

Evaluation of Sediment Agitation and Mixing into the Surrounding Water Column from Capping Activities - Boston Harbor

Evaluation of Sediment Agitation and Mixing into the Surrounding Water Column from Capping Activities – Boston Harbor

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Sally Gutierrez, Director
National Risk Management Research Laboratory

Abstract

Capping is a common remediation technology for the containment/stabilization of contaminated sediments. During capping activities, capping material is commonly released from a barge at the water surface and falls through the water column to the sediment surface, thus providing a clean surface sediment layer. Little information exists on the potential release of contaminated sediments during and after the capping operations. This report focuses on the measured release of contaminants during individual capping events at two Confined Aquatic Disposal Cells (CADs) located in the Mystic River, Boston, MA. The two CADs (M8 and M19) were previously filled with dredged material contaminated with total petroleum hydrocarbons (TPH), polycyclic aromatic hydrocarbons (PAHs), and polychlorinated biphenyls (PCBs). U.S. EPA/ORD sampled the water column during each capping event to evaluate whether cap placement resulted in the release of contaminated sediments. Results showed capping from the water surface resulted in contaminant resuspension with the most significant releases occurring during the application of the first layers of capping material. With each subsequent layering of the capping material, levels of contaminant resuspension decrease with each successive application.

CONTENTS

FIGURES	iv
TABLES	iv
ACRONYMS AND ABBREVIATIONS	vi
1.0 INTRODUCTION	1
1.1 Background.....	1
1.2 Environmental System.....	2
1.3 Project Objectives.....	4
2.0 FIELD SAMPLING AND ANALYTICAL METHODS	5
2.1 Marine Water Sampling.....	5
2.1.1 Sampling and Navigation.....	5
2.1.2 Monitoring and Sampling Operations.....	7
2.1.3 Field Measurements and Collection of Water Samples	8
2.1.4 Decontamination of Sample Pumping System	8
2.1.5 Field Observations	9
2.2 Analyses of Organic Contaminants	9
2.2.1 TPH Analysis.....	10
2.2.2 PAH Analysis	11
2.2.3 PCB Analysis.....	11
2.3 TSS Analyses.....	11
2.4 RCRA 8 Metals Analyses	12
3.0 RESULTS AND DISCUSSION	13
3.1 Pre Survey Background	13
3.2 Total Suspended Solids.....	13
3.3 Total Petroleum Hydrocarbons	15
3.4 Polycyclic Aromatic Hydrocarbons.....	18
3.5 Polychlorinated Biphenyls.....	22
3.6 RCRA 8 Metals.....	22
3.7 Filtered Samples	27
3.8 Post Survey Sampling	28
3.9 Sand Capping Material	29
3.10 Data Comparisons.....	30
4.0 CONCLUSIONS	35
5.0 REFERENCES	37
APPENDIX A: BOSTON HARBOR PLUME TRACKING SURVEY REPORT	A-1
APPENDIX B: CHAIN OF CUSTODY FORMS	B-1
APPENDIX C: QUALITY CONTROL REPORTS	C-1
APPENDIX D: TPH LABORATORY-REPORTED SAMPLE DATA WITH QC QUALIFIERS	D-1
APPENDIX E: PAH LABORATORY-REPORTED SAMPLE DATA WITH QC QUALIFIERS	E-1
APPENDIX F: PCB LABORATORY-REPORTED SAMPLE DATA WITH QC QUALIFIERS	F-1

APPENDIX G:	RCRA 8 METALS LABORATORY-REPORTED SAMPLE DATA	G-1
APPENDIX H:	TSS AND CONTAMINANT OF CONCERN TWO-DIMENSIONAL PLOTS.....	H-1
APPENDIX I:	AVERAGE CURRENT VELOCITY PLOTS	I-1

FIGURES

Figure 1-1.	Location of Boston Harbor Navigation Improvement Project and Cape Cod Canal.....	2
Figure 1-2.	Boston Harbor Navigation Improvement Project, Mystic River and Inner Confluence Disposal Cells	3
Figure 1-3.	Tug Boat Pushing Great Lakes Hopper Dredge, <i>The Manhattan Island</i>	3
Figure 2-1.	BOSS In Situ Measurement and Onboard Components.....	6
Figure 2-2.	BOSS Onboard Battelle’s Vessel, <i>Aquamonitor</i>	7
Figure 2-3.	Transect Line, Sampling Stations, and Station Types for BOSS Surveys and Monitoring.	8
Figure 2-4.	Decontaminating the BOSS Between Sampling Events.....	9
Figure 3-1.	Average TPH Concentrations – Cell M19	20
Figure 3-2.	Average TPH Concentrations – Cell M8	20
Figure 3-3.	Average Total PAH Concentrations – Cell M19	21
Figure 3-4.	Average Total PAH Concentrations – Cell M8	21
Figure 3-5.	Average Total PCB Concentrations – Cell M19	23
Figure 3-6.	Average Total PCB Concentrations – Cell M8.....	23
Figure 3-7.	2-D Plot of PAH and TSS Concentrations for Run 1 CAD Cell M19.....	31
Figure 3-8.	TPH Plotted Against TSS for Runs 1 Through 4.....	32
Figure 3-9.	PAHs Plotted Against TSS for Runs 1 Through 4.....	32
Figure 3-10.	PCBs Plotted Against TSS for Runs 1 Through 4	32
Figure 3-11.	TPH Plotted Against TSS for Runs 5 through 8.....	33
Figure 3-12.	PAHs Plotted Against TSS for Runs 5 Through 8.....	33
Figure 3-13.	PCBs Plotted Against TSS for Runs 5 through 8	33

TABLES

Table 2-1.	Critical and Noncritical Measurements.....	5
Table 2-2.	Field Measurements and Instruments.....	6
Table 2-3.	Number of Samples Collected During the Survey Events at Boston Harbor	7
Table 2-4.	Compounds of Interest and Method Detection Limits	12
Table 3-1.	Pre Survey Organics Analytical Results	14
Table 3-2.	RCRA 8 Metals Analytical Results for Pre Survey	14
Table 3-3.	Organics Analytical Results for Run 1.....	15
Table 3-4.	Organics Analytical Results for Run 2.....	15
Table 3-5.	Organics Analytical Results for Run 3.....	16
Table 3-6.	Organics Analytical Results for Run 4.....	16
Table 3-7.	Organics Analytical Results for Run 5.....	17
Table 3-8.	Organics Analytical Results for Run 6.....	17
Table 3-9.	Organics Analytical Results for Run 7.....	18
Table 3-10.	Organics Analytical Results for Run 8.....	18
Table 3-11.	RCRA 8 Metals Analytical Results for Run 1	19
Table 3-12.	RCRA 8 Metals Analytical Results for Run 2	24
Table 3-13.	RCRA 8 Metals Analytical Results for Run 3	24
Table 3-14.	RCRA 8 Metals Analytical Results for Run 4	25

Table 3-15.	RCRA 8 Metals Analytical Results for Run 5	25
Table 3-16.	RCRA 8 Metals Analytical Results for Run 6	26
Table 3-17.	RCRA 8 Metals Analytical Results for Run 7	26
Table 3-18.	RCRA 8 Metals Analytical Results for Run 8	27
Table 3-19.	Comparison of Filtered Samples	27
Table 3-20.	Organics Analytical Results for Post Survey	28
Table 3-21.	RCRA 8 Metals Analytical Results for Post Survey	29
Table 3-22.	Organics Analytical Results for Sand Capping Material.....	29
Table 3-23.	Correlation Coefficients and Linear Regression Values for Runs 1 Through 8	34
Table 3-24.	Average Current Velocity and Flow Direction Approximately 2 m Above the River Bottom.....	34
Table 4-1.	Comparison of Results from Boston Harbor and Eagle Harbor.....	35

ACRONYMS AND ABBREVIATIONS

2-D	two-dimensional
ADCP	Acoustic Doppler Current Profiler
ALQ	Analytical Limits of Quantitation
BHNIP	Boston Harbor Navigation Improvement Project
BOSS	Battelle Ocean Sampling System
CAD	confined aquatic disposal
COC	contaminant of concern
CTD	conductivity, temperature, and depth
DCM	dichloromethane
DUP	duplicate
ECD	electron capture detector
EPC	electronic pressure controlled
GC	gas chromatograph
GC/FID	gas chromatography/flame ionization detection
GC/MS	gas chromatography/mass spectrometry
GPS	global positioning system
HCl	hydrochloric acid
HP	Hewlett Packard
HPLC	high-performance liquid chromatography
ICP-MS	inductively coupled plasma – mass spectrometry
IUPAC	International Union of Pure and Applied Chemistry
K-D	Kunderna Danish
LCS	laboratory control sample
MDL	method detection limit
MLLW	mean lower low water
MS	matrix spike
MSD	mass selective detector
NA	not applicable
ND	not detected
N-evap	nitrogen evaporation
NRMRL	National Risk Management Research Laboratory
PAH	polycyclic aromatic hydrocarbon
PB	procedural blank
PCB	polychlorinated biphenyl
psi	pounds per square inch

QAPP	Quality Assurance Project Plan
RCRA	Resource Conservation and Recovery Act
RF	response factor
RIS	Recovery Internal Standard
SIM	select ion monitoring
SIS	Surrogate Internal Standard
SOP	Standard Operating Procedure
TPH	total (extractable) petroleum hydrocarbons
TSS	total suspended solids
USACE	United States Army Corps of Engineers
U.S. EPA	United States Environmental Protection Agency
WA	work assignment
WAL	Work Assignment Leader
WAM	Work Assignment Manager

1.0 INTRODUCTION

This technical report was prepared in fulfillment of Contract No. 68-C7-0008, Work Assignment (WA) No. 4-26 by Battelle under the sponsorship of the United States Environmental Protection Agency's (U.S. EPA's) National Risk Management Research Laboratory (NRMRL). The work was conducted at Battelle, Columbus, OH, from April 11, 2000 to September 30, 2001.

Mr. George T. Moore is the U.S. EPA Project Officer for this contract and Mr. Terrence Lyons is the U.S. EPA Work Assignment Manager (WAM). Dr. Abraham Chen is the Battelle Program Manager and Battelle Work Assignment Leader (WAL). The members of the Battelle project staff included Ms. Jennifer Ickes, Mr. Wayne Trulli, Dr. Carl Albro, Ms. Carole Peven-McCarthy, Ms. Lydia Cumming, and Dr. Victor Magar.

1.1 Background

The U.S. EPA's NRMRL is interested in evaluating if placement of marine caps would result in the release of contaminants into the surrounding water column. The goal of this study was to achieve a better understanding of the amount of contaminants released into the surrounding water column before, during, and after capping. For this study, a state-of-the-art oceanographic technology was used to acquire real time, high-resolution field data to determine the extent of the release of contaminants into the water column caused by sediment agitation from capping activities for two confined aquatic disposal (CAD) cells at the Mystic River/Boston Harbor, Boston, MA. A parallel study conducted under U.S. EPA Contract No. 68-C7-0008, WA No. 4-30 focused on the resuspension of polycyclic aromatic hydrocarbon (PAH) compounds during capping at the Wyckoff/Eagle Harbor Superfund site in Bainbridge Island, WA (Battelle, 2001).

A common remediation technology for the containment/stabilization of contaminated sediments is capping. Capping is the covering of contaminated sediments with sand, gravel, or fine-grain dredged or excavated materials. During capping activities, tons of capping material are released from barges at the water's surface to fall to the sediment layer below. Caged fish located downstream of the capping site have been used to try to evaluate the extent of exposure from individual capping activities. Little information exists on the amount of contaminants released into the surrounding water column during and after capping.

CAD cells in Boston Harbor were used as disposal sites for silty, fine-grained sediments that were determined to be unsuitable for ocean placement from the Boston Harbor Navigation Improvement Project (BHNIP). Two of the CAD cells, located in the Mystic River portion of Boston Harbor (Figure 1-1), were filled with dredged material in January 2000. The two cells, M8 and M19 (Figure 1-2), were left undisturbed for 8 months to allow the dredged material to consolidate prior to capping. Consolidation was expected to reduce mixing between the sediments in the CAD cells and the cap sediments.

CAD cell M8 was 700 ft by 200 ft, was excavated to 90 ft deep, and had an estimated capacity of 155,000 yd³ of dredged material. CAD cell M19 was the larger of the two cells at 800 ft by 300 ft, was excavated to 80 ft deep, and had an estimated capacity of 179,000 yd³ of dredged material. Average concentrations of total petroleum hydrocarbons (TPH), polychlorinated biphenyls (PCBs), and PAHs measured in CAD cells from the Mystic River were 1,519 mg/kg, 220 µg/kg, and 64,478 µg/kg, respectively (USACE, 1999a). These concentrations were not measured in either CAD cells M19 or M8. However, all CAD cells in the Mystic River were filled with dredged material from the same location, so concentrations of the material placed in cells M8 and M19 should be consistent with these concentrations.

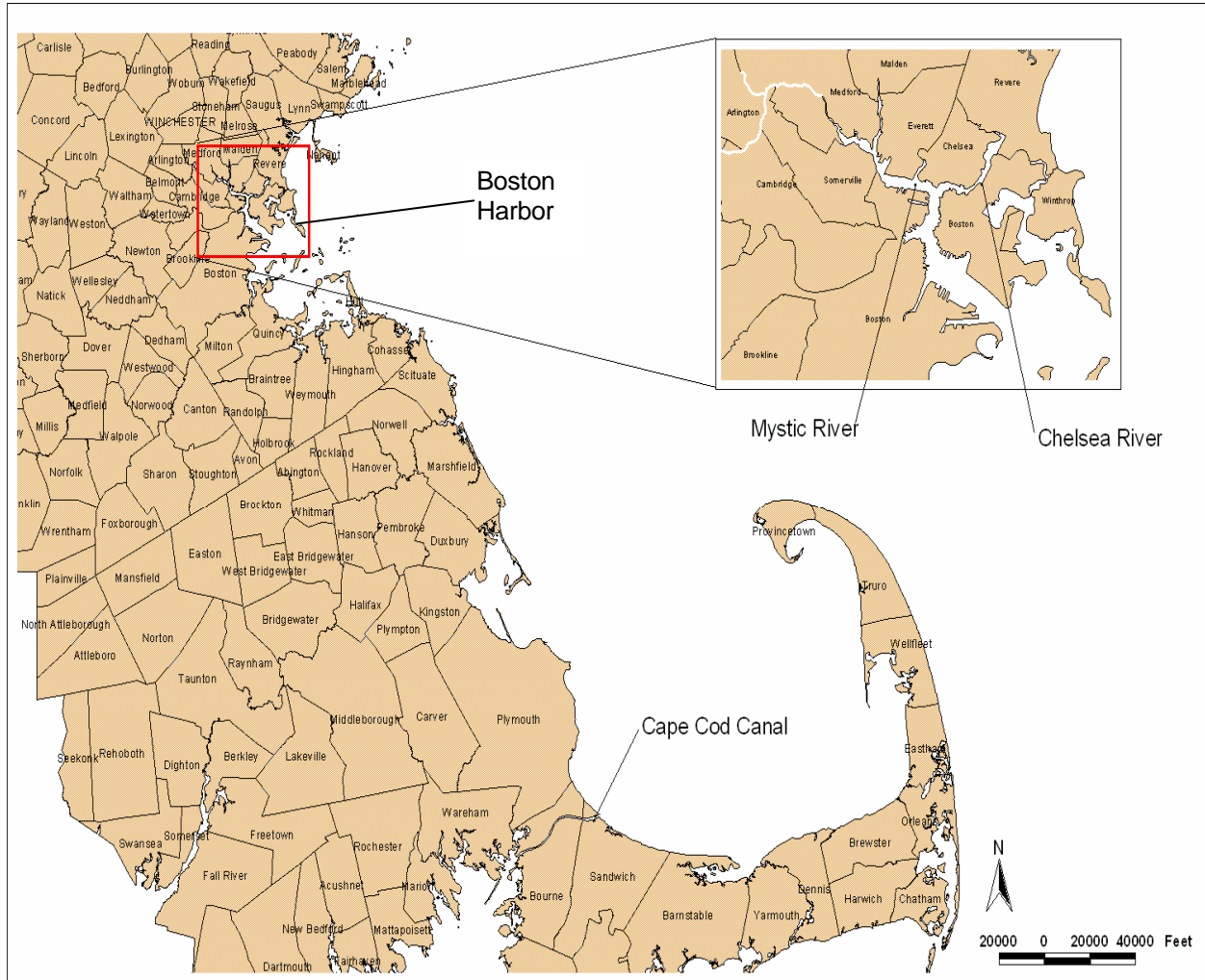


Figure 1-1. Location of Boston Harbor Navigation Improvement Project and Cape Cod Canal (Source: Fredette et al., 2000)

Sand dredged from Cape Cod Canal (Figure 1-1) was used to cap CAD cells M8 and M19 (Fredette et al., 2000). The sand cap was “sprinkled” on the cells using a partially opened hopper dredge, which was maneuvered using a tug rather than utilizing the dredge’s engines (Figure 1-3). This method of capping was expected to minimize disturbance of the silt material in the CAD cells.

1.2 Environmental System

During a May 16, 2000 site visit, the U.S. EPA WAM, U.S. EPA Region 1 office, United States Army Corps of Engineers’ (USACE’s) New England District, and Battelle identified Boston Harbor as a suitable candidate site for monitoring sediment agitation and mixing during a capping event. Boston Harbor was selected for this study for the following reasons:

- The site has a well-documented history of contaminated sediments disposal, which made identification of contaminants of concern (COCs) easier and eliminated the need for sample collection and analysis for site characterization.

