVED OXYGEN (mg/L)						NEW SALINITY (ppt)							
CONC	REP	0	1	2	3	4	5	6	0	1	2	3	4	5	6
LAB	A	7.8	6.8	6.9	7.1	7.1	7.1	7.4	25	25	26	26	25.7	25	25
-001	A	8.2	7.6	8.0	6.9	8.2	6.7	8.1	25	25	25	25	25	25	25
-002	A	7.7	7.4	7.6	6.8	7.7	6.6	8.1	25	25	25	25	25	25	25
-003	A	7.7	6.9	7.5	6.8	7.3	6.4	8.1	24	24	25	25	25	25	25
-004	A														
45 10/3/08		NEW pH (SU)						NEW TEMPERATURE (°C)							
CONC	REP	0	1	2	3	4	5	6	0	1	2	3	4	5	6
LAB	A	8.16	8.12	8.07	8.08	8.18	7.88	7.96	25	25	25	25	24	24	25
-001	A	7.58	7.76	7.61	7.55	7.61	7.59	7.66	25	25	25	25	24	24	25
-002	A	7.68	7.71	7.66	7.64	7.66	7.64	7.63	25	25	25	25	24	24	25
-003	A	7.76	7.76	7.77	7.70	7.76	7.72	7.70	25	25	25	25	24	24	25
-004	A														
INC TEMP:		25	25	25	25	25	25	25							
DATE:		10/2/08	10/3	10/4	10/5	10/6	10/7	10/8							
TIME:		1350	1100	1015	1150	1150	1005	1030							
INIT:		WM	ST	DM	UB	UB	APL	APL							

①

WATER QUALITY METERS USED NEW WATER QUALITIES								
	0	1	2	3	4	5	6	7
Water Quality Station #	///	ES 1	1	1	1	1	2	
Initials	///	WMSJ	DM	DM	UB	APL	APL	
Date	10/2/08	10/3/08	10-4-08	10-5-08	10/6	10-7	10-8	

**Americamysis bahia 7 DAY CHRONIC ASSAY
OLD WATER QUALITIES**

STUDY: 17699		CLIENT: BATTELLE		LOCATION: NEW BEDFORD					LAB CONTROL: HAMPTON ESTUARY						
OLD SALINITY (ppt)									OLD pH (SU)						
Conc	Rep	1	2	3	4	5	6	7	1	2	3	4	5	6	7
Control	A	25	26	26	27	27	25	25	8.03	7.83	7.87	8.02	8.11	7.93	7.95
-001	A	26	25	25	25	25	25	25	7.91	7.93	7.82	8.11	7.87	7.85	7.84
-002	A	26	26	26	26	26	26	26	7.88	7.80	7.81	7.88	7.85	7.88	7.84
-003	A	25	25	25	25	25	25	25	7.94	7.88	7.86	7.95	7.92	7.96	7.90
-004	A														
10/3/08 SJ OLD TEMPERATURE (°C)															
Conc	Rep	1	2	3	4	5	6	7							
Control	A	25	24	24	25	25	25	25							
-001	A	25	24	24	25	25	25	25							
-002	A	25	24	24	25	25	25	26							
-003	A	25	24	24	25	25	25	25							
-004	A														
INC TEMP:		25	25	25	25	25	25	25							
DATE:		10/3/08	10-4	10-5	10/6	10-7	10-8	10-9							
TIME:		1015	0950	1040	0935	0900	0950	0915							
INITIALS:		SJ	DM	DM	SJ	APC	APC	APC							

GENERAL NOTES - for additional information refer to SOP #1411 or EPA manual 600/4-91/003

- Test vessels will be 250 mL glass beakers containing a minimum of 150 mL of solution
- 8 replicates per site with 5 organisms each
- Test Temperature: 26±1°C
- Salinity: 25 ±2ppt
- Dissolved Oxygen: >4.3 mg/L
- Photoperiod will be 16 hours light and 8 hours dark.
- Passing criteria require ≥80% survival and average dry weight of ≥0.20 mg/organism in the control vessels.

WATER QUALITY METERS USED OLD WATER QUALITIES								
	0	1	2	3	4	5	6	7
Water Quality Station #	/ / / / /	1	1	1	1	1	1	1
Initials	/ / / / /	SJ	DM	DM	SJ	APC	APC	APC
Date		10/3/08	10-4-08	10-5-08	10/6	10-7	10-8	10-9

**Americamysis bahia 7 DAY CHRONIC ASSAY
SAMPLE USE RECORD**

STUDY: 17699			CLIENT: BATTELLE - New Bedford							
SPECIES: <i>A. bahia</i>			TEST: chronic renewal							
Sample	Day: 0		Day: 1		Day: 2		Day	Date	Time	Init
	Volume Used (mL)	ESI Cube ID	Volume Used (mL)	ESI Cube ID	Volume Used (mL)	ESI Cube ID				
Lab Control	1600	n/a	1200	n/a	1200	n/a	0	10/2/08	1340	WM
-001	1600	-001	↓	-001	↓	-001	1	10/3	1045	SJ
-002	1600	-002	↓	-002	↓	-002	2	10/4	1010	DM
-003	1600	-003	↓	-003	↓	-003	3	10/5	1050	DM
-004	—	—	—	—	—	—	4	10/6	1105	UB
							5	10/7	1000	APL
							6	10/8	1020	APL
Sample	Day: 3		Day: 4		Day: 5					
	Volume Used (mL)	ESI Cube ID	Volume Used (mL)	ESI Cube ID	Volume Used (mL)	ESI Cube ID				
Lab Control	1200	n/a	1200	n/a	1200	n/a				
-001	↓	-001	↓	001	↓	001				
-002	↓	-002	↓	002	↓	002				
-003	↓	-003	↓	003	↓	003				
-004	—	—	—	—	—	—				
Sample	Day: 6									
	Volume Used (mL)	ESI Cube ID								
Lab Control	1200	n/a								
-001	↓	001								
-002	↓	002								
-003	↓	003								
-004	—	—								



Aquatic Research Organisms

DATA SHEET

Rec 10/11

I. Organism History

Species AMERICAMYSIS bahia

Source: Lab reared Hatchery reared _____ Field collected _____

Hatch date 9-24-08 Receipt date _____

Lot number 092408MS Strain _____

Brood origination FLORIDA

II. Water Quality

Temperature 25 °C Salinity ~30 ppt D.O. _____ ppm

pH 7.8 su Hardness _____ ppm Alkalinity _____ ppm

III. Culture Conditions

Freshwater _____ Saltwater Other _____

Recirculating Flow through _____ Static _____

DIET: Flake food Phytoplankton _____ Trout chow

Artemia Rotifers _____ YCT _____ Other ENCAP-SHRIMP DIET

Prophylactic treatments: _____

Comments: _____

IV. Shipping Information

Client: ESI # of Organisms 300+

Carrier: _____ Date shipped 10-1-08

Biologist: Mark Josenquist

EnviroSystems, Inc.
One Lafayette Road
P.O. Box 778
Hampton, NH 03843-0778
Telephone: 603-926-3345

SAMPLE RECEIPT RECORD

ESI STUDY NUMBER: 17629 CLIENT: Battelle

SAMPLE RECEIPT:
DATE: 8/21/08 TIME: 1640 BY: KS

DELIVERED VIA: FEDEX CLIENT ESI UPS OTHER

LOGGED INTO LAB:
DATE: 8/22/08 TIME: 1100 BY: SJ

SAMPLE CONDITION:

- CHAIN OF CUSTODY: YES NO
- CHAIN OF CUSTODY SIGNED: YES NO
- CHAIN OF CUSTODY COMPLETE: YES NO
- SAMPLE DATE: YES NO
- SAMPLE TIME RECORDED: YES NO
- SAMPLE TYPE IDENTIFIED: YES NO
- CUSTODY SEAL IN PLACE: YES NA NO
- SHIPPING CONTAINER INTACT: YES NO
- SAMPLE TEMPERATURE (AT ARRIVAL): 4 °C
- DOES CLIENT NEED NOTIFICATION OF TEMPERATURE?
 YES NO
- SAMPLE ARRIVED ON ICE: YES NO

COMMENTS: See COC

Chain of Custody

17629

Proj. No 6606422		Proj. Name New Bedford Harbor Water Quality														
SAMPLERS: Signature <i>Matthew R. Lynch Amanda Maxamchuk</i>					ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"											
DATE	TIME	Field BATTELLE ID	Lab CLIENT ID	SAMPLE DESCRIPTION		PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER <i>Toxicity</i>	ACIDIFIED	PRESERVED <i>4°C</i>	Total Number of Containers
8/21/08	1420	WB-TOX-01-082108	-001	Tox Sample from 25 to 32 NTU									X		X	1
↓	1502	WB-TOX-02-082108	-002	Tox Sample from 14 to 20 NTU									X		X	1
↓	1520	WB-TOX-03-082108	-003	Tox Sample from .2 to .3 NTU									X		X	1
8/22/08	1100	WB-TOX-001	-004	NH ₃												
↓	↓	WB-TOX-002	-005	↓												
↓	↓	WB-TOX-003	-006	↓												
Relinquished by: <i>Matthew R. Lynch</i>				Date/Time 8/21/08 1640		Received by: <i>Tom Simas</i>					Date/Time 8/21/08 1640					
Relinquished by:				Date/Time		Received by:					Date/Time					
Comments:																

EnviroSystems, Inc.
One Lafayette Road
P.O. Box 778
Hampton, NH 03843-0778
Telephone: 603-926-3345

SAMPLE RECEIPT RECORD

ESI STUDY NUMBER: 17699 CLIENT: Battelle

SAMPLE RECEIPT:
DATE: 10/1/08 TIME: 1630 BY: JS

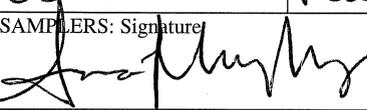
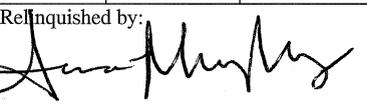
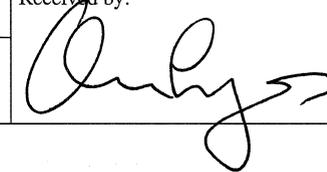
DELIVERED VIA: FEDEX CLIENT ESI UPS OTHER

LOGGED INTO LAB:
DATE: 10/1/08 TIME: 1630 BY: JS

SAMPLE CONDITION:

- CHAIN OF CUSTODY: YES NO
- CHAIN OF CUSTODY SIGNED: YES NO
- CHAIN OF CUSTODY COMPLETE: YES NO
- SAMPLE DATE: YES NO
- SAMPLE TIME RECORDED: YES NO
- SAMPLE TYPE IDENTIFIED: YES NO
- CUSTODY SEAL IN PLACE: YES NA NO
- SHIPPING CONTAINER INTACT: YES NO
- SAMPLE TEMPERATURE (AT ARRIVAL): 4 °C
- DOES CLIENT NEED NOTIFICATION OF TEMPERATURE?
 YES NO
- SAMPLE ARRIVED ON ICE: YES NO

COMMENTS:

Proj. No 6606472		Proj. Name New Bedford Harbor Water Quality		ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"		PEST		PCB		TPH FINGERPRINT		PAH		VOA		TBT		METALS		OTHER TOXICITY		ACIDIFIED		PRESERVED		Total Number of Containers	
SAMPLERS: Signature 																											
DATE	TIME	Field BATTLE ID	Lab CLIENT ID	SAMPLE DESCRIPTION																							
10/1/08	11:23	WQ-TOX-001-100108		50-65 NTU station: 57 NTU																	✓					1	
↓	11:50	WQ-TOX-002-100108		19-26 NTU station: 24 NTU																	✓					1	
	12:5	WQ-TOX-003-100108		3.8 NTU station: NREF																	✓					1	
		EB-0																									
Relinquished by: 				Date/Time 10/1/08 14:23		Received by: PATRICK CURRAN 				Date/Time 10/1/08 14:23																	
Relinquished by: PATRICK CURRAN				Date/Time 10/1/08 16:30		Received by: 				Date/Time 10/1/08 16:30																	
Comments: ① disregard AEM 10/1/08																											



US ARMY CORPS
OF ENGINEERS
New England District

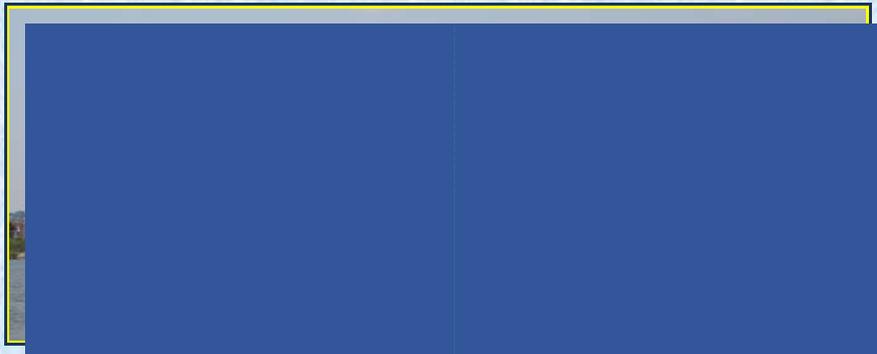
Contract No. DACW33-03-D-0004

Delivery Order No. 22

June 2009

Final

Sawyer Street 2008 Semi-annual Groundwater Monitoring Technical Memorandum



**Environmental Monitoring, Sampling, and
Analysis**

New Bedford Harbor Superfund Site

New Bedford Harbor, MA



Final Technical Memorandum

Date: June 2009
To: Robert Leitch, USACE North Atlantic Division New England District
From: Deirdre Dahlen, Battelle
Subject: Sawyer Street 2008 Semi-annual Groundwater Monitoring Results

This Technical Memorandum presents a summary of the groundwater monitoring activities conducted at the Sawyer Street Confined Disposal Facility (CDF) in New Bedford, Massachusetts during the 2008 semi-annual monitoring period. The 2008 monitoring study is a continuation of a multi-year groundwater sampling program to sample six groundwater wells located at the perimeter of the CDF. Results from previous programs are presented in ENSR (2006) and Battelle (2008a).

Results from the monitoring study are used to assess potential trends in concentrations of polychlorinated biphenyls (PCBs) as Aroclor and selected metals (cadmium, chromium, copper, and lead) and to evaluate the integrity of the CDF. At the request of the U.S. EPA, groundwater sampled in 2008 was also analyzed for volatile organic compounds (VOCs).

Field Activity Summary

Sampling was conducted in the spring and fall of 2008, on May 19-20, 2008 and November 6-7, 2008. During both events, *in-situ* water quality measurements (temperature, specific conductivity, dissolved oxygen [DO], pH, Oxidative Redox Potential [ORP], turbidity), groundwater levels, and samples of groundwater were collected at six wells located at the perimeter of the CDF, identified as MW-1, MW-3, MW-4A, MW-5, MW-6, and MW-7A (Figure 1). All field measurements and groundwater collection were conducted according to the Field Sampling Plan (FSP) developed for this investigation (Battelle, 2008b). Field activities are summarized briefly below.

Groundwater sampling was performed according to the procedures for Low-Flow (Low-Stress) Purging and Sampling based on EPA Region I Low Stress (flow) Purging and Sampling Groundwater Procedure for the Collection of Groundwater Samples from Monitoring Wells, Rev. 2, July 30, 1996 (EPA, 1996). A bladder pump (equipped with dedicated Teflon bladders) was used during both sampling events. Dedicated sample tubing was used to collect groundwater samples to minimize the risk of sample contamination and cross contamination between wells. Upon arrival for sample collection, the water level was measured with a cleaned water level tape and the well volume was calculated. The water level tape was cleaned between wells following decontamination procedures described in the FSP (Battelle, 2008b). The pump was then affixed to the dedicated tubing which was placed into the well. The water depth was measured again before purging the well to account for any water displacement from the pump. Groundwater samples were collected for PCBs (as Aroclor), metals, and VOC analysis once the well was purged and all diagnostic parameters (i.e., pH, DO, specific conductivity, turbidity, temperature, and ORP) achieved a steady state. The flow rate was verified using a graduated cylinder and timepiece and then recorded on the field log sheets.

Quality control (QC) samples were also collected to assess data quality in terms of precision and potential contamination. Field-based QC samples included one field duplicate sample and one equipment blank per sampling event. Additional groundwater was also collected for the preparation of laboratory-based QC samples (i.e., matrix spike and matrix spike duplicate).



Field measurements were recorded on detailed field logs sheets provided in Appendix A. The integrity of the groundwater samples was maintained by using cleaned, dedicated sampling tubing for each well, by not introducing contaminants into the samples during collection (e.g., wells were sampled from lowest contamination to highest contamination to reduce potential cross-contamination issues; the stainless steel bladder pump was cleaned in between wells), by collecting the samples in clean bottles provided by the analytical laboratories, by keeping the samples cold on ice during transport to the analytical laboratories, and by analyzing the samples within the required holding time.

***In-situ* Water Quality Summary**

Water quality parameters were measured during the initial pumping of groundwater from the wells before the actual groundwater sample collection. *In-situ* measurements were made using an YSI® (Yellow Springs Instruments) multi-meter sonde and a flow-thru cell. The flow-thru cell was disconnected from the discharge line during the actual sample collection. The YSI® sonde was calibrated and used according to the manufacturer's specifications. Calibration records are documented on the field logs (Appendix A). Once the diagnostic parameters had stabilized, sample collection was initiated. *In-situ* measurements are summarized in Table 1.

Chemistry Water Quality Summary

Groundwater samples were analyzed for PCBs (as Aroclor), metals, and VOCs. PCB Aroclor analysis was performed by TestAmerica in Burlington, Vermont; metals analysis was performed by Battelle Marine Science Laboratory in Sequim, Washington; and VOC analysis was performed by Alpha Analytical in Mansfield, Massachusetts. Sample results are summarized in Table 2, and are compared to the Massachusetts Contingency Plan (MCP), Method 1 category GW-3 criteria for groundwater that has a potential to discharge to a surface water body (MADEP, 2008). Complete test results are provided in Appendix B.

Consistent with results from previous monitoring years (ENSR, 2006 and Battelle, 2008a), PCB and metals concentrations in all the groundwater samples collected during the May and November 2008 events were below the MCP GW-3 criteria (Table 2). Individual PCB Aroclors were undetected in all the groundwater samples except Aroclor 1242 at MW-4A (0.043 µg/L) during the May sampling event and Aroclor 1254 at MW-5 (0.032 µg/L) during the November sampling event (Appendix B). The target metals cadmium, chromium, copper, and lead were detected in all of the groundwater samples, albeit at low concentrations often comparable to low-level equipment blank contamination (see Quality Control section). Groundwater sampled at MW-7A, located along the southern boundary of the CDF, contained the highest concentrations of cadmium and copper (Table 2). The highest lead concentrations were measured in groundwater in well MW-1 (Table 2), located along the western boundary of the CDF. Chromium concentrations within each sampling event were relatively uniform across most locations; the lowest concentrations were measured at wells MW-5 and MW-6 during the spring event and at well MW-6 during the fall event.

With the exception of acetone, target VOCs were undetected in all the groundwater samples collected during the May and November 2008 events (Appendix B). While measured concentrations of acetone were comparable to low-level background contamination (see Quality Control section), sample concentrations were at least three orders of magnitude lower than the MCP GW-3 criteria (Table 2).



Quality Control

Analytical data received third party validation and the data were qualified according to Region 1 Data Validation guidelines. Qualifiers reported with the data represent the final qualifier assigned by the data validator. Results from the field QC samples were also evaluated to assess data quality in terms of precision (field replicate) and potential contamination (equipment blank) that may contribute to contaminant concentrations measured in the field samples. Results from the field replicate samples are summarized in Table 3 and results for the equipment blanks are presented with the sample data in Table 2.

Overall, PCB, metals, and VOCs results were comparable between the original and the replicate samples (Table 3), indicating that the sample collection methods were reproducible and that representative groundwater samples were collected.

Low-level contamination was measured in the equipment blanks: PCB Aroclor 1242 was detected at 0.095 µg/L in the fall 2008 blank; target metals were detected in equipment blanks during both sampling events; and acetone and methylene chloride were detected in the spring 2008 blank (Table 2). Potential impacts to data quality are:

- PCBs – The low-level PCB contamination does not appear to impact data quality because Aroclor 1242 was undetected in the associated field samples.
- Metals – Sample concentrations measured at levels less than five times the equipment blank values have been qualified by the data validator. While low-level contamination may have contributed to sample concentrations, all metals concentrations in all of the groundwater samples were well below the MCP GW-3 criteria (Table 2).
- VOCs – Sample concentrations of acetone measured at levels less than ten times the equipment blank value have been qualified by the data validator. While the low-level acetone contamination may have contributed to sample concentrations, acetone concentrations in all of the groundwater samples were at least three orders of magnitude below the MCP GW-3 criteria. The low-level methylene chloride contamination does not appear to impact data quality because methylene chloride was undetected in the associated field samples.

Summary

Semi-annual monitoring was performed in 2008 at the Sawyer Street CDF as part of the ongoing groundwater monitoring program. Groundwater levels, water quality parameters, organic contaminants, and metals were monitored in all six wells at the facility. Analysis of groundwater samples indicates that although low-level detections of PCB Aroclor, metals, and VOCs were observed, concentrations were all well below MCP GW-3 criteria. Overall, the groundwater data collected during the 2008 semi-annual monitoring suggest that the integrity of the CDF is currently maintained.

Literature Cited

Battelle, 2008a. Technical Memorandum: Sawyer Street 2007 Semi-annual Groundwater Monitoring Results -New Bedford, Massachusetts. Prepared by Battelle. May 2008.

Battelle, 2008b. Groundwater Monitoring Final Field Sampling Plan-New Bedford, Massachusetts. Prepared by Battelle. May 2008.



ENSR, 2006. Final Sawyer Street Groundwater Report: New Bedford Harbor Superfund Site - New Bedford, Massachusetts. Prepared by ENSR Corporation. December 2006.

EPA, 1996. EPA Region I Low Stress (flow) Purging and Sampling Groundwater Procedure for the Collection of Groundwater Samples from Monitoring Wells, Rev. 2, July 30, 1996.

Massachusetts Department of Environmental Protection (MADEP), 2008. MCP Method 1 Groundwater Standards. 310 CMR 40.0974(2). http://www.mass.gov/dep/cleanup/laws/0974_2.htm



Figure 1: Sawyer Street CDF Monitoring Well Locations

Table 1: Summary of *In-situ* Groundwater Data Collected Immediately Prior to Sampling

Event	Well ID	Sample Date/Time	Depth to Water (ft)	pH	Specific Cond. (µS/cm)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	ORP (mV)	Purge Volume (L)	Flow Rate (mL/min)	Color/Odor	Draw-down ^(a) (ft)
May 2008	MW-7A	5/19/2008 12:23	10.89	6.63	860	11.56	0.93	12	242.7	8.586	102	clear	-0.38
	MW-6	5/19/2008 15:18	13.78	7.19	604	12.69	0.3	5.7	4.5	7.705	75	clear/no odor	-0.59
	MW-1	5/19/2008 17:33	17.03	6.91	932	12.26	0.84	7.1	5.8	3.62	45		-2.48
	MW-5	5/20/2008 10:05	10.09	7.45	3263	11.32	0.19	4.1	-51.4	2.95	74	clear/no odor	-1.79
	MW-4A	5/20/2008 12:08	11.5	6.81	5074	13.01	0	4.8	-275.5	3.525	65	clear/sulfide	-2.29
	MW-3	5/20/2008 14:22	15.52	7.02	3872	12.12	0.48	5.3	-77	4.4	75	yellow color	-1.82
November 2008	MW-7A	11/6/2008 8:28	11.11	6.66	877	15.29	0.9	0.1	204.8	2.35	55	clear	-0.15
	MW-6	11/6/2008 10:03	13.78	7.3	520	14.93	0.5	1.5	111	5.69	60		-0.86
	MW-1	11/6/2008 12:14	16.76	6.8	911	15.05	0.77	0.5	3.8	3.64	35	clear	-1.91
	MW-5	11/6/2008 13:01	9.61	7.85	1878	14.71	1.85	2.2	-154.7	2.6	60	sulfur odor	-1.61
	MW-4A	11/7/2008 8:55	12	7.06	4370	14.52	0.52	2.7	-352.2	4.51	65		-2.12
	MW-3	11/7/2008 9:16	15.82	7.41	4401	14.24	0.28	9.8	-212.7	3.01	55	light orange & no odor	-1.39

^(a) Drawdown is the distance in feet the water level changed during the sampling process.



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Table 2: PCB, Metal and VOC Groundwater Results, May and November 2008 Sampling Events

Well ID	Sample Date	Result (µg/L)					
		Total PCB ^(a)	Cadmium	Chromium	Copper	Lead	Acetone
MW-1	5/19/2008	— U ^(b)	0.249	5.35	0.984 U ^(c)	0.739	2.79 EB
	11/6/2008	— U ^(b)	0.435	1.78 U ^(c)	1.46 U ^(c)	0.894 U ^(c)	10.3
MW-3	5/20/2008	— UJ ^(b)	0.124	6.36	1.95	0.085 U ^(c)	8.4 EB
	11/7/2008	— U ^(b)	0.03	5.63	0.855 U ^(c)	0.063 U ^(c)	5.36
MW-4A	5/20/2008	0.043 J	0.028 U ^(c)	6.57	1.46	0.071 U ^(c)	3.05 EB
	11/7/2008	— UD ^(b)	0.027	5.62	2.27	0.175 U ^(c)	5.32
MW-5	5/20/2008	— U ^(b)	0.046 U ^(c)	1.89 U ^(c)	1.12 U ^(c)	0.061 U ^(c)	16 EB
	11/6/2008	0.032 J	0.052	4.04	2.10	0.274 U ^(c)	5 U
MW-6	5/19/2008	— U ^(b)	0.044 U ^(c)	2.45 U ^(c)	0.453 U ^(c)	0.057 U ^(c)	1.26 EB
	11/6/2008	— UJ ^(b)	0.052	0.346 U ^(c)	0.666 U ^(c)	0.183 U ^(c)	23.3
MW-7A	5/19/2008	— U ^(b)	0.711	5.28	4.99	0.071 U ^(c)	5 U
	11/6/2008	— U ^(b)	0.648	1.01 U ^(c)	4.99	0.023 U ^(c)	5 U
MCP GW-3 Criteria^(d)		10	4	300	NA	10	50000
Equipment Blank	5/20/2008	— UJ ^(b)	0.011 J	0.843	0.269	0.077	7.19
	11/5/2008		0.095	0.608	0.354	0.078	5

^(a) Total PCB calculated as the sum of Aroclors 1016, 1221, 1232, 1242, 1248, 1254 and 1260; a value of zero (0) used in summation for non-detects. For example, total PCB was calculated as follows for sample MW-4A collected on 05/20/2008:

Parameter	Result (µg/L)	Final Qual	Result (µg/L)	Comment
Aroclor 1016	0.047	U	0	zero substituted for non-detect
Aroclor 1221	0.047	U	0	
Aroclor 1232	0.047	U	0	
Aroclor 1242	0.043	J	0.043	J
Aroclor 1248	0.047	U	0	zero substituted for non-detect
Aroclor 1254	0.047	U	0	
Aroclor 1260	0.047	U	0	
			0.043 J	Total PCB

^(b) PCB Aroclors undetected in the study samples at concentrations above the laboratory reporting limit (see Appendix B).

^(c) Chemical detected at concentration <5X equipment blank values.

^(d) MCP: Massachusetts Contingency Plan, Method 1 MCP GW-3 standard from 310 CMR 40.0974(2).

Key:

EB: Chemical not detected at concentration above 10X equipment blank values.

U: Chemical not detected at concentration above the laboratory reporting limit.

J: Estimated value.

NA: Not applicable.



Table 3: Field Replicate Results, May and November 2008 Sampling Events

Sampling Event/Well	Parameter	Result (µg/L)		RPD
		Sample	Replicate	
May 2008/ Well MW-5	Total PCB ^(a)	— U ^(b)	— U ^(b)	NA
	Cadmium	0.046 U ^(c)	0.043 U ^(c)	7%
	Chromium	1.89 U ^(c)	1.98 U ^(c)	5%
	Copper	1.12 U ^(c)	1.05 U ^(c)	6%
	Lead	0.061 U ^(c)	0.056 U ^(c)	9%
	Acetone	16 EB	16 EB	0%
November 2008/ Well MW-3	Cadmium	0.03	0.031	3%
	Chromium	5.63	5.92	5%
	Copper	0.855 U ^(c)	0.944 U ^(c)	10%
	Lead	0.063 U ^(c)	0.069 U ^(c)	9%
November 2008/Aerovox Well MW-6A ^(d)	Aroclor 1254	2.30 D	1.90 J	19%
	Tetrachloroethene	5.27	5.07	4%
	Cis-1,2-dichloroethene	14.3	14.4	1%
	Trichloroethene	113	113	0%

^(a) Total PCB calculated as the sum of Aroclors 1016, 1221, 1232, 1242, 1248, 1254 and 1260; a value of zero (0) used in summation for non-detects.

^(b) PCB Aroclors undetected in the study samples at concentrations above the laboratory reporting limit (see Appendix B).

^(c) Chemical detected at concentration <5X equipment blank values.

^(d) Groundwater monitoring at the Sawyer Street CDF and Aerovox site was performed in November 2008 as a single event. As a result, a shared field replicate was collected, for common test parameters (PCB and VOC), to satisfy the field QC requirements.

Key:

EB: Chemical not detected at concentration above 10X equipment blank values.

U: Chemical not detected at concentration above the laboratory reporting limit.

J: Estimated value.

D: Concentration from analysis of the sample at a secondary dilution.

NA: Not applicable

RPD: relative percent difference.

APPENDIX A

Groundwater Monitoring Field Logs

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Spring 2008 Sampling Event

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YSI Calibration Form
Daily 2007 GW Monitoring for New Bedford Harbor – G606422

Instrument Model # YSI 6600V2

S/N# 05H1397 AC

Date: <u>5/19/08 / 1000</u>		Initials: <u>MW/MRF</u>	
DO membrane changed? Y <input checked="" type="radio"/> NA		Turbidity Wiper Changed? Y <input checked="" type="radio"/> N	
Battery Voltage: <u>12.3</u>		Turbidity wiper parks 180° from optics? <input checked="" type="radio"/> Y N	
Parameter	Initial Reading	Calibrated Reading	Calibration Data (acceptable range)
Conductivity (mS/cm)	<u>1.021</u> 1.974	<u>1.000</u>	Cell constant (4.55 – 5.45)
Depth (ft) <u>meters</u>	<u>-1.174</u>	<u>0.00</u>	Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	<u>-1.9</u>	<u>0.0</u>	Turbidity Offset:
Turbidity (NTU) 123	<u>121.4</u>	<u>123.0</u>	
D.O. (% Sat)	<u>100.6</u>	<u>100.5</u>	D.O. Gain (0.7 - 1.4)
pH 4	<u>3.89</u>	<u>4.00</u>	
pH 7	<u>6.86</u>	<u>7.00</u>	
ORP	<u>236.7</u>	<u>244.0</u>	
Comments:			

Date: <u>5/19/08 / 1836</u>		Initials: <u>MW</u>	
DO membrane changed? Y <input checked="" type="radio"/> NA		Turbidity Wiper Changed? <input checked="" type="radio"/> Y <input checked="" type="radio"/> N	
Battery Voltage: <u>12.8</u>		Turbidity wiper parks 180° from optics? <input checked="" type="radio"/> Y N	
Parameter	<input checked="" type="radio"/> Initial Reading	Calibrated Reading	Calibration Data (acceptable range)
Conductivity (mS/cm)	<u>0.964</u>		Cell constant (4.55 – 5.45)
Depth (ft) <u>m</u>	<u>0.013</u>		Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	<u>1.2</u>		Turbidity Offset:
Turbidity (NTU) 123	<u>124.3</u>		
D.O. (% Sat)	<u>101.9</u>		D.O. Gain (0.7 - 1.4)
pH 4	<u>4.00</u>		
pH 7	<u>6.99</u>		
ORP	<u>241.7</u>		
Comments:			

Ⓢ End of Day

YSI Calibration Form
Daily 2007 GW Monitoring for New Bedford Harbor – G606422

Instrument Model # YSI 6600V2

S/N# 05H1397 AC

Date: <u>5/20/08</u>		Initials: <u>MLF</u>	
DO membrane changed? Y <input checked="" type="radio"/> NA	Turbidity Wiper Changed? Y <input checked="" type="radio"/>		
Battery Voltage: <u>13.2</u>	Turbidity wiper parks 180° from optics? <input checked="" type="radio"/> Y N		
Parameter	Initial Reading	Calibrated Reading	Calibration Data (acceptable range)
Conductivity (mS/cm)	<u>97.2</u>	<u>1.00</u>	Cell constant (4.55 – 5.45)
Depth (ft) <u>m</u>	<u>-0.88</u>	<u>0.00</u>	Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	<u>0.0</u>	<u>0.0</u>	Turbidity Offset:
Turbidity (NTU) 123	<u>125.2</u>	<u>123</u>	
D.O. (% Sat)	<u>99.3</u>	<u>98.5</u>	D.O. Gain (0.7 - 1.4)
pH 4	<u>3.93</u>	<u>4.00</u>	
pH 7	<u>6.99</u>	<u>7.00</u>	
ORP	<u>247.4</u>	<u>244</u>	
Comments:			

Date: <u>5/20/08 / 1507</u>		Initials: <u>MW</u>	
DO membrane changed? Y <input checked="" type="radio"/> NA	Turbidity Wiper Changed? Y <input checked="" type="radio"/>		
Battery Voltage: <u>12.6</u>	Turbidity wiper parks 180° from optics? <input checked="" type="radio"/> Y N		
Parameter	Initial Reading	Calibrated Reading	Calibration Data (acceptable range)
Conductivity (mS/cm)	<u>1.007</u>		Cell constant (4.55 – 5.45)
Depth (ft) <u>m</u>	<u>-0.0057</u>		Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	<u>0.5</u>		Turbidity Offset:
Turbidity (NTU) 123	<u>122.3</u>		
D.O. (% Sat)	<u>97.7</u>		D.O. Gain (0.7 - 1.4)
pH 4	<u>4.08</u>		
pH 7	<u>7.05</u>		
ORP	<u>241.3</u>		
Comments:			

End of Day



Well ID: MW-7A

Groundwater Sample Collection Record

Client: ACOE Date: 5/19/08 Time: 11 AM Start 11 AM am/pm
 Project No: NBH Finish 1320 am/pm
 Site Location: Sawyer Street
 Weather Conditions: _____ Collectors: JMF/MRF/MW

1. WATER LEVEL / WELL DATA

Measured Height of Water Column: 4.55 ft
 Well Depth: 15.03 ft
 Depth to Water (initial): 10.48 ft Purged Volume: 8.586 + .600 = 9.186
 Depth to Water (pump in well): 13.0 10.51 ft
 Pump Depth: 13.0 ft
 Gallons (Volume):
 0.16 GAL/FT (2 IN)
 0.65 GAL/FT (4 IN) =
 1.5 GAL/FT (6 IN)

① s/b JMF 5/19/08 ② Please ignore SMF status

↑ from top of well casing

2. SAMPLE COLLECTION

Method:

Field Equipment Used:

Equipment	Make	Model	Serial Number
Solinst water level Meter			
YSI 6600 V2 multi parameter water quality Sonde			0581397 AC
MP10 QED Controller	Micro Purge Basics		MP10-1628

Probes
 Optical DO
 Turb.
 pH
 Spec. Cond.
 ORP
 Temp

Time (24 hr)	±3% Temp (°C)	±3% Spec Cond. (µS/cm)	±10% DO (mg/L)	±0.1 pH	±10 ORP (mV)	±10% Turbidity (NTU)	Volume Removed (Liters)	Flow Rate (ml/min)	Depth to Water (Feet)	Drawdown* (Feet)	Color/Odor
1132	13.16	0.786	4.37	6.27	272.9	14.7	—	15.3	10.75	-0.24	clear
1135	12.45	0.778	4.08	6.45	270.7	12.1	0.459	154	10.82	-0.31	clear
1138	11.92	0.769	3.66	6.57	266.9	11.8	0.921	101	10.82	-0.31	clear
1141	12.11	0.768	3.38	6.61	265.1	11.0	1.845	101	10.82	-0.31	
1144	12.09	0.772	3.05	6.63	263.7	10.5	2.769	101	10.83	-0.32	
1147	12.13	0.777	2.79	6.63	262.7	10.4	3.693		10.84	-0.33	
1150	12.13	0.787	2.48	6.63	261.2	10.3	4.617	101	10.84	-0.33	
1153	11.98	0.798	2.24	6.63	260.2	10.3	4.920		10.85	-0.34	
1156	11.95	0.807	2.03	6.63	258.0	10.3	5.223				
1159	11.78	0.821	1.84	6.62	256.8	10.2	5.526	102			
1202	11.77	0.828	1.70	6.63	253.5	11.3	5.832		10.86	-0.35	
1205	11.80	0.833	1.54	6.62	250.5	11.6	6.444	102	10.88	-0.37	
1208	11.65	0.842	1.36	6.63	248.4	11.7	6.75		10.89	-0.38	
1211	11.70	0.844	1.28	6.63	247.3	11.6	7.056		10.87	-0.36	clear
1214	11.69	0.849	1.20	6.63	246.0	11.7	7.362		10.88	-0.37	
1217	11.56	0.854	1.08	6.63	244.7	11.9	7.668		10.88	-0.37	

- reduced discharge Rate 1137

* To calculate the drawdown value you subtract the depth to water at the end of purging from the depth of water after the pump has been placed in the well.

Sample ID	No. Containers	Container Type	Preservation	Analysis Req.	Time
MW-07A-051908	3 auto	40ml vial	HCl	VOA (MS/MSD)	1225
MW-07A-051908	4	Ambic 1L	40C	PCB (MS/MSD)	1241
MW-07A-051908	1	500ml	HNO3	Metals (MS/MSD)	1315

NOTES:
 ① start of day 0904 from top of well casing JMF/MRF 5/19/08
 ② s/b mstem correlation

Signature: Jane M. [Signature] Date: 5/19/08

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Well ID: MW-6

Groundwater Sample Collection Record

Client: ACOE Date: 5/19/08 Time: 1325 Start am/pm
 Project No: NRH Finish am/pm
 Site Location: Savage Street
 Weather Conditions: Partly Cloudy + Windy Collectors: JMF/MRF/MW

I. WATER LEVEL / WELL DATA

Measured Height of Water Column: 7.02 ft
 Well Depth: 19.48 ft
 Depth to Water (initial): 12.46 ft Purged Volume: 7.705 + .6 = 8.305
 Depth to Water (pump in well): 13.19 ft
 Pump Depth 17.48 ft
 Gallons (Volume):
 0.16 GAL/FT (2 IN)
 0.65 GAL/FT (4 IN) =
 1.5 GAL/FT (6 IN)

② Please ignore JMF data

↑ from top of well casing

2. SAMPLE COLLECTION

Method:

Field Equipment Used:

Equipment	Make	Model	Serial Number
Solinst H ₂ O level meter			101-200-P2 DC
MP10 Controller			MP10-1586
VSI 6600 V2	Yokumo	Turb, DO, pH, ORP, temp	0581397 AC
CO2 cylinder			

1.4 x ±.02 x x x

Time (24 hr)	±3% Temp (°C)	±3% Spec Cond (µS/cm)	±10% DO (mg/L)	±0.1 pH	±10 ORP (mV)	±10% Turbidity (NTU)	Volume Removed (Liters)	Flow Rate (mL/min)	Depth to Water (Feet)	Drawdown* (Feet)	Color/Odor
1325	14.11	0.564	2.84	7.30	256.2	21.2	—	100	13.8	-0.706	clean / No odor
1330	12.90	0.558	2.25	7.15	249.3	12.6	.5	49	14.05	-0.86	discharge PATTI @ 1331
1335	13.42	0.558	2.07	7.12	255.3	10.2	.745		13.8	-0.706	
1340	14.47	0.557	1.83	7.13	246.6	8.7	.99	45	13.7	-0.651	
1345	14.81	0.561	1.68	7.13	238.1	6.6	1.215	45	13.65	-0.46	
1350	15.08	0.562	1.57	7.12	227.7	6.4	1.44	45.44	13.65	-0.46	
1355	15.17	0.564	1.39	7.11	218.1	5.8	1.66	44	13.63	-0.44	
1400	15.32	0.564	1.31	7.11	212.3	5.6	1.88	55.80	13.58	-0.39	discharge into ↑ @ 1401
1405	14.31	0.568	1.20	7.09	198.3	5.4	2.159	80	13.68	-0.49	
1410	13.34	0.566	1.16	7.10	178.5	6.7	2.555		13.80	-0.61	discharge @ 1411 ↓
1415	13.13	0.564	1.17	7.08	165.3	7.0	2.955	60	13.85	-0.66	
1420	12.87	0.564	1.12	7.07	143.5	6.9	3.255	65.65	13.96	-0.72	discharge @ 1422
1425	13.05	0.570	0.93	7.11	114.7	5.7	3.58	50.75	13.95	-0.76	
1430	13.22	0.578	0.79	7.11	108.6	5.4	3.955	50.75	13.88	-0.69	
1435	13.09	0.586	0.62	7.14	86.8	5.2	4.33		13.85	-0.66	
1440	12.89	0.592	0.48	7.15	66.8	5.3	4.705	75	13.85	-0.66	

* To calculate the drawdown value you subtract the depth to water at the end of purging from the depth of water after the pump has been placed in the well.

Sample ID	No. Containers	Container Type	Preservation	Analysis Req.	Time
MW-06-051908	1 act	40ml vial	HCl	VOC	1519
MW-07A-051708	2	16 Amber	4°C	PCB	1522
MW-07A-051708	1	500ml Teflon	HNO ₃	Metals	1546

NOTES:
 ① taken 5/19/08 0916 JMF/MRF (top of well casing)
 ② 518 mStem JMF data
 ③ H₂O in filter thru cell
 ④ 516 JMF data

Signature: [Signature] Date: 5/19/08

Groundwater Sample Collection Record

Client: ACOE Date: 5/19/08 Time: _____ Start 1325 am/pm
 Project No: NBH Finish 1558 am/pm
 Site Location: Sankey St
 Weather Conditions: Partly Cloudy + Windy Collectors: JMF/MRF/MW

1. WATER LEVEL / WELL DATA

Measured Height of 0.16 GAL/FT (2 IN)
 Well Depth: Water Column: 0.65 GAL/FT (4 IN) = _____ Gallons (Volume)
 1.5 GAL/FT (6 IN)
 Depth to Water (initial): _____ Purged Volume: _____
 Depth to Water (pump in well): _____

see page 1

2. SAMPLE COLLECTION

Method:

Field Equipment Used:

Equipment	Make	Model	Serial Number

see page 1

Time (24 hr)	±3% Temp (°C)	±3% Spec Cond. (µS/cm)	±10% DO (mg/L)	±0.1 pH	±10 ORP (mV)	Turbidity (NTU)	Volume Removed (Liters)	Flow Rate (mL/min)	Depth to Water (Feet)	Drawdown* (Feet)	Color/Odor
1445	13.05	0.575	.43	7.16	+54.5	5.2	5.08	50 75	13.8	0.61	
1450	13.19	0.597	.38	7.15	+40.9	5.2	5.455				
1455	12.83	0.600	.35	7.11	+34.5	5.4	5.83	50 75	13.8	0.61	
1500	12.68	0.601	.32	7.17	+25.5	5.4	6.205	75	13.8	0.61	
1505	12.51	0.602	.31	7.18	+19.1	5.7	6.58		13.78	-0.59	
1510	12.61	0.602	.30	7.18	12.8	5.6	6.955	75	13.78	-0.59	
1514	12.66	0.603	.31	7.21	6.7	5.7	7.33			-0.59	
1518	12.69	0.604	0.30	7.19	4.5	5.7	7.705		13.78	-0.59	

* To calculate the drawdown value you subtract the depth to water at the end of purging from the depth of water after the pump has been placed in the well.

Sample ID	No. Containers	Container Type	Preservation	Analysis Req.	Time

see page 1

NOTES:

Signature: [Signature] Date: 5/19/08

Well ID: MW-1

Groundwater Sample Collection Record

Client: ACOE Date: 5/19/08 Time: 1402 Start: 1402/1602 am/pm
 Project No: NRH Finish: 1635/1830 am/pm
 Site Location: Sample Street
 Weather Conditions: Partly Sunny + Windy Collectors: JMF/MRF/MW

1. WATER LEVEL / WELL DATA

Measured Well Depth: 24.39 ft Height of Water Column: 9.09 ft
 Depth to Water (initial): 15.3 ft Purged Volume: 3.62 + .600
 Depth to Water (pump in well): 14.55 ft
 Pump Depth: 22.0 ft
 Gallons (Volume): 0.16 GAL/FT (2 IN), 0.65 GAL/FT (4 IN) =, 1.5 GAL/FT (6 IN)
 ↑ from top of well casing

2. SAMPLE COLLECTION

Method:

Field Equipment Used:

Equipment	Make	Model	Serial Number
Schott H ₂ O Level Meter			A10126A
MP10 Controller	RED	MP10 1586	
YSI 6600 V2	Probes - DO, Turb, Temp, pH, Cond		A581397AC

Time (24 hr)	Temp (°C)	Spec Cond. (µS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Volume Removed (Liters)	Flow Rate (mL/min)	Depth to Water (Feet)	Drawdown* (Feet)	Color/Odor
1616	13.35	918	2.83	7.09	209.8	29.5	—	50	15.65	-1.1	
1621	13.46	918	2.48	7.10	213.0	21.5	0.25	50	16.10	-1.45	
1628	13.49	924	2.27	7.13	214.1	17.1	0.60	15	16.22	-1.67	
1634	13.35	926	2.05	7.07	214.7	15.7	0.69	60	16.38	-1.83	
1639	13.07	927	1.87	7.07	118.2	13.3	0.99	50	16.68	-2.13	
1644	12.81	0.925	1.71	7.06	74.4	10.8	1.24	45	16.96	-2.35	
1649	12.66	0.925	1.64	7.07	61.7	10.3	1.49	45	17.05	-2.5	
1654	12.80	0.925	1.55	7.06	53.6	9.4	1.74		17.11	-2.56	
1659	12.79	0.927	1.48	7.05	43.4	8.2	1.99	45	17.16	-2.61	
1704	12.74	0.928	1.39	7.02	34.9	7.6	2.24	45	17.16	-2.61	
1709	12.62	0.929	1.29	7.00	26.5	6.8	2.49	45	17.16	-2.61	
1714	12.51	0.931	1.19	6.97	23.1	6.8	2.74				
1720	12.47	0.930	1.05	7.00	13.6	6.6	3.01	45	17.06	-2.51	
1725	12.35	0.931	0.95	6.96	8.2	6.6	3.26	45	17.1	-2.55	
1729	12.24	0.932	0.88	6.96	7.0	6.9	3.44	45	17.07	-2.52	
1733	12.26	0.932	0.84	6.91	5.8	7.1	3.62	45	17.03	-2.48	

* To calculate the drawdown value you subtract the depth to water at the end of purging from the depth of water after the pump has been placed in the well.

Sample ID	No. Containers	Container Type	Preservation	Analysis Req.	Time
MW-001-051908	1 set	40ml Vial	HCL	VOC	1735
MW-001-051908	2	1L Amber	4°C	PCB	1742
↓	1	500ml Teflon	HNO ₃	METALS	1820

NOTES: ① TAKEN 5/19/08 0911 AM JMF/MRF (to top of well casing)
 ② H₂O left in flow-thru cell
 ③ s/b nstcm JMF 01/2/09

Signature: Michael Walsh Date: 5/19/08

Well ID: MW-5

Groundwater Sample Collection Record

Client: ACOE Date: 5/20/08 Time: _____ Start 0900 am/pm
 Project No: N6H Finish 1050 am/pm
 Site Location: Sawyer Springs
 Weather Conditions: _____ Collectors: JMF/MF/MW

1. WATER LEVEL / WELL DATA

Measured Height of Water Column: 19.25 ft 11.24 ft
 Well Depth: _____ Gallons (Volume)
 0.16 GAL/FT (2 IN)
 0.65 GAL/FT (4 IN) =
 1.5 GAL/FT (6 IN)
 Depth to Water (initial): 8.01 ft Purged Volume: 2.95 + .600
 = 3.55
 Depth to Water (pump in well): 8.3 ft
 Pump Depth: 19.0
 ↑ from top of well casing

2. SAMPLE COLLECTION

Method:

Field Equipment Used:

Equipment	Make	Model	Serial Number
<u>YSI 6600 Y2</u>			<u>0581397 AC</u>
<u>MPIO Controller</u>			<u>MP11-1628</u>
<u>Solinst Water Level Probe</u>			

Time (24 hr)	Temp (°C)	Spec Cond. (µS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Volume Removed (Liters)	Flow Rate (mL/min)	Depth to Water (Feet)	Drawdown* (Feet)	Color/Odor
<u>0924</u>	<u>11.34</u>	<u>3.274</u>	<u>2.16</u>	<u>7.46</u>	<u>186.8</u>	<u>7.7</u>	—	<u>75</u>	<u>7.1</u>	<u>-0.8</u>	<u>clear / no odor</u>
<u>0930</u>	<u>11.14</u>	<u>3.275</u>	<u>0.96</u>	<u>7.46</u>	<u>74.5</u>	<u>5.2</u>	<u>.45</u>		<u>9.55</u>	<u>-1.25</u>	
<u>0935</u>	<u>11.07</u>	<u>3.270</u>	<u>0.65</u>	<u>7.46</u>	<u>46.4</u>	<u>4.9</u>	<u>.825</u>	<u>79</u>	<u>9.70</u>	<u>-1.40</u>	
<u>0940</u>	<u>11.02</u>	<u>3.266</u>	<u>0.48</u>	<u>7.46</u>	<u>3.2</u>	<u>4.0</u>	<u>1.72</u>	<u>68</u>	<u>9.98</u>	<u>-1.68</u>	<u>↓ ↓ discharge rate @ 0941</u>
<u>0945</u>	<u>11.22</u>	<u>3.263</u>	<u>0.37</u>	<u>7.46</u>	<u>-16.5</u>	<u>3.9</u>	<u>1.56</u>		<u>10.00</u>	<u>-1.7</u>	
<u>0950</u>	<u>11.29</u>	<u>3.264</u>	<u>0.30</u>	<u>7.46</u>	<u>-31.0</u>	<u>4.1</u>	<u>1.9</u>		<u>10.02</u>	<u>-1.72</u>	
<u>0955</u>	<u>11.30</u>	<u>3.263</u>	<u>0.26</u>	<u>7.46</u>	<u>-41.4</u>	<u>3.9</u>	<u>2.24</u>		<u>10.06</u>	<u>-1.76</u>	
<u>1000</u>	<u>11.37</u>	<u>3.261</u>	<u>0.23</u>	<u>7.46</u>	<u>-47.0</u>	<u>3.9</u>	<u>2.58</u>	<u>74</u>	<u>10.08</u>	<u>-1.78</u>	
<u>1005</u>	<u>11.32</u>	<u>3.263</u>	<u>0.19</u>	<u>7.45</u>	<u>-51.4</u>	<u>4.1</u>	<u>2.95</u>		<u>10.09</u>	<u>-1.79</u>	

* To calculate the drawdown value you subtract the depth to water at the end of purging from the depth of water after the pump has been placed in the well.

Sample ID	No. Containers	Container Type	Preservation	Analysis Req.	Time
<u>MW-005-052008</u>	<u>2 sets</u>	<u>40ml</u>	<u>H2C</u>	<u>VOC+(REP)</u>	<u>1007</u>
<u>MW-005-052008</u>	<u>2</u>	<u>1L Amber</u>	<u>4°C</u>	<u>PCB</u>	<u>1015</u>
	<u>2</u>	<u>500ml Teflon</u>	<u>HNO3</u>	<u>Metals</u>	<u>1050</u>

- Raptivate (1 of jar)
- Rep

NOTES:
 ① taken on 5/14/06 @ 0928 JMF/MRF (top of well casing)
 ② H₂O in flow thru cell
 ③ mStem s163MT 2/12/09

Signature: [Signature] Date: 5/20/08

Well ID: MW-4A

Groundwater Sample Collection Record

Client: ACOE Date: 5/20/08 Time: _____ Start 1058 am/pm
 Project No: NBH Finish 1325 am/pm
 Site Location: Savage Street
 Weather Conditions: Overcast Windy SW 15-20 Collectors: JMF/MF/MW

1. WATER LEVEL / WELL DATA

Measured Well Depth: 24.63 Height of Water Column: 15.42 x
 Depth to Water (initial): 9.21 x Purged Volume: 3.525 + .600
 Depth to Water (pump in well): 8.95 9.21 x = 4.125
 Gallons (Volume): 0.16 GAL/FT (2 IN)
 0.65 GAL/FT (4 IN) =
 1.5 GAL/FT (6 IN)
 Pump Depth - 22.0 ft
 ↑
 ft down from top well casing

2. SAMPLE COLLECTION

Method:

Field Equipment Used:

Equipment	Make	Model	Serial Number
<u>YSI 6600V2</u>			<u>0581397 AC</u>
<u>MP10 Controller</u>			<u>MP10 - 1628</u>
<u>Solnist water level meter</u>			

Time (24 hr)	Temp (°C)	Spec Cond (µS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Volume Removed (Liters)	Flow Rate (mL/min)	Depth to Water (Feet)	Drawdown* (Feet)	Color/Odor
<u>1105</u>	<u>15.45</u>	<u>7.366</u>	<u>1.16</u>	<u>6.9</u>	<u>-222.6</u>	<u>18.0</u>	<u>—</u>	<u>45</u>	<u>9.75</u>	<u>-0.54</u>	<u>clear/sulfide</u>
<u>1110</u>	<u>14.89</u>	<u>7.404</u>	<u>.35</u>	<u>6.77</u>	<u>-269.6</u>	<u>14.7</u>	<u>.255</u>	<u>45</u>	<u>10.02</u>	<u>-0.81</u>	
<u>1115</u>	<u>14.32</u>	<u>7.315</u>	<u>.14</u>	<u>6.73</u>	<u>-280.1</u>	<u>12.1</u>	<u>.510</u>	<u>55</u>	<u>10.21</u>	<u>-1.00</u>	
<u>1120</u>	<u>14.07</u>	<u>7.045</u>	<u>.06</u>	<u>6.72</u>	<u>-281.9</u>	<u>10.1</u>	<u>.785</u>	<u>55</u>	<u>10.42</u>	<u>-1.21</u>	
<u>1125</u>	<u>14.04</u>	<u>6.722</u>	<u>.02</u>	<u>6.72</u>	<u>-284.1</u>	<u>9.0</u>	<u>1.06</u>	<u>55</u>	<u>10.60</u>	<u>-1.39</u>	
<u>1130</u>	<u>13.86</u>	<u>6.337</u>	<u>0</u>	<u>6.74</u>	<u>-284.2</u>	<u>8.4</u>	<u>1.338</u>	<u>55</u>	<u>10.79</u>	<u>-1.58</u>	
<u>1136</u>	<u>13.24</u>	<u>5.926</u>	<u>0</u>	<u>6.76</u>	<u>-281.7</u>	<u>9.4</u>	<u>1.608</u>	<u>55</u>	<u>10.96</u>	<u>-1.75</u>	
<u>1143</u>	<u>13.09</u>	<u>5.641</u>	<u>0</u>	<u>6.80</u>	<u>-282.2</u>	<u>11.1</u>	<u>2.08</u>	<u>55</u>	<u>11.10</u>	<u>-1.89</u>	
<u>1148</u>	<u>13.23</u>	<u>5.531</u>	<u>0</u>	<u>6.81</u>	<u>-281.9</u>	<u>14.0</u>	<u>2.325</u>	<u>55</u>	<u>11.18</u>	<u>-1.97</u>	
<u>1153</u>	<u>12.9</u>	<u>5.538</u>	<u>0</u>	<u>6.80</u>	<u>-277</u>	<u>14.4</u>	<u>2.6</u>	<u>55</u>	<u>11.32</u>	<u>-2.11</u>	
<u>1158</u>	<u>13.03</u>	<u>5.180</u>	<u>0</u>	<u>6.80</u>	<u>-274.7</u>	<u>17.3*</u>	<u>2.875</u>	<u>05</u>	<u>11.42</u>	<u>-2.21</u>	<u>-cleaned optics*</u>
<u>1203</u>	<u>13.11</u>	<u>5.112</u>	<u>0</u>	<u>6.81</u>	<u>-275.8</u>	<u>4.9</u>	<u>3.2</u>	<u>wl</u>	<u>11.50</u>		
<u>1208</u>	<u>13.01</u>	<u>5.074</u>	<u>0</u>	<u>6.81</u>	<u>-275.5</u>	<u>4.8</u>	<u>3.525</u>		<u>11.50</u>	<u>-2.29</u>	

* To calculate the drawdown value you subtract the depth to water at the end of purging from the depth of water after the pump has been placed in the well.

Sample ID	No. Containers	Container Type	Preservation	Analysis Req.	Time	
<u>MW-04A-052008</u>	<u>6</u>	<u>40 ml</u>	<u>HCl</u>	<u>VOL</u>	<u>1217</u>	<u>-3 for QA</u>
	<u>4</u>	<u>1 Liter</u>	<u>4°C</u>	<u>Org.</u>	<u>1227</u>	<u>-2 for QA</u>
	<u>2</u>	<u>Teflon</u>	<u>HNO3</u>	<u>metals</u>	<u>1301</u>	<u>-1 for QA</u>

NOTES: ① taken @ 0931 on slotted JMF/MF (to top of well casing) ② water from flow thru cell
 ③ slt mslcm slotted JMF

Signature: Matthew R. Myrick Date: 5/20/08

Well ID: MW-3

Groundwater Sample Collection Record

Client: ACOF Date: 5/20/08 Time: 1330 Start am/pm
 Project No: NRH Finish 5000 am/pm
 Site Location: Sullivan Street
 Weather Conditions: Overcast Windy SW 15-20 Collectors: MRF, JF, MW

1. WATER LEVEL / WELL DATA

Measured Well Depth: 24.10 ft Height of Water Column: 9.21 ft
 Depth to Water (initial): 14.89 ft Purged Volume: 4.4 + .60 = 5.0L
 Depth to Water (pump in well): 13.7 ft
 Pump Depth: 22.0 ft
 Gallons (Volume): 0.16 GAL/FT (2 IN)
 0.65 GAL/FT (4 IN) =
 1.5 GAL/FT (6 IN)
 ↑ from top of PVC

2. SAMPLE COLLECTION

Method:

Field Equipment Used:

Equipment	Make	Model	Serial Number
<u>YSI 6600 V2</u>			<u>0581397AC</u>
<u>MP10 Controller</u>			<u>MP10-1628</u>
<u>Solinst Water level meter</u>			

Time (24 hr)	Temp (°C)	Spec Cond. (µS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Volume Removed (Liters)	Flow Rate (mL/min)	Depth to Water (Feet)	Drawdown* (Feet)	Color/Odor
1325	13.70	4.78	2.16	6.84	-93.0	33.5	—	45	14.38	-1.68	yellow
1330	13.95	4.772	1.48	6.82	-89.8	29.5	.225	90	14.68	-1.78	
1335	13.60	4.813	1.45	6.82	-78.6	27.2	.675	95	15.10	-1.4	
1340	12.58	4.792	1.09	6.83	-73.9	20.5	1.150		15.42	-1.72	
1345	12.38	4.724	.89	6.82	-64.7	16.1	1.625	75	15.55	-1.85	
1350	12.35	4.635	.85	6.83	-59.7	13.8	2.000	75	15.55	-1.85	
1354	12.27	4.527	.79	6.85	-58.3	11.4	2.3	75	15.55	-1.85	
1358	12.26	4.406	.63	6.89	-60.4	10.1	2.6	75	15.55	-1.85	
1402	12.27	4.294	.60	6.92	-62.2	8.6	2.9	75	15.52	-1.82	
1406	12.22	4.198	.55	6.94	-64.1	7.7	3.2	75	15.54	-1.84	
1410	12.27	4.055	.51	6.98	-68.9	6.2	3.5	75	15.54	-1.84	
1414	12.28	3.985	.52	6.99	-71.3	5.8	3.8	75	15.54	-1.84	
1418	12.23	3.936	.5	7.01	-73.4	5.4	4.1	75	15.52	-1.82	
1422	12.12	3.872	.48	7.02	-77	5.3	4.4	75	15.52	-1.82	

- increased discharge rate
 Δ↓ discharge rate 1343

* To calculate the drawdown value you subtract the depth to water at the end of purging from the depth of water after the pump has been placed in the well.

Sample ID	No. Containers	Container Type	Preservation	Analysis Req.	Time
<u>MW-003-052008</u>	<u>3</u>	<u>40 ml glass</u>	<u>HCl</u>	<u>VOC</u>	<u>1430</u>
	<u>2</u>	<u>1 liter</u>	<u>4°C</u>	<u>Org</u>	<u>1432</u>
	<u>1</u>	<u>Teflon</u>	<u>HNO₃</u>	<u>metals</u>	<u>1453</u>

NOTES: ① taken on 5/19/08 JMF/MRF 0120 (top of PVC @ notch)
 ② slb meter mslcm jmi analog
 ③ H₂O in flow thru well
 equipment blank take @ 1600

Signature: Mullin & Myrick Date: 5/20/08

Fall 2008 Sampling Event

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YSI Calibration Form for Groundwater Surveys

Project No. G606422		Date: 11/06/08		Recorded By: Patrick Curran	
Data File Name: N/A			Instrument Model / SN: 6820/03E0613A0		
CALIBRATION and MAINTENANCE					
DO membrane changed? Y <input checked="" type="radio"/> N		Turbidity Wiper Changed? Y <input checked="" type="radio"/> N			
Battery Voltage:		Turbidly wiper parks 180° from optics? <input checked="" type="radio"/> Y <input type="radio"/> N			
Parameter	Initial Reading	Calibrated Reading	End of Day Reading	Calibration Data (acceptable range)	
Conductivity ^{uSD} (mS/cm)	1012	1000	998	Cell constant (4.55 – 5.45)	
ORP	201.4	201.4	201.8	Pressure offset, vented (0 ± 6)	
Turbidity (NTU) 0	-0.2	0.0	0.2	Turbidity Offset:	
Turbidity (NTU) 123	123.6	123.0	122.8		
D.O. (% Sat)	101.9	100.2	99.4	D.O. Gain (0.7 - 1.4)	
pH 4	3.90	4.00	4.06		
pH 7	6.95	7.00	6.86		
pH 10	10.15	10.03	10.01		

Comments:

Project No. G606422		Date: 11/06/08		Recorded By: Patrick Curran	
Data File Name:			Instrument Model / SN: 6820/97K1095AE		
CALIBRATION and MAINTENANCE					
DO membrane changed? Y <input checked="" type="radio"/> N		Turbidity Wiper Changed? Y <input checked="" type="radio"/> N			
Battery Voltage:		Turbidly wiper parks 180° from optics? <input checked="" type="radio"/> Y <input type="radio"/> N			
Parameter	Initial Reading	Calibrated Reading	End of Day Reading	Calibration Data (acceptable range)	
Conductivity ^{uSD} (mS/cm)	1019	1000	1001	Cell constant (4.55 – 5.45)	
ORP	201.4	201.4	202.8	Pressure offset, vented (0 ± 6)	
Turbidity (NTU) 0	0.9	0.0	-0.6	Turbidity Offset:	
Turbidity (NTU) 123	122.1	123.0	122.0		
D.O. (% Sat)	101.2	101.0	100.3	D.O. Gain (0.7 - 1.4)	
pH 4	3.99	4.00	3.98		
pH 7	6.96	7.00	6.92		
pH 10	^{PL} _{06/18} 10.15	10.03	10.01		
Comments:	11/06/08 10.08 10.02				
① slb uS/cm Jim 2/10/09					

YSI Calibration Form for Groundwater Surveys

Project No. G606422	Date: 11/7/08	Recorded By: Matt Kitzpatrick
Data File Name: NA		Instrument Model / SN: 6820 03E0613 AD

CALIBRATION and MAINTENANCE

DO membrane changed? Y <input checked="" type="radio"/> N	Turbidity Wiper Changed? Y <input checked="" type="radio"/> N
Battery Voltage:	Turbidly wiper parks 180° from optics? <input checked="" type="radio"/> Y <input type="radio"/> N

Parameter	Initial Reading	Calibrated Reading	End of Day Reading	Calibration Data (acceptable range)
Conductivity (µS/cm)	981	1000	995	Cell constant (4.55 - 5.45)
ORP	203.1	201.4	200.6	Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	.3	0.0	-0.3	Turbidity Offset:
Turbidity (NTU) 123	122.3	123	123.9	
D.O. (% Sat)	102.2	100.0	103.1	D.O. Gain (0.7 - 1.4)
pH 4	4.01	4.00	4.18	
pH 7	6.93	7.00	6.96	
pH 10	10.13	10.02	10.04	

Comments:

Project No. G606422	Date: 11/7/08	Recorded By: Matt Kitzpatrick
Data File Name: NA		Instrument Model / SN: 6820 97K1095 AE

CALIBRATION and MAINTENANCE

DO membrane changed? Y <input checked="" type="radio"/> N	Turbidity Wiper Changed? Y <input checked="" type="radio"/> N
Battery Voltage:	Turbidly wiper parks 180° from optics? <input checked="" type="radio"/> Y <input type="radio"/> N

Parameter	Initial Reading	Calibrated Reading	End of Day Reading	Calibration Data (acceptable range)
Conductivity (µS/cm)	984	1001	998	Cell constant (4.55 - 5.45)
ORP	204.3	201.4	201.1	Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	-1	0.0	-0.7	Turbidity Offset:
Turbidity (NTU) 123	124.5	123.1	121.1	
D.O. (% Sat)	103.4	100.5	103.2	D.O. Gain (0.7 - 1.4)
pH 4	3.93	4.00	4.12	
pH 7	6.95	7.00	6.95	
pH 10	10.17	10.03	10.01	

Comments:

① 516 µS/cm TMT 2/11/09

Well ID: MW-7A

Groundwater Sample Collection Record

Client: NBH Date: 11/6/08 Time: 0730 Start am/pm
 Project No: 6606422 Finish 0930 am/pm
 Site Location: Sawyer STREET
 Weather Conditions: Cloudy Collectors: MF

1. WATER LEVEL / WELL DATA

Measured Height of 0.16 GAL/FT (2 IN)
 Well Depth: 14.85 ft Water Column: 3.77 ft 0.65 GAL/FT (4 IN) =
 Depth to Water (initial): 11.08 ft Purged Volume: 2.35 + 0.6 Gallons (Volume)
 Depth to Water (pump in well): 10.96 ft = 2.95 L
 1.5 GAL/FT (6 IN)

2. SAMPLE COLLECTION

Method:

Field Equipment Used:

Equipment	Make	Model	Serial Number
<u>Controller</u>	<u>MicroPurge</u>	<u>MP10</u>	<u>2249</u>
<u>Water Level meter</u>	<u>Solomist</u>	<u>101</u>	<u>31389</u>
<u>Sonde</u>	<u>YSI</u>	<u>6820</u>	<u>97K1095 AE</u>

Time (24 hr)	Temp (°C)	Spec Cond. (µS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Volume Removed (Liters)	Flow Rate (mL/min)	Depth to Water (Feet)	Drawdown* (Feet)	Color/Odor
0747	15.99	783	2.77	6.36	285.5	0.5	—	75	11.14	-0.18	clear
0753	15.75	859	1.80	6.54	238.3	0.1	0.45	80	11.11	-0.15	
0758	15.69	874	1.62	6.58	225.8	0.1	0.7	85	11.11	-0.15	
0803	15.56	876	1.55	6.57	224.0	0.1	0.975	85	11.11	-0.15	
0808	15.44	875	1.37	6.60	220.0	0.1	1.25	85	11.12	-0.16	
0813	15.35	874	1.18	6.63	217.2	0.1	1.525	85	11.12	-0.16	
0818	15.30	874	1.06	6.64	213.8	0.1	1.8	85	11.12	-0.16	
0823	15.28	875	0.96	6.65	209.8	0.2	2.075	85	11.12	-0.16	
0828	15.29	877	0.90	6.66	204.8	0.1	2.35	85	11.11	-0.15	

* To calculate the drawdown value you subtract the depth to water at the end of purging from the depth of water after the pump has been placed in the well.

Sample ID	No. Containers	Container Type	Preservation	Analysis Req.	Time
<u>MW-07A-110608</u>	<u>3</u>	<u>40 ml glass</u>	<u>HCl/4°C</u>	<u>VOA</u>	<u>0831</u>
	<u>2</u>	<u>1L glass</u>	<u>4°C</u>	<u>PCB</u>	<u>0835</u>
	<u>1</u>	<u>1L Teflon</u>	<u>HNO₃/4°C</u>	<u>Metals</u>	<u>0912</u>

NOTES:
 ① reduce flow rate to 50ml/min @ 0749
 ② Volume in flow-thru cell
 ③ 218 µS/cm @ 1209 GMT

Signature: [Signature] Date: 11/13/08

Well ID: MW-6

①

Groundwater Sample Collection Record

Client: NBH Date: 1/16/08 Time: 0810 Start 1050 Finish 1050

Project No: 61006422

Site Location: Sawyer St

Weather Conditions: Cloudy / Drizzle Collectors: OT/PC

1. WATER LEVEL / WELL DATA

Measured Height of Water Column: 5.37 ft 0.16 GAL/FT (2 IN)
 Well Depth: 19.19 ft 0.65 GAL/FT (4 IN) = Gallons (Volume)
 Depth to Water (initial): 13.32 ft Purged Volume: 5.69 + 0.6 1.5 GAL/FT (6 IN)
 Depth to Water (pump in well): 12.92 ft = 6.29 L

2. SAMPLE COLLECTION

Method:
 Field Equipment Used:

Equipment	Make	Model	Serial Number
Compressor	GED	3020	17723
Controller	MicroPump	MP10	8253
YSI	YSI	6820	03E 0613 AD
Solinst	Water Level Meter	101	45547

① Well label as marked on pavement at the access s.t. It appears that MW-6 + MW-6a are marked incorrectly (ie backwards) See the Discussion in the Tech memo for more details
 JMT 2/4/09
 Please ignore

Time (24 hr)	Temp (°C)	Spec Cond. (µS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Volume Removed (Liters)	Flow Rate (mL/min)	Depth to Water (Feet)	Drawdown* (Feet)	Color/Odor
0830	15.19	514	5.20	7.03	340.6	23.6	—	75	13.62	-0.80	NK
0835	15.17	517	4.04	7.09	316.6	23.0	0.45	*	13.73	-0.81	
0840	15.18	519	3.21	7.13	296.2	20.4	0.69	?	13.75	-0.83	
0845	15.15	521	2.62	7.15	277.6	17.5	0.99	60	13.75	-0.83	
0850	15.16	523	1.96	7.17	263.4	14.6	1.29	—	13.75	-0.83	
0855	15.19	523	1.55	7.19	249.0	11.0	1.59	60	13.76	-0.84	
0900	15.19	525	1.27	7.18	120.6	9.2	1.9	—	13.78	-0.86	
0905	15.18	526	1.04	7.20	99.3	6.7	2.21	60	13.78	-0.86	
0910	15.18	528	0.86	7.20	39.4	6.4	2.51	—	13.79	-0.87	
0915	15.21	528	0.76	7.21	5.2	4.7	2.81	60	13.79	-0.87	
0920	15.23	529	0.70	7.22	-4.5	4.5	3.11	—	13.78	-0.86	
0925	15.27	529	0.63	7.23	-37.6	3.6	3.41	60	13.77	↓	
0930	15.27	529	0.59	7.24	-45.1	3.0	3.71	—	13.78	↓	
0935	15.30	529	0.56	7.24	-70.4	2.6	4.01	60	13.78	↓	
0940	15.28	528	0.55	7.25	-79.7	2.3	4.31	—	13.78	↓	
0945	15.22	526	0.51	7.27	-98.1	1.9	4.61	—	13.78	-0.86	

* To calculate the drawdown value you subtract the depth to water at the end of purging from the depth of water after the pump has been placed in the well.

Sample ID	No. Containers	Container Type	Preservation	Analysis Req.	Time
MW-006-110608	3	40ml vial	HCl	Voa	1005
↓	2	1L Amber	4°C	PCB	1007
↓	1	1L Teflon	HNO ₃	Metals	1037

NOTES:
 * water level dropped fast / before flow thru cell filled 13.6
 * discharge lowered @ 0836 to 60ml/min
 ① Volume in flow thru cell
 ② s/b es/cm JMT 2/12/09

Signature: [Signature] Date: 1/13/08

Well ID: MW-6

Groundwater Sample Collection Record

Client: NBI Date: _____ Time: _____ Start _____ am/pm
 Project No: _____ Finish _____ am/pm
 Site Location: _____
 Weather Conditions: _____ Collectors: _____

1. WATER LEVEL / WELL DATA

Measured Height of 0.16 GAL/FT (2 IN)
 Well Depth: Water Column: 0.65 GAL/FT (4 IN) = Gallons (Volume)
 1.5 GAL/FT (6 IN)
 Depth to Water (initial): _____ Purged Volume: _____
 Depth to Water (pump in well): _____

see page 1

2. SAMPLE COLLECTION

Method:

Field Equipment Used:

Equipment	Make	Model	Serial Number
<i>see page 1</i>			

Time (24 hr)	Temp (°C)	Spec Cond. (µS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Volume Removed (Liters)	Flow Rate (mL/min)	Depth to Water (Feet)	Drawdown* (Feet)	Color/Odor
0950	15.14	524	0.53	7.28	706.4	1.7	4.91	60	13.78	-0.86	
0955	15.03	522	0.51	7.29	112.3	1.3	5.21		13.78	-0.86	
1003	14.93	520	0.50	7.30	111.0	1.5	5.69	60	13.78	-0.86	

* To calculate the drawdown value you subtract the depth to water at the end of purging from the depth of water after the pump has been placed in the well.

Sample ID	No. Containers	Container Type	Preservation	Analysis Req.	Time

see page 1

NOTES:
 @ 518 us/cm
 alidog smr

Signature: Juan M. Janga Date: 11/13/08

Well ID: MW-1

Groundwater Sample Collection Record

Client: USACE Date: 11/6/08 Time: 1040 Start am/pm
 Project No: 6606427 1350 Finish am/pm
 Site Location: Sawyer St
 Weather Conditions: Rain NE wind ~10 Collectors: MRF / PC / JMT

1. WATER LEVEL / WELL DATA

Measured Height of 8.59 ft 0.16 GAL/FT (2 IN)
 Well Depth: 24.2 ft Water Column: 0.65 GAL/FT (4 IN) = Gallons (Volume)
 1.5 GAL/FT (6 IN)
 Depth to Water (initial): 15.61 ft Purged Volume: 3.64 + 0.6
 = 4.24 L
 Depth to Water (pump in well): 14.85 ft

2. SAMPLE COLLECTION

Method:

Field Equipment Used:

Equipment	Make	Model	Serial Number
Controller	MicroPurge	MP10	2249
Water Level Meter	Solonist	101	31389
Sonde	YSI	6820	97K1095 AE

Time (24 hr)	Temp (°C)	Spec Cond (µS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Volume Removed (Liters)	Flow Rate (mL/min)	Depth to Water (Feet)	Drawdown* (Feet)	Color/Odor
1059	16.07	861	4.04	6.90	203.3	1.8	—	105	16.31	-1.46	Clear ①
1107	15.88	864	4.05	6.89	207.3	2.7	0.84	50	16.87	-2.02	
1121	15.67	867	2.44	6.87	207.9	1.7	1.54	50	16.60	-1.75	
1126	15.39	868	2.24	6.87	207.1	1.9	1.79	45	16.62	-1.77	
1131	15.21	885	1.92	6.84	120.0	2.0	2.015	45	16.75	-1.9	
1137	15.19	894	1.61	6.83	83.7	1.9	2.285	45	16.79	-2.04	②
1143	15.14	900	1.43	6.82	54.2	1.3	2.555	35	16.76	-1.91	
1149	15.02	907	1.13	6.81	30.5	1.0	2.765	35	16.76	-1.91	
1154	15.00	908	1.07	6.81	25.1	.6	2.94	35	16.76	-1.91	
1159	15.07	909	.95	6.81	15.9	.9	3.115	35	16.76	-1.91	
1204	15.05	910	.84	6.80	11.0	.6	3.29	35	16.76	-1.91	
1209	15.06	910	.77	6.80	4.8	.7	3.465	35	16.76	-1.91	
1214	15.05	911	.77	6.80	3.8	.5	3.64	35	16.76	-1.91	

* To calculate the drawdown value you subtract the depth to water at the end of purging from the depth of water after the pump has been placed in the well.

Sample ID	No. Containers	Container Type	Preservation	Analysis Req.	Time
MW-001-110608	3	40ml glass	4°C/HCl	VOA	1217
↓	2	1L glass	4°C	PCB	1222
↓	1	1L teflon	4°C/HNO ₃	Metals	1345

NOTES: ① reduced flow to 50 ml/min @ 11:01
 ② reduced flow to 35 ml/min @ 11:40
 - increased flow to 50 ml/min during VOL collection to fill bottle in discharge
 ② Volume in flow thru JMT 11/13/08
 ④ s/b w/ Skm JMT 11/13/08

Signature: Matthew R. [Signature] Date: 11/6/08

Well ID: MW-5

Groundwater Sample Collection Record

Client: NBH Date: 11/6/08 Time: 1205 Start am
 Project No: 6606422 Finish 230 pm
 Site Location: Sammy Street
 Weather Conditions: Cloudy, Rainy Collectors: JT/MF/PC

1. WATER LEVEL / WELL DATA

Measured Height of Water Column: 10.47 ft 0.16 GAL/FT (2 IN)
 Well Depth: 19.03 ft 0.65 GAL/FT (4 IN) = Gallons (Volume)
 1.5 GAL/FT (6 IN)
 Depth to Water (initial): 8.56 ft Purged Volume: 2.6 + .6 = 3.2
 Depth to Water (pump in well): 8.0 ft

2. SAMPLE COLLECTION

Method:

Field Equipment Used:

Equipment	Make	Model	Serial Number
Compressor	GED	3020	17723
Controller	Micro Page	MP10	2253
YSI		6820	03E0613AD
Water Level Meter	Sotermal	101	45547

Stabilization Criteria:	± 3%	± 3%	± 10%	± 0.1 units	± 10 mV	± 10%					
Time (24 hr)	Temp (°C)	Spec Cond. (µS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Volume Removed (Liters)	Flow Rate (mL/min)	Depth to Water (Feet)	Drawdown* (Feet)	Color/Odor
1226	14.76	641	3.88	7.86	-120.3	4.7	—	60	9.5	-7.5	Sulfur
1231	14.79	1824	2.76	7.84	-149.2	10.0	1.02	60	9.2	-1.3	
1234	14.78	1888	2.29	7.85	-160.0	3.8	1.2	50	9.4	-1.4	
1241	14.76	1880	2.06	7.85	-160.4	2.8	1.45	60	9.54	-1.5	
1246	14.76	1866	1.96	7.85	-156.3	2.8	1.7	60	9.7	-1.7	
1251	14.73	1856	1.78	7.85	-158.4	2.8	2	60	9.24	-1.74	
1256	14.72	1065	1.81	7.85	-158.1	2.7	2.3	60	9.71	-1.71	
1301	14.71	1878	1.85	7.85	-154.7	2.2	2.6	60	9.61	-1.61	

* To calculate the drawdown value you subtract the depth to water at the end of purging from the depth of water after the pump has been placed in the well.

Sample ID	No. Containers	Container Type	Preservation	Analysis Req.	Time
MW-005-110609	3	40ml vial	HCl	VOA	1303
	2	1L Amber	4°C	PCB	1305
	1	1L Teflon	HNO ₃	Metals	1352

NOTES: dropped quickly 8-8.6 before flow thru cell filled ① 3.6 - cleaned probe
 ② Reduced flow rate @ 1228 45 ③ turned down pressure
 ④ Volume of Flow-thru cell

Signature: Janice M. Jensen Date: 11/13/08

⑤ s/e µS/cm 11/21/09 JMT

Well ID: MW-4A

Groundwater Sample Collection Record

Client: NBH-ACOE Date: 11/7/08 Time: 0735 Start am/pm
 Project No: 660642 0945 Finish am/pm
 Site Location: Sample St
 Weather Conditions: Cloudy, Foggy, Misty Collectors: JT

1. WATER LEVEL / WELL DATA

Measured Well Depth: 24.46 ft Height of Water Column: 14.65 ft 0.16 GAL/FT (2 IN)
 0.65 GAL/FT (4 IN) = Gallons (Volume)
 1.5 GAL/FT (6 IN)
 Depth to Water (initial): 9.81 ft Purged Volume: 4.505 + 0.6^②
 Depth to Water (pump in well): 9.88 ft = 5.105 L

2. SAMPLE COLLECTION

Method:

Field Equipment Used:

Equipment	Make	Model	Serial Number
Water Level Meter	Solinst	101	45547
YSI 6820 Controller	MicroPonge	MP10	97K1095
Compressor	QED	3020	0249
			17723

Stabilization Criteria:	± 3%	± 3% ✓	± 10%	± 0.1 units	± 10 mV	± 10%	Volume Removed (Liters)	Flow Rate (mL/min)	Depth to Water (Feet)	Drawdown* (Feet)	Color/Odor
Time (24 hr)	±.4 ✓ Temp (°C)	±130 Spec Cond (µS/cm)	±.1 DO (mg/L)	✓ pH	✓ ORP (mV)	Turbidity (NTU)					
0748	14.20	5999	2.54	7.00	-268.9	13.3	—	80	10.85	-0.97	
0755	14.22	5885	0.98	7.01	-315.2	9.5	0.56	80	10.98	-1.1	
0800	14.25	5666	1.59	7.02	-328.0	6.3	0.80	65	11.10	-1.22	
0805	14.30	5453	1.31	7.02	-336.4	5.8	1.255		11.23	-1.35	
0810	14.23	5388	1.25	7.03	-341.5	6.0	1.58	65	11.28	-1.90	
0815	14.30	5154	1.02	7.04	-344.7	6.0	1.905		11.40	-1.52	
0820	14.34	5000	0.88	7.04	-348.0	5.5	2.23	65	11.53	-1.65	
0825	14.36	4856	0.80	7.05	-350.8	5.3	2.555		11.58	-1.7	
0830	14.36	4728	0.70	7.05	-351.9	4.5	2.88	65	11.68	-1.8	
0835	14.41	4590	0.63	7.06	-351.2	3.9	3.205		11.78	-1.7	
0840	14.47	4517	0.59	7.06	-353.2	3.4	3.53	65	11.86	-1.98	
0845	14.51	4471	0.57	7.06	-353.6	3.0	3.855		11.90	-2.02	
0850	14.52	4417	0.55	7.06	-354.5	2.8	4.18	65	11.97	-2.09	
0855	14.52	4370	0.52	7.06	-352.2	2.7	4.505		12.00	-2.12	

* To calculate the drawdown value you subtract the depth to water at the end of purging from the depth of water after the pump has been placed in the well.

Sample ID	No. Containers	Container Type	Preservation	Analysis Req.	Time
MW-04A-110708	3	40ml vial	HCl	VOA	0817
	2	1L Amber Bottle	4°C	PFB	0859
	1	1L Teflon Bottle	HNO ₃	Metals	0929
MW-04A-110708-QA1					

NOTES: Water level dropped to 0.3 before flow thru cell was filled
 ① reduced @ 0758
 ② Volume of Flow thru cell
 ③ 0.16 µS/cm stabilization

Signature: James M. Jinger Date: 11/13/08

Groundwater Sample Collection Record

Client: USACE Date: 11/7/08 Time: 0730 Start am/pm
 Project No: 6606422 Finish 1030 am/pm
 Site Location: Sawyer St
 Weather Conditions: Misty lite NE wind Collectors: Matt Fitzpatrick

1. WATER LEVEL / WELL DATA

Measured Well Depth: 23.94 ft Height of Water Column: 8.96 ft 0.16 GAL/FT (2 IN)
 0.65 GAL/FT (4 IN) = Gallons (Volume)
 1.5 GAL/FT (6 IN)
 Depth to Water (initial): 14.98 ft Purged Volume: 3.01 + 0.6
 Depth to Water (pump in well): 14.43 ft = 3.61 L

2. SAMPLE COLLECTION

Method:

Field Equipment Used:

Equipment	Make	Model	Serial Number
Controller	Mimo Purge	MP10	2253
Water Level Meter	Solonist	101	31389
Sonde	YSI	6820	03E0613 AD

Stabilization Criteria:	± 3%	± 3%	± 10%	± 0.1 units	± 10 mV	± 10%	Volume Removed (Liters)	Flow Rate (mL/min)	Depth to Water (Feet)	Drawdown* (Feet)	Color/Odor
Time (24 hr)	Temp (°C)	Spec Cond. (µS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)					
0801	13.94	4567	2.24	6.95	-156.0	86.1	0.1	55	15.82	-1.39	lt. orange
0806	13.92	4566	1.70	7.06	-155.0	86.2	0.11	40	15.87	-1.44	no odor
0811	13.93	4492	1.33	7.11	-155.7	80.0	0.23	40	15.87	-1.44	
0816	13.95	4414	1.08	7.14	-155.0	69.5	0.43	40	15.85	-1.42	
0821	13.97	4387	.95	7.16	-160.2	59.7	0.63	40	15.87	-1.44	
0826	14.00	4379	.82	7.19	-166.8	51.4	0.83	40	15.82	-1.39	
0831	14.03	4386	.73	7.21	-171.7	43.1	1.03	40	15.85	-1.42	
0836	14.05	4395	.62	7.25	-176.9	35.5	1.23	40	15.85	-1.42	
0841	14.09	4412	.55	7.28	-186.6	30.1	1.43	40	15.85	-1.42	
0846	14.13	4423	.49	7.31	-193.7	24.6	1.63	40	15.82	-1.39	
0851	14.19	4434	.44	7.33	-194.8	19.5	1.83	40	15.82	-1.39	
0856	14.22	4437	.40	7.35	-200.0	17.3	2.03	40	15.82	-1.39	
0901	14.24	4435	.37	7.37	-200.8	14.5	2.23	40	15.77	-1.34	
0906	14.24	4429	.33	7.39	-204.8	11.9	2.35	55	15.77	-1.34	
0911	14.24	4409	.30	7.41	-210.2	9.6	2.735	55	15.82	-1.39	
0916	14.24	4401	.28	7.41	-212.7	9.8	3.01	55	15.82	-1.39	

* To calculate the drawdown value you subtract the depth to water at the end of purging from the depth of water after the pump has been placed in the well.

Sample ID	No. Containers	Container Type	Preservation	Analysis Req.	Time
MW-003-110708	3	40 ml glass	HCl/4°C	VOA	0920
	2	1L glass	4°C	PCB	0923
	1	1L teflon	HNO ₃ /4°C	metals	1001
MW-003-110708-REP	1	1L teflon	HNO ₃ /4°C	metals	1001

NOTES:
 ① Reduce flow rate to 40 ml/min @ 0803
 ② increased flow rate back to 55 ml/min @ 0904
 ③ Volume of flow thru cell
 ④ s/B µS/cm 3MT @ 1209

Signature: Matthew R. Fitzpatrick Date: 11/7/08

APPENDIX B

2008 Sawyer Street CDF Groundwater Monitoring Chemistry Data

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Summary Data Tables

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Attachment B
Sawyer Street CDF 2008 Groundwater Monitoring Chemistry Data

		Station Id	FIELDQC				MW-1				MW-3
		Northing				2701441.				2701536.	
		Easting				814357.				814758.	
		Depth Top				24.39				24.1	
		Depth Unit				FT				FT	
		Start Date	05/20/2008			05/19/2008				05/20/2008	
		Samp Id	EB-052008			MW-001-051908				MW-003-052008	
		Matrix	GW			GW				GW	
		Field Qc Code	EB			SA				SA	
		Lab Qc Code	EB			SA				SA	
		Fraction	TOTAL			TOTAL				TOTAL	
Class	Param Code	Description	Result	Final Qual	Unit	Result	Final Qual	Unit	Result	Final Qual	Unit
AR	12674-11-2	Aroclor 1016	0.047	UJ	UG/L	0.047	U	UG/L	0.047	UJ	UG/L
AR	11104-28-2	Aroclor 1221	0.047	UJ	UG/L	0.047	U	UG/L	0.047	UJ	UG/L
AR	11141-16-5	Aroclor 1232	0.047	UJ	UG/L	0.047	U	UG/L	0.047	UJ	UG/L
AR	53469-21-9	Aroclor 1242	0.047	UJ	UG/L	0.047	U	UG/L	0.047	UJ	UG/L
AR	12672-29-6	Aroclor 1248	0.047	UJ	UG/L	0.047	U	UG/L	0.047	UJ	UG/L
AR	11097-69-1	Aroclor 1254	0.047	UJ	UG/L	0.047	U	UG/L	0.047	UJ	UG/L
AR	11096-82-5	Aroclor 1260	0.047	UJ	UG/L	0.047	U	UG/L	0.047	UJ	UG/L
ARSURR	AS-2051-24-3	DecaCB - Aroclor Surrogate	93.		PCT_REC	82.		PCT_REC	109.		PCT_REC
ARSURR	AS-877-09-8	Tetrachloro-meta-xylene - Aroclor Surrogate	58.		PCT_REC	64.		PCT_REC	58.		PCT_REC
MET	7440-43-9	Cadmium	0.0114	J	UG/L	0.249		UG/L	0.124		UG/L
MET	7440-47-3	Chromium	0.843		UG/L	5.35		UG/L	6.36		UG/L
MET	7440-50-8	Copper	0.269		UG/L	0.984	U	UG/L	1.95		UG/L
MET	7439-92-1	Lead	0.0769		UG/L	0.739		UG/L	0.0849	U	UG/L
SVOC	109-99-9	Tetrahydrofuran	5.	U	UG/L	5.	U	UG/L	5.	U	UG/L
TSS	TSS	Total suspended solids									
VOC	67-64-1	Acetone	7.19		UG/L	2.79	EB	UG/L	8.4	EB	UG/L
VOC	71-43-2	Benzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	108-86-1	Bromobenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	74-97-5	Bromochloromethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-27-4	Bromodichloromethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-25-2	Bromofrom	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	74-83-9	Bromomethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-15-0	Carbon Disulfide	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	56-23-5	Carbon Tetrachloride	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	108-90-7	Chlorobenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-00-3	Chloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	67-66-3	Chloroform	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	74-87-3	Chloromethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	156-59-2	Cis-1,2-Dichloroethene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	124-48-1	Dibromochloromethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	74-95-3	Dibromomethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-71-8	Dichlorodifluoromethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	60-29-7	Diethyl Ether	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	108-20-3	Di-Isopropyl Ether	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	637-92-3	Ethyl Tertiary-Butyl Ether	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	100-41-4	Ethylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	V-87-68-3	Hexachlorobutadiene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	98-82-8	Isopropylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-09-2	Methylene Chloride	1.21	J	UG/L	5.	U	UG/L	5.	U	UG/L
VOC	1634-04-4	Methyl-Tert-Butyl-Ether (Mtbe)	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	V-91-20-3	Naphthalene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	104-51-8	N-Butylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	103-65-1	N-Propylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	99-87-6	P-Isopropyltoluene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	135-98-8	Sec-Butylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	100-42-5	Styrene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	98-06-6	Tert-Butylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	994-05-8	Tertiary-Amyl Methyl Ether	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	127-18-4	Tetrachloroethene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	108-88-3	Toluene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	156-60-5	Trans-1,2-Dichloroethene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	79-01-6	Trichloroethene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-69-4	Trichlorofluoromethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-01-4	Vinyl Chloride	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-34-3	1,1-Dichloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-35-4	1,1-Dichloroethene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	563-58-6	1,1-Dichloropropene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	71-55-6	1,1,1-Trichloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	630-20-6	1,1,1,2-Tetrachloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	79-00-5	1,1,2-Trichloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	79-34-5	1,1,2,2-Tetrachloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	106-93-4	1,2-Dibromoethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	96-12-8	1,2-Dibromo-3-Chloropropane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	V-95-50-1	1,2-Dichlorobenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	107-06-2	1,2-Dichloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	17060-07-0	1,2-Dichloroethane-D4	111.		PCT_REC	102.		PCT_REC	111.		PCT_REC
VOC	78-87-5	1,2-Dichloropropane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	87-61-6	1,2,3-Trichlorobenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	96-18-4	1,2,3-Trichloropropane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	V-120-82-1	1,2,4-Trichlorobenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	95-63-6	1,2,4-Trimethylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	V-541-73-1	1,3-Dichlorobenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	142-28-9	1,3-Dichloropropane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	108-67-8	1,3,5-Trimethylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	V-106-46-7	1,4-Dichlorobenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	123-91-1	1,4-Dioxane (P-Dioxane)	100.	U	UG/L	100.	U	UG/L	100.	U	UG/L
VOC	78-93-3	2-Butanone	5.	U	UG/L	5.	U	UG/L	5.	U	UG/L
VOC	95-49-8	2-Chlorotoluene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	591-78-6	2-Hexanone	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	594-20-7	2,2-Dichloropropane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	106-43-4	4-Chlorotoluene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	108-10-1	4-Methyl-2-Pentanone	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	542-75-6	Total 1,3-Dichloropropene	4.	U	UG/L	4.	U	UG/L	4.	U	UG/L
VOC	1330-20-7	Xylene (Total)	6.	U	UG/L	6.	U	UG/L	6.	U	UG/L
VOCSURR	1868-53-7	Dibromofluoromethane	106.		PCT_REC	101.		PCT_REC	105.		PCT_REC
VOCSURR	2037-26-5	Toluene-D8	99.		PCT_REC	99.		PCT_REC	99.		PCT_REC
VOCSURR	460-00-4	4-Bromofluorobenzene	97.		PCT_REC	97.		PCT_REC	98.		PCT_REC

Attachment B
Sawyer Street CDF 2008 Groundwater Monitoring Chemistry Data

		Station Id	MW-4A		MW-5		MW-5				
		Northing	2701422.		2701437.		2701437.				
		Easting	814875.		814876.		814876.				
		Depth Top	24.63		19.25		19.25				
		Depth Unit	FT		FT		FT				
		Start Date	05/20/2008		05/20/2008		05/20/2008				
		Samp Id	MW-04A-052008		MW-005-052008		MW-005-052008-REP				
		Matrix	GW		GW		GW				
		Field Qc Code	SA		SA		REP				
		Lab Qc Code	SA		SA		REP				
		Fraction	TOTAL		TOTAL		TOTAL				
Class	Param Code	Description	Result	Final Qual	Unit	Result	Final Qual	Unit	Result	Final Qual	Unit
AR	12674-11-2	Aroclor 1016	0.047	U	UG/L	0.047	U	UG/L	0.047	U	UG/L
AR	11104-28-2	Aroclor 1221	0.047	U	UG/L	0.047	U	UG/L	0.047	U	UG/L
AR	11141-16-5	Aroclor 1232	0.047	U	UG/L	0.047	U	UG/L	0.047	U	UG/L
AR	53469-21-9	Aroclor 1242	0.043	J	UG/L	0.047	U	UG/L	0.047	U	UG/L
AR	12672-29-6	Aroclor 1248	0.047	U	UG/L	0.047	U	UG/L	0.047	U	UG/L
AR	11097-69-1	Aroclor 1254	0.047	U	UG/L	0.047	U	UG/L	0.047	U	UG/L
AR	11096-82-5	Aroclor 1260	0.047	U	UG/L	0.047	U	UG/L	0.047	U	UG/L
ARSURR	AS-2051-24-3	DecaCB - Aroclor Surrogate	159.		PCT_REC	90.		PCT_REC	132.	P	PCT_REC
ARSURR	AS-877-09-8	Tetrachloro-meta-xylene - Aroclor Surrogate	85.		PCT_REC	66.		PCT_REC	64.		PCT_REC
MET	7440-43-9	Cadmium	0.0277	U	UG/L	0.046	U	UG/L	0.0434	U	UG/L
MET	7440-47-3	Chromium	6.57		UG/L	1.89	U	UG/L	1.98	U	UG/L
MET	7440-50-8	Copper	1.46		UG/L	1.12	U	UG/L	1.05	U	UG/L
MET	7439-92-1	Lead	0.071	U	UG/L	0.0609	U	UG/L	0.0557	U	UG/L
SVOC	109-99-9	Tetrahydrofuran	5.	U	UG/L	5.	U	UG/L	5.	U	UG/L
TSS	TSS	Total suspended solids									
VOC	67-64-1	Acetone	3.05	EB	UG/L	16.	EB	UG/L	16.	EB	UG/L
VOC	71-43-2	Benzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	108-86-1	Bromobenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	74-97-5	Bromochloromethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-27-4	Bromodichloromethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-25-2	Bromoform	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	74-83-9	Bromomethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-15-0	Carbon Disulfide	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	56-23-5	Carbon Tetrachloride	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	108-90-7	Chlorobenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-00-3	Chloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	67-66-3	Chloroform	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	74-87-3	Chloromethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	156-59-2	Cis-1,2-Dichloroethene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	124-48-1	Dibromochloromethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	74-95-3	Dibromomethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-71-8	Dichlorodifluoromethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	60-29-7	Diethyl Ether	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	108-20-3	Di-Isopropyl Ether	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	637-92-3	Ethyl Tertiary-Butyl Ether	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	100-41-4	Ethylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	V-87-68-3	Hexachlorobutadiene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	98-82-8	Isopropylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-09-2	Methylene Chloride	5.	U	UG/L	5.	U	UG/L	5.	U	UG/L
VOC	1634-04-4	Methyl-Tert-Butyl-Ether (Mtbe)	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	V-91-20-3	Naphthalene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	104-51-8	N-Butylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	103-65-1	N-Propylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	99-87-6	P-Isopropyltoluene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	135-98-8	Sec-Butylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	100-42-5	Styrene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	98-06-6	Tert-Butylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	994-05-8	Tertiary-Amyl Methyl Ether	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	127-18-4	Tetrachloroethene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	108-88-3	Toluene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	156-60-5	Trans-1,2-Dichloroethene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	79-01-6	Trichloroethene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-69-4	Trichlorofluoromethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-01-4	Vinyl Chloride	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-34-3	1,1-Dichloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-35-4	1,1-Dichloroethene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	563-58-6	1,1-Dichloropropene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	71-55-6	1,1,1-Trichloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	630-20-6	1,1,1,2-Tetrachloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	79-00-5	1,1,2-Trichloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	79-34-5	1,1,2,2-Tetrachloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	106-93-4	1,2-Dibromoethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	96-12-8	1,2-Dibromo-3-Chloropropane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	V-95-50-1	1,2-Dichlorobenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	107-06-2	1,2-Dichloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	17060-07-0	1,2-Dichloroethane-D4	108.		PCT_REC	108.		PCT_REC	109.		PCT_REC
VOC	78-87-5	1,2-Dichloropropane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	87-61-6	1,2,3-Trichlorobenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	96-18-4	1,2,3-Trichloropropane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	V-120-82-1	1,2,4-Trichlorobenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	95-63-6	1,2,4-Trimethylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	V-541-73-1	1,3-Dichlorobenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	142-28-9	1,3-Dichloropropane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	108-67-8	1,3,5-Trimethylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	V-106-46-7	1,4-Dichlorobenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	123-91-1	1,4-Dioxane (P-Dioxane)	100.	U	UG/L	100.	U	UG/L	100.	U	UG/L
VOC	78-93-3	2-Butanone	5.	U	UG/L	5.	U	UG/L	5.	U	UG/L
VOC	95-49-8	2-Chlorotoluene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	591-78-6	2-Hexanone	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	594-20-7	2,2-Dichloropropane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	106-43-4	4-Chlorotoluene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	108-10-1	4-Methyl-2-Pentanone	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	542-75-6	Total 1,3-Dichloropropene	4.	U	UG/L	4.	U	UG/L	4.	U	UG/L
VOC	1330-20-7	Xylene (Total)	6.	U	UG/L	6.	U	UG/L	6.	U	UG/L
VOCSURR	1868-53-7	Dibromofluoromethane	105.		PCT_REC	104.		PCT_REC	104.		PCT_REC
VOCSURR	2037-26-5	Toluene-D8	100.		PCT_REC	99.		PCT_REC	98.		PCT_REC
VOCSURR	460-00-4	4-Bromofluorobenzene	98.		PCT_REC	97.		PCT_REC	96.		PCT_REC

Attachment B
Sawyer Street CDF 2008 Groundwater Monitoring Chemistry Data

		Station Id	MW-6			MW-7A			FIELDQC		
		Northing	2701648.			2701234.					
		Easting	814558.			814575.					
		Depth Top	19.48			15.03					
		Depth Unit	FT			FT			NA		
		Start Date	05/19/2008			05/19/2008			11/05/2008		
		Samp Id	MW-006-051908			MW-07A-051908			EB-110508		
		Matrix	GW			GW			BLK		
		Field Qc Code	SA			SA			EB		
		Lab Qc Code	SA			SA			EB		
		Fraction	TOTAL			TOTAL			TOTAL		
Class	Param Code	Description	Result	Final Qual	Unit	Result	Final Qual	Unit	Result	Final Qual	Unit
AR	12674-11-2	Aroclor 1016	0.048	U	UG/L	0.048	U	UG/L	0.047	U	UG/L
AR	11104-28-2	Aroclor 1221	0.048	U	UG/L	0.048	U	UG/L	0.047	U	UG/L
AR	11141-16-5	Aroclor 1232	0.048	U	UG/L	0.048	U	UG/L	0.047	U	UG/L
AR	53469-21-9	Aroclor 1242	0.048	U	UG/L	0.048	U	UG/L	0.095	U	UG/L
AR	12672-29-6	Aroclor 1248	0.048	U	UG/L	0.048	U	UG/L	0.047	U	UG/L
AR	11097-69-1	Aroclor 1254	0.048	U	UG/L	0.048	U	UG/L	0.047	U	UG/L
AR	11096-82-5	Aroclor 1260	0.048	U	UG/L	0.048	U	UG/L	0.047	U	UG/L
ARSURR	AS-2051-24-3	DecaCB - Aroclor Surrogate	107.		PCT_REC	88.		PCT_REC	114.		PCT_REC
ARSURR	AS-877-09-8	Tetrachloro-meta-xylene - Aroclor Surrogate	62.		PCT_REC	70.		PCT_REC	101.		PCT_REC
MET	7440-43-9	Cadmium	0.0444	U	UG/L	0.711		UG/L	0.005	U	UG/L
MET	7440-47-3	Chromium	2.45	U	UG/L	5.28		UG/L	0.6077	U	UG/L
MET	7440-50-8	Copper	0.453	U	UG/L	4.99		UG/L	0.3543	U	UG/L
MET	7439-92-1	Lead	0.0571	U	UG/L	0.0705	U	UG/L	0.07816	U	UG/L
SVOC	109-99-9	Tetrahydrofuran	5.	U	UG/L	5.	U	UG/L	2.	U	UG/L
TSS	TSS	Total suspended solids							1.	U	MG/L
VOC	67-64-1	Acetone	1.26	EB	UG/L	5.	U	UG/L	5.	U	UG/L
VOC	71-43-2	Benzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	108-86-1	Bromobenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	74-97-5	Bromochloromethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-27-4	Bromodichloromethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-25-2	Bromofrom	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	74-83-9	Bromomethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-15-0	Carbon Disulfide	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	56-23-5	Carbon Tetrachloride	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	108-90-7	Chlorobenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-00-3	Chloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	67-66-3	Chloroform	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	74-87-3	Chloromethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	156-59-2	Cis-1,2-Dichloroethene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	124-48-1	Dibromochloromethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	74-95-3	Dibromomethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-71-8	Dichlorodifluoromethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	60-29-7	Diethyl Ether	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	108-20-3	Di-Isopropyl Ether	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	637-92-3	Ethyl Tertiary-Butyl Ether	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	100-41-4	Ethylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	V-87-68-3	Hexachlorobutadiene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	98-82-8	Isopropylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-09-2	Methylene Chloride	5.	U	UG/L	5.	U	UG/L	2.	U	UG/L
VOC	1634-04-4	Methyl-Tert-Butyl-Ether (Mtbe)	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	V-91-20-3	Naphthalene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	104-51-8	N-Butylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	103-65-1	N-Propylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	99-87-6	P-Isopropyltoluene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	135-98-8	Sec-Butylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	100-42-5	Styrene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	98-06-6	Tert-Butylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	994-05-8	Tertiary-Amyl Methyl Ether	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	127-18-4	Tetrachloroethene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	108-88-3	Toluene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	156-60-5	Trans-1,2-Dichloroethene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	79-01-6	Trichloroethene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-69-4	Trichlorofluoromethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-01-4	Vinyl Chloride	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-34-3	1,1-Dichloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	75-35-4	1,1-Dichloroethene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	563-58-6	1,1-Dichloropropene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	1,1-55-6	1,1,1-Trichloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	630-20-6	1,1,1,2-Tetrachloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	79-00-5	1,1,2-Trichloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	79-34-5	1,1,2,2-Tetrachloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	106-93-4	1,2-Dibromoethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	96-12-8	1,2-Dibromo-3-Chloropropane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	V-95-50-1	1,2-Dichlorobenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	107-06-2	1,2-Dichloroethane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	17060-07-0	1,2-Dichloroethane-D4	101.		PCT_REC	100.		PCT_REC	106.		PCT_REC
VOC	78-87-5	1,2-Dichloropropane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	87-61-6	1,2,3-Trichlorobenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	96-18-4	1,2,3-Trichloropropane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	V-120-82-1	1,2,4-Trichlorobenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	95-63-6	1,2,4-Trimethylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	V-541-73-1	1,3-Dichlorobenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	142-28-9	1,3-Dichloropropane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	108-67-8	1,3,5-Trimethylbenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	V-106-46-7	1,4-Dichlorobenzene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	123-91-1	1,4-Dioxane (P-Dioxane)	100.	U	UG/L	100.	U	UG/L	100.	U	UG/L
VOC	78-93-3	2-Butanone	5.	U	UG/L	5.	U	UG/L	2.	U	UG/L
VOC	95-49-8	2-Chlorotoluene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	591-78-6	2-Hexanone	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	594-20-7	2,2-Dichloropropane	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	106-43-4	4-Chlorotoluene	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	108-10-1	4-Methyl-2-Pentanone	2.	U	UG/L	2.	U	UG/L	2.	U	UG/L
VOC	542-75-6	Total 1,3-Dichloropropene	4.	U	UG/L	4.	U	UG/L	4.	U	UG/L
VOC	1330-20-7	Xylene (Total)	6.	U	UG/L	6.	U	UG/L	6.	U	UG/L
VOCSURR	1868-53-7	Dibromofluoromethane	101.		PCT_REC	100.		PCT_REC	104.		PCT_REC
VOCSURR	2037-26-5	Toluene-D8	99.		PCT_REC	100.		PCT_REC	100.		PCT_REC
VOCSURR	460-00-4	4-Bromofluorobenzene	95.		PCT_REC	95.		PCT_REC	101.		PCT_REC

Attachment B
Sawyer Street CDF 2008 Groundwater Monitoring Chemistry Data

		Station Id	MW-1			MW-3			MW-3		
		Northing	2701441.			2701536.			2701536.		
		Easting	814357.			814758.			814758.		
		Depth Top	24.2			23.94			23.94		
		Depth Unit	FT			FT			FT		
		Start Date	11/06/2008			11/07/2008			11/07/2008		
		Samp Id	MW-001-110608			MW-003-110708			MW-003-110708-REP		
		Matrix	GW			GW			GW		
		Field Qc Code	SA			SA			REP		
		Lab Qc Code	SA			SA			REP		
		Fraction	TOTAL			TOTAL			TOTAL		
Class	Param Code	Description	Result	Final Qual	Unit	Result	Final Qual	Unit	Result	Final Qual	Unit
AR	12674-11-2	Aroclor 1016	0.048	U	UG/L	0.048	U	UG/L			
AR	11104-28-2	Aroclor 1221	0.048	U	UG/L	0.048	U	UG/L			
AR	11141-16-5	Aroclor 1232	0.048	U	UG/L	0.048	U	UG/L			
AR	53469-21-9	Aroclor 1242	0.048	U	UG/L	0.048	U	UG/L			
AR	12672-29-6	Aroclor 1248	0.048	U	UG/L	0.048	U	UG/L			
AR	11097-69-1	Aroclor 1254	0.048	U	UG/L	0.048	U	UG/L			
AR	11096-82-5	Aroclor 1260	0.048	U	UG/L	0.048	U	UG/L			
ARSURR	AS-2051-24-3	DecaCB - Aroclor Surrogate	73.		PCT_REC	94.		PCT_REC			
ARSURR	AS-877-09-8	Tetrachloro-meta-xylene - Aroclor Surrogate	91.		PCT_REC	94.		PCT_REC			
MET	7440-43-9	Cadmium	0.4345		UG/L	0.02989		UG/L	0.03063		UG/L
MET	7440-47-3	Chromium	1.775	U	UG/L	5.63		UG/L	5.92		UG/L
MET	7440-50-8	Copper	1.458	U	UG/L	0.855	U	UG/L	0.944	U	UG/L
MET	7439-92-1	Lead	0.8941	U	UG/L	0.06295	U	UG/L	0.0685	U	UG/L
SVOC	109-99-9	Tetrahydrofuran	2.	U	UG/L	2.	U	UG/L			
TSS	TSS	Total suspended solids									
VOC	67-64-1	Acetone	10.3		UG/L	5.36		UG/L			
VOC	71-43-2	Benzene	2.	U	UG/L	2.	U	UG/L			
VOC	108-86-1	Bromobenzene	2.	U	UG/L	2.	U	UG/L			
VOC	74-97-5	Bromochloromethane	2.	U	UG/L	2.	U	UG/L			
VOC	75-27-4	Bromodichloromethane	2.	U	UG/L	2.	U	UG/L			
VOC	75-25-2	Bromoform	2.	U	UG/L	2.	U	UG/L			
VOC	74-83-9	Bromomethane	2.	U	UG/L	2.	U	UG/L			
VOC	75-15-0	Carbon Disulfide	2.	U	UG/L	2.	U	UG/L			
VOC	56-23-5	Carbon Tetrachloride	2.	U	UG/L	2.	U	UG/L			
VOC	108-90-7	Chlorobenzene	2.	U	UG/L	2.	U	UG/L			
VOC	75-00-3	Chloroethane	2.	U	UG/L	2.	U	UG/L			
VOC	67-66-3	Chloroform	2.	U	UG/L	2.	U	UG/L			
VOC	74-87-3	Chloromethane	2.	U	UG/L	2.	U	UG/L			
VOC	156-59-2	Cis-1,2-Dichloroethene	2.	U	UG/L	2.	U	UG/L			
VOC	124-48-1	Dibromochloromethane	2.	U	UG/L	2.	U	UG/L			
VOC	74-95-3	Dibromomethane	2.	U	UG/L	2.	U	UG/L			
VOC	75-71-8	Dichlorodifluoromethane	2.	U	UG/L	2.	U	UG/L			
VOC	60-29-7	Diethyl Ether	2.	U	UG/L	2.	U	UG/L			
VOC	108-20-3	Di-Isopropyl Ether	2.	U	UG/L	2.	U	UG/L			
VOC	637-92-3	Ethyl Tertiary-Butyl Ether	2.	U	UG/L	2.	U	UG/L			
VOC	100-41-4	Ethylbenzene	2.	U	UG/L	2.	U	UG/L			
VOC	V-87-68-3	Hexachlorobutadiene	2.	U	UG/L	2.	U	UG/L			
VOC	98-82-8	Isopropylbenzene	2.	U	UG/L	2.	U	UG/L			
VOC	75-09-2	Methylene Chloride	2.	U	UG/L	2.	U	UG/L			
VOC	1634-04-4	Methyl-Tert-Butyl-Ether (Mtbe)	2.	U	UG/L	2.	U	UG/L			
VOC	V-91-20-3	Naphthalene	2.	U	UG/L	2.	U	UG/L			
VOC	104-51-8	N-Butylbenzene	2.	U	UG/L	2.	U	UG/L			
VOC	103-65-1	N-Propylbenzene	2.	U	UG/L	2.	U	UG/L			
VOC	99-87-6	P-Isopropyltoluene	2.	U	UG/L	2.	U	UG/L			
VOC	135-98-8	Sec-Butylbenzene	2.	U	UG/L	2.	U	UG/L			
VOC	100-42-5	Styrene	2.	U	UG/L	2.	U	UG/L			
VOC	98-06-6	Tert-Butylbenzene	2.	U	UG/L	2.	U	UG/L			
VOC	994-05-8	Tertiary-Amyl Methyl Ether	2.	U	UG/L	2.	U	UG/L			
VOC	127-18-4	Tetrachloroethene	2.	U	UG/L	2.	U	UG/L			
VOC	108-88-3	Toluene	2.	U	UG/L	2.	U	UG/L			
VOC	156-60-5	Trans-1,2-Dichloroethene	2.	U	UG/L	2.	U	UG/L			
VOC	79-01-6	Trichloroethene	2.	U	UG/L	2.	U	UG/L			
VOC	75-69-4	Trichlorofluoromethane	2.	U	UG/L	2.	U	UG/L			
VOC	75-01-4	Vinyl Chloride	2.	U	UG/L	2.	U	UG/L			
VOC	75-34-3	1,1-Dichloroethane	2.	U	UG/L	2.	U	UG/L			
VOC	75-35-4	1,1-Dichloroethene	2.	U	UG/L	2.	U	UG/L			
VOC	563-58-6	1,1-Dichloropropene	2.	U	UG/L	2.	U	UG/L			
VOC	71-55-6	1,1,1-Trichloroethane	2.	U	UG/L	2.	U	UG/L			
VOC	630-20-6	1,1,1,2-Tetrachloroethane	2.	U	UG/L	2.	U	UG/L			
VOC	79-00-5	1,1,2-Trichloroethane	2.	U	UG/L	2.	U	UG/L			
VOC	79-34-5	1,1,2,2-Tetrachloroethane	2.	U	UG/L	2.	U	UG/L			
VOC	106-93-4	1,2-Dibromoethane	2.	U	UG/L	2.	U	UG/L			
VOC	96-12-8	1,2-Dibromo-3-Chloropropane	2.	U	UG/L	2.	U	UG/L			
VOC	V-95-50-1	1,2-Dichlorobenzene	2.	U	UG/L	2.	U	UG/L			
VOC	107-06-2	1,2-Dichloroethane	2.	U	UG/L	2.	U	UG/L			
VOC	17060-07-0	1,2-Dichloroethane-D4	108.		PCT_REC	106.		PCT_REC			
VOC	78-87-5	1,2-Dichloropropane	2.	U	UG/L	2.	U	UG/L			
VOC	87-61-6	1,2,3-Trichlorobenzene	2.	U	UG/L	2.	U	UG/L			
VOC	96-18-4	1,2,3-Trichloropropane	2.	U	UG/L	2.	U	UG/L			
VOC	V-120-82-1	1,2,4-Trichlorobenzene	2.	U	UG/L	2.	U	UG/L			
VOC	95-63-6	1,2,4-Trimethylbenzene	2.	U	UG/L	2.	U	UG/L			
VOC	V-541-73-1	1,3-Dichlorobenzene	2.	U	UG/L	2.	U	UG/L			
VOC	142-28-9	1,3-Dichloropropane	2.	U	UG/L	2.	U	UG/L			
VOC	108-67-8	1,3,5-Trimethylbenzene	2.	U	UG/L	2.	U	UG/L			
VOC	V-106-46-7	1,4-Dichlorobenzene	2.	U	UG/L	2.	U	UG/L			
VOC	123-91-1	1,4-Dioxane (P-Dioxane)	100.	U	UG/L	100.	U	UG/L			
VOC	78-93-3	2-Butanone	2.	U	UG/L	2.	U	UG/L			
VOC	95-49-8	2-Chlorotoluene	2.	U	UG/L	2.	U	UG/L			
VOC	591-78-6	2-Hexanone	2.	U	UG/L	2.	U	UG/L			
VOC	594-20-7	2,2-Dichloropropane	2.	U	UG/L	2.	U	UG/L			
VOC	106-43-4	4-Chlorotoluene	2.	U	UG/L	2.	U	UG/L			
VOC	108-10-1	4-Methyl-2-Pentanone	2.	U	UG/L	2.	U	UG/L			
VOC	542-75-6	Total 1,3-Dichloropropene	4.	U	UG/L	4.	U	UG/L			
VOC	1330-20-7	Xylene (Total)	6.	U	UG/L	6.	U	UG/L			
VOCSURR	1868-53-7	Dibromofluoromethane	101.		PCT_REC	104.		PCT_REC			
VOCSURR	2037-26-5	Toluene-D8	91.		PCT_REC	102.		PCT_REC			
VOCSURR	460-00-4	4-Bromofluorobenzene	98.		PCT_REC	101.		PCT_REC			

Attachment B
Sawyer Street CDF 2008 Groundwater Monitoring Chemistry Data

		Station Id	MW-4A		MW-4A		MW-5	
		Northing	2701422.		2701422.		2701437.	
		Easting	814875.		814875.		814876.	
		Depth Top	24.46		24.46		19.03	
		Depth Unit	FT		FT		FT	
		Start Date	11/07/2008		11/07/2008		11/06/2008	
		Samp Id	MW-04A-110708		MW-04A-110708		MW-005-110608	
		Matrix	GW		GW		GW	
		Field Qc Code	SA		SA		SA	
		Lab Qc Code	SA		SADL1		SA	
		Fraction	TOTAL		TOTAL		TOTAL	
Class	Param Code	Description	Result	Final Qual	Unit	Result	Final Qual	Unit
AR	12674-11-2	Aroclor 1016				1.4	UD	UG/L
AR	11104-28-2	Aroclor 1221				1.4	UD	UG/L
AR	11141-16-5	Aroclor 1232				1.4	UD	UG/L
AR	53469-21-9	Aroclor 1242				1.4	UD	UG/L
AR	12672-29-6	Aroclor 1248				1.4	UD	UG/L
AR	11097-69-1	Aroclor 1254				1.4	UD	UG/L
AR	11096-82-5	Aroclor 1260				1.4	UD	UG/L
ARSURR	AS-2051-24-3	DecaCB - Aroclor Surrogate				60.		PCT_REC
ARSURR	AS-877-09-8	Tetrachloro-meta-xylene - Aroclor Surrogate				1,508.		PCT_REC
MET	7440-43-9	Cadmium	0.02744		UG/L			0.05179
MET	7440-47-3	Chromium	5.618		UG/L			4.04
MET	7440-50-8	Copper	2.27		UG/L			2.102
MET	7439-92-1	Lead	0.1748	U	UG/L			0.274
SVOC	109-99-9	Tetrahydrofuran	2.	U	UG/L			2.
TSS	TSS	Total suspended solids						
VOC	67-64-1	Acetone	5.32		UG/L			5.
VOC	71-43-2	Benzene	2.	U	UG/L			2.
VOC	108-86-1	Bromobenzene	2.	U	UG/L			2.
VOC	74-97-5	Bromochloromethane	2.	U	UG/L			2.
VOC	75-27-4	Bromodichloromethane	2.	U	UG/L			2.
VOC	75-25-2	Bromofrom	2.	U	UG/L			2.
VOC	74-83-9	Bromomethane	2.	U	UG/L			2.
VOC	75-15-0	Carbon Disulfide	2.	U	UG/L			2.
VOC	56-23-5	Carbon Tetrachloride	2.	U	UG/L			2.
VOC	108-90-7	Chlorobenzene	2.	U	UG/L			2.
VOC	75-00-3	Chloroethane	2.	U	UG/L			2.
VOC	67-66-3	Chloroform	2.	U	UG/L			2.
VOC	74-87-3	Chloromethane	2.	U	UG/L			2.
VOC	156-59-2	Cis-1,2-Dichloroethene	2.	U	UG/L			2.
VOC	124-48-1	Dibromochloromethane	2.	U	UG/L			2.
VOC	74-95-3	Dibromomethane	2.	U	UG/L			2.
VOC	75-71-8	Dichlorodifluoromethane	2.	U	UG/L			2.
VOC	60-29-7	Diethyl Ether	2.	U	UG/L			2.
VOC	108-20-3	Di-Isopropyl Ether	2.	U	UG/L			2.
VOC	637-92-3	Ethyl Tertiary-Butyl Ether	2.	U	UG/L			2.
VOC	100-41-4	Ethylbenzene	2.	U	UG/L			2.
VOC	V-87-68-3	Hexachlorobutadiene	2.	U	UG/L			2.
VOC	98-82-8	Isopropylbenzene	2.	U	UG/L			2.
VOC	75-09-2	Methylene Chloride	2.	U	UG/L			2.
VOC	1634-04-4	Methyl-Tert-Butyl-Ether (Mtbe)	2.	U	UG/L			2.
VOC	V-91-20-3	Naphthalene	2.	U	UG/L			2.
VOC	104-51-8	N-Butylbenzene	2.	U	UG/L			2.
VOC	103-65-1	N-Propylbenzene	2.	U	UG/L			2.
VOC	99-87-6	P-Isopropyltoluene	2.	U	UG/L			2.
VOC	135-98-8	Sec-Butylbenzene	2.	U	UG/L			2.
VOC	100-42-5	Styrene	2.	U	UG/L			2.
VOC	98-06-6	Tert-Butylbenzene	2.	U	UG/L			2.
VOC	994-05-8	Tertiary-Amyl Methyl Ether	2.	U	UG/L			2.
VOC	127-18-4	Tetrachloroethene	2.	U	UG/L			2.
VOC	108-88-3	Toluene	2.	U	UG/L			2.
VOC	156-60-5	Trans-1,2-Dichloroethene	2.	U	UG/L			2.
VOC	79-01-6	Trichloroethene	2.	U	UG/L			2.
VOC	75-69-4	Trichlorofluoromethane	2.	U	UG/L			2.
VOC	75-01-4	Vinyl Chloride	2.	U	UG/L			2.
VOC	75-34-3	1,1-Dichloroethane	2.	U	UG/L			2.
VOC	75-35-4	1,1-Dichloroethene	2.	U	UG/L			2.
VOC	563-58-6	1,1-Dichloropropene	2.	U	UG/L			2.
VOC	71-55-6	1,1,1-Trichloroethane	2.	U	UG/L			2.
VOC	630-20-6	1,1,1,2-Tetrachloroethane	2.	U	UG/L			2.
VOC	79-00-5	1,1,2-Trichloroethane	2.	U	UG/L			2.
VOC	79-34-5	1,1,2,2-Tetrachloroethane	2.	U	UG/L			2.
VOC	106-93-4	1,2-Dibromoethane	2.	U	UG/L			2.
VOC	96-12-8	1,2-Dibromo-3-Chloropropane	2.	U	UG/L			2.
VOC	V-95-50-1	1,2-Dichlorobenzene	2.	U	UG/L			2.
VOC	107-06-2	1,2-Dichloroethane	2.	U	UG/L			2.
VOC	17060-07-0	1,2-Dichloroethane-D4	106.		PCT_REC			105.
VOC	78-87-5	1,2-Dichloropropane	2.	U	UG/L			2.
VOC	87-61-6	1,2,3-Trichlorobenzene	2.	U	UG/L			2.
VOC	96-18-4	1,2,3-Trichloropropane	2.	U	UG/L			2.
VOC	V-120-82-1	1,2,4-Trichlorobenzene	2.	U	UG/L			2.
VOC	95-63-6	1,2,4-Trimethylbenzene	2.	U	UG/L			2.
VOC	V-541-73-1	1,3-Dichlorobenzene	2.	U	UG/L			2.
VOC	142-28-9	1,3-Dichloropropane	2.	U	UG/L			2.
VOC	108-67-8	1,3,5-Trimethylbenzene	2.	U	UG/L			2.
VOC	V-106-46-7	1,4-Dichlorobenzene	2.	U	UG/L			2.
VOC	123-91-1	1,4-Dioxane (P-Dioxane)	100.	U	UG/L			100.
VOC	78-93-3	2-Butanone	2.	U	UG/L			2.
VOC	95-49-8	2-Chlorotoluene	2.	U	UG/L			2.
VOC	591-78-6	2-Hexanone	2.	U	UG/L			2.
VOC	594-20-7	2,2-Dichloropropane	2.	U	UG/L			2.
VOC	106-43-4	4-Chlorotoluene	2.	U	UG/L			2.
VOC	108-10-1	4-Methyl-2-Pentanone	2.	U	UG/L			2.
VOC	542-75-6	Total 1,3-Dichloropropene	4.	U	UG/L			4.
VOC	1330-20-7	Xylene (Total)	6.	U	UG/L			6.
VOCSURR	1868-53-7	Dibromofluoromethane	104.		PCT_REC			104.
VOCSURR	2037-26-5	Toluene-D8	101.		PCT_REC			101.
VOCSURR	460-00-4	4-Bromofluorobenzene	101.		PCT_REC			99.

Attachment B
Sawyer Street CDF 2008 Groundwater Monitoring Chemistry Data

		Station Id	MW-6		MW-7A			
		Northing	2701648.		2701234.			
		Easting	814558.		814575.			
		Depth Top	19.19		14.85			
		Depth Unit	FT		FT			
		Start Date	11/06/2008		11/06/2008			
		Samp Id	MW-006-110608		MW-07A-110608			
		Matrix	GW		GW			
		Field Qc Code	SA		SA			
		Lab Qc Code	SA		SA			
		Fraction	TOTAL		TOTAL			
Class	Param Code	Description	Result	Final Qual	Unit	Result	Final Qual	Unit
AR	12674-11-2	Aroclor 1016	0.047	UJ	UG/L	0.048	U	UG/L
AR	11104-28-2	Aroclor 1221	0.047	UJ	UG/L	0.048	U	UG/L
AR	11141-16-5	Aroclor 1232	0.047	UJ	UG/L	0.048	U	UG/L
AR	53469-21-9	Aroclor 1242	0.047	UJ	UG/L	0.048	U	UG/L
AR	12672-29-6	Aroclor 1248	0.047	UJ	UG/L	0.048	U	UG/L
AR	11097-69-1	Aroclor 1254	0.047	UJ	UG/L	0.048	U	UG/L
AR	11096-82-5	Aroclor 1260	0.047	UJ	UG/L	0.048	U	UG/L
ARSURR	AS-2051-24-3	DecaCB - Aroclor Surrogate	50.		PCT_REC	87.		PCT_REC
ARSURR	AS-877-09-8	Tetrachloro-meta-xylene - Aroclor Surrogate	87.		PCT_REC	110.		PCT_REC
MET	7440-43-9	Cadmium	0.0516		UG/L	0.6483		UG/L
MET	7440-47-3	Chromium	0.3464	U	UG/L	1.011	U	UG/L
MET	7440-50-8	Copper	0.6682	U	UG/L	4.991		UG/L
MET	7439-92-1	Lead	0.1827	U	UG/L	0.02256	U	UG/L
SVOC	109-99-9	Tetrahydrofuran	2.	U	UG/L	2.	U	UG/L
TSS	TSS	Total suspended solids						
VOC	67-64-1	Acetone	23.3		UG/L	5.	U	UG/L
VOC	71-43-2	Benzene	2.	U	UG/L	2.	U	UG/L
VOC	108-86-1	Bromobenzene	2.	U	UG/L	2.	U	UG/L
VOC	74-97-5	Bromochloromethane	2.	U	UG/L	2.	U	UG/L
VOC	75-27-4	Bromodichloromethane	2.	U	UG/L	2.	U	UG/L
VOC	75-25-2	Bromoform	2.	U	UG/L	2.	U	UG/L
VOC	74-83-9	Bromomethane	2.	U	UG/L	2.	U	UG/L
VOC	75-15-0	Carbon Disulfide	2.	U	UG/L	2.	U	UG/L
VOC	56-23-5	Carbon Tetrachloride	2.	U	UG/L	2.	U	UG/L
VOC	108-90-7	Chlorobenzene	2.	U	UG/L	2.	U	UG/L
VOC	75-00-3	Chloroethane	2.	U	UG/L	2.	U	UG/L
VOC	67-66-3	Chloroform	2.	U	UG/L	2.	U	UG/L
VOC	74-87-3	Chloromethane	2.	U	UG/L	2.	U	UG/L
VOC	156-59-2	Cis-1,2-Dichloroethene	2.	U	UG/L	2.	U	UG/L
VOC	124-48-1	Dibromochloromethane	2.	U	UG/L	2.	U	UG/L
VOC	74-95-3	Dibromomethane	2.	U	UG/L	2.	U	UG/L
VOC	75-71-8	Dichlorodifluoromethane	2.	U	UG/L	2.	U	UG/L
VOC	60-29-7	Diethyl Ether	2.	U	UG/L	2.	U	UG/L
VOC	108-20-3	Di-Isopropyl Ether	2.	U	UG/L	2.	U	UG/L
VOC	637-92-3	Ethyl Tertiary-Butyl Ether	2.	U	UG/L	2.	U	UG/L
VOC	100-41-4	Ethylbenzene	2.	U	UG/L	2.	U	UG/L
VOC	V-87-68-3	Hexachlorobutadiene	2.	U	UG/L	2.	U	UG/L
VOC	98-82-8	Isopropylbenzene	2.	U	UG/L	2.	U	UG/L
VOC	75-09-2	Methylene Chloride	2.	U	UG/L	2.	U	UG/L
VOC	1634-04-4	Methyl-Tert-Butyl-Ether (Mtbe)	2.	U	UG/L	2.	U	UG/L
VOC	V-91-20-3	Naphthalene	2.	U	UG/L	2.	U	UG/L
VOC	104-51-8	N-Butylbenzene	2.	U	UG/L	2.	U	UG/L
VOC	103-65-1	N-Propylbenzene	2.	U	UG/L	2.	U	UG/L
VOC	99-87-6	P-Isopropyltoluene	2.	U	UG/L	2.	U	UG/L
VOC	135-98-8	Sec-Butylbenzene	2.	U	UG/L	2.	U	UG/L
VOC	100-42-5	Styrene	2.	U	UG/L	2.	U	UG/L
VOC	98-06-6	Tert-Butylbenzene	2.	U	UG/L	2.	U	UG/L
VOC	994-05-8	Tertiary-Amyl Methyl Ether	2.	U	UG/L	2.	U	UG/L
VOC	127-18-4	Tetrachloroethene	2.	U	UG/L	2.	U	UG/L
VOC	108-88-3	Toluene	2.	U	UG/L	2.	U	UG/L
VOC	156-60-5	Trans-1,2-Dichloroethene	2.	U	UG/L	2.	U	UG/L
VOC	79-01-6	Trichloroethene	2.	U	UG/L	2.	U	UG/L
VOC	75-69-4	Trichlorofluoromethane	2.	U	UG/L	2.	U	UG/L
VOC	75-01-4	Vinyl Chloride	2.	U	UG/L	2.	U	UG/L
VOC	75-34-3	1,1-Dichloroethane	2.	U	UG/L	2.	U	UG/L
VOC	75-35-4	1,1-Dichloroethene	2.	U	UG/L	2.	U	UG/L
VOC	563-58-6	1,1-Dichloropropene	2.	U	UG/L	2.	U	UG/L
VOC	71-55-6	1,1,1-Trichloroethane	2.	U	UG/L	2.	U	UG/L
VOC	630-20-6	1,1,1,2-Tetrachloroethane	2.	U	UG/L	2.	U	UG/L
VOC	79-00-5	1,1,2-Trichloroethane	2.	U	UG/L	2.	U	UG/L
VOC	79-34-5	1,1,2,2-Tetrachloroethane	2.	U	UG/L	2.	U	UG/L
VOC	106-93-4	1,2-Dibromoethane	2.	U	UG/L	2.	U	UG/L
VOC	96-12-8	1,2-Dibromo-3-Chloropropane	2.	U	UG/L	2.	U	UG/L
VOC	V-95-50-1	1,2-Dichlorobenzene	2.	U	UG/L	2.	U	UG/L
VOC	107-06-2	1,2-Dichloroethane	2.	U	UG/L	2.	U	UG/L
VOC	17060-07-0	1,2-Dichloroethane-D4	106.		PCT_REC	103.		PCT_REC
VOC	78-87-5	1,2-Dichloropropane	2.	U	UG/L	2.	U	UG/L
VOC	87-61-6	1,2,3-Trichlorobenzene	2.	U	UG/L	2.	U	UG/L
VOC	96-18-4	1,2,3-Trichloropropane	2.	U	UG/L	2.	U	UG/L
VOC	V-120-82-1	1,2,4-Trichlorobenzene	2.	U	UG/L	2.	U	UG/L
VOC	95-63-6	1,2,4-Trimethylbenzene	2.	U	UG/L	2.	U	UG/L
VOC	V-541-73-1	1,3-Dichlorobenzene	2.	U	UG/L	2.	U	UG/L
VOC	142-28-9	1,3-Dichloropropane	2.	U	UG/L	2.	U	UG/L
VOC	108-67-8	1,3,5-Trimethylbenzene	2.	U	UG/L	2.	U	UG/L
VOC	V-106-46-7	1,4-Dichlorobenzene	2.	U	UG/L	2.	U	UG/L
VOC	123-91-1	1,4-Dioxane (P-Dioxane)	100.	U	UG/L	100.	U	UG/L
VOC	78-93-3	2-Butanone	2.	U	UG/L	2.	U	UG/L
VOC	95-49-8	2-Chlorotoluene	2.	U	UG/L	2.	U	UG/L
VOC	591-78-6	2-Hexanone	2.	U	UG/L	2.	U	UG/L
VOC	594-20-7	2,2-Dichloropropane	2.	U	UG/L	2.	U	UG/L
VOC	106-43-4	4-Chlorotoluene	2.	U	UG/L	2.	U	UG/L
VOC	108-10-1	4-Methyl-2-Pentanone	2.	U	UG/L	2.	U	UG/L
VOC	542-75-6	Total 1,3-Dichloropropene	4.	U	UG/L	4.	U	UG/L
VOC	1330-20-7	Xylene (Total)	6.	U	UG/L	6.	U	UG/L
VOCSURR	1868-53-7	Dibromofluoromethane	99.		PCT_REC	103.		PCT_REC
VOCSURR	2037-26-5	Toluene-D8	91.		PCT_REC	100.		PCT_REC
VOCSURR	460-00-4	4-Bromofluorobenzene	99.		PCT_REC	99.		PCT_REC

TestAmerica Burlington Data Qualifier Definitions

Organic

- U: Compound analyzed but not detected at a concentration above the reporting limit.
- J: Estimated value.
- N: Indicates presumptive evidence of a compound. This flag is used only for tentatively identified compounds (TICs) where the identification of a compound is based on a mass spectral library search.
- P: SW-846: The relative percent difference for detected concentrations between two GC columns is greater than 40%. Unless otherwise specified the higher of the two values is reported on the Form I.
- CLP SOW: Greater than 25% difference for detected concentrations between two GC columns. Unless otherwise specified the lower of the two values is reported on the Form I.
- C: Pesticide result whose identification has been confirmed by GC/MS.
- B: Analyte is found in the sample and the associated method blank. The flag is used for tentatively identified compounds as well as positively identified compounds.
- E: Compounds whose concentrations exceed the upper limit of the calibration range of the instrument for that specific analysis.
- D: Concentrations identified from analysis of the sample at a secondary dilution.
- A: Tentatively identified compound is a suspected aldol condensation product.
- X,Y,Z: Laboratory defined flags that may be used alone or combined, as needed. If used, the description of the flag is defined in the project narrative.

Inorganic/Metals

- E: Reported value is estimated due to the presence of interference.
- N: Matrix spike sample recovery is not within control limits.
- * Duplicate sample analysis is not within control limits.
- B: The result reported is less than the reporting limit but greater than the instrument detection limit.
- U: Analyte was analyzed for but not detected above the reporting limit.

Method Codes:

P ICP-AES
MS ICP-MS
CV Cold Vapor AA
AS Semi-Automated Spectrophotometric

Attachment B
Code List - Validation Qualifiers

NBHPROD_CODE_LIST		
FIELD_NAME	CODE	DESCR
VALID_QUAL	D	Result is reported at a secondary dilution factor. Spike and surrogate recoveries may have been diluted below quantifiable levels.
VALID_QUAL	EB	Indicate that sampling error has potentially affected the sample results. Detected in Equipment Blank
VALID_QUAL	J	For organics analysis, indicates an estimated value. The result is less than the reporting limit, but greater than 1/2 reporting limit.
VALID_QUAL	M	EMPC value is associated with this result.
VALID_QUAL	R	For organics analysis, rejected Value. The R qualifier will be assigned by the data validation team.
VALID_QUAL	U	For organics analysis, indicates the compound was analyzed for, but not detected above the reporting limit. ND MAY NOT be used in place of U.
VALID_QUAL	ZZZ	Results were qualified as unused

Laboratory Report – PCB Data

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TestAmerica
South Burlington, VT

Sample Data Summary
Package

SDG: 125617

June 16, 2008

TestAmerica Laboratories, Inc.

Ms. Yixian Zhang
Battele
397 Washington Street
Duxbury, MA 02332

Re: Laboratory Project No. 28000
Case: 28000; SDG: 125617

Dear Ms. Zhang:

Enclosed are the analytical results for the samples that were received by TestAmerica Burlington on May 22nd, 2008. Laboratory identification numbers were assigned, and designated as follows:

<u>Lab ID</u>	<u>Client Sample ID</u>	<u>Sample Date</u>	<u>Sample Matrix</u>
Received: 05/22/08 ETR No: 125617			
752926	MW-07A-051908	05/19/08	WATER
752926MS	MW-07A-051908MS	05/19/08	WATER
752926MD	MW-07A-051908MSD	05/19/08	WATER
752927	MW-006-051908	05/19/08	WATER
752928	MW-001-051908	05/19/08	WATER
752929	MW-005-052008	05/20/08	WATER
752930	MW-005-052008-REP	05/20/08	WATER
752931	MW-04A-052008	05/20/08	WATER
752932	MW-003-052008	05/20/08	WATER
752933	EB-052008	05/20/08	WATER

Documentation of the condition of the samples at the time of their receipt and any exception to the laboratory's Sample Acceptance Policy is documented in the Sample Handling section of this submittal.

SW846 8082 – PCB Aroclors:

Due to inherent software limitations, the sample identifications for MW-07A-051908, MW-07A-051908MS, MW-07A-051908MSD, MW-006-051908, MW-001-051908, MW-005-052008, MW-005-052008-REP, MW-04A-052008 and MW-003-052008 were truncated.

The analysis of the method blank, MBLK052508A, exhibited a percent recovery (58%) for the surrogate compound Tetrachloro-m-xylene that was marginally below quality control criteria (60-115%) at 58% on the RTX-5 analytical column only.

The matrix spike duplicate analysis of sample MW-07A-051908 yielded a percent recovery of the surrogate compound Decachlorobiphenyl that exceeded the advisory control limits (60-115%) at 138% on the RTX-5 analytical column only.

The analysis of sample MW-006-051908 yielded a percent recovery of the surrogate compound Tetrachloro-m-xylene that was flagged as an outage on the RTX-35 analytical column because the percent recovery (60%) is at the advisory quality control lower limit (60-115%).

The analyses of samples MW-005-052008-REP (132%) and MW-04A-052008 (159%) exhibited percent recoveries of the surrogate compound Decachlorobiphenyl that exceeded the advisory control limits (60-115%) on the RTX-5 column only.

The analyses of samples MW-003-052008 and EB-052008 exhibited percent recoveries of the surrogate compound Tetrachloro-m-Oxylene that exceeded the advisory control limits (60-115%) on both analytical columns.

There are select Aroclor 1260 peaks flagged as outages in the Continuing Calibration Verification (CCVs) standards on the RTX-5 analytical column. The averages of the five quantitation peaks in each of these is below 15.0% difference criteria, therefore all the CCVs are within the control criteria.

Manual integration of quantitation peaks was performed where necessary. Documentation of each manual integration was provided in the supportive documentation. Secondary review was performed by the laboratory on all of the manual integrations within this submittal.

For dual column analyses, the laboratory reported the higher of the two confirmed results for each analyte.

Any reference within this report to Severn Trent Laboratories, Inc. or STL, should be understood to refer to TestAmerica Laboratories, Inc. (formerly known as Severn Trent Laboratories, Inc.) The analytical results associated with the samples presented in this test report were generated under a quality system that adheres to requirements specified in the NELAC standard. Release of the data in this test report and any associated electronic deliverables is authorized by the Laboratory Director's designee as verified by the following signature.

If there are any questions regarding this submittal, please contact me at 802 660-1990.

Sincerely,



Ron Pentkowski
Project Manager

Enclosure

TestAmerica Burlington Data Qualifier Definitions

Organic

- U: Compound analyzed but not detected at a concentration above the reporting limit.
- J: Estimated value.
- N: Indicates presumptive evidence of a compound. This flag is used only for tentatively identified compounds (TICs) where the identification of a compound is based on a mass spectral library search.
- P: SW-846: The relative percent difference for detected concentrations between two GC columns is greater than 40%. Unless otherwise specified the higher of the two values is reported on the Form I.
- CLP SOW: Greater than 25% difference for detected concentrations between two GC columns. Unless otherwise specified the lower of the two values is reported on the Form I.
- C: Pesticide result whose identification has been confirmed by GC/MS.
- B: Analyte is found in the sample and the associated method blank. The flag is used for tentatively identified compounds as well as positively identified compounds.
- E: Compounds whose concentrations exceed the upper limit of the calibration range of the instrument for that specific analysis.
- D: Concentrations identified from analysis of the sample at a secondary dilution.
- A: Tentatively identified compound is a suspected aldol condensation product.
- X,Y,Z: Laboratory defined flags that may be used alone or combined, as needed. If used, the description of the flag is defined in the project narrative.

Inorganic/Metals

- E: Reported value is estimated due to the presence of interference.
- N: Matrix spike sample recovery is not within control limits.
- * Duplicate sample analysis is not within control limits.
- B: The result reported is less than the reporting limit but greater than the instrument detection limit.
- U: Analyte was analyzed for but not detected above the reporting limit.

Method Codes:

- P ICP-AES
MS ICP-MS
CV Cold Vapor AA
AS Semi-Automated Spectrophotometric

Report to: Company: <u>Battelle</u> Address: <u>397 Washington St</u> <u>Dorchester, MA 02332</u> Contact: <u>Yixian Zhang</u> Phone: <u>781-952-5298</u> Fax: _____ Contract/ Quote: _____	Invoice to: Company: <u>Same</u> Address: _____ Contact: _____ Phone: _____ Fax: _____	ANALYSIS REQUESTED <div style="border: 1px solid black; padding: 5px; transform: rotate(-90deg); transform-origin: left top; position: absolute; left: 50px; top: 200px; font-size: 2em; font-weight: bold;">PCB Analyzers</div>	Lab Use Only Due Date: _____ Temp. of coolers when received (C°): <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:20%;">1</td> <td style="width:20%;">2</td> <td style="width:20%;">3</td> <td style="width:20%;">4</td> <td style="width:20%;">5</td> </tr> </table> Custody Seal N / Y Intact N / Y Screened For Radioactivity <input type="checkbox"/>	1	2	3	4	5
1	2	3	4	5				

Sampler's Name <u>Jessica Fahey</u>	Sampler's Signature
--	-------------------------

Proj. No.		Project Name				No./Type of Containers ²				Lab/Sample ID (Lab Use Only)
Matrix ¹	Date	Time	C o m p	G r a b	Identifying Marks of Sample(s)	VOA	A/G 1 Lt.	250 ml	P/O	
	G606442				New Bedford Harbor - Sawyer St GW					
W	5/19/08	1241		✓	MW-07A-051908 (Leisure for NES/MSD)		4			✓
W	5/19/08	1522		✓	MW-006-051908		2			✓
W	5/19/08	1742		✓	MW-001-051908		2			✓
W	5/20/08	1015		✓	MW-005-052008 (Rep ³)		2			✓
W	5/20/08	1015		✓	MW-005-052008-REP		1			✓
W	5/20/08	1227		✓	MW-04A-052008		2			✓
W	5/20/08	1432		✓	MW-003-052008		2			✓
W	5/20/08	1605		✓	P.B-052008		2			✓

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time	Remarks <u>CD Reassigned JMF 5/20/08</u>
	5/20/08	1800		05-20-08	0945	
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time	
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time	Client's delivery of samples constitutes acceptance of TestAmerica terms and conditions contained in the Price Schedule.

¹Matrix WW - Wastewater W - Water S - Soil L - Liquid A - Air bag C - Charcoal Tube SL - Sludge O - Oil
²Container VOA - 40 ml vial A/G - Amber / Or Glass 1 Liter 250 ml - Glass wide mouth P/O - Plastic or other _____

TestAmerica Cannot accept verbal changes.
Please Fax written changes to
(802) 660-1919

TAL-8234(1007)



Sample Data Summary – 8082 PCBS

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

005052008REP

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617
 Matrix: (soil/water) WATER Lab Sample ID: 752930
 Sample wt/vol: 1060 (g/mL) ML Lab File ID: 09JUN080949-R101
 % Moisture: _____ decanted: (Y/N) _____ Date Received: 05/22/08
 Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 05/25/08
 Concentrated Extract Volume: 1 (mL) Date Analyzed: 06/09/08
 Injection Volume: 1.0 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2-----	Aroclor-1016	0.047	U
11104-28-2-----	Aroclor-1221	0.047	U
11141-16-5-----	Aroclor-1232	0.047	U
53469-21-9-----	Aroclor-1242	0.047	U
12672-29-6-----	Aroclor-1248	0.047	U
11097-69-1-----	Aroclor-1254	0.047	U
11096-82-5-----	Aroclor-1260	0.047	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

07A051908

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617
 Matrix: (soil/water) WATER Lab Sample ID: 752926
 Sample wt/vol: 1040 (g/mL) ML Lab File ID: 09JUN080949-R041
 % Moisture: _____ decanted: (Y/N) _____ Date Received: 05/22/08
 Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 05/25/08
 Concentrated Extract Volume: 1 (mL) Date Analyzed: 06/09/08
 Injection Volume: 1.0 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		Q
12674-11-2-----	Aroclor-1016	0.048	U	
11104-28-2-----	Aroclor-1221	0.048	U	
11141-16-5-----	Aroclor-1232	0.048	U	
53469-21-9-----	Aroclor-1242	0.048	U	
12672-29-6-----	Aroclor-1248	0.048	U	
11097-69-1-----	Aroclor-1254	0.048	U	
11096-82-5-----	Aroclor-1260	0.048	U	

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

EB-052008

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Matrix: (soil/water) WATER Lab Sample ID: 752933

Sample wt/vol: 1060 (g/mL) ML Lab File ID: 09JUN080949-R141

% Moisture: _____ decanted: (Y/N) _____ Date Received: 05/22/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 05/25/08

Concentrated Extract Volume: 1 (mL) Date Analyzed: 06/09/08

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

12674-11-2-----	Aroclor-1016	0.047	U
11104-28-2-----	Aroclor-1221	0.047	U
11141-16-5-----	Aroclor-1232	0.047	U
53469-21-9-----	Aroclor-1242	0.047	U
12672-29-6-----	Aroclor-1248	0.047	U
11097-69-1-----	Aroclor-1254	0.047	U
11096-82-5-----	Aroclor-1260	0.047	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

MW001051908

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Matrix: (soil/water) WATER Lab Sample ID: 752928

Sample wt/vol: 1060 (g/mL) ML Lab File ID: 09JUN080949-R081

% Moisture: _____ decanted: (Y/N) _____ Date Received: 05/22/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 05/25/08

Concentrated Extract Volume: 1 (mL) Date Analyzed: 06/09/08

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

12674-11-2-----	Aroclor-1016	0.047	U
11104-28-2-----	Aroclor-1221	0.047	U
11141-16-5-----	Aroclor-1232	0.047	U
53469-21-9-----	Aroclor-1242	0.047	U
12672-29-6-----	Aroclor-1248	0.047	U
11097-69-1-----	Aroclor-1254	0.047	U
11096-82-5-----	Aroclor-1260	0.047	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

MW003052008

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Matrix: (soil/water) WATER Lab Sample ID: 752932

Sample wt/vol: 1060 (g/mL) ML Lab File ID: 09JUN080949-R131

% Moisture: _____ decanted: (Y/N) _____ Date Received: 05/22/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 05/25/08

Concentrated Extract Volume: 1 (mL) Date Analyzed: 06/09/08

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

12674-11-2-----	Aroclor-1016	0.047	U
11104-28-2-----	Aroclor-1221	0.047	U
11141-16-5-----	Aroclor-1232	0.047	U
53469-21-9-----	Aroclor-1242	0.047	U
12672-29-6-----	Aroclor-1248	0.047	U
11097-69-1-----	Aroclor-1254	0.047	U
11096-82-5-----	Aroclor-1260	0.047	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

MW005052008

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Matrix: (soil/water) WATER Lab Sample ID: 752929

Sample wt/vol: 1060 (g/mL) ML Lab File ID: 09JUN080949-R091

% Moisture: _____ decanted: (Y/N) _____ Date Received: 05/22/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 05/25/08

Concentrated Extract Volume: 1 (mL) Date Analyzed: 06/09/08

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

12674-11-2-----	Aroclor-1016	0.047	U
11104-28-2-----	Aroclor-1221	0.047	U
11141-16-5-----	Aroclor-1232	0.047	U
53469-21-9-----	Aroclor-1242	0.047	U
12672-29-6-----	Aroclor-1248	0.047	U
11097-69-1-----	Aroclor-1254	0.047	U
11096-82-5-----	Aroclor-1260	0.047	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

MW006051908

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Matrix: (soil/water) WATER Lab Sample ID: 752927

Sample wt/vol: 1040 (g/mL) ML Lab File ID: 09JUN080949-R071

% Moisture: _____ decanted: (Y/N) _____ Date Received: 05/22/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 05/25/08

Concentrated Extract Volume: 1 (mL) Date Analyzed: 06/09/08

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

12674-11-2-----	Aroclor-1016	0.048	U
11104-28-2-----	Aroclor-1221	0.048	U
11141-16-5-----	Aroclor-1232	0.048	U
53469-21-9-----	Aroclor-1242	0.048	U
12672-29-6-----	Aroclor-1248	0.048	U
11097-69-1-----	Aroclor-1254	0.048	U
11096-82-5-----	Aroclor-1260	0.048	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

MW04A052008

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Matrix: (soil/water) WATER Lab Sample ID: 752931

Sample wt/vol: 1060 (g/mL) ML Lab File ID: 09JUN080949-R121

% Moisture: _____ decanted: (Y/N) _____ Date Received: 05/22/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 05/25/08

Concentrated Extract Volume: 1 (mL) Date Analyzed: 06/09/08

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

12674-11-2-----	Aroclor-1016	0.047	U
11104-28-2-----	Aroclor-1221	0.047	U
11141-16-5-----	Aroclor-1232	0.047	U
53469-21-9-----	Aroclor-1242	0.043	J
12672-29-6-----	Aroclor-1248	0.047	U
11097-69-1-----	Aroclor-1254	0.047	U
11096-82-5-----	Aroclor-1260	0.047	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

MBLK052508A

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Matrix: (soil/water) WATER Lab Sample ID: MBLK052508A

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 09JUN080949-R011

% Moisture: _____ decanted: (Y/N) _____ Date Received: _____

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 05/25/08

Concentrated Extract Volume: 1 (mL) Date Analyzed: 06/09/08

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

12674-11-2-----	Aroclor-1016	0.050	U
11104-28-2-----	Aroclor-1221	0.050	U
11141-16-5-----	Aroclor-1232	0.050	U
53469-21-9-----	Aroclor-1242	0.050	U
12672-29-6-----	Aroclor-1248	0.050	U
11097-69-1-----	Aroclor-1254	0.050	U
11096-82-5-----	Aroclor-1260	0.050	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

PBLK_SCU

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Matrix: (soil/water) WATER Lab Sample ID: PBLK_SCU

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 09JUN080949-R031

% Moisture: _____ decanted: (Y/N) _____ Date Received: _____

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: _____

Concentrated Extract Volume: 1 (mL) Date Analyzed: 06/09/08

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

12674-11-2-----	Aroclor-1016	0.050	U
11104-28-2-----	Aroclor-1221	0.050	U
11141-16-5-----	Aroclor-1232	0.050	U
53469-21-9-----	Aroclor-1242	0.050	U
12672-29-6-----	Aroclor-1248	0.050	U
11097-69-1-----	Aroclor-1254	0.050	U
11096-82-5-----	Aroclor-1260	0.050	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

07A051908MS

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Matrix: (soil/water) WATER Lab Sample ID: 752926MS

Sample wt/vol: 1050 (g/mL) ML Lab File ID: 09JUN080949-R051

% Moisture: _____ decanted: (Y/N) _____ Date Received: 05/22/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 05/25/08

Concentrated Extract Volume: 1 (mL) Date Analyzed: 06/09/08

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2-----	Aroclor-1016	0.41	
11104-28-2-----	Aroclor-1221	0.048	U
11141-16-5-----	Aroclor-1232	0.048	U
53469-21-9-----	Aroclor-1242	0.048	U
12672-29-6-----	Aroclor-1248	0.048	U
11097-69-1-----	Aroclor-1254	0.048	U
11096-82-5-----	Aroclor-1260	0.42	

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

07A051908MSD

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Matrix: (soil/water) WATER Lab Sample ID: 752926MD

Sample wt/vol: 1040 (g/mL) ML Lab File ID: 09JUN080949-R061

% Moisture: _____ decanted: (Y/N) _____ Date Received: 05/22/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 05/25/08

Concentrated Extract Volume: 1 (mL) Date Analyzed: 06/09/08

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

12674-11-2-----	Aroclor-1016	0.42	
11104-28-2-----	Aroclor-1221	0.048	U
11141-16-5-----	Aroclor-1232	0.048	U
53469-21-9-----	Aroclor-1242	0.048	U
12672-29-6-----	Aroclor-1248	0.048	U
11097-69-1-----	Aroclor-1254	0.048	U
11096-82-5-----	Aroclor-1260	0.43	

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

A052508LCS

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Matrix: (soil/water) WATER Lab Sample ID: A052508LCS

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 09JUN080949-R021

% Moisture: _____ decanted: (Y/N) _____ Date Received: _____

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 05/25/08

Concentrated Extract Volume: 1 (mL) Date Analyzed: 06/09/08

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2-----	Aroclor-1016	0.38	
11104-28-2-----	Aroclor-1221	0.050	U
11141-16-5-----	Aroclor-1232	0.050	U
53469-21-9-----	Aroclor-1242	0.050	U
12672-29-6-----	Aroclor-1248	0.050	U
11097-69-1-----	Aroclor-1254	0.050	U
11096-82-5-----	Aroclor-1260	0.42	

FORM 2
WATER OTHER SURROGATE RECOVERY

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

GC Column(1): RTX-5 ID: 0.25 (mm) GC Column(2): RTX-35 ID: 0.25 (mm)

	CLIENT	TCX 1	TCX 2	DCB 1	DCB 2	OTHER	OTHER	TOT
	SAMPLE NO.	%REC #	%REC #	%REC #	%REC #	(1)	(2)	OUT
	=====	=====	=====	=====	=====	=====	=====	=====
01	MBLK052508A	58*	62	92	95			1
02	A052508LCS	62	65	88	100			0
03	PBLK_SCU	105	100	90	105			0
04	07A051908	68	70	88	86			0
05	07A051908MS	66	66	84	92			0
06	07A051908MSD	68	68	138*	91			1
07	MW006051908	62	60*	107	78			1
08	MW001051908	61	64	82	82			0
09	MW005052008	66	66	82	90			0
10	005052008REP	61	64	132*	87			1
11	MW04A052008	80	85	159*	111			1
12	MW003052008	58*	56*	109	77			2
13	EB-052008	58*	58*	85	93			2
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								

ADVISORY
QC LIMITS

S1 (TCX) = Tetrachloro-m-xylene (60-115)

S2 (DCB) = Decachlorobiphenyl (65-115)

Column to be used to flag recovery values

* Values outside of QC limits

D Surrogate diluted out

FORM 3
WATER OTHER MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Matrix Spike - BATTEL Sample No.: 07A051908

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
Aroclor-1016	0.48	0.0	0.41	85	65-120
Aroclor-1260	0.48	0.0	0.42	88	55-120

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS	
					RPD	REC.
Aroclor-1016	0.48	0.42	88	3	30	65-120
Aroclor-1260	0.48	0.43	90	2	30	55-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 2 outside limits

Spike Recovery: 0 out of 4 outside limits

COMMENTS: _____

FORM 3
WATER OTHER LAB CONTROL SAMPLE

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Matrix Spike - Sample No.: A052508LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Aroclor-1016	0.50		0.38	76	65-120
Aroclor-1260	0.50		0.42	84	55-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 2 outside limits

COMMENTS: _____

FORM 4
OTHER METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

MBLK052508A

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617
 Lab Sample ID: MBLK052508A Lab File ID: 09JUN080949-R011
 Matrix (soil/water) WATER Extraction: (SepF/Cont/Sonc) SEPF
 Sulfur Cleanup (Y/N) N Date Extracted: 05/25/08
 Date Analyzed (1): 06/09/08 Date Analyzed (2): 06/09/08
 Time Analyzed (1): 1619 Time Analyzed (2): 1619
 Instrument ID (1): 7227_1 Instrument ID (2): 7227_2
 GC Column (1): RTX-5 ID: 0.25(mm) GC Column (2): RTX-35 ID: 0.25(mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01	A052508LCS	A052508LCS	06/09/08	06/09/08
02	07A051908	752926	06/09/08	06/09/08
03	07A051908MS	752926MS	06/09/08	06/09/08
04	07A051908MSD	752926MD	06/09/08	06/09/08
05	MW006051908	752927	06/09/08	06/09/08
06	MW001051908	752928	06/09/08	06/09/08
07	MW005052008	752929	06/09/08	06/09/08
08	005052008REP	752930	06/09/08	06/09/08
09	MW04A052008	752931*	06/09/08	06/09/08
10	MW003052008	752932	06/09/08	06/09/08
11	EB-052008	752933	06/09/08	06/09/08
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				

COMMENTS: *-Extract received sulfur cleanup. The associated cleanup blank is PBLK_SCU.