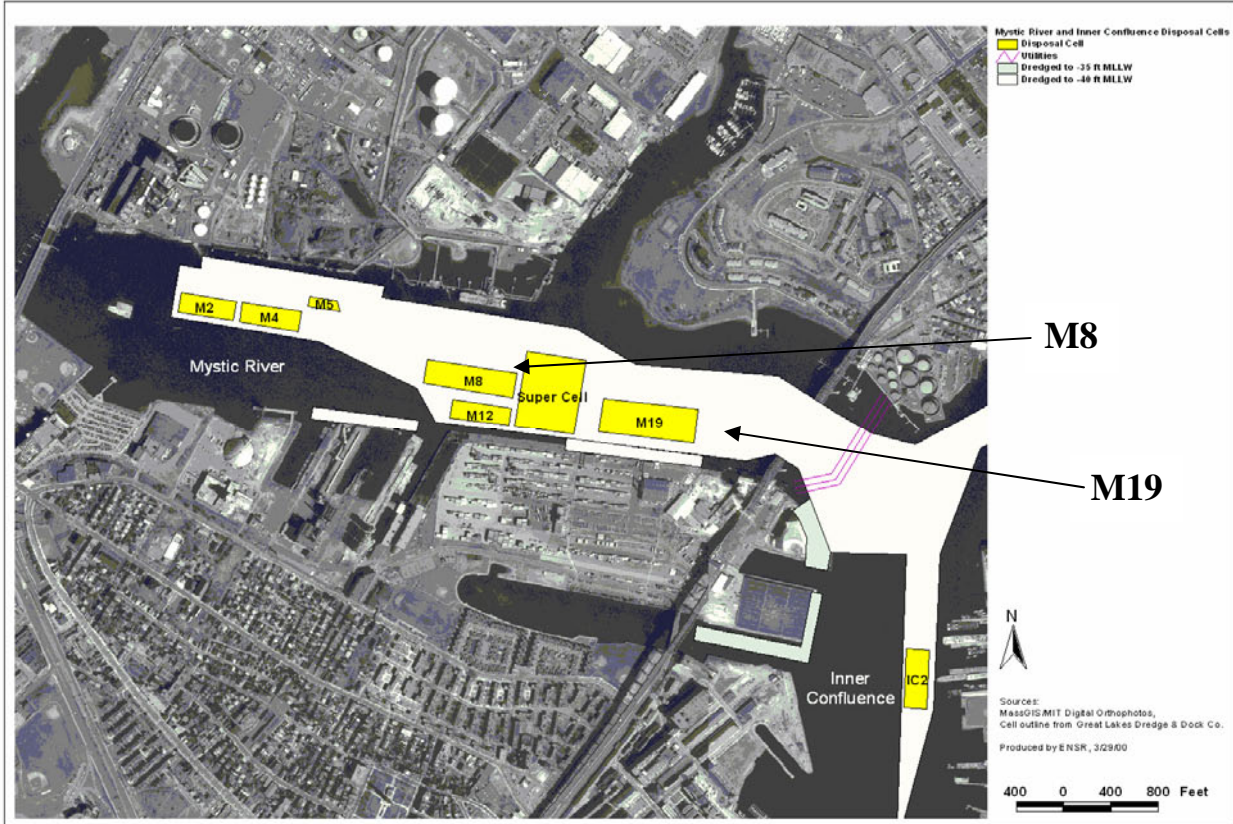


Figure 1-2. Boston Harbor Navigation Improvement Project, Mystic River and Inner Confluence Disposal Cells (Source: Fredette et al., 2000)



Figure 1-3. Tug Boat Pushing Great Lakes Hopper Dredge, *The Manhattan Island*

- COC concentrations in the CAD were high enough to make detection possible during monitoring.
- The U.S. EPA Region 1 Office and the USACE's New England District expressed interest in this study and agreed to provide technical support for the field efforts, including data exchange.
- The site was well characterized, thereby provided a large database of information to select appropriate sample locations.
- The capping of the CADs took place during fiscal year 2000, allowing field activities to be completed during the time allotted for this work assignment.

1.3 Project Objectives

The primary objective of this work assignment was to evaluate if cap placement resulted in the release of contaminants into the surrounding water column. This report focuses on results of water quality analyses during capping events at the two Boston Harbor/Mystic River CAD cells.

2.0 FIELD SAMPLING AND ANALYTICAL METHODS

This section describes field sampling methods used at Boston Harbor, and methods used to analyze samples for TPH, PCBs, and PAHs, and Resource Conservation and Recovery Act (RCRA) 8 metals. Field and analytical methods were conducted in accordance with a U.S. EPA-approved Quality Assurance Project Plan (QAPP) for the study (QAPP I.D. No. 206-Q2-0) (Battelle, 2000). The experimental design is described in Section 2.0 of that QAPP.

Table 2-1 identifies both critical and noncritical measurements that were made during the course of this study.

Table 2-1. Critical and Noncritical Measurements

Measurement	Method/Instrument
<i>Critical Measurements</i>	
TPH (fingerprint) in water	Battelle SOP 5-202
PCBs in water	Battelle SOP 5-128
PAHs in water	Battelle SOP 5-157
RCRA metals in water	U.S. EPA Method 200.8
TSS	Battelle SOP 5-053
Transmissometry/ Turbidity	Seatech 20-cm (660 nm)
GPS Navigation	Battelle SOP
<i>Noncritical Measurements</i>	
Conductivity	OS200 CTD
Temperature	OS200 CTD
Depth	Furuno FCV-52
Current velocity	RD Instruments ADCP WHM600-I-UG6

ADCP = Acoustic Doppler Current Profiler.

CTD = conductivity, temperature, and depth.

GPS = global positioning system.

SOP = Standard Operating Procedure.

TSS = total suspended solids.

2.1 Marine Water Sampling

2.1.1 Sampling and Navigation. Monitoring of the capping event was conducted using the Battelle Ocean Sampling System (BOSS) deployed from a survey vessel. The BOSS in situ sensor package included: conductivity, temperature, depth, and transmissometers, and a Teflon™/titanium pumping system for sample collection (Figure 2-1). A second transmissometer, calibrated to the in situ data, was located at the water sampling manifold so that the appropriate parcel of water could be identified and sampled at the appropriate time. Additionally, an Acoustic Doppler Current Profiler (ADCP) was deployed to obtain vertical profiles of horizontal currents. Table 2-2 provides a summary of the field measurements that were acquired from the survey vessel during each monitoring event. A more detailed description of monitoring activities and sample collection can be found in the Boston Harbor Plume Tracking Survey Report (Appendix A).

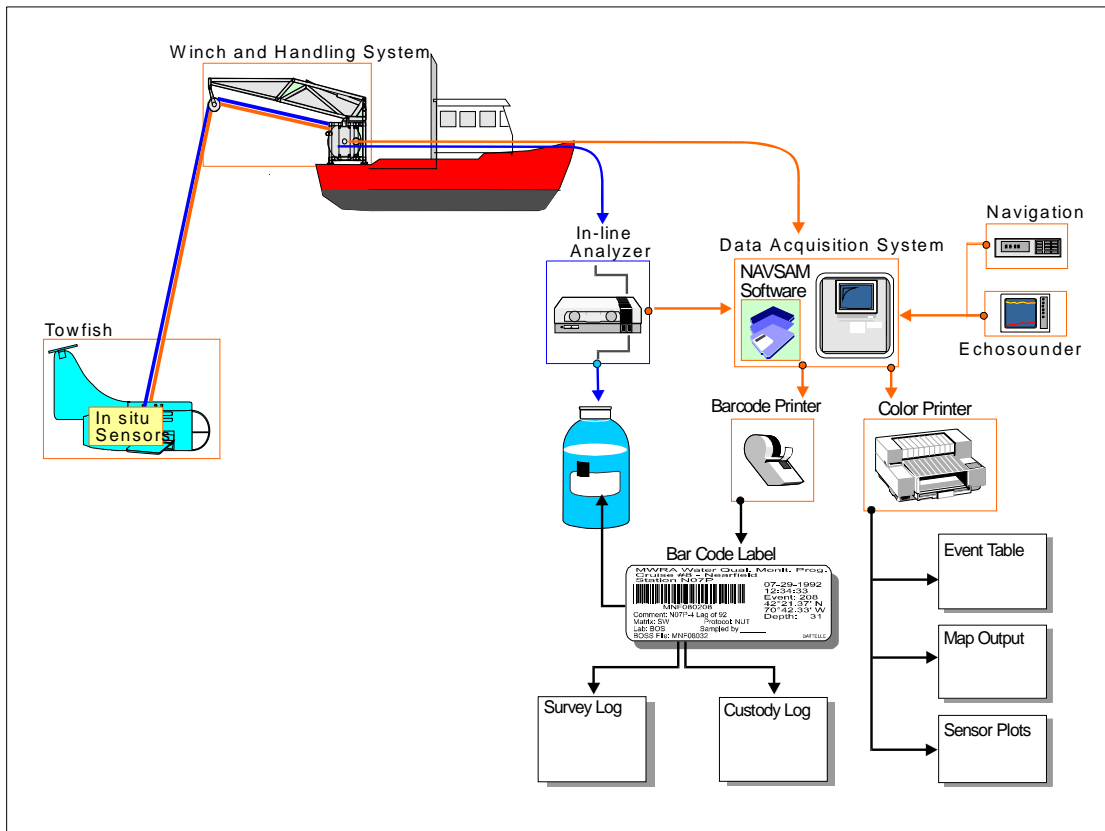


Figure 2-1. BOSS In Situ Measurement and Onboard Components

Table 2-2. Field Measurements and Instruments

Measurements	Units	Instrument
Conductivity	$\mu\text{mhos/cm}$	OS200 CTD
Temperature	$^{\circ}\text{C}$	OS200 CTD
Pressure	m	OS200 CTD
Transmissometry/Turbidity	m^{-1}	Seatech 20-cm (660 nm) (2)
Bottom depth	m	Furuno FCV-52
Navigational position	degrees	Northstar 942X
Ocean current velocity	cm/sec	RD Instruments ADCP WHM600-I-UG6

Several days prior to the field operations, all equipment was installed aboard the survey vessel and tested. Two days prior to the initiation of capping, background sampling events were conducted at CAD cells M8 and M19. Monitoring for both cells was a deviation of the approved QAPP (Battelle, 2000), which stated that either cell M8 or cell M19 would be monitored. Monitoring of both cells was unavoidable because the hopper dredge was unable to cap one CAD cell continuously as the USACE had anticipated. Monitoring activities were conducted in approximately 14-hour intervals. Each 14-hour interval included approximately 1 hour of capping for each barge drop plus 13 hours of barge reloading. The hopper dredge was reloaded at Cape Cod, MA.

2.1.2 Monitoring and Sampling Operations. Field survey operations consisted of 10 separate sampling events conducted over a 22-day period (approximately two events per day plus background samples before and after capping). All 10 events were conducted using the BOSS (Figure 2-2). During the first event, sensor data and water samples were collected prior to initiation of capping activities at CAD cells M8 and M19 for baseline/reference data. During the next eight events, sensor data and water samples were collected while capping activities were conducted at either cells M8 or M19 (Table 2-3). During the last (10th) event, sensor data and water samples were collected four days after completion of all capping activities at cells M8 and M19. Figure 2-3 shows the target BOSS transects and target sampling locations used for background surveys and active monitoring events (i.e., during capping).

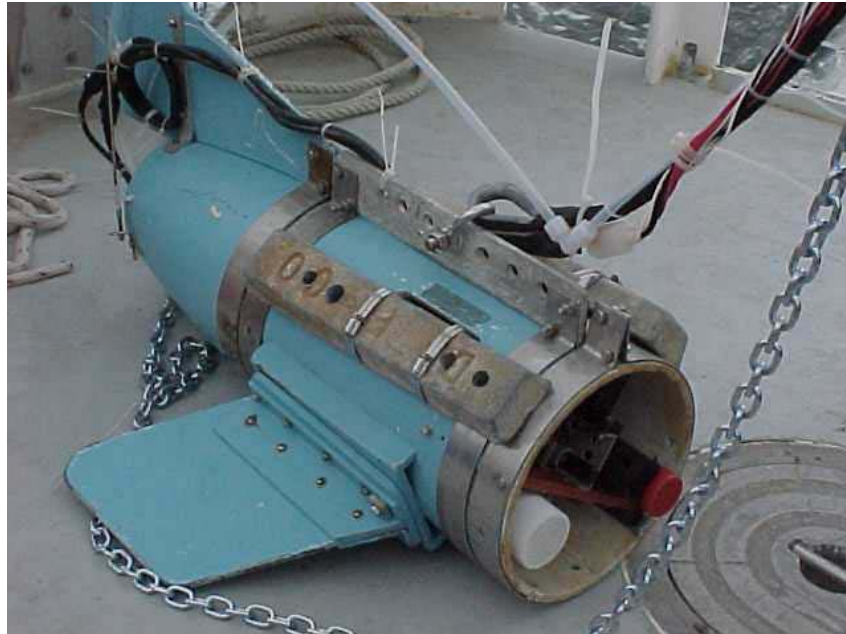


Figure 2-2. BOSS Onboard Battelle’s Vessel, *Aquamonitor*

Table 2-3. Number of Samples Collected During the Survey Events at Boston Harbor

Type of Event	Number of Events per Survey	Number of Samples per Event		
		CAD Cell M19	CAD Cell M8	Total
Pre Survey	1	5	5	10
Pre Runs 1 – 4	4	3	0	12
Runs 1 – 4	4	9	0	36
Post Runs 1 – 4	4	3 ^(a)	0	10
Pre Runs 5 – 8	4	0	3	12
Runs 5 – 8	4	0	9	36
Post Runs 5 – 8	4	0	3	12
Post Survey	1	5	5	10
Total	-	-	-	138

(a) Sampler struck bottom immediately following sample collection for the first Post Run 3 sample, and system components fouled with mud. As a result the second and third samples for Post Run 3 could not be collected.

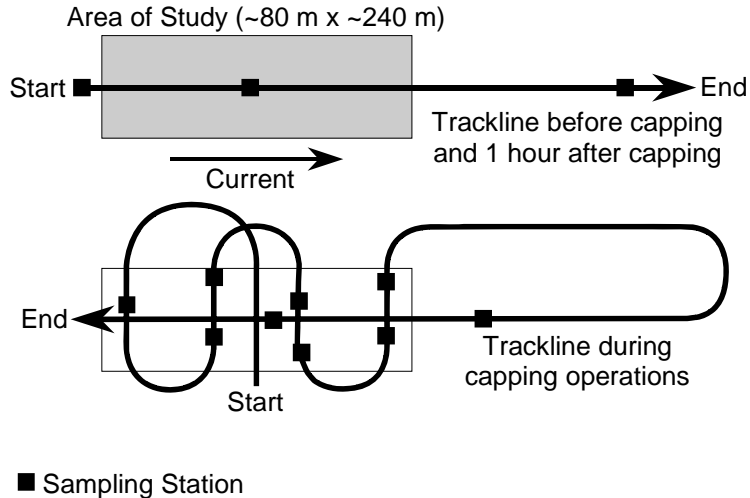


Figure 2-3. Transect Line, Sampling Stations, and Station Types for BOSS Surveys and Monitoring. The top transect represents the daily Pre Run and Post Run background monitoring events. The bottom transect represents a typical monitoring event during capping.

A total of 138 water sample sets were collected during the study. Ten sample sets (for organics, metals, and TSS) were collected during each of the first and last (10th) sampling events along the Standard Transect Line (five at CAD cell M8 and five at CAD cell M19) (see Figure 2-3, Table 2-3, and Appendix A Table 1). Fifteen sample sets (for organics, metals, and TSS) were collected during each of the eight capping events (i.e., sampling events 2 through 9). Three samples were collected before and after each of the two daily capping events (six samples total per event).

During these monitoring activities, real-time BOSS sensor data was collected continuously along several transects within the designated CAD. The BOSS was towed at a distance of 2 m above the river bottom for all transects (unless obstructed) in order to optimize the potential to detect resuspended sediments.

Three samples were collected along the Pre- and Post-Dump Transect Lines (Figure 2-3). Nine samples were collected along the Standard Transect Line (Figure 2-3 and Appendix A Table 1) during actual capping activities for each of the eight sampling events during capping.

Five sediment samples of the sand used as capping material for CAD cells M8 and M19 were collected by the USACE. These five samples were analyzed for organic contaminants.

2.1.3 Field Measurements and Collection of Water Samples. Monitoring equipment and sampling techniques used for the monitoring survey are described in detail in Appendix A and in the approved QAPP I.D. No. 206-Q2-0 (Battelle, 2000). Chain of custody documentation for all samples collected are provided in Appendix B.

2.1.4 Decontamination of Sample Pumping System. Prior to each sampling event, the sample pumping system was decontaminated by pumping the following solvents through the system (Figure 2-4):

- Dichloromethane (DCM)
- Acetone
- 5% hydrochloric acid (HCl)
- Deionized water (3 times the tubing volume).



Figure 2-4. Decontaminating the BOSS Between Sampling Events

All solvents, acids, and aqueous waste residue resulting from the decontamination of field sampling equipment were collected in separate, approved waste containers and returned to Battelle, Duxbury, MA where they were disposed of in an appropriate hazardous waste stream.

2.1.5 Field Observations. A complete description of field observations can be found in the Boston Harbor Plume Tracking Survey Report (Appendix A).

2.2 Analyses of Organic Contaminants

Given holding time constraints, samples were prepared and extracted within 7 days of the respective collection dates. The extracts from each sample matrix were analyzed for TPH, PCBs, and PAHs within 40 days of extraction. General physical observations of the samples (e.g., color, visible sediments, and presence of plant/wood debris) were made and recorded in the laboratory preparation records. Items such as sediments and debris were removed prior to processing by allowing the samples to settle before decanting the supernatant for extraction and analysis.

Water samples obtained during field sampling were prepared for analysis of TPH, PCBs, and PAHs according to Battelle SOP 5-200-02 (*Water Extraction for Trace Level Semi-Volatile Organic Contaminant Analysis*) (Battelle, 2000). The method is summarized as follows:

If suspended sediment was visibly present in the water sample, it was filtered through a quartz glass fiber filter (1.0 μm). Water samples of approximately 1,000 mL were spiked with Surrogate Internal Standard (SIS) and serially extracted three times with 60 mL of DCM using a separatory funnel. The SIS compounds added were *o*-terphenyl, naphthalene- d_8 , phenanthrene- d_{10} , chrysene- d_{12} , and the

following PCB congeners¹: C12 (PCB 14), C13 (PCB 34), C15 (PCB 104), and C15 (PCB 112). The three extracts were combined and treated with anhydrous sodium sulfate to remove residual water from the extract. The dried extract then was concentrated to approximately 0.5 mL using the Kunderna Danish (K-D) and nitrogen evaporation (N-evap) techniques. The combined extracts were passed through a 2% deactivated alumina column, and the eluate from the column concentrated to 900 L using K-D and/or N-evap concentration techniques. This concentrated extract was fractionated by size-exclusion high-performance liquid chromatography (HPLC) water. The HPLC extract was concentrated under nitrogen, and the concentrated extract was spiked with Recovery Internal Standard (RIS) (containing 5 α -androstane, acenaphthene-d₁₀, fluorene-d₁₀, benzo[a]pyrene-d₁₂), and the following PCB congeners: C15 (PCB 96), C15 (PCB 103), and C16 (PCB 166). The extract then was split for TPH and PAH/PCB analyses.

For selected filtered samples, the filters were placed into a 500-mL glass jar and spiked with SIS and serially extracted three times with 100 mL of DCM using shaker table techniques. Sand capping material collected by the USACE was analyzed in a similar manner as the filters. The SIS compounds added were *o*-terphenyl, naphthalene-d₈, phenanthrene-d₁₀, chrysene-d₁₂, and the following PCB congeners: C12 (PCB 14), C13 (PCB 34), C15 (PCB 104), and C15 (PCB 112). The three extracts were combined and treated with anhydrous sodium sulfate to remove residual water from the extract. The dried extract then was concentrated to approximately 0.5 mL using the K-D and N-evap techniques. The combined extracts were passed through a 2% deactivated alumina column, and the eluate from the column concentrated to 900 L using K-D and/or N-evap concentration techniques. This concentrated extract was fractionated by size-exclusion HPLC water. The HPLC extract was concentrated under nitrogen, and the concentrated extract was then spiked with RIS (containing 5 α -androstane, acenaphthene-d₁₀, fluorene-d₁₀, benzo[a]pyrene-d₁₂), and the following PCB congeners: C15(PCB 96), C15(PCB 103), and C16(PCB 166). The extract then was split for TPH and PAH/PCB analysis.

The following quality control samples were processed along with each batch of ≤ 20 water samples:

- 1 laboratory control sample (LCS)
- 1 procedural blank (PB)
- 1 duplicate (DUP)
- 1 matrix spike (MS).

A quality control summary for all samples analyzed for organics is provided in Appendix C.

2.2.1 TPH Analysis. The high resolution “fingerprint” of the extractable TPH from each water sample was conducted at Battelle’s Duxbury laboratory using Battelle SOP 5-202-04, *Determination of Low Level Total Petroleum Hydrocarbons and Individual Hydrocarbon Concentrations in Environmental Samples* (Battelle, 2000). This method employed capillary gas chromatography with flame ionization detection (GC/FID). The analytical system was comprised of a Hewlett Packard (HP) 5890 or equivalent GC and FID. Prior to sample analysis, a five-point calibration was performed to demonstrate the linear range of the analysis and to determine the individual compound response factors (RFs) at each calibration solution concentration. The calibration solution was composed of selected C₈ to C₃₆ *n*-alkanes, pristane, and phytane. Analyte concentrations in the standard solutions ranged from approximately 1.0 $\mu\text{g/mL}$ to 100 $\mu\text{g/mL}$. The RF at each calibration concentration was determined and the TPH RF was based on the average response factors of all the target analytes in the calibration solution. A mid-level calibration check and solvent blank was analyzed for every 10 samples. Samples were quantified against the RIS 5 α -androstane. TPH laboratory-reported sample data is provided in Appendix D.

¹ PCB numbers in parentheses refer to the International Union of Pure and Applied Chemistry (IUPAC) nomenclature.

2.2.2 PAH Analysis. Water sample extracts were analyzed for the concentrations of 16 priority PAH analytes (Table 2-3) by Battelle's Duxbury laboratory using high-resolution capillary gas chromatography with mass spectrometry (GC/MS) as described in Battelle SOP 5-157, *Identification and Quantitation of Polynuclear Aromatic Hydrocarbons by Gas Chromatography/Mass Spectrometry* (Battelle, 2000). The analytical system was comprised of a HP 5890 or equivalent GC, equipped with an electronic pressure controlled (EPC) inlet and an HP 5972 or equivalent mass selective detector (MSD) operating in the selected ion monitoring (SIM) mode. A minimum of a five-point RF calibration was run with analyte concentrations in the standard solutions ranging from approximately 0.02 ng/μL to approximately 10 ng/μL. The samples were bracketed by passing standard checks analyzed no less frequently than every 10 samples and at the completion of each sequence.

Quantification of individual compounds was obtained by the method of internal standards using the RIS compound acenaphthene-d₁₀ as the quantification internal standard. Total PAH was determined as the sum of the individual PAH analytes. Laboratory-reported sample data for PAHs is provided in Appendix E.

2.2.3 PCB Analysis. Water extracts were analyzed for the concentration of 18 PCB congeners by Battelle's Duxbury laboratory according to Battelle SOP 5-128, *Identification and Quantitation of Polychlorinated Biphenyls (by Congener and Aroclor) and Chlorinated Pesticides by Gas Chromatography/Electron Capture Detection* (Battelle, 2000). This method employed high-resolution capillary GC with an electron capture detector (ECD). The analytical system was comprised of a HP 5890 or equivalent GC equipped with an EPC inlet and dual ECD detectors. A minimum of a five-point RF calibration was run with analyte concentrations in the standard solutions ranging from 0.005 ng/μL to approximately 1.0 ng/μL. All 18 major PCB congeners (Table 2-3) were included in the calibration standards. The samples were bracketed by passing standard checks analyzed no less frequently than every 10 samples and at the completion of each sequence.

Quantification of individual compounds were obtained by the method of internal standards using the RIS compounds as quantification internal standards using Cl5 (PCB 103) and Cl6 (PCB 166). Total PCBs were determined as the sum of the individual PCB congeners. Laboratory-reported sample data for PCBs is provided in Appendix F.

2.3 TSS Analyses

Water samples obtained during field sampling were prepared for analysis according to Battelle SOP 5-053 (Total Suspended Solids) (Battelle, 2000). The method is summarized as follows:

Sample volumes of at least 500 mL were stored at 4°C±2°C in the dark for no more than 7 days. These samples then were filtered using a polysulfone filter that was 47 mm in diameter and had a pore size of 0.45 μm. All samples were filtered in duplicate. A known amount of sample volume was decanted into the filtering apparatus and filtered using a vacuum pump at 5 psi. Before the filter was removed from the filter holder it was rinsed with Milli-Q water adjusted to pH 8. The filter then was air-dried in a desiccator for at least 48 hours and reweighed.

TSS was calculated as follows:

$$\text{TSS (mg/L)} = \frac{\text{particle mass (mg)}}{\text{volume of water filtered (L)}}$$

where: particle mass (mg) = (filter with sample – filter tare weight)
 volume of water filtered = (volume measured directly as initial
 volume – final volume).

2.4 RCRA 8 Metals Analyses

Water samples obtained during field sampling for metals analysis were prepared according to U.S. EPA Method 200.8 for total recoverable elements. Samples were acidified with (1+1) nitric acid to pH < 2 in the field using reagent-grade acid. Samples were held for at least 16 hours at pH < 2 prior to analysis. All quality control samples specified by U.S. EPA Method 200.8 were prepared with:

- 1 quality control sample (quarterly)
- 1 laboratory reagent blank (1 per ≤ 20 samples)
- 1 laboratory fortified blank (1 per ≤ 20 samples)
- 1 matrix spike sample (1 per 10 samples).

Water samples were analyzed, without additional laboratory processing, using inductively coupled plasma–mass spectrometry (ICP-MS). Table 2-4 lists the target compounds and associated method detection limits (MDLs) for this project. The method detection limits for RCRA 8 metals reported for this project are higher than can generally be determined by ICP-MS because of matrix interferences during analysis of the samples. Quality control summaries for samples analyzed for RCRA 8 metals are provide in Appendix C. Laboratory-reported sample data for RCRA 8 metals is provided in Appendix G.

Table 2-4. Compounds of Interest and Method Detection Limits

PAHs (ng/L)	MDL	PCBs (ng/L) ^(a)	MDL
Naphthalene	20.12	Cl2(08)	9.60
Acenaphthylene	0.50	Cl3(18)	0.83
Acenaphthene	0.64	Cl3(28)	1.04
Fluorene	0.59	Cl4(52)	0.86
Phenanthrene	0.45	Cl4(44)	0.87
Anthracene	0.42	Cl4(66)	0.89
Fluoranthene	0.53	Cl5(101)	0.69
Pyrene	0.57	Cl5(118)	0.52
Benzo(a)anthracene	0.83	Cl6(153)	0.64
Chrysene	0.44	Cl5(105)	0.35
Benzo(b)fluoranthene	0.51	Cl6(138)	0.80
Benzo(k)fluoranthene	0.52	Cl7(187)	0.52
Benzo(a)pyrene	0.78	Cl6(128)	0.84
Indeno(1,2,3-c,d)pyrene	1.10	Cl7(180)	0.58
Dibenz(a,h)anthracene	1.25	Cl7(170)	0.61
Benzo(g,h,i)perylene	0.68	Cl8(195)	0.65
		Cl9(206)	0.73
RCRA 8 Metals (mg/L)		Cl10(209)	0.76
Ag	0.02		
As	0.02	TSS (mg/L)	0.1
Ba	1.5		
Cd	0.02	TPH (µg/L)	78.4
Cr	0.4		
Hg	0.0005		
Pb	0.02		
Se	0.2		

(a) Numbers in parenthesis identify IUPAC numbers

3.0 RESULTS AND DISCUSSION

This section describes the TPH, PAH, PCB, RCRA 8 metals, and TSS analytical results. Tables 3-1 and 3-2 list the analytical results for the Pre Survey. Tables 3-3 through 3-10 list the TSS, TPH, total PAH, and total PCB analytical results, and Tables 3-11 through 3-18 list the analytical results for the RCRA 8 metals. Table 3-19 lists TPH, total PAH, and total PCB results for the sand capping material. Post Survey results are listed in Table 3-20 and 3-21. All samples are listed in the order in which they were collected by the BOSS. Samples will be described in the following sections using the terms described below:

- Pre Survey: samples taken two days before capping began in Boston Harbor
- Pre Run (1-8): samples taken approximately one hour before each capping event
- Run (1-4): samples taken during capping at CAD cell M19
- Run (5-8): samples taken during capping at CAD cell M8
- Post Run (1-8): samples taken approximately one hour after each capping event for Runs 1-8
- Post Survey: samples taken four days after capping was completed
- Sand Capping Material: sand samples collected by USACE and Great Lakes from the sand used to cap both CAD cells M19 and cell M8.

Nine of the samples collected during capping were filtered before analysis to determine the soluble fraction of TPH, PAHs, and PCBs and the amount of these organics sorbed to particulate matter. Tables 3-3, 3-5, 3-7, 3-8, and 3-9 present the combined concentrations of the filtrate and particulate matter, and Section 3.7 compares the two fractions of the filtered samples.

3.1 Pre Survey Background

Two days prior to capping, water samples were taken in Boston Harbor using the BOSS. Five samples each were collected at both CAD cell M8 and cell M19 (Table 3-1). PCB results from all ten samples showed that PCB levels were less than Analytical Limits of Quantitation (ALQ) prior to capping in Boston Harbor. For several samples, all 18 PCB congeners were non-detected or were below the ALQ (<ALQ) for these samples. These samples are reported as <ALQ in the following tables; analytical data associated with these samples can be found in Appendix F. TSS levels associated with these samples were low (<4.1 mg/L). TPH concentrations ranged from 8.34 µg /L to 99.63 µg/L, except for one sample (CAD01021) collected at CAD cell M8 which was <ALQ. Total PAH concentrations were between 32.17 ng/L and 72.26 ng/L.

Only two of the RCRA 8 metals were detected in the Pre Survey samples (Table 3-2). Arsenic was detected in four samples, with concentrations ranging from 0.024 mg/L to 0.035 mg/L. Chromium was detected in all ten background samples, with concentrations ranging from 0.056 mg/L to 0.064 mg/L. As expected, no observable differences in water quality could be determined between the two CAD cells prior to capping in Boston Harbor.

3.2 Total Suspended Solids

TSS concentrations for the Pre Run samples for Run 1 were consistent with before capping background samples (3.6 to 5.2 mg/L; see Table 3-3). Once capping began at cell M19, TSS levels increased to as high as 122 mg/L and remained elevated throughout Run 1. TSS samples likely included some of the capping sand as it was being released from the hopper dredge. The highest TSS levels at cell M19 were recorded during Run 1. TSS one hour after capping during Run 1 decreased to approximately 9 mg/L, which was slightly higher than the initial TSS values for the Pre Run samples at cell M19.

Table 3-1. Pre Survey Organics Analytical Results

Sample ID	Date Collected	Time Collected	TSS (mg/L)	TPH (µg/L)	Total PAH (ng/L)	Total PCB (ng/L)
<i>Pre Survey CAD Cell M8</i>						
CAD01021	9/6/00	12:23	2.32	<156.80	72.26	<ALQ
CAD01024	9/6/00	12:24	2.41	8.72	36.06	<ALQ
CAD01027	9/6/00	12:25	2.60	12.74	40.72	<ALQ
CAD0102A	9/6/00	12:27	3.56	24.47	62.14	<ALQ
CAD0102D	9/6/00	12:32	2.90	14.76	42.87	<ALQ
<i>Pre Survey CAD Cell M19</i>						
CAD0104A	9/6/00	14:13	2.10	26.75	68.39	<ALQ
CAD0104D	9/6/00	14:14	2.82	25.28	43.47	<ALQ
CAD01050	9/6/00	14:18	4.06	18.93	44.05	<ALQ
CAD01053	9/6/00	14:22	2.76	22.22	32.17	<ALQ
CAD01056	9/6/00	14:24	3.86	8.34	66.09	<ALQ
CAD01056 DUP				99.63	70.50	

Table 3-2. RCRA 8 Metals Analytical Results for Pre Survey

Sample ID	Date Collected	Time Collected	TSS (mg/L)	Analytes (mg/L)							
				Arsenic	Barium	Cadmium	Chromium	Silver	Lead	Mercury	Selenium
<i>Pre Survey CAD Cell M8</i>											
CAD01021MM1	9/6/00	12:23	2.32	<0.02	<0.5	<0.02	0.056	<0.02	<0.02	<0.0005	<0.2
CAD01024MM1	9/6/00	12:24	2.41	0.024	<0.5	<0.02	0.06	<0.02	<0.02	<0.0005	<0.2
CAD01027MM1	9/6/00	12:25	2.60	<0.02	<0.5	<0.02	0.061	<0.02	<0.02	<0.0005	<0.2
CAD0102AMM1	9/6/00	12:27	3.56	<0.02	<0.5	<0.02	0.059	<0.02	<0.02	<0.0005	<0.2
CAD0102DMM1	9/6/00	12:32	2.90	0.031	<0.5	<0.02	0.06	<0.02	<0.02	<0.0005	<0.2
<i>Pre Survey CAD Cell M19</i>											
CAD0104AMM1	9/6/00	14:13	2.10	<0.02	<0.5	<0.02	0.064	<0.02	<0.02	<0.0005	<0.2
CAD0104DMM1	9/6/00	14:14	2.82	<0.02	<0.5	<0.02	0.059	<0.02	<0.02	<0.0005	<0.2
CAD01050MM1	9/6/00	14:18	4.06	0.035	<0.5	<0.02	0.059	<0.02	<0.02	<0.0005	<0.2
CAD01053MM1	9/6/00	14:22	2.76	<0.02	<0.5	<0.02	0.061	<0.02	<0.02	<0.0005	<0.2
CAD01056MM1	9/6/00	14:24	3.86	0.027	<0.5	<0.02	0.059	<0.02	<0.02	<0.0005	<0.2

Note: Bold type indicates detected concentrations

Subsequent runs (Runs 2, 3, and 4; see Tables 3-4, 3-5, and 3-6, respectively) showed similar patterns of elevated TSS levels during each run, followed by decreased levels that approached background levels between runs. However, concentrations of TSS during capping for Run 2 (i.e., approximately 12 to 42 mg/L) were much lower than those seen during Run 1. Runs 3 and 4 had similar results to Run 2, with TSS levels of approximately 8 to 53 mg/L.

Samples collected from cell M8 showed a trend similar to those from cell M19. Run 5, which was the first capping event at cell M8, had concentrations of TSS similar to those of Run 1 at cell M19, with a maximum TSS concentration of 102 mg/L (see Table 3-7). The next three runs at cell M8 (see Tables 3-8, 3-9, and 3-10) showed a decrease in TSS levels of approximately 3 to 52 mg/L. During Run 7 a very high detection of TSS (191.74 mg/L) was observed for the first sample collected during that run. This could either be the result of resuspension of silt material that was not capped during the previous events or it could be the result of collection of clean capping sand by the BOSS.

Table 3-3. Organics Analytical Results for Run 1

Sample ID	Date Collected	Time Collected	TSS (mg/L)	TPH (µg/L)	Total PAH (ng/L)	Total PCB (ng/L)
<i>Pre Run 1 CAD Cell M19</i>						
CAD012AC	9/9/00	15:59	4.56	48.49	61.83	<ALQ
CAD012AF	9/9/00	16:01	5.22	<156.80	51.80	<ALQ
CAD012B2	9/9/00	16:02	3.61	47.99	66.34	<ALQ
<i>Run 1 CAD Cell M19</i>						
CAD012BF	9/9/00	16:59	122.40	179.36 ^(a)	808.37 ^(a)	9.07 ^(a)
CAD012C3	9/9/00	17:03	95.18	729.23 ^(a)	5,242.30 ^(a)	84.24 ^(a)
CAD012C6	9/9/00	17:05	122.61	324.63	1,518.53	19.08
CAD012CC	9/9/00	17:07	71.56	<78.40	508.31	7.38
CAD012CF	9/9/00	17:10	39.97	130.17	746.12	18.71
CAD012D2	9/9/00	17:12	114.06	300.53	1,912.42	26.72
CAD012D6	9/9/00	17:17	14.28	15.32	235.48	6.01
CAD012DC	9/9/00	17:23	21.46	34.08	93.04	0.96
CAD012E0	9/9/00	17:25	46.57	251.78	1,282.64	4.73
<i>Post Run 1 CAD Cell M19</i>						
CAD012EC	9/9/00	18:33	9.10	<78.40	110.73	2.22
CAD012F0	9/9/00	18:37	9.46	44.59	168.17	4.63
CAD012F4	9/9/00	18:42	9.01	30.10	151.53	3.83

(a) Value includes the sum of water and sediment concentration for samples that were filtered before analysis. Water and sediment concentrations are reported separately in Table 3-11.

Table 3-4. Organics Analytical Results for Run 2

Sample ID	Date Collected	Time Collected	TSS (mg/L)	TPH (µg/L)	Total PAH (ng/L)	Total PCB (ng/L)
<i>Pre Run 2 CAD Cell M19</i>						
CAD0130C	9/10/00	7:19	13.98	<78.40	209.53	18.02
CAD0130F	9/10/00	7:22	14.59	83.33	223.72	4.92
CAD01312	9/10/00	7:28	16.28	64.59	241.59	4.49
<i>Run 2 CAD Cell M19</i>						
CAD0131F	9/10/00	8:51	24.36	58.07	126.46	3.36
CAD01322	9/10/00	8:54	25.61	93.69	113.93	1.64
CAD01322DUP	9/10/00	8:54		7.20	115.42	
CAD01325	9/10/00	8:58	35.13	<156.80	71.88	<ALQ
CAD0132B	9/10/00	9:11	42.16	<156.80	404.68	<ALQ
CAD0132E	9/10/00	9:12	35.59	22.54	70.51	<ALQ
CAD0132EDUP	9/10/00	9:12		68.41	129.46	
CAD01331	9/10/00	9:26	12.08	71.94	111.94	2.79
CAD01334	9/10/00	9:28	27.89	87.27	185.47	1.73
CAD01337	9/10/00	9:34	15.47	72.15	170.82	4.25
CAD0133A	9/10/00	9:40	16.58	98.03	257.96	2.66
<i>Post Run 2 CAD Cell M19</i>						
CAD01348	9/10/00	10:14	11.54	32.50	47.11	0.79
CAD0134B	9/10/00	10:17	7.95	58.82	83.31	1.37
CAD0134E	9/10/00	10:19	14.02	73.24	105.72	1.22

3.3 Total Petroleum Hydrocarbons

TPH concentrations tended to vary over the 22 days of sampling (Tables 3-3 through 3-10). At cell M19, the highest average TPH level (i.e., 729.23 µg/L) was detected during Post Run 3, with the next highest level occurring during Run 1 (i.e., 218.1 µg/L) (Figure 3-1). Only one sample and one duplicate were collected during Post Run 3 because the BOSS struck bottom immediately following the collection

Table 3-5. Organics Analytical Results for Run 3

Sample ID	Date Collected	Time Collected	TSS (mg/L)	TPH (µg/L)	Total PAH (ng/L)	Total PCB (ng/L)
<i>Pre Run 3 CAD Cell M19</i>						
CAD01371	9/10/00	11:16	4.09	41.10	89.00	0.99
CAD01376	9/10/00	11:19	3.81	83.94	48.89	1.10
CAD0137A	9/10/00	11:21	3.39	42.82	56.41	0.88
<i>Run 3 CAD Cell M19</i>						
CAD01390	9/11/00	1:13	26.77	58.08 ^(a)	186.41 ^(a)	1.67 ^(a)
CAD01394	9/11/00	1:16	53.43	201.14 ^(a)	308.12 ^(a)	7.96 ^(a)
CAD01398	9/11/00	1:19	22.36	60.85	168.55	2.91
CAD0139F	9/11/00	1:21	31.82	62.07	188.14	3.75
CAD013A2	9/11/00	1:26	20.83	55.54	164.15	3.06
CAD013A6	9/11/00	1:30	8.51	255.76	72.87	2.16
CAD013AA	9/11/00	1:33	9.46	213.74	92.43	3.36
CAD013B0	9/11/00	1:39	9.16	238.85	95.57	2.71
CAD013B4	9/11/00	1:41	12.24	208.06	69.51	1.83
<i>Post Run 3 CAD Cell M19^(b)</i>						
CAD013C9	9/11/00	2:25	5.86	351.94	88.27	3.25
CAD013C9DUP	9/11/00	2:25		420.48	93.75	

- (a) Value includes the sum of water and sediment concentration for samples that were filtered before analysis. Water and sediment concentrations are reported separately in Table 3-11.
- (b) Sampler struck bottom immediately following sample collection for the first Post Run 3 sample, and system components fouled with mud. As a result the second and third samples for Post Run 3 could not be collected.