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617
 Instrument ID: 7227_1 Calibration Date(s): 06/09/08 06/09/08
 Column: RTX-5 ID: 0.25 (mm) Calibration Time(s): 1041 1507

LAB FILE ID: RF50: 09JUN080925-RF100: 09JUN080925RF200: 09JUN080925
 RF400: 09JUN080925RF800: 09JUN080925

COMPOUND	RF50	RF100	RF200	RF400	RF800
=====	=====	=====	=====	=====	=====
Aroclor-1016	30.120	27.870	26.940	24.055	22.635
(2)	39.280	36.060	34.145	32.098	30.310
(3)	74.100	68.810	67.535	64.378	64.262
(4)	45.480	43.140	40.840	38.062	36.096
(5)	31.780	30.590	29.420	28.058	26.632
Aroclor-1221			15.945		
(2)			11.230		
(3)			34.740		
(4)			6.340		
(5)			4.360		
Aroclor-1232			29.355		
(2)			16.925		
(3)			17.400		
(4)			31.755		
(5)			20.410		
Aroclor-1242			22.675		
(2)			28.915		
(3)			55.160		
(4)			33.360		
(5)			23.870		
Aroclor-1248			17.185		
(2)			13.600		
(3)			33.860		
(4)			17.860		
(5)			18.915		
Aroclor-1254			22.000		
(2)			19.195		
(3)			38.025		
(4)			13.990		
(5)			49.490		
Aroclor-1260	46.820	43.810	39.845	38.105	37.228
(2)	54.180	50.380	47.690	46.170	45.621
(3)	143.120	135.280	133.425	131.015	138.495
(4)	75.840	70.900	68.855	65.740	68.072
(5)	47.180	43.690	41.505	40.215	38.926
=====	=====	=====	=====	=====	=====
Tetrachloro-m-xylene	1439.000	1338.100	1366.600	1355.325	1385.212
Decachlorobiphenyl	1679.000	1608.300	1570.050	1539.350	1558.975

FORM VI OTHER

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617
 Instrument ID: 7227_1 Calibration Date(s): 06/09/08 06/09/08
 Column: RTX-5 ID: 0.25 (mm) Calibration Time(s): 1041 1507

COMPOUND	CURVE	COEFFICIENT A1	%RSD OR R^2	MAX %RSD OR R^2
Aroclor-1016	AVRG	26.3240000	11.386	20.000
(2)	AVRG	34.3785000	10.146	20.000
(3)	AVRG	67.8170000	5.944	20.000
(4)	AVRG	40.7237500	9.267	20.000
(5)	AVRG	29.2960000	6.930	20.000
Aroclor-1221	AVRG	15.9450000	0.000	20.000 <-
(2)	AVRG	11.2300000	0.000	20.000 <-
(3)	AVRG	34.7400000	0.000	20.000 <-
(4)	AVRG	6.34000000	0.000	20.000 <-
(5)	AVRG	4.36000000	0.000	20.000 <-
Aroclor-1232	AVRG	29.3550000	0.000	20.000 <-
(2)	AVRG	16.9250000	0.000	20.000 <-
(3)	AVRG	17.4000000	0.000	20.000 <-
(4)	AVRG	31.7550000	0.000	20.000 <-
(5)	AVRG	20.4100000	0.000	20.000 <-
Aroclor-1242	AVRG	22.6750000	0.000	20.000 <-
(2)	AVRG	28.9150000	0.000	20.000 <-
(3)	AVRG	55.1600000	0.000	20.000 <-
(4)	AVRG	33.3600000	0.000	20.000 <-
(5)	AVRG	23.8700000	0.000	20.000 <-
Aroclor-1248	AVRG	17.1850000	0.000	20.000 <-
(2)	AVRG	13.6000000	0.000	20.000 <-
(3)	AVRG	33.8600000	0.000	20.000 <-
(4)	AVRG	17.8600000	0.000	20.000 <-
(5)	AVRG	18.9150000	0.000	20.000 <-
Aroclor-1254	AVRG	22.0000000	0.000	20.000 <-
(2)	AVRG	19.1950000	0.000	20.000 <-
(3)	AVRG	38.0250000	0.000	20.000 <-
(4)	AVRG	13.9900000	0.000	20.000 <-
(5)	AVRG	49.4900000	0.000	20.000 <-
Aroclor-1260	AVRG	41.1615000	9.837	20.000
(2)	AVRG	48.8082500	7.222	20.000
(3)	AVRG	136.267000	3.453	20.000
(4)	AVRG	69.8815000	5.450	20.000
(5)	AVRG	42.3032500	7.670	20.000
Tetrachloro-m-xylene	AVRG	1376.84750	2.814	20.000
Decachlorobiphenyl	AVRG	1591.13500	3.467	20.000

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617
 Instrument ID: 7227_2 Calibration Date(s): 06/09/08 06/09/08
 Column: RTX-35 ID: 0.25 (mm) Calibration Time(s): 1041 1507

LAB FILE ID: RF50: 09JUN080925-RF100: 09JUN080925RF200: 09JUN080925
 RF400: 09JUN080925RF800: 09JUN080925

COMPOUND	RF50	RF100	RF200	RF400	RF800
=====	=====	=====	=====	=====	=====
Aroclor-1016	81.440	75.000	71.460	66.640	63.371
(2)	119.140	109.840	105.690	98.550	94.909
(3)	181.300	170.760	168.895	164.502	165.105
(4)	98.460	91.250	87.600	83.650	81.604
(5)	78.420	74.240	71.500	69.265	67.998
Aroclor-1221			46.390		
(2)			30.415		
(3)			91.635		
(4)			14.585		
(5)			18.565		
Aroclor-1232			77.900		
(2)			53.740		
(3)			75.980		
(4)			41.935		
(5)			35.640		
Aroclor-1242			89.160		
(2)			43.550		
(3)			138.135		
(4)			73.595		
(5)			59.965		
Aroclor-1248			47.250		
(2)			80.030		
(3)			37.210		
(4)			30.750		
(5)			35.165		
Aroclor-1254			52.100		
(2)			39.380		
(3)			47.205		
(4)			33.770		
(5)			149.410		
Aroclor-1260	199.360	191.010	180.705	174.160	173.921
(2)	552.420	551.500	561.645	537.118	582.142
(3)	192.400	182.220	179.105	175.598	180.006
(4)	70.280	70.120	67.060	63.205	62.308
(5)	172.760	162.830	161.770	158.062	160.979
=====	=====	=====	=====	=====	=====
Tetrachloro-m-xylene	4249.600	4171.200	4510.800	4385.725	4379.050
Decachlorobiphenyl	4013.600	3928.400	4061.450	4054.550	4011.112

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617
 Instrument ID: 7227_2 Calibration Date(s): 06/09/08 06/09/08
 Column: RTX-35 ID: 0.25 (mm) Calibration Time(s): 1041 1507

COMPOUND	CURVE	COEFFICIENT A1	%RSD OR R^2	MAX %RSD OR R^2
=====				
Aroclor-1016	AVRG	71.5822500	9.896	20.000
(2)	AVRG	105.625750	9.048	20.000
(3)	AVRG	170.112500	3.983	20.000
(4)	AVRG	88.5127500	7.550	20.000
(5)	AVRG	72.2845000	5.770	20.000
Aroclor-1221	AVRG	46.3900000	0.000	20.000 <-
(2)	AVRG	30.4150000	0.000	20.000 <-
(3)	AVRG	91.6350000	0.000	20.000 <-
(4)	AVRG	14.5850000	0.000	20.000 <-
(5)	AVRG	18.5650000	0.000	20.000 <-
Aroclor-1232	AVRG	77.9000000	0.000	20.000 <-
(2)	AVRG	53.7400000	0.000	20.000 <-
(3)	AVRG	75.9800000	0.000	20.000 <-
(4)	AVRG	41.9350000	0.000	20.000 <-
(5)	AVRG	35.6400000	0.000	20.000 <-
Aroclor-1242	AVRG	89.1600000	0.000	20.000 <-
(2)	AVRG	43.5500000	0.000	20.000 <-
(3)	AVRG	138.135000	0.000	20.000 <-
(4)	AVRG	73.5950000	0.000	20.000 <-
(5)	AVRG	59.9650000	0.000	20.000 <-
Aroclor-1248	AVRG	47.2500000	0.000	20.000 <-
(2)	AVRG	80.0300000	0.000	20.000 <-
(3)	AVRG	37.2100000	0.000	20.000 <-
(4)	AVRG	30.7500000	0.000	20.000 <-
(5)	AVRG	35.1650000	0.000	20.000 <-
Aroclor-1254	AVRG	52.1000000	0.000	20.000 <-
(2)	AVRG	39.3800000	0.000	20.000 <-
(3)	AVRG	47.2050000	0.000	20.000 <-
(4)	AVRG	33.7700000	0.000	20.000 <-
(5)	AVRG	149.410000	0.000	20.000 <-
Aroclor-1260	AVRG	183.831250	6.046	20.000
(2)	AVRG	556.965000	2.978	20.000
(3)	AVRG	181.865750	3.493	20.000
(4)	AVRG	66.5945000	5.623	20.000
(5)	AVRG	163.280250	3.422	20.000
=====				
Tetrachloro-m-xylene	AVRG	4339.27500	3.037	20.000
Decachlorobiphenyl	AVRG	4013.82250	1.320	20.000

FORM VI OTHER

FORM 8
OTHER ANALYTICAL SEQUENCE

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617
 GC Column: RTX-5 ID: 0.25 (mm) Init. Calib. Date(s): 06/09/08 06/09/08
 Instrument ID: 7227_1

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS,
 SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION							
TCX: 3.79			DCB: 14.13				
CLIENT	LAB	DATE	TIME	TCX	DCB		
SAMPLE NO.	SAMPLE ID	ANALYZED	ANALYZED	RT	RT	#	#
=====	=====	=====	=====	=====	=====	=====	=====
01	AR1221 200PP	AR1221 200PP	06/09/08	1041	3.80		14.14
02	AR1232 200PP	AR1232 200PP	06/09/08	1105	3.80		14.14
03	AR1242 200PP	AR1242 200PP	06/09/08	1129	3.80		14.14
04	AR1248 200PP	AR1248 200PP	06/09/08	1153	3.81		14.15
05	AR1254 200PP	AR1254 200PP	06/09/08	1218	3.81		14.14
06	AR1262 200PP	AR1262 200PP	06/09/08	1242	3.81		14.14
07	AR1268 200PP	AR1268 200PP	06/09/08	1306	3.81		14.14
08	AR1660 50PPB	AR1660 50PPB	06/09/08	1330	3.79		14.13
09	AR1660 100PP	AR1660 100PP	06/09/08	1354	3.79		14.13
10	AR1660 200PP	AR1660 200PP	06/09/08	1419	3.79		14.13
11	AR1660 400PP	AR1660 400PP	06/09/08	1443	3.79		14.13
12	AR1660 800PP	AR1660 800PP	06/09/08	1507	3.80		14.14
13	AR1660 ICV	AR1660 ICV	06/09/08	1555	3.80		14.14
14	MBLK052508A	MBLK052508A	06/09/08	1619	3.80		14.14
15	A052508LCS	A052508LCS	06/09/08	1644	3.80		14.14
16	PBLK SCU	PBLK SCU	06/09/08	1708	3.80		14.14
17	07A051908	752926	06/09/08	1732	3.80		14.14
18	07A051908MS	752926MS	06/09/08	1756	3.81		14.14
19	07A051908MSD	752926MD	06/09/08	1821	3.81		14.14
20	MW006051908	752927	06/09/08	1845	3.81		14.14
21	MW001051908	752928	06/09/08	1909	3.79		14.13
22	MW005052008	752929	06/09/08	1933	3.79		14.13
23	005052008REP	752930	06/09/08	1957	3.79		14.13
24	AR1660 200PP	AR1660 200PP	06/09/08	2022	3.79		14.13
25	MW04A052008	752931	06/09/08	2046	3.79		14.13
26	MW003052008	752932	06/09/08	2110	3.79		14.13
27	EB-052008	752933	06/09/08	2135	3.79		14.13
28	AR1660 200PP	AR1660 200PP	06/09/08	2159	3.80		14.14
29							
30							
31							
32							

QC LIMITS

TCX = Tetrachloro-m-xylene (+/- 0.05 MINUTES)
 DCB = Decachlorobiphenyl (+/- 0.05 MINUTES)

Column used to flag retention time values with an asterisk.
 * Values outside of QC limits.

FORM 8
OTHER ANALYTICAL SEQUENCE

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617
 GC Column: RTX-35 ID: 0.25 (mm) Init. Calib. Date(s): 06/09/08 06/09/08
 Instrument ID: 7227_2

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS,
 SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION							
				TCX: 4.42	DCB: 15.27		
CLIENT	LAB	DATE	TIME	TCX	DCB		
SAMPLE NO.	SAMPLE ID	ANALYZED	ANALYZED	RT #	RT #		
=====	=====	=====	=====	=====	=====		
01	AR1221 200PP	AR1221 200PP	06/09/08	1041	4.42	15.30	
02	AR1232 200PP	AR1232 200PP	06/09/08	1105	4.41	15.29	
03	AR1242 200PP	AR1242 200PP	06/09/08	1129	4.42	15.29	
04	AR1248 200PP	AR1248 200PP	06/09/08	1153	4.42	15.30	
05	AR1254 200PP	AR1254 200PP	06/09/08	1218	4.41	15.29	
06	AR1262 200PP	AR1262 200PP	06/09/08	1242	4.42	15.29	
07	AR1268 200PP	AR1268 200PP	06/09/08	1306	4.42	15.25	
08	AR1660 50PPB	AR1660 50PPB	06/09/08	1330	4.40	15.28	
09	AR1660 100PP	AR1660 100PP	06/09/08	1354	4.41	15.28	
10	AR1660 200PP	AR1660 200PP	06/09/08	1419	4.40	15.28	
11	AR1660 400PP	AR1660 400PP	06/09/08	1443	4.41	15.29	
12	AR1660 800PP	AR1660 800PP	06/09/08	1507	4.41	15.29	
13	AR1660 ICV	AR1660 ICV	06/09/08	1555	4.42	15.29	
14	MBLK052508A	MBLK052508A	06/09/08	1619	4.41	15.29	
15	A052508LCS	A052508LCS	06/09/08	1644	4.41	15.29	
16	PBLK_SCU	PBLK_SCU	06/09/08	1708	4.41	15.29	
17	07A051908	752926	06/09/08	1732	4.41	15.29	
18	07A051908MS	752926MS	06/09/08	1756	4.42	15.30	
19	07A051908MSD	752926MD	06/09/08	1821	4.42	15.29	
20	MW006051908	752927	06/09/08	1845	4.42	15.29	
21	MW001051908	752928	06/09/08	1909	4.40	15.27	
22	MW005052008	752929	06/09/08	1933	4.41	15.28	
23	005052008REP	752930	06/09/08	1957	4.40	15.28	
24	AR1660 200PP	AR1660 200PP	06/09/08	2022	4.41	15.28	
25	MW04A052008	752931	06/09/08	2046	4.40	15.28	
26	MW003052008	752932	06/09/08	2110	4.41	15.28	
27	EB-052008	752933	06/09/08	2135	4.40	15.28	
28	AR1660 200PP	AR1660 200PP	06/09/08	2159	4.41	15.29	
29							
30							
31							
32							

QC LIMITS

TCX = Tetrachloro-m-xylene (+/- 0.05 MINUTES)
 DCB = Decachlorobiphenyl (+/- 0.05 MINUTES)

Column used to flag retention time values with an asterisk.
 * Values outside of QC limits.

FORM 10
 OTHER IDENTIFICATION SUMMARY
 FOR MULTICOMPONENT ANALYTES

BATTEL SAMPLE NO.

MW04A052008

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Lab Sample ID: 752931 Date(s) Analyzed: 06/09/08 06/09/08

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column(1): RTX-5 ID: 0.25 (mm) GC Column(2): RTX-35 ID: 0.25 (mm)

ANALYTE	PEAK	RT	RT WINDOW		CONCENTRATION	MEAN CONCENTRATION	RPD	
			FROM	TO				
Aroclor-1242	1	4.22	4.18	4.28	0.040	0.036		
	2	5.36	5.33	5.43	0.041			
	3	5.52	5.47	5.57	0.028			
	COLUMN 1	4	5.63	5.59	5.69			0.034
	5							
COLUMN 2	1	6.02	5.98	6.08	0.075	0.043	18	
	2	6.52	6.49	6.59	0.043			
	3	6.81	6.78	6.88	0.040			
	4	7.11	7.07	7.17	0.021			
	5	7.37	7.34	7.44	0.034			
COLUMN 1	1							
	2							
	3							
	4							
	5							
COLUMN 2	1							
	2							
	3							
	4							
	5							
COLUMN 1	1							
	2							
	3							
	4							
	5							
COLUMN 2	1							
	2							
	3							
	4							
	5							

At least 3 peaks are required for identification of multicomponent analytes.

FORM 10
 OTHER IDENTIFICATION SUMMARY
 FOR MULTICOMPONENT ANALYTES

BATTEL SAMPLE NO.

07A051908MS

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Lab Sample ID: 752926MS Date(s) Analyzed: 06/09/08 06/09/08

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column(1): RTX-5 ID: 0.25 (mm) GC Column(2): RTX-35 ID: 0.25 (mm)

ANALYTE	PEAK	RT	RT WINDOW		CONCENTRATION	MEAN CONCENTRATION	RPD
			FROM	TO			
Aroclor-1016	1	4.23	4.17	4.27	0.39		
	2	4.99	4.93	5.03	0.40		
	3	5.38	5.31	5.41	0.41		
	COLUMN 1	4	5.52	5.46	5.56	0.41	
	5	5.64	5.58	5.68	0.41	0.40	
COLUMN 2	1	5.31	5.23	5.33	0.40		
	2	6.04	5.97	6.07	0.42		
	3	6.84	6.76	6.86	0.38		
	4	7.13	7.06	7.16	0.41		
	5	7.39	7.32	7.42	0.43	0.41	2.5
Aroclor-1260	1	10.69	10.62	10.72	0.37		
	2	11.29	11.23	11.33	0.39		
	3	11.89	11.83	11.93	0.40		
	COLUMN 1	4	12.41	12.35	12.45	0.47	
	5	12.63	12.57	12.67	0.44	0.42	
COLUMN 2	1	12.60	12.53	12.63	0.44		
	2	13.38	13.31	13.41	0.44		
	3	13.87	13.80	13.90	0.43		
	4	14.45	14.38	14.48	0.42		
	5	14.54	14.47	14.57	0.40	0.42	0.0
COLUMN 1	1						
	2						
	3						
	4						
	5						
COLUMN 2	1						
	2						
	3						
	4						
	5						

At least 3 peaks are required for identification of multicomponent analytes.

FORM 10
 OTHER IDENTIFICATION SUMMARY
 FOR MULTICOMPONENT ANALYTES

BATTEL SAMPLE NO.

07A051908MSD

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Lab Sample ID: 752926MD Date(s) Analyzed: 06/09/08 06/09/08

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column(1): RTX-5 ID: 0.25(mm) GC Column(2): RTX-35 ID: 0.25(mm)

ANALYTE	PEAK	RT	RT WINDOW		CONCENTRATION	MEAN CONCENTRATION	RPD	
			FROM	TO				
Aroclor-1016	1	4.23	4.17	4.27	0.39			
	2	4.99	4.93	5.03	0.38			
	3	5.38	5.31	5.41	0.37			
	COLUMN 1	4	5.52	5.46	5.56	0.36		
	5	5.64	5.58	5.68	0.36	0.37		
COLUMN 2	1	5.30	5.23	5.33	0.40			
	2	6.04	5.97	6.07	0.45			
	3	6.83	6.76	6.86	0.42			
	4	7.13	7.06	7.16	0.41			
	5	7.39	7.32	7.42	0.41	0.42	13	
Aroclor-1260	1	10.68	10.62	10.72	0.37			
	2	11.29	11.23	11.33	0.38			
	3	11.89	11.83	11.93	0.43			
	COLUMN 1	4	12.41	12.35	12.45	0.49		
	5	12.63	12.57	12.67	0.45	0.42		
COLUMN 2	1	12.59	12.53	12.63	0.45			
	2	13.37	13.31	13.41	0.44			
	3	13.87	13.80	13.90	0.43			
	4	14.44	14.38	14.48	0.42			
	5	14.54	14.47	14.57	0.43	0.43	2.4	
COLUMN 1	1							
	2							
	3							
	4							
	5							
COLUMN 2	1							
	2							
	3							
	4							
	5							

At least 3 peaks are required for identification of multicomponent analytes.

FORM 10
 OTHER IDENTIFICATION SUMMARY
 FOR MULTICOMPONENT ANALYTES

CLIENT SAMPLE NO.

A052508LCS

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: 28000 SAS No.: SDG No.: 125617

Lab Sample ID: A052508LCS Date(s) Analyzed: 06/09/08 06/09/08

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column(1): RTX-5 ID: 0.25(mm) GC Column(2): RTX-35 ID: 0.25(mm)

ANALYTE	PEAK	RT	RT WINDOW		CONCENTRATION	MEAN CONCENTRATION	RPD	
			FROM	TO				
Aroclor-1016	1	4.22	4.17	4.27	0.35	0.36		
	2	4.99	4.93	5.03	0.35			
	3	5.37	5.31	5.41	0.37			
	COLUMN 1	4	5.52	5.46	5.56			0.37
	5	5.64	5.58	5.68	0.38			
COLUMN 2	1	5.29	5.23	5.33	0.36	0.38	5.4	
	2	6.03	5.97	6.07	0.40			
	3	6.82	6.76	6.86	0.38			
	4	7.12	7.06	7.16	0.37			
	5	7.38	7.32	7.42	0.38			
Aroclor-1260	1	10.68	10.62	10.72	0.37	0.41		
	2	11.29	11.23	11.33	0.37			
	3	11.89	11.83	11.93	0.41			
	COLUMN 1	4	12.41	12.35	12.45			0.45
	5	12.63	12.57	12.67	0.43			
COLUMN 2	1	12.59	12.53	12.63	0.42	0.42	2.4	
	2	13.37	13.31	13.41	0.44			
	3	13.86	13.80	13.90	0.41			
	4	14.43	14.38	14.48	0.40			
	5	14.53	14.47	14.57	0.41			
COLUMN 1	1							
	2							
	3							
	4							
	5							
COLUMN 2	1							
	2							
	3							
	4							
	5							

At least 3 peaks are required for identification of multicomponent analytes.

TestAmerica
South Burlington, VT

Sample Data Summary
Package

SDG: 128692

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

December 29, 2008

TestAmerica Laboratories, Inc.

Ms. Yixian Zhang
Battele
397 Washington Street
Duxbury, MA 02332

Re: Laboratory Project No. 28000
Case: NBH; SDG: 128692

Dear Ms. Zhang:

Enclosed are the analytical results for the samples that were received by TestAmerica Burlington on November 7th, 2008. Laboratory identification numbers were assigned, and designated as follows:

<u>Lab ID</u>	<u>Client Sample ID</u>	<u>Sample Date</u>	<u>Sample Matrix</u>
	Received: 11/07/08 ETR No: 128692		
774872	MW-07A-110608	11/06/08	WATER
774873	EB-110508	11/05/08	WATER
774874	MW-006-110608	11/06/08	WATER
774875	MW-04B-110508	11/05/08	WATER
774876	MW-04A-110508	11/05/08	WATER
774877	MW-007-110508	11/05/08	WATER
774878	MW-006-110508	11/05/08	WATER
774879	MW-006-110508-REP	11/05/08	WATER

Documentation of the condition of the samples at the time of their receipt and any exception to the laboratory's Sample Acceptance Policy is documented in the Sample Handling section of this submittal.

SW846 Method 8082 – PCB Aroclors:

Due to inherent software limitations, the sample identifications for MW-07A-110608, EB-110508, MW-006-110608, MW-04B-110508, MW-04A-110508, MW-007-110508, MW-006-110508 and MW-006-110508-REP were truncated.

Surrogate percent recoveries were below the advisory control limits in sample MW-007-110508. Re-extraction was performed outside of the method holding time yielding results that were within the control limits and both sets of data were formally presented.

The original analyses of samples MW-006-110508 and MW-006-110508-REP were accomplished at a dilution to get the response of the analyte with the highest concentration within the initial calibration range. The original analysis of sample MW-006-110508-REP exhibited percent recoveries of the surrogate Decachlorobiphenyl (DCB) that were below the advisory control limits. This sample was re-extracted outside the method holding time. The

DCB recoveries improved, but still did not pass the advisory limits. Both sets of data were formally presented. The analysis of sample MW-006-110508 yielded percent recoveries for the surrogate compound Tetrachloro-m-xylene (TCX) that were high in the more concentrated analysis due to matrix related interference. All surrogate recoveries in the dilution analysis for this sample were within the advisory control limits.

The analysis of sample MW-04B-110508 yielded a percent recovery for the surrogate compound Tetrachloro-m-xylene (TCX) that was above the advisory control limits on the RTX-5 column and is attributed to matrix interference.

The analyses of samples EB-110508, MW-04B-110508 and MW-007-110508 appear to have PCB Aroclor peaks in the early (Aroclor1242) region of the chromatogram. The pattern does not match any of the laboratory calibration standards. The laboratory identified the peaks as a "weathered" pattern of Aroclor1242.

The analyses of samples MW-006-110508 and MW-006-110508-REP appear to have PCB peaks in the Aroclor 1254 region of the chromatogram. Peaks in the early region of Aroclor 1254 are relatively large. The overall pattern is not a good match to the laboratory's calibration standard, although the later eluting portion of the Aroclor 1254 pattern does match the calibration standard.

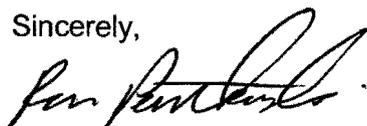
The analysis of the Continuing Calibration Verification (CCV) standard performed on 12/12/08 at 1517 hours (closing CCV for the re-extracts) exhibited a percent difference for the surrogate Decachlorobiphenyl that was marginally outside the control limits (15%) at 15.8% on the RTX-5 analytical column.

Manual integration of quantitation peaks was performed where necessary. Documentation of each manual integration was provided in the supportive documentation. Secondary review was performed by the laboratory on all of the manual integrations within this submittal. For dual column analyses, the laboratory reported the higher of the two confirmed results for each analyte. Quantitation was performed using peak heights.

Any reference within this report to Severn Trent Laboratories, Inc. or STL, should be understood to refer to TestAmerica Laboratories, Inc. (formerly known as Severn Trent Laboratories, Inc.) The analytical results associated with the samples presented in this test report were generated under a quality system that adheres to requirements specified in the NELAC standard. Release of the data in this test report and any associated electronic deliverables is authorized by the Laboratory Director's designee as verified by the following signature.

If there are any questions regarding this submittal, please contact me at 802 660-1990.

Sincerely,



Ron Pentkowski
Project Manager

Enclosure

TestAmerica Burlington Data Qualifier Definitions

Organic

- U: Compound analyzed but not detected at a concentration above the reporting limit.
- J: Estimated value.
- N: Indicates presumptive evidence of a compound. This flag is used only for tentatively identified compounds (TICs) where the identification of a compound is based on a mass spectral library search.
- P: SW-846: The relative percent difference for detected concentrations between two GC columns is greater than 40%. Unless otherwise specified the higher of the two values is reported on the Form I.

CLP SOW: Greater than 25% difference for detected concentrations between two GC columns. Unless otherwise specified the lower of the two values is reported on the Form I.
- C: Pesticide result whose identification has been confirmed by GC/MS.
- B: Analyte is found in the sample and the associated method blank. The flag is used for tentatively identified compounds as well as positively identified compounds.
- E: Compounds whose concentrations exceed the upper limit of the calibration range of the instrument for that specific analysis.
- D: Concentrations identified from analysis of the sample at a secondary dilution.
- A: Tentatively identified compound is a suspected aldol condensation product.
- X,Y,Z: Laboratory defined flags that may be used alone or combined, as needed. If used, the description of the flag is defined in the project narrative.

Inorganic/Metals

- E: Reported value is estimated due to the presence of interference.
- N: Matrix spike sample recovery is not within control limits.
- * Duplicate sample analysis is not within control limits.
- B: The result reported is less than the reporting limit but greater than the instrument detection limit.
- U: Analyte was analyzed for but not detected above the reporting limit.

Method Codes:

- P ICP-AES
MS ICP-MS
CV Cold Vapor AA
AS Semi-Automated Spectrophotometric

Proj. No 606422		Proj. Name New Bedford Harbor Groundwater		ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"		PEST		PCB - Arcobars		TPH FINGERPRINT		PAH		VOA		TBT		METALS		OTHER		ACIDIFIED		PRESERVED		Total Number of Containers	
SAMPLERS: Signature Jessica Tenza																											
DATE	TIME	Labo BATTLE ID	Field CLIENT ID	SAMPLE DESCRIPTION																							
6/08	0835			MW-07A-110608																							4
5/08	1330			① MW-04A-EB-110508																							4
6/08	1007			MW-006-110608																							4
Requested by: Jessica Tenza				Date/Time 11/6/08 1130		Received by: [Signature]				Date/Time 11/6/08 1130																	
Requested by: [Signature]				Date/Time 11/6/08 130 PM		Received by: [Signature]				Date/Time 11/7/08 1030																	
Comments: ① please disregard. AEM 11/6/08 ② SIB 1130																											

No. 606422 Proj. Name New Bedford Harbor

AMPLERS: Signature
Jessica Tenzar

ANALYSIS REQUESTED →
 "NUMBER OF CONTAINERS"

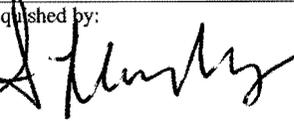
DATE	TIME	Lab ID BATTELLE ID	Field ID CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB - <i>Aroclors</i>	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
5/08	934		MW-04B-110508			✓									2
5/08	906		MW-04A-110508	Well Dry, use only as needed (half bottle)		✓									2
5/08	1237		MW-007-110508			✓									2
5/08	1244		MW-006-110508			✓									2
5/08	1244		MW-006-110508-REP	Field Duplicate		✓									2

Requested by:

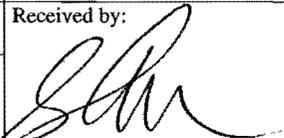

Date/Time
11/6/08 0930

Received by:


Date/Time
11/6/08 1130

Requested by:


Date/Time
11/6/08 1330

Received by:


Date/Time
11/7/08 1030

Comments:



Sample Data Summary – 8082 PCBS

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

07110508

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692
 Matrix: (soil/water) WATER Lab Sample ID: 774877
 Sample wt/vol: 1045 (g/mL) ML Lab File ID: 17DEC080948-R031
 % Moisture: _____ decanted: (Y/N) _____ Date Received: 11/07/08
 Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/11/08
 Concentrated Extract Volume: 1 (mL) Date Analyzed: 12/17/08
 Injection Volume: 1.0 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2-----	Aroclor-1016	0.048	U
11104-28-2-----	Aroclor-1221	0.048	U
11141-16-5-----	Aroclor-1232	0.048	U
53469-21-9-----	Aroclor-1242	0.25	
12672-29-6-----	Aroclor-1248	0.048	U
11097-69-1-----	Aroclor-1254	0.048	U
11096-82-5-----	Aroclor-1260	0.048	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

07110508RE

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692
 Matrix: (soil/water) WATER Lab Sample ID: 774877R1
 Sample wt/vol: 1050 (g/mL) ML Lab File ID: 11DEC081813-R271
 % Moisture: _____ decanted: (Y/N) _____ Date Received: 11/07/08
 Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/19/08
 Concentrated Extract Volume: 1 (mL) Date Analyzed: 12/12/08
 Injection Volume: 1.0 (uL) Dilution Factor: 5.0
 GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2-----	Aroclor-1016	0.24	U
11104-28-2-----	Aroclor-1221	0.24	U
11141-16-5-----	Aroclor-1232	0.24	U
53469-21-9-----	Aroclor-1242	18	E
12672-29-6-----	Aroclor-1248	0.24	U
11097-69-1-----	Aroclor-1254	0.24	U
11096-82-5-----	Aroclor-1260	0.24	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

07110508REDL

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692
 Matrix: (soil/water) WATER Lab Sample ID: 774877R1D1
 Sample wt/vol: 1050 (g/mL) ML Lab File ID: 11DEC081813-R281
 % Moisture: _____ decanted: (Y/N) -- Date Received: 11/07/08
 Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/19/08
 Concentrated Extract Volume: 1 (mL) Date Analyzed: 12/12/08
 Injection Volume: 1.0 (uL) Dilution Factor: 50.0
 GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		Q
12674-11-2-----	Aroclor-1016	2.4	U	
11104-28-2-----	Aroclor-1221	2.4	U	
11141-16-5-----	Aroclor-1232	2.4	U	
53469-21-9-----	Aroclor-1242	15	D	
12672-29-6-----	Aroclor-1248	2.4	U	
11097-69-1-----	Aroclor-1254	2.4	U	
11096-82-5-----	Aroclor-1260	2.4	U	

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

10508REP

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692
 Matrix: (soil/water) WATER Lab Sample ID: 774879
 Sample wt/vol: 1045 (g/mL) ML Lab File ID: 16DEC081437-R081
 % Moisture: _____ decanted: (Y/N) _____ Date Received: 11/07/08
 Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/11/08
 Concentrated Extract Volume: 1 (mL) Date Analyzed: 12/16/08
 Injection Volume: 1.0 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2-----	Aroclor-1016	0.048	U
11104-28-2-----	Aroclor-1221	0.048	U
11141-16-5-----	Aroclor-1232	0.048	U
53469-21-9-----	Aroclor-1242	0.048	U
12672-29-6-----	Aroclor-1248	0.048	U
11097-69-1-----	Aroclor-1254	1.3	E
11096-82-5-----	Aroclor-1260	0.048	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

10508REPD

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692
 Matrix: (soil/water) WATER Lab Sample ID: 774879D1
 Sample wt/vol: 1045 (g/mL) ML Lab File ID: 16DEC081437-R091
 % Moisture: _____ decanted: (Y/N) _____ Date Received: 11/07/08
 Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/11/08
 Concentrated Extract Volume: 1 (mL) Date Analyzed: 12/16/08
 Injection Volume: 1.0 (uL) Dilution Factor: 5.0
 GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2-----	Aroclor-1016	0.24	U
11104-28-2-----	Aroclor-1221	0.24	U
11141-16-5-----	Aroclor-1232	0.24	U
53469-21-9-----	Aroclor-1242	0.24	U
12672-29-6-----	Aroclor-1248	0.24	U
11097-69-1-----	Aroclor-1254	1.5	D
11096-82-5-----	Aroclor-1260	0.24	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

10508REPRE

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Matrix: (soil/water) WATER Lab Sample ID: 774879R1

Sample wt/vol: 1060 (g/mL) ML Lab File ID: 11DEC081813-R291

% Moisture: _____ decanted: (Y/N) _____ Date Received: 11/07/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/19/08

Concentrated Extract Volume: 1 (mL) Date Analyzed: 12/12/08

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2-----	Aroclor-1016	0.047	U
11104-28-2-----	Aroclor-1221	0.047	U
11141-16-5-----	Aroclor-1232	0.047	U
53469-21-9-----	Aroclor-1242	0.047	U
12672-29-6-----	Aroclor-1248	0.047	U
11097-69-1-----	Aroclor-1254	1.7	E
11096-82-5-----	Aroclor-1260	0.047	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

10508REPREDL

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692
 Matrix: (soil/water) WATER Lab Sample ID: 774879R1D1
 Sample wt/vol: 1060 (g/mL) ML Lab File ID: 11DEC081813-R301
 % Moisture: _____ decanted: (Y/N) _____ Date Received: 11/07/08
 Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/19/08
 Concentrated Extract Volume: 1 (mL) Date Analyzed: 12/12/08
 Injection Volume: 1.0 (uL) Dilution Factor: 5.0
 GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2-----	Aroclor-1016	0.24	U
11104-28-2-----	Aroclor-1221	0.24	U
11141-16-5-----	Aroclor-1232	0.24	U
53469-21-9-----	Aroclor-1242	0.24	U
12672-29-6-----	Aroclor-1248	0.24	U
11097-69-1-----	Aroclor-1254	1.9	D
11096-82-5-----	Aroclor-1260	0.24	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

EB-110508

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692
 Matrix: (soil/water) WATER Lab Sample ID: 774873
 Sample wt/vol: 1060 (g/mL) ML Lab File ID: 11DEC081813-R131
 % Moisture: _____ decanted: (Y/N) _____ Date Received: 11/07/08
 Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/11/08
 Concentrated Extract Volume: 1 (mL) Date Analyzed: 12/12/08
 Injection Volume: 1.0 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		Q
12674-11-2-----	Aroclor-1016	0.047	U	
11104-28-2-----	Aroclor-1221	0.047	U	
11141-16-5-----	Aroclor-1232	0.047	U	
53469-21-9-----	Aroclor-1242	0.095		
12672-29-6-----	Aroclor-1248	0.047	U	
11097-69-1-----	Aroclor-1254	0.047	U	
11096-82-5-----	Aroclor-1260	0.047	U	

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

MW006-110608

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692
 Matrix: (soil/water) WATER Lab Sample ID: 774874
 Sample wt/vol: 1060 (g/mL) ML Lab File ID: 17DEC080948-R061
 % Moisture: _____ decanted: (Y/N) _____ Date Received: 11/07/08
 Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/11/08
 Concentrated Extract Volume: 1 (mL) Date Analyzed: 12/17/08
 Injection Volume: 1.0 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2-----	Aroclor-1016	0.047	U
11104-28-2-----	Aroclor-1221	0.047	U
11141-16-5-----	Aroclor-1232	0.047	U
53469-21-9-----	Aroclor-1242	0.047	U
12672-29-6-----	Aroclor-1248	0.047	U
11097-69-1-----	Aroclor-1254	0.047	U
11096-82-5-----	Aroclor-1260	0.047	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

MW04A-110508

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Matrix: (soil/water) WATER Lab Sample ID: 774876

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 11DEC081813-R161

% Moisture: _____ decanted: (Y/N) _____ Date Received: 11/07/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/11/08

Concentrated Extract Volume: 1 (mL) Date Analyzed: 12/12/08

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2-----	Aroclor-1016	0.050	U
11104-28-2-----	Aroclor-1221	0.050	U
11141-16-5-----	Aroclor-1232	0.050	U
53469-21-9-----	Aroclor-1242	0.42	
12672-29-6-----	Aroclor-1248	0.050	U
11097-69-1-----	Aroclor-1254	0.62	
11096-82-5-----	Aroclor-1260	0.050	

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

MW04B-110508

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Matrix: (soil/water) WATER Lab Sample ID: 774875

Sample wt/vol: 1020 (g/mL) ML Lab File ID: 11DEC081813-R151

% Moisture: _____ decanted: (Y/N) _____ Date Received: 11/07/08

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/11/08

Concentrated Extract Volume: 1 (mL) Date Analyzed: 12/12/08

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2-----	Aroclor-1016	0.049	U
11104-28-2-----	Aroclor-1221	0.049	U
11141-16-5-----	Aroclor-1232	0.049	U
53469-21-9-----	Aroclor-1242	0.74	
12672-29-6-----	Aroclor-1248	0.049	U
11097-69-1-----	Aroclor-1254	0.15	
11096-82-5-----	Aroclor-1260	0.049	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

MW07A-110608

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692
 Matrix: (soil/water) WATER Lab Sample ID: 774872
 Sample wt/vol: 1050 (g/mL) ML Lab File ID: 11DEC081813-R121
 % Moisture: _____ decanted: (Y/N) _____ Date Received: 11/07/08
 Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/11/08
 Concentrated Extract Volume: 1 (mL) Date Analyzed: 12/12/08
 Injection Volume: 1.0 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	-----Aroclor-1016	0.048	U
11104-28-2	-----Aroclor-1221	0.048	U
11141-16-5	-----Aroclor-1232	0.048	U
53469-21-9	-----Aroclor-1242	0.048	U
12672-29-6	-----Aroclor-1248	0.048	U
11097-69-1	-----Aroclor-1254	0.048	U
11096-82-5	-----Aroclor-1260	0.048	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

W006110508

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692
 Matrix: (soil/water) WATER Lab Sample ID: 774878
 Sample wt/vol: 1045 (g/mL) ML Lab File ID: 16DEC081437-R051
 % Moisture: _____ decanted: (Y/N) _____ Date Received: 11/07/08
 Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/11/08
 Concentrated Extract Volume: 1 (mL) Date Analyzed: 12/16/08
 Injection Volume: 1.0 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

12674-11-2-----	Aroclor-1016	0.048	U
11104-28-2-----	Aroclor-1221	0.048	U
11141-16-5-----	Aroclor-1232	0.048	U
53469-21-9-----	Aroclor-1242	0.048	U
12672-29-6-----	Aroclor-1248	0.048	U
11097-69-1-----	Aroclor-1254	2.6	E
11096-82-5-----	Aroclor-1260	0.048	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

W006110508DL

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692
 Matrix: (soil/water) WATER Lab Sample ID: 774878D1
 Sample wt/vol: 1045 (g/mL) ML Lab File ID: 11DEC081813-R171
 % Moisture: _____ decanted: (Y/N) _____ Date Received: 11/07/08
 Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/11/08
 Concentrated Extract Volume: 1 (mL) Date Analyzed: 12/12/08
 Injection Volume: 1.0 (uL) Dilution Factor: 4.0
 GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

12674-11-2-----	Aroclor-1016	0.19	U
11104-28-2-----	Aroclor-1221	0.19	U
11141-16-5-----	Aroclor-1232	0.19	U
53469-21-9-----	Aroclor-1242	0.19	U
12672-29-6-----	Aroclor-1248	0.19	U
11097-69-1-----	Aroclor-1254	2.3	D
11096-82-5-----	Aroclor-1260	0.19	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

MBLK111108E

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692
 Matrix: (soil/water) WATER Lab Sample ID: MBLK111108E
 Sample wt/vol: 1000 (g/mL) ML Lab File ID: 11DEC081813-R091
 % Moisture: _____ decanted: (Y/N) _____ Date Received: _____
 Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/11/08
 Concentrated Extract Volume: 1 (mL) Date Analyzed: 12/12/08
 Injection Volume: 1.0 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

12674-11-2-----	Aroclor-1016	0.050	U
11104-28-2-----	Aroclor-1221	0.050	U
11141-16-5-----	Aroclor-1232	0.050	U
53469-21-9-----	Aroclor-1242	0.050	U
12672-29-6-----	Aroclor-1248	0.050	U
11097-69-1-----	Aroclor-1254	0.050	U
11096-82-5-----	Aroclor-1260	0.050	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

MBLK111908E

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692
 Matrix: (soil/water) WATER Lab Sample ID: MBLK111908E
 Sample wt/vol: 1000 (g/mL) ML Lab File ID: 11DEC081813-R251
 % Moisture: _____ decanted: (Y/N) _____ Date Received: _____
 Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/19/08
 Concentrated Extract Volume: 1 (mL) Date Analyzed: 12/12/08
 Injection Volume: 1.0 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2-----	Aroclor-1016	0.050	U
11104-28-2-----	Aroclor-1221	0.050	U
11141-16-5-----	Aroclor-1232	0.050	U
53469-21-9-----	Aroclor-1242	0.050	U
12672-29-6-----	Aroclor-1248	0.050	U
11097-69-1-----	Aroclor-1254	0.050	U
11096-82-5-----	Aroclor-1260	0.050	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

PBLK_SCU

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692
 Matrix: (soil/water) WATER Lab Sample ID: PBLK_SCU
 Sample wt/vol: 1000 (g/mL) ML Lab File ID: 11DEC081813-R241
 % Moisture: _____ decanted: (Y/N) _____ Date Received: _____
 Extraction: (SepF/Cont/Sonc) SONC Date Extracted: _____
 Concentrated Extract Volume: 1 (mL) Date Analyzed: 12/12/08
 Injection Volume: 1.0 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2-----	Aroclor-1016	0.050	U
11104-28-2-----	Aroclor-1221	0.050	U
11141-16-5-----	Aroclor-1232	0.050	U
53469-21-9-----	Aroclor-1242	0.050	U
12672-29-6-----	Aroclor-1248	0.050	U
11097-69-1-----	Aroclor-1254	0.050	U
11096-82-5-----	Aroclor-1260	0.050	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

E111108LCS

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692
 Matrix: (soil/water) WATER Lab Sample ID: E111108LCS
 Sample wt/vol: 1000 (g/mL) ML Lab File ID: 11DEC081813-R101
 % Moisture: _____ decanted: (Y/N) _____ Date Received: _____
 Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/11/08
 Concentrated Extract Volume: 1 (mL) Date Analyzed: 12/12/08
 Injection Volume: 1.0 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2-----	Aroclor-1016	0.42	
11104-28-2-----	Aroclor-1221	0.050	U
11141-16-5-----	Aroclor-1232	0.050	U
53469-21-9-----	Aroclor-1242	0.050	U
12672-29-6-----	Aroclor-1248	0.050	U
11097-69-1-----	Aroclor-1254	0.050	U
11096-82-5-----	Aroclor-1260	0.48	

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

E111908LCS

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692
 Matrix: (soil/water) WATER Lab Sample ID: E111908LCS
 Sample wt/vol: 1000 (g/mL) ML Lab File ID: 11DEC081813-R261
 % Moisture: _____ decanted: (Y/N) _____ Date Received: _____
 Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/19/08
 Concentrated Extract Volume: 1 (mL) Date Analyzed: 12/12/08
 Injection Volume: 1.0 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2-----	Aroclor-1016	0.40	
11104-28-2-----	Aroclor-1221	0.050	U
11141-16-5-----	Aroclor-1232	0.050	U
53469-21-9-----	Aroclor-1242	0.050	U
12672-29-6-----	Aroclor-1248	0.050	U
11097-69-1-----	Aroclor-1254	0.050	U
11096-82-5-----	Aroclor-1260	0.47	

FORM 2
WATER OTHER SURROGATE RECOVERY

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692
 GC Column(1): RTX-5 ID: 0.25 (mm) GC Column(2): RTX-35 ID: 0.25 (mm)

	CLIENT SAMPLE NO.	TCX 1 %REC #	TCX 2 %REC #	DCB 1 %REC #	DCB 2 %REC #	OTHER (1)	OTHER (2)	TOT OUT
	=====	=====	=====	=====	=====	=====	=====	=====
01	MBLK111108E	95	95	105	115			0
02	E111108LCS	92	90	108	115			0
03	MW07A-110608	110	102	81	87			0
04	EB-110508	101	101	103	114			0
05	MW04B-110508	133*	107	82	84			1
06	MW04A-110508	112	112	68	72			0
07	W006110508DL	102	102	70	84			0
08	PBLK_SCU	105	105	105	120*			1
09	MBLK111908E	85	85	90	102			0
10	E111908LCS	82	82	95	110			0
11	07110508RE	60	87	76	94			0
12	07110508REDL	0D	0D	0D	0D			0
13	10508REPRE	87	82	40*	48*			2
14	10508REPREDL	87	85	40D	50D			0
15	W006110508	123*	118*	78	89			2
16	10508REP	70	65	22*	26*			2
17	10508REPD	68	68	24D	31D			0
18	07110508	18*	1*	2*	2*			4
19	MW006-110608	85	87	42*	50*			2
20								
21								
22								
23								
24								
25								
26								
27								
28								

ADVISORY
QC LIMITS

S1 (TCX) = Tetrachloro-m-xylene (60-115)
 S2 (DCB) = Decachlorobiphenyl (65-115)

Column to be used to flag recovery values
 * Values outside of QC limits
 D Surrogate diluted out

FORM 3
WATER OTHER LAB CONTROL SAMPLE

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Matrix Spike - Sample No.: E111108LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Aroclor-1016	0.50		0.42	84	65-120
Aroclor-1260	0.50		0.48	96	55-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 2 outside limits

COMMENTS: _____

FORM 3
WATER OTHER LAB CONTROL SAMPLE

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Matrix Spike - Sample No.: E111908LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Aroclor-1016	0.50		0.40	80	65-120
Aroclor-1260	0.50		0.47	94	55-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 2 outside limits

COMMENTS: _____

FORM 4
OTHER METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

MBLK111108E

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692
 Lab Sample ID: MBLK111108E Lab File ID: 11DEC081813-R091
 Matrix (soil/water) WATER Extraction: (SepF/Cont/Sonc) SEPF
 Sulfur Cleanup (Y/N) N Date Extracted: 11/11/08
 Date Analyzed (1): 12/12/08 Date Analyzed (2): 12/12/08
 Time Analyzed (1): 0419 Time Analyzed (2): 0419
 Instrument ID (1): 7227_1 Instrument ID (2): 7227_2
 GC Column (1): RTX-5 ID: 0.25(mm) GC Column (2): RTX-35 ID: 0.25(mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01	E111108LCS	E111108LCS	12/12/08	12/12/08
02	MW07A-110608	774872	12/12/08	12/12/08
03	EB-110508	774873	12/12/08	12/12/08
04	MW04B-110508	774875	12/12/08	12/12/08
05	MW04A-110508	774876	12/12/08	12/12/08
06	W006110508DL	774878D1	12/12/08	12/12/08
07	W006110508	774878	12/16/08	12/16/08
08	10508REP	774879	12/16/08	12/16/08
09	10508REPD1	774879D1	12/16/08	12/16/08
10	07110508	774877	12/17/08	12/17/08
11	MW006-110608	774874	12/17/08	12/17/08
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				

COMMENTS:

FORM 4
OTHER METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

MBLK111908E

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Lab Sample ID: MBLK111908E Lab File ID: 11DEC081813-R251

Matrix (soil/water) WATER Extraction: (SepF/Cont/Sonc) SEPF

Sulfur Cleanup (Y/N) N Date Extracted: 11/19/08

Date Analyzed (1): 12/12/08 Date Analyzed (2): 12/12/08

Time Analyzed (1): 1203 Time Analyzed (2): 1203

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column (1): RTX-5 ID: 0.25(mm) GC Column (2): RTX-35 ID: 0.25(mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO. =====	LAB SAMPLE ID =====	DATE ANALYZED 1 =====	DATE ANALYZED 2 =====
01	E111908LCS	E111908LCS	12/12/08	12/12/08
02	07110508RE	774877R1	12/12/08	12/12/08
03	07110508REDL	774877R1D1	12/12/08	12/12/08
04	10508REPRE	774879R1	12/12/08	12/12/08
05	10508REPREDL	774879R1D1	12/12/08	12/12/08
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				

COMMENTS: _____

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692
 Instrument ID: 7227_1 Calibration Date(s): 12/11/08 12/11/08
 Column: RTX-5 ID: 0.25 (mm) Calibration Time(s): 1926 2352

LAB FILE ID: RF50: 11DEC081808-RF100: 11DEC081808RF200: 11DEC081808
 RF400: 11DEC081808RF800: 11DEC081808

COMPOUND	RF50	RF100	RF200	RF400	RF800
Aroclor-1016	68.400	60.980	60.195	53.800	54.086
(2)	91.100	84.620	84.935	77.690	78.871
(3)	168.240	161.030	164.450	161.600	170.071
(4)	98.100	91.490	91.190	85.378	88.218
(5)	65.360	61.650	61.530	58.530	60.472
Aroclor-1221			31.290		
(2)			23.210		
(3)			73.485		
(4)			15.090		
(5)			10.325		
Aroclor-1232			62.850		
(2)			35.790		
(3)			35.800		
(4)			68.215		
(5)			38.365		
Aroclor-1242			46.235		
(2)			63.865		
(3)			127.345		
(4)			68.945		
(5)			46.840		
Aroclor-1248			35.610		
(2)			28.955		
(3)			75.455		
(4)			34.615		
(5)			27.700		
Aroclor-1254			20.670		
(2)			17.225		
(3)			33.905		
(4)			11.705		
(5)			46.015		
Aroclor-1260	56.460	51.350	52.730	46.085	48.255
(2)	62.240	56.690	58.820	54.048	55.618
(3)	144.740	139.280	148.855	139.948	151.529
(4)	82.880	77.860	79.535	74.770	78.899
(5)	60.260	55.100	56.060	50.162	52.846
Aroclor-1262			32.505		
(2)			70.175		
(3)			31.555		
(4)			169.030		
(5)			60.645		
Aroclor-1268			277.510		
(2)			278.855		
(3)			328.090		
(4)			81.420		

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692
 Instrument ID: 7227_1 Calibration Date(s): 12/11/08 12/11/08
 Column: RTX-5 ID: 0.25 (mm) Calibration Time(s): 1926 2352

LAB FILE ID: RF50: 11DEC081808-RF100: 11DEC081808RF200: 11DEC081808
 RF400: 11DEC081808RF800: 11DEC081808

COMPOUND	RF50	RF100	RF200	RF400	RF800
=====	=====	=====	=====	=====	=====
(5)			1683.300		
=====	=====	=====	=====	=====	=====
Tetrachloro-m-xylene	2551.800	2446.800	2708.400	2543.300	2830.562
Decachlorobiphenyl	4341.400	4249.800	4400.100	4419.375	4392.650

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON

Contract: 28000

Lab Code: STLV

Case No.: NBH

SAS No.:

SDG No.: 128692

Instrument ID: 7227_1

Calibration Date(s): 12/11/08

12/11/08

Column: RTX-5

ID: 0.25 (mm)

Calibration Time(s): 1926

2352

COMPOUND	CURVE	COEFFICIENT A1	%RSD OR R^2	MAX %RSD OR R^2
Aroclor-1016	AVRG	59.4922500	10.074	20.000
(2)	AVRG	83.4432500	6.460	20.000
(3)	AVRG	165.078250	2.419	20.000
(4)	AVRG	90.8750000	5.219	20.000
(5)	AVRG	61.5085000	4.048	20.000
Aroclor-1221	AVRG	31.2900000	0.000	20.000 <-
(2)	AVRG	23.2100000	0.000	20.000 <-
(3)	AVRG	73.4850000	0.000	20.000 <-
(4)	AVRG	15.0900000	0.000	20.000 <-
(5)	AVRG	10.3250000	0.000	20.000 <-
Aroclor-1232	AVRG	62.8500000	0.000	20.000 <-
(2)	AVRG	35.7900000	0.000	20.000 <-
(3)	AVRG	35.8000000	0.000	20.000 <-
(4)	AVRG	68.2150000	0.000	20.000 <-
(5)	AVRG	38.3650000	0.000	20.000 <-
Aroclor-1242	AVRG	46.2350000	0.000	20.000 <-
(2)	AVRG	63.8650000	0.000	20.000 <-
(3)	AVRG	127.345000	0.000	20.000 <-
(4)	AVRG	68.9450000	0.000	20.000 <-
(5)	AVRG	46.8400000	0.000	20.000 <-
Aroclor-1248	AVRG	35.6100000	0.000	20.000 <-
(2)	AVRG	28.9550000	0.000	20.000 <-
(3)	AVRG	75.4550000	0.000	20.000 <-
(4)	AVRG	34.6150000	0.000	20.000 <-
(5)	AVRG	27.7000000	0.000	20.000 <-
Aroclor-1254	AVRG	20.6700000	0.000	20.000 <-
(2)	AVRG	17.2250000	0.000	20.000 <-
(3)	AVRG	33.9050000	0.000	20.000 <-
(4)	AVRG	11.7050000	0.000	20.000 <-
(5)	AVRG	46.0150000	0.000	20.000 <-
Aroclor-1260	AVRG	50.9760000	7.884	20.000
(2)	AVRG	57.4830000	5.524	20.000
(3)	AVRG	144.870250	3.713	20.000
(4)	AVRG	78.7887500	3.718	20.000
(5)	AVRG	54.8857500	6.864	20.000
Aroclor-1262	AVRG	32.5050000	0.000	20.000 <-
(2)	AVRG	70.1750000	0.000	20.000 <-
(3)	AVRG	31.5550000	0.000	20.000 <-
(4)	AVRG	169.030000	0.000	20.000 <-
(5)	AVRG	60.6450000	0.000	20.000 <-
Aroclor-1268	AVRG	277.510000	0.000	20.000 <-
(2)	AVRG	278.855000	0.000	20.000 <-
(3)	AVRG	328.090000	0.000	20.000 <-
(4)	AVRG	81.4200000	0.000	20.000 <-

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692
 Instrument ID: 7227_1 Calibration Date(s): 12/11/08 12/11/08
 Column: RTX-5 ID: 0.25 (mm) Calibration Time(s): 1926 2352

COMPOUND	CURVE	COEFFICIENT A1	%RSD OR R^2	MAX %RSD OR R^2
=====	=====	=====	=====	=====
(5)_____	AVRG	1683.30000	0.000	20.000 <-
=====	=====	=====	=====	=====
Tetrachloro-m-xylene_____	AVRG	2616.17250	5.816	20.000
Decachlorobiphenyl_____	AVRG	4360.66500	1.567	20.000

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692
 Instrument ID: 7227_2 Calibration Date(s): 12/11/08 12/11/08
 Column: RTX-35 ID: 0.25 (mm) Calibration Time(s): 1926 2352

LAB FILE ID: RF50: 11DEC081808-RF100: 11DEC081808RF200: 11DEC081808
 RF400: 11DEC081808RF800: 11DEC081808

COMPOUND	RF50	RF100	RF200	RF400	RF800
Aroclor-1016	83.680	75.830	72.380	66.235	64.379
(2)	127.960	118.480	112.805	104.752	102.760
(3)	179.160	169.450	171.465	163.000	164.269
(4)	90.700	84.900	84.755	77.358	75.249
(5)	70.880	67.560	67.630	61.342	61.668
Aroclor-1221			40.815		
(2)			29.250		
(3)			88.905		
(4)			14.465		
(5)			18.475		
Aroclor-1232			77.850		
(2)			53.195		
(3)			71.370		
(4)			36.220		
(5)			28.235		
Aroclor-1242			90.300		
(2)			32.155		
(3)			131.865		
(4)			64.605		
(5)			51.355		
Aroclor-1248			45.250		
(2)			79.285		
(3)			32.250		
(4)			26.320		
(5)			30.675		
Aroclor-1254			46.950		
(2)			34.555		
(3)			40.700		
(4)			27.945		
(5)			113.875		
Aroclor-1260	152.100	134.900	138.640	123.288	125.928
(2)	470.080	448.410	482.650	465.010	478.490
(3)	169.340	158.890	160.410	150.000	146.695
(4)	70.500	66.250	65.030	61.880	59.216
(5)	174.300	159.850	160.275	151.798	155.745
Aroclor-1262			109.770		
(2)			54.585		
(3)			75.740		
(4)			85.195		
(5)			502.860		
Aroclor-1268			653.160		
(2)			559.630		
(3)			539.310		
(4)			140.155		

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692
 Instrument ID: 7227_2 Calibration Date(s): 12/11/08 12/11/08
 Column: RTX-35 ID: 0.25 (mm) Calibration Time(s): 1926 2352

LAB FILE ID: RF50: 11DEC081808-RF100: 11DEC081808RF200: 11DEC081808
 RF400: 11DEC081808RF800: 11DEC081808

COMPOUND	RF50	RF100	RF200	RF400	RF800
=====	=====	=====	=====	=====	=====
(5)			2155.890		
=====	=====	=====	=====	=====	=====
Tetrachloro-m-xylene	3718.800	3451.600	3605.500	3491.100	3695.388
Decachlorobiphenyl	5976.000	5713.900	5665.550	5371.975	5713.012

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692
 Instrument ID: 7227_2 Calibration Date(s): 12/11/08 12/11/08
 Column: RTX-35 ID: 0.25 (mm) Calibration Time(s): 1926 2352

COMPOUND	CURVE	COEFFICIENT A1	%RSD OR R ²	MAX %RSD OR R ²
=====				
Aroclor-1016	AVRG	72.5007500	10.713	20.000
	(2)	AVRG	113.351500	20.000
	(3)	AVRG	169.468750	20.000
	(4)	AVRG	82.5922500	20.000
	(5)	AVRG	65.8160000	20.000
Aroclor-1221	AVRG	40.8150000	0.000	20.000 <-
	(2)	AVRG	29.2500000	20.000 <-
	(3)	AVRG	88.9050000	20.000 <-
	(4)	AVRG	14.4650000	20.000 <-
	(5)	AVRG	18.4750000	20.000 <-
Aroclor-1232	AVRG	77.8500000	0.000	20.000 <-
	(2)	AVRG	53.1950000	20.000 <-
	(3)	AVRG	71.3700000	20.000 <-
	(4)	AVRG	36.2200000	20.000 <-
	(5)	AVRG	28.2350000	20.000 <-
Aroclor-1242	AVRG	90.3000000	0.000	20.000 <-
	(2)	AVRG	32.1550000	20.000 <-
	(3)	AVRG	131.865000	20.000 <-
	(4)	AVRG	64.6050000	20.000 <-
	(5)	AVRG	51.3550000	20.000 <-
Aroclor-1248	AVRG	45.2500000	0.000	20.000 <-
	(2)	AVRG	79.2850000	20.000 <-
	(3)	AVRG	32.2500000	20.000 <-
	(4)	AVRG	26.3200000	20.000 <-
	(5)	AVRG	30.6750000	20.000 <-
Aroclor-1254	AVRG	46.9500000	0.000	20.000 <-
	(2)	AVRG	34.5550000	20.000 <-
	(3)	AVRG	40.7000000	20.000 <-
	(4)	AVRG	27.9450000	20.000 <-
	(5)	AVRG	113.875000	20.000 <-
Aroclor-1260	AVRG	134.971000	8.489	20.000
	(2)	AVRG	468.928000	20.000
	(3)	AVRG	157.067000	20.000
	(4)	AVRG	64.5752500	20.000
	(5)	AVRG	160.393500	20.000
Aroclor-1262	AVRG	109.770000	0.000	20.000 <-
	(2)	AVRG	54.5850000	20.000 <-
	(3)	AVRG	75.7400000	20.000 <-
	(4)	AVRG	85.1950000	20.000 <-
	(5)	AVRG	502.860000	20.000 <-
Aroclor-1268	AVRG	653.160000	0.000	20.000 <-
	(2)	AVRG	559.630000	20.000 <-
	(3)	AVRG	539.310000	20.000 <-
	(4)	AVRG	140.155000	20.000 <-

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692
 Instrument ID: 7227_2 Calibration Date(s): 12/11/08 12/11/08
 Column: RTX-35 ID: 0.25 (mm) Calibration Time(s): 1926 2352

COMPOUND	CURVE	COEFFICIENT A1	%RSD OR R ²	MAX %RSD OR R ²
=====	=====	=====	=====	=====
(5) _____	AVRG	2155.89000	0.000	20.000 <-
=====	=====	=====	=====	=====
Tetrachloro-m-xylene _____	AVRG	3592.47750	3.318	20.000
Decachlorobiphenyl _____	AVRG	5688.08750	3.777	20.000

FORM 8
OTHER ANALYTICAL SEQUENCE

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692
 GC Column: RTX-5 ID: 0.25 (mm) Init. Calib. Date(s): 12/11/08 12/11/08
 Instrument ID: 7227_1

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS,
 SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION							
				TCX: 3.23	DCB: 13.34		
CLIENT	LAB	DATE	TIME	TCX	DCB		
SAMPLE NO.	SAMPLE ID	ANALYZED	ANALYZED	RT	#	RT	#
=====	=====	=====	=====	=====	=====	=====	=====
01	AR1221 200PP	AR1221 200PP	12/11/08	1926	3.24	13.34	
02	AR1232 200PP	AR1232 200PP	12/11/08	1950	3.24	13.34	
03	AR1242 200PP	AR1242 200PP	12/11/08	2014	3.24	13.35	
04	AR1248 200PP	AR1248 200PP	12/11/08	2039	3.23	13.34	
05	AR1254 200PP	AR1254 200PP	12/11/08	2103	3.23	13.33	
06	AR1262 200PP	AR1262 200PP	12/11/08	2127	3.23	13.34	
07	AR1268 200PP	AR1268 200PP	12/11/08	2151	3.23	13.33	
08	AR1660 50PPB	AR1660 50PPB	12/11/08	2215	3.23	13.33	
09	AR1660 100PP	AR1660 100PP	12/11/08	2240	3.23	13.33	
10	AR1660 200PP	AR1660 200PP	12/11/08	2304	3.23	13.34	
11	AR1660 400PP	AR1660 400PP	12/11/08	2328	3.23	13.34	
12	AR1660 800PP	AR1660 800PP	12/11/08	2352	3.23	13.34	
13	AR1660 ICV	AR1660 ICV	12/12/08	0041	3.23	13.34	
14	MBLK111108E	MBLK111108E	12/12/08	0419	3.23	13.34	
15	E111108LCS	E111108LCS	12/12/08	0443	3.23	13.33	
16	AR1660 200PP	AR1660 200PP	12/12/08	0507	3.23	13.33	
17	MW07A-110608	774872	12/12/08	0648	3.24	13.35	
18	EB-110508	774873	12/12/08	0713	3.23	13.34	
19	MW04B-110508	774875	12/12/08	0801	3.23	13.34	
20	MW04A-110508	774876	12/12/08	0825	3.23	13.34	
21	W006110508DL	774878D1	12/12/08	0849	3.24	13.34	
22	AR1660 200PP	AR1660 200PP	12/12/08	1051	3.23	13.33	
23	PBLK SCU	PBLK SCU	12/12/08	1139	3.23	13.34	
24	MBLK111908E	MBLK111908E	12/12/08	1203	3.23	13.34	
25	E111908LCS	E111908LCS	12/12/08	1227	3.23	13.34	
26	07110508RE	774877R1	12/12/08	1252	3.26	13.34	
27	07110508REDL	774877R1D1	12/12/08	1316			
28	10508REPRE	774879R1	12/12/08	1340	3.23	13.34	
29	10508REPREDL	774879R1D1	12/12/08	1404	3.23	13.34	
30	AR1660 200PP	AR1660 200PP	12/12/08	1517	3.24	13.34	
31	AR1660 200PP	AR1660 200PP	12/16/08	1326	3.24	13.34	
32	W006110508	774878	12/16/08	1616	3.23	13.33	

QC LIMITS
 TCX = Tetrachloro-m-xylene (+/- 0.05 MINUTES)
 DCB = Decachlorobiphenyl (+/- 0.05 MINUTES)

Column used to flag retention time values with an asterisk.
 * Values outside of QC limits.

FORM 8
OTHER ANALYTICAL SEQUENCE

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692
 GC Column: RTX-5 ID: 0.25 (mm) Init. Calib. Date(s): 12/11/08 12/11/08
 Instrument ID: 7227_1

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS,
 SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION						
TCX: 3.23			DCB: 13.34			
	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	TCX RT #	DCB RT #
	=====	=====	=====	=====	=====	=====
01	10508REP	774879	12/16/08	1728	3.23	13.33
02	10508REPD	774879D1	12/16/08	1752	3.23	13.33
03	AR1660 200PP	AR1660 200PP	12/16/08	1841	3.23	13.34
04	AR1660 200PP	AR1660 200PP	12/17/08	1015	3.23	13.33
05	07110508	774877	12/17/08	1040	3.23	13.34
06	MW006-110608	774874	12/17/08	1152	3.21	13.32
07	AR1660 200PP	AR1660 200PP	12/17/08	1217	3.23	13.33
08						
09						
10						
11						
12						
13						
14						
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26						
27						
28						
29						
30						
31						
32						

QC LIMITS

TCX = Tetrachloro-m-xylene (+/- 0.05 MINUTES)
 DCB = Decachlorobiphenyl (+/- 0.05 MINUTES)

Column used to flag retention time values with an asterisk.
 * Values outside of QC limits.

FORM 8
OTHER ANALYTICAL SEQUENCE

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692
 GC Column: RTX-35 ID: 0.25 (mm) Init. Calib. Date(s): 12/11/08 12/11/08
 Instrument ID: 7227_2

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS,
 SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION							
				TCX:	DCB:		
				3.86	14.57		
	CLIENT	LAB	DATE	TIME	TCX	DCB	
	SAMPLE NO.	SAMPLE ID	ANALYZED	ANALYZED	RT	#	RT
							#
01	AR1221 200PP	AR1221 200PP	12/11/08	1926	3.87		14.58
02	AR1232 200PP	AR1232 200PP	12/11/08	1950	3.87		14.57
03	AR1242 200PP	AR1242 200PP	12/11/08	2014	3.87		14.57
04	AR1248 200PP	AR1248 200PP	12/11/08	2039	3.85		14.56
05	AR1254 200PP	AR1254 200PP	12/11/08	2103	3.85		14.56
06	AR1262 200PP	AR1262 200PP	12/11/08	2127	3.86		14.57
07	AR1268 200PP	AR1268 200PP	12/11/08	2151	3.85		14.56
08	AR1660 50PPB	AR1660 50PPB	12/11/08	2215	3.86		14.57
09	AR1660 100PP	AR1660 100PP	12/11/08	2240	3.86		14.56
10	AR1660 200PP	AR1660 200PP	12/11/08	2304	3.86		14.57
11	AR1660 400PP	AR1660 400PP	12/11/08	2328	3.86		14.57
12	AR1660 800PP	AR1660 800PP	12/11/08	2352	3.86		14.56
13	AR1660 ICV	AR1660 ICV	12/12/08	0041	3.87		14.57
14	MBLK111108E	MBLK111108E	12/12/08	0419	3.85		14.56
15	E111108LCS	E111108LCS	12/12/08	0443	3.85		14.55
16	AR1660 200PP	AR1660 200PP	12/12/08	0507	3.85		14.56
17	MW07A-110608	774872	12/12/08	0648	3.85		14.57
18	EB-110508	774873	12/12/08	0713	3.86		14.57
19	MW04B-110508	774875	12/12/08	0801	3.86		14.57
20	MW04A-110508	774876	12/12/08	0825	3.86		14.57
21	W006110508DL	774878D1	12/12/08	0849	3.86		14.56
22	AR1660 200PP	AR1660 200PP	12/12/08	1051	3.86		14.56
23	PBLK SCU	PBLK SCU	12/12/08	1139	3.86		14.57
24	MBLK111908E	MBLK111908E	12/12/08	1203	3.85		14.56
25	E111908LCS	E111908LCS	12/12/08	1227	3.86		14.56
26	07110508RE	774877R1	12/12/08	1252	3.86		14.56
27	07110508REDL	774877R1D1	12/12/08	1316			
28	10508REPREDL	774879R1	12/12/08	1340	3.85		14.56
29	10508REPREDL	774879R1D1	12/12/08	1404	3.86		14.57
30	AR1660 200PP	AR1660 200PP	12/12/08	1517	3.86		14.57
31	AR1660 200PP	AR1660 200PP	12/16/08	1326	3.86		14.57
32	W006110508	774878	12/16/08	1616	3.85		14.55

QC LIMITS
 TCX = Tetrachloro-m-xylene (+/- 0.05 MINUTES)
 DCB = Decachlorobiphenyl (+/- 0.05 MINUTES)

Column used to flag retention time values with an asterisk.
 * Values outside of QC limits.

FORM 8
OTHER ANALYTICAL SEQUENCE

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692
 GC Column: RTX-35 ID: 0.25 (mm) Init. Calib. Date(s): 12/11/08 12/11/08
 Instrument ID: 7227_2

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS,
 SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION						
TCX: 3.86			DCB: 14.57			
CLIENT	LAB	DATE	TIME	TCX	DCB	
SAMPLE NO.	SAMPLE ID	ANALYZED	ANALYZED	RT	RT	#
=====	=====	=====	=====	=====	=====	=====
01	10508REP	774879	12/16/08	1728	3.85	14.56
02	10508REPD1	774879D1	12/16/08	1752	3.86	14.56
03	AR1660 200PP	AR1660 200PP	12/16/08	1841	3.86	14.56
04	AR1660 200PP	AR1660 200PP	12/17/08	1015	3.85	14.55
05	07110508	774877	12/17/08	1040	3.87	14.57
06	MW006-110608	774874	12/17/08	1152	3.84	14.55
07	AR1660 200PP	AR1660 200PP	12/17/08	1217	3.85	14.55
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						

QC LIMITS

TCX = Tetrachloro-m-xylene (+/- 0.05 MINUTES)
 DCB = Decachlorobiphenyl (+/- 0.05 MINUTES)

Column used to flag retention time values with an asterisk.
 * Values outside of QC limits.

FORM 10
OTHER IDENTIFICATION SUMMARY
FOR MULTICOMPONENT ANALYTES

BATTEL SAMPLE NO.

07110508

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Lab Sample ID: 774877 Date(s) Analyzed: 12/17/08 12/17/08

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column(1): RTX-5 ID: 0.25 (mm) GC Column(2): RTX-35 ID: 0.25 (mm)

ANALYTE	PEAK	RT	RT WINDOW		CONCENTRATION	MEAN CONCENTRATION	RPD
			FROM	TO			
Aroclor-1242	1	4.59	4.54	4.64	0.21	0.25	
	2	4.71	4.66	4.76	0.26		
	3	4.80	4.76	4.86	0.29		
COLUMN 1	4						
	5						
COLUMN 2	1	5.88	5.84	5.94	0.21	0.24	4.1
	2	6.13	6.09	6.19	0.24		
	3	6.36	6.31	6.41	0.28		
	4						
	5						
COLUMN 1	1						
	2						
	3						
	4						
	5						
COLUMN 2	1						
	2						
	3						
	4						
	5						
COLUMN 1	1						
	2						
	3						
	4						
	5						
COLUMN 2	1						
	2						
	3						
	4						
	5						

At least 3 peaks are required for identification of multicomponent analytes.

FORM 10
 OTHER IDENTIFICATION SUMMARY
 FOR MULTICOMPONENT ANALYTES

BATTEL SAMPLE NO.

07110508RE

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Lab Sample ID: 774877R1 Date(s) Analyzed: 12/12/08 12/12/08

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column(1): RTX-5 ID: 0.25 (mm) GC Column(2): RTX-35 ID: 0.25 (mm)

ANALYTE	PEAK	RT	RT WINDOW		CONCENTRATION	MEAN CONCENTRATION	RPD	
			FROM	TO				
Aroclor-1242	1	4.09	4.03	4.13	27			
	2	4.58	4.54	4.64	13			
	3	4.70	4.66	4.76	15			
	COLUMN 1	4	4.80	4.76	4.86	17		
	5						18	
COLUMN 2	1	5.87	5.84	5.94	13			
	2	6.13	6.09	6.19	13			
	3	6.35	6.31	6.41	16			
	4							
	5						14	25
COLUMN 1	1							
	2							
	3							
	4							
	5							
COLUMN 2	1							
	2							
	3							
	4							
	5							
COLUMN 1	1							
	2							
	3							
	4							
	5							
COLUMN 2	1							
	2							
	3							
	4							
	5							

At least 3 peaks are required for identification of multicomponent analytes.

FORM 10
 OTHER IDENTIFICATION SUMMARY
 FOR MULTICOMPONENT ANALYTES

BATTEL SAMPLE NO.

07110508REDL

Lab Name: TESTAMERICA BURLINGTON

Contract: 28000

Lab Code: STLV

Case No.: NBH

SAS No.:

SDG No.: 128692

Lab Sample ID: 774877R1D1

Date(s) Analyzed: 12/12/08 12/12/08

Instrument ID (1): 7227_1

Instrument ID (2): 7227_2

GC Column(1): RTX-5

ID: 0.25 (mm)

GC Column(2): RTX-35

ID: 0.25 (mm)

ANALYTE	PEAK	RT	RT WINDOW		CONCENTRATION	MEAN CONCENTRATION	RPD
			FROM	TO			
Aroclor-1242	1	4.58	4.54	4.64	13		
	2	4.71	4.66	4.76	16		
	3	4.80	4.76	4.86	17		
	COLUMN 1	4					
	5					15	
COLUMN 2	1	5.87	5.84	5.94	13		
	2	6.12	6.09	6.19	15		
	3	6.35	6.31	6.41	17		
	4						
	5					15	0.0
COLUMN 1	1						
	2						
	3						
	4						
	5						
COLUMN 2	1						
	2						
	3						
	4						
	5						
COLUMN 1	1						
	2						
	3						
	4						
	5						
COLUMN 2	1						
	2						
	3						
	4						
	5						

At least 3 peaks are required for identification of multicomponent analytes.

FORM 10
 OTHER IDENTIFICATION SUMMARY
 FOR MULTICOMPONENT ANALYTES

BATTEL SAMPLE NO.

10508REP

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692
 Lab Sample ID: 774879 Date(s) Analyzed: 12/16/08 12/16/08
 Instrument ID (1): 7227_1 Instrument ID (2): 7227_2
 GC Column(1): RTX-5 ID: 0.25(mm) GC Column(2): RTX-35 ID: 0.25(mm)

ANALYTE	PEAK	RT	RT WINDOW		CONCENTRATION	MEAN CONCENTRATION	RPD
			FROM	TO			
Aroclor-1254	1	6.48	6.43	6.53	0.95	0.93	
	2	6.78	6.73	6.83	0.99		
	3	6.88	6.83	6.93	0.99		
	4	6.96	6.91	7.01	1.1		
	5	7.60	7.55	7.65	0.65		
COLUMN 1	1	8.69	8.64	8.74	1.9	1.3	33
	2	9.02	8.98	9.08	1.3		
	3	9.33	9.29	9.39	1.4		
	4	9.93	9.88	9.98	0.76		
	5						
COLUMN 2	1						
	2						
	3						
	4						
	5						
COLUMN 1	1						
	2						
	3						
	4						
	5						
COLUMN 2	1						
	2						
	3						
	4						
	5						

At least 3 peaks are required for identification of multicomponent analytes.

FORM 10
 OTHER IDENTIFICATION SUMMARY
 FOR MULTICOMPONENT ANALYTES

BATTEL SAMPLE NO.

10508REPD

Lab Name: TESTAMERICA BURLINGTON

Contract: 28000

Lab Code: STL

Case No.: NBH

SAS No.:

SDG No.: 128692

Lab Sample ID: 774879D1

Date(s) Analyzed: 12/16/08 12/16/08

Instrument ID (1): 7227_1

Instrument ID (2): 7227_2

GC Column(1): RTX-5

ID: 0.25 (mm)

GC Column(2): RTX-35

ID: 0.25 (mm)

ANALYTE	PEAK	RT	RT WINDOW		CONCENTRATION	MEAN CONCENTRATION	RPD	
			FROM	TO				
Aroclor-1254	1	6.48	6.43	6.53	1.2			
	2	6.78	6.73	6.83	1.3			
	3	6.88	6.83	6.93	1.1			
	COLUMN 1	4	6.96	6.91	7.01	1.4		
	5	7.60	7.55	7.65	0.71	1.1		
COLUMN 2	1	8.69	8.64	8.74	2.1			
	2	9.03	8.98	9.08	1.5			
	3	9.34	9.29	9.39	1.5			
	4	9.93	9.88	9.98	0.78			
	5					1.5	31	
COLUMN 1	1							
	2							
	3							
	4							
	5							
COLUMN 2	1							
	2							
	3							
	4							
	5							
COLUMN 1	1							
	2							
	3							
	4							
	5							
COLUMN 2	1							
	2							
	3							
	4							
	5							

At least 3 peaks are required for identification of multicomponent analytes.

FORM 10
OTHER IDENTIFICATION SUMMARY
FOR MULTICOMPONENT ANALYTES

BATTEL SAMPLE NO.

10508REPRE

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Lab Sample ID: 774879R1 Date(s) Analyzed: 12/12/08 12/12/08

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column(1): RTX-5 ID: 0.25 (mm) GC Column(2): RTX-35 ID: 0.25 (mm)

ANALYTE	PEAK	RT	RT WINDOW		CONCENTRATION	MEAN CONCENTRATION	RPD
			FROM	TO			
Aroclor-1254	1	6.48	6.43	6.53	1.2		
	2	6.79	6.73	6.83	1.3		
	3	6.88	6.83	6.93	1.4		
	COLUMN 1	4	6.96	6.91	7.01	1.4	
	5	7.61	7.55	7.65	0.88	1.2	
COLUMN 2	1	8.69	8.64	8.74	2.4		
	2	9.34	9.29	9.39	1.8		
	3	9.94	9.88	9.98	0.95		
	4						
	5					1.7	34
COLUMN 1	1						
	2						
	3						
	4						
	5						
COLUMN 2	1						
	2						
	3						
	4						
	5						
COLUMN 1	1						
	2						
	3						
	4						
	5						
COLUMN 2	1						
	2						
	3						
	4						
	5						

At least 3 peaks are required for identification of multicomponent analytes.

FORM 10
OTHER IDENTIFICATION SUMMARY
FOR MULTICOMPONENT ANALYTES

BATTEL SAMPLE NO.

10508REPREDL

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Lab Sample ID: 774879R1D1 Date(s) Analyzed: 12/12/08 12/12/08

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column(1): RTX-5 ID: 0.25(mm) GC Column(2): RTX-35 ID: 0.25(mm)

ANALYTE	PEAK	RT	RT WINDOW		CONCENTRATION	MEAN CONCENTRATION	RPD
			FROM	TO			
Aroclor-1254	1	6.49	6.43	6.53	1.5		
	2	6.79	6.73	6.83	1.6		
	3	6.89	6.83	6.93	1.5		
	COLUMN 1	4	6.97	6.91	7.01	1.7	
	5	7.61	7.55	7.65	0.93	1.4	
COLUMN 2	1	8.70	8.64	8.74	2.7		
	2	9.35	9.29	9.39	1.9		
	3	9.94	9.88	9.98	1.00		
	4						
	5					1.9	30
=====							
COLUMN 1	1						
	2						
	3						
	4						
	5						
COLUMN 2	1						
	2						
	3						
	4						
	5						
=====							
COLUMN 1	1						
	2						
	3						
	4						
	5						
COLUMN 2	1						
	2						
	3						
	4						
	5						

At least 3 peaks are required for identification of multicomponent analytes.

FORM 10
OTHER IDENTIFICATION SUMMARY
FOR MULTICOMPONENT ANALYTES

BATTEL SAMPLE NO.

EB-110508

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Lab Sample ID: 774873 Date(s) Analyzed: 12/12/08 12/12/08

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column(1): RTX-5 ID: 0.25(mm) GC Column(2): RTX-35 ID: 0.25(mm)

ANALYTE	PEAK	RT	RT WINDOW		CONCENTRATION	MEAN CONCENTRATION	RPD	
			FROM	TO				
Aroclor-1242	1	3.65	3.60	3.70	0.12			
	2	4.08	4.03	4.13	0.12			
	3	4.59	4.54	4.64	0.061			
	COLUMN 1	4	4.71	4.66	4.76	0.072		
	5	4.80	4.76	4.86	0.079	0.091		
COLUMN 2	1	5.22	5.17	5.27	0.12			
	2	5.54	5.50	5.60	0.15			
	3	5.88	5.84	5.94	0.062			
	4	6.13	6.09	6.19	0.069			
	5	6.35	6.31	6.41	0.078	0.095	4.3	
COLUMN 1	1							
	2							
	3							
	4							
	5							
COLUMN 2	1							
	2							
	3							
	4							
	5							
COLUMN 1	1							
	2							
	3							
	4							
	5							
COLUMN 2	1							
	2							
	3							
	4							
	5							

At least 3 peaks are required for identification of multicomponent analytes.

FORM 10
 OTHER IDENTIFICATION SUMMARY
 FOR MULTICOMPONENT ANALYTES

BATTEL SAMPLE NO.

MW04A-110508

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Lab Sample ID: 774876 Date(s) Analyzed: 12/12/08 12/12/08

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column(1): RTX-5 ID: 0.25 (mm) GC Column(2): RTX-35 ID: 0.25 (mm)

ANALYTE	PEAK	RT	RT WINDOW		CONCENTRATION	MEAN CONCENTRATION	RPD	
			FROM	TO				
Aroclor-1242	1	3.65	3.60	3.70	0.12	0.32		
	2	4.08	4.03	4.13	0.41			
	3	4.59	4.54	4.64	0.48			
	COLUMN 1	4	4.71	4.66	4.76			0.22
	5	4.80	4.76	4.86	0.36			
COLUMN 2	1	5.21	5.17	5.27	0.44	0.42	27	
	2	5.88	5.84	5.94	0.47			
	3	6.35	6.31	6.41	0.35			
	4							
	5							
Aroclor-1254	1	6.49	6.43	6.53	0.49	0.50		
	2	6.79	6.73	6.83	0.50			
	3	6.89	6.83	6.93	0.51			
	COLUMN 1	4	6.97	6.91	7.01			0.54
	5	7.61	7.55	7.65	0.44			
COLUMN 2	1	8.45	8.38	8.48	0.70	0.62	21	
	2	8.70	8.64	8.74	0.65			
	3	9.04	8.98	9.08	0.61			
	4	9.35	9.29	9.39	0.63			
	5	9.94	9.88	9.98	0.48			
Aroclor-1260	1	9.15	9.10	9.20	0.045	0.050		
	2	9.72	9.67	9.77	0.058			
	3	10.44	10.39	10.49	0.045			
	COLUMN 1	4	11.20	11.15	11.25			0.077
	5	11.52	11.47	11.57	0.024			
COLUMN 2	1	11.60	11.55	11.65	0.049	0.039	25	
	2	12.56	12.51	12.61	0.057			
	3	13.11	13.06	13.16	0.042			
	4	13.73	13.68	13.78	0.025			
	5	13.85	13.80	13.90	0.025			

At least 3 peaks are required for identification of multicomponent analytes.

FORM 10
 OTHER IDENTIFICATION SUMMARY
 FOR MULTICOMPONENT ANALYTES

BATTEL SAMPLE NO.

MW04B-110508

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Lab Sample ID: 774875 Date(s) Analyzed: 12/12/08 12/12/08

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column(1): RTX-5 ID: 0.25 (mm) GC Column(2): RTX-35 ID: 0.25 (mm)

ANALYTE	PEAK	RT	RT WINDOW		CONCENTRATION	MEAN CONCENTRATION	RPD	
			FROM	TO				
Aroclor-1242	1	4.58	4.54	4.64	0.85	0.74		
	2	4.71	4.66	4.76	0.53			
	3	4.80	4.76	4.86	0.84			
COLUMN 1	4							
	5							
COLUMN 2	1	5.88	5.84	5.94	0.81	0.68	8.5	
	2	6.13	6.09	6.19	0.45			
	3	6.36	6.31	6.41	0.77			
COLUMN 2	4							
	5							
Aroclor-1254	1	6.48	6.43	6.53	0.19	0.12		
	2	6.78	6.73	6.83	0.12			
	3	6.88	6.83	6.93	0.071			
	COLUMN 1	4	6.96	6.91	7.01			0.094
		5	7.61	7.55	7.65			0.13
COLUMN 2	1	8.44	8.38	8.48	0.21	0.15	22	
	2	8.70	8.64	8.74	0.15			
	3	9.04	8.98	9.08	0.15			
	4	9.35	9.29	9.39	0.096			
	5	9.94	9.88	9.98	0.14			
COLUMN 1	1							
	2							
	3							
	4							
	5							
COLUMN 2	1							
	2							
	3							
	4							
	5							

At least 3 peaks are required for identification of multicomponent analytes.

FORM 10
 OTHER IDENTIFICATION SUMMARY
 FOR MULTICOMPONENT ANALYTES

BATTEL SAMPLE NO.

W006110508

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Lab Sample ID: 774878 Date(s) Analyzed: 12/16/08 12/16/08

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column(1): RTX-5 ID: 0.25(mm) GC Column(2): RTX-35 ID: 0.25(mm)

ANALYTE	PEAK	RT	RT WINDOW		CONCENTRATION	MEAN CONCENTRATION	RPD	
			FROM	TO				
Aroclor-1254	1	6.47	6.43	6.53	1.7			
	2	6.77	6.73	6.83	1.8			
	3	6.87	6.83	6.93	1.9			
	COLUMN 1	4	6.95	6.91	7.01	2.0		
	5	7.60	7.55	7.65	1.3	1.8		
COLUMN 2	1	8.68	8.64	8.74	3.7			
	2	9.02	8.98	9.08	2.6			
	3	9.33	9.29	9.39	2.7			
	4	9.92	9.88	9.98	1.5			
	5					2.6	36	
COLUMN 1	1							
	2							
	3							
	4							
	5							
COLUMN 2	1							
	2							
	3							
	4							
	5							
COLUMN 1	1							
	2							
	3							
	4							
	5							
COLUMN 2	1							
	2							
	3							
	4							
	5							

At least 3 peaks are required for identification of multicomponent analytes.

FORM 10
OTHER IDENTIFICATION SUMMARY
FOR MULTICOMPONENT ANALYTES

BATTEL SAMPLE NO.

W006110508DL

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Lab Sample ID: 774878D1 Date(s) Analyzed: 12/12/08 12/12/08

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column(1): RTX-5 ID: 0.25 (mm) GC Column(2): RTX-35 ID: 0.25 (mm)

ANALYTE	PEAK	RT	RT WINDOW		CONCENTRATION	MEAN CONCENTRATION	RPD	
			FROM	TO				
Aroclor-1254	1	6.49	6.43	6.53	1.8			
	2	6.79	6.73	6.83	1.8			
	3	6.89	6.83	6.93	1.7			
	COLUMN 1	4	6.97	6.91	7.01	2.0		
	5	7.61	7.55	7.65	1.1	1.7		
COLUMN 2	1	8.70	8.64	8.74	3.3			
	2	9.04	8.98	9.08	2.3			
	3	9.35	9.29	9.39	2.4			
	4	9.94	9.88	9.98	1.2			
	5					2.3	30	
COLUMN 1	1							
	2							
	3							
	4							
	5							
COLUMN 2	1							
	2							
	3							
	4							
	5							
COLUMN 1	1							
	2							
	3							
	4							
	5							
COLUMN 2	1							
	2							
	3							
	4							
	5							

At least 3 peaks are required for identification of multicomponent analytes.

FORM 10
 OTHER IDENTIFICATION SUMMARY
 FOR MULTICOMPONENT ANALYTES

CLIENT SAMPLE NO.

E111108LCS

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Lab Sample ID: E111108LCS Date(s) Analyzed: 12/12/08 12/12/08

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column(1): RTX-5 ID: 0.25(mm) GC Column(2): RTX-35 ID: 0.25(mm)

ANALYTE	PEAK	RT	RT WINDOW		CONCENTRATION	MEAN CONCENTRATION	RPD	
			FROM	TO				
Aroclor-1016	1	3.64	3.59	3.69	0.41	0.42		
	2	4.27	4.23	4.33	0.41			
	3	4.58	4.54	4.64	0.44			
	COLUMN 1	4	4.70	4.66	4.76			0.42
	5	4.79	4.75	4.85	0.44			
COLUMN 2	1	4.58	4.55	4.65	0.41	0.42	0.0	
	2	5.20	5.16	5.26	0.41			
	3	5.87	5.83	5.93	0.42			
	4	6.12	6.08	6.18	0.42			
	5	6.34	6.30	6.40	0.43			
Aroclor-1260	1	9.14	9.10	9.20	0.43	0.45		
	2	9.71	9.67	9.77	0.45			
	3	10.43	10.39	10.49	0.47			
	COLUMN 1	4	11.19	11.15	11.25			0.46
	5	11.51	11.47	11.57	0.44			
COLUMN 2	1	11.58	11.55	11.65	0.45	0.48	6.5	
	2	12.54	12.51	12.61	0.51			
	3	13.10	13.06	13.16	0.49			
	4	13.71	13.68	13.78	0.47			
	5	13.83	13.80	13.90	0.49			
COLUMN 1	1							
	2							
	3							
	4							
	5							
COLUMN 2	1							
	2							
	3							
	4							
	5							

At least 3 peaks are required for identification of multicomponent analytes.

FORM 10
OTHER IDENTIFICATION SUMMARY
FOR MULTICOMPONENT ANALYTES

CLIENT SAMPLE NO.

E111908LCS

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128692

Lab Sample ID: E111908LCS Date(s) Analyzed: 12/12/08 12/12/08

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column(1): RTX-5 ID: 0.25 (mm) GC Column(2): RTX-35 ID: 0.25 (mm)

ANALYTE	PEAK	RT	RT WINDOW		CONCENTRATION	MEAN CONCENTRATION	RPD	
			FROM	TO				
Aroclor-1016	1	3.64	3.59	3.69	0.38	0.38		
	2	4.27	4.23	4.33	0.33			
	3	4.58	4.54	4.64	0.39			
	COLUMN 1	4	4.70	4.66	4.76			0.40
	5	4.80	4.75	4.85	0.42			
COLUMN 2	1	4.59	4.55	4.65	0.35	0.40	5.1	
	2	5.20	5.16	5.26	0.40			
	3	5.87	5.83	5.93	0.43			
	4	6.13	6.08	6.18	0.42			
	5	6.35	6.30	6.40	0.43			
Aroclor-1260	1	9.14	9.10	9.20	0.41	0.41		
	2	9.71	9.67	9.77	0.41			
	3	10.44	10.39	10.49	0.44			
	COLUMN 1	4	11.19	11.15	11.25			0.43
	5	11.52	11.47	11.57	0.39			
COLUMN 2	1	11.59	11.55	11.65	0.44	0.47	14	
	2	12.55	12.51	12.61	0.51			
	3	13.11	13.06	13.16	0.46			
	4	13.72	13.68	13.78	0.45			
	5	13.84	13.80	13.90	0.46			
COLUMN 1	1							
	2							
	3							
	4							
	5							
COLUMN 2	1							
	2							
	3							
	4							
	5							

At least 3 peaks are required for identification of multicomponent analytes.

TestAmerica
South Burlington, VT

Sample Data Summary
Package

SDG: 128717

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

December 31, 2008

TestAmerica Laboratories, Inc.

Ms. Yixian Zhang
Battele
Duxbury Operations
397 Washington Street
Duxbury, MA 02332

Re: Laboratory Project No. NBH
Case: NBH; SDG: 128717

Dear Ms. Zhang:

Enclosed are the analytical results for the samples that were received by TestAmerica Burlington on November 8th, 2008. Laboratory identification numbers were assigned, and designated as follows:

<u>Lab ID</u>	<u>Client Sample ID</u>	<u>Sample Date</u>	<u>Sample Matrix</u>
Received: 11/08/08 ETR No: 128717			
775142	MW-001-110608	11/06/08	WATER
775143	MW-005-110608	11/06/08	WATER
775144	MW-04A-110708	11/07/08	WATER
775145	MW-003-110708	11/07/08	WATER

Documentation of the condition of the samples at the time of their receipt and any exception to the laboratory's Sample Acceptance Policy is documented in the Sample Handling section of this submittal.

SW846 Method 8082 – PCB Aroclors:

Due to inherent software limitations, the sample identifications for MW-001-110608, MW-005-110608, MW-04A-110708 and MW-003-110708 were truncated.

Sample MW-04A-110708 exhibited a significant amount of matrix interference in the early region of the chromatogram. The interference exceeded the detector capacity in the 3-fold dilution analysis. A further, 30.3-fold dilution was performed to minimize the matrix effect of the interference in this sample. There were no identifiable Aroclor patterns in this region.

The recoveries of the surrogate compound Tetrachloro-m-xylene (TCX) were outside the advisory control limits (60-115%) in the analysis of the sample MW-04A-110708. The analysis of sample MW-005-110608 yielded a percent recovery of the surrogate compound Decachlorobiphenyl (DCB) on the RTX-5 analytical column that was marginally below the advisory control limits (65-115%) at 64%. However, the DCB percent recovery was within the control limits on the RTX-35 column. The TCX percent recoveries were within the advisory control limits on both columns for sample MW-005-110608. The laboratory attributes these anomalies to matrix interference.

The analysis of the Continuing Calibration Verification (CCV) standard performed on 12/12/08 at 1517 hours exhibited a percent difference for the surrogate Decachlorobiphenyl that was marginally outside the control limits (15%) at 15.8% on the RTX-5 analytical column.

Manual integration of quantitation peaks was performed where necessary. Documentation of each manual integration was provided in the supportive documentation. Secondary review was performed by the laboratory on all of the manual integrations within this submittal.

For dual column analyses, the laboratory reported the higher of the two confirmed results for each analyte.

Any reference within this report to Severn Trent Laboratories, Inc. or STL, should be understood to refer to TestAmerica Laboratories, Inc. (formerly known as Severn Trent Laboratories, Inc.) The analytical results associated with the samples presented in this test report were generated under a quality system that adheres to requirements specified in the NELAC standard. Release of the data in this test report and any associated electronic deliverables is authorized by the Laboratory Director's designee as verified by the following signature.

If there are any questions regarding this submittal, please contact me at 802 660-1990.

Sincerely,



Ron Pentkowski
Project Manager

Enclosure

TestAmerica Burlington Data Qualifier Definitions

Organic

- U: Compound analyzed but not detected at a concentration above the reporting limit.
- J: Estimated value.
- N: Indicates presumptive evidence of a compound. This flag is used only for tentatively identified compounds (TICs) where the identification of a compound is based on a mass spectral library search.
- P: SW-846: The relative percent difference for detected concentrations between two GC columns is greater than 40%. Unless otherwise specified the higher of the two values is reported on the Form I.
- CLP SOW: Greater than 25% difference for detected concentrations between two GC columns. Unless otherwise specified the lower of the two values is reported on the Form I.
- C: Pesticide result whose identification has been confirmed by GC/MS.
- B: Analyte is found in the sample and the associated method blank. The flag is used for tentatively identified compounds as well as positively identified compounds.
- E: Compounds whose concentrations exceed the upper limit of the calibration range of the instrument for that specific analysis.
- D: Concentrations identified from analysis of the sample at a secondary dilution.
- A: Tentatively identified compound is a suspected aldol condensation product.
- X,Y,Z: Laboratory defined flags that may be used alone or combined, as needed. If used, the description of the flag is defined in the project narrative.

Inorganic/Metals

- E: Reported value is estimated due to the presence of interference.
- N: Matrix spike sample recovery is not within control limits.
- * Duplicate sample analysis is not within control limits.
- B: The result reported is less than the reporting limit but greater than the instrument detection limit.
- U: Analyte was analyzed for but not detected above the reporting limit.

Method Codes:

- P ICP-AES
MS ICP-MS
CV Cold Vapor AA
AS Semi-Automated Spectrophotometric

Battelle

The Business of Innovation

Chain of Custody

Ship to : Test America - Burlington

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

Proj. No 6606422		Proj. Name NBH - Groundwater		ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"												
SPLERS: Signature J. Tenzer, M. Fitzpatrick, P. Curran																
DATE	TIME	Lab ID BATTELLE ID	Field ID CLIENT ID	SAMPLE DESCRIPTION		PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
11/10/08	1222		MW-001-110608	Groundwater	Location Sanger St		✓								40c	2
↓	1305		MW-005-110608				✓								✓	2
11/10/08	0859		MW-04A-110708				✓								✓	2
11/10/08	0923		MW-003-110708				✓								✓	2
			MW-003-110708-REP				✓								✓	2 (3)
Inquired by:				Date/Time		Received by:				Date/Time						
				11/17/08 1330		Lab TA Burlington				11/08/08 0940						
Inquired by:				Date/Time		Received by:				Date/Time						
Comments: @SIB 0923 @SIB MW-003-110708-REP JMT 11/16/08 (3) Please ignore JMT 11/16/08																

ORIGINAL



Sample Data Summary – 8082 PCBS

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

MW001-110608

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717
 Matrix: (soil/water) WATER Lab Sample ID: 775142
 Sample wt/vol: 1045 (g/mL) ML Lab File ID: 11DEC081813-R181
 % Moisture: _____ decanted: (Y/N) _____ Date Received: 11/08/08
 Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/11/08
 Concentrated Extract Volume: 1 (mL) Date Analyzed: 12/12/08
 Injection Volume: 1.0 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
11104-28-2-----	Aroclor-1221	0.048	U
11141-16-5-----	Aroclor-1232	0.048	U
53469-21-9-----	Aroclor-1242	0.048	U
12674-11-2-----	Aroclor-1016	0.048	U
12672-29-6-----	Aroclor-1248	0.048	U
11096-82-5-----	Aroclor-1260	0.048	U
11097-69-1-----	Aroclor-1254	0.048	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

MW003-110708

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717
 Matrix: (soil/water) WATER Lab Sample ID: 775145
 Sample wt/vol: 1050 (g/mL) ML Lab File ID: 11DEC081813-R231
 % Moisture: _____ decanted: (Y/N) _____ Date Received: 11/08/08
 Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/11/08
 Concentrated Extract Volume: 1 (mL) Date Analyzed: 12/12/08
 Injection Volume: 1.0 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	-----Aroclor-1016	0.048	U
11104-28-2	-----Aroclor-1221	0.048	U
11141-16-5	-----Aroclor-1232	0.048	U
53469-21-9	-----Aroclor-1242	0.048	U
12672-29-6	-----Aroclor-1248	0.048	U
11097-69-1	-----Aroclor-1254	0.048	U
11096-82-5	-----Aroclor-1260	0.048	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

W005110608

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717
 Matrix: (soil/water) WATER Lab Sample ID: 775143
 Sample wt/vol: 1025 (g/mL) ML Lab File ID: 16DEC081437-R011
 % Moisture: _____ decanted: (Y/N) _____ Date Received: 11/08/08
 Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/11/08
 Concentrated Extract Volume: 1 (mL) Date Analyzed: 12/16/08
 Injection Volume: 1.0 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2-----	Aroclor-1016	0.049	U
11104-28-2-----	Aroclor-1221	0.049	U
11141-16-5-----	Aroclor-1232	0.049	U
53469-21-9-----	Aroclor-1242	0.049	U
12672-29-6-----	Aroclor-1248	0.049	U
11097-69-1-----	Aroclor-1254	0.032	J
11096-82-5-----	Aroclor-1260	0.049	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

W04A110708

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717
 Matrix: (soil/water) WATER Lab Sample ID: 775144
 Sample wt/vol: 1040 (g/mL) ML Lab File ID: 16DEC081437-R031
 % Moisture: _____ decanted: (Y/N) _____ Date Received: 11/08/08
 Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/11/08
 Concentrated Extract Volume: 1 (mL) Date Analyzed: 12/16/08
 Injection Volume: 1.0 (uL) Dilution Factor: 3.0
 GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2-2-2-2-2-2	Aroclor-1016	0.14	U
11104-28-2-2-2-2-2-2	Aroclor-1221	0.14	U
11141-16-5-2-2-2-2-2	Aroclor-1232	0.14	U
53469-21-9-2-2-2-2-2	Aroclor-1242	0.14	U
12672-29-6-2-2-2-2-2	Aroclor-1248	0.14	U
11097-69-1-2-2-2-2-2	Aroclor-1254	0.14	U
11096-82-5-2-2-2-2-2	Aroclor-1260	0.14	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

BATTEL SAMPLE NO.

W04A110708DL

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717
 Matrix: (soil/water) WATER Lab Sample ID: 775144D1
 Sample wt/vol: 1040 (g/mL) ML Lab File ID: 16DEC081437-R041
 % Moisture: _____ decanted: (Y/N) _____ Date Received: 11/08/08
 Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/11/08
 Concentrated Extract Volume: 1 (mL) Date Analyzed: 12/16/08
 Injection Volume: 1.0 (uL) Dilution Factor: 30.0
 GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2-----	Aroclor-1016	1.4	U
11104-28-2-----	Aroclor-1221	1.4	U
11141-16-5-----	Aroclor-1232	1.4	U
53469-21-9-----	Aroclor-1242	1.4	U
12672-29-6-----	Aroclor-1248	1.4	U
11097-69-1-----	Aroclor-1254	1.4	U
11096-82-5-----	Aroclor-1260	1.4	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

MBLK111108E

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717
 Matrix: (soil/water) WATER Lab Sample ID: MBLK111108E
 Sample wt/vol: 1000 (g/mL) ML Lab File ID: 11DEC081813-R091
 % Moisture: _____ decanted: (Y/N) _____ Date Received: _____
 Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/11/08
 Concentrated Extract Volume: 1 (mL) Date Analyzed: 12/12/08
 Injection Volume: 1.0 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
11104-28-2-----	Aroclor-1221	0.050	U
11141-16-5-----	Aroclor-1232	0.050	U
53469-21-9-----	Aroclor-1242	0.050	U
12674-11-2-----	Aroclor-1016	0.050	U
12672-29-6-----	Aroclor-1248	0.050	U
11096-82-5-----	Aroclor-1260	0.050	U
11097-69-1-----	Aroclor-1254	0.050	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

PBLK_SCU

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717
 Matrix: (soil/water) WATER Lab Sample ID: PBLK_SCU
 Sample wt/vol: 1000 (g/mL) ML Lab File ID: 16DEC081437-R101
 % Moisture: _____ decanted: (Y/N) _____ Date Received: _____
 Extraction: (SepF/Cont/Sonc) SONC Date Extracted: _____
 Concentrated Extract Volume: 1 (mL) Date Analyzed: 12/16/08
 Injection Volume: 1.0 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2-----	Aroclor-1016	0.050	U
11104-28-2-----	Aroclor-1221	0.050	U
11141-16-5-----	Aroclor-1232	0.050	U
53469-21-9-----	Aroclor-1242	0.050	U
12672-29-6-----	Aroclor-1248	0.050	U
11097-69-1-----	Aroclor-1254	0.050	U
11096-82-5-----	Aroclor-1260	0.050	U

FORM 1
OTHER ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

E111108LCS

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717
 Matrix: (soil/water) WATER Lab Sample ID: E111108LCS
 Sample wt/vol: 1000 (g/mL) ML Lab File ID: 11DEC081813-R101
 % Moisture: _____ decanted: (Y/N) _____ Date Received: _____
 Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/11/08
 Concentrated Extract Volume: 1 (mL) Date Analyzed: 12/12/08
 Injection Volume: 1.0 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		Q
12674-11-2-----	Aroclor-1016	0.42		
11104-28-2-----	Aroclor-1221	0.050		U
11141-16-5-----	Aroclor-1232	0.050		U
53469-21-9-----	Aroclor-1242	0.050		U
12672-29-6-----	Aroclor-1248	0.050		U
11097-69-1-----	Aroclor-1254	0.050		U
11096-82-5-----	Aroclor-1260	0.48		

FORM 2
WATER OTHER SURROGATE RECOVERY

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717

GC Column(1): RTX-5 ID: 0.25 (mm) GC Column(2): RTX-35 ID: 0.25 (mm)

	CLIENT SAMPLE NO.	TCX 1 %REC #	TCX 2 %REC #	DCB 1 %REC #	DCB 2 %REC #	OTHER (1)	OTHER (2)	TOT OUT
	=====	=====	=====	=====	=====	=====	=====	=====
01	MBLK111108E	95	95	105	115			0
02	E111108LCS	92	90	108	115			0
03	MW001-110608	91	89	68	73			0
04	MW003-110708	94	92	87	94			0
05	W005110608	82	77	64*	72			1
06	W04A110708	0D	109	39D	47D			0
07	W04A110708DL	1508D	23D	47D	60D			0
08	PBLK_SCU	95	95	90	105			0
09								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								

ADVISORY
QC LIMITS

S1 (TCX) = Tetrachloro-m-xylene (60-115)

S2 (DCB) = Decachlorobiphenyl (65-115)

Column to be used to flag recovery values

* Values outside of QC limits

D Surrogate diluted out

FORM 3
WATER OTHER LAB CONTROL SAMPLE

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717

Matrix Spike - Sample No.: E111108LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Aroclor-1016	0.50		0.42	84	65-120
Aroclor-1260	0.50		0.48	96	55-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 2 outside limits

COMMENTS:

FORM 4
OTHER METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

MBLK111108E

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717
 Lab Sample ID: MBLK111108E Lab File ID: 11DEC081813-R091
 Matrix (soil/water) WATER Extraction: (SepF/Cont/Sonc) SEPF
 Sulfur Cleanup (Y/N) N Date Extracted: 11/11/08
 Date Analyzed (1): 12/12/08 Date Analyzed (2): 12/12/08
 Time Analyzed (1): 0419 Time Analyzed (2): 0419
 Instrument ID (1): 7227_1 Instrument ID (2): 7227_2
 GC Column (1): RTX-5 ID: 0.25(mm) GC Column (2): RTX-35 ID: 0.25(mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01	E111108LCS	E111108LCS	12/12/08	12/12/08
02	MW001-110608	775142	12/12/08	12/12/08
03	MW003-110708	775145	12/12/08	12/12/08
04	W005110608	775143*	12/16/08	12/16/08
05	W04A110708	775144	12/16/08	12/16/08
06	W04A110708DL	775144D1	12/16/08	12/16/08
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				

COMMENTS: *-Sample extract received sulfur cleanup. The associated cleanup blank is PBLK_SCU.

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717
 Instrument ID: 7227_1 Calibration Date(s): 12/11/08 12/11/08
 Column: RTX-5 ID: 0.25 (mm) Calibration Time(s): 1926 2352

LAB FILE ID: RF50: 11DEC081808-RF100: 11DEC081808RF200: 11DEC081808
 RF400: 11DEC081808RF800: 11DEC081808

COMPOUND	RF50	RF100	RF200	RF400	RF800
Aroclor-1016	68.400	60.980	60.195	53.800	54.086
(2)	91.100	84.620	84.935	77.690	78.871
(3)	168.240	161.030	164.450	161.600	170.071
(4)	98.100	91.490	91.190	85.378	88.218
(5)	65.360	61.650	61.530	58.530	60.472
Aroclor-1221			31.290		
(2)			23.210		
(3)			73.485		
(4)			15.090		
(5)			10.325		
Aroclor-1232			62.850		
(2)			35.790		
(3)			35.800		
(4)			68.215		
(5)			38.365		
Aroclor-1242			46.235		
(2)			63.865		
(3)			127.345		
(4)			68.945		
(5)			46.840		
Aroclor-1248			35.610		
(2)			28.955		
(3)			75.455		
(4)			34.615		
(5)			27.700		
Aroclor-1254			20.670		
(2)			17.225		
(3)			33.905		
(4)			11.705		
(5)			46.015		
Aroclor-1260	56.460	51.350	52.730	46.085	48.255
(2)	62.240	56.690	58.820	54.048	55.618
(3)	144.740	139.280	148.855	139.948	151.529
(4)	82.880	77.860	79.535	74.770	78.899
(5)	60.260	55.100	56.060	50.162	52.846
Aroclor-1262			32.505		
(2)			70.175		
(3)			31.555		
(4)			169.030		
(5)			60.645		
Aroclor-1268			277.510		
(2)			278.855		
(3)			328.090		
(4)			81.420		

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717
 Instrument ID: 7227_1 Calibration Date(s): 12/11/08 12/11/08
 Column: RTX-5 ID: 0.25 (mm) Calibration Time(s): 1926 2352

LAB FILE ID: RF50: 11DEC081808-RF100: 11DEC081808RF200: 11DEC081808
 RF400: 11DEC081808RF800: 11DEC081808

COMPOUND	RF50	RF100	RF200	RF400	RF800
=====	=====	=====	=====	=====	=====
(5)			1683.300		
=====	=====	=====	=====	=====	=====
Tetrachloro-m-xylene	2551.800	2446.800	2708.400	2543.300	2830.562
Decachlorobiphenyl	4341.400	4249.800	4400.100	4419.375	4392.650

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717
 Instrument ID: 7227_1 Calibration Date(s): 12/11/08 12/11/08
 Column: RTX-5 ID: 0.25 (mm) Calibration Time(s): 1926 2352

COMPOUND	CURVE	COEFFICIENT A1	%RSD OR R^2	MAX %RSD OR R^2
=====				
Aroclor-1016	AVRG	59.4922500	10.074	20.000
	(2) AVRG	83.4432500	6.460	20.000
	(3) AVRG	165.0782500	2.419	20.000
	(4) AVRG	90.8750000	5.219	20.000
	(5) AVRG	61.5085000	4.048	20.000
Aroclor-1221	AVRG	31.2900000	0.000	20.000 <-
	(2) AVRG	23.2100000	0.000	20.000 <-
	(3) AVRG	73.4850000	0.000	20.000 <-
	(4) AVRG	15.0900000	0.000	20.000 <-
	(5) AVRG	10.3250000	0.000	20.000 <-
Aroclor-1232	AVRG	62.8500000	0.000	20.000 <-
	(2) AVRG	35.7900000	0.000	20.000 <-
	(3) AVRG	35.8000000	0.000	20.000 <-
	(4) AVRG	68.2150000	0.000	20.000 <-
	(5) AVRG	38.3650000	0.000	20.000 <-
Aroclor-1242	AVRG	46.2350000	0.000	20.000 <-
	(2) AVRG	63.8650000	0.000	20.000 <-
	(3) AVRG	127.3450000	0.000	20.000 <-
	(4) AVRG	68.9450000	0.000	20.000 <-
	(5) AVRG	46.8400000	0.000	20.000 <-
Aroclor-1248	AVRG	35.6100000	0.000	20.000 <-
	(2) AVRG	28.9550000	0.000	20.000 <-
	(3) AVRG	75.4550000	0.000	20.000 <-
	(4) AVRG	34.6150000	0.000	20.000 <-
	(5) AVRG	27.7000000	0.000	20.000 <-
Aroclor-1254	AVRG	20.6700000	0.000	20.000 <-
	(2) AVRG	17.2250000	0.000	20.000 <-
	(3) AVRG	33.9050000	0.000	20.000 <-
	(4) AVRG	11.7050000	0.000	20.000 <-
	(5) AVRG	46.0150000	0.000	20.000 <-
Aroclor-1260	AVRG	50.9760000	7.884	20.000
	(2) AVRG	57.4830000	5.524	20.000
	(3) AVRG	144.8702500	3.713	20.000
	(4) AVRG	78.7887500	3.718	20.000
	(5) AVRG	54.8857500	6.864	20.000
Aroclor-1262	AVRG	32.5050000	0.000	20.000 <-
	(2) AVRG	70.1750000	0.000	20.000 <-
	(3) AVRG	31.5550000	0.000	20.000 <-
	(4) AVRG	169.0300000	0.000	20.000 <-
	(5) AVRG	60.6450000	0.000	20.000 <-
Aroclor-1268	AVRG	277.5100000	0.000	20.000 <-
	(2) AVRG	278.8550000	0.000	20.000 <-
	(3) AVRG	328.0900000	0.000	20.000 <-
	(4) AVRG	81.4200000	0.000	20.000 <-

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717
 Instrument ID: 7227_1 Calibration Date(s): 12/11/08 12/11/08
 Column: RTX-5 ID: 0.25 (mm) Calibration Time(s): 1926 2352

COMPOUND	CURVE	COEFFICIENT A1	%RSD OR R^2	MAX %RSD OR R^2
=====	=====	=====	=====	=====
(5) _____	AVRG	1683.30000	0.000	20.000 <-
=====	=====	=====	=====	=====
Tetrachloro-m-xylene _____	AVRG	2616.17250	5.816	20.000
Decachlorobiphenyl _____	AVRG	4360.66500	1.567	20.000

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717
 Instrument ID: 7227_2 Calibration Date(s): 12/11/08 12/11/08
 Column: RTX-35 ID: 0.25 (mm) Calibration Time(s): 1926 2352

LAB FILE ID: RF50: 11DEC081808-RF100: 11DEC081808RF200: 11DEC081808
 RF400: 11DEC081808RF800: 11DEC081808

COMPOUND	RF50	RF100	RF200	RF400	RF800
Aroclor-1016	83.680	75.830	72.380	66.235	64.379
(2)	127.960	118.480	112.805	104.752	102.760
(3)	179.160	169.450	171.465	163.000	164.269
(4)	90.700	84.900	84.755	77.358	75.249
(5)	70.880	67.560	67.630	61.342	61.668
Aroclor-1221			40.815		
(2)			29.250		
(3)			88.905		
(4)			14.465		
(5)			18.475		
Aroclor-1232			77.850		
(2)			53.195		
(3)			71.370		
(4)			36.220		
(5)			28.235		
Aroclor-1242			90.300		
(2)			32.155		
(3)			131.865		
(4)			64.605		
(5)			51.355		
Aroclor-1248			45.250		
(2)			79.285		
(3)			32.250		
(4)			26.320		
(5)			30.675		
Aroclor-1254			46.950		
(2)			34.555		
(3)			40.700		
(4)			27.945		
(5)			113.875		
Aroclor-1260	152.100	134.900	138.640	123.288	125.928
(2)	470.080	448.410	482.650	465.010	478.490
(3)	169.340	158.890	160.410	150.000	146.695
(4)	70.500	66.250	65.030	61.880	59.216
(5)	174.300	159.850	160.275	151.798	155.745
Aroclor-1262			109.770		
(2)			54.585		
(3)			75.740		
(4)			85.195		
(5)			502.860		
Aroclor-1268			653.160		
(2)			559.630		
(3)			539.310		
(4)			140.155		

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717
 Instrument ID: 7227_2 Calibration Date(s): 12/11/08 12/11/08
 Column: RTX-35 ID: 0.25 (mm) Calibration Time(s): 1926 2352

LAB FILE ID: RF50: 11DEC081808-RF100: 11DEC081808RF200: 11DEC081808
 RF400: 11DEC081808RF800: 11DEC081808

COMPOUND	RF50	RF100	RF200	RF400	RF800
=====	=====	=====	=====	=====	=====
(5)			2155.890		
=====	=====	=====	=====	=====	=====
Tetrachloro-m-xylene	3718.800	3451.600	3605.500	3491.100	3695.388
Decachlorobiphenyl	5976.000	5713.900	5665.550	5371.975	5713.012

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717
 Instrument ID: 7227_2 Calibration Date(s): 12/11/08 12/11/08
 Column: RTX-35 ID: 0.25 (mm) Calibration Time(s): 1926 2352

COMPOUND	CURVE	COEFFICIENT A1	%RSD OR R^2	MAX %RSD OR R^2
Aroclor-1016	AVRG	72.5007500	10.713	20.000
	(2) AVRG	113.351500	9.106	20.000
	(3) AVRG	169.468750	3.810	20.000
	(4) AVRG	82.5922500	7.587	20.000
	(5) AVRG	65.8160000	6.320	20.000
Aroclor-1221	AVRG	40.8150000	0.000	20.000 <-
	(2) AVRG	29.2500000	0.000	20.000 <-
	(3) AVRG	88.9050000	0.000	20.000 <-
	(4) AVRG	14.4650000	0.000	20.000 <-
	(5) AVRG	18.4750000	0.000	20.000 <-
Aroclor-1232	AVRG	77.8500000	0.000	20.000 <-
	(2) AVRG	53.1950000	0.000	20.000 <-
	(3) AVRG	71.3700000	0.000	20.000 <-
	(4) AVRG	36.2200000	0.000	20.000 <-
	(5) AVRG	28.2350000	0.000	20.000 <-
Aroclor-1242	AVRG	90.3000000	0.000	20.000 <-
	(2) AVRG	32.1550000	0.000	20.000 <-
	(3) AVRG	131.865000	0.000	20.000 <-
	(4) AVRG	64.6050000	0.000	20.000 <-
	(5) AVRG	51.3550000	0.000	20.000 <-
Aroclor-1248	AVRG	45.2500000	0.000	20.000 <-
	(2) AVRG	79.2850000	0.000	20.000 <-
	(3) AVRG	32.2500000	0.000	20.000 <-
	(4) AVRG	26.3200000	0.000	20.000 <-
	(5) AVRG	30.6750000	0.000	20.000 <-
Aroclor-1254	AVRG	46.9500000	0.000	20.000 <-
	(2) AVRG	34.5550000	0.000	20.000 <-
	(3) AVRG	40.7000000	0.000	20.000 <-
	(4) AVRG	27.9450000	0.000	20.000 <-
	(5) AVRG	113.875000	0.000	20.000 <-
Aroclor-1260	AVRG	134.971000	8.489	20.000
	(2) AVRG	468.928000	2.856	20.000
	(3) AVRG	157.067000	5.718	20.000
	(4) AVRG	64.5752500	6.665	20.000
	(5) AVRG	160.393500	5.301	20.000
Aroclor-1262	AVRG	109.770000	0.000	20.000 <-
	(2) AVRG	54.5850000	0.000	20.000 <-
	(3) AVRG	75.7400000	0.000	20.000 <-
	(4) AVRG	85.1950000	0.000	20.000 <-
	(5) AVRG	502.860000	0.000	20.000 <-
Aroclor-1268	AVRG	653.160000	0.000	20.000 <-
	(2) AVRG	559.630000	0.000	20.000 <-
	(3) AVRG	539.310000	0.000	20.000 <-
	(4) AVRG	140.155000	0.000	20.000 <-

FORM 6
OTHER INITIAL CALIBRATION DATA

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717
 Instrument ID: 7227_2 Calibration Date(s): 12/11/08 12/11/08
 Column: RTX-35 ID: 0.25 (mm) Calibration Time(s): 1926 2352

COMPOUND	CURVE	COEFFICIENT A1	%RSD OR R^2	MAX %RSD OR R^2
=====	=====	=====	=====	=====
(5) _____	AVRG	2155.89000	0.000	20.000
=====	=====	=====	=====	=====
Tetrachloro-m-xylene _____	AVRG	3592.47750	3.318	20.000
Decachlorobiphenyl _____	AVRG	5688.08750	3.777	20.000

FORM 8
OTHER ANALYTICAL SEQUENCE

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717
 GC Column: RTX-5 ID: 0.25 (mm) Init. Calib. Date(s): 12/11/08 12/11/08
 Instrument ID: 7227_1

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS,
 SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION							
				TCX: 3.23	DCB: 13.34		
CLIENT	LAB	DATE	TIME	TCX	DCB		
SAMPLE NO.	SAMPLE ID	ANALYZED	ANALYZED	RT	RT	#	#
=====	=====	=====	=====	=====	=====	=====	=====
01	AR1221 200PP	AR1221 200PP	12/11/08	1926	3.24		13.34
02	AR1232 200PP	AR1232 200PP	12/11/08	1950	3.24		13.34
03	AR1242 200PP	AR1242 200PP	12/11/08	2014	3.24		13.35
04	AR1248 200PP	AR1248 200PP	12/11/08	2039	3.23		13.34
05	AR1254 200PP	AR1254 200PP	12/11/08	2103	3.23		13.33
06	AR1262 200PP	AR1262 200PP	12/11/08	2127	3.23		13.34
07	AR1268 200PP	AR1268 200PP	12/11/08	2151	3.23		13.33
08	AR1660 50PPB	AR1660 50PPB	12/11/08	2215	3.23		13.33
09	AR1660 100PP	AR1660 100PP	12/11/08	2240	3.23		13.33
10	AR1660 200PP	AR1660 200PP	12/11/08	2304	3.23		13.34
11	AR1660 400PP	AR1660 400PP	12/11/08	2328	3.23		13.34
12	AR1660 800PP	AR1660 800PP	12/11/08	2352	3.23		13.34
13	AR1660 ICV	AR1660 ICV	12/12/08	0041	3.23		13.34
14	MBLK111108E	MBLK111108E	12/12/08	0419	3.23		13.34
15	E111108LCS	E111108LCS	12/12/08	0443	3.23		13.33
16	AR1660 200PP	AR1660 200PP	12/12/08	0507	3.23		13.33
17	MW001-110608	775142	12/12/08	0914	3.24		13.34
18	AR1660 200PP	AR1660 200PP	12/12/08	1051	3.23		13.33
19	MW003-110708	775145	12/12/08	1115	3.23		13.33
20	AR1660 200PP	AR1660 200PP	12/12/08	1517	3.24		13.34
21	AR1660 200PP	AR1660 200PP	12/16/08	1326	3.24		13.34
22	W005110608	775143	12/16/08	1439	3.24		13.33
23	W04A110708	775144	12/16/08	1527			13.32
24	W04A110708DL	775144D1	12/16/08	1551	3.19		13.33
25	PBLK SCU	PBLK SCU	12/16/08	1816	3.23		13.34
26	AR1660 200PP	AR1660 200PP	12/16/08	1841	3.23		13.34
27							
28							
29							
30							
31							
32							

QC LIMITS

TCX = Tetrachloro-m-xylene (+/- 0.05 MINUTES)
 DCB = Decachlorobiphenyl (+/- 0.05 MINUTES)

Column used to flag retention time values with an asterisk.
 * Values outside of QC limits.

FORM 8
OTHER ANALYTICAL SEQUENCE

Lab Name: TESTAMERICA BURLINGTON Contract: 28000
 Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717
 GC Column: RTX-35 ID: 0.25 (mm) Init. Calib. Date(s): 12/11/08 12/11/08
 Instrument ID: 7227_2

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS,
 SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION							
				TCX: 3.86	DCB: 14.57		
CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	TCX RT	#	DCB RT	#
=====	=====	=====	=====	=====	=====	=====	=====
01	AR1221 200PP	AR1221 200PP	12/11/08	1926	3.87	14.58	
02	AR1232 200PP	AR1232 200PP	12/11/08	1950	3.87	14.57	
03	AR1242 200PP	AR1242 200PP	12/11/08	2014	3.87	14.57	
04	AR1248 200PP	AR1248 200PP	12/11/08	2039	3.85	14.56	
05	AR1254 200PP	AR1254 200PP	12/11/08	2103	3.85	14.56	
06	AR1262 200PP	AR1262 200PP	12/11/08	2127	3.86	14.57	
07	AR1268 200PP	AR1268 200PP	12/11/08	2151	3.85	14.56	
08	AR1660 50PPB	AR1660 50PPB	12/11/08	2215	3.86	14.57	
09	AR1660 100PP	AR1660 100PP	12/11/08	2240	3.86	14.56	
10	AR1660 200PP	AR1660 200PP	12/11/08	2304	3.86	14.57	
11	AR1660 400PP	AR1660 400PP	12/11/08	2328	3.86	14.57	
12	AR1660 800PP	AR1660 800PP	12/11/08	2352	3.86	14.56	
13	AR1660 ICV	AR1660 ICV	12/12/08	0041	3.87	14.57	
14	MBLK111108E	MBLK111108E	12/12/08	0419	3.85	14.56	
15	E111108LCS	E111108LCS	12/12/08	0443	3.85	14.55	
16	AR1660 200PP	AR1660 200PP	12/12/08	0507	3.85	14.56	
17	MW001-110608	775142	12/12/08	0914	3.87	14.58	
18	AR1660 200PP	AR1660 200PP	12/12/08	1051	3.86	14.56	
19	MW003-110708	775145	12/12/08	1115	3.85	14.56	
20	AR1660 200PP	AR1660 200PP	12/12/08	1517	3.86	14.57	
21	AR1660 200PP	AR1660 200PP	12/16/08	1326	3.86	14.57	
22	W005110608	775143	12/16/08	1439	3.85	14.55	
23	W04A110708	775144	12/16/08	1527	3.85	14.55	
24	W04A110708DL	775144D1	12/16/08	1551	3.86	14.56	
25	PBLK_SCU	PBLK_SCU	12/16/08	1816	3.86	14.56	
26	AR1660 200PP	AR1660 200PP	12/16/08	1841	3.86	14.56	
27							
28							
29							
30							
31							
32							

QC LIMITS

TCX = Tetrachloro-m-xylene (+/- 0.05 MINUTES)
 DCB = Decachlorobiphenyl (+/- 0.05 MINUTES)

Column used to flag retention time values with an asterisk.
 * Values outside of QC limits.

FORM 10
 OTHER IDENTIFICATION SUMMARY
 FOR MULTICOMPONENT ANALYTES

BATTEL SAMPLE NO.

W005110608

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717

Lab Sample ID: 775143 Date(s) Analyzed: 12/16/08 12/16/08

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column(1): RTX-5 ID: 0.25(mm) GC Column(2): RTX-35 ID: 0.25(mm)

ANALYTE	PEAK	RT	RT WINDOW		CONCENTRATION	MEAN CONCENTRATION	RPD
			FROM	TO			
Aroclor-1254	1	6.50	6.43	6.53	0.047	0.025	
	2	6.80	6.73	6.83	0.021		
	3	6.89	6.83	6.93	0.0086		
	4	6.98	6.91	7.01	0.013		
	5	7.62	7.55	7.65	0.033		
COLUMN 1	1	8.42	8.38	8.48	0.057	0.032	25
	2	8.68	8.64	8.74	0.021		
	3	9.33	9.29	9.39	0.015		
	4	9.92	9.88	9.98	0.034		
	5						
COLUMN 2	1						
	2						
	3						
	4						
	5						
COLUMN 1	1						
	2						
	3						
	4						
	5						
COLUMN 2	1						
	2						
	3						
	4						
	5						

At least 3 peaks are required for identification of multicomponent analytes.

FORM 10
 OTHER IDENTIFICATION SUMMARY
 FOR MULTICOMPONENT ANALYTES

CLIENT SAMPLE NO.

E111108LCS

Lab Name: TESTAMERICA BURLINGTON Contract: 28000

Lab Code: STLV Case No.: NBH SAS No.: SDG No.: 128717

Lab Sample ID: E111108LCS Date(s) Analyzed: 12/12/08 12/12/08

Instrument ID (1): 7227_1 Instrument ID (2): 7227_2

GC Column(1): RTX-5 ID: 0.25 (mm) GC Column(2): RTX-35 ID: 0.25 (mm)

ANALYTE	PEAK	RT	RT WINDOW		CONCENTRATION	MEAN CONCENTRATION	RPD
			FROM	TO			
Aroclor-1016	1	3.64	3.59	3.69	0.41		
	2	4.27	4.23	4.33	0.41		
	3	4.58	4.54	4.64	0.44		
	COLUMN 1	4	4.70	4.66	4.76	0.42	
	5	4.79	4.75	4.85	0.44	0.42	
COLUMN 2	1	4.58	4.55	4.65	0.41		
	2	5.20	5.16	5.26	0.41		
	3	5.87	5.83	5.93	0.42		
	4	6.12	6.08	6.18	0.42		
	5	6.34	6.30	6.40	0.43	0.42	0.0
Aroclor-1260	1	9.14	9.10	9.20	0.43		
	2	9.71	9.67	9.77	0.45		
	3	10.43	10.39	10.49	0.47		
	COLUMN 1	4	11.19	11.15	11.25	0.46	
	5	11.51	11.47	11.57	0.44	0.45	
COLUMN 2	1	11.58	11.55	11.65	0.45		
	2	12.54	12.51	12.61	0.51		
	3	13.10	13.06	13.16	0.49		
	4	13.71	13.68	13.78	0.47		
	5	13.83	13.80	13.90	0.49	0.48	6.5
COLUMN 1	1						
	2						
	3						
	4						
	5						
COLUMN 2	1						
	2						
	3						
	4						
	5						

At least 3 peaks are required for identification of multicomponent analytes.

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Laboratory Report – Metals Data

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Analytical Chemistry Data Package Inorganics Analysis

**Project: New Bedford Harbor
Groundwater, 2008**

**Analysis of Metals in
Groundwater Samples**

Battelle Project No. 55280
CF No. 2899



Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, WA 98382
(360) 681-4564

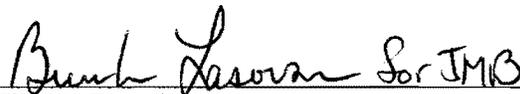
CERTIFICATION STATEMENT AND DATA RELEASE

Battelle Marine Sciences Laboratory is releasing the following data set:

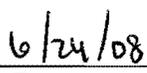
New Bedford Harbor Groundwater Water Chemistry

METALS IN WATER

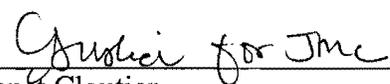
We certify that the data contained within this data set is authentic:



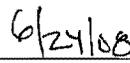
Jill M. Brandenberger
MSL Metals Chemistry Project Manager



Date



Janet Cloutier
MSL QA Officer



Date

BATTELLE MARINE SCIENCES LABORATORIES

Jill Brandenberger, Project Manager
 1529 West Sequim Bay Road
 Sequim, Washington 98382
 (360) 681-4564

**NEW BEDFORD HARBOR
 GROUNDWATER MONITORING JUNE 2008
 Metals in Groundwater
 (Units: ug/L)**

SPONSOR CODE	Site Description	MSL Code	Date Collected	Date Received	Analysis Date	Cd	Cr	Cu	Pb
					Method:	1638mod	1638mod	1638mod	1638mod
					CAS Code:	7440-43-9	7440-47-3	7440-50-8	7439-92-1
					Achieved MDL	0.005	0.1	0.03	0.003
					Achieved QL:	0.02	0.2	0.1	0.01
					PROJECT QL:	0.1	0.5	0.5	0.1
MW-006-051908	MW-6	2899-1	05/19/08	05/22/08	06/06/08	0.0444	2.45	0.453	0.0571
MW-001-051908	MW-1	2899-2	05/19/08	05/22/08	06/06/08	0.249	5.35	0.984	0.739
MW-07A-051908	MW-7A	2899-3	05/19/08	05/22/08	06/06/08	0.711	5.28	4.99	0.0705
MW-005-052008	MW-5	2899-4	05/20/08	05/22/08	06/06/08	0.0460	1.89	1.12	0.0609
MW-005-052008-REP	MW-05	2899-5	05/20/08	05/22/08	06/06/08	0.0434	1.98	1.05	0.0557
MW-005-052008-REP	MW-05	2899-5 DUP	05/20/08	05/22/08	06/06/08	0.0463	1.88	1.07	0.0543
MW-04A-052008	MW-4A	2899-6	05/20/08	05/22/08	06/06/08	0.0277	6.57	1.46	0.0710
MW-003-052008	MW-3	2899-7	05/20/08	05/22/08	06/06/08	0.124	6.36	1.95	0.0849
EB-052008	NA	2899-8	05/20/08	05/22/08	06/06/08	0.0114 J	0.843	0.269	0.0769
<u>METHOD BLANK</u>									
MB		TRM Blank R1				0.005 U	0.1 U	0.03 U	0.003 U
<u>LABORATORY CONTROL SAMPLE RESULTS</u>									
LCS		TRM LCS R1				5.35	5.35	5.41	5.04
		Spiking Level				5	5	5	5
		Percent Recovery, LCS				107%	107%	108%	101%

BATTELLE MARINE SCIENCES LABORATORIES

Jill Brandenberger, Project Manager
 1529 West Sequim Bay Road
 Sequim, Washington 98382
 (360) 681-4564

**NEW BEDFORD HARBOR
 GROUNDWATER MONITORING JUNE 2008
 Metals in Groundwater
 (Units: ug/L)**

SPONSOR CODE	Site Description	MSL Code	Date Collected	Date Received	Analysis Date	Cd	Cr	Cu	Pb
					Method:	1638mod	1638mod	1638mod	1638mod
					CAS Code:	7440-43-9	7440-47-3	7440-50-8	7439-92-1
					Achieved MDL	0.005	0.1	0.03	0.003
					Achieved QL:	0.02	0.2	0.1	0.01
					PROJECT QL:	0.1	0.5	0.5	0.1

MATRIX SPIKE RESULTS

MS		2899-1 MS				5.34	8.04	5.38	5.31
MSD		2899-1 MSD				5.16	7.83	5.22	5.25
MW-006-051908	MW-6	2899-1	05/19/08	05/22/08	06/06/08	0.0444	2.45	0.453	0.0571
		Spiking Level				5	5	5	5.24
		Percent Recovery, MS				106%	112%	99%	100%
		Percent Recovery, MSD				102%	108%	95%	99%
		RPD				4%	4%	3%	1%

LABORATORY DUPLICATES

MW-005-052008-REP	MW-05	2899-5	05/20/08	05/22/08	06/06/08	0.0434	1.98	1.05	0.0557
MW-005-052008-REP	MW-05	2899-5 DUP	05/20/08	05/22/08	06/06/08	0.0463	1.88	1.07	0.0543
		Mean				0.0448	1.93	1.06	0.0550
		RPD				7%	5%	2%	3%

STANDARD REFERENCE MATERIAL RESULTS

SRM		TRM 1640 R1				24.2	39.6	92.2	27.6
		certified/ref value				22.79	38.60	85.2	27.89
		range				± 1.6	± 0.96	± 1.20	± 0.14
		Percent Difference, SRM				6%	3%	8%	1%

BATTELLE MARINE SCIENCES LABORATORIES

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**NEW BEDFORD HARBOR
GROUNDWATER MONITORING JUNE 2008
Metals in Groundwater**

-
- B Blank concentration > RL and sample concentration < 5 times the detected blank
 - E Concentration exceeds the range of the calibration curve for that particular analyte.
 - J Estimated value as it is less than the reporting limit. The analyte was positively identified; the quantitation is an estimation.
 - U Undetected at the method detection limit (MDL): The associated data value is the MDL.
 - N QC value outside the accuracy or precision criteria goal

QAPP Data Quality Objectives:

- MB < RL
- SRM Percent Difference $\leq 25\%$ of true values
- MS 75-125 %
- MS DUP $\leq 25\%$ RPD
- LCS 85-115%
- Field DUP $\leq 30\%$ RPD

QA/QC NARRATIVE

PROJECT: New Bedford Harbor Groundwater June 2008

PARAMETER: Trace Metals: cadmium (Cd), chromium (Cr), copper (Cu), and lead (Pb)

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

MATRIX: Groundwater/Freshwater (salinity < 5 parts per thousand)

SAMPLE CUSTODY AND PROCESSING: Eight trace metals samples were received on 05/22/08. All samples were received in good condition (i.e., no sample containers were broken). The samples were preserved in the field to a pH of <2.0 using double distilled nitric acid. Upon arrival at MSL, two samples were randomly checked to confirm the pH was < 2.0. The cooler temperature was measured upon arrival at MSL and was 5.9°C. This is within the general guideline for temperature of $4 \pm 2^\circ\text{C}$. Samples were assigned a Battelle Central File (CF) identification number (2899) and were entered into Battelle's laboratory information management system.

The following lists information on sample receipt and processing activities:

Lab Sample IDs:	2899*1-8
Description:	Groundwater
Sample collection dates	05/19/08 and 05/20/08
Laboratory arrival date	05/22/08
Cooler temp. on arrival	5.9°C
ICP-MS analysis	06/06/08

DATA QUALITY OBJECTIVES:

Analyte	Analytical Method	LCS Recovery	MS Recovery	SRM Accuracy	Relative Precision	MDL ⁽²⁾ µg/L	QL ⁽²⁾ µg/L
Cd	ICP-MS	85-115%	75-125%	≤25% PD	≤25% ⁽¹⁾	0.005	0.02
Cr	ICP-MS	85-115%	75-125%	≤25% PD	≤25% ⁽¹⁾	0.1	0.2
Cu	ICP-MS	85-115%	75-125%	≤25% PD	≤25% ⁽¹⁾	0.03	0.1
Pb	ICP-MS	85-115%	75-125%	≤25% PD	≤25% ⁽¹⁾	0.003	0.01

(1) Evaluated on matrix spike duplicates.

(2) PD = Percent Difference from Certified or Reference Value

(3) Annual method detection limit (MDL) study for total recoverable metals in freshwater. Quantitation limit (QL) defined as 3.18* MDL rounded to the nearest 1, 2, or 5.

METHODS: The samples were analyzed for trace 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.

Trace metal concentration are reported in units of µg/L. Data were not blank corrected.

QA/QC NARRATIVE

HOLDING TIMES:	The recommended holding time for water (calculated from sample collection) is 6 months for trace metals. All samples were analyzed within their respective holding times.
DETECTION LIMITS:	<p>The MDLs reported in the tables are freshwater MDLs from the annual freshwater TRM MDL study. Analytical results were reported to the achieved MDL. Data were also flagged to the reporting limit (RL) or quantitation limit (QL) defined as 3.18 times the achieved MDL and rounded to the nearest 1, 2, or 5 based on guidelines from the USEPA.</p> <p>Data were evaluated and flagged in accordance with the following criteria:</p> <ul style="list-style-type: none">U Undetected at the method detection limit (MDL): The associated data value is the MDL.J Estimated value as it is less than the reporting limit. The analyte was positively identified; the quantitation is an estimation.N QC value outside the accuracy or precision criteria goalB Blank concentration > RL and sample concentration < 5 times the detected blank
METHOD BLANKS:	A minimum of one method blank per 20 field samples received was analyzed with each analytical batch. The method blanks were not detected greater than the laboratory MDL.
LABORATORY CONTROL SAMPLE ACCURACY:	A minimum of one blank spikes or laboratory control samples (LCS) per 20 field samples received was analyzed with each analytical batch. The LCS sample recoveries were within the QC acceptance criterion of 85-115% recovery for all metals.
MATRIX SPIKE ACCURACY:	A minimum of one matrix spike (MS) and matrix spike duplicate (MSD) were analyzed with the samples. The MS/MSD recoveries were within the QC acceptance criterion of 75-125% recovery for all metals.
PRECISION:	Precision for this set of samples was assessed by the performance of matrix spikes in duplicate and laboratory duplicates. Precision was expressed as the relative percent difference (RPD) of replicate results. The RPD values were within the QC criterion of $\leq 25\%$ RPD for all metals.
STANDARD REFERENCE MATERIAL ACCURACY:	Standard reference material (SRM) 1640 was analyzed with each analytical batch. SRM accuracy was expressed as the percent difference between the measured and certified or reference values. The percent differences were within the QC acceptance criterion of $\leq 25\%$ difference for all metals.

Proj. No: 6606422 Proj. Name: New Bedford Harbor - GW Sampling Sawyer Street

SAMPLERS: Signature: J. Fahey + M. Fitzpatrick

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
5/19/08	1546	MW-006-051908	2899.1	Groundwater ref MS/MSD							✓				1
	1820	MW-001-051908	2								✓				1
	1315	MW-07A-051908	3								✓				1
5/20/08	1050	MW-005-052008	4								✓				1
	1050	MW-005-052008-REP	5	Replicate							✓				1
		MW-00	1								✓				1
	1301	MW-04A-052008	6								✓				1
	1453	MW-003-052008	7								✓				1
	1620	EB-052008	2899.8								✓				1

Relinquished by: <i>Jessie M. Fahey</i>	Date/Time		Received by: <i>[Signature]</i>	Date/Time	
	5/20/08	1800		05/22-08	1205
Relinquished by:	Date/Time		Received by:	Date/Time	

Comments:

cc: Project Manager/Central File
Login File

2899

SAMPLE LOGIN
(SOP# MSL-A-001)

Project Manager: Brandenberger
Date Received: 05/22/08
Batch: 1

PROJECT: New Bedford Harbor- GW Sampling Sawyer Street

SPONSOR CODE	Station ID on bottle ✓	BATTELLE CODE	MATRIX	STORAGE LOCATION	PARAMETERS REQUESTED	COLLECTION DATE	INITIALS
MW-006-051908 ✓	MW-6	2899-1 ✓	ground water	Prep Lab I-1-C	metals, <i>MS/MSD</i>	05/19/08 ✓	MLFM
MW-001-051908 ✓	MW-1	2899-2	ground water	Prep Lab I-1-C	metals	05/19/08	MLFM
MW-07A-051908 ✓	MW-7A	2899-3	ground water	Prep Lab I-1-C	metals	05/19/08 ✓	MLFM
MW-005-052008 ✓	MW-5	2899-4	ground water	Prep Lab I-1-C	metals	05/20/08 ✓	MLFM
MW-005-052008-REP ✓	MW-05	2899-5	ground water	Prep Lab I-1-C	metals, <i>Replicate</i>	05/20/08	MLFM
MW-04A-052008 ✓	MW-4A	2899-6	ground water	Prep Lab I-1-C	metals	05/20/08	MLFM
MW-003-052008 ✓	MW-3	2899-7	ground water	Prep Lab I-1-C	metals	05/20/08	MLFM
EB-052008 ✓	NA	2899-8 ✓	ground water	Prep Lab I-1-C	metals	05/20/08 ✓	MLFM

✓ idg slzwb

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

Matrix: water WP# W84822

- 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: As preserved in field

Date To Archive: _____ Date To Dispose: _____

TO BE COMPLETED UPON SAMPLE ARRIVAL/LOG-IN

- Yes No N/A Indicate in Appropriate Box
- Was a custody seal present?
 - Was the custody seal intact?
 - Was cooler(s) temperature(s) within acceptable range of $4 \pm 2^\circ\text{C}$ or frozen? 5.9 $^\circ\text{C}$
(if multiple coolers, note temp. of each) _____ $^\circ\text{C}$
 - Was Project Manager notified of any custody/login discrepancies (cooler temp, sponsor codes, etc)?
Comment/Remedy: _____
 - Were all chain of custody forms signed and dated?
 - Were samples filtered at MSL?

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

Container type: Teflon Poly Glass Spex Other: _____

Notes: _____

Completed By: [Signature] Date/Time: 07/22/08 1205

SAMPLE PRESERVATION

- Sample(s) were preserved at MSL
- Sample(s) were preserved prior to arrival at MSL (noted on CoC / Sample / per PM Instruction)
- Random pH checked for ~10% of samples (use dip paper) Sample IDs: # 286 both O.K.
- 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: 07/22/08 1205

NBHLabLoad Exceptions Report for MSL052208

Number of Records: 56

Uniqueness Violations

None.

Missing Sample IDs

None.

Zero Not Allowed

None.

Other Missing Data

None.

Tuesday, June 24, 2008

Page 1 of 3

NBHLabLoad Exceptions Report for MSL052208

Number of Records: 56

Code and CAS List Exceptions

None.

Format Exceptions

None.

Dilutions without 'D' qualifier

None.

Detection Limit Null Violations

None.

Tuesday, June 24, 2008

Page 2 of 3

NBHLabLoad Exceptions Report for MSL052208

Number of Records: 56

Other Exceptions

None.