Table 3-6. Organics Analytical Results for Run 4

Sample ID	Date Collected	Time Collected	TSS (mg/L)	TPH (µg/L)	Total PAH (ng/L)	Total PCB (ng/L)
<i>Pre Run 4 CAD Cell M19</i>						
CAD01405	9/12/00	21:35	5.29	15.93	59.01	<ALQ
CAD01408	9/12/00	21:36	5.42	<156.80	58.52	<ALQ
CAD0140B	9/12/00	21:38	4.33	19.41	76.79	<ALQ
<i>Run 4 CAD Cell M19</i>						
CAD01416	9/12/00	22:14	38.72	44.70	92.82	<ALQ
CAD01419	9/12/00	22:17	19.00	39.57	83.39	<ALQ
CAD0141C	9/12/00	22:20	16.48	47.77	86.28	<ALQ
CAD0141F	9/12/00	22:24	25.03	78.73	151.02	2.61
CAD01422	9/12/00	22:29	21.92	51.22	120.07	7.76
CAD01425	9/12/00	22:36	17.60	31.77	89.40	3.23
CAD01428	9/12/00	22:37	11.75	45.78	88.85	2.30
CAD0142B	9/12/00	22:45	8.62	6.39	83.89	1.41
CAD0142E	9/12/00	22:46	7.54	26.83	64.86	23.79
<i>Post Run 4 CAD Cell M19</i>						
CAD01436	9/12/00	23:32	3.49	21.58	77.32	1.56
CAD01439	9/12/00	23:34	4.64	30.97	56.09	1.48
CAD0143C	9/12/00	23:36	3.84	<156.80	61.82	0.47
CAD0143CDUP	9/12/00	23:36		59.80	50.92	0.90

of these samples, disabling the system for further sampling during this run. As a result, the system had to be taken back to the pier and cleaned. Figure 3-1 shows that Post Run samples often would have greater TPH concentrations than those collected during capping. Figure 3-2 shows that average TPH concentrations during capping at cell M8 remained relatively consistent with Post Survey concentrations. Runs 1-4 were more variable because of a few very high detections during Run 1, Run 3, and Post Run 3; note the difference in scales of the y-axis between Figures 3-1 and 3-2. Only one sample was collected during Post Run 3, so this concentration is not based on an average.

Table 3-7. Organics Analytical Results for Run 5

Sample ID	Date Collected	Time Collected	TSS (mg/L)	TPH (µg/L)	Total PAH (ng/L)	Total PCB (ng/L)
<i>Pre Run 5 CAD Cell M8</i>						
CAD01469	9/14/00	3:33	3.50	48.25	97.46	28.30
CAD0146C	9/14/00	3:35	7.21	26.60	56.23	11.25
CAD0146F	9/14/00	3:37	4.07	47.74	39.68	<ALQ
<i>Run 5 CAD Cell M8</i>						
CAD0147D	9/14/00	4:52	102.67	65.91 ^(a)	136.40 ^(a)	3.67 ^(a)
CAD01480	9/14/00	5:00	70.82	75.77 ^(a)	312.35 ^(a)	6.59 ^(a)
CAD01483	9/14/00	5:04	94.15	78.02	612.54	14.49
CAD01486	9/14/00	5:13	73.52	82.61	770.72	12.00
CAD01489	9/14/00	5:17	44.76	22.78	318.31	5.16
CAD0148C	9/14/00	5:24	25.59	77.35	246.78	4.16
CAD0148F	9/14/00	5:32	16.27	113.45	137.38	3.19
CAD01492	9/14/00	5:33	24.34	52.88	153.71	4.72
CAD01495	9/14/00	5:39	12.96	35.76	102.63	2.40
<i>Post Run 5 CAD Cell M8</i>						
CAD0149D	9/14/00	6:11	9.23	43.71	89.25	2.10
CAD014A0	9/14/00	6:13	8.75	18.23	71.69	1.19
CAD014A3	9/14/00	6:16	7.93	172.62	334.49	4.93

(a) Value includes both water and sediment concentration for samples that were filtered before analysis. Water and sediment concentrations are reported separately in Table 3-11.

Table 3-8. Organics Analytical Results for Run 6

Sample ID	Date Collected	Time Collected	TSS (mg/L)	TPH (µg/L)	Total PAH (ng/L)	Total PCB (ng/L)
<i>Pre Run 6 CAD Cell M8</i>						
CAD014BF	9/15/00	8:45	2.86	59.35	52.40	5.73
CAD014C2	9/15/00	8:47	3.19	49.66	46.34	1.99
CAD014C5	9/15/00	8:50	2.49	43.53	44.31	1.51
<i>Run 6 CAD Cell M8</i>						
CAD014D4	9/15/00	9:52	51.98	95.94 ^(a)	142.21 ^(a)	9.88 ^(a)
CAD014DB	9/15/00	9:57	37.58	390.02 ^(a)	188.63 ^(a)	8.64 ^(a)
CAD014DBDUP	9/15/00	9:57		111.33	58.27	
CAD014DE	9/15/00	9:59	35.97	89.80	161.02	<ALQ
CAD014E4	9/15/00	10:02	30.50	75.29	103.12	<ALQ
CAD014E7	9/15/00	10:06	38.13	101.53	185.86	2.50
CAD014EA	9/15/00	10:11	30.38	49.40	164.87	1.46
CAD014ED	9/15/00	10:14	11.97	61.84	73.04	0.59
CAD014F3	9/15/00	10:22	2.93	41.12	41.41	0.34
CAD014F6	9/15/00	10:25	11.00	53.41	78.66	0.59
<i>Post Run 6 CAD Cell M8</i>						
CAD01511	9/15/00	11:36	5.03	42.69	63.72	0.45
CAD01514	9/15/00	11:48	4.80	64.12	63.35	1.09
CAD0151A	9/15/00	11:50	4.86	80.41	65.41	1.43

(a) Value includes both water and sediment concentration for samples that were filtered before analysis. Water and sediment concentrations are reported separately in Table 3-11.

The TPH concentrations above cell M19 and cell M8 resulting from the capping activities were likely overshadowed by background TPH due to the level of urbanization and industrialization around Boston Harbor and by the large amount of boat traffic in the harbor. In general, there was no clear trend between samples collected for the Pre and Post Survey samples and samples collected during capping.

Table 3-9. Organics Analytical Results for Run 7

Sample ID	Date Collected	Time Collected	TSS (mg/L)	TPH (µg/L)	Total PAH (ng/L)	Total PCB (ng/L)
<i>Pre Run 7 CAD Cell M8</i>						
CAD01523	9/15/00	23:35	5.18	37.02	65.72	0.86
CAD01526	9/15/00	23:38	4.62	49.47	48.40	1.18
CAD01529	9/15/00	23:41	6.53	43.04	52.64	0.50
<i>Run 7 CAD Cell M8</i>						
CAD01534	9/16/00	0:09	191.74	88.01 ^(a)	111.97 ^(a)	1.90 ^(a)
CAD01538	9/16/00	0:14	27.08	72.30	185.21	2.02
CAD0153B	9/16/00	0:19	20.68	52.53	109.81	2.18
CAD0153E	9/16/00	0:25	7.38	50.27	101.50	1.29
CAD01541	9/16/00	0:26	9.94	66.65	87.15	1.60
CAD01544	9/16/00	0:31	7.56	71.17	70.74	1.59
CAD01547	9/16/00	0:35	5.87	75.24	86.00	1.26
CAD01547DUP	9/16/00	0:35		40.08	59.03	
CAD0154C	9/16/00	0:42	4.78	32.85	61.98	5.08
CAD0154F	9/16/00	0:44	5.61	7.27	48.79	1.57
<i>Post Run 7 CAD Cell M8</i>						
CAD0155E	9/16/00	1:33	4.30	21.57	67.35	0.50
CAD01561	9/16/00	1:35	3.41	50.42	66.28	1.46
CAD01564	9/16/00	1:39	4.05	10.96	108.99	0.80
CAD01564DUP	9/16/00	1:39		133.53	157.55	

(a) Value includes both water and sediment concentration for samples that were filtered before analysis. Water and sediment concentrations are reported separately in Table 3-11.

Table 3-10. Organics Analytical Results for Run 8

Sample ID	Date Collected	Time Collected	TSS (mg/L)	TPH (µg/L)	Total PAH (ng/L)	Total PCB (ng/L)
<i>Pre Run 8 CAD Cell M8</i>						
CAD015AB	9/20/00	9:43	4.25	87.36	72.38	<ALQ
CAD015B0	9/20/00	9:50	4.30	<156.80	57.30	0.96
CAD015B3	9/20/00	9:53	2.06	10.97	32.14	<ALQ
<i>Run 8 CAD Cell M8</i>						
CAD015C2	9/20/00	10:34	48.69	47.49	113.57	<ALQ
CAD015C5	9/20/00	10:38	9.09	20.55	88.67	3.94
CAD015CB	9/20/00	10:45	25.25	31.11	127.16	2.34
CAD015CE	9/20/00	10:49	36.26	17.71	90.83	1.51
CAD015D1	9/20/00	10:54	13.38	<78.40	58.66	2.43
CAD015D4	9/20/00	11:01	15.57	41.16	101.30	2.89
CAD015D7	9/20/00	11:05	11.96	192.79	262.70	3.88
CAD015DC	9/20/00	11:10	9.98	65.64	63.37	1.90
CAD015DF	9/20/00	11:12	10.73	37.60	108.70	2.16
<i>Post Run 8 CAD Cell M8</i>						
CAD015EF	9/20/00	11:52	4.48	0.81	68.66	1.75
CAD015F2	9/20/00	11:56	4.28	16.65	57.57	0.73
CAD015F5	9/20/00	12:00	2.86	85.80	49.40	0.39
CAD015F5DUP	9/20/00	12:00		193.01	78.47	

3.4 Polycyclic Aromatic Hydrocarbons

Total PAH concentrations followed a more predictable pattern than TPH concentrations, with the highest total PAH concentration measured during Run 1, and with decreasing concentrations measured throughout the remaining events (Figures 3-3 and 3-4).

Table 3-11. RCRA 8 Metals Analytical Results for Run 1

Sample ID	Date Collected	Time Collected	TSS (mg/L)	Analytes (mg/L)							
				Arsenic	Barium	Cadmium	Chromium	Silver	Lead	Mercury	Selenium
<i>Pre Run 1 CAD Cell M19</i>											
CAD012ACMM1	9/9/00	15:59	4.56	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
CAD012AFMM1	9/9/00	16:01	5.22	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
CAD012B2MM1	9/9/00	16:02	3.61	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
<i>Run 1 CAD cell M19</i>											
CAD012BFMM1	9/9/00	16:59	122.40	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
CAD012C3MM1	9/9/00	17:03	95.18	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
CAD012C6MM1	9/9/00	17:05	122.61	<0.02	<0.5	<0.02	0.047	<0.02	<0.02	<0.0005	<0.2
CAD012CCMM1	9/9/00	17:07	71.56	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
CAD012CFMM1	9/9/00	17:10	39.97	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
CAD012D2MM1	9/9/00	17:12	114.06	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
CAD012D6MM1	9/9/00	17:17	14.28	<0.02	<0.5	<0.02	0.041	<0.02	<0.02	<0.0005	<0.2
CAD012DCMM1	9/9/00	17:23	21.46	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
CAD012E0MM1	9/9/00	17:25	46.57	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
<i>Post Run 1 CAD Cell M19</i>											
CAD012ECMM1	9/9/00	18:33	9.10	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
CAD012F0MM1	9/9/00	18:37	9.46	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
CAD012F4MM1	9/9/00	18:42	9.01	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2

Note: Bold type indicates detected concentrations

Pre Run 1 samples for cell M19 had concentrations similar to background samples, with an average Pre Run 1 concentration of 59.99 ng/L (Figure 3-3; Table 3-3). Total PAH concentrations collected during capping were much greater than background and Pre Run 1 concentrations. Total PAH concentrations in samples taken during Run 1 averaged 1,372 ng/L \pm 1,569 ng/L, with a maximum of 5,242.30 ng/L. Post Run 1 samples collected one hour after capping stopped for Run 1 remained elevated above the Pre Run 1 samples, but decreased significantly from samples collected during Run 1.

Pre Run 2 samples had higher total PAH concentrations compared to the samples collected during Post Run 1 and Run 2. These samples also had elevated TSS, TPH, and PCB concentrations. The cause of the higher concentrations in the Pre Run 2 samples is not known. Shortly before the Pre Run 2 samples were collected, a container ship entered the harbor, passing over cell M19. It is possible the turbulence from this ship's engines caused uncapped contaminants from cell M19 to be resuspended for a short period of time. Further resuspension after Run 2 was not observed at cell M19.

Total PAH concentrations continued to decrease over the remaining capping events at cell M19. By the end of sampling at cell M19, concentrations had returned to background levels measured during the Pre Survey before capping began. For Runs 3 and 4, total PAH concentrations during each run were slightly higher than Pre Run and Post Run concentrations.

Samples from Runs 5-8 at cell M8 followed a similar pattern to cell M19, but the PAH concentrations for cell M8 were on average lower than those from cell M19. The highest PAH concentration for cell M8 were detected during Run 5 (the first run), with an average concentration of 310 ng/L and a maximum concentration of 770.72 ng/L (Figure 3-4; Table 3-7). The Post Run 5 concentrations remained elevated, but PAH levels returned to Pre Survey concentrations by the next morning, as seen by the Pre Run 6 sampling. The remaining three runs had elevated PAH concentrations averaging around 100 ng/L. The cause of the elevated total PAH concentrations during Runs 6, 7, and 8 is not known. The Post Run 8 concentrations dropped back to Pre Survey levels with an average concentration of 63.5 ng/L, and a maximum concentration of 78.47 ng/L.

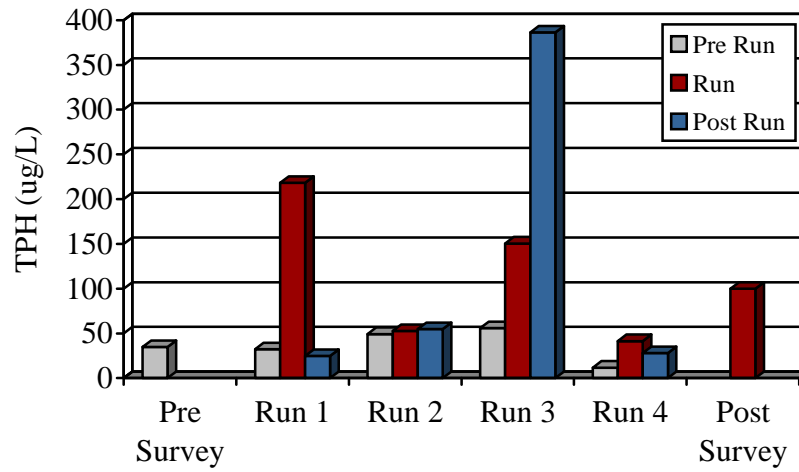


Figure 3-1. Average TPH Concentrations – Cell M19

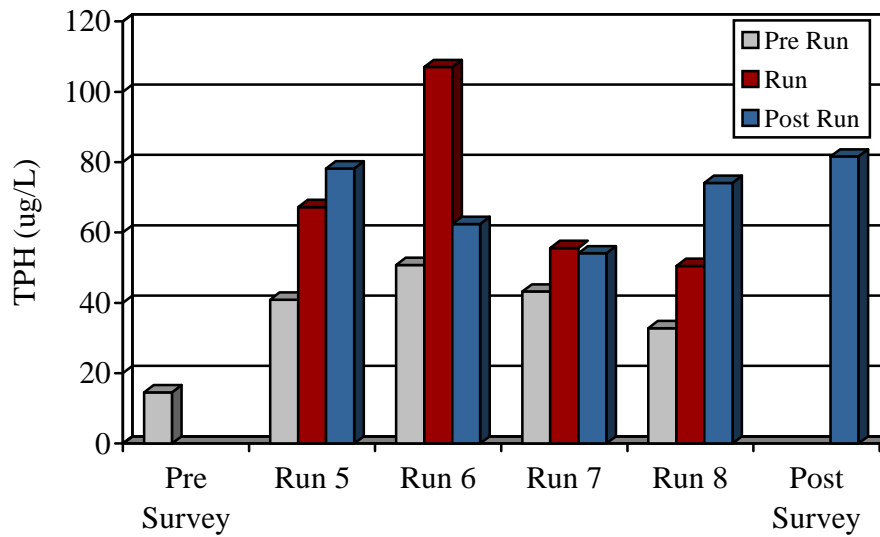


Figure 3-2. Average TPH Concentrations – Cell M8

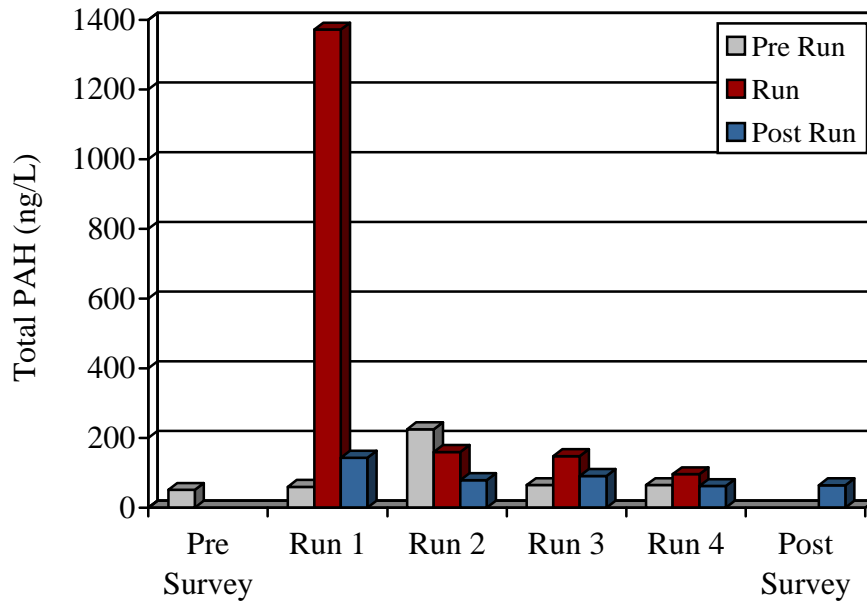


Figure 3-3. Average Total PAH Concentrations – Cell M19

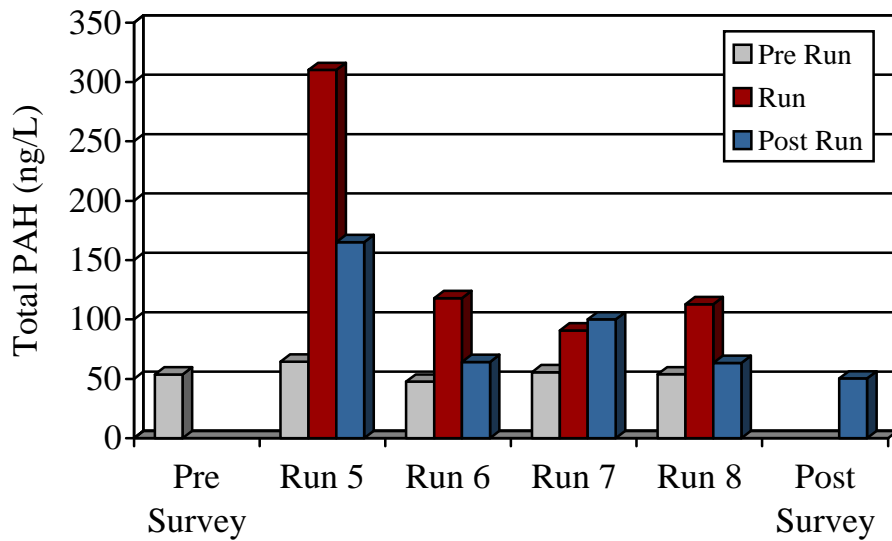


Figure 3-4. Average Total PAH Concentrations – Cell M8

3.5 Polychlorinated Biphenyls

PCB concentrations in background samples and Pre Run 1 samples were all <ALQ for cell M19. The first PCB detection occurred during Run 1, where concentrations averaged $19.7 \text{ ng/L} \pm 25.6 \text{ ng/L}$, with a maximum value of 84.24 ng/L (Table 3-3). The 84.24 ng/L sample collected during Run 1 was the highest PCB detection for all sampling events, and was the only sample that exceeded the water quality criteria, set for the BHNIP, for PCBs of 30 ng/L (USACE, 1999b). Samples taken 1 hour after Run 1 dropped back to $<4.7 \text{ ng/L}$. The first Pre Run 2 sample had a PCB concentration of 18.02 ng/L , but the other two Pre Run 2 samples had concentrations $<5 \text{ ng/L}$.

PCB concentrations were lower during Run 2 than Run 1, and averaged $1.8 \text{ ng/L} \pm 1.6 \text{ ng/L}$ with a maximum of 4.25 ng/L (Figure 3-5; Tables 3-3 to 3-6). Average concentrations for Run 3 and Run 4 were higher than Run 2, but much lower than Run 1, and Pre Run 4 samples returned to <ALQ. The average PCB concentrations for Runs 3 and 4 were 3.3 ng/L and 4.6 ng/L , respectively; variation in the Run 4 samples was high with one elevated detection at 23.79 ng/L , and three Run 4 samples measured <ALQ.

The PCB concentrations at CAD Cell M8 were, in general, lower than those for cell M19 (Figure 3-6). The highest detection at cell M8 was in a sample from Pre Run 5 (the first run), measured at a concentration of 28.30 ng/L (Tables 3-7 to 3-10). The cause of the elevated total PCB concentration during Pre Run 5 is not known. PCB levels remained elevated during Run 5 with a high concentration of 14.49 ng/L ; the remaining samples at cell M8 did not exceed 12.00 ng/L . No samples collected during sampling at cell M8 exceeded the water quality standard of 30 ng/L .

3.6 RCRA 8 Metals

The following eight metals were analyzed in the Boston Harbor water samples: arsenic, barium, cadmium, chromium, silver, lead, mercury, and selenium. Tables 3-12 through 3-19 show the results of the RCRA 8 metals for Runs 1-8, respectively. Three of these metals, barium, cadmium, and silver, were <ALQ in all samples collected during the survey. Mercury was detected only in one sample during Run 8 at cell M8 at a concentration of 0.0013 mg/L . Selenium was not detected in any of the samples collected before or during capping, but it was detected in the Post Survey samples at a range of 0.023 to 0.17 mg/L (see Section 3.8). Lead was detected in all but one sample collected during Run 4 at cell M19. The lead concentrations in these samples ranged from 0.024 to 0.025 mg/L , which was just slightly higher than the detection limit of 0.02 mg/L . One Post Survey sample for cell M8 also had a lead detection of 0.15 mg/L (see Section 3.8). However, lead was not detected in any other samples during the survey.

Arsenic was detected in the Pre Survey samples for both cell M19 and cell M8, but was not detected again until Run 4 at a concentration range of 0.024 to 0.031 mg/L . Detections of arsenic also were observed in a few samples from Run 5, Run 6, Run 7, and Run 8, with the highest detection of 0.04 mg/L during Run 7.

Chromium was detected in all of the Pre Survey samples at a range of 0.056 to 0.064 mg/L . Chromium also was detected in two samples from Run 1 at 0.041 and 0.047 mg/L . All samples collected from Runs 4 and 5 had detections of chromium ranging from 0.047 to 0.061 mg/L , which is less than the maximum concentration detected in the Pre Survey samples. Chromium also was detected in some of the samples from Run 6 and Run 8, but all of those detections also were below Pre Survey sample concentrations.

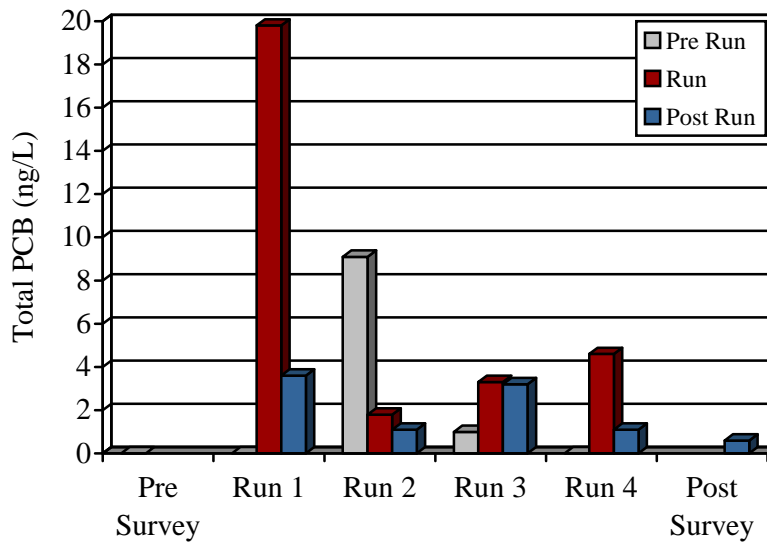


Figure 3-5. Average Total PCB Concentrations – Cell M19

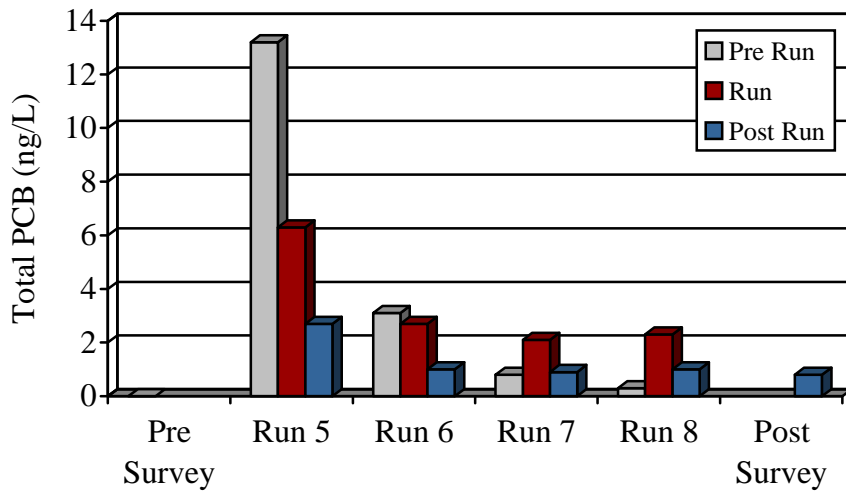


Figure 3-6. Average Total PCB Concentrations – Cell M8

Table 3-12. RCRA 8 Metals Analytical Results for Run 2

Sample ID	Date Collected	Time Collected	TSS (mg/L)	Analytes (mg/L)								
				Arsenic	Barium	Cadmium	Chromium	Silver	Lead	Mercury	Selenium	
<i>Pre Run 2 CAD Cell M19</i>												
CAD0130CMM1	9/10/00	7:19	13.98	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2	
CAD0130FMM1	9/10/00	7:22	14.59	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2	
CAD01312MM1	9/10/00	7:28	16.28	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2	
<i>Run 2 CAD Cell M19</i>												
CAD0131FMM1	9/10/00	8:51	24.36	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2	
CAD01322MM1	9/10/00	8:54	25.61	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2	
CAD01325MM1	9/10/00	8:58	35.13	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2	
CAD0132BMM1	9/10/00	9:11	42.16	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2	
CAD0132EMM1	9/10/00	9:12	35.59	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2	
CAD01331MM1	9/10/00	9:26	12.08	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2	
CAD01334MM1	9/10/00	9:28	27.89	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2	
CAD01337MM1	9/10/00	9:34	15.47	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2	
CAD0133AMM1	9/10/00	9:40	16.58	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2	
<i>Post Run 2 CAD Cell M19</i>												
CAD01348MM1	9/10/00	10:14	11.54	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2	
CAD0134BMM1	9/10/00	10:17	7.95	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2	
CAD0134EMM1	9/10/00	10:19	14.02	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2	

Table 3-13. RCRA 8 Metals Analytical Results for Run 3

Sample ID	Date Collected	Time Collected	TSS (mg/L)	Analytes (mg/L)								
				Arsenic	Barium	Cadmium	Chromium	Silver	Lead	Mercury	Selenium	
<i>Pre Run 3 CAD Cell M19</i>												
CAD01371MM1	9/10/00	11:16	4.09	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2	
CAD01376MM1	9/10/00	11:19	3.81	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2	
CAD0137AMM1	9/10/00	11:21	3.39	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2	
<i>Run 3 CAD Cell M19</i>												
CAD01390MM1	9/11/00	1:13	26.77	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2	
CAD01394MM1	9/11/00	1:16	53.43	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2	
CAD01398MM1	9/11/00	1:19	22.36	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2	
CAD0139FMM1	9/11/00	1:21	31.82	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2	
CAD013A2MM1	9/11/00	1:26	20.83	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2	
CAD013A6MM1	9/11/00	1:30	8.51	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2	
CAD013AAMM1	9/11/00	1:33	9.46	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2	
CAD013B0MM1	9/11/00	1:39	9.16	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2	
CAD013B4MM1	9/11/00	1:41	12.24	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2	
<i>Post Run 3 CAD Cell M19</i>												
CAD013C9MM1	9/11/00	2:25	5.86	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2	

Table 3-14. RCRA 8 Metals Analytical Results for Run 4

Sample ID	Date Collected	Time Collected	TSS (mg/L)	Analytes (mg/L)							
				Arsenic	Barium	Cadmium	Chromium	Silver	Lead	Mercury	Selenium
<i>Pre Run 4 CAD Cell M19</i>											
CAD01405MM1	9/12/00	21:35	5.29	<0.02	<0.5	<0.02	0.06	<0.02	0.025	<0.0005	<0.2
CAD01408MM1	9/12/00	21:36	5.42	<0.02	<0.5	<0.02	0.058	<0.02	0.024	<0.0005	<0.2
CAD0140BMM1	9/12/00	21:38	4.33	0.027	<0.5	<0.02	0.057	<0.02	0.024	<0.0005	<0.2
<i>Run 4 CAD Cell M19</i>											
CAD01416MM1	9/12/00	22:14	38.72	0.024	<0.5	<0.02	0.058	<0.02	0.024	<0.0005	<0.2
CAD01419MM1	9/12/00	22:17	19.00	<0.02	<0.5	<0.02	0.061	<0.02	0.024	<0.0005	<0.2
CAD0141CMM1	9/12/00	22:20	16.48	<0.02	<0.5	<0.02	0.059	<0.02	0.024	<0.0005	<0.2
CAD0141FMM1	9/12/00	22:24	25.03	<0.02	<0.5	<0.02	0.059	<0.02	0.025	<0.0005	<0.2
CAD01422MM1	9/12/00	22:29	21.92	0.029	<0.5	<0.02	0.058	<0.02	0.024	<0.0005	<0.2
CAD01425MM1	9/12/00	22:36	17.60	0.031	<0.5	<0.02	0.057	<0.02	0.024	<0.0005	<0.2
CAD01428MM1	9/12/00	22:37	11.75	0.028	<0.5	<0.02	0.057	<0.02	0.024	<0.0005	<0.2
CAD0142BMM1	9/12/00	22:45	8.62	<0.02	<0.5	<0.02	0.056	<0.02	0.024	<0.0005	<0.2
CAD0142EMM1	9/12/00	22:46	7.54	<0.02	<0.5	<0.02	0.057	<0.02	0.024	<0.0005	<0.2
<i>Post Run 4 CAD Cell M19</i>											
CAD01436MM1	9/12/00	23:32	3.49	0.028	<0.5	<0.02	0.058	<0.02	0.024	<0.0005	<0.2
CAD01439MM1	9/12/00	23:34	4.64	0.026	<0.5	<0.02	0.056	<0.02	0.024	<0.0005	<0.2
CAD0143CMM1	9/12/00	23:36	3.84	<0.02	<0.5	<0.02	0.047	<0.02	<0.02	<0.0005	<0.2

Note: Bold type indicates detected concentrations

Table 3-15. RCRA 8 Metals Analytical Results for Run 5

Sample ID	Date Collected	Time Collected	TSS (mg/L)	Analytes (mg/L)							
				Arsenic	Barium	Cadmium	Chromium	Silver	Lead	Mercury	Selenium
<i>Pre Run 5 CAD Cell M8</i>											
CAD01469MM1	9/14/00	3:33	3.50	<0.02	<0.5	<0.02	0.048	<0.02	<0.02	<0.0005	<0.2
CAD0146CMM1	9/14/00	3:35	7.21	<0.02	<0.5	<0.02	0.047	<0.02	<0.02	<0.0005	<0.2
CAD0146FMM1	9/14/00	3:37	4.07	<0.02	<0.5	<0.02	0.048	<0.02	<0.02	<0.0005	<0.2
<i>Run 5 CAD Cell M8</i>											
CAD0147DMM1	9/14/00	4:52	102.67	<0.02	<0.5	<0.02	0.055	<0.02	<0.02	<0.0005	<0.2
CAD01480MM1	9/14/00	5:00	70.82	<0.02	<0.5	<0.02	0.057	<0.02	<0.02	<0.0005	<0.2
CAD01483MM1	9/14/00	5:04	94.15	<0.02	<0.5	<0.02	0.057	<0.02	<0.02	<0.0005	<0.2
CAD01486MM1	9/14/00	5:13	73.52	0.026	<0.5	<0.02	0.056	<0.02	<0.02	<0.0005	<0.2
CAD01489MM1	9/14/00	5:17	44.76	0.02	<0.5	<0.02	0.056	<0.02	<0.02	<0.0005	<0.2
CAD0148CMM1	9/14/00	5:24	25.59	0.036	<0.5	<0.02	0.052	<0.02	<0.02	<0.0005	<0.2
CAD0148FMM1	9/14/00	5:32	16.27	<0.02	<0.5	<0.02	0.049	<0.02	<0.02	<0.0005	<0.2
CAD01492MM1	9/14/00	5:33	24.34	<0.02	<0.5	<0.02	0.056	<0.02	<0.02	<0.0005	<0.2
CAD01495MM1	9/14/00	5:39	12.96	<0.02	<0.5	<0.02	0.053	<0.02	<0.02	<0.0005	<0.2
<i>Post Run 5 CAD Cell M8</i>											
CAD0149DMM1	9/14/00	6:11	9.23	0.022	<0.5	<0.02	0.052	<0.02	<0.02	<0.0005	<0.2
CAD014A0MM1	9/14/00	6:13	8.75	<0.02	<0.5	<0.02	0.052	<0.02	<0.02	<0.0005	<0.2
CAD014A3MM1	9/14/00	6:16	7.93	<0.02	<0.5	<0.02	0.049	<0.02	<0.02	<0.0005	<0.2

Note: Bold type indicates detected concentrations

Table 3-16. RCRA 8 Metals Analytical Results for Run 6

Sample ID	Date Collected	Time Collected	TSS (mg/L)	Analytes (mg/L)							
				Arsenic	Barium	Cadmium	Chromium	Silver	Lead	Mercury	Selenium
<i>Pre Run 6 CAD Cell M8</i>											
CAD014BFMM1	9/15/00	8:45	2.86	0.029	<0.5	<0.02	0.051	<0.02	<0.02	<0.0005	<0.2
CAD014C2MM1	9/15/00	8:47	3.19	<0.02	<0.5	<0.02	0.052	<0.02	<0.02	<0.0005	<0.2
CAD014C5MM1	9/15/00	8:50	2.49	<0.02	<0.5	<0.02	0.056	<0.02	<0.02	<0.0005	<0.2
<i>Run 6 CAD Cell M8</i>											
CAD014D4MM1	9/15/00	9:52	51.98	<0.02	<0.5	<0.02	0.063	<0.02	<0.02	<0.0005	<0.2
CAD014DBMM1	9/15/00	9:57	37.58	<0.02	<0.5	<0.02	0.056	<0.02	<0.02	<0.0005	<0.2
CAD014DEMM1	9/15/00	9:59	35.97	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
CAD014E4MM1	9/15/00	10:02	30.50	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
CAD014E7MM1	9/15/00	10:06	38.13	<0.02	<0.5	<0.02	0.044	<0.02	<0.02	<0.0005	<0.2
CAD014EAMM1	9/15/00	10:11	30.38	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
CAD014EDMM1	9/15/00	10:14	11.97	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
CAD014F3MM1	9/15/00	10:22	2.93	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
CAD014F6MM1	9/15/00	10:25	11.00	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
<i>Post Run 6 CAD Cell M8</i>											
CAD01511MM1	9/15/00	11:36	5.03	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
CAD01514MM1	9/15/00	11:48	4.80	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
CAD0151AMM1	9/15/00	11:50	4.86	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2