Total PCB Violations

None.

Tuesday, June 24, 2008

Page 3 of 3

Analytical Chemistry Data Package Inorganics Analysis

**Project: New Bedford Harbor
Groundwater, 2008**

**Analysis of Metals in
Groundwater Samples**

Battelle Project No. 55280
CF No. 2899



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:

New Bedford Harbor Groundwater Water Chemistry

METALS IN WATER

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



Jill M. Brandenberger
MSL Metals Chemistry Project Manager

12/5/08

Date



Gary Gill
MSL QA Officer

12/5/08

Date

BATTELLE MARINE SCIENCES LABORATORIES

Jill Brandenberger, Project Manager
 1529 West Sequim Bay Road
 Sequim, Washington 98382
 (360) 681-4564

**NEW BEDFORD HARBOR
 GROUNDWATER MONITORING NOVEMBER 2008
 Metals in Groundwater
 (Units: ug/L)**

SPONSOR CODE	Site Description	MSL Code	Date Collected	Date Received	Analysis Date	Cd	Cr	Cu	Pb
					Method:	1638mod	1638mod	1638mod	1638mod
					CAS Code:	7440-43-9	7440-47-3	7440-50-8	7439-92-1
					Achieved MDL	0.005	0.1	0.03	0.003
					Achieved QL:	0.02	0.2	0.1	0.01
					PROJECT QL:	0.1	0.5	0.5	0.1
MW-07A-110608	Sawyer Street	2899-9	11/06/08	11/11/08	11/18/08	0.648	1.01	4.99	0.0226
MW-006-110608	Sawyer Street	2899-10	11/06/08	11/11/08	11/18/08	0.0516	0.346	0.666	0.183
MW-001-110608	Sawyer Street	2899-11	11/06/08	11/11/08	11/18/08	0.435	1.78	1.46	0.894
MW-005-110608	Sawyer Street	2899-12	11/06/08	11/11/08	11/18/08	0.0518	4.04	2.10	0.274
MW-04A-110708	Sawyer Street	2899-13	11/07/08	11/11/08	11/18/08	0.0274	5.62	2.27	0.175
MW-04A-110708	Sawyer Street	2899-13 DUP	11/07/08	11/11/08	11/18/08	0.0265	5.91	2.27	0.183
MW-003-110708	Sawyer Street	2899-14	11/07/08	11/11/08	11/18/08	0.0299	5.63	0.855	0.0630
MW-003-110708-REP	Sawyer Street	2899-15	11/07/08	11/11/08	11/18/08	0.0306	5.92	0.944	0.0685
EB-110508	Equip. Blank	2899-16	11/05/08	11/11/08	11/18/08	0.005 U	0.608	0.354	0.0782
<u>METHOD BLANK</u>									
MB		TRM Blank R1				0.005 U	0.1 U	0.03 U	0.003 U
<u>LABORATORY CONTROL SAMPLE RESULTS</u>									
LCS		TRM LCS				4.98	4.96	5.08	4.97
		Spiking Level				5	5	5	5
		Percent Recovery, LCS				100%	99%	102%	99%
<u>MATRIX SPIKE RESULTS</u>									
MS		2899-9 MS				5.63	5.98	9.69	5.26
MSD		2899-9 MSD				5.64	5.87	9.51	5.22
MW-07A-110608	Sawyer Street	2899-9	11/06/08	11/11/08	11/18/08	0.648	1.01	4.99	0.0226
		Spiking Level				5	5	5	5
		Percent Recovery, MS				100%	99%	94%	105%
		Percent Recovery, MSD				100%	97%	90%	104%
		RPD				0%	2%	4%	1%
<u>LABORATORY DUPLICATES</u>									
MW-04A-110708	Sawyer Street	2899-13	11/07/08	11/11/08	11/18/08	0.0274	5.62	2.27	0.175
MW-04A-110708	Sawyer Street	2899-13 DUP	11/07/08	11/11/08	11/18/08	0.0265	5.91	2.27	0.183
		Mean				0.0270	5.76	2.27	0.179
		RPD				3%	5%	0%	4%
<u>STANDARD REFERENCE MATERIAL RESULTS</u>									
SRM		TRM 1640				23.4	38.1	88.8	28.7
		certified/ref value				22.79	38.60	85.2	27.89
		range				± 1.6	± 0.96	± 1.20	± 0.14
		Percent Difference, SRM				3%	1%	4%	3%

BATTELLE MARINE SCIENCES LABORATORIES

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NEW BEDFORD HARBOR
GROUNDWATER MONITORING NOVEMBER 2008
Metals in Groundwater

-
- B Blank concentration > RL and sample concentration < 5 times the detected blank
 - E Concentration exceeds the range of the calibration curve for that particular analyte.
 - J Estimated value as it is less than the reporting limit. The analyte was positively identified; the quantitation is an estimation.
 - U Undetected at the method detection limit (MDL): The associated data value is the MDL.
 - N QC value outside the accuracy or precision criteria goal

QAPP Data Quality Objectives:

- MB < RL
- SRM Percent Difference $\leq 25\%$ of true values
- MS 75-125 %
- MS DUP $\leq 25\%$ RPD
- LCS 85-115%
- Field DUP $\leq 30\%$ RPD

QA/QC NARRATIVE

PROJECT: New Bedford Harbor Groundwater November 2008

PARAMETER: Trace Metals: cadmium (Cd), chromium (Cr), copper (Cu), and lead (Pb)

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

MATRIX: Groundwater/Freshwater (salinity < 5 parts per thousand)

SAMPLE CUSTODY AND PROCESSING: Eight trace metals samples were received on 11/11/08. All samples were received in good condition (i.e., no sample containers were broken). The samples were preserved in the field to a pH of <2.0 using double distilled nitric acid. Upon arrival at MSL, two samples were randomly checked to confirm the pH was < 2.0. The cooler temperature was measured upon arrival at MSL and was 2.8°C. This is within the general guideline for temperature of $4 \pm 2^\circ\text{C}$. Samples were assigned a Battelle Central File (CF) identification number (2899) and were entered into Battelle's laboratory information management system.

The following lists information on sample receipt and processing activities:

Lab Sample IDs:	2899*9-16
Description:	Groundwater
Sample collection dates	11/05/08 through 11/07/08
Laboratory arrival date	11/11/08
Cooler temp. on arrival	2.8°C
ICP-MS analysis	11/18/08

DATA QUALITY OBJECTIVES:

Analyte	Analytical Method	LCS Recovery	MS Recovery	SRM Accuracy	Relative Precision	MDL ⁽²⁾ µg/L	QL ⁽²⁾ µg/L
Cd	ICP-MS	85-115%	75-125%	≤25% PD	≤25% ⁽¹⁾	0.005	0.02
Cr	ICP-MS	85-115%	75-125%	≤25% PD	≤25% ⁽¹⁾	0.1	0.2
Cu	ICP-MS	85-115%	75-125%	≤25% PD	≤25% ⁽¹⁾	0.03	0.1
Pb	ICP-MS	85-115%	75-125%	≤25% PD	≤25% ⁽¹⁾	0.003	0.01

(1) Evaluated on matrix spike duplicates.

(2) Annual method detection limit (MDL) study for total recoverable metals in freshwater. Quantitation limit (QL) defined as $3.18 * \text{MDL}$ rounded to the nearest 1, 2, or 5 per USEPA guidance.

METHODS: The samples were analyzed for trace 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.

Trace metal concentrations are reported in units of µg/L. Data were not blank corrected.

QA/QC NARRATIVE

HOLDING TIMES:	The recommended holding time for water (calculated from sample collection) is 6 months for trace metals. All samples were analyzed within their respective holding times.
DETECTION LIMITS:	<p>The MDLs reported in the tables are freshwater MDLs from the annual freshwater TRM MDL study. Analytical results were reported to the achieved MDL. Data were also flagged to the reporting limit (RL) or quantitation limit (QL) defined as 3.18 times the achieved MDL and rounded to the nearest 1, 2, or 5 based on guidelines from the USEPA.</p> <p>Data were evaluated and flagged in accordance with the following criteria:</p> <ul style="list-style-type: none">U Undetected at the method detection limit (MDL): The associated data value is the MDL.J Estimated value as it is less than the reporting limit. The analyte was positively identified; the quantitation is an estimation.N QC value outside the accuracy or precision criteria goalB Blank concentration > RL and sample concentration < 5 times the detected blank
METHOD BLANKS:	A minimum of one method blank per 20 field samples received was analyzed with each analytical batch. Metal concentrations in the method blank were all less than the laboratory MDL.
LABORATORY CONTROL SAMPLE ACCURACY:	A minimum of one blank spikes or laboratory control samples (LCS) per 20 field samples received was analyzed with each analytical batch. The LCS sample recoveries were within the QC acceptance criterion of 85-115% recovery for all metals.
MATRIX SPIKE ACCURACY:	A minimum of one matrix spike (MS) and matrix spike duplicate (MSD) were analyzed with the samples. The MS/MSD recoveries were within the QC acceptance criterion of 75-125% recovery for all metals.
PRECISION:	Precision for this set of samples was assessed by the performance of matrix spike duplicates and laboratory duplicates. Precision was expressed as the relative percent difference (RPD) of replicate results. The RPD values were within the QC criterion of $\leq 25\%$ RPD for all metals.
STANDARD REFERENCE MATERIAL ACCURACY:	Standard reference material (SRM) 1640 was analyzed with each analytical batch. SRM accuracy was expressed as the percent difference between the measured and certified or reference values. The percent differences were within the QC acceptance criterion of $\leq 25\%$ difference for all metals.

Battelle

The Business of Innovation

Chain of Custody

Ship to Battelle-MSL

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

Proj. No G606422	Proj. Name NBH - Groundwater
----------------------------	--

SAMPLERS: Signature
J. Tenzen, M. Fitzpatrick, P. Curran

ANALYSIS REQUESTED →
"NUMBER OF CONTAINERS"

DATE	TIME	Lab ID BATTLE ID	Field ID CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED HNO ₃	PRESERVED	Total Number of Containers	
11/6/08	0912	2599. 9	MW-07A-110608	Matrix Groundwater							✓		✓		✓ 1	
	1037	10	MW-006-110608	Locuston Sauger Street							✓		✓		1	
	1345	11	MW-001-110608									✓		✓		1
	1352	12	MW-005-110608									✓		✓		1
11/7/08	0929	13	MW-04A-110708									✓		✓		1
	1001	14	MW-003-110708									✓		✓		1
	1001	15	MW-003-110708-REP	(Field Dup)							✓		✓		1	
11/5/08	1440	2599. 16	EB-110508	Equipment Blank							✓		✓		1	

Relinquished by: 	Date/Time		Received by: 	Date/Time	
	11/10/08	1500		11/11/08	1240
Relinquished by:	Date/Time		Received by:	Date/Time	

Comments:

ORIGINAL

cc: Project Manager/Central File
Login File

2899

SAMPLE LOGIN
(SOP# MSL-A-001)

Project Manager: Brandenberger
Date Received: 11/11/08
Batch: 2

PROJECT: New Bedford Harbor- GW Sampling Sawyer Street

SPONSOR CODE	Site Description	BATTELLE CODE	MATRIX	STORAGE LOCATION	PARAMETERS REQUESTED	COLLECTION DATE	INITIALS
MW-07A-110608 ✓	Sawyer Street	2899-9	✓ground water	Prep Lab J-2-A	✓metals	11/06/08 ✓	MLFM
MW-006-110608 ✓	Sawyer Street	2899-10	ground water	Prep Lab J-2-A	metals	11/06/08	MLFM
MW-001-110608 ✓	Sawyer Street	2899-11	ground water	Prep Lab J-2-A	metals	11/06/08	MLFM
MW-005-110608 ✓	Sawyer Street	2899-12	ground water	Prep Lab J-2-A	metals	11/06/08	MLFM
MW-04A-110708 ✓	Sawyer Street	2899-13	ground water	Prep Lab J-2-A	metals	11/07/08	MLFM
MW-003-110708 ✓	Sawyer Street	2899-14	ground water	Prep Lab J-2-A	metals	11/07/08	MLFM
MW-003-110708-REP ✓	Sawyer Street	2899-15 ✓	ground water	Prep Lab J-2-A	metals	11/07/08 ✓	MLFM
EB-110508 ✓	Equip. Blank	2899-16	Equip. Blank	Prep Lab J-2-A	metals	11/05/08 ✓	MLFM

✓ 11/12/08

Central File #: 2899

Sample No(s): 9-16

Project Manager: JMS

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

Matrix: groundwater WP# W84822

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 field 0.2% Optima HNO₃

Date To Archive: _____ Date To Dispose: _____

TO BE COMPLETED UPON SAMPLE ARRIVAL/LOG-IN

Yes No N/A Indicate in Appropriate Box

Was a custody seal present?

Was the custody seal intact?

Was cooler(s) temperature(s) within acceptable range of 4±2°C or frozen? 2.8 °C
(if multiple coolers, note temp. of each) _____ °C

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

Were all chain of custody forms signed and dated?

Were samples filtered at MSL?

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

Container type: Teflon Poly Glass Spex Other: _____

Notes: _____

Completed By: JMS

Date/Time: 11/1/08 1245

SAMPLE PRESERVATION

Sample(s) were preserved at MSL

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

Random pH checked for ~10% of samples (use dip paper) Sample IDs: #10 & 14 both 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: JMS

Date/Time: 11/1/08 1245

Laboratory Report – VOC Data

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ANALYTICAL REPORT

Prepared for:

Battelle

Duxbury Operations

397 Washington Street

Duxbury, MA 02332

Project: New Bedford Harbor

ETR: 0805124

Report Date: May 30, 2008

Certifications and Accreditations

Massachusetts M-MA030

Connecticut PH-0141

New Hampshire 2206

Rhode Island LAO00289

New Jersey MA015

Maine MA0030

New York 11627

Louisiana 03090

Florida E87814

Pennsylvania 68-02089

Army Corps of Engineers

Department of the Navy

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CASE NARRATIVE

Alpha Analytical

ETR: 0805124

Project: New Bedford Harbor

All analyses were performed according to Alpha Analytical quality assurance program and documented Standard Operating Procedures (SOPs). The analytical results contained in this report were performed within holding time, and with appropriate quality control measures, except where noted. All soil/sediment results are reported on a dry weight basis unless otherwise noted. A summary of all state and federal accreditations is provided within this report. Blank correction of results is not performed in the laboratory for any parameter. Alpha Analytical certifies that the test results within meet all of the requirements of NELAC, for all NELAC accredited parameters.

The enclosed results of analyses are representative of the samples as received by the laboratory. Alpha Analytical makes no representations or certifications as to the method of sample collection, sample identification, or transporting/handling procedures used prior to the receipt of samples by Alpha Analytical. To the best of my knowledge, the information contained in this report is accurate and complete. For any questions regarding this report, please contact the signatory below at 508-822-9300.

Approved by: Nancy a Rose Title: Project Manager Date: 5/30/08
Nancy Rose Project Manager

Sample ID Cross Reference



Client: **Battelle**
Project: **New Bedford Harbor**

Lab Code: **MA00030**
ETR: **0805124**

Lab Sample ID	Client Sample ID
0805124-01	MW-07A-051908
0805124-02	MW-006-051908
0805124-03	MW-001-051908
0805124-04	MW-005-052008
0805124-05	MW-005-052008-REP
0805124-06	MW-04A-052008
0805124-07	MW-003-052008
0805124-08	EB-052008
0805124-09	Trip Blank

VOLATILE ORGANICS

Volatile Organics by 8260



Client: Battelle
Project: New Bedford Harbor
Client ID: MW-07A-051908
Case: N/A **SDG:** N/A
Matrix: Water

Lab Code: MA00030
ETR: 0805124
Lab ID: 0805124-01
Associated Blank: VW052708B30
Concentration Units: µg/L

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
05/19/08	05/20/08	05/27/08	5	5	1	ALM

Parameter	Result	Parameter	Result
Dichlorodifluoromethane	2.00 U	1,3-Dichloropropene, Total	4.00 U
Chloromethane	2.00 U	Toluene	2.00 U
Vinyl chloride	2.00 U	1,1,2-Trichloroethane	2.00 U
Bromomethane	2.00 U	2-Hexanone	2.00 U
Chloroethane	2.00 U	Tetrachloroethene	2.00 U
Trichlorofluoromethane	2.00 U	1,3-Dichloropropane	2.00 U
Diethyl ether	2.00 U	Dibromochloromethane	2.00 U
Acetone	5.00 U	1,2-Dibromoethane	2.00 U
1,1-Dichloroethene	2.00 U	Chlorobenzene	2.00 U
Carbon disulfide	2.00 U	1,1,1,2-Tetrachloroethane	2.00 U
Methylene chloride	5.00 U	Ethylbenzene	2.00 U
Methyl tert-butyl ether (MTBE)	2.00 U	Xylenes, Total	6.00 U
trans-1,2-Dichloroethene	2.00 U	Styrene	2.00 U
Diisopropyl Ether (DIPE)	2.00 U	Bromoform	2.00 U
1,1-Dichloroethane	2.00 U	Isopropylbenzene	2.00 U
Ethyl Tertiary Butyl Ether (ETBE)	2.00 U	1,1,2,2-Tetrachloroethane	2.00 U
2-Butanone (MEK)	5.00 U	Bromobenzene	2.00 U
cis-1,2-Dichloroethene	2.00 U	1,2,3-Trichloropropane	2.00 U
2,2-Dichloropropane	2.00 U	n-Propylbenzene	2.00 U
Bromochloromethane	2.00 U	2-Chlorotoluene	2.00 U
Chloroform	2.00 U	1,3,5-Trimethylbenzene	2.00 U
1,1,1-Trichloroethane	2.00 U	4-Chlorotoluene	2.00 U
1,1-Dichloropropene	2.00 U	tert-Butylbenzene	2.00 U
Carbon tetrachloride	2.00 U	1,2,4-Trimethylbenzene	2.00 U
Benzene	2.00 U	sec-Butylbenzene	2.00 U
Tertiary Amyl Methyl Ether (TAME)	2.00 U	1,3-Dichlorobenzene	2.00 U
Tetrahydrofuran	5.00 U	p-Isopropyltoluene	2.00 U
1,2-Dichloroethane	2.00 U	1,4-Dichlorobenzene	2.00 U
Trichloroethene	2.00 U	n-Butylbenzene	2.00 U
1,2-Dichloropropane	2.00 U	1,2-Dibromo-3-chloropropane	2.00 U
Dibromomethane	2.00 U	1,2-Dichlorobenzene	2.00 U
1,4-Dioxane	100 U	1,2,4-Trichlorobenzene	2.00 U
Bromodichloromethane	2.00 U	Hexachlorobutadiene	2.00 U
Methyl isobutyl ketone (MIBK)	2.00 U	Naphthalene	2.00 U
		1,2,3-Trichlorobenzene	2.00 U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	100	70-130
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	95	70-130

N/A - Not Applicable
 U - The analyte was analyzed for but not detected at the sample specific level reported.

Volatile Organics by 8260



Client: Battelle
Project: New Bedford Harbor
Client ID: MW-006-051908
Case: N/A **SDG:** N/A
Matrix: Water

Lab Code: MA00030
ETR: 0805124
Lab ID: 0805124-02
Associated Blank: VW052708B30
Concentration Units: µg/L

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
05/19/08	05/20/08	05/27/08	5	5	1	ALM

Parameter	Result	Parameter	Result
Dichlorodifluoromethane	2.00 U	1,3-Dichloropropene, Total	4.00 U
Chloromethane	2.00 U	Toluene	2.00 U
Vinyl chloride	2.00 U	1,1,2-Trichloroethane	2.00 U
Bromomethane	2.00 U	2-Hexanone	2.00 U
Chloroethane	2.00 U	Tetrachloroethene	2.00 U
Trichlorofluoromethane	2.00 U	1,3-Dichloropropane	2.00 U
Diethyl ether	2.00 U	Dibromochloromethane	2.00 U
Acetone	1.26 J	1,2-Dibromoethane	2.00 U
1,1-Dichloroethene	2.00 U	Chlorobenzene	2.00 U
Carbon disulfide	2.00 U	1,1,1,2-Tetrachloroethane	2.00 U
Methylene chloride	5.00 U	Ethylbenzene	2.00 U
Methyl tert-butyl ether (MTBE)	2.00 U	Xylenes, Total	6.00 U
trans-1,2-Dichloroethene	2.00 U	Styrene	2.00 U
Diisopropyl Ether (DIPE)	2.00 U	Bromoform	2.00 U
1,1-Dichloroethane	2.00 U	Isopropylbenzene	2.00 U
Ethyl Tertiary Butyl Ether (ETBE)	2.00 U	1,1,2,2-Tetrachloroethane	2.00 U
2-Butanone (MEK)	5.00 U	Bromobenzene	2.00 U
cis-1,2-Dichloroethene	2.00 U	1,2,3-Trichloropropane	2.00 U
2,2-Dichloropropane	2.00 U	n-Propylbenzene	2.00 U
Bromochloromethane	2.00 U	2-Chlorotoluene	2.00 U
Chloroform	2.00 U	1,3,5-Trimethylbenzene	2.00 U
1,1,1-Trichloroethane	2.00 U	4-Chlorotoluene	2.00 U
1,1-Dichloropropene	2.00 U	tert-Butylbenzene	2.00 U
Carbon tetrachloride	2.00 U	1,2,4-Trimethylbenzene	2.00 U
Benzene	2.00 U	sec-Butylbenzene	2.00 U
Tertiary Amyl Methyl Ether (TAME)	2.00 U	1,3-Dichlorobenzene	2.00 U
Tetrahydrofuran	5.00 U	p-Isopropyltoluene	2.00 U
1,2-Dichloroethane	2.00 U	1,4-Dichlorobenzene	2.00 U
Trichloroethene	2.00 U	n-Butylbenzene	2.00 U
1,2-Dichloropropane	2.00 U	1,2-Dibromo-3-chloropropane	2.00 U
Dibromomethane	2.00 U	1,2-Dichlorobenzene	2.00 U
1,4-Dioxane	100 U	1,2,4-Trichlorobenzene	2.00 U
Bromodichloromethane	2.00 U	Hexachlorobutadiene	2.00 U
Methyl isobutyl ketone (MIBK)	2.00 U	Naphthalene	2.00 U
		1,2,3-Trichlorobenzene	2.00 U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	101	70-130
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	95	70-130

N/A - Not Applicable
 J - Estimated value, below quantitation limit.
 U - The analyte was analyzed for but not detected at the sample specific level reported.

Volatile Organics by 8260



Client: **Battelle**
 Project: **New Bedford Harbor**
 Client ID: **MW-001-051908**
 Case: **N/A** SDG: **N/A**
 Matrix: **Water**

Lab Code: **MA00030**
 ETR: **0805124**
 Lab ID: **0805124-03**
 Associated Blank: **VW052708B30**
 Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
05/19/08	05/20/08	05/27/08	5	5	1	ALM

Parameter	Result	Parameter	Result
Dichlorodifluoromethane	2.00 U	1,3-Dichloropropene, Total	4.00 U
Chloromethane	2.00 U	Toluene	2.00 U
Vinyl chloride	2.00 U	1,1,2-Trichloroethane	2.00 U
Bromomethane	2.00 U	2-Hexanone	2.00 U
Chloroethane	2.00 U	Tetrachloroethene	2.00 U
Trichlorofluoromethane	2.00 U	1,3-Dichloropropane	2.00 U
Diethyl ether	2.00 U	Dibromochloromethane	2.00 U
Acetone	2.79 J	1,2-Dibromoethane	2.00 U
1,1-Dichloroethene	2.00 U	Chlorobenzene	2.00 U
Carbon disulfide	2.00 U	1,1,1,2-Tetrachloroethane	2.00 U
Methylene chloride	5.00 U	Ethylbenzene	2.00 U
Methyl tert-butyl ether (MTBE)	2.00 U	Xylenes, Total	6.00 U
trans-1,2-Dichloroethene	2.00 U	Styrene	2.00 U
Diisopropyl Ether (DIPE)	2.00 U	Bromoform	2.00 U
1,1-Dichloroethane	2.00 U	Isopropylbenzene	2.00 U
Ethyl Tertiary Butyl Ether (ETBE)	2.00 U	1,1,2,2-Tetrachloroethane	2.00 U
2-Butanone (MEK)	5.00 U	Bromobenzene	2.00 U
cis-1,2-Dichloroethene	2.00 U	1,2,3-Trichloropropane	2.00 U
2,2-Dichloropropane	2.00 U	n-Propylbenzene	2.00 U
Bromochloromethane	2.00 U	2-Chlorotoluene	2.00 U
Chloroform	2.00 U	1,3,5-Trimethylbenzene	2.00 U
1,1,1-Trichloroethane	2.00 U	4-Chlorotoluene	2.00 U
1,1-Dichloropropene	2.00 U	tert-Butylbenzene	2.00 U
Carbon tetrachloride	2.00 U	1,2,4-Trimethylbenzene	2.00 U
Benzene	2.00 U	sec-Butylbenzene	2.00 U
Tertiary Amyl Methyl Ether (TAME)	2.00 U	1,3-Dichlorobenzene	2.00 U
Tetrahydrofuran	5.00 U	p-Isopropyltoluene	2.00 U
1,2-Dichloroethane	2.00 U	1,4-Dichlorobenzene	2.00 U
Trichloroethene	2.00 U	n-Butylbenzene	2.00 U
1,2-Dichloropropane	2.00 U	1,2-Dibromo-3-chloropropane	2.00 U
Dibromomethane	2.00 U	1,2-Dichlorobenzene	2.00 U
1,4-Dioxane	100 U	1,2,4-Trichlorobenzene	2.00 U
Bromodichloromethane	2.00 U	Hexachlorobutadiene	2.00 U
Methyl isobutyl ketone (MIBK)	2.00 U	Naphthalene	2.00 U
		1,2,3-Trichlorobenzene	2.00 U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	101	70-130
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	97	70-130

N/A - Not Applicable

J - Estimated value, below quantitation limit.

U - The analyte was analyzed for but not detected at the sample specific level reported.

Volatile Organics by 8260



Client: Battelle
Project: New Bedford Harbor
Client ID: MW-005-052008
Case: N/A **SDG:** N/A
Matrix: Water

Lab Code: MA00030
ETR: 0805124
Lab ID: 0805124-04
Associated Blank: VW052708B30
Concentration Units: µg/L

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
05/20/08	05/20/08	05/27/08	5	5	1	ALM

Parameter	Result	Parameter	Result
Dichlorodifluoromethane	2.00 U	1,3-Dichloropropene, Total	4.00 U
Chloromethane	2.00 U	Toluene	2.00 U
Vinyl chloride	2.00 U	1,1,2-Trichloroethane	2.00 U
Bromomethane	2.00 U	2-Hexanone	2.00 U
Chloroethane	2.00 U	Tetrachloroethene	2.00 U
Trichlorofluoromethane	2.00 U	1,3-Dichloropropane	2.00 U
Diethyl ether	2.00 U	Dibromochloromethane	2.00 U
Acetone	16.0	1,2-Dibromoethane	2.00 U
1,1-Dichloroethene	2.00 U	Chlorobenzene	2.00 U
Carbon disulfide	2.00 U	1,1,1,2-Tetrachloroethane	2.00 U
Methylene chloride	5.00 U	Ethylbenzene	2.00 U
Methyl tert-butyl ether (MTBE)	2.00 U	Xylenes, Total	6.00 U
trans-1,2-Dichloroethene	2.00 U	Styrene	2.00 U
Diisopropyl Ether (DIPE)	2.00 U	Bromoform	2.00 U
1,1-Dichloroethane	2.00 U	Isopropylbenzene	2.00 U
Ethyl Tertiary Butyl Ether (ETBE)	2.00 U	1,1,2,2-Tetrachloroethane	2.00 U
2-Butanone (MEK)	5.00 U	Bromobenzene	2.00 U
cis-1,2-Dichloroethene	2.00 U	1,2,3-Trichloropropane	2.00 U
2,2-Dichloropropane	2.00 U	n-Propylbenzene	2.00 U
Bromochloromethane	2.00 U	2-Chlorotoluene	2.00 U
Chloroform	2.00 U	1,3,5-Trimethylbenzene	2.00 U
1,1,1-Trichloroethane	2.00 U	4-Chlorotoluene	2.00 U
1,1-Dichloropropene	2.00 U	tert-Butylbenzene	2.00 U
Carbon tetrachloride	2.00 U	1,2,4-Trimethylbenzene	2.00 U
Benzene	2.00 U	sec-Butylbenzene	2.00 U
Tertiary Amyl Methyl Ether (TAME)	2.00 U	1,3-Dichlorobenzene	2.00 U
Tetrahydrofuran	5.00 U	p-Isopropyltoluene	2.00 U
1,2-Dichloroethane	2.00 U	1,4-Dichlorobenzene	2.00 U
Trichloroethene	2.00 U	n-Butylbenzene	2.00 U
1,2-Dichloropropane	2.00 U	1,2-Dibromo-3-chloropropane	2.00 U
Dibromomethane	2.00 U	1,2-Dichlorobenzene	2.00 U
1,4-Dioxane	100 U	1,2,4-Trichlorobenzene	2.00 U
Bromodichloromethane	2.00 U	Hexachlorobutadiene	2.00 U
Methyl isobutyl ketone (MIBK)	2.00 U	Naphthalene	2.00 U
		1,2,3-Trichlorobenzene	2.00 U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	104	70-130
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	97	70-130

N/A - Not Applicable
 U - The analyte was analyzed for but not detected at the sample specific level reported.

Volatile Organics by 8260



Client: **Battelle**
 Project: **New Bedford Harbor**
 Client ID: **MW-005-052008-REP**
 Case: **N/A** SDG: **N/A**
 Matrix: **Water**

Lab Code: **MA00030**
 ETR: **0805124**
 Lab ID: **0805124-05**
 Associated Blank: **VW052708B30**
 Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
05/20/08	05/20/08	05/27/08	5	5	1	ALM

Parameter	Result	Parameter	Result
Dichlorodifluoromethane	2.00 U	1,3-Dichloropropene, Total	4.00 U
Chloromethane	2.00 U	Toluene	2.00 U
Vinyl chloride	2.00 U	1,1,2-Trichloroethane	2.00 U
Bromomethane	2.00 U	2-Hexanone	2.00 U
Chloroethane	2.00 U	Tetrachloroethene	2.00 U
Trichlorofluoromethane	2.00 U	1,3-Dichloropropane	2.00 U
Diethyl ether	2.00 U	Dibromochloromethane	2.00 U
Acetone	16.0	1,2-Dibromoethane	2.00 U
1,1-Dichloroethene	2.00 U	Chlorobenzene	2.00 U
Carbon disulfide	2.00 U	1,1,1,2-Tetrachloroethane	2.00 U
Methylene chloride	5.00 U	Ethylbenzene	2.00 U
Methyl tert-butyl ether (MTBE)	2.00 U	Xylenes, Total	6.00 U
trans-1,2-Dichloroethene	2.00 U	Styrene	2.00 U
Diisopropyl Ether (DIPE)	2.00 U	Bromoform	2.00 U
1,1-Dichloroethane	2.00 U	Isopropylbenzene	2.00 U
Ethyl Tertiary Butyl Ether (ETBE)	2.00 U	1,1,2,2-Tetrachloroethane	2.00 U
2-Butanone (MEK)	5.00 U	Bromobenzene	2.00 U
cis-1,2-Dichloroethene	2.00 U	1,2,3-Trichloropropane	2.00 U
2,2-Dichloropropane	2.00 U	n-Propylbenzene	2.00 U
Bromochloromethane	2.00 U	2-Chlorotoluene	2.00 U
Chloroform	2.00 U	1,3,5-Trimethylbenzene	2.00 U
1,1,1-Trichloroethane	2.00 U	4-Chlorotoluene	2.00 U
1,1-Dichloropropene	2.00 U	tert-Butylbenzene	2.00 U
Carbon tetrachloride	2.00 U	1,2,4-Trimethylbenzene	2.00 U
Benzene	2.00 U	sec-Butylbenzene	2.00 U
Tertiary Amyl Methyl Ether (TAME)	2.00 U	1,3-Dichlorobenzene	2.00 U
Tetrahydrofuran	5.00 U	p-Isopropyltoluene	2.00 U
1,2-Dichloroethane	2.00 U	1,4-Dichlorobenzene	2.00 U
Trichloroethene	2.00 U	n-Butylbenzene	2.00 U
1,2-Dichloropropane	2.00 U	1,2-Dibromo-3-chloropropane	2.00 U
Dibromomethane	2.00 U	1,2-Dichlorobenzene	2.00 U
1,4-Dioxane	100 U	1,2,4-Trichlorobenzene	2.00 U
Bromodichloromethane	2.00 U	Hexachlorobutadiene	2.00 U
Methyl isobutyl ketone (MIBK)	2.00 U	Naphthalene	2.00 U
		1,2,3-Trichlorobenzene	2.00 U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	104	70-130
1,2-Dichloroethane-d4	109	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	96	70-130

N/A - Not Applicable
 U - The analyte was analyzed for but not detected at the sample specific level reported.

Volatile Organics by 8260



Client: **Battelle**
 Project: **New Bedford Harbor**
 Client ID: **MW-04A-052008**
 Case: **N/A** SDG: **N/A**
 Matrix: **Water**

Lab Code: **MA00030**
 ETR: **0805124**
 Lab ID: **0805124-06**
 Associated Blank: **VW052708B30**
 Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
05/20/08	05/20/08	05/27/08	5	5	1	ALM

Parameter	Result	Parameter	Result
Dichlorodifluoromethane	2.00 U	1,3-Dichloropropene, Total	4.00 U
Chloromethane	2.00 U	Toluene	2.00 U
Vinyl chloride	2.00 U	1,1,2-Trichloroethane	2.00 U
Bromomethane	2.00 U	2-Hexanone	2.00 U
Chloroethane	2.00 U	Tetrachloroethene	2.00 U
Trichlorofluoromethane	2.00 U	1,3-Dichloropropane	2.00 U
Diethyl ether	2.00 U	Dibromochloromethane	2.00 U
Acetone	3.05 J	1,2-Dibromoethane	2.00 U
1,1-Dichloroethene	2.00 U	Chlorobenzene	2.00 U
Carbon disulfide	2.00 U	1,1,1,2-Tetrachloroethane	2.00 U
Methylene chloride	5.00 U	Ethylbenzene	2.00 U
Methyl tert-butyl ether (MTBE)	2.00 U	Xylenes, Total	6.00 U
trans-1,2-Dichloroethene	2.00 U	Styrene	2.00 U
Diisopropyl Ether (DIPE)	2.00 U	Bromoform	2.00 U
1,1-Dichloroethane	2.00 U	Isopropylbenzene	2.00 U
Ethyl Tertiary Butyl Ether (ETBE)	2.00 U	1,1,2,2-Tetrachloroethane	2.00 U
2-Butanone (MEK)	5.00 U	Bromobenzene	2.00 U
cis-1,2-Dichloroethene	2.00 U	1,2,3-Trichloropropane	2.00 U
2,2-Dichloropropane	2.00 U	n-Propylbenzene	2.00 U
Bromochloromethane	2.00 U	2-Chlorotoluene	2.00 U
Chloroform	2.00 U	1,3,5-Trimethylbenzene	2.00 U
1,1,1-Trichloroethane	2.00 U	4-Chlorotoluene	2.00 U
1,1-Dichloropropene	2.00 U	tert-Butylbenzene	2.00 U
Carbon tetrachloride	2.00 U	1,2,4-Trimethylbenzene	2.00 U
Benzene	2.00 U	sec-Butylbenzene	2.00 U
Tertiary Amyl Methyl Ether (TAME)	2.00 U	1,3-Dichlorobenzene	2.00 U
Tetrahydrofuran	5.00 U	p-Isopropyltoluene	2.00 U
1,2-Dichloroethane	2.00 U	1,4-Dichlorobenzene	2.00 U
Trichloroethene	2.00 U	n-Butylbenzene	2.00 U
1,2-Dichloropropane	2.00 U	1,2-Dibromo-3-chloropropane	2.00 U
Dibromomethane	2.00 U	1,2-Dichlorobenzene	2.00 U
1,4-Dioxane	100 U	1,2,4-Trichlorobenzene	2.00 U
Bromodichloromethane	2.00 U	Hexachlorobutadiene	2.00 U
Methyl isobutyl ketone (MIBK)	2.00 U	Naphthalene	2.00 U
		1,2,3-Trichlorobenzene	2.00 U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	105	70-130
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	98	70-130

N/A - Not Applicable
 J - Estimated value, below quantitation limit.
 U - The analyte was analyzed for but not detected at the sample specific level reported.

Volatile Organics by 8260



Client: Battelle
Project: New Bedford Harbor
Client ID: MW-003-052008
Case: N/A SDG: N/A
Matrix: Water

Lab Code: MA00030
ETR: 0805124
Lab ID: 0805124-07
Associated Blank: VW052708B30
Concentration Units: µg/L

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
05/20/08	05/20/08	05/28/08	5	5	1	ALM

Parameter	Result	Parameter	Result
Dichlorodifluoromethane	2.00 U	1,3-Dichloropropene, Total	4.00 U
Chloromethane	2.00 U	Toluene	2.00 U
Vinyl chloride	2.00 U	1,1,2-Trichloroethane	2.00 U
Bromomethane	2.00 U	2-Hexanone	2.00 U
Chloroethane	2.00 U	Tetrachloroethene	2.00 U
Trichlorofluoromethane	2.00 U	1,3-Dichloropropane	2.00 U
Diethyl ether	2.00 U	Dibromochloromethane	2.00 U
Acetone	8.40	1,2-Dibromoethane	2.00 U
1,1-Dichloroethene	2.00 U	Chlorobenzene	2.00 U
Carbon disulfide	2.00 U	1,1,1,2-Tetrachloroethane	2.00 U
Methylene chloride	5.00 U	Ethylbenzene	2.00 U
Methyl tert-butyl ether (MTBE)	2.00 U	Xylenes, Total	6.00 U
trans-1,2-Dichloroethene	2.00 U	Styrene	2.00 U
Diisopropyl Ether (DIPE)	2.00 U	Bromoform	2.00 U
1,1-Dichloroethane	2.00 U	Isopropylbenzene	2.00 U
Ethyl Tertiary Butyl Ether (ETBE)	2.00 U	1,1,2,2-Tetrachloroethane	2.00 U
2-Butanone (MEK)	5.00 U	Bromobenzene	2.00 U
cis-1,2-Dichloroethene	2.00 U	1,2,3-Trichloropropane	2.00 U
2,2-Dichloropropane	2.00 U	n-Propylbenzene	2.00 U
Bromochloromethane	2.00 U	2-Chlorotoluene	2.00 U
Chloroform	2.00 U	1,3,5-Trimethylbenzene	2.00 U
1,1,1-Trichloroethane	2.00 U	4-Chlorotoluene	2.00 U
1,1-Dichloropropene	2.00 U	tert-Butylbenzene	2.00 U
Carbon tetrachloride	2.00 U	1,2,4-Trimethylbenzene	2.00 U
Benzene	2.00 U	sec-Butylbenzene	2.00 U
Tertiary Amyl Methyl Ether (TAME)	2.00 U	1,3-Dichlorobenzene	2.00 U
Tetrahydrofuran	5.00 U	p-Isopropyltoluene	2.00 U
1,2-Dichloroethane	2.00 U	1,4-Dichlorobenzene	2.00 U
Trichloroethene	2.00 U	n-Butylbenzene	2.00 U
1,2-Dichloropropane	2.00 U	1,2-Dibromo-3-chloropropane	2.00 U
Dibromomethane	2.00 U	1,2-Dichlorobenzene	2.00 U
1,4-Dioxane	100 U	1,2,4-Trichlorobenzene	2.00 U
Bromodichloromethane	2.00 U	Hexachlorobutadiene	2.00 U
Methyl isobutyl ketone (MIBK)	2.00 U	Naphthalene	2.00 U
		1,2,3-Trichlorobenzene	2.00 U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	105	70-130
1,2-Dichloroethane-d4	111	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	98	70-130

N/A - Not Applicable
 U - The analyte was analyzed for but not detected at the sample specific level reported.

Volatile Organics by 8260



Client: Battelle
Project: New Bedford Harbor
Client ID: EB-052008
Case: N/A **SDG:** N/A
Matrix: Water

Lab Code: MA00030
ETR: 0805124
Lab ID: 0805124-08
Associated Blank: VW052708B30
Concentration Units: µg/L

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
05/20/08	05/20/08	05/28/08	5	5	1	ALM

Parameter	Result	Parameter	Result
Dichlorodifluoromethane	2.00 U	1,3-Dichloropropene, Total	4.00 U
Chloromethane	2.00 U	Toluene	2.00 U
Vinyl chloride	2.00 U	1,1,2-Trichloroethane	2.00 U
Bromomethane	2.00 U	2-Hexanone	2.00 U
Chloroethane	2.00 U	Tetrachloroethene	2.00 U
Trichlorofluoromethane	2.00 U	1,3-Dichloropropane	2.00 U
Diethyl ether	2.00 U	Dibromochloromethane	2.00 U
Acetone	7.19	1,2-Dibromoethane	2.00 U
1,1-Dichloroethene	2.00 U	Chlorobenzene	2.00 U
Carbon disulfide	2.00 U	1,1,1,2-Tetrachloroethane	2.00 U
Methylene chloride	1.21 J	Ethylbenzene	2.00 U
Methyl tert-butyl ether (MTBE)	2.00 U	Xylenes, Total	6.00 U
trans-1,2-Dichloroethene	2.00 U	Styrene	2.00 U
Diisopropyl Ether (DIPE)	2.00 U	Bromoform	2.00 U
1,1-Dichloroethane	2.00 U	Isopropylbenzene	2.00 U
Ethyl Tertiary Butyl Ether (ETBE)	2.00 U	1,1,2,2-Tetrachloroethane	2.00 U
2-Butanone (MEK)	5.00 U	Bromobenzene	2.00 U
cis-1,2-Dichloroethene	2.00 U	1,2,3-Trichloropropane	2.00 U
2,2-Dichloropropane	2.00 U	n-Propylbenzene	2.00 U
Bromochloromethane	2.00 U	2-Chlorotoluene	2.00 U
Chloroform	2.00 U	1,3,5-Trimethylbenzene	2.00 U
1,1,1-Trichloroethane	2.00 U	4-Chlorotoluene	2.00 U
1,1-Dichloropropene	2.00 U	tert-Butylbenzene	2.00 U
Carbon tetrachloride	2.00 U	1,2,4-Trimethylbenzene	2.00 U
Benzene	2.00 U	sec-Butylbenzene	2.00 U
Tertiary Amyl Methyl Ether (TAME)	2.00 U	1,3-Dichlorobenzene	2.00 U
Tetrahydrofuran	5.00 U	p-Isopropyltoluene	2.00 U
1,2-Dichloroethane	2.00 U	1,4-Dichlorobenzene	2.00 U
Trichloroethene	2.00 U	n-Butylbenzene	2.00 U
1,2-Dichloropropane	2.00 U	1,2-Dibromo-3-chloropropane	2.00 U
Dibromomethane	2.00 U	1,2-Dichlorobenzene	2.00 U
1,4-Dioxane	100 U	1,2,4-Trichlorobenzene	2.00 U
Bromodichloromethane	2.00 U	Hexachlorobutadiene	2.00 U
Methyl isobutyl ketone (MIBK)	2.00 U	Naphthalene	2.00 U
		1,2,3-Trichlorobenzene	2.00 U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	106	70-130
1,2-Dichloroethane-d4	111	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	97	70-130

N/A - Not Applicable
 J - Estimated value, below quantitation limit.
 U - The analyte was analyzed for but not detected at the sample specific level reported.

Volatile Organics by 8260



Client: Battelle
Project: New Bedford Harbor
Client ID: Trip Blank
Case: N/A **SDG:** N/A
Matrix: Water

Lab Code: MA00030
ETR: 0805124
Lab ID: 0805124-09
Associated Blank: VW052708B30
Concentration Units: µg/L

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
05/20/08	05/20/08	05/27/08	5	5	1	ALM

Parameter	Result	Parameter	Result
Dichlorodifluoromethane	2.00 U	1,3-Dichloropropene, Total	4.00 U
Chloromethane	2.00 U	Toluene	2.00 U
Vinyl chloride	2.00 U	1,1,2-Trichloroethane	2.00 U
Bromomethane	2.00 U	2-Hexanone	2.00 U
Chloroethane	2.00 U	Tetrachloroethene	2.00 U
Trichlorofluoromethane	2.00 U	1,3-Dichloropropane	2.00 U
Diethyl ether	2.00 U	Dibromochloromethane	2.00 U
Acetone	5.00 U	1,2-Dibromoethane	2.00 U
1,1-Dichloroethene	2.00 U	Chlorobenzene	2.00 U
Carbon disulfide	2.00 U	1,1,1,2-Tetrachloroethane	2.00 U
Methylene chloride	5.00 U	Ethylbenzene	2.00 U
Methyl tert-butyl ether (MTBE)	2.00 U	Xylenes, Total	6.00 U
trans-1,2-Dichloroethene	2.00 U	Styrene	2.00 U
Diisopropyl Ether (DIPE)	2.00 U	Bromoform	2.00 U
1,1-Dichloroethane	2.00 U	Isopropylbenzene	2.00 U
Ethyl Tertiary Butyl Ether (ETBE)	2.00 U	1,1,1,2-Tetrachloroethane	2.00 U
2-Butanone (MEK)	5.00 U	Bromobenzene	2.00 U
cis-1,2-Dichloroethene	2.00 U	1,2,3-Trichloropropane	2.00 U
2,2-Dichloropropane	2.00 U	n-Propylbenzene	2.00 U
Bromochloromethane	2.00 U	2-Chlorotoluene	2.00 U
Chloroform	2.00 U	1,3,5-Trimethylbenzene	2.00 U
1,1,1-Trichloroethane	2.00 U	4-Chlorotoluene	2.00 U
1,1-Dichloropropene	2.00 U	tert-Butylbenzene	2.00 U
Carbon tetrachloride	2.00 U	1,2,4-Trimethylbenzene	2.00 U
Benzene	2.00 U	sec-Butylbenzene	2.00 U
Tertiary Amyl Methyl Ether (TAME)	2.00 U	1,3-Dichlorobenzene	2.00 U
Tetrahydrofuran	5.00 U	p-Isopropyltoluene	2.00 U
1,2-Dichloroethane	2.00 U	1,4-Dichlorobenzene	2.00 U
Trichloroethene	2.00 U	n-Butylbenzene	2.00 U
1,2-Dichloropropane	2.00 U	1,2-Dibromo-3-chloropropane	2.00 U
Dibromomethane	2.00 U	1,2-Dichlorobenzene	2.00 U
1,4-Dioxane	100 U	1,2,4-Trichlorobenzene	2.00 U
Bromodichloromethane	2.00 U	Hexachlorobutadiene	2.00 U
Methyl isobutyl ketone (MIBK)	2.00 U	Naphthalene	2.00 U
		1,2,3-Trichlorobenzene	2.00 U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	100	70-130
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	96	70-130

N/A - Not Applicable
 U - The analyte was analyzed for but not detected at the sample specific level reported.

Blank Volatile Organics by 8260



Client: **Battelle**
 Project: **New Bedford Harbor**
 Client ID: **Blank**
 Case: **N/A** SDG: **N/A**
 Matrix: **Water**

Lab Code: **MA00030**
 ETR: **0805124**
 Lab ID: **VW052708B30**
 Associated Blank: **N/A**
 Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	05/27/08	5	5	1	ALM

Parameter	Result	Parameter	Result
Dichlorodifluoromethane	2.00 U	1,3-Dichloropropene, Total	4.00 U
Chloromethane	2.00 U	Toluene	2.00 U
Vinyl chloride	2.00 U	1,1,2-Trichloroethane	2.00 U
Bromomethane	2.00 U	2-Hexanone	2.00 U
Chloroethane	2.00 U	Tetrachloroethene	2.00 U
Trichlorofluoromethane	2.00 U	1,3-Dichloropropane	2.00 U
Diethyl ether	2.00 U	Dibromochloromethane	2.00 U
Acetone	5.00 U	1,2-Dibromoethane	2.00 U
1,1-Dichloroethene	2.00 U	Chlorobenzene	2.00 U
Carbon disulfide	2.00 U	1,1,1,2-Tetrachloroethane	2.00 U
Methylene chloride	5.00 U	Ethylbenzene	2.00 U
Methyl tert-butyl ether (MTBE)	2.00 U	Xylenes, Total	6.00 U
trans-1,2-Dichloroethene	2.00 U	Styrene	2.00 U
Diisopropyl Ether (DIPE)	2.00 U	Bromoform	2.00 U
1,1-Dichloroethane	2.00 U	Isopropylbenzene	2.00 U
Ethyl Tertiary Butyl Ether (ETBE)	2.00 U	1,1,2,2-Tetrachloroethane	2.00 U
2-Butanone (MEK)	5.00 U	Bromobenzene	2.00 U
cis-1,2-Dichloroethene	2.00 U	1,2,3-Trichloropropane	2.00 U
2,2-Dichloropropane	2.00 U	n-Propylbenzene	2.00 U
Bromochloromethane	2.00 U	2-Chlorotoluene	2.00 U
Chloroform	2.00 U	1,3,5-Trimethylbenzene	2.00 U
1,1,1-Trichloroethane	2.00 U	4-Chlorotoluene	2.00 U
1,1-Dichloropropene	2.00 U	tert-Butylbenzene	2.00 U
Carbon tetrachloride	2.00 U	1,2,4-Trimethylbenzene	2.00 U
Benzene	2.00 U	sec-Butylbenzene	2.00 U
Tertiary Amyl Methyl Ether (TAME)	2.00 U	1,3-Dichlorobenzene	2.00 U
Tetrahydrofuran	5.00 U	p-Isopropyltoluene	2.00 U
1,2-Dichloroethane	2.00 U	1,4-Dichlorobenzene	2.00 U
Trichloroethene	2.00 U	n-Butylbenzene	2.00 U
1,2-Dichloropropane	2.00 U	1,2-Dibromo-3-chloropropane	2.00 U
Dibromomethane	2.00 U	1,2-Dichlorobenzene	2.00 U
1,4-Dioxane	100 U	1,2,4-Trichlorobenzene	2.00 U
Bromodichloromethane	2.00 U	Hexachlorobutadiene	2.00 U
Methyl isobutyl ketone (MIBK)	2.00 U	Naphthalene	2.00 U
		1,2,3-Trichlorobenzene	2.00 U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	100	70-130
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	95	70-130

N/A - Not Applicable
 U - The analyte was analyzed for but not detected at the sample specific level reported.

Laboratory Control Summary Volatile Organics by 8260



Client: **Battelle**
 Project: **New Bedford Harbor**
 Client ID: **Laboratory Control Sample**
 Case: **N/A** SDG: **N/A**
 Matrix: **Water**

Lab Code: **MA00030**
 ETR: **0805124**
 Lab ID: **See Below**
 Associated Blank: **VW052708B30**
 Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	05/27/08	5	5	1	ALM

Lab ID: **VW052708B30** **VW052708LCS06** **VW052708LCSD06**

Parameter	Blank		LCS		LCSD		% RPD	RPD % Recovery	
	Conc.	U	Conc.	% Recovery	Conc.	% Recovery		Limit	Limits
Dichlorodifluoromethane	2.00	U	23.0	115	23.1	115	0	25	70-130
Chloromethane	2.00	U	14.7	74	15.3	77	4	25	70-130
Vinyl chloride	2.00	U	18.5	93	19.4	97	5	25	70-130
Bromomethane	2.00	U	16.6	83	18.1	90	8	25	70-130
Chloroethane	2.00	U	16.2	81	16.8	84	4	25	70-130
Trichlorofluoromethane	2.00	U	17.4	87	17.7	88	2	25	70-130
Diethyl ether	2.00	U	16.2	81	16.9	84	4	25	70-130
Acetone	5.00	U	18.8	94	18.8	94	0	25	70-130
1,1-Dichloroethene	2.00	U	18.3	92	19.0	95	3	25	70-130
Carbon disulfide	2.00	U	21.5	108	22.3	112	4	25	70-130
Methylene chloride	5.00	U	19.0	95	19.4	97	2	25	70-130
Methyl tert-butyl ether (MTBE)	2.00	U	18.6	93	19.0	95	2	25	70-130
trans-1,2-Dichloroethene	2.00	U	18.5	93	19.2	96	4	25	70-130
Diisopropyl Ether (DIPE)	2.00	U	18.9	95	19.3	96	2	25	70-130
1,1-Dichloroethane	2.00	U	18.2	91	19.1	95	4	25	70-130
Ethyl Tertiary Butyl Ether (ETBE)	2.00	U	18.2	91	18.9	94	4	25	70-130
2-Butanone (MEK)	5.00	U	20.0	100	19.7	99	1	25	70-130
cis-1,2-Dichloroethene	2.00	U	18.1	91	17.8	89	2	25	70-130
2,2-Dichloropropane	2.00	U	17.9	90	17.9	89	0	25	70-130
Bromochloromethane	2.00	U	19.9	99	20.1	101	1	25	70-130
Chloroform	2.00	U	19.0	95	19.5	97	3	25	70-130
1,1,1-Trichloroethane	2.00	U	19.3	97	20.1	101	4	25	70-130
1,1-Dichloropropene	2.00	U	18.4	92	19.1	96	4	25	70-130
Carbon tetrachloride	2.00	U	19.0	95	19.3	97	2	25	70-130
Benzene	2.00	U	18.7	94	19.5	97	4	25	70-130
Tertiary Amyl Methyl Ether (TAME)	2.00	U	19.4	97	20.0	100	3	25	70-130
Tetrahydrofuran	5.00	U	19.7	99	20.0	100	1	25	70-130
1,2-Dichloroethane	2.00	U	18.3	91	18.8	94	3	25	70-130
Trichloroethene	2.00	U	19.0	95	20.0	100	6	25	70-130
1,2-Dichloropropane	2.00	U	18.4	92	18.8	94	2	25	70-130
Dibromomethane	2.00	U	19.0	95	19.3	97	2	25	70-130
1,4-Dioxane	100	U	191	95	203	101	6	25	70-130
Bromodichloromethane	2.00	U	18.6	93	19.1	95	2	25	70-130

Laboratory Control Summary

Volatile Organics by 8260



Client: **Battelle**
 Project: **New Bedford Harbor**
 Client ID: **Laboratory Control Sample**
 Case: **N/A** SDG: **N/A**
 Matrix: **Water**

Lab Code: **MA00030**
 ETR: **0805124**
 Lab ID: **See Below**
 Associated Blank: **VW052708B30**
 Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	05/27/08	5	5	1	ALM

Lab ID: VW052708B30 VW052708LCS06 VW052708LCSD06

Parameter	Blank Conc.	U	LCS		LCSD		% RPD	RPD Limit	% Recovery Limits
			Conc.	% Recovery	Conc.	% Recovery			
Methyl isobutyl ketone (MIBK)	2.00	U	16.2	81	16.7	84	3	25	70-130
1,3-Dichloropropene, Total	4.00	U	36.9	92	37.4	93	1	25	70-130
Toluene	2.00	U	18.6	93	18.9	94	2	25	70-130
1,1,2-Trichloroethane	2.00	U	18.0	90	18.6	93	3	25	70-130
2-Hexanone	2.00	U	18.3	91	18.7	94	2	25	70-130
Tetrachloroethene	2.00	U	19.6	98	19.9	100	2	25	70-130
1,3-Dichloropropane	2.00	U	18.9	94	19.2	96	2	25	70-130
Dibromochloromethane	2.00	U	19.1	96	19.1	96	0	25	70-130
1,2-Dibromoethane	2.00	U	19.3	97	19.7	98	2	25	70-130
Chlorobenzene	2.00	U	18.5	92	18.9	94	2	25	70-130
1,1,1,2-Tetrachloroethane	2.00	U	19.0	95	19.6	98	3	25	70-130
Ethylbenzene	2.00	U	18.2	91	18.5	92	2	25	70-130
Xylenes, Total	6.00	U	55.8	93	56.1	93	1	25	70-130
Styrene	2.00	U	19.0	95	19.2	96	1	25	70-130
Bromoform	2.00	U	18.8	94	19.3	97	3	25	70-130
Isopropylbenzene	2.00	U	18.5	92	19.2	96	4	25	70-130
1,1,2,2-Tetrachloroethane	2.00	U	18.5	93	18.7	93	1	25	70-130
Bromobenzene	2.00	U	18.7	94	19.2	96	3	25	70-130
1,2,3-Trichloropropane	2.00	U	19.8	99	19.6	98	1	25	70-130
n-Propylbenzene	2.00	U	18.4	92	18.9	94	3	25	70-130
2-Chlorotoluene	2.00	U	18.4	92	18.8	94	2	25	70-130
1,3,5-Trimethylbenzene	2.00	U	18.6	93	18.8	94	1	25	70-130
4-Chlorotoluene	2.00	U	18.6	93	19.0	95	2	25	70-130
tert-Butylbenzene	2.00	U	18.8	94	19.0	95	1	25	70-130
1,2,4-Trimethylbenzene	2.00	U	18.1	91	18.6	93	3	25	70-130
sec-Butylbenzene	2.00	U	18.9	94	19.1	95	1	25	70-130
1,3-Dichlorobenzene	2.00	U	18.4	92	18.8	94	2	25	70-130
p-Isopropyltoluene	2.00	U	18.6	93	18.7	94	1	25	70-130
1,4-Dichlorobenzene	2.00	U	18.6	93	19.0	95	2	25	70-130
n-Butylbenzene	2.00	U	18.6	93	18.6	93	0	25	70-130
1,2-Dibromo-3-chloropropane	2.00	U	18.8	94	18.9	94	0	25	70-130
1,2-Dichlorobenzene	2.00	U	18.8	94	18.9	95	1	25	70-130
1,2,4-Trichlorobenzene	2.00	U	19.0	95	19.1	96	1	25	70-130

Laboratory Control Summary Volatile Organics by 8260



Client: **Battelle**
 Project: **New Bedford Harbor**
 Client ID: **Laboratory Control Sample**
 Case: **N/A** SDG: **N/A**
 Matrix: **Water**

Lab Code: **MA00030**
 ETR: **0805124**
 Lab ID: **See Below**
 Associated Blank: **VW052708B30**
 Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	05/27/08	5	5	1	ALM

Lab ID: **VW052708B30** **VW052708LCS06** **VW052708LCSD06**

Parameter	Blank		LCS		LCSD		% RPD	RPD % Recovery	
	Conc.		Conc.	% Recovery	Conc.	% Recovery		Limit	Limits
Hexachlorobutadiene	2.00	U	20.9	104	20.0	100	4	25	70-130
Naphthalene	2.00	U	19.2	96	19.0	95	1	25	70-130
1,2,3-Trichlorobenzene	2.00	U	18.8	94	18.3	91	3	25	70-130

Surrogate	% Recovery		Acceptance Range (%)
Dibromofluoromethane	99	99	70-130
1,2-Dichloroethane-d4	95	95	70-130
Toluene-d8	98	99	70-130
4-Bromofluorobenzene	98	98	70-130

N/A - Not Applicable
 U - The analyte was analyzed for but not detected at the sample specific level reported.

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded result.

06/04/08 11:40

Chain of Custody Records



CHAIN OF CUSTODY

PAGE 1 OF

WESTBORO, MA MANSFIELD, MA
 TEL: 508-898-8220 TEL: 508-822-9300
 FAX: 508-898-9193 FAX: 508-822-3288

Date Rec'd in Lab: _____

ALPHA Job #: 0805124**Project Information**Project Name: New Bedford Harbor**Report Information - Data Deliverables**
 FAX EMAIL
 ADEX Add'l Deliverables
Billing Information Same as Client info PO #: _____**Client Information**Client: BattelleProject Location: New Bedford, MAAddress: 397 Washington St
Duxbury, MA 02332Project #: 6606422Phone: 781-952-5298Project Manager: Deirdre Dahlen

Fax: _____

ALPHA Quote #: _____

Email: fabexj@battelle.org**Turn-Around Time** Standard RUSH (only confirmed if pre-approved!)

Date Due: _____ Time: _____

Regulatory Requirements/Report Limits

State / Fed Program: _____ Criteria: _____

MA MCP PRESUMPTIVE CERTAINTY --- CT REASONABLE CONFIDENCE PROTOCOLS
 Yes No Are MCP Analytical Methods Required?
 Yes No Are CT RCP (Reasonable Confidence Protocols) Required?
 These samples have been previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits: _____

ANALYSIS	VOC	SAMPLE HANDLING	TOTAL # BOTTLES
		Filtration <input type="checkbox"/> Done <input type="checkbox"/> Not needed <input type="checkbox"/> Lab to do Preservation <input type="checkbox"/> Lab to do (Please specify below)	
		Sample Specific Comments	

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials											Sample Specific Comments					
		Date	Time																		
1	MW-07A-051908	5/19/08	1325	GW H ₂ O	JMF	✓														3 set of 3 vials MS/MSD ^{ex for}	9
2	MW-006-051908	5/19/08	1519			✓														1 set of 3 vials	3
3	MW-001-051908 ⁰ 051908	5/19/08	1735			✓														↓	3
4	MW-005-052008	5/20/08	1007			✓														↓	3
5	MW-005-052008-REP	5/20/08	1007			✓														Replicate	3
6	MW-04A-052008	5/20/08	1217			✓														1 set of 3 vials	3
7	MW-003-052008	5/20/08	1430			✓														↓	3
8	EB-052008	5/20/08	1600			✓														↓	3

PLEASE ANSWER QUESTIONS ABOVE!

⁰ Please ignore JMF 5/20/08Container Type Preservative BIS YOUR PROJECT
MA MCP or CT RCP?

Relinquished By:

Date/Time

Received By:

Date/Time

Jessie M. Fah
Deirdre Dahlen

5/20/08 1605
 5/20/08 1704

Miguel Valdez
Deirdre Dahlen

5/20/08 1605
 5/20/08 1704

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms. See reverse side.

Sample Receipt Checklist

Client: <u>BATDOX</u>	Receipt Date: <u>5/20/08</u>
Project:	Log-in Date: <u>5/24/08</u>
ETR #: <u>0805/24</u>	Inspection by: <u>W</u> Login by: <u>W</u>

ALL SECTIONS BELOW MUST BE COMPLETED

Comments / Notes

Were samples shipped? Yes, FedEx / UPS / Other: _____ No, Alpha Analytical Courier pick-up <u>Hand delivered</u>	Sample storage refrigerator #: <u>VOA</u>
Is bill of lading retained? Yes, Tracking #: _____ No, Unavailable / <u>NA</u>	Sample storage freezer #: _____
Number of coolers received for this project delivery: <u>1</u>	Cooler 2: _____ Cooler 3: _____ Cooler 4: _____ Cooler 5: _____ Cooler 6: _____ Cooler 7: _____ More: _____
Indicate cooler temperature upon opening (if multiple coolers, record <u>all</u> temps): Note: If <u>all</u> coolers are 2-6°C, use one checklist, if NOT, use separate checklists and note <u>all</u> samples received <u>above</u> 6°C. Cooler 1: Temperature(s) taken from: <u>50</u> IR Gun, (Circle one) SN <u>460647143</u> or 94031 _____ Temp. Blank, / NA	
Were samples received on ice? <u>Yes</u> / No	
Chain-of-Custody present? <u>Yes</u> / No Complete? <u>Yes</u> / No	
Custody seals present on Cooler? Yes / <u>No</u> on Bottles? Yes / <u>No</u> Intact? Yes / No / <u>NA</u>	
Note: Affix custody seals to back of this page.	
Were sample containers intact? <u>Yes</u> / No If No, list samples: →	
Did VOA/VPH waters contain headspace (>5mm)? Yes / <u>No</u> / NA If Yes, list samples: →	
Were 5035 VOA soils, or VPH soils, covered with MeOH? Yes / No / <u>NA</u> If No, list samples: →	
Was a sufficient amount of sample received for each test indicated on the COC? <u>Yes</u> / No If No, list samples: →	
If chemical preservation is appropriate - Were samples field preserved? <u>Yes</u> / No / NA <input checked="" type="checkbox"/> C=HCl <input type="checkbox"/> M=MeOH <input type="checkbox"/> S=H ₂ SO ₄ <input type="checkbox"/> H=NaOH <input type="checkbox"/> N=HNO ₃ <input type="checkbox"/> Other: _____ <input type="checkbox"/> U= Unknown	Chemical preservation OK for ALL samples? Yes / No / N/A If No, list samples below:
Preservation (pH) verified at lab for <u>EVERY</u> bottle? (<u>Not: VOA</u> VPH / Sulfide) YES: <2 or >12 (CN) or NO NA If No, why?:	<u>trip Blank not on COC</u>
Were samples received within hold time? <u>Yes</u> / No If No, list samples: →	
Discrepancy between samples rec'd & COC? <u>Yes</u> / No If Yes, list samples: →	
Was the Project Manager notified of any other problems? Yes / No / NA	
Project Manager Acknowledgement: _____ Date: _____	Please use back for any additional notes!

Certificate/Approval Program Summary



Method numbers assume the most recent EPA revisions. For a complete listing of analytes for the referenced methods please contact your Alpha Woods Hole Lab Project Manager or the Quality Assurance Manager.

Connecticut Department of Public Health Certificate/Lab ID : PH-0141 - *Wastewater* (General Chemistry: EPA 120.1, 150.1, 160.1, 160.2, 180.1, 300.0, 310.1, 335.2, 365.2; Metals: 200.8, 245.1; Organics: 608, 624, 625, ETPH) *Solid Waste/Soil* (General Chemistry: 1010, 9010/9014, 9045, 9060; Metals: 6020, 7470, 7471; Organics: 8081, 8082, 8260, 8270, ETPH).

Florida Department of Health Certificate/Lab ID : E87814 - Primary NELAP Accreditation Authority for Air & Emissions. Secondary NELAP Accreditation for Wastewater and Solid & Hazardous Waste. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 335.2, 365.2, SM2320B, SM2340B, SM2540G, SM4500NH3; Metals: 245.1; Organics: 608, 624, 625). *Solid and Hazardous Waste* (General Chemistry: 9010/9014, 9045, 9050, 9056, 9065, Reactivity 7.3; Metals: 6020, 7470, 7471; Organics: 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

Louisiana Department of Environmental Quality Certificate/Lab ID : 03090 - Primary NELAP Accrediting Authority for Wastewater, Solid & Hazardous Waste. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 365.2, 376.2, 9010/9014, 9056, SM2540G; Metals: 200.8, 245.1, 6020; Organics: 608, 624, 625, 8015-DRO/GRO, 8081, 8082, 8260, 8270). *Solid and Hazardous Waste* (General Chemistry: 1010, 1311, 9010/9014, 9040, 9045, 9056, 9060, Reactivity 7.3; Metals: 6020, 7196, 7470, 7471; Organics: 8015-DRO/GRO, 8081, 8082, 8260, 8270).

Maine Department of Human Services Certificate/Lab ID : MA0030 - *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 335.2, 365.2; Metals: EPA 245.1; Organics: 608, 624).

Massachusetts Department of Environmental Protection Certificate/Lab ID : M-MA030 - *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 335.2, 365.2; Metals: EPA 245.1; Organics: EPA 608, 624).

New Hampshire Department of Environmental Services Certificate/Lab ID : 2206 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 365.2, 376.2, SM2540G; Metals: 200.8, 245.4; Organics: 608, 624, 625).

New Jersey Department of Environmental Protection Certificate/Lab ID : MA015 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 376.2, 9010/9014, 9056, SM2540G; Metals: 200.8, 245.1 6020; Organics: 608, 624, 625, 8081, 8082, 8260, 8270). *Solid & Hazardous Waste* (General Chemistry: EPA 1010, 1311, 9010/9014, 9040, 9045, 9056, 9060; Metals: 6020, 7196, 7470, 7471; Organics: 8015-DRO/GRO, 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

New York Department of Health Certificate/Lab ID : 11627 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 365.2, 376.2; Metals: 245.1; Organics: 608, 624, 625). *Solid and Hazardous Waste* (General Chemistry: EPA 1010, 1311; : 245.1; 6020, 7041; Organics: 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

Rhode Island Department of Health Certificate/Lab ID : LAO00289 - Chemistry: *Organic and Inorganic in Non-Portable Water, Wastewater/Sewage and Soil* (Refer to LADEQ and MADEP certificates for method numbers.)

Pennsylvania Department of Environmental Protection Certificate/Lab ID : 68-02089 - Registered laboratory

U.S. Army Corps of Engineers

Department of the Navy



ANALYTICAL REPORT

Prepared for:
Battelle
Duxbury Operations
397 Washington Street
Duxbury, MA 02332

Project: New Bedford Harbor
ETR: 0811052
Report Date: November 21, 2008

Certifications and Accreditations

Massachusetts M-MA030
Connecticut PH-0141
New Hampshire 2206
Rhode Island LAO00289
New Jersey MA015
Maine MA0030
New York 11627
Louisiana 03090
Florida E87814
Pennsylvania 68-02089
Army Corps of Engineers
Department of the Navy

This report shall not be reproduced except in full, without written approval from the laboratory.



Sample ID Cross Reference

Client: **Battelle**
Project: **New Bedford Harbor**

Lab Code: **MA00030**
ETR: **0811052**



Lab Sample ID	Client Sample ID
0811052-01	MW-04A-110508
0811052-02	MW-04B-110508
0811052-03	MW-007-110508
0811052-04	MW-006-110508
0811052-05	MW-07A-110608
0811052-06	MW-006-110508-REP
0811052-07	MW-006-110608
0811052-08	MW-001-110608
0811052-09	MW-005-110608
0811052-10	MW-04A-110708
0811052-11	MW-003-110708
0811052-12	EB-110508
0811052-13	MW-04A-110508
0811052-14	MW-04B-110508
0811052-15	MW-007-110508
0811052-16	MW-006-110508
0811052-17	MW-006-110508-REP
0811052-18	Trip Blank

Sawyer Street
CDF samples

CASE NARRATIVE

Alpha Analytical

ETR: 0811052

Project: New Bedford Harbor

All analyses were performed according to Alpha Analytical quality assurance program and documented Standard Operating Procedures (SOPs). The analytical results contained in this report were performed within holding time, and with appropriate quality control measures, except where noted. All soil/sediment results are reported on a dry weight basis unless otherwise noted. A summary of all state and federal accreditations is provided within this report. Blank correction of results is not performed in the laboratory for any parameter. Alpha Analytical certifies that the test results within meet all of the requirements of NELAC, for all NELAC accredited parameters.

Volatiles by 8260

The initial calibration analyzed on 11/17/08 had a value for Bromomethane outside of the 15% RSD QC advisory limit at 20.9%. This initial calibration meets the acceptability criteria.

Continuing calibration verification standard, C1111901 has the percent deviation for Bromomethane above the 30%D limit at 31.3%D. This continuing calibration meets the acceptability criteria.

The laboratory control sample duplicate (VW111808LCSD10) has a percent recovery for 1, 4-Dioxane above the upper 130% limit at 137%. This compound was not detected in associated samples therefore no further action taken.

The laboratory control sample (VW111908LCS09) has a percent recovery for 1, 4-Dioxane above the upper 130% limit at 152%. This compound was not detected in associated samples therefore no further action taken.

Sample MW-04A-110508 (0811052-01) was analyzed at a (5X) dilution. An undiluted re-analysis was performed in order to obtain lower reporting limits. Acetone exceeded calibration in the undiluted analysis. Both sets of results reported. The discrepancy in results possible due to differences in sample vials.

Sample MW-04B-110508 (0811052-02) was analyzed on a dilution (10X) due to target compound concentration.

Sample MW-007-110508 (0811052-03) was analyzed on a dilution (100X) due to target compound concentration. This analysis had concentrations of Trichloroethylene detected over the calibration range of the instrument as noted with an "E" qualifier. The sample was re-analyzed on a dilution (200X). Both analyses were reported.

The enclosed results of analyses are representative of the samples as received by the laboratory. Alpha Analytical makes no representations or certifications as to the method of sample collection, sample identification, or transporting/handling procedures used prior to the receipt of samples by Alpha Analytical. To the best of my knowledge, the information contained in this report is accurate and complete. For any questions regarding this report, please contact the signatory below at 508-822-9300.

Approved by:  Title: Project Manager Date: 11/21/08
Pete Henriksen

i

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Volatile Organics

By

8260

Volatile Organics by 8260



Client: Battelle
Project: New Bedford Harbor
Client ID: MW-04A-110508
Case: N/A **SDG:** N/A
Matrix: Water

Lab Code: MA00030
ETR: 0811052
Lab ID: 0811052-01
Associated Blank: VW111908B11
Concentration Units: µg/L

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
11/05/08	11/07/08	11/19/08	5	5	1	BAS

Parameter	Result	Parameter	Result
Dichlorodifluoromethane	2.00 U	1,3-Dichloropropene, Total	4.00 U
Chloromethane	2.00 U	Toluene	2.00 U
Vinyl chloride	2.24	1,1,2-Trichloroethane	2.00 U
Bromomethane	2.00 U	2-Hexanone	2.00 U
Chloroethane	2.00 U	Tetrachloroethene	2.00 U
Trichlorofluoromethane	2.00 U	1,3-Dichloropropane	2.00 U
Diethyl ether	2.00 U	Dibromochloromethane	2.00 U
Acetone	354 E	1,2-Dibromoethane	2.00 U
1,1-Dichloroethene	2.00 U	Chlorobenzene	2.00 U
Carbon disulfide	2.00 U	1,1,1,2-Tetrachloroethane	2.00 U
Methylene chloride	2.00 U	Ethylbenzene	2.00 U
Methyl tert-butyl ether (MTBE)	2.00 U	Xylenes, Total	6.00 U
trans-1,2-Dichloroethene	2.00 U	Styrene	2.00 U
Diisopropyl Ether (DIPE)	2.00 U	Bromoform	2.00 U
1,1-Dichloroethane	2.00 U	Isopropylbenzene	2.00 U
Ethyl Tertiary Butyl Ether (ETBE)	2.00 U	1,1,2,2-Tetrachloroethane	2.00 U
2-Butanone (MEK)	2.00 U	Bromobenzene	2.00 U
cis-1,2-Dichloroethene	17.3	1,2,3-Trichloropropane	2.00 U
2,2-Dichloropropane	2.00 U	n-Propylbenzene	2.00 U
Bromochloromethane	2.00 U	2-Chlorotoluene	2.00 U
Chloroform	2.00 U	1,3,5-Trimethylbenzene	2.00 U
1,1,1-Trichloroethane	2.00 U	4-Chlorotoluene	2.00 U
1,1-Dichloropropene	2.00 U	tert-Butylbenzene	2.00 U
Carbon tetrachloride	2.00 U	1,2,4-Trimethylbenzene	2.00 U
Benzene	2.00 U	sec-Butylbenzene	2.00 U
Tertiary Amyl Methyl Ether (TAME)	2.00 U	1,3-Dichlorobenzene	2.00 U
Tetrahydrofuran	2.29	p-Isopropyltoluene	2.00 U
1,2-Dichloroethane	2.00 U	1,4-Dichlorobenzene	2.00 U
Trichloroethene	16.6	n-Butylbenzene	2.00 U
1,2-Dichloropropane	2.00 U	1,2-Dibromo-3-chloropropane	2.00 U
Dibromomethane	2.00 U	1,2-Dichlorobenzene	2.00 U
1,4-Dioxane	100 U	1,2,4-Trichlorobenzene	2.00 U
Bromodichloromethane	2.00 U	Hexachlorobutadiene	2.00 U
Methyl isobutyl ketone (MIBK)	2.00 U	Naphthalene	2.00 U
		1,2,3-Trichlorobenzene	2.00 U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	107	70-130
1,2-Dichloroethane-d4	105	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	104	70-130

N/A - Not Applicable
 E - Estimated value, exceeds the upper limit of calibration.
 U - The analyte was analyzed for but not detected at the sample specific level reported.

Volatile Organics by 8260



Client: **Battelle**
 Project: **New Bedford Harbor**
 Client ID: **MW-04A-110508**
 Case: **N/A** SDG: **N/A**
 Matrix: **Water**

Lab Code: **MA00030**
 ETR: **0811052**
 Lab ID: **0811052-01E**
 Associated Blank: **VW111808B11**
 Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
11/05/08	11/07/08	11/18/08	5	5	5	BAS

Parameter	Result	Parameter	Result
Dichlorodifluoromethane	10.0 U	1,3-Dichloropropene, Total	20.0 U
Chloromethane	10.0 U	Toluene	10.0 U
Vinyl chloride	10.0 U	1,1,2-Trichloroethane	10.0 U
Bromomethane	10.0 U	2-Hexanone	10.0 U
Chloroethane	10.0 U	Tetrachloroethene	10.0 U
Trichlorofluoromethane	10.0 U	1,3-Dichloropropane	10.0 U
Diethyl ether	10.0 U	Dibromochloromethane	10.0 U
Acetone	81.6	1,2-Dibromoethane	10.0 U
1,1-Dichloroethene	10.0 U	Chlorobenzene	10.0 U
Carbon disulfide	10.0 U	1,1,1,2-Tetrachloroethane	10.0 U
Methylene chloride	10.0 U	Ethylbenzene	10.0 U
Methyl tert-butyl ether (MTBE)	10.0 U	Xylenes, Total	30.0 U
trans-1,2-Dichloroethene	10.0 U	Styrene	10.0 U
Diisopropyl Ether (DIPE)	10.0 U	Bromoform	10.0 U
1,1-Dichloroethane	10.0 U	Isopropylbenzene	10.0 U
Ethyl Tertiary Butyl Ether (ETBE)	10.0 U	1,1,2,2-Tetrachloroethane	10.0 U
2-Butanone (MEK)	10.0 U	Bromobenzene	10.0 U
cis-1,2-Dichloroethene	10.1	1,2,3-Trichloropropane	10.0 U
2,2-Dichloropropane	10.0 U	n-Propylbenzene	10.0 U
Bromochloromethane	10.0 U	2-Chlorotoluene	10.0 U
Chloroform	10.0 U	1,3,5-Trimethylbenzene	10.0 U
1,1,1-Trichloroethane	10.0 U	4-Chlorotoluene	10.0 U
1,1-Dichloropropene	10.0 U	tert-Butylbenzene	10.0 U
Carbon tetrachloride	10.0 U	1,2,4-Trimethylbenzene	10.0 U
Benzene	10.0 U	sec-Butylbenzene	10.0 U
Tertiary Amyl Methyl Ether (TAME)	10.0 U	1,3-Dichlorobenzene	10.0 U
Tetrahydrofuran	10.0 U	p-Isopropyltoluene	10.0 U
1,2-Dichloroethane	10.0 U	1,4-Dichlorobenzene	10.0 U
Trichloroethene	10.3	n-Butylbenzene	10.0 U
1,2-Dichloropropane	10.0 U	1,2-Dibromo-3-chloropropane	10.0 U
Dibromomethane	10.0 U	1,2-Dichlorobenzene	10.0 U
1,4-Dioxane	500 U	1,2,4-Trichlorobenzene	10.0 U
Bromodichloromethane	10.0 U	Hexachlorobutadiene	10.0 U
Methyl isobutyl ketone (MIBK)	10.0 U	Naphthalene	10.0 U
		1,2,3-Trichlorobenzene	10.0 U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	101	70-130
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	99	70-130

N/A - Not Applicable
 U - The analyte was analyzed for but not detected at the sample specific level reported.

Volatile Organics by 8260



Client: **Battelle**
 Project: **New Bedford Harbor**
 Client ID: **MW-04B-110508**
 Case: **N/A** SDG: **N/A**
 Matrix: **Water**

Lab Code: **MA00030**
 ETR: **0811052**
 Lab ID: **0811052-02**
 Associated Blank: **VW111808B11**
 Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
11/05/08	11/07/08	11/18/08	5	5	10	BAS

Parameter	Result	Parameter	Result
Dichlorodifluoromethane	20.0 U	1,3-Dichloropropene, Total	40.0 U
Chloromethane	20.0 U	Toluene	20.0 U
Vinyl chloride	308	1,1,2-Trichloroethane	20.0 U
Bromomethane	20.0 U	2-Hexanone	20.0 U
Chloroethane	20.0 U	Tetrachloroethene	20.0 U
Trichlorofluoromethane	20.0 U	1,3-Dichloropropane	20.0 U
Diethyl ether	20.0 U	Dibromochloromethane	20.0 U
Acetone	50.0 U	1,2-Dibromoethane	20.0 U
1,1-Dichloroethene	20.0 U	Chlorobenzene	20.0 U
Carbon disulfide	20.0 U	1,1,1,2-Tetrachloroethane	20.0 U
Methylene chloride	20.0 U	Ethylbenzene	20.0 U
Methyl tert-butyl ether (MTBE)	20.0 U	Xylenes, Total	60.0 U
trans-1,2-Dichloroethene	20.0 U	Styrene	20.0 U
Diisopropyl Ether (DIPE)	20.0 U	Bromoform	20.0 U
1,1-Dichloroethane	20.0 U	Isopropylbenzene	20.0 U
Ethyl Tertiary Butyl Ether (ETBE)	20.0 U	1,1,2,2-Tetrachloroethane	20.0 U
2-Butanone (MEK)	20.0 U	Bromobenzene	20.0 U
cis-1,2-Dichloroethene	743	1,2,3-Trichloropropane	20.0 U
2,2-Dichloropropane	20.0 U	n-Propylbenzene	20.0 U
Bromochloromethane	20.0 U	2-Chlorotoluene	20.0 U
Chloroform	20.0 U	1,3,5-Trimethylbenzene	20.0 U
1,1,1-Trichloroethane	20.0 U	4-Chlorotoluene	20.0 U
1,1-Dichloropropene	20.0 U	tert-Butylbenzene	20.0 U
Carbon tetrachloride	20.0 U	1,2,4-Trimethylbenzene	20.0 U
Benzene	20.0 U	sec-Butylbenzene	20.0 U
Tertiary Amyl Methyl Ether (TAME)	20.0 U	1,3-Dichlorobenzene	20.0 U
Tetrahydrofuran	20.0 U	p-Isopropyltoluene	20.0 U
1,2-Dichloroethane	20.0 U	1,4-Dichlorobenzene	20.0 U
Trichloroethene	1720	n-Butylbenzene	20.0 U
1,2-Dichloropropane	20.0 U	1,2-Dibromo-3-chloropropane	20.0 U
Dibromomethane	20.0 U	1,2-Dichlorobenzene	20.0 U
1,4-Dioxane	1000 U	1,2,4-Trichlorobenzene	20.0 U
Bromodichloromethane	20.0 U	Hexachlorobutadiene	20.0 U
Methyl isobutyl ketone (MIBK)	20.0 U	Naphthalene	20.0 U
		1,2,3-Trichlorobenzene	20.0 U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	102	70-130
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	98	70-130

N/A - Not Applicable
 U - The analyte was analyzed for but not detected at the sample specific level reported.

Volatile Organics by 8260



Client: **Battelle**
 Project: **New Bedford Harbor**
 Client ID: **MW-007-110508**
 Case: **N/A** SDG: **N/A**
 Matrix: **Water**

Lab Code: **MA00030**
 ETR: **0811052**
 Lab ID: **0811052-03**
 Associated Blank: **VW111808B11**
 Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
11/05/08	11/07/08	11/18/08	5	5	100	BAS

Parameter	Result	Parameter	Result
Dichlorodifluoromethane	200 U	1,3-Dichloropropene, Total	400 U
Chloromethane	200 U	Toluene	200 U
Vinyl chloride	200 U	1,1,2-Trichloroethane	200 U
Bromomethane	200 U	2-Hexanone	200 U
Chloroethane	200 U	Tetrachloroethene	200 U
Trichlorofluoromethane	200 U	1,3-Dichloropropane	200 U
Diethyl ether	200 U	Dibromochloromethane	200 U
Acetone	500 U	1,2-Dibromoethane	200 U
1,1-Dichloroethene	200 U	Chlorobenzene	200 U
Carbon disulfide	200 U	1,1,1,2-Tetrachloroethane	200 U
Methylene chloride	200 U	Ethylbenzene	200 U
Methyl tert-butyl ether (MTBE)	200 U	Xylenes, Total	600 U
trans-1,2-Dichloroethene	200 U	Styrene	200 U
Diisopropyl Ether (DIPE)	200 U	Bromoform	200 U
1,1-Dichloroethane	200 U	Isopropylbenzene	200 U
Ethyl Tertiary Butyl Ether (ETBE)	200 U	1,1,2,2-Tetrachloroethane	200 U
2-Butanone (MEK)	200 U	Bromobenzene	200 U
cis-1,2-Dichloroethene	1250	1,2,3-Trichloropropane	200 U
2,2-Dichloropropane	200 U	n-Propylbenzene	200 U
Bromochloromethane	200 U	2-Chlorotoluene	200 U
Chloroform	200 U	1,3,5-Trimethylbenzene	200 U
1,1,1-Trichloroethane	200 U	4-Chlorotoluene	200 U
1,1-Dichloropropene	200 U	tert-Butylbenzene	200 U
Carbon tetrachloride	200 U	1,2,4-Trimethylbenzene	200 U
Benzene	200 U	sec-Butylbenzene	200 U
Tertiary Amyl Methyl Ether (TAME)	200 U	1,3-Dichlorobenzene	200 U
Tetrahydrofuran	200 U	p-Isopropyltoluene	200 U
1,2-Dichloroethane	200 U	1,4-Dichlorobenzene	200 U
Trichloroethene	22800 E	n-Butylbenzene	200 U
1,2-Dichloropropane	200 U	1,2-Dibromo-3-chloropropane	200 U
Dibromomethane	200 U	1,2-Dichlorobenzene	200 U
1,4-Dioxane	10000 U	1,2,4-Trichlorobenzene	200 U
Bromodichloromethane	200 U	Hexachlorobutadiene	200 U
Methyl isobutyl ketone (MIBK)	200 U	Naphthalene	200 U
		1,2,3-Trichlorobenzene	200 U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	103	70-130
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	98	70-130

N/A - Not Applicable

E - Estimated value, exceeds the upper limit of calibration.

U - The analyte was analyzed for but not detected at the sample specific level reported.

Volatile Organics by 8260



Client: Battelle
Project: New Bedford Harbor
Client ID: MW-007-110508
Case: N/A SDG: N/A
Matrix: Water

Lab Code: MA00030
ETR: 0811052
Lab ID: 0811052-03
Associated Blank: VW111908B11
Concentration Units: µg/L

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
11/05/08	11/07/08	11/19/08	5	5	200	BAS

Parameter	Result	Parameter	Result
Dichlorodifluoromethane	400 U	1,3-Dichloropropene, Total	800 U
Chloromethane	400 U	Toluene	400 U
Vinyl chloride	400 U	1,1,2-Trichloroethane	400 U
Bromomethane	400 U	2-Hexanone	400 U
Chloroethane	400 U	Tetrachloroethene	400 U
Trichlorofluoromethane	400 U	1,3-Dichloropropane	400 U
Diethyl ether	400 U	Dibromochloromethane	400 U
Acetone	1000 U	1,2-Dibromoethane	400 U
1,1-Dichloroethene	400 U	Chlorobenzene	400 U
Carbon disulfide	400 U	1,1,1,2-Tetrachloroethane	400 U
Methylene chloride	400 U	Ethylbenzene	400 U
Methyl tert-butyl ether (MTBE)	400 U	Xylenes, Total	1200 U
trans-1,2-Dichloroethene	400 U	Styrene	400 U
Diisopropyl Ether (DIPE)	400 U	Bromoform	400 U
1,1-Dichloroethane	400 U	Isopropylbenzene	400 U
Ethyl Tertiary Butyl Ether (ETBE)	400 U	1,1,2,2-Tetrachloroethane	400 U
2-Butanone (MEK)	400 U	Bromobenzene	400 U
cis-1,2-Dichloroethene	1020	1,2,3-Trichloropropane	400 U
2,2-Dichloropropane	400 U	n-Propylbenzene	400 U
Bromochloromethane	400 U	2-Chlorotoluene	400 U
Chloroform	400 U	1,3,5-Trimethylbenzene	400 U
1,1,1-Trichloroethane	400 U	4-Chlorotoluene	400 U
1,1-Dichloropropene	400 U	tert-Butylbenzene	400 U
Carbon tetrachloride	400 U	1,2,4-Trimethylbenzene	400 U
Benzene	400 U	sec-Butylbenzene	400 U
Tertiary Amyl Methyl Ether (TAME)	400 U	1,3-Dichlorobenzene	400 U
Tetrahydrofuran	400 U	p-Isopropyltoluene	400 U
1,2-Dichloroethane	400 U	1,4-Dichlorobenzene	400 U
Trichloroethene	18300	n-Butylbenzene	400 U
1,2-Dichloropropane	400 U	1,2-Dibromo-3-chloropropane	400 U
Dibromomethane	400 U	1,2-Dichlorobenzene	400 U
1,4-Dioxane	20000 U	1,2,4-Trichlorobenzene	400 U
Bromodichloromethane	400 U	Hexachlorobutadiene	400 U
Methyl isobutyl ketone (MIBK)	400 U	Naphthalene	400 U
		1,2,3-Trichlorobenzene	400 U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	101	70-130
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	91	70-130
4-Bromofluorobenzene	97	70-130

N/A - Not Applicable
 U - The analyte was analyzed for but not detected at the sample specific level reported.

Volatile Organics by 8260



Client: **Battelle**
 Project: **New Bedford Harbor**
 Client ID: **MW-006-110508**
 Case: **N/A** SDG: **N/A**
 Matrix: **Water**

Lab Code: **MA00030**
 ETR: **0811052**
 Lab ID: **0811052-04**
 Associated Blank: **VW111808B11**
 Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
11/05/08	11/07/08	11/18/08	5	5	1	BAS

Parameter	Result	Parameter	Result
Dichlorodifluoromethane	2.00 U	1,3-Dichloropropene, Total	4.00 U
Chloromethane	2.00 U	Toluene	2.00 U
Vinyl chloride	2.00 U	1,1,2-Trichloroethane	2.00 U
Bromomethane	2.00 U	2-Hexanone	2.00 U
Chloroethane	2.00 U	Tetrachloroethene	5.27
Trichlorofluoromethane	2.00 U	1,3-Dichloropropane	2.00 U
Diethyl ether	2.00 U	Dibromochloromethane	2.00 U
Acetone	5.00 U	1,2-Dibromoethane	2.00 U
1,1-Dichloroethene	2.00 U	Chlorobenzene	2.00 U
Carbon disulfide	2.00 U	1,1,1,2-Tetrachloroethane	2.00 U
Methylene chloride	2.00 U	Ethylbenzene	2.00 U
Methyl tert-butyl ether (MTBE)	2.00 U	Xylenes, Total	6.00 U
trans-1,2-Dichloroethene	2.00 U	Styrene	2.00 U
Diisopropyl Ether (DIPE)	2.00 U	Bromoform	2.00 U
1,1-Dichloroethane	2.00 U	Isopropylbenzene	2.00 U
Ethyl Tertiary Butyl Ether (ETBE)	2.00 U	1,1,1,2-Tetrachloroethane	2.00 U
2-Butanone (MEK)	2.00 U	Bromobenzene	2.00 U
cis-1,2-Dichloroethene	14.3	1,2,3-Trichloropropane	2.00 U
2,2-Dichloropropane	2.00 U	n-Propylbenzene	2.00 U
Bromochloromethane	2.00 U	2-Chlorotoluene	2.00 U
Chloroform	2.00 U	1,3,5-Trimethylbenzene	2.00 U
1,1,1-Trichloroethane	2.00 U	4-Chlorotoluene	2.00 U
1,1-Dichloropropene	2.00 U	tert-Butylbenzene	2.00 U
Carbon tetrachloride	2.00 U	1,2,4-Trimethylbenzene	2.00 U
Benzene	2.00 U	sec-Butylbenzene	2.00 U
Tertiary Amyl Methyl Ether (TAME)	2.00 U	1,3-Dichlorobenzene	2.00 U
Tetrahydrofuran	2.00 U	p-Isopropyltoluene	2.00 U
1,2-Dichloroethane	2.00 U	1,4-Dichlorobenzene	2.00 U
Trichloroethene	113	n-Butylbenzene	2.00 U
1,2-Dichloropropane	2.00 U	1,2-Dibromo-3-chloropropane	2.00 U
Dibromomethane	2.00 U	1,2-Dichlorobenzene	2.00 U
1,4-Dioxane	100 U	1,2,4-Trichlorobenzene	2.00 U
Bromodichloromethane	2.00 U	Hexachlorobutadiene	2.00 U
Methyl isobutyl ketone (MIBK)	2.00 U	Naphthalene	2.00 U
		1,2,3-Trichlorobenzene	2.00 U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	102	70-130
1,2-Dichloroethane-d4	103	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	98	70-130

N/A - Not Applicable
 U - The analyte was analyzed for but not detected at the sample specific level reported.

Volatile Organics by 8260



Client: **Battelle**
 Project: **New Bedford Harbor**
 Client ID: **MW-07A-110608**
 Case: **N/A** SDG: **N/A**
 Matrix: **Water**

Lab Code: **MA00030**
 ETR: **0811052**
 Lab ID: **0811052-05**
 Associated Blank: **VW111808B11**
 Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
11/06/08	11/07/08	11/18/08	5	5	1	BAS

Parameter	Result	Parameter	Result
Dichlorodifluoromethane	2.00 U	1,3-Dichloropropene, Total	4.00 U
Chloromethane	2.00 U	Toluene	2.00 U
Vinyl chloride	2.00 U	1,1,2-Trichloroethane	2.00 U
Bromomethane	2.00 U	2-Hexanone	2.00 U
Chloroethane	2.00 U	Tetrachloroethene	2.00 U
Trichlorofluoromethane	2.00 U	1,3-Dichloropropene	2.00 U
Diethyl ether	2.00 U	Dibromochloromethane	2.00 U
Acetone	5.00 U	1,2-Dibromoethane	2.00 U
1,1-Dichloroethene	2.00 U	Chlorobenzene	2.00 U
Carbon disulfide	2.00 U	1,1,1,2-Tetrachloroethane	2.00 U
Methylene chloride	2.00 U	Ethylbenzene	2.00 U
Methyl tert-butyl ether (MTBE)	2.00 U	Xylenes, Total	6.00 U
trans-1,2-Dichloroethene	2.00 U	Styrene	2.00 U
Diisopropyl Ether (DIPE)	2.00 U	Bromoform	2.00 U
1,1-Dichloroethane	2.00 U	Isopropylbenzene	2.00 U
Ethyl Tertiary Butyl Ether (ETBE)	2.00 U	1,1,1,2-Tetrachloroethane	2.00 U
2-Butanone (MEK)	2.00 U	Bromobenzene	2.00 U
cis-1,2-Dichloroethene	2.00 U	1,2,3-Trichloropropane	2.00 U
2,2-Dichloropropane	2.00 U	n-Propylbenzene	2.00 U
Bromochloromethane	2.00 U	2-Chlorotoluene	2.00 U
Chloroform	2.00 U	1,3,5-Trimethylbenzene	2.00 U
1,1,1-Trichloroethane	2.00 U	4-Chlorotoluene	2.00 U
1,1-Dichloropropene	2.00 U	tert-Butylbenzene	2.00 U
Carbon tetrachloride	2.00 U	1,2,4-Trimethylbenzene	2.00 U
Benzene	2.00 U	sec-Butylbenzene	2.00 U
Tertiary Amyl Methyl Ether (TAME)	2.00 U	1,3-Dichlorobenzene	2.00 U
Tetrahydrofuran	2.00 U	p-Isopropyltoluene	2.00 U
1,2-Dichloroethane	2.00 U	1,4-Dichlorobenzene	2.00 U
Trichloroethene	2.00 U	n-Butylbenzene	2.00 U
1,2-Dichloropropane	2.00 U	1,2-Dibromo-3-chloropropane	2.00 U
Dibromomethane	2.00 U	1,2-Dichlorobenzene	2.00 U
1,4-Dioxane	100 U	1,2,4-Trichlorobenzene	2.00 U
Bromodichloromethane	2.00 U	Hexachlorobutadiene	2.00 U
Methyl isobutyl ketone (MIBK)	2.00 U	Naphthalene	2.00 U
		1,2,3-Trichlorobenzene	2.00 U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	103	70-130
1,2-Dichloroethane-d4	103	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	99	70-130

N/A - Not Applicable

U - The analyte was analyzed for but not detected at the sample specific level reported.

Volatile Organics by 8260



Client: **Battelle**
 Project: **New Bedford Harbor**
 Client ID: **MW-006-110508-REP**
 Case: **N/A** SDG: **N/A**
 Matrix: **Water**

Lab Code: **MA00030**
 ETR: **0811052**
 Lab ID: **0811052-06**
 Associated Blank: **VW111808B11**
 Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
11/05/08	11/07/08	11/18/08	5	5	1	BAS

Parameter	Result	Parameter	Result
Dichlorodifluoromethane	2.00 U	1,3-Dichloropropene, Total	4.00 U
Chloromethane	2.00 U	Toluene	2.00 U
Vinyl chloride	2.00 U	1,1,2-Trichloroethane	2.00 U
Bromomethane	2.00 U	2-Hexanone	2.00 U
Chloroethane	2.00 U	Tetrachloroethene	5.07
Trichlorofluoromethane	2.00 U	1,3-Dichloropropane	2.00 U
Diethyl ether	2.00 U	Dibromochloromethane	2.00 U
Acetone	5.00 U	1,2-Dibromoethane	2.00 U
1,1-Dichloroethene	2.00 U	Chlorobenzene	2.00 U
Carbon disulfide	2.00 U	1,1,1,2-Tetrachloroethane	2.00 U
Methylene chloride	2.00 U	Ethylbenzene	2.00 U
Methyl tert-butyl ether (MTBE)	2.00 U	Xylenes, Total	6.00 U
trans-1,2-Dichloroethene	2.00 U	Styrene	2.00 U
Diisopropyl Ether (DIPE)	2.00 U	Bromoform	2.00 U
1,1-Dichloroethane	2.00 U	Isopropylbenzene	2.00 U
Ethyl Tertiary Butyl Ether (ETBE)	2.00 U	1,1,2,2-Tetrachloroethane	2.00 U
2-Butanone (MEK)	2.00 U	Bromobenzene	2.00 U
cis-1,2-Dichloroethene	14.4	1,2,3-Trichloropropane	2.00 U
2,2-Dichloropropane	2.00 U	n-Propylbenzene	2.00 U
Bromochloromethane	2.00 U	2-Chlorotoluene	2.00 U
Chloroform	2.00 U	1,3,5-Trimethylbenzene	2.00 U
1,1,1-Trichloroethane	2.00 U	4-Chlorotoluene	2.00 U
1,1-Dichloropropene	2.00 U	tert-Butylbenzene	2.00 U
Carbon tetrachloride	2.00 U	1,2,4-Trimethylbenzene	2.00 U
Benzene	2.00 U	sec-Butylbenzene	2.00 U
Tertiary Amyl Methyl Ether (TAME)	2.00 U	1,3-Dichlorobenzene	2.00 U
Tetrahydrofuran	2.00 U	p-Isopropyltoluene	2.00 U
1,2-Dichloroethane	2.00 U	1,4-Dichlorobenzene	2.00 U
Trichloroethene	113	n-Butylbenzene	2.00 U
1,2-Dichloropropane	2.00 U	1,2-Dibromo-3-chloropropane	2.00 U
Dibromomethane	2.00 U	1,2-Dichlorobenzene	2.00 U
1,4-Dioxane	100 U	1,2,4-Trichlorobenzene	2.00 U
Bromodichloromethane	2.00 U	Hexachlorobutadiene	2.00 U
Methyl isobutyl ketone (MIBK)	2.00 U	Naphthalene	2.00 U
		1,2,3-Trichlorobenzene	2.00 U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	103	70-130
1,2-Dichloroethane-d4	103	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	99	70-130

N/A - Not Applicable
 U - The analyte was analyzed for but not detected at the sample specific level reported.

Volatile Organics by 8260



Client: Battelle
Project: New Bedford Harbor
Client ID: MW-006-110608
Case: N/A SDG: N/A
Matrix: Water

Lab Code: MA00030
ETR: 0811052
Lab ID: 0811052-07
Associated Blank: VW111908B11
Concentration Units: µg/L

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
11/06/08	11/07/08	11/19/08	5	5	1	BAS

Parameter	Result	Parameter	Result
Dichlorodifluoromethane	2.00 U	1,3-Dichloropropene, Total	4.00 U
Chloromethane	2.00 U	Toluene	2.00 U
Vinyl chloride	2.00 U	1,1,2-Trichloroethane	2.00 U
Bromomethane	2.00 U	2-Hexanone	2.00 U
Chloroethane	2.00 U	Tetrachloroethene	2.00 U
Trichlorofluoromethane	2.00 U	1,3-Dichloropropane	2.00 U
Diethyl ether	2.00 U	Dibromochloromethane	2.00 U
Acetone	23.3	1,2-Dibromoethane	2.00 U
1,1-Dichloroethene	2.00 U	Chlorobenzene	2.00 U
Carbon disulfide	2.00 U	1,1,1,2-Tetrachloroethane	2.00 U
Methylene chloride	2.00 U	Ethylbenzene	2.00 U
Methyl tert-butyl ether (MTBE)	2.00 U	Xylenes, Total	6.00 U
trans-1,2-Dichloroethene	2.00 U	Styrene	2.00 U
Diisopropyl Ether (DIPE)	2.00 U	Bromoform	2.00 U
1,1-Dichloroethane	2.00 U	Isopropylbenzene	2.00 U
Ethyl Tertiary Butyl Ether (ETBE)	2.00 U	1,1,2,2-Tetrachloroethane	2.00 U
2-Butanone (MEK)	2.00 U	Bromobenzene	2.00 U
cis-1,2-Dichloroethene	2.00 U	1,2,3-Trichloropropane	2.00 U
2,2-Dichloropropane	2.00 U	n-Propylbenzene	2.00 U
Bromochloromethane	2.00 U	2-Chlorotoluene	2.00 U
Chloroform	2.00 U	1,3,5-Trimethylbenzene	2.00 U
1,1,1-Trichloroethane	2.00 U	4-Chlorotoluene	2.00 U
1,1-Dichloropropene	2.00 U	tert-Butylbenzene	2.00 U
Carbon tetrachloride	2.00 U	1,2,4-Trimethylbenzene	2.00 U
Benzene	2.00 U	sec-Butylbenzene	2.00 U
Tertiary Amyl Methyl Ether (TAME)	2.00 U	1,3-Dichlorobenzene	2.00 U
Tetrahydrofuran	2.00 U	p-Isopropyltoluene	2.00 U
1,2-Dichloroethane	2.00 U	1,4-Dichlorobenzene	2.00 U
Trichloroethene	2.00 U	n-Butylbenzene	2.00 U
1,2-Dichloropropane	2.00 U	1,2-Dibromo-3-chloropropane	2.00 U
Dibromomethane	2.00 U	1,2-Dichlorobenzene	2.00 U
1,4-Dioxane	100 U	1,2,4-Trichlorobenzene	2.00 U
Bromodichloromethane	2.00 U	Hexachlorobutadiene	2.00 U
Methyl isobutyl ketone (MIBK)	2.00 U	Naphthalene	2.00 U
		1,2,3-Trichlorobenzene	2.00 U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	99	70-130
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	91	70-130
4-Bromofluorobenzene	99	70-130

N/A - Not Applicable
 U - The analyte was analyzed for but not detected at the sample specific level reported.

Volatile Organics by 8260



Client: **Battelle**
 Project: **New Bedford Harbor**
 Client ID: **MW-001-110608**
 Case: **N/A** SDG: **N/A**
 Matrix: **Water**

Lab Code: **MA00030**
 ETR: **0811052**
 Lab ID: **0811052-08**
 Associated Blank: **VW111908B11**
 Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
11/06/08	11/07/08	11/19/08	5	5	1	BAS

Parameter	Result	Parameter	Result
Dichlorodifluoromethane	2.00 U	1,3-Dichloropropene, Total	4.00 U
Chloromethane	2.00 U	Toluene	2.00 U
Vinyl chloride	2.00 U	1,1,2-Trichloroethane	2.00 U
Bromomethane	2.00 U	2-Hexanone	2.00 U
Chloroethane	2.00 U	Tetrachloroethene	2.00 U
Trichlorofluoromethane	2.00 U	1,3-Dichloropropane	2.00 U
Diethyl ether	2.00 U	Dibromochloromethane	2.00 U
Acetone	10.3	1,2-Dibromoethane	2.00 U
1,1-Dichloroethene	2.00 U	Chlorobenzene	2.00 U
Carbon disulfide	2.00 U	1,1,1,2-Tetrachloroethane	2.00 U
Methylene chloride	2.00 U	Ethylbenzene	2.00 U
Methyl tert-butyl ether (MTBE)	2.00 U	Xylenes, Total	6.00 U
trans-1,2-Dichloroethene	2.00 U	Styrene	2.00 U
Diisopropyl Ether (DIPE)	2.00 U	Bromoform	2.00 U
1,1-Dichloroethane	2.00 U	Isopropylbenzene	2.00 U
Ethyl Tertiary Butyl Ether (ETBE)	2.00 U	1,1,2,2-Tetrachloroethane	2.00 U
2-Butanone (MEK)	2.00 U	Bromobenzene	2.00 U
cis-1,2-Dichloroethene	2.00 U	1,2,3-Trichloropropane	2.00 U
2,2-Dichloropropane	2.00 U	n-Propylbenzene	2.00 U
Bromochloromethane	2.00 U	2-Chlorotoluene	2.00 U
Chloroform	2.00 U	1,3,5-Trimethylbenzene	2.00 U
1,1,1-Trichloroethane	2.00 U	4-Chlorotoluene	2.00 U
1,1-Dichloropropene	2.00 U	tert-Butylbenzene	2.00 U
Carbon tetrachloride	2.00 U	1,2,4-Trimethylbenzene	2.00 U
Benzene	2.00 U	sec-Butylbenzene	2.00 U
Tertiary Amyl Methyl Ether (TAME)	2.00 U	1,3-Dichlorobenzene	2.00 U
Tetrahydrofuran	2.00 U	p-Isopropyltoluene	2.00 U
1,2-Dichloroethane	2.00 U	1,4-Dichlorobenzene	2.00 U
Trichloroethene	2.00 U	n-Butylbenzene	2.00 U
1,2-Dichloropropane	2.00 U	1,2-Dibromo-3-chloropropane	2.00 U
Dibromomethane	2.00 U	1,2-Dichlorobenzene	2.00 U
1,4-Dioxane	100 U	1,2,4-Trichlorobenzene	2.00 U
Bromodichloromethane	2.00 U	Hexachlorobutadiene	2.00 U
Methyl isobutyl ketone (MIBK)	2.00 U	Naphthalene	2.00 U
		1,2,3-Trichlorobenzene	2.00 U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	101	70-130
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	91	70-130
4-Bromofluorobenzene	98	70-130

N/A - Not Applicable
 U - The analyte was analyzed for but not detected at the sample specific level reported.

Volatile Organics by 8260



Client: Battelle
Project: New Bedford Harbor
Client ID: MW-005-110608
Case: N/A **SDG:** N/A
Matrix: Water

Lab Code: MA00030
ETR: 0811052
Lab ID: 0811052-09
Associated Blank: VW111808B11
Concentration Units: µg/L

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
11/06/08	11/07/08	11/18/08	5	5	1	BAS

Parameter	Result	Parameter	Result
Dichlorodifluoromethane	2.00 U	1,3-Dichloropropene, Total	4.00 U
Chloromethane	2.00 U	Toluene	2.00 U
Vinyl chloride	2.00 U	1,1,2-Trichloroethane	2.00 U
Bromomethane	2.00 U	2-Hexanone	2.00 U
Chloroethane	2.00 U	Tetrachloroethene	2.00 U
Trichlorofluoromethane	2.00 U	1,3-Dichloropropane	2.00 U
Diethyl ether	2.00 U	Dibromochloromethane	2.00 U
Acetone	5.00 U	1,2-Dibromoethane	2.00 U
1,1-Dichloroethene	2.00 U	Chlorobenzene	2.00 U
Carbon disulfide	2.00 U	1,1,1,2-Tetrachloroethane	2.00 U
Methylene chloride	2.00 U	Ethylbenzene	2.00 U
Methyl tert-butyl ether (MTBE)	2.00 U	Xylenes, Total	6.00 U
trans-1,2-Dichloroethene	2.00 U	Styrene	2.00 U
Diisopropyl Ether (DIPE)	2.00 U	Bromoform	2.00 U
1,1-Dichloroethane	2.00 U	Isopropylbenzene	2.00 U
Ethyl Tertiary Butyl Ether (ETBE)	2.00 U	1,1,1,2-Tetrachloroethane	2.00 U
2-Butanone (MEK)	2.00 U	Bromobenzene	2.00 U
cis-1,2-Dichloroethene	2.00 U	1,2,3-Trichloropropane	2.00 U
2,2-Dichloropropane	2.00 U	n-Propylbenzene	2.00 U
Bromochloromethane	2.00 U	2-Chlorotoluene	2.00 U
Chloroform	2.00 U	1,3,5-Trimethylbenzene	2.00 U
1,1,1-Trichloroethane	2.00 U	4-Chlorotoluene	2.00 U
1,1-Dichloropropene	2.00 U	tert-Butylbenzene	2.00 U
Carbon tetrachloride	2.00 U	1,2,4-Trimethylbenzene	2.00 U
Benzene	2.00 U	sec-Butylbenzene	2.00 U
Tertiary Amyl Methyl Ether (TAME)	2.00 U	1,3-Dichlorobenzene	2.00 U
Tetrahydrofuran	2.00 U	p-Isopropyltoluene	2.00 U
1,2-Dichloroethane	2.00 U	1,4-Dichlorobenzene	2.00 U
Trichloroethene	2.00 U	n-Butylbenzene	2.00 U
1,2-Dichloropropane	2.00 U	1,2-Dibromo-3-chloropropane	2.00 U
Dibromomethane	2.00 U	1,2-Dichlorobenzene	2.00 U
1,4-Dioxane	100 U	1,2,4-Trichlorobenzene	2.00 U
Bromodichloromethane	2.00 U	Hexachlorobutadiene	2.00 U
Methyl isobutyl ketone (MIBK)	2.00 U	Naphthalene	2.00 U
		1,2,3-Trichlorobenzene	2.00 U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	104	70-130
1,2-Dichloroethane-d4	105	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	99	70-130

N/A - Not Applicable

U - The analyte was analyzed for but not detected at the sample specific level reported.

Volatile Organics by 8260



Client: Battelle
Project: New Bedford Harbor
Client ID: MW-04A-110708
Case: N/A **SDG:** N/A
Matrix: Water

Lab Code: MA00030
ETR: 0811052
Lab ID: 0811052-10
Associated Blank: VW111808B11
Concentration Units: µg/L

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
11/07/08	11/07/08	11/18/08	5	5	1	BAS

Parameter	Result	Parameter	Result
Dichlorodifluoromethane	2.00 U	1,3-Dichloropropene, Total	4.00 U
Chloromethane	2.00 U	Toluene	2.00 U
Vinyl chloride	2.00 U	1,1,2-Trichloroethane	2.00 U
Bromomethane	2.00 U	2-Hexanone	2.00 U
Chloroethane	2.00 U	Tetrachloroethene	2.00 U
Trichlorofluoromethane	2.00 U	1,3-Dichloropropane	2.00 U
Diethyl ether	2.00 U	Dibromochloromethane	2.00 U
Acetone	5.32	1,2-Dibromoethane	2.00 U
1,1-Dichloroethene	2.00 U	Chlorobenzene	2.00 U
Carbon disulfide	2.00 U	1,1,1,2-Tetrachloroethane	2.00 U
Methylene chloride	2.00 U	Ethylbenzene	2.00 U
Methyl tert-butyl ether (MTBE)	2.00 U	Xylenes, Total	6.00 U
trans-1,2-Dichloroethene	2.00 U	Styrene	2.00 U
Diisopropyl Ether (DIPE)	2.00 U	Bromoform	2.00 U
1,1-Dichloroethane	2.00 U	Isopropylbenzene	2.00 U
Ethyl Tertiary Butyl Ether (ETBE)	2.00 U	1,1,2,2-Tetrachloroethane	2.00 U
2-Butanone (MEK)	2.00 U	Bromobenzene	2.00 U
cis-1,2-Dichloroethene	2.00 U	1,2,3-Trichloropropane	2.00 U
2,2-Dichloropropane	2.00 U	n-Propylbenzene	2.00 U
Bromochloromethane	2.00 U	2-Chlorotoluene	2.00 U
Chloroform	2.00 U	1,3,5-Trimethylbenzene	2.00 U
1,1,1-Trichloroethane	2.00 U	4-Chlorotoluene	2.00 U
1,1-Dichloropropene	2.00 U	tert-Butylbenzene	2.00 U
Carbon tetrachloride	2.00 U	1,2,4-Trimethylbenzene	2.00 U
Benzene	2.00 U	sec-Butylbenzene	2.00 U
Tertiary Amyl Methyl Ether (TAME)	2.00 U	1,3-Dichlorobenzene	2.00 U
Tetrahydrofuran	2.00 U	p-Isopropyltoluene	2.00 U
1,2-Dichloroethane	2.00 U	1,4-Dichlorobenzene	2.00 U
Trichloroethene	2.00 U	n-Butylbenzene	2.00 U
1,2-Dichloropropane	2.00 U	1,2-Dibromo-3-chloropropane	2.00 U
Dibromomethane	2.00 U	1,2-Dichlorobenzene	2.00 U
1,4-Dioxane	100 U	1,2,4-Trichlorobenzene	2.00 U
Bromodichloromethane	2.00 U	Hexachlorobutadiene	2.00 U
Methyl isobutyl ketone (MIBK)	2.00 U	Naphthalene	2.00 U
		1,2,3-Trichlorobenzene	2.00 U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	104	70-130
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	101	70-130

N/A - Not Applicable

U - The analyte was analyzed for but not detected at the sample specific level reported.

Volatile Organics by 8260



Client: Battelle
Project: New Bedford Harbor
Client ID: MW-003-110708
Case: N/A SDG: N/A
Matrix: Water

Lab Code: MA00030
ETR: 0811052
Lab ID: 0811052-11
Associated Blank: VW111808B11
Concentration Units: µg/L

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
11/07/08	11/07/08	11/18/08	5	5	1	BAS

Parameter	Result	Parameter	Result
Dichlorodifluoromethane	2.00 U	1,3-Dichloropropene, Total	4.00 U
Chloromethane	2.00 U	Toluene	2.00 U
Vinyl chloride	2.00 U	1,1,2-Trichloroethane	2.00 U
Bromomethane	2.00 U	2-Hexanone	2.00 U
Chloroethane	2.00 U	Tetrachloroethene	2.00 U
Trichlorofluoromethane	2.00 U	1,3-Dichloropropane	2.00 U
Diethyl ether	2.00 U	Dibromochloromethane	2.00 U
Acetone	5.36	1,2-Dibromoethane	2.00 U
1,1-Dichloroethene	2.00 U	Chlorobenzene	2.00 U
Carbon disulfide	2.00 U	1,1,1,2-Tetrachloroethane	2.00 U
Methylene chloride	2.00 U	Ethylbenzene	2.00 U
Methyl tert-butyl ether (MTBE)	2.00 U	Xylenes, Total	6.00 U
trans-1,2-Dichloroethene	2.00 U	Styrene	2.00 U
Diisopropyl Ether (DIPE)	2.00 U	Bromoform	2.00 U
1,1-Dichloroethane	2.00 U	Isopropylbenzene	2.00 U
Ethyl Tertiary Butyl Ether (ETBE)	2.00 U	1,1,2,2-Tetrachloroethane	2.00 U
2-Butanone (MEK)	2.00 U	Bromobenzene	2.00 U
cis-1,2-Dichloroethene	2.00 U	1,2,3-Trichloropropane	2.00 U
2,2-Dichloropropane	2.00 U	n-Propylbenzene	2.00 U
Bromochloromethane	2.00 U	2-Chlorotoluene	2.00 U
Chloroform	2.00 U	1,3,5-Trimethylbenzene	2.00 U
1,1,1-Trichloroethane	2.00 U	4-Chlorotoluene	2.00 U
1,1-Dichloropropene	2.00 U	tert-Butylbenzene	2.00 U
Carbon tetrachloride	2.00 U	1,2,4-Trimethylbenzene	2.00 U
Benzene	2.00 U	sec-Butylbenzene	2.00 U
Tertiary Amyl Methyl Ether (TAME)	2.00 U	1,3-Dichlorobenzene	2.00 U
Tetrahydrofuran	2.00 U	p-Isopropyltoluene	2.00 U
1,2-Dichloroethane	2.00 U	1,4-Dichlorobenzene	2.00 U
Trichloroethene	2.00 U	n-Butylbenzene	2.00 U
1,2-Dichloropropane	2.00 U	1,2-Dibromo-3-chloropropane	2.00 U
Dibromomethane	2.00 U	1,2-Dichlorobenzene	2.00 U
1,4-Dioxane	100 U	1,2,4-Trichlorobenzene	2.00 U
Bromodichloromethane	2.00 U	Hexachlorobutadiene	2.00 U
Methyl isobutyl ketone (MIBK)	2.00 U	Naphthalene	2.00 U
		1,2,3-Trichlorobenzene	2.00 U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	104	70-130
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	101	70-130

N/A - Not Applicable
 U - The analyte was analyzed for but not detected at the sample specific level reported.

Volatile Organics by 8260



Client: Battelle
Project: New Bedford Harbor
Client ID: EB-110508
Case: N/A **SDG:** N/A
Matrix: Water

Lab Code: MA00030
ETR: 0811052
Lab ID: 0811052-12
Associated Blank: VW111808B11
Concentration Units: µg/L

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
11/05/08	11/07/08	11/18/08	5	5	1	BAS

Parameter	Result	Parameter	Result
Dichlorodifluoromethane	2.00 U	1,3-Dichloropropene, Total	4.00 U
Chloromethane	2.00 U	Toluene	2.00 U
Vinyl chloride	2.00 U	1,1,2-Trichloroethane	2.00 U
Bromomethane	2.00 U	2-Hexanone	2.00 U
Chloroethane	2.00 U	Tetrachloroethene	2.00 U
Trichlorofluoromethane	2.00 U	1,3-Dichloropropane	2.00 U
Diethyl ether	2.00 U	Dibromochloromethane	2.00 U
Acetone	5.00 U	1,2-Dibromoethane	2.00 U
1,1-Dichloroethene	2.00 U	Chlorobenzene	2.00 U
Carbon disulfide	2.00 U	1,1,1,2-Tetrachloroethane	2.00 U
Methylene chloride	2.00 U	Ethylbenzene	2.00 U
Methyl tert-butyl ether (MTBE)	2.00 U	Xylenes, Total	6.00 U
trans-1,2-Dichloroethene	2.00 U	Styrene	2.00 U
Diisopropyl Ether (DIPE)	2.00 U	Bromoform	2.00 U
1,1-Dichloroethane	2.00 U	Isopropylbenzene	2.00 U
Ethyl Tertiary Butyl Ether (ETBE)	2.00 U	1,1,2,2-Tetrachloroethane	2.00 U
2-Butanone (MEK)	2.00 U	Bromobenzene	2.00 U
cis-1,2-Dichloroethene	2.00 U	1,2,3-Trichloropropane	2.00 U
2,2-Dichloropropane	2.00 U	n-Propylbenzene	2.00 U
Bromochloromethane	2.00 U	2-Chlorotoluene	2.00 U
Chloroform	2.00 U	1,3,5-Trimethylbenzene	2.00 U
1,1,1-Trichloroethane	2.00 U	4-Chlorotoluene	2.00 U
1,1-Dichloropropene	2.00 U	tert-Butylbenzene	2.00 U
Carbon tetrachloride	2.00 U	1,2,4-Trimethylbenzene	2.00 U
Benzene	2.00 U	sec-Butylbenzene	2.00 U
Tertiary Amyl Methyl Ether (TAME)	2.00 U	1,3-Dichlorobenzene	2.00 U
Tetrahydrofuran	2.00 U	p-Isopropyltoluene	2.00 U
1,2-Dichloroethane	2.00 U	1,4-Dichlorobenzene	2.00 U
Trichloroethene	2.00 U	n-Butylbenzene	2.00 U
1,2-Dichloropropane	2.00 U	1,2-Dibromo-3-chloropropane	2.00 U
Dibromomethane	2.00 U	1,2-Dichlorobenzene	2.00 U
1,4-Dioxane	100 U	1,2,4-Trichlorobenzene	2.00 U
Bromodichloromethane	2.00 U	Hexachlorobutadiene	2.00 U
Methyl isobutyl ketone (MIBK)	2.00 U	Naphthalene	2.00 U
		1,2,3-Trichlorobenzene	2.00 U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	104	70-130
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	101	70-130

N/A - Not Applicable
 U - The analyte was analyzed for but not detected at the sample specific level reported.

Volatile Organics by 8260



Client: **Battelle**
 Project: **New Bedford Harbor**
 Client ID: **Trip Blank**
 Case: **N/A** SDG: **N/A**
 Matrix: **Water**

Lab Code: **MA00030**
 ETR: **0811052**
 Lab ID: **0811052-18**
 Associated Blank: **VW111808B11**
 Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
11/05/08	11/07/08	11/18/08	5	5	1	BAS

Parameter	Result	Parameter	Result
Dichlorodifluoromethane	2.00 U	1,3-Dichloropropene, Total	4.00 U
Chloromethane	2.00 U	Toluene	2.00 U
Vinyl chloride	2.00 U	1,1,2-Trichloroethane	2.00 U
Bromomethane	2.00 U	2-Hexanone	2.00 U
Chloroethane	2.00 U	Tetrachloroethene	2.00 U
Trichlorofluoromethane	2.00 U	1,3-Dichloropropane	2.00 U
Diethyl ether	2.00 U	Dibromochloromethane	2.00 U
Acetone	5.00 U	1,2-Dibromoethane	2.00 U
1,1-Dichloroethene	2.00 U	Chlorobenzene	2.00 U
Carbon disulfide	2.00 U	1,1,1,2-Tetrachloroethane	2.00 U
Methylene chloride	2.00 U	Ethylbenzene	2.00 U
Methyl tert-butyl ether (MTBE)	2.00 U	Xylenes, Total	6.00 U
trans-1,2-Dichloroethene	2.00 U	Styrene	2.00 U
Diisopropyl Ether (DIPE)	2.00 U	Bromoform	2.00 U
1,1-Dichloroethane	2.00 U	Isopropylbenzene	2.00 U
Ethyl Tertiary Butyl Ether (ETBE)	2.00 U	1,1,2,2-Tetrachloroethane	2.00 U
2-Butanone (MEK)	2.00 U	Bromobenzene	2.00 U
cis-1,2-Dichloroethene	2.00 U	1,2,3-Trichloropropane	2.00 U
2,2-Dichloropropane	2.00 U	n-Propylbenzene	2.00 U
Bromochloromethane	2.00 U	2-Chlorotoluene	2.00 U
Chloroform	2.00 U	1,3,5-Trimethylbenzene	2.00 U
1,1,1-Trichloroethane	2.00 U	4-Chlorotoluene	2.00 U
1,1-Dichloropropene	2.00 U	tert-Butylbenzene	2.00 U
Carbon tetrachloride	2.00 U	1,2,4-Trimethylbenzene	2.00 U
Benzene	2.00 U	sec-Butylbenzene	2.00 U
Tertiary Amyl Methyl Ether (TAME)	2.00 U	1,3-Dichlorobenzene	2.00 U
Tetrahydrofuran	2.00 U	p-Isopropyltoluene	2.00 U
1,2-Dichloroethane	2.00 U	1,4-Dichlorobenzene	2.00 U
Trichloroethene	2.00 U	n-Butylbenzene	2.00 U
1,2-Dichloropropane	2.00 U	1,2-Dibromo-3-chloropropane	2.00 U
Dibromomethane	2.00 U	1,2-Dichlorobenzene	2.00 U
1,4-Dioxane	100 U	1,2,4-Trichlorobenzene	2.00 U
Bromodichloromethane	2.00 U	Hexachlorobutadiene	2.00 U
Methyl isobutyl ketone (MIBK)	2.00 U	Naphthalene	2.00 U
		1,2,3-Trichlorobenzene	2.00 U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	102	70-130
1,2-Dichloroethane-d4	99	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	98	70-130

N/A - Not Applicable
 U - The analyte was analyzed for but not detected at the sample specific level reported.

Blank Volatile Organics by 8260



Client: **Battelle**
 Project: **New Bedford Harbor**
 Client ID: **Blank**
 Case: **N/A** SDG: **N/A**
 Matrix: **Water**

Lab Code: **MA00030**
 ETR: **0811052**
 Lab ID: **VW111808B11**
 Associated Blank: **N/A**
 Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	11/18/08	5	5	1	BAS

Parameter	Result	Parameter	Result
Dichlorodifluoromethane	2.00 U	1,3-Dichloropropene, Total	4.00 U
Chloromethane	2.00 U	Toluene	2.00 U
Vinyl chloride	2.00 U	1,1,2-Trichloroethane	2.00 U
Bromomethane	2.00 U	2-Hexanone	2.00 U
Chloroethane	2.00 U	Tetrachloroethene	2.00 U
Trichlorofluoromethane	2.00 U	1,3-Dichloropropane	2.00 U
Diethyl ether	2.00 U	Dibromochloromethane	2.00 U
Acetone	5.00 U	1,2-Dibromoethane	2.00 U
1,1-Dichloroethene	2.00 U	Chlorobenzene	2.00 U
Carbon disulfide	2.00 U	1,1,1,2-Tetrachloroethane	2.00 U
Methylene chloride	2.00 U	Ethylbenzene	2.00 U
Methyl tert-butyl ether (MTBE)	2.00 U	Xylenes, Total	6.00 U
trans-1,2-Dichloroethene	2.00 U	Styrene	2.00 U
Diisopropyl Ether (DIPE)	2.00 U	Bromoform	2.00 U
1,1-Dichloroethane	2.00 U	Isopropylbenzene	2.00 U
Ethyl Tertiary Butyl Ether (ETBE)	2.00 U	1,1,2,2-Tetrachloroethane	2.00 U
2-Butanone (MEK)	2.00 U	Bromobenzene	2.00 U
cis-1,2-Dichloroethene	2.00 U	1,2,3-Trichloropropane	2.00 U
2,2-Dichloropropane	2.00 U	n-Propylbenzene	2.00 U
Bromochloromethane	2.00 U	2-Chlorotoluene	2.00 U
Chloroform	2.00 U	1,3,5-Trimethylbenzene	2.00 U
1,1,1-Trichloroethane	2.00 U	4-Chlorotoluene	2.00 U
1,1-Dichloropropene	2.00 U	tert-Butylbenzene	2.00 U
Carbon tetrachloride	2.00 U	1,2,4-Trimethylbenzene	2.00 U
Benzene	2.00 U	sec-Butylbenzene	2.00 U
Tertiary Amyl Methyl Ether (TAME)	2.00 U	1,3-Dichlorobenzene	2.00 U
Tetrahydrofuran	2.00 U	p-Isopropyltoluene	2.00 U
1,2-Dichloroethane	2.00 U	1,4-Dichlorobenzene	2.00 U
Trichloroethene	2.00 U	n-Butylbenzene	2.00 U
1,2-Dichloropropane	2.00 U	1,2-Dibromo-3-chloropropane	2.00 U
Dibromomethane	2.00 U	1,2-Dichlorobenzene	2.00 U
1,4-Dioxane	100 U	1,2,4-Trichlorobenzene	2.00 U
Bromodichloromethane	2.00 U	Hexachlorobutadiene	2.00 U
Methyl isobutyl ketone (MIBK)	2.00 U	Naphthalene	2.00 U
		1,2,3-Trichlorobenzene	2.00 U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	101	70-130
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	97	70-130

N/A - Not Applicable
 U - The analyte was analyzed for but not detected at the sample specific level reported.

Laboratory Control Summary

Volatile Organics by 8260



Client: **Battelle**
 Project: **New Bedford Harbor**
 Client ID: **Laboratory Control Sample**
 Case: **N/A** SDG: **N/A**
 Matrix: **Water**

Lab Code: **MA00030**
 ETR: **0811052**
 Lab ID: **See Below**
 Associated Blank: **VW111808B11**
 Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	11/18/08	5	5	1	BAS

Lab ID: VW111808B11 VW111808LCS10 VW111808LCSD10

Parameter	Blank Conc.	U	LCS		LCSD		% RPD	RPD % Recovery	
			Conc.	% Recovery	Conc.	% Recovery		Limit	Limits
Dichlorodifluoromethane	2.00	U	18.5	93	17.5	87	6	25	70-130
Chloromethane	2.00	U	17.5	88	16.5	82	6	25	70-130
Vinyl chloride	2.00	U	23.1	116	21.7	108	7	25	70-130
Bromomethane	2.00	U	19.5	98	18.4	92	6	25	70-130
Chloroethane	2.00	U	19.6	98	18.7	94	5	25	70-130
Trichlorofluoromethane	2.00	U	20.1	101	18.9	95	6	25	70-130
Diethyl ether	2.00	U	20.7	103	21.4	107	4	25	70-130
Acetone	5.00	U	18.6	93	18.3	91	2	25	70-130
1,1-Dichloroethene	2.00	U	20.4	102	19.9	99	2	25	70-130
Carbon disulfide	2.00	U	24.6	123	23.1	116	6	25	70-130
Methylene chloride	2.00	U	19.0	95	19.3	96	1	25	70-130
Methyl tert-butyl ether (MTBE)	2.00	U	19.0	95	18.7	93	2	25	70-130
trans-1,2-Dichloroethene	2.00	U	20.5	103	19.5	98	5	25	70-130
Diisopropyl Ether (DIPE)	2.00	U	20.3	102	20.0	100	1	25	70-130
1,1-Dichloroethane	2.00	U	20.1	101	19.3	97	4	25	70-130
Ethyl Tertiary Butyl Ether (ETBE)	2.00	U	19.8	99	19.2	96	3	25	70-130
2-Butanone (MEK)	2.00	U	20.1	100	20.9	105	4	25	70-130
cis-1,2-Dichloroethene	2.00	U	19.1	95	18.9	94	1	25	70-130
2,2-Dichloropropane	2.00	U	20.4	102	19.2	96	6	25	70-130
Bromochloromethane	2.00	U	20.3	101	19.9	99	2	25	70-130
Chloroform	2.00	U	20.2	101	19.4	97	4	25	70-130
1,1,1-Trichloroethane	2.00	U	20.3	101	19.1	96	6	25	70-130
1,1-Dichloropropene	2.00	U	20.1	100	19.1	96	5	25	70-130
Carbon tetrachloride	2.00	U	19.1	95	18.2	91	5	25	70-130
Benzene	2.00	U	20.3	101	19.1	96	6	25	70-130
Tertiary Amyl Methyl Ether (TAME)	2.00	U	20.4	102	20.0	100	2	25	70-130
Tetrahydrofuran	2.00	U	17.2	86	16.9	84	2	25	70-130
1,2-Dichloroethane	2.00	U	19.0	95	18.9	95	0	25	70-130
Trichloroethene	2.00	U	20.3	101	18.8	94	8	25	70-130
1,2-Dichloropropane	2.00	U	20.7	104	19.8	99	5	25	70-130
Dibromomethane	2.00	U	20.2	101	19.8	99	2	25	70-130
1,4-Dioxane	100	U	522	130	548	137 ^a	5	25	70-130
Bromodichloromethane	2.00	U	20.6	103	19.7	98	5	25	70-130

Laboratory Control Summary Volatile Organics by 8260



Client: **Battelle**
 Project: **New Bedford Harbor**
 Client ID: **Laboratory Control Sample**
 Case: **N/A** SDG: **N/A**
 Matrix: **Water**

Lab Code: **MA00030**
 ETR: **0811052**
 Lab ID: **See Below**
 Associated Blank: **VW111808B11**
 Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	11/18/08	5	5	1	BAS

Lab ID: **VW111808B11 VW111808LCS10 VW111808LCSD10**

Parameter	Blank Conc.	U	LCS		LCSD		% RPD	RPD % Recovery	
			Conc.	% Recovery	Conc.	% Recovery		Limit	Limits
Methyl isobutyl ketone (MIBK)	2.00	U	19.7	98	19.3	96	2	25	70-130
1,3-Dichloropropene, Total	4.00	U	41.1	103	39.4	98	4	25	70-130
Toluene	2.00	U	20.6	103	19.4	97	6	25	70-130
1,1,2-Trichloroethane	2.00	U	20.4	102	19.7	98	4	25	70-130
2-Hexanone	2.00	U	20.9	105	20.2	101	4	25	70-130
Tetrachloroethene	2.00	U	15.0	75	14.1	71	6	25	70-130
1,3-Dichloropropane	2.00	U	20.4	102	19.5	98	5	25	70-130
Dibromochloromethane	2.00	U	20.5	103	19.8	99	4	25	70-130
1,2-Dibromoethane	2.00	U	20.6	103	19.5	98	5	25	70-130
Chlorobenzene	2.00	U	19.8	99	18.9	95	5	25	70-130
1,1,1,2-Tetrachloroethane	2.00	U	20.0	100	19.4	97	3	25	70-130
Ethylbenzene	2.00	U	19.7	99	18.9	94	4	25	70-130
Xylenes, Total	6.00	U	59.5	99	57.0	95	4	25	70-130
Styrene	2.00	U	20.0	100	19.2	96	4	25	70-130
Bromoform	2.00	U	19.5	97	19.1	95	2	25	70-130
Isopropylbenzene	2.00	U	20.0	100	19.2	96	4	25	70-130
1,1,2,2-Tetrachloroethane	2.00	U	19.7	98	19.2	96	2	25	70-130
Bromobenzene	2.00	U	19.4	97	19.2	96	1	25	70-130
1,2,3-Trichloropropane	2.00	U	18.2	91	17.9	90	2	25	70-130
n-Propylbenzene	2.00	U	20.0	100	19.0	95	5	25	70-130
2-Chlorotoluene	2.00	U	19.1	96	18.6	93	3	25	70-130
1,3,5-Trimethylbenzene	2.00	U	19.8	99	19.3	97	2	25	70-130
4-Chlorotoluene	2.00	U	19.8	99	19.3	97	3	25	70-130
tert-Butylbenzene	2.00	U	20.0	100	19.1	95	5	25	70-130
1,2,4-Trimethylbenzene	2.00	U	19.9	100	19.2	96	4	25	70-130
sec-Butylbenzene	2.00	U	20.2	101	19.5	97	4	25	70-130
1,3-Dichlorobenzene	2.00	U	19.8	99	19.2	96	3	25	70-130
p-Isopropyltoluene	2.00	U	20.6	103	19.5	98	5	25	70-130
1,4-Dichlorobenzene	2.00	U	19.8	99	19.0	95	4	25	70-130
n-Butylbenzene	2.00	U	20.5	103	19.6	98	5	25	70-130
1,2-Dibromo-3-chloropropane	2.00	U	19.6	98	19.0	95	3	25	70-130
1,2-Dichlorobenzene	2.00	U	19.7	98	19.3	97	2	25	70-130
1,2,4-Trichlorobenzene	2.00	U	19.8	99	19.2	96	3	25	70-130

Laboratory Control Summary Volatile Organics by 8260



Client: **Battelle**
 Project: **New Bedford Harbor**
 Client ID: **Laboratory Control Sample**
 Case: **N/A** SDG: **N/A**
 Matrix: **Water**

Lab Code: **MA00030**
 ETR: **0811052**
 Lab ID: **See Below**
 Associated Blank: **VW111808B11**
 Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	11/18/08	5	5	1	BAS

Lab ID: **VW111808B11** **VW111808LCS10** **VW111808LCSD10**

Parameter	Blank Conc.	U	LCS		LCSD		% RPD	RPD % Recovery	
			Conc.	% Recovery	Conc.	% Recovery		Limit	Limits
Hexachlorobutadiene	2.00	U	23.1	116	21.0	105	10	25	70-130
Naphthalene	2.00	U	19.4	97	19.0	95	2	25	70-130
1,2,3-Trichlorobenzene	2.00	U	20.6	103	19.9	99	4	25	70-130

Surrogate	% Recovery		Acceptance Range (%)
Dibromofluoromethane	100	101	70-130
1,2-Dichloroethane-d4	98	98	70-130
Toluene-d8	101	101	70-130
4-Bromofluorobenzene	99	99	70-130

N/A - Not Applicable
 " - Value outside of QC Limits.
 U - The analyte was analyzed for but not detected at the sample specific level reported.

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded result.

11/21/08 08:04

Blank Volatile Organics by 8260



Client: **Battelle**
 Project: **New Bedford Harbor**
 Client ID: **Blank**
 Case: **N/A** SDG: **N/A**
 Matrix: **Water**

Lab Code: **MA00030**
 ETR: **0811052**
 Lab ID: **VW111908B11**
 Associated Blank: **N/A**
 Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	11/19/08	5	5	1	BAS

Parameter	Result	Parameter	Result
Dichlorodifluoromethane	2.00 U	1,3-Dichloropropene, Total	4.00 U
Chloromethane	2.00 U	Toluene	2.00 U
Vinyl chloride	2.00 U	1,1,2-Trichloroethane	2.00 U
Bromomethane	2.00 U	2-Hexanone	2.00 U
Chloroethane	2.00 U	Tetrachloroethene	2.00 U
Trichlorofluoromethane	2.00 U	1,3-Dichloropropane	2.00 U
Diethyl ether	2.00 U	Dibromochloromethane	2.00 U
Acetone	5.00 U	1,2-Dibromoethane	2.00 U
1,1-Dichloroethene	2.00 U	Chlorobenzene	2.00 U
Carbon disulfide	2.00 U	1,1,1,2-Tetrachloroethane	2.00 U
Methylene chloride	2.00 U	Ethylbenzene	2.00 U
Methyl tert-butyl ether (MTBE)	2.00 U	Xylenes, Total	6.00 U
trans-1,2-Dichloroethene	2.00 U	Styrene	2.00 U
Diisopropyl Ether (DIPE)	2.00 U	Bromoform	2.00 U
1,1-Dichloroethane	2.00 U	Isopropylbenzene	2.00 U
Ethyl Tertiary Butyl Ether (ETBE)	2.00 U	1,1,2,2-Tetrachloroethane	2.00 U
2-Butanone (MEK)	2.00 U	Bromobenzene	2.00 U
cis-1,2-Dichloroethene	2.00 U	1,2,3-Trichloropropane	2.00 U
2,2-Dichloropropane	2.00 U	n-Propylbenzene	2.00 U
Bromochloromethane	2.00 U	2-Chlorotoluene	2.00 U
Chloroform	2.00 U	1,3,5-Trimethylbenzene	2.00 U
1,1,1-Trichloroethane	2.00 U	4-Chlorotoluene	2.00 U
1,1-Dichloropropene	2.00 U	tert-Butylbenzene	2.00 U
Carbon tetrachloride	2.00 U	1,2,4-Trimethylbenzene	2.00 U
Benzene	2.00 U	sec-Butylbenzene	2.00 U
Tertiary Amyl Methyl Ether (TAME)	2.00 U	1,3-Dichlorobenzene	2.00 U
Tetrahydrofuran	2.00 U	p-Isopropyltoluene	2.00 U
1,2-Dichloroethane	2.00 U	1,4-Dichlorobenzene	2.00 U
Trichloroethene	2.00 U	n-Butylbenzene	2.00 U
1,2-Dichloropropane	2.00 U	1,2-Dibromo-3-chloropropane	2.00 U
Dibromomethane	2.00 U	1,2-Dichlorobenzene	2.00 U
1,4-Dioxane	100 U	1,2,4-Trichlorobenzene	2.00 U
Bromodichloromethane	2.00 U	Hexachlorobutadiene	2.00 U
Methyl isobutyl ketone (MIBK)	2.00 U	Naphthalene	2.00 U
		1,2,3-Trichlorobenzene	2.00 U

Surrogate	% Recovery	Acceptance Range (%)
Dibromofluoromethane	108	70-130
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	105	70-130
4-Bromofluorobenzene	104	70-130

N/A - Not Applicable
 U - The analyte was analyzed for but not detected at the sample specific level reported.

Laboratory Control Summary

Volatile Organics by 8260



Client: **Battelle**
 Project: **New Bedford Harbor**
 Client ID: **Laboratory Control Sample**
 Case: **N/A** SDG: **N/A**
 Matrix: **Water**

Lab Code: **MA00030**
 ETR: **0811052**
 Lab ID: **See Below**
 Associated Blank: **VW111908B11**
 Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	11/19/08	5	5	1	BAS

Lab ID: VW111908B11 VW111908LCS09 VW111908LCSD09

Parameter	Blank Conc.	U	LCS		LCSD		% RPD	RPD Limit	% Recovery Limits
			Conc.	% Recovery	Conc.	% Recovery			
Dichlorodifluoromethane	2.00	U	20.3	102	19.4	97	4	25	70-130
Chloromethane	2.00	U	18.8	94	17.7	89	6	25	70-130
Vinyl chloride	2.00	U	24.8	124	22.6	113	9	25	70-130
Bromomethane	2.00	U	18.6	93	18.0	90	3	25	70-130
Chloroethane	2.00	U	21.1	106	19.0	95	11	25	70-130
Trichlorofluoromethane	2.00	U	22.3	112	21.1	105	6	25	70-130
Diethyl ether	2.00	U	22.2	111	21.6	108	3	25	70-130
Acetone	5.00	U	22.0	110	20.0	100	10	25	70-130
1,1-Dichloroethene	2.00	U	21.6	108	20.1	101	7	25	70-130
Carbon disulfide	2.00	U	25.3	127	24.1	120	5	25	70-130
Methylene chloride	2.00	U	20.7	103	21.5	108	4	25	70-130
Methyl tert-butyl ether (MTBE)	2.00	U	21.6	108	21.1	105	2	25	70-130
trans-1,2-Dichloroethene	2.00	U	23.1	115	22.2	111	4	25	70-130
Diisopropyl Ether (DIPE)	2.00	U	23.2	116	23.0	115	1	25	70-130
1,1-Dichloroethane	2.00	U	22.6	113	22.1	111	2	25	70-130
Ethyl Tertiary Butyl Ether (ETBE)	2.00	U	22.3	112	21.8	109	2	25	70-130
2-Butanone (MEK)	2.00	U	24.4	122	24.7	124	1	25	70-130
cis-1,2-Dichloroethene	2.00	U	21.7	109	21.1	106	3	25	70-130
2,2-Dichloropropane	2.00	U	22.9	115	21.0	105	9	25	70-130
Bromochloromethane	2.00	U	22.1	110	21.5	107	3	25	70-130
Chloroform	2.00	U	23.1	116	21.9	110	6	25	70-130
1,1,1-Trichloroethane	2.00	U	22.9	115	21.9	109	5	25	70-130
1,1-Dichloropropene	2.00	U	22.8	114	21.1	105	8	25	70-130
Carbon tetrachloride	2.00	U	23.1	115	21.5	108	7	25	70-130
Benzene	2.00	U	22.8	114	21.7	109	5	25	70-130
Tertiary Amyl Methyl Ether (TAME)	2.00	U	23.3	116	22.6	113	3	25	70-130
Tetrahydrofuran	2.00	U	20.1	100	19.2	96	4	25	70-130
1,2-Dichloroethane	2.00	U	22.6	113	22.4	112	1	25	70-130
Trichloroethene	2.00	U	22.4	112	20.5	103	9	25	70-130
1,2-Dichloropropane	2.00	U	22.8	114	21.8	109	5	25	70-130
Dibromomethane	2.00	U	22.5	112	21.6	108	4	25	70-130
1,4-Dioxane	100	U	610	152 ^a	514	129	17	25	70-130
Bromodichloromethane	2.00	U	22.9	115	21.9	109	5	25	70-130

Laboratory Control Summary

Volatile Organics by 8260



Client: **Battelle**
 Project: **New Bedford Harbor**
 Client ID: **Laboratory Control Sample**
 Case: **N/A** SDG: **N/A**
 Matrix: **Water**

Lab Code: **MA00030**
 ETR: **0811052**
 Lab ID: **See Below**
 Associated Blank: **VW111908B11**
 Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	11/19/08	5	5	1	BAS

Lab ID: VW111908B11 VW111908LCS09 VW111908LCSD09

Parameter	Blank		LCS		LCSD		% RPD	RPD % Recovery	
	Conc.	U	Conc.	% Recovery	Conc.	% Recovery		Limit	Limits
Methyl isobutyl ketone (MIBK)	2.00	U	22.9	115	21.8	109	5	25	70-130
1,3-Dichloropropene, Total	4.00	U	44.9	112	42.7	107	5	25	70-130
Toluene	2.00	U	22.4	112	21.2	106	6	25	70-130
1,1,2-Trichloroethane	2.00	U	22.0	110	21.5	107	2	25	70-130
2-Hexanone	2.00	U	24.5	122	23.4	117	4	25	70-130
Tetrachloroethene	2.00	U	15.8	79	14.7	74	7	25	70-130
1,3-Dichloropropane	2.00	U	22.6	113	21.4	107	5	25	70-130
Dibromochloromethane	2.00	U	21.9	109	21.1	105	4	25	70-130
1,2-Dibromoethane	2.00	U	22.2	111	21.3	107	4	25	70-130
Chlorobenzene	2.00	U	19.8	99	18.6	93	6	25	70-130
1,1,1,2-Tetrachloroethane	2.00	U	19.8	99	18.7	93	6	25	70-130
Ethylbenzene	2.00	U	19.8	99	18.9	94	5	25	70-130
Xylenes, Total	6.00	U	60.1	100	56.2	94	7	25	70-130
Styrene	2.00	U	20.1	100	19.1	96	5	25	70-130
Bromoform	2.00	U	19.0	95	18.1	91	4	25	70-130
Isopropylbenzene	2.00	U	19.6	98	18.6	93	5	25	70-130
1,1,2,2-Tetrachloroethane	2.00	U	23.0	115	21.7	108	6	25	70-130
Bromobenzene	2.00	U	19.4	97	18.4	92	5	25	70-130
1,2,3-Trichloropropane	2.00	U	19.1	96	18.1	91	5	25	70-130
n-Propylbenzene	2.00	U	19.8	99	18.4	92	7	25	70-130
2-Chlorotoluene	2.00	U	19.3	96	18.3	92	5	25	70-130
1,3,5-Trimethylbenzene	2.00	U	19.7	98	18.7	93	5	25	70-130
4-Chlorotoluene	2.00	U	19.8	99	18.7	94	6	25	70-130
tert-Butylbenzene	2.00	U	19.5	97	18.2	91	7	25	70-130
1,2,4-Trimethylbenzene	2.00	U	19.9	100	18.8	94	6	25	70-130
sec-Butylbenzene	2.00	U	19.3	96	18.0	90	7	25	70-130
1,3-Dichlorobenzene	2.00	U	19.7	99	18.8	94	5	25	70-130
p-Isopropyltoluene	2.00	U	19.3	97	18.2	91	6	25	70-130
1,4-Dichlorobenzene	2.00	U	19.7	99	18.9	94	4	25	70-130
n-Butylbenzene	2.00	U	20.0	100	18.6	93	7	25	70-130
1,2-Dibromo-3-chloropropane	2.00	U	19.8	99	18.7	93	6	25	70-130
1,2-Dichlorobenzene	2.00	U	19.6	98	18.8	94	4	25	70-130
1,2,4-Trichlorobenzene	2.00	U	19.6	98	18.4	92	6	25	70-130

Laboratory Control Summary Volatile Organics by 8260



Client: **Battelle**
 Project: **New Bedford Harbor**
 Client ID: **Laboratory Control Sample**
 Case: **N/A** SDG: **N/A**
 Matrix: **Water**

Lab Code: **MA00030**
 ETR: **0811052**
 Lab ID: **See Below**
 Associated Blank: **VW111908B11**
 Concentration Units: **µg/L**

Date Collected	Date Received	Date Analyzed	Sample Amount (ml)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	11/19/08	5	5	1	BAS

Lab ID: **VW111908B11** **VW111908LCS09** **VW111908LCSD09**

Parameter	Blank Conc.	U	LCS		LCSD		% RPD	RPD % Recovery	
			Conc.	% Recovery	Conc.	% Recovery		Limit	Limits
Hexachlorobutadiene	2.00	U	19.5	97	17.4	87	11	25	70-130
Naphthalene	2.00	U	20.4	102	19.1	96	7	25	70-130
1,2,3-Trichlorobenzene	2.00	U	20.1	101	18.8	94	7	25	70-130

Surrogate	% Recovery		Acceptance Range (%)
Dibromofluoromethane	107	105	70-130
1,2-Dichloroethane-d4	106	106	70-130
Toluene-d8	106	105	70-130
4-Bromofluorobenzene	104	103	70-130

N/A - Not Applicable
^a - Value outside of QC Limits.
 U - The analyte was analyzed for but not detected at the sample specific level reported.

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded result.

11/21/08 08:05

Chain of Custody Records

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Chain of Custody

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0811052

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Duxbury, MA 02332
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Fax: 781-934-2124

39 of 4

Proj. No: **6606422**
Proj. Name: **NBH - Groundwater**

SAMPLERS: Signature
James M. Jorgensen, M. Fitzpatrick, Patrick Curran

ANALYSIS REQUESTED →
"NUMBER OF CONTAINERS"

DATE	TIME	Lab ID BATTELLE ID	Field ID CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER TSS	ACIDIFIED	PRESERVED	Total Number of Containers
1	11/5/08 0903		MW-04A-110508	Location Acetoxon Groundwater					✓					✓	3
2	↓ 0925		MW-04B-110508	↓					✓					✓	3
3	↓ 1235		MW-007-110508	↓					✓					✓	3
4	↓ 1238		MW-006-110508	↓					✓					✓	3
5	11/6/08 0831		MW-07A-110608	Sampler Sr					✓					✓	3
6	11/5/08 1238		MW-006-110508-REP	Acetoxon (Field Dup)					✓					✓	3
7	11/6/08 1005		MW-006-110608	Sampler Sr					✓					✓	3
8	↓ 1217		MW-001-110608	↓					✓					✓	3
9	↓ 1303		MW-005-110608	↓					✓					✓	3
10	11/7/08 0857		MW-04A-110708	Acetoxon					✓					✓	3
11	↓ 0920		MW-003-110708	↓					✓					✓	3
12	11/5/08		EB-110508	Equipment Blank					✓			✓		✓	4
13	11/5/08 0918		MW-04A-110508	Acetoxon Groundwater					✓					✓	1
14	↓ 1640		MW-04B-110508	↓					✓					✓	1
15	↓ 1245		MW-007-110508	↓					✓					✓	1
16	↓ 1310		MW-006-110508	↓					✓					✓	1
17	↓ 1310		MW-006-110508-REP	↓ (Field Dup)					✓					✓	1

Relinquished by: *James M. Jorgensen* Date/Time: 11/7/08 1130
Received by: *Patrick Curran* Date/Time: 11/7/08 1130

Relinquished by: *Patrick Curran* Date/Time: 11/7/08 1300
Received by: *[Signature]* Date/Time: 11/7/08 1300

Comments:
 ① Please ignore SMT 11/6/08
 ② SIB MW-04A-110708
 ③ Equipment Blank for VOA+TSS
 ↓ ↓
 3 vials 1 bottle

Sample Receipt Checklist

Client: <u>BATDUX</u>	Receipt Date: <u>11/7/08</u>
Project: <u>NB Harbor</u>	Log-in Date: <u>✓</u>
ETR #: <u>0811052</u>	Inspection by: <u>w</u> Login by: <u>w</u>

ALL SECTIONS BELOW MUST BE COMPLETED

Comments / Notes

Were samples shipped? Yes, FedEx / UPS / Other: _____ No, Alpha Analytical Courier pick-up / <u>Hand delivered</u>	Sample storage refrigerator #: <u>C3</u>
Is bill of lading retained? Yes, Tracking #: _____ No, Unavailable <u>NA</u>	Sample storage freezer #: _____
Number of coolers received for this project delivery: <u>1</u>	Cooler 2: _____ Cooler 3: _____ Cooler 4: _____ Cooler 5: _____ Cooler 6: _____ Cooler 7: _____ More: _____
Indicate cooler temperature upon opening (if multiple coolers, record <u>all</u> temps): Note: If <u>all</u> coolers are 2-6°C, use one checklist, if NOT, use separate checklists and note <u>all</u> samples received <u>above</u> 6°C. Cooler 1: Temperature(s) taken from: <u>6°</u> IR Gun, (Circle one) SN 460647143 or 94031 <u>6°</u> Temp. Blank, / <u>NA</u>	
Were samples received on ice? <u>Yes</u> / <u>No</u>	
Chain-of-Custody present? <u>Yes</u> / No Complete? <u>Yes</u> / No	
Custody seals present on Cooler? Yes / <u>No</u> on Bottles? Yes / <u>No</u> Intact? Yes / No / <u>NA</u>	
Note: Affix custody seals to back of this page.	
Were sample containers intact? <u>Yes</u> / No If No, list samples: →	
Did VOA/VPH waters contain headspace (>5mm)? Yes / <u>No</u> / <u>NA</u> If Yes, list samples: →	
Were 5035 VOA soils, or VPH soils, covered with MeOH? Yes / No / <u>NA</u> If No, list samples: →	
Was a sufficient amount of sample received for each test indicated on the COC? <u>Yes</u> No If No, list samples: →	
If chemical preservation is appropriate - Were samples field preserved? <u>Yes</u> / No / NA <input checked="" type="checkbox"/> C=HCl <input type="checkbox"/> M=MeOH <input type="checkbox"/> S=H ₂ SO ₄ <input type="checkbox"/> H=NaOH <input type="checkbox"/> N=HNO ₃ <input type="checkbox"/> Other: _____ <input type="checkbox"/> U=Unknown	Chemical preservation OK for ALL samples? Yes / No / <u>N/A</u>
Preservation (pH) verified at lab for <u>EVERY</u> bottle? (<u>Not</u> : VOA / VPH / Sulfide) YES: <2 or >12 (CN) or NO NA If No, why?:	If No, list samples below: <div style="font-size: 1.2em; font-family: cursive;"> top blank rec'd - NOT on COC </div>
Were samples received within hold time? Yes / No If No, list samples: →	
Discrepancy between samples rec'd & COC? <u>Yes</u> / No If Yes, list samples: →	
Was the Project Manager notified of any other problems? Yes / No / NA	
Project Manager Acknowledgement: _____ Date: _____	Please use back for any additional notes!

Certificate/Approval Program Summary



Method numbers assume the most recent EPA revisions. For a complete listing of analytes for the referenced methods please contact your Alpha Woods Hole Lab Project Manager or the Quality Assurance Manager.

Connecticut Department of Public Health Certificate/Lab ID : PH-0141 - *Wastewater* (General Chemistry: EPA 120.1, 150.1, 160.1, 160.2, 180.1, 300.0, 310.1, 335.2; Metals: 200.8, 245.1; Organics: 608-PCB, ETPH)
Solid Waste/Soil (General Chemistry: 1010, 9010/9014, 9045, 9060; Metals: 6020, 7470, 7471; Organics: 8081, 8082, 8260, 8270, ETPH).

Florida Department of Health Certificate/Lab ID : E87814 - Primary NELAP Accreditation Authority for Air & Emissions. Secondary NELAP Accreditation for Wastewater and Solid & Hazardous Waste. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 335.2, SM2320B, SM2340B, SM2540G, SM4500NH₃; Metals: 245.1; Organics: 608-PCB). *Solid and Hazardous Waste* (General Chemistry: 9010/9014, 9045, 9050, 9056, 9065, Reactivity 7.3; Metals: 6020, 7470, 7471; Organics: 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

Louisiana Department of Environmental Quality Certificate/Lab ID : 03090 - Primary NELAP Accrediting Authority for Wastewater, Solid & Hazardous Waste. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 376.2, 9010/9014, 9056, SM2540G; Metals: 200.8, 245.1, 6020; Organics: 608-PCB, 8015-DRO, 8081, 8082, 8260, 8270). *Solid and Hazardous Waste* (General Chemistry: 1010, 1311, 9010/9014, 9040, 9045, 9056, 9060, Reactivity 7.3; Metals: 6020, 7196, 7470, 7471; Organics: 8015-DRO, 8081, 8082, 8260, 8270).

Maine Department of Human Services Certificate/Lab ID : MA0030 - *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 335.2; Metals: EPA 245.1; Organics: 608-PCB).

Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA030 - *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 335.2; Metals: EPA 245.1; Organics: EPA 608-PCB).

New Hampshire Department of Environmental Services Certificate/Lab ID: 2206 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 376.2, SM2540G; Metals: 200.8, 245.4; Organics: 608-PCB).

New Jersey Department of Environmental Protection Certificate/Lab ID : MA015 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 376.2, 9010/9014, 9056, SM2540G; Metals: 200.8, 245.1 6020; Organics: 608-PCB, 8081, 8082, 8260, 8270). *Solid & Hazardous Waste* (General Chemistry: EPA 1010, 1311, 9010/9014, 9040, 9045, 9056, 9060; Metals: 6020, 7196, 7470, 7471; Organics: 8015-DRO, 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

New York Department of Health Certificate/Lab ID : 11627 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 376.2; Metals: 200.8, 245.1; Organics: 608-PCB). *Solid and Hazardous Waste* (General Chemistry: EPA 1010, 1311; : 200.8, 8020, 7041; Organics: 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

Rhode Island Department of Health Certificate/Lab ID : LAO00289 - Chemistry: *Organic and Inorganic in Non-Poratable Water, Wastewater/Sewage and Soil* (Refer to LADEQ and MADEP certificates for method numbers.)

Pennsylvania Department of Environmental Protection Certificate/Lab ID : 68-02089 - Registered laboratory

U.S. Army Corps of Engineers

Department of the Navy



US ARMY CORPS
OF ENGINEERS
New England District

Contract No. DACW33-03-D-0004

Delivery Order No. 22

June 2009

Final

Sediment Trap Study Report



**Environmental Monitoring, Sampling, and
Analysis**

New Bedford Harbor Superfund Site

New Bedford Harbor, MA

Final

Sediment Trap Study Report

**Environmental Monitoring, Sampling, and Analysis
New Bedford Harbor Superfund Site
New Bedford Harbor, MA**

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: 22**

Prepared by:

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June 2009

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APPENDICES

- Appendix A: Field Logs
- Appendix B: Grain Size and TOC Data
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1.0 PROJECT DESCRIPTION AND OBJECTIVES

1.1 Purpose

Battelle has been contracted by U.S. Army Corps of Engineers (USACE) New England District (NAE) to perform environmental monitoring in support of the remedial activities at the New Bedford Harbor Superfund Site. This document presents the results from a sediment trap study designed to monitor resuspended sediments in the northern portion of the harbor that could impact restoration of the North of Wood Street (NWS) area. The data collection activities for the sediment trap study included:

- Deployment and collection of sediment traps at four locations north of dredging area MU-1 including traps north of the Wood Street Bridge (study locations are ‘up-current’ of dredging area MU-1 during ebb tide and ‘down-current’ of dredging area MU-1 during flood tide);
- *In-situ* water quality monitoring (e.g., temperature, salinity, and turbidity) at these locations;
- Collection of surface sediments at each sediment trap location; and
- Analysis of sediment trap samples and surface sediments for polychlorinated biphenyls (PCBs) congeners, grain size and total organic carbon (TOC).

1.2 Site Description

The New Bedford Harbor Superfund Site (hereafter referred to as the site), located in Bristol County, Massachusetts (MA), extends from the shallow northern reaches of the Acushnet River estuary south through the commercial harbor of New Bedford and into 17,000 adjacent acres of Buzzards Bay (Figure 1). Industrial and urban development surrounding the harbor has resulted in sediments becoming contaminated with high concentrations of many pollutants, most notably PCBs and heavy metals. Two manufacturers in the area used PCBs while producing electronic devices from the 1940s to the late 1970s, when the use of PCBs was banned by the U.S. Environmental Protection Agency (USEPA). Based on human health concerns and ecological risk assessments, USEPA added New Bedford Harbor to the National Priorities List in 1983 as a designated Superfund site. Through an Interagency Agreement between the USEPA and the USACE NAE, the USACE NAE is responsible for carrying out the design and implementation of the remedial measures at the site. The site has been divided into three areas – the upper, lower and outer harbors – consistent with geographical features of the area and gradients of contamination (Figure 2).

The shoreline Aerovox manufacturing facility located in New Bedford, MA (Figure 2) used PCBs in the manufacture of electrical capacitors from approximately 1940 to 1977. This facility is considered one of the major sources of historic PCB contamination to New Bedford Harbor. The highest concentrations of PCBs were found in sediments in a 5-acre area in the northern portion of the Acushnet River Estuary adjacent to the Aerovox facility. These ‘hot spot’ sediments, which contained PCBs upwards of 100,000 milligrams per kilogram (mg/kg), were removed between 1994 and 1995 as part of USEPA’s 1990 “Hot Spot” Record of Decision



(ROD). Full scale remediation dredging per the 1998 Upper and Lower Harbor ROD was initiated in 2004 and has continued with annual funding every year since. Another known source of PCB contamination in New Bedford Harbor is related to activities at the Cornell-Dubilier mill on the western shore of the outer harbor (Figure 2). In 2005, a 15 acre underwater cap pilot project was implemented near Cornell-Dubilier to cap PCB contaminated sediments.

Located at the far northern end of the Upper Harbor are areas which were prioritized for restoration activities based on their proximity to shoreline residential and recreational land use areas. The NWS area includes in-river sediments and marsh soils on the eastern and western shores of the river. The NWS area ranges from approximately 250-ft south of the Wood Street Bridge to approximately 0.25 miles north of the bridge. Sediments and marsh soils in the NWS area previously had PCB concentrations as high as 46,000 mg/kg. The 1998 ROD established the following clean up criteria: 1 mg/kg for residential shoreline areas, 10 mg/kg for the sub-tidal sediments, 25 mg/kg for the top foot of recreational land use shoreline soils, and 50 mg/kg for shoreline soils deeper than the top foot in residential and recreational land use areas.

In the winter of 2002-2003, approximately 15,000 cubic yards of material was removed from the NWS area. The site was remediated using temporary dams and pumps to divert river water around the site. This allowed excavation activities to be conducted on dry sediments and soils, thus eliminating the potential for sediment resuspension and recontamination. Clean fill was used to restore the river banks, but sub-tidal areas were left at the depth of excavation (i.e., not backfilled). Marsh and upland vegetation was planted above the low water line to stabilize and restore the shoreline. In August of 2004 post-remediation sampling revealed elevated PCB concentrations on the eastern shoreline of the NWS area, and in certain sub-tidal locations. Elevated concentrations were found above the high tide line suggesting that incomplete remediation was a more likely cause than recontamination from in-river sources. Additional remediation and restoration efforts were conducted in December of 2005 to remove the remaining contamination. Samples collected before and after this effort showed an improvement in shoreline PCB concentrations (ENSR 2006). Additional sediment sampling in 2006 (Battelle 2007a) and 2007 (Battelle 2008) showed some variability in PCB concentrations but no substantial recontamination.

1.3 Objectives

The objective of this study was to collect data to assess trends in PCBs at the NWS area and to further evaluate the potential for recontamination of previously remediated areas north of the Wood Street Bridge, and to identify potential sources, if possible. Changes in PCBs observed in sediment stations at the NWS area could be associated with resuspension of dredged material related to remedial dredging activities, naturally occurring movement of resuspended sediments in the area, an upland source, or any combination of these factors. Data collected to support the study objectives included: physical characteristics (grain size and TOC), PCB chemistry on suspended sediment material and surface sediments, and *in-situ* water quality measurements (e.g., turbidity) during sediment trap deployment periods.



2.0 STUDY DESIGN AND METHODS

The study area and design and sampling and analytical methods used to deploy, collect and analyze sediment trap and surface (0-2 cm) sediment samples for physical characteristics and PCBs is summarized in this section and detailed in the project work plan (Battelle 2007b).

2.1 Study Area

The NWS area is a shallow water estuary located at the upstream reach of New Bedford Harbor and the Acushnet River. This area of the upper harbor also includes a narrow channel with steep marsh banks on both sides, with at least two combined sewer overflows that could provide additional inputs to the system. New Bedford Harbor is a highly dynamic system influenced by physical processes including precipitation, winds, severe weather conditions including coastal storms and hurricanes, and tides. Tides are semidiurnal, with two high waters and two low waters occurring each day. The tide, together with variability in freshwater flow, determines the current direction and its influence on the transport of suspended sediments. On ebb tides, “down-current” is always to the south. However, on flood tides flow is often, though not always, to the north. While all of these physical processes can influence resuspension and transport of bottom sediment in the area, tides and storm waves appear to be the dominating processes at the site (Battelle, 1991).

2.2 Study Design

Sediment trap samplers were deployed at four stations in the northern portion of New Bedford Harbor (Figure 3) to characterize sediment resuspension and associated PCBs and physical characteristics at the NWS area before, during, and after dredging. Pre and post-dredging deployments were performed to assess natural movement of sediments in the harbor. The three northernmost deployment locations (ST-01, ST-02, and ST-03) were chosen to correspond to existing sediment sampling stations (033, 048, and 062, Figure 3). The southernmost station (ST-04) was located at the northern boundary of the 2007 and 2008 dredging activities (Areas G and H in 2007 and Aerovox and Pierce Mill Cove in 2008). Sediment traps were recovered once a sufficient quantity of suspended sediment material had accumulated to meet mass requirements for physical and chemical testing. Co-located surface sediments were collected during two events (post 2007 dredging and pre 2008 dredging) to represent an integrated measurement of actual surface sediment concentrations and PCB composition pre and post-dredging.

The sediment trap and surface sediment samples were analyzed for grain size, TOC, and PCB congeners (correlated to total PCBs using a site-specific correlation factor). Continuous *in-situ* water quality monitoring was also performed using moored instruments to collect temperature, salinity, dissolved oxygen (DO), and turbidity data. Other field data including sampling location, sample deployment and collection date, and sample depth were recorded on the field logs.

2.3 Field Methods

The sediment trap study was performed over a 12 month period, and encompassed both active dredging and non-dredging periods. A timeline showing when sediment trap samples and



surface (0-2 cm) sediment samples were collected relative to dredging and non-dredging activities is presented in Figure 4.

2.3.1 Sediment Trap Deployment and Retrieval

The sediment trap study was performed over a 12 month period, with individual deployments occurring during both active dredging and non-dredging periods. A minimum of two traps were deployed at each location to provide information on reproducibility with respect to sediment accumulation rates and to provide additional material for analysis. A third trap was also deployed at ST-01 to allow for sufficient replication to assess the precision of the field and laboratory measurements. All information pertaining to the deployment and retrieval of sediment traps was recorded on the Field Daily Log Forms (Appendix A). During sediment trap deployment, turbidity, temperature, and salinity measurements were obtained at the location of the deployment and recorded on the *In Situ* Log Form (Appendix A). In addition, a moored YSI data sonde was stationed at ST-03 to collect continuous turbidity, temperature, and salinity measurements over the duration of the deployments. A differential Global Positioning System (dGPS) was used to locate the stations. The dGPS was calibrated and the information recorded on the Calibration Form (Appendix A).

Figure 5 shows a picture of a sediment trap before and during deployment and after recovery. Each sediment trap sampler consisted of a 2-liter wide mouth plastic jar with a funnel affixed to the mouth. The inner diameter of the funnel was 8 inches. The jar/funnel assembly was secured inside a weighted 1-gallon bucket. This configuration placed the opening of the trap (mouth of the funnel) approximately 1-ft above the sediment water interface and approximately 3-inches above the rim of the bucket. A line from the bucket was attached to a surface buoy. During deployment clean sediment traps were lowered slowly through the water column and placed gently on the bottom. Every effort was made to minimize resuspension of sediments during deployment of the trap.

Sediment traps were retrieved once a sufficient quantity of material had accumulated (approximately 20 grams wet; based on visual observation of traps) to meet mass requirements for physical and chemical testing. The duration of the deployment period varied over the course of the study, and was dependent on the rate that suspended material accumulated in the traps. If sediment deposition rates were lower than expected, the deployment times were extended. To retrieve the samples, the traps were pulled up slowly and gently by the surface buoy line. Every effort was made to minimize disturbance of sediments within the trap. The traps were brought on board the boat, the funnel was gently removed, and a cap was placed on the 2-liter jar. Samples were kept cold (4°C) and transported under chain of custody to Battelle (Duxbury, MA) for processing (see Section 2.4.1).

2.3.2 Surface Sediment Sampling

Co-located surface sediments were collected at each of the four trap locations to represent an integrated measurement of actual surface sediment concentrations and PCB composition before and after dredging.

Surface sediment was collected using a Kynar coated 0.1-m² Van Veen grab sampler. Each grab sample was inspected for acceptability (Battelle, 2007b). The 0-2 cm was collected for physical



and chemical testing using pre-cleaned stainless steel scoops or spoons. Samples were homogenized by stirring in a clean, stainless steel container prior to subsampling into individual containers in the field. Samples were kept cold (4°C) and transported under chain of custody to Battelle (Duxbury, MA) for processing (see Section 2.4.1).

2.4 Laboratory Methods

2.4.1 Sample Processing

Upon receipt at the Battelle Duxbury Laboratory (BDL), sample custody was transferred to the laboratory. Sediment trap samples were allowed to rest undisturbed overnight in a cold room (4° ±2° C). This served two purposes. First, because many of the traps contained invertebrates such as shrimp or crabs, this chilling of the samples reduced movement of the organisms, thus reducing mixing of the sample. Secondly, the overnight storage allowed sediments in the sample to fully settle.

After the chilling and settling period, the sediment and water was transferred to a 500 mL Teflon jar, and centrifuged at approximately 1500 rpm to consolidate the trap samples and remove excess water. Before centrifugation, visible invertebrates in the sediment were removed with solvent-rinsed forceps. The centrifuged material for each sample was weighed using an electronic balance, and the weight recorded. Sediment deposition rates were calculated based on the mass of sediment accumulated in the trap, duration of the trap deployment, and the surface area of the sediment trap as follows:

$$\text{Deposition Rate (DR)} = (W_{ST} / D_{ST}) / A_{ST}$$

where,

W_{ST} = mass of sediment trapped, grams dry weight

D_{ST} = duration of the sediment trap deployment, days

A_{ST} = area of the sediment trap, 0.0324 m² based on 8 inch diameter of funnel

Sediment material collected from the three trap samplers deployed at station ST-01 were split as follows: one trap sample was archived¹ frozen at the laboratory and two trap samples were used for grain size, TOC, and PCB analysis. Sample material split for grain size, TOC, and PCB analysis was sub-sampled from the same trap. Sediment material collected from the two trap samplers deployed at stations ST-02, ST-03, and ST04 were split as follows: one trap sample was used for grain size and TOC analysis and the second trap sample was used for PCB analysis.

All surface sediments were homogenized at the laboratory and split for grain size, TOC, and PCB analysis.

Sub-samples for grain size and TOC analysis were shipped overnight to Applied Marine Sciences (AMS) in League City, Texas (TX). Sub-samples for PCB analysis were frozen until analysis at BDL.

¹ For deployments #1 and #2, all three sediment trap samples from station ST-01 were analyzed for grain size, TOC, and PCBs.



2.4.2 Grain Size Analysis

The quantitative determination of the distribution of particle sizes in sediments was performed by AMS following ASTM D422 (AMS SOP 2103). The distribution of particle sizes larger than 74 microns (μm No. 200 sieve) was determined by sieving, while the distribution of particle sizes less than 74 μm was determined using a hydrometer. Initial preparation consisted of homogenizing samples thoroughly and removing any foreign debris (sticks, plastic, etc.). An aliquot of wet sediment was weighed and dispersed using a solution of RO/DI (reverse osmosis de-ionized) water and sodium hexameta-phosphate, then wet sieved over a No. 200 mesh sieve. The coarse fraction ($>74 \mu\text{m}$ -gravels and sands) retained on the No. 200 sieve was transferred to a beaker and dried at 105°C for 12 hours. After drying, the coarse fraction was passed through a series of nested sieves to determine the distribution of gravel and sand. The fine fraction ($<74 \mu\text{m}$ silts and clays) passing the No. 200 sieve was collected in a calibrated 1 liter (L) cylinder. A hydrometer test was performed at predetermined intervals to determine the distribution of silt and clay-sized particles. All results were reported as percent on a dry weight basis.

2.4.3 Total Organic Carbon Analysis

TOC analyses were performed by AMS following EPA SW-846 Method 9060A (AMS SOP 2201). Sample preparation consisted of drying, homogenization, and acidification to remove carbonates and bicarbonates. The samples were combusted in a high-temperature furnace in a stream of oxygen to form CO_2 , which was analyzed using a CO_2 Coulometer. Interfering gases, such as halogens, sulfur, nitrogen oxides, and water, were removed by chemical scrubbers prior to CO_2 measurement. All results were reported in percent carbon on a dry weight basis.

2.4.4 Polychlorinated Biphenyl (Congener) Analysis

Sediment (trap and surface) samples for PCB congener analysis were removed from frozen storage and allowed to thaw. Each sample was mixed in the container and a measured aliquot removed for percent moisture determination (Section 2.4.5). A second measured aliquot was removed and placed on a piece of aluminum foil for air drying in a hood overnight. The air-drying process was implemented to ensure percent solids in the samples were $>50\%$ to enhance extraction efficiency.

The air-dried sample was spiked with surrogates and extracted using Accelerated Solvent Extraction (ASE) following modified EPA SW846 Method 3545 (Battelle SOP 5-307). The extract was poured through a funnel containing sodium sulfate. The extract volume was then brought to 100 mL and 10 mL was removed for further processing. The 10 mL split was treated with activated copper for sulfur removal, solvent exchanged into hexane, and passed through a Florisil SPE cartridge. The post-Florisil extract was then diluted to 10 mL, out of which 1 mL was fortified with internal standards (IS) and submitted for analysis. The 100-fold pre dilution scheme (described here) was performed to prevent contamination of the analytical instruments that may occur from highly contaminated samples.

All sample extracts were analyzed for a set of 44 PCB congeners using gas chromatography/mass spectrometry (GC/MS) in the selected ion monitoring mode (SIM) following key components of EPA Method 1668A and 8270D (Battelle SOP 5-315). Sample data were quantified by the method of internal standards, using the IS compounds. Many of the sample



extracts were diluted and re-analyzed because selected PCB congeners responded above the linear range of the instrument calibration. Congener concentrations resolved from post-analytical dilutions were qualified with a “D”, while concentrations resolved from the 100-fold pre-analytical dilutions were not qualified with a “D”. All results were reported in micrograms per kilogram ($\mu\text{g}/\text{kg}$) dry weight.

2.4.5 Percent Moisture

Percent moisture was determined by each laboratory (BDL and AMS) to determine the amount of water present in the sediment samples (trap and surface). At each laboratory, a well-homogenized aliquot of each sediment sample was dried overnight in an oven and the percent moisture was determined as the percent ratio of wet to dry weight for each analytical aliquot. All results were reported as percent on a wet weight basis.

At BDL, the percent moisture was determined before the samples were air-dried (Section 2.4.4) for PCB analysis. The percent moisture determination step was not repeated on the air-dried sample used for extraction.

2.4.6 Data Analyses

Microsoft® Excel 2003 and JMP (The Statistical Discovery Software, a business unit of SAS Institute, Inc.) were used to characterize the sediment chemistry data. Individual and station mean values were used in the data analyses for the following sediment parameters: sand+gravel, silt, and clay; percent fines, percent total sand, TOC, and total PCB, as follows:

- Percent fines – calculated as the sum of the silt and clay fractions
- Percent total sand – calculated as the sum of the coarse sand, medium sand, and fine sand fractions
- Total PCB – calculated as 2.6 times the sum of the 18 National Status and Trends (NS&T) congeners², as is routinely done for the New Bedford Harbor program. A value of zero was used in the summation for non-detects.

Total PCB concentrations used in the comparison of sediment trap and surface (0-2 cm) sediment data were also normalized to percent fines because normalization provides a more conservative means of evaluating the data for trends. Graphical representations of the sediment data were presented as ternary and histogram plots.

PCB flux, a measurement of PCB input to the bottom sediments based on both sediment deposition rate and PCB concentration, was calculated as follows:

$$\text{PCB Flux (mg/m}^2\text{/day)} = (\text{Total PCB}_{\text{ST}} \times \text{DR}_{\text{ST}})/1000$$

where,

² NS&T congeners include PCBs 8, 18, 28, 44, 52, 66, 101, 105, 118, 128, 138, 153, 170, 180, 187, 195, 206, and 209.



Total PCB_{ST} = concentration of total PCB in trapped sediment, mg/kg dry weight
DR_{ST} = deposition rate, g/m²/day

2.5 Quality Assurance/Quality Control

2.5.1 Field Program

Replicate trap samplers were deployed and collected at each of the sediment trap stations (three samplers at station ST-01 and two samplers each at stations ST-02, ST-03, and ST-04) during each deployment to evaluate sampling reproducibility in terms of collected particulate mass. Replicate trap samplers deployed and collected at station ST-01 during each deployment were also used to evaluate sampling and analytical (i.e., grain size, TOC, and PCB) reproducibility. Replicate surface sediments were collected at station ST-01 during each sampling event to evaluate sampling and analytical reproducibility.

2.5.2 Laboratory Program

A routine set of laboratory-based quality control (QC) samples were prepared with each set of study samples to evaluate data quality in terms of accuracy and precision. QC samples for grain size consisted of one laboratory duplicate sample for each batch of 20 or fewer samples. QC samples for TOC consisted of one method blank, one continuing calibration verification, one independent continuing calibration verification, and one laboratory duplicate sample for each batch of 20 or fewer samples. QC samples for PCB analysis included one procedural blank, one laboratory control sample (LCS), one matrix spike (MS), and one matrix spike duplicate (MSD) for each batch of 20 or fewer samples.

2.6 Project Deviations

The project work plan (Battelle 2007b) indicated that a total of 12 sediment trap deployments would be conducted at each of the 4 stations. Upon evaluating the study objectives and consulting with USEPA and USACE NAE, it was determined that data provided by the 10 deployments performed over the 12-month period (beginning in October 2007 and ending in October 2008) were sufficient to meet the study objectives.

The surface sediment samples collected at the inter-tidal locations in July 2007 are not used in this report because these locations were not co-located with the trap locations, and PCB composition at these locations may not be representative of the sediment trap locations as a result.

In accordance with the study objectives, two sampling events were performed over the study period to collect co-located surface (0-2 cm) sediment samples at each of the four sediment trap locations. The co-located surface sediment samples were not collected within the same dredge season. Rather, these samples were collected following completion of dredge activities in 2007 (i.e., post 2007 dredge) and prior to the on-set of dredge activities in 2008 (i.e., pre 2008 dredge). While the surface sediment samples were not collected within the same dredge season, the samples do represent an integrated measurement of actual surface sediment concentrations and PCB composition over the study period.



3.0 RESULTS

This section summarizes results from the sediment trap study, including field and laboratory test results. Complete test results, along with results from the analysis of field- and laboratory-based QC samples, are provided as appendices to the report (Appendix A includes copies of all field logs; Appendix B includes grain size and TOC data; and Appendix C includes PCB data).

3.1 Field Sample Results

3.1.1 Sediment Sampling

Sediment trap and surface samples collected in support of this study are summarized in Table 1. The sediment trap study was performed over a 12-month period, beginning October 2007 and ending October 2008 (see Figure 4 for project timeline). Sediment trap samplers were not deployed between December 11, 2007 and March 13, 2008 due to icing conditions. A total of ten sediment trap deployments were performed at each of the four trap stations, with deployment duration ranging from 21 days to 38 days (Table 1).

Co-located surface (0-2 cm) sediment samples were collected at each of the four trap deployment locations during two events: November 12, 2007 (post 2007 dredge) and April 22, 2008 (pre 2008 dredge).

All sediment trap samples were processed to determine the particulate mass accumulated and sediment deposition rates. All sediment trap and co-located surface sediment samples received laboratory testing as described in Section 3.2.

3.1.2 In-situ Water Quality Monitoring

A moored YSI data sonde was stationed at ST-03 to collect continuous temperature, salinity, DO, and turbidity data over the duration of the sediment trap deployments. Continuous *in-situ* water quality data are not available between December 11, 2007 and March 13, 2008 because sediment traps were not deployed during this period due to icing conditions. Nor are data available between August 26 and September 15, 2008 because of a disruption in the power source (the unit was subsequently replaced).

Temperature and Salinity – Continuous *in-situ* temperature and salinity data collected during the sediment trap deployments are shown in Figure 6. Typical seasonal trends in temperature were observed throughout the study period. The highest recorded water temperatures occurred in July and August and the lowest recorded temperatures occurred in December (Figure 6). Salinity was variable within a narrow range between 20 PSU to 30 PSU throughout the study period, except for rainfall events. Salinity decreased by more than 20 PSU during major rain events (United States Geological Survey, 2009) that occurred in March, May, August, September and October 2008 (Figure 6).

Dissolved Oxygen (DO) – Continuous *in situ* DO data collected during the sediment trap deployments are shown in Figure 7. DO measurements showed patterns that were typical of estuarine environments. High DO levels were observed in the spring and fall, with lower levels



observed throughout the warmer summer months. On average DO levels from May through September 2008 were approximately 5 milligrams per liter (mg/L). However, spikes in the DO, which can be caused by large phytoplankton blooms, were also observed. A substantial increase in DO was recorded in mid July (Figure 7), which coincided with a particularly dry time period when the salinity data showed very little fluctuation (Figure 6).

Turbidity – Continuous *in-situ* turbidity data collected during the sediment trap deployments are shown in Figure 8. The raw turbidity data was variable day to day, but remained fairly consistent throughout the study period with values ranging from 0 NTU to less than 30 NTU. Filtered turbidity data showed that on average values ranged from close to 0 NTU to approximately 10 NTU. No seasonal trends were apparent in the turbidity data. However, several less significant rainfall events did coincide with increases in turbidity. For example, an increase in turbidity was observed in mid to late October 2007 and in late July 2008. Both events coincided with a small decrease in salinity (Figure 6). The larger decreases in salinity observed in mid March, early May, mid August, and late September through early October of 2008 did not appear to coincide with substantial turbidity changes, although turbidity readings did appear to be more variable than other periods.

3.2 Laboratory Testing

3.2.1 Sediment Accumulation

The mass of sediment accumulated in the sediment traps during deployment is summarized in Table 2. The wet mass of sediment accumulated in the traps ranged from 11 grams at station ST-01 during deployment #2 to approximately 190 grams at station ST-02 during deployment #9 (Table 2). The dry mass of sediment (calculated from wet mass using the percent moisture) accumulated in the traps ranged 2.5 grams at ST-04 (during deployment #4 to approximately 52 grams at ST-02 during deployment #9 (Table 2). Inter-location and inter-deployment differences were observed. Sediment mass data were used to evaluate sediment deposition rates and PCB flux (see Section 4.0).

3.2.2 Grain Size

Grain size results for the sediment trap and surface sediment samples are summarized in Table 3. The sediment trap samples from all deployments were dominated by fine-grained particles. Percent fines ranged from 86.5% to 99.8%, with 50 out of the 52 samples having >94% fines. Percent total sand ranged from 0.17% to 13.5%. Gravel was only present in 1 of the 52 samples (ST-03-103107-2) at 0.53%.

The co-located surface sediment samples were also generally fine-grained, with 7 out of 10 samples having >80% fines (Table 3). Surface sediment at station ST-01 had similar grain size composition between sampling events, while grain size composition was more variable between events at stations ST-02, ST03, and ST-04. The variability may reflect small-scale heterogeneity at these locations.



3.2.3 Total Organic Carbon

TOC results for the sediment trap and surface sediment samples are summarized in Table 3. All of the sediment trap samples had high concentrations of organic carbon (frequently >10%), consistent with the fine-grained composition of the sediments.

The co-located surface sediment samples generally had lower concentrations of organic carbon, ranging from 1.84% to 15.5%. Organic carbon content was higher in fine-grained (>90% fines) surface sediments and lower in coarse-grained (>45% total sand) sediments (Table 3). TOC levels in surface sediments were similar between events at stations ST-01 and ST-02 and more variable at stations ST-03 and ST-04.

3.2.4 Polychlorinated Biphenyls (Congener)

PCB results, presented as total PCB (2.6 times the sum of the 18 NS&T congeners), are summarized in Table 4. Concentrations of total PCB in the sediment trap samples ranged from 31.5 mg/kg at station ST-01 during deployment #2 to 345 mg/kg at station ST-04 during deployment #1 (Table 4). Concentrations of total PCB in the surface sediments ranged from 28.5 mg/kg at station ST-01 during the post 2007 dredge event (field duplicate) to 152 mg/kg at station ST-03 during the pre 2008 dredge event. Substantial variability in the total PCB data was observed, especially over time and across stations. The spatial and temporal trends in the PCB data are discussed in Section 4.0.

3.3 Quality Assurance/Quality Control

3.3.1 Field Program

Field replicate samples were collected throughout the study to evaluate sampling and analytical reproducibility with respect to sediment accumulation, grain size, TOC, and PCBs. For sediment accumulation, replicate sediment trap samplers were deployed and collected at each station and during each deployment (triplicate samplers at ST-01 and duplicate samplers at ST-02, ST-03, and ST-04). For grain size, TOC, and PCBs, replicate trap and surface sediment samples were collected at one station during each event (triplicate measurements at ST-01 during trap deployments 1 and 2 and duplicate measurements at ST-01 during trap deployments 3-10 and both surface sediment sampling events). The reproducibility among the replicate measurements is reported in terms of relative standard deviation (RSD), where the number of replicate measurements is three for a given station or relative percent difference (RPD), where the number of replicate measurements is two for a given station. Replicate results are reported with the sample data in Table 2 (sediment accumulation), Table 3 (grain size and TOC), and Table 4 (total PCB).

3.3.1.1 Sediment Accumulation

The precision between field replicates measurements in terms of the wet or dry mass of accumulated sediment was fair, with values ranging from 2% to 130% RSD/RPDs based on wet mass and from 1% to 155% based on dry mass (Table 2). The majority of the replicate samples (30 (wet) or 32 (dry) out of 39) had RSD/RPDs <50% (Table 2).



3.3.1.2 Grain Size

Field replicate measurements agreed well for silt and clay fractions (RSD/RPDs ranged from 0.2% to 9% for percent fines) and were more variable for sand and gravel fractions (RSD/RPDs ranged from 3% to 148% for total sand) (Table 3). The higher variability among replicate samples for the sand and gravel fractions is attributed to the very low percentages (frequently <5%) of these grain size fractions measured in the sediment samples.

3.3.1.3 Total Organic Carbon

Field replicate measurements agreed well for TOC, with values ranging from 0.3% to 27% RSD/RPDs (Table 3).

3.3.1.4 Polychlorinated Biphenyls (Congener)

Field replicate results for total PCB were generally comparable, with 9 out of the 12 replicates having RSD/RPDs <50% (Table 4). Concentrations of total PCB were more variable for 3 of the 12 replicate samples, with RSD/RPDs ranging from 57% to 71% (Table 4). The higher variability may be attributed to natural sample heterogeneity, sampling and/or laboratory analytical variability, or a combination of these factors.

3.3.2 Laboratory Program

Results from the laboratory-based QC samples are reported with the sample data as appendices to this report (Appendix B for grain size and TOC and Appendix C for PCB). Results from the analysis of laboratory-based QC samples for PCBs were evaluated against the project measurement quality objectives to evaluate data quality in terms of accuracy and precision. Results from this evaluation are summarized in the QA/QC narratives provided in Appendix C. Overall, results from the laboratory-based QC samples for all test parameters (grain size, TOC, and PCBs) indicate that the laboratory methods were in control and the data are useable.



4.0 SUMMARY AND CONCLUSIONS

This section describes the physical characteristics of suspended and settling sediment material at the NWS area, discusses trends in PCBs and evaluates if recontamination of the area is likely due to movement of sediment particles in the water column. Results discussed below are summarized in Table 5, and include sediment deposition rate and PCB flux to the bottom sediment based on amount of sediment collected, area of the trap, deployment durations, and PCB concentrations measured in the sediment trap samples.

4.1 Physical Characteristics

Sediment trap sediments were comprised of fine-grained (generally >90% fines), homogenous sediments with variable distributions of silt and clay fractions and high percentages of organic carbon (frequently >10%) (Figure 9). By comparison, surface (0-2 cm) sediments were more heterogeneous, comprised of both coarse-grained, low TOC and fine-grained, high TOC sediments (Figure 9).

Spatial and temporal trends in the physical characteristics and deposition rates of suspended and settling sediment material at the NWS study area were apparent in the study data. The distribution of fine-grained material (silt and clay fractions) at station ST-01 was variable throughout the monitoring period (Figure 10), during both dredging and non-dredging periods. By contrast, the distribution of fine-grained material was spatially more variable at stations ST-02, ST-03, and ST-04 during dredging activities compared to non-dredging periods (Figure 10). Moreover, the limited data showed a preferential increase in clay content during dredging periods at the southernmost stations ST-03 and ST-04 (Figure 10).

Sediment deposition rates were spatially variable at the NWS study area in the summer during remediation activities and were less spatially variable in the fall, winter and early spring during non-dredging periods (Figure 11). Excluding station ST-02, the time-series data suggest that sediment deposition rates appear to be seasonal, increasing from late spring to summer, reaching maximum rates in July/August and decreasing from late fall to winter, reaching minimum rates in March/April (Figure 11). The largest fluxuations in deposition rates were observed at station ST-02 (Figure 11), located immediately north of the Wood Street Bridge. Deposition rates at station ST-02 were also among the highest measured at the NWS study area in the summer of 2008 during the Aerovox and Pierce Mill Cove remediation periods (Figure 11). Interestingly, sedimentation rates at nearby stations (ST-01, ST-03) decreased during the Pierce Mill Cove dredge period (Figure 11), suggesting that the sustained, elevated sedimentation rates at ST-02 (25-30 g/m²/day) could be associated with factors other than the remediation activity. Moreover, the observed decrease in sedimentation rates at stations ST-01, ST-03, and ST-04 during the Pierce Mill Cove dredging period (Figure 11) suggests that distance from the remediation activity may have influenced the sedimentation rates. That is, sedimentation rates increased during the Aerovox remediation period, located in close proximity (approximately 400 meters) to the study area, and decreased during the Pierce Mill Cove dredge period, located further away (approximately 2,000 meters) from the study area. However, the results for ST-02 (high deposition rate during Pierce Mill Cove dredging) confound the interpretation of the results, suggesting other unknown factors also may be contributors.



4.2 Polychlorinated Biphenyl Distribution and Flux

Spatial and temporal trends were observed in the PCB data from the sediment traps deployed at the NWS area in 2007 and 2008. In general, PCB concentrations were spatially somewhat more variable during non-dredging periods compared to dredging periods³ (Figure 12). The spatial variability may reflect differences in physical characteristics, such as grain size (variable silt and clay fractions) (see Figure 10), the highly dynamic nature of the system, or a combination of these factors. The study data also suggests that PCB concentrations can change in response to human activities, such as remedial dredging which can result in the resuspension of dredged material. For example, PCB concentrations were among the highest measured in sediment traps deployed at stations ST-02, ST-03 and ST-04 during dredging in 2007 at Areas G and H (Figure 12), located south of the study area (Figure 3). In addition, total PCB concentrations at the NWS area increased above ‘non-dredging levels’ following the onset of shoreline excavation activities in 2008 at the Aerovox site (Figures 12 and 13), located approximately 400 meters south of the study area (southern boundary, Figure 3). PCB concentrations returned to near or below ‘non-dredging levels’ approximately two months after the cessation of excavation activities at the Aerovox site. During this period, active dredging was performed at the Pierce Mill Cove area located approximately 2,000 meters south the study area (southern boundary, Figure 3). The decreasing trend in total PCB concentrations during the Pierce Mill Cove dredge period (Figure 12) suggests that relatively ‘clean’ sediment material may have been transported to the NWS area during this period, and/or that Pierce Mill Cove suspended sediments were not being transported to the NWS area. As shown in Figure 14, PCB flux followed similar temporal and spatial trends as sediment deposition rate (Figure 11) and PCB concentrations (Figure 12), combining the results from both deposition and concentration.

With few exceptions, concentrations of total PCB were among the lowest measured during the study period at station ST-01, located at the northern boundary of the study area (Figure 12). PCB concentrations were generally among the highest measured during the study period at station ST-04 (Figure 12), located at the southern boundary of the study area and in closest proximity (relative to other trap locations) to the remediation activities. While there was some variability in the PCB concentrations across space and time, the detailed congener patterns were generally similar among all the sediment samples (surface and sediment traps) indicating a common source of contamination (congener patterns for representative station ST-04 shown in Figure 15).

Overall, the study data suggest that the physical characteristics of the sediment, natural transport of sediment material in the water column, and proximity to remediation activities can influence PCB concentrations and composition in surface sediments. Moreover, PCBs in the surface sediments in the study area appear to be mostly from downstream sources (i.e., harbor areas to the south of the study area; considered down-current during ebb tide or up-current during flood tide).

³ PCB data from the first deployment did not fit this generalization possibly because the deployment encompassed both active dredging and non-dredging periods which can confound the data interpretation.



4.3 Comparison of PCBs in Sediment Trap and Surface Sediments

Contamination in surface sediment typically represents long-term accumulation measured in terms of years, whereas contamination measured in sediment traps represents a snap shot in time (e.g., days and weeks) and reflects current deposits to the sediment bottom. While there was some variability in PCBs over space and time at the NWS area, concentrations of total PCB measured in the sediment traps at a given location were comparable to or slightly higher⁴ than levels measured in the co-located surface (0-2 cm) sediments (normalized data are shown in Figure 16; non-normalized data are shown in Figures 17-19). Sediment trap samples with PCB concentrations above surface sediment levels coincided with remedial dredging activities at Area H in 2007 and shoreline excavation activities at the Aerovox site in 2008 (Figures 16-19). PCB concentrations in sediment trap samples decreased following the cessation of these remediation activities (see Section 4.2).

Sediment trap and surface sediment data were also comparable in terms of the congener distribution patterns (representative station ST-04 shown in Figure 15), indicating that the PCB-contaminated material depositing in the traps is representative of the material accumulating on the sediment bottom. Overall, the study data indicate that sediment trap and surface sediments at the NWS area are fairly comparable, both in terms of concentration levels and composition.

4.4 Potential Sediment Recontamination

Long-term monitoring of PCBs in surface sediments has been conducted at the NWS area to assess the efficacy of the remediation activities conducted in 2002-2003 and again in December 2005. Three of the long-term monitoring locations correspond to locations sampled under the sediment trap study (i.e., ST-01, ST-02, and ST-03). While the types of sediment sampled varied between the studies⁵, the PCB data are informative with respect to assessing potential sediment recontamination at the NWS area. Total PCB concentrations measured in sediment cores, surface sediment, and sediment trap samples at stations ST-01, ST-02, and ST-03 are shown in Figures 17 through 19.

The sediment trap study showed that PCB-contaminated sediment material has deposited at the NWS study area, contributing to short-term changes to the PCB levels in the uppermost sediment material. While the long-term monitoring data did not reveal any substantial recontamination (Battelle, 2007a and 2008), a small increase in PCB concentrations has been observed since 2005 in sediment cores sampled at the co-located trap stations (Figures 17-19). Post-depositional processes such as bioturbation and resuspension continue to mix surface and subsurface sediment which probably explains why the post-remediation PCB increase is relatively small in the sediment cores and more evident in the sediment trap samples.

Overall, the sediment trap study showed that sediment deposition rates and PCB concentrations in the depositing sediment material varied over space and time at the NWS area, likely reflecting

⁴ Depending on the location, total PCB concentrations in the sediment traps were as much as 4× higher compared to levels in co-located surface sediments.

⁵ The long-term monitoring program sampled sediment cores and analyzed the surface 6 inches or 0-15 cm for PCBs. The sediment trap study sampled surface (0-2 cm) sediment and sediment traps (<1 cm) for PCB testing.



the natural variability of a highly dynamic system and influence from human activities such as remedial dredging activities. Resuspension and transport of sediments to the NWS area from other parts of New Bedford Harbor is a concern because the resuspended sediment material could be a source of PCB contamination to the NWS area. PCB data from the long-term monitoring and sediment trap studies, however, suggest that substantial recontamination has not occurred (in the surface 15 cm) at the NWS area. The small post-remediation increase in PCBs observed at some locations within the greater NWS area suggests that continued monitoring would be valuable to assess site conditions and better understand potential impacts ongoing remediation activities at New Bedford Harbor may have on the NWS area.



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Tables



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Table 1. Summary of Sediment Trap and Surface Sediment Samples Collected for Physical and Chemical Testing

Deployment Period	Deployment Duration (day)	Activity	Sample ID	Station ID	Test Parameter
SEDIMENT TRAP SAMPLES					
Deployment 1					
10/2/07-10/31/07	29	Dredging & debris removal at Area H started 8/6/2007, ended 10/9/2007	ST-01-103107-1	ST-01	PCB, Grain Size, TOC
			ST-01-103107-2		
			ST-01-103107-3		
			ST-02-103107-1	ST-02	PCB
			ST-02-103107-2		Grain Size, TOC
			ST-03-103107-1	ST-03	PCB
			ST-03-103107-2		Grain Size, TOC
			ST-04-103107-1	ST-04	PCB
ST-04-103107-2	Grain Size, TOC				
Deployment 2					
11/7/07-12/10/07	33	No dredging	ST-01-121007-1	ST-01	PCB; Grain Size, TOC
			ST-01-121007-2		
			ST-01-121007-3		
			ST-02-121007-1	ST-02	PCB
			ST-02-121007-2		Grain Size, TOC
			ST-03-121007-1	ST-03	PCB
			ST-03-121007-2		Grain Size, TOC
			ST-04-121007-1	ST-04	PCB
ST-04-121007-2	Grain Size, TOC				
Deployment 3					
3/14/08-4/15/08	32	No dredging	ST-01-041508-A	ST-01	Archive
			ST-01-041508-B		PCB, Grain Size, TOC
			ST-01-041508-C		PCB, Grain Size, TOC
			ST-02-041508-A	ST-02	PCB
			ST-02-041508-B		Grain Size, TOC
			ST-03-041508-A	ST-03	PCB
			ST-03-041508-B		Grain Size, TOC
			ST-04-041508-A	ST-04	PCB
ST-04-041508-B	Grain Size, TOC				
Deployment 4					
4/15/08-5/15/08	30	No dredging	ST-01-051508-A	ST-01	Archive
			ST-01-051508-B		PCB, Grain Size, TOC
			ST-01-051508-C		PCB, Grain Size, TOC
			ST-02-051508-A	ST-02	PCB
			ST-02-051508-B		Grain Size, TOC
			ST-03-051508-A	ST-03	PCB
			ST-03-051508-B		Grain Size, TOC
			ST-04-051508-A	ST-04	PCB
			ST-04-051508-B		Grain Size, TOC
			SS01-042208DUP	ST-02	PCB, Grain Size, TOC
			SS02-042208		PCB, Grain Size, TOC
			SS03-042208		PCB, Grain Size, TOC
SS04-042208	PCB, Grain Size, TOC				



Table 1. (cont)

Deployment Period	Deployment Duration (day)	Activity	Sample ID	Station ID	Test Parameter
Deployment 5					
5/15/08-6/11/08	27	Aerovox shoreline excavation started 6/2/08, ended 7/23/08	ST-01-061108-A	ST-01	Archive
			ST-01-061108-B		PCB, Grain Size, TOC
			ST-01-061108-C		PCB, Grain Size, TOC
			ST-02-061108-A	ST-02	PCB
			ST-02-061108-B		Grain Size, TOC
			ST-03-061108-A	ST-03	PCB
			ST-03-061108-B		Grain Size, TOC
			ST-04-061108-A	ST-04	PCB
ST-04-061108-B	Grain Size, TOC				
Deployment 6					
6/11/08-7/10/08	29	Aerovox shoreline excavation started 6/2/08, ended 7/23/08	ST-01-071008-A	ST-01	Archive
			ST-01-071008-B		PCB, Grain Size, TOC
			ST-01-071008-C		PCB, Grain Size, TOC
			ST-02-071008-A	ST-02	PCB
			ST-02-071008-B		Grain Size, TOC
			ST-03-071008-A	ST-03	PCB
			ST-03-071008-B		Grain Size, TOC
			ST-04-071008-A	ST-04	PCB
ST-04-071008-B	Grain Size, TOC				
Deployment 7					
7/10/08-7/31/08	21	Aerovox shoreline excavation started 6/2/08, ended 7/23/08	ST-01-073108-A	ST-01	Archive
			ST-01-073108-B		PCB, Grain Size, TOC
			ST-01-073108-C		PCB, Grain Size, TOC
			ST-02-073108-A	ST-02	PCB
			ST-02-073108-B		Grain Size, TOC
			ST-03-073108-A	ST-03	PCB
			ST-03-073108-B		Grain Size, TOC
			ST-04-073108-A	ST-04	PCB
ST-04-073108-B	Grain Size, TOC				
Deployment 8					
7/31/2008-8/25/08	25	Pierce Mill Cove dredging started 8/18/08, ended 10/21/08	ST-01-082508-A	ST-01	Archive
			ST-01-082508-B		PCB, Grain Size, TOC
			ST-01-082508-C		PCB, Grain Size, TOC
			ST-02-082508-A	ST-02	PCB
			ST-02-082508-B		Grain Size, TOC
			ST-03-082508-A	ST-03	PCB
			ST-03-082508-B		Grain Size, TOC
			ST-04-082508-A	ST-04	PCB
ST-04-082508-B	Grain Size, TOC				
Deployment 9					
8/25/08-10/2/08	38	Pierce Mill Cove dredging started	ST-01-100208-A	ST-01	Archive
			ST-01-100208-B		PCB, Grain Size, TOC
			ST-01-100208-C		PCB, Grain Size, TOC
			ST-02-100208-A	ST-02	PCB



Table 1. (cont)

Deployment Period	Deployment Duration (day)	Activity	Sample ID	Station ID	Test Parameter
		8/18/08, ended 10/21/08	ST-02-100208-B	ST-03	Grain Size, TOC
			ST-03-100208-A		PCB
			ST-03-100208-B		Grain Size, TOC
			ST-04-100208-A	ST-04	PCB, Grain Size, TOC
			ST-04-100208-B		Not used; insufficient mass for analysis
Deployment 10					
10/2/08 - 10/30/08	28	Pierce Mill Cove dredging started 8/18/08, ended 10/21/08	ST-01-103008-A	ST-01	Archive
			ST-01-103008-B		PCB, Grain Size, TOC
			ST-01-103008-C		PCB, Grain Size, TOC
			ST-02-103008-A	ST-02	PCB
			ST-02-103008-B		Grain Size, TOC
			ST-03-103008-A	ST-03	PCB
			ST-03-103008-B		Grain Size, TOC
			ST-04-103008-A	ST-04	PCB
ST-04-103008-B	Grain Size, TOC				
SURFACE (0-2 CM) SEDIMENT SAMPLES					
Event 1 (post 2007 dredge)					
11/12/07	NA	No dredging	SS-ST01-111207	ST-01	PCB, Grain Size, TOC
			SS-ST01-111207-DUP		PCB, Grain Size, TOC
			SS-ST02-111207	ST-02	PCB, Grain Size, TOC
			SS-ST03-111207	ST-03	PCB, Grain Size, TOC
			SS-ST04-111207	ST-04	PCB, Grain Size, TOC
Event 2 (pre 2008 dredge)					
4/22/08	NA	No dredging	SS01-042208	ST-01	PCB, Grain Size, TOC
			SS01-042208DUP		PCB, Grain Size, TOC
			SS02-042208	ST-02	PCB, Grain Size, TOC
			SS03-042208	ST-03	PCB, Grain Size, TOC
			SS04-042208	ST-04	PCB, Grain Size, TOC

¹ PCB testing conducted by BDL; Grain size and TOC testing conducted by AMS.



Table 2. Summary of Sediment Mass Collected During Sediment Trap Deployments

Sample ID	Sediment Trap Wet Weight (g)	Replicate Precision RSD/RPD ¹ (%)	Percent Moisture ² (%)	Sediment Trap Dry Weight ³ (g)	Replicate Precision RSD/RPD ⁴ (%)
Deployment 1 (10/2/07 to 10/31/07)					
ST-01-103107-1	29.55	18	42 (74)	12.5	19
ST-01-103107-2	28.69		44 (75)	11.6	
ST-01-103107-3	20.84		44 (75)	8.5	
ST-02-103107-1	23.6	52	49	11.9	6
ST-02-103107-2	40.04		(72)	11.2	
ST-03-103107-1	33.93	15	53	15.8	43
ST-03-103107-2	39.41		(74)	10.2	
ST-04-103107-1	26.45	79	53	12.3	42
ST-04-103107-2	61.08		(69)	18.9	
Deployment 2 (11/7/07 to 12/10/07)					
ST-01-121007-1	18.2	23	52 (81)	6.1	26
ST-01-121007-2	11.4		65 (73)	3.5	
ST-01-121007-3	15.7		59 (78)	5.0	
ST-02-121007-1	22.2	54	55	9.9	21
ST-02-121007-2	38.5		(79)	8.1	
ST-03-121007-1	38.5	66	58	16.3	97
ST-03-121007-2	19.5		(71)	5.7	
ST-04-121007-1	29.5	22	62	11.3	2
ST-04-121007-2	36.7		(70)	11.0	
Deployment 3 (3/14/08 to 4/15/08)					
ST-01-041508-A	12.83	17	NM	NM	NM
ST-01-041508-B	15.34		75 (76)	3.7	23
ST-01-041508-C	18.22		74 (75)	4.7	
ST-02-041508-A	16.36	11	75	4.1	7
ST-02-041508-B	18.32		(76)	4.4	
ST-03-041508-A	16.09	4	74	4.2	8
ST-03-041508-B	16.81		(73)	4.5	
ST-04-041508-A	21.54	2	76	5.2	6
ST-04-041508-B	21.16		(74)	5.5	
Deployment 4 (4/15/08 to 5/15/08)					
ST-01-051508-A	61.98	29	NM	NM	NM
ST-01-051508-B	38.17		84 (85)	5.9	6
ST-01-051508-C	39.21		84 (84)	6.3	
ST-02-051508-A	21.17	28	76	5.0	44
ST-02-051508-B	16.04		(80)	3.2	
ST-03-051508-A	16.1	26	80	3.2	49
ST-03-051508-B	21.01		(75)	5.3	
ST-04-051508-A	11.74	11	79	2.5	11
ST-04-051508-B	13.14		(79)	2.8	
Deployment 5 (5/15/08 to 6/11/08)					
ST-01-061108-A	48.62	8	NM	NM	NM
ST-01-061108-B	48.08		79 (71)	12.0	18
ST-01-061108-C	41.74		76 (76)	10.0	



Table 2. (cont)

Sample ID	Sediment Trap Wet Weight (g)	Replicate Precision RSD/RPD ¹ (%)	Percent Moisture ² (%)	Sediment Trap Dry Weight ³ (g)	Replicate Precision RSD/RPD ⁴ (%)
Deployment 5 (5/15/08 to 6/11/08)					
ST-02-061108-A	108.75	72	68	34.9	72
ST-02-061108-B	51.38		(68)	16.4	
ST-03-061108-A	30.49	26	77	7.1	28
ST-03-061108-B	23.42		(77)	5.4	
ST-04-061108-A	21.84	3	73	5.9	34
ST-04-061108-B	21.16		(80)	4.2	
Deployment 6 (6/11/08 to 7/10/08)					
ST-01-071008-A	52.07	27	NM	NM	NM
ST-01-071008-B	30.57		78 (80)	6.3	63
ST-01-071008-C	51.22		76 (76)	12.2	
ST-02-071008-A	43.96	6	73	11.8	14
ST-02-071008-B	41.26		(75)	10.3	
ST-03-071008-A	37.56	32	76	9.0	27
ST-03-071008-B	27.27		(75)	6.8	
ST-04-071008-A	42.95	11	75	10.7	7
ST-04-071008-B	38.34		(74)	10.0	
Deployment 7 (7/10/08 to 7/31/08)					
ST-01-073108-A	26.06	56	NM	NM	NM
ST-01-073108-B	57.05		73 (68)	17.0	104
ST-01-073108-C	21.13		78 (71)	5.4	
ST-02-073108-A	98.85	88	69	30.3	92
ST-02-073108-B	38.51		(71)	11.2	
ST-03-073108-A	41.5	19	74	10.7	19
ST-03-073108-B	50.05		(74)	13.0	
ST-04-073108-A	62.45	18	72	17.8	27
ST-04-073108-B	52.25		(74)	13.6	
Deployment 8 (7/31/08 to 8/25/08)					
ST-01-082508-A	73.14	30	NM	NM	NM
ST-01-082508-B	39.79		70 (70)	11.8	34
ST-01-082508-C	55.56		70 (70)	16.6	
ST-02-082508-A	76.94	8	68	24.4	11
ST-02-082508-B	70.76		(69)	21.9	
ST-03-082508-A	61.57	31	71	17.8	38
ST-03-082508-B	83.93		(69)	26.0	
ST-04-082508-A	15.31	130	80	3.1	155
ST-04-082508-B	71.77		(66)	24.4	
Deployment 9 (8/25/08 to 10/2/08)					
ST-01-100208-A	76.52	27	NM	NM	NM
ST-01-100208-B	59.01		73 (72)	16.2	28
ST-01-100208-C	43.91		73 (72)	12.2	
ST-02-100208-A	189.25	108	73	51.7	117
ST-02-100208-B	56.42		(76)	13.5	



Table 2. (cont)

Sample ID	Sediment Trap Wet Weight (g)	Replicate Precision RSD/RPD ¹ (%)	Percent Moisture ² (%)	Sediment Trap Dry Weight ³ (g)	Replicate Precision RSD/RPD ⁴ (%)
ST-03-100208-A	94.12	40	71	27.6	44
ST-03-100208-B	62.81		(72)	17.6	
ST-04-100208-A	31.6	NA	75 (69)	8.8	NA
ST-04-100208-B	Limited material collected. No weight measurement performed.				
Deployment 10 (10/2/08 to 10/30/08)					
ST-01-103008-A	30.4	11	NM	NM	1
ST-01-103008-B	26.2		74 (69)	7.5	
ST-01-103008-C	32.8		78 (76)	7.5	
ST-02-103008-A	97.6	23	69	30.6	34
ST-02-103008-B	77.7		(72)	21.8	
ST-03-103008-A	45.7	23	72	12.8	34
ST-03-103008-B	36.3		(75)	9.1	
ST-04-103008-A	28.1	29	75	7.1	24
ST-04-103008-B	37.6		(76)	9.0	

Notes:

NM = not measured; RSD = relative standard deviation; RPD = relative percent difference.

¹Precision results determined using wet weight data.

²Percent Moisture measured by BDL and AMS; results reported as BDL value (AMS value).

³Sediment Trap Dry Weight = Sediment Trap Wet Weight*(100 - % Moisture)/100. When % Moisture results from both labs were available, average of the two values was used.

⁴Precision results determined using dry weight data.



Table 3. Grain Size and TOC in Sediment Trap and Surface Sediment Samples

Sample ID	TOC (%)	Gravel (%)	Coarse Sand (%)	Medium Sand (%)	Fine Sand (%)	Silt (%)	Clay (%)	Total Sand ¹ (%)	Percent Fines ² (%)
SEDIMENT TRAP SAMPLES									
Deployment 1 (10/2/07 to 10/31/07)									
ST-01-103107-1	12.41	0.00	0.00	0.12	1.01	40.61	58.26	1.13	98.87
ST-02-103107-2	11.36	0.00	0.00	0.11	0.68	53.38	45.83	0.79	99.21
ST-03-103107-2	10.14	0.53	0.08	0.29	1.14	47.07	50.89	1.51	97.96
ST-04-103107-2	10.10	0.00	0.13	0.29	1.39	60.04	38.15	1.81	98.19
Deployment 2 (11/7/07 to 12/10/07)									
ST-01-121007-1	11.85	0.00	0.00	0.24	1.60	53.17	44.99	1.84	98.16
ST-02-121007-2	10.44	0.00	0.00	0.06	1.34	46.77	51.83	1.40	98.60
ST-03-121007-2	9.72	0.00	0.00	0.02	1.58	48.02	50.38	1.60	98.40
ST-04-121007-2	10.53	0.00	0.00	0.88	2.36	59.23	37.53	3.24	96.76
Deployment 3 (3/14/08 to 4/15/08)									
ST-01-041508-B	13.05	0.00	0.00	0.83	4.37	29.64	65.16	5.20	94.80
ST-02-041508-B	12.61	0.00	0.00	0.75	4.41	47.00	47.84	5.16	94.84
ST-03-041508-B	9.18	0.00	0.00	0.90	2.41	57.96	38.73	3.31	96.69
ST-04-041508-B	10.57	0.00	0.00	0.28	2.02	39.58	58.12	2.30	97.70
Deployment 4 (4/15/08 to 5/15/08)									
ST-01-051508-B	16.36	0.00	0.00	0.00	0.67	39.25	60.08	0.67	99.33
ST-02-051508-B	11.77	0.00	0.00	0.00	0.17	40.20	59.63	0.17	99.83
ST-03-051508-B	11.72	0.00	0.00	0.00	1.35	39.60	59.05	1.35	98.65
ST-04-051508-B	9.89	0.00	0.00	0.00	0.87	39.71	59.42	0.87	99.13
Deployment 5 (5/15/08 to 6/11/08)									
ST-01-061108-B	15.45	0.00	0.00	0.24	0.75	25.56	73.45	0.99	99.01
ST-02-061108-B	11.20	0.00	0.00	0.01	1.01	39.02	59.96	1.02	98.98
ST-03-061108-B	10.79	0.00	0.00	0.20	0.99	35.88	62.93	1.19	98.81
ST-04-061108-B	11.44	0.00	0.00	0.13	0.27	29.62	69.98	0.40	99.60
Deployment 6 (6/11/08 to 7/10/08)									
ST-01-071008-B	12.89	0.00	0.00	0.12	0.32	44.28	55.28	0.44	99.56
ST-02-071008-B	15.01	0.00	0.10	0.36	0.27	36.49	62.78	0.73	99.27
ST-03-071008-B	12.10	0.00	0.00	0.21	0.49	24.93	74.37	0.70	99.30
ST-04-071008-B	10.62	0.00	0.00	0.37	0.77	32.80	66.06	1.14	98.86
Deployment 7 (7/10/08 to 7/31/08)									
ST-01-073108-B	16.25	0.00	0.00	0.12	5.24	18.45	76.19	5.36	94.64
ST-02-073108-B	13.70	0.00	0.00	0.21	0.49	15.14	84.16	0.70	99.30
ST-03-073108-B	11.29	0.00	0.00	0.05	0.50	27.95	71.50	0.55	99.45
ST-04-073108-B	11.71	0.00	0.00	0.06	0.43	23.49	76.02	0.49	99.51
Deployment 8 (7/31/08 to 8/25/08)									
ST-01-082508-B	12.68	0.00	0.00	0.00	2.70	20.45	76.85	2.70	97.30
ST-02-082508-B	13.88	0.00	0.00	0.00	1.84	26.53	71.63	1.84	98.16
ST-03-082508-B	11.83	0.00	0.05	0.36	2.22	32.37	65.00	2.63	97.37
ST-04-082508-B	12.59	0.00	0.00	0.08	1.81	15.46	82.65	1.89	98.11
Deployment 9 (8/25/08 to 10/2/08)									
ST-01-100208-B	15.41	0.00	0.00	0.14	4.99	43.15	51.72	5.13	94.87
ST-02-100208-B	23.83	0.00	0.00	2.07	1.35	57.83	38.75	3.42	96.58
ST-03-100208-B	12.39	0.00	0.00	0.06	2.72	45.59	51.63	2.78	97.22
ST-04-100208-A	13.58	0.00	0.00	0.76	1.65	10.89	86.70	2.41	97.59



Table 3. (cont)

Sample ID	TOC (%)	Gravel (%)	Coarse Sand (%)	Medium Sand (%)	Fine Sand (%)	Silt (%)	Clay (%)	Total Sand ¹ (%)	Percent Fines ² (%)
SEDIMENT TRAP SAMPLES									
Deployment 10 (10/2/08 to 10/30/08)									
ST-01-103008-B	13.38	0.00	5.13	2.69	5.69	35.27	51.22	13.51	86.49
ST-02-103008-B	16.97	0.00	6.08	4.56	2.69	54.36	32.31	13.33	86.67
ST-03-103008-B	13.05	0.00	0.00	0.20	1.35	33.62	64.83	1.55	98.45
ST-04-103008-B	12.21	0.00	0.00	0.25	1.69	30.28	67.78	1.94	98.06
SURFACE (0-2 CM) SEDIMENT SAMPLES									
Event 1 (post 2007 Dredge)									
SS-ST01-111207	15.47	0.00	0.00	0.12	3.58	49.86	46.44	3.70	96.30
SS-ST02-111207	7.91	6.30	1.72	6.06	26.36	36.41	23.15	34.14	59.56
SS-ST03-111207	1.84	5.35	4.30	18.70	36.80	21.95	12.90	59.80	34.85
SS-ST04-111207	7.77	2.45	4.11	6.14	6.02	53.06	28.22	16.27	81.28
Event 2 (pre 2008 Dredge)									
SS01-042208	12.16	0.00	0.00	0.68	6.67	61.27	31.38	7.35	92.65
SS02-042208	9.31	0.00	0.57	2.15	13.91	44.07	39.30	16.63	83.37
SS03-042208	8.07	0.00	0.00	2.09	12.78	56.13	29.00	14.87	85.13
SS04-042208	3.33	19.38	11.40	20.92	12.87	23.92	11.51	45.19	35.43
FIELD REPLICATE DATA									
SEDIMENT TRAP SAMPLES									
Deployment 1 (10/2/07 to 10/31/07)									
ST-01-103107-1	12.41	0.00	0.00	0.12	1.01	40.61	58.26	1.13	98.87
ST-01-103107-2	14.40	0.00	0.00	0.06	0.20	45.16	54.58	0.26	99.74
ST-01-103107-3	13.75	0.00	0.00	0.05	0.43	49.37	50.15	0.48	99.52
RSD	7.5%	NA	NA	49.4%	76.4%	9.7%	7.5%	72.6%	0.5%
Deployment 2 (11/7/07 to 12/10/07)									
ST-01-121007-1	11.85	0.00	0.00	0.24	1.60	53.17	44.99	1.84	98.16
ST-01-121007-2	11.14	0.00	0.00	1.53	1.32	48.27	48.88	2.85	97.15
ST-01-121007-3	12.50	0.00	0.00	2.26	1.52	33.58	62.64	3.78	96.22
RSD	5.7%	NA	NA	76.1%	9.7%	22.7%	17.8%	34.4%	1.0%
Deployment 3 (3/14/08 to 4/15/08)									
ST-01-041508-B	13.05	0.00	0.00	0.83	4.37	29.64	65.16	5.20	94.80
ST-01-041508-C	12.66	0.00	0.00	1.88	4.02	21.73	72.37	5.90	94.10
RPD	3.0%	NA	NA	77.5%	8.3%	30.8%	10.5%	12.6%	0.7%
Deployment 4 (4/15/08 to 5/15/08)									
ST-01-051508-B	16.36	0.00	0.00	0.00	0.67	39.25	60.08	0.67	99.33
ST-01-051508-C	17.19	0.00	0.00	0.00	0.52	54.12	45.36	0.52	99.48
RPD	4.9%	NA	NA	NA	25.2%	31.9%	27.9%	25.2%	0.2%
Deployment 5 (5/15/08 to 6/11/08)									
ST-01-061108-B	15.45	0.00	0.00	0.24	0.75	25.56	73.45	0.99	99.01
ST-01-061108-C	15.54	0.00	0.34	0.16	0.70	20.34	78.46	1.20	98.80
RPD	0.6%	NA	200%	40.0%	6.9%	22.7%	6.6%	19.2%	0.2%



Table 3. (cont)

Sample ID	TOC (%)	Gravel (%)	Coarse Sand (%)	Medium Sand (%)	Fine Sand (%)	Silt (%)	Clay (%)	Total Sand ¹ (%)	Percent Fines ² (%)
Deployment 6 (6/11/08 to 7/10/08)									
ST-01-071008-B	12.89	0.00	0.00	0.12	0.32	44.28	55.28	0.44	99.56
ST-01-071008-C	14.02	0.00	0.00	0.62	2.34	47.10	49.94	2.96	97.04
RPD	8.4%	NA	NA	135%	152%	6.2%	10.2%	148%	2.6%
Deployment 7 (7/10/08 to 7/31/08)									
ST-01-073108-B	16.25	0.00	0.00	0.12	5.24	18.45	76.19	5.36	94.64
ST-01-073108-C	12.40	0.00	0.00	0.60	2.19	25.62	71.59	2.79	97.21
RPD	26.9%	NA	NA	133%	82.1%	32.5%	6.2%	63.1%	2.7%
Deployment 8 (7/31/08 to 8/25/08)									
ST-01-082508-B	12.68	0.00	0.00	0.00	2.70	20.45	76.85	2.70	97.30
ST-01-082508-C	13.06	0.00	0.00	0.04	3.15	31.69	65.12	3.19	96.81
RPD	3.0%	NA	NA	200%	15.4%	43.1%	16.5%	16.6%	0.5%
Deployment 9 (8/25/08 to 10/2/08)									
ST-01-100208-B	15.41	0.00	0.00	0.14	4.99	43.15	51.72	5.13	94.87
ST-01-100208-C	15.37	0.00	0.00	0.40	3.41	31.35	64.84	3.81	96.19
RPD	0.3%	NA	NA	96.3%	37.6%	31.7%	22.5%	29.5%	1.4%
Deployment 10 (10/2/08 to 10/30/08)									
ST-01-103008-B	13.38	0.00	5.13	2.69	5.69	35.27	51.22	13.51	86.49
ST-01-103008-C	13.21	0.00	0.05	1.43	4.18	36.20	58.14	5.66	94.34
RPD	1.3%	NA	196%	61.2%	30.6%	2.6%	12.7%	81.9%	8.7%
SURFACE SEDIMENTS									
Event 1 (post 2007 Dredge)									
SS-ST01-111207	15.47	0.00	0.00	0.12	3.58	49.86	46.44	3.70	96.30
SS-ST01-111207-DUP	12.25	0.00	0.00	0.16	1.64	49.17	49.03	1.80	98.20
RPD	23.2%	NA	NA	28.6%	74.3%	1.4%	5.4%	69.1%	2.0%
Event 2 (pre 2008 Dredge)									
SS01-042208	12.16	0.00	0.00	0.68	6.67	61.27	31.38	7.35	92.65
SS01-042208DUP	12.92	0.00	0.24	1.05	6.30	63.96	28.45	7.59	92.41
RPD	6.1%	NA	200%	42.8%	5.7%	4.3%	9.8%	3.2%	0.3%

Notes:

RSD = relative standard deviation; RPD = relative percent difference.

¹Total Sand (%) = Coarse Sand (%) + Medium Sand (%) + Fine Sand (%)

²Percent Fines (%) = Silt (%) + Clay (%)



Table 4. Total PCB in Sediment Trap and Surface Sediment Samples

Station	Sample ID	Total PCB ¹ (mg/kg dry weight)		Precision (RPD/RSD)
		Original Sample	Field Replicate Sample(s)	
SEDIMENT TRAP SAMPLES				
Deployment 1 (10/2/07 to 10/31/07)				
ST-01	ST-01-103107-1	127.95	47.51, 45.17	64%
ST-02	ST-02-103107-1	287.65	—	—
ST-03	ST-03-103107-1	250.45	—	—
ST-04	ST-04-103107-1	344.61	—	—
Deployment 2 (11/7/07 to 12/10/07)				
ST-01	ST-01-121007-1	31.53	70.83, 56.35	38%
ST-02	ST-02-121007-1	215.31	—	—
ST-03	ST-03-121007-1	104.51	—	—
ST-04	ST-04-121007-1	168.38	—	—
Deployment 3 (3/14/08 to 4/15/08)				
ST-01	ST-01-041508-B	56.66	64.58	13%
ST-02	ST-02-041508-A	120.27	—	—
ST-03	ST-03-041508-A	113.48	—	—
ST-04	ST-04-041508-A	207.52	—	—
Deployment 4 (4/15/08 to 5/15/08)				
ST-01	ST-01-051508-B	71.50	77.63	8%
ST-02	ST-02-051508-A	149.17	—	—
ST-03	ST-03-051508-A	113.21	—	—
ST-04	ST-04-051508-A	135.17	—	—
Deployment 5 (5/15/08 to 6/11/08)				
ST-01	ST-01-061108-B	177.12	180.49	2%
ST-02	ST-02-061108-A	203.87	—	—
ST-03	ST-03-061108-A	220.05	—	—
ST-04	ST-04-061108-A	236.82	—	—
Deployment 6 (6/11/08 to 7/10/08)				
ST-01	ST-01-071008-B	223.92	288.96	25%
ST-02	ST-02-071008-A	231.46	—	—
ST-03	ST-03-071008-A	215.26	—	—
ST-04	ST-04-071008-A	286.86	—	—
Deployment 7 (7/10/08 to 7/31/08)				
ST-01	ST-01-073108-B	121.75	121.06	1%
ST-02	ST-02-073108-A	220.58	—	—
ST-03	ST-03-073108-A	208.02	—	—
ST-04	ST-04-073108-A	245.49	—	—
Deployment 8 (7/31/08 to 8/25/08)				
ST-01	ST-01-082508-B	71.93	128.77	57%
ST-02	ST-02-082508-A	70.57	—	—
ST-03	ST-03-082508-A	113.83	—	—
ST-04	ST-04-082508-A	156.08	—	—



Table 4. (cont)

Station	Sample ID	Total PCB ¹ (mg/kg dry weight)		Precision (RPD/RSD)
		Original Sample	Field Replicate Sample(s)	
SEDIMENT TRAP SAMPLES				
Deployment 9 (8/25/08 to 10/2/08)				
ST-01	ST01-100208-B	76.02	69.17	9%
ST-02	ST02-100208-A	71.22	—	—
ST-03	ST03-100208-A	73.05	—	—
ST-04	ST04-100208-A	78.88	—	—
Deployment 10 (10/2/08 to 10/30/08)				
ST-01	ST-01-103008-B	92.83	78.99	16%
ST-02	ST-02-103008-A	79.72	—	—
ST-03	ST-03-103008-A	80.24	—	—
ST-04	ST-04-103008-A	83.17	—	—
SURFACE (0-2 CM) SAMPLES				
Event 1 (post 2007 Dredge)				
ST-01	SS-ST01-111207	60.25	28.52	71%
ST-02	SS-ST02-111207	86.78	—	—
ST-03	SS-ST03-111207	33.22	—	—
ST-04	SS-ST04-111207	142.96	—	—
Event 2 (pre 2008 Dredge)				
ST-01	SS01-042208	117.37	131.27	11%
ST-02	SS02-042208	128.95	—	—
ST-03	SS03-042208	151.71	—	—
ST-04	SS04-042208	42.95	—	—

Note:

RSD = relative standard deviation; RPD = relative percent difference.

¹Total PCB = 2.6 times the sum of the 18 NS&T PCB congener concentrations; a value of zero used in summation for non-detects.



Table 5. Sediment Deposition Rates and Estimated PCB Flux

Deployment Period, Duration, Activity	Sample ID	Sediment Trap Dry Weight (g)	Sediment Deposition Rate ¹ (g/m ² /day)	Total PCB Congeners (mg/kg)	Total PCB Congener Flux ² (mg/m ² /day)
Deployment 1					
10/2/07-10/31/07, 29 days, Dredging & debris removal in Area H started 8/6/2007, ended 10/9/2007.	ST-01-103107-1	12.5	13.3	127.95	1.70
	ST-01-103107-2	11.6	12.3	47.51	0.58
	ST-01-103107-3	8.5	9.0	45.17	0.41
	ST-02-103107-1	11.9	12.7	287.65	3.66
	ST-02-103107-2	11.2	11.9	—	—
	ST-03-103107-1	15.8	16.8	250.45	4.21
	ST-03-103107-2	10.2	10.9	—	—
	ST-04-103107-1	12.3	13.1	344.61	4.52
ST-04-103107-2	18.9	20.2	—	—	
Deployment 2					
11/7/07-12/10/07, 33 days, No dredging.	ST-01-121007-1	6.1	5.7	31.53	0.18
	ST-01-121007-2	3.5	3.3	70.83	0.23
	ST-01-121007-3	5.0	4.6	56.35	0.26
	ST-02-121007-1	9.9	9.3	215.31	2.00
	ST-02-121007-2	8.1	7.6	—	—
	ST-03-121007-1	16.3	15.3	104.51	1.60
	ST-03-121007-2	5.7	5.3	—	—
	ST-04-121007-1	11.3	10.6	168.38	1.78
ST-04-121007-2	11.0	10.3	—	—	
Deployment 3					
3/14/08-4/15/08, 32 days, No dredging.	ST-01-041508-B	3.7	3.6	56.66	0.20
	ST-01-041508-C	4.7	4.5	64.58	0.29
	ST-02-041508-A	4.1	4.0	120.27	0.48
	ST-02-041508-B	4.4	4.2	—	—
	ST-03-041508-A	4.2	4.0	113.48	0.46
	ST-03-041508-B	4.5	4.4	—	—
	ST-04-041508-A	5.2	5.0	207.52	1.04
	ST-04-041508-B	5.5	5.3	—	—
Deployment 4					
4/15/08-5/15/08, 30 days, No dredging.	ST-01-051508-B	5.9	6.1	71.50	0.44
	ST-01-051508-C	6.3	6.5	77.63	0.51
	ST-02-051508-A	5.0	5.2	149.17	0.77
	ST-02-051508-B	3.2	3.3	—	—
	ST-03-051508-A	3.2	3.3	113.21	0.37
	ST-03-051508-B	5.3	5.4	—	—
	ST-04-051508-A	2.5	2.5	135.17	0.34
	ST-04-051508-B	2.8	2.8	—	—
Deployment 5					
5/15/08-6/11/08, 27 days, Aerovox dredging started 6/2/08, ended 7/23/08.	ST-01-061108-B	12.0	13.7	177.12	2.43
	ST-01-061108-C	10.0	11.5	180.49	2.07
	ST-02-061108-A	34.9	39.9	203.87	8.14
	ST-02-061108-B	16.4	18.8	—	—
	ST-03-061108-A	7.1	8.1	220.05	1.79
	ST-03-061108-B	5.4	6.2	—	—
	ST-04-061108-A	5.9	6.8	236.82	1.61
	ST-04-061108-B	4.2	4.8	—	—



Table 5. (cont)

Deployment Period, Duration, Activity	Sample ID	Sediment Trap Dry Weight (g)	Sediment Deposition Rate ¹ (g/m ² /day)	Total PCB Congeners (mg/kg)	Total PCB Congener Flux ² (mg/m ² /day)
Deployment 6					
6/11/08-7/10/08, 29 days, Aerovox dredging started 6/2/08, ended 7/23/08	ST-01-071008-B	6.3	6.8	223.92	1.51
	ST-01-071008-C	12.2	13.0	288.96	3.75
	ST-02-071008-A	11.8	12.6	231.46	2.91
	ST-02-071008-B	10.3	11.0	—	—
	ST-03-071008-A	9.0	9.6	215.26	2.06
	ST-03-071008-B	6.8	7.3	—	—
	ST-04-071008-A	10.7	11.3	286.86	3.25
ST-04-071008-B	10.0	10.6	—	—	
Deployment 7					
7/10/08-7/31/08, 21 days, Aerovox dredging started 6/2/08, ended 7/23/08.	ST-01-073108-B	17.0	24.9	121.75	3.03
	ST-01-073108-C	5.4	7.9	121.06	0.96
	ST-02-073108-A	30.3	44.6	220.58	9.84
	ST-02-073108-B	11.2	16.4	—	—
	ST-03-073108-A	10.7	15.8	208.02	3.28
	ST-03-073108-B	13.0	19.1	—	—
	ST-04-073108-A	17.8	26.1	245.49	6.42
ST-04-073108-B	13.6	20.0	—	—	
Deployment 8					
7/31/2008-8/25/08, 25 days, Pierce Mill Cove dredging started 8/18/08, ended 10/21/08.	ST-01-082508-B	11.8	14.6	71.93	1.05
	ST-01-082508-C	16.6	20.5	128.77	2.65
	ST-02-082508-A	24.4	30.1	70.57	2.13
	ST-02-082508-B	21.9	27.1	—	—
	ST-03-082508-A	17.8	21.9	113.83	2.49
	ST-03-082508-B	26.0	32.1	—	—
	ST-04-082508-A	3.1	3.8	156.09	0.59
ST-04-082508-B	24.4	30.1	—	—	
Deployment 9					
8/25/08-10/2/08, 38 days, Pierce Mill Cove dredging started 8/18/08, ended 10/21/08.	ST-01-100208-B	16.2	13.1	76.02	1.00
	ST-01-100208-C	12.2	9.9	69.17	0.68
	ST-02-100208-A	51.7	42.0	71.22	2.99
	ST-02-100208-B	13.5	11.0	—	—
	ST-03-100208-A	27.6	22.4	73.05	1.64
	ST-03-100208-B	17.6	14.3	—	—
	ST-04-100208-A	8.8	7.2	78.88	0.57
Deployment 10					
10/2/08 - 10/30/08, 28 days, Pierce Mill Cove dredging started 8/18/08, ended 10/21/08.	ST-01-103008-B	7.5	8.2	92.83	0.76
	ST-01-103008-C	7.5	8.3	78.99	0.66
	ST-02-103008-A	30.6	33.8	79.72	2.69
	ST-02-103008-B	21.8	24.0	—	—
	ST-03-103008-A	12.8	14.1	80.24	1.13
	ST-03-103008-B	9.1	10.0	—	—
	ST-04-103008-A	7.1	7.8	83.17	0.65
ST-04-103008-B	9.0	9.9	—	—	

Notes:

¹ Sediment Deposition Rate = Sediment Trap Dry Weight / Deployment Duration / Area of Sediment Trap (0.0324 m²)

² Total PCB Flux = (Total PCB × Deposition Rate)/1000



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Figures



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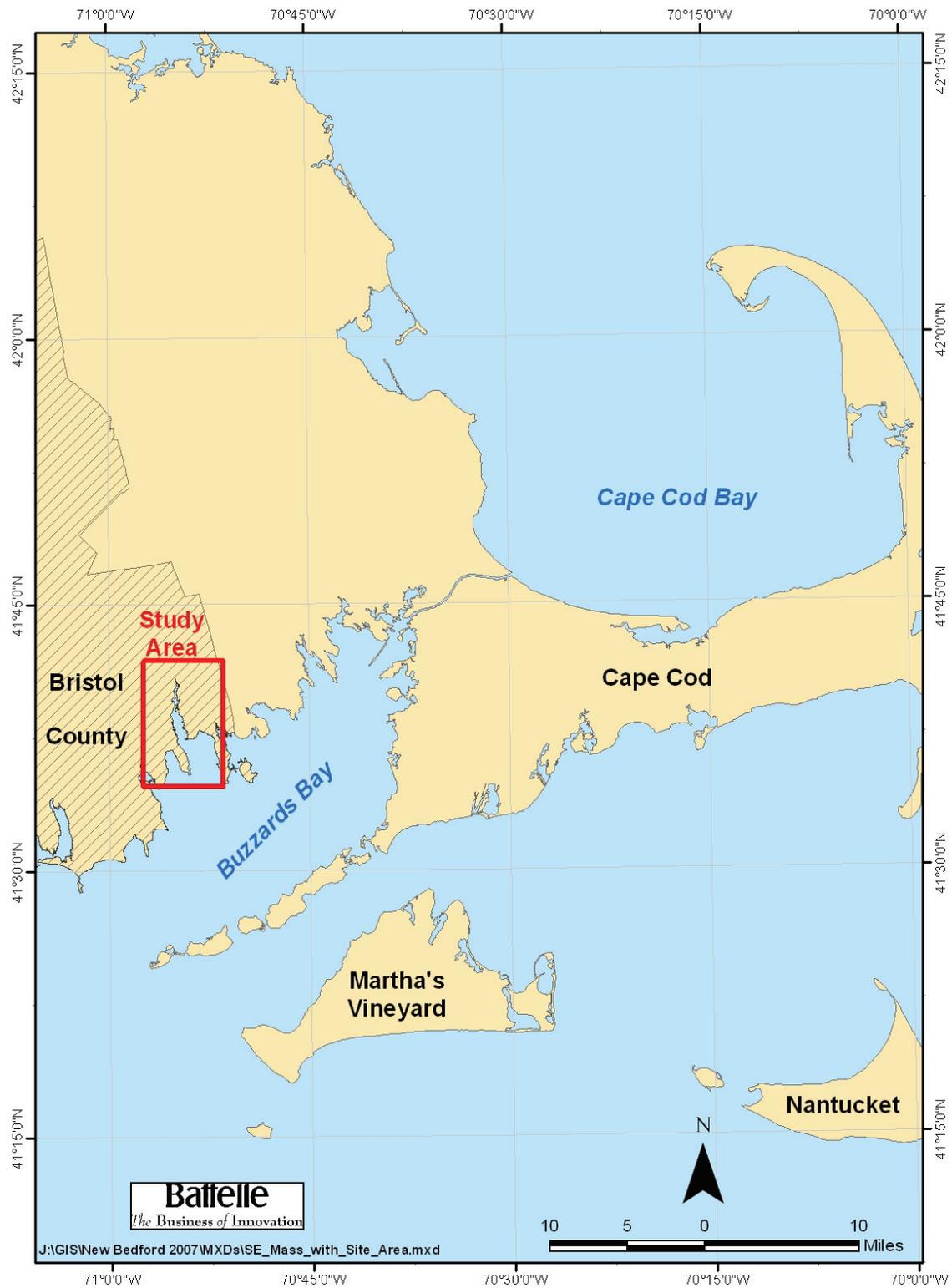


Figure 1. Location of the New Bedford Harbor Site in Southeastern, MA.



Figure 2. Overview of New Bedford Harbor Site.

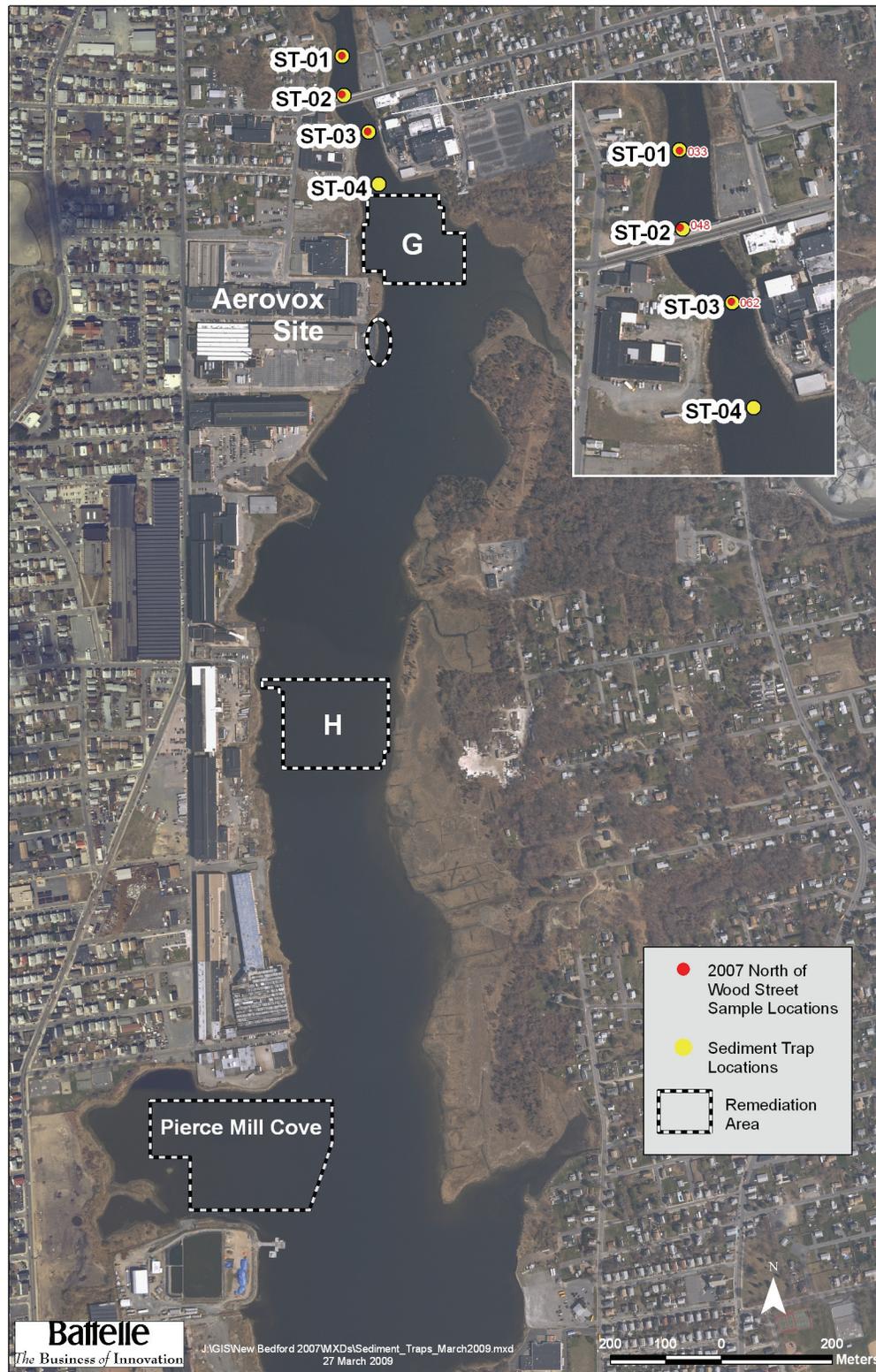


Figure 3. Sediment Trap Study Locations and 2007 and 2008 Remediation Areas.

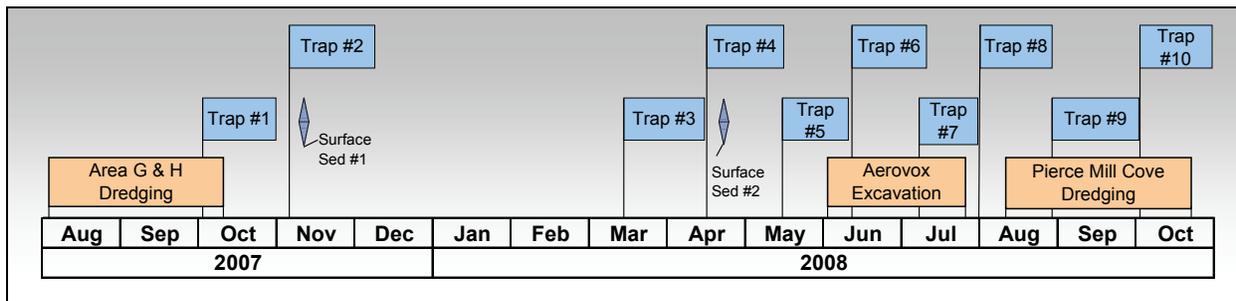


Figure 4. Sediment Trap Study Timeline. See Table 1 for Specific Collection Dates.



Figure 5. Pictures of Sediment Traps before Deployment (Top), During Deployment (Bottom), and Recovery (Bottom).

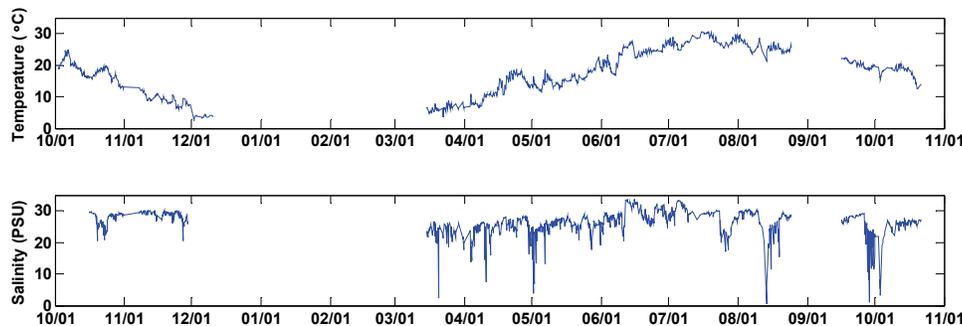


Figure 6. *In situ* Temperature and Salinity Data at ST-03 from October 2007 to October 2008. (showing all data when sensor depth >1m; mooring not deployed between December 11, 2007 and March 13, 2008 due to icing conditions)

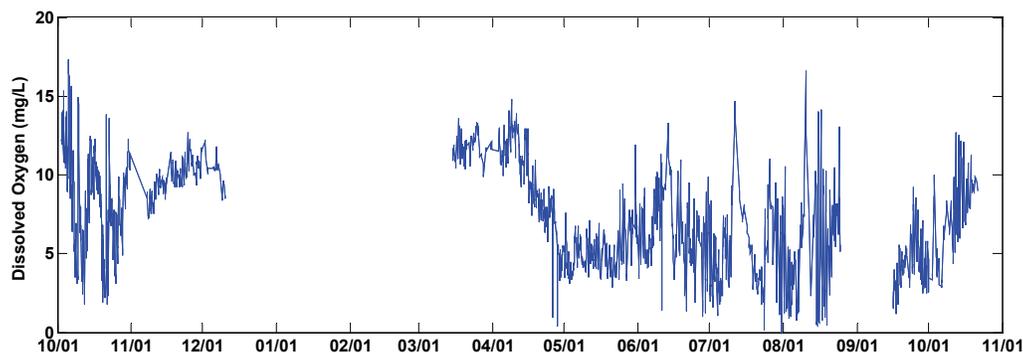


Figure 7. *In situ* Dissolved Oxygen Data at ST-03 from October 2007 to October 2008. (mooring not deployed between December 11, 2007 and March 13, 2008 due to icing conditions)

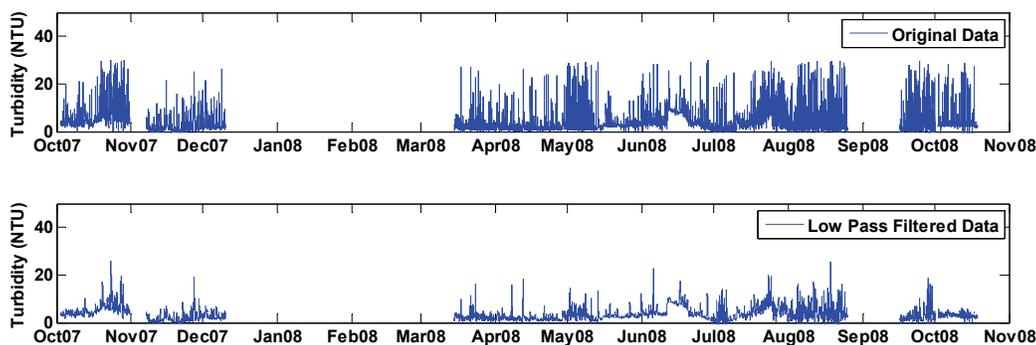


Figure 8. *In situ* Turbidity Data at ST-03 from October 2007 to October 2008. (mooring not deployed between December 11, 2007 and March 13, 2008 due to icing conditions)

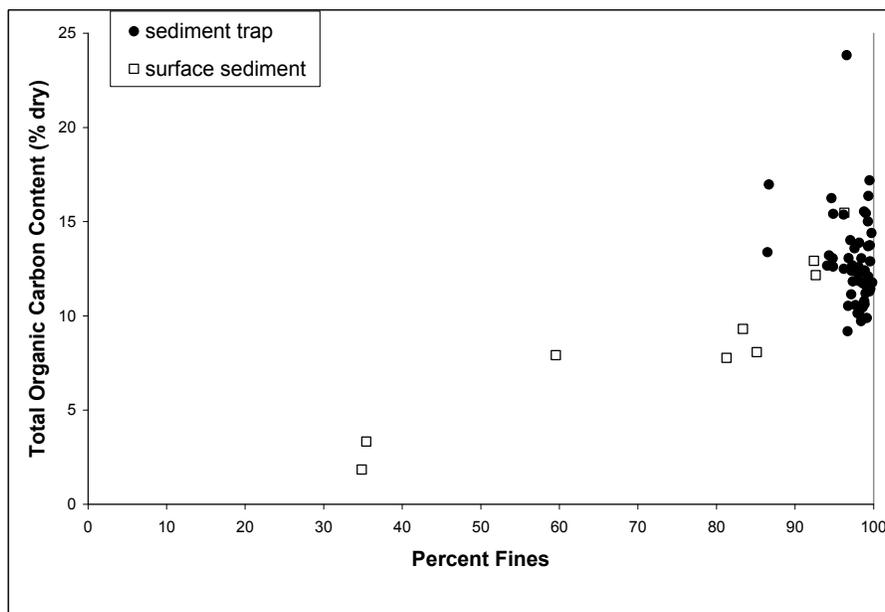
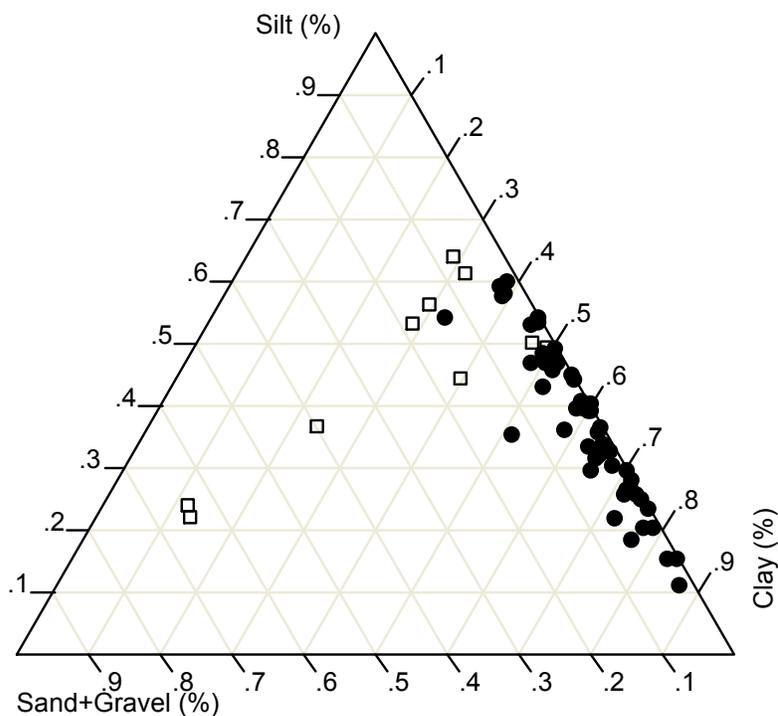


Figure 9. Grain Size Distributions (Top) and the Correspondence between Percent Fines and TOC (Bottom) in Sediment Trap (●) and Surface (□) Sediment Samples at the North of Wood Street Area, Data from October 2007 to October 2008.

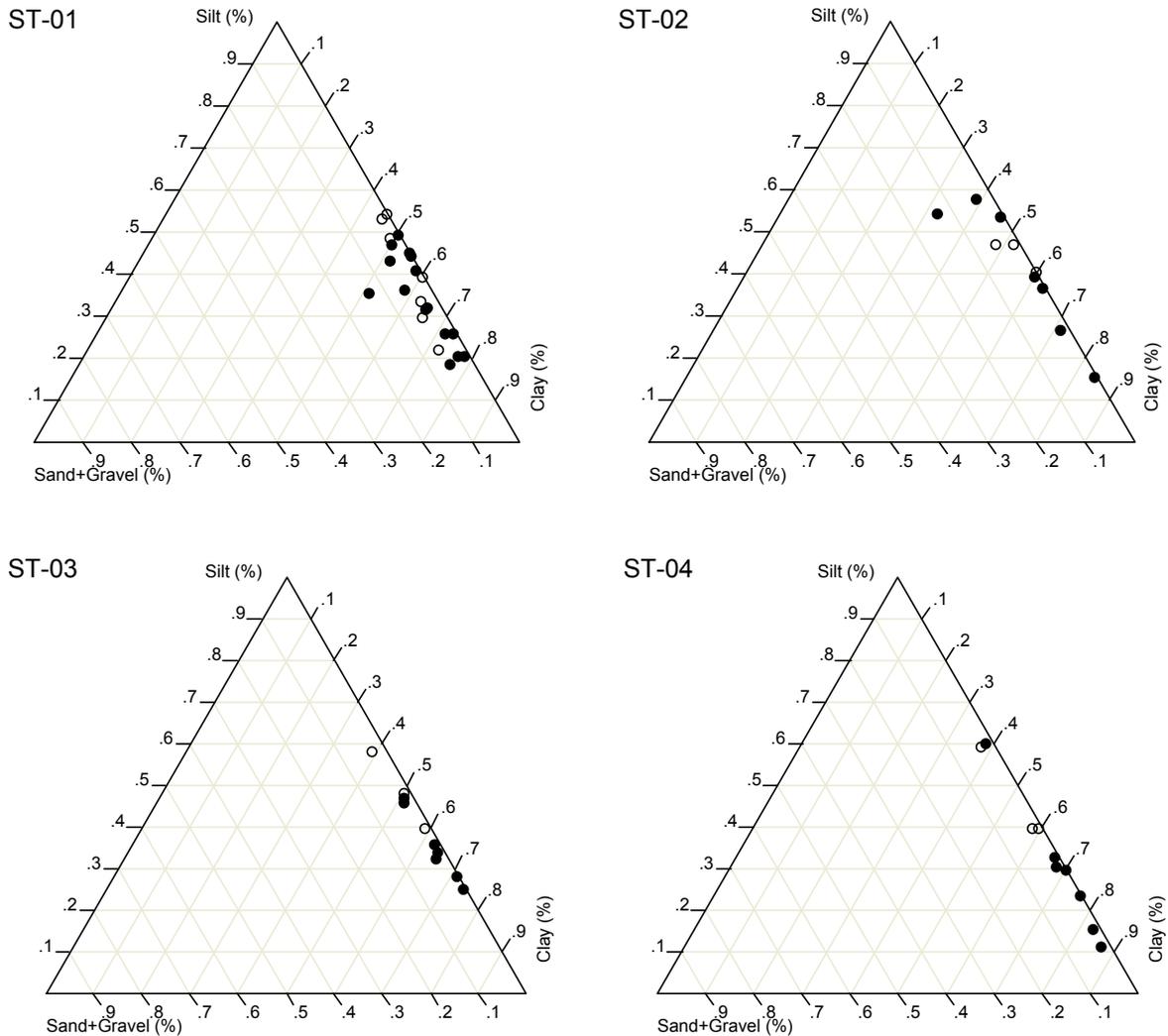


Figure 10. Grain Size Distributions in Suspended Sediment Material at Sediment Trap Locations during Non-dredging (○) and Dredging (●) Periods, Data from October 2007 to October 2008.

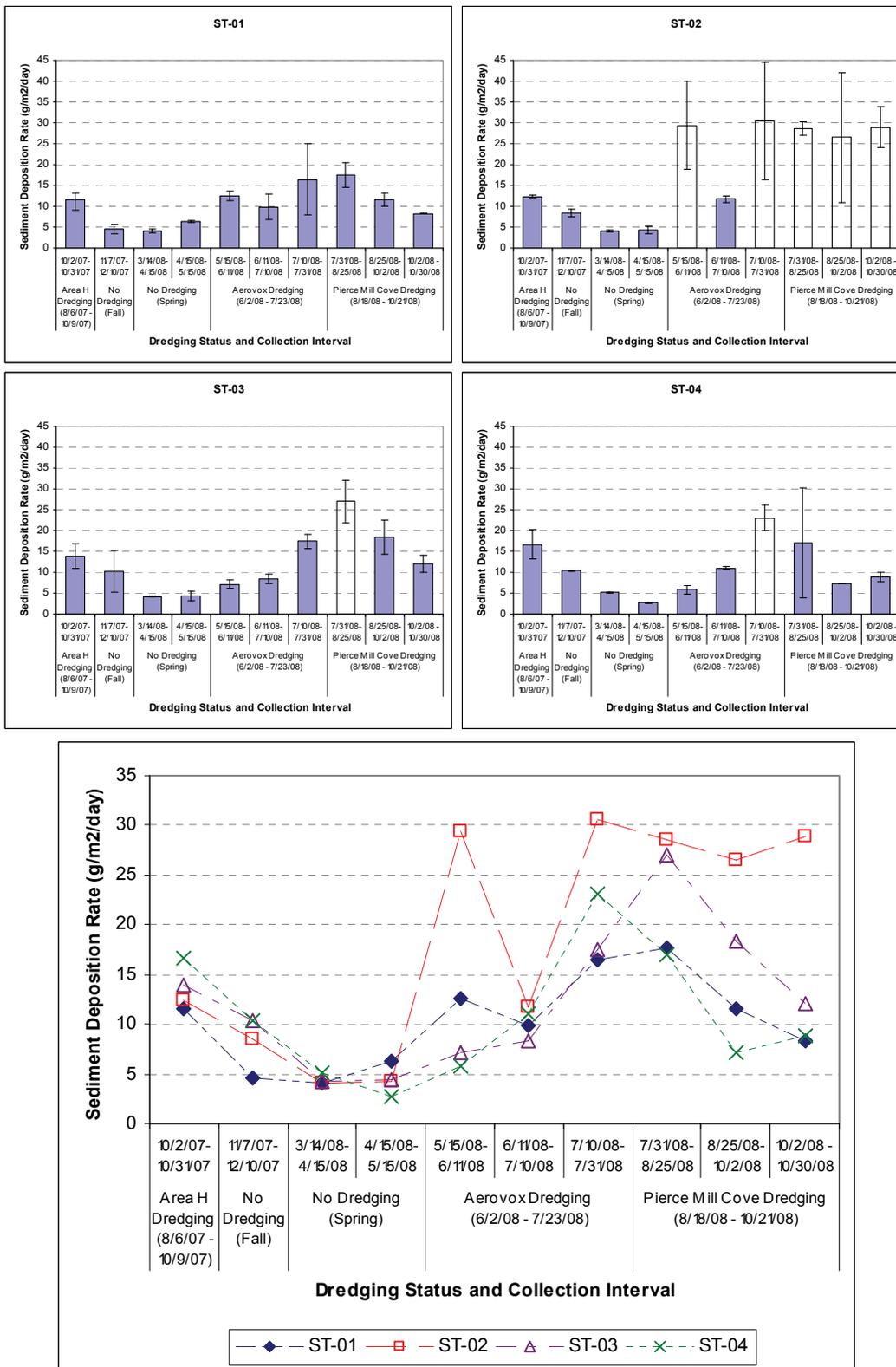


Figure 11. Sediment Deposition Rate at Sediment Trap Stations. Bars and symbols represent average values and vertical bars represent the range of values. (Deployment #1 10/2/07 to 10/31/07 occurred largely during a non-dredging period)

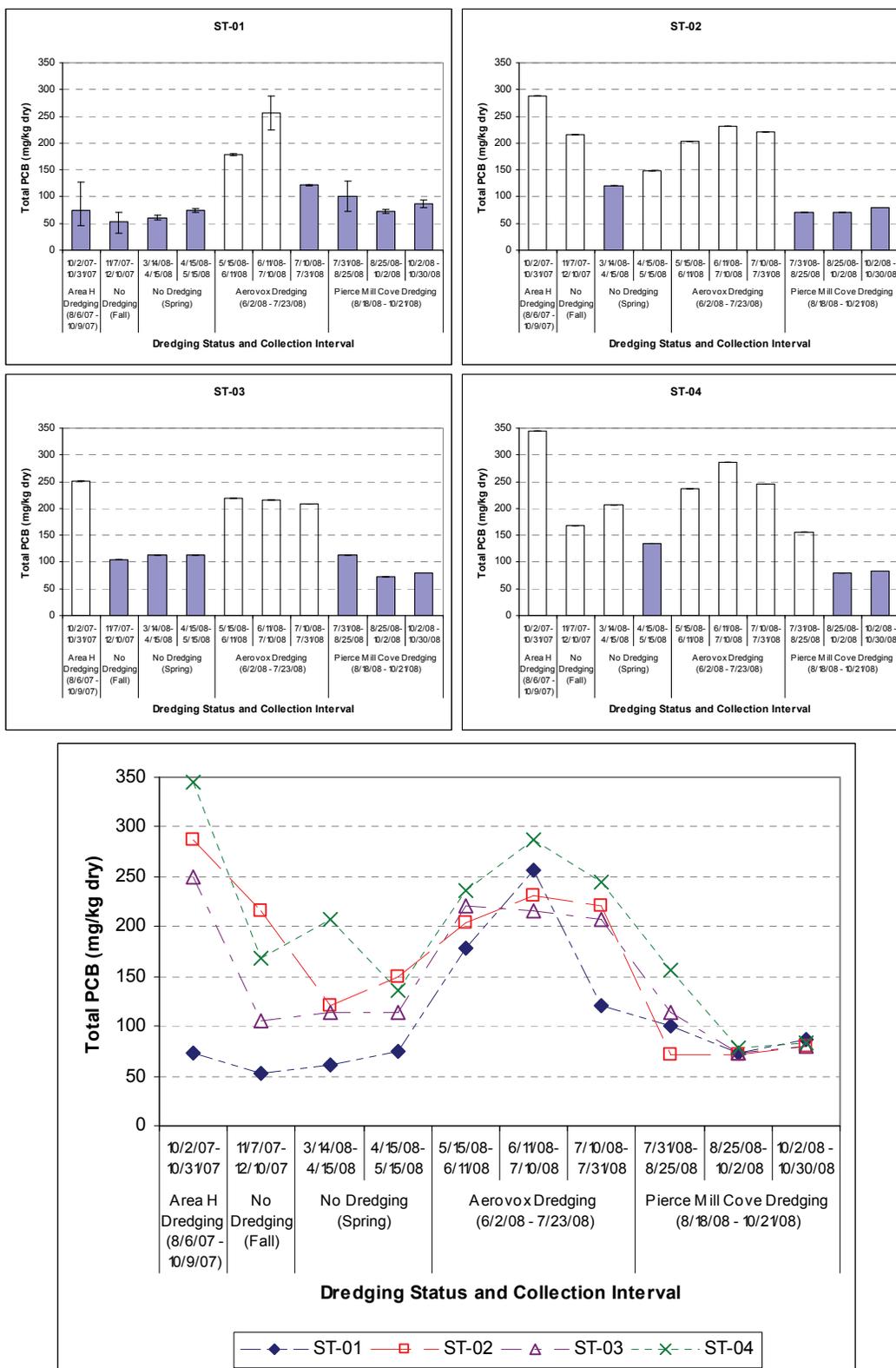


Figure 12. Total PCB Concentrations at Sediment Trap Stations. Bars and symbols represent average values and vertical bars represent the range of values. (Deployment #1 10/2/07 to 10/31/07 occurred largely during a non-dredging period)

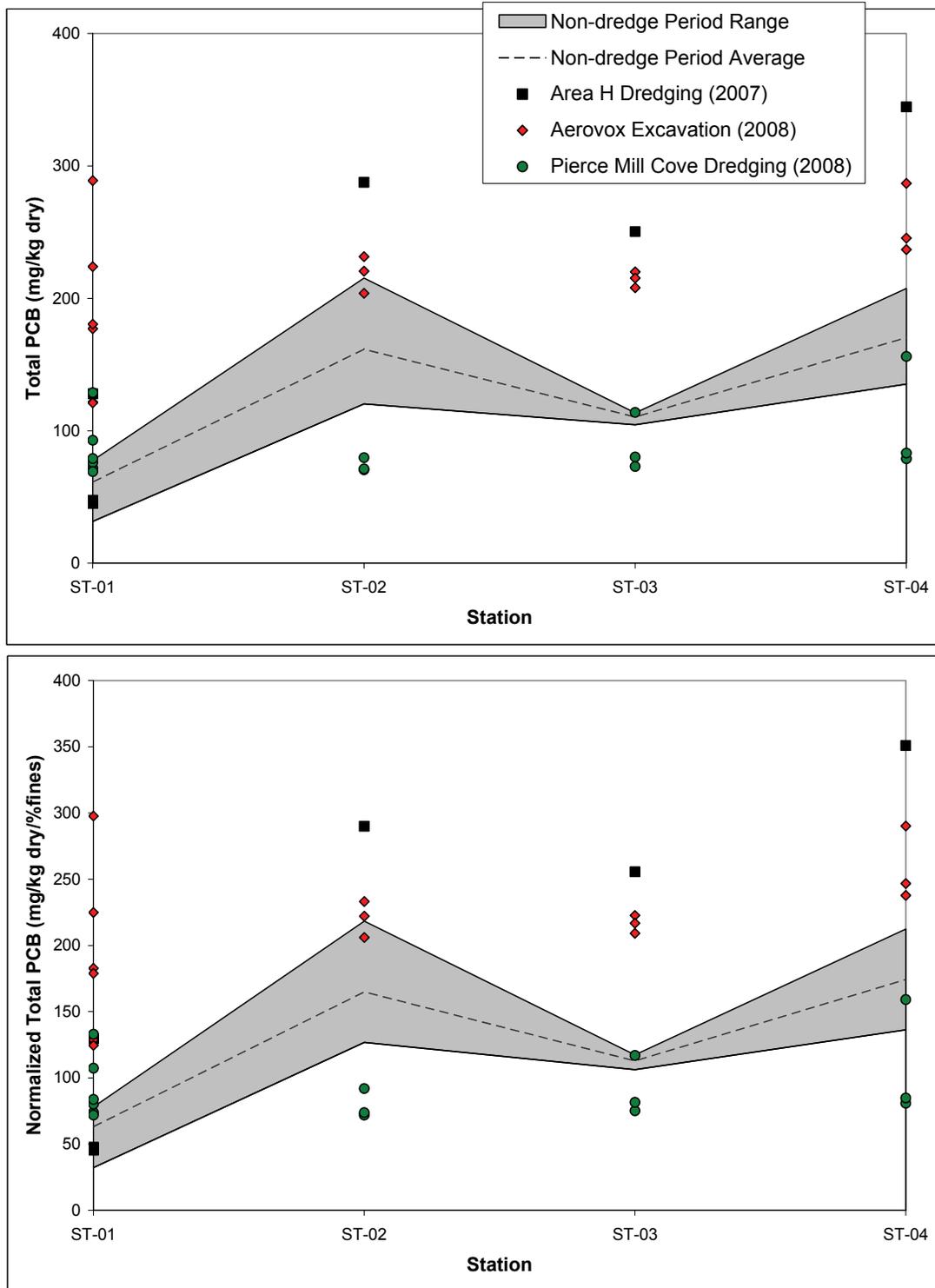


Figure 13. Total PCB Concentrations, Non-normalized (Top) and Normalized to Percent Fines (Bottom), in Sediment Trap Samples Deployed During Non-dredge (grey band) and Dredge (symbols) Periods. The grey band represents the range of values during the non-dredge period and the dashed line represents the average values during the non-dredge period. The symbols represent total PCB concentrations during remediation activities.

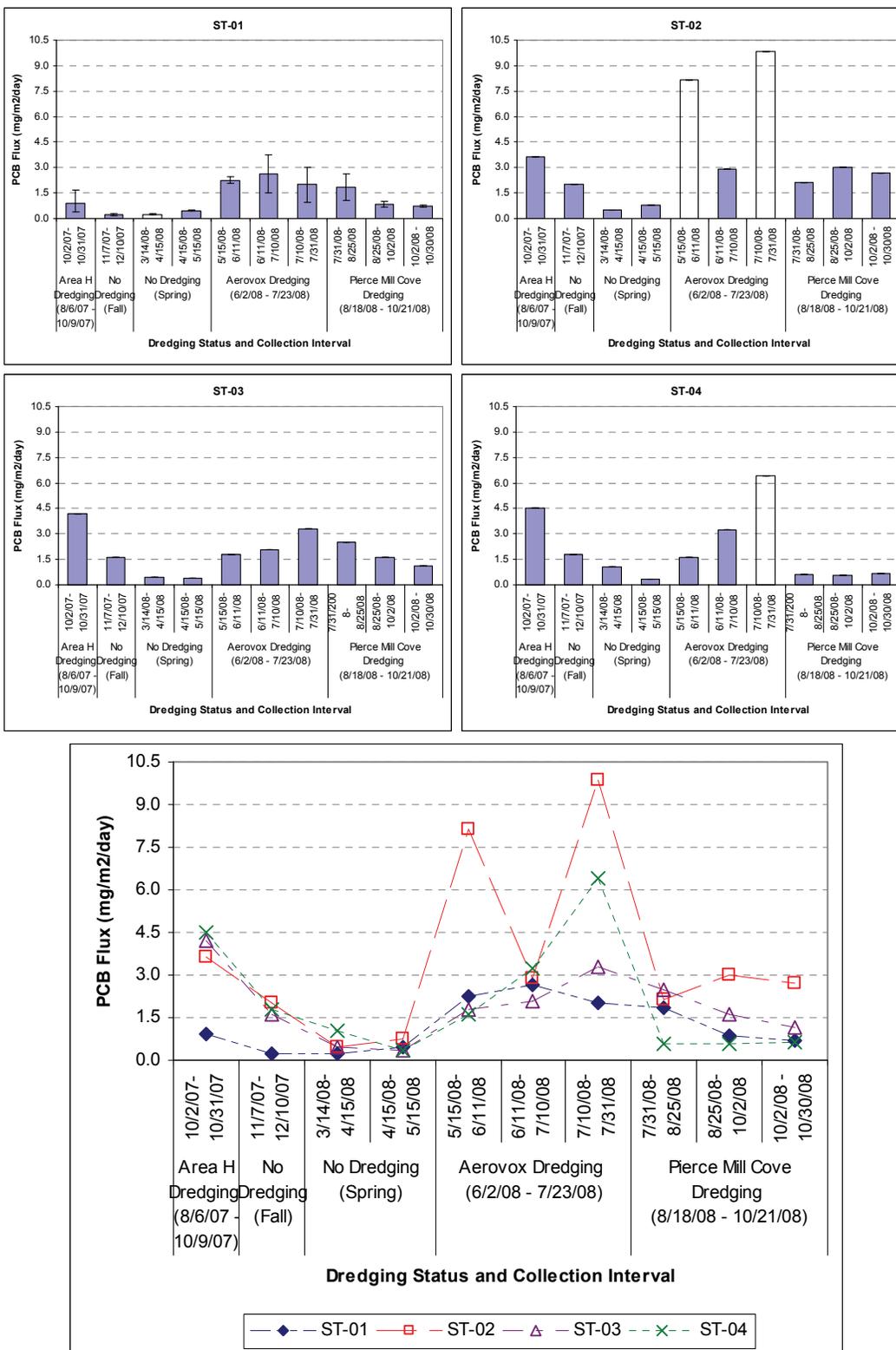


Figure 14. PCB Flux at Sediment Trap Stations. Bars and symbols represent average values and vertical bars represent the range of values. (Deployment #1 10/2/07 to 10/31/07 occurred largely during a non-dredging period)

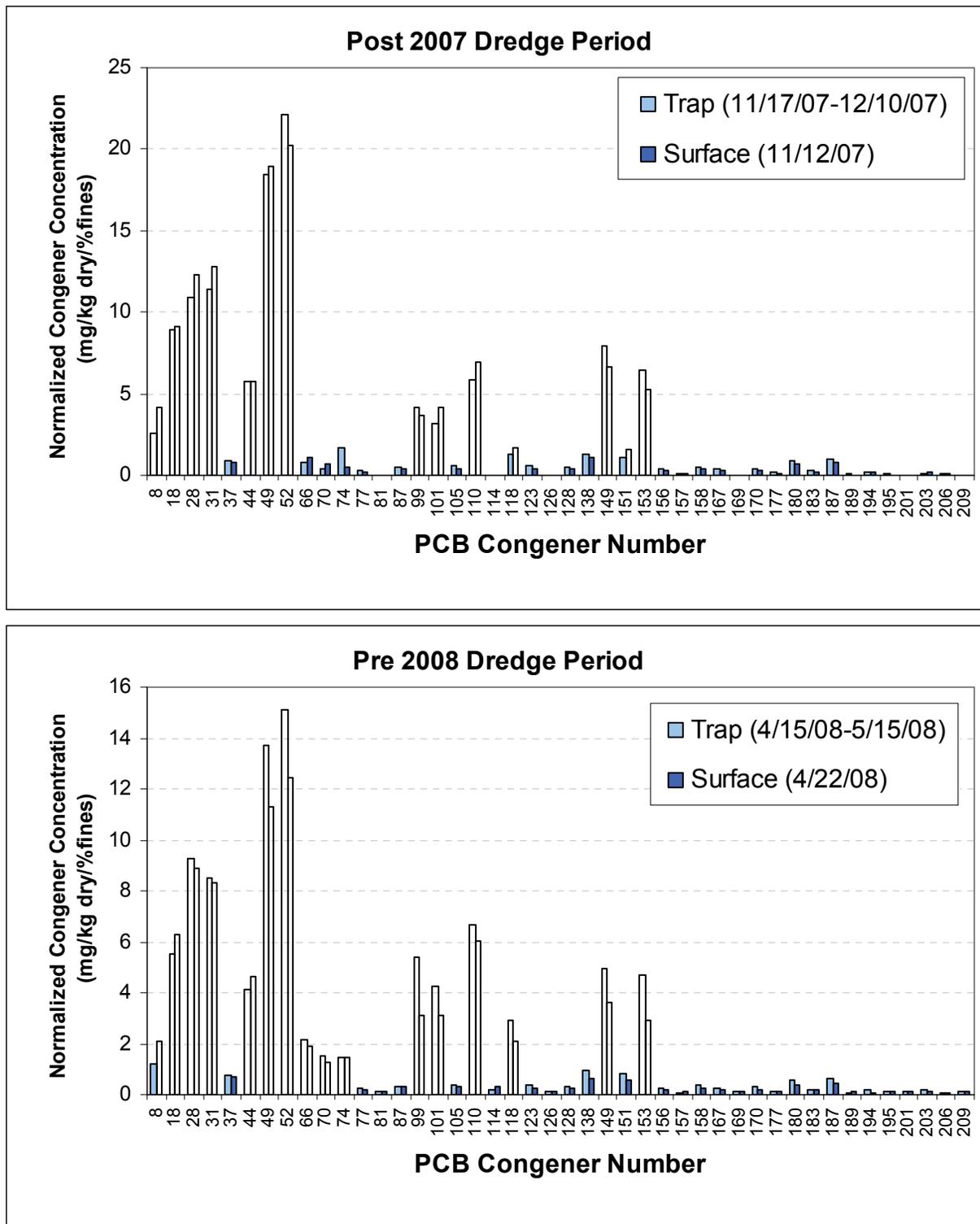


Figure 15. Comparison of PCB Distribution Patterns in Surface Sediment and Sediment Trap Samples at Station ST-04 During Post 2007 (top) and Pre 2008 (bottom) Dredge Periods.

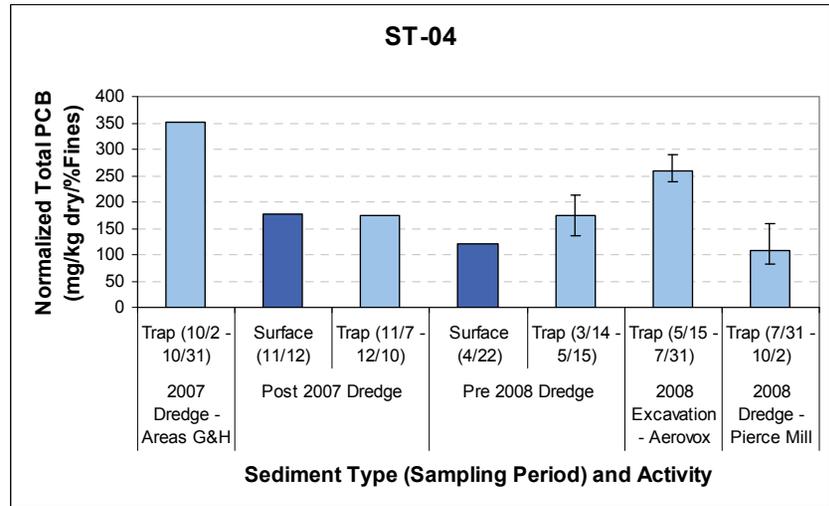
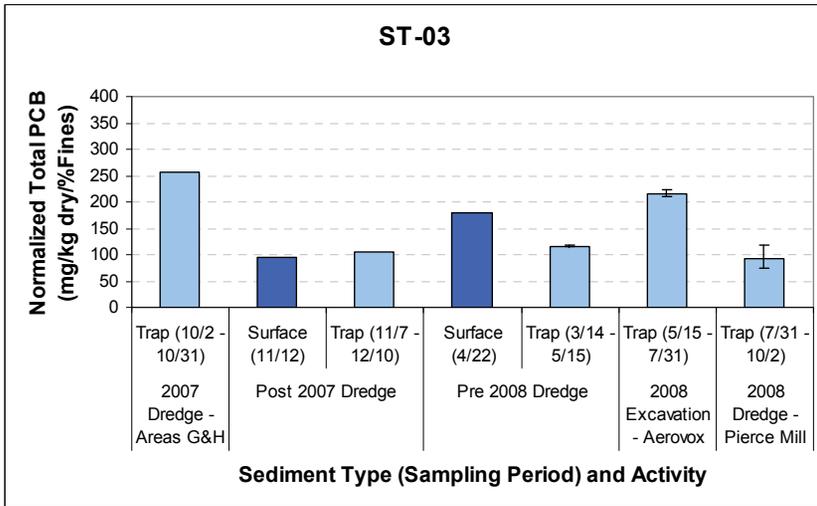
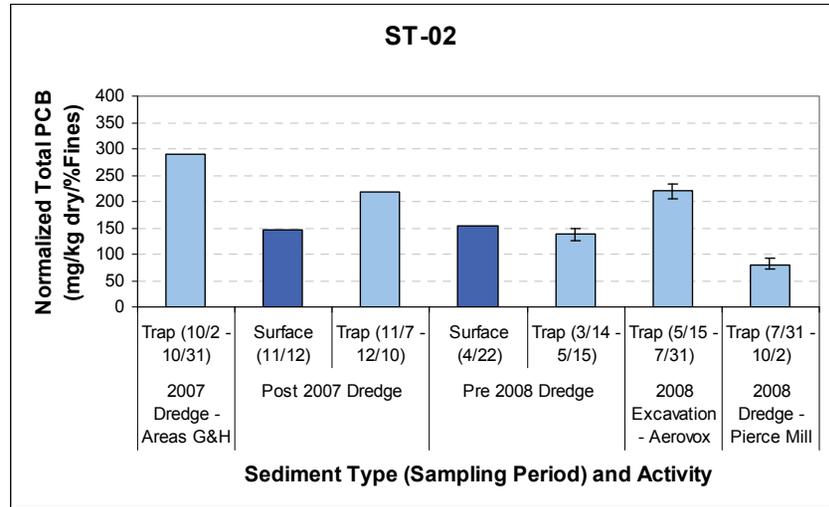
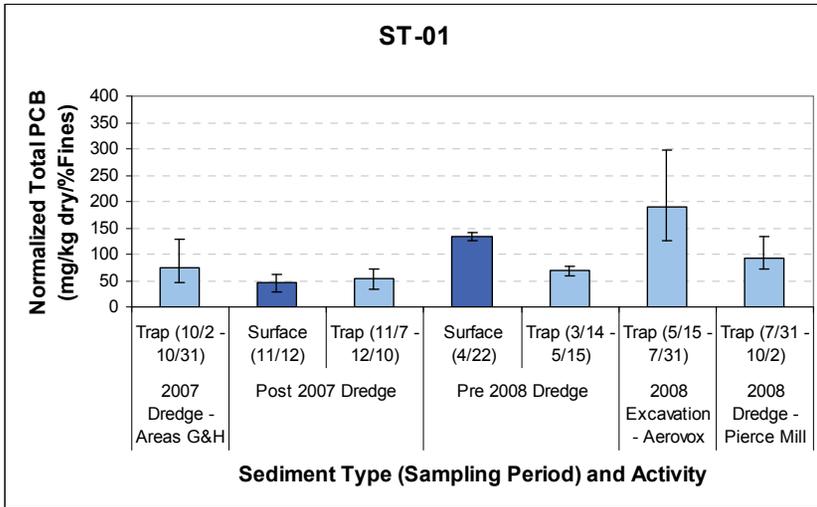


Figure 16. Total PCB Concentrations (Normalized to Percent Fines) in Surface (0-2 cm) Sediment (dark blue bars) and Sediment Trap (light blue bars) Samples at the North of Wood Street Area, October 2007 to October 2008. Bars represent average values and vertical bars represent the range of values during the activity periods.



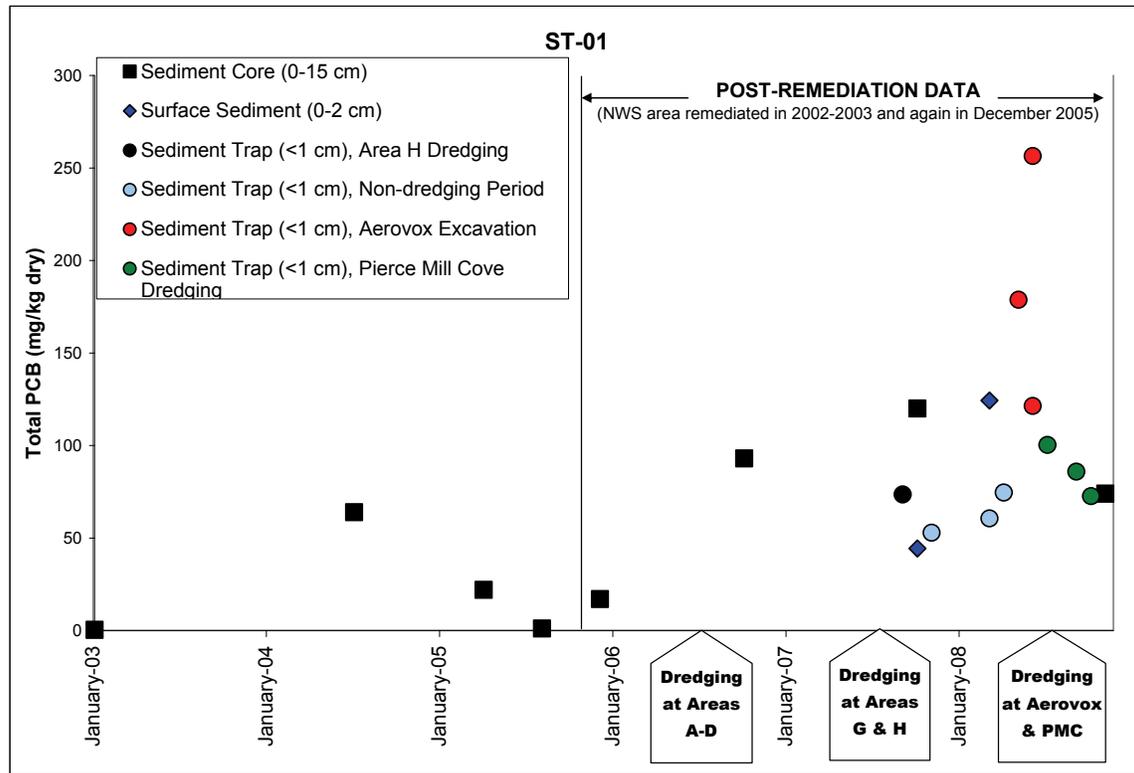


Figure 17. Total PCB in Sediment at Station ST-01 from 2003 to 2008.

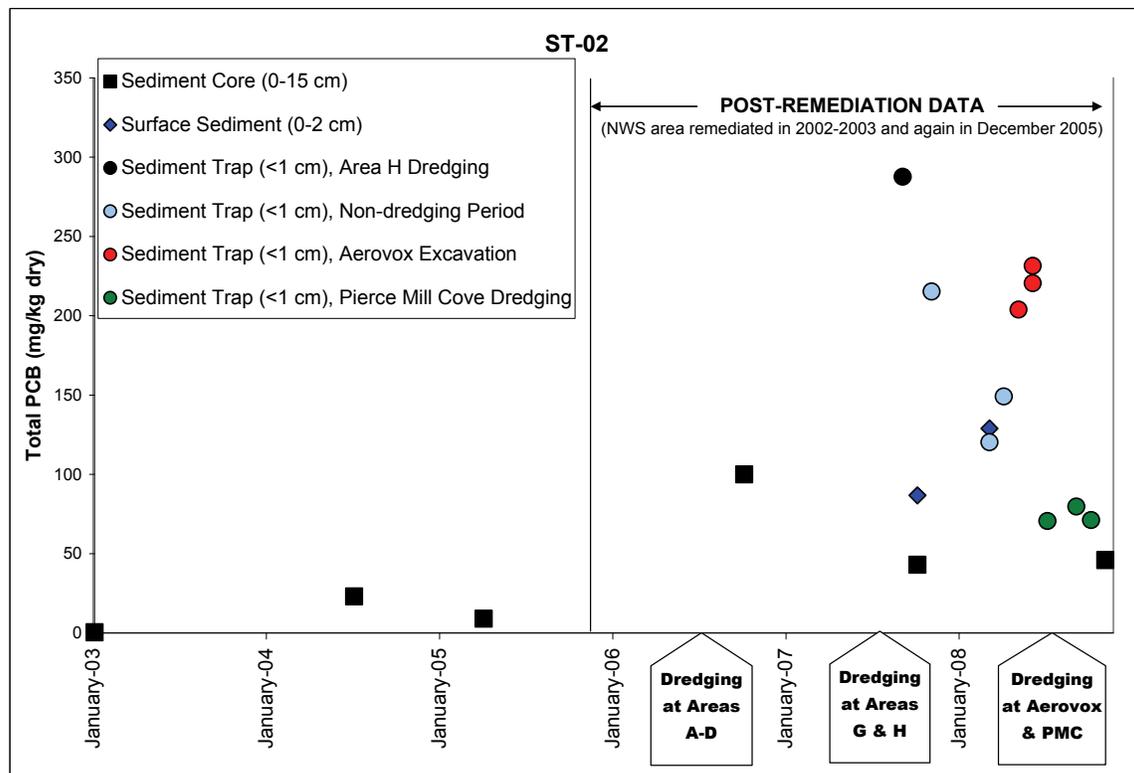


Figure 18. Total PCB in Sediment at Station ST-02 from 2003 to 2008.

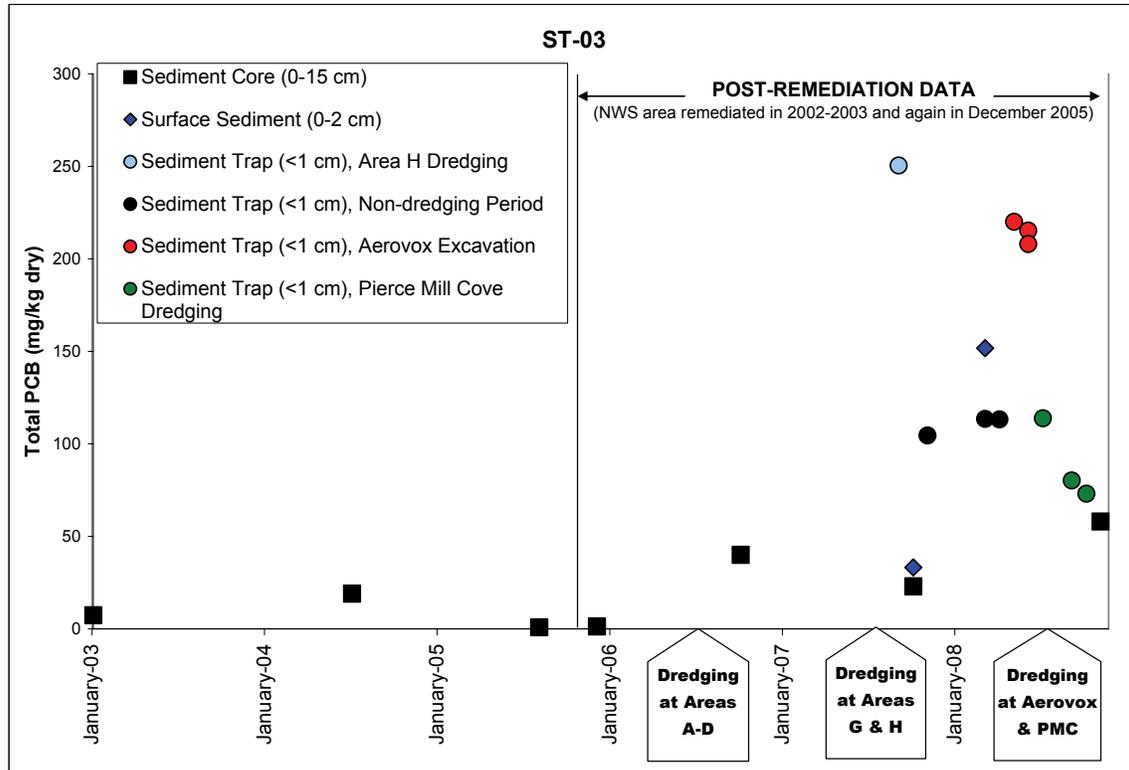


Figure 19. Total PCB in Sediment at Station ST-03 from 2003 to 2008.

APPENDIX A

Field Logs

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Deployment No. 1

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Field Daily Log Form

Date: 10/02/07 Weather: 65°F / partly cloudy / wind 5 SE

Tides:
0.2 @ 0552
4.2 @ 13:09
0.6 @ 19:19

Monitoring Period:
 From: 0900 To: 1500
 Tidal Stage: HWS Ebb LWS Flood
 Dredging Activity:

dredge & debris removal
in area H

Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
<u>ST-01</u>	<u>4.2</u>	<u>1</u>
<u>ST-02</u>	<u>4.9</u>	<u>1</u>
<u>ST-03</u>	<u>3.8</u>	<u>1</u>
<u>ST-04</u>	<u>4.2</u>	<u>1</u>

Oil sheen/ Debris: _____

Samples Collected for Laboratory Analysis

Sample IDs:
 PCB (Sediment Trap)
NA

PCB (Surface Grab)
NA

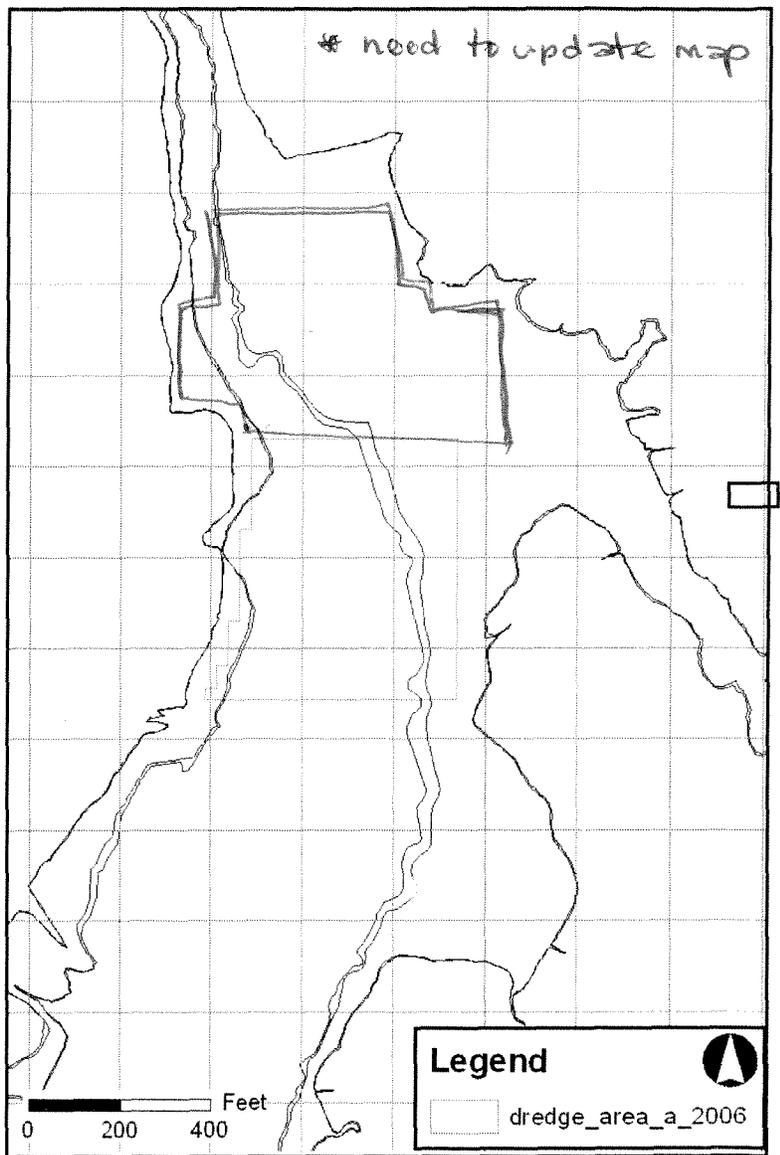
Turbidity (500ml) NA
 Dissolved PCB (2x1L) NA

Notes:

Sampling Crew: Mike McKee / Mike Walsh

Chief Scientist Signature: [Signature]

- * Sediment traps are labelled ST-XX-X station # / A B or C
- * 2 traps deployed at stations 2, 3, & 4
- * 3 traps deployed at station 1
- * YSI mooring at station 03 (~7' depth @ 1345)





Sediment Trap Deployment (G606422)

In situ Data Field Form

Dredging Location	Area H
Dredging Description	Dredging & debris removal
Survey Vessel	Gale Force
Chief Scientist	Mike McKee
Sampling Technician	
Vessel Captain	Mike Walsh
Other Personnel	
Weather conditions	65°F / partly cloudy / Winds S SE

Date	10/02/07
Page	1 of 1

Tide information	
High	
Low	0.2 @ 0552
High	4.2 @ 1309
Low	0.6 @ 1919

Station Number	Time	Northing	Easting	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes
		Latitude SP MA 2001 - m	Longitude SP MA 200 - m							
ADOP ST-04	1149	825355.285	248604.666	4.2 ft	0.807 ft	4.2 NTU	30.1	13.6 mg	19.26	
					2.0 ft	3.5 NTU	30.18	10.38	19.22	2 traps
2.13 → ST-03	1208	825449.835	248585.592	5.0 ft	1 ft	3.8	29.67	14.63	19.57	deployed @ 1200
					2 ft	3.2	29.89	12.14	19.25	
					3 ft	3.8	30.19	10.45	19.23	2 traps
2.19 ← ST-02	1223	825516.524	248540.927	6.9 ft	1 ft	4.9	29.09	15.49	19.20	deployed @ 1215
					2 ft	2.4	29.96	10.28	19.06	
					3 ft	2.2	30.21	9.25	19.10	
					4 ft	1.8	30.32	8.21	19.03	
					5 ft	1.7	30.35	7.45	18.92	2 traps
2.81 ST-01	1239	825587.814	248537.952	5.2 ft	1 ft	4.2	29.16	14.31	19.42	deployed @ 1230
					2 ft	3.0	29.94	10.94	18.97	
					3 ft	1.8	30.20	9.04	18.99	
					4 ft	1.7	30.27	8.14	19.05	
					4.5 ft	1.6	30.30	7.53	19.00	3 traps deployed @ 1245
Signature of Data recorder: <i>Michael P. [Signature]</i>										

Field Daily Log Form

Date: 10/9/07 Weather: 60°F pty cloudy winds NNW 10k

Tides:
4.14 @ 0706
0.2L @ 1337
4.04 @ 1926

Monitoring Period:
 From: 0800 To: 1245
 Tidal Stage: HWS Ebb LWS Flood
 Dredging Activity:

dredging & debris removal

Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
<u>ST-01</u>	<u>6.9</u>	<u>1.01</u>
<u>ST-02</u>	<u>5.9</u>	<u>0.97</u>
<u>ST-03</u>	<u>7.2</u>	<u>1.01</u>
<u>ST-04</u>	<u>4.1</u>	<u>1.02</u>

Oil sheen/ Debris: _____

Samples Collected for Laboratory Analysis

Sample IDs:

PCB (Sediment Trap)

NA

PCB (Surface Grab)

NA

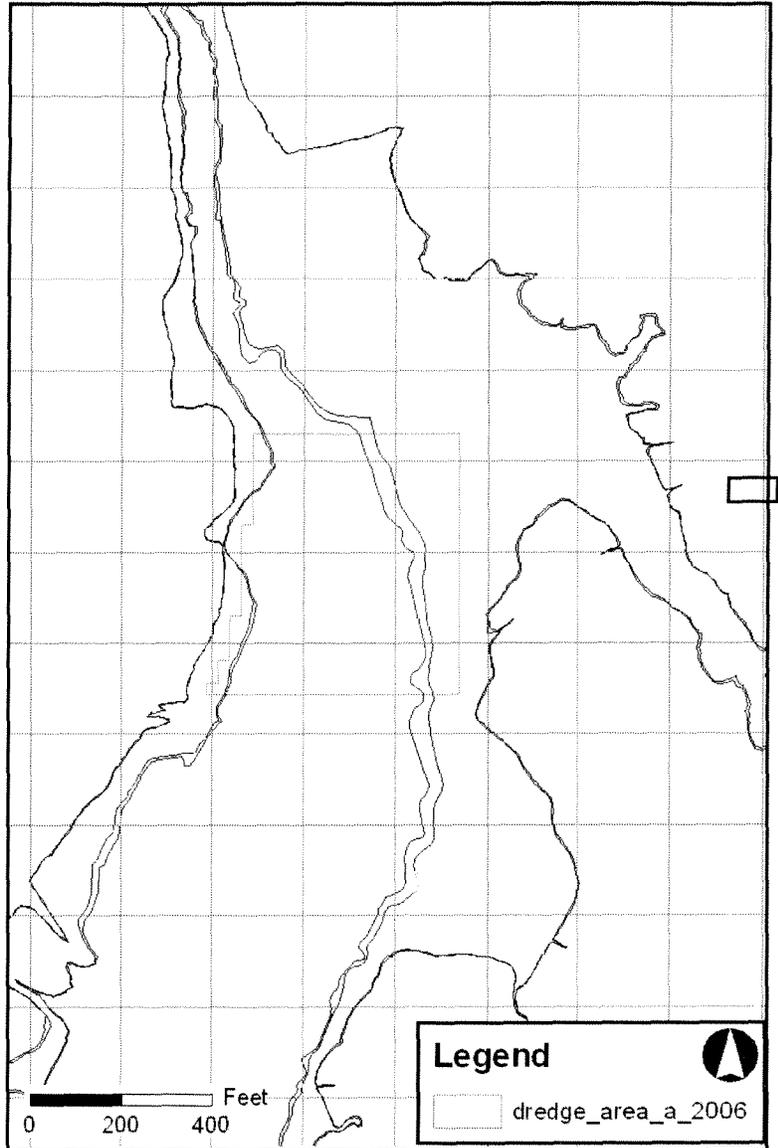
Turbidity (500ml) NA

Dissolved PCB (2x1L) NA

Notes: Insufficient quantity of material in sediment traps. Redeployed traps for one week.

Sampling Crew: Mike Walsh / Mike McKee

Chief Scientist Signature: Michael P. [Signature]



Dredging Location	Area #
Dredging Description	Dredging & debris removal
Survey Vessel	Gale Force
Chief Scientist	Mike McKee
Sampling Technician	
Vessel Captain	Mike Walsh
Other Personnel	
Weather conditions	60°F Partly Cloudy Winds NNW @ 10 kt

Date	10/9/07
Page	1 of 1

Tide information	
High	0706
Low	1337
High	1926
Low	

* sediment traps do not have sufficient material for analysis / redeployed for one week

Station Number	Time	N Latitude SPMA2001-m	E Longitude SPMA2001-m	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	Notes
ST-01	0842	825587.814	248537.952	5.2	1.09 ft	6.8	29.94	5.07	20.22	Ph 6.96
					2.04 ft	6.5	30.12	4.85	20.08	Ph 6.93
					3.00 ft	6.5	30.15	4.10	20.03	Ph 6.90
					4.02 ft	5.1	30.17	3.82	19.98	Ph 6.90
ST-02	0856	825516.524	248540.927	7.3	0.97 ft	5.9	29.94	5.15	19.90	Ph 7.01
					2.03 ft	5.7	29.99	4.97	19.90	Ph 7.00
					3.01 ft	4.5	30.20	4.52	19.87	Ph 6.97
					4.01 ft	4.3	30.22	4.37	19.87	Ph 6.96
					5.01 ft	5.0	30.23	4.31	19.86	Ph 6.97
					6.00 ft	5.3	30.24	4.21	19.86	Ph 6.97
ST-03	0907	825449.835	248585.692	4.7	1.01 ft	7.2	29.61	6.92	19.83	Ph 7.09
					2.01 ft	5.2	30.11	5.60	19.85	Ph 7.01
					3.02 ft	4.2	30.26	4.77	19.86	Ph 6.97
					4.00 ft	4.6	30.27	4.46	19.85	Ph 6.97
ST-04	0930	825355.285	248604.666	4.1	1.02 ft	4.1	30.26	8.10	19.71	Ph 7.24
					2.00 ft	3.2	30.42	7.59	19.69	Ph 7.23
					3.00 ft	3.2	30.44	7.48	19.68	Ph 7.23

Signature of Data recorder: *Michael P. ...*

Field Daily Log Form

Date: 10/16/07 Weather: 55°F / sunny / wind NW 10-15 kt

Tides: L0428 @ 0.4, H1146 @ 3.6, L1712 @ 0.7

Monitoring Period: From: 1200 To: 1200 Tidal Stage: HWS Ebb LWS Flood Dredging Activity:

completed/demob

Turbidity Summary

Table with 3 columns: Location, Turbidity (NTU), Sensor/water Depth (ft). Rows include ST04, ST01, ST02, ST03 with handwritten values.