Note: Bold type indicates detected concentrations

Table 3-17. RCRA 8 Metals Analytical Results for Run 7

Sample ID	Date Collected	Time Collected	TSS (mg/L)	Analytes (mg/L)							
				Arsenic	Barium	Cadmium	Chromium	Silver	Lead	Mercury	Selenium
<i>Pre Run 7 CAD Cell M8</i>											
CAD01523MM1	9/15/00	23:35	5.18	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
CAD01526MM1	9/15/00	23:38	4.62	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
CAD01529MM1	9/15/00	23:41	6.53	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
<i>Run 7 CAD Cell M8</i>											
CAD01534MM1	9/16/00	0:09	191.74	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
CAD01538MM1	9/16/00	0:14	27.08	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
CAD0153BMM1	9/16/00	0:19	20.68	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
CAD0153EMM1	9/16/00	0:25	7.38	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
CAD01541MM1	9/16/00	0:26	9.94	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
CAD01544MM1	9/16/00	0:31	7.56	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
CAD01547MM1	9/16/00	0:35	5.87	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
CAD0154CMM1	9/16/00	0:42	4.78	0.04	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
CAD0154FMM1	9/16/00	0:44	5.61	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
<i>Post Run 7 CAD Cell M8</i>											
CAD0155EMM1	9/16/00	1:33	4.30	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
CAD01561MM1	9/16/00	1:35	3.41	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
CAD01564MM1	9/16/00	1:39	4.05	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2

Note: Bold type indicates detected concentrations

Table 3-18. RCRA 8 Metals Analytical Results for Run 8

Sample ID	Date Collected	Time Collected	TSS (mg/L)	Analytes (mg/L)							
				Arsenic	Barium	Cadmium	Chromium	Silver	Lead	Mercury	Selenium
<i>Pre Run 8 CAD Cell M8</i>											
CAD015ABMM1	9/20/00	9:43	4.25	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
CAD015B0MM1	9/20/00	9:50	4.30	<0.02	<0.5	<0.02	0.04	<0.02	<0.02	<0.0005	<0.2
CAD015B3MM1	9/20/00	9:53	2.06	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
<i>Run 8 CAD Cell M8</i>											
CAD015C2MM1	9/20/00	10:34	48.69	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
CAD015C5MM1	9/20/00	10:38	9.09	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
CAD015CBMM1	9/20/00	10:45	25.25	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
CAD015CEMM1	9/20/00	10:49	36.26	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	0.0013	<0.2
CAD015D1MM1	9/20/00	10:54	13.38	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
CAD015D4MM1	9/20/00	11:01	15.57	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
CAD015D7MM1	9/20/00	11:05	11.96	<0.02	<0.5	<0.02	<0.04	<0.02	<0.02	<0.0005	<0.2
CAD015DCMM1	9/20/00	11:10	9.98	<0.02	<0.5	<0.02	0.041	<0.02	<0.02	<0.0005	<0.2
CAD015DFMM1	9/20/00	11:12	10.73	<0.02	<0.5	<0.02	0.054	<0.02	<0.02	<0.0005	<0.2
<i>Post Run 8 CAD Cell M8</i>											
CAD015EFMM1	9/20/00	11:52	4.48	0.03	<0.5	<0.02	0.056	<0.02	<0.02	<0.0005	<0.2
CAD015F2MM1	9/20/00	11:56	4.28	<0.02	<0.5	<0.02	0.057	<0.02	<0.02	<0.0005	<0.2
CAD015F5MM1	9/20/00	12:00	2.86	0.027	<0.5	<0.02	0.057	<0.02	<0.02	<0.0005	<0.2

Note: Bold type indicates detected concentrations

Table 3-19. Comparison of Filtered Samples

Sample ID	Date Collected	Time Collected	TSS (mg/L)	TPH (µg/L)		Total PAH (ng/L)		Total PCB (ng/L)	
				Filtrate	Particulate	Filtrate	Particulate	Filtrate	Particulate
CAD012BF	9/9/00	16:59	122.40	25.10	154.26	178.73	629.64	<ALQ	9.07
CAD012C3	9/9/00	17:03	95.18	41.95	687.28	432.07	4,810.23	<ALQ	84.24
CAD01390	9/11/00	1:13	26.77	43.15	14.93	98.56	87.85	0.92	0.75
CAD01394	9/11/00	1:16	53.43	58.82	142.32	59.97	248.15	1.06	6.90
CAD0147D	9/14/00	4:52	102.67	44.39	21.52	67.91	68.49	<ALQ	3.67
CAD01480	9/14/00	5:00	70.82	30.17	45.60	117.44	194.91	<ALQ	6.59
CAD014D4	9/15/00	9:52	51.98	54.07	41.87	62.86	79.35	0.47	9.41
CAD014DB	9/15/00	9:57	37.58	338.97	51.05	61.87	126.76	0.88	7.76
CAD01534	9/16/00	0:09	191.74	53.31	34.70	44.73	67.24	0.76	1.14

3.7 Filtered Samples

Nine of the samples collected at Boston Harbor were filtered before analysis to determine if the organic contaminants of concern were sorbed to the suspended particulates or if organics partitioned into the water column. Particulate sample concentrations are reported as the mass of contaminant on the sediment per liter of water collected, for comparison with filtrate concentrations. Table 3-19 shows both the filtrate and particulate concentrations for these nine samples. For PAHs, generally the highest concentrations were found in the particulate samples. Only one of the nine samples had higher total PAH levels in the filtrate. The remaining eight samples had higher particulate concentrations, with four samples having particulate concentrations of PAH more than double the filtrate concentration. Several samples had TPH

concentrations higher in water, with the largest difference in sample CAD014DB where the filtrate TPH concentration was 338.97 µg/L and the particulate concentration was 51.05 µg/L. All but one sample had a higher PCB concentration in the particulate and four of the nine samples had filtrate total PCB concentrations <ALQ.

This pattern of the highest levels of organics associated with particulate matter was expected. PCBs and PAHs are highly hydrophobic and tend to sorb strongly to organic material, and therefore are not likely to partition into the water column. TPH has greater solubility in water and therefore would partition to a greater extent into the water phase.

3.8 Post Survey Sampling

Four days after capping stopped at CAD cells M8 and cell M19, the Post Survey samples were collected above each CAD cell. Ten samples (five at each cell) were taken from approximately the same locations as the Pre Survey background samples (Table 3-20). PCB levels did not return to the before capping <ALQ, but were still low at a range of <ALQ to 1.49 ng/L. TSS levels returned to approximately the same as before capping at <4.2 mg/L.

Table 3-20. Organics Analytical Results for Post Survey

Sample ID	Date Collected	Time Collected	TSS (mg/L)	TPH (µg/L)	Total PAH (ng/L)	Total PCB (ng/L)
<i>Post Survey CAD Cell M19</i>						
CAD01610	9/28/00	9:22	4.14	219.05	82.93	0.37
CAD01613	9/28/00	9:26	3.61	75.28	73.95	<ALQ
CAD01616	9/28/00	9:29	3.48	60.68	56.39	1.17
CAD01619	9/28/00	9:32	3.28	75.78	53.14	0.69
CAD0161C	9/28/00	9:35	2.39	67.98	55.43	0.83
<i>Post Survey CAD Cell M8</i>						
CAD01620	9/28/00	9:38	3.18	73.30	46.38	0.45
CAD01623	9/28/00	9:41	2.17	93.49	45.69	0.62
CAD01626	9/28/00	9:44	2.46	36.00	41.01	0.85
CAD01629	9/28/00	9:47	3.81	48.31	62.27	1.49
CAD0162C	9/28/00	9:50	1.58	120.13	47.49	0.44
CAD0162CDUP	9/28/00	9:50		118.57	59.42	

TPH concentrations again varied widely, ranging from 36.00 µg/L to 219.05 µg/L. The high TPH concentrations probably were not related to the capping events. The Post Survey PAH range was slightly higher than the Pre Survey concentrations, ranging from 41.01 ng/L to 82.93 ng/L in the Post Survey as compared to 32.17 ng/L to 72.26 ng/L in the Pre Survey.

Only two of the eight RCRA 8 metals were detected during the Post Survey sampling (Table 3-21). Lead was detected in one sample at 0.15 mg/L. Selenium was detected in six of the ten samples at a range of 0.023 mg/L to 0.17 mg/L.

Table 3-21. RCRA 8 Metals Analytical Results for Post Survey

Sample ID	Date Collected	Time Collected	TSS (mg/L)	Analytes (mg/L)							
				Arsenic	Barium	Cadmium	Chromium	Silver	Lead	Mercury	Selenium
<i>Post Survey CAD Cell M19</i>											
CAD01610MM1	9/28/00	9:22	4.14	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.0005	0.031
CAD01613MM1	9/28/00	9:26	3.61	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.0005	<0.02
CAD01616MM1	9/28/00	9:29	3.48	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.0005	0.059
CAD01619MM1	9/28/00	9:32	3.28	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.0005	<0.02
CAD0161CMM1	9/28/00	9:35	2.39	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.0005	0.17
<i>Post Survey CAD Cell M8</i>											
CAD01620MM1	9/28/00	9:38	3.18	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.0005	0.023
CAD01623MM1	9/28/00	9:41	2.17	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.0005	0.072
CAD01626MM1	9/28/00	9:44	2.46	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.0005	0.036
CAD01629MM1	9/28/00	9:47	3.81	<0.02	<0.02	<0.02	<0.02	<0.02	0.15	<0.0005	<0.02
CAD0162CMM1	9/28/00	9:50	1.58	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.0005	<0.02

Note: Bold type indicates detected concentrations

3.9 Sand Capping Material

Sand used for capping in Boston Harbor was analyzed for PCB, PAH, and TPH in order to determine if the levels of organics detected in the water samples taken during the survey could be caused by the material used for capping. The capping sand was collected from the Cape Cod Canal, which has been determined by the USACE to be free from contaminants and contains sand suitable for use in capping. The sand samples were obtained from the USACE and Great Lakes Dredging Company. Samples were taken from five different loads in order to provide a good representation of the sand used throughout the capping process, and were collected during the last three days of capping at Boston Harbor in order to meet the holding times for organics. A TPH analysis was run for Load #24, but no duplicate was run for PCBs. These cap samples were not analyzed for the RCRA 8 metals because of the time and budget constraints on the project. However, the very low concentration of RCRA 8 metals detected during capping indicate that the capping material would not have noticeably contributed to contamination of the water column.

All of the Cape Cod sand samples had low levels of organic contaminants (Table 3-22). PCBs were <ALQ in all five sand samples. TPH was <ALQ in two samples, including Load #20 and Load #21. Load #22 and Load #23 had estimated TPH concentrations of 2.35 mg/kg and 3.10 mg/kg, respectively. The highest detection of TPH was 14.03 mg/kg in Load #24.

Table 3-22. Organics Analytical Results for Sand Capping Material

Sample ID	Date Collected	Time Collected	TPH (mg/kg)	Total PAH (ng/g)	Total PCB (ng/g)
<i>Sand Capping Material</i>					
Load #20	9/22/00	ND	<4.42	3.16	<ALQ
Load #21	9/22/00	ND	<4.76	2.81	<ALQ
Load #22	9/23/00	ND	2.35	6.66	<ALQ
Load #23	9/23/00	ND	3.10	8.24	<ALQ
Load #24	9/24/00	ND	14.03	14.46	<ALQ
Load #24 DUP	9/24/00	ND	4.85	13.52	NA

PAHs were detected at low levels in all five sand samples and the duplicate for Load #24. PAH concentrations ranged from 2.81 ng/g in Load #21 to 14.46 ng/g in Load #24. The detections of TPH and PAH were so low in the sand samples that they were probably related to natural background from the Cape Cod area.

3.10 Data Comparisons

Analytical results of water samples collected before, during, and after capping activities were compared to quantify changes in contaminant concentrations in the water column caused by the capping activities. Contaminant concentrations were plotted against turbidity levels to determine whether areas of high turbidity (caused by capping) corresponded to areas of relatively high contamination. Two dimensional (2-D) turbidity maps were generated to show TSS levels and COCs in the area where the capping took place. A 2-D diagram of PAH and TSS concentrations for Run 1 is shown in Figure 3-7 and 2-D plots for the remaining runs can be found in Appendix H. Figures 3-8 through 3-10 show plots for TPH, PAH, and PCB concentrations plotted against TSS, respectively, for Runs 1 through 4. Figures 3-11 through 3-13 show plots for TPH, PAH, and PCB concentration plotted against TSS, respectively, for Runs 5 through 8. Linear regression values and correlation coefficients for each plot are shown in Table 3-23. All r^2 values were below 0.5 except PAH vs. TSS for Run 3 ($r^2 = 0.957$), PCBs vs. TSS for Run 7 ($r^2 = 0.7696$) and PCBs for Run 3 ($r^2 = 0.6611$). However, PCBs vs. TSS for Run 2 had a negative slope, suggesting that the r^2 value of 0.7696 was an artifact of the data and does not suggest a predictable trend. In general, the low r^2 values indicate that TSS values are not good predictors of suspended contaminant concentrations during capping. This is because the resuspended, contaminated TSS likely are overshadowed by the TSS from the capping material.

Information from the ADCP was used to determine flow velocity and direction for Boston Harbor and the Mystic River during all sampling events. The data gathered using the ADCP and BOSS shows that the current velocity during sampling was very slow and the flow direction was variable. Table 3-24 gives the average velocity and direction for each day of sampling; the standard deviation is also listed. Average current velocities were plotted for each day (Appendix I). The velocities and flow direction in Table 3-24 and the plots in Appendix I are calculated at approximately 2 m above the river bottom, which was the same depth that samples were taken using the BOSS. The ADCP gathers profiles of horizontal currents for the entire water column by depth, but the velocities and flow directions for the entire water column were more variable than for 2 m above the river bottom. The current velocities observed in the Mystic River probably were not great enough to transport sediments resuspended by capping “down-stream” from the CAD cells.

Data from Boston Harbor indicate that resuspension was greater when capping was conducted over uncapped sediments, and that resuspended contaminants probably did not travel downstream with the current. Suspended sediments settled rapidly (within an hour) after the capping activities ceased and resuspension decreased as more capping material was placed over the contaminated sediments.

In general, high TSS concentrations did not correlate to high organic concentrations at cell M19, where the average correlation coefficient was 0.3560. At cell M19, four water samples taken during Run 1 had both high TSS concentrations and relatively high organic concentrations; however, several water samples also had high TPH levels and very low TSS concentrations. Cell M19 also had one sample in Run 4 with a high PCB concentration (23.79 ng/L), but low TSS (7.54 mg/L).

Samples taken at cell M8 showed even lower correlation between TSS and organic concentrations, where the average correlation coefficient was 0.2195. TSS levels and organic concentrations at cell M8 were generally lower than at cell M19.