Oil sheen/ Debris: none

Samples Collected for Laboratory Analysis

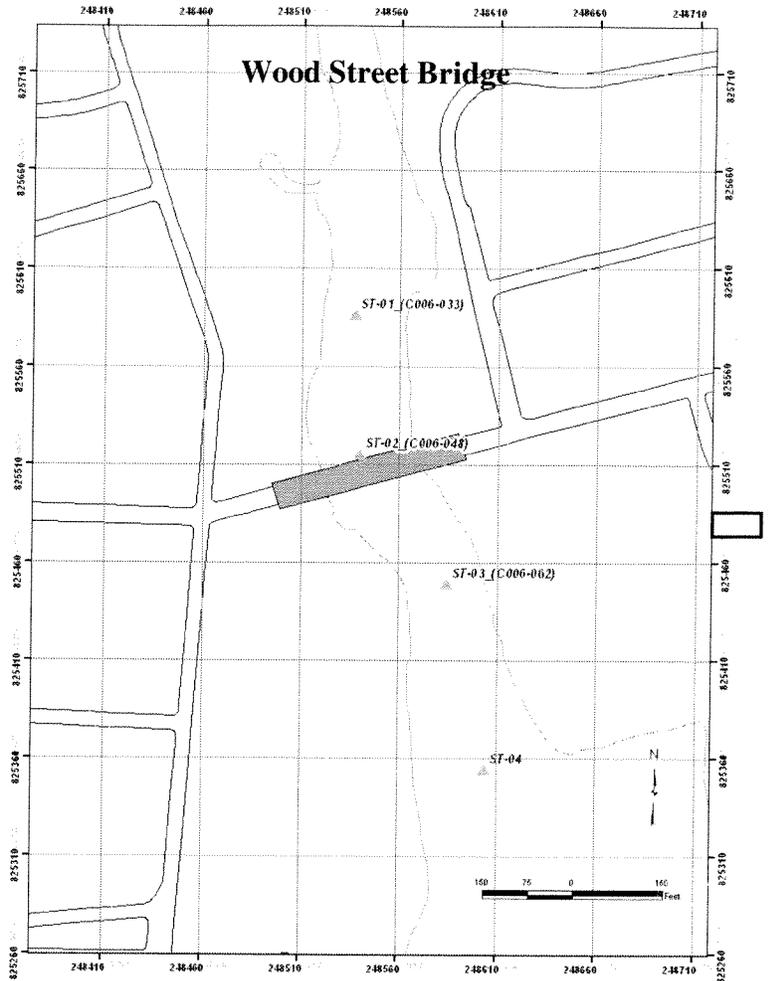
Sample IDs: PCB (Sediment Trap) NA, PCB (Surface Grab) NA, Turbidity (500ml) NA, Dissolved PCB (2x1L) NA

Notes:

Insufficient quantity of material in sed traps. Redeployed for two weeks (until 10/30/07)

Sampling Crew: Mike McKee, Mike Walsh

Chief Scientist Signature: [Handwritten Signature]



dGPS Calibration Form

Project #:

INITIALS

MPM

CHECK GPS against at least one reference checkpoint at beginning of each day.

GPS Reference Checkpoint Name

NBH porch

Benchmark Location:

Time	Units and Datum	Northing / Latitude	Easting / Longitude
Beginning of day	^{MA2001} SP NA083 ft	2701152.075	814564.881

Comments -

Date/Time

10/16/07 0909

Vessel

Gale Force

Unit Make/Model

Trimble XRS Pro

Mooring Deployment/Retrieval Log and Calibration Form

Project No. <u>6606422-07SEDSAMP</u>		Date: <u>10/16/07</u>	Recorded By: <u>MW/MM</u>
Station ID: <u>ST-03</u>		On Station: <u>0</u> / <u>R</u> (local) <u>1107</u> / <u>R</u>	Off Station: <u>0</u> / <u>R</u> (local) <u>1145</u> / <u>R</u>
Northing (NAD83, feet) <u>825449.835</u>		Easting (NAD83, feet) <u>248585.592</u>	DGPS Accuracy Estimate (± m): <u>1.7</u>
Water depth (ft): <u>4.8</u>	Sample Platform: <u>Vessel</u> Wading		Deployment/Retrieval Time: (local) <u>1140</u> / <u>0</u>
Sensor Depth (ft): <u>3.03</u>			
Data File Name: <u>ST03_01</u> ^① <u>ST03_1B</u>	Instrument Model / SN: <u>02A0880AA</u>		
General Water Description-Option (from back-up meter)			
Temperature (°C): <u>16.07</u>		: D.O. (mg/L) <u>9.89</u>	
Salinity (‰): <u>29.51</u>			
Turbidity (NTU): <u>2.5</u>			
CALIBRATION and MAINTENANCE			
DO membrane changed? <input checked="" type="radio"/> Y <input type="radio"/> N		Turbidity Wiper Changed? <input type="radio"/> Y <input checked="" type="radio"/> N	
Battery Voltage: <u>12.7</u>		Turbidity wiper parks 180° from optics? <input checked="" type="radio"/> Y <input type="radio"/> N	
Parameter	Initial Reading	Calibrated Reading	Calibration Data (acceptable range)
Conductivity (mS/cm)	<u>1003</u>	<u>1000</u>	Cell constant (4.55 – 5.45)
Depth (ft)	<u>-0.083</u>	<u>0.000</u>	Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	<u>0.2</u>	<u>0.0</u>	Turbidity Offset:
Turbidity (NTU) 123	<u>124.1</u>	<u>123.0</u>	
D.O. (% Sat)	<u>100.8%</u>	<u>100.8%</u>	D.O. Gain (0.7 - 1.4)
Field Activities / Comments / Observations:			
<u>Ph 4</u>	<u>4.02</u>	<u>3.99</u>	
<u>Ph 7</u>	<u>7.25</u>	<u>7.00</u>	
<u>Batteries Charged</u>			

① File name changed to ST03_1B to correspond w/ series-MPM
12/19/07

Dredging Location	NA (dredging complete / dends)
Dredging Description	NA
Survey Vessel	Gale Force
Chief Scientist	Mike McKee
Sampling Technician	
Vessel Captain	Mike Walsh
Other Personnel	
Weather conditions	55°F / Sunny / Winds NW @ 10-15 knts

Date	10/16/07
Page	1 of 1

Tide information	
High	
Low	0428 0.4
High	1146 3.6
Low	1712 0.7

Station Number	Time	N Latitude MASP2001_m	E Longitude MASP2001_m	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	pH	Notes
ST-04	1032	825355.285	248604.666	3.5	1.03	2.6	28.55	9.39	15.67	6.81	
					2.00	2.9	29.32	9.46	15.97	7.05	
					2.99	2.3	29.59	9.51	16.04	7.35	
ST-01	1044	825587.814	248537.952	4.4	1.05	3.0	28.27	8.70	16.12	7.49	
					2.04	2.5	29.48	9.08	16.16	7.08 7.55	
					3.04	2.3	29.56	9.21	16.20	7.57	
ST-02	1054	825516.524	248540.927	6.1	1.03	8.6	28.17	8.73	15.88	7.57	
					2.06	8.0	28.91	9.27	15.98	7.64	
					3.00	7.4	29.44	9.51	16.10	7.65	
					3.99	7.22	29.53	9.55	16.06	7.66	
					5.01	7.1	29.55	9.51	16.07	7.67	
ST-03	1107	825449.836	248585.592	4.8	1.06	3.6	28.23	15.96 9.09	15.96	7.65	
					2.01	3.3	28.83	9.68	16.00	7.70	
					3.03	2.5	29.51	9.89	16.07	7.72	
					4.02	2.3	29.58	9.89	16.10	7.72	

Signature of Data recorder: *Mike Walsh*

Field Daily Log Form

Date: 10/31/07 Weather: 50°F / pthly cloudy / winds 15 SW

Tides:
0546 L @ 0.2
1247 H @ 4.2
1858 L @ 0.4

Monitoring Period:
 From: 1400 To: 1600
 Tidal Stage: HWS Ebb LWS Flood
 Dredging Activity:

dredging complete

Turbidity Summary		
Location	Turbidity (NTU)	Sensor/water Depth (ft)
<u>ST04</u>	<u>1.4</u>	<u>3.02</u>
<u>ST03</u>	<u>3.4</u>	<u>3.00</u>
<u>ST02</u>	<u>2.4</u>	<u>3.04</u>
<u>ST01</u>	<u>2.5</u>	<u>3.03</u>

Oil sheen/ Debris: yes

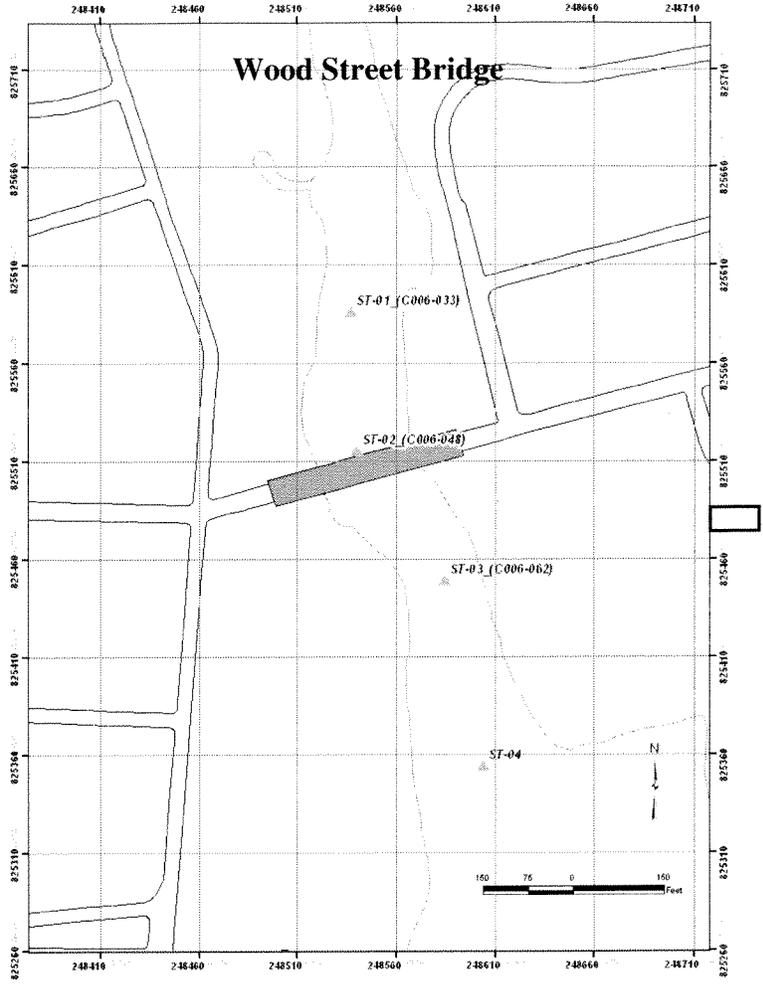
Samples Collected for Laboratory Analysis

Sample IDs:
 PCB (Sediment Trap) ST-A-XXXXXX-2
 PCB (Surface Grab) NA
 Turbidity (500ml) NA
 Dissolved PCB (2x1L) NA

Notes: retrieved YSI mooring
retrieved 1st round of sediment traps → ST-01-103107-1,
ST-01-103107-2, ST-01-103107-3, ST-02-103107-1, ST-02-103107-2,
ST-03-103107-1, ST-03-103107-2, ST-04-103107-1, ST-04-103107-2

Sampling Crew: Mike McKee, Mike Walsh

Chief Scientist Signature: Michael P. [Signature]



Dredging Location	NA
Dredging Description	dredging complete
Survey Vessel	Gale Force
Chief Scientist	MIKA MCKEE
Sampling Technician	
Vessel Captain	MIKE WALSH
Other Personnel	
Weather conditions	50°F / ptly cloudy / winds 15 SW

Date	10/31/07
Page	1 of 1

Tide information	
High	
Low	0916 @ 0.2
High	1247 4.2
Low	1858 0.4

Station Number	Time	N Latitude MA SP2001_m	E Longitude MA SP2001_m	Water depth	Sample Depth	Turbidity	Salinity	DO	Temp	pH	Notes
ST04	1411	825355.285	248604.666	4.2'	1.02'	2.0	30.04	8.71	13.59	7.66	
↓	↓				2.03	2.0	30.03	8.06	13.59	7.66	
					3.02	1.4	30.27	7.30	13.62	7.66	
ST03	1422	825449.835	248585.592	4.7'	1.04	4.4	29.40	8.16	13.76	7.71	
↓	↓				2.02	4.1	29.35	7.93	13.76	7.70	
					3.00	3.4	29.67	7.40	13.85	7.68	
ST02	1431	825516.524	248540.927	5.7'	1.01	5.5	28.35	7.97	13.78	7.69	
↓	↓				2.03	3.2	29.13	7.69	13.71	7.70	
					3.04	2.4	29.70	7.17	13.37	7.63	
					4.01	1.8	30.02	6.83	13.30	7.60	
ST01	1441	825587.814	248537.952	4.4'	1.00	2.4	26.18	6.52	13.48	7.62	
↓	↓				2.04	2.3	29.17	6.42	13.46	7.64	
					3.03	2.5	29.70	6.39	13.41	7.63	

Signature of Data recorder: *Michael P. [Signature]*

Passive Sampling Devices (G921346)
SURVEY RECORD LOG

SURVEY: Passive Sampling Devices
21 day retrieval

DATE: 10/31/07

0700 @ NBH trailer

0900 - depart for NBH4 from dock

0940 - on station @ NBH4

0948 - pulled moorings → mid & south floats fouled w/ seaweed

10:15 - ^{new} PEDs on moorings (7D)

1020 - mooring redeployed

1035 - YSI cast & water collection → Turbidity reading off (~5 NTU)

1220 - back on station @ NBH4 - new YSI ^{go back to dock to get other YSI}

1238 - depart for NBH2

1305 - arrive @ NBH2 @ recover moorings

1315 - collect PEDs

1320 - water collection & YSI cast

1343 - PEDs redeployed

Sed Trap 1411-1441 → YSI casts and sed. trap recovery @ N. Wood St.

Surface Sampling Event No. 1

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Station Log for Benthic Sediment Grab Samples

Project Name: *New Bedford Harbor Environmental Monitoring*
 Project #: *G606422*
 Client: *USACE NAE*

Location: *New Bedford, MA*
 Chief Scientist: *M. Walsh*
 Vessel: *R/V Gale Force*

Field Measurements

Survey ID: <i>ST-04</i> ^{MW}	Station Depth (feet): <i>3.8</i>
Station ID: <i>ST-04</i>	Time on Station: <i>0936</i>
Date: <i>11/12/2007</i>	Time Depart Station: <i>0955</i>
Recorded by: <i>MW</i>	

Attempt #1

Northing: <i>2707840.49</i>	Grab Size: <i>0.1-m²</i>
Easting: <i>815620.64</i>	Analyses: <i>PCBs TOC/OS</i>
Collection Time: <i>1000</i>	
Sample ID: <i>SS-ST04-11207</i>	

Sample Description: *Grey Brown silt/sand over black silt/sand and gravel oyster shells*

Attempt #2

Latitude:	Grab Size: <i>0.1-m²</i>
Longitude:	Analyses: <i>PCBs</i>
Time:	
Sample ID:	

Sample Description:

Additional Comments:

Field Measurements

Survey ID:	Station Depth (feet): <i>4.0'</i>
Station ID: <i>ST-03</i>	Time on Station: <i>1014</i>
Date: <i>11/12/07</i>	Time Depart Station: <i>1024</i>
Recorded by: <i>MW</i>	

Attempt #1

Northing: <i>2708143.91</i>	Grab Size: <i>0.1-m²</i>
Easting: <i>815574.35</i>	Analyses: <i>PCBs TOC/OS</i>
Collection Time: <i>1016</i>	
Sample ID: <i>SS-ST03-11207</i>	

Sample Description:

Attempt #2

Latitude:	Grab Size: <i>0.1-m²</i>
Longitude:	Analyses: <i>PCBs</i>
Time:	
Sample ID:	

Sample Description: *Grey Brown silt/sand^{MW} sand and silt on surface over mostly Grey Brown SAND. Snail and Glass Shrimp on surface*

Additional Comments:

Station Log for Benthic Sediment Grab Samples

Project Name: *New Bedford Harbor Environmental Monitoring*
 Project #: *G606422*
 Client: *USACE NAE*

Location: *New Bedford, MA*
 Chief Scientist: *M. Walsh*
 Vessel: *R/V Gale Force*

Field Measurements

Survey ID:	Station Depth (feet): <i>6.1'</i>
Station ID: <i>ST-02</i>	Time on Station: <i>1030</i>
Date: <i>11/12/07</i>	Time Depart Station: <i>1058</i>
Recorded by: <i>MW</i>	

Attempt #1

Northing: <i>2708405.70</i>	Grab Size: <i>0.1-m²</i>
Easting: <i>815438.52</i>	Analyses: <i>PCBs, TOC/GS</i>
Collection Time: <i>1037</i> <i>1051</i>	
Sample ID: <i>SS-ST02-111207</i>	

Sample Description: *1st Attempt N/G - 2nd Attempt N/G*

Grey Brown sand and silt with Algae and organic Detritus
Many Glass Shrimp - slight sheen on surface

Attempt #2

Latitude:	Grab Size: <i>0.1-m²</i>
Longitude:	Analyses: <i>PCBs</i>
Time:	
Sample ID:	

Sample Description:

Additional Comments:

Field Measurements

Survey ID:	Station Depth (feet): <i>3.9'</i>
Station ID: <i>ST01</i>	Time on Station: <i>1105</i>
Date: <i>11/12/07</i>	Time Depart Station:
Recorded by: <i>MW</i>	

Attempt #1

Northing: <i>2708600.18</i>	Grab Size: <i>0.1-m²</i>
Easting: <i>815404.64</i>	Analyses: <i>PCBs TOC/GS</i>
Collection Time: <i>1108</i>	
Sample ID: <i>SS-ST01-111207</i>	

Sample Description: *Black silt and organic Detritus*

Strong sulfide odor
SPOTTY sheen on surface - sheen noticed throughout Grab

Attempt #2

N Latitude: <i>Nothing 2708600.18</i>	Grab Size: <i>0.1-m²</i>
E Longitude: <i>Easting 815404.64</i>	Analyses: <i>PCBs TOC/GS</i>
Time: <i>1116</i>	
Sample ID: <i>SS-ST01-111207-DUP</i>	

Sample Description: *Black/Brown silt and organic Detritus*

SPOTTY sheen on surface - strong sulfide odor

Additional Comments:

Deployment No. 2

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Field Daily Log Form

Date: 11/7/07

Weather: 50°F / Sunny / 8 kts WNW

Tides:

536 @ 4.0H
1213 @ 0.3L
1755 @ 3.6H

Monitoring Period:

From: 0800 To: 12:30

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:

dredging complete

Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
<u>ST01</u>	<u>2.2</u>	<u>1.08</u>
<u>ST02</u>	<u>2.8</u>	<u>1.02</u>
<u>"</u>	<u>2.4</u>	<u>2.02</u>
<u>ST03</u>	<u>3.2</u>	<u>1.04</u>
<u>ST04</u>	<u>2.6</u>	<u>1.00</u>

Oil sheen/ Debris: none

Samples Collected for Laboratory Analysis

Sample IDs:

PCB (Sediment Trap) NA

PCB (Surface Grab) NA

Turbidity (500ml) NA

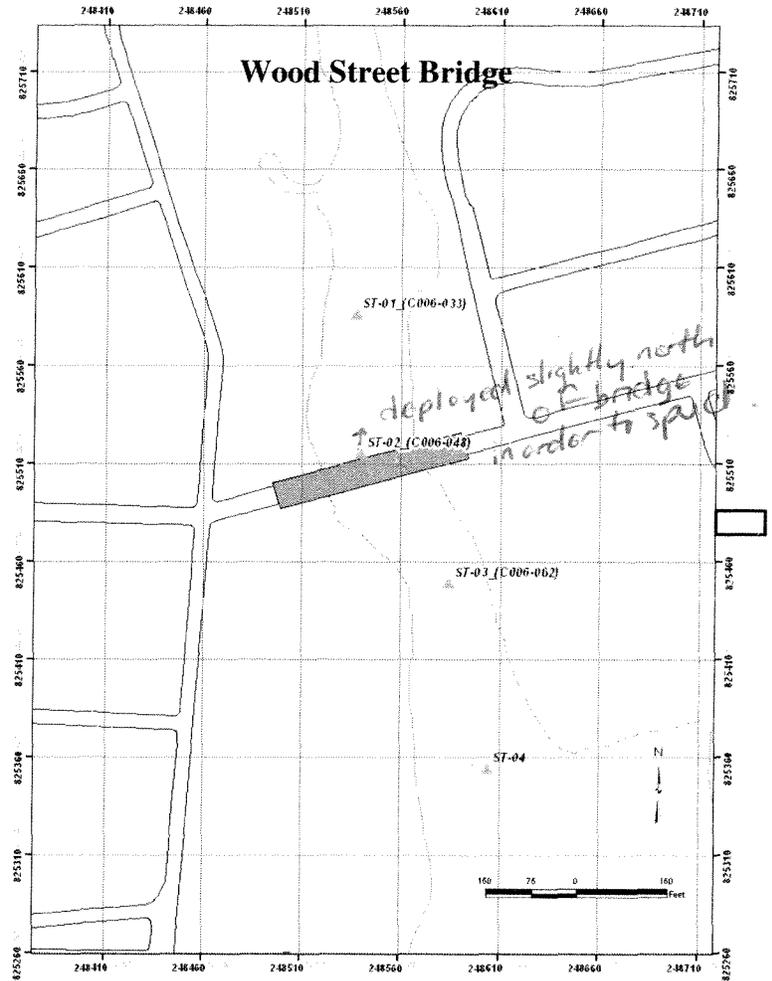
Dissolved PCB (2x1L) NA

Notes:

very low tide for sed trap deployment. churned up the bottom a bit at ST-04.

Sampling Crew: Mike McKee / Mike Walsh

Chief Scientist Signature: Michael P. [Signature]



dGPS Calibration Form

Project #: G606422

INITIALS MPM

CHECK GPS against at least one reference checkpoint at beginning of each day.

GPS Reference Checkpoint Name Jacobs NBH Benchmark
Benchmark Location:

Time	Units and Datum	Northing / Latitude	Easting / Longitude
Beginning of day	<u>MA State Plane 2001 (ft)</u>	<u>2701293.880</u>	<u>814160.870</u>

Comments -

Replacement Trimble XRS Pro used.

Date/Time 11/7/07 Vessel Gale force

Unit Make/Model Trimble XRS Pro

Sud Trap
G600422

Mooring Deployment/Retrieval Log and Calibration Form

Project No. G600422		Date: 11/6/07	Recorded By: MPM
Station ID: ST03		On Station: (local) 0921	Off Station: (local) 0925
Northing (NAD83, feet) 2708169.790		Easting (NAD83, feet) 815567.815	
Water depth (ft): 2.3		DGPS Accuracy Estimate (± m): 2.87	
Sensor Depth (ft): 1.04		Deployment/Retrieval Time: (local) 11/1/07 @ 0921	
Data File Name: ST03B1 ¹ ST03-2A		Instrument Model / SN: 06J1733 AB	
General Water Description-Option (from back-up meter)			
Temperature (°C): 12.21		: D.O. (mg/L) 4.94	
Salinity (‰): 27.75			
Turbidity (NTU): 3.2			
CALIBRATION and MAINTENANCE			
DO membrane changed? Y N		Turbidity Wiper Changed? Y N	
Battery Voltage: 12.5		Turbidity wiper parks 180° from optics? Y N	
Parameter	Initial Reading	Calibrated Reading	Calibration Data (acceptable range)
Conductivity (mS/cm)	0.977	1.0	Cell constant (4.55 - 5.45)
Depth (ft)	0.665	0.000	Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	0.07	0.00	Turbidity Offset:
Turbidity (NTU) 123	119.1	123.0	
D.O. (% Sat)	99.5	99.5	D.O. Gain (0.7 - 1.4)
Field Activities / Comments / Observations:			
pH 4.0	4.03	4.00	
pH 7.0	7.02	7.00	
chl	-0.1	-0.1	
ST03-2A			
① Renamed data file to correspond w/ rest of series - MPM 12/19/07			

Retrieved

DUXBURY OPERATIONS

SURVEY PROBLEM LOG

SURVEY: Sed Trap / Pass Samp
Please record any problems or issues.

DATE: 11/7/07

0830 - depart from deck for NWS bridge

0901 - arrive at ST01 & deployed sed traps

0905 - YSI cast (1 depth)

0910 - arrive at ST02 & deployed traps just N of station

0915 - YSI cast (2 depths)

0921 - arrived @ ST03 & deployed traps & YSI casts

0925 - YSI cast (1 depth)

0927 - arrived @ ST04 & deployed traps

0930 - YSI cast (1 depth) & depart for NBH4

1037 - arrive @ NBH4 & collect PEDS
1 = South
2 = mid
3 = North

1045 - YSI cast

1055 - water collection @ 8' WD

1138 - on station @ NBH2 / collect PEDS
1 = South
2 = mid
3 = North

1145 - YSI cast

1205 - water collection @ 12' WD

1215 - rinsate blank

1230 - back @ deck

Mooring Deployment/Retrieval Log and Calibration Form

Project No. <u>G606422</u>		Date: <u>11/29/2007</u>	Recorded By: <u>MW</u>
Station ID: <u>ST03</u>		On Station: (local) <u>1005</u>	Off Station: (local) <u>1030</u>
Northing (NAD83, feet)		Easting (NAD83, feet)	
Water depth (ft): <u>5.2'</u>		Sample Platform: <u>Vessel</u> Wading	Deployment/Retrieval Time: (local) <u>1025</u>
Sensor Depth (ft): <u>4'</u>			
Data File Name: <u>ST03B2</u> ② <u>ST03-2B</u>		Instrument Model / SN: <u>02A0880AA</u> ① M An	
General Water Description-Option (from back-up meter)			
Temperature (°C):		: D.O. (mg/L)	
Salinity (‰):			
Turbidity (NTU):			
CALIBRATION and MAINTENANCE			
DO membrane changed? <input checked="" type="radio"/> Y <input type="radio"/> N		Turbidity Wiper Changed? <input type="radio"/> Y <input checked="" type="radio"/> N	
Battery Voltage: <u>12.1</u>		Turbidly wiper parks 180° from optics? <input checked="" type="radio"/> Y <input type="radio"/> N	
Parameter	Initial Reading	Calibrated Reading	Calibration Data (acceptable range)
Conductivity (mS/cm)	<u>988</u>	<u>1001</u>	Cell constant (4.55 - 5.45)
Depth (ft)	<u>-0.013</u>	<u>0.000</u>	Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	<u>1.2</u>	<u>0.0</u>	Turbidity Offset:
Turbidity (NTU) 123	<u>121.6</u>	<u>123.0</u>	
D.O. (% Sat)	<u>100.6</u>	<u>100.6</u>	D.O. Gain (0.7 - 1.4)
Field Activities / Comments / Observations:			
<u>PH 4.00</u>	<u>3.99</u>	<u>4.00</u>	
<u>PH 7.00</u>	<u>6.92</u>	<u>7.00</u>	
① wiper on sensor not working / redeployed sensor from previous week w/ new filename.			

Retrieved
12/10/07
@0915
An
11/29/07

② File name changed to correspond w/ rest of series - MPM 12/19/07

Field Daily Log Form

Date: 12/10/07 Weather: 32°F / rainy / winds N 5-10kts

Tides:
H 0752 @ 4.0
L 1330 @ 0.2
H 2014 @ 3.2

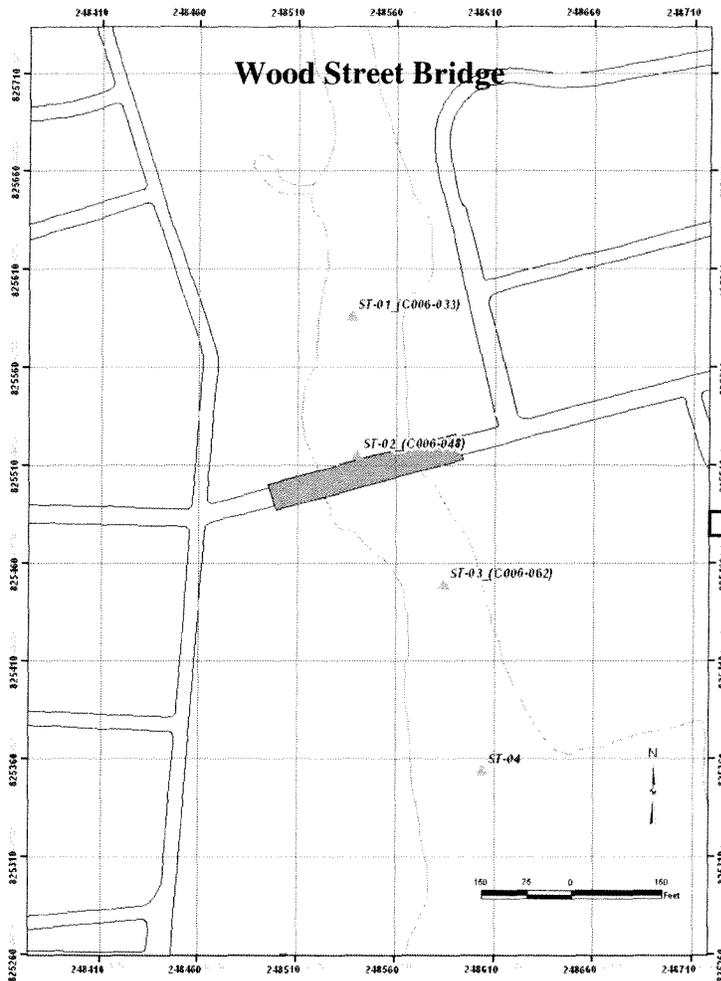
Monitoring Period:
 From: 0800 To: 1000
 Tidal Stage: HWS Ebb LWS Flood
 Dredging Activity:

dredging complete

Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
<u>ST04</u>	<u>X</u>	<u>X</u>
<u>ST03</u>	<u>X</u>	<u>X</u>
<u>ST02</u>	<u>X</u>	<u>X</u>
<u>ST01</u>	<u>X</u>	<u>X</u>

① mpm
12/10/07



Oil sheen/ Debris: none

Samples Collected for Laboratory Analysis

Sample IDs:
 PCB (Sediment Trap) ST-ST01#-MMDBY4-Rep
 PCB (Surface Grab) NA
 Turbidity (500ml) NA
 Dissolved PCB (2x1L) NA

Notes:

① Not able to conduct YSI casts during recovery → area around NWS bridge was iced out and we had to operate quickly to recover traps & fixed YSI before getting iced in.

Sampling Crew: Mike McKee Mike Walsh

Chief Scientist Signature: Mark P. H.

Passive Sampling Devices (G921346)
SURVEY RECORD LOG

SURVEY: Sediment Traps/Passive Samplers

DATE: 12/10/07

- 0815 Depart dock for North Wood St. Bridge to collect sediment traps
- 0845 Arrive at station 4 and begin retrievals (south to North)
- 0930 Depart NWS area for dock to drop off samples & YSE
- 1005 Depart dock for NBH4
- 1050 Arrive at NBH4 & recover SPMD/SPME canisters (21 day)
- 1058 Recover 21 day PEDS
- 1115 YSE cast & bulk water (8' WD)
- 1132 Depart for NBH2
- 1159 Arrive @ NBH2 and retrieve SPMDs/SPMEs
- 1220 Recover PEDS (21 Day)
- 1235 YSE cast & collect bulk water (10' WD)
- 0300 Back at dock

Deployment No. 3

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Field Daily Log Form

Date: 03/14/08 Weather: 50°F / overcast / windy Spts S

Tides:

L 7:41 @ 0.3
H 14:28 @ 2.9
L 19:43 @ 0.3

Monitoring Period:

From: 12:00 To: 16:15

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:

Pre-dredge

Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
<u>ST01</u>	<u>1.0</u>	<u>2.0'</u>
<u>ST02</u>	<u>1.2</u>	<u>3.1'</u>
<u>ST03</u>	<u>1.1</u>	<u>2.05'</u>
<u>ST04</u>	<u>1.0</u>	<u>2.0'</u>

Oil sheen/ Debris:

Samples Collected for Laboratory Analysis

Sample IDs:

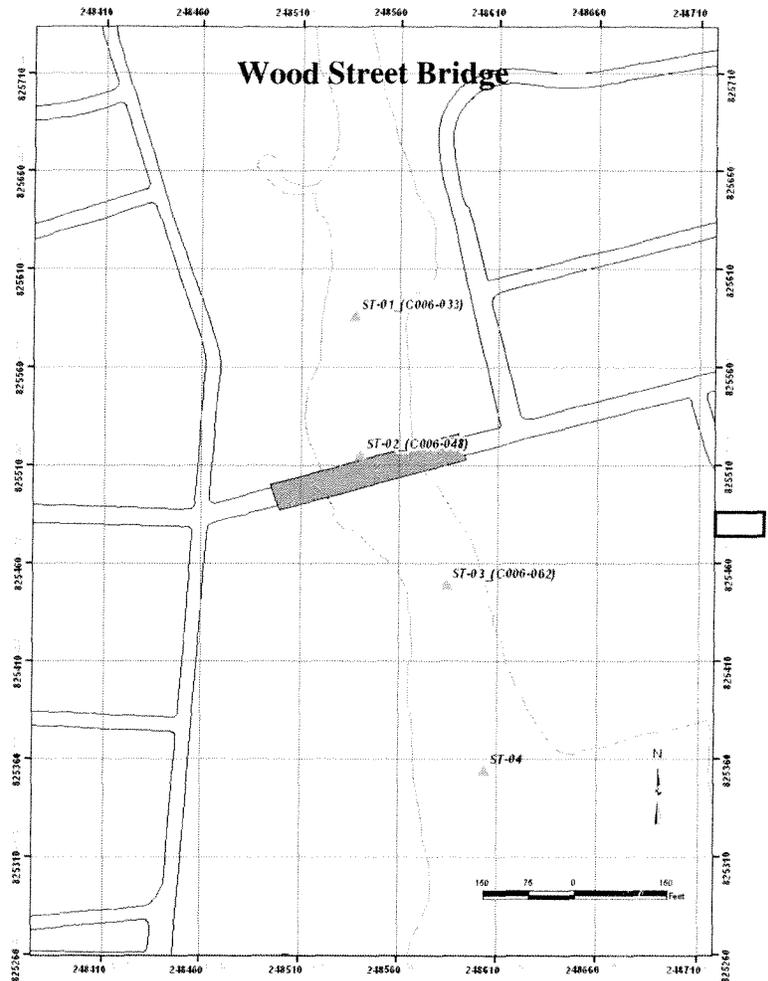
PCB (Sediment Trap) N/A
PCB (Surface Grab) N/A
Turbidity (500ml) N/A
Dissolved PCB (2x1L) N/A

Notes:

Reddish brown tint to the water near Wood St bridge (humics?)
Sediment traps deployed for two weeks

Sampling Crew: Mike McKee / Mike Walsh

Chief Scientist Signature: [Signature]



dGPS Calibration Form

Project #: G606422

INITIALS MPM

CHECK GPS against at least one reference checkpoint at beginning of each day.

GPS Reference Checkpoint Name NBH Trailer porch (NW corner)

Benchmark Location:

Time	Units and Datum	Northing / Latitude	Easting / Longitude
Beginning of day	MA SP 2001 / NAD83	2701153.27	814566.01

PDOP
2.43

Comments - explor st 210; WGS 84 41° 39.514N 070° 55.222W Acc=33'

The new leased Trimble GeoXT did not have an active GPS upon boot. Reboot (soft reboot) corrected the problem after speaking to tech support at U.S. Environmental

Date/Time 03/14/08 Vessel Gale Force

Unit Make/Model Trimble GeoXT

YSI Calibration Form
Daily 2007 WQ Monitoring for New Bedford Harbor – G606422

Instrument Model # 4920

S/N# 02B00711 AA

Date: <u>3/14/2008</u>		Initials: <u>MPM</u>	
DO membrane changed? <input checked="" type="radio"/> Y <input type="radio"/> N		Turbidity Wiper Changed? <input checked="" type="radio"/> Y <input type="radio"/> N	
Battery Voltage: <u>12.4</u>		Turbidly wiper parks 180° from optics? <input checked="" type="radio"/> Y <input type="radio"/> N	
Parameter	Initial Reading	Calibrated Reading	Calibration Data (acceptable range)
Conductivity (mS/cm)	<u>1039</u>	<u>1.000</u>	Cell constant (4.55 – 5.45)
Depth (ft)	<u>0.821</u>	<u>0.002</u>	Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	<u>2.1</u>	<u>0.0</u>	Turbidity Offset:
Turbidity (NTU) 123	<u>122.5</u>	<u>123.0</u>	
D.O. (% Sat)	<u>100.2% 9.674</u>	<u>→ "</u>	D.O. Gain (0.7 - 1.4)
pH 4	<u>4.06</u>	<u>4.00</u>	
pH 7	<u>7.07</u>	<u>6.99</u>	
Comments:	<u>pH 10</u>	<u>9.84</u>	<u>9.97</u>

Date:		Initials:	
DO membrane changed? Y N		Turbidity Wiper Changed? Y N	
Battery Voltage:		Turbidly wiper parks 180° from optics? Y N	
Parameter	Initial Reading	Calibrated Reading	Calibration Data (acceptable range)
Conductivity (mS/cm)			Cell constant (4.55 – 5.45)
Depth (ft)			Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0			Turbidity Offset:
Turbidity (NTU) 123			
D.O. (% Sat)			D.O. Gain (0.7 - 1.4)
pH 4			
pH 7			
Comments:			

Mooring Deployment/Retrieval Log and Calibration Form

Project No. 606422		Date: 3/14/2008	Recorded By: MW/MM
Station ID: ST-03		On Station: (local) 1535	Off Station: (local) 1546
Northing (NAD83, feet) 2705163.51		Easting (NAD83, feet) 815510.03	DGPS Accuracy Estimate (± m): 2.09
Water depth (ft): 4.9'		Sample Platform: Vessel	Deployment/Retrieval Time: (local) 1546 / -
Sensor Depth (ft): ~2' from bottom		Wading	
Data File Name: ST03 ← ① MPM ST03_3A		Instrument Model / SN: 02B 007 11AA	
General Water Description-Option (from back-up meter)			
Temperature (°C): 6.53		Other:	
Salinity (‰): 13.68		D.O. (mg/L) 11.16	
Turbidity (NTU): 1.1		pH (pH units): 7.46	
CALIBRATION and MAINTENANCE			
DO membrane changed? <input checked="" type="checkbox"/> Y <input type="checkbox"/> N		Turbidity Wiper Changed? <input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
		Chlorophyll Wiper Changed? <input type="checkbox"/> Y <input type="checkbox"/> N N/A	
Battery Voltage: 12.3		Turbidity wiper parks 180° from optics? <input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
		Chlorophyll Wiper Parks 180° from optics? <input type="checkbox"/> Y <input type="checkbox"/> N N/A	
Parameter	Initial Reading	Calibrated Reading	Calibration Data (acceptable range)
Conductivity (mS/cm)	1.039	1.000	Cell constant (4.55 - 5.45)
pH 4 ± 1	4.06	4.00	MV (0 ± 50)
pH 7 ± 1	7.07	6.99	MV (+ -172 ± 7 from 7 buffer)
pH 10 ± 1	9.84	9.97	
Depth (ft)	0.821	0.002	Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	2.1	0.0	Turbidity Offset:
Turbidity (NTU) 123	122.5	123.0	
D.O. (% Sat)	100.9	9.67 mg/l	D.O. Gain (0.7 - 1.4)
Field Activities / Comments / Observations:			
ST03_3A → 03/14/08 through 03/28/08			
ST03_3B → 03/28/08 through 04/15/08			
ST03_4A → 04/15/08 through 05/15/08			

Removed
04/15/08
1438

① Filename changed to correspond with deployment period - MPM 05/19/08

DUXBURY OPERATIONS

SURVEY PROBLEM LOG

SURVEY: NBH Sed Trap

DATE: 03/14/08

Please record any problems or issues.

~1000 - Arrive at NBH trailer, calibrate YSI sensor, benchmark the
Trimble GeoXT on the porch, load gear onto boat

1140 - Arrive at the public launch in Fairhaven and launch
pontoon boat

1200 - Depart for upper Harbor

1300 - Arrived at NBH ST-01 and prepared to deploy sediment
traps

1315 - Deployed 1st three traps at ST-01 and conducted
YSI cast \rightarrow salinity values near 0 \rightarrow may need to
recal

1330 - Deploy remaining traps and head for more saline
waters to test YSI

1438 - YSI cast at area H to quickly test salinity values
11 ppt seems reasonable for position in the Harbor \rightarrow return
to ST-01 to conduct YSI casts at sed trap locations

1545 - Depart for Jacobs dock to pick up 20' spuds

1615 - Return to Fairhaven launch and recover boat

Field Daily Log Form

Date: 03/28/08 Weather: 40°F/cloudy/winds 10-15 NE

Tides:
0.5' @ 05:42
2.4' @ 13:16
0.5' @ 17:48

Monitoring Period:
From: 08:00 To: 11:00
Tidal Stage: HWS Ebb LWS Flood
Dredging Activity:

NA

Turbidity Summary Location	Turbidity (NTU)	Sensor/water Depth (ft)
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

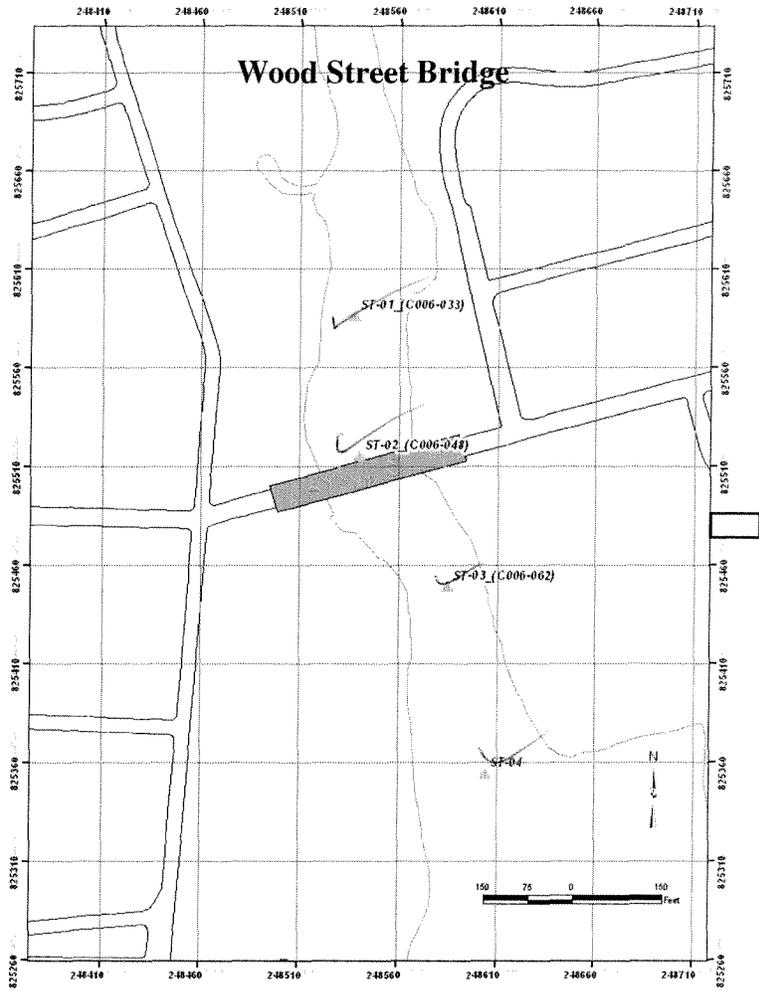
Oil sheen/ Debris: _____
Samples Collected for Laboratory Analysis

Sample IDs:
PCB (Sediment Trap) N/A
PCB (Surface Grab) N/A
Turbidity (500ml) N/A
Dissolved PCB (2x1L) N/A

Notes:
Sediment traps deployed for 2 weeks so far, checking amount of material collected -> Light veneer of sediments at bottom of HDPE containers. Re-deployed for 2 weeks. Checked battery life & stated data file for YSI

Sampling Crew: Mike Walsh / Mike McKee

Chief Scientist Signature: [Signature]



dGPS Calibration Form

Project #: G606422

INITIALS MPM

CHECK GPS against at least one reference checkpoint at beginning of each day.

GPS Reference Checkpoint Name NBH Trailer Porch (NW corner)

Benchmark Location:

Time	Units and Datum	Northing / Latitude	Easting / Longitude
Beginning of day	MA 2001 SP NAD83 (ft)	2701152.61'	814564.27'

DDOP
3.86

Comments -

None

Date/Time 03/28/08 08:15 Vessel Gale Force

Unit Make/Model Trimble GeoXT

Deployment No. 4

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Field Daily Log Form

Date: 04/15/08 Weather: 50°F/sunny/winds 10-15 kts S

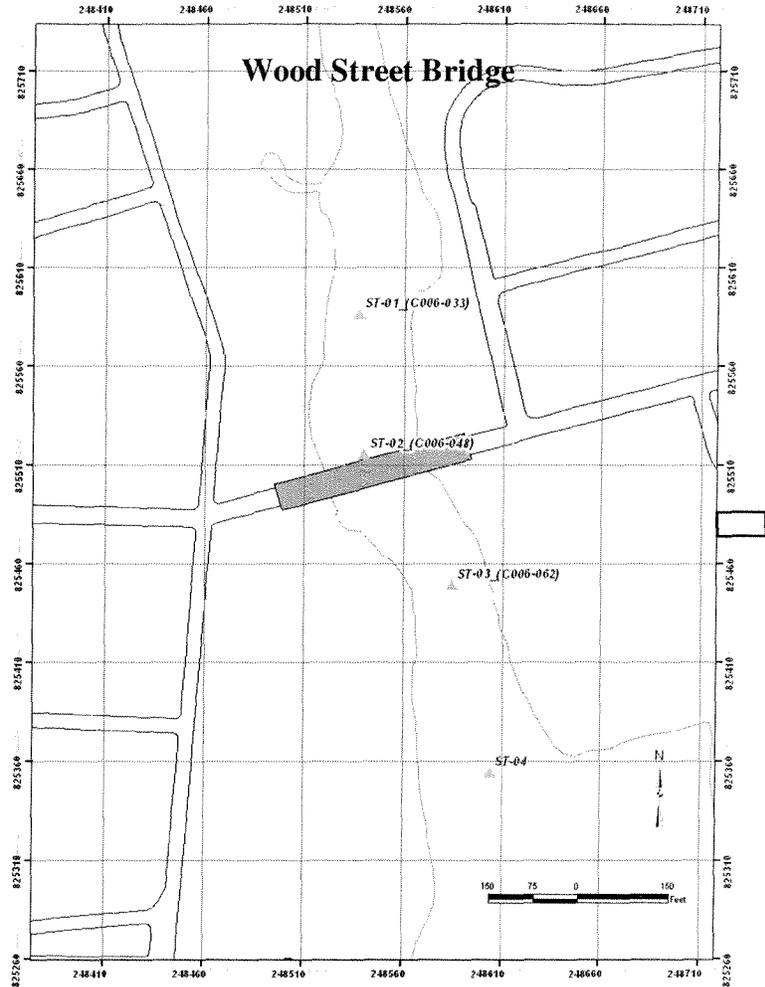
Tides:
3.6' @ 4:49
0.2' @ 11:23
3.7' @ 17:16

Monitoring Period:
 From: 1400 To: 1700
 Tidal Stage: HWS Ebb LWS Flood
 Dredging Activity:

None

Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
ST-01	+0.4	2.04'
ST-02	-0.3	4.00'
ST-03	-0.3	2.00'
ST-04	-0.1	2.02'



Oil sheen/ Debris: _____

Samples Collected for Laboratory Analysis

Sample IDs:

PCB (Sediment Trap) N/A
 PCB (Surface Grab) N/A
 Turbidity (500ml) N/A
 Dissolved PCB (2x1L) N/A

Notes:

- Reddish brown bit to water near Wood St. Bridge
- American eel in sed trap ST-02.B
- Sediment traps recovered and re-deployed

Sampling Crew: Mike McKee / Mike Walsh

Chief Scientist Signature: Michael P. [Signature]

dGPS Calibration Form

Project #: G606422

INITIALS MPM

CHECK GPS against at least one reference checkpoint at beginning of each day.

GPS Reference Checkpoint Name NBH Trailer Porch (NW corner)
Benchmark Location:

PDOP
2.29

Time	Units and Datum	Northing / Latitude	Easting / Longitude
Beginning of day	NA SP 2001 NAD83 ft	2701151.53	814564.17

Comments -

GPS ~ 10 ft off the reference point in the AM. Checked all settings (ie, datum, units, benchmark waypoint) and all were correct. Reloaded factory settings and the problem was corrected.

Date/Time 04/15/08 1718 Vessel Gale Force

Unit Make/Model Trimble GeoXT

Mooring Deployment/Retrieval Log and Calibration Form

Project No. G606422		Date: 04/15/08	Recorded By: MPM/MW
Station ID: ST-03		On Station: (local) 1430	Off Station: (local)
Northing (NAD83, feet) 2708168		Easting (NAD83, feet) 815569	DGPS Accuracy Estimate (± m): 2.87
Water depth (ft): 36'		Sample Platform: Vessel Wading	Deployment/Retrieval Time: (local) 04/15/08 1650 / 05/15/08 1459 ①
Sensor Depth (ft): 26'			
Data File Name: ST-03E ② ST03-4A		Instrument Model / SN: G920 / 02B0071AA	
General Water Description-Option (from back-up meter)			
Temperature (°C): 12.77		Other:	
Salinity (‰): 26.20		D.O. (mg/L) 10.21	
Turbidity (NTU): -0.1		pH (pH units): 8.01	
CALIBRATION and MAINTENANCE			
DO membrane changed? Y <input checked="" type="checkbox"/> N		Turbidity Wiper Changed? Y <input checked="" type="checkbox"/> N	
		Chlorophyll Wiper Changed? Y <input checked="" type="checkbox"/> N NA	
Battery Voltage: 12.9		Turbidity wiper parks 180° from optics? Y <input checked="" type="checkbox"/> N	
		Chlorophyll Wiper Parks 180° from optics? Y <input checked="" type="checkbox"/> N NA	
Parameter	Initial Reading	Calibrated Reading	Calibration Data (acceptable range)
Conductivity (mS/cm)	0.985	1.000	Cell constant (4.55 - 5.45)
pH 4 ± 1	3.91	4.01	MV (0 ± 50)
pH 7 ± 1	7.10	7.00	MV (+ -172 ± 7 from 7 buffer)
pH 10 ± 1	9.86	9.99	
Depth (ft)	0.467	0.004	Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	0.7	0.0	Turbidity Offset:
Turbidity (NTU) 123	126.3	123.0	
D.O. (% Sat)	10.23/102%		D.O. Gain (0.7 - 1.4) D.O. Charge 48.2
Field Activities / Comments / Observations:			
① Re-deployed on 05/15/08 @ 1615 b/c other sonde is providing inconsistent DO & turbidity readings			
② Filename changed to correspond w/ deployment period - MPM 05/19/08			

Field Daily Log Form

Date: 04/22/08 Weather: 60°F/calm/clear/winds 5-10 SE

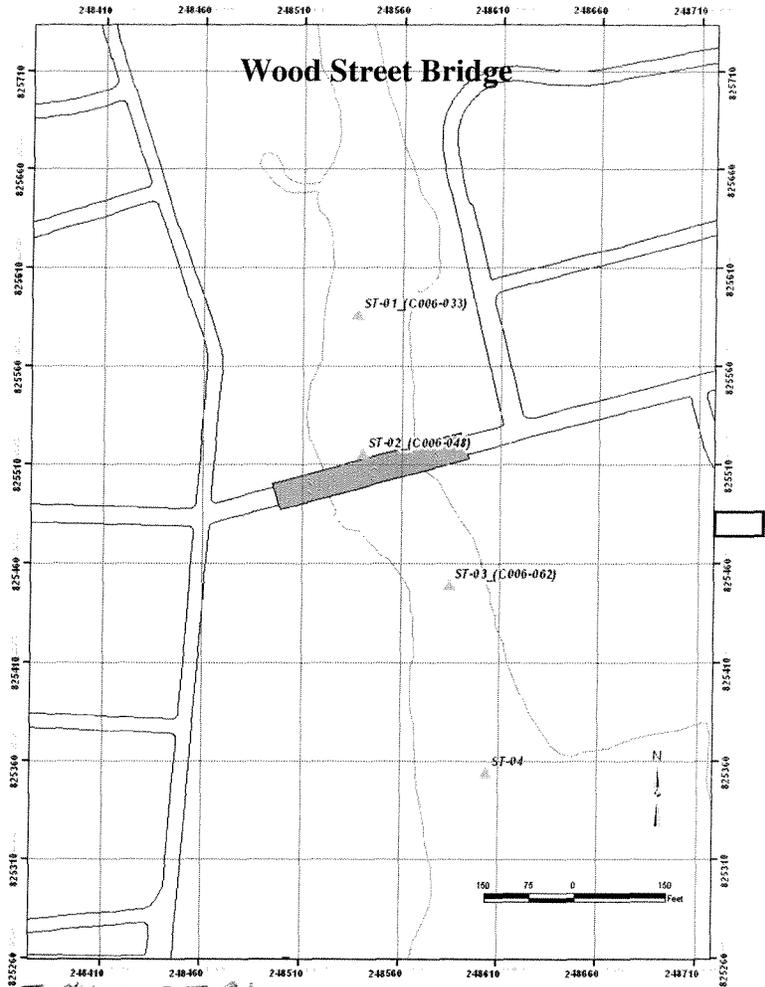
Tides:
0.0 @ 3:20
3.4 @ 9:51
0.0 @ 15:08

Monitoring Period:
From: 0800 To: 1100
Tidal Stage: HWS Ebb LWS Flood
Dredging Activity:

None

Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)



Oil sheen/ Debris: slight sheen on grabs @ ST-04 & ST-01

Samples Collected for Laboratory Analysis

Sample IDs:

PCB (Sediment Trap) ## MDDYY

PCB (Surface Grab) SS-Station-Date-rep

Turbidity (500ml) _____

Dissolved PCB (2x1L) _____

Notes:

Sediment grabs at four sed trap locations w/ 0.1m²
van Veen grab

Sampling Crew: Mike Walsh / Mike McKee

Chief Scientist Signature: [Signature]

dGPS Calibration Form

Project #: 606422

INITIALS MPM

CHECK GPS against at least one reference checkpoint at beginning of each day.

GPS Reference Checkpoint Name NBH Trailer Porch (NW corner)
Benchmark Location:

Time	Units and Datum	Northing / Latitude	Easting / Longitude
Beginning of day	^{MA} SP 200' NAD83 feet	270115 4.86'	814565.20'

Comments -

Date/Time 04/22/08 Vessel Gale Force

Unit Make/Model Trimble GeoXT

Pre-Dredge

SURVEY RECORD LOG

SURVEY: Sediment Grabs

DATE: 04/22/08

Please record any problems or issues.

0815 - On station at NBH ST-04 to collect surf sed grabs

0901 - depart st-04 for ST-03

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Surface Sampling Event No. 2

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Station Log for Benthic Sediment Grab Samples

Project Name: *New Bedford Harbor Environmental Monitoring*
 Project #: *G606422*
 Client: *USACE NAE*

Location: *New Bedford, MA*
 Chief Scientist:
 Vessel: *R/V Gale Force*

Field Measurements

Survey ID: *07SEOTRAP* Station Depth (feet): *3.0'*
 Station ID: *ST-04* Time on Station: *0818*
 Date: *04/22/08* Time Depart Station: *0901*
 Recorded by: *MM*

Attempt #1

Northing: *2701850.93'* PDOP *2.03* Grab Size: *0.1-m²*
 Easting: *815615.74'* Analyses: *PCBs / TOC & GS*
 Collection Time:
 Sample ID: *SS04-042208*

Sample Description:

overpenetrated - using mud shoe

Attempt #2

Latitude: *2701850.93'* Grab Size: *0.1-m²*
 Longitude: *815615.74'* Analyses: *PCBs / TOC & GS*
 Time: *0835*
 Sample ID: *SS04-042208*

Sample Description:

*olive brown silt sand mixture over dark grey coarse sand/silt
 clay mixture / some gravel and shell hash / slight H₂S smell
 light sheen in mixture*

Additional Comments:

biota - sea lettuce, snails, amphipods, small cel

Field Measurements

Survey ID: *07SEOTRAP* Station Depth (feet): *3.7'*
 Station ID: *ST-03* Time on Station: *0908*
 Date: *04/22/08* Time Depart Station: *0925*
 Recorded by: *MM*

Attempt #1

Northing: *2708196.58'* PDOP *2.16* Grab Size: *0.1-m²*
 Easting: *815580.11'* Analyses: *PCBs / TOC & GS*
 Collection Time: *0913*
 Sample ID: *SS03-042208*

Sample Description:

*olive brown to black silt / mixture of fine sand
 no clear odor*

Attempt #2

Latitude: Grab Size: *0.1-m²*
 Longitude: Analyses: *PCBs*
 Time:
 Sample ID:

Sample Description:

Additional Comments:

biota - sea lettuce, worm tubes, amphipods

Station Log for Benthic Sediment Grab Samples

Project Name: *New Bedford Harbor Environmental Monitoring*
 Project #: *G606422*
 Client: *USACE NAE*

Location: *New Bedford, MA*
 Chief Scientist:
 Vessel: *R/V Gale Force*

Field Measurements

Survey ID: *07SEDTRAP* Station Depth (feet): *4.4'*
 Station ID: *ST-01* Time on Station: *0945*
 Date: *04/22/08* Time Depart Station: *0952 1020*
 Recorded by: *MM*

Attempt #1

Northing: *2708609.67'* PDOP *4.14* Grab Size: *0.1-m²*
 Easting: *815420.65'* Analyses: *PCBs / TOC & GS*
 Collection Time: *0952*
 Sample ID: *SS01-042208*

Sample Description: *olive brown to black silt / detritus mixture*
no clear odor

Attempt #2

Latitude: *2708609.67'* Grab Size: *0.1-m²*
 Longitude: *815420.65'* Analyses: *PCBs / TOC & GS*
 Time: *1008*
 Sample ID: *SS01-042208-DUP*

Sample Description: *olive brown to black silt / detritus mixture*
no clear odor

Additional Comments:

light sheen on both grabs / lots of detritus / some amphipods and worm tubes

Field Measurements

Survey ID: *07SEDTRAP* Station Depth (feet): *6.5'*
 Station ID: *ST-02* Time on Station: *1030*
 Date: *04/22/08* Time Depart Station:
 Recorded by: *MM*

Attempt #1

Northing: *2708382'* Grab Size: *0.1-m²*
 Easting: *815420'* Analyses: *PCBs / TOC & GS*
 Collection Time: *1035*
 Sample ID: *SS02-042208*

Sample Description: *olive brown to black silt / detritus mixture*
slight H₂S odor

Attempt #2

Latitude: Grab Size: *0.1-m²*
 Longitude: Analyses: *PCBs*
 Time:
 Sample ID:

Sample Description:

Additional Comments:

biota- snails, sea lettuce, small eel, worm tubes

Deployment No. 5

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Field Daily Log Form

Date: 05/15/08

Weather: 65°F / overcast / winds 10 kts S

Tides:

<u>3.3</u>	@	<u>05:11</u>
<u>0.4</u>	@	<u>11:23</u>
<u>4.0</u>	@	<u>17:36</u>

Monitoring Period:

From: 1200 To: 1700

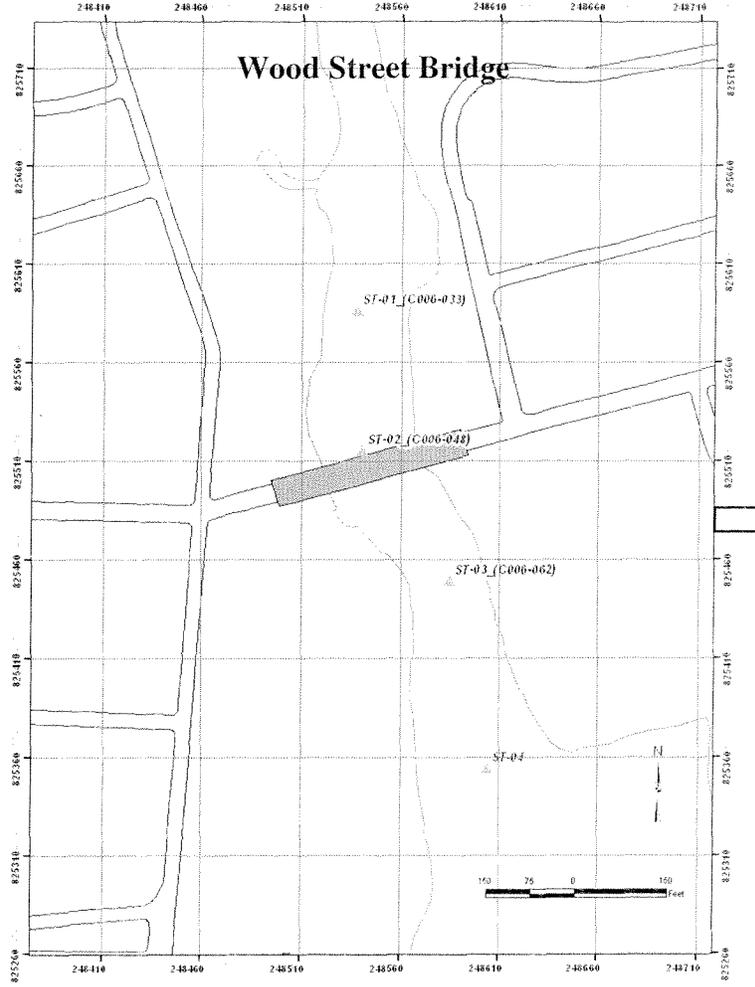
Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:

- none
- shore-based mob for Aerovox dredging

Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
<u>ST-01</u>	<u>0.9</u>	<u>2.0'</u>
<u>ST-02</u>	<u>0.4</u>	<u>4.0'</u>
<u>ST-03</u>	<u>0.6</u>	<u>2.0'</u>
<u>ST-04</u>	<u>0.7</u>	<u>1.0'</u>



Oil sheen/ Debris:

Samples Collected for Laboratory Analysis

Sample IDs:

PCB (Sediment Trap) ST-## - MMDDYY - rep

PCB (Surface Grab) NA

Turbidity (500ml) NA

Dissolved PCB (2x1L) NA

Notes:

- strong paint smell near stations ST03 & ST04

Sampling Crew: Mike Walsh / Mike McKee

Chief Scientist Signature: Michael P. [Signature]

dGPS Calibration Form

Project #: G606422

INITIALS NPM

CHECK GPS against at least one reference checkpoint at beginning of each day.

GPS Reference Checkpoint Name NBH Trailer porch (NW corner)
Benchmark Location:

Time	Units and Datum	Northing / Latitude	Easting / Longitude
Beginning of day	MA State Plane 2001 NAD83, U.S. feet	2701155.61'	814565.01'

Comments -

Date/Time 05/15/08/11:45 Vessel Gale Force

Unit Make/Model Trimble GeoXT

Attachment 1-
Battelle
Applied Coastal and Environmental Services

Deployment/Retrieval Log and Calibration Form

Project No: 6606422-07SEOTRAP		Date: 5/15/08	Recorded By: N. WATSH	
Station ID: ST03		On Station: (local) 1608	Off Station: (local)	
Latitude (Northing (circle one)) 2708173'	Longitude (Easting (circle one)) 815557'	Navigation System (units) NAD 83/feet	DGPS Accuracy Estimate (units): 1.92	
Water depth (ft): 4.3'	Sample Platform: <input checked="" type="radio"/> Vessel <input type="radio"/> Wading	Deployment/Retrieval Time: (2) MPM (local) 05/15/08 / 05/30/08 1615 / 1500		
Sensor Depth (ft): 2.3'				
Data File Name: ST03F ③ ST03-5A		Instrument Model / SN: Battelle Jorda 06J1733 AB		
General Water Description-Option (from back-up meter if available)				
Temperature (°C): 15.85		Other:		
Salinity (‰): 21.85		D.O. (mg/L) 6.30		
Turbidity (NTU): -0.6		pH (pH units): 7.70		
CALIBRATION and MAINTENANCE				
DO membrane changed? <input checked="" type="radio"/> Y <input type="radio"/> N		Turbidity Wiper Changed? <input checked="" type="radio"/> Y <input type="radio"/> N		Chlorophyll Wiper Changed? <input checked="" type="radio"/> Y <input type="radio"/> N
Battery Voltage: 12.3		Turbidity wiper parks 180° from optics? <input checked="" type="radio"/> Y <input type="radio"/> N		Chlorophyll Wiper Parks 180° from optics? <input checked="" type="radio"/> Y <input type="radio"/> N
Parameter	Initial Reading	Calibrated Reading	Cal Constants	Calibration Data (acceptable range)
Conductivity (mS/cm)	48.67	50.00		Cell constant should be between 4.55 - 5.45
pH 4 ± 1	4.05	4.00		180 ± 50 MV (span from pH7 should be -165 to 180 MV)
pH 7 ± 1	7.05	7.00		0 MV ± 50 MV
pH 10 ± 1	9.73	9.95		-180 ± 50 MV (span from pH7 should be -165 to 180 MV)
pH - General	NA	NA	NA	pH offset -400 to 400; pH gain between -6.07 and -4.22
Depth (ft)	1.01	0.000		System is vented, acceptable offset is -6 to 6
Turbidity (NTU) 0	-0.8	0.0		Turbidity Offset: -10 to 10
Turbidity (NTU) 123	124.5	123.0		Range is ratio of M1 to A1 = 0.6 to 1.5
D.O. (% Sat)	100.0% / 7.55 mg/l	100.0% / 9.85 mg/l		D.O. Gain (0.5 - 2.0)
Field Activities / Comments / Observations:				
chl	0.2	0.0		

① WN M.WATSH 5/15/08 ③ MPM - renamed to match deployment - 08/25/08
 ② MPM 5/15/08 - redeployed 6920 sensor (SN 02B0071AA) b/c the Battelle sonde (above) was providing inconsistent data. Installed new batteries in 6920 and started new data file (ST03F) - see previous log

**Attachment 1:
Battelle
Applied Coastal and Environmental Services**

Deployment/Retrieval Log and Calibration Form

Project No. <u>6606422</u>		Date: <u>5/27/08</u>	Recorded By: <u>MW</u>	
Station ID: <u>ST03</u>		On Station: <u>1513</u> (local)	Off Station: <u>1525</u> (local)	
Latitude/Northing (circle one)	Longitude/Easting (circle one)	Navigation System (datum, units)	DGPS Accuracy Estimate (units± m):	
Water depth (ft):	Sample Platform: <u>Vessel</u> Wading		Deployment/Retrieval Time: <u>05/30/08</u> (local) <u>Deploy 15:20 / Rec 06/11/08</u>	
Sensor Depth (ft):			<u>13:20</u>	
Data File Name: ST0304C ^① <u>ST03-5B</u>		Instrument Model / SN: <u>0100474 AA</u>		
General Water Description-Option (from back-up meter if available)				
Temperature (°C):		Other: <u>N/A</u>		
Salinity (‰):		D.O. (mg/L): <u>N/A</u>		
Turbidity (NTU):		pH (pH units):		
CALIBRATION and MAINTENANCE				
DO membrane changed? <input checked="" type="checkbox"/> Y <input type="checkbox"/> N		Turbidity Wiper Changed? <input checked="" type="checkbox"/> Y <input type="checkbox"/> N		Chlorophyll Wiper Changed? Y <input type="checkbox"/> N <input checked="" type="checkbox"/> <u>NA</u>
Battery Voltage:		Turbidity wiper parks 180° from optics? <input checked="" type="checkbox"/> Y <input type="checkbox"/> N		Chlorophyll Wiper Parks 180° from optics? Y <input type="checkbox"/> N <input checked="" type="checkbox"/> <u>NA</u>
Parameter	Initial Reading	Calibrated Reading	Cal Constants	Calibration Data (acceptable range)
Conductivity (mS/cm)	9117 <u>1023</u>	<u>1000</u>		Cell constant should be between 4.55 - 5.45
pH 4 ± 1	<u>3.85</u>	<u>3.98</u>		180 ± 50 MV (span from pH 7 should be ~165 to 180 MV)
pH 7 ± 1	<u>6.94</u>	<u>7.00</u>		0 MV ± 50 MV
pH 10 ± 1	<u>9.93</u>	<u>10.00</u>		-180 ± 50 MV (span from pH7 should be ~165 to 180 MV)
pH - General	NA	NA	NA	pH offset -400 to 400; pH gain between -6.07 and -4.22
Depth (ft)	<u>1.074</u>	<u>0.000</u>		System is vented, acceptable offset is -6 to 6
Turbidity (NTU) 0	<u>0.9</u>	<u>0.0</u>		Turbidity Offset: -10 to 10
Turbidity (NTU) 123	<u>128.6</u>	<u>123.0</u>		Range is ratio of M1 to A1 = 0.6 to 1.5
D.O. (% Sat)	107.0	<u>100.0</u>		D.O. Gain (0.5 - 2.0)
Field Activities / Comments / Observations:				

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Deployment No. 6

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Field Daily Log Form

Date: 06/11/08

Weather: 80°F / sunny / Winds 5-10 NW

Tides:

0.5' @ 0844
3.8' @ 1519
0.7 @ 2158

Monitoring Period:

From: 11:15 To: 14:30

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:

shoreline dredging w/
back hoe at Aerovox site

Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
<u>ST-01</u>	<u>19.3</u>	<u>3'</u>
<u>ST-02</u>	<u>20.7</u>	<u>5'</u>
<u>ST-03</u>	<u>19.6</u>	<u>3.7'</u>
<u>ST-04</u>	<u>2719.3</u>	<u>2.7'</u>

Oil sheen/ Debris: none

Samples Collected for Laboratory Analysis

Sample IDs:

PCB (Sediment Trap) ST ## MMDYY - REP

PCB (Surface Grab) NA

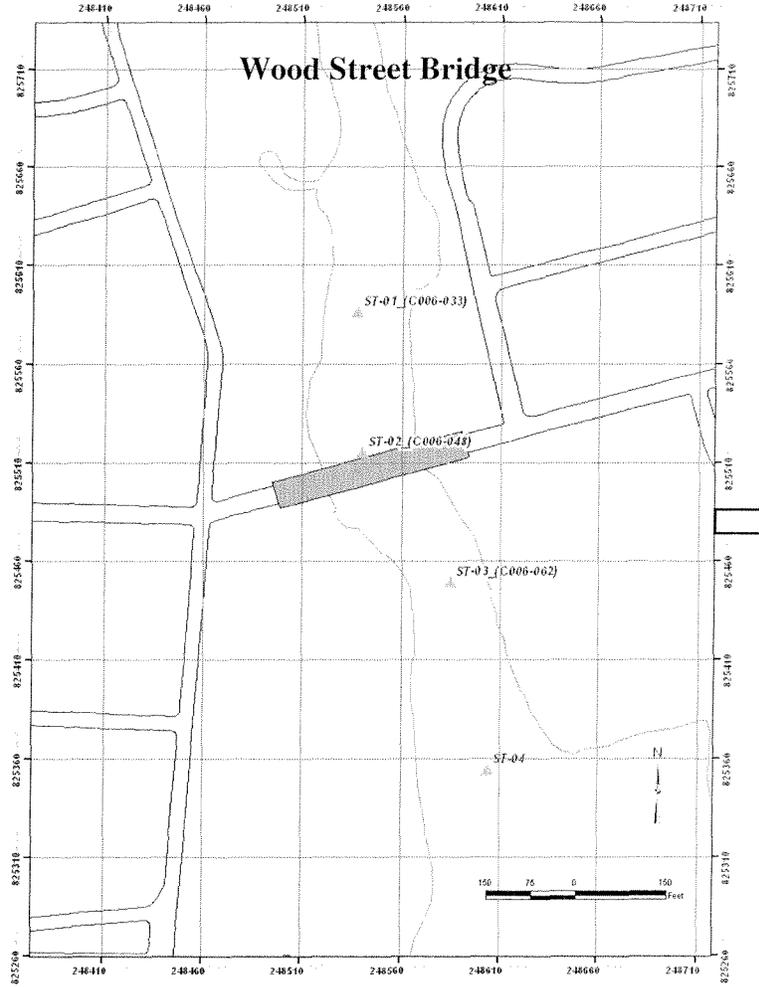
Turbidity (500ml) NA

Dissolved PCB (2x1L) NA

Notes:

Sampling Crew: Mike Walsh / Mike McKee

Chief Scientist Signature: *Michael P. ...*



dGPS Calibration Form

Project #: G606422

INITIALS MPM

CHECK GPS against at least one reference checkpoint at beginning of each day.

GPS Reference Checkpoint Name NBH Trailer (NW corner)
Benchmark Location:

Time	Units and Datum	Northing / Latitude	Easting / Longitude
Beginning of day	NA SP 2001 NAD83 / u.s. Feet	2701154.11'	814564.23'

Comments -

Date/Time 06/11/08 Vessel Gale Force

Unit Make/Model Garmin Trimble GeoXT

Sediment Trap Deployment (G606422) In situ Data Field Form

Dredging Location	Aerovox
Dredging Description	shoreline dredging w/ backhoe
Survey Vessel	Gale Force
Chief Scientist	Mike McKee
Sampling Technician	
Vessel Captain	Mike Walsh
Other Personnel	
Weather conditions	80°F / sunny / 5-10 kts NW

Date	06/11/08
Page	1 of 1

Tide information	
High	3.4' @ 0245
Low	0.5' @ 0844
High	3.8' @ 1519
Low	0.7' @ 2158

Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity NTU	Salinity PPT	DO mg/L	Temp °C	pH	Notes
ST-01	1215	2708615.92	815410.41	3'	1.007'	19.3	31.60	10.12	26.73	7.86	PDOP-3.30
ST-02	1224	2708378.69	815423.23	5'	1.039'	20.7	31.44	8.56	26.24	7.85	PDOP-3.85
↓	↓	↓	↓	↓	2.012'	21.3	32.31	7.98	25.90	7.82	
					3.022'	21.7	32.56	7.64	25.79	7.81	
ST-04	1248	2707859.91	815632.91	2.7'	1.062'	19.3	32.82	10.69	26.59	8.05	PDOP-2.29
ST-03	1310	2708166.92	8155172.28	3.7'	1.066'	19.6	32.83	10.46	26.41	7.98	PDOP-2.85
↓	↓	↓	↓	↓	2.030'	19.3	32.97	9.43	26.07	7.92	
		2708166.92	8155172.28								
Signature of Data recorder: <i>Michael D. McKee</i>											

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Deployment No. 7

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Field Daily Log Form

Date: 07/10/08 Weather: Sunny/85°F/Winds light

Tides:
L 0.6' @ 0737
H 3.8' @ 1440
L 1.0' @ 2056

Monitoring Period:
From: 11:15 To: 1445
Tidal Stage: HWS Ebb LWS Flood
Dredging Activity:

shoreline dredging
at Aerovox

Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
<u>ST01</u>	<u>7.1</u>	<u>2'</u>
<u>ST02</u>	<u>7.1</u>	<u>4'</u>
<u>ST04</u>	<u>5.9</u>	<u>2'</u>
<u>ST03</u>	<u>7.8</u>	<u>3'</u>

Oil sheen/ Debris: yes

Samples Collected for Laboratory Analysis

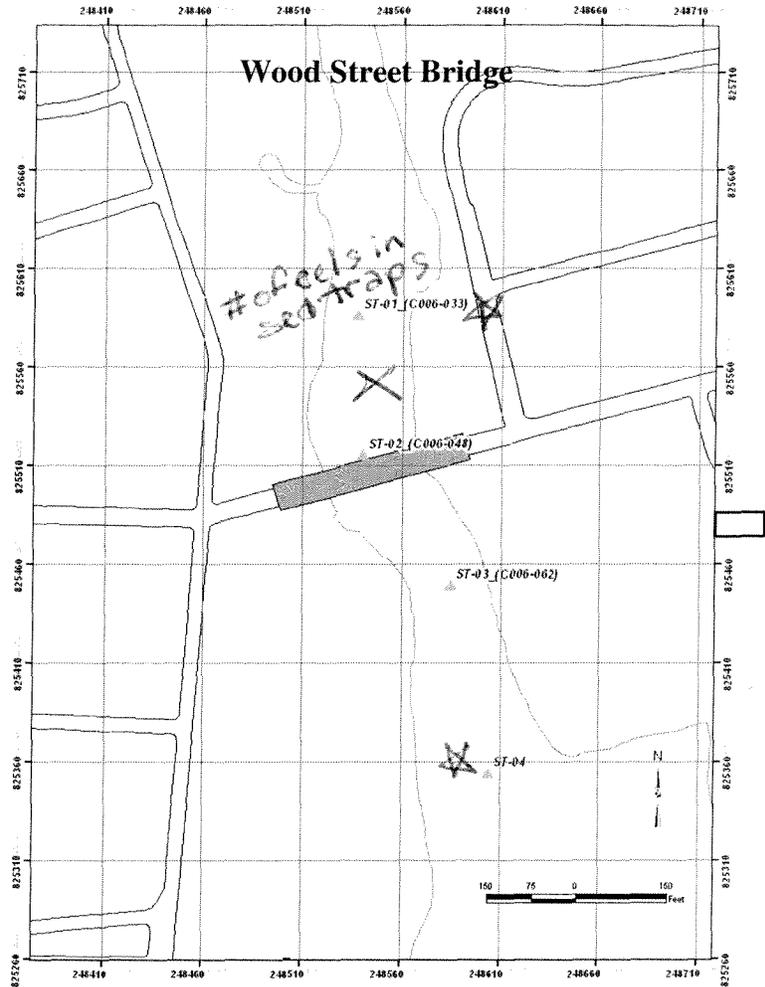
Sample IDs:
PCB (Sediment Trap) ST-##-MMDDYY-REP
PCB (Surface Grab) NA
Turbidity (500ml) NA
Dissolved PCB (2x1L) NA

Notes:

* noticed oily sheen on deck after redeploying traps.
X at least 20 dead fish (1-2") floating on surface
slight oily sheen in ST-04-071008-A

Sampling Crew: Mike Walsh / Mike McKee

Chief Scientist Signature: Mark P. [Signature]



dGPS Calibration Form

Project #: G606422-07SEDTRAP

INITIALS MPM

CHECK GPS against at least one reference checkpoint at beginning of each day.

GPS Reference Checkpoint Name NBH Trailer Porch (NW corner)

Benchmark Location:

PDOP
4.57

Time	Units and Datum	Northing / Latitude	Easting / Longitude
Beginning of day	<u>NA SP 2001</u> <u>NAD 83 (US FT)</u>	<u>2701155.42'</u>	<u>814566.12'</u>

Comments -

Date/Time 07/10/08 11:07 Vessel Gale Force

Unit Make/Model Trimble XRS P2

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Deployment No. 8

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Field Daily Log Form

Date: 07/31/08 Weather: overcast / 75°F /

Tides:
4.2' H @ 07:31
-0.2' L @ 12:56
4.9' H @ 19:58

Monitoring Period:
From: 0800 To: 1200
Tidal Stage: HWS Ebb LWS Flood
Dredging Activity:

shoreline demarcating
at Aerovox

Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
<u>ST-04</u>	<u>0.6</u>	<u>1'</u>
<u>ST-01</u>	<u>2.7</u>	<u>1'</u>
<u>ST-02</u>	<u>8.4</u>	<u>1'</u>
<u>ST-03</u>	<u>7.0</u>	<u>1'</u>

Oil sheen/ Debris: yes

Samples Collected for Laboratory Analysis

Sample IDs:

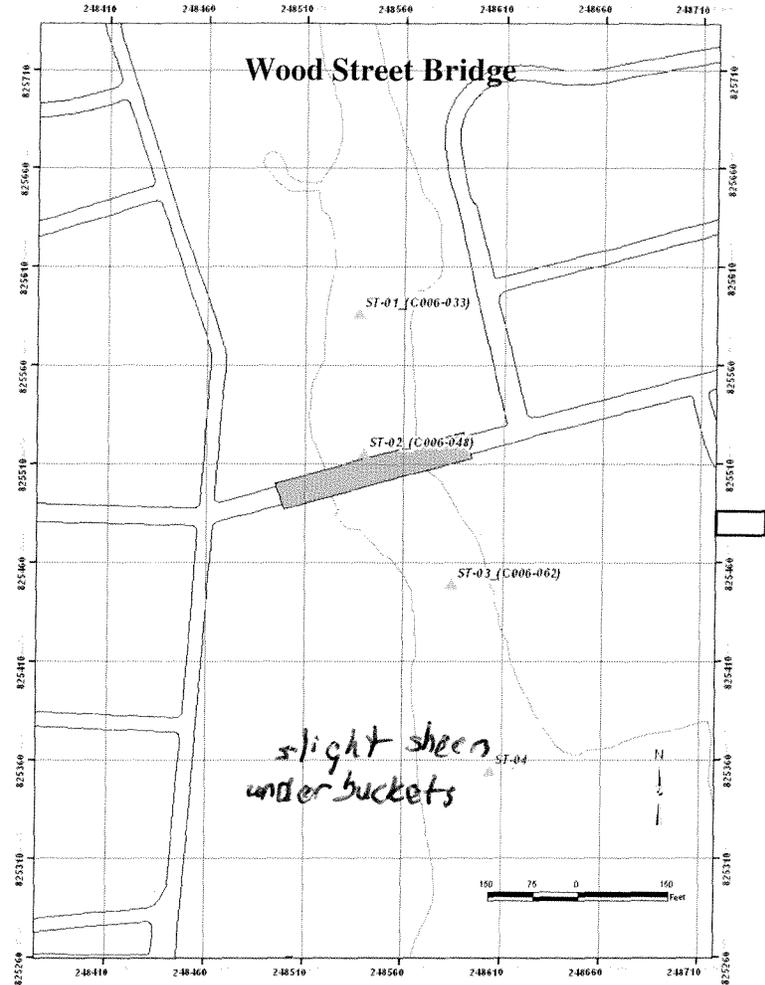
PCB (Sediment Trap) ST-##-MMDDYY-REP

PCB (Surface Grab) NA

Turbidity (500ml) NA

Dissolved PCB (2x1L) NA

Notes: small baitfish schooling ①



Sampling Crew: Mike McKee / Jess Fahay / Matt Fitzpatrick

Chief Scientist Signature: [Signature]

① upon closer observation, water dripping from overhead utility cable - MPM
07/31/08

Mooring Deployment/Retrieval Log and Calibration Form

Project No. G606422		Date: 07/31/08	Recorded By: MPM
Station ID: ST03		On Station: (local)	Off Station: (local)
Northing (NAD83, feet) 2708166.92'		Easting (NAD83, feet) 815572.28'	DGPS Accuracy Estimate (± m):
Water depth (ft): 4.3'	Sample Platform: Vessel Wading		Deployment/Retrieval Time: (local) Deployed 09:35/
Sensor Depth (ft): 2.3'			
Data File Name: ST03_08A		Instrument Model / SN:	
General Water Description-Option (from back-up meter)			
Temperature (°C): 28.14		Other:	
Salinity (‰): 26.75		D.O. (mg/L) 1.07	
Turbidity (NTU): 7.0		pH (pH units): 7.19	
CALIBRATION and MAINTENANCE			
DO membrane changed? (Y) N	Turbidity Wiper Changed? (Y) N	Chlorophyll Wiper Changed? Y N N/A	
Battery Voltage: 12.7v	Turbidity wiper parks 180° from optics? (Y) N	Chlorophyll Wiper Parks 180° from optics? Y N N/A	
Parameter	Initial Reading	Calibrated Reading	Calibration Data (acceptable range)
Conductivity (mS/cm)	0.968	1.001	Cell constant (4.55 - 5.45)
pH 4 ± 1	3.97	4.00	MV (0 ± 50)
pH 7 ± 1	7.06	7.00	MV (+ -172 ± 7 from 7 buffer)
pH 10 ± 1	9.68	9.95	
Depth (ft)	0.105'	-0.001'	Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	-2.6	0.0	Turbidity Offset:
Turbidity (NTU) 123	124.5	123.0	
D.O. (% Sat)	100%	8.91 mg/L	D.O. Gain (0.7 - 1.4)
Field Activities / Comments / Observations:			

Retrieved
08/25/08
1435

Dredging Location	N/A
Dredging Description	demobing from Aerovox
Survey Vessel	Gale Force
Chief Scientist	Mike McKee
Sampling Technician	Jess Fahey
Vessel Captain	Matt Fitzpatrick
Other Personnel	
Weather conditions	

Date	07/31/08
Page	1 of 1

Tide information	
High	
Low	
High	
Low	

Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity NTU	Salinity	DO % sat	Temp	Notes
ST04	0928			4.9						
↓				↓	1.01	0.6 NTU	29.11	2.04	28.03	pH 7.41
					2.04	-0.1	28.65	2.22	27.63	pH 7.47
					3.08	0.2	28.91	2.18	27.49	pH 7.47
ST01	0954			5.0						
↓	↓			↓	1.02	2.7	27.37	1.26	28.21	pH 7.27
					2.01	5.5	27.89	1.30	28.21	pH 7.34
					3.01	2.28	28.29	1.02	28.05	pH 7.32
ST02	0913			6.9						
↓	↓			↓	1.03	8.4	27.62	1.07	28.27	pH 7.22
					2.02	3.6	29.08	1.36	28.26	pH 7.30
					3.01	1.7	29.36	1.35	28.14	pH 7.33
					4.01	0.4	29.70	1.14	27.87	pH 7.30
					5.02	-0.1	28.67	1.31	27.76	pH 7.33
ST03	0935			4.3						
↓	↓			↓	1.01	7.0	28.79	1.07	28.14	pH 7.19
					2.01	3.4	27.94	1.23	28.16	pH 7.29

Signature of Data recorder:

① 26.75

② 28.14

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Deployment No. 9

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Field Daily Log Form

Date: 08/25/08 Weather: 78°F / Winds 10-15 kts SW / cloudy

Tides:

L 0.4' @ 0820
H 4.1' @ 1551
L 0.7' @ 2215

Monitoring Period:

From: 12:30 To: 15:00

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:

- Dredging at Sawyer St. Cove

Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
ST-01	6.0	1'
ST-02	7.1	1'
ST-04	2.4	1'
ST-03	4.4	1'

Oil sheen/ Debris: none

Samples Collected for Laboratory Analysis

Sample IDs:

PCB (Sediment Trap) ST-#P-MMDDYY-REP

PCB (Surface Grab) NA

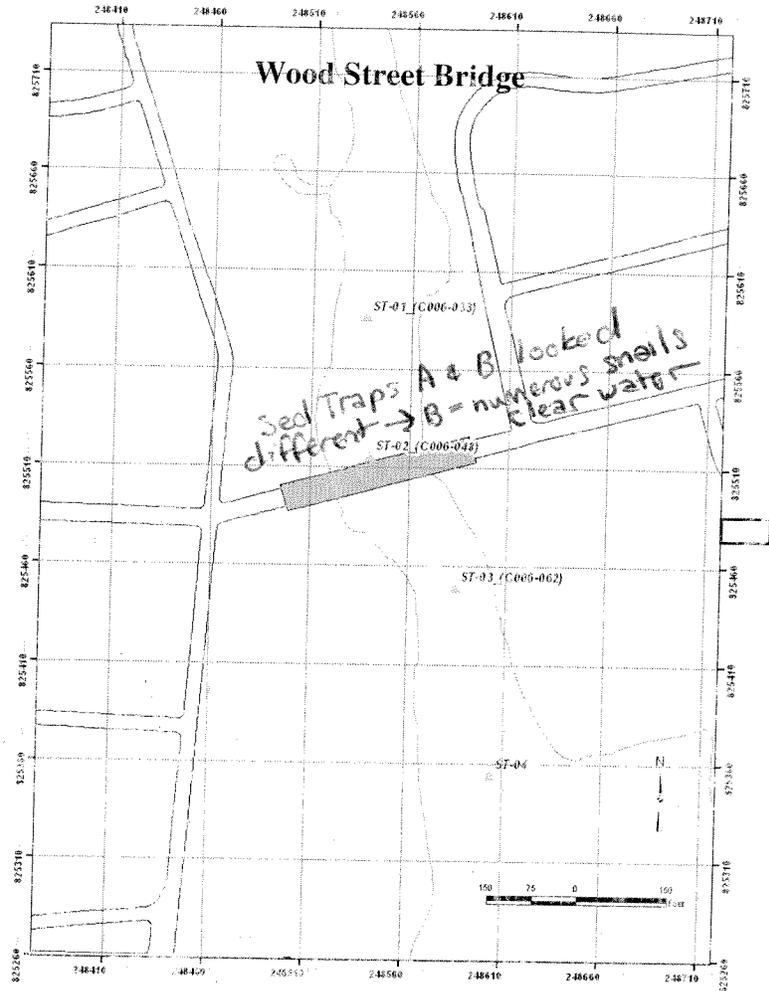
Turbidity (500ml) NA

Dissolved PCB (2x1L) NA

Notes:

Sampling Crew: Matt Fitzpatrick / Mike McKee

Chief Scientist Signature: [Signature]



dGPS Calibration Form

Project #:

INITIALS Matt B. Kuntz

CHECK GPS against at least one reference checkpoint at beginning of each day.

GPS Reference Checkpoint Name Outside of Cab trailer

Benchmark Location:

Time	Units and Datum	Northing / Latitude	Easting / Longitude
Beginning of day	NAD83 Mass St plane	2701156.66	814565.35

Comments -

3.58' from target

Date/Time 8/25/08 1147 Vessel Gale Force

Unit Make/Model Trimble Geo XT

Mooring Deployment/Retrieval Log and Calibration Form

Project No. G606422		Date: 08/25/08	Recorded By: MPM
Station ID: ST03		On Station: (local)	Off Station: (local)
Northing (NAD83, feet) N2708162.8'		Easting (NAD83, feet) E815570.9'	
Water depth (ft): 5.0'		Sample Platform: Vessel Wading	DGPS Accuracy Estimate (± m): PDOP - 2.73
Sensor Depth (ft): 3.0'			Deployment/Retrieval Time: (local) 1445
Data File Name: ST03-09A		Instrument Model / SN:	
General Water Description-Option (from back-up meter)			
Temperature (°C): 25.22		Other:	
Salinity (‰): 25.75		D.O. (mg/L) 10.65	
Turbidity (NTU): 4.4		pH (pH units): 8.30	
CALIBRATION and MAINTENANCE			
DO membrane changed? Y <input checked="" type="checkbox"/> N		Turbidity Wiper Changed? Y <input checked="" type="checkbox"/> N	
Battery Voltage: 12.4V		Turbidity wiper parks 180° from optics? Y <input checked="" type="checkbox"/> N	
		Chlorophyll Wiper Changed? Y <input checked="" type="checkbox"/> N NA	
		Chlorophyll Wiper Parks 180° from optics? Y <input checked="" type="checkbox"/> N NA	
Parameter	Initial Reading	Calibrated Reading	Calibration Data (acceptable range)
Conductivity (µS/cm)	1002	1000	Cell constant (4.55 - 5.45)
pH 4 ± 1	4.03	4.00	MV (0 ± 50)
pH 7 ± 1	7.10	7.00	MV (+ ~172 ± 7 from 7 buffer)
pH 10 ± 1	9.64	9.93	
Depth (ft)	-0.624	0.002	Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	1.2	0.0	Turbidity Offset:
Turbidity (NTU) 123	123.9	123.1	
D.O. (% Sat)	98.8	98.8	D.O. Gain (0.7 - 1.4)
Field Activities / Comments / Observations:			

Mooring Deployment/Retrieval Log and Calibration Form

Project No. G606422		Date: 9/16/08	Recorded By: MRF
Station ID: ST03		On Station: (local)	Off Station: (local)
Northing (NAD83, feet)		Easting (NAD83, feet)	
Water depth (ft):		Sample Platform: Vessel	Deployment/Retrieval Time: (local) YSE 6920 9810757AA
Sensor Depth (ft): ~2.0' from bottom		Wading	
Data File Name: ST10A		Instrument Model / SN:	
General Water Description-Option (from back-up meter)			
Temperature (°C):		Other:	
Salinity (‰):		D.O. (mg/L)	
Turbidity (NTU):		pH (pH units):	
CALIBRATION and MAINTENANCE			
DO membrane changed? Y <input checked="" type="radio"/> N		Turbidity Wiper Changed? Y <input checked="" type="radio"/> N	
		Chlorophyll Wiper Changed? Y <input checked="" type="radio"/> N NA	
Battery Voltage: 12.2		Turbidity wiper parks 180° from optics? Y <input checked="" type="radio"/> N	
		Chlorophyll Wiper Parks 180° from optics? Y <input checked="" type="radio"/> N NA	
Parameter	Initial Reading	Calibrated Reading	Calibration Data (acceptable range)
Conductivity (mS/cm)	50.097	50.000	Cell constant (4.55 - 5.45)
pH 4 ± 1	4.02	4.00	MV (0 ± 50)
pH 7 ± 1	7.11	7.00	MV (+ ~172 ± 7 from 7 buffer)
pH 10 ± 1	9.81	9.97	
Depth (ft)	-3.31	.001	Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	5.0	0	Turbidity Offset: 0.0
Turbidity (NTU) 123	123.2	123.0	
D.O. (% Sat)	100.6	100	D.O. Gain (0.7 - 1.4)
Field Activities / Comments / Observations:			

Deployment No. 10

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Field Daily Log Form

Date: 10/2/08 Weather: Rain then clearing

Tides:

Low @ 03:30
High @ 10:21
Low @ 16:08

Monitoring Period:

From: 0900 To: 11:30

Tidal Stage: HWS Ebb LWS Flood

Dredging Activity:

Active dredging in
Cove Area

Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
<u>ST01</u>	<u>3.4-4.5</u>	<u>1-4' / 5.4'</u>
<u>ST02</u>	<u>3.6-5.3</u>	<u>1-6' / 6.9'</u>
<u>ST04</u>	<u>3.5-4.5</u>	<u>1-4' / 5.2'</u>
<u>ST03</u>	<u>3.2-4.7</u>	<u>1-4' / 4.7-5.5'</u>

Oil sheen/ Debris: None

Samples Collected for Laboratory Analysis

Sample IDs:

PCB (Sediment Trap) STXX-MMDDYY-REP

PCB (Surface Grab) NA

Turbidity (500ml) NA

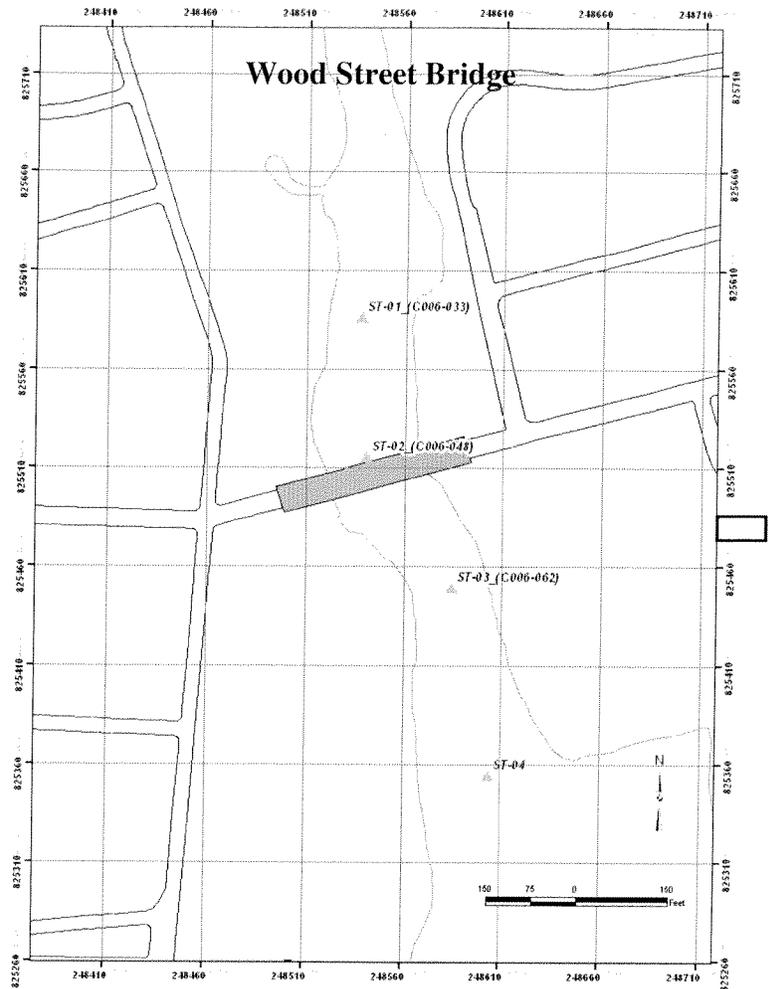
Dissolved PCB (2x1L) NA

Notes:

Very strong out going current observed throughout
the monitoring period
large schools of adult

Sampling Crew: Matt Fitzpatrick + Annie Murphy

Chief Scientist Signature: Matthew R. Light



Project No. G606422	Date: 10/2/08	Recorder: AFM
DGPS (make/model/SN): Trimble/GeoXT/4701415091	Coordinate System and units: NAD83 Mass State Plane feet	
Morning dGPS Check		
Time of check (local): 7:54	DGPS Estimate of Accuracy (PDOP): 4.69	
Benchmark or Reference Point ID: corner of stairs outside trailer	Benchmark or Reference Point Established By: MPM/Jacobs	
Established Latitude/Northing: 2701154.11	Established Longitude/Easting: 814564.23	
Measured Latitude/Northing: 2701154.45	Measured Longitude/Easting: 814563.37	
Instrument Measured Displacement (meters): ^{feet} 1.14 ft		
Displacement Acceptable? (≤ 3 m): <input checked="" type="radio"/> YES <input type="radio"/> NO		
Afternoon dGPS Check		
Time of check (local): 1200	DGPS Estimate of Accuracy (PDOP): 2.88	
Benchmark or Reference Point ID: corner of stairs outside trailer	Benchmark or Reference Point Established By: MPM/Jacobs	
Established Latitude/Northing: 2701154.11	Established Longitude/Easting: 814564.23	
Measured Latitude/Northing: 2701156.98	Measured Longitude/Easting: 814565.10	
Instrument Measured Displacement (meters): ^{feet} 2.92 ft		
Displacement Acceptable? (≤ 3 m): <input checked="" type="radio"/> YES <input type="radio"/> NO		
Field Activities / Comments / Observations:		

Field Team Leader Signature _____

Dredging Location	Cove Area
Dredging Description	Active dredging
Survey Vessel	Gale Force
Chief Scientist	Matt Fitzpatrick
Sampling Technician	Annie Murphy
Vessel Captain	Annie Murphy
Other Personnel	
Weather conditions	AM showers clearing by 9AM

Date	10/2/08
Page	1 of 1

Tide information	
High	10:21
Low	03:30
High	10:20 22:39
Low	16:08

Station Name	Time	Latitude	Longitude	Water depth (ft)	Sample Depth (ft)	Turbidity (NTU)	Salinity (PSU)	DO (mg/L)	DO (% sat)	Temp (°C)	ph	Notes
ST01	9:27	270861307	815597.71	5.4	1.0	3.4	1.30	7.62	80.5	17.57	6.35	Flood Tide
	9:29				2.0	4.3	15.35	4.71	54.8	19.0	6.82	
	9:30				3.0	4.5	18.90	3.72	44.6	19.25	6.98	
	9:31				4.0	4.2	19.72	3.04	36.8	19.27	7.05	
ST02	10:00	270839880	815420.80	6.9	1.0	3.6	3.0	6.82	71.8	17.95	6.76	
	10:01				2.0	4.2	15.43	4.62	54.6	19.7	6.98	
	10:02				3.0	4.2	19.24	3.46	41.1	19.29	7.07	
	10:03				4.0	4.2	20.09	2.84	34.5	19.31	7.12	
	10:04				5.0	5.3	20.84	2.19	26.5	19.31	7.12	
	10:05				6.0	5.1	21.34	2.6	25.5	19.33	7.14	
ST03	10:28	270784628	815630.45	5.2	1.0	3.5	3.20	6.94	75.3	18.02	6.81	
	10:29				2.0	4.3	18.52	4.65	55.6	19.21	7.13	
	10:30				3.0	4.3	20.86	4.28	52.9	19.31	7.26	
ST04	10:31	2708166.2	815568.82	5.5	4.0	4.5	21.72	3.62	44.7	19.36	7.22	
	10:52				1.0	3.2	4.05	6.69	72.6	17.99	6.74	
	10:53				2.0	4.4	18.2	4.24	51.0	19.5	7.05	
	10:54				3.0	4.2	20.14	4.02	49.2	19.25	7.20	
	10:55				4.0	4.7	21.64	3.09	35.8	19.37	7.17	

① s/b 9:28 AEM 10/2/08 ② 17.73 s/b AEM 10/2/08
 ③ s/b ST04 AEM 10/2/08

Field Daily Log Form

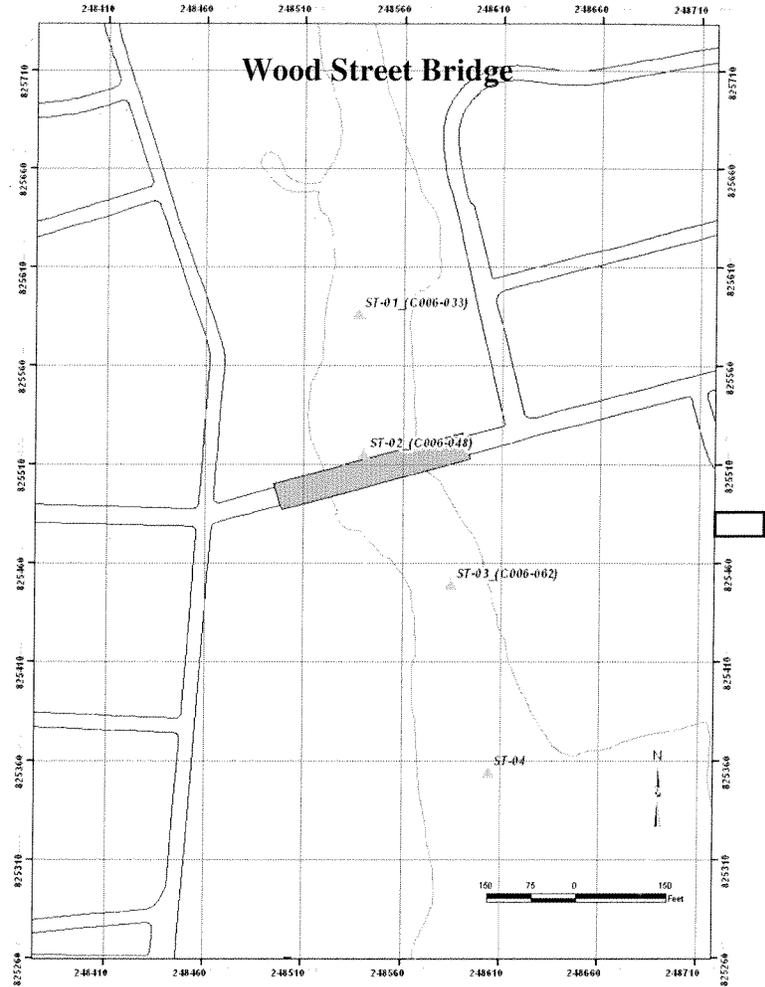
Date: 10/30/08 Weather: Sunny NW wind ~10kts

Tides:
High @ 9:13
Low @ 15:10
High @ 21:32

Monitoring Period:
From: 9:00 To: 11:00
Tidal Stage: HWS Ebb LWS Flood
Dredging Activity:
relative dredging,
Demob in
Pierce Mill Cove Area

Turbidity Summary

Location	Turbidity (NTU)	Sensor/water Depth (ft)
<u>ST01</u>	<u>2.0-1.9</u>	<u>1'-4' / 5.1'</u>
<u>ST02</u>	<u>1.7-2.2</u>	<u>1'-5' / 6.3'</u>
<u>ST03</u>	<u>1.6-3.4</u>	<u>1'-4' / 5.0'</u>
<u>ST04</u>	<u>2.1-2.3</u>	<u>1'-3' / 4.5'</u>



Oil sheen/ Debris: _____

Samples Collected for Laboratory Analysis

Sample IDs:

PCB (Sediment Trap) STXX-MMDDYY-REP

PCB (Surface Grab) NA

Turbidity (500ml) NA

Dissolved PCB (2x1L) NA

Notes:

Sampling Crew: Matt Fitzpatrick, Annie Murphy, Patrick Curran

Chief Scientist Signature: _____

Battelle

The Business of Innovation

Project No. G606422	Date: 10/30/08	Recorder: MRF
DGPS (make/model/SN): Trimble/GeoXT/4701415091	Coordinate System and units: NAD83 M _a St plane feet	
Morning dGPS Check		
Time of check (local): 0820	DGPS Estimate of Accuracy (PDOP): 2.63	
Benchmark or Reference Point ID: outside Lab trailer	Benchmark or Reference Point Established By: McKee / Jacobs	
Established Latitude/Northing: 2701154.11	Established Longitude/Easting: 814564.23	
Measured Latitude/Northing: 2701154.00	Measured Longitude/Easting: 814562.53	
Instrument Measured Displacement ^{feet} (meters): 1.66		
Displacement Acceptable? (≤ 3 m): <input checked="" type="radio"/> YES NO		
Afternoon dGPS Check		
Time of check (local): 1206	DGPS Estimate of Accuracy (PDOP): 2.45	
Benchmark or Reference Point ID: outside lab trailer	Benchmark or Reference Point Established By: McKee/Jacobs	
Established Latitude/Northing: 2701154.11	Established Longitude/Easting: 814564.23	
Measured Latitude/Northing: 2701159.13	Measured Longitude/Easting: 814564.76 814564.76	
Instrument Measured Displacement ^{feet} (meters): 5.15		
Displacement Acceptable? (≤ 3 m): <input checked="" type="radio"/> YES NO		
Field Activities / Comments / Observations:		

Field Team Leader Signature _____

Mooring Deployment/Retrieval Log and Calibration Form

Project No. G606422		Date: 10/30/08	Recorded By: AEM
Station ID:		On Station: (local)	Off Station: (local)
Northing (NAD83, feet)		Easting (NAD83, feet)	DGPS Accuracy Estimate (± m):
Water depth (ft):		Sample Platform: Gale Force	Deployment/Retrieval Time: (local)
Sensor Depth (ft):			
Data File Name:		Instrument Model / SN:	
General Water Description-Option (from back-up meter)			
Temperature (°C):		D.O. (mg/L):	
Salinity (psu):		pH :	
Turbidity (NTU):			
CALIBRATION and MAINTENANCE			
DO membrane changed? Y <input checked="" type="radio"/> N		Turbidity Wiper Changed? Y <input checked="" type="radio"/> N	
Battery Voltage: 10.8		Turbidly wiper parks 180° from optics? Y <input checked="" type="radio"/> N	
Parameter	Initial Reading	Calibrated Reading	Calibration Data (acceptable range)
Conductivity (mS/cm)	50102	50.008	Cell constant (4.55 – 5.45)
Depth (ft)	-0.031	0.0	Pressure offset, vented (0 ± 6)
Turbidity (NTU) 0	0.1	0.0	Turbidity Offset:
Turbidity (NTU) 123	124.4	123.0	
D.O. (% Sat)	102.7	100.6	D.O. Gain (0.7 - 1.4)
pH 4	4.03	4.00	
pH 7	6.92	7.00	
pH 10	10.13	10.03	
Field Activities / Comments / Observations:			
<u>End of day Readings</u>			
Conducivity - 50065			
Depth - 0.006			
Turbidity (0) - 0.6			
" (123) - 127.7			
DO % - 83.0%			
pH 4 - 4.03			
pH 10 - 10.01			
pH 7 - 6.93			

Dredging Location	Cove Area
Dredging Description	Demobilization
Survey Vessel	Gate Force
Chief Scientist	Matt Fitzpatrick
Sampling Technician	Annie Murphy / Patrick Curran
Vessel Captain	Matt Fitzpatrick
Other Personnel	
Weather conditions	Sunny NW winds ~10 KTS

Date	10/30/08
Page	1 of 1

Tide information	
High	913
Low	1510
High	2132
Low	

Arrival Time	Station Number	Time	Latitude	Longitude	Water depth	Sample Depth	Turbidity	Salinity	DO (mg/l)	Temp	pH	% DO sat.	Notes
900	ST01	0911	27086.63	815410.7	5.1	1.0	2.0	18.0	6.83	10.64	7.44	68.9	
						2.0	2.0	20.97	6.42	11.23	7.52	66.8	
						3.0	2.0	22.75	5.98	11.67	7.57	63.8	
						4.0	1.9	23.39	5.9	11.88	7.64	63.2	
928	ST02	930	2708460.7	815422.9	6.3	1.0	2.2	17.1	6.71	10.36	7.45	67.2	
						2.0	1.8	21.6	6.29	11.37	7.56	66.4	
						3.0	1.8	23.43	6.05	11.81	7.65	64.9	
						4.0	1.8	24.04	5.97	12.04	7.71	64.5	
						5.0	1.7	24.29	5.92	12.11	7.75	64.3	
944	ST03	950	2708162.4	815566.9	5.0	1.0	1.6	18.30	8.12	9.10	7.43	64.0	s/b 74.8
						2.0	2.0	23.7	5.94	11.97	7.57	63.9	s/b 64.0
						3.0	1.7	24.41	5.88	12.18	7.69	63.9	
						4.0	3.4	24.73	6.04	12.23	7.76	66.0	
1003	ST04	1010	2707850.2	815630.2	4.5	1.0	2.3	23.9	6.25	12.0	7.79	67.0	
						2.0	2.1	24.9	6.17	12.23	7.83	66.9	
						3.0	2.2	25.01	6.06	12.26	7.85	66.2	

Signature of Data recorder: *[Handwritten Signature]*

AEM 10/30/08

APPENDIX B

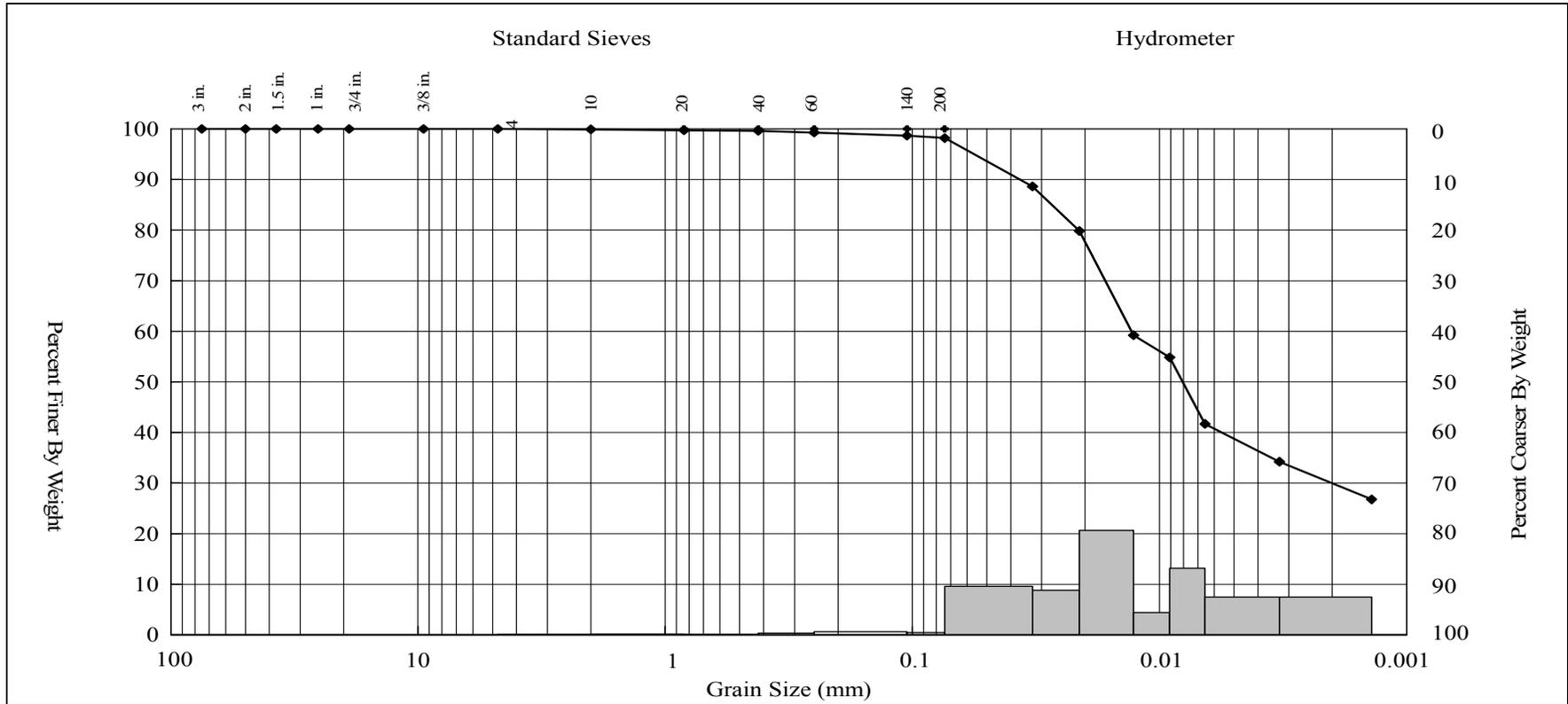
Grain Size and TOC Data

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Deployment No. 1 and
Surface Sampling Event No. 1

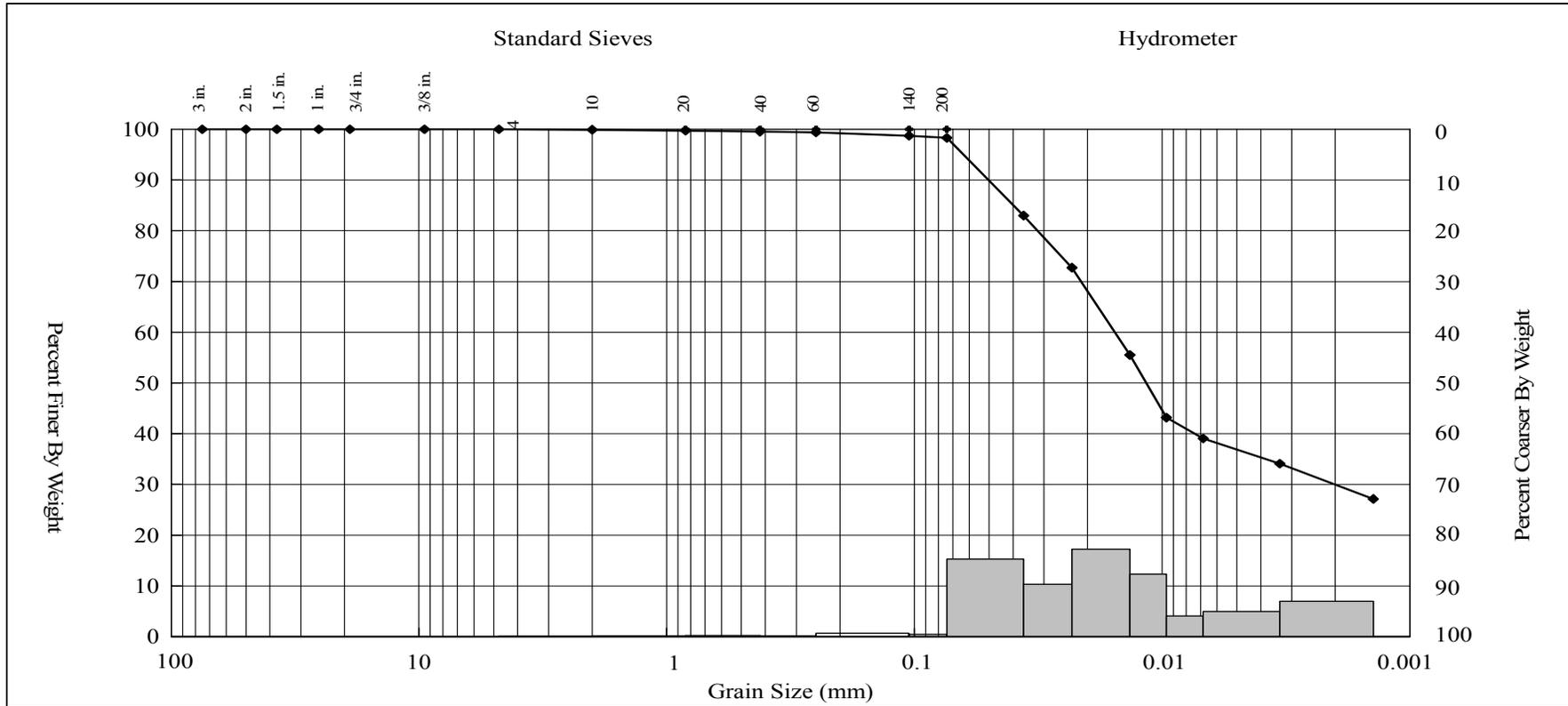
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GEOTECHNICAL RESULTS



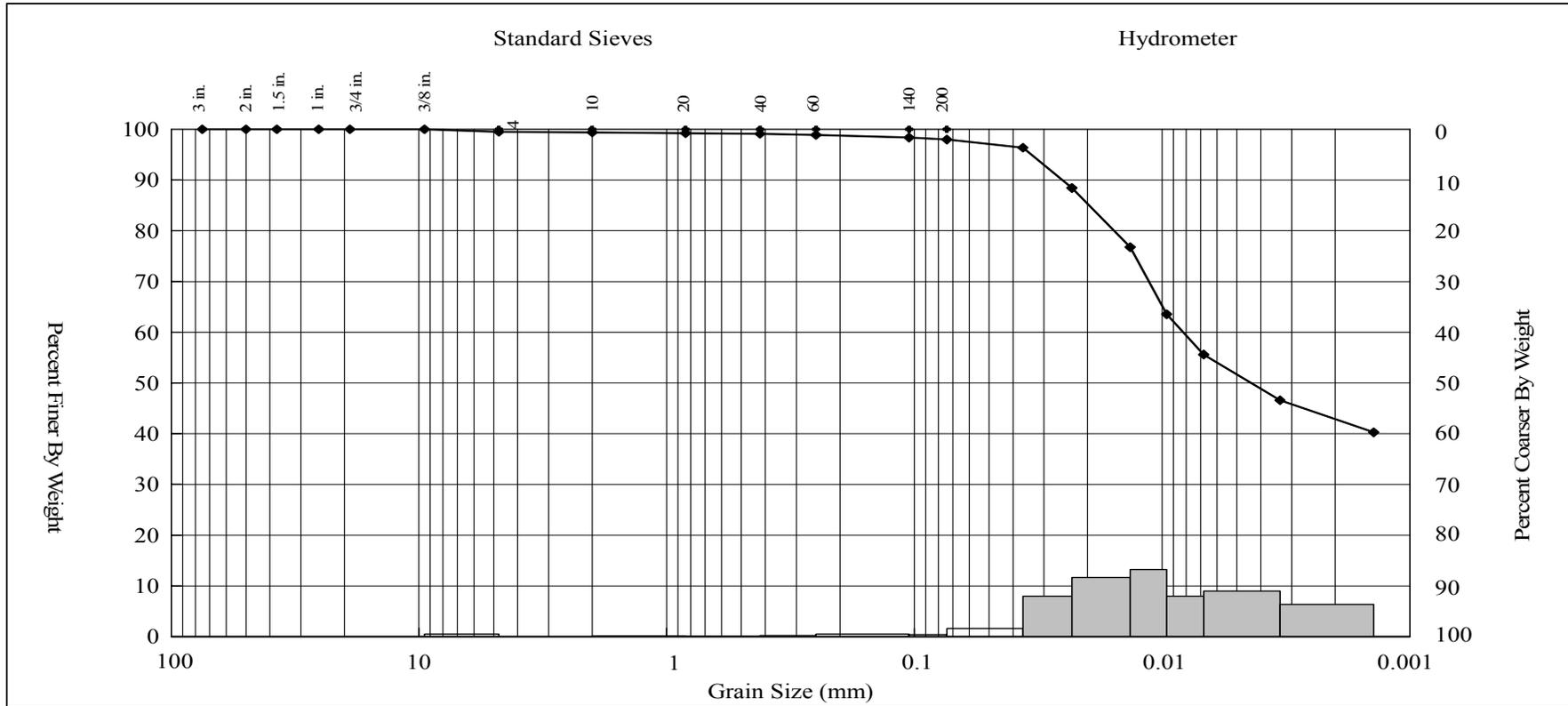
Gravel (%)	Sand (%)			Fines (%)		Client:				
	Coarse	Medium	Fine	Silt	Clay					
0.00	0.13	0.29	1.39	60.04	38.15	Battelle				
Client Project Title: New Bedford Harbor Client Project Number: G606422-DUXCHEM AMS Project Number: 07-137 Date Sampled: 10/31/2007 Date Analyzed: 12/7/2007 Matrix, Method: Sediment, ASTM D 422										
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
224										
Material Description										
Elastic Silt ("MH"), black (2.5 N)						Client Sample ID: Q0719 AMS Sample ID: 29271				
 APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax				These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard. <i>K.S. Davis, P.G.</i> _____ AMS, Inc. Technical Director				 ACCREDITED IN ACCORDANCE WITH nelac LABORATORY No. E87956		

GEOTECHNICAL RESULTS



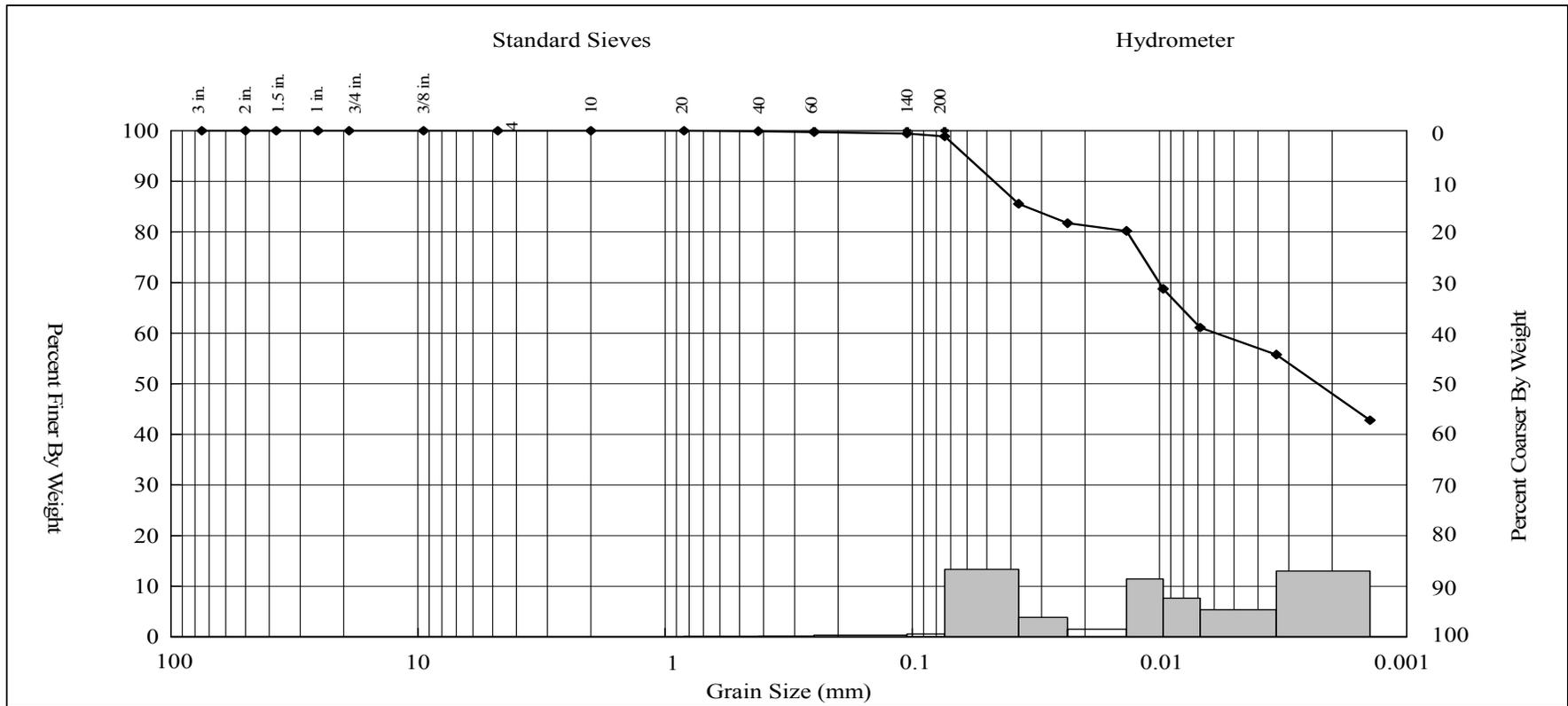
Gravel (%)	Sand (%)			Fines (%)		Client:					
	Coarse	Medium	Fine	Silt	Clay						
0.00	0.12	0.37	1.24	61.82	36.45	Client: Battelle Client Project Title: New Bedford Harbor Client Project Number: G606422-DUXCHEM AMS Project Number: 07-137 Date Sampled: 10/31/2007 Date Analyzed: 12/7/2007 Matrix, Method: Sediment, ASTM D 422					
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	
224											
Material Description											
Elastic Silt ("MH"), black (2.5 N)						Client Sample ID: Q0719 AMS Sample ID: 29271-2					
 APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax			These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard. <i>K.S. Davis, P.G.</i> _____ AMS, Inc. Technical Director					 ACCREDITED IN ACCORDANCE WITH nelac Laboratory No. E87956			

GEOTECHNICAL RESULTS



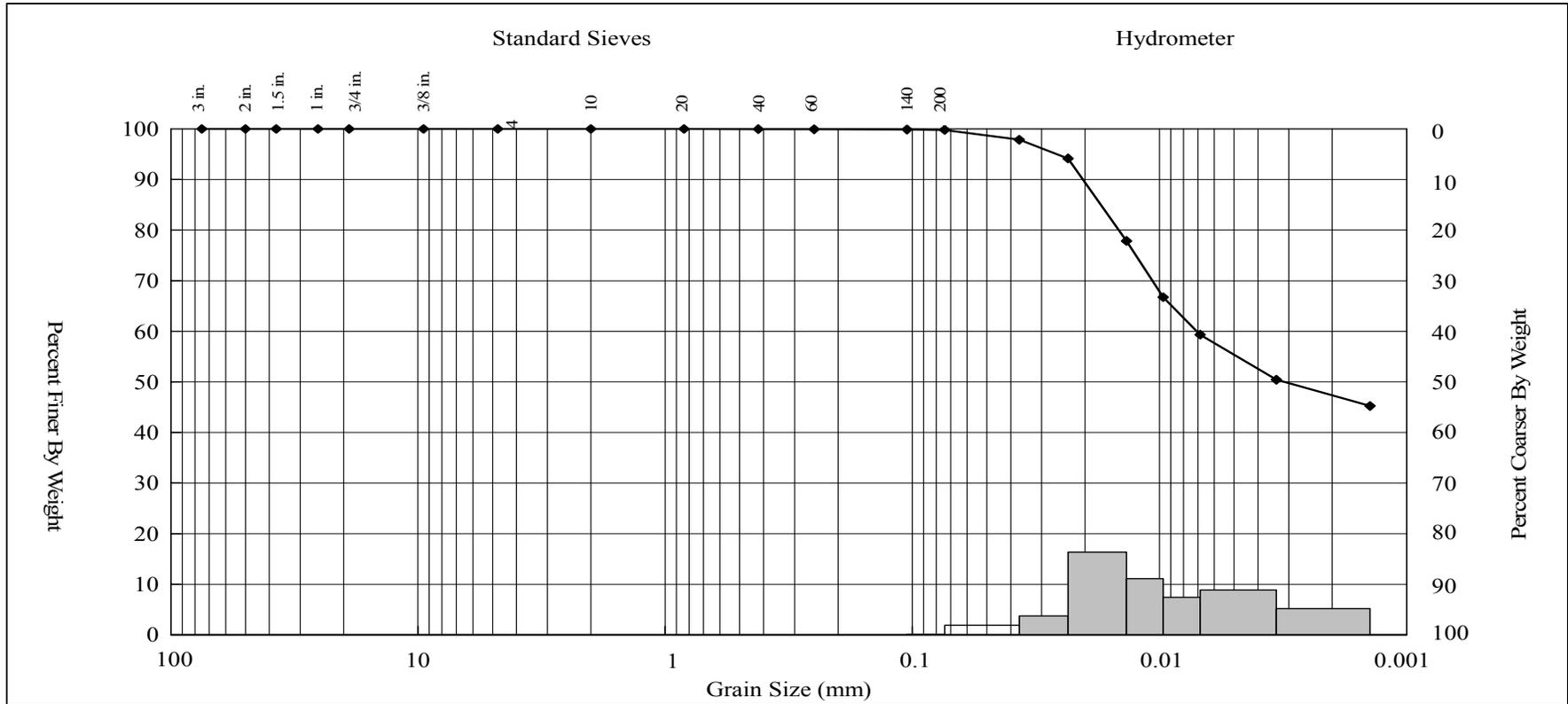
Gravel (%)	Sand (%)			Fines (%)		Client: Battelle						
	Coarse	Medium	Fine	Silt	Clay							
0.53	0.08	0.29	1.14	47.07	50.89	Client Project Title: New Bedford Harbor						
						Client Project Number: G606422-DUXCHEM						
						AMS Project Number: 07-137						
						Date Sampled: 10/31/2007						
						Date Analyzed: 12/7/2007						
						Matrix, Method: Sediment, ASTM D 422						
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Client Sample ID: Q0721	
285												
Material Description												
Lean Clay ("CL"), black (2.5 N)												
APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax						These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.						
						<i>K.S. Davis, P.G.</i> _____ AMS, Inc. Technical Director						ACCREDITED IN ACCORDANCE WITH nelac Laboratory No. E87956

GEOTECHNICAL RESULTS



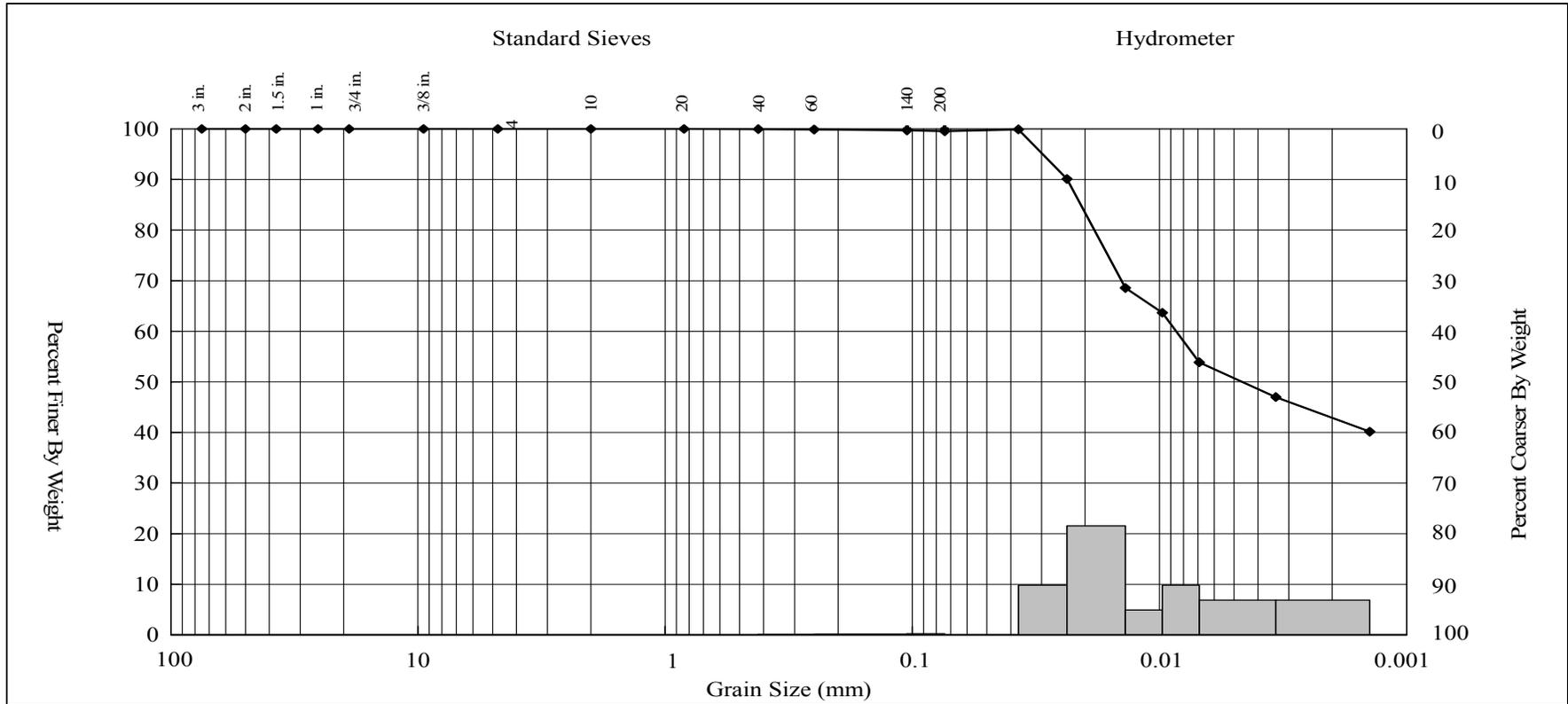
Gravel (%)	Sand (%)			Fines (%)		Client:		Battelle								
	Coarse	Medium	Fine	Silt	Clay	Client Project Title:		New Bedford Harbor								
0.00	0.00	0.12	1.01	40.61	58.26	Client Project Number:		G606422-DUXCHEM								
						AMS Project Number:		07-137								
						Date Sampled:		10/31/2007								
						Date Analyzed:		12/7/2007								
						Matrix, Method:		Sediment, ASTM D 422								
Water Cont. (%)						Client Sample ID:		Q0724								
283	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u						
Material Description						AMS Sample ID:		29274								
Lean Clay ("CL"), black (2.5 N)																
APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax						These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard. <i>K.S. Davis, P.G.</i> _____ AMS, Inc. Technical Director						ACCREDITED IN ACCORDANCE WITH nelac LABORATORY NO. E87956				

GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client:		Battelle						
	Coarse	Medium	Fine	Silt	Clay	Client Project Title:		New Bedford Harbor						
0.00	0.00	0.06	0.20	45.16	54.58	Client Project Number:		G606422-DUXCHEM						
						AMS Project Number:		07-137						
						Date Sampled:		10/31/2007						
						Date Analyzed:		12/7/2007						
						Matrix, Method:		Sediment, ASTM D 422						
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Client Sample ID:		Q0725	
301											AMS Sample ID:		29275	
Material Description														
Lean Clay ("CL"), black (2.5 N)														
APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax					These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard. <i>K.S. Davis, P.G.</i> _____ AMS, Inc. Technical Director					 ACCREDITED IN ACCORDANCE WITH nelac Laboratory No. E87956				

GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)					Fines (%)											
	Coarse	Medium	Fine			Silt	Clay			Client:	Battelle						
0.00	0.00	0.05	0.43			49.37	50.15			Client Project Title:	New Bedford Harbor						
												Client Project Number:	G606422-DUXCHEM				
												AMS Project Number:	07-137				
												Date Sampled:	10/31/2007				
												Date Analyzed:	12/7/2007				
												Matrix, Method:	Sediment, ASTM D 422				
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u							
293																	
Material Description												Client Sample ID:	Q0726				
Lean Clay ("CL"), black (2.5 N)												AMS Sample ID:	29276				
APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax						These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard. <i>K.S. Davis, P.G.</i> _____ AMS, Inc. Technical Director						ACCREDITED IN ACCORDANCE WITH nelac LABORATORY NO. E87956					

QUALITY CONTROL RESULTS

Client: Battelle
 Project Title: New Bedford Harbor
 Project Number: G606422-DUXCHEM
 Client Sample ID: Q0719
 AMS Sample ID: 29271

AMS Project Number: 07-137
 Date Sampled: 10/31/2007
 Date Analyzed: 12/7/2007
 Matrix: Sediment
 Method: ASTM D 422
 Batch: 120707-01G

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	0.00	0.00	0.00		≤ 25
2.00	No. 10	Coarse Sand	0.13	0.12	8.00		≤ 25
0.425	No. 40	Medium Sand	0.29	0.37	24.24		≤ 25
0.074	No. 200	Fine Sand	1.39	1.24	11.41		≤ 25
<0.074 - 0.005	Hydrometer	Silt	60.04	61.82	2.92		≤ 25
<0.005	Hydrometer	Clay	38.15	36.45	4.56		≤ 25

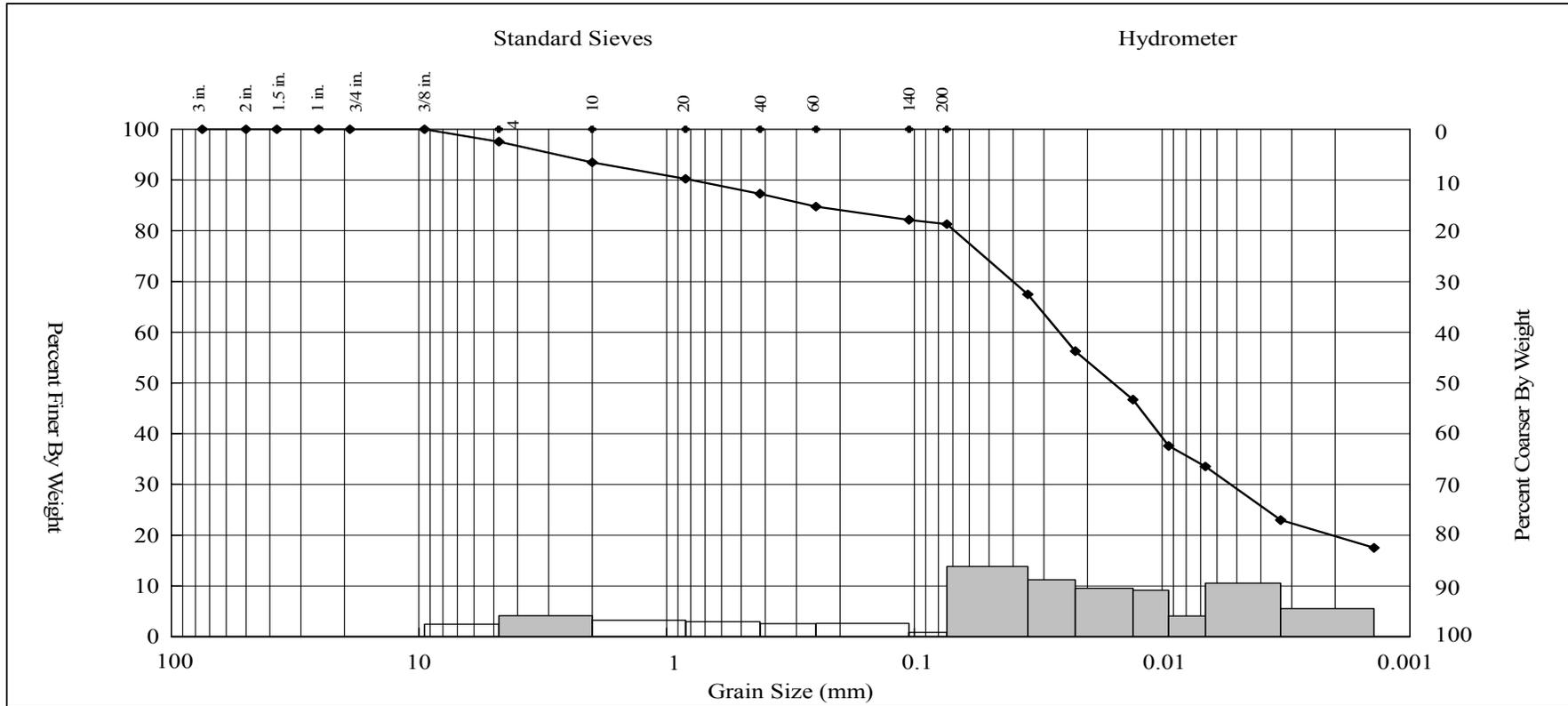
Samples in Batch: 29271 29273 29275 29280 29282 29355 29360 29365 29372 29376
 29272 29274 29276 29281 29353 29357 29364 29371 29375 29379

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).

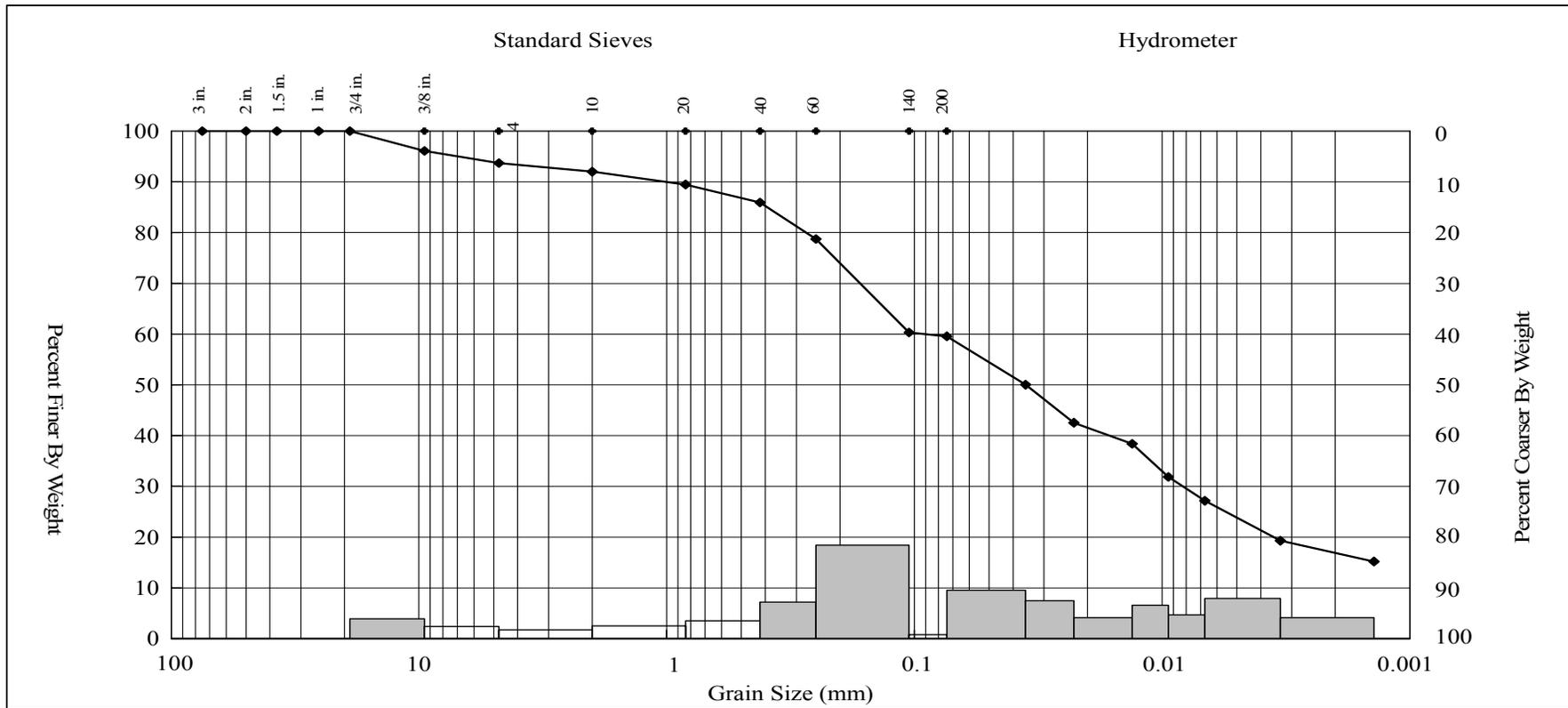
	<p>APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax</p>	<p>These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.</p> <p style="margin-top: 10px;"><i>K.S. Davis, P.G.</i></p> <hr style="width: 20%; margin: 0 auto;"/> <p>AMS, Inc. Technical Director</p>	
			<p>Laboratory No. E87956</p>

GEOTECHNICAL RESULTS



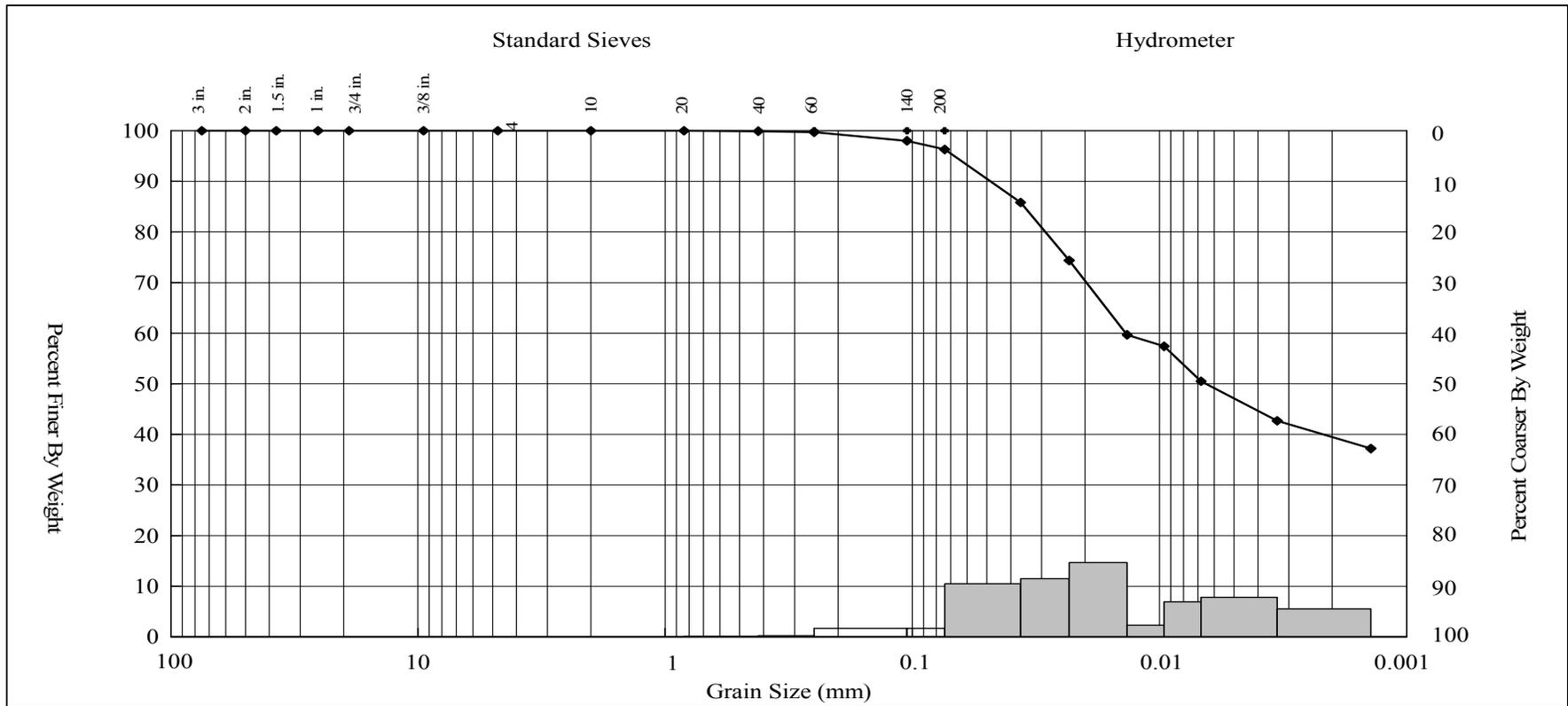
Gravel (%)	Sand (%)			Fines (%)		Client: Battelle							
	Coarse	Medium	Fine	Silt	Clay								
2.45	4.11	6.14	6.02	53.06	28.22	Client Project Title: New Bedford Harbor 2007 WQM							
						Client Project Number: G606422 DUXCHEM							
						AMS Project Number: 07-141							
						Date Sampled: 11/12/2007							
						Date Analyzed: 12/7/2007							
						Matrix, Method: Sediment, ASTM D 422							
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Client Sample ID: Q0930 (SS-ST04-111207)		
185													AMS Sample ID: 29318
Material Description													
Elastic Silt with Sand ("MH"), black (N 2.5)													
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.						ACCREDITED IN ACCORDANCE WITH nelac Laboratory No. E87956	
						<i>K.S. Davis, P.G.</i> _____ AMS, Inc. Technical Director							

GEOTECHNICAL RESULTS



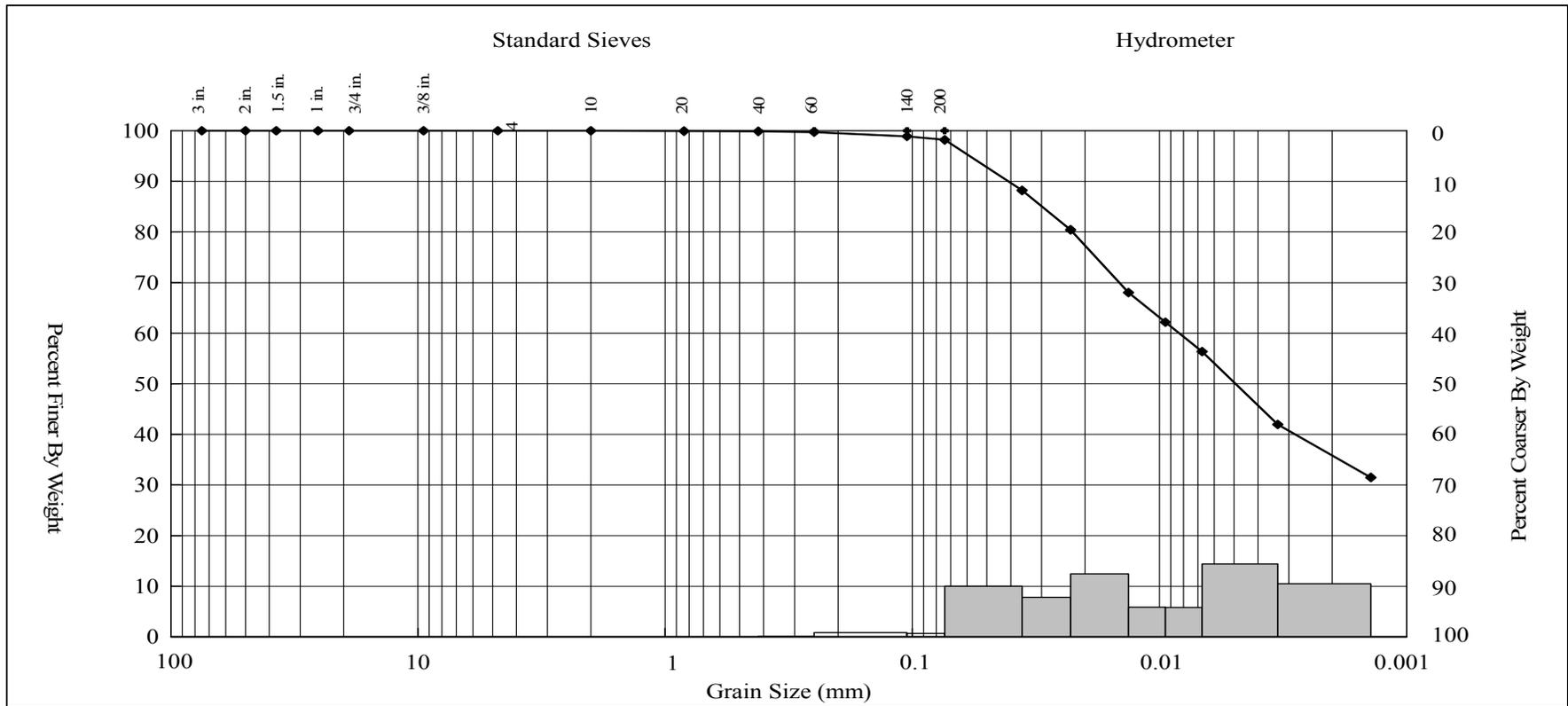
Gravel (%)	Sand (%)			Fines (%)		Client:							
	Coarse	Medium	Fine	Silt	Clay	Battelle							
6.30	1.72	6.06	26.36	36.41	23.15	Client Project Title: New Bedford Harbor 2007 WQM							
						Client Project Number: G606422 DUXCHEM							
						AMS Project Number: 07-141							
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Date Sampled: 11/12/2007		
133											Date Analyzed: 12/7/2007		
Material Description												Matrix, Method: Sediment, ASTM D 422	
Sandy Elastic Silt ("MH"), black (N 2.5)										Client Sample ID: Q0932 (SS-ST02-111207)			
										AMS Sample ID: 29320			
 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.						 Laboratory No. E87956			
				<i>K.S. Davis, P.G.</i> _____ AMS, Inc. Technical Director									

GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client:							
	Coarse	Medium	Fine	Silt	Clay	Battelle							
0.00	0.00	0.12	3.58	49.86	46.44	Client Project Title: New Bedford Harbor 2007 WQM							
						Client Project Number: G606422 DUXCHEM							
						AMS Project Number: 07-141							
						Date Sampled: 11/12/2007							
						Date Analyzed: 12/7/2007							
						Matrix, Method: Sediment, ASTM D 422							
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Client Sample ID: Q0933 (SS-ST01-111207)		
488											AMS Sample ID: 29321		
Material Description													
Elastic Silt ("MH"), black (N 1)													
 APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax						These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard. <i>K.S. Davis, P.G.</i> _____ AMS, Inc. Technical Director						 ACCREDITED IN ACCORDANCE WITH nelac Laboratory No. E87956	

GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client:		Battelle							
	Coarse	Medium	Fine	Silt	Clay	Client Project Title:		New Bedford Harbor 2007 WQM							
0.00	0.00	0.16	1.64	49.17	49.03	Client Project Number:		G606422 DUXCHEM							
						AMS Project Number:		07-141							
						Date Sampled:		11/12/2007							
						Date Analyzed:		12/7/2007							
						Matrix, Method:		Sediment, ASTM D 422							
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Client Sample ID:		Q0934 (SS-ST01-111207-DUP)		
318											AMS Sample ID:		29322		
Material Description															
Elastic Silt ("MH"), black (N 2.5)															
APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax						These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard. <i>K.S. Davis, P.G.</i> _____ AMS, Inc. Technical Director						ACCREDITED IN ACCORDANCE WITH nelac Laboratory No. E87956			

QUALITY CONTROL RESULTS

Client: Battelle
 Project Title: New Bedford Harbor 2007 WQM
 Project Number: G606422 DUXCHEM
 Client Sample ID: Q0934 (SS-ST01-111207-DUP)
 AMS Sample ID: 29322

AMS Project Number: 07-141
 Date Sampled: 11/12/2007
 Date Analyzed: 12/7/2007
 Matrix: Sediment
 Method: ASTM D 422
 Batch: 120707-02G

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	0.00	0.00	0.00		≤ 25
2.00	No. 10	Coarse Sand	0.00	0.00	0.00		≤ 25
0.425	No. 40	Medium Sand	0.16	0.13	20.69		≤ 25
0.074	No. 200	Fine Sand	1.64	1.93	16.25		≤ 25
<0.074 - 0.005	Hydrometer	Silt	49.17	51.64	4.90		≤ 25
<0.005	Hydrometer	Clay	49.03	46.30	5.73		≤ 25

Samples in Batch: 29280 29282 29319 29321 29394 29402 29407 29417 29419 29421
 29281 29318 29320 29322 29395 29403 29410 29418 29420 29422

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).

 <p>APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax</p>	These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard. <i>K.S. Davis, P.G.</i> <hr style="width: 20%; margin: auto;"/> AMS, Inc. Technical Director	 ACCREDITED IN ACCORDANCE WITH nelac Laboratory No. E87956
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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606422-DUXCHEM
Project Name: New Bedford Harbor
Client Sample ID: Q0719 (ST-04-103107-2)
AMS Sample ID: 29271

AMS Project Number: 07-137
Date Sampled: 10/31/2007
Date Received: 11/9/2007

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	10.10	%		0.01	0.03	EPA 9060A	Sediment	12/13/2007

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: G606422-DUXCHEM
Project Name: New Bedford Harbor
Client Sample ID: Q0721 (ST-03-1203107-2)
AMS Sample ID: 29272

AMS Project Number: 07-137
Date Sampled: 10/31/2007
Date Received: 11/9/2007

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	10.14	%		0.01	0.03	EPA 9060A	Sediment	12/13/2007

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: G606422-DUXCHEM
Project Name: New Bedford Harbor
Client Sample ID: Q0723 (ST-02-103107-2)
AMS Sample ID: 29273

AMS Project Number: 07-137
Date Sampled: 10/31/2007
Date Received: 11/9/2007

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	11.36	%		0.01	0.03	EPA 9060A	Sediment	12/13/2007

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: G606422-DUXCHEM
Project Name: New Bedford Harbor
Client Sample ID: Q0724 (ST-01-103107-1)
AMS Sample ID: 29274

AMS Project Number: 07-137
Date Sampled: 10/31/2007
Date Received: 11/9/2007

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	12.41	%		0.01	0.03	EPA 9060A	Sediment	12/13/2007

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: G606422-DUXCHEM
Project Name: New Bedford Harbor
Client Sample ID: Q0725 (ST-01-103107-2)
AMS Sample ID: 29275

AMS Project Number: 07-137
Date Sampled: 10/31/2007
Date Received: 11/9/2007

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	14.40	%		0.01	0.03	EPA 9060A	Sediment	12/13/2007

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: G606422-DUXCHEM
Project Name: New Bedford Harbor
Client Sample ID: Q0726 (ST-01-103107-3)
AMS Sample ID: 29276

AMS Project Number: 07-137
Date Sampled: 10/31/2007
Date Received: 11/9/2007

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	13.75	%		0.01	0.03	EPA 9060A	Sediment	12/13/2007

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

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

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TOC QUALITY CONTROL RESULTS

Client: Battelle
 Project Number: G606422-DUXCHEM
 Project Name: New Bedford Harbor
 Matrix: Sediment
 Method: EPA 9060A

AMS Project Number: 07-137
 Date Analyzed: 12/13/2007
 Batch ID: 121307-01T

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	3.16	3.23	2.19		0.01	0.03	≤ 5 RPD
ICCV-01	2.08	2.00	3.92		0.01	0.03	≤ 5 RPD

Sample Duplicate Results:

AMS Sample ID	Result (%)	Duplicate Result (%)	Relative % Difference (%)	Data Qualifier	LOD (%)	LOQ (%)	QC Limits (%)
29271	10.10	10.21	1.08		0.01	0.03	≤ 25 RPD

Samples in Batch (AMS ID):

29271	29274	29318	29321
29272	29275	29319	29322
29273	29276	29320	

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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QUALITY CONTROL

Client: Battelle
Project Number: G606422-DUXCHEM
Project Name: New Bedford Harbor

AMS Project Number: 07-137

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:	07-141
Project Number:	New Bedford Harbor 2007 WQM	Date Sampled:	11/12/2007
Project Name:	G606422 DUXCHEM	Date Received:	11/15/2007
Client Sample ID:	Q0930 (SS-ST04-111207)		
AMS Sample ID:	29318		

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	7.77	%		0.01	0.03	EPA 9060A	Sediment	12/13/2007

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: New Bedford Harbor 2007 WQM
Project Name: G606422 DUXCHEM
Client Sample ID: Q0931 (SS-ST03-111207)
AMS Sample ID: 29319

AMS Project Number: 07-141
Date Sampled: 11/12/2007
Date Received: 11/15/2007

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	1.84	%		0.01	0.03	EPA 9060A	Sediment	12/13/2007

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: 07-141
Project Number:	New Bedford Harbor 2007 WQM	Date Sampled: 11/12/2007
Project Name:	G606422 DUXCHEM	Date Received: 11/15/2007
Client Sample ID:	Q0932 (SS-ST02-111207)	
AMS Sample ID:	29320	

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	7.91	%		0.01	0.03	EPA 9060A	Sediment	12/13/2007

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:	07-141
Project Number:	New Bedford Harbor 2007 WQM	Date Sampled:	11/12/2007
Project Name:	G606422 DUXCHEM	Date Received:	11/15/2007
Client Sample ID:	Q0933 (SS-ST01-111207)		
AMS Sample ID:	29321		

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	15.47	%		0.01	0.03	EPA 9060A	Sediment	12/13/2007

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: New Bedford Harbor 2007 WQM
Project Name: G606422 DUXCHEM
Client Sample ID: Q0934 (SS-ST01-111207-DUP)
AMS Sample ID: 29322

AMS Project Number: 07-141
Date Sampled: 11/12/2007
Date Received: 11/15/2007

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	12.25	%		0.01	0.03	EPA 9060A	Sediment	12/13/2007

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

KS Davis, P.G.

AMS, Inc. Technical Director





TOC QUALITY CONTROL RESULTS

Client:	Battelle	AMS Project Number:	07-141
Project Number:	New Bedford Harbor 2007 WQM	Date Analyzed:	12/13/2007
Project Name:	G606422 DUXCHEM	Batch ID:	121307-01T
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	3.16	3.23	2.19		0.01	0.03	≤ 5 RPD
ICCV-01	2.08	2.00	3.92		0.01	0.03	≤ 5 RPD

Sample Duplicate Results:

AMS Sample ID	Result (%)	Duplicate Result (%)	Relative % Difference (%)	Data Qualifier	LOD (%)	LOQ (%)	QC Limits (%)
29322	12.25	15.04	20.45		0.01	0.03	≤ 25 RPD

Samples in Batch (AMS ID):

29271	29274	29318	29321
29272	29275	29319	29322
29273	29276	29320	

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.

KS Davis, P.G.

AMS, Inc. Technical Director





Applied Marine Sciences, Inc.

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QUALITY CONTROL

Client: Battelle
Project Number: New Bedford Harbor 2007 WQM
Project Name: G606422 DUXCHEM

AMS Project Number: 07-141

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.

TOC / Grain Size

Proj. No: **G-606422**
Proj. Name: **Sediment Traps - NBH**

SAMPLERS: Signature
Michael P. [Signature]

ANALYSIS REQUESTED →
"NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
10/31/07	1411	Q0718	ST-04-103107-1	station 4 1 st sed trap deployment		✓						✓			1
	1411	Q0719	ST-04-103107-2	" 4		✓						✓			1
	1422	Q0720	ST-03-103107-1	" 3		✓						✓			1
	1422	Q0721	ST-03-103107-2	" 3		✓						✓			1
	1431	Q0722	ST-02-103107-1	" 2		✓						✓			1
	1431	Q0723	ST-02-103107-2	" 2		✓						✓			1
	1441	Q0724	ST-01-103107-1	" 1		✓						✓			1
	1441	Q0725	ST-01-103107-2	" 1		✓						✓			1
	1441	Q0726	ST-01-103107-3	" 1		✓						✓			1

Relinquished by: Mike McKee	Date/Time 11/01/07 12:00		Received by: <i>Jeanine P. Seyfert</i>	Date/Time 11/1/07 12:00	
	Date/Time			Date/Time	

Comments:

Proj. No G606422	Proj. Name New Bedford Harbor
---------------------	----------------------------------

SAMPLERS: Signature <i>Michael Walsh</i>				ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"		PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
---	--	--	--	--	--	------	-----	--------------------	-----	-----	-----	--------	-------	-----------	-----------	-------------------------------

DATE	TIME	Client ID BATTELLE ID	LIMS ID -CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
11/2/2007	0950	SS-ST04-111207	Q0930	Surface Sediment from Sediment Trap keatrans		✓									1
11/2/2007	1016	SS-ST03-111207	Q0931	" "		✓									1
11/2/2007	1051	SS-ST02-111207	Q0932	" "		✓									1
11/2/2007	1105	SS-ST01-111207	Q0933	1 of 2		✓									1
11/2/2007	1116	SS-ST01-111207-DUP	2 of 2	" " Q0934		✓									1

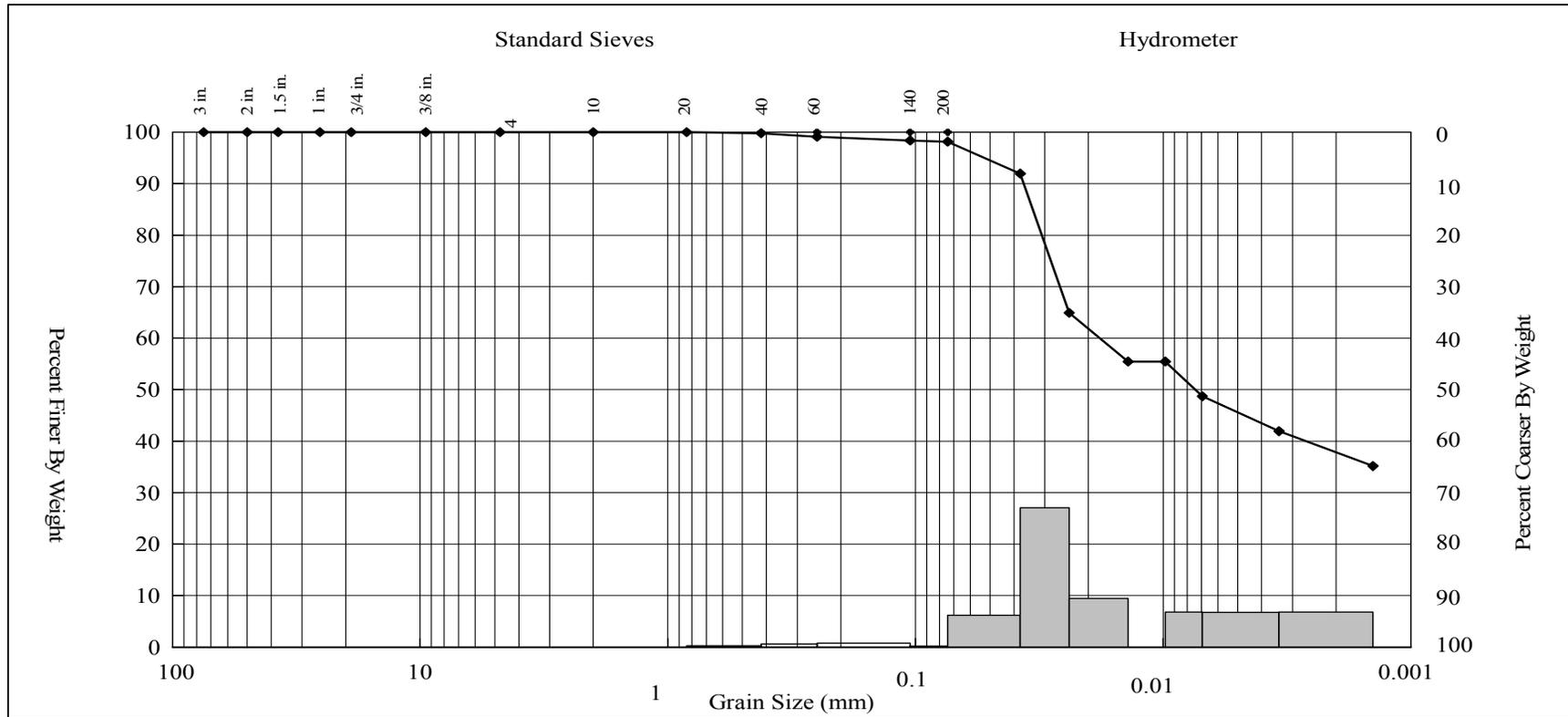
Relinquished by: <i>Michael Walsh</i>	Date/Time 11/12/2007 1545		Received by: <i>Jeannine Siefert</i>	Date/Time 11-12-07 15:45	
	Date/Time			Date/Time	

Comments:

Deployment No. 2

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GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client Project Title: New Bedford Harbor WQM		Client Project Number: G606422				
	Coarse	Medium	Fine	Silt	Clay							
0.00	0.00	0.24	1.60	53.17	44.99	AMS Project Number: 07-159		Date Sampled: 12/10/2007				
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Date Analyzed: 1/8/2008	
	440										Matrix: Sediment	
Material Description										Method: ASTM D 422		
Elastic Silt ("MH"), black (SY 2.5/1)										Client Sample ID: Q1173 (ST-01-121007-1)		
										AMS Sample ID: 29596		

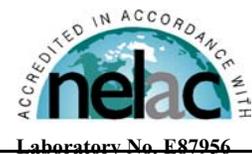


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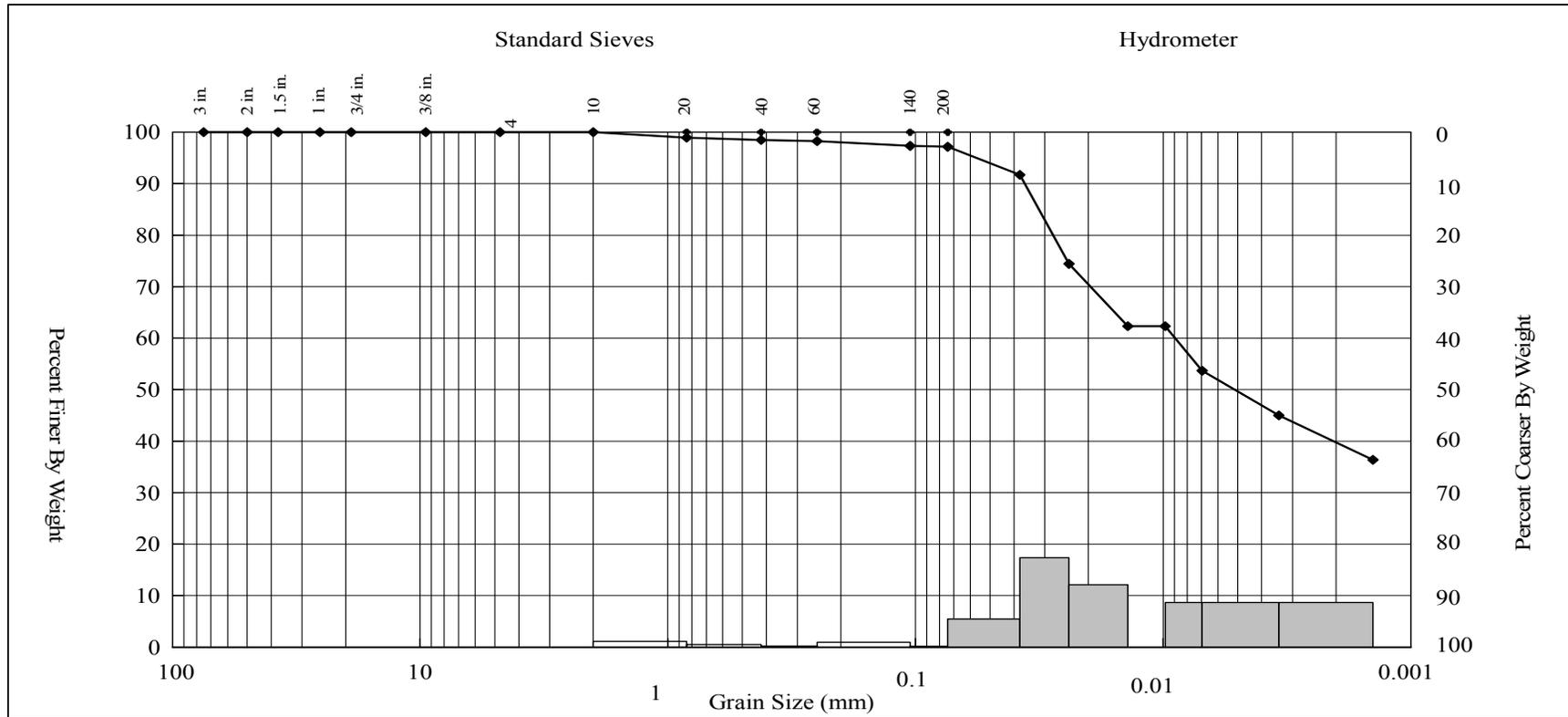
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

K.S. Davis, P.G.

AMS, Inc. Technical Director



GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client Project Title: New Bedford Harbor WQM		Client Project Number: G606422				
	Coarse	Medium	Fine	Silt	Clay							
0.00	0.00	1.53	1.32	48.27	48.88	AMS Project Number: 07-159		Date Sampled: 12/10/2007				
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Date Analyzed: 1/8/2008	
	267										Matrix: Sediment	
Material Description										Method: ASTM D 422		
Lean Clay ("CL"), black (SY 2.5/1)										Client Sample ID: Q1174 (ST-01-121007-2)		
										AMS Sample ID: 29597		



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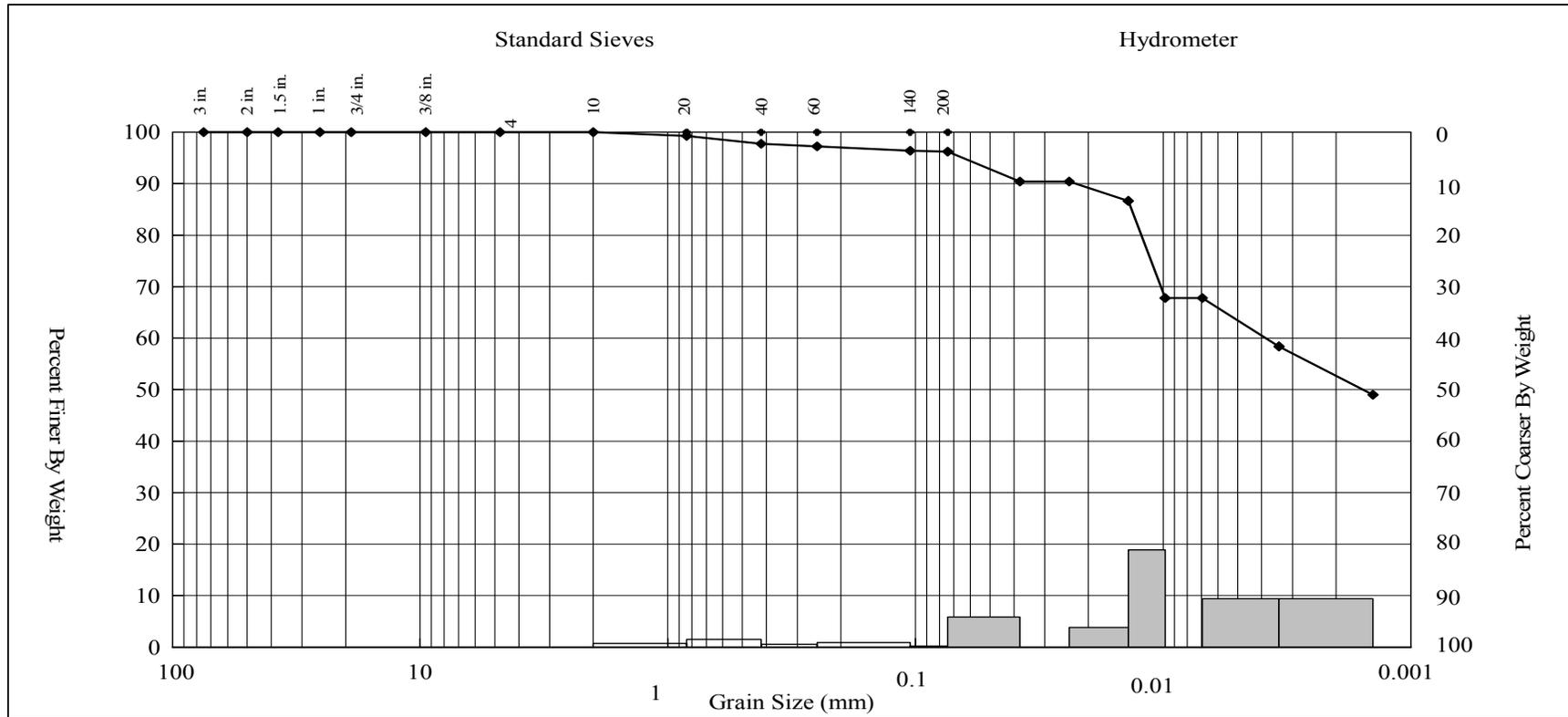
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

K.S. Davis, P.G.

AMS, Inc. Technical Director



GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client Project Title: New Bedford Harbor WQM						
	Coarse	Medium	Fine	Silt	Clay							
0.00	0.00	2.26	1.52	33.58	62.64	Client Project Number: G606422						
						AMS Project Number: 07-159						
						Date Sampled: 12/10/2007						
						Date Analyzed: 1/8/2008						
						Matrix: Sediment						
						Method: ASTM D 422						
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Client Sample ID: Q1175 (ST-01-121007-3)	
345												
Material Description												
Lean Clay ("CL"), black (SY 2.5/1)												
AMS Sample ID: 29598												



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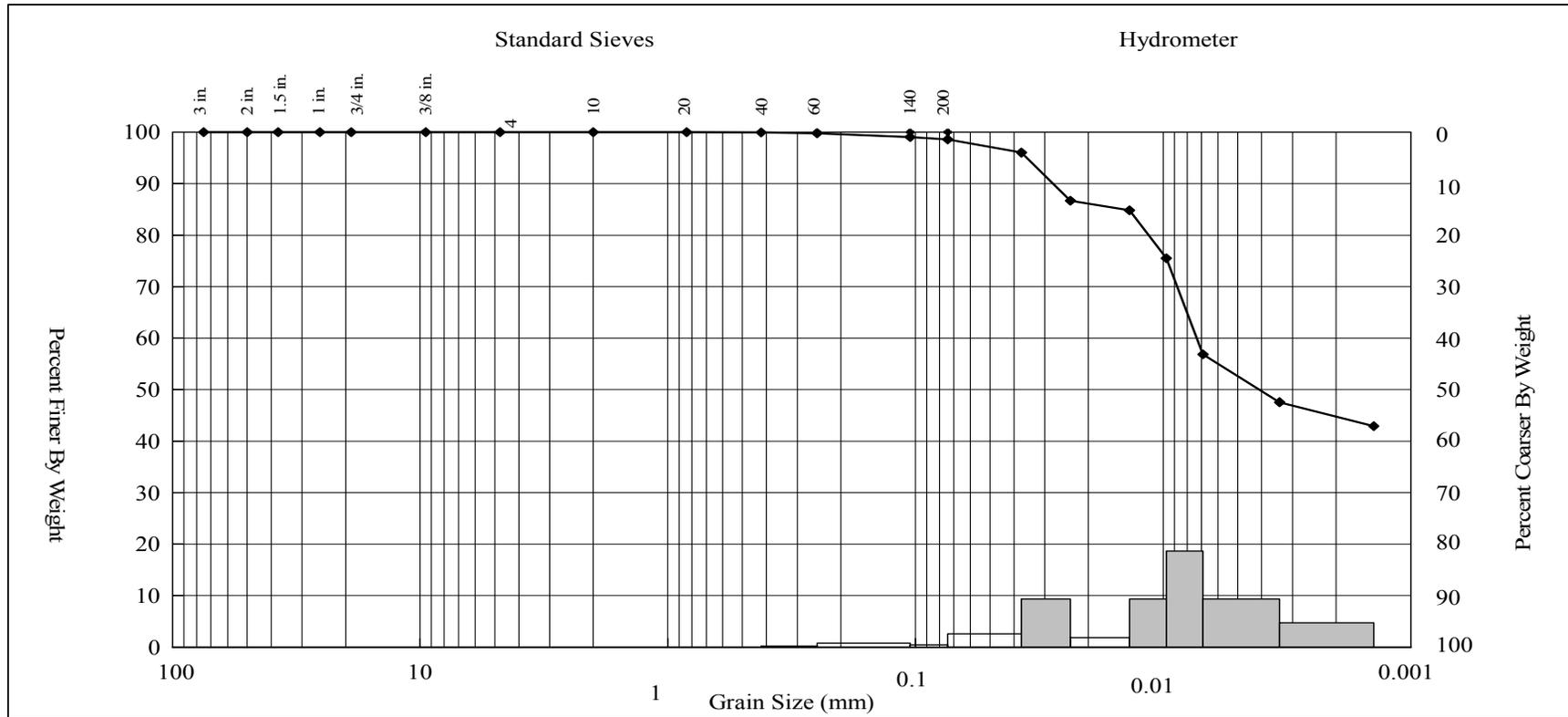
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

K.S. Davis, P.G.

AMS, Inc. Technical Director



GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client Project Title: New Bedford Harbor WQM		Client Project Number: G606422				
	Coarse	Medium	Fine	Silt	Clay							
0.00	0.00	0.06	1.34	46.77	51.83	AMS Project Number: 07-159		Date Sampled: 12/10/2007				
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Date Analyzed: 1/8/2008	
	235										Matrix: Sediment	
Material Description										Method: ASTM D 422		
Lean Clay ("CL"), black (SY 2.5/1)										Client Sample ID: Q1177 (ST-02-121007-2)		
										AMS Sample ID: 29599		



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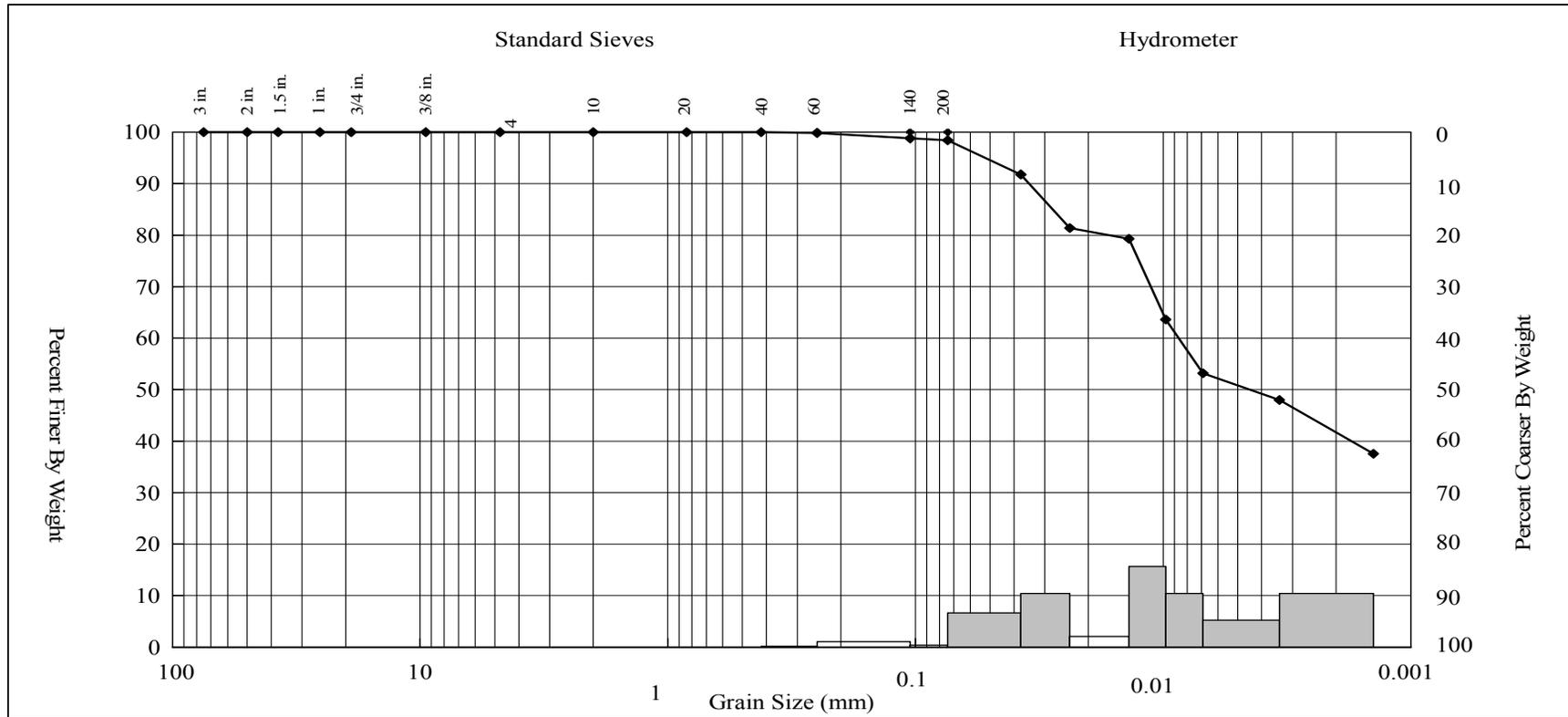
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

K.S. Davis, P.G.

AMS, Inc. Technical Director



GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client Project Title: New Bedford Harbor WQM						
	Coarse	Medium	Fine	Silt	Clay							
0.00	0.00	0.02	1.58	48.02	50.38	Client Project Number: G606422						
						AMS Project Number: 07-159						
						Date Sampled: 12/10/2007						
						Date Analyzed: 1/8/2008						
						Matrix: Sediment						
						Method: ASTM D 422						
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Client Sample ID: Q1179 (ST-03-121007-2)	
367												
Material Description											AMS Sample ID: 29600	
Lean Clay ("CL"), black (SY 2.5/1)												



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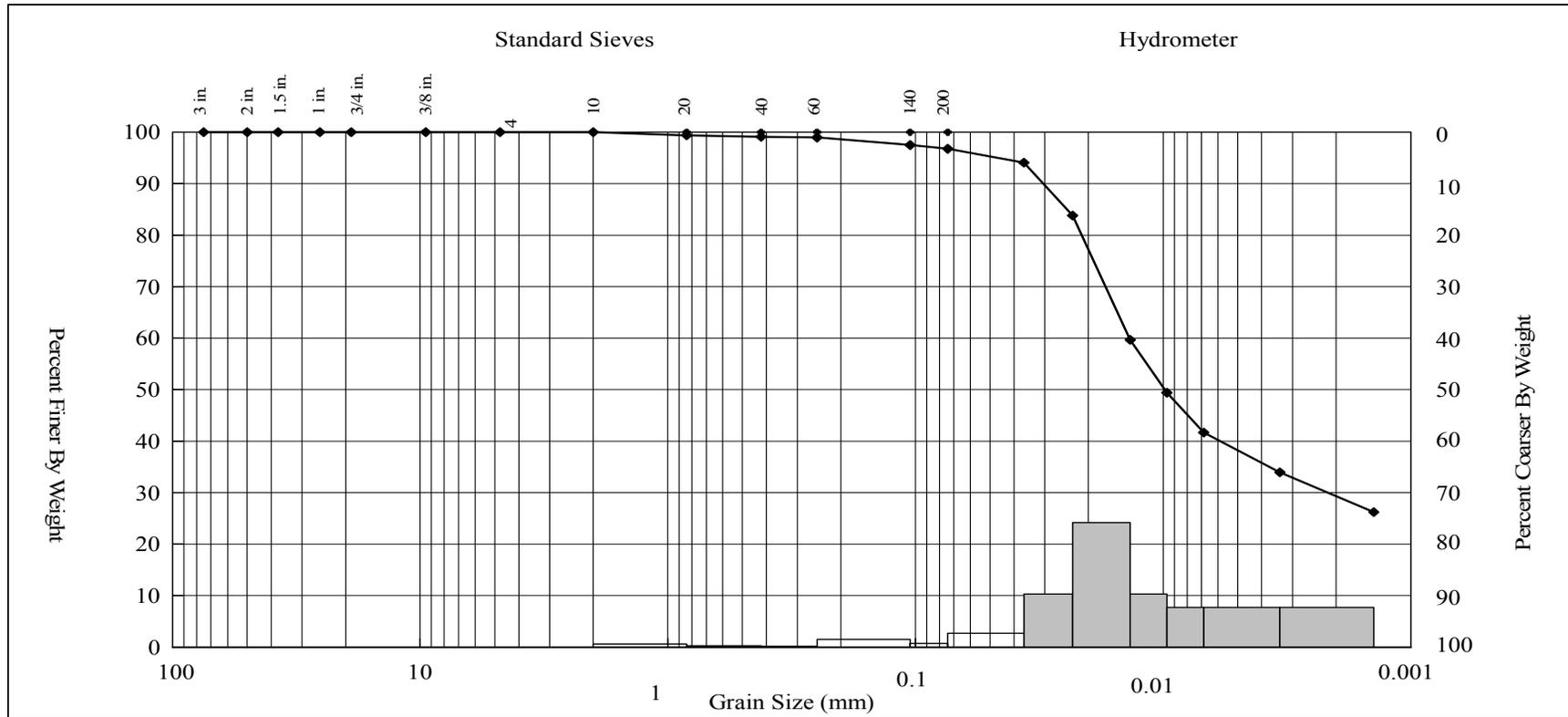
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

K.S. Davis, P.G.

AMS, Inc. Technical Director



GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client Project Title: New Bedford Harbor WQM		Client Project Number: G606422				
	Coarse	Medium	Fine	Silt	Clay							
0.00	0.00	0.88	2.36	59.23	37.53	AMS Project Number: 07-159		Date Sampled: 12/10/2007				
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Date Analyzed: 1/8/2008	
	241										Matrix: Sediment	
Material Description										Method: ASTM D 422		
Elastic Silt ("MH"), black (SY 2.5/1)										Client Sample ID: Q1181 (ST-04-121007-2)		
										AMS Sample ID: 29601		



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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.

K.S. Davis, P.G.

AMS, Inc. Technical Director



QUALITY CONTROL RESULTS

Client: Battelle
 Project Title: New Bedford Harbor WQM
 Project Number: G606422
 Client Sample ID: Q1177 (ST-02-121007-2)
 AMS Sample ID: 29599

AMS Project Number: 07-159
 Date Sampled: 12/10/2007
 Date Analyzed: 1/8/2008
 Matrix: Sediment
 Method: ASTM D 422
 Batch: 010808-01G

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	0.00	0.00	0.00		≤ 25
2.00	No. 10	Coarse Sand	0.00	0.00	0.00		≤ 25
0.425	No. 40	Medium Sand	0.06	0.05	0.00		≤ 25
0.074	No. 200	Fine Sand	1.34	1.22	9.37		≤ 25
<0.074 - 0.005	Hydrometer	Silt	46.77	46.98	0.45		≤ 25
<0.005	Hydrometer	Clay	51.83	51.75	0.15		≤ 25

Samples in Batch: 29596 29598 29600
 29597 29599 29601

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).

	<p>APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax</p>	<p>These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.</p> <p style="margin-top: 10px;"><i>K.S. Davis, P.G.</i></p> <hr style="width: 20%; margin: 0 auto;"/> AMS, Inc. Technical Director	
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Laboratory No. E87956



Applied Marine Sciences, Inc.

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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606422
Project Name: New Bedford Harbor WQM
Client Sample ID: Q1173 (ST-01-121007-1)
AMS Sample ID: 29596

AMS Project Number: 07-159
Date Sampled: 12/10/2007
Date Received: 12/28/2007

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	11.85	%		0.01	0.03	EPA 9060A	Sediment	1/15/2008

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

KS Davis, P.G.

AMS, Inc. Technical Director





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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606422
Project Name: New Bedford Harbor WQM
Client Sample ID: Q1174 (ST-01-121007-2)
AMS Sample ID: 29597

AMS Project Number: 07-159
Date Sampled: 12/10/2007
Date Received: 12/28/2007

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	11.14	%		0.01	0.03	EPA 9060A	Sediment	1/15/2008

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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AMS, Inc. Technical Director





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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606422
Project Name: New Bedford Harbor WQM
Client Sample ID: Q1175 (ST-01-121007-3)
AMS Sample ID: 29598

AMS Project Number: 07-159
Date Sampled: 12/10/2007
Date Received: 12/28/2007

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	12.50	%		0.01	0.03	EPA 9060A	Sediment	1/15/2008

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

KS Davis, P.G.

AMS, Inc. Technical Director



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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606422
Project Name: New Bedford Harbor WQM
Client Sample ID: Q1177 (ST-02-121007-2)
AMS Sample ID: 29599

AMS Project Number: 07-159
Date Sampled: 12/10/2007
Date Received: 12/28/2007

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	10.44	%		0.01	0.03	EPA 9060A	Sediment	1/15/2008

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

KS Davis, P.G.

AMS, Inc. Technical Director



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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606422
Project Name: New Bedford Harbor WQM
Client Sample ID: Q1179 (ST-03-121007-2)
AMS Sample ID: 29600

AMS Project Number: 07-159
Date Sampled: 12/10/2007
Date Received: 12/28/2007

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	9.72	%		0.01	0.03	EPA 9060A	Sediment	1/15/2008

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

KS Davis, P.G.

AMS, Inc. Technical Director





Applied Marine Sciences, Inc.

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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606422
Project Name: New Bedford Harbor WQM
Client Sample ID: Q1181 (ST-04-121007-2)
AMS Sample ID: 29601

AMS Project Number: 07-159
Date Sampled: 12/10/2007
Date Received: 12/28/2007

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	10.53	%		0.01	0.03	EPA 9060A	Sediment	1/15/2008

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

KS Davis, P.G.

AMS, Inc. Technical Director



TOC QUALITY CONTROL RESULTS

Client: Battelle
 Project Number: G606422
 Project Name: New Bedford Harbor WQM
 Matrix: Sediment
 Method: EPA 9060A

AMS Project Number: 07-159
 Date Analyzed: 1/15/2008
 Batch ID: 011508-02T

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-02	0.01	0.01	--	U	0.01	0.03	≤ 0.03
CCV-02	3.14	3.23	2.83		0.01	0.03	≤ 5 RPD
ICCV-02	2.06	2.00	2.96		0.01	0.03	≤ 5 RPD

Sample Duplicate Results:

AMS Sample ID	Result (%)	Duplicate Result (%)	Relative % Difference (%)	Data Qualifier	LOD (%)	LOQ (%)	QC Limits (%)
29599	10.44	10.31	1.25		0.01	0.03	≤ 25 RPD

Samples in Batch (AMS ID): 29591 29594 29597 29600
 29592 29595 29598 29601
 29593 29596 29599

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.

KS Davis, P.G.

AMS, Inc. Technical Director





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QUALITY CONTROL

Client: Battelle
Project Number: G606422
Project Name: New Bedford Harbor WQM

AMS Project Number: 07-159

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.



Chain of Custody

Project Name: NBH Sed Traps
Project Number: G606422

Relinquished by: Mike McKee
Received by: *Jeanmi Light*

Date: 12-11-07
Date: *12-11-07*

Field Sample ID	Analytical Lab Sample ID	Sample Date (ddmmyy)	Sample Time (local)	Station ID	Analysis	No. of Containers	Size (liters)	Container Type	Preservative
ST-01-121007-1	<i>Q1173</i>	12-10-2007	0915	ST01	PCB, TOC, Grain Size	1	2	PE	NA
ST-01-121007-2	<i>Q1174</i>	12-10-2007	0915	ST01	PCB, TOC, Grain Size	1	2	PE	NA
ST-01-121007-3	<i>Q1175</i>	12-10-2007	0915	ST01	PCB, TOC, Grain Size	1	2	PE	NA
ST-02-121007-1	<i>Q1176</i>	12-10-2007	0910	ST02	PCB, TOC, Grain Size	1	2	PE	NA
ST-02-121007-2	<i>Q1177</i>	12-10-2007	0910	ST02	PCB, TOC, Grain Size	1	2	PE	NA
ST-03-121007-1	<i>Q1178</i>	12-10-2007	0900	ST03	PCB, TOC, Grain Size	1	2	PE	
ST-03-121007-2	<i>Q1179</i>	12-10-2007	0900	ST03	PCB, TOC, Grain Size	1	2	PE	
ST-04-121007-1	<i>Q1180</i>	12-10-2007	0855	ST04	PCB, TOC, Grain Size	1	2	PE	NA
ST-04-121007-2	<i>Q1181</i>	12-10-2007	0855	ST04	PCB, TOC, Grain Size	1	2	PE	NA

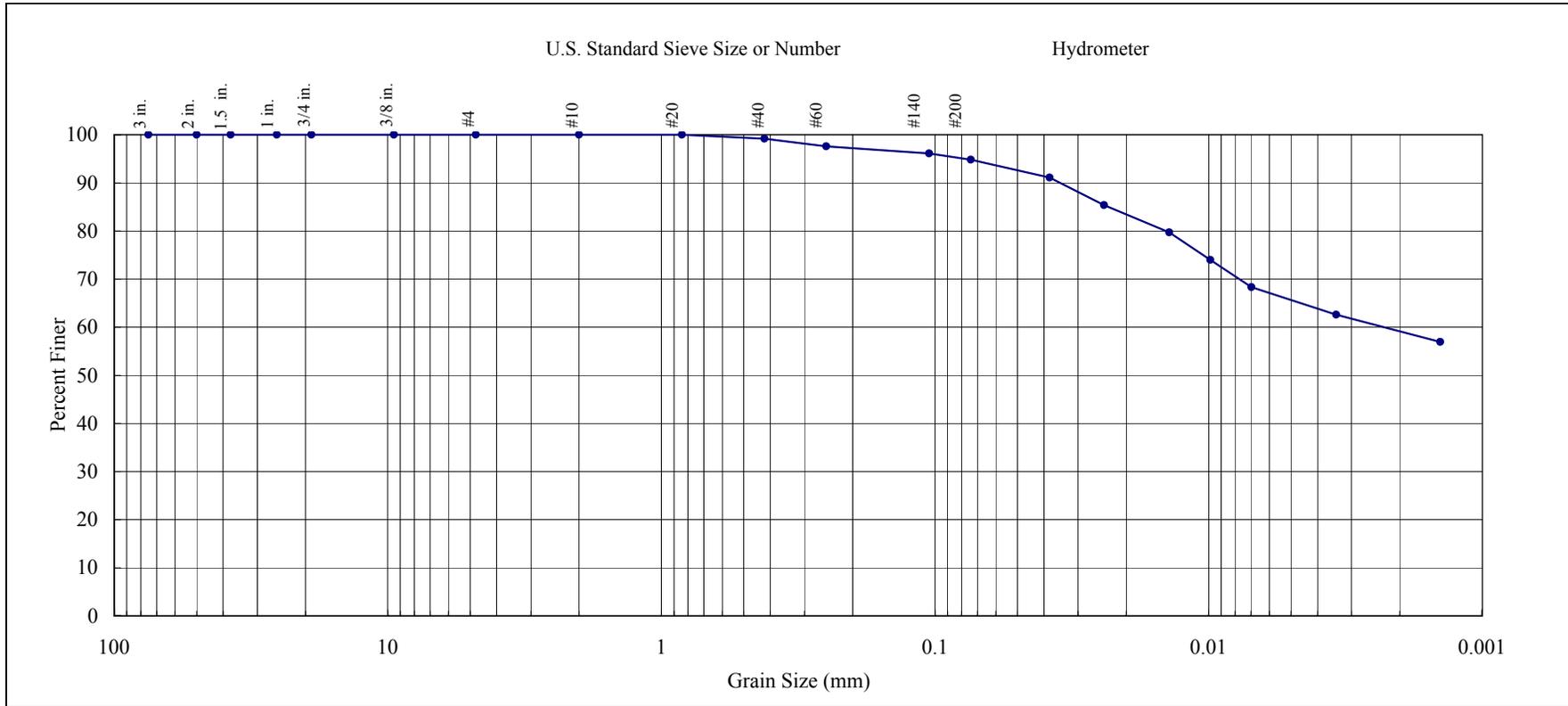
This is the corrected COC. Please see the corrective action for details.

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Deployment No. 3

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GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client:						
	Coarse	Medium	Fine	Silt	Clay	Battelle						
0.00	0.00	0.83	4.37	29.64	65.16	Client Project Title:	New Bedford Harbor Sed Traps					
						Client Project Number:	G606422					
						AMS Project Number:	8C6					
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Date Sampled:	4/15/2008
309											Date Analyzed:	4/23/2008
Material Description												
Lean Clay ("CL"), black (N1)												
						Client Sample ID:	Q2744 (ST-01-041508-B)					
						AMS Sample ID:	8C6-1					



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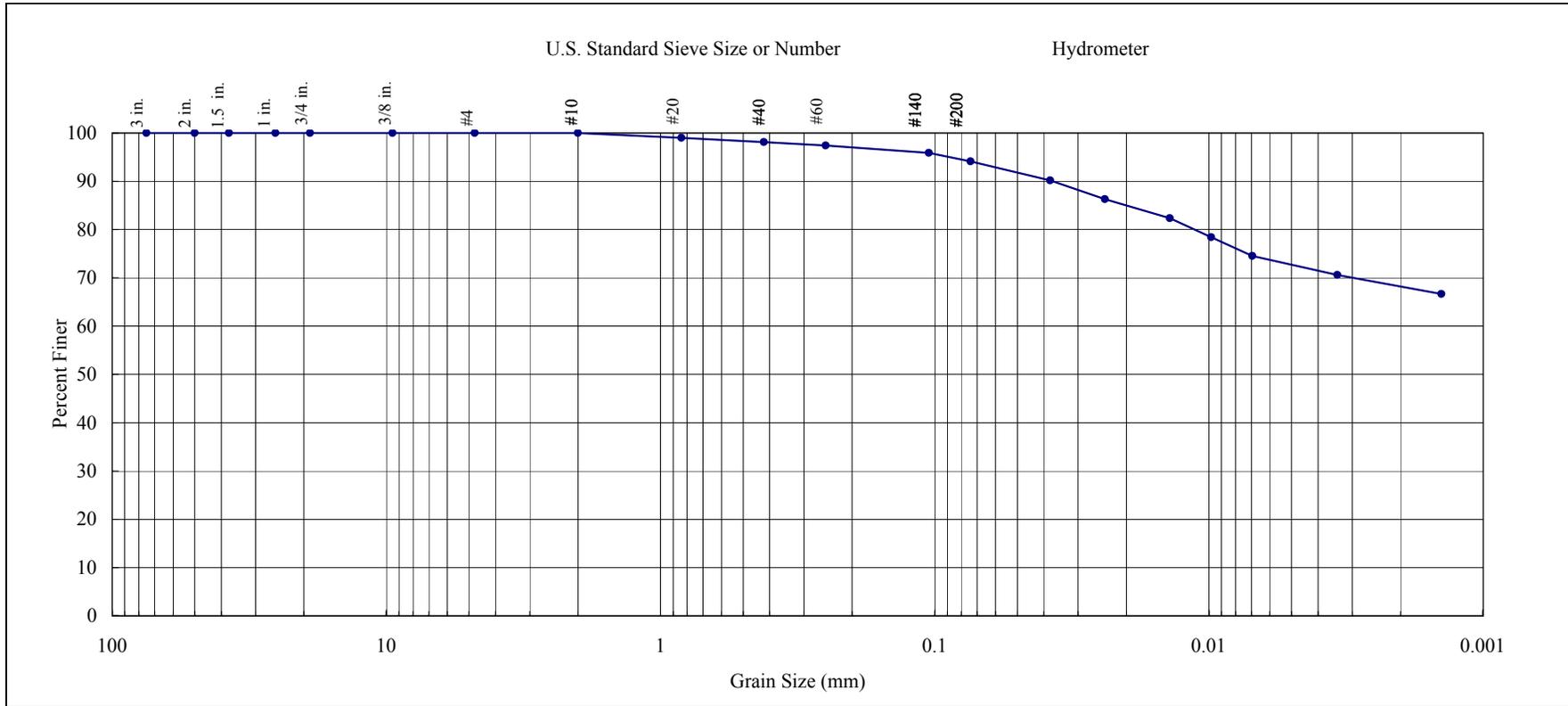
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis

 AMS, Inc. Project Manager



GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)					Fines (%)						Client: Battelle	
	Coarse	Medium	Fine						Silt	Clay		Client Project Title: New Bedford Harbor Sed Traps	
0.00	0.00	1.88	4.02						21.73	72.37		Client Project Number: G606422	
												AMS Project Number: 8C6	
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u		Date Sampled: 4/15/2008	
305												Date Analyzed: 4/23/2008	
Material Description													Matrix, Method: Sediment, ASTM D 422
Fat Clay ("CH"), black (N1)												Client Sample ID: Q2745 (ST-01-041508-C)	
												AMS Sample ID: 8C6-2	



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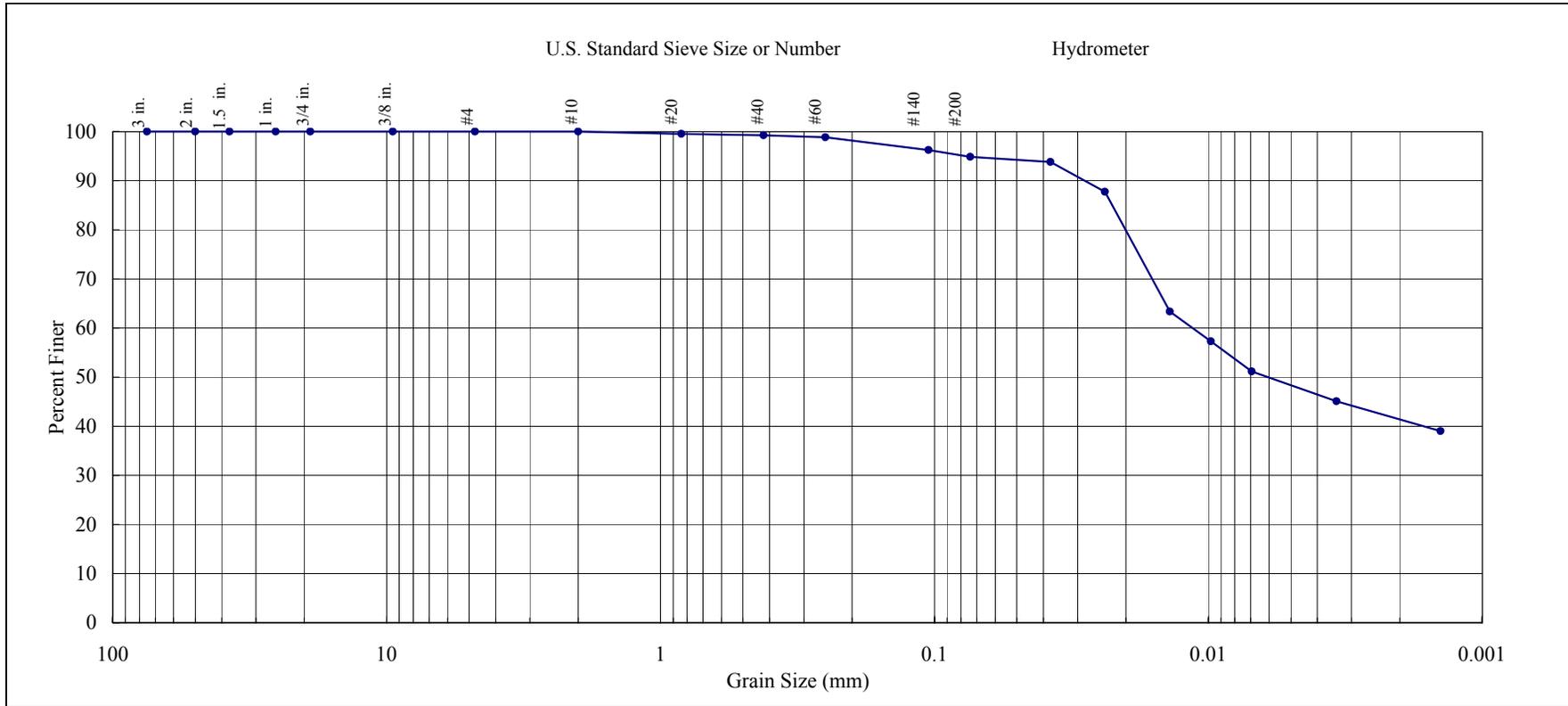
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis

 AMS, Inc. Project Manager



GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client:						
	Coarse	Medium	Fine	Silt	Clay	Battelle						
0.00	0.00	0.75	4.41	47.00	47.84	Client Project Title:	New Bedford Harbor Sed Traps					
						Client Project Number:	G606422					
						AMS Project Number:	8C6					
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Date Sampled:	4/15/2008
316											Date Analyzed:	4/23/2008
Material Description												
Lean Clay ("CL"), black (N1)												
						Matrix, Method:	Sediment, ASTM D 422					
						Client Sample ID:	Q2747 (ST-02-041508-B)					
						AMS Sample ID:	8C6-3					



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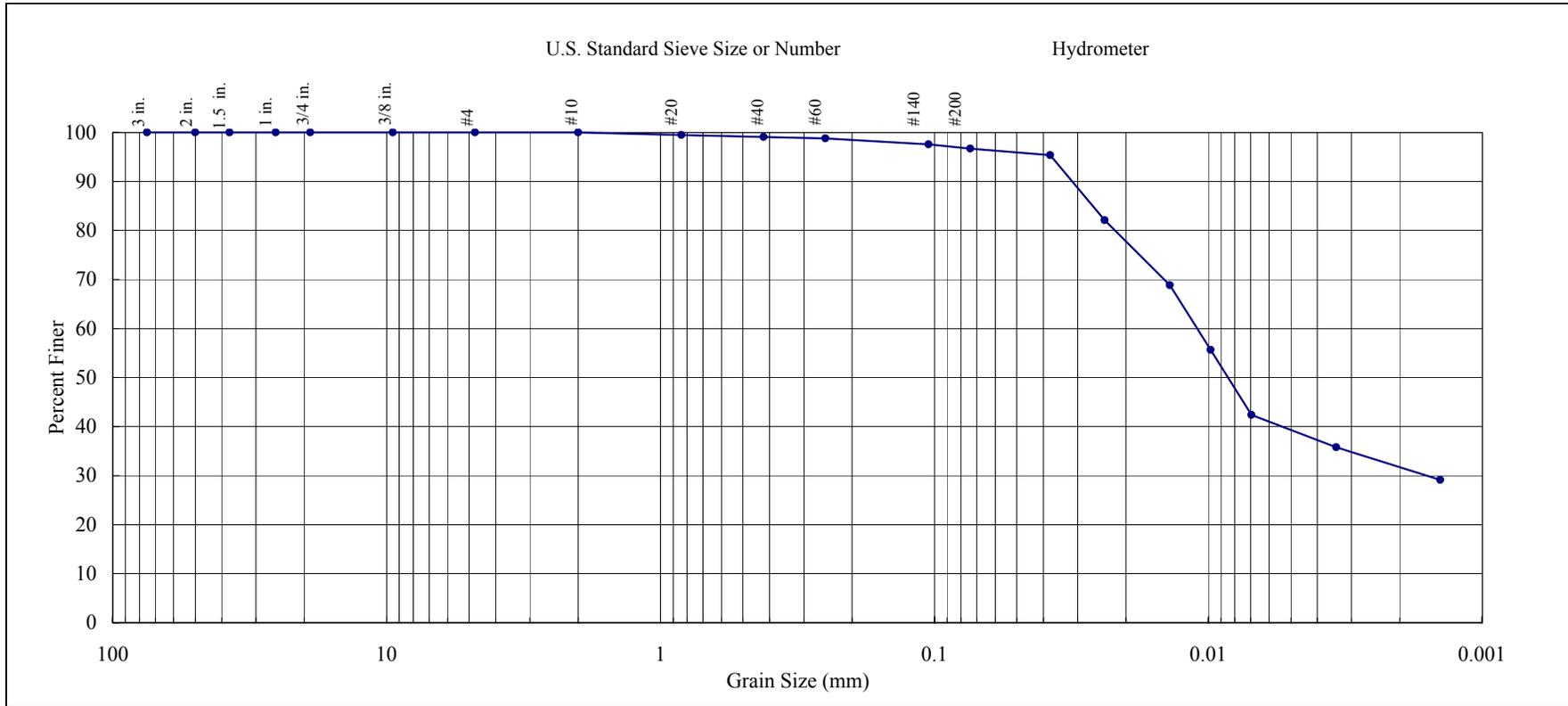
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis

 AMS, Inc. Project Manager



GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client:						
	Coarse	Medium	Fine	Silt	Clay	Battelle						
0.00	0.00	0.90	2.41	57.96	38.73	Client Project Title:	New Bedford Harbor Sed Traps					
						Client Project Number:	G606422					
						AMS Project Number:	8C6					
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Date Sampled:	4/15/2008
272											Date Analyzed:	4/23/2008
Material Description												
Elastic Silt ("MH"), black (N1)												
						Client Sample ID:	Q2749 (ST-03-041508-B)					
						AMS Sample ID:	8C6-4					



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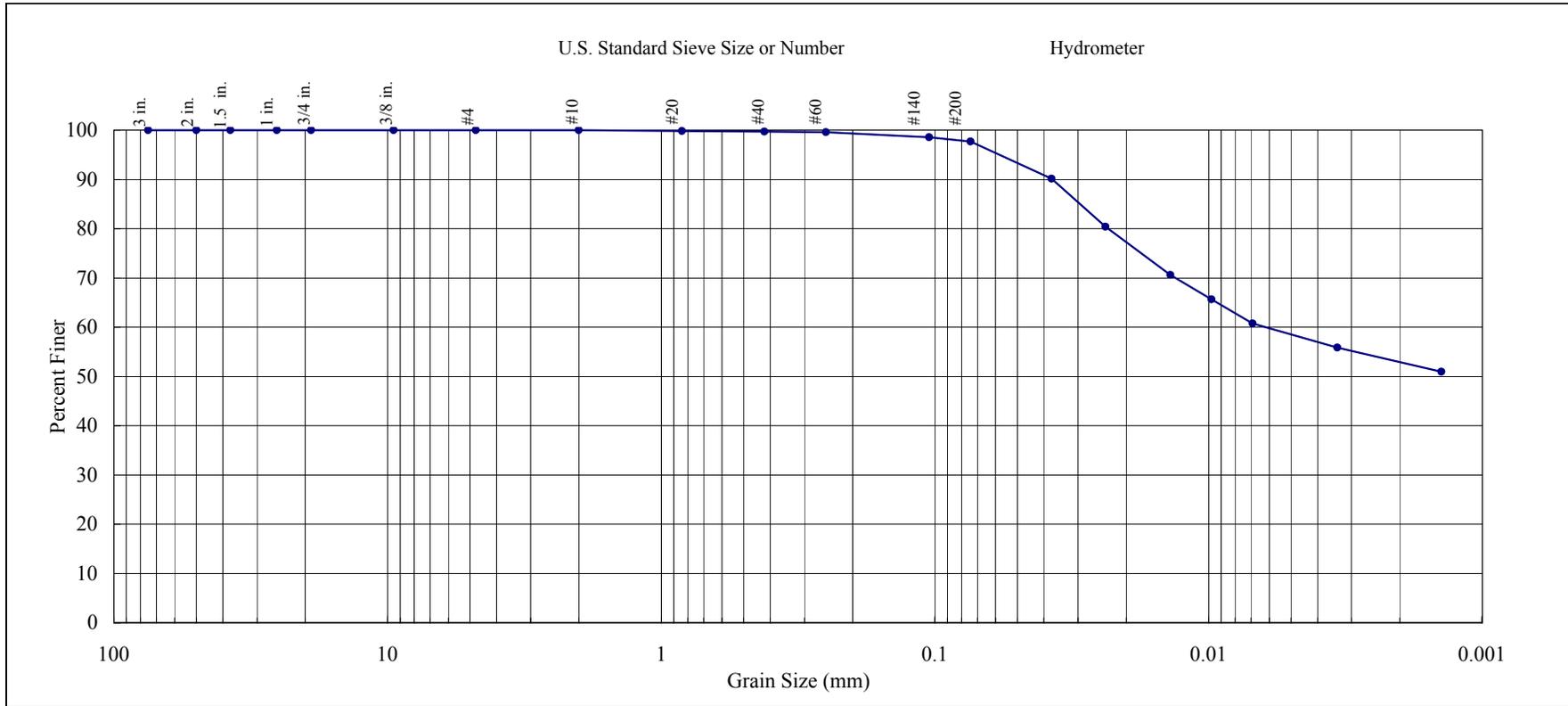
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis

 AMS, Inc. Project Manager

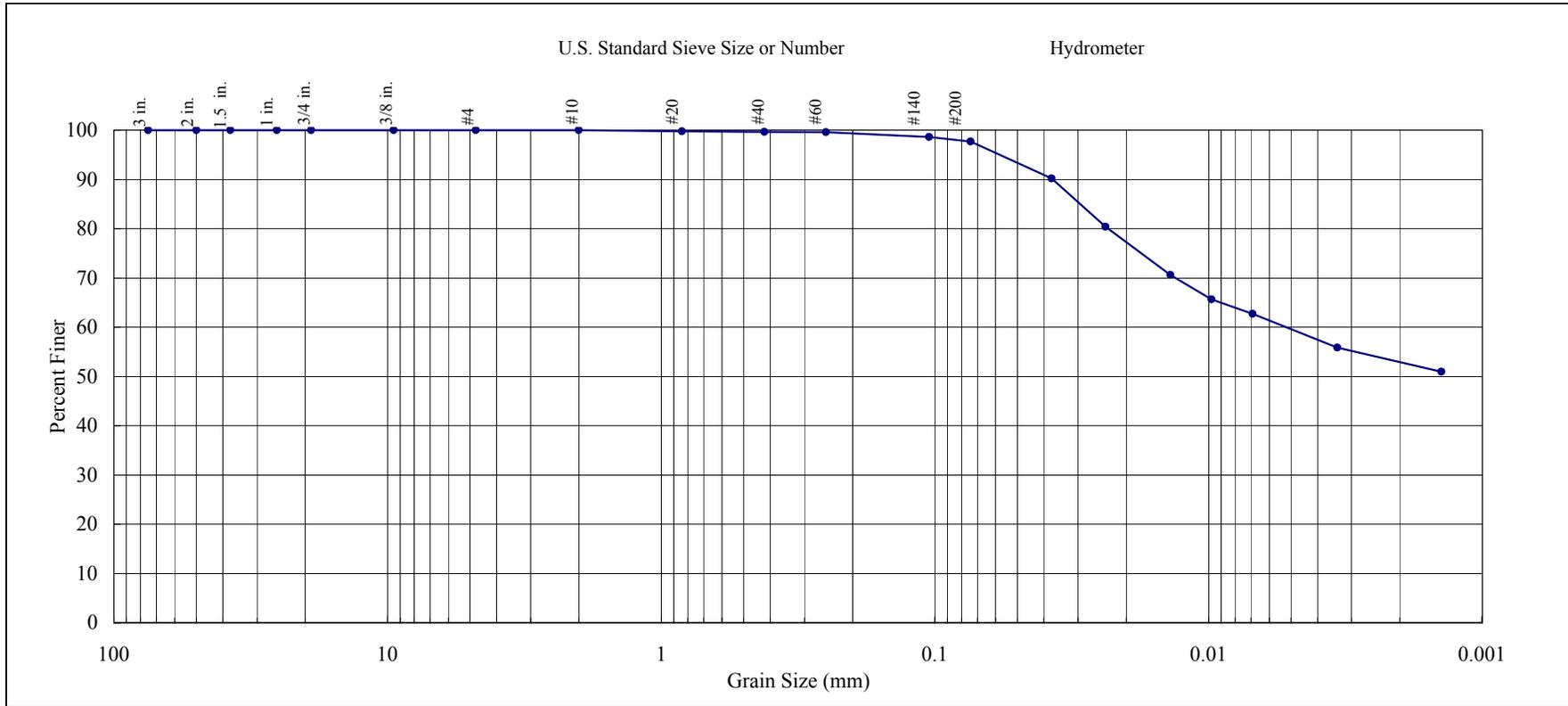


GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client: Battelle		Client Project Title: New Bedford Harbor Sed Traps				
	Coarse	Medium	Fine	Silt	Clay							
0.00	0.00	0.28	2.02	39.58	58.12	Client Project Number: G606422		AMS Project Number: 8C6				
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Date Sampled: 4/15/2008	Date Analyzed: 4/23/2008
289											Matrix, Method: Sediment, ASTM D 422	
Material Description												
Lean Clay ("CL"), black (N1)											Client Sample ID: Q2751 (ST-04-041508-B)	
											AMS Sample ID: 8C6-5	
 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.					ACCREDITED IN ACCORDANCE WITH  Laboratory No. E87956			_____ <i>Jennifer D. Davis</i> AMS, Inc. Project Manager	

GEOTECHNICAL RESULTS



Gravel (%)		Sand (%)			Fines (%)		Client: Battelle		Client Project Title: New Bedford Harbor Sed Traps				
		Coarse	Medium	Fine	Silt	Clay							
0.00		0.00	0.35	1.95	38.68	59.02	Client Project Number: G606422		AMS Project Number: 8C6				
Water Cont. (%)		LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Date Sampled: 4/15/2008	
289												Date Analyzed: 4/23/2008	
Material Description												Matrix, Method: Sediment, ASTM D 422	
Lean Clay ("CL"), black (N1)										Client Sample ID: Q2751 (ST-04-041508-B)		AMS Sample ID: 8C6-5Q	
 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.						 ACCREDITED IN ACCORDANCE WITH nelac LABORATORY NO. E87956				
			<i>Jennifer D. Davis</i> _____ AMS, Inc. Project Manager										

QUALITY CONTROL RESULTS

Client: Battelle
 Project Title: New Bedford Harbor Sed Traps
 Project Number: G606422
 Client Sample ID: Q2751 (ST-04-041508-B)
 AMS Sample ID: 8C6-5

AMS Project Number: 8C6
 Date Sampled: 4/15/2008
 Date Analyzed: 4/23/2008
 Matrix: Sediment
 Method: ASTM D 422
 Batch: 042208-01G

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	0.00	0.00	0.00		≤ 25
2.00	No. 10	Coarse Sand	0.00	0.00	0.00		≤ 25
0.425	No. 40	Medium Sand	0.28	0.35	22.22		≤ 25
0.074	No. 200	Fine Sand	2.02	1.95	3.53		≤ 25
<0.074 - 0.005	Hydrometer	Silt	39.58	38.68	2.30		≤ 25
<0.005	Hydrometer	Clay	58.12	59.02	1.54		≤ 25

Samples in Batch: 8C6-1 8C6-4
 8C6-2 8C6-5
 8C6-3

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).

	<p>APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax</p>	<p>These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.</p> <p style="margin-top: 10px;"><i>Jennifer D. Davis</i> _____ AMS, Inc. Project Manager</p>	 Laboratory No. E87956
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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C6
Project Number:	G606422-07DUXCHE	Date Sampled:	4/15/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	4/22/2008
Client Sample ID:	Q2744 (ST-01-041508-B)		
AMS Sample ID:	8C6-1		

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	13.05	%		0.01	0.03	EPA 9060A	Sediment	5/1/2008

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 D. Davis
AMS, Inc. Project Manager



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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606422-07DUXCHE
Project Name: New Bedford Harbor 2007 Water Quality Monitoring
Client Sample ID: Q2745 (ST-01-041508-C)
AMS Sample ID: 8C6-2

AMS Project Number: 8C6
Date Sampled: 4/15/2008
Date Received: 4/22/2008

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	12.66	%		0.01	0.03	EPA 9060A	Sediment	5/1/2008

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 D. Davis
AMS, Inc. Project Manager



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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606422-07DUXCHE
Project Name: New Bedford Harbor 2007 Water Quality Monitoring
Client Sample ID: Q2747 (ST-02-041508-B)
AMS Sample ID: 8C6-3

AMS Project Number: 8C6
Date Sampled: 4/15/2008
Date Received: 4/22/2008

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	12.61	%		0.01	0.03	EPA 9060A	Sediment	5/1/2008

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 D. Davis
AMS, Inc. Project Manager



Applied Marine Sciences, Inc.

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C6
Project Number:	G606422-07DUXCHE	Date Sampled:	4/15/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	4/22/2008
Client Sample ID:	Q2749 (ST-03-041508-B)		
AMS Sample ID:	8C6-4		

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	9.18	%		0.01	0.03	EPA 9060A	Sediment	5/1/2008

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 D. Davis
AMS, Inc. Project Manager



Applied Marine Sciences, Inc.

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C6
Project Number:	G606422-07DUXCHE	Date Sampled:	4/15/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	4/22/2008
Client Sample ID:	Q2751 (ST-04-041508-B)		
AMS Sample ID:	8C6-5		

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	10.57	%		0.01	0.03	EPA 9060A	Sediment	5/1/2008

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 D. Davis
AMS, Inc. Project Manager



Applied Marine Sciences, Inc.

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TOC QUALITY CONTROL RESULTS

Client:	Battelle	AMS Project Number: 8C6
Project Number:	G606422-07DUXCHE	AMS SOP Number: 2201
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Analyzed: 5/1/2008
Matrix:	Sediment	Batch ID: 050108-01T
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	3.16	3.23	2.19		0.01	0.03	≤ 5 RPD
ICCV-01	2.07	2.00	3.44		0.01	0.03	≤ 5 RPD

Sample Duplicate Results:

AMS Sample ID	Result (%)	Duplicate Result (%)	Relative % Difference (%)	Data Qualifier	LOD (%)	LOQ (%)	QC Limits (%)
8C6-5	10.57	10.10	4.55		0.01	0.03	≤ 25 RPD

Samples in Batch (AMS ID):

8C6-1	8C6-4
8C6-2	8C6-5
8C6-3	

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.



Applied Marine Sciences, Inc.

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QUALITY CONTROL

Client: Battelle
Project Number: G606422-07DUXCHE
Project Name: New Bedford Harbor 2007 Water Quality Monitoring

AMS Project Number: 8C6
AMS SOP Number: 2201

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.



Chain of Custody

Project Name: NBH Sed Traps
 Project Number: G606422

Relinquished by: Mike McKee
 Received by: *Jocanne Aghd*

Date: 04-16-08
 Date: 4-17-08

Field Sample ID	Analytical Lab Sample ID	Sample Date (ddmmyy)	Sample Time (local)	Station ID	Analysis ¹	No. of Containers	Size (liters)	Container Type	Preservative
ST-01-041508-A	Q2743	04-15-2008	1556	ST01	PCB, TOC, Grain Size	1	2	PE	NA
ST-01-041508-B	Q2744	04-15-2008	1556	ST01	PCB, TOC, Grain Size	1	2	PE	NA
ST-01-041508-C	Q2745	04-15-2008	1556	ST01	PCB, TOC, Grain Size	1	2	PE	NA
ST-02-041508-A	Q2746	04-15-2008	1620	ST02	PCB, TOC, Grain Size	1	2	PE	NA
ST-02-041508-B	Q2747	04-15-2008	1620	ST02	PCB, TOC, Grain Size	1	2	PE	NA
ST-03-041508-A	Q2748	04-15-2008	1438	ST03	PCB, TOC, Grain Size	1	2	PE	NA
ST-03-041508-B	Q2749	04-15-2008	1438	ST03	PCB, TOC, Grain Size	1	2	PE	NA
ST-04-041508-A	Q2750	04-15-2008	1637	ST04	PCB, TOC, Grain Size	1	2	PE	NA
ST-04-041508-B	Q2751	04-15-2008	1637	ST04	PCB, TOC, Grain Size	1	2	PE	NA

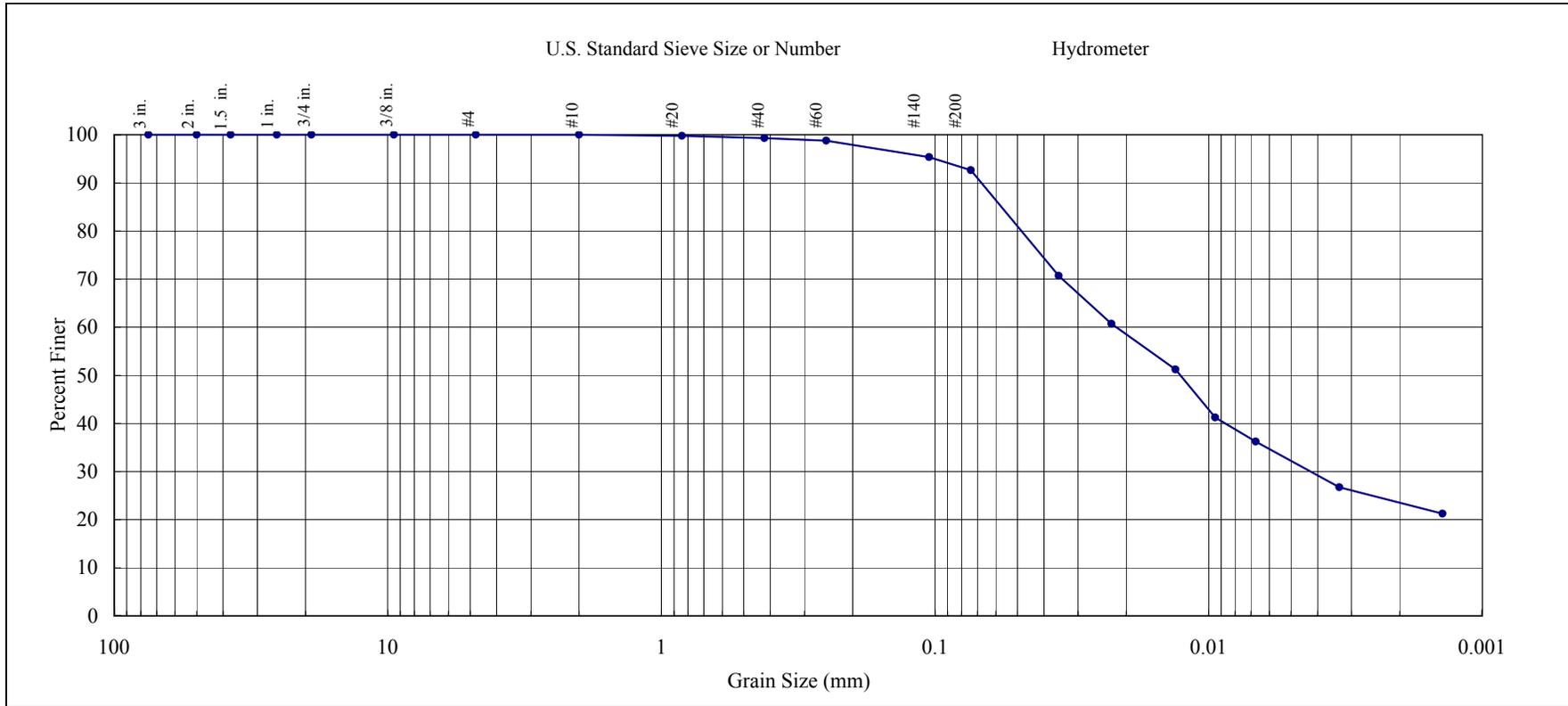
¹ All sediment trap samples will be allowed to settle overnight at 4°C. On the following day, overlying water will be decanted and remaining sediment slurry will be centrifuged to remove excessive water. The weight of each centrifuged sample will be weighed to assess reproducibility of total mass at each location. PCB, TOC, and grain size analyses will be conducted on 1 of 2 samples at ST-02, 03, and 04. PCB, TOC, and grain size analyses will be conducted on 2 of 3 samples collected at ST-01. Samples designated for PCB analysis will be frozen until sample analysis starts. Samples designated for TOC and grain size analyses will be shipped to Applied Marine Sciences located in League City, TX.

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Surface Sampling Event No. 2

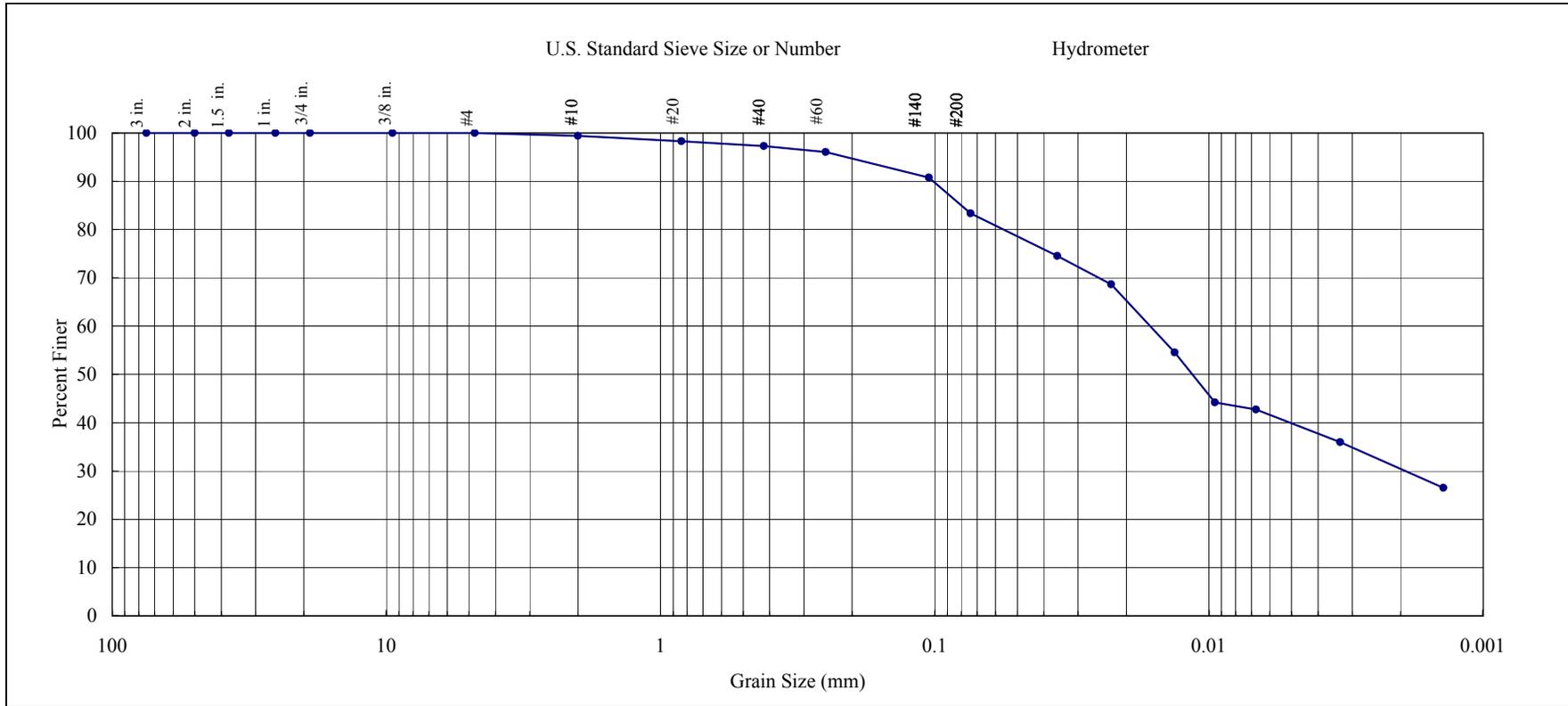
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GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client:							
	Coarse	Medium	Fine	Silt	Clay	Battelle							
0.00	0.00	0.68	6.67	61.27	31.38	Client Project Title:	New Bedford Harbor Sed Traps						
						Client Project Number:	G606422						
						AMS Project Number:	8C7						
						Date Sampled:	4/22/2008						
						Date Analyzed:	4/28/2008						
						Matrix, Method:	Sediment, ASTM D 422						
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u			
237													
Material Description													
Elastic Silt ("MH"), black (N1)											Client Sample ID:	SS01-042208	
											AMS Sample ID:	8C7-1	
 APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax				These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard. <i>Jennifer D. Davis</i> _____ AMS, Inc. Project Manager								 ACCREDITED IN ACCORDANCE WITH nelac LABORATORY No. E87956	

GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)				Client: Battelle		
	Coarse	Medium	Fine	Silt				Clay		
0.00	0.57	2.15	13.91	44.07				39.30	Client Project Title: New Bedford Harbor Sed Traps	
	AMS Project Number: 8C7									
	Date Sampled: 4/22/2008									
	Date Analyzed: 4/28/2008									
	Matrix, Method: Sediment, ASTM D 422									
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
244										
Material Description										
Elastic Silt with Sand ("MH"), black (N1)										
								Client Sample ID: SS02-042208		
								AMS Sample ID: 8C7-2		



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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.

Jennifer D. Davis

 AMS, Inc. Project Manager



GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)					Fines (%)					Client:	Battelle	
	Coarse	Medium	Fine			Silt	Clay				Client Project Title:	New Bedford Harbor Sed Traps	
19.38	11.40	20.92	12.87			23.92	11.51				Client Project Number:	G606422	
											AMS Project Number:	8C7	
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Date Sampled:	4/22/2008	
51											Date Analyzed:	4/28/2008	
Material Description												Matrix, Method:	Sediment, ASTM D 422
Silty Sand with Gravel ("SM"), black (N1)												Client Sample ID:	SS04-042208
												AMS Sample ID:	8C7-4



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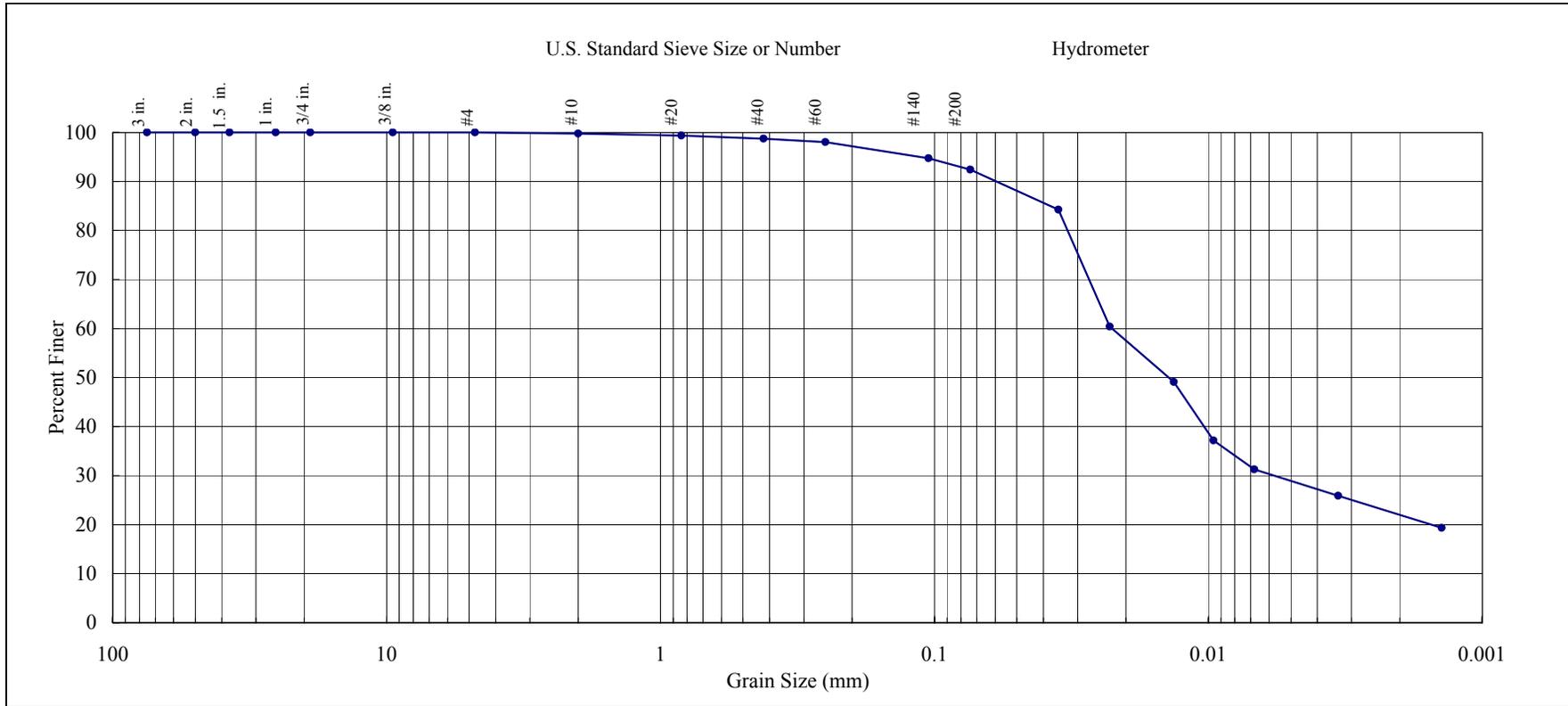
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis

 AMS, Inc. Project Manager



GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client:					
	Coarse	Medium	Fine	Silt	Clay	Battelle					
0.00	0.24	1.05	6.30	63.96	28.45	Client Project Title:	New Bedford Harbor Sed Traps				
						Client Project Number:	G606422				
						AMS Project Number:	8C7				
						Date Sampled:	4/22/2008				
						Date Analyzed:	4/28/2008				
						Matrix, Method:	Sediment, ASTM D 422				
						Client Sample ID:	SS01-042208-dup				
						AMS Sample ID:	8C7-5				
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	
287											
Material Description											
Elastic Silt ("MH"), black (N1)											
APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax						These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.					
						<i>Jennifer D. Davis</i> _____ AMS, Inc. Project Manager					
						ACCREDITED IN ACCORDANCE WITH nelac LABORATORY NO. E87956					

QUALITY CONTROL RESULTS

Client: Battelle
 Project Title: New Bedford Harbor Sed Traps
 Project Number: G606422
 Client Sample ID: SS03-042208
 AMS Sample ID: 8C7-3

AMS Project Number: 8C7
 Date Sampled: 4/22/2008
 Date Analyzed: 4/28/2008
 Matrix: Sediment
 Method: ASTM D 422
 Batch: 042708-01G

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	0.00	0.00	0.00		≤ 25
2.00	No. 10	Coarse Sand	0.00	0.00	0.00		≤ 25
0.425	No. 40	Medium Sand	2.09	1.68	21.75		≤ 25
0.074	No. 200	Fine Sand	12.78	12.85	0.55		≤ 25
<0.074 - 0.005	Hydrometer	Silt	56.13	53.05	5.64		≤ 25
<0.005	Hydrometer	Clay	29.00	32.42	11.14		≤ 25

Samples in Batch: 8C7-1 8C7-5
 8C7-2 8C7-3
 8C7-4

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).

	<p>APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax</p>	<p>These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.</p> <p style="text-align: center;"><i>Jennifer D. Davis</i> _____ AMS, Inc. Project Manager</p>	
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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C7
Project Number:	G606422-07DUXCHE	Date Sampled:	4/22/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	4/24/2008
Client Sample ID:	SS01-042208		
AMS Sample ID:	8C7-1		

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	12.16	%		0.01	0.03	EPA 9060A	Sediment	5/1/2008

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 D. Davis
AMS, Inc. Project Manager



Applied Marine Sciences, Inc.

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C7
Project Number:	G606422-07DUXCHE	Date Sampled:	4/22/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	4/24/2008
Client Sample ID:	SS02-042208		
AMS Sample ID:	8C7-2		

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	9.31	%		0.01	0.03	EPA 9060A	Sediment	5/1/2008

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 D. Davis
AMS, Inc. Project Manager



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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606422-07DUXCHE
Project Name: New Bedford Harbor 2007 Water Quality Monitoring
Client Sample ID: SS01-042208-dup
AMS Sample ID: 8C7-5

AMS Project Number: 8C7
Date Sampled: 4/22/2008
Date Received: 4/24/2008

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	12.92	%		0.01	0.03	EPA 9060A	Sediment	5/1/2008

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 D. Davis
AMS, Inc. Project Manager



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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C7
Project Number:	G606422-07DUXCHE	Date Sampled:	4/22/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	4/24/2008
Client Sample ID:	SS04-042208		
AMS Sample ID:	8C7-4		

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	3.33	%		0.01	0.03	EPA 9060A	Sediment	5/1/2008

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 D. Davis
AMS, Inc. Project Manager



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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C7
Project Number:	G606422-07DUXCHE	Date Sampled:	4/22/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	4/24/2008
Client Sample ID:	SS03-042208		
AMS Sample ID:	8C7-3		

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	8.07	%		0.01	0.03	EPA 9060A	Sediment	5/1/2008

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 D. Davis
AMS, Inc. Project Manager



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TOC QUALITY CONTROL RESULTS

Client:	Battelle	AMS Project Number: 8C7
Project Number:	G606422-07DUXCHE	AMS SOP Number: 2201
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Analyzed: 5/1/2008
Matrix:	Sediment	Batch ID: 050108-02T
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-02	0.01	0.01	--	U	0.01	0.03	≤ 0.03
CCV-02	3.16	3.23	2.19		0.01	0.03	≤ 5 RPD
ICCV-02	2.07	2.00	3.44		0.01	0.03	≤ 5 RPD

Sample Duplicate Results:

AMS Sample ID	Result (%)	Duplicate Result (%)	Relative % Difference (%)	Data Qualifier	LOD (%)	LOQ (%)	QC Limits (%)
8C7-3	8.07	8.14	0.86		0.01	0.03	≤ 25 RPD

Samples in Batch (AMS ID): 8C7-1 8C7-4
8C7-2 8C7-3
8C7-5

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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QUALITY CONTROL

Client: Battelle
Project Number: G606422-07DUXCHE
Project Name: New Bedford Harbor 2007 Water Quality Monitoring

AMS Project Number: 8C7
AMS SOP Number: 2201

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.

Proj. No G606422	Proj. Name NBH Sed Trap
----------------------------	-----------------------------------

SAMPLERS: Signature <i>Michael P. [Signature]</i>				ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER TOC & Grain size	ACIDIFIED	PRESERVED	Total Number of Containers
--	--	--	--	--	------	-----	--------------------	-----	-----	-----	--------	------------------------	-----------	-----------	----------------------------

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER TOC & Grain size	ACIDIFIED	PRESERVED	Total Number of Containers
04/22/08	0945	SS01-042208		station 1 sed grab								✓			
	1030	SS02-042208		station 2 sed grab								✓			
	0908	SS03-042208		station 3 sed grab								✓			
	0818	SS04-042208		station 4 sed grab								✓			
		SS04-042208		station 4 sed grab								✓			
	1005	SS01-042208-DUP		station 1 sed grab - field duplicate								✓			

Relinquished by: <i>Michael P. [Signature]</i>	Date/Time		Received by:	Date/Time	
	04/23/08	0800			
Relinquished by:	Date/Time		Received by:	Date/Time	

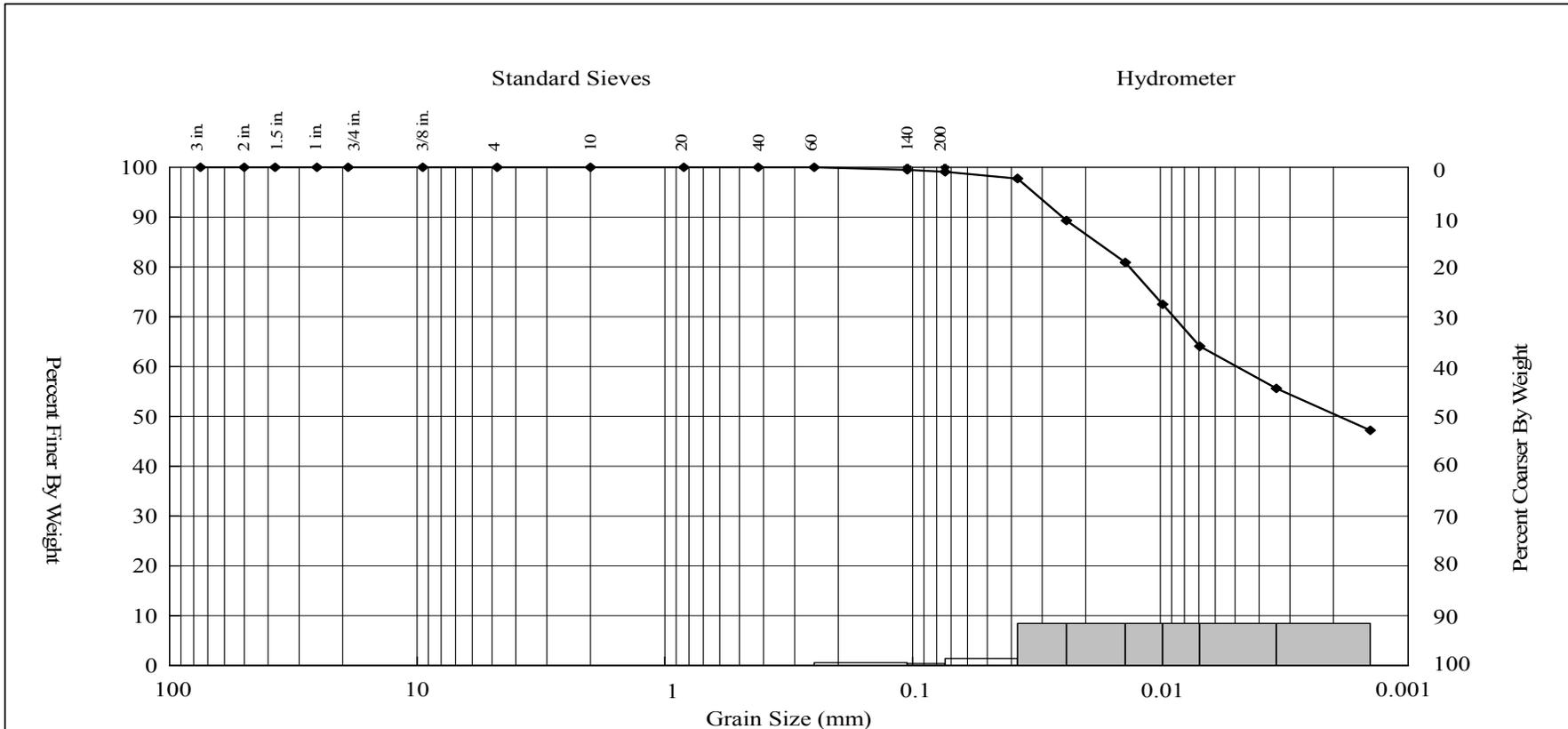
Comments:

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Deployment No. 4

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GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client Project Title:						
	Coarse	Medium	Fine	Silt	Clay	New Bedford Harbor WQM						
0.00	0.00	0.00	0.87	39.71	59.42	Client Project Number: G606422-07DUXCHE						
						AMS Project Number: 8C9						
						Date Sampled: 5/15/2008						
						Date Analyzed: 6/15/2008						
						Matrix: Sediment						
						Method: ASTM D 422						
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Client Sample ID: Q2880 (ST-04-051508-B)	
371											AMS Sample ID: 8C9-1	
Material Description												
Lean Clay ("CL"), black (5Y 2.5/1)												



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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.

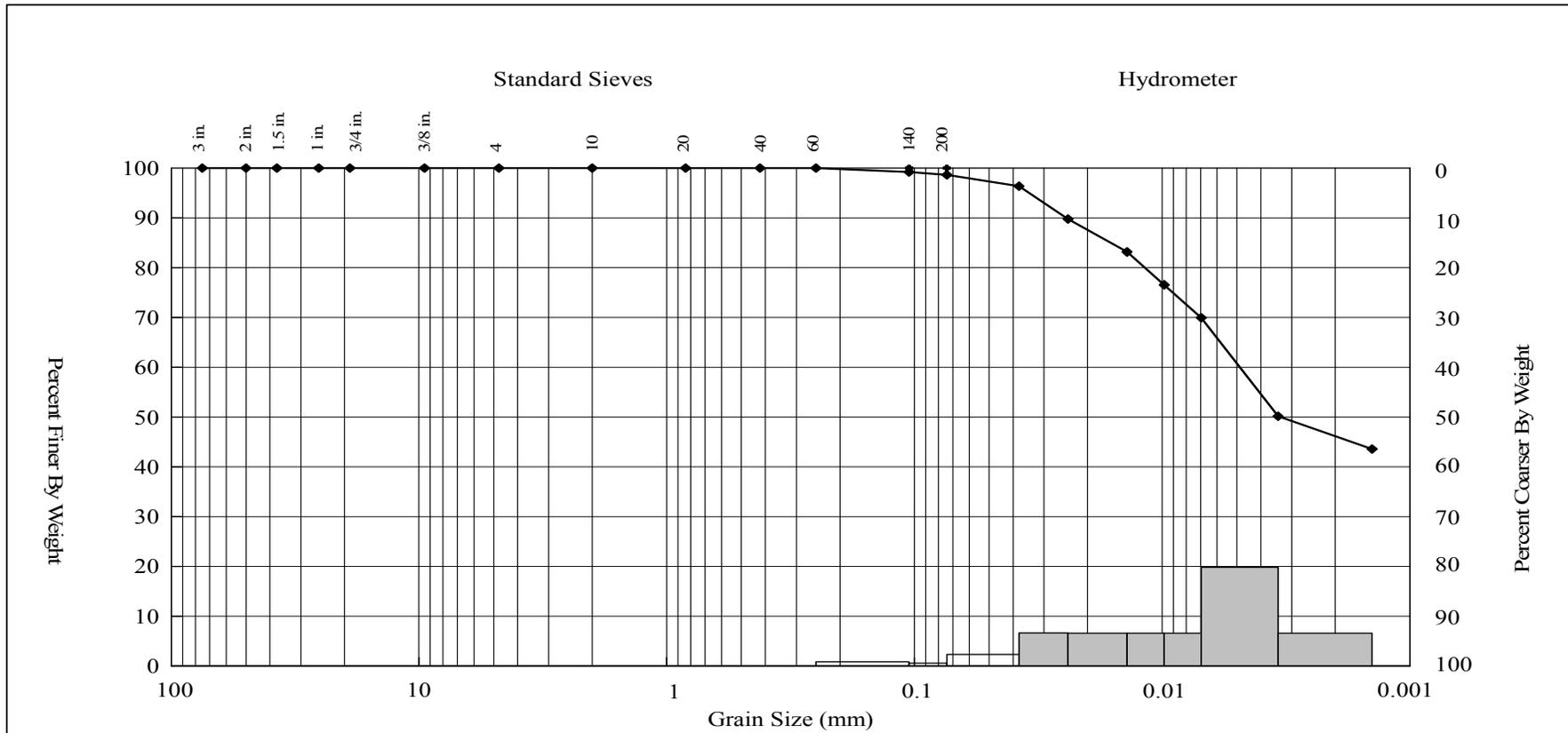
Jennifer D. Davis

 AMS, Inc. Project Manager



Laboratory No. E87956

GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client Project Title:		New Bedford Harbor WQM		
	Coarse	Medium	Fine	Silt	Clay	Client Project Number:		G606422-07DUXCHE		
0.00	0.00	0.00	1.35	39.60	59.05	AMS Project Number:		8C9		
						Date Sampled:		5/15/2008		
						Date Analyzed:		6/15/2008		
						Matrix:		Sediment		
						Method:		ASTM D 422		
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
375										
Material Description										
Lean Clay ("CL"), black (5Y 2.5/1)						Client Sample ID:		Q2882 (ST-03-051508-B)		
						AMS Sample ID:		8C9-2		



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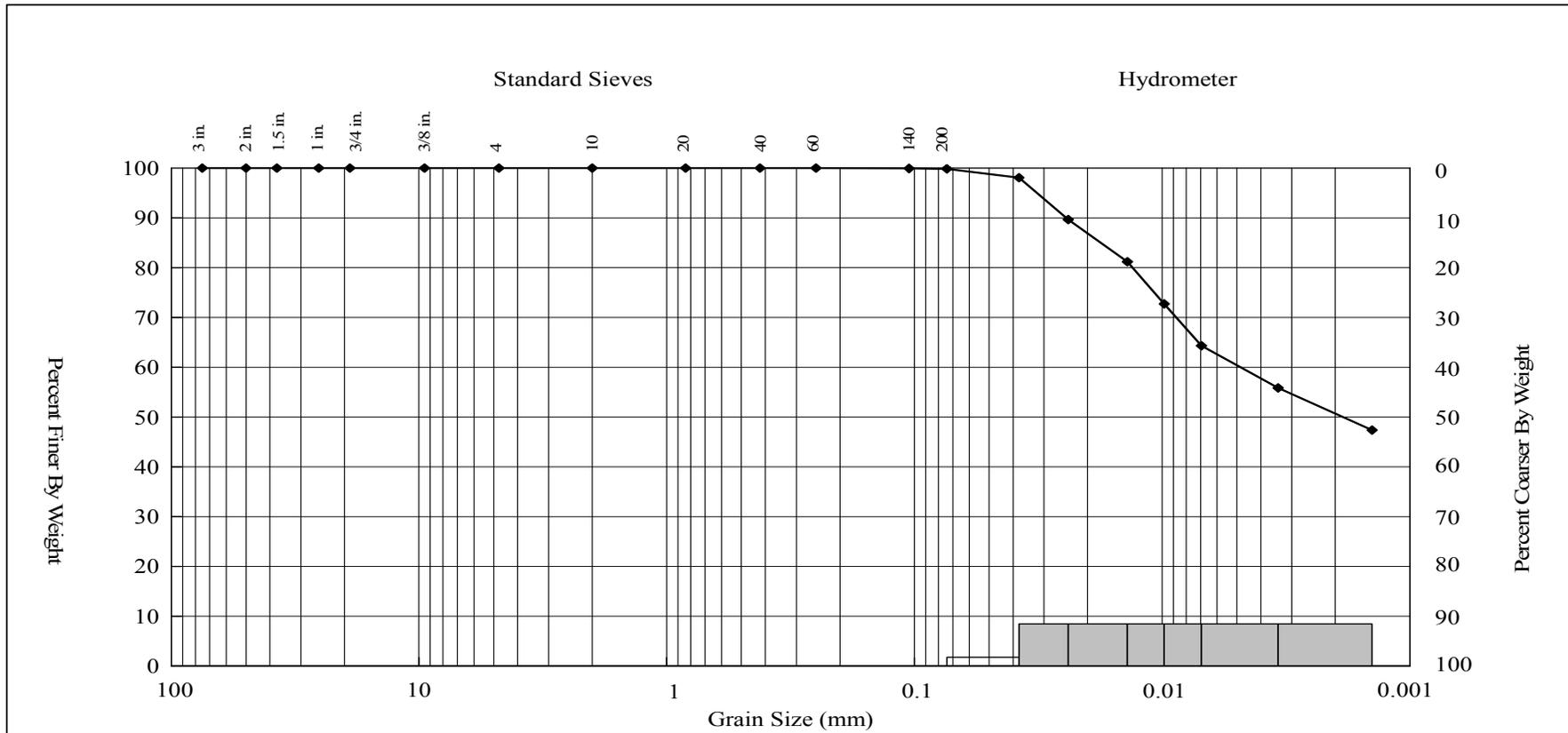
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis

 AMS, Inc. Project Manager



GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client Project Title:					
	Coarse	Medium	Fine	Silt	Clay	New Bedford Harbor WQM					
0.00	0.00	0.00	0.17	40.20	59.63	Client Project Number: G606422-07DUXCHE					
						AMS Project Number: 8C9					
						Date Sampled: 5/15/2008					
						Date Analyzed: 6/15/2008					
						Matrix: Sediment					
						Method: ASTM D 422					
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Client Sample ID:
408											Q2884 (ST-02-051508-B)
Material Description											AMS Sample ID:
Lean Clay ("CL"), black (5Y 2.5/1)											8C9-3



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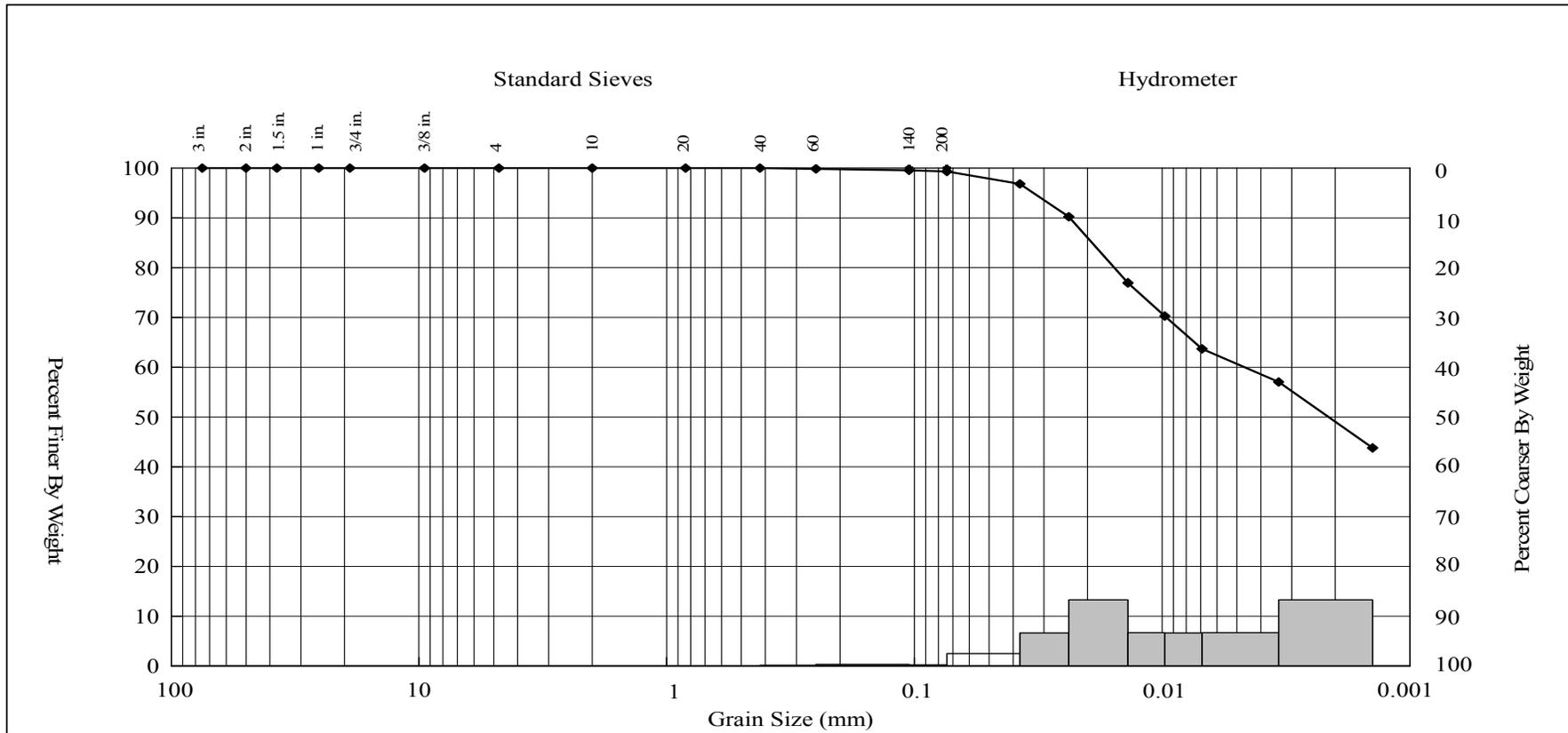
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis

 AMS, Inc. Project Manager



GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client Project Title:						
	Coarse	Medium	Fine	Silt	Clay	New Bedford Harbor WQM						
0.00	0.00	0.00	0.67	39.25	60.08	Client Project Number: G606422-07DUXCHE						
						AMS Project Number: 8C9						
						Date Sampled: 5/15/2008						
						Date Analyzed: 6/15/2008						
						Matrix: Sediment						
						Method: ASTM D 422						
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Client Sample ID: Q2886 (ST-01-051508-B)	
507											AMS Sample ID: 8C9-4	
Material Description												
Lean Clay ("CL"), black (5Y 2.5/1)												



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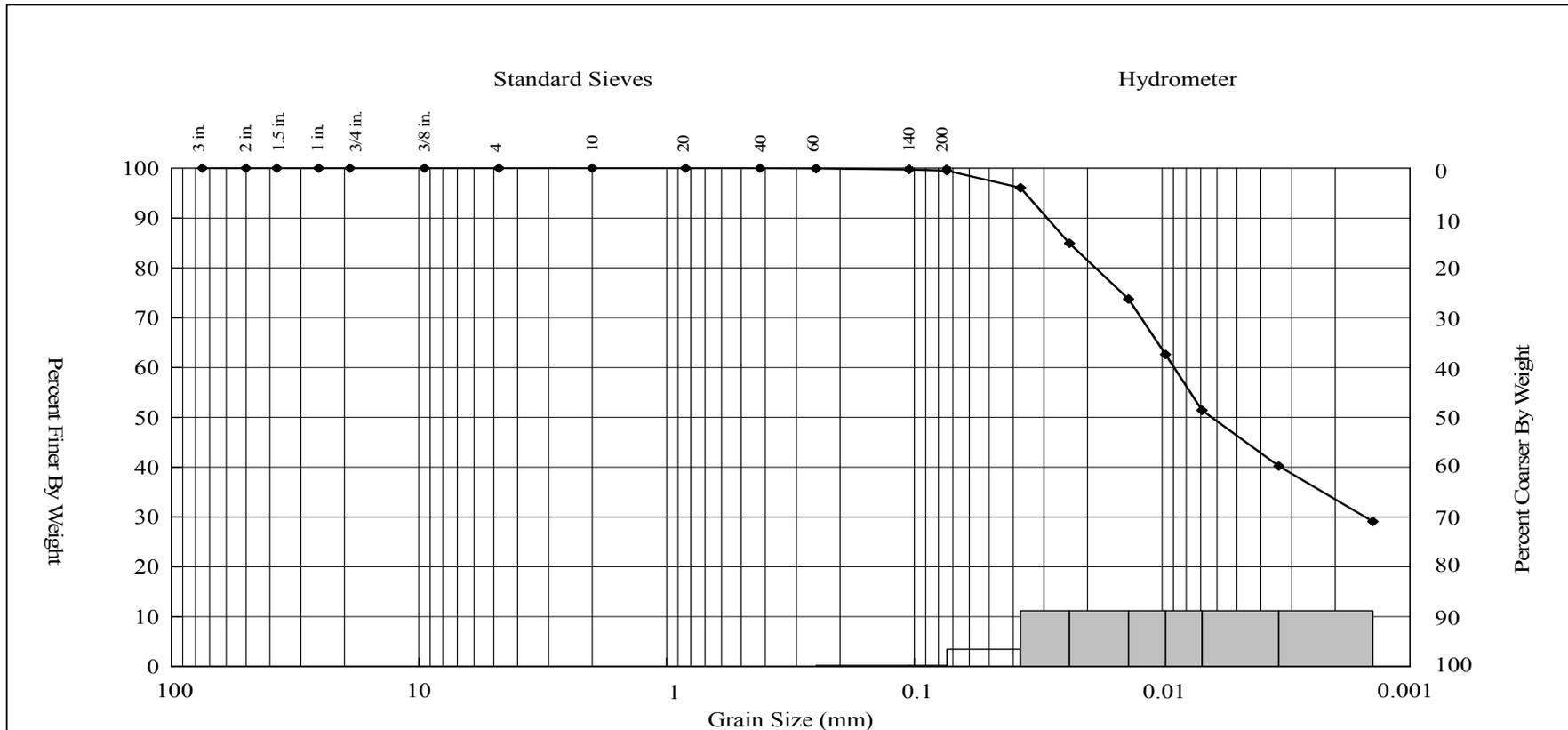
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis

 AMS, Inc. Project Manager



GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client Project Title:						
	Coarse	Medium	Fine	Silt	Clay	New Bedford Harbor WQM						
0.00	0.00	0.00	0.52	54.12	45.36	Client Project Number: G606422-07DUXCHE						
						AMS Project Number: 8C9						
						Date Sampled: 5/15/2008						
						Date Analyzed: 6/15/2008						
						Matrix: Sediment						
						Method: ASTM D 422						
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Client Sample ID: Q2887 (ST-01-051508-C) AMS Sample ID: 8C9-5	
507												
Material Description												
Elastic Silt ("MH"), black (5Y 2.5/1)												



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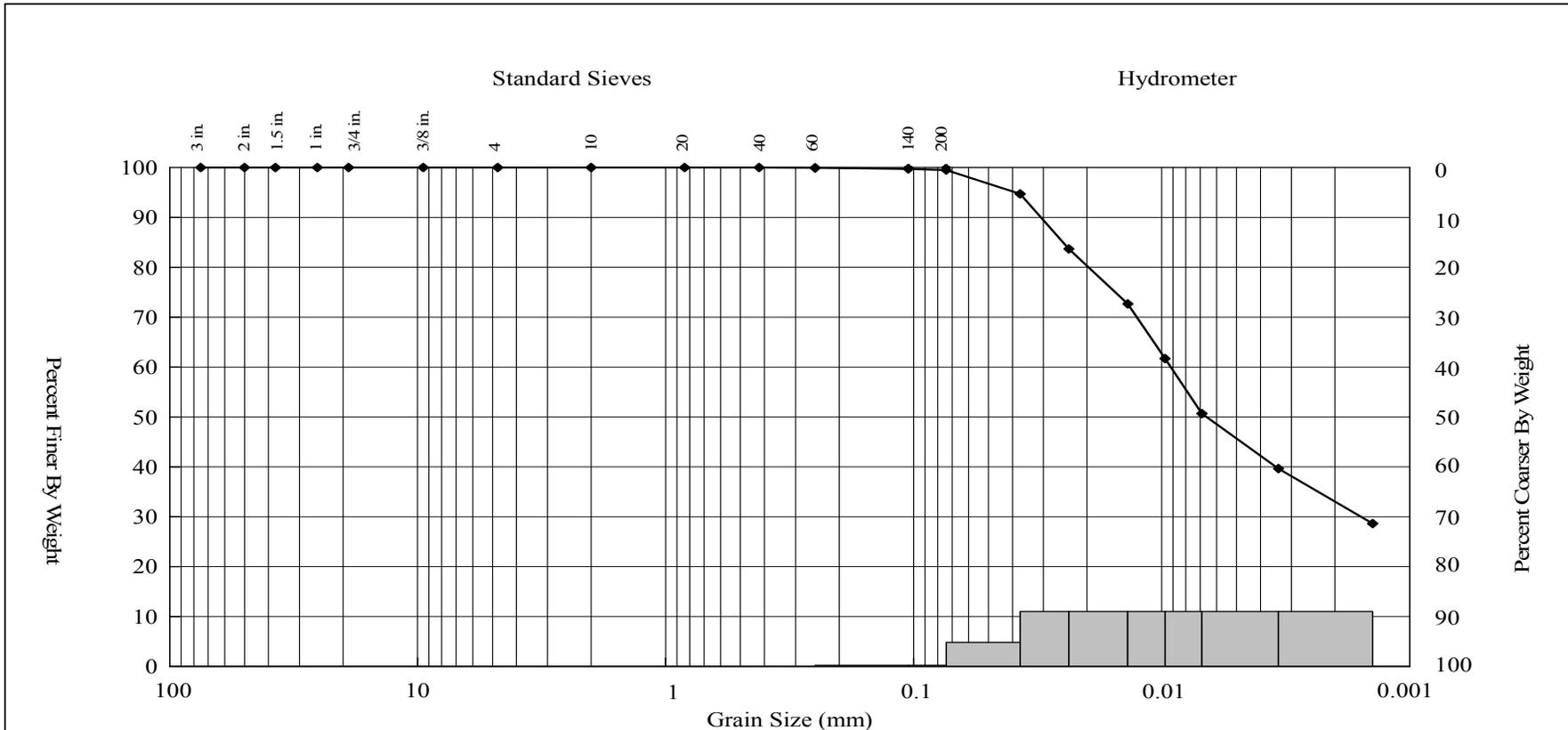
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis

 AMS, Inc. Project Manager



GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client Project Title:		New Bedford Harbor WQM		
	Coarse	Medium	Fine	Silt	Clay	Client Project Number:		G606422-07DUXCHE		
0.00	0.00	0.00	0.51	54.77	44.72	AMS Project Number:		8C9		
						Date Sampled:		5/15/2008		
						Date Analyzed:		6/15/2008		
						Matrix:		Sediment		
						Method:		ASTM D 422		
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
565										
Material Description										
Elastic Silt ("MH"), black (5Y 2.5/1)						Client Sample ID:		Q2887 (ST-01-051508-C)		
						AMS Sample ID:		8C9-5Q		



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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.

Jennifer D. Davis

 AMS, Inc. Project Manager



QUALITY CONTROL RESULTS

Client: Battelle
 Project Title: New Bedford Harbor WQM
 Project Number: G606422-07DUXCHE
 Client Sample ID: Q2887 (ST-01-051508-C)
 AMS Sample ID: 8C9-5

AMS Project Number: 8C9
 Date Sampled: 5/15/2008
 Date Analyzed: 6/15/2008
 Matrix: Sediment
 Method: ASTM D 422
 Batch: 061508-01G

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	0.00	0.00	0.00		≤ 25
2.00	No. 10	Coarse Sand	0.00	0.00	0.00		≤ 25
0.425	No. 40	Medium Sand	0.00	0.00	0.00		≤ 25
0.074	No. 200	Fine Sand	0.52	0.51	1.94		≤ 25
<0.074 - 0.005	Hydrometer	Silt	54.12	54.77	1.19		≤ 25
<0.005	Hydrometer	Clay	45.36	44.72	1.42		≤ 25

Samples in Batch: 8C9-1 8C9-3 8C9-5
 8C9-2 8C9-4

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).

 <p>APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax</p>	<p>These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.</p> <p style="text-align: center;"><i>Jennifer D. Davis</i> _____ AMS, Inc. Project Manager</p>	 <p>Laboratory No. E87956</p>
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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C9
Project Number:	G606422-07DUXCHE	Date Sampled:	5/15/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	6/4/2008
Client Sample ID:	Q2880 (ST-04-051508-B)		
AMS Sample ID:	8C9-1		

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	9.89	%		0.01	0.03	EPA 9060A	Sediment	6/18/2008

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 D. Davis
AMS, Inc. Project Manager



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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C9
Project Number:	G606422-07DUXCHE	Date Sampled:	5/15/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	6/4/2008
Client Sample ID:	Q2882 (ST-03-051508-B)		
AMS Sample ID:	8C9-2		

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	11.72	%		0.01	0.03	EPA 9060A	Sediment	6/18/2008

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 D. Davis
AMS, Inc. Project Manager



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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number: 8C9
Project Number:	G606422-07DUXCHE	Date Sampled: 5/15/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received: 6/4/2008
Client Sample ID:	Q2884 (ST-02-051508-B)	
AMS Sample ID:	8C9-3	

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	11.77	%		0.01	0.03	EPA 9060A	Sediment	6/18/2008

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 D. Davis
AMS, Inc. Project Manager



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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606422-07DUXCHE
Project Name: New Bedford Harbor 2007 Water Quality Monitoring
Client Sample ID: Q2886 (ST-01-051508-B)
AMS Sample ID: 8C9-4

AMS Project Number: 8C9
Date Sampled: 5/15/2008
Date Received: 6/4/2008

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	16.36	%		0.01	0.03	EPA 9060A	Sediment	6/18/2008

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 D. Davis
AMS, Inc. Project Manager



Applied Marine Sciences, Inc.

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number: 8C9
Project Number:	G606422-07DUXCHE	Date Sampled: 5/15/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received: 6/4/2008
Client Sample ID:	Q2887 (ST-01-051508-C)	
AMS Sample ID:	8C9-5	

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	17.19	%		0.01	0.03	EPA 9060A	Sediment	6/18/2008

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 D. Davis
AMS, Inc. Project Manager



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TOC QUALITY CONTROL RESULTS

Client:	Battelle	AMS Project Number: 8C9
Project Number:	G606422-07DUXCHE	AMS SOP Number: 2201
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Analyzed: 6/18/2008
Matrix:	Sediment	Batch ID: 061808-01T
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	3.12	3.23	3.46		0.01	0.03	≤ 5 RPD
ICCV-01	2.06	2.00	2.96		0.01	0.03	≤ 5 RPD

Sample Duplicate Results:

AMS Sample ID	Result (%)	Duplicate Result (%)	Relative % Difference (%)	Data Qualifier	LOD (%)	LOQ (%)	QC Limits (%)
8C9-5	17.19	17.94	4.27		0.01	0.03	≤ 25 RPD

Samples in Batch (AMS ID):

8C9-1	8C9-4
8C9-2	8C9-5
8C9-3	

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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QUALITY CONTROL

Client: Battelle
Project Number: G606422-07DUXCHE
Project Name: New Bedford Harbor 2007 Water Quality Monitoring

AMS Project Number: 8C9
AMS SOP Number: 2201

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.

Proj. No: **GG06422**
Proj. Name: **Sediment Trap-NBH**

SAMPLERS: Signature: *Michael P. Mc...*

ANALYSIS REQUESTED →
"NUMBER OF CONTAINERS"

OTHER TOC/Grain Size

DATE	TIME	LAB BATTELLE ID	FIELD CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER TOC/Grain Size	ACIDIFIED	PRESERVED	Total Number of Containers
05/15/08	14:38	Q2879	ST-04-051508-A	4 th sediment trap recovery station 04		✓						✓			
	↓	Q2880	ST-04-051508-B	station 04		✓						✓			
	14:59	Q2881	ST-03-051508-A	station 03		✓						✓			
	↓	Q2882	ST-03-051508-B	station 03		✓						✓			
	15:36	Q2883	ST-02-051508-A	station 02		✓						✓			
	↓	Q2884	ST-02-051508-B	station 02		✓						✓			
	15:52	Q2885	ST-01-051508-A	station 01		✓						✓			
	↓	Q2886	ST-01-051508-B	station 01		✓						✓			
	↓	Q2887	ST-01-051508-C	station 01		✓						✓			

Relinquished by: *Michael P. Mc...*

Date/Time: 05/16/08 1200

Received by: *Jeanine Light*

Date/Time: 5/16/08 1200

Relinquished by:

Date/Time:

Received by:

Date/Time:

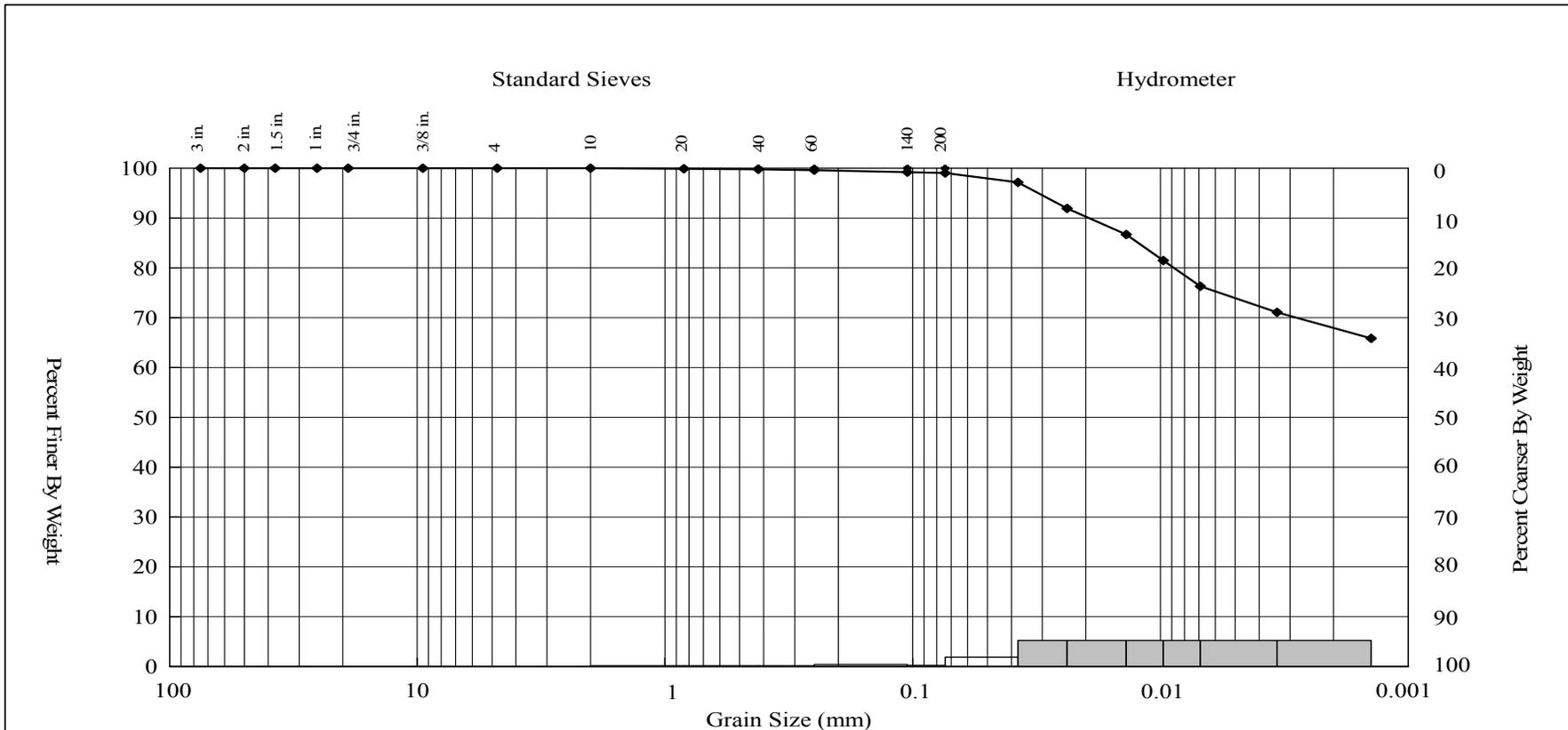
Comments: After settling and decanting, all samples will be weighed for reproducibility. At station 01, 2 of 3 samples will be analyzed for PCB, TOC, & Grain Size. At stations 02, 03 & 04, 1 of 2 samples will be analyzed for PCB, TOC, & Grain Size.

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Deployment No. 5

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GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client Project Title: New Bedford Harbor WQM		Client Project Number: G606422-07DUXCHE		AMS Project Number: 8C13		Date Sampled: 6/11/2008		Date Analyzed: 7/12/2008		Matrix: Sediment		Method: ASTM D 422		
	Coarse	Medium	Fine	Silt	Clay															
0.00	0.00	0.24	0.75	25.56	73.45															
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u										
249																				
Material Description											Client Sample ID: Q3079 (ST-01-061108-B)		AMS Sample ID: 8C13-1							
Fat Clay ("CH"), black (SY 2.5/1)																				



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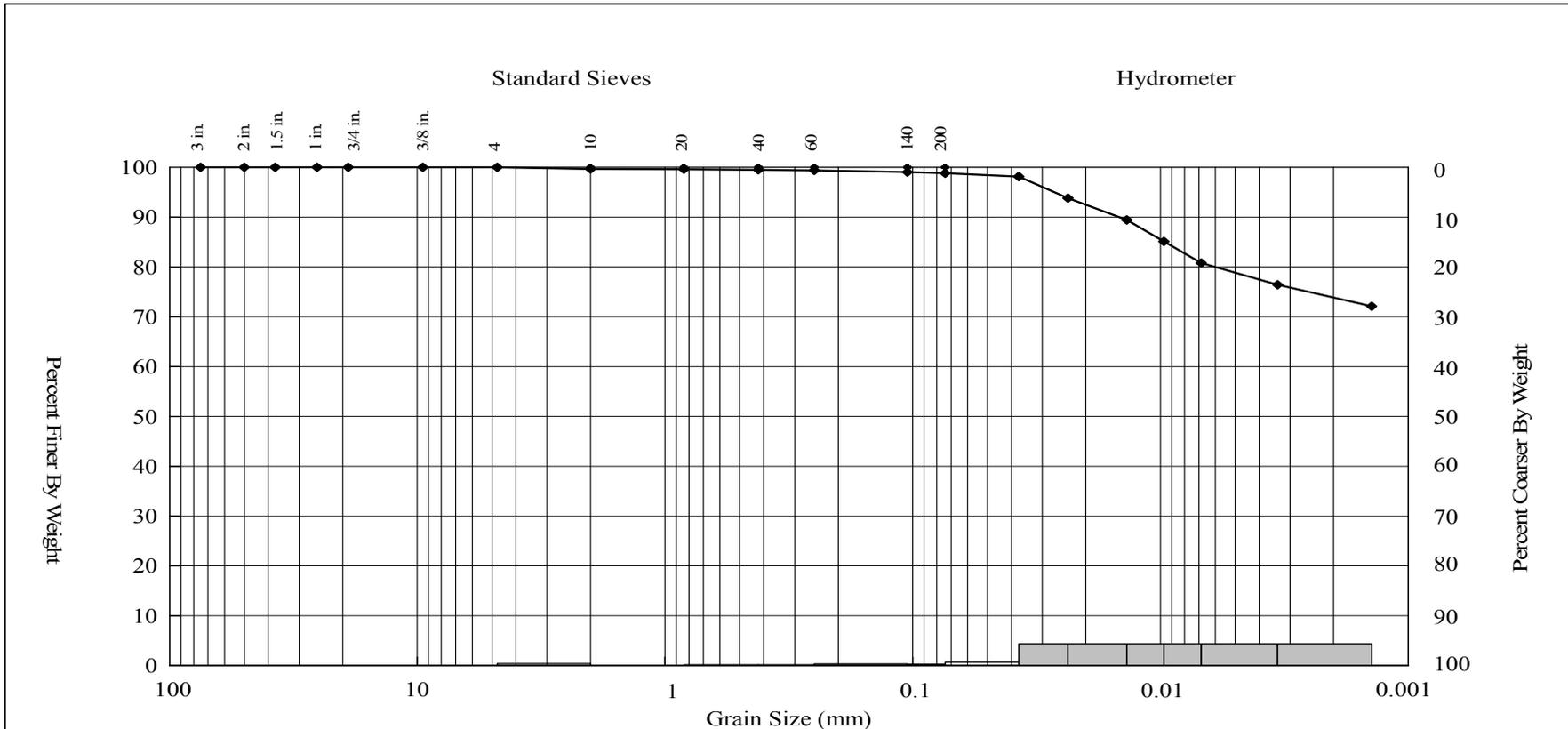
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis

 AMS, Inc. Project Manager



GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client Project Title:		New Bedford Harbor WQM		
	Coarse	Medium	Fine	Silt	Clay	Client Project Number:		G606422-07DUXCHE		
0.00	0.34	0.16	0.70	20.34	78.46	AMS Project Number:		8C13		
						Date Sampled:		6/11/2008		
						Date Analyzed:		7/12/2008		
						Matrix:		Sediment		
						Method:		ASTM D 422		
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
375										
Material Description										
Fat Clay ("CH"), black (SY 2.5/1)						Client Sample ID:		Q3080 (ST-01-061108-C)		
						AMS Sample ID:		8C13-2		



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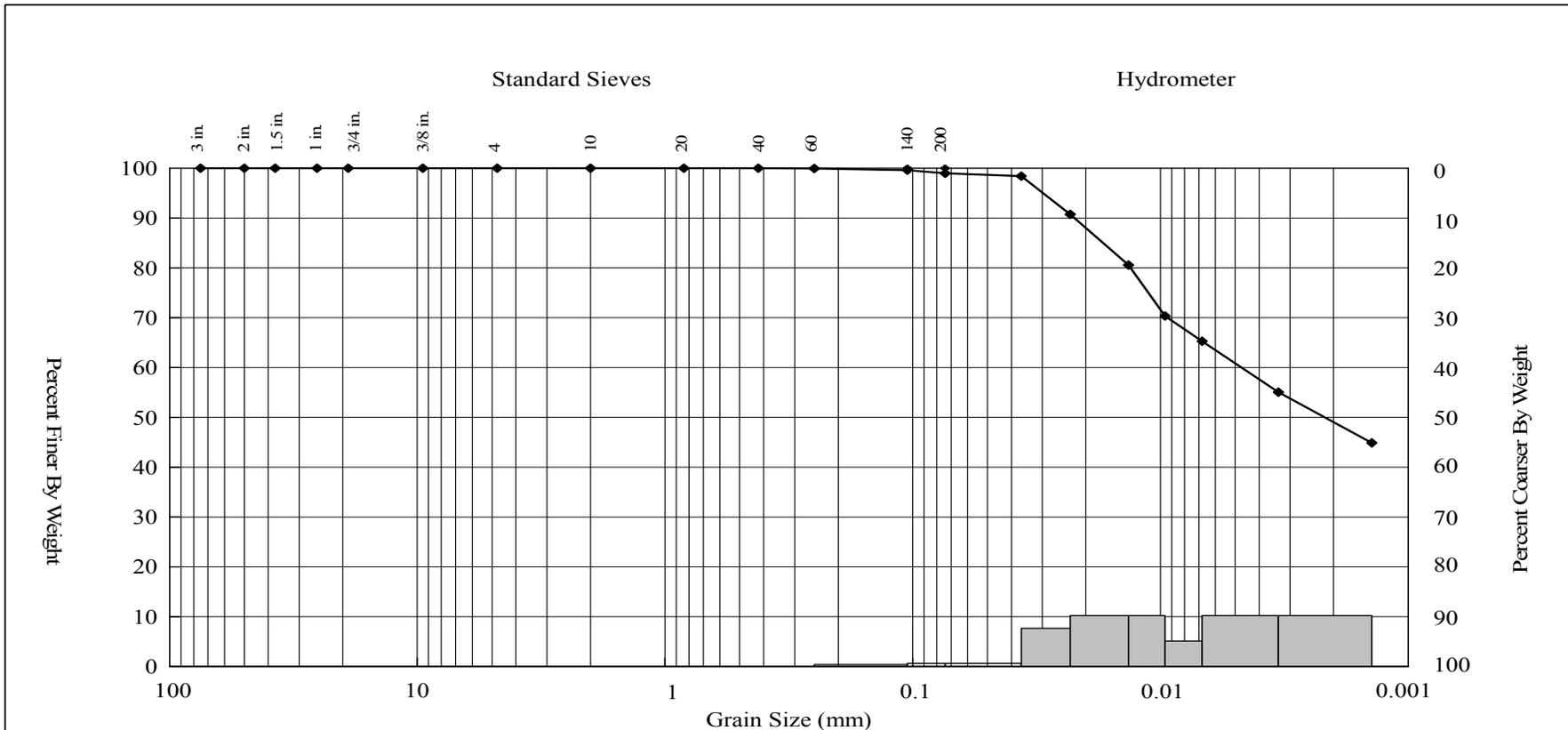
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis

 AMS, Inc. Project Manager



GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client Project Title:						
	Coarse	Medium	Fine	Silt	Clay	New Bedford Harbor WQM						
0.00	0.00	0.01	1.01	39.02	59.96	Client Project Number: G606422-07DUXCHE						
						AMS Project Number: 8C13						
						Date Sampled: 6/11/2008						
						Date Analyzed: 7/12/2008						
						Matrix: Sediment						
						Method: ASTM D 422						
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Client Sample ID: Q3082 (ST-02-061108-B)	
216												
Material Description												
Lean Clay ("CL"), black (5Y 2.5/1)												



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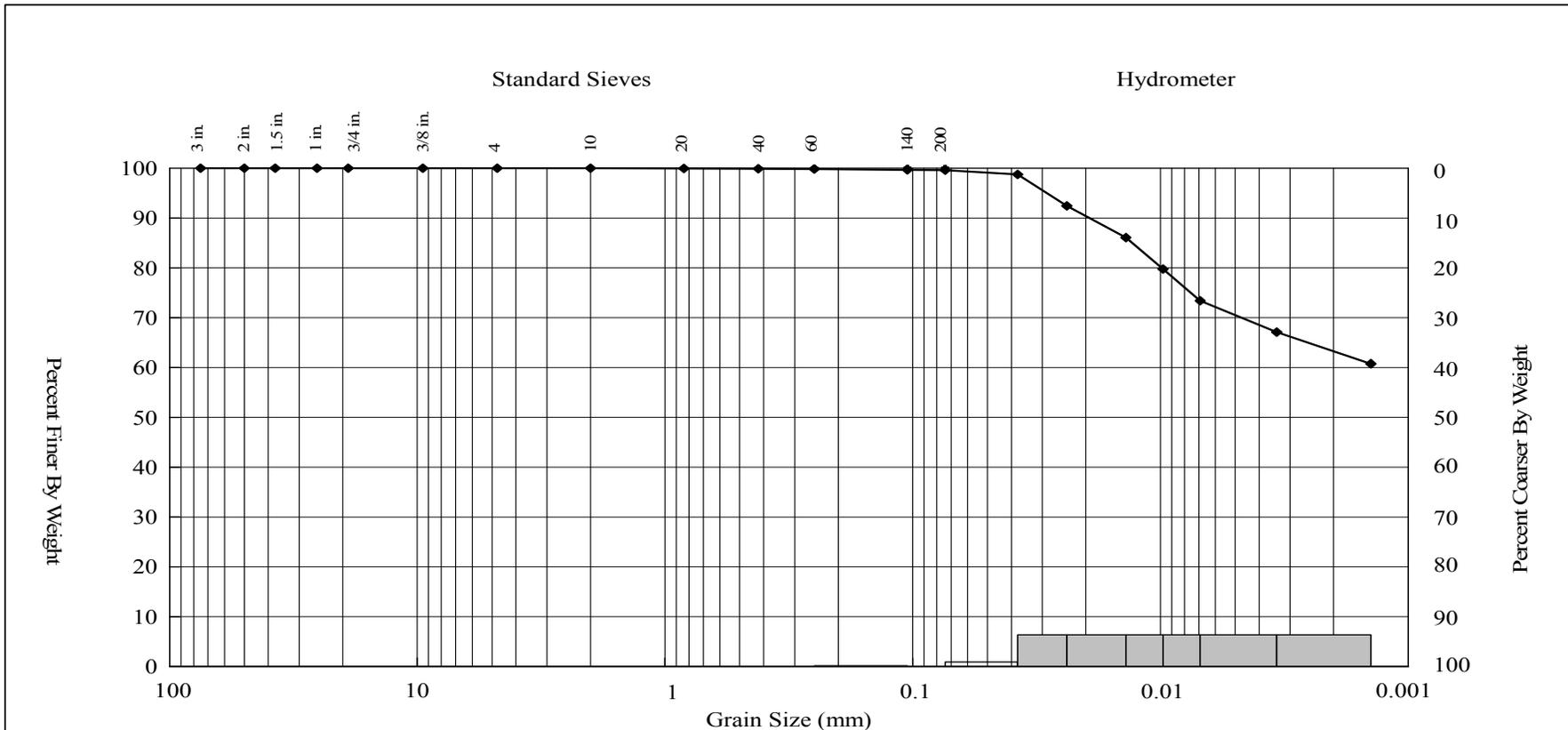
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis

 AMS, Inc. Project Manager



GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)										
	Coarse	Medium	Fine	Silt	Clay									
0.00	0.00	0.13	0.27	29.62	69.98									
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u				
342														
Material Description														
Lean Clay ("CL"), black (5Y 2.5/1)														
											Client Project Title: New Bedford Harbor WQM			
											Client Project Number: G606422-07DUXCHE			
											AMS Project Number: 8C13			
											Date Sampled: 6/11/2008			
											Date Analyzed: 7/12/2008			
											Matrix: Sediment			
											Method: ASTM D 422			
											Client Sample ID: Q3084 (ST-04-061108-B)			
											AMS Sample ID: 8C13-4			



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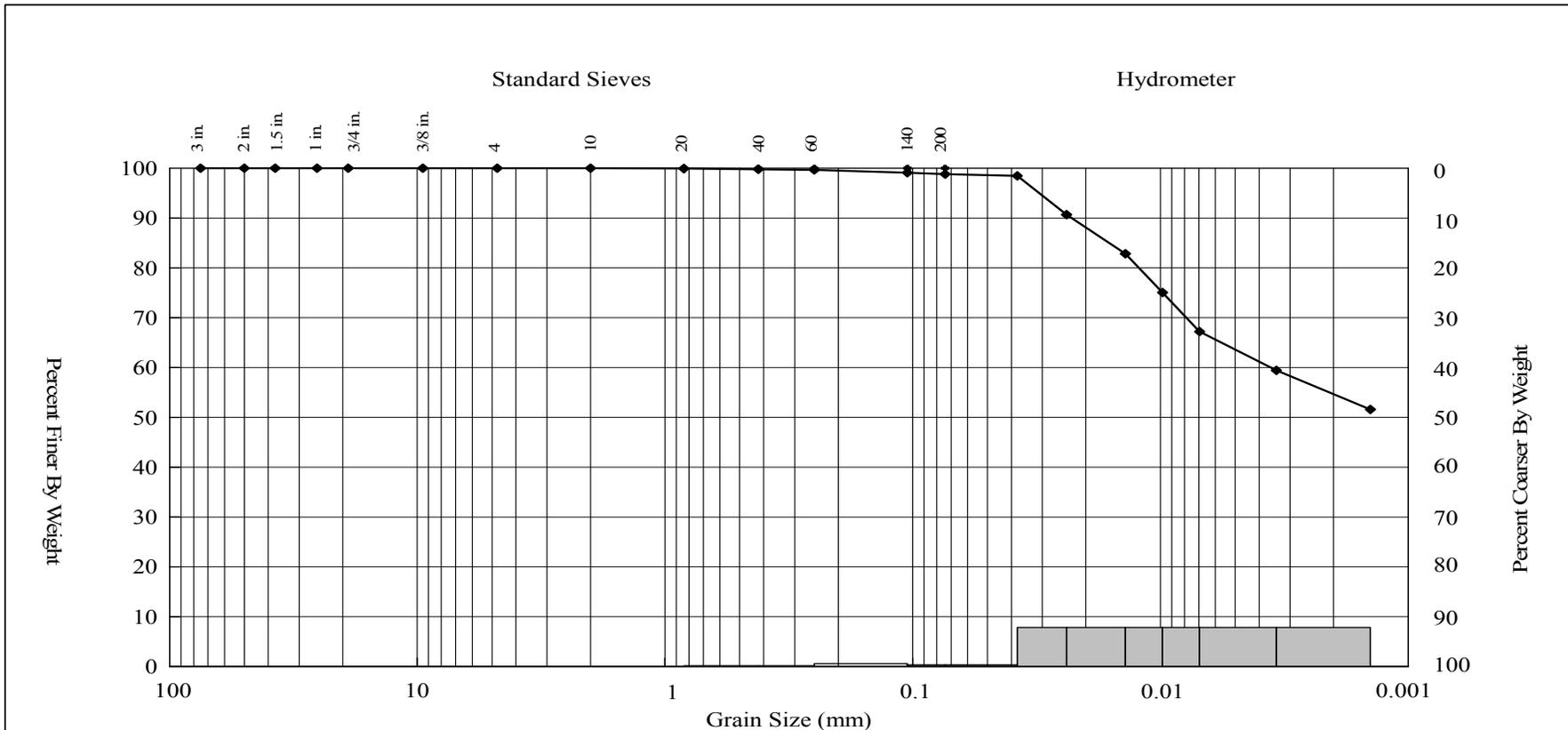
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis

 AMS, Inc. Project Manager



GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client Project Title:						
	Coarse	Medium	Fine	Silt	Clay	New Bedford Harbor WQM						
0.00	0.00	0.20	0.99	35.88	62.93	Client Project Number: G606422-07DUXCHE						
						AMS Project Number: 8C13						
						Date Sampled: 6/11/2008						
						Date Analyzed: 7/12/2008						
						Matrix: Sediment						
						Method: ASTM D 422						
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Client Sample ID: Q3086 (ST-03-061108-B)	
342											AMS Sample ID: 8C13-5	
Material Description												
Lean Clay ("CL"), black (5Y 2.5/1)												



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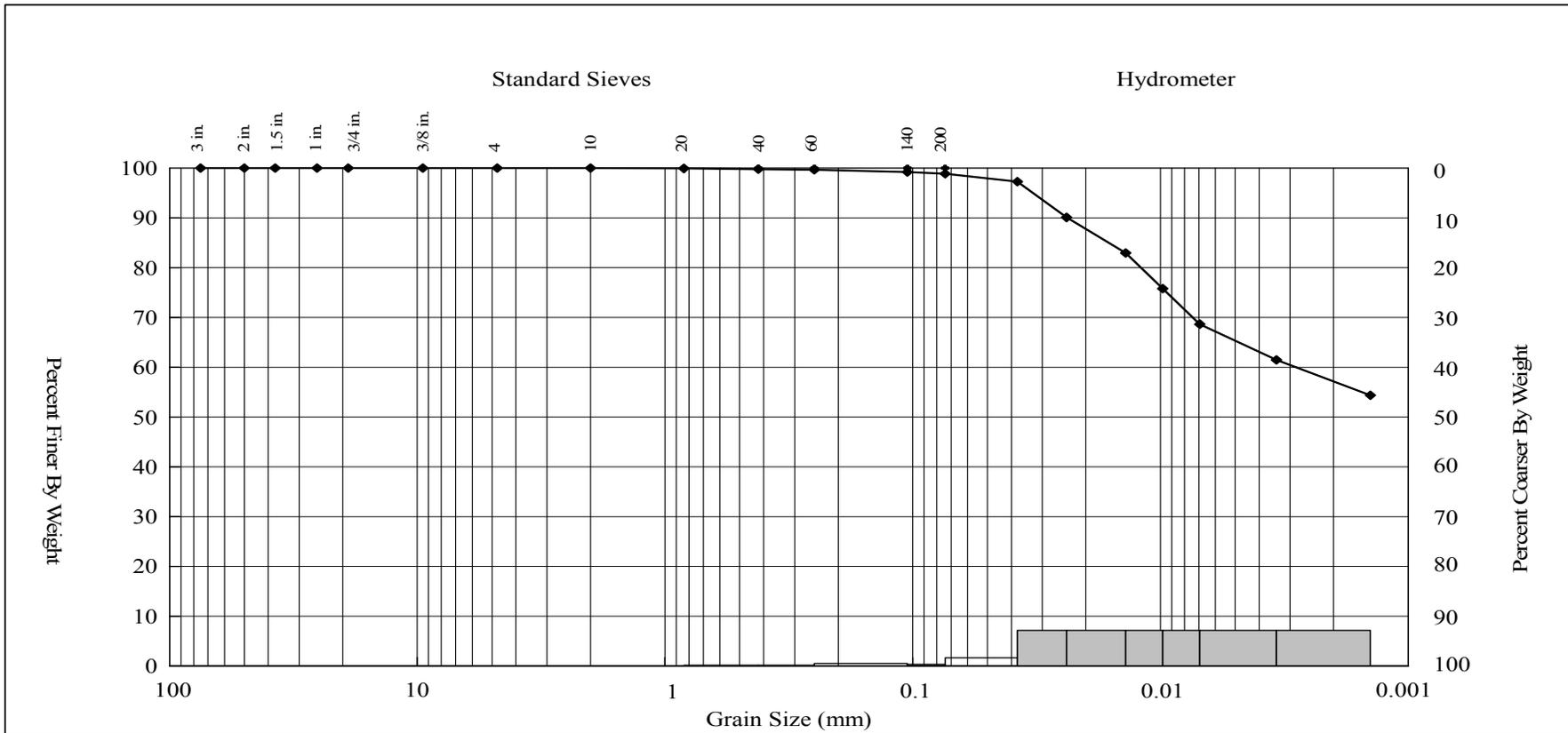
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis

 AMS, Inc. Project Manager



GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client Project Title: New Bedford Harbor WQM		Client Project Number: G606422-07DUXCHE		AMS Project Number: 8C13		Date Sampled: 6/11/2008		Date Analyzed: 7/12/2008		Matrix: Sediment		Method: ASTM D 422		
	Coarse	Medium	Fine	Silt	Clay															
0.00	0.00	0.20	0.93	34.15	64.72															
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u										
412																				
Material Description											Client Sample ID: Q3086 (ST-03-061108-B)		AMS Sample ID: 8C13-5Q							
Lean Clay ("CL"), black (5Y 2.5/1)																				



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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.

Jennifer D. Davis

 AMS, Inc. Project Manager



QUALITY CONTROL RESULTS

Client: Battelle
 Project Title: New Bedford Harbor WQM
 Project Number: G606422-07DUXCHE
 Client Sample ID: Q3086 (ST-03-061108-B)
 AMS Sample ID: 8C13-5

AMS Project Number: 8C13
 Date Sampled: 6/11/2008
 Date Analyzed: 7/12/2008
 Matrix: Sediment
 Method: ASTM D 422
 Batch: 071108-01G

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	0.00	0.00	0.00		≤ 25
2.00	No. 10	Coarse Sand	0.00	0.00	0.00		≤ 25
0.425	No. 40	Medium Sand	0.20	0.20	0.00		≤ 25
0.074	No. 200	Fine Sand	0.99	0.93	6.25		≤ 25
<0.074 - 0.005	Hydrometer	Silt	35.88	34.15	4.94		≤ 25
<0.005	Hydrometer	Clay	62.93	64.72	2.80		≤ 25

Samples in Batch: 8C13-1 8C13-3 8C13-5
 8C13-2 8C13-4

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).

	<p>APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax</p>	<p>These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.</p> <p style="margin-top: 10px;"><i>Jennifer D. Davis</i> _____ AMS, Inc. Project Manager</p>	 Laboratory No. E87956
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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C13
Project Number:	G606422-07DUXCHE	Date Sampled:	6/11/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	6/24/2008
Client Sample ID:	Q3079 (ST-01-061108-B)		
AMS Sample ID:	8C13-1		

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	15.45	%		0.01	0.03	EPA 9060A	Sediment	7/5/2008

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 D. Davis
AMS, Inc. Project Manager



Applied Marine Sciences, Inc.