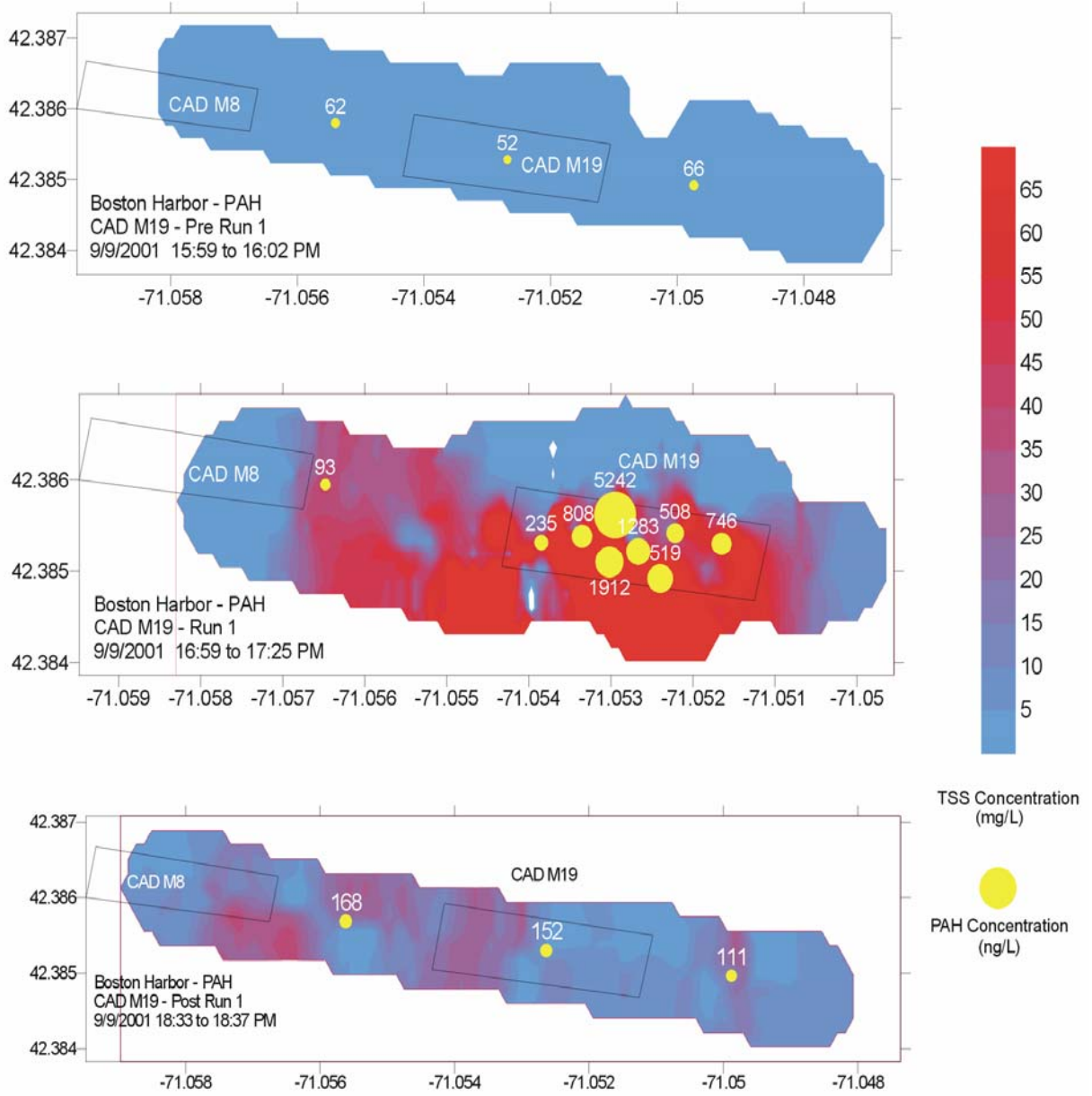


Figure 3-7. 2-D Plot of PAH and TSS Concentrations for Run 1 CAD Cell M19

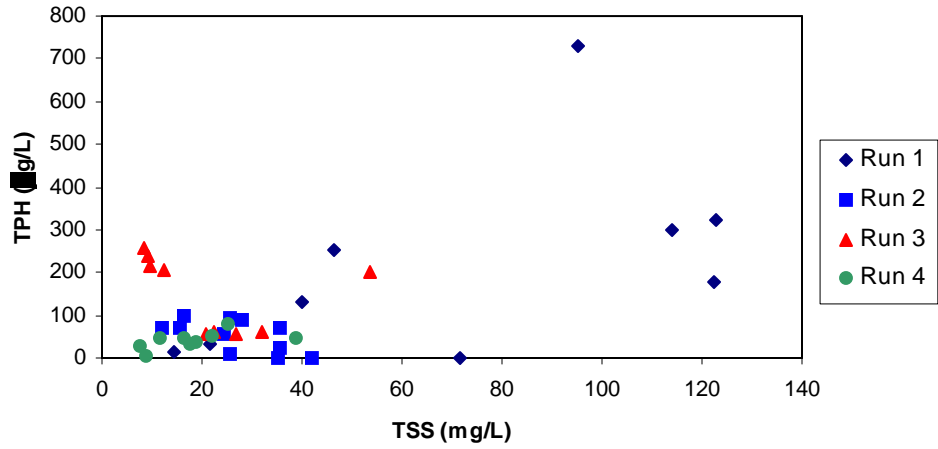


Figure 3-8. TPH Plotted Against TSS for Runs 1 Through 4

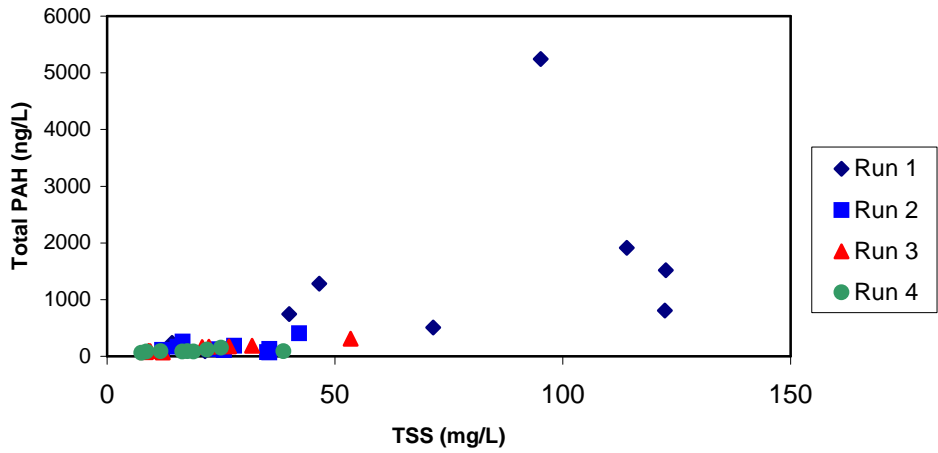


Figure 3-9. PAHs Plotted Against TSS for Runs 1 Through 4

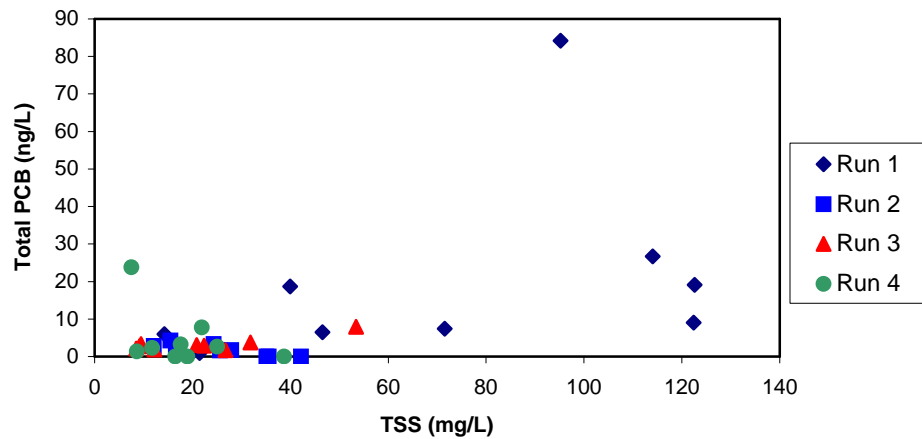


Figure 3-10. PCBs Plotted Against TSS for Runs 1 Through 4

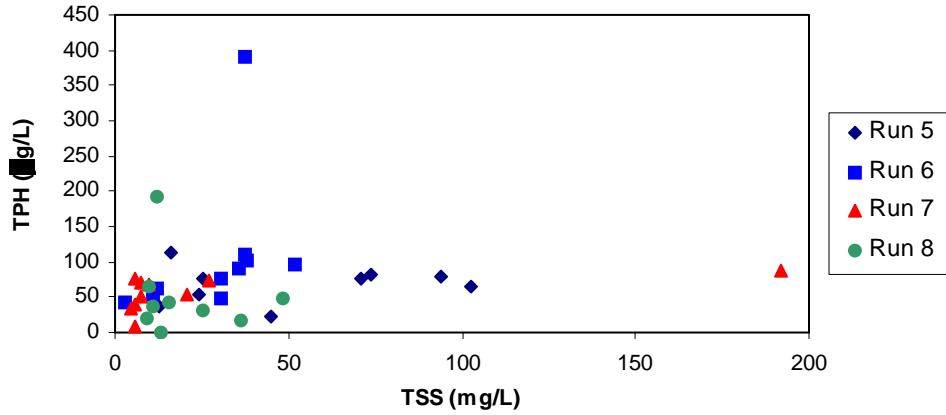


Figure 3-11. TPH Plotted Against TSS for Runs 5 through 8

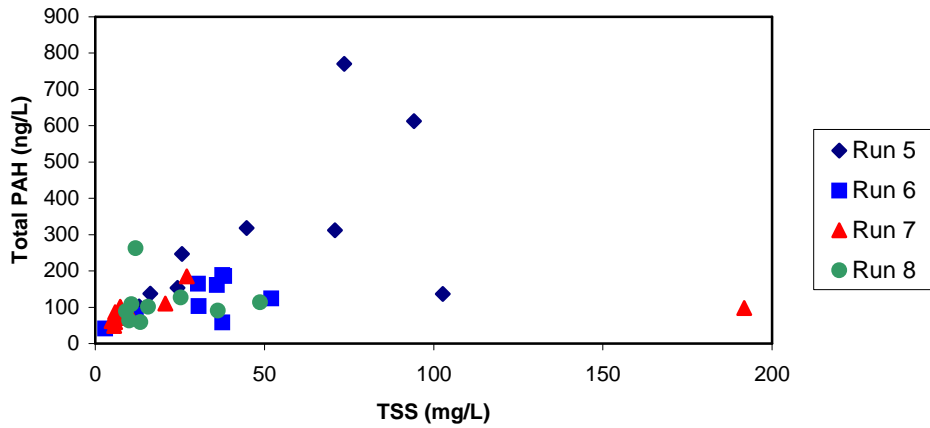


Figure 3-12. PAHs Plotted Against TSS for Runs 5 Through 8

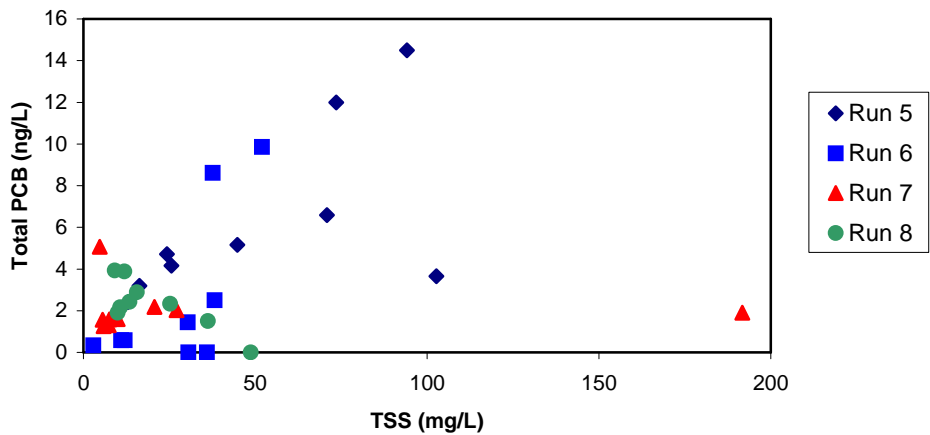


Figure 3-13. PCBs Plotted Against TSS for Runs 5 through 8

Table 3-23. Correlation Coefficients and Linear Regression Values for Runs 1 Through 8

Run No.	r ²	Slope	Y-intercept
<i>TPH (Figures 3-8 and 3-11)</i>			
Run 1	0.2833	2.7939	17.164
Run 2	0.4014	-2.515	120.36
Run 3	0.1187	-2.0799	195.42
Run 4	0.2935	1.1141	20.789
Run 5	0.0149	0.0958	62.218
Run 6	0.1453	2.5489	33.554
Run 7	0.2636	0.2138	49.512
Run 8	0.036	-0.7716	65.959
<i>PAHs (Figures 3-9 and 3-12)</i>			
Run 1	0.2027	16.329	196.11
Run 2	0.0361	1.9267	108.01
Run 3	0.9566	5.0897	38.02
Run 4	0.2211	1.239	72.676
Run 5	0.2822	3.5999	124.07
Run 6	0.3862	2.2221	53.941
Run 7	0.0327	0.1212	87.357
Run 8	0.0015	-0.1668	116.13
<i>PCBs (Figures 3-10 and 3-13)</i>			
Run 1	0.1431	0.2228	3.7986
Run 2	0.7696	-0.1354	5.3594
Run 3	0.6611	0.105	0.9945
Run 4	0.1848	-0.342	10.897
Run 5	0.3809	0.075	2.3864
Run 6	0.4446	0.1605	-1.8065
Run 7	0.0033	-0.0011	2.089
Run 8	0.643	-0.0694	3.7327

Table 3-24. Average Current Velocity and Flow Direction Approximately 2 m Above the River Bottom

Date	Velocity (East) mm/s	Standard Deviation (East) mm/s	Velocity (North) mm/s	Standard Deviation (North) mm/s
9/6/00	12.5	213	20.2	211
9/9/00	3.2	222	-5.5	220
9/10/00	-3.2	221	3.0	218
9/11/00	-16.5	224	23.2	225
9/12/00	15.2	254	5.6	247
9/13/00	-2.7	223	-11.9	232
9/14/00	-5.2	221	-22.0	216
9/15/00	32.5	231	10.3	222
9/16/00	49.5	239	27.0	255
9/20/00	0.2	216	-3.0	219

4.0 CONCLUSIONS

Background levels of TPH, PCBs, and PAHs were below detection limits or very low levels were detected. The highest resuspension of contaminant material was seen during the first event at each CAD cell when previously uncapped sediments were being capped. In general, contaminant resuspension was very low for all capping events during this survey. Rapid dissipation of TSS and contaminants was seen for all capping events.

Table 4-1 compares sampling results at Boston Harbor to results from the parallel study at Eagle Harbor. These two sites used very different methods for capping contaminated settlements, but both sites showed similar results from the monitoring during the capping events. The capping material at Eagle Harbor was washed off of a barge with a high-pressure hose, compared to the “sprinkling” method used at Boston Harbor. A complete description of the capping method used at Eagle Harbor can be found in Battelle (2001).

The BOSS proved to be an effective instrument for the collection of water samples before, during, and after capping. Samples and data collected using the BOSS helped to achieve a better understanding of the amount of contaminants released into the surrounding water column as a result of a capping event.

Table 4-1. Comparison of Results from Boston Harbor and Eagle Harbor

Monitoring Event	Boston Harbor		Eagle Harbor	Observations
	PCBs (ng/L)	PAHs (ng/L)	PAHs (ng/L)	
Before Capping	<ALQ	32 – 72	46 – 73	Non-detect to low level background at both sites.
During Capping	<ALQ – 84	32 – 5,242	20 – 3,872	Elevated suspended contaminants during capping; contaminant resuspension decreased with successive capping layers at both sites.
After Capping	0.4 – 1.5	41 – 83	38 – 159	Rapid settling of suspended contaminants at both sites.

5.0 REFERENCES

- Battelle. 2000. Final Quality Assurance Project Plan, Evaluation of Sediment Agitation and Mixing into the Surrounding Water Column from Capping Activities. QAPP I.D. No. 206-02-0. August 30.
- Battelle. 2001. Draft Final Report for Evaluation of Sediment Agitation and Mixing into the Surrounding Water Column from Capping Activities at the Wyckoff/Eagle Harbor Superfund Site. November.
- Fredette, T.J., P.E. Jackson, C.J. Demos, D.A. Hadden, S.H. Wolf, T.A. Nowak Jr., and E. DeAngelo. 2000. The Boston Harbor Navigation Improvement Project CAD Cells: Recommendations for Future Projects Based on Field Experience and Monitoring. Draft paper submitted to the June 2000 Western Dredging Association Conference, Warwick, RI.
- United States Army Corps of Engineers (USACE) 1999a. Chemistry Data Report - Boston Harbor Navigation and Berth Dredging, Boston Harbor. August 5.
- United States Army Corps of Engineers (USACE). 1999b. Water Quality Certification – Compliance with Condition E2, Boston Harbor Navigation and Berth Dredging Project – Phase 2 Letter Report. December 28.



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Evaluation of Sediment Agitation and Mixing into the Surrounding Water Column from Capping Activities - Boston Harbor

APPENDIX A

BOSTON HARBOR PLUME TRACKING SURVEY REPORT

CAD 01 – BOSTON HARBOR, MA

BOSTON HARBOR PLUME TRACKING SURVEY REPORT

FOR

**EVALUATION OF SEDIMENT AGITATION AND MIXING INTO THE
SURROUNDING WATER COLUMN FROM CAPPING ACTIVITIES**

EPA Boston Harbor Resuspension Plume Monitoring Project

Contract No. 68-C7-0008
Work Assignment No. 26

Submitted to

U.S. ENVIRONMENTAL PROTECTION AGENCY
National Risk Management Research Laboratory
26 West Martin Luther King Drive
Cincinnati, OH 45268

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June 15, 2001



TABLE OF CONTENTS

- 1. INTRODUCTION 2
- 2. METHODS 5
 - 2.1. DEVIATIONS 8
- 3. SURVEY CHRONOLOGY 9
- 4. SURVEY RESULTS 21
- 5. PROBLEMS EXPERIENCED, ACTIONS TAKEN, AND RECOMMENDATIONS 22
 - 5.1. SCHEDULE 22
 - 5.2. TECHNICAL 22
- 6. REFERENCES 23

LIST OF TABLES

- TABLE 1. SURVEY PERSONNEL FOR EAGLE HARBOR PLUME TRACKING SURVEY, 2000. 4
- TABLE 2. SUMMARY OF FIELD MEASUREMENTS AND INSTRUMENTS 6
- TABLE 3. ANALYTE, SAMPLE METHOD, VOLUME, PRESERVATION, AND HOLDING TIMES. 8
- TABLE 4. NUMBERS AND TYPES TRANSECTS TO BE OCCUPIED AND SAMPLES TO BE COLLECTED
DURING THE CAPPING RESUSPENSION SURVEY IN EAGLE HARBOR, WA. 22

LIST OF FIGURES

- FIGURE 1. EAGLE HARBOR MAP 3

APPENDICES

- APPENDIX A 24
- APPENDIX B 34
- APPENDIX C 59

1. Introduction

The U.S. Environmental Protection Agency's (U.S. EPA's) National Risk Management Research Laboratory (NRMRL) wanted to determine whether the placement of a marine sediment-cap results in the release of contaminants both into the surrounding water column and onto surrounding sediments. The goal of this study was to achieve a better understanding of the amount of contaminants released into the surrounding water column before, during, and after capping. This study utilized state-of-the-art oceanographic technology to acquire high-resolution field data for determining the extent of the release of any contaminated sediment into the water column attributable to sediment agitation during capping activities of a confined aquatic disposal (CAD) cell in Boston Harbor, MA.

CAD cells in Boston Harbor have been used as disposal sites for silty, fine-grained sediments from the Boston Harbor Navigation Improvement Project (BHNIP) that were determined to be unsuitable for ocean disposal. Two of the CAD cells, located in the Mystic River portion of Boston Harbor, were filled with dredged material in January 2000. The dredged material in these two cells, M8 and M19 (Figure 1), has been allowed to consolidate in order to reduce the amount of mixing between the dredged silt and cap sand during capping of the cell. Sand dredged from the Cape Cod Canal was used to create caps for cells M8 and M19 in Mystic River/Boston Harbor (Fredette *et al.*, 2000). The sand cap was "sprinkled" on the cells using a partially opened hopper dredge, which was maneuvered using a tug down the length of the CAD cell. This "sprinkling" method of cap creation minimizes the disturbance of the silt material in the disposal cells.

CAD cells M19 and M8 (Figure 1) were monitored during capping operations. The objective of the study was to determine whether or not capping affects resuspension of the contaminated sediments and adversely impacts the water column and surrounding environment. To accomplish this objective Battelle conducted a plume tracking survey to monitor the plumes at each of the two targeted Boston Harbor CAD sites.

This plume tracking survey at CAD Sites M19 and M8 was conducted from September 6 through 28, 2000. The survey involved tracking and sampling the plumes of sediment generated by the capping activities. The Battelle-owned research vessel R/V *Aquamonitor* served as the monitoring platform. Mobilization was conducted on September 4 and 5, and final demobilization was conducted on September 28, while the vessel was docked at Hewitts Cove Marina in Hingham, MA. The survey crew is listed in Table 1. The planned numbers of events and samples to be collected are in Table 2.

This survey report describes the daily activities of survey CAD 01, and provides a synopsis of some preliminary observations from the survey. A description of the survey methods is provided in Section 2. A chronological summary of survey activities and observations is provided in Section 3. Preliminary survey results are provided in Section 4. A description of survey problems and corrective actions, and recommendations for future surveys can be found in Section 5.