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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606422-07DUXCHE
Project Name: New Bedford Harbor 2007 Water Quality Monitoring
Client Sample ID: Q3080 (ST-01-061108-C)
AMS Sample ID: 8C13-2

AMS Project Number: 8C13
Date Sampled: 6/11/2008
Date Received: 6/24/2008

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	15.54	%		0.01	0.03	EPA 9060A	Sediment	7/5/2008

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 D. Davis
AMS, Inc. Project Manager



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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C13
Project Number:	G606422-07DUXCHE	Date Sampled:	6/11/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	6/24/2008
Client Sample ID:	Q3082 (ST-02-061108-B)		
AMS Sample ID:	8C13-3		

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	11.20	%		0.01	0.03	EPA 9060A	Sediment	7/5/2008

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 D. Davis
AMS, Inc. Project Manager



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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C13
Project Number:	G606422-07DUXCHE	Date Sampled:	6/11/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	6/24/2008
Client Sample ID:	Q3084 (ST-04-061108-B)		
AMS Sample ID:	8C13-4		

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	11.44	%		0.01	0.03	EPA 9060A	Sediment	7/5/2008

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 D. Davis
AMS, Inc. Project Manager



Applied Marine Sciences, Inc.

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C13
Project Number:	G606422-07DUXCHE	Date Sampled:	6/11/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	6/24/2008
Client Sample ID:	Q3086 (ST-03-061108-B)		
AMS Sample ID:	8C13-5		

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	10.79	%		0.01	0.03	EPA 9060A	Sediment	7/5/2008

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 D. Davis
AMS, Inc. Project Manager



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TOC QUALITY CONTROL RESULTS

Client:	Battelle	AMS Project Number: 8C13
Project Number:	G606422-07DUXCHE	AMS SOP Number: 2201
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Analyzed: 7/5/2008
Matrix:	Sediment	Batch ID: 070508-01T
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	3.11	3.23	3.79		0.01	0.03	≤ 5 RPD
ICCV-01	2.05	2.00	2.47		0.01	0.03	≤ 5 RPD

Sample Duplicate Results:

AMS Sample ID	Result (%)	Duplicate Result (%)	Relative % Difference (%)	Data Qualifier	LOD (%)	LOQ (%)	QC Limits (%)
8C13-5	10.79	10.76	0.28		0.01	0.03	≤ 25 RPD

Samples in Batch (AMS ID): 8C13-1 8C13-4
8C13-2 8C13-5
8C13-3

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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QUALITY CONTROL

Client: Battelle
Project Number: G606422-07DUXCHE
Project Name: New Bedford Harbor 2007 Water Quality Monitoring

AMS Project Number: 8C13
AMS SOP Number: 2201

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.

Toc/Grain Size

Proj. No
G606422

Proj. Name
NB4 Sed Trp

SAMPLERS: Signature
Michael P. M...

ANALYSIS REQUESTED →
"NUMBER OF CONTAINERS"

DATE	TIME	Lab BATTELLE ID	Field CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER Toc/Grain Size	ACIDIFIED	PRESERVED	Total Number of Containers
06/11/08	1215	Q3078	ST-01-061108-A	5 ^m sediment trap recovery station 01		✓						✓			
	↓	Q3079	ST-01-061108-B	01		✓						✓			
	↓	Q3080	ST-01-061108-C	01		✓						✓			
	1224	Q3081	ST-02-061108-A	02		✓						✓			
	↓	Q3082	ST-02-061108-B	02		✓						✓			
	1248	Q3083	ST-04-061108-A	04		✓						✓			
	↓	Q3084	ST-04-061108-B	04		✓						✓			
	1310	Q3085	ST-03-061108-A	03		✓						✓			
	↓	Q3086	ST-03-061108-B	03		✓						✓			

Relinquished by:
Michael P. M...

Date/Time
~~05/12/08~~ 0800
06/12/08

Received by:
Jeannine Seyfert

Date/Time
6/12/08 1148

Relinquished by:
MPM

Date/Time
06/12/08

Received by:

Date/Time

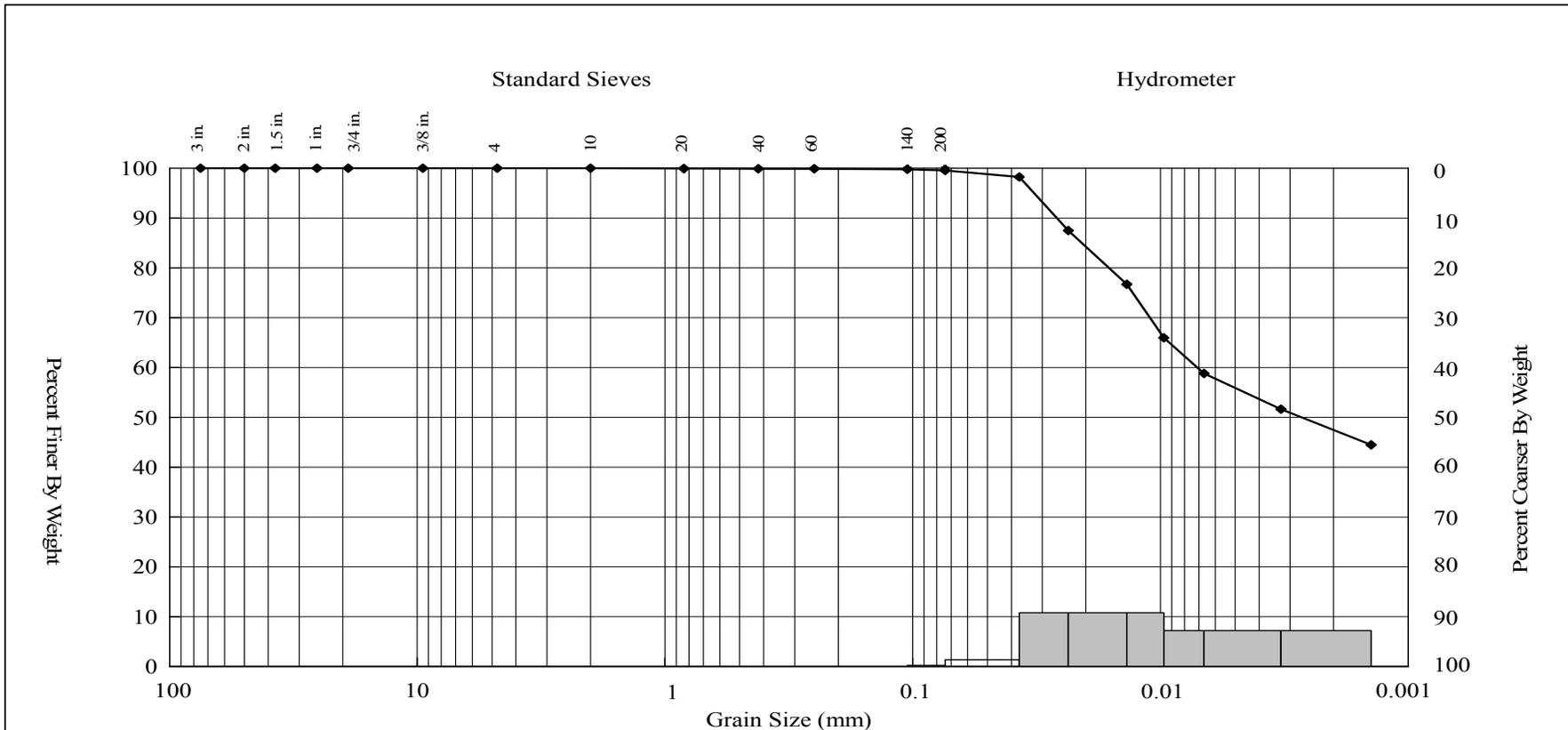
Comments: After settling samples for 24 hrs and decanting, all samples will be weighed for reproducibility. At ST-01 2 of 3 samples will be analyzed for PCB, TOC & GS. At ST-02, 03 & 04 only 1 of 2 samples will be analyzed for PCB, TOC & GS

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Deployment No. 6

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GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client Project Title:		New Bedford Harbor WQM						
	Coarse	Medium	Fine	Silt	Clay	Client Project Number:		G606422-07DUXCHE						
0.00	0.00	0.12	0.32	44.28	55.28	AMS Project Number:		8C14						
						Date Sampled:		7/10/2008						
						Date Analyzed:		8/4/2008						
						Matrix:		Sediment						
						Method:		ASTM D 422						
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Client Sample ID:		Q3438 (ST-01-071008-B)	
407														
Material Description														
Lean Clay ("CL"), black (5Y 2.5/1)														



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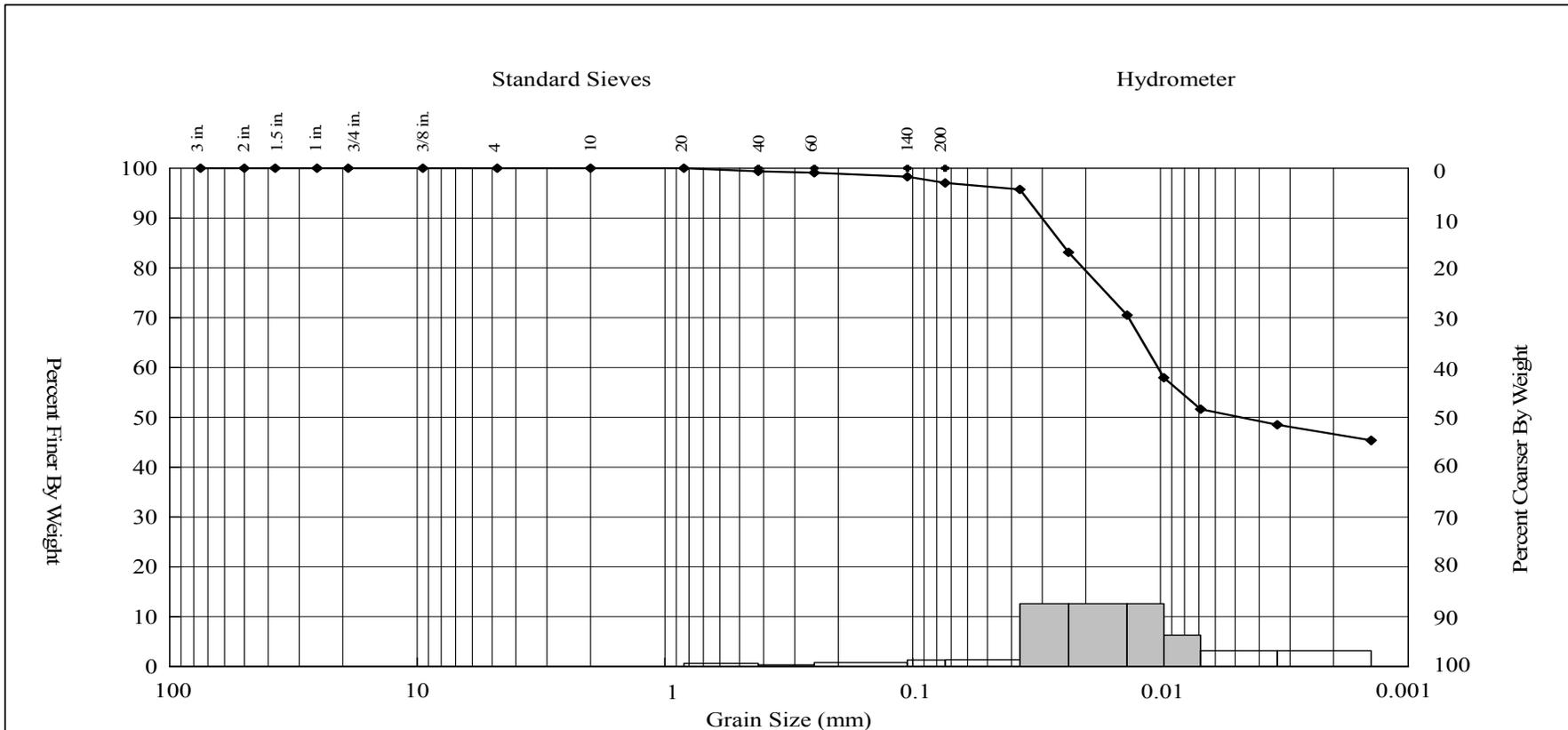
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis

 AMS, Inc. Project Manager



GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client Project Title: New Bedford Harbor WQM		Client Project Number: G606422-07DUXCHE		AMS Project Number: 8C14		Date Sampled: 7/10/2008		Date Analyzed: 8/4/2008		Matrix: Sediment		Method: ASTM D 422	
	Coarse	Medium	Fine	Silt	Clay														
0.00	0.00	0.62	2.34	47.10	49.94														
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Client Sample ID: Q3439 (ST-01-071008-C)		AMS Sample ID: 8C14-2						
375																			
Material Description																			
Lean Clay ("CL"), black (5Y 2.5/1)																			



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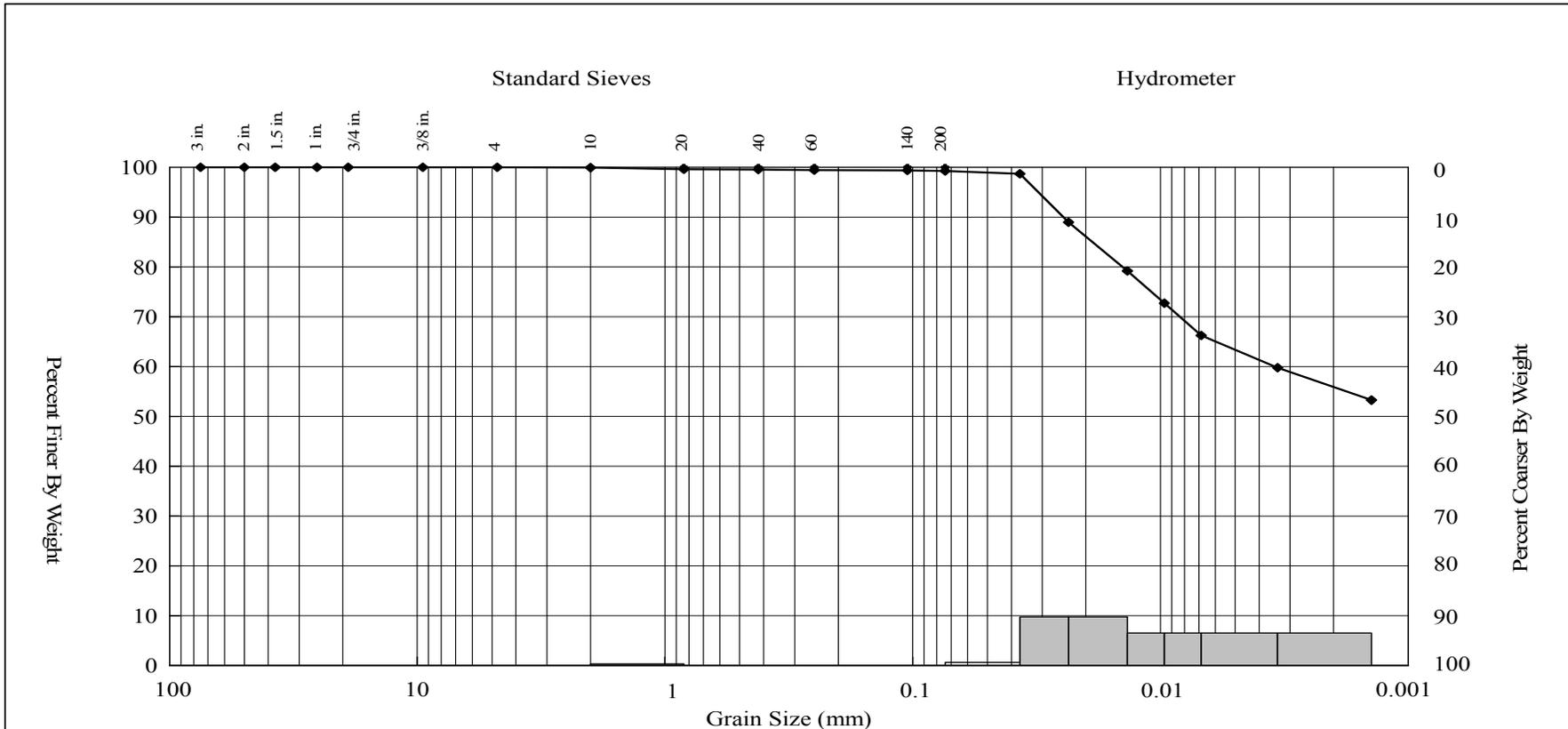
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis

 AMS, Inc. Project Manager



GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client Project Title:		New Bedford Harbor WQM		
	Coarse	Medium	Fine	Silt	Clay	Client Project Number:		G606422-07DUXCHE		
0.00	0.10	0.36	0.27	36.49	62.78	AMS Project Number:		8C14		
						Date Sampled:		7/10/2008		
						Date Analyzed:		8/4/2008		
						Matrix:		Sediment		
						Method:		ASTM D 422		
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
297										
Material Description										
Lean Clay ("CL"), black (5Y 2.5/1)						Client Sample ID:		Q3441 (ST-02-071008-B)		
						AMS Sample ID:		8C14-3		



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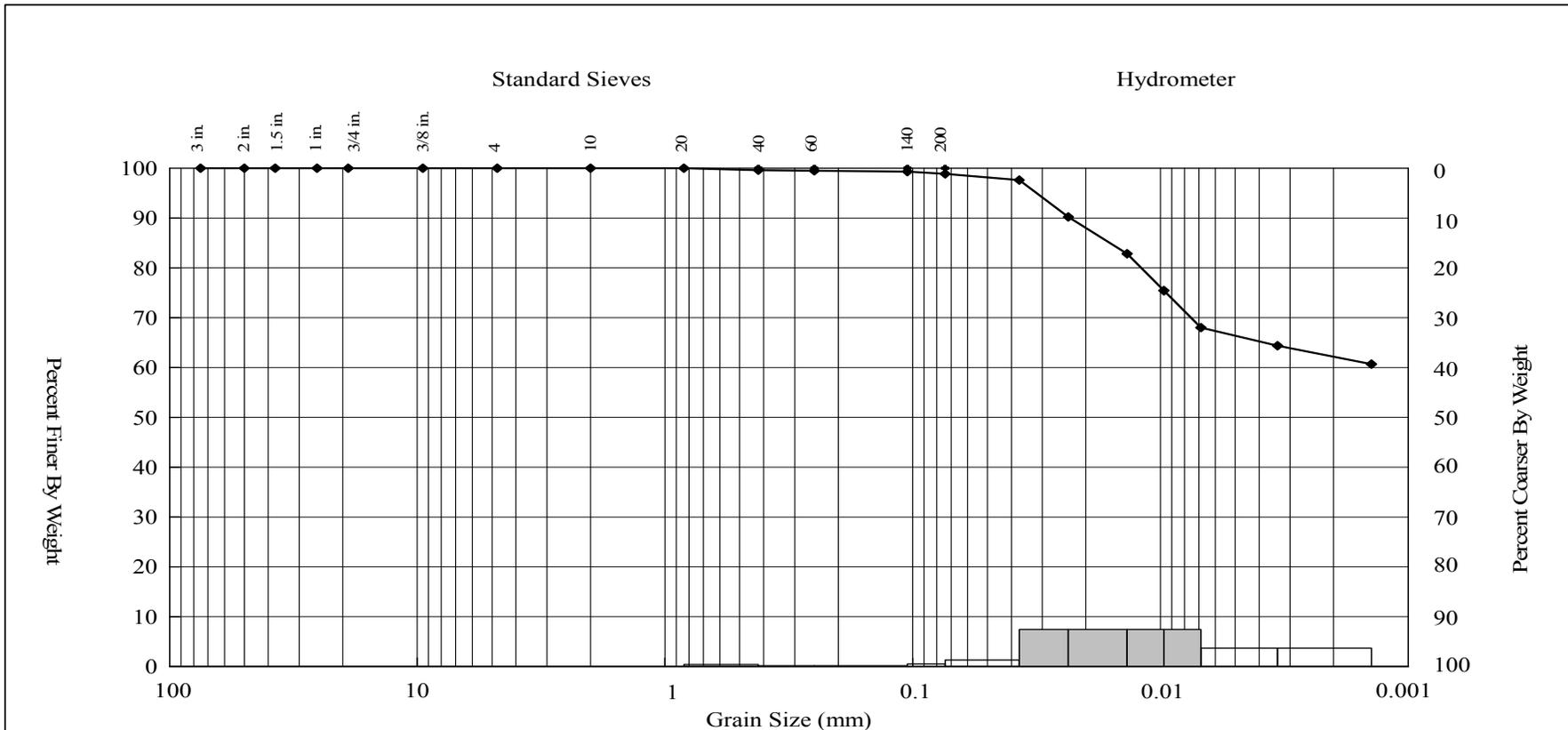
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis

 AMS, Inc. Project Manager



GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client Project Title:		New Bedford Harbor WQM						
	Coarse	Medium	Fine	Silt	Clay	Client Project Number:		G606422-07DUXCHE						
0.00	0.00	0.37	0.77	32.80	66.06	AMS Project Number:		8C14						
						Date Sampled:		7/10/2008						
						Date Analyzed:		8/4/2008						
						Matrix:		Sediment						
						Method:		ASTM D 422						
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Client Sample ID:		Q3443 (ST-03-071008-B)	
293											AMS Sample ID:		8C14-4	
Material Description														
Lean Clay ("CL"), black (5Y 2.5/1)														



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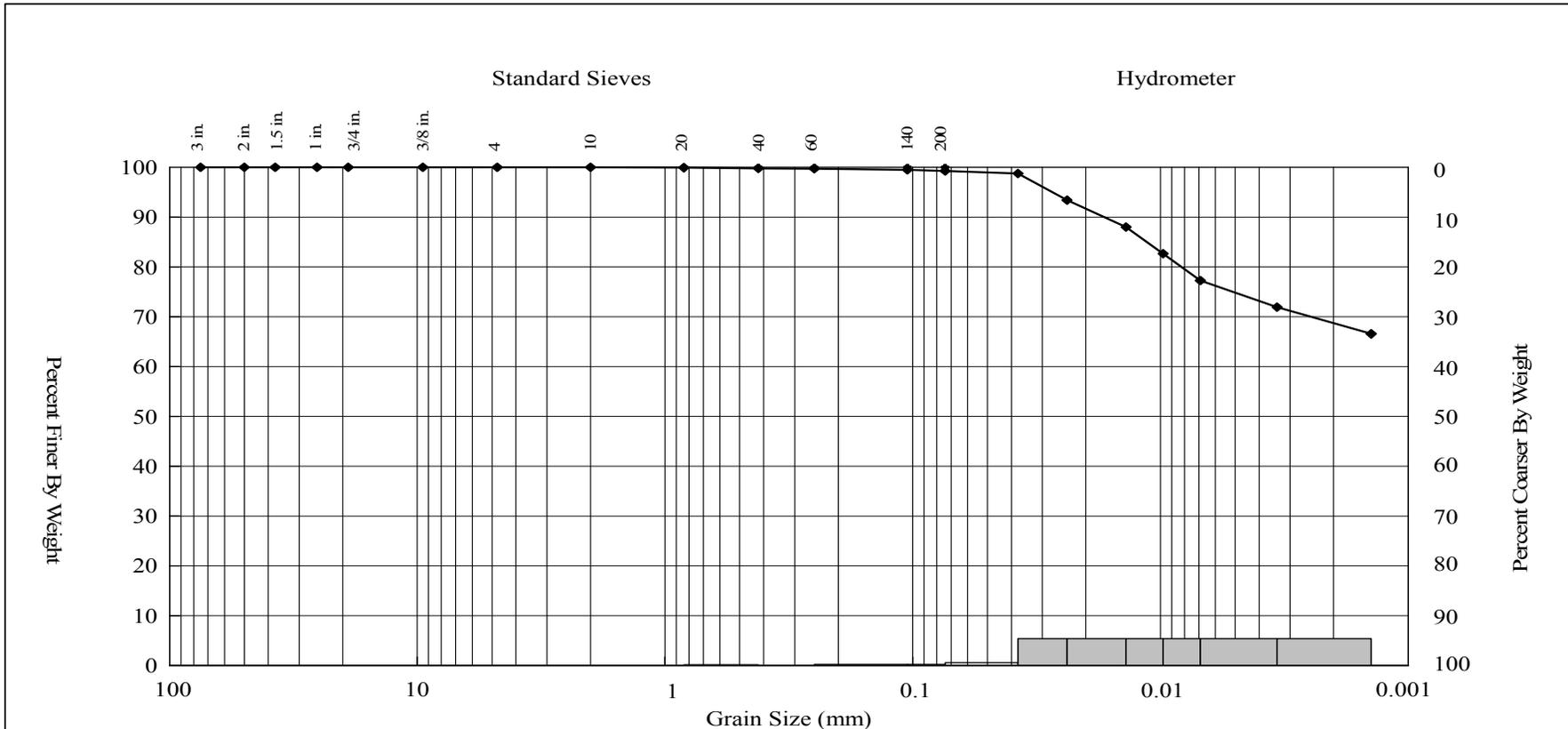
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis

 AMS, Inc. Project Manager



GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client Project Title:		New Bedford Harbor WQM				
	Coarse	Medium	Fine	Silt	Clay	Client Project Number:		G606422-07DUXCHE				
0.00	0.00	0.21	0.49	24.93	74.37	AMS Project Number:		8C14				
						Date Sampled:		7/10/2008				
						Date Analyzed:		8/4/2008				
						Matrix:		Sediment				
						Method:		ASTM D 422				
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Client Sample ID: Q3445 (ST-03-071008-B) AMS Sample ID: 8C14-5	
293												
Material Description												
Lean Clay ("CL"), black (5Y 2.5/1)												

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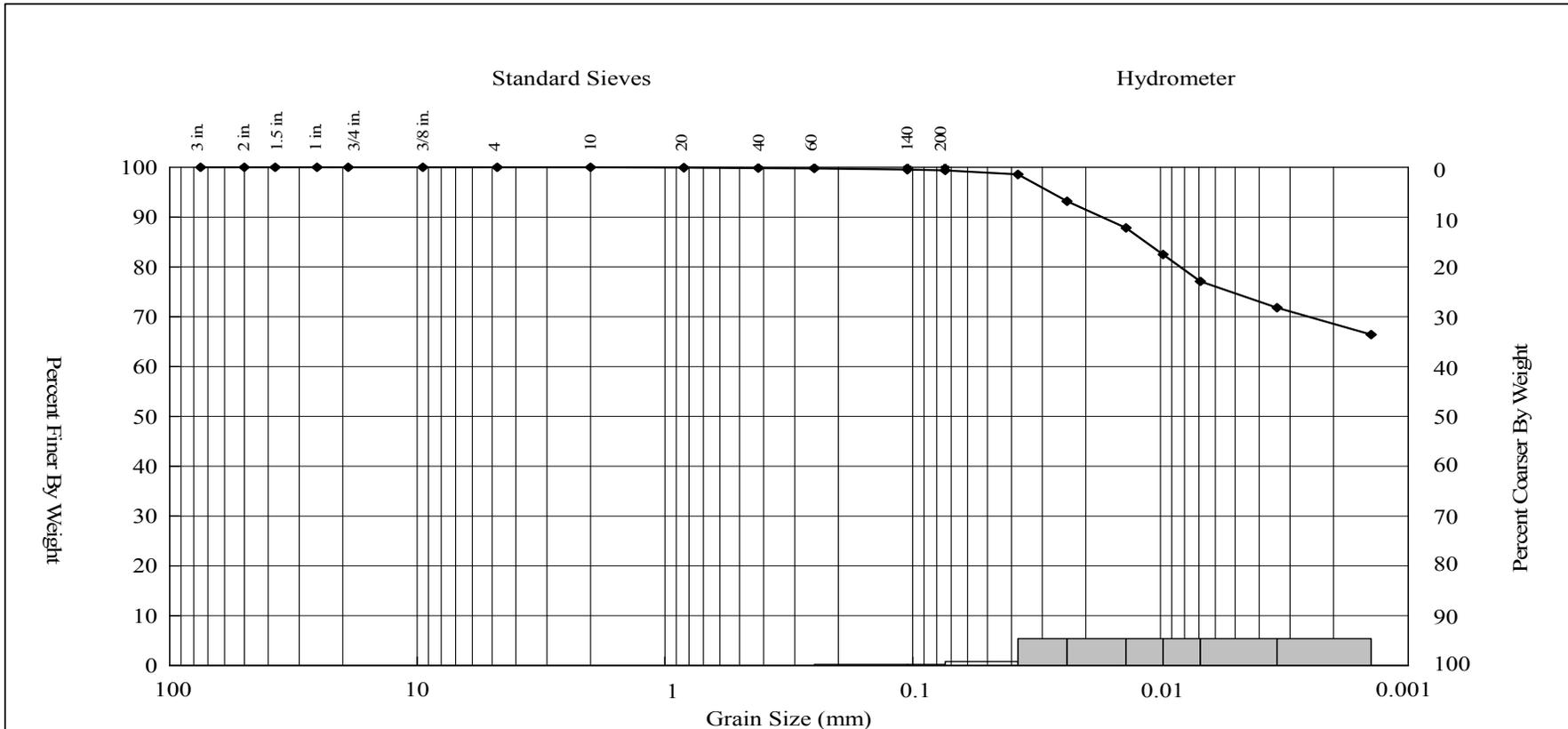
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis

 AMS, Inc. Project Manager

Laboratory No. E87956

GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client Project Title: New Bedford Harbor WQM						
	Coarse	Medium	Fine	Silt	Clay							
0.00	0.00	0.17	0.47	25.12	74.24	Client Project Number: G606422-07DUXCHE						
						AMS Project Number: 8C14						
						Date Sampled: 7/10/2008						
						Date Analyzed: 8/4/2008						
						Matrix: Sediment						
						Method: ASTM D 422						
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Client Sample ID: Q3445 (ST-03-071008-B)	
292												
Material Description												
Lean Clay ("CL"), black (5Y 2.5/1)												
						AMS Sample ID: 8C14-5Q						



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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.

Jennifer D. Davis

 AMS, Inc. Project Manager



QUALITY CONTROL RESULTS

Client: Battelle
 Project Title: New Bedford Harbor WQM
 Project Number: G606422-07DUXCHE
 Client Sample ID: Q3445 (ST-03-071008-B)
 AMS Sample ID: 8C14-5

AMS Project Number: 8C14
 Date Sampled: 7/10/2008
 Date Analyzed: 8/4/2008
 Matrix: Sediment
 Method: ASTM D 422
 Batch: 073108-01G

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	0.00	0.00	0.00		≤ 25
2.00	No. 10	Coarse Sand	0.00	0.00	0.00		≤ 25
0.425	No. 40	Medium Sand	0.21	0.17	21.05		≤ 25
0.074	No. 200	Fine Sand	0.49	0.47	4.17		≤ 25
<0.074 - 0.005	Hydrometer	Silt	24.93	25.12	0.76		≤ 25
<0.005	Hydrometer	Clay	74.37	74.24	0.17		≤ 25

Samples in Batch: 8C14-1 8C14-3 8C14-5
 8C14-2 8C14-4

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).

	<p>APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax</p>	<p>These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.</p> <p style="margin-top: 10px;"> <i>Jennifer D. Davis</i> _____ AMS, Inc. Project Manager </p>	
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Laboratory No. E87956



Applied Marine Sciences, Inc.

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C14
Project Number:	G606422-07DUXCHE	Date Sampled:	7/10/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	7/23/2008
Client Sample ID:	Q3438 (ST-01-071008-B)		
AMS Sample ID:	8C14-1		

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	12.89	%		0.01	0.03	EPA 9060A	Sediment	8/4/2008

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 D. Davis
AMS, Inc. Project Manager



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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C14
Project Number:	G606422-07DUXCHE	Date Sampled:	7/10/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	7/23/2008
Client Sample ID:	Q3439 (ST-01-071008-C)		
AMS Sample ID:	8C14-2		

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	14.02	%		0.01	0.03	EPA 9060A	Sediment	8/4/2008

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:	8C14
Project Number:	G606422-07DUXCHE	Date Sampled:	7/10/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	7/23/2008
Client Sample ID:	Q3441 (ST-02-071008-B)		
AMS Sample ID:	8C14-3		

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	15.01	%		0.01	0.03	EPA 9060A	Sediment	8/4/2008

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 D. Davis
AMS, Inc. Project Manager



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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C14
Project Number:	G606422-07DUXCHE	Date Sampled:	7/10/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	7/23/2008
Client Sample ID:	Q3443 (ST-03-071008-B)		
AMS Sample ID:	8C14-4		

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	10.62	%		0.01	0.03	EPA 9060A	Sediment	8/4/2008

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 D. Davis
AMS, Inc. Project Manager



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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C14
Project Number:	G606422-07DUXCHE	Date Sampled:	7/10/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	7/23/2008
Client Sample ID:	Q3445 (ST-03-071008-B)		
AMS Sample ID:	8C14-5		

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	12.10	%		0.01	0.03	EPA 9060A	Sediment	8/4/2008

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 D. Davis
AMS, Inc. Project Manager



Applied Marine Sciences, Inc.

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TOC QUALITY CONTROL RESULTS

Client:	Battelle	AMS Project Number:	8C14
Project Number:	G606422-07DUXCHE	AMS SOP Number:	2201
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Analyzed:	8/4/2008
Matrix:	Sediment	Batch ID:	080408-03T
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-03	0.01	0.01	--	U	0.01	0.03	≤ 0.03
CCV-03	3.14	3.23	2.83		0.01	0.03	≤ 5 RPD
ICCV-03	2.07	2.00	3.44		0.01	0.03	≤ 5 RPD

Sample Duplicate Results:

AMS Sample ID	Result (%)	Duplicate Result (%)	Relative % Difference (%)	Data Qualifier	LOD (%)	LOQ (%)	QC Limits (%)
8C14-5	12.10	12.23	1.07		0.01	0.03	≤ 25 RPD

Samples in Batch (AMS ID): 8C14-1 8C14-4
8C14-2 8C14-5
8C14-3

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.



Applied Marine Sciences, Inc.

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QUALITY CONTROL

Client: Battelle
Project Number: G606422-07DUXCHE
Project Name: New Bedford Harbor 2007 Water Quality Monitoring

AMS Project Number: 8C14
AMS SOP Number: 2201

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.

Proj. No G606422	Proj. Name NBH Sed Trap
----------------------------	-----------------------------------

SAMPLERS: Signature
Michael P. McGuire

ANALYSIS REQUESTED →
"NUMBER OF CONTAINERS"

DATE	TIME	LAB BATTELLE ID	FIELD CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER TOC/GRAIN SIZE	ACIDIFIED	PRESERVED	Total Number of Containers
07/10/08	1158	Q3437	ST-01-071008-A	6 th sediment trap recovery station 01		✓									
	↓	Q3438	ST-01-071008-B			✓									
		Q3439	ST-01-071008-C			✓									
	1219	Q3440	ST-02-071008-A			✓									
	↓	Q3441	ST-02-071008-B			✓									
	1242	Q3442	ST-04-071008-A			✓									
	↓	Q3443	ST-04-071008-B			✓									
	1317	Q3444	ST-03-071008-A			✓									
	↓	Q3445	ST-03-071008-B			✓									

Relinquished by:
Michael P. McGuire

Date/Time	
07/11/08	12:00

Received by:
Jamie Light

Date/Time	
7-11-08	12:00

Relinquished by:

Date/Time	

Received by:

Date/Time	

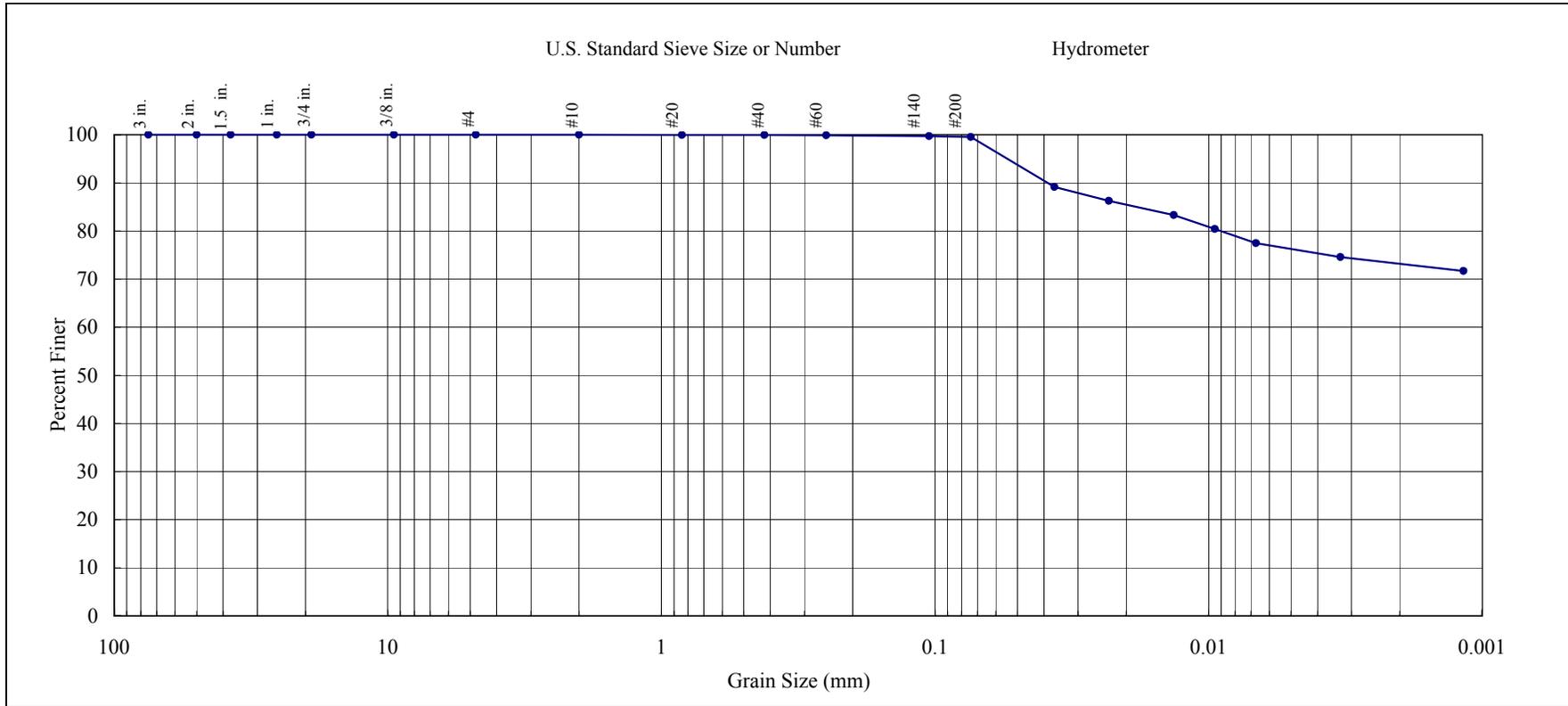
Comments: After settling for 24 hrs and decanting, all samples will be weighed for reproducibility. At station ST-01 2 of 3 samples will be analyzed for PCB, TOC, & GS. At ST-02, 03 & 04, only 1 of 2 samples will be analyzed.

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Deployment No. 7

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GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client: Battelle		Client Project Title: New Bedford Harbor Sed Traps					
	Coarse	Medium	Fine	Silt	Clay								
0.00	0.00	0.06	0.43	23.49	76.02	Client Project Number: G606422		AMS Project Number: 8C17					
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Date Sampled: 7/31/2008	Date Analyzed: 10/3/2008	Matrix, Method: Sediment, ASTM D 422
292													
Material Description													
Lean Clay ("CL"), black (N1)											Client Sample ID: Q3735	AMS Sample ID: 8C17-01	



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 League City, TX 77573
 281.554.7272 Tel.
 281.554.6356 Fax

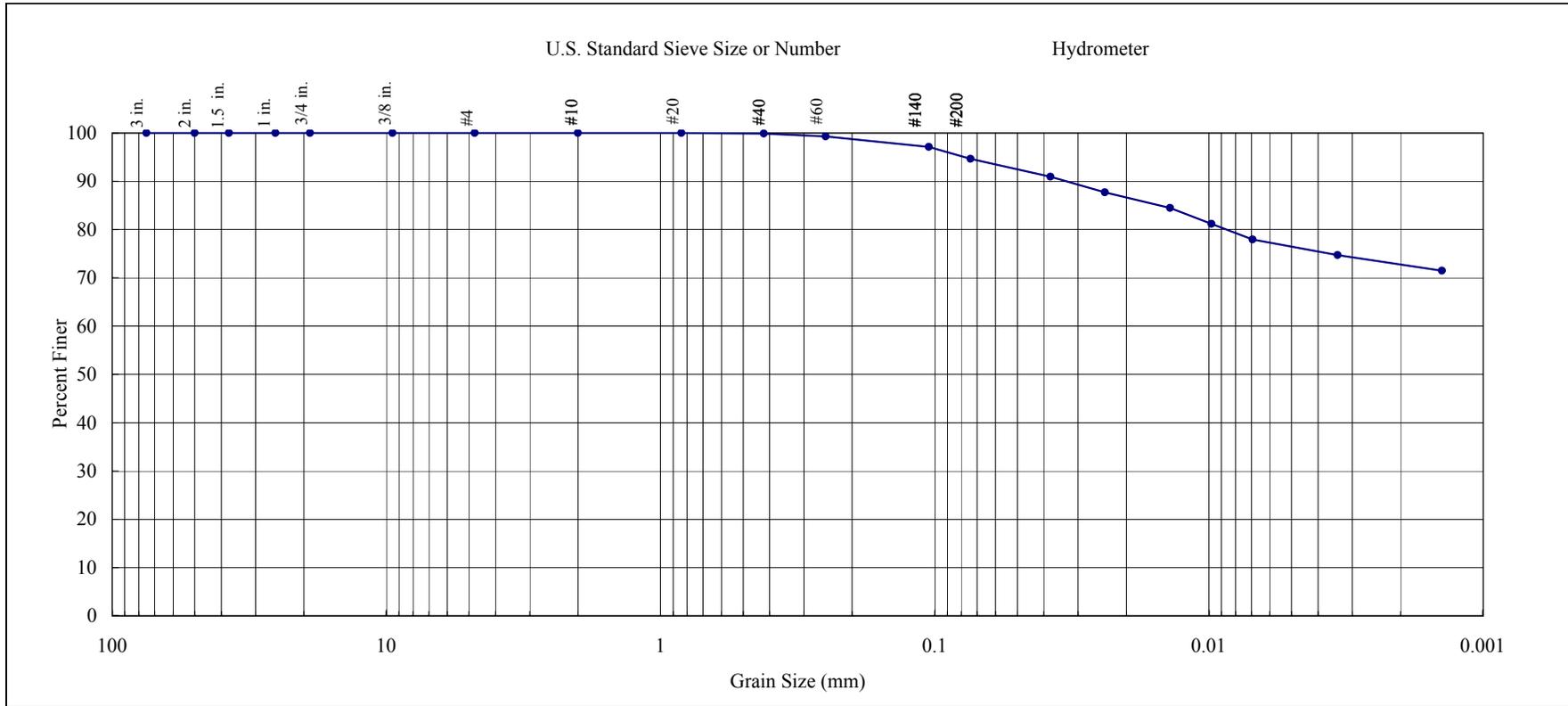
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis

 AMS, Inc. Project Manager



GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client:	Battelle					
	Coarse	Medium	Fine	Silt	Clay							
0.00	0.00	0.12	5.24	18.45	76.19	Client Project Title:	New Bedford Harbor Sed Traps					
						Client Project Number:	G606422					
						AMS Project Number:	8C17					
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Date Sampled:	7/31/2008
210											Date Analyzed:	10/3/2008
Material Description												
Lean Clay ("CL"), black (N1)												
						Client Sample ID:	Q3737					
						AMS Sample ID:	8C17-02					



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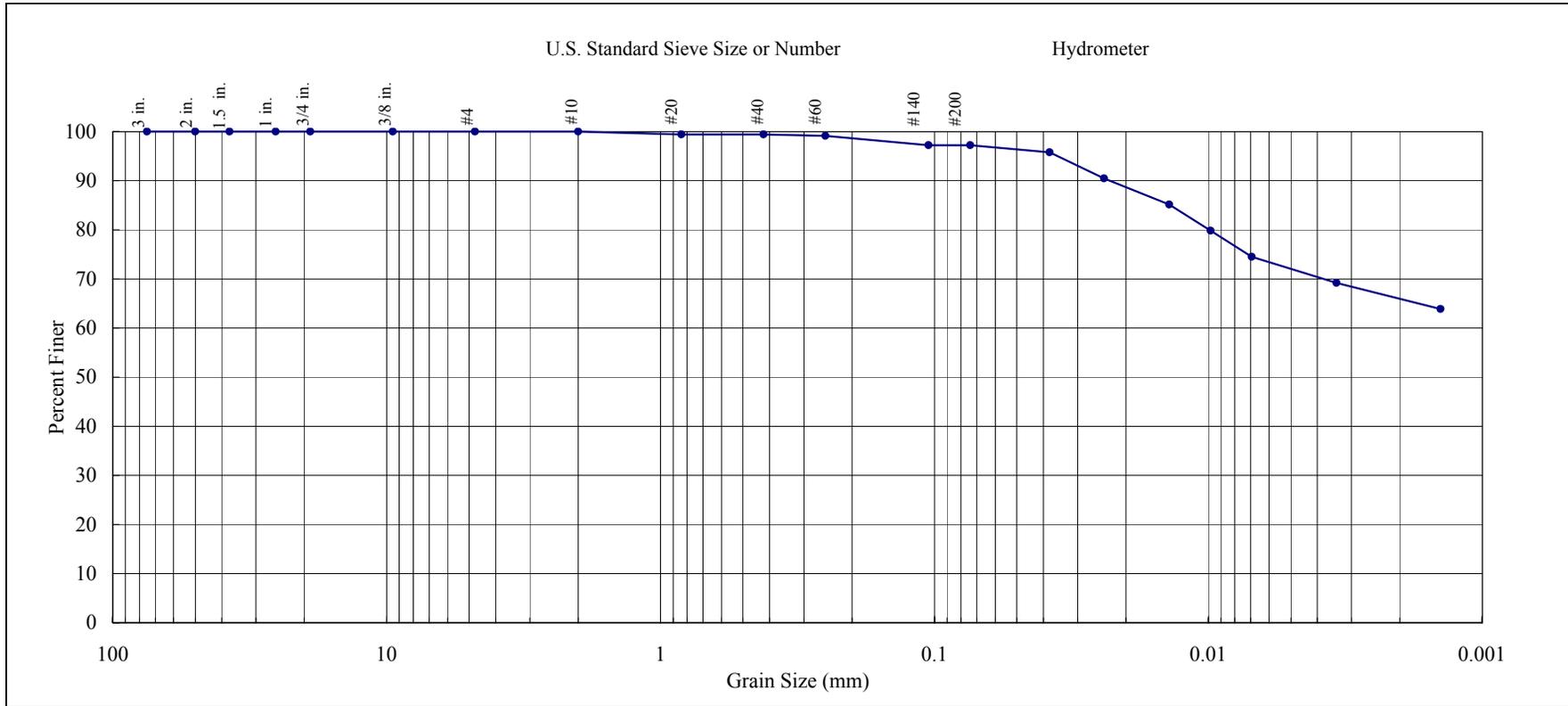
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis

 AMS, Inc. Project Manager



GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client:						
	Coarse	Medium	Fine	Silt	Clay	Battelle						
0.00	0.00	0.60	2.19	25.62	71.59	Client Project Title:	New Bedford Harbor Sed Traps					
						Client Project Number:	G606422					
						AMS Project Number:	8C17					
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Date Sampled:	7/31/2008
246											Date Analyzed:	10/3/2008
Material Description												
Lean Clay ("CL"), black (N1)										Matrix, Method:		Sediment, ASTM D 422
										Client Sample ID:		Q3738
										AMS Sample ID:		8C17-03



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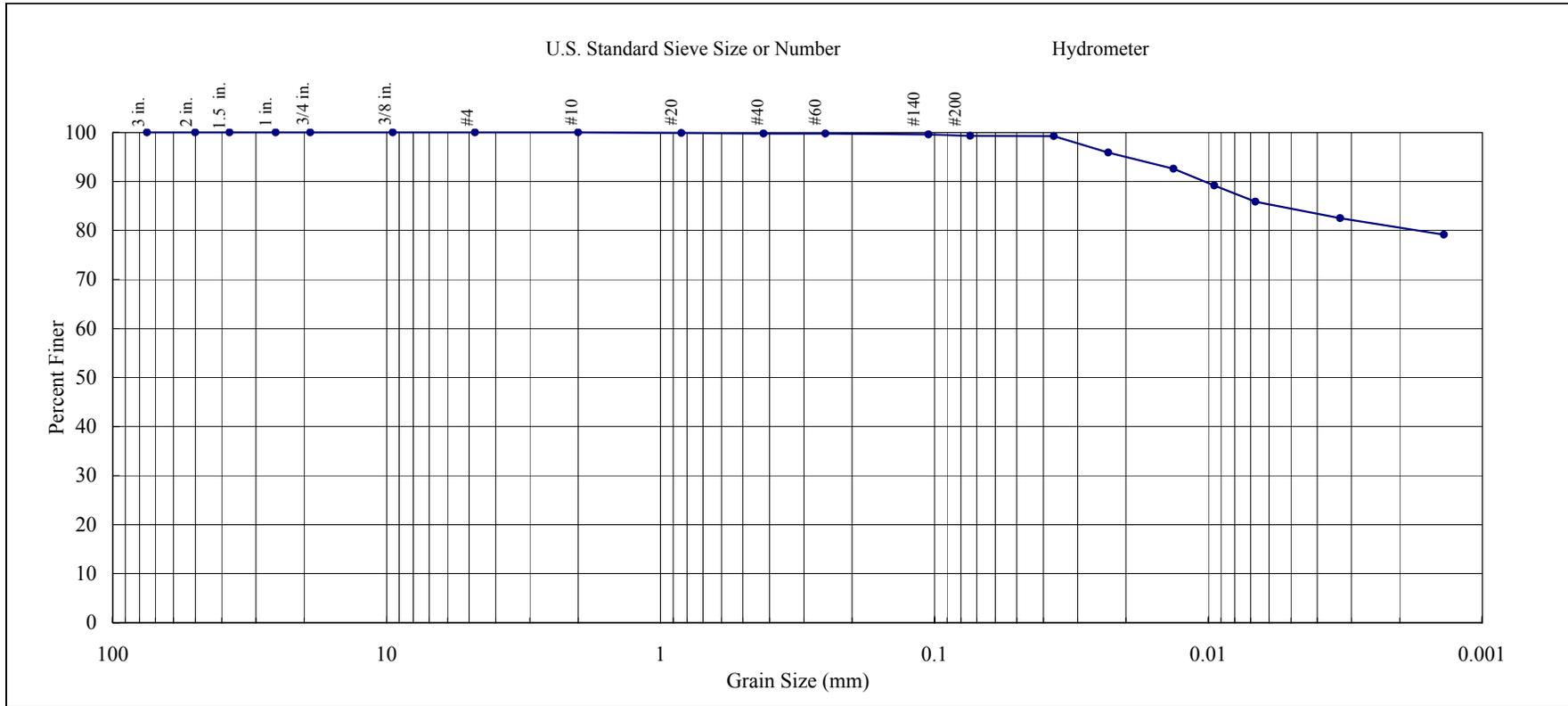
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis

 AMS, Inc. Project Manager



GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client:						
	Coarse	Medium	Fine	Silt	Clay	Battelle						
0.00	0.00	0.21	0.49	15.14	84.16	Client Project Title:	New Bedford Harbor Sed Traps					
						Client Project Number:	G606422					
						AMS Project Number:	8C17					
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Date Sampled:	7/31/2008
244											Date Analyzed:	10/3/2008
Material Description												
Lean Clay ("CL"), black (N1)												
						Client Sample ID:	Q3740					
						AMS Sample ID:	8C17-04					



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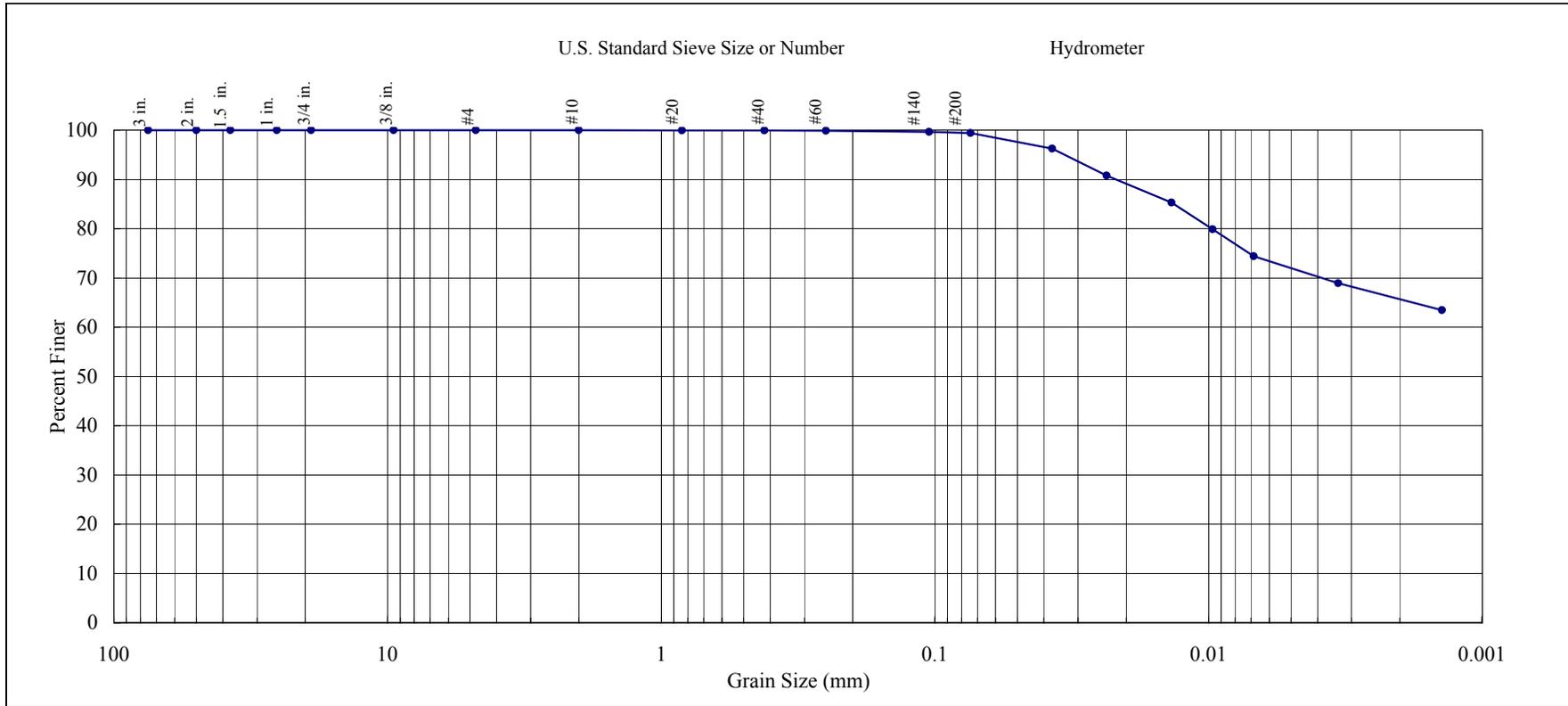
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis

 AMS, Inc. Project Manager



GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client: Battelle		Client Project Title: New Bedford Harbor Sed Traps					
	Coarse	Medium	Fine	Silt	Clay								
0.00	0.00	0.05	0.50	27.95	71.50	Client Project Number: G606422		AMS Project Number: 8C17					
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Date Sampled: 7/31/2008	Date Analyzed: 10/3/2008	Matrix, Method: Sediment, ASTM D 422
257													
Material Description													
Lean Clay ("CL"), black (N1)											Client Sample ID: Q3742	AMS Sample ID: 8C17-05	



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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.

Jennifer D. Davis

 AMS, Inc. Project Manager



QUALITY CONTROL RESULTS

Client: Battelle
 Project Title: New Bedford Harbor Sed Traps
 Project Number: G606422
 Client Sample ID: Q3742
 AMS Sample ID: 8C17-05

AMS Project Number: 8C17
 Date Sampled: 7/31/2008
 Date Analyzed: 10/3/2008
 Matrix: Sediment
 Method: ASTM D 422
 Batch: 1

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	0.00	0.00	0.00		≤ 25
2.00	No. 10	Coarse Sand	0.00	0.00	0.00		≤ 25
0.425	No. 40	Medium Sand	0.05	0.05	0.00		≤ 25
0.074	No. 200	Fine Sand	0.50	0.45	10.53		≤ 25
<0.074 - 0.005	Hydrometer	Silt	27.95	27.97	0.07		≤ 25
<0.005	Hydrometer	Clay	71.50	71.53	0.04		≤ 25

Samples in Batch: 8C17-01 8C17-04
 8C17-02 8C17-05
 8C17-03

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).

 <p>APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax</p>	<p>These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.</p> <p style="text-align: center;"><i>Jennifer D. Davis</i> _____ AMS, Inc. Project Manager</p>	 <p>ACCREDITED IN ACCORDANCE WITH nelac LABORATORY NO. E87956</p>
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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:	8C17
Project Number:	G606422-07DUXCHE	Date Sampled:	7/31/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	8/21/2008
Client Sample ID:	Q3735 (ST-04-073108-B)		
AMS Sample ID:	8C17-1		

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	11.71	%		0.01	0.03	EPA 9060A	Sediment	9/4/2008

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 D. Davis
AMS, Inc. Project Manager



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:	8C17
Project Number:	G606422-07DUXCHE	Date Sampled:	7/31/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	8/21/2008
Client Sample ID:	Q3737 (ST-01-073108-B)		
AMS Sample ID:	8C17-2		

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	16.25	%		0.01	0.03	EPA 9060A	Sediment	9/4/2008

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 D. Davis
AMS, Inc. Project Manager



Applied Marine Sciences, Inc.

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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606422-07DUXCHE
Project Name: New Bedford Harbor 2007 Water Quality Monitoring
Client Sample ID: Q3738 (ST-01-073108-C)
AMS Sample ID: 8C17-3

AMS Project Number: 8C17
Date Sampled: 7/31/2008
Date Received: 8/21/2008

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	12.40	%		0.01	0.03	EPA 9060A	Sediment	9/4/2008

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 D. Davis
AMS, Inc. Project Manager



Applied Marine Sciences, Inc.

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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606422-07DUXCHE
Project Name: New Bedford Harbor 2007 Water Quality Monitoring
Client Sample ID: Q3740 (ST-02-073108-B)
AMS Sample ID: 8C17-4

AMS Project Number: 8C17
Date Sampled: 7/31/2008
Date Received: 8/21/2008

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	13.70	%		0.01	0.03	EPA 9060A	Sediment	9/4/2008

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 D. Davis
AMS, Inc. Project Manager



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:	8C17
Project Number:	G606422-07DUXCHE	Date Sampled:	7/31/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	8/21/2008
Client Sample ID:	Q3742 (ST-03-073108-B)		
AMS Sample ID:	8C17-5		

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	11.29	%		0.01	0.03	EPA 9060A	Sediment	9/4/2008

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 D. Davis
AMS, Inc. Project Manager



Applied Marine Sciences, Inc.

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TOC QUALITY CONTROL RESULTS

Client:	Battelle	AMS Project Number: 8C17
Project Number:	G606422-07DUXCHE	AMS SOP Number: 2201
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Analyzed: 9/4/2008
Matrix:	Sediment	Batch ID: 090408-03T
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-03	0.01	0.01	--	U	0.01	0.03	≤ 0.03
CCV-03	3.15	3.23	2.51		0.01	0.03	≤ 5 RPD
ICCV-03	2.04	2.00	1.98		0.01	0.03	≤ 5 RPD

Sample Duplicate Results:

AMS Sample ID	Result (%)	Duplicate Result (%)	Relative % Difference (%)	Data Qualifier	LOD (%)	LOQ (%)	QC Limits (%)
8C17-5	12.30	12.23	0.57		0.01	0.03	≤ 25 RPD

Samples in Batch (AMS ID): 8C17-1 8C17-4
8C17-2 8C17-5
8C17-3

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.



Applied Marine Sciences, Inc.

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QUALITY CONTROL

Client: Battelle
Project Number: G606422-07DUXCHE
Project Name: New Bedford Harbor 2007 Water Quality Monitoring

AMS Project Number: 8C17
AMS SOP Number: 2201

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.

Proj. No: **G606422**
Proj. Name: **Sed Trap**

SAMPLERS: Signature
Mark P M

ANALYSIS REQUESTED →
"NUMBER OF CONTAINERS"

DATE	TIME	LAB BATTLE ID	FIELD CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER GS/TOC	ACIDIFIED	PRESERVED	Total Number of Containers
07/31/08	0828	Q3734	ST-01-073108-A	7th sediment trap recovery station 04		✓						✓			
	↓	Q3735	ST-04-073108-B			✓						✓			
	0854	Q3736	ST-01-073108-A			✓						✓			
	↓	Q3737	ST-01-073108-B			✓						✓			
	↓	Q3738	ST-01-073108-C			✓						✓			
	0913	Q3739	ST-02-073108-A			✓						✓			
	↓	Q3740	ST-02-073108-B			✓						✓			
	0935	Q3741	ST-03-073108-A			✓						✓			
	↓	Q3742	ST-03-073108-B			✓						✓			

Relinquished by:
Mark P M

Date/Time
07/31/08 11:45

Received by:
Jeanine Slight

Date/Time
7-31-08 11:45am

Relinquished by:

Date/Time

Received by:

Date/Time

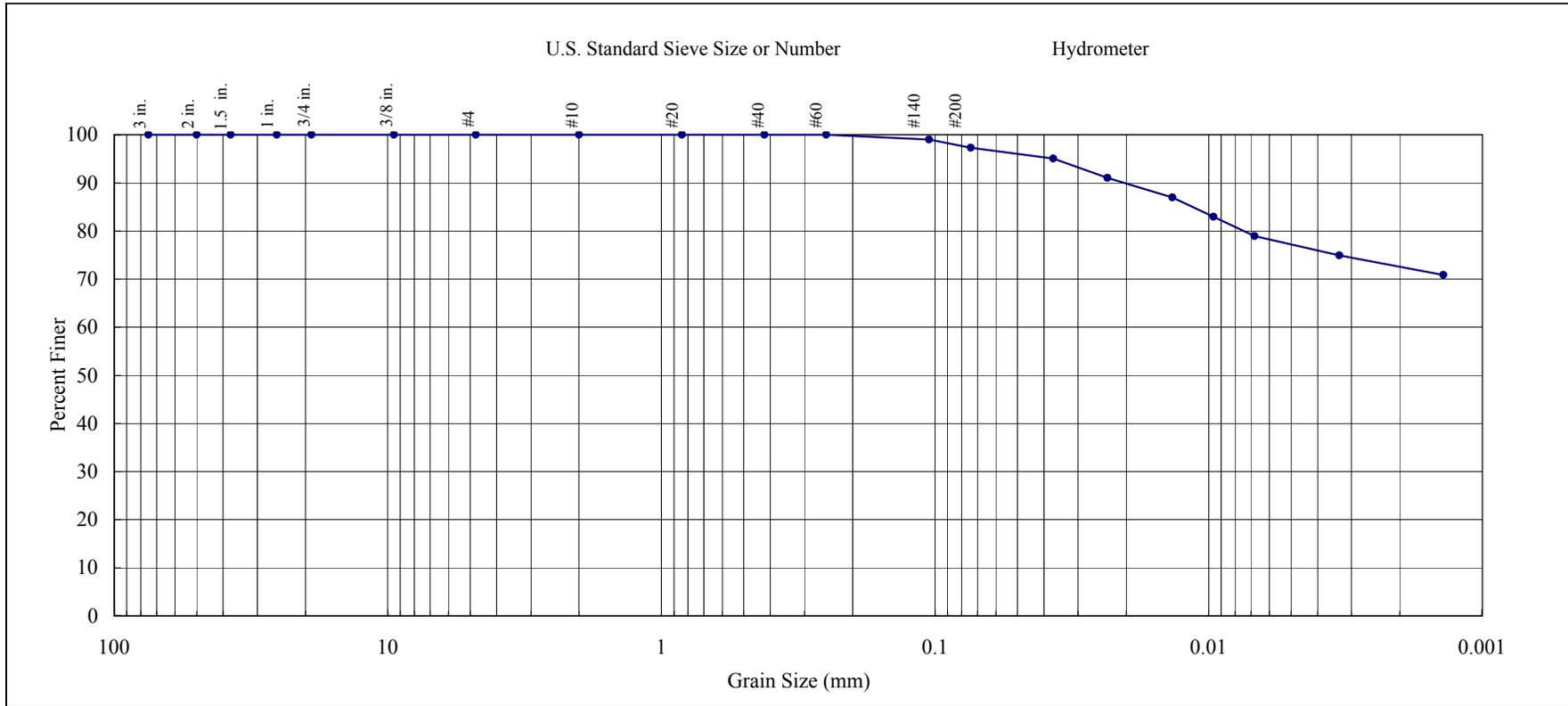
Comments: After settling for 24 hrs & decanting, all samples will be weighed for reproducibility. At station ST-01, 3 samples will be analyzed for PCB, TOC & GS. At ST-02, 03 & 04, only 1 of 2 samples will be analyzed.

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Deployment No. 8

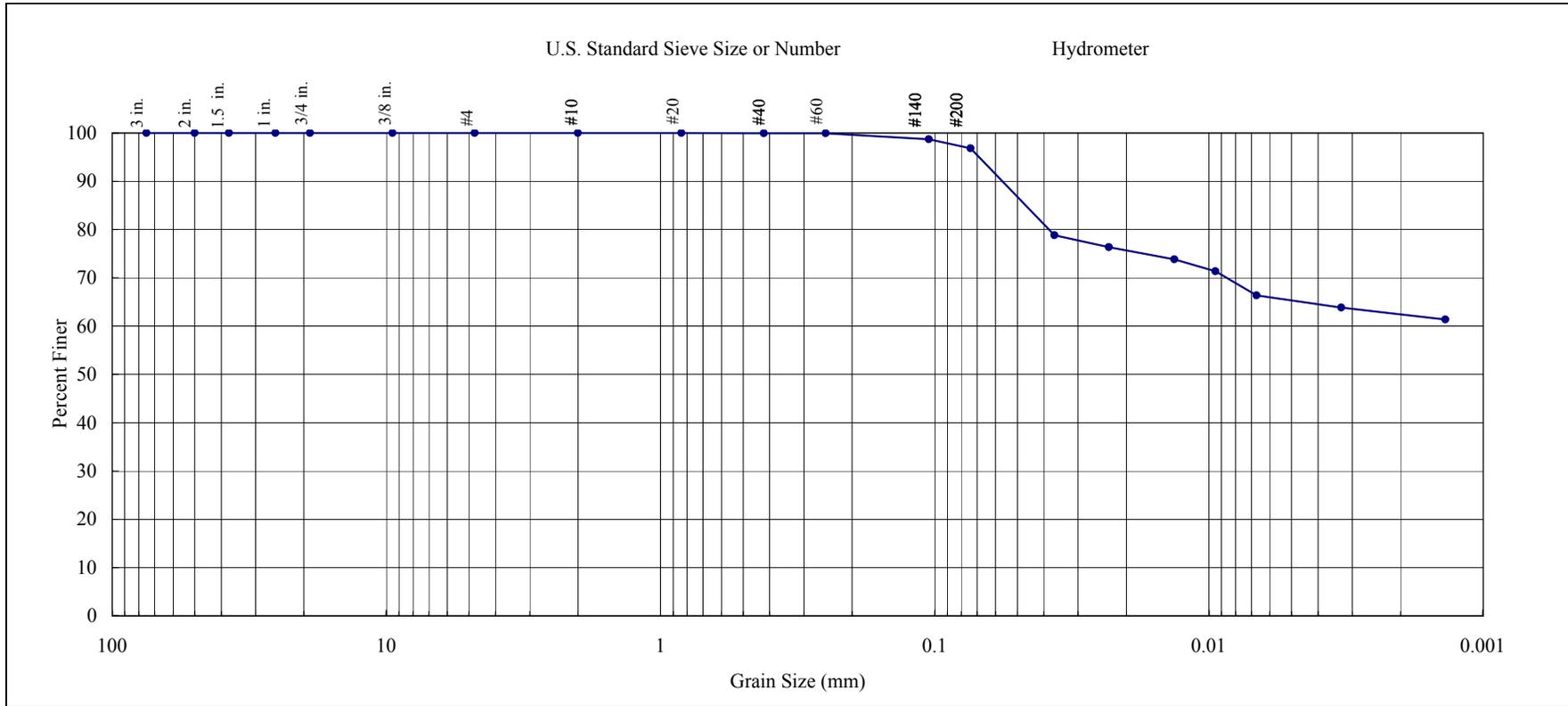
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GEOTECHNICAL RESULTS



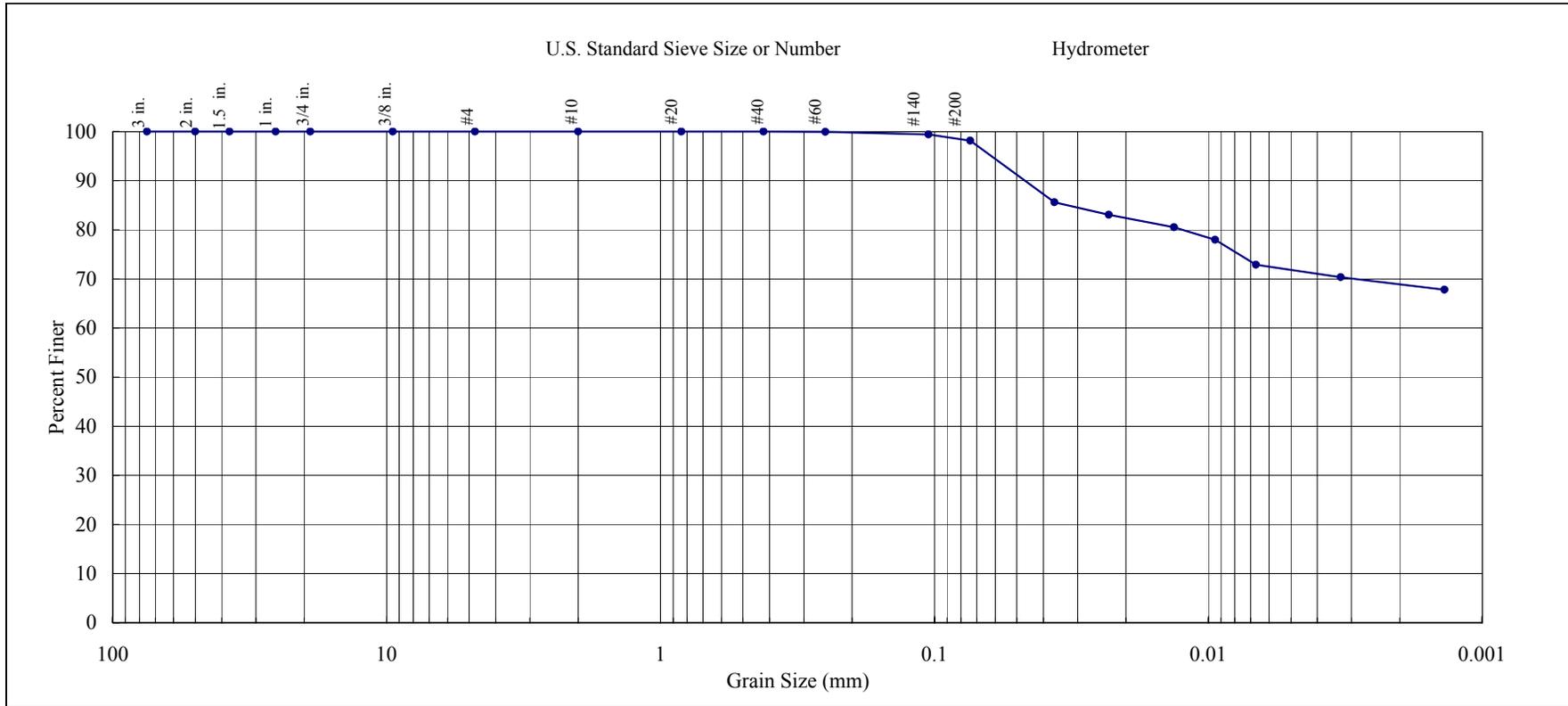
Gravel (%)	Sand (%)			Fines (%)		Client:		Battelle						
	Coarse	Medium	Fine	Silt	Clay	Client Project Title:		New Bedford Harbor Sed Traps						
0.00	0.00	0.00	2.70	20.45	76.85	Client Project Number:		G606422						
						AMS Project Number:		8C20						
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Date Sampled:		8/25/2008	
236											Date Analyzed:		10/3/2008	
Material Description											Matrix, Method:		Sediment, ASTM D 422	
Lean Clay ("CL"), black (N1)											Client Sample ID:		Q4052 (ST-01-082508-B)	
											AMS Sample ID:		8C20-1	
 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.						 ACCREDITED IN ACCORDANCE WITH nelac LABORATORY NO. E87956				
				<i>Jennifer D. Davis</i> _____ AMS, Inc. Project Manager										

GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)					Client:	Battelle																						
	Coarse	Medium	Fine	Silt	Clay			Client Project Title:	New Bedford Harbor Sed Traps																							
0.00	0.00	0.04	3.15	31.69	65.12			Client Project Number:	G606422																							
AMS Project Number: 8C20																																
Date Sampled: 8/25/2008																																
Date Analyzed: 10/3/2008																																
Matrix, Method: Sediment, ASTM D 422																																
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Water Cont. (%)</th> <th style="width: 5%;">LL</th> <th style="width: 5%;">PI</th> <th style="width: 5%;">D₈₅</th> <th style="width: 5%;">D₆₀</th> <th style="width: 5%;">D₅₀</th> <th style="width: 5%;">D₃₀</th> <th style="width: 5%;">D₁₅</th> <th style="width: 5%;">D₁₀</th> <th style="width: 5%;">C_c</th> <th style="width: 5%;">C_u</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">234</td> <td></td> </tr> </tbody> </table>									Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	234											Client Sample ID: Q4053 (ST-01-082508-C) AMS Sample ID: 8C20-2	
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u																						
234																																
Material Description																																
Lean Clay ("CL"), black (N1)																																
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.				 Laboratory No. E87956			_____ <i>Jennifer D. Davis</i> AMS, Inc. Project Manager																					

GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client:						
	Coarse	Medium	Fine	Silt	Clay	Battelle						
0.00	0.00	0.00	1.84	26.53	71.63	Client Project Title:	New Bedford Harbor Sed Traps					
						Client Project Number:	G606422					
						AMS Project Number:	8C20					
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Date Sampled:	8/25/2008
224											Date Analyzed:	10/3/2008
Material Description												
Lean Clay ("CL"), black (N1)												
						Client Sample ID:	Q4055 (ST-02-082508-B)					
						AMS Sample ID:	8C20-3					



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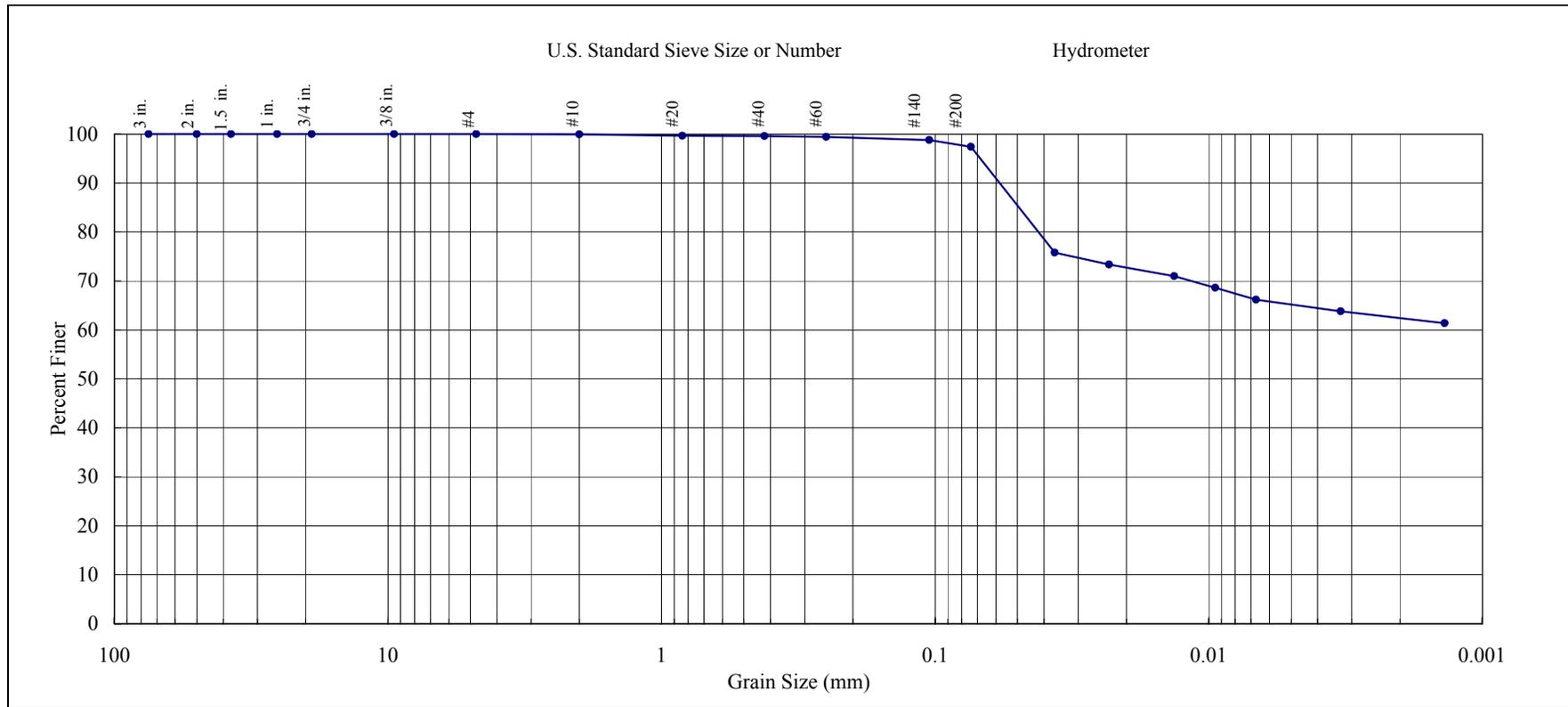
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis

 AMS, Inc. Project Manager



GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client:						
	Coarse	Medium	Fine	Silt	Clay	Battelle						
0.00	0.05	0.36	2.22	32.37	65.00	Client Project Title:	New Bedford Harbor Sed Traps					
						Client Project Number:	G606422					
						AMS Project Number:	8C20					
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Date Sampled:	8/25/2008
219											Date Analyzed:	10/3/2008
Material Description												
Lean Clay ("CL"), black (N1)												
						Client Sample ID:	Q4057 (ST-03-082508-B)					
						AMS Sample ID:	8C20-4					



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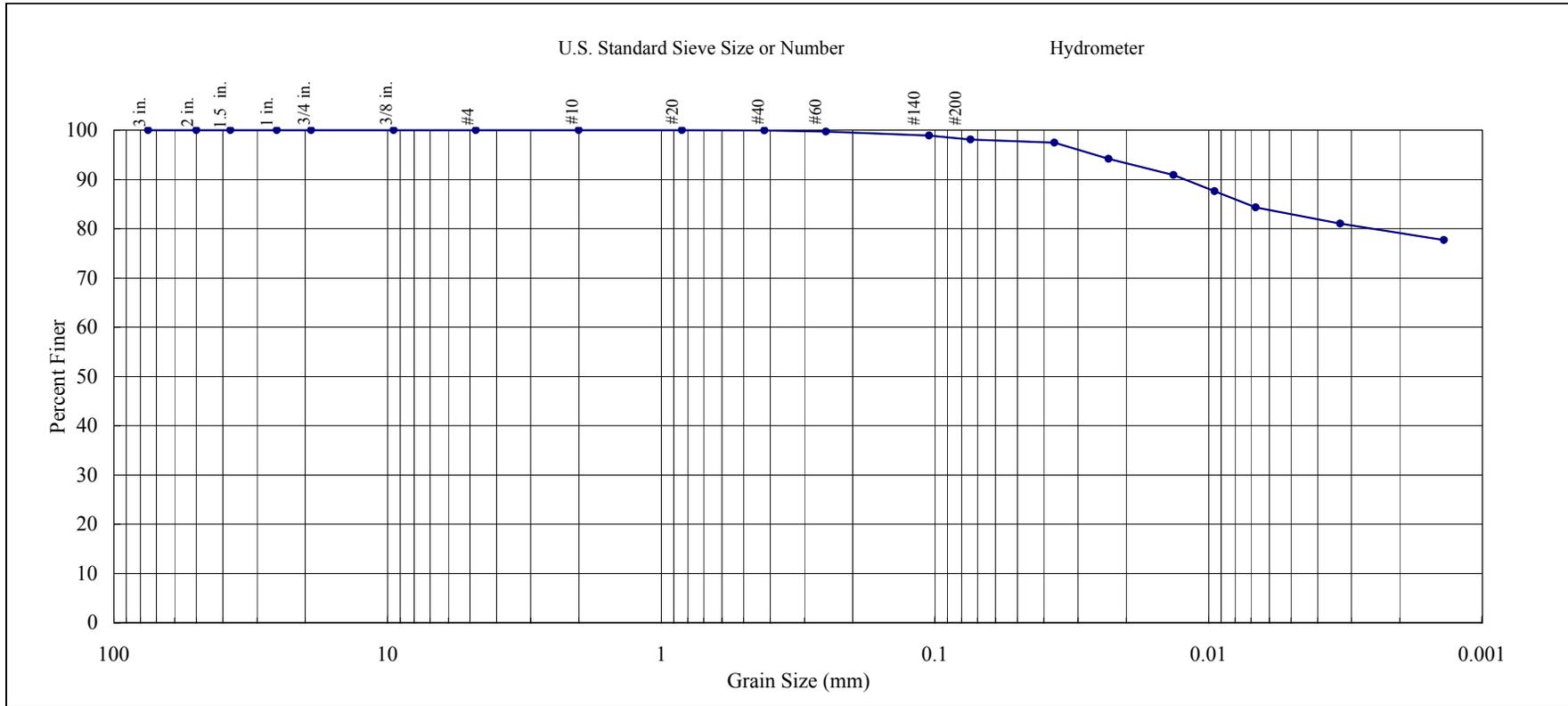
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis

 AMS, Inc. Project Manager



GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client:						
	Coarse	Medium	Fine	Silt	Clay	Battelle						
0.00	0.00	0.08	1.81	15.46	82.65	Client Project Title:	New Bedford Harbor Sed Traps					
						Client Project Number:	G606422					
						AMS Project Number:	8C20					
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Date Sampled:	8/25/2008
198											Date Analyzed:	10/3/2008
Material Description												
Lean Clay ("CL"), black (N1)												
						Client Sample ID:	Q4059 (ST-04-082508-B)					
						AMS Sample ID:	8C20-5					



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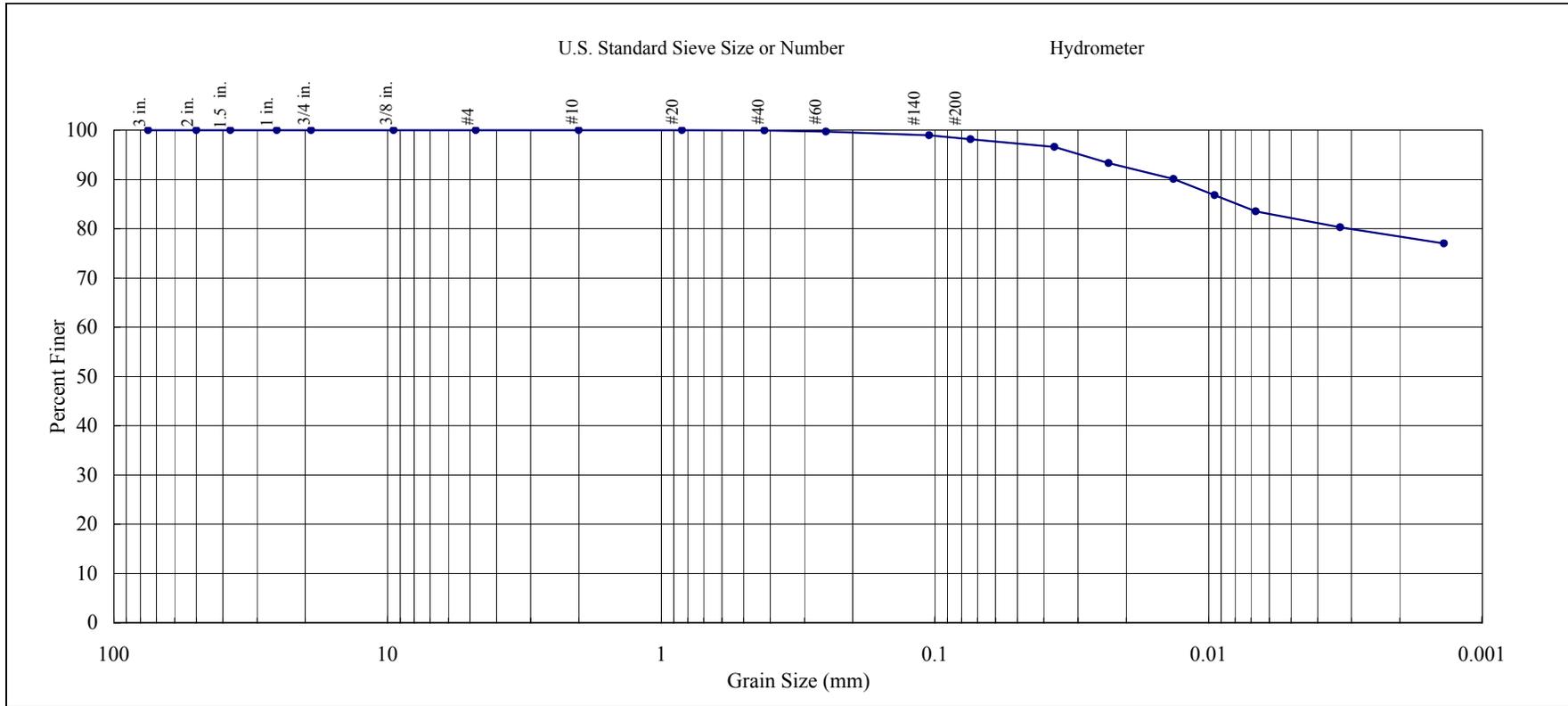
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis

 AMS, Inc. Project Manager



GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)					Fines (%)					Client:	Battelle
	Coarse	Medium	Fine			Silt	Clay				Client Project Title:	New Bedford Harbor Sed Traps
0.00	0.00	0.08	1.78			16.25	81.89				Client Project Number:	G606422
											AMS Project Number:	8C20
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Date Sampled:	8/25/2008
198											Date Analyzed:	10/3/2008
Material Description												
Lean Clay ("CL"), black (N1)											Matrix, Method:	Sediment, ASTM D 422
											Client Sample ID:	Q4059 (ST-04-082508-B)
											AMS Sample ID:	8C20-05Q



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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.

Jennifer D. Davis

 AMS, Inc. Project Manager



QUALITY CONTROL RESULTS

Client: Battelle
 Project Title: New Bedford Harbor Sed Traps
 Project Number: G606422
 Client Sample ID: Q4059 (ST-04-082508-B)
 AMS Sample ID: 8C20-5

AMS Project Number: 8C20
 Date Sampled: 8/25/2008
 Date Analyzed: 10/3/2008
 Matrix: Sediment
 Method: ASTM D 422
 Batch: 1

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	0.00	0.00	0.00		≤ 25
2.00	No. 10	Coarse Sand	0.00	0.00	0.00		≤ 25
0.425	No. 40	Medium Sand	0.08	0.08	0.00		≤ 25
0.074	No. 200	Fine Sand	1.81	1.78	1.67		≤ 25
<0.074 - 0.005	Hydrometer	Silt	15.46	16.25	4.98		≤ 25
<0.005	Hydrometer	Clay	82.65	81.89	0.92		≤ 25

Samples in Batch: 8C20-1 8C20-4
 8C20-2 8C20-05
 8C20-3

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).

	<p>APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax</p>	<p>These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.</p> <p style="text-align: center;"><i>Jennifer D. Davis</i> _____ AMS, Inc. Project Manager</p>	 Laboratory No. E87956
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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606422-07DUXCHE
Project Name: New Bedford Harbor 2007 Water Quality Monitoring
Client Sample ID: Q4052 (ST-01-082508-B)
AMS Sample ID: 8C20-1

AMS Project Number: 8C20
Date Sampled: 8/25/2008
Date Received: 9/9/2008

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	12.68	%		0.01	0.03	EPA 9060A	Sediment	10/3/2008

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 D. Davis
AMS, Inc. Project Manager



Applied Marine Sciences, Inc.

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C20
Project Number:	G606422-07DUXCHE	Date Sampled:	8/25/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	9/9/2008
Client Sample ID:	Q4053 (ST-01-082508-C)		
AMS Sample ID:	8C20-2		

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	13.06	%		0.01	0.03	EPA 9060A	Sediment	10/3/2008

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 D. Davis
AMS, Inc. Project Manager



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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C20
Project Number:	G606422-07DUXCHE	Date Sampled:	8/25/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	9/9/2008
Client Sample ID:	Q4055 (ST-02-082508-B)		
AMS Sample ID:	8C20-3		

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	13.88	%		0.01	0.03	EPA 9060A	Sediment	10/3/2008

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 D. Davis
AMS, Inc. Project Manager



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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C20
Project Number:	G606422-07DUXCHE	Date Sampled:	8/25/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	9/9/2008
Client Sample ID:	Q4057 (ST-03-082508-B)		
AMS Sample ID:	8C20-4		

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	11.83	%		0.01	0.03	EPA 9060A	Sediment	10/3/2008

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 D. Davis
AMS, Inc. Project Manager



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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606422-07DUXCHE
Project Name: New Bedford Harbor 2007 Water Quality Monitoring
Client Sample ID: Q4059 (ST-04-082508-B)
AMS Sample ID: 8C20-5

AMS Project Number: 8C20
Date Sampled: 8/25/2008
Date Received: 9/9/2008

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	12.59	%		0.01	0.03	EPA 9060A	Sediment	10/3/2008

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 D. Davis
AMS, Inc. Project Manager



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TOC QUALITY CONTROL RESULTS

Client:	Battelle	AMS Project Number:	8C20
Project Number:	G606422-07DUXCHE	AMS SOP Number:	2201
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Analyzed:	10/3/2008
Matrix:	Sediment	Batch ID:	100308-04T
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-03	0.01	0.01	--	U	0.01	0.03	≤ 0.03
CCV-03	3.17	3.23	1.88		0.01	0.03	≤ 5 RPD
ICCV-03	2.08	2.00	3.92		0.01	0.03	≤ 5 RPD

Sample Duplicate Results:

AMS Sample ID	Result (%)	Duplicate Result (%)	Relative % Difference (%)	Data Qualifier	LOD (%)	LOQ (%)	QC Limits (%)
8C20-5	11.51	12.23	6.07		0.01	0.03	≤ 25 RPD

Samples in Batch (AMS ID): 8C20-1 8C20-4
8C20-2 8C20-5
8C20-3

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.



Applied Marine Sciences, Inc.

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QUALITY CONTROL

Client: Battelle
Project Number: G606422-07DUXCHE
Project Name: New Bedford Harbor 2007 Water Quality Monitoring

AMS Project Number: 8C20
AMS SOP Number: 2201

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.

Proj. No G-606422	Proj. Name NBH Sed Trap
----------------------	----------------------------

SAMPLERS: Signature
Michael P. ...

ANALYSIS REQUESTED →
"NUMBER OF CONTAINERS"

DATE	TIME	LAB BATTELLE ID	FIELD CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER (GS/TOC)	ACIDIFIED	PRESERVED	Total Number of Containers
08/25/08	13:07	Q4051	ST-01-082508-A			✓						✓			1
	↓	Q4052	ST-01-082508-B			✓						✓			1
	↓	Q4053	ST-01-082508-C			✓						✓			1
	13:30	Q4054	ST-02-082508-A			✓						✓			1
	↓	Q4055	ST-02-082508-B			✓						✓			1
	14:18	Q4056	ST-03-082508-A			✓						✓			1
	↓	Q4057	ST-03-082508-B			✓						✓			1
	13:56	Q4058	ST-04-082508-A			✓						✓			1
	↓	Q4059	ST-04-082508-B			✓						✓			1

Relinquished by:
Michael P. ...

Date/Time
08/26/08 14:10

Received by:
Jeanne Donovan

Date/Time
8/26/08 1410

Relinquished by:

Date/Time

Received by:

Date/Time

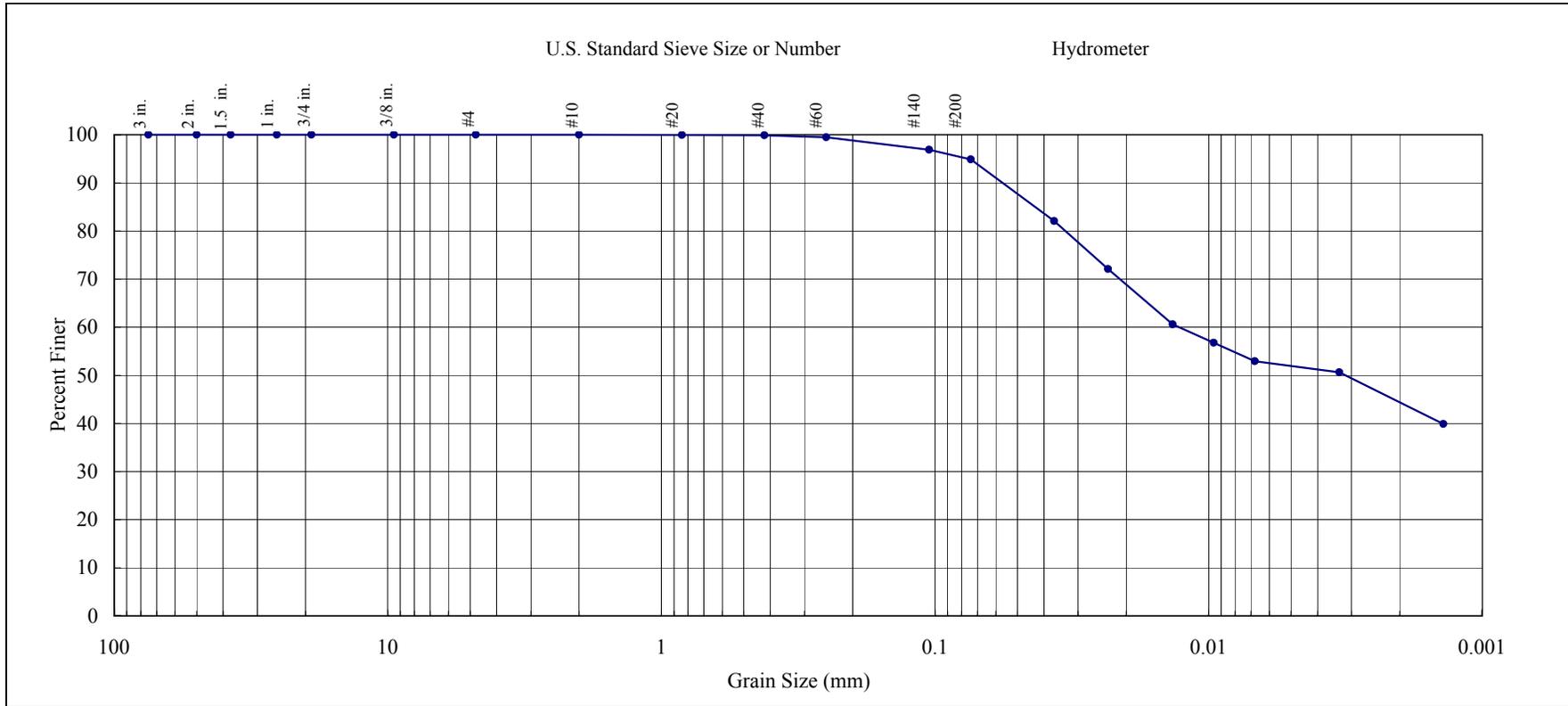
Comments: After settling for 24 hrs & decanting, all samples will be weighed for reproducibility. At station ST-01, 2 of 3 samples will be analyzed for PCB, TOC & Grain Size. At station ST-02, 03 & 04 only, 1 of 2 samples will be analyzed

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Deployment No. 9

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GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client:							
	Coarse	Medium	Fine	Silt	Clay	Battelle							
0.00	0.00	0.14	4.99	43.15	51.72	Client Project Title:	New Bedford Harbor Sed Traps						
						Client Project Number:	G606422						
						AMS Project Number:	8C24						
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Date Sampled:	10/2/2008	
261											Date Analyzed:	11/15/2008	
Material Description												Matrix, Method:	Sediment, ASTM D 422
Lean Clay ("CL"), black (N1)												Client Sample ID:	Q4850 (ST01-100208-B)
												AMS Sample ID:	8C24-1



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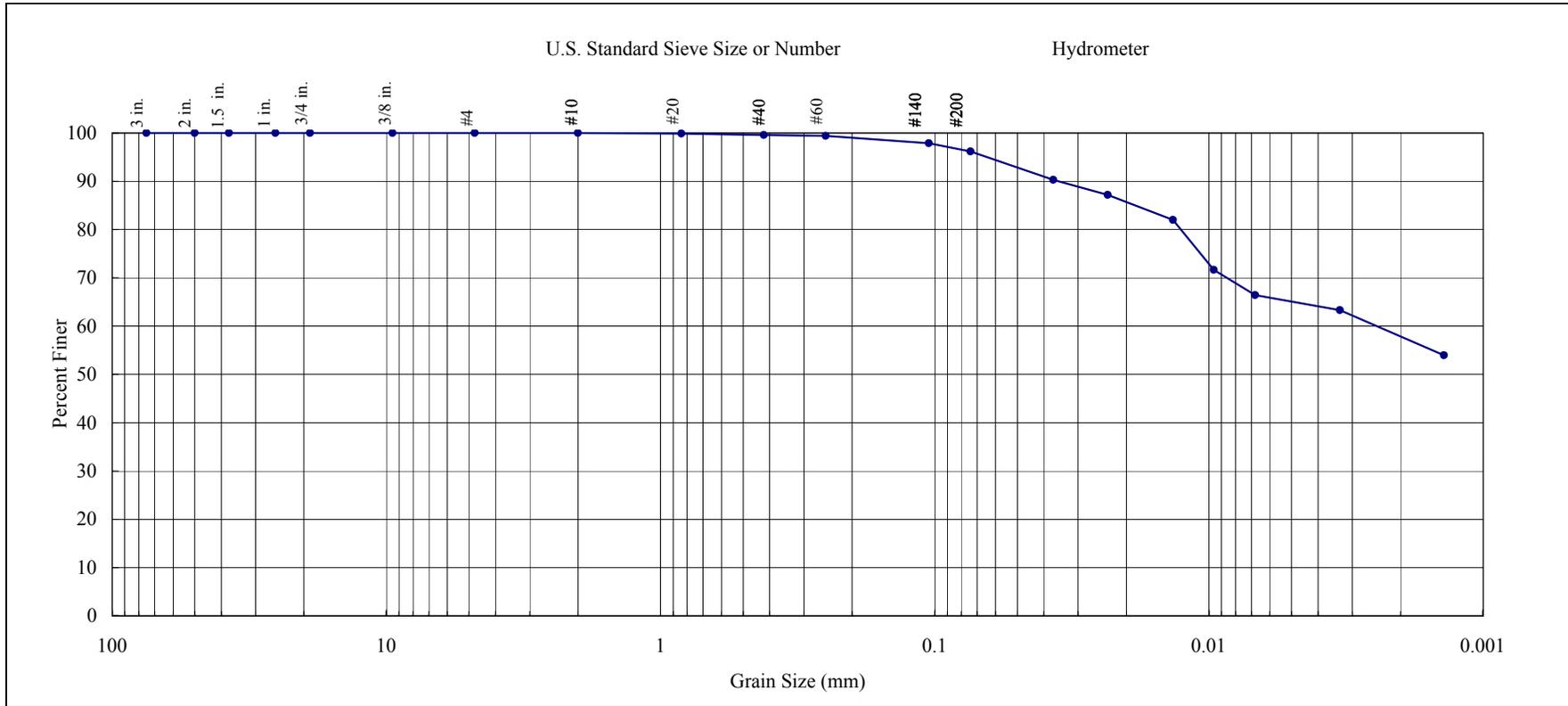
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis

 AMS, Inc. Project Manager



GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client: Battelle		Client Project Title: New Bedford Harbor Sed Traps					
	Coarse	Medium	Fine	Silt	Clay								
0.00	0.00	0.40	3.41	31.35	64.84	Client Project Number: G606422		AMS Project Number: 8C24					
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Date Sampled: 10/2/2008	Date Analyzed: 11/15/2008	Matrix, Method: Sediment, ASTM D 422
253											Client Sample ID: Q4851 (ST01-100208-C)		
Material Description										AMS Sample ID: 8C24-2			
Lean Clay ("CL"), black (N1)													



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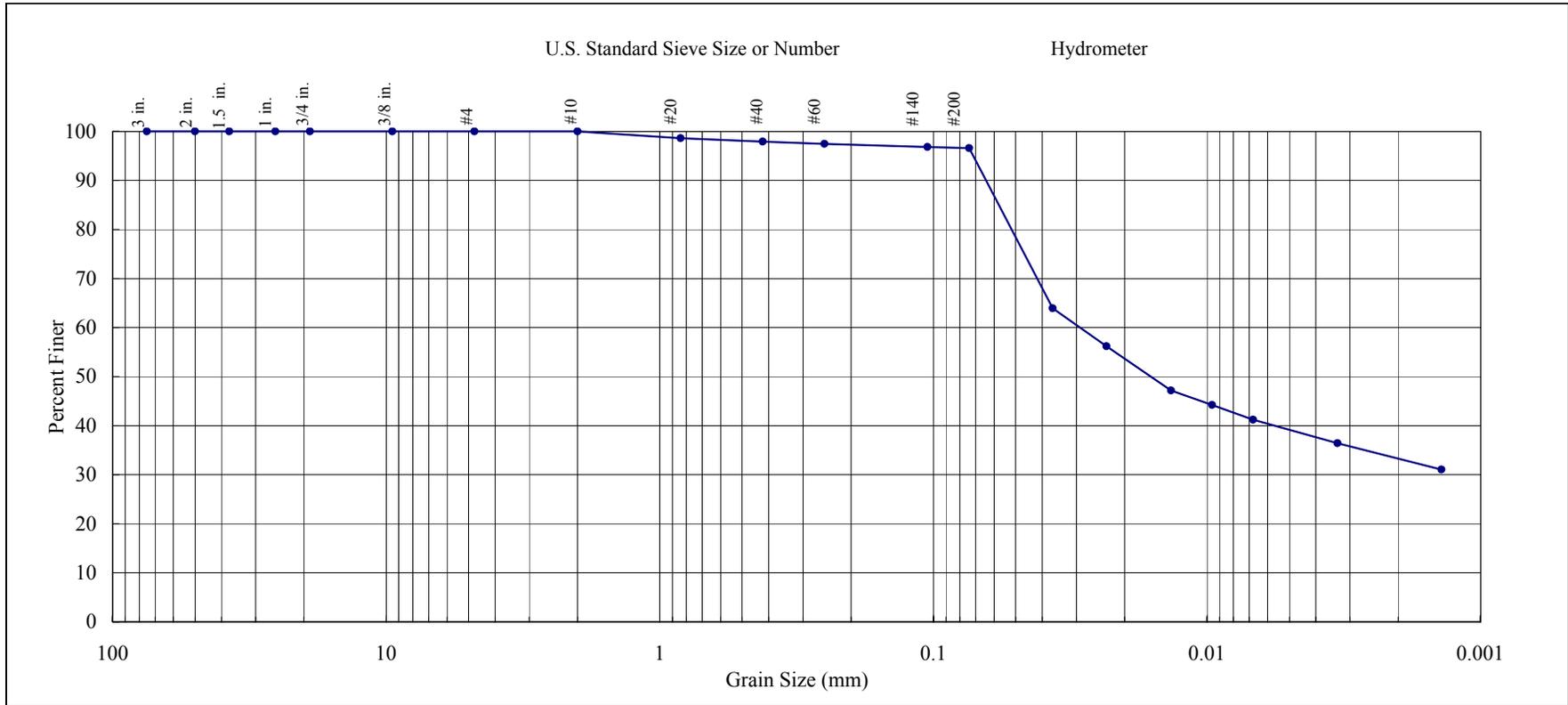
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis

 AMS, Inc. Project Manager



GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client: Battelle		Client Project Title: New Bedford Harbor Sed Traps					
	Coarse	Medium	Fine	Silt	Clay								
0.00	0.00	2.07	1.35	57.83	38.75	Client Project Number: G606422		AMS Project Number: 8C24					
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Date Sampled: 10/2/2008	Date Analyzed: 11/15/2008	Matrix, Method: Sediment, ASTM D 422
315											Client Sample ID: Q4853 (ST02-100208-B)		
Material Description										AMS Sample ID: 8C24-3			
Elastic Silt ("MH"), black (N1)													



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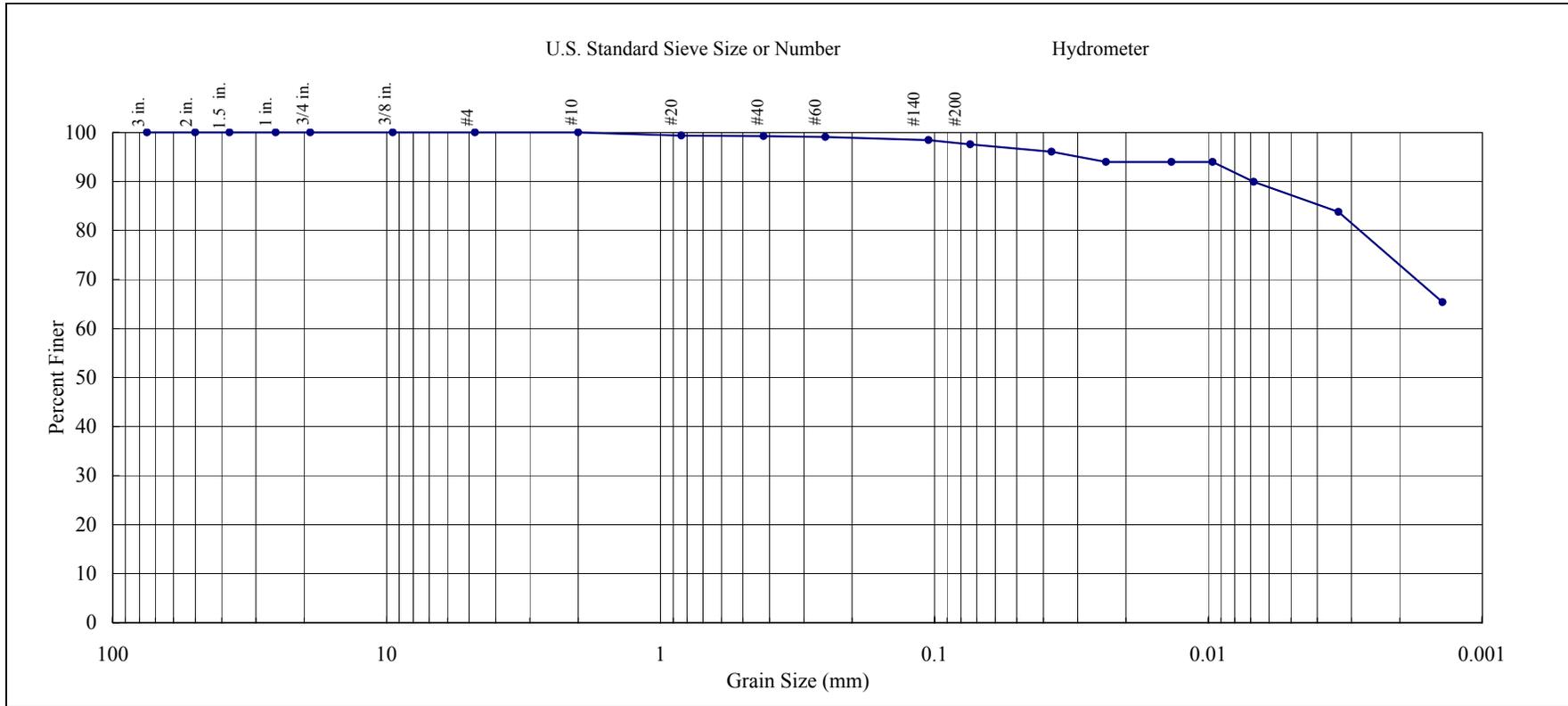
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis

 AMS, Inc. Project Manager



GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)					Fines (%)					Client:	Battelle
	Coarse	Medium	Fine			Silt	Clay				Client Project Title:	New Bedford Harbor Sed Traps
0.00	0.00	0.76	1.65			10.89	86.70				Client Project Number:	G606422
											AMS Project Number:	8C24
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Date Sampled:	10/2/2008
223											Date Analyzed:	11/15/2008
Material Description												
Fat Clay ("CH"), black (N1)											Matrix, Method:	Sediment, ASTM D 422
											Client Sample ID:	Q4854 (ST04-100208-A)
											AMS Sample ID:	8C24-4



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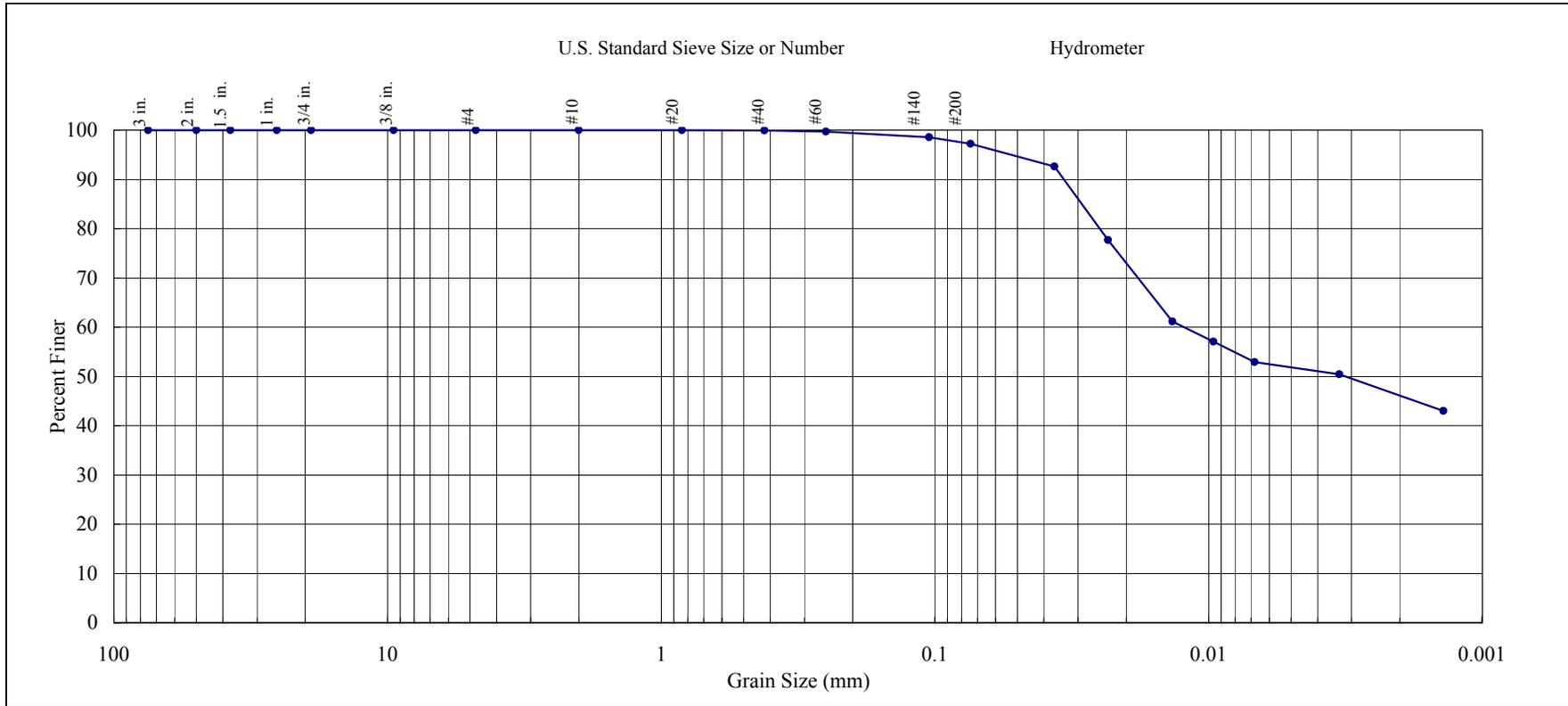
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis

 AMS, Inc. Project Manager



GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client:						
	Coarse	Medium	Fine	Silt	Clay	Battelle						
0.00	0.00	0.06	2.72	45.59	51.63	Client Project Title:	New Bedford Harbor Sed Traps					
						Client Project Number:	G606422					
						AMS Project Number:	8C24					
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Date Sampled:	10/2/2008
259											Date Analyzed:	11/15/2008
Material Description												
Lean Clay ("CL"), black (N1)												
						Client Sample ID:	Q4857 (ST03-100208-B)					
						AMS Sample ID:	8C24-5					



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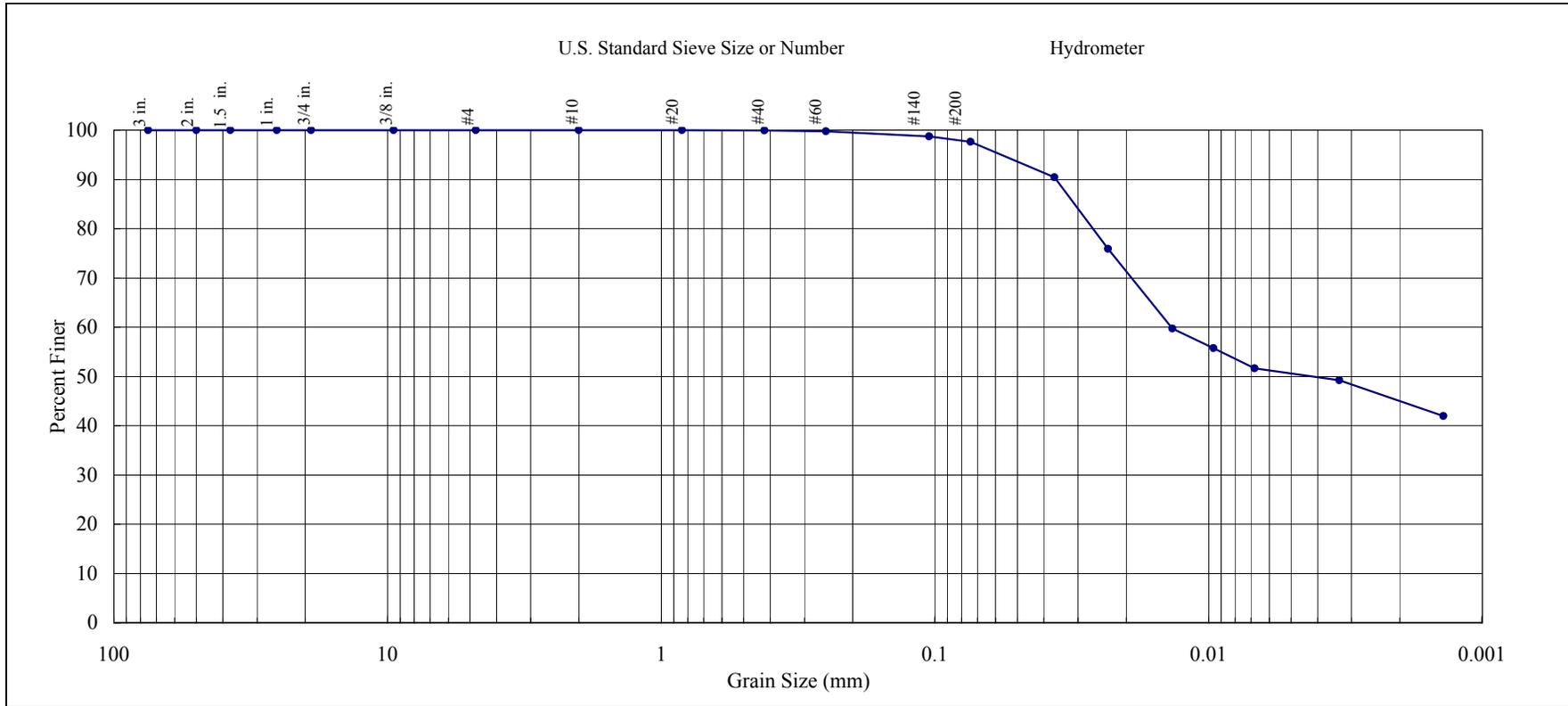
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis

 AMS, Inc. Project Manager



GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client:		Battelle		
	Coarse	Medium	Fine	Silt	Clay	Client Project Title:		New Bedford Harbor Sed Traps		
0.00	0.00	0.05	2.32	47.22	50.41	Client Project Number:		G606422		
						AMS Project Number:		8C24		
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
259										
Material Description										
Lean Clay ("CL"), black (N1)						Date Sampled:		10/2/2008		
						Date Analyzed:		11/15/2008		
						Matrix, Method:		Sediment, ASTM D 422		
						Client Sample ID:		Q4857 (ST03-100208-B)		
						AMS Sample ID:		8C24-5Q		



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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.

Jennifer D. Davis

 AMS, Inc. Project Manager



QUALITY CONTROL RESULTS

Client: Battelle
 Project Title: New Bedford Harbor Sed Traps
 Project Number: G606422
 Client Sample ID: Q4857 (ST03-100208-B)
 AMS Sample ID: 8C24-5

AMS Project Number: 8C24
 Date Sampled: 10/2/2008
 Date Analyzed: 11/15/2008
 Matrix: Sediment
 Method: ASTM D 422
 Batch: 1

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	0.00	0.00	0.00		≤ 25
2.00	No. 10	Coarse Sand	0.00	0.00	0.00		≤ 25
0.425	No. 40	Medium Sand	0.06	0.05	18.18		≤ 25
0.074	No. 200	Fine Sand	2.72	2.32	15.87		≤ 25
<0.074 - 0.005	Hydrometer	Silt	45.59	47.22	3.51		≤ 25
<0.005	Hydrometer	Clay	51.63	50.41	2.39		≤ 25

Samples in Batch: 8C24-1 8C24-4
 8C24-2 8C20-5
 8C24-3

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).

 <p>APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax</p>	<p>These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.</p> <p style="text-align: center;"><i>Jennifer D. Davis</i> _____ AMS, Inc. Project Manager</p>	 <p>ACCREDITED IN ACCORDANCE WITH nelac LABORATORY NO. E87956</p>
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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number: 8C24
Project Number:	G606422-07DUXCHE	Date Sampled: 10/2/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received: 10/8/2008
Client Sample ID:	Q4850 (ST01-100208-B)	
AMS Sample ID:	8C24-1	

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	15.41	%		0.01	0.03	EPA 9060A	Sediment	10/25/2008

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 D. Davis
AMS, Inc. Project Manager



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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number: 8C24
Project Number:	G606422-07DUXCHE	Date Sampled: 10/2/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received: 10/8/2008
Client Sample ID:	Q4851 (ST01-100208-C)	
AMS Sample ID:	8C24-2	

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	15.37	%		0.01	0.03	EPA 9060A	Sediment	10/25/2008

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 D. Davis
AMS, Inc. Project Manager



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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number: 8C24
Project Number:	G606422-07DUXCHE	Date Sampled: 10/2/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received: 10/8/2008
Client Sample ID:	Q4853 (ST02-100208-B)	
AMS Sample ID:	8C24-3	

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	23.83	%		0.01	0.03	EPA 9060A	Sediment	10/25/2008

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 D. Davis
AMS, Inc. Project Manager



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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number: 8C24
Project Number:	G606422-07DUXCHE	Date Sampled: 10/2/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received: 10/8/2008
Client Sample ID:	Q4854 (ST04-100208-A)	
AMS Sample ID:	8C24-4	

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	13.58	%		0.01	0.03	EPA 9060A	Sediment	10/25/2008

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 D. Davis
AMS, Inc. Project Manager



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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C24
Project Number:	G606422-07DUXCHE	Date Sampled:	10/2/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	10/8/2008
Client Sample ID:	Q4857 (ST03-100208-B)		
AMS Sample ID:	8C24-5		

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	12.39	%		0.01	0.03	EPA 9060A	Sediment	10/25/2008

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 D. Davis
AMS, Inc. Project Manager



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TOC QUALITY CONTROL RESULTS

Client:	Battelle	AMS Project Number: 8C24
Project Number:	G606422-07DUXCHE	AMS SOP Number: 2201
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Analyzed: 10/25/2008
Matrix:	Sediment	Batch ID: 102508-01T
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	3.11	3.23	3.79		0.01	0.03	≤ 5 RPD
ICCV-01	2.07	2.00	3.44		0.01	0.03	≤ 5 RPD

Sample Duplicate Results:

AMS Sample ID	Result (%)	Duplicate Result (%)	Relative % Difference (%)	Data Qualifier	LOD (%)	LOQ (%)	QC Limits (%)
8C24-5	12.39	11.74	5.39		0.01	0.03	≤ 25 RPD

Samples in Batch (AMS ID): 8C24-1 8C24-4
8C24-2 8C24-5
8C24-3

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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QUALITY CONTROL

Client: Battelle
Project Number: G606422-07DUXCHE
Project Name: New Bedford Harbor 2007 Water Quality Monitoring

AMS Project Number: 8C24
AMS SOP Number: 2201

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.

Chain of Custody

 Proj. No: 6606422
 Proj. Name: Sed Trap

 SAMPLERS: Signature


 ANALYSIS REQUESTED →
 "NUMBER OF CONTAINERS"

GS/TOC

DATE	TIME	Lab BATTELLE ID	Field CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER GS/TOC	ACIDIFIED	PRESERVED	Total Number of Containers	
10/2/08	0926	Q4849	ST01-100208-A	9 th sediment trap recovery station	ST01	X						X			1	
	↓	Q4850	ST01-100208-B		ST01	X							X			1
		Q4851	ST01-100208-C		ST01	X							X			1
	0955	Q4852	ST02-100208-A		ST02	X							X			1
	↓	Q4853	ST02-100208-B		ST02	X							X			1
	1022	Q4854	ST04-100208-A		ST04	X							X			1
	↓	Q4855	ST04-100208-B		ST04	X							X			1
	1045	Q4856	ST03-100208-A		ST03	X							X			1
	↓	Q4857	ST03-100208-B	ST03	X							X			1	

 Relinquished by:


 Date/Time
 10/2/08 1315

 Received by:


 Date/Time
 10/2/08 13:15

Relinquished by:

Date/Time

Received by:

Date/Time

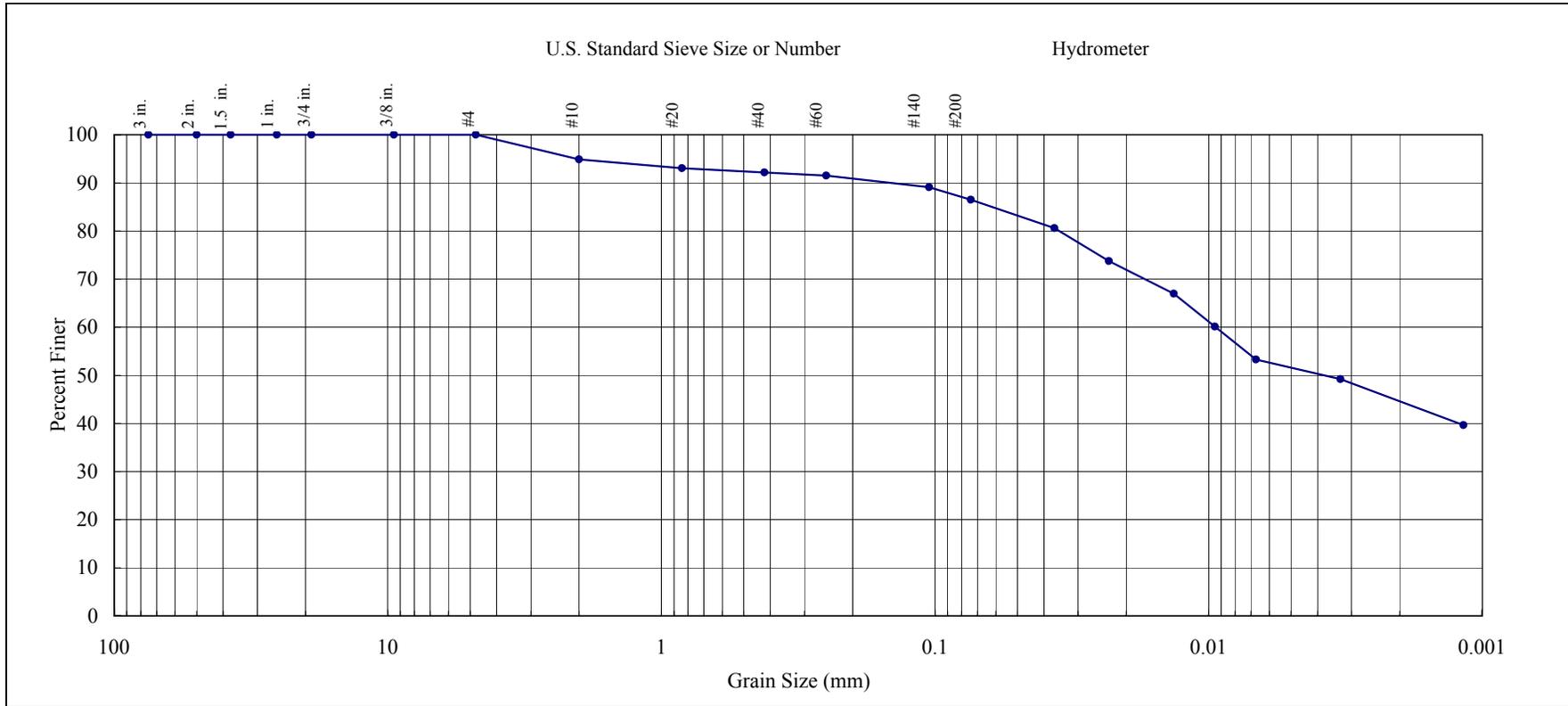
Comments: After settling for 24 hours, All samples will be decanted + weighed for reproducibility. At Station ST01 2 of 3 samples will be analyzed for PCB, TOC, + GS. At the remaining stations only 1 of 2 samples will be analyzed

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Deployment No. 10

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GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client:						
	Coarse	Medium	Fine	Silt	Clay	Battelle						
0.00	5.13	2.69	5.69	35.27	51.22	Client Project Title:	New Bedford Harbor Sed Traps					
						Client Project Number:	G606422					
						AMS Project Number:	8C26					
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Date Sampled:	10/30/2008
227											Date Analyzed:	12/2/2008
Material Description												
Lean Clay ("CL"), black (N1)												
						Client Sample ID:	Q5252 (ST-01-103008-B)					
						AMS Sample ID:	8C26-01					



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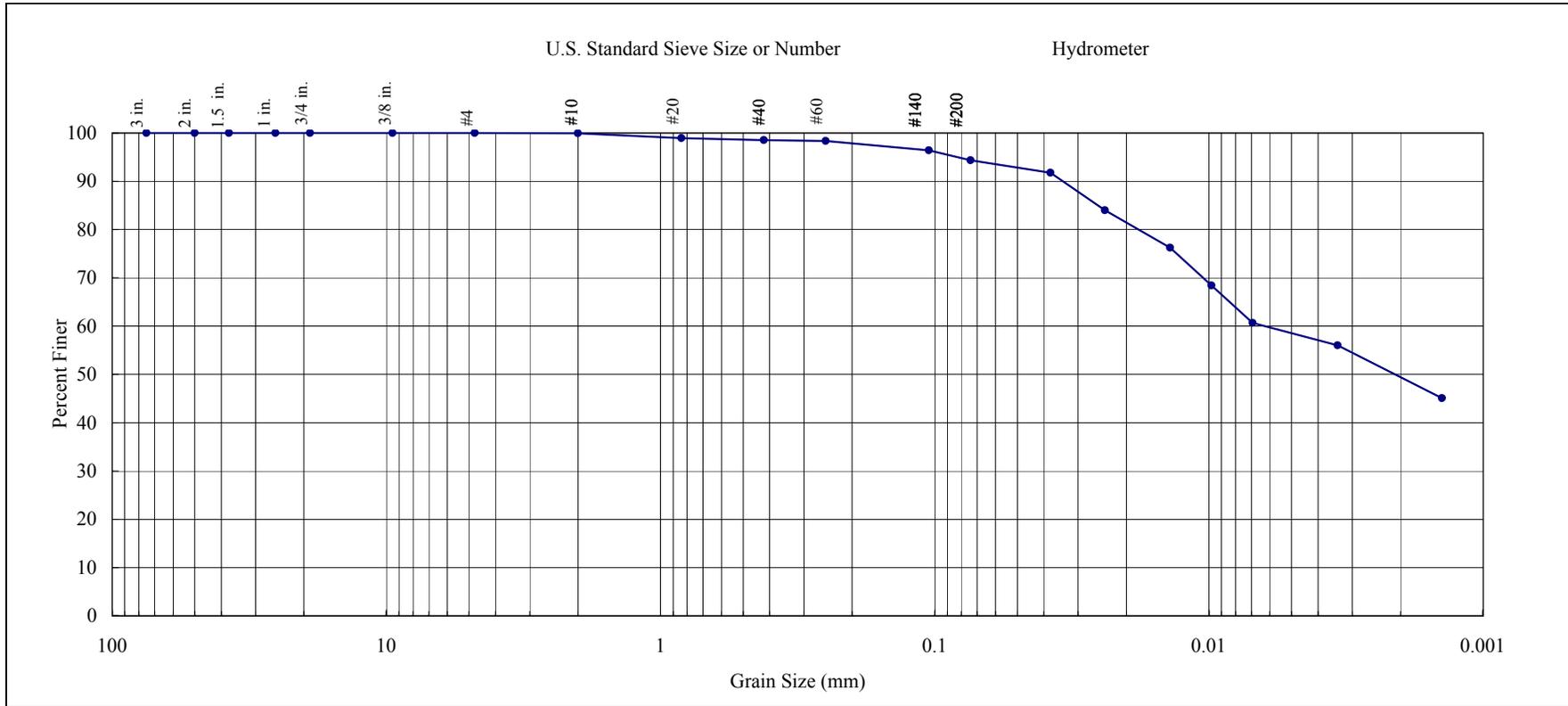
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis

 AMS, Inc. Project Manager

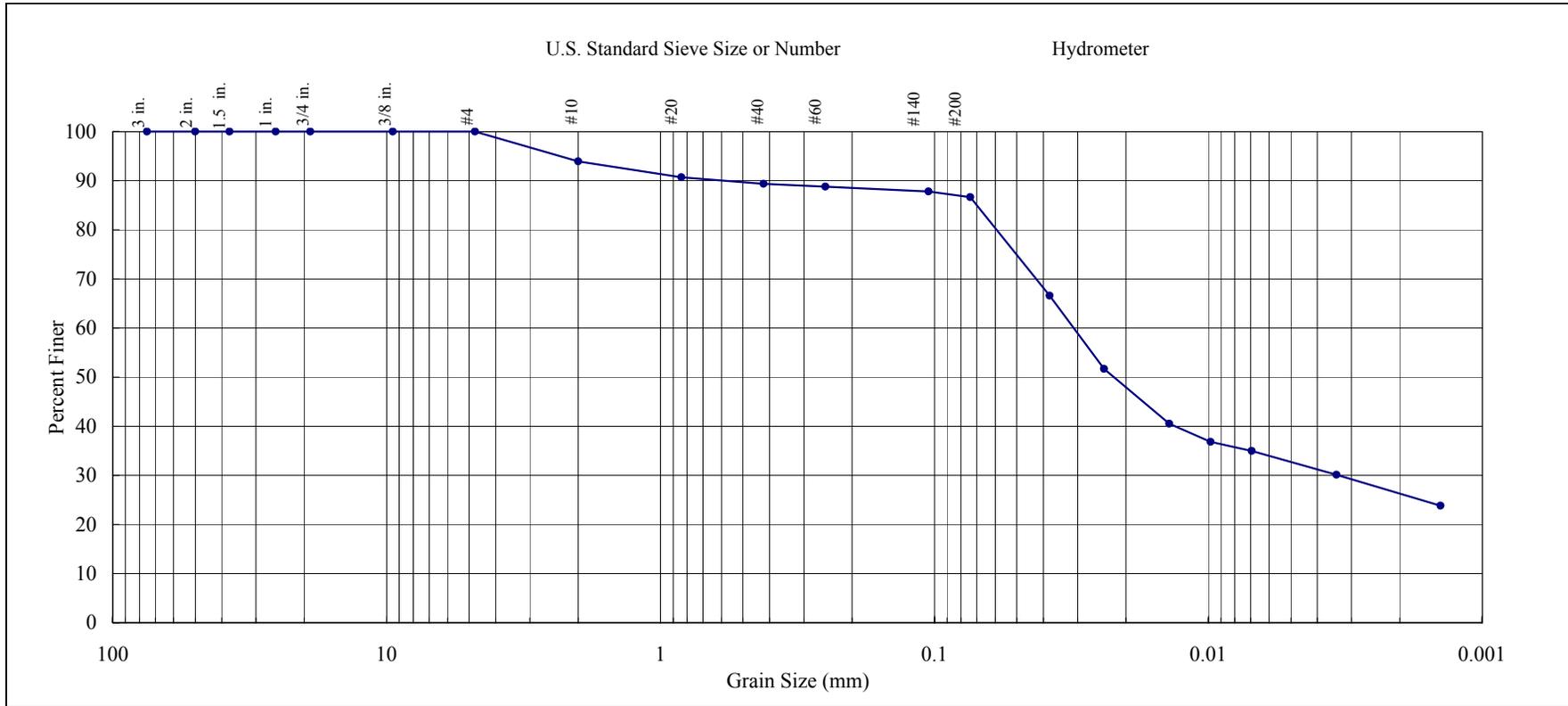


GEOTECHNICAL RESULTS



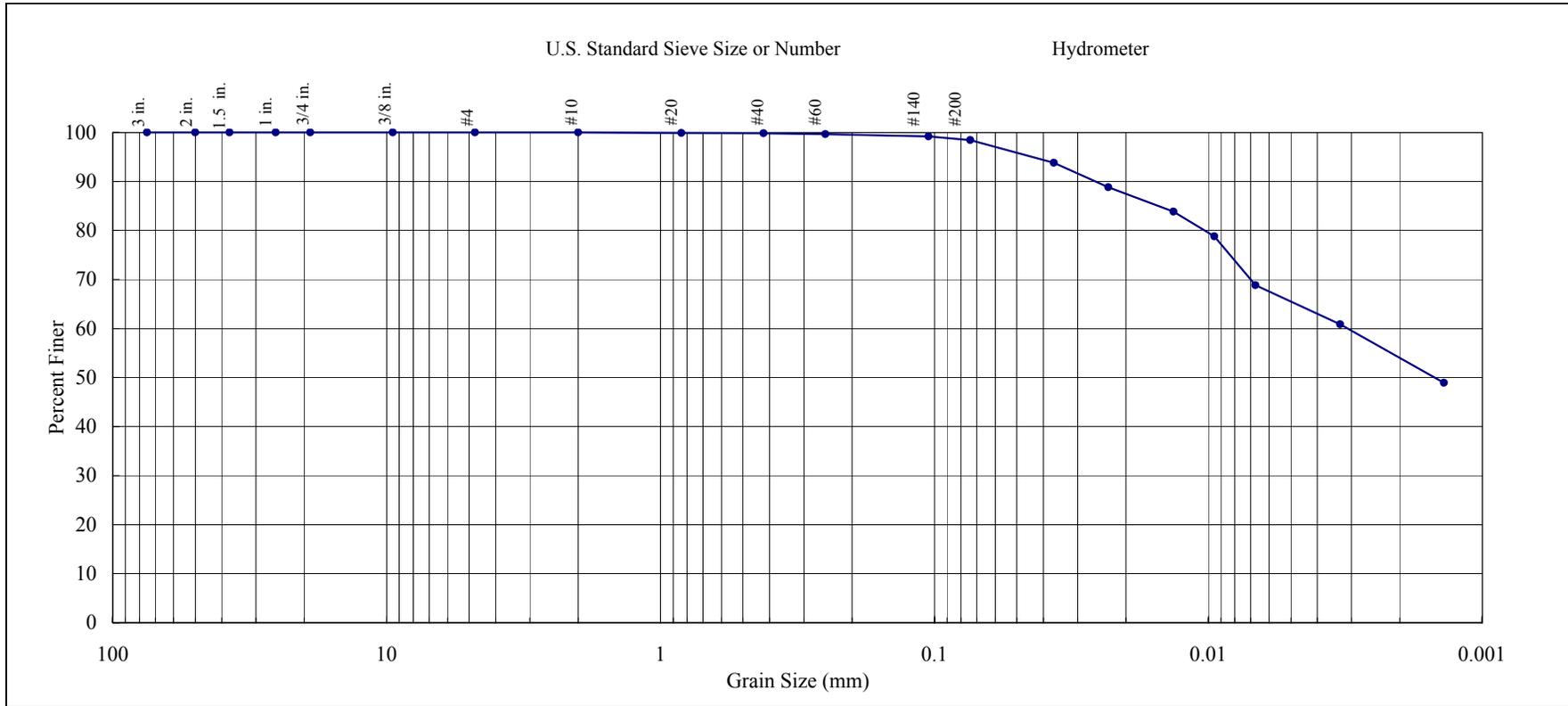
Gravel (%)	Sand (%)			Fines (%)		Client: Battelle	
	Coarse	Medium	Fine	Silt	Clay		
0.00	0.05	1.43	4.18	36.20	58.14	Client Project Title: New Bedford Harbor Sed Traps	
AMS Project Number: 8C26		Client Project Number: G606422		Date Sampled: 10/30/2008		Date Analyzed: 12/2/2008	
Matrix, Method: Sediment, ASTM D 422		Water Cont. (%)		LL		PI	
320		D ₈₅		D ₆₀		D ₅₀	
		D ₃₀		D ₁₅		D ₁₀	
		C _c		C _u		Client Sample ID: Q5253 (ST-01-103008-C)	
		AMS Sample ID: 8C26-02		Material Description Lean Clay ("CL"), black (N1)			
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GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client: Battelle		Client Project Title: New Bedford Harbor Sed Traps					
	Coarse	Medium	Fine	Silt	Clay								
0.00	6.08	4.56	2.69	54.36	32.31	Client Project Number: G606422		AMS Project Number: 8C26					
Water Cont. (%)		LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Date Sampled: 10/30/2008	
253												Date Analyzed: 12/2/2008	
Material Description											Matrix, Method: Sediment, ASTM D 422		
Elastic Silt ("MH"), black (N1)											Client Sample ID: Q5255 (ST-02-103008-B)		
											AMS Sample ID: 8C26-03		
 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.							 ACCREDITED IN ACCORDANCE WITH nelac LABORATORY NO. E87956		
				<i>Jennifer D. Davis</i> _____ AMS, Inc. Project Manager									

GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client:						
	Coarse	Medium	Fine	Silt	Clay	Battelle						
0.00	0.00	0.20	1.35	33.62	64.83	Client Project Title:	New Bedford Harbor Sed Traps					
						Client Project Number:	G606422					
						AMS Project Number:	8C26					
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Date Sampled:	10/30/2008
302											Date Analyzed:	12/2/2008
Material Description												
Lean Clay ("CL"), black (N1)												
						Client Sample ID:	Q5257 (ST-03-103008-B)					
						AMS Sample ID:	8C26-04					



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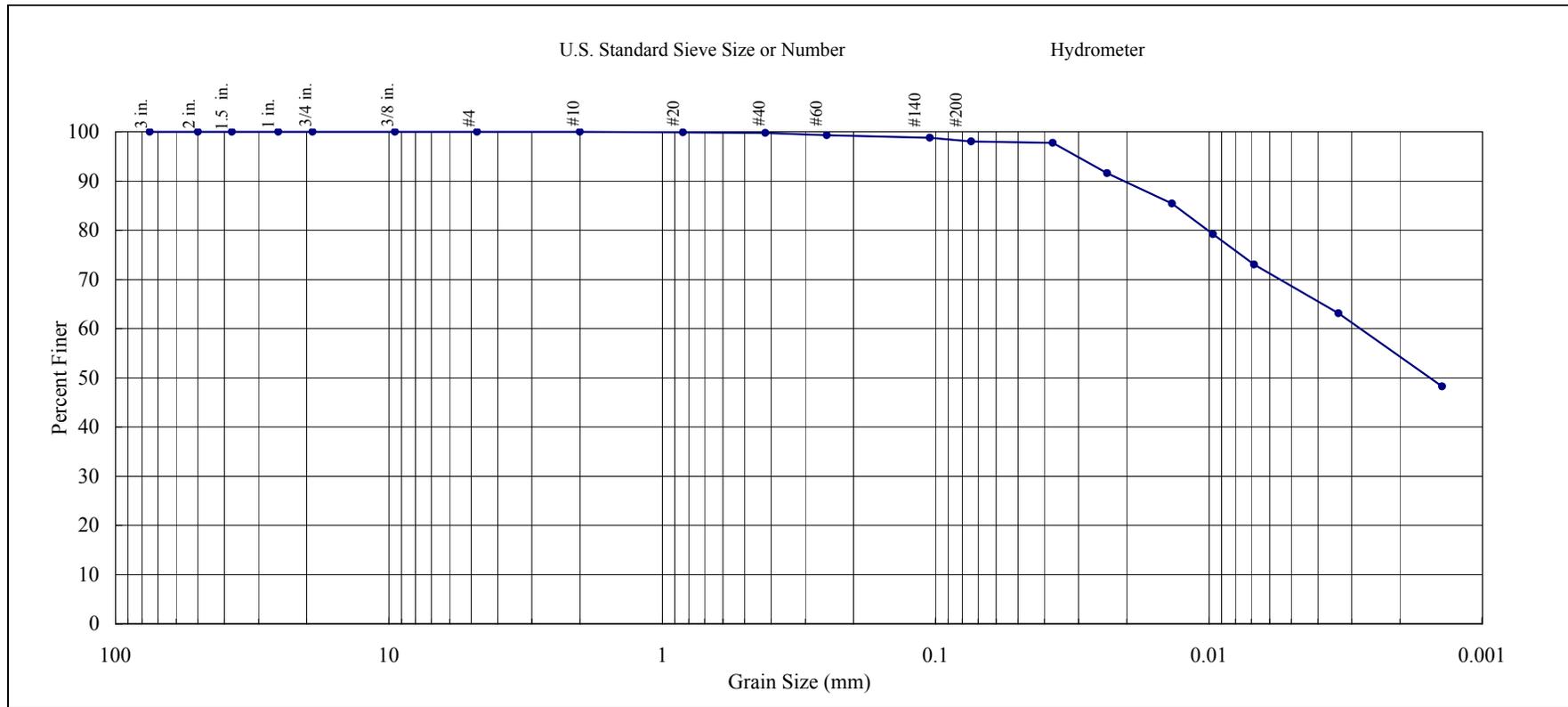
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis

 AMS, Inc. Project Manager



GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client:						
	Coarse	Medium	Fine	Silt	Clay	Battelle						
0.00	0.00	0.25	1.69	30.28	67.78	Client Project Title:	New Bedford Harbor Sed Traps					
						Client Project Number:	G606422					
						AMS Project Number:	8C26					
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Date Sampled:	10/30/2008
317											Date Analyzed:	12/2/2008
Material Description												
Lean Clay ("CL"), black (N1)												
						Client Sample ID:	Q5259 (ST-04-103008-B)					
						AMS Sample ID:	8C26-05					



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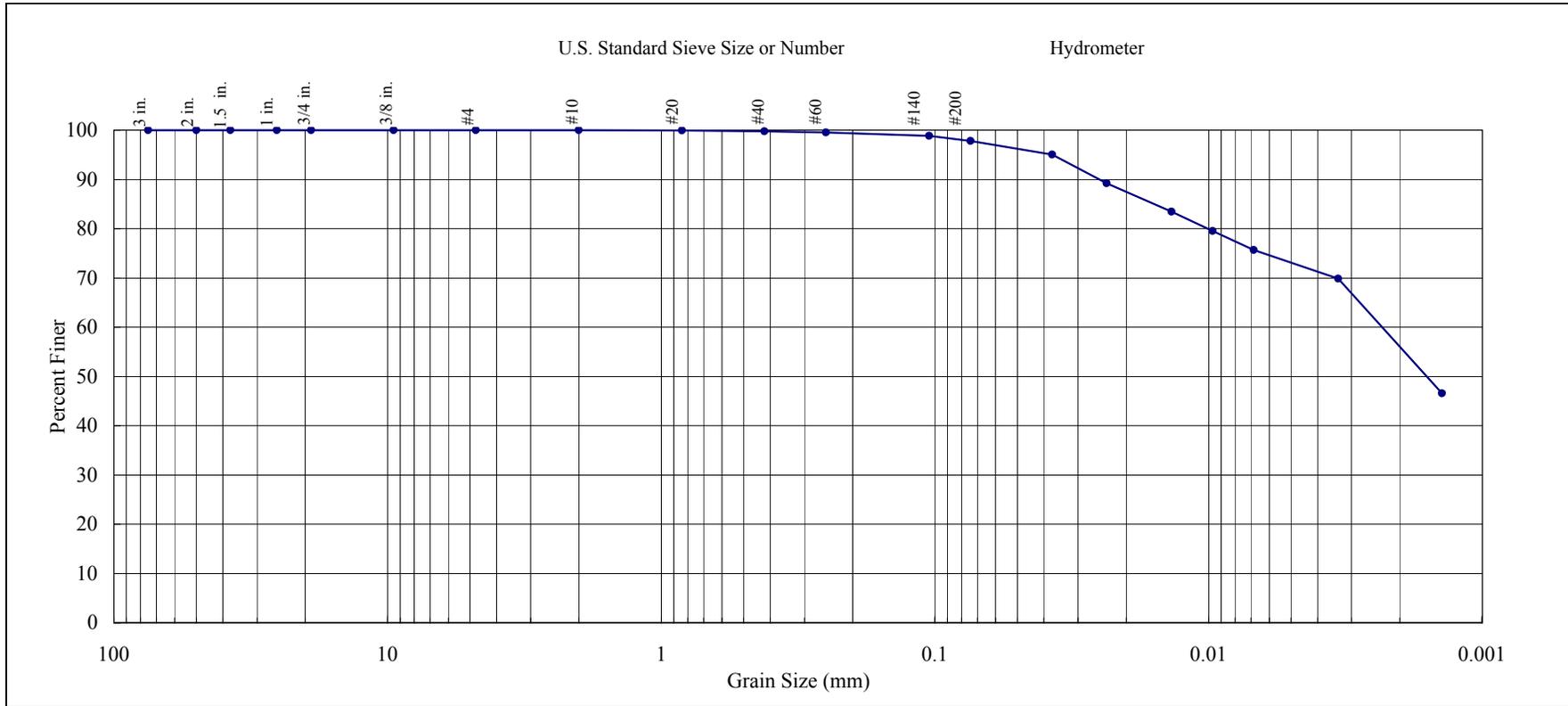
These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.

Jennifer D. Davis

 AMS, Inc. Project Manager



GEOTECHNICAL RESULTS



Gravel (%)	Sand (%)			Fines (%)		Client:						
	Coarse	Medium	Fine	Silt	Clay	Battelle						
0.00	0.00	0.22	1.95	25.24	72.59	Client Project Title:	New Bedford Harbor Sed Traps					
						Client Project Number:	G606422					
						AMS Project Number:	8C26					
Water Cont. (%)	LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u	Date Sampled:	10/30/2008
317											Date Analyzed:	12/2/2008
Material Description												
Lean Clay ("CL"), black (N1)												
						Client Sample ID:	Q5259 (ST-04-103008-B)					
						AMS Sample ID:	8C26-05Q					
 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.				 ACCREDITED IN ACCORDANCE WITH nelac LABORATORY No. E87956				
				<i>Jennifer D. Davis</i> _____ AMS, Inc. Project Manager								

QUALITY CONTROL RESULTS

Client: Battelle
 Project Title: New Bedford Harbor Sed Traps
 Project Number: G606422
 Client Sample ID: Q5259 (ST-04-103008-B)
 AMS Sample ID: 8C26-05

AMS Project Number: 8C26
 Date Sampled: 10/30/2008
 Date Analyzed: 12/2/2008
 Matrix: Sediment
 Method: ASTM D 422
 Batch: 112208-01G

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	0.00	0.00	0.00		≤ 25
2.00	No. 10	Coarse Sand	0.00	0.00	0.00		≤ 25
0.425	No. 40	Medium Sand	0.25	0.22	12.77		≤ 25
0.074	No. 200	Fine Sand	1.69	1.95	14.29		≤ 25
<0.074 - 0.005	Hydrometer	Silt	30.28	25.24	18.16		≤ 25
<0.005	Hydrometer	Clay	67.78	72.59	6.85		≤ 25

Samples in Batch: 8C26-01 8C26-04
 8C26-02 8C26-05
 8C26-03

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).

	<p>APPLIED MARINE SCIENCES, INC. 502 N. Hwy 3, Suite B League City, TX 77573 281.554.7272 Tel. 281.554.6356 Fax</p>	<p>These analyses were performed in accordance with ASTM standards, the 2006 DoD Quality Systems Manual (Version 3), and the 2003 NELAC Standard.</p> <p style="text-align: center;"><i>Jennifer D. Davis</i> _____ AMS, Inc. Project Manager</p>	
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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: 8C26
Project Number:	G606422-07DUXCHE	Date Sampled: 10/30/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received: 11/4/2008
Client Sample ID:	Q5252 (ST-01-103008-B)	
AMS Sample ID:	8C26-1	

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	13.38	%		0.01	0.03	EPA 9060A	Sediment	11/24/2008

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:

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

Jennifer D. Davis
AMS, Inc. Project Manager



Applied Marine Sciences, Inc.

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ANALYTICAL RESULTS

Client: Battelle
Project Number: G606422-07DUXCHE
Project Name: New Bedford Harbor 2007 Water Quality Monitoring
Client Sample ID: Q5253 (ST-01-103008-C)
AMS Sample ID: 8C26-2

AMS Project Number: 8C26
Date Sampled: 10/30/2008
Date Received: 11/4/2008

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	13.21	%		0.01	0.03	EPA 9060A	Sediment	11/24/2008

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:

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

Jennifer D. Davis
AMS, Inc. Project Manager



Applied Marine Sciences, Inc.

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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number: 8C26
Project Number:	G606422-07DUXCHE	Date Sampled: 10/30/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received: 11/4/2008
Client Sample ID:	Q5255 (ST-02-103008-B)	
AMS Sample ID:	8C26-3	

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	16.97	%		0.01	0.03	EPA 9060A	Sediment	11/24/2008

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:

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

Jennifer D. Davis
AMS, Inc. Project Manager



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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C26
Project Number:	G606422-07DUXCHE	Date Sampled:	10/30/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	11/4/2008
Client Sample ID:	Q5257 (ST-03-103008-B)		
AMS Sample ID:	8C26-4		

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	13.05	%		0.01	0.03	EPA 9060A	Sediment	11/24/2008

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:

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

Jennifer D. Davis
AMS, Inc. Project Manager



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ANALYTICAL RESULTS

Client:	Battelle	AMS Project Number:	8C26
Project Number:	G606422-07DUXCHE	Date Sampled:	10/30/2008
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Received:	11/4/2008
Client Sample ID:	Q5259 (ST-04-103008-B)		
AMS Sample ID:	8C26-5		

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Data Qualifier</u>	<u>LOD</u>	<u>LOQ</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Analyzed</u>
Total Organic Carbon	12.21	%		0.01	0.03	EPA 9060A	Sediment	11/24/2008

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:

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

Jennifer D. Davis
AMS, Inc. Project Manager



Applied Marine Sciences, Inc.

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TOC QUALITY CONTROL RESULTS

Client:	Battelle	AMS Project Number: 8C26
Project Number:	G606422-07DUXCHE	AMS SOP Number: 2201
Project Name:	New Bedford Harbor 2007 Water Quality Monitoring	Date Analyzed: 11/24/2008
Matrix:	Sediment	Batch ID: 112408-01T
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	3.17	3.23	1.88		0.01	0.03	≤ 5 RPD
ICCV-01	2.05	2.00	2.47		0.01	0.03	≤ 5 RPD

Sample Duplicate Results:

AMS Sample ID	Result (%)	Duplicate Result (%)	Relative % Difference (%)	Data Qualifier	LOD (%)	LOQ (%)	QC Limits (%)
8C26-5	12.21	12.15	0.49		0.01	0.03	≤ 25 RPD

Samples in Batch (AMS ID): 8C26-1 8C26-4
8C26-2 8C26-5
8C26-3

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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QUALITY CONTROL

Client: Battelle
Project Number: G606422-07DUXCHE
Project Name: New Bedford Harbor 2007 Water Quality Monitoring

AMS Project Number: 8C26
AMS SOP Number: 2201

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.

Chain of Custody

Proj. No: **GG06422**
 Proj. Name: **New Bedford Harbor Sed. Trap**

SAMPLERS: Signature
Matt Flynn Annie Murphy Patrick Curran

ANALYSIS REQUESTED →
 "NUMBER OF CONTAINERS"

DATE	TIME	Field BATTELLE ID	Lab CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers	
10/30/08	0911	ST-01-103008-A	Q5251	Sediment trap sample from station ST01		X									1	
	↓	ST-01-103008-B	Q5252			X										1
	↓	ST-01-103008-C	Q5253			X										1
	0930	ST-02-103008-A	Q5254			X										1
	↓	ST-02-103008-B	Q5255			X										1
	0950	ST-03-103008-A	Q5256			X										1
	↓	ST-03-103008-B	Q5257			X										1
	1010	ST-04-103008-A	Q5258			X										1
	↓	ST-04-103008-B	Q5259		X										1	

Relinquished by:
Matthew R Flynn

Date/Time
 10/30/08 1700

Received by:
Jeannine Siefert

Date/Time
 10/30/08 1700

Relinquished by:

Date/Time

Received by:

Date/Time

Comments:

APPENDIX C

Polychlorinated Biphenyl Data

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Deployment Nos. 1 and 2 and
Surface Sampling Event No. 1

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Project Client: USACE - North Atlantic Division
 Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
 Project Number: G606422-07DUXCHEM

Client ID	SS-ST04-111207	SS-ST03-111207	SS-ST02-111207	SS-ST01-111207	SS-ST01-111207-DUP	ST-04-103107-1
Battelle ID	Q0930-P	Q0931-P	Q0932-P	Q0933-P	Q0934-P	Q0718-P
Sample Type	SA	SA	SA	SA	SA	SA
Collection Date	11/12/07	11/12/07	11/12/07	11/12/07	11/12/07	10/31/07
Extraction Date	01/11/08	01/11/08	01/11/08	01/11/08	01/11/08	01/11/08
Analysis Date	01/17/08	01/17/08	01/17/08	01/17/08	01/17/08	01/17/08
Analytical Instrument	MS	MS	MS	MS	MS	MS
% Moisture	62.01	32.5	52.41	74.19	74.29	53.42
% Lipid	NA	NA	NA	NA	NA	NA
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT TRAP
Sample Size	12.65	20.64	14.76	7.71	7.76	2.83
Size Unit-Basis	G_DRY	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	UG/KG_DRY
CI2(8)	3400.58 D	818.99 D	1890.1 D	2244.48 D	956.26	5679.8 D
CI3(18)	7438.4 D	1783.45 D	4088.35 D	3867.9 D	1763.69 D	16792.21 D
CI3(28)	10019.8 D	2642.93 D	7351.11 D	4436.1 D	2302.55 D	23225.51 D
CI3(31)	10416.34 D	2852.54 D	7321.77 D	4495.55 D	2298.87 D	23772.1 D
CI3(37)	671.64 E	234.82	532.02	409.04	196.49	1706.89
CI4(44)	4651.99 D	980.83 D	2660.92 D	1693.33 D	805.3	9972.12 D
CI4(49)	15382.49 D	3446.34 D	9723.85 D	4909.66 D	2453.7 D	37717.62 D
CI4(52)	16421.95 D	3476.24 D	9180.82 D	5575.44 D	2509.13 D	41261.61 D
CI4(66)	909.81 D	233.58 D	958.42 D	922.7	428.84	2689.08 D
CI4(70)	548.13 D	476.77	643.19 D	806.51	380.04	1384.57 D
CI4(74)	363.65 D	413.1	401.84 D	636.35	289.61	1008.45 D
CI4(77)	145.6	58.49	122.17	100.07	50.73	440.07
CI4(81)	8.78 U	5.38 U	7.53 U	14.41 U	14.32 U	39.26 U
CI5(87)	323.84	94.87	235.78	137.95	64.59	938.73
CI5(99)	3019.59 D	850.89 D	2442.2	1229.98 D	668.64	10297.02 D
CI5(101)	3363.68 D	685.05 D	2129.65 D	1449.78	637.32	8539.04 D
CI5(105)	358.61	106.31	258.23	119.01	56.42	994.79
CI5(110)	5655.67 D	1180.62 D	3918.18 D	1975.41 D	727.57 D	14564.17 D
CI5(114)	8.78 U	5.38 U	7.53 U	14.41 U	14.32 U	39.26 U
CI5(118)	1398.34 D	358.44 D	923.01 D	515.45 D	482.22	5082.02 D
CI5(123)	337.42	113.31	261.22	163.93	78.75	1039.64
CI5(126)	8.78 U	5.38 U	7.53 U	14.41 U	14.32 U	39.26 U
CI6(128)	290.85	76.1	181.7	91.83	40.36	839.61
CI6(138)	878.78 D	240.74	540.49	271.46	131.5	2304.44
CI6(149)	5390.84 D	1246.69 D	2925.76 D	1624.82 D	872.03 D	13062.32 D
CI6(151)	1328.66 D	176.7	422.23	221.78	93.09	1962.79
CI6(153)	4255.41 D	946.94 D	2226.5 D	1463.59 D	613.85 D	10631.02 D
CI6(156)	249.33	70.61	163.64	86.54	45.4	748.98
CI6(157)	58.2	20.06	41.44	28.56	23.91	178.7
CI6(158)	314.98	88.04	201.86	106.19	46.49	865.25
CI6(167)	261.46	68.2	166.51	95.47	47.75	719.87
CI6(169)	14.67	5.38 U	7.53 U	14.41 U	14.32 U	120.51
CI7(170)	267.23	66.76	170.36	81.62	35.72	756.57
CI7(177)	110.88	30.62	71.01	40.88	18.07	336.98
CI7(180)	542.22	148.49	331.25	180.85	79.84	1518.17
CI7(183)	193.17	48.5	121.47	60.53	25.38	535.91
CI7(187)	646.01	170.14	397.24	208.89	90.93	1812.63
CI7(189)	37.74	11.87	21.45	20.13	14.32 U	97.21
CI8(194)	136.3	32.93	87.16	55.35	29.05	395.17
CI8(195)	37.65	8.98	20.64	16.66	12.29 J	122.55
CI8(201)	20.42	5.6	13.94	13.81 J	14.32 U	61.69
CI8(203)	140.85	30.59	54.6	52.15	30.9	420.95
CI9(206)	78.37	25.07	50.84	32.9	21.85	232.41
LOC 10	25.53	8.64	17.91	14.41 U	14.32 U	88.99

Surrogate Recoveries (%)

CI3(34)	88	80	89	76	81	81
CI6(152)	78	71	79	66	79	75



Project Client: USACE - North Atlantic Division
 Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
 Project Number: G606422-07DUXCHEM

Client ID	ST-03-103107-1	ST-02-103107-1	ST-01-103107-1	ST-01-103107-2	ST-01-103107-3	ST-01-121007-1
Battelle ID	Q0720-P	Q0722-P	Q0724-P	Q0725-P	Q0726-P	Q1173-P
Sample Type	SA	SA	SA	SA	SA	SA
Collection Date	10/31/07	10/31/07	10/31/07	10/31/07	10/31/07	12/10/07
Extraction Date	01/11/08	01/11/08	01/11/08	01/11/08	01/11/08	01/11/08
Analysis Date	01/17/08	01/17/08	01/17/08	01/17/08	01/17/08	01/18/08
Analytical Instrument	MS	MS	MS	MS	MS	MS
% Moisture	53.47	49.4	41.67	44.44	43.6	51.67
% Lipid	NA	NA	NA	NA	NA	NA
Matrix	SEDIMENT TRAP					
Sample Size	6.11	2.55	1.52	4.34	3.67	2.67
Size Unit-Basis	G_DRY	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	UG/KG_DRY
CI2(8)	5091.04 D	6129.59 D	1771.22	683.15	720.89	337.89
CI3(18)	14911.12 D	15108.42 D	4824.26	1872.09	1956.77	1228.4
CI3(28)	18158.42 D	21047.19 D	10471.09 D	3977.5 D	3267.24 D	2235.53
CI3(31)	18223.91 D	21543 D	8340.93 D	2962.59 D	2788.5 D	1996.28
CI3(37)	1104.38	1626.17	786.38	316.39	304.8	216.48
CI4(44)	7020.02 D	8865.84 D	3400.53	1281.47	1287.01	909.64
CI4(49)	26940.36 D	30994.66 D	11297.7 D	3688.29 D	3932.65 D	3035.21
CI4(52)	29361.53 D	33635.25 D	13033.42 D	4387.37 D	4227.2 D	3345.27
CI4(66)	1504.36 D	1736.91 D	1848.78	698.41	673.77	446.32
CI4(70)	870.69 D	1563.42 D	1347.89	510.44	521.65	349.93
CI4(74)	513.38 D	2970.64	1534.63	585.01	548.92	361.73
CI4(77)	278.85	411.02	273.84	102.93	99.78	88.93
CI4(81)	18.19 U	43.57 U	73.1 U	25.6 U	30.28 U	41.61 U
CI5(87)	535.12	855.6	323.02	122.1	131.56	91.68
CI5(99)	6074.65 D	6897.66 D	4429.48	1758.6	1604.1	1133.2
CI5(101)	5253.26 D	6116.26 D	3144.03	1223.13	1231.88	863.12
CI5(105)	623.75	824.53	373.85	149.85	149.12	108.62
CI5(110)	8709.26 D	12453.77 D	4788.77 D	1672.52 D	2371.61	1653.35
CI5(114)	18.19 U	43.57 U	73.1 U	25.6 U	30.28 U	41.61 U
CI5(118)	2032.73 D	3334.92 D	3245.99	1277.51	1194.02	772.34
CI5(123)	607.94	936.56	479.72	177.36	202.58	150.96
CI5(126)	18.19 U	43.57 U	73.1 U	25.6 U	30.28 U	41.61 U
CI6(128)	513.48	612.75	290.25	123.05	101.33	72.5
CI6(138)	2927.27 D	1904.65	888.06	349	345.4	248.41
CI6(149)	9282.75 D	11196.66 D	3592.1	1370.28	1462.96	1085.6
CI6(151)	1163.29	1516.21	508.88	192.81	203.25	133.96
CI6(153)	6252.49 D	7737.35 D	4108.54	1577.16	1524.56	1063.02
CI6(156)	459.88	590.18	338.06	122.68	121.16	106.86
CI6(157)	109.83	143.25	131.69	50.05	49.25	66.46
CI6(158)	536.71	665.69	320.77	131.41	122.79	102.69
CI6(167)	445.92	554.31	329.86	116.5	124.06	104.13
CI6(169)	18.19 U	43.57 U	73.1 U	25.6 U	30.28 U	41.61 U
CI7(170)	435.22	565.7	275.41	102.89	106.91	89.84
CI7(177)	187.96	252.36	116.64	46.41	51.01	41.92
CI7(180)	900.75	1217.53	581.96	222.03	219.51	167.74
CI7(183)	330.23	413.05	162.42	72.86	63.9	45.99
CI7(187)	1102.03	1441.9	645.41	246.32	244.77	178.84
CI7(189)	58.47	95.78	73.1 U	25.6 U	41.49	41.61 U
CI8(194)	219.97	314.27	206.47	67.17	76.19	41.61 U
CI8(195)	60.31	86.06	83.12	22.01 J	28.1 J	41.61 U
CI8(201)	32.47	59.95	63.36 J	20.1 J	30.28 U	41.61 U
CI8(203)	229.69	224.07	209.59	75.13	74.14	41.61 U
CI9(206)	132.7	189.76	140.12	49.74	60.49	57.73
LOC 10	44.74	81.87	85.9	28.79	33.03	41.61 U

Surrogate Recoveries (%)

CI3(34)	78	77	73	70	72	76
CI6(152)	66	68	67	67	68	70



Project Client: USACE - North Atlantic Division
 Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
 Project Number: G606422-07DUXCHEM

Client ID	ST-01-121007-2	ST-01-121007-3	ST-02-121007-1	ST-03-121007-1	ST-04-121007-1
Battelle ID	Q1174-P	Q1175-P	Q1176-P	Q1178-P	Q1180-P
Sample Type	SA	SA	SA	SA	SA
Collection Date	12/10/07	12/10/07	12/10/07	12/10/07	12/10/07
Extraction Date	01/11/08	01/11/08	01/11/08	01/11/08	01/11/08
Analysis Date	01/18/08	01/18/08	01/18/08	01/18/08	01/18/08
Analytical Instrument	MS	MS	MS	MS	MS
% Moisture	64.79	58.73	55.26	57.55	61.76
% Lipid	NA	NA	NA	NA	NA
Matrix	SEDIMENT TRAP				
Sample Size	2.00	2.26	3.42	9.94	5.85
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
CI2(8)	758.68	575.22	1991.49	1795.91 D	2529.08 D
CI3(18)	2853.21	2187.4	9742.72 D	5707.23 D	8682.51 D
CI3(28)	4465.18 D	4113.27	17125.7 D	6772.64 D	10566.09 D
CI3(31)	4980.6	3774.13	16250.45 D	6751.38 D	11005.69 D
CI3(37)	485.54	350.54	1319.66	599.65	906.3
CI4(44)	2232.46	1641.67	6498.74 D	3197.22 D	5544.8 D
CI4(49)	6611.76 D	4826.89 D	23730.84 D	11282.94 D	17837.94 D
CI4(52)	7317.35 D	5781.23 D	24970.82 D	12693.81 D	21404.92 D
CI4(66)	1066.73	811.24	2152.13 D	396.78 D	801.52 D
CI4(70)	891.67	634.22	1096.88 D	283.07 D	402.37 D
CI4(74)	857.18	663.37	2439.91	162.08 D	1609.68 E
CI4(77)	159.76	132.63	364.38	150.28	242.99
CI4(81)	55.56 U	49.16 U	32.49 U	11.18 U	18.99 U
CI5(87)	245.88	170.04	625.24	324.63	483.48
CI5(99)	2617.2	2005.08	6189.85 D	2536.34 D	4007.16 D
CI5(101)	2142.56	1542.89	5140.1 D	2178.11 D	3057.32 D
CI5(105)	236.19	191.03	674.67	349.07	530.31
CI5(110)	4183.91	3025.11	8999.61 D	3662.09 D	5707.67 D
CI5(114)	55.56 U	49.16 U	32.49 U	11.18 U	18.99 U
CI5(118)	1869.96	1377.57	2933.66 D	907.48 D	1271.44 D
CI5(123)	300.85	227.32	714.77	350.77	549.72
CI5(126)	55.56 U	49.16 U	32.49 U	11.18 U	18.99 U
CI6(128)	179.08	120.86	510.62	278.25	439.52
CI6(138)	552.14	453.3	1469.15	813.89	1232.03
CI6(149)	2567.28	1909.4	7352.9 D	5237.03 D	7687.49 D
CI6(151)	323.88	271.37	1136.72	655.58	1052.66
CI6(153)	2412.62	1977.77	6765.5 D	3601.25 D	6268.01 D
CI6(156)	188.76	165.48	481.46	252.49	384.78
CI6(157)	97.19	85.43	131.33	58.57	94.99
CI6(158)	210.11	162.56	564.96	281.41	456.57
CI6(167)	197.4	175.67	457.17	259.75	379.94
CI6(169)	55.56 U	49.16 U	32.49 U	11.18 U	18.99 U
CI7(170)	165.23	151.63	461.07	248.44	411.18
CI7(177)	73.34	72.91	192.27	114.1	159.35
CI7(180)	380.68	297.83	966.56	520.38	820.43
CI7(183)	104.75	96	340.69	187.28	282.78
CI7(187)	408.26	321.88	1126.53	593.19	964.82
CI7(189)	55.56 U	49.16 U	71.11	33.85	57.94
CI8(194)	128.51	115.1	242.29	133.35	215.98
CI8(195)	56.28	49.16 U	72.05	39.74	64.59
CI8(201)	55.56 U	49.16 U	43.99	19.64	33.26
CI8(203)	139.27	106.38	170.51	88.3	135.82
CI9(206)	86.22	72.04	143.18	78.31	130.61
LOC 10	59.04	57.07	65.36	25.52	44.1

Surrogate Recoveries (%)

CI3(34)	72	81	75	77	81
CI6(152)	69	79	72	70	80



Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM
Client ID: Procedural Blank

Battelle ID	BL300PB-P
Sample Type	PB
Collection Date	01/11/08
Extraction Date	01/11/08
Analysis Date	01/16/08
Analytical Instrument	MS
% Moisture	54.77
% Lipid	NA
Matrix	SEDIMENT
Sample Size	6.89
Size Unit-Basis	G_DRY
Units	UG/KG_DRY

Cl2(8)	16.29 U
Cl3(18)	16.29 U
Cl3(28)	20.4
Cl3(31)	15.21 J
Cl3(37)	16.13 U
Cl4(44)	16.13 U
Cl4(49)	16.13 U
Cl4(52)	17.63
Cl4(66)	16.29 U
Cl4(70)	16.13 U
Cl4(74)	16.13 U
Cl4(77)	16.29 U
Cl4(81)	16.13 U
Cl5(87)	16.13 U
Cl5(99)	16.13 U
Cl5(101)	16.29 U
Cl5(105)	16.13 U
Cl5(110)	16.13 U
Cl5(114)	16.13 U
Cl5(118)	16.29 U
Cl5(123)	16.13 U
Cl5(126)	16.13 U
Cl6(128)	16.29 U
Cl6(138)	16.29 U
Cl6(149)	16.13 U
Cl6(151)	16.13 U
Cl6(153)	16.29 U
Cl6(156)	16.13 U
Cl6(157)	16.13 U
Cl6(158)	16.13 U
Cl6(167)	16.13 U
Cl6(169)	16.13 U
Cl7(170)	16.29 U
Cl7(177)	16.13 U
Cl7(180)	16.29 U
Cl7(183)	16.13 U
Cl7(187)	16.13 U
Cl7(189)	16.13 U
Cl8(194)	16.13 U
Cl8(195)	16.13 U
Cl8(201)	16.13 U
Cl8(203)	16.13 U
Cl9(206)	16.13 U
LOC 10	16.13 U

Surrogate Recoveries (%)

Cl3(34)	76
Cl6(152)	83



Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM 060208-03: Sand, White
 Client ID Quartz, -50+70

Battelle ID	Sample Type	Collection Date	Extraction Date	Analysis Date	Analytical Instrument	% Moisture	% Lipid	Matrix	Sample Size	Size Unit-Basis	Units	Target	% Recovery	Qualifier
	BL301LCS-P													
	LCS													
		01/11/08	01/11/08	01/16/08	MS	NA	NA	SEDIMENT	NA	NA	NG			
C12(8)												2907.86	4012.00	72
C13(18)												2731.06	4012.00	68
C13(28)												2706.82	4004.00	68
C13(31)												317.61		
C13(37)												111.11	U	
C14(44)												3040.36	4008.00	76
C14(49)												111.11	U	
C14(52)												2899.95	4000.00	72
C14(66)												2954.69	4004.00	74
C14(70)												111.11	U	
C14(74)												111.11	U	
C14(77)												2683.72	4000.00	67
C14(81)												111.11	U	
C15(87)												111.11	U	
C15(99)												111.11	U	
C15(101)												2618.17	4008.00	65
C15(105)												3151.57	4004.00	79
C15(110)												111.11	U	
C15(114)												111.11	U	
C15(118)												2658.32	4004.00	66
C15(123)												111.11	U	
C15(126)												2480.8	4024.00	62
C16(128)												2919.76	4024.00	73
C16(138)												2776.57	4008.00	69
C16(149)												111.11	U	
C16(151)												111.11	U	
C16(153)												2948.05	4004.00	74
C16(156)												111.11	U	
C16(157)												111.11	U	
C16(158)												111.11	U	
C16(167)												111.11	U	
C16(169)												111.11	U	
C17(170)												3079.27	4020.00	77
C17(177)												111.11	U	
C17(180)												3283.51	4016.00	82
C17(183)												111.11	U	
C17(187)												3165.89	4012.00	79
C17(189)												111.11	U	
C18(194)												111.11	U	
C18(195)												3069.34	4012.00	77
C18(201)												111.11	U	
C18(203)												111.11	U	
C19(206)												3144.12	4012.00	78
LOC 10												3541.02	4004.00	88

Surrogate Recoveries (%)

C13(34)	79
C16(152)	82



Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM
Client ID SS-ST01-111207 SS-ST01-111207

Battelle ID	Q0933-P	Q0933MS-P				
Sample Type	SA	MS				
Collection Date	11/12/07	11/12/2007				
Extraction Date	01/11/08	1/11/2008				
Analysis Date	01/17/08	1/17/2008				
Analytical Instrument	MS	MS				
% Moisture	74.19	78.81				
% Lipid	NA	NA				
Matrix	SEDIMENT	SEDIMENT				
Sample Size	7.71	2.94				
Size Unit-Basis	G_DRY	G_DRY				
Units	UG/KG_DRY	UG/KG_DRY			Target % Recovery	Qualifier
CI2(8)	2244.48 D	3784.65 E		1364.63	113	
CI3(18)	3867.9 D	5902.9 E		1364.63	149	
CI3(28)	4436.1 D	7278.18 E		1361.90	209	
CI3(31)	4495.55 D	6673.93 E				
CI3(37)	409.04	508.41				
CI4(44)	1693.33 D	3501.27		1363.27	133	
CI4(49)	4909.66 D	6910.61 E				
CI4(52)	5575.44 D	8713.31 E		1360.54	231	
CI4(66)	922.7	2283.67		1361.90	100	
CI4(70)	806.51	934.82				
CI4(74)	636.35	770.95				
CI4(77)	100.07	1282.43		1360.54	87	
CI4(81)	14.41 U	37.79 U				
CI5(87)	137.95	181.03				
CI5(99)	1229.98 D	1852.56				
CI5(101)	1449.78	2813.99		1363.27	100	
CI5(105)	119.01	1293.65		1361.90	86	
CI5(110)	1975.41 D	3431.78				
CI5(114)	14.41 U	37.79 U				
CI5(118)	515.45 D	2418.63		1361.90	140	
CI5(123)	163.93	209.15				
CI5(126)	14.41 U	1117.09		1368.71	82	
CI6(128)	91.83	1238.51		1368.71	84	
CI6(138)	271.46	1419.63		1363.27	84	
CI6(149)	1624.82 D	1925.62				
CI6(151)	221.78	273.81				
CI6(153)	1463.59 D	2640.2		1361.90	86	
CI6(156)	86.54	123.2				
CI6(157)	28.56	74.98				
CI6(158)	106.19	142.67				
CI6(167)	95.47	146.48				
CI6(169)	14.41 U	37.79 U				
CI7(170)	81.62	1263.64		1367.35	86	
CI7(177)	40.88	54.53				
CI7(180)	180.85	1438.39		1365.99	92	
CI7(183)	60.53	61.98				
CI7(187)	208.89	1378.82		1364.63	86	
CI7(189)	20.13	37.79 U				
CI8(194)	55.35	87.3				
CI8(195)	16.66	1102.19		1364.63	80	
CI8(201)	13.81 J	37.79 U				
CI8(203)	52.15	92.76				
CI9(206)	32.9	1154.51		1364.63	82	
LOC 10	14.41 U	1055.47		1361.90	77	

Surrogate Recoveries (%)

CI3(34)	76	83
CI6(152)	66	75



Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM
Client ID: SS-ST01-111207

Battelle ID	Q0933MSD-P				
Sample Type	MSD				
Collection Date	11/12/2007				
Extraction Date	1/11/2008				
Analysis Date	1/17/2008				
Analytical Instrument	MS				
% Moisture	77.34				
% Lipid	NA				
Matrix	SEDIMENT				
Sample Size	3.09				
Size Unit-Basis	G_DRY				
Units	UG/KG_DRY	Target	% Recovery	Qualifier	RPD (%)
					Qualifier
Cl2(8)	2101.63	1298.38	0		200.0
Cl3(18)	2871.52	1298.38	0		200.0
Cl3(28)	3424.1	1295.79	0		200.0
Cl3(31)	2694				
Cl3(37)	225.41				
Cl4(44)	1924.24	1297.09	18		152.3
Cl4(49)	2851.35				
Cl4(52)	3901.34	E 1294.50	0		200.0
Cl4(66)	1460.13	1295.79	41		83.7
Cl4(70)	370.12				
Cl4(74)	313.17				
Cl4(77)	1091.27	1294.50	77		12.2
Cl4(81)	35.96	U			
Cl5(87)	73.77				
Cl5(99)	655.27				
Cl5(101)	1551.2	1297.09	8		170.4
Cl5(105)	1136.38	1295.79	79		8.5
Cl5(110)	1217.77				
Cl5(114)	35.96	U			
Cl5(118)	1472.32	1295.79	74		61.7
Cl5(123)	104.11				
Cl5(126)	1049.43	1302.27	81		1.2
Cl6(128)	1045.92	1302.27	73		14.0
Cl6(138)	1083.89	1297.09	63		28.6
Cl6(149)	632.41				
Cl6(151)	83.23				
Cl6(153)	1504.21	1295.79	3		186.5
Cl6(156)	65.66				
Cl6(157)	54.07				
Cl6(158)	74.38				
Cl6(167)	82.16				
Cl6(169)	35.96	U			
Cl7(170)	1086.76	1300.97	77		11.0
Cl7(177)	29.39	J			
Cl7(180)	1230.99	1299.68	81		12.7
Cl7(183)	25.4	J			
Cl7(187)	1092.83	1298.38	68		23.4
Cl7(189)	35.96	U			
Cl8(194)	35.96	U			
Cl8(195)	1027.69	1298.38	78		2.5
Cl8(201)	35.96	U			
Cl8(203)	35.96	U			
Cl9(206)	1072.47	1298.38	80		2.5
LOC 10	1100.84	1295.79	85		9.9

Surrogate Recoveries (%)

Cl3(34)	75
Cl6(152)	70

**PCB Congeners – Sediment Trap QA/QC Summary
Batch 08-0005**

PROJECT: New Bedford Harbor Sediment Trap Study (USACE)
PARAMETER: PCB Congeners
LABORATORY: Battelle, Duxbury, MA
MATRIX: Sediment Trap Samples
SAMPLE CUSTODY: Surface sediment and sediment trap samples were collected on 10/31/07, 11/12/07, and 12/10/07. Samples arrived in three shipments, and were hand delivered to the Battelle Duxbury Chemistry Sample Custodian. The samples were received in good condition and no custody issues were noted. Samples were logged into Battelle LIMS and received unique IDs. After being received by the lab, the sediment trap samples were centrifuged to remove excess water. The samples were then stored in the walk-in freezer until preparation could begin.

	Reference Method	Method Blank	Surrogate Recovery	LCS Recovery	MS Recovery	LCS/LCSD, Laboratory Duplicate Relative Percent Difference	Detection Limits (ug/kg dry wt)
PCB Congeners	EPA 1668A and 8270C	< RL	40-120% Recovery	40-120% Recovery	40-120% Recovery (analyte conc. in MS must be >5x background)	≤30% RPD	16.13

METHOD: Sediment trap samples were extracted for PCB congeners following modified EPA Method 3545. Approximately 5 g of sediment was spiked with surrogates and extracted using an Accelerated Solvent Extractor (ASE). The extract was poured through a funnel and passed through glass wool and sodium sulfate. The extract was then brought to 100 mL; 10 mL was removed and continued on for further processing. The 10 mL split was treated with copper, solvent exchanged to hexane, and passed through a Florisil SPE cartridge. The post-Florisil extract was then brought to 10 mL, out of which 1 mL was removed to be fortified with internal standards (IS). Extracts designated for PCB congener analysis were analyzed using gas chromatography/mass spectrometry (GC/MS), following Battelle SOP 5-315 which is based on EPA Methods 1668A and 8270C. Sample data were quantified by the method of internal standards, using the IS compounds. Data was evaluated against sample specific reporting limits.

HOLDING TIMES: Sediments of this batch were extracted within 1 year of sample holding time for frozen sediments. All extracts were analyzed within 40 days of extract holding time.

Batch	Collection Date	Extraction Date	Analysis Date
08-0005	10/31/2007 – 12/07/2007	1/11/08	1/16/08-1/18/08

**PCB Congeners – Sediment Trap QA/QC Summary
Batch 08-0005**

LIST OF SAMPLES:

08-0005

Sample ID	Battelle ID
SS-ST04-111207	Q0930
SS-ST03-111207	Q0931
SS-ST02-111207	Q0932
SS-ST01-111207	Q0933
SS-ST01-111207DUP	Q0934
ST-04-103107-01	Q0718
ST-03-103107-01	Q0720
ST-02-103107-01	Q0722
ST-01-103107-01	Q0724
ST-01-103107-02	Q0725
ST-01-103107-03	Q0726
ST-01-121007-1	Q1173
ST-01-121007-2	Q1174
ST-01-121007-3	Q1175
ST-02-121007-1	Q1176
ST-03-121007-1	Q1178
ST-04-121007-1	Q1180

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.

08-0005 – PCB 28, and PCB 52 were detected in the PB at concentration slightly above the reporting limits and qualified with a “N”. The presence of these compounds in the PB does not have any impact on the data quality because the detected concentrations in the field samples were at least three orders of magnitude higher for these compounds.

**LABORATORY
CONTROL
SAMPLE:**

A pair of laboratory control (LCS) and laboratory control sample duplicate (LCSD) samples 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 the percent recoveries is calculated to measure the data quality in terms of precision.

08-0005 – No exceedence noted. All percent recoveries were within laboratory control limit of 40-120%.

MATRIX SPIKE

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.

08-0005 – The background sample was highly-contaminated with PCBs. Many of the target compounds were not spiked at a concentration > 5 x background, and therefore could not be used for data evaluation. For this reason, the MS sample was not diluted to resolve the concentrations qualified with “E”. Data were reported as is.

PCB Congeners – Sediment Trap QA/QC Summary

Batch 08-0005

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).

08-0005 – No exceedence noted. All surrogate recoveries were within laboratory control limit of 40-120%.

CALIBRATIONS: The GC/MS is calibrated with a minimum of a 6-point curve. The co-efficient of determination must be > 0.995 for each target analyte in the initial calibration (ICAL). Each batch of samples analyzed is bracketed by a continuing calibration check (CCC) sample, run at a frequency of every 12 hours (minimally). This percent difference (PD) between the ICAL and the CCC should be $< 25\%$ for individual analytes; additionally, an instrument calibration check (ICC) sample was run with the initial calibration. The PD for the ICC should be $< 25\%$ for each analyte.

08-0005 –

0 ICAL exceedence,

1 ICC exceedence: PCB 81 had a %D at 32.6% in the ICC due to standard impurity.

2 CCC exceedence: PCB 123 were responding slightly higher than criteria in two CCCs.

This slight overestimation should have limited impact on interpretation of the data.

TOC / Grain Size

Proj. No: **G-606422**
Proj. Name: **Sediment Traps - NBH**

SAMPLERS: Signature
Michael P. [Signature]

ANALYSIS REQUESTED →
"NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
10/31/07	1411	Q0718	ST-04-103107-1	station 4 1 st sed trap deployment		✓						✓			1
	1411	Q0719	ST-04-103107-2	" 4		✓						✓			1
	1422	Q0720	ST-03-103107-1	" 3		✓						✓			1
	1422	Q0721	ST-03-103107-2	" 3		✓						✓			1
	1431	Q0722	ST-02-103107-1	" 2		✓						✓			1
	1431	Q0723	ST-02-103107-2	" 2		✓						✓			1
	1441	Q0724	ST-01-103107-1	" 1		✓						✓			1
	1441	Q0725	ST-01-103107-2	" 1		✓						✓			1
	1441	Q0726	ST-01-103107-3	" 1		✓						✓			1

Relinquished by: Mike McKee	Date/Time		Received by: <i>Jeanine P. Seyfert</i>	Date/Time	
	11/01/07	12:00		11/1/07	12:00
Relinquished by:	Date/Time		Received by:	Date/Time	

Comments:

Proj. No G606422	Proj. Name New Bedford Harbor
---------------------	----------------------------------

SAMPLERS: Signature <i>Michael Walsh</i>				ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"		PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
DATE	TIME	Client ID BATTELLE ID	LIMS ID -CLIENT ID	SAMPLE DESCRIPTION												
11/12/2007	0950	SS-ST04-111207	Q0930	Surface Sediment from Sediment Trap keatrans			✓									1
11/12/2007	1016	SS-ST03-111207	Q0931	" " " "			✓									1
11/12/2007	1051	SS-ST02-111207	Q0932	" " " "			✓									1
11/12/2007	1105	SS-ST01-111207	Q0933	1 of 2	" "		✓									1
11/12/2007	1116	SS-ST01-111207-DUP		2 of 2	" " Q0934		✓									1

Relinquished by: <i>Michael Walsh</i>	Date/Time 11/12/2007 1545		Received by: <i>Jeannine Siefert</i>	Date/Time 11-12-07 15:45	
	Date/Time			Date/Time	

Comments:



Chain of Custody

Project Name: NBH Sed Traps
Project Number: G606422

Relinquished by: Mike McKee
Received by: *Jeanmi Light*

Date: 12-11-07
Date: *12-11-07*

Field Sample ID	Analytical Lab Sample ID	Sample Date (ddmmyy)	Sample Time (local)	Station ID	Analysis	No. of Containers	Size (liters)	Container Type	Preservative
ST-01-121007-1	<i>Q1173</i>	12-10-2007	0915	ST01	PCB, TOC, Grain Size	1	2	PE	NA
ST-01-121007-2	<i>Q1174</i>	12-10-2007	0915	ST01	PCB, TOC, Grain Size	1	2	PE	NA
ST-01-121007-3	<i>Q1175</i>	12-10-2007	0915	ST01	PCB, TOC, Grain Size	1	2	PE	NA
ST-02-121007-1	<i>Q1176</i>	12-10-2007	0910	ST02	PCB, TOC, Grain Size	1	2	PE	NA
ST-02-121007-2	<i>Q1177</i>	12-10-2007	0910	ST02	PCB, TOC, Grain Size	1	2	PE	NA
ST-03-121007-1	<i>Q1178</i>	12-10-2007	0900	ST03	PCB, TOC, Grain Size	1	2	PE	
ST-03-121007-2	<i>Q1179</i>	12-10-2007	0900	ST03	PCB, TOC, Grain Size	1	2	PE	
ST-04-121007-1	<i>Q1180</i>	12-10-2007	0855	ST04	PCB, TOC, Grain Size	1	2	PE	NA
ST-04-121007-2	<i>Q1181</i>	12-10-2007	0855	ST04	PCB, TOC, Grain Size	1	2	PE	NA

This is the corrected COC. Please see the corrective action for details.

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Deployment Nos. 3-5 and
Surface Sampling Event No. 2

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Project Client: USACE - North Atlantic Division
 Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
 Project Number: G606422-07DUXCHEM

Client ID	ST-01-041508-B	ST-01-041508-C	ST-02-041508-A	ST-03-041508-A	ST-04-041508-A	SS01-042208
Battelle ID	Q2744-P	Q2745-P	Q2746-P	Q2748-P	Q2750-P	Q2793-P
Sample Type	SA	SA	SA	SA	SA	SA
Collection Date	04/15/08	04/15/08	04/15/08	04/15/08	04/15/08	04/22/08
Extraction Date	07/17/08	07/17/08	07/17/08	07/17/08	07/17/08	07/17/08
Analysis Date	07/26/08	07/26/08	07/27/08	07/27/08	07/27/08	07/27/08
Analytical Instrument	MS	MS	MS	MS	MS	MS
% Moisture	75.49	73.74	74.88	74.06	75.98	67.25
% Lipid	NA	NA	NA	NA	NA	NA
Matrix	SEDIMENT TRAP	SEDIMENT TRAP				
Sample Size	1.08	1.14	1.25	1.30	1.20	1.69
Size Unit-Basis	G_DRY	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	UG/KG_DRY
CI2(8)	644.03	777.61	1263.73	1116.99	2299.82	1912.34
CI3(18)	2151.18	2733.89	4698.6 D	4669.49 D	8914.26 D	3834.4 D
CI3(28)	3686.37	4145.59 D	8130.16 D	7165.21 D	11642.27 D	9592.74 D
CI3(31)	3345.63	3866.87	6792.44 D	6366.65 D	12606.64 D	8325.15 D
CI3(37)	337.31	395.59	670.34	580.14	1113.17	951.07
CI4(44)	1887.39	2088.98	3822.36 D	3651.71 D	6667.89 D	3308.47 D
CI4(49)	5854.56 D	6318.25 D	11911.58 D	10782.12 D	21859.26 D	11673.16 D
CI4(52)	6474.27 D	7280.28 D	12970.05 D	12483.68 D	25372.96 D	10469.31 D
CI4(66)	885.09	1041.06	1923.96	1716.89	2914.75	2514.1 D
CI4(70)	650.48	715.67	1347.52	1195.66	2035.29	2140.9
CI4(74)	592.91	667.67	1244.17	1064.99	1862.2	1658.18
CI4(77)	129.77	135.08	184.26	178.75	281.96	249.69
CI4(81)	66.46 J	122.32 U	111.56 U	107.26 U	116.2 U	82.51 U
CI5(87)	157.18	225.42	335.77	264.51	548.34	349.22
CI5(99)	1618.91	1869.74	4606.22 D	4123.12 D	6558.19 D	3755.34 D
CI5(101)	1740.67	1895.92	4076.76 D	3791.54 D	5765.3 D	3571.27 D
CI5(105)	194.16	198.3	316.63	341.19	556.1	390.99
CI5(110)	2635.84	2914.03	5510.89 D	5100.62 D	9410.72 D	5130.69 D
CI5(114)	266.21	265	241.99	249.34	211.04	139.18
CI5(118)	1178.35	1324.23	2428.11	2305.89	4983.87 D	3380.19 D
CI5(123)	137.63	152.17	304.24	290.29	496.97	339.88
CI5(126)	129.12 U	122.32 U	111.56 U	107.26 U	116.2 U	82.51 U
CI6(128)	139.13	172.62	258.73	259.54	460.53	284.44
CI6(138)	455.88	471.89	796	802.03	1367.96	913.12
CI6(149)	2037.99	2154.49	4328.76 D	3848.38 D	6757.55 D	3564.15 D
CI6(151)	337.18	368.17	618.23	615.78	1219.04	578.48
CI6(153)	1693.36	1898.41	4309.02 D	4111.28 D	6379.07 D	3570.3 D
CI6(156)	144.98	143.19	233.28	219.33	384.18	268.34
CI6(157)	128.6 U	121.83 U	63.19 J	53.42 J	95.08 J	62.75 J
CI6(158)	211.61	189.95	284.8	277.93	440.63	336.39
CI6(167)	140.38	135.57	209.17	225.23	396.81	229.9
CI6(169)	129.12 U	122.32 U	111.56 U	107.26 U	97.95 J	82.51 U
CI7(170)	138.42	152.58	243.51	245.53	408.22	242.2
CI7(177)	62.29 J	84.4 J	96.41 J	98.75 J	195.23	106.94
CI7(180)	244.4	291.63	443	441.92	860.63	493.29
CI7(183)	113.68 J	107.52 J	197.75	176.14	297.9	193.77
CI7(187)	253.48	268.1	514	499.02	998.16	525.04
CI7(189)	128.6 U	121.83 U	38.82 J	106.84 U	65.23 J	30.92 J
CI8(194)	128.6 U	124.08	114.91	96.6 J	191.57	134.75
CI8(195)	128.6 U	121.83 U	111.11 U	106.84 U	82.89 J	47.55 J
CI8(201)	128.6 U	121.83 U	57.95 J	106.84 U	115.74 U	82.18 U
CI8(203)	128.6 U	121.83 U	142.69	164.2	247.76	144.6
CI9(206)	15.63 J	48.69 J	35.22 J	28 J	100.6 J	70.95 J
CI10(209)	12.34 J	49.07 J	28.36 J	17.94 J	41.92 J	22.53 J

Surrogate Recoveries (%)

CI3(34)	90	103	94	85	91	94
CI6(152)	84	94	84	76	81	86



Project Client: USACE - North Atlantic Division
 Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
 Project Number: G606422-07DUXCHEM

Client ID	SS02-042208	SS03-042208	SS04-042208	SS01-042208-DUP	ST-04-051508-A	ST-03-051508-A
Battelle ID	Q2794-P	Q2795-P	Q2796-P	Q2797-P	Q2879-P	Q2881-P
Sample Type	SA	SA	SA	SA	SA	SA
Collection Date	04/22/08	04/22/08	04/22/08	04/22/08	05/15/08	05/15/08
Extraction Date	07/17/08	07/17/08	07/17/08	07/17/08	07/17/08	07/17/08
Analysis Date	07/27/08	07/27/08	07/27/08	07/27/08	07/27/08	07/28/08
Analytical Instrument	MS	MS	MS	MS	MS	MS
% Moisture	66.29	63.96	47.4	69.35	79.03	80.31
% Lipid	NA	NA	NA	NA	NA	NA
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT TRAP	SEDIMENT TRAP
Sample Size	1.69	1.80	2.74	1.54	1.10	0.98
Size Unit-Basis	G_DRY	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	UG/KG_DRY
CI2(8)	1353.87	2021.44	748.2	2316.33	1188.43	1135.11
CI3(18)	3439.46 D	5515.36 D	2224 D	4791.14 D	5448.59 D	4238.42
CI3(28)	10622.8 D	11475.25 D	3144.39 D	10128.23 D	9160.46 D	8544.93 D
CI3(31)	10611.97 D	10928.57 D	2950.03 D	9978.66 D	8443.61 D	6712.76 D
CI3(37)	993.38	1111.73	241.46	1198.34	771.14	734.51
CI4(44)	3127.58 D	4227.73 D	1639.63	3379.89 D	4074.95	3200.62
CI4(49)	15320.96 D	16047.83 D	4006.94 D	12635.5 D	13563.71 D	10579.31 D
CI4(52)	12115.55 D	15977.21 D	4404.55 D	11275.11 D	14956.62 D	12010.15 D
CI4(66)	2537.38 D	2762.62 D	676.42	2986.98 D	2141.79	1942.85
CI4(70)	1981.48	2048.36 D	458.86	2345.66	1490.01	1343.76
CI4(74)	1804.33	1921.26	510.76	1858.34	1461.45	1284.68
CI4(77)	237.06	263.41	77.48	260.95	232.72	217.52
CI4(81)	82.51 U	77.47 U	50.89 U	90.55 U	126.77 U	142.29 U
CI5(87)	375.11	426.88	122.5	413.34	345.61	297.04
CI5(99)	4557.04 D	4870.36 D	1092.09	4484.38 D	5370.51 D	3447.18
CI5(101)	4342.8 D	4470.25 D	1100.32	4512.28 D	4235.96 D	3629.85
CI5(105)	433.59	480.78	109.48	448.94	400.38	335.75
CI5(110)	6512.13 D	6817.45 D	2130.08 D	5829.13 D	6639.42 D	6722.65 D
CI5(114)	129.95	183.39	109.91	176.68	217.4	264.4
CI5(118)	3920.97 D	3539.68 D	752.42	3793.45 D	2921.1	2465.95
CI5(123)	403.53	464.49	91.73	379.95	374.33	299.38
CI5(126)	82.51 U	77.47 U	50.89 U	90.55 U	126.77 U	142.29 U
CI6(128)	349.12	319.83	80.22	286.99	300.55	260.5
CI6(138)	1046.93	1077.65	230.48	950.12	968.98	869.44
CI6(149)	3897.4 D	5724 D	1283.47	4217.21 D	4932.75 D	4407.34 D
CI6(151)	693.74	817.01	209.42	628.1	807.37	645.64
CI6(153)	4603.99 D	4667.28 D	1045.52	4194.91 D	4629.92 D	3566.67
CI6(156)	293.97	298.51	62.53	286.06	272.11	250.92
CI6(157)	67.81 J	74.53 J	50.69 U	67.48 J	61.74 J	76.8 J
CI6(158)	352.94	385.58	96.51	305.37	383.03	346.75
CI6(167)	267.99	307.03	77.61	237.51	264.41	256.76
CI6(169)	82.51 U	62.09 J	50.89 U	90.55 U	126.77 U	142.29 U
CI7(170)	289	298.57	63.06	250.01	286.95	255.36
CI7(177)	134.48	146.51	38.51 J	97.97	150.8	97.14 J
CI7(180)	577.39	618.78	130.61	510.7	584.39	438.25
CI7(183)	219.59	253.42	57.03	213.59	216.04	192.28
CI7(187)	664.16	733.12	152.53	582.37	635.38	557.78
CI7(189)	40.98 J	33 J	50.69 U	28.55 J	33.99 J	141.72 U
CI8(194)	140.38	153.42	28.89 J	132.47	167.7	134.93 J
CI8(195)	60.13 J	45.6 J	50.69 U	90.19 U	126.26 U	141.72 U
CI8(201)	53.73 J	49.75 J	50.69 U	50.81 J	126.26 U	141.72 U
CI8(203)	181.86	185.43	37.64 J	143.93	188.28	141.72 U
CI9(206)	81.61 J	90.78	15.68 J	55.09 J	53.78 J	90.38 J
CI10(209)	31.6 J	28.99 J	50.69 U	27.1 J	126.26 U	141.72 U

Surrogate Recoveries (%)

CI3(34)	91	94	89	93	85	85
CI6(152)	81	84	78	82	76	79



Project Client: USACE - North Atlantic Division
 Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
 Project Number: G606422-07DUXCHEM

Client ID	ST-02-051508-A	ST-01-051508-B	ST-01-051508-C	ST-01-061108-B	ST-01-061108-C	ST-02-061108-A
Battelle ID	Q2883-P	Q2886-P	Q2887-P	Q3079-P	Q3080-P	Q3081-P
Sample Type	SA	SA	SA	SA	SA	SA
Collection Date	05/15/08	05/15/08	05/15/08	06/11/08	06/11/08	06/11/08
Extraction Date	07/17/08	07/17/08	07/17/08	07/17/08	07/17/08	07/17/08
Analysis Date	07/28/08	07/28/08	07/28/08	07/28/08	07/28/08	07/28/08
Analytical Instrument	MS	MS	MS	MS	MS	MS
% Moisture	76.21	83.89	83.72	79.03	75.91	67.9
% Lipid	NA	NA	NA	NA	NA	NA
Matrix	SEDIMENT TRAP					
Sample Size	1.18	0.80	0.82	1.04	1.28	1.59
Size Unit-Basis	G_DRY	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	UG/KG_DRY
CI2(8)	1384.28	832.42	894.98	2318.06	2762.66	3226.4 D
CI3(18)	5677.33 D	3122.68	3425.23	7859.03 D	8673.7 D	8472.97 D
CI3(28)	11132.2 D	5061.77 D	5464.33 D	12674.81 D	11620.01 D	13520.13 D
CI3(31)	9366.5 D	4675.43 D	5132.51 D	10699.23 D	11681.36 D	12573.76 D
CI3(37)	950.12	459.19	470.13	1134.94	1147.81	1257.04
CI4(44)	4166.03 D	2175.09	2372.93	4836.78 D	4963 D	5201.64 D
CI4(49)	13273.16 D	7215.42 D	7546.79 D	14335.28 D	15999.94 D	19026.7 D
CI4(52)	15169.61 D	7977.01 D	8564.41 D	16317.74 D	17420.6 D	20509.02 D
CI4(66)	2617.03	1162.73	1325.56	3277.05	3113.42	3707.36 D
CI4(70)	1790.21	864.81	935.17	2356.42	2447.86	2942.68 D
CI4(74)	1754.47	809.12	895.67	1964.96	1890.74	2028.32
CI4(77)	260.38	169.38 J	169.27 J	284.61	286.26	311.63
CI4(81)	118.17 U	174.31 U	170.05 U	134.08 U	108.94 U	87.7 U
CI5(87)	343.88	194.63	227.63	652.05	681.85	830.57
CI5(99)	4980.72 D	1876.48	2111.96	6330.1 D	5821.53 D	6636.02 D
CI5(101)	4348.02 D	2199.43	2292.75	5488.06 D	5800.54 D	6369.72 D
CI5(105)	455.35	199.25	224.52	689.05	665.93	776.43
CI5(110)	8897.88 D	3129.3	3411.71	7229.89 D	8373.76 D	9367.73 D
CI5(114)	247.38	325.39	320.57	226.68	179.41	134.91
CI5(118)	4512.59 D	1395.98	1562.66	5334.38 D	5205.99 D	5144.24 D
CI5(123)	398.34	175.12	176.21	455.59	510.84	564.84
CI5(126)	118.17 U	174.31 U	170.05 U	134.08 U	108.94 U	87.7 U
CI6(128)	344.4	193.45	149.55 J	414.39	479.78	530.93
CI6(138)	1072.6	484.84	563.19	1483.96	1448.41	1750.51
CI6(149)	5711.56 D	2354.45	2626.23	5193.3 D	6300.89 D	6858.05 D
CI6(151)	774.62	382.21	422.03	870.29	960.3	1262.94
CI6(153)	4800.82 D	1941.91	2187.24	5488.14 D	5410.11 D	6745.46 D
CI6(156)	308.09	165.07 J	159.76 J	369.68	393.49	410.7
CI6(157)	84 J	173.61 J	63.96 J	97.87 J	76.95 J	85.87 J
CI6(158)	344.74	229.25	233.44	447.51	448.1	541.3
CI6(167)	292.1	145.77 J	151.18 J	312.31	312	383.77
CI6(169)	118.17 U	174.31 U	170.05 U	134.08 U	108.94 U	87.7 U
CI7(170)	287.94	174.21	187.42	309.59	350.34	408.5
CI7(177)	121.93	65.37 J	60.38 J	147.35	137.9	184.06
CI7(180)	594.11	281.15	328.52	697.46	644.28	834.93
CI7(183)	237.23	117.48 J	118.62 J	264.78	259.9	302.84
CI7(187)	650.72	298.65	315.56	765.15	760.01	1007.51
CI7(189)	48.52 J	173.61 U	169.38 U	49.66 J	108.51 U	48.86 J
CI8(194)	161.01	66.08 J	169.38 U	158.46	172.71	197.1
CI8(195)	70.48 J	173.61 U	169.38 U	72.5 J	108.51 U	68.15 J
CI8(201)	117.7 U	173.61 U	169.38 U	69.8 J	108.51 U	56.49 J
CI8(203)	191.67	173.61 U	144.63 J	205.06	184.45	223.1
CI9(206)	64.71 J	173.61 U	169.38 U	75.2 J	76.59 J	104.07
CI10(209)	23.12 J	173.61 U	169.38 U	23.53 J	24.06 J	32.58 J

Surrogate Recoveries (%)

CI3(34)	90	85	95	89	90	91
CI6(152)	85	78	88	84	84	85



Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM
Client ID ST-04-061108-A ST-03-061108-A

Battelle ID	Q3083-P	Q3085-P
Sample Type	SA	SA
Collection Date	06/11/08	06/11/08
Extraction Date	07/17/08	07/17/08
Analysis Date	07/28/08	07/28/08
Analytical Instrument	MS	MS
% Moisture	72.8	76.62
% Lipid	NA	NA
Matrix	SEDIMENT TRAP	SEDIMENT TRAP
Sample Size	1.42	1.21
Size Unit-Basis	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY

Cl2(8)	2617.82	2262.56
Cl3(18)	10476.1 D	8865.01 D
Cl3(28)	14588.01 D	13746.49 D
Cl3(31)	14188.62 D	12865.96 D
Cl3(37)	1506.59	1407.02
Cl4(44)	6645.89 D	6450.8 D
Cl4(49)	23428.11 D	19929.82 D
Cl4(52)	26312.38 D	22642.86 D
Cl4(66)	3633.26 D	3964.74 D
Cl4(70)	2897.5 D	2861.35
Cl4(74)	2484.63	2292.4
Cl4(77)	372.95	338.41
Cl4(81)	98.2 U	115.24 U
Cl5(87)	854.39	929.57
Cl5(99)	8222.48 D	7061.3 D
Cl5(101)	7339.22 D	7123.05 D
Cl5(105)	847.25	919.23
Cl5(110)	11904.7 D	9908.2 D
Cl5(114)	129.34	175.24
Cl5(118)	5923.24 D	5938.8 D
Cl5(123)	600.51	572.17
Cl5(126)	98.2 U	115.24 U
Cl6(128)	550.8	600.57
Cl6(138)	1594.2	2045.39
Cl6(149)	8413.17 D	8217.08 D
Cl6(151)	1229.65	1267.16
Cl6(153)	8100.69 D	7419.54 D
Cl6(156)	438.28	543.8
Cl6(157)	113.25	145.92
Cl6(158)	616.47	573.25
Cl6(167)	426.7	401.85
Cl6(169)	98.2 U	115.24 U
Cl7(170)	399.64	478.88
Cl7(177)	177.64	200.72
Cl7(180)	893.36	905.96
Cl7(183)	331.54	330.44
Cl7(187)	1014.78	1022.86
Cl7(189)	58.24 J	49.66 J
Cl8(194)	227.85	214.06
Cl8(195)	97.81 U	110.25 J
Cl8(201)	97.81 U	114.78 U
Cl8(203)	252.61	267.27
Cl9(206)	117.71	101.06 J
Cl10(209)	30.34 J	35.05 J

Surrogate Recoveries (%)

Cl3(34)	83	82
Cl6(152)	76	76



Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM
Client ID Procedural Blank

Battelle ID	BM032PB-P
Sample Type	PB
Collection Date	07/17/08
Extraction Date	07/17/08
Analysis Date	07/26/08
Analytical Instrument	MS
% Moisture	73.19
% Lipid	NA
Matrix	SEDIMENT
Sample Size	1.35
Size Unit-Basis	G_DRY
Units	UG/KG_DRY

Cl2(8)	102.88 U
Cl3(18)	102.88 U
Cl3(28)	103.29 U
Cl3(31)	102.88 U
Cl3(37)	103.29 U
Cl4(44)	103.29 U
Cl4(49)	102.88 U
Cl4(52)	102.88 U
Cl4(66)	102.88 U
Cl4(70)	102.88 U
Cl4(74)	102.88 U
Cl4(77)	102.88 U
Cl4(81)	103.29 U
Cl5(87)	103.29 U
Cl5(99)	102.88 U
Cl5(101)	102.88 U
Cl5(105)	102.88 U
Cl5(110)	103.29 U
Cl5(114)	102.88 U
Cl5(118)	103.29 U
Cl5(123)	103.29 U
Cl5(126)	103.29 U
Cl6(128)	103.29 U
Cl6(138)	102.88 U
Cl6(149)	102.88 U
Cl6(151)	103.29 U
Cl6(153)	103.29 U
Cl6(156)	103.29 U
Cl6(157)	102.88 U
Cl6(158)	102.88 U
Cl6(167)	102.88 U
Cl6(169)	103.29 U
Cl7(170)	102.88 U
Cl7(177)	102.88 U
Cl7(180)	103.29 U
Cl7(183)	103.29 U
Cl7(187)	103.29 U
Cl7(189)	102.88 U
Cl8(194)	102.88 U
Cl8(195)	102.88 U
Cl8(201)	102.88 U
Cl8(203)	102.88 U
Cl9(206)	102.88 U
Cl10(209)	102.88 U

Surrogate Recoveries (%)

Cl3(34)	83
Cl6(152)	87



Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM 060208-03: Sand, White
 Client ID Quartz, -50+70

Battelle ID	BM033LCS-P			
Sample Type	LCS			
Collection Date	07/17/08			
Extraction Date	07/17/08			
Analysis Date	07/26/08			
Analytical Instrument	MS			
% Moisture	NA			
% Lipid	NA			
Matrix	SEDIMENT			
Sample Size	5.17			
Size Unit-Basis	G_DRY			
Units	UG/KG_DRY	Target	% Recovery	Qualifier
C12(8)	671.21	776.02	86	
C13(18)	654.3	776.02	84	
C13(28)	616.04	774.47	80	
C13(31)	61.68			
C13(37)	26.97			U
C14(44)	699.86	775.24	90	
C14(49)	26.86			U
C14(52)	719.86	773.69	93	
C14(66)	738.46	774.47	95	
C14(70)	26.86			U
C14(74)	26.86			U
C14(77)	678.56	773.69	88	
C14(81)	26.97			U
C15(87)	26.97			U
C15(99)	26.86			U
C15(101)	640.47	775.24	83	
C15(105)	737.36	774.47	95	
C15(110)	26.97			U
C15(114)	60.06			
C15(118)	625.91	774.47	81	
C15(123)	26.97			U
C15(126)	698.6	778.34	90	
C16(128)	705.87	778.34	91	
C16(138)	596.88	775.24	77	
C16(149)	26.86			U
C16(151)	26.97			U
C16(153)	682.11	774.47	88	
C16(156)	26.97			U
C16(157)	26.86			U
C16(158)	26.86			U
C16(167)	26.86			U
C16(169)	26.97			U
C17(170)	668.14	777.56	86	
C17(177)	26.86			U
C17(180)	723.52	776.79	93	
C17(183)	26.97			U
C17(187)	696.8	776.02	90	
C17(189)	26.86			U
C18(194)	26.86			U
C18(195)	667.7	776.02	86	
C18(201)	26.86			U
C18(203)	26.86			U
C19(206)	749.25	776.02	97	
C110(209)	752.09	774.47	97	

Surrogate Recoveries (%)

C13(34)	91
C16(152)	93



Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM
Client ID SS01-042208 SS01-042208

Battelle ID	Q2793-P	Q2793MS-P				
Sample Type	SA	MS				
Collection Date	04/22/08	4/22/2008				
Extraction Date	07/17/08	7/17/2008				
Analysis Date	07/27/08	7/27/2008				
Analytical Instrument	MS	MS				
% Moisture	67.25	67.62				
% Lipid	NA	NA				
Matrix	SEDIMENT	SEDIMENT				
Sample Size	1.69	1.64				
Size Unit-Basis	G_DRY	G_DRY				
Units	UG/KG_DRY	UG/KG_DRY		Target	% Recovery	Qualifier
Cl2(8)	1912.34	4548.31	D	2446.34	108	
Cl3(18)	3834.4 D	6042.06	D	2446.34	90	
Cl3(28)	9592.74 D	10861.76	D	2441.46	52	
Cl3(31)	8325.15 D	8406.61	D			
Cl3(37)	951.07	815.05				
Cl4(44)	3308.47 D	4705.39	D	2443.90	57	
Cl4(49)	11673.16 D	10134.93	D			
Cl4(52)	10469.31 D	11727.27	D	2439.02	52	
Cl4(66)	2514.1 D	4231.88	D	2441.46	70	
Cl4(70)	2140.9	1770.42				
Cl4(74)	1658.18	1403.68				
Cl4(77)	249.69	2242.98		2439.02	82	
Cl4(81)	82.51 U	85.03	U			
Cl5(87)	349.22	311.77				
Cl5(99)	3755.34 D	3872.63	D			
Cl5(101)	3571.27 D	5265.46	D	2443.90	69	
Cl5(105)	390.99	2143.38	D	2441.46	72	
Cl5(110)	5130.69 D	5046.61	D			
Cl5(114)	139.18	137.71				
Cl5(118)	3380.19 D	4781.1	D	2441.46	57	
Cl5(123)	339.88	287.12				
Cl5(126)	82.51 U	2208.41		2453.66	90	
Cl6(128)	284.44	1684.49	D	2453.66	57	
Cl6(138)	913.12	3151.63	D	2443.90	92	
Cl6(149)	3564.15 D	3843.78	D			
Cl6(151)	578.48	502.04				
Cl6(153)	3570.3 D	5016.5	D	2441.46	59	
Cl6(156)	268.34	221.11				
Cl6(157)	62.75 J	78.55	J			
Cl6(158)	336.39	252.28				
Cl6(167)	229.9	210.84				
Cl6(169)	82.51 U	85.03	U			
Cl7(170)	242.2	2150.71		2451.22	78	
Cl7(177)	106.94	83.62	J			
Cl7(180)	493.29	2965.33	D	2448.78	101	
Cl7(183)	193.77	160.15				
Cl7(187)	525.04	2059.28	D	2446.34	63	
Cl7(189)	30.92 J	84.69	U			
Cl8(194)	134.75	99.5				
Cl8(195)	47.55 J	2023.24		2446.34	81	
Cl8(201)	82.18 U	84.69	U			
Cl8(203)	144.6	132.64				
Cl9(206)	70.95 J	2076.19		2446.34	82	
Cl10(209)	22.53 J	1992.54		2441.46	81	

Surrogate Recoveries (%)

Cl3(34)	94	87
Cl6(152)	86	76



Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM
Client ID SS01-042208

Battelle ID	Q2793MSD-P					
Sample Type	MSD					
Collection Date	4/22/2008					
Extraction Date	7/17/2008					
Analysis Date	7/27/2008					
Analytical Instrument	MS					
% Moisture	67.87					
% Lipid	NA					
Matrix	SEDIMENT					
Sample Size	1.69					
Size Unit-Basis	G_DRY					
Units	UG/KG_DRY		Target	% Recovery	Qualifier	RPD (%)
						Qualifier
Cl2(8)	4669	D	2373.96	116		7.1
Cl3(18)	6053.73	D	2373.96	93		3.3
Cl3(28)	10116.75	D	2369.23	22		81.1
Cl3(31)	8892.11	D				
Cl3(37)	1009.68					
Cl4(44)	5263.07	D	2371.60	82		36.0
Cl4(49)	11600.79	D				
Cl4(52)	12260.44	D	2366.86	76		37.5
Cl4(66)	4406.46	D	2369.23	80		13.3
Cl4(70)	2015.21					
Cl4(74)	1569.37					
Cl4(77)	2640.7	D	2366.86	101		20.8
Cl4(81)	82.51	U				
Cl5(87)	370.37					
Cl5(99)	4170.43	D				
Cl5(101)	5131.58	D	2371.60	66		4.4
Cl5(105)	2269.17	D	2369.23	79		9.3
Cl5(110)	5090.85	D				
Cl5(114)	130.76					
Cl5(118)	4975.2	D	2369.23	67		16.1
Cl5(123)	306.68					
Cl5(126)	1822.07	D	2381.07	77		15.6
Cl6(128)	2025.49	D	2381.07	73		24.6
Cl6(138)	3339.6	D	2371.60	102		10.3
Cl6(149)	3911.33	D				
Cl6(151)	507.19					
Cl6(153)	5211.72	D	2369.23	69		15.6
Cl6(156)	213.98					
Cl6(157)	71.06	J				
Cl6(158)	268.89					
Cl6(167)	209.91					
Cl6(169)	82.51	U				
Cl7(170)	2740.38	D	2378.70	105		29.5
Cl7(177)	97.66					
Cl7(180)	2671.7	D	2376.33	92		9.3
Cl7(183)	165.96					
Cl7(187)	2638.1	D	2373.96	89		34.2
Cl7(189)	82.18	U				
Cl8(194)	128.35					
Cl8(195)	2263.54	D	2373.96	93		13.8
Cl8(201)	82.18	U				
Cl8(203)	162.72					
Cl9(206)	2125.59	D	2373.96	87		5.9
Cl10(209)	2253.29	D	2369.23	94		14.9

Surrogate Recoveries (%)

Cl3(34)	94
Cl6(152)	81

PCB Congeners – Sediment Trap QA/QC Summary
Batch 08-0170

PROJECT: New Bedford Harbor Sediment Trap Study (USACE)
PARAMETER: PCB Congeners
LABORATORY: Battelle, Duxbury, MA
MATRIX: Sediment Trap Samples
SAMPLE CUSTODY: Surface sediment and sediment trap samples were collected on 4/15/08, 4/22/08, 5/15/08, and 6/11/08. Samples arrived in four shipments, and were hand delivered to the Battelle Duxbury Chemistry Sample Custodian. The samples were received in good condition and no custody issues were noted. Samples were logged into Battelle LIMS and received unique IDs. After being received by the lab, the sediment trap samples were centrifuged to remove excess water. The samples were then stored in the walk-in freezer until preparation could begin.

	Reference Method	Method Blank	Surrogate Recovery	LCS Recovery	MS Recovery	LCS/LCSD, Laboratory Duplicate Relative Percent Difference	Detection Limits (ug/kg dry wt)
PCB Congeners	EPA 1668A and 8270C	< RL	40-120% Recovery	40-120% Recovery	40-120% Recovery (analyte conc. in MS must be >5x background)	≤30% RPD	103.29

METHOD: Sediment trap samples were extracted for PCB congeners following modified EPA Method 3545. Sediments were air-dried overnight and approximately 5 g of sediment was spiked with surrogates and extracted using an Accelerated Solvent Extractor (ASE). The extract was poured through a funnel and passed through glass wool and sodium sulfate. The extract was then brought to 100 mL; 10 mL was removed and continued on for further processing. The 10 mL split was treated with copper, solvent exchanged to hexane, and passed through a Florisil SPE cartridge. The post-Florisil extract was then brought to 10 mL, out of which 1 mL was removed to be fortified with internal standards (IS). Extracts designated for PCB congener analysis were analyzed using gas chromatography/mass spectrometry (GC/MS), following Battelle SOP 5-315 which is based on EPA Methods 1668A and 8270C. Sample data were quantified by the method of internal standards, using the IS compounds. Data was evaluated against sample specific reporting limits.

HOLDING TIMES: Sediments of this batch were extracted within 1 year of sample holding time for frozen sediments. All extracts were analyzed within 40 days of extract holding time.

Batch	Collection Date	Extraction Date	Analysis Date
08-0170	4/15/2008 – 6/11/2008	7/17/08	7/26/08-7/28/08

**PCB Congeners – Sediment Trap QA/QC Summary
Batch 08-0170**

LIST OF SAMPLES:

08-0005

Sample ID	Battelle ID
ST-01-041508B	Q2744
ST-01-041508C	Q2745
ST-02-041508A	Q2746
ST-03-041508A	Q2748
ST-04-041508A	Q2750
SS01-042208	Q2793
SS02-042208	Q2794
SS03-042208	Q2795
SS04-042208	Q2796
SS01-042208DUP	Q2797
ST-04-051508-A	Q2879
ST-03-051508-A	Q2881
ST-02-051508-A	Q2883
ST-01-051508-B	Q2886
ST-01-051508-C	Q2887
ST-01-061108-B	Q3079
ST-01-061108-C	Q3080
ST-02-061108-A	Q3081
ST-04-061108-A	Q3083
ST-03-061108-A	Q3085

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.

08-0170 – No exceedences noted. No target analytes were detected in the blank sample.

**LABORATORY
CONTROL
SAMPLE:**

A pair of laboratory control (LCS) and laboratory control sample duplicate (LCSD) samples 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 the percent recoveries is calculated to measure the data quality in terms of precision.

08-0170 – No exceedence noted. All percent recoveries of spiked analytes were within laboratory control limit of 40-120%.

MATRIX SPIKE

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.

08-0170 – No exceedence noted. All percent recoveries of spiked analytes were within laboratory control limit of 40-120%. All RPDs were within laboratory control limit of <30%.

PCB Congeners – Sediment Trap QA/QC Summary

Batch 08-0170

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).

08-0170 – No exceedence noted. All surrogate recoveries were within laboratory control limit of 40-120%.

CALIBRATIONS: The GC/MS is calibrated with a minimum of a 6-point curve. The co-efficient of determination must be > 0.995 for each target analyte in the initial calibration (ICAL). Each batch of samples analyzed is bracketed by a continuing calibration check (CCC) sample, run at a frequency of every 12 hours (minimally). This percent difference (PD) between the ICAL and the CCC should be $< 25\%$ for individual analytes; additionally, an instrument calibration check (ICC) sample was run with the initial calibration. The PD for the ICC should be $< 25\%$ for each analyte.

08-0170 –

0 ICAL exceedence,

1 ICC exceedence: PCB 81 exceeded the %D criteria in the ICC due to standard impurity.

0 CCC exceedence: PCB 123 were responding slightly higher than criteria in two CCCs.

This slight overestimation should have limited impact on interpretation of the data.



Chain of Custody

Project Name: NBH Sed Traps
 Project Number: G606422

Relinquished by: Mike McKee
 Received by: *Jocanne Aghd*

Date: 04-16-08
 Date: *4-17-08*

Field Sample ID	Analytical Lab Sample ID	Sample Date (ddmmmyy)	Sample Time (local)	Station ID	Analysis ¹	No. of Containers	Size (liters)	Container Type	Preservative
ST-01-041508-A	<i>Q2743</i>	04-15-2008	1556	ST01	PCB, TOC, Grain Size	1	2	PE	NA
ST-01-041508-B	<i>Q2744</i>	04-15-2008	1556	ST01	PCB, TOC, Grain Size	1	2	PE	NA
ST-01-041508-C	<i>Q2745</i>	04-15-2008	1556	ST01	PCB, TOC, Grain Size	1	2	PE	NA
ST-02-041508-A	<i>Q2746</i>	04-15-2008	1620	ST02	PCB, TOC, Grain Size	1	2	PE	NA
ST-02-041508-B	<i>Q2747</i>	04-15-2008	1620	ST02	PCB, TOC, Grain Size	1	2	PE	NA
ST-03-041508-A	<i>Q2748</i>	04-15-2008	1438	ST03	PCB, TOC, Grain Size	1	2	PE	NA
ST-03-041508-B	<i>Q2749</i>	04-15-2008	1438	ST03	PCB, TOC, Grain Size	1	2	PE	NA
ST-04-041508-A	<i>Q2750</i>	04-15-2008	1637	ST04	PCB, TOC, Grain Size	1	2	PE	NA
ST-04-041508-B	<i>Q2751</i>	04-15-2008	1637	ST04	PCB, TOC, Grain Size	1	2	PE	NA

¹ All sediment trap samples will be allowed to settle overnight at 4°C. On the following day, overlying water will be decanted and remaining sediment slurry will be centrifuged to remove excessive water. The weight of each centrifuged sample will be weighed to assess reproducibility of total mass at each location. PCB, TOC, and grain size analyses will be conducted on 1 of 2 samples at ST-02, 03, and 04. PCB, TOC, and grain size analyses will be conducted on 2 of 3 samples collected at ST-01. Samples designated for PCB analysis will be frozen until sample analysis starts. Samples designated for TOC and grain size analyses will be shipped to Applied Marine Sciences located in League City, TX.

Sample Receipt FormApproved: Authorized

Project Number: G606422 Client: _____
Received by: Seyfert, Jeannine Date/Time Received: Thursday, April 24, 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	Cooler	NA	None	Not Applicable	Intact	4.0	5

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): 4 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: Field Room II: Refrigerator - R0004 (Lower Col BDO IDs Assigned: Q2793 - Q2797

Samples logged in by: Seyfert, Jeannine Date/Time: 04/24/2008 12:00 AM

Approved By: _____ Approved On: _____

Authorized By: _____ Authorized On: _____

Sample Receipt Form Details

Approved: Authorized

Project Number: G606422 Client: _____

Received by: Seyfert, Jeannine Date/Time Received: Thursday, April 24, 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:
Q2793	SS01-042208	04/22/08 9:45	04/24/08 16:13	1	SEDIMENT	4	NA	NA	NA	F0002 (Walk-in)			
Q2794	SS02-042208	04/22/08 10:30	04/24/08 16:13	1	SEDIMENT	4	NA	NA	NA	F0002 (Walk-in)			
Q2795	SS03-042208	04/22/08 9:08	04/24/08 16:14	1	SEDIMENT	4	NA	NA	NA	F0002 (Walk-in)			
Q2796	SS04-042208	04/22/08 8:18	04/24/08 16:14	1	SEDIMENT	4	NA	NA	NA	F0002 (Walk-in)			
Q2797	SS01-042208-DUP	04/22/08 10:05	04/24/08 16:14	1	SEDIMENT	4	NA	NA	NA	F0002 (Walk-in)			

Total Samples: 5



Chain of Custody

Project Name: NBH Sed Traps
Project Number: G606422

Relinquished by: Mike McKee

Received by: *Jeannine Lyft*

Date: 04-23-08

Date: 4-24-08

Field Sample ID	Analytical Lab Sample ID	Sample Date (ddmmmyy)	Sample Time (local)	Station ID	Analysis ¹	No. of Containers	Size (liters)	Container Type	Preservative
SS01-042208	Q2793	04-22-2008	0945	ST01	PCB	1	0.5	PC glass	NA
SS02-042208	Q2794	04-22-2008	1030	ST02	PCB	1	0.5	PC glass	NA
SS03-042208	Q2795	04-22-2008	0908	ST03	PCB	1	0.5	PC glass	NA
SS04-042208	Q2796	04-22-2008	0818	ST04	PCB	1	0.5	PC glass	NA
SS01-042208-DUP	Q2797	04-22-2008	1005	ST01	PCB ¹	1	0.5	PC glass	NA

¹ The field sampling plan did not specify field duplicates for sediment grab analysis. Please contact Deirdre before running the duplicate sample.

Sample Receipt FormApproved: Authorized Project Number: G606422

Client: _____

Received by: Seyfert, JeannineDate/Time Received: Friday, May 16, 2008 12:00 AMNo. of Shipping Containers: 1**SHIPMENT**Method of Delivery: Hand DeliveredTracking Number: NACOC 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	Cooler	NA	None	Not Applicable	Intact	4.0	9

SamplesSample 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): 4 Temperature Blank used Yes No*(Note: If temperature upon receipt differs from required conditions, see sample log comment field)*Samples Acidified: Yes No UnknownInitial 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.: UnknownStorage Location: Field Room II: Refrigerator - R0004 (Lower Col BDO IDs Assigned: Q2879 - Q2887Samples logged in by: Seyfert, Jeannine Date/Time: 05/16/2008 12:00 AM

Approved By: _____

Approved On: _____

Authorized By: _____

Authorized On: _____

Sample Receipt Form Details

Approved: Authorized:

Project Number: G606422 Client: _____

Received by: Seyfert, Jeannine Date/Time Received: Friday, May 16, 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:
Q2879	ST-04-051508-A	05/15/08 14:38	05/19/08 16:45	1	SEDIMENT TRA	4	NA	NA	NA	R0004 (Lower C			
Q2880	ST-04-051508-B	05/15/08 14:38	05/19/08 16:45	1	SEDIMENT TRA	4	NA	NA	NA	R0004 (Lower C			
Q2881	ST-03-051508-A	05/15/08 14:59	05/19/08 16:45	1	SEDIMENT TRA	4	NA	NA	NA	R0004 (Lower C			
Q2882	ST-03-051508-B	05/15/08 14:59	05/19/08 16:45	1	SEDIMENT TRA	4	NA	NA	NA	R0004 (Lower C			
Q2883	ST-02-051508-A	05/15/08 15:36	05/19/08 16:46	1	SEDIMENT TRA	4	NA	NA	NA	R0004 (Lower C			
Q2884	ST-02-051508-B	05/15/08 15:36	05/19/08 16:46	1	SEDIMENT TRA	4	NA	NA	NA	R0004 (Lower C			
Q2885	ST-01-051508-A	05/15/08 15:52	05/19/08 16:46	1	SEDIMENT TRA	4	NA	NA	NA	R0004 (Lower C			
Q2886	ST-01-051508-B	05/15/08 15:52	05/19/08 16:46	1	SEDIMENT TRA	4	NA	NA	NA	R0004 (Lower C			
Q2887	ST-01-051508-C	05/15/08 15:52	05/19/08 16:47	1	SEDIMENT TRA	4	NA	NA	NA	R0004 (Lower C			

Total Samples: 9

OTHER TOC/Grain Size

Proj. No GG06422	Proj. Name Sediment Trap-NBH
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SAMPLERS: Signature
Michael P. Mc...

ANALYSIS REQUESTED →
"NUMBER OF CONTAINERS"

DATE	TIME	LAB BATTELLE ID	FIELD CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER TOC/Grain Size	ACIDIFIED	PRESERVED	Total Number of Containers
05/15/08	14:38	Q2879	ST-04-051508-A	4 th sediment trap recovery station 04		✓						✓			
	↓	Q2880	ST-04-051508-B	station 04		✓						✓			
	14:59	Q2881	ST-03-051508-A	station 03		✓						✓			
	↓	Q2882	ST-03-051508-B	station 03		✓						✓			
	15:36	Q2883	ST-02-051508-A	station 02		✓						✓			
	↓	Q2884	ST-02-051508-B	station 02		✓						✓			
	15:52	Q2885	ST-01-051508-A	station 01		✓						✓			
	↓	Q2886	ST-01-051508-B	station 01		✓						✓			
	↓	Q2887	ST-01-051508-C	station 01		✓						✓			

Relinquished by:
Michael P. Mc...

Date/Time
05/16/08 1200

Received by:
Jeanine Light

Date/Time
5/16/08 1200

Relinquished by:

Date/Time

Received by:

Date/Time

Comments: After settling and decanting, all samples will be weighed for reproducibility. At station 01, 2 of 3 samples will be analyzed for PCB, TOC, & Grain Size. At stations 02, 03 & 04, 1 of 2 samples will be analyzed for PCB, TOC, & Grain Size.

Sample Receipt Form

Approved: Authorized

Project Number: G606422 Client: _____
Received by: Seyfert, Jeannine Date/Time Received: Thursday, June 12, 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	Smpls
1 of 1	Cooler	NA	None	Not Applicable	Intact	4.0	9

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): 4 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 South: Refrigerator - R0003 (Upper Cold) BDO IDs Assigned: Q3078 - Q3086

Samples logged in by: Seyfert, Jeannine Date/Time: 06/12/2008 12:00 AM

Approved By: _____ Approved On: _____

Authorized By: _____ Authorized On: _____

Sample Receipt Form Details

Approved: Authorized

Project Number: G606422 Client: _____

Received by: Seyfert, Jeannine Date/Time Received: Thursday, June 12, 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:
Q3078	ST-01-061108-A	06/11/08 12:15	06/16/08 10:12	1	SEDIMENT TRA	4	NA	NA	NA	R0003 (Upper C			
Q3079	ST-01-061108-B	06/11/08 12:15	06/16/08 10:12	1	SEDIMENT TRA	4	NA	NA	NA	R0003 (Upper C			
Q3080	ST-01-061108-C	06/11/08 12:15	06/16/08 10:12	1	SEDIMENT TRA	4	NA	NA	NA	R0003 (Upper C			
Q3081	ST-02-061108-A	06/11/08 12:24	06/16/08 10:12	1	SEDIMENT TRA	4	NA	NA	NA	R0003 (Upper C			
Q3082	ST-02-061108-B	06/11/08 12:24	06/16/08 10:13	1	SEDIMENT TRA	4	NA	NA	NA	R0003 (Upper C			
Q3083	ST-04-061108-A	06/11/08 12:48	06/16/08 10:13	1	SEDIMENT TRA	4	NA	NA	NA	R0003 (Upper C			
Q3084	ST-04-061108-B	06/11/08 12:48	06/16/08 10:13	1	SEDIMENT TRA	4	NA	NA	NA	R0003 (Upper C			
Q3085	ST-03-061108-A	06/11/08 13:10	06/16/08 10:13	1	SEDIMENT TRA	4	NA	NA	NA	R0003 (Upper C			
Q3086	ST-03-061108-B	06/11/08 13:10	06/16/08 10:14	1	SEDIMENT TRA	4	NA	NA	NA	R0003 (Upper C			

Total Samples: 9

Toc/Grain Size

Proj. No
G606422

Proj. Name
NB4 Sed Trp

SAMPLERS: Signature
Michael P. M...

ANALYSIS REQUESTED →
"NUMBER OF CONTAINERS"

DATE	TIME	Lab BATTELLE ID	Field CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER Toc/Grain Size	ACIDIFIED	PRESERVED	Total Number of Containers
06/11/08	1215	Q3078	ST-01-061108-A	5 ^m sediment trap recovery station 01		✓						✓			
	↓	Q3079	ST-01-061108-B	01		✓						✓			
		Q3080	ST-01-061108-C	01		✓						✓			
	1224	Q3081	ST-02-061108-A	02		✓						✓			
	↓	Q3082	ST-02-061108-B	02		✓						✓			
	1248	Q3083	ST-04-061108-A	04		✓						✓			
	↓	Q3084	ST-04-061108-B	04		✓						✓			
	1310	Q3085	ST-03-061108-A	03		✓						✓			
	↓	Q3086	ST-03-061108-B	03		✓						✓			

Relinquished by:
Michael P. M...

Date/Time
~~05/12/08~~ 0800
06/12/08

Received by:
Jeannine Seyfert

Date/Time
6/12/08 1148

Relinquished by:
MPM

Date/Time
06/12/08

Received by:

Date/Time

Comments: After settling samples for 24 hrs and decanting, all samples will be weighed for reproducibility. At ST-01 2 of 3 samples will be analyzed for PCB, TOC & GS. At ST-02, 03 & 04 only 1 of 2 samples will be analyzed for PCB, TOC & GS

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Deployment Nos. 6-9

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Project Client: USACE - North Atlantic Division
 Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
 Project Number: G606422-07DUXCHEM

Client ID	ST-01-071008-B	ST-01-071008-C	ST-02-071008-A	ST-04-071008-A	ST-03-071008-A	ST-04-073108-A
Battelle ID	Q3438-P	Q3439-P	Q3440-P	Q3442-P	Q3444-P	Q3734-P
Sample Type	SA	SA	SA	SA	SA	SA
Collection Date	07/10/08	07/10/08	07/10/08	07/10/08	07/10/08	07/31/08
Extraction Date	10/08/08	10/08/08	10/08/08	10/08/08	10/08/08	10/08/08
Analysis Date	10/27/08	10/27/08	10/27/08	10/27/08	10/28/08	10/28/08
Analytical Instrument	MS	MS	MS	MS	MS	MS
% Moisture	78.47	76.42	73.11	75.2	76.08	71.51
% Lipid	NA	NA	NA	NA	NA	NA
Matrix	SEDIMENT TRAP					
Sample Size	0.73	1.08	2.72	2.49	2.40	2.88
Size Unit-Basis	G_DRY	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	UG/KG_DRY
C12(8)	3171.16	5259.4	4375.59	4997.94	3216.31	3166.33
C13(18)	9084.48	12244.4	9171.37 D	11663.2 D	7746.34 D	9120.59 D
C13(28)	12946.59	17824 D	13791.05 D	17601.49 D	11999.74 D	14787.37 D
C13(31)	13090.66	17730.25 D	13616.51 D	17113.06 D	12477.15 D	14880.54 D
C13(37)	1419.38	1881.66	1804.27	1647.76	1443.07	1378.43
C14(44)	5881.55	8197.97	6618.67 D	7476.4 D	6905.91 D	7369.79 D
C14(49)	18105.43	20745.5 D	17921.51 D	22999.22 D	17893.48 D	22582.46 D
C14(52)	20182.42	22840.11 D	20069.71 D	29231 D	19585.57 D	24176.16 D
C14(66)	3883.38	5890.57	4529.14	4872.13	3589.64	3543.88
C14(70)	3553.12	5499.64	4119.25	4224.19	3404.3	3265.92
C14(74)	2206.01	3263.21	2933.56	3116.94	2427.03	2320.53
C14(77)	533.34	538.3	381.77	383.4	342.98	330.6
C14(81)	344.52 U	232.87 U	92.46 U	101 U	104.79 U	87.33 U
C15(87)	2058.8	2107.54	1983.65	1693	1592.02	1583.6
C15(99)	6557.48	9034.77	6920.73 D	8573.09 D	7016.24 D	7604.93 D
C15(101)	8727.95	11477.63	8374.51 D	9871.65 D	8457.82 D	8713.05 D
C15(105)	1553.88	1895.77	1778.42	1736.74	1546.57	1575.54
C15(110)	10412.39	12677.74	9738.71 D	11926.14 D	9932.35 D	11267.2 D
C15(114)	342.47 U	231.48 U	91.91 U	100.4 U	104.17 U	86.81 U
C15(118)	6640.82	7996.71	6800.61 D	7585.93 D	6821.53 D	6973.38 D
C15(123)	914.74	1053.92	820.34	922.79	783.16	790.48
C15(126)	343.84 U	232.41 U	92.28 U	100.8 U	104.58 U	87.15 U
C16(128)	1111.27	1177.54	1025.99	1047.1	927.79	1024.14
C16(138)	2893.46	3470.33	3124.6	3115.7	2776.89	2688.19
C16(149)	7261.38	8523.08	7672.59 D	9489.89 D	8419.5 D	8911.33 D
C16(151)	1335.55	1679.94	1497.16	1533.23	1312.32	1350.62
C16(153)	7489.36	9683.25	6438.37 D	7987.63 D	6412.45 D	7999.59 D
C16(156)	771.7	882.67	702.29	759.02	652.94	711.15
C16(157)	319.04 J	286.03	182.68	170.34	172	164.11
C16(158)	852.88	936.98	922.94	930.69	812.42	834.25
C16(167)	469.59	555.61	486.28	513.05	481.73	514.74
C16(169)	343.84 U	232.41 U	92.28 U	100.8 U	104.58 U	87.15 U
C17(170)	625.16	645.67	561.23	580.06	547.2	662.52
C17(177)	354.71	397.81	280.41	289.47	265.27	276.56
C17(180)	1059.3	1286.45	1079.51	1130.87	1026.87	1096.71
C17(183)	312.34 J	456.51	403.34	438.64	407.24	430.41
C17(187)	871.11	1084.56	1044.71	1215.39	1012.28	1225.86
C17(189)	342.47 U	231.48 U	91.91 U	100.4 U	104.17 U	86.81 U
C18(194)	342.47 U	312.77	220.27	231.61	199.42	246.89
C18(195)	342.47 U	164.16 J	93.16	75.76 J	71.71 J	116.73
C18(201)	342.47 U	231.48 U	91.91 U	39.37 J	37.5 J	39.48 J
C18(203)	342.47 U	231.48 U	243.27	283.34	232.14	289.54
C19(206)	342.47 U	231.48 U	146.73	142.75	146.69	136.67
C110(209)	342.47 U	231.48 U	91.91 U	100.4 U	104.17 U	43.42 J

Surrogate Recoveries (%)

C13(34)	85	88	90	86	72	90
C16(152)	92	92	97	87	79	98



Project Client: USACE - North Atlantic Division

Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)

Project Number: G606422-07DUXCHEM

Client ID	ST-01-073108-B	ST-01-073108-C	ST-02-073108-A	ST-03-073108-A	ST-01-082508-B	ST-01-082508-C
Battelle ID	Q3737-P	Q3738-P	Q3739-P	Q3741-P	Q4052-P	Q4053-P
Sample Type	SA	SA	SA	SA	SA	SA
Collection Date	07/31/08	07/31/08	07/31/08	07/31/08	08/25/08	08/25/08
Extraction Date	10/08/08	10/08/08	10/08/08	10/08/08	10/08/08	10/08/08
Analysis Date	10/28/08	10/28/08	10/28/08	10/28/08	10/28/08	10/28/08
Analytical Instrument	MS	MS	MS	MS	MS	MS
% Moisture	72.56	78.05	69.3	74.11	70.44	70.1
% Lipid	NA	NA	NA	NA	NA	NA
Matrix	SEDIMENT TRAP					
Sample Size	2.74	1.86	3.10	2.60	0.92	1.14
Size Unit-Basis	G_DRY	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	UG/KG_DRY
C12(8)	2269.01	2116.47 D	3576.08	3162.56	1362.11	1879.78
C13(18)	4852.21 D	6199.34	8785.95 D	6838.47 D	3048.23	4522.18
C13(28)	7721.04 D	7590.21 D	14286.55 D	12747.62 D	5305.12	9791.71
C13(31)	7325.03 D	7981.65 D	13867.22 D	12231.19 D	5203.89	9363.12
C13(37)	768	747.96	1403.15	1305.96	472.86	588.22
C14(44)	3368.2	3678.6	6285.97 D	6130.6 D	1931.5	3276.68
C14(49)	9426.1 D	10329.55 D	19409.55 D	17396.77 D	6603.1	12525.27
C14(52)	10152.78 D	10054.97 D	20610.41 D	18481.46 D	6891.05	13074.18
C14(66)	2009.63	2015.21	3821.88	3582.27	1194.83	2166.85
C14(70)	2015.39	1835.05	3471.28	3256.52	983.63	1825.41
C14(74)	1299.92	1286.06	2478.63	2420.16	799.63	1420.33
C14(77)	225.99	252.96	329.48	388.9	274.54	277.39
C14(81)	91.79 U	135.22 U	81.13 U	96.73 U	273.37 U	220.61 U
C15(87)	979.64	725.35	1523.83	1480.74	472	798.7
C15(99)	3441.63	3583.17	6266.24 D	6988.79 D	1939.46	3957.55
C15(101)	4414.34	4170.74	7714.54 D	7798.43 D	2174.54	4571.25
C15(105)	887.11	676.77	1481.87	1584.02	285.1	583.31
C15(110)	5075.49 D	5316.02	8933.44 D	9251.02 D	2803.58	5154.47
C15(114)	91.24 U	134.41 U	80.65 U	96.15 U	271.74 U	219.3 U
C15(118)	3227.28	3092.07	5721.38 D	6167.31 D	1677.76	3142.84
C15(123)	446.39	485.09	747.34	779.55	404.73	523.64
C15(126)	91.61 U	134.95 U	80.97 U	96.54 U	272.83 U	220.18 U
C16(128)	565.79	444.36	888.33	1012.47	266.55 J	395.17
C16(138)	1641.54	1229.23	2898.88	3173.03	681.55	1138.12
C16(149)	3939.42	3941.98	7232.87 D	8291.79 D	2105.26	3759.68
C16(151)	642.34	612.2	1232.18	1343.55	433.91	708.27
C16(153)	4268.44	3863.58	6107.56 D	6040.89 D	1942.94	3853.2
C16(156)	347.18	341.43	649.9	704.6	307.23	369.61
C16(157)	122.66	134.41 U	156.03	176.58	271.74 U	166.78 J
C16(158)	405.23	419.05	747.37	896.33	248.39 J	349.43
C16(167)	257.54	253.25	443.53	516.71	198.22 J	250.55
C16(169)	91.61 U	134.95 U	80.97 U	96.54 U	272.83 U	220.18 U
C17(170)	306.43	295.23	500.97	633.86	216.18 J	237.13
C17(177)	169.39	186.47	248.1	292.55	271.74 U	209.69 J
C17(180)	568.45	489.74	934.31	1179.92	366.84	445.98
C17(183)	194.42	189.07	355.61	428.71	108.88 J	170.16 J
C17(187)	483.59	536.99	959.22	1183.76	319.33	447.48
C17(189)	91.24 U	134.41 U	61.71 J	81.97 J	271.74 U	219.3 U
C18(194)	139.15	142	230.17	253.96	271.74 U	219.3 U
C18(195)	91.24 U	134.41 U	100.39	96.3	271.74 U	219.3 U
C18(201)	91.24 U	134.41 U	32.43 J	40.09 J	271.74 U	219.3 U
C18(203)	144.6	170.95	250.99	289.17	271.74 U	219.3 U
C19(206)	92.42	108.14 J	134.52	141.57	271.74 U	219.3 U
C110(209)	91.24 U	134.41 U	31.46 J	52.03 J	271.74 U	219.3 U

Surrogate Recoveries (%)

C13(34)	86	86	89	97	83	87
C16(152)	89	92	92	102	88	93



Project Client: USACE - North Atlantic Division
 Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
 Project Number: G606422-07DUXCHEM

Client ID	ST-02-082508-A	ST-03-082508-A	ST-04-082508-A	ST01-100208-B	ST01-100208-C	ST02-100208-A
Battelle ID	Q4054-P	Q4056-P	Q4058-P	Q4850-P	Q4851-P	Q4852-P
Sample Type	SA	SA	SA	SA	SA	SA
Collection Date	08/25/08	08/25/08	08/25/08	10/02/08	10/02/08	10/02/08
Extraction Date	10/08/08	10/08/08	10/08/08	10/08/08	10/08/08	10/08/08
Analysis Date	10/28/08	10/28/08	10/29/08	10/29/08	10/29/08	10/29/08
Analytical Instrument	MS	MS	MS	MS	MS	MS
% Moisture	68.26	71.17	80	73.23	72.51	72.67
% Lipid	NA	NA	NA	NA	NA	NA
Matrix	SEDIMENT TRAP	SEDIMENT TRAP	SEDIMENT TRAP	SEDIMENT TRAP	SEDIMENT TRAP	SEDIMENT TRAP
Sample Size	3.23	2.89	2.03	2.72	2.77	2.77
Size Unit-Basis	G_DRY	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	UG/KG_DRY
Cl2(8)	1444.01	1630.8	2201.43	1336.27	1259.33	1295.65
Cl3(18)	3473.48	4376.65	6442.8	3095.2	2926.17	3324.74
Cl3(28)	4706.1 D	6898.05 D	9354.26 D	6010.29	5384.38	5331.09
Cl3(31)	4772.81 D	5946.13 D	8500.48 D	4748.85	4243.63	5150.2
Cl3(37)	423.38	556.74	875.82	452.29	477.47	403.33
Cl4(44)	2052.85	3418.44	4477.57	2079.33	1777.06	2041.39
Cl4(49)	5945.37 D	9882.03 D	12558.96 D	4732.43 D	5495.5	5902.71 D
Cl4(52)	6120.43 D	10222.65 D	14387.17 D	5794.82 D	5538.22 D	6219.21 D
Cl4(66)	1093.7	1836.97	2476.43	1051.99	1028.53	1066.35
Cl4(70)	999.36	1296.87	2105.96	847.28	744.08	909.31
Cl4(74)	745.73	1207.89	1690.24	864.77	842.75	708.21
Cl4(77)	126.07	141.21	274.43	173.95	161.77	135.28
Cl4(81)	77.86 U	87.02 U	123.89 U	92.46 U	90.79 U	90.79 U
Cl5(87)	387.07	691.55	893.42	398.26	321.1	372.62
Cl5(99)	1972.3	3965.67	5172.81	2651.58	2356.5	1910.02
Cl5(101)	2329.89	4435.69	5508.59	2242.54	1819.35	2223.48
Cl5(105)	337.78	680.27	885.54	345.93	346.04	328.78
Cl5(110)	2964.7	5152.44	7156.41	2997.73	2484.65	2863.64
Cl5(114)	77.4 U	86.51 U	123.15 U	91.91 U	90.25 U	90.25 U
Cl5(118)	1648.43	3109.7	4005.88	2117.65	1896.22	1597.39
Cl5(123)	242.74	384.88	530.8	289.97	259.64	245.59
Cl5(126)	77.71 U	86.85 U	123.65 U	92.28 U	90.61 U	90.61 U
Cl6(128)	244.47	404.83	622.16	293.04	236.28	261.03
Cl6(138)	669.51	1217.73	1677.59	824.89	722.53	668.4
Cl6(149)	2238.17	3746.34	5713.79	2205.45	1981.33	2171.2
Cl6(151)	366.1	621.04	853.53	373.21	347.34	349.35
Cl6(153)	2221.84	4157.3	5969.61	2978.31	2717.35	2255.37
Cl6(156)	189.02	331.1	445.68	259.95	246.19	205.46
Cl6(157)	87.38	105.66	158.61	92.04	90.25 U	65.68 J
Cl6(158)	241.7	373.65	564.17	246.66	215.77	206.15
Cl6(167)	134.08	239.83	333.27	196.98	173.25	149.43
Cl6(169)	77.71 U	86.85 U	123.65 U	92.28 U	90.61 U	90.61 U
Cl7(170)	151.53	262.29	358.97	201.64	203.14	164.3
Cl7(177)	113.59	138.03	193.8	136.61	124.84	98.05
Cl7(180)	286.7	497.61	712.82	441.9	326.28	304.18
Cl7(183)	100.27	189.16	277.72	150.96	123.46	95.05
Cl7(187)	304.63	487.6	744.75	361.27	343.86	310.95
Cl7(189)	77.4 U	86.51 U	123.15 U	91.91 U	90.25 U	90.25 U
Cl8(194)	86.21	136.61	195.81	117.5	111.84	90.25 U
Cl8(195)	55.36 J	58.43 J	85.66 J	63.22 J	90.25 U	90.25 U
Cl8(201)	77.4 U	86.51 U	123.15 U	91.91 U	90.25 U	90.25 U
Cl8(203)	90.25	137	206.51	104.58	114.17	102.12
Cl9(206)	77.4 U	85.63 J	121.34 J	91.91 U	80.17 J	90.25 U
Cl10(209)	77.4 U	86.51 U	123.15 U	91.91 U	90.25 U	90.25 U

Surrogate Recoveries (%)

Cl3(34)	85	87	95	90	93	85
Cl6(152)	92	92	100	96	98	95



Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM
 Client ID ST04-100208-A ST03-100208-A

Battelle ID	Q4854-P	Q4856-P
Sample Type	SA	SA
Collection Date	10/02/08	10/02/08
Extraction Date	10/08/08	10/08/08
Analysis Date	10/29/08	10/29/08
Analytical Instrument	MS	MS
% Moisture	75.18	70.66
% Lipid	NA	NA
Matrix	SEDIMENT TRAP	SEDIMENT TRAP
Sample Size	2.52	2.93
Size Unit-Basis	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY

C12(8)	1297.48	1436.66
C13(18)	3250.95	3582.54
C13(28)	5936.65	4211.53 D
C13(31)	5545.16	4226.27 D
C13(37)	464.36	514.25
C14(44)	2324.01	2410.14
C14(49)	6332.29 D	5065.52 D
C14(52)	6804.79 D	5346.63 D
C14(66)	1273.34	1312.79
C14(70)	1051.43	1124.55
C14(74)	859	882.33
C14(77)	178.58	178.54
C14(81)	99.8 U	85.84 U
C15(87)	456.57	493.96
C15(99)	2389.63	2486.66
C15(101)	2613.42	2705.46
C15(105)	380.5	418.89
C15(110)	3393.12	3533.23
C15(114)	99.21 U	85.32 U
C15(118)	1948.2	2050.23
C15(123)	292.41	298.63
C15(126)	99.6 U	85.67 U
C16(128)	285.04	274.53
C16(138)	768.71	786.28
C16(149)	2727.23	2786.57
C16(151)	424.76	404.07
C16(153)	2547.58	2594.33
C16(156)	212.47	223.79
C16(157)	99.21 U	75.31 J
C16(158)	255.91	239.39
C16(167)	164.85	159
C16(169)	99.6 U	85.67 U
C17(170)	164.83	185.01
C17(177)	114.99	100.4
C17(180)	336.86	345.89
C17(183)	114.93	132.91
C17(187)	332.95	358.97
C17(189)	99.21 U	85.32 U
C18(194)	112.12	87.12
C18(195)	99.21 U	85.32 U
C18(201)	99.21 U	85.32 U
C18(203)	130.03	111.73
C19(206)	73.5 J	76.29 J
C110(209)	99.21 U	85.32 U

Surrogate Recoveries (%)

C13(34)	86	90
C16(152)	90	94



Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM
Client ID: Procedural Blank

Battelle ID	BM466PB-P
Sample Type	PB
Collection Date	10/08/08
Extraction Date	10/08/08
Analysis Date	10/27/08
Analytical Instrument	MS
% Moisture	73.45
% Lipid	NA
Matrix	SEDIMENT
Sample Size	2.69
Size Unit-Basis	G_DRY
Units	UG/KG_DRY

C12(8)	92.94 U
C13(18)	92.94 U
C13(28)	93.49 U
C13(31)	92.94 U
C13(37)	93.49 U
C14(44)	93.31 U
C14(49)	92.94 U
C14(52)	92.94 U
C14(66)	92.94 U
C14(70)	92.94 U
C14(74)	92.94 U
C14(77)	92.94 U
C14(81)	93.49 U
C15(87)	93.31 U
C15(99)	92.94 U
C15(101)	92.94 U
C15(105)	93.12 U
C15(110)	93.49 U
C15(114)	92.94 U
C15(118)	93.31 U
C15(123)	93.49 U
C15(126)	93.31 U
C16(128)	93.49 U
C16(138)	92.94 U
C16(149)	92.94 U
C16(151)	93.31 U
C16(153)	93.49 U
C16(156)	93.49 U
C16(157)	92.94 U
C16(158)	92.94 U
C16(167)	92.94 U
C16(169)	93.31 U
C17(170)	92.94 U
C17(177)	92.94 U
C17(180)	93.49 U
C17(183)	93.49 U
C17(187)	93.49 U
C17(189)	92.94 U
C18(194)	92.94 U
C18(195)	92.94 U
C18(201)	92.94 U
C18(203)	92.94 U
C19(206)	92.94 U
C110(209)	92.94 U

Surrogate Recoveries (%)

C13(34)	90
C16(152)	99



Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM

Client ID: 060208-03: Sand, White
 Quartz, -50+70

Battelle ID: BM467LCS-P
 Sample Type: LCS
 Collection Date: 10/08/08
 Extraction Date: 10/08/08
 Analysis Date: 10/27/08
 Analytical Instrument: MS
 % Moisture: NA
 % Lipid: NA
 Matrix: SEDIMENT
 Sample Size: 10.07
 Size Unit-Basis: G_DRY
 Units: UG/KG DRY

Units	UG/KG DRY	Target	% Recovery	Qualifier
C12(8)	350.7	398.41	88	
C13(18)	311.06	398.41	78	
C13(28)	298.74	397.62	75	
C13(31)	24.83			U
C13(37)	24.98			U
C14(44)	320.92	398.01	81	
C14(49)	24.83			U
C14(52)	311.11	397.22	78	
C14(66)	299.76	397.62	75	
C14(70)	24.83			U
C14(74)	24.83			U
C14(77)	246.93	397.22	62	
C14(81)	24.98			U
C15(87)	24.93			U
C15(99)	24.83			U
C15(101)	310.62	398.01	78	
C15(105)	333.19	397.62	84	
C15(110)	24.98			U
C15(114)	24.83			U
C15(118)	257.71	397.62	65	
C15(123)	24.98			U
C15(126)	281.81	399.60	71	
C16(128)	323.82	399.60	81	
C16(138)	274.24	398.01	69	
C16(149)	24.83			U
C16(151)	24.93			U
C16(153)	325.65	397.62	82	
C16(156)	24.98			U
C16(157)	24.83			U
C16(158)	24.83			U
C16(167)	24.83			U
C16(169)	24.93			U
C17(170)	330.81	399.21	83	
C17(177)	24.83			U
C17(180)	319.77	398.81	80	
C17(183)	24.98			U
C17(187)	323.75	398.41	81	
C17(189)	24.83			U
C18(194)	24.83			U
C18(195)	276.17	398.41	69	
C18(201)	24.83			U
C18(203)	24.83			U
C19(206)	295.31	398.41	74	
C110(209)	281.95	397.62	71	

Surrogate Recoveries (%)

C13(34)	80
C16(152)	102



Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM
Client ID ST-04-071008-A ST-04-071008-A

Battelle ID	Q3442-P	Q3442MS-P			
Sample Type	SA	MS			
Collection Date	07/10/08	7/10/2008			
Extraction Date	10/08/08	10/8/2008			
Analysis Date	10/28/08	10/28/2008			
Analytical Instrument	MS	MS			
% Moisture	75.2	75.42			
% Lipid	NA	NA			
Matrix	SEDIMENT TRAP	SEDIMENT TRAP			
Sample Size	2.49	2.5			
Size Unit-Basis	G_DRY	G_DRY			
Units	UG/KG_DRY	UG/KG_DRY		Target	% Recovery Qualifier
C12(8)	4997.94	6759.37	E	1604.80	110
C13(18)	11663.2 D	18840.62	E	1604.80	447
C13(28)	17601.49 D	27731.97	E	1601.60	633
C13(31)	17113.06 D	25404.13	E		
C13(37)	1647.76	2002.6			
C14(44)	7476.4 D	11789.02	E	1603.20	269
C14(49)	22999.22 D	35262.5	E		
C14(52)	29231 D	42339.17	E	1600.00	819
C14(66)	4872.13	7201.73	E	1601.60	145
C14(70)	4224.19	5261.22	E		
C14(74)	3116.94	3877.7			
C14(77)	383.4	1554.58		1600.00	73
C14(81)	101 U	100.6	U		
C15(87)	1693	2116.32			
C15(99)	8573.09 D	10958.86	E		
C15(101)	9871.65 D	14358.42	E	1603.20	280
C15(105)	1736.74	3719.52		1601.60	124
C15(110)	11926.14 D	15687.42	E		
C15(114)	100.4 U	100 U			
C15(118)	7585.93 D	9469.13	E	1601.60	118
C15(123)	922.79	1106.36			
C15(126)	100.8 U	1380.15		1609.60	86
C16(128)	1047.1	2628.88		1609.60	98
C16(138)	3115.7	5786.09	E	1603.20	167
C16(149)	9489.89 D	11394.65	E		
C16(151)	1533.23	1900.33			
C16(153)	7987.63 D	14333.33	E	1601.60	396
C16(156)	759.02	910.74			
C16(157)	170.34	211.84			
C16(158)	930.69	1164.87			
C16(167)	513.05	615.64			
C16(169)	100.8 U	100.4	U		
C17(170)	580.06	2126.02		1608.00	96
C17(177)	289.47	329.24			
C17(180)	1130.87	2602.94		1606.40	92
C17(183)	438.64	561.46			
C17(187)	1215.39	2728.76		1604.80	94
C17(189)	100.4 U	92.22	J		
C18(194)	231.61	251.65			
C18(195)	75.76 J	1304.58		1604.80	77
C18(201)	39.37 J	39.45	J		
C18(203)	283.34	297.59			
C19(206)	142.75	1285.4		1604.80	71
C110(209)	100.4 U	1101.46		1601.60	69

Surrogate Recoveries (%)

C13(34)	86	93
C16(152)	87	96



Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM
Client ID: ST-04-071008-A

Battelle ID	Q3442MSD-P				
Sample Type	MSD				
Collection Date	7/10/2008				
Extraction Date	10/8/2008				
Analysis Date	10/28/2008				
Analytical Instrument	MS				
% Moisture	75.1				
% Lipid	NA				
Matrix	SEDIMENT TRAP				
Sample Size	2.5				
Size Unit-Basis	G_DRY				
Units	UG/KG_DRY		Target	% Recovery	RPD (%)
				Qualifier	Qualifier
C12(8)	6115.33	E	1604.80	70	44.4
C13(18)	16963.94	E	1604.80	330	30.1
C13(28)	24884.17	E	1601.60	455	32.7
C13(31)	22662.05	E			
C13(37)	1805.43				
C14(44)	10532.19	E	1603.20	191	33.9
C14(49)	32121.91	E			
C14(52)	38445.18	E	1600.00	576	34.8
C14(66)	6515.33	E	1601.60	103	33.9
C14(70)	4639.38				
C14(74)	3515.31				
C14(77)	1535.71		1600.00	72	1.4
C14(81)	100.6	U			
C15(87)	1923.53				
C15(99)	10043.48	E			
C15(101)	13041.67	E	1603.20	198	34.3
C15(105)	3376.06		1601.60	102	19.5
C15(110)	14697.06	E			
C15(114)	100	U			
C15(118)	8911.77	E	1601.60	83	34.8
C15(123)	1007.28				
C15(126)	1349.74		1609.60	84	2.4
C16(128)	2575.52		1609.60	95	3.1
C16(138)	4808.02		1603.20	106	44.7
C16(149)	10556.17	E			
C16(151)	1703.21				
C16(153)	13069.11	E	1601.60	317	22.2
C16(156)	811.81				
C16(157)	216.95				
C16(158)	1017.83				
C16(167)	564.67				
C16(169)	100.4	U			
C17(170)	1934.81		1608.00	84	13.3
C17(177)	309.55				
C17(180)	2558.99		1606.40	89	3.3
C17(183)	478.89				
C17(187)	2657.51		1604.80	90	4.3
C17(189)	94.36	J			
C18(194)	251.41				
C18(195)	1207.07		1604.80	70	9.5
C18(201)	40.92	J			
C18(203)	270.21				
C19(206)	1164.83		1604.80	64	10.4
C110(209)	1119.39		1601.60	70	1.4

Surrogate Recoveries (%)

C13(34)	89
C16(152)	90

PCB Congeners – Sediment Trap QA/QC Summary

Batch 08-0280

PROJECT: New Bedford Harbor Sediment Trap Study (USACE)
PARAMETER: PCB Congeners
LABORATORY: Battelle, Duxbury, MA
MATRIX: Sediment Trap Samples
SAMPLE CUSTODY: Sediment trap samples were collected on 7/10/2008, 7/31/2008, 8/25/2008, and 10/2/2008. Samples were hand delivered to the Battelle Duxbury Chemistry Sample Custodian on four separate occasions. All samples were received in good condition and no custody issues were noted. Samples were logged into Battelle LIMS and received unique IDs. After being received by the lab, the sediment trap samples were centrifuged to remove excess water. The samples were then stored in the walk-in freezer until preparation could begin.

	Reference Method	Method Blank	Surrogate Recovery	LCS Recovery	MS Recovery	Duplicate Relative Percent Difference	Reporting Limits (ug/kg dry wt)
PCB Congeners	EPA 1668A and 8270C	< RL	40-120% Recovery	40-120% Recovery	40-120% Recovery <small>(analyte conc. in MS must be >5x background)</small>	≤30% RPD	~ 93.00

METHOD: Sediment trap samples were extracted for PCB congeners following modified EPA Method 3545. Sediments were air-dried overnight and approximately 5 g of sediment was spiked with surrogates and extracted using an Accelerated Solvent Extractor (ASE). The extract was poured through a funnel and passed through glass wool and sodium sulfate. The extract was then brought to 100 mL; 10 mL was removed and continued on for further processing. The 10 mL split was treated with copper, solvent exchanged to hexane, and passed through a Florisil SPE cartridge. The post-Florisil extract was then brought to 10 mL, out of which 1 mL was removed to be fortified with internal standards (IS). Extracts designated for PCB congener analysis were analyzed using gas chromatography/mass spectrometry (GC/MS), following Battelle SOP 5-315 which is based on EPA Methods 1668A and 8270C. Sample data were quantified by the method of internal standards, using the IS compounds. Data was evaluated against sample specific reporting limits.

HOLDING TIMES: Sediments of this batch were extracted within 1 year of sample holding time for frozen sediments. All extracts were initially analyzed within 40 days of extract holding time, however some dilutions were analyzed after the 40 days expired.

Batch	Collection Date	Extraction Date	Analysis Date
08-0280	7/10, 7/31, 8/2, & 10/2/2008	10/8/08	10/27/2008 – 11/21/2008

PCB Congeners – Sediment Trap QA/QC Summary
Batch 08-0280

LIST OF SAMPLES:

08-0005

Sample ID	Battelle ID
ST-01-071008-B	Q3438
ST-01-071008-C	Q3439
ST-02-071008-A	Q3440
ST-04-071008-A	Q3442
ST-03-071008-A	Q3444
ST-04-073108-A	Q3734
ST-01-073108-B	Q3737
ST-01-073108-C	Q3738
ST-02-073108-A	Q3739
ST-03-073108-A	Q3741
ST-01-082508-B	Q4052
ST-01-082508-C	Q4053
ST-02-082508-A	Q4054
ST-03-082508-A	Q4056
ST-04-082508-A	Q4058
ST01-100208-B	Q4850
ST01-100208-C	Q4851
ST02-100208-A	Q4852
ST04-100208-A	Q4854
ST03-100208-A	Q4856

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.

08-0280 – No exceedences noted. No target analytes were detected in the blank sample.

LABORATORY CONTROL SAMPLE:

A of laboratory control (LCS) sample was prepared with each analytical batch. The percent recoveries of target analytes were calculated to measure data quality in terms of accuracy.

08-0280 – No exceedence noted. All percent recoveries of spiked analytes were within laboratory control limit of 40-120%.

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.

08-0280 – No exceedence noted. All percent recoveries of analytes spiked at a concentration great enough to be used for data quality assessment (> 5 x background) were within laboratory control limit of 40-120%. All RPDs between analytes spiked at a concentration great enough to be used for data quality assessment (> 5 x background) were within laboratory control limit of <30%.

PCB Congeners – Sediment Trap QA/QC Summary

Batch 08-0280

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).

08-0280 – No exceedence noted. All surrogate recoveries were within laboratory control limit of 40-120%.

CALIBRATIONS: The GC/MS is calibrated with a minimum of a 6point curve. The co-efficient of determination must be > 0.995 for each target analyte in the initial calibration (ICAL). Each batch of samples analyzed is bracketed by a continuing calibration verification (CCV) sample, run at a frequency of every 12 hours (minimally). This percent difference (PD) for the CCV should be $< 25\%$ for individual analytes. Additionally an instrument calibration check (ICC) sample was run with the initial calibration. The PD for the ICC should be $< 25\%$ for each analyte.

08-0280 – PCB 81 exceeded the %D criteria in the ICC due to standard impurity. A second ICC was run and results were acceptable for this compound. All other calibration criteria were met.

Sample Receipt FormApproved: Authorized Project Number: G606422

Client: _____

Received by: Seyfert, JeannineDate/Time Received: Friday, July 11, 2008 12:00 AMNo. of Shipping Containers: 1**SHIPMENT**Method of Delivery: Hand DeliveredTracking Number: NACOC 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	Cooler	NA	None	Not Applicable	Intact	4.0	9

SamplesSample 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): 4 Temperature Blank used Yes No
*(Note: If temperature upon receipt differs from required conditions, see sample log comment field)*Samples Acidified: Yes No UnknownInitial 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.: UnknownStorage Location: Chem South: Refrigerator - R0003 (Upper Cold) BDO IDs Assigned: Q3437 - Q3445Samples logged in by: Seyfert, Jeannine Date/Time: 07/11/2008 12:00 AM

Approved By: _____ Approved On: _____

Authorized By: _____ Authorized On: _____

Report Corrective Actions

Corrective Action No: 1 of 1

Authorized Approved:

COC Client: _____

COC Project: NBH sediment traps

COC Date: 7/15/2008 10:06:

	Description of Problem:	Explanation:
Client Id	Jars and C-O-C do not have matching Ids	The COC for Q3437 lists the client ID as "ST-01-071008-A." The jar simple lists the client ID as "ST01A."

Documentation of project manager notification

Sample Custodian: Seyfert, Jeannine Date: 7/15/2008 10:12:00 A

Laboratory Manager: Thorn, Jonathan Date: 9/16/2008 11:48:00 A

Project Manager: Zhang, Yixian Date: 9/16/2008 10:59:00 A

Documentation of client notification (should be completed by project manager within 24 hrs):

On _____ I contacted _____ at _____

Results of communication with client (Describe any corrective action directed by the client):

Battelle field sampling staff was notified of the error on the jar.

Date this form was received back to the custodian: _____

Reference Number: _____

Sample Receipt Form Details

Approved: Authorized:

Project Number: G606422 Client: _____

Received by: Seyfert, Jeannine Date/Time Received: Friday, July 11, 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:
Q3437	ST-01-071008-A	07/10/08 11:58	07/15/08 10:08	1	SEDIMENT TRA	4	NA	NA	NA	R0003 (Upper C			
Q3438	ST-01-071008-B	07/10/08 11:58	07/15/08 10:08	1	SEDIMENT TRA	4	NA	NA	NA	R0003 (Upper C			
Q3439	ST-01-071008-C	07/10/08 11:58	07/15/08 10:08	1	SEDIMENT TRA	4	NA	NA	NA	R0003 (Upper C			
Q3440	ST-02-071008-A	07/10/08 12:19	07/15/08 10:09	1	SEDIMENT TRA	4	NA	NA	NA	R0003 (Upper C			
Q3441	ST-02-071008-B	07/10/08 12:19	07/15/08 10:10	1	SEDIMENT TRA	4	NA	NA	NA	R0003 (Upper C			
Q3442	ST-03-071008-A	07/10/08 12:42	07/15/08 10:10	1	SEDIMENT TRA	4	NA	NA	NA	R0003 (Upper C			
Q3443	ST-03-071008-B	07/10/08 12:42	07/15/08 10:10	1	SEDIMENT TRA	4	NA	NA	NA	R0003 (Upper C			
Q3444	ST-04-071008-A	07/10/08 13:17	07/15/08 10:10	1	SEDIMENT TRA	4	NA	NA	NA	R0003 (Upper C			
Q3445	ST-04-071008-B	07/10/08 13:17	07/15/08 10:11	1	SEDIMENT TRA	4	NA	NA	NA	R0003 (Upper C			

Total Samples: 9

Proj. No G606422	Proj. Name NBH Sed Trap
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SAMPLERS: Signature

Michael P. McGuire

ANALYSIS REQUESTED →
"NUMBER OF CONTAINERS"

DATE	TIME	LAB BATTELLE ID	FIELD CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER TOC/GRAIN SIZE	ACIDIFIED	PRESERVED	Total Number of Containers
07/10/08	1158	Q3437	ST-01-071008-A	6 th sediment trap recovery station 01		✓									
	↓	Q3438	ST-01-071008-B	01		✓									
		Q3439	ST-01-071008-C	01		✓									
	1219	Q3440	ST-02-071008-A	02		✓									
	↓	Q3441	ST-02-071008-B	02		✓									
	1242	Q3442	ST-04-071008-A	04		✓									
	↓	Q3443	ST-04-071008-B	04		✓									
	1317	Q3444	ST-03-071008-A	03		✓									
	↓	Q3445	ST-03-071008-B	03		✓									

Relinquished by: <i>Michael P. McGuire</i>	Date/Time		Received by: <i>Jamie Light</i>	Date/Time	
	07/11/08	12:00		7-11-08	12:00
Relinquished by:	Date/Time		Received by:	Date/Time	

Comments: After settling for 24 hrs and decanting, all samples will be weighed for reproducibility. At station ST-01 2 of 3 samples will be analyzed for PCB, TOC, & GS. At ST-02, 03 & 04, only 1 of 2 samples will be analyzed.

Sample Receipt Form

Approved: Authorized

Project Number: _____ Client: _____
Received by: Seyfert, Jeannine Date/Time Received: Thursday, July 31, 2008 12:00 AM
No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Hand Delivered Tracking Number: Not Recorded
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	Cooler		None		Intact	Ambient	9

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): Ambient 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 South: Refrigerator - R0003 (Upper Cold) BDO IDs Assigned: Q3734 - Q3742

Samples logged in by: Arsenault, Joanne Date/Time: 07/31/2008 12:00 AM

Approved By: _____ Approved On: _____

Authorized By: _____ Authorized On: _____

Sample Receipt Form Details

Approved: Authorized:

Project Number: _____ Client: _____

Received by: Seyfert, Jeannine Date/Time Received: Thursday, July 31, 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:
Q3734	ST-04-073108-A	07/31/08 8:28	08/05/08 10:23	1	SEDIMENT TRA	NA	NA	NA	NA	R0003 (Upper Co			
Q3735	ST-04-073108-B	07/31/08 8:28	08/05/08 10:26	1	SEDIMENT TRA	NA	NA	NA	NA	R0003 (Upper Co			
Q3736	ST-01-072108-A	07/31/08 8:54	08/05/08 10:26	1	SEDIMENT TRA	NA	NA	NA	NA	R0003 (Upper Co			
Q3737	ST-01-073108-B	07/31/08 8:54	08/05/08 10:28	1	SEDIMENT TRA	NA	NA	NA	NA	R0003 (Upper Co			
Q3738	ST-01-073108-C	07/31/08 8:54	08/05/08 10:28	1	SEDIMENT TRA	NA	NA	NA	NA	R0003 (Upper Co			
Q3739	ST-02-073108-A	07/31/08 9:13	08/05/08 10:30	1	SEDIMENT TRA	NA	NA	NA	NA	R0003 (Upper Co			
Q3740	ST-02-073108-B	07/31/08 9:13	08/05/08 10:31	1	SEDIMENT TRA	NA	NA	NA	NA	R0003 (Upper Co			
Q3741	ST-03-073108-A	07/31/08 9:35	08/05/08 10:31	1	SEDIMENT TRA	NA	NA	NA	NA	R0003 (Upper Co			
Q3742	ST-03-073108-B	07/31/08 9:35	08/05/08 10:32	1	SEDIMENT TRA	NA	NA	NA	NA	R0003 (Upper Co			

Total Samples: 9

Proj. No: **G606422**
Proj. Name: **Sed Trap**

SAMPLERS: Signature: *Mark P M*
ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	LAB BATTLE ID	FIELD CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER GS/TOC	ACIDIFIED	PRESERVED	Total Number of Containers
07/31/08	0828	Q3734	ST-01-073108-A	7th sediment trap recovery station 04		✓						✓			
	↓	Q3735	ST-04-073108-B			✓						✓			
	0854	Q3736	ST-01-073108-A			✓						✓			
	↓	Q3737	ST-01-073108-B			✓						✓			
	↓	Q3738	ST-01-073108-C			✓						✓			
	0913	Q3739	ST-02-073108-A			✓						✓			
	↓	Q3740	ST-02-073108-B			✓						✓			
	0935	Q3741	ST-03-073108-A			✓						✓			
	↓	Q3742	ST-03-073108-B			✓						✓			

Relinquished by: *Mark P M*
Date/Time: 07/31/08 11:45
Received by: *Jeanne Slight*
Date/Time: 7-31-08 11:45am

Relinquished by: _____
Date/Time: _____
Received by: _____
Date/Time: _____

Comments: After settling for 24 hrs & decanting, all samples will be weighed for reproducibility. At station ST-01, 3 samples will be analyzed for PCB, TOC & GS. At ST-02, 03 & 04, only 1 of 2 samples will be analyzed.

Sample Receipt Form

Approved: Authorized

Project Number: _____ Client: NBH Sediment Trap
Received by: Arsenault, Joanne Date/Time Received: Tuesday, August 26, 2008 2:10 PM
No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Hand Delivered Tracking Number: Not Recorded
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				Not Applicable	4.0	9

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): 4 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 South: Refrigerator - R0003 (Upper Cold) BDO IDs Assigned: Q4051 - Q4059

Samples logged in by: Arsenault, Joanne Date/Time: 08/26/2008 2:10 PM

Approved By: Brackett, Roxanne Approved On: 9/18/2008 11:3

Authorized By: _____ Authorized On: _____

Sample Receipt Form Details

Approved: Authorized

Project Number: _____ Client: NBH Sediment Trap

Received by: Arsenault, Joanne Date/Time Received: Tuesday, August 26, 2008 2:10 PM

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:
Q4051	ST-01-082508-A	08/25/08 13:07	08/27/08 13:46	1	SEDIMENT TRA		NA	NA	NA	R0003 (Upper C			
Q4052	ST-01-082508-B	08/25/08 13:07	08/27/08 13:50	1	SEDIMENT TRA		NA	NA	NA	R0003 (Upper C			
Q4053	ST-01-082508-C	08/25/08 13:07	08/27/08 13:50	1	SEDIMENT TRA		NA	NA	NA	R0003 (Upper C			
Q4054	ST-02-082508-A	08/25/08 13:30	08/27/08 13:50	1	SEDIMENT TRA		NA	NA	NA	R0003 (Upper C			
Q4055	ST-02-082508-B	08/25/08 13:30	08/27/08 13:51	1	SEDIMENT TRA		NA	NA	NA	R0003 (Upper C			
Q4056	ST-03-082508-A	08/25/08 14:18	08/27/08 13:51	1	SEDIMENT TRA		NA	NA	NA	R0003 (Upper C			
Q4057	ST-03-082508-B	08/25/08 14:18	08/27/08 13:52	1	SEDIMENT TRA		NA	NA	NA	R0003 (Upper C			
Q4058	ST-04-082508-A	08/25/08 13:56	08/27/08 13:52	1	SEDIMENT TRA		NA	NA	NA	R0003 (Upper C			
Q4059	ST-04-082508-B	08/25/08 13:56	08/27/08 13:52	1	SEDIMENT TRA		NA	NA	NA	R0003 (Upper C			

Total Samples: 9

Proj. No G606422	Proj. Name NBH Sed Trap
---------------------	----------------------------

SAMPLERS: Signature
Michael P. ...

ANALYSIS REQUESTED →
"NUMBER OF CONTAINERS"

DATE	TIME	LAB BATTELLE ID	FIELD CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER (GS/TOC)	ACIDIFIED	PRESERVED	Total Number of Containers
08/25/08	13:07	Q4051	ST-01-082508-A			✓						✓			1
	↓	Q4052	ST-01-082508-B			✓						✓			1
	↓	Q4053	ST-01-082508-C			✓						✓			1
	13:30	Q4054	ST-02-082508-A			✓						✓			1
	↓	Q4055	ST-02-082508-B			✓						✓			1
	14:18	Q4056	ST-03-082508-A			✓						✓			1
	↓	Q4057	ST-03-082508-B			✓						✓			1
	13:56	Q4058	ST-04-082508-A			✓						✓			1
	↓	Q4059	ST-04-082508-B			✓						✓			1

Relinquished by: <i>Michael P. ...</i>	Date/Time 08/26/08 14:10		Received by: <i>Jeanne Donovan</i>	Date/Time 8/26/08 1410	
	Date/Time			Date/Time	

Comments: After settling for 24 hrs & decanting, all samples will be weighed for reproducibility. At station ST-01, 2 of 3 samples will be analyzed for PCB, TOC & Grain Size. At station ST-02, 03 & 04 only 1 of 2 samples will be analyzed

Sample Receipt Form

Approved: Authorized

Project Number: G606422-07DUXCHEM

Client: _____

Received by: Seyfert, Jeannine

Date/Time Received: Thursday, October 02, 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	Cooler	NA	None	Not Applicable	Intact	4.0	9

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): 4 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: Field Room II: Refrigerator - R0004 (Lower Col BDO IDs Assigned: Q4849 - Q4857

Samples logged in by: Seyfert, Jeannine Date/Time: 10/02/2008 12:00 AM

Approved By: _____ Approved On: _____

Authorized By: _____ Authorized On: _____

Sample Receipt Form Details

Approved: Authorized

Project Number: G606422-07DUXCHEM

Client: _____

Received by: Seyfert, Jeannine

Date/Time Received: Thursday, October 02, 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:
Q4849	ST01-100208-A	10/02/08 9:26	10/03/08 15:52	1	SEDIMENT TRA	4	NA	NA	NA	R0004 (Lower C			
Q4850	ST01-100208-B	10/02/08 9:26	10/03/08 15:54	1	SEDIMENT TRA	4	NA	NA	NA	R0004 (Lower C			
Q4851	ST01-100208-C	10/02/08 9:26	10/03/08 15:54	1	SEDIMENT TRA	4	NA	NA	NA	R0004 (Lower C			
Q4852	ST02-100208-A	10/02/08 9:55	10/03/08 15:54	1	SEDIMENT TRA	4	NA	NA	NA	R0004 (Lower C			
Q4853	ST02-100208-B	10/02/08 9:55	10/03/08 15:55	1	SEDIMENT TRA	4	NA	NA	NA	R0004 (Lower C			
Q4854	ST04-100208-A	10/02/08 10:22	10/03/08 15:55	1	SEDIMENT TRA	4	NA	NA	NA	R0004 (Lower C			
Q4855	ST04-100208-B	10/02/08 10:22	10/03/08 15:56	1	SEDIMENT TRA	4	NA	NA	NA	R0004 (Lower C			
Q4856	ST03-100208-A	10/02/08 10:45	10/03/08 15:56	1	SEDIMENT TRA	4	NA	NA	NA	R0004 (Lower C			
Q4857	ST03-100208-B	10/02/08 10:45	10/03/08 15:57	1	SEDIMENT TRA	4	NA	NA	NA	R0004 (Lower C			

Total Samples: 9

Chain of Custody

 Proj. No: 6606422
 Proj. Name: Sed Trap

 SAMPLERS: Signature


 ANALYSIS REQUESTED →
 "NUMBER OF CONTAINERS"

GS/TOC

DATE	TIME	Lab BATTELLE ID	Field CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER GS/TOC	ACIDIFIED	PRESERVED	Total Number of Containers	
10/2/08	0926	Q4849	ST01-100208-A	9 th sediment trap recovery station	ST01	X						X			1	
	↓	Q4850	ST01-100208-B		ST01	X							X			1
	↓	Q4851	ST01-100208-C		ST01	X							X			1
	0955	Q4852	ST02-100208-A		ST02	X							X			1
	↓	Q4853	ST02-100208-B		ST02	X							X			1
	1022	Q4854	ST04-100208-A		ST04	X							X			1
	↓	Q4855	ST04-100208-B		ST04	X							X			1
	1045	Q4856	ST03-100208-A		ST03	X							X			1
	↓	Q4857	ST03-100208-B	ST03	X							X			1	

 Relinquished by:


 Date/Time
 10/2/08 1315

 Received by:


 Date/Time
 10/2/08 13:15

Relinquished by:

Date/Time

Received by:

Date/Time

Comments: After settling for 24 hours, All samples will be decanted + weighed for reproducibility. At Station ST01 2 of 3 samples will be analyzed for PCB, TOC, + GS. At the remaining stations only 1 of 2 samples will be analyzed

Deployment No. 10

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Project Client: USACE - North Atlantic Division

Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)

Project Number: G606422-07DUXCHEM

Client ID	ST-01-103008-B	ST-01-103008-C	ST-02-103008-A	ST-03-103008-A	ST-04-103008-A
Battelle ID	Q5252-P	Q5253-P	Q5254-P	Q5256-P	Q5258-P
Sample Type	SA	SA	SA	SA	SA
Collection Date	10/30/08	10/30/08	10/30/08	10/30/08	10/30/08
Extraction Date	02/02/09	02/02/09	02/02/09	02/02/09	02/02/09
Analysis Date	02/08/09	02/08/09	02/09/09	02/09/09	02/09/09
Analytical Instrument	MS	MS	MS	MS	MS
% Moisture	74	78	68.62	71.92	74.85
% Lipid	NA	NA	NA	NA	NA
Matrix	SEDIMENT TRAP				
Sample Size	1.17	0.81	3.31	2.81	2.53
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
CI2(8)	1264.48	1040.39	1057.33	1039.1	1166.42
CI3(18)	3414.9	2688.7	3012.62	3180.43	3447.58
CI3(28)	6214.49	4727.63	6207.53 D	5798.58 D	5498.99
CI3(31)	5476.05	4165.73	5561.12 D	5201.87 D	5211.4
CI3(37)	580.58	527.82	512.14	435.97	424.34
CI4(44)	2535.43	2050.05	2210.94	2263.93	2534.61
CI4(49)	8886.1	6781.92	7791.17 D	7518.55 D	8400.96 D
CI4(52)	9722.48	7614.38	8188.55 D	8447.86 D	9127.51 D
CI4(66)	1391.79	1244.3	1235.75	1093.54	1123.36
CI4(70)	1091.25	1122.07	1023.46	831.89	855.47
CI4(74)	1099.05	914.9	879.35	829.36	768.14
CI4(77)	190.89	200.97	125.11	123.71	137.79
CI4(81)	107.26 U	154.94 U	37.92 U	44.66 U	49.6 U
CI5(87)	366.5	504.8	338.99	255.28	297.73
CI5(99)	2991.65	2479.29	2349.47	2566.34	2568.76
CI5(101)	2810.9	2574.32	2476.56	2363.59	2366.53
CI5(105)	410.21	567.6	338.44	296.28	320.27
CI5(110)	4212.42	3753.59	3660.05	3623.08	3750.93
CI5(114)	106.84 U	154.32 U	47.49	51.94	60.32
CI5(118)	2289.77	2218.69	1796.22	1850.77	1895.48
CI5(123)	318.68	341.91	234.12	221.84	244.75
CI5(126)	107.26 U	154.94 U	37.92 U	44.66 U	49.6 U
CI6(128)	261.92	296.17	228.15	218.25	227.05
CI6(138)	919.51	1135.95	696.89	705.37	659.39
CI6(149)	3074.35	2573.66	2515.61	2683.35	2723.4
CI6(151)	510.27	496.32	408.75	408.8	442.33
CI6(153)	3155.18	2982.84	2331.5	2588.26	2603.79
CI6(156)	250.81	259.88	166.57	165.84	173.97
CI6(157)	110.41	154.32 U	54.25	60.58	59.87
CI6(158)	331.94	393.65	207.73	224.28	237.71
CI6(167)	217.24	252.47	160.53	160.31	164.23
CI6(169)	107.26 U	154.94 U	37.92 U	44.66 U	49.6 U
CI7(170)	231.76	258.62	170.75	181.28	176.25
CI7(177)	159.36	200.24	89.22	95.23	102.28
CI7(180)	489.44	533.96	319.61	352.22	402.53
CI7(183)	201.62	212.99	123.53	141.71	151.2
CI7(187)	506.13	439.78	331.39	405	369.47
CI7(189)	106.84 U	154.32 U	28.69 J	35.23 J	43.2 J
CI8(194)	16.13 J	154.32 U	46.39	43.31 J	39.8 J
CI8(195)	30.18 J	154.32 U	14.83 J	21.08 J	19.26 J
CI8(201)	109.42	154.32 U	43.99	48.86	55.03
CI8(203)	177.29	231.08	76.01	92.96	107.25
CI9(206)	36.39 J	7.99 J	30.44 J	43.49 J	39.55 J
CI10(209)	17.99 J	154.32 U	13 J	11.31 J	10.75 J

Surrogate Recoveries (%)

CI3(34)	73	76	76	80	82
CI6(152)	75	79	74	79	82



Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM
Client ID: Procedural Blank

Battelle ID	BM762PB-P
Sample Type	PB
Collection Date	02/02/09
Extraction Date	02/02/09
Analysis Date	02/08/09
Analytical Instrument	MS
% Moisture	NA
% Lipid	NA
Matrix	SEDIMENT
Sample Size	10.46
Size Unit-Basis	G_DRY
Units	UG/KG_DRY

Cl2(8)	11.95 U
Cl3(18)	11.95 U
Cl3(28)	12 U
Cl3(31)	11.95 U
Cl3(37)	12 U
Cl4(44)	12 U
Cl4(49)	11.95 U
Cl4(52)	11.95 U
Cl4(66)	11.95 U
Cl4(70)	11.95 U
Cl4(74)	11.95 U
Cl4(77)	11.95 U
Cl4(81)	12 U
Cl5(87)	12 U
Cl5(99)	11.95 U
Cl5(101)	11.95 U
Cl5(105)	11.95 U
Cl5(110)	12 U
Cl5(114)	11.95 U
Cl5(118)	12 U
Cl5(123)	12 U
Cl5(126)	12 U
Cl6(128)	12 U
Cl6(138)	11.95 U
Cl6(149)	11.95 U
Cl6(151)	12 U
Cl6(153)	12 U
Cl6(156)	12 U
Cl6(157)	11.95 U
Cl6(158)	11.95 U
Cl6(167)	11.95 U
Cl6(169)	12 U
Cl7(170)	11.95 U
Cl7(177)	11.95 U
Cl7(180)	12 U
Cl7(183)	12 U
Cl7(187)	12 U
Cl7(189)	11.95 U
Cl8(194)	11.95 U
Cl8(195)	11.95 U
Cl8(201)	11.95 U
Cl8(203)	11.95 U
Cl9(206)	11.95 U
Cl10(209)	11.95 U

Surrogate Recoveries (%)

Cl3(34)	87
Cl6(152)	95



Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM

Client ID	Laboratory Control Sample		
Battelle ID	BM763LCS-P		
Sample Type	LCS		
Collection Date	02/02/09		
Extraction Date	02/02/09		
Analysis Date	02/08/09		
Analytical Instrument	MS		
% Moisture	NA		
% Lipid	NA		
Matrix	SEDIMENT		
Sample Size	10.56		
Size Unit-Basis	G_DRY		
Units	UG/KG DRY	Target	% Recovery
C12(8)	280.48	379.92	74
C13(18)	278.4	379.92	73
C13(28)	247.79	379.17	65
C13(31)	31.42		
C13(37)	11.88 U		
C14(44)	281.45	379.55	74
C14(49)	11.84 U		
C14(52)	275.55	378.79	73
C14(66)	269.29	379.17	71
C14(70)	11.84 U		
C14(74)	11.84 U		
C14(77)	261.78	378.79	69
C14(81)	11.88 U		
C15(87)	11.88 U		
C15(99)	11.84 U		
C15(101)	248.36	379.55	65
C15(105)	273.25	379.17	72
C15(110)	11.88 U		
C15(114)	11.84 U		
C15(118)	266.19	379.17	70
C15(123)	11.88 U		
C15(126)	231.11	381.06	61
C16(128)	261.37	381.06	69
C16(138)	250.8	379.55	66
C16(149)	11.84 U		
C16(151)	11.88 U		
C16(153)	285.07	379.17	75
C16(156)	11.88 U		
C16(157)	11.84 U		
C16(158)	11.84 U		
C16(167)	11.84 U		
C16(169)	11.88 U		
C17(170)	243.77	380.68	64
C17(177)	11.84 U		
C17(180)	273.36	380.30	72
C17(183)	11.88 U		
C17(187)	261.94	379.92	69
C17(189)	11.84 U		
C18(194)	11.84 U		
C18(195)	223.84	379.92	59
C18(201)	11.84 U		
C18(203)	11.84 U		
C19(206)	229.31	379.92	60
C110(209)	236.79	379.17	62

Surrogate Recoveries (%)

C13(34)	78
C16(152)	89



Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM
Client ID ST-03-103008-A ST-03-103008-A

Battelle ID	Q5256-P	Q5256MS-P			
Sample Type	SA	MS			
Collection Date	10/30/08	10/30/2008			
Extraction Date	02/02/09	2/2/2009			
Analysis Date	02/09/09	2/9/2009			
Analytical Instrument	MS	MS			
% Moisture	71.92	71.77			
% Lipid	NA	NA			
Matrix	SEDIMENT TRAP	SEDIMENT TRAP			
Sample Size	2.81	1.5			
Size Unit-Basis	G_DRY	G_DRY			
Units	UG/KG_DRY	UG/KG_DRY	Target	% Recovery	Qualifier
C12(8)	1039.1	3886.46	2674.67	106	
C13(18)	3180.43	7935.14	2674.67	178	
C13(28)	5798.58 D	12231.56	2669.33	241	E
C13(31)	5201.87 D	9697.67			
C13(37)	435.97	831.6			
C14(44)	2263.93	6333.89	2672.00	152	
C14(49)	7518.55 D	15560.65			E
C14(52)	8447.86 D	19347.08	2666.67	409	E
C14(66)	1093.54	4405.73	2669.33	124	
C14(70)	831.89	1569.26			
C14(74)	829.36	1572.75			
C14(77)	123.71	2213.9	2666.67	78	
C14(81)	44.66 U	83.67			U
C15(87)	255.28	515.6			
C15(99)	2566.34	5055.93			
C15(101)	2363.59	6676.53	2672.00	161	
C15(105)	296.28	2826.18	2669.33	95	
C15(110)	3623.08	7120.92			
C15(114)	51.94	126.33			
C15(118)	1850.77	5837.06	2669.33	149	
C15(123)	221.84	452.82			
C15(126)	44.66 U	2074.42	2682.67	77	
C16(128)	218.25	2651.08	2682.67	91	
C16(138)	705.37	3316.17	2672.00	98	
C16(149)	2683.35	5332.65			
C16(151)	408.8	832.16			
C16(153)	2588.26	7390.18	2669.33	180	
C16(156)	165.84	366.6			
C16(157)	60.58	109.27			
C16(158)	224.28	452.99			
C16(167)	160.31	364.05			
C16(169)	44.66 U	83.67			U
C17(170)	181.28	2533.96	2680.00	88	
C17(177)	95.23	197.19			
C17(180)	352.22	3203.31	2677.33	106	
C17(183)	141.71	280.2			
C17(187)	405	2952.71	2674.67	95	
C17(189)	35.23 J	85.62			
C18(194)	43.31 J	116.04			
C18(195)	21.08 J	2041.23	2674.67	76	
C18(201)	48.86	100.95			
C18(203)	92.96	176.76			
C19(206)	43.49 J	2233.76	2674.67	82	
C110(209)	11.31 J	2096.71	2669.33	78	

Surrogate Recoveries (%)

C13(34)	80	83
C16(152)	79	83

Project Client: USACE - North Atlantic Division
Project Name: NBH Sediment Trap Sample PCB Congener Analysis (GC/MS)
Project Number: G606422-07DUXCHEM ST-03-103008-A
Client ID

Battelle ID	Q5256MSD-P				
Sample Type	MSD				
Collection Date	10/30/2008				
Extraction Date	2/2/2009				
Analysis Date	2/9/2009				
Analytical Instrument	MS				
% Moisture	71.54				
% Lipid	NA				
Matrix	SEDIMENT TRAP				
Sample Size	1.44				
Size Unit-Basis	G_DRY				
Units	UG/KG_DRY	Target	% Recovery	Qualifier	RPD (%)
					Qualifier
C12(8)	3704.6	2786.11	96		9.9
C13(18)	7338.56	2786.11	149		17.7
C13(28)	11926.97	E 2780.56	220		9.1
C13(31)	9233.12				
C13(37)	815.15				
C14(44)	6166.3	2783.33	140		8.2
C14(49)	14518.5	E 2780.56			
C14(52)	18035.42	E 2777.78	345		17.0
C14(66)	4335.04	2780.56	117		5.8
C14(70)	1583.59				
C14(74)	1563.6				
C14(77)	2218.88	2777.78	75		3.9
C14(81)	87.15	U			
C15(87)	511.33				
C15(99)	4683.86				
C15(101)	6552.41	2783.33	150		7.1
C15(105)	2795.35	2780.56	90		5.4
C15(110)	6610.24				
C15(114)	108.86				
C15(118)	5576.43	2780.56	134		10.6
C15(123)	422.96				
C15(126)	2056.51	2794.44	74		4.0
C16(128)	2540.58	2794.44	83		9.2
C16(138)	3274.99	2783.33	92		6.3
C16(149)	4981.86				
C16(151)	794.09				
C16(153)	7066.87	2780.56	161		11.1
C16(156)	344.26				
C16(157)	118.99				
C16(158)	426.2				
C16(167)	336.52				
C16(169)	87.15	U			
C17(170)	2485.33	2791.67	83		5.8
C17(177)	192.08				
C17(180)	3009.68	2788.89	95		10.9
C17(183)	266.8				
C17(187)	2821.08	2786.11	87		8.8
C17(189)	86.81	U			
C18(194)	94.52				
C18(195)	2050.41	2786.11	73		4.0
C18(201)	97.82				
C18(203)	238.14				
C19(206)	2223.2	2786.11	78		5.0
C110(209)	2085.59	2780.56	75		3.9

Surrogate Recoveries (%)

C13(34)	78
C16(152)	76

PCB Congeners – Sediment Trap QA/QC Summary
Batch 09-0016

PROJECT: New Bedford Harbor Sediment Trap Study (USACE)
PARAMETER: PCB Congeners
LABORATORY: Battelle, Duxbury, MA
MATRIX: Sediment Trap Samples
SAMPLE CUSTODY: Surface sediment and sediment trap samples were collected on 10/30/2008. Samples were hand delivered to the Battelle Duxbury Chemistry Sample Custodian. The samples were received in good condition and no custody issues were noted. Samples were logged into Battelle LIMS and received unique IDs. After being received by the lab, the sediment trap samples were centrifuged to remove excess water. The samples were then stored in the walk-in freezer until preparation could begin.

	Reference Method	Method Blank	Surrogate Recovery	LCS Recovery	MS Recovery	Duplicate Relative Percent Difference	Reporting Limits (ug/kg dry wt)
PCB Congeners	EPA 1668A and 8270C	< RL	40-120% Recovery	40-120% Recovery	40-120% Recovery (analyte conc. in MS must be >5x background)	≤30% RPD	~ 11.95 – 12.00

METHOD: Sediment trap samples were extracted for PCB congeners following modified EPA Method 3545. Sediments were air-dried overnight and approximately 5 g of sediment was spiked with surrogates and extracted using an Accelerated Solvent Extractor (ASE). The extract was poured through a funnel and passed through glass wool and sodium sulfate. The extract was then brought to 100 mL; 10 mL was removed and continued on for further processing. The 10 mL split was treated with copper, solvent exchanged to hexane, and passed through a Florisil SPE cartridge. The post-Florisil extract was then brought to 10 mL, out of which 1 mL was removed to be fortified with internal standards (IS). Extracts designated for PCB congener analysis were analyzed using gas chromatography/mass spectrometry (GC/MS), following Battelle SOP 5-315 which is based on EPA Methods 1668A and 8270C. Sample data were quantified by the method of internal standards, using the IS compounds. Data was evaluated against sample specific reporting limits.

HOLDING TIMES: Sediments of this batch were extracted within 1 year of sample holding time for frozen sediments. All extracts were analyzed within 40 days of extract holding time.

Batch	Collection Date	Extraction Date	Analysis Date
09-0016	10/30/2008	2/2/2009	2/8/2009 – 2/21/2009

PCB Congeners – Sediment Trap QA/QC Summary

Batch 09-0016

LIST OF SAMPLES:

08-0005

Sample ID	Battelle ID
ST-01-103008-B	Q5252
ST-01-103008-C	Q5253
ST-02-103008-A	Q5254
ST-03-103008-A	Q5256
ST-04-103008-A	Q5258

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.

09-0016 – No exceedences noted. No target analytes were detected in the blank sample.

LABORATORY CONTROL SAMPLE: A of laboratory control (LCS) sample was prepared with each analytical batch. The percent recoveries of target analytes were calculated to measure data quality in terms of accuracy.

09-0016 – No exceedence noted. All percent recoveries of spiked analytes were within laboratory control limit of 40-120%.

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.

09-0016 – No exceedence noted. All percent recoveries of analytes spiked at a concentration great enough to be used for data quality assessment ($> 5 \times$ background) were within laboratory control limit of 40-120%. All RPDs between analytes spiked at a concentration great enough to be used for data quality assessment ($> 5 \times$ background) were within laboratory control limit of $< 30\%$.

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).

09-0016 – No exceedence noted. All surrogate recoveries were within laboratory control limit of 40-120%.

CALIBRATIONS: The GC/MS is calibrated with a minimum of a 6-point curve. The co-efficient of determination must be > 0.995 for each target analyte in the initial calibration (ICAL). Each batch of samples analyzed is bracketed by a continuing calibration verification (CCV) sample, run at a frequency of every 12 hours (minimally). This percent difference (PD) for the CCV should be $< 25\%$ for individual analytes. Additionally an instrument calibration check (ICC) sample was run with the initial calibration. The PD for the ICC should be $< 25\%$ for each analyte.

09-0016 – PCB 81 exceeded the %D criteria in the ICC due to standard impurity. A second ICC was run and results were acceptable for this compound. All other calibration criteria were met.

Sample Receipt Form

Approved: Authorized

Project Number: G606422

Client: _____

Received by: Seyfert, Jeannine

Date/Time Received: Friday, October 31, 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	Smpls
1 of 1	Cooler	NA	None	Not Applicable	Intact	4.0	9

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): 4 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 South: Refrigerator - R0003 (Upper Cold) BDO IDs Assigned: Q5251 - Q5259

Samples logged in by: Seyfert, Jeannine Date/Time: 10/31/2008 12:00 AM

Approved By: _____ Approved On: _____

Authorized By: _____ Authorized On: _____

Sample Receipt Form Details

Approved: Authorized:

Project Number: G606422 Client: _____

Received by: Seyfert, Jeannine Date/Time Received: Friday, October 31, 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:
Q5251	ST-01-103008-A	10/30/08 9:11	10/31/08 9:53	1	SEDIMENT TRA	4	NA	No	NA	R0003 (Upper C			
Q5252	ST-01-103008-B	10/30/08 9:11	10/31/08 9:54	1	SEDIMENT TRA	4	NA	No	NA	R0003 (Upper C			
Q5253	ST-01-103008-C	10/30/08 9:11	10/31/08 9:54	1	SEDIMENT TRA	4	NA	No	NA	R0003 (Upper C			
Q5254	ST-02-103008-A	10/30/08 9:30	10/31/08 9:54	1	SEDIMENT TRA	4	NA	No	NA	R0003 (Upper C			
Q5255	ST-02-103008-B	10/30/08 9:30	10/31/08 9:55	1	SEDIMENT TRA	4	NA	No	NA	R0003 (Upper C			
Q5256	ST-03-103008-A	10/30/08 9:50	10/31/08 9:55	1	SEDIMENT TRA	4	NA	No	NA	R0003 (Upper C			
Q5257	ST-03-103008-B	10/30/08 9:50	10/31/08 9:55	1	SEDIMENT TRA	4	NA	No	NA	R0003 (Upper C			
Q5258	ST-04-103008-A	10/30/08 10:10	10/31/08 9:55	1	SEDIMENT TRA	4	NA	No	NA	R0003 (Upper C			
Q5259	ST-04-103008-B	10/30/08 10:10	10/31/08 9:56	1	SEDIMENT TRA	4	NA	No	NA	R0003 (Upper C			

Total Samples: 9

Chain of Custody

Proj. No GG06422		Proj. Name New Bedford Harbor Sed. Trap														
SAMPLERS: Signature Matt Flynn Annie Murphy Patrick Curran				ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"												
DATE	TIME	Field BATTELLE ID	Lab CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers	
10/30/08	0911	ST-01-103008-A	Q5251	Sediment trap sample from station ST01		X									1	
	↓	ST-01-103008-B	Q5252			X										1
	↓	ST-01-103008-C	Q5253			X										1
	0930	ST-02-103008-A	Q5254			X										1
	↓	ST-02-103008-B	Q5255			X										1
	0950	ST-03-103008-A	Q5256			X										1
	↓	ST-03-103008-B	Q5257			X										1
	1010	ST-04-103008-A	Q5258			X										1
	↓	ST-04-103008-B	Q5259		X										1	
Relinquished by: Matthew R Flynn				Date/Time 10/30/08 1700		Received by: Jeannine Siefert					Date/Time 10/30/08 1700					
Relinquished by:				Date/Time		Received by:					Date/Time					
Comments:																