**Figure 1. Boston Harbor Navigation Improvement Project
Mystic River and Inner Confluence Disposal Cells (Fredette *et al.*, 2000)**

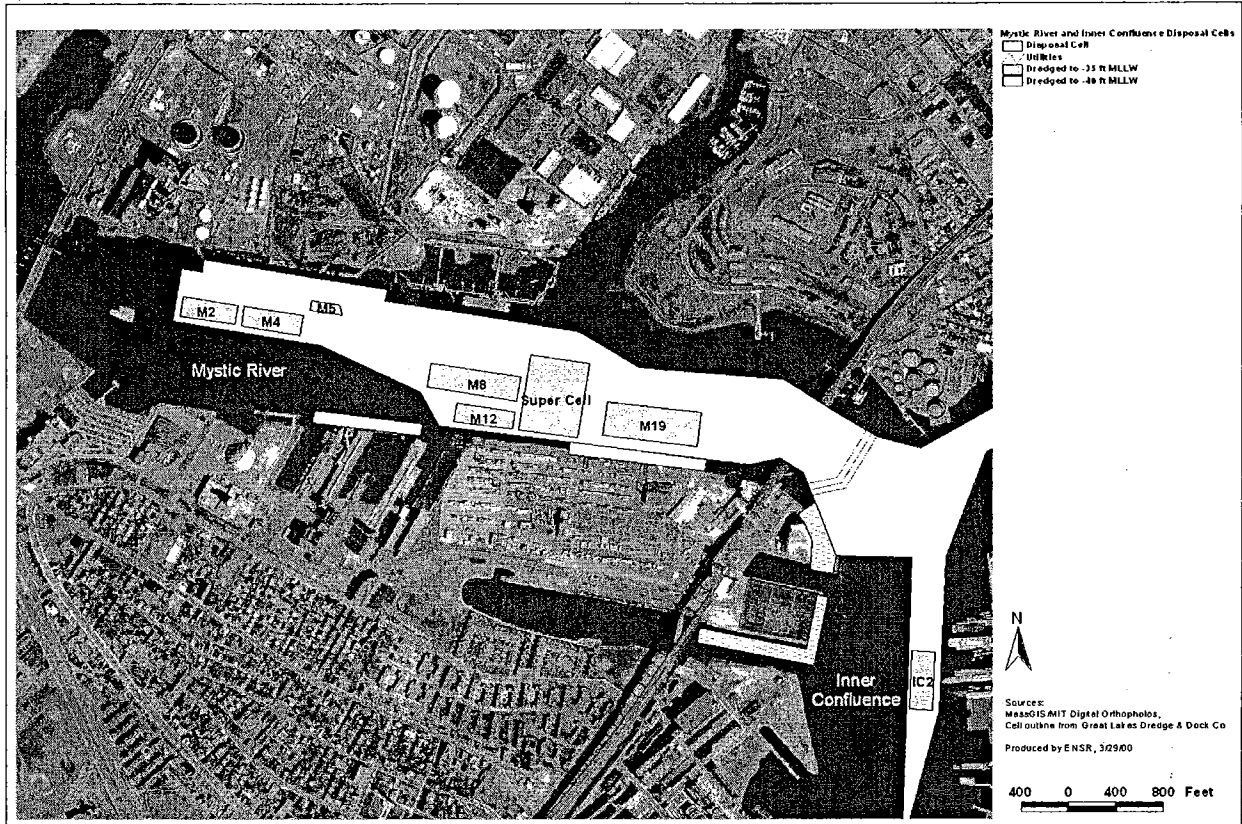


Table -1. Survey Personnel for Boston Harbor, MA, Plume Tracking Survey, September 2000. (Team 1: black, Team 2: blue).

Activity:	Mobilization	Pre-Capping Background Sampling	Daily Sampling at CAD M19				
			Date:	9/4	9/5	9/9	9/10
Chief Scientist		W. Trulli C. Albro	W. Trulli	C. Albro	W. Trulli C. Albro	W. Trulli C. Albro	W. Trulli
NAVSAM Operator	B. Mandeville	B. Mandeville S. Libby	B. Mandeville	S. Libby	B. Mandeville S. Libby	B. Mandeville S. Libby	B. Mandeville
PI/Winch Operator	T. Kaufman L. Gilday	T. Kaufman L. Gilday	T. Kaufman	L. Gilday	T. Kaufman L. Gilday	T. Kaufman L. Gilday	T. Kaufman
DPM/Sampling Technician	M. Mannis	L. Cumming J. Ickes	L. Cumming	J. Ickes	L. Cumming J. Ickes	L. Cumming J. Ickes	
ADCP Operator	S. Curtis	L. Short S. Curtis	L. Short	S. Curtis	L. Short S. Curtis	L. Short S. Curtis	L. Short
Captain (Subcontractor)		B. Ryder E. Chiasson	B. Ryder	E. Chiasson	B. Ryder E. Chiasson	B. Ryder E. Chiasson	B. Ryder
EPA Work Assignment Manager			T. Lyons	T. Lyons	T. Lyons T. Lyons	T. Lyons	T. Lyons
At-Sea Totals	N/A	5 5	6 N/A	N/A 6	6 6	6 6	6 N/A
Activity			Daily Sampling at CAD M8				
Date			9/14	9/15	9/16	9/20	9/28
Chief Scientist			C. Albro	W. Trulli	W. Trulli	W. Trulli	S. Libby
NAVSAM Operator			S. Libby	B. Mandeville	B. Mandeville	B. Mandeville	B. Mandeville
PI/Winch Operator			L. Gilday	T. Kaufman	T. Kaufman	T. Kaufman	L. Gilday
DPM/Sampling Technician			J. Ickes				
ADCP Operator			S. Curtis	J. Boyle	L. Short	L. Short	S. Curtis
Captain (Subcontractor)			E. Chiasson	B. Ryder	B. Ryder	B. Ryder	E. Chiasson
Work Assignment Manager (EPA)			T. Lyons				
At-Sea Totals			N/A 6	6 N/A	5 N/A	5 N/A	N/A 5

Table 1. Planned Numbers and Types Transects and Samples to be Collected during the Capping Resuspension Survey in Boston Harbor MA.

Type of Event	Number of Events in Survey	Numbers and Types of Transects per Event	Numbers and Types of Samples per Event		
			Organics	Metals	TSS
Precapping	1	1 standard transect	5	5	5
Capping	8	1 pre-dump background transect	3	3	3
		1 standard transect	9	9	9
		1 post-dump background transect	3	3	3
Postcapping	1	1 standard transect	5	5	5

2. Methods

The following subsections briefly summarize the methods used during this survey. The Quality Assurance Project Plan (QAPP) (Battelle 2000) for the *Evaluation of Sediment Agitation and Mixing into the Surrounding Water Column from Capping Activities* contains additional details on survey sampling methods.

Method Descriptions:

Navigation. Vessel positioning during sampling operations was accomplished with the BOSS navigation system. This system consists of a Northstar Differential Global Positioning System (DGPS) interfaced to the NAVSAM computer and software. The global positioning system (GPS) receiver has six dedicated channels and is capable of locking onto six different satellites at one time. To correct the GPS calculations, the Northstar DGPS received correction data from one of three United States Coast Guard DGPS broadcast sites: Montauk Point, NY, Chatham, MA, or Portsmouth Harbor, NH. This capability ensured strong signal reception, and accurate and reliable positioning with 2-second updates.

A calibration check of the GPS navigation system vs. known benchmarks was conducted twice daily to verify that the system was working properly. The checks were conducted prior to departing in the morning and following arrival at the dock in the evening.

Battelle Ocean Sampling System. Monitoring of the capping event was conducted using the Battelle Ocean Sampling System (BOSS) deployed from the R/V *Aquamonitor*. The BOSS *in situ* sensor package included a conductivity, temperature and, depth (CTD) sensor (OS200 CTD), a turbidity sensor, and a Teflon™/titanium pumping system for sample collection. A second turbidity sensor, calibrated to the *in situ* data, was located at the water-sampling manifold so that the appropriate parcel of water could be identified and sampled at the appropriate time. Additionally, an Acoustic Doppler Current Profiler (ADCP) was deployed for obtaining vertical profiles of horizontal currents. Table 2 lists the field measurements acquired from the survey vessel during each monitoring event.

The entire pumping system, including suction strainers, pump, and Teflon tubing up to but not including the on-deck transmissometer, was decontaminated with dichloromethane (DCM) and acetone, followed by deionized water rinse. The transmissometer could not be cleaned using this procedure because the solvents would melt the plastic components of the unit. Decontamination was conducted during each dumping event prior to initiating sampling operations.

Field measurements and instruments are listed in Table 3.

Table 3. Summary of Field Measurements and Instruments.

Parameter	Lab	Units	Instrument
Conductivity	Battelle	Mmhos/cm	OS200 CTD
Temperature	Battelle	°C	OS200 CTD
Pressure	Battelle	m	OS200 CTD
Transmissometry/Turbidity	Battelle	m-1	Seatech 20-cm (660nm) (2)
Bottom depth	Battelle	m	Furuno FCV-52
Navigational position	Battelle	Degrees	Northstar 942X
Ocean current velocity	WHOI	Cm/sec	RD Instruments ADCP WHM600-I-UG6

Plume Tracking and Sampling. BOSS sensor data were collected continuously along transects within each CAD cell (Figure 2). The configuration of the transect and the sampling locations along each transect varied according to the capping activity (e.g., pre-capping, capping, post-capping activities). During the transects, BOSS was towed at a distance of ~2 m above the bottom along all transects (unless obstructed) to ensure that sensors detected resuspended sediments (if detectable).

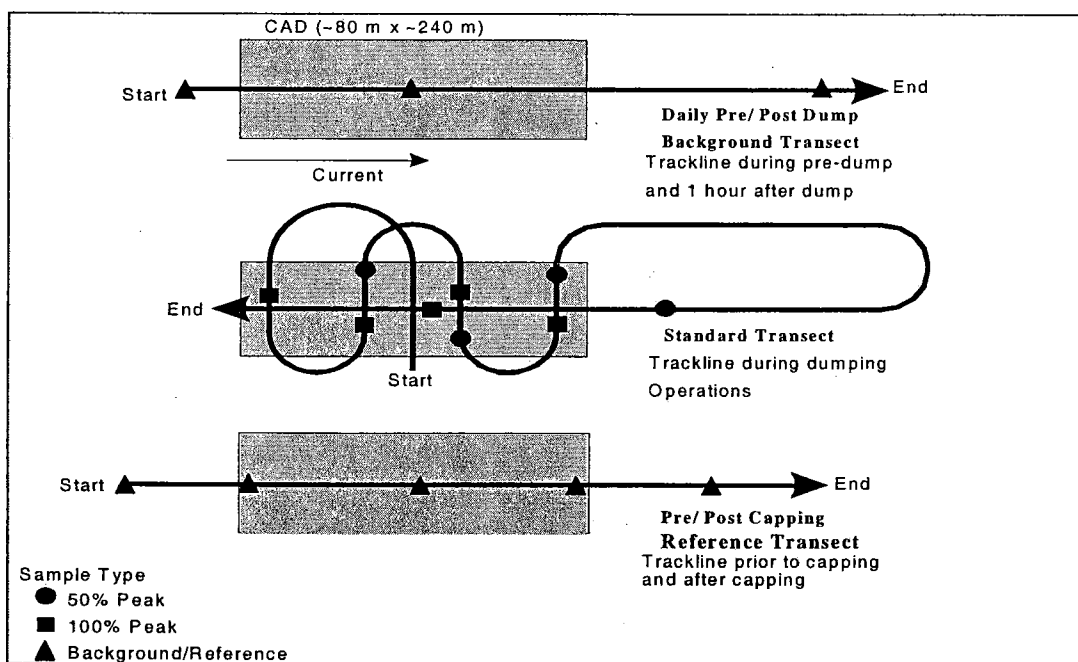


Figure 2. Survey Transects and Sampling Station Types. (Top: daily pre-dump and post-dump background transect line. Middle: standard transect line. Bottom: pre-capping operations and after all post-capping operations).

Three sample sets were collected immediately prior to each capping event, nine sample sets were collected during each capping event, and, with one exception during Event 3 at cell M19), three sets were collected immediately following each capping event. Each sample set consisted of three water samples: one sample for organic-constituents analysis, one sample for trace metals analysis, and one sample for total suspended solids (TSS) analysis. Water sample sets were shipped to the analytical laboratories for analysis immediately following the survey.

The station/sample location number, GPS coordinates, date and time, depth of the water column, and any observations associated with the sampling at each sampling location were made in the field survey logbook. Each sample was assigned a unique ID and label by NAVSAM, which also electronically stores the field and sensor data. Exceptions are noted in Section 5.

BOSS sensor data were collected continuously during transit through the site, pre- and post-capping sampling activities, and along all transects between water-sampling locations within the capping area during capping operations. [The plots are not included in this survey report but will be reported in the final interpretive report.] The BOSS was towed at a distance of approximately 2 m or less above the bottom along all transects (unless obstructed) to ensure that sensors were deep enough to detect (if detectable) the resuspended sediments, and the sampling intake was in the best place to sample for those sediments.

Sample Shipping and Custody. Each day, samples were stored shipboard in coolers containing ice, and returned to the Battelle Duxbury Laboratory following each sampling event. Samples were stored in a walk-in chill room until analysis, or until shipment to the analytical laboratories targeted to analyze TSS and trace metal samples. Before shipping, the ice was replenished in each cooler, and the sample custody forms were completed, placed in a sealed Ziploc bag which was taped to the inside of the cooler lid. A cooler blank was included in the shipment. The laboratory sample custodian was notified of the impending shipment on the day that the samples were shipped so that they were alerted to expect the samples on the following day. Sample custodians were as shown below.

Organics Analysis

Mr. Patrick Barrett
Battelle Duxbury
397 Washington Street
Duxbury, MA 02332
781-934-5400 (main)
781-952-5282 (direct)

TSS Analysis

Ms. Laura Reed
University of Rhode Island (URI)
Graduate School of Oceanography
Narragansett, RI 02882-1197
(401) 874-6657 (office)
(401) 874-6651 (lab)

Metals Analysis

Mr. Kevin Murray
Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21
Sparks, Nevada 89431-5778
(775) 355-1044 (office)
(775) 355-0406 (FAX)

Sample Storage Conditions. Sample storage conditions are presented in Table 4.

2.1. Deviations

Additional Work at CAD Cell M8. Under the original plan, only one of the two uncapped CAD cells, the larger-area M19, was selected for monitoring during capping activities. However, because Battelle was able to monitor only four dumping events at M19, U.S. EPA and Battelle management jointly decided to monitor four consecutive dumping events at cell M8. This activity provided additional valuable information on resuspension of CAD sediments and contaminant concentrations at the site, and also provided verification that sediments at cell M8 behaved similarly to those at cell M19 during capping. Sampling operations at cell M8 were conducted in pattern similar to the pattern shown in Figure 2 and followed during the sampling at cell M19.

Table 4. Analyte, Sampling Method, Volume, Preservation, and Holding Times.

Analyte (Analytical Laboratory) ^(a)	Matrix	Method	Sample Volume	Container Type	Preservation	Holding Time
<i>Laboratory Analyses</i>						
TPH (BDO)	Water	Battelle SOP 5-202-04	1,000 mL	Amber glass with Teflon™-lined cap	Cool, 4°C±2°C	14 days
PCB (BDO)	Water	Battelle SOP 5-128	1,000 mL ^(b)	Amber glass with Teflon™-lined cap	Cool, 4°C±2°C	7 days/ 40 days ^(c)
PAH (BDO)	Water	Battelle SOP 5-157	1,000 mL ^(b)	Amber glass with Teflon™-lined cap	Cool, 4°C±2°C	7 days/ 40 days ^(c)
TSS (URI)	Water	Battelle SOP 5-053	500 mL	Poly ethylene plastic	Cool, 4°C±2°C, Dark	7 days
Metals (AAI)	Water		1000mL	Polyethylene plastic	Cool, 4°C±2°C, Dark	28 days
<i>Field Analyses</i>						
Temperature (BDO)	Water	OS200 CTD	NA	NA	NA	<i>In situ</i>
Depth (BDO)	Water	OS200 CTD	NA	NA	NA	<i>In situ</i>
Transmissometry/ Turbidity (BDO)	Water	Seatech 20-cm (660nm)	NA	NA	NA	<i>In situ</i>
Conductivity (BDO)	Water	OS200 CTD	NA	NA	NA	<i>In situ</i>

(a) BDO: Battelle Duxbury Operations; URI: University of Rhode Island; AAI: Alpha Analytical, Inc.

(b) Sample for TPH also extracted for PAH analysis.

(c) Extractions must be complete within 7 days, and gas chromatography/mass spectrometry (GC/MS) analysis must be complete within 40 days.

GC/MS = gas chromatography/mass spectrometry.

NA = Not applicable.

3. Survey Chronology

Note: All times are recorded as Eastern (Daylight Savings) Time.

Monday, September 4, 2000

0800	Loaded all equipment and supplies aboard the vessel R/V <i>Aquamonitor</i> . Prepared water-column sampling-system for towing.
------	--

Tuesday, September 5, 2000

0800	Continued mobilization activities. Ms. Jennifer Ickes and Ms. Lydia Cumming arrive from Battelle Columbus.
------	--

Wednesday, September 6, 2000

1100	Departed Hewitts Cove Marina (HCM) to CAD cell M8. Conducted training exercises with staff from Sampling Team 2.
1223	Initiated collection of precapping reference samples at CAD cell M8. Collected pre-capping reference sample at Station B1.
1225	Collected pre-capping reference sample at Station B2.
1226	Collected pre-capping reference sample at Station B3.
1227	Collected pre-capping reference sample at Station P1.
1232	Collected pre-capping reference sample at Station P2. Completed Collection of five pre-capping reference samples at CAD cell M8. Returned to HCM to pick up Sampling Team 1 for training.
1300	Switched sampling teams and returned to CAD cell M19 to conduct training exercises and collect reference samples at CAD cell M19.
1413	Initiated collection of pre-capping reference samples at CAD cell M-19. Collected pre-capping reference sample at Station B1.
1415	Collected pre-capping reference sample at Station B21.
1419	Collected pre-capping reference sample at Station B3.
1422	Collected pre-capping reference sample at Station P1.
1424	Collected pre-capping reference sample at Station P2. Completed collection of pre-capping reference samples at CAD cell M19. Returned to HCM.

Saturday, September 9, 2000

1300	Conducted navigation calibration. Meet with Sampling Team 1 to discuss the daily sampling strategy.
------	---

1320	Departed HCM to Collected background samples at M19 before hopper dredge arrived at the site and began initial dump of capping material. In route, sampling team was notified that the dredge arrival on site will be approximately 1615. <i>Aquamonitor</i> proceeded to Pier 1 in East Boston.
1410	Arrive Pier 1 dock; pick up Ms. Ickes and Ms. Cumming of Battelle-Columbus and Mr. Lyons of U.S. EPA.
1512	Transited to cell M19 for sampling of Event 1.
1550	On site. Cleaned pumping system and calibrated pump.
1559	Initiate monitoring/sampling activities along pre-dump transect. Collected Event 1 pre-dump water samples for organics, metals, and TSS at Station B1.
1601	Collected Event 1 pre-dump water samples for organics, metals, and TSS at Station B2.
1603	Collected Event 1 pre-dump water samples for organics, metals, and TSS at Station B3.
1650	Hopper dredge <i>Manhattan Island</i> initiates capping operations (dumping).
1700	Collected Event 1/Sample Set 1F water samples for organics, metals, and TSS along Standard Transect at M19.
1704	Collected Event 1/Sample Set 2H water samples for organics, metals, and TSS along Standard Transect at M19.
1705	Collected Event 1/Sample Set 3F water samples for organics, metals, and TSS along Standard Transect at M19.
1708	Collected Event 1/Sample Set 4F water samples for organics, metals, and TSS along Standard Transect at M19.
1710	Collected Event 1/Sample Set 5H water samples for organics, metals, and TSS along Standard Transect at M19.
1713	Collected Event 1/Sample Set 6H water samples for organics, metals, and TSS along Standard Transect at M19.
1717	Collected Event 1/Sample Set 7F water samples for organics, metals, and TSS along Standard Transect at M19.
1723	Collected Event 1/Sample Set 8H water samples for organics, metals, and TSS along Standard Transect at M19. Pumping system hit bottom, and Chief Scientist noted a reduction in the pumping rate.
1726	Collected Event 1/Sample Set 9F water samples for organics, metals, and TSS along Standard Transect at M19. Dredge departs site.
1834	Collected Event 1 post-dump water samples for organics, metals, and TSS at Station P1.

1837	Collected Event 1 post-dump water samples for organics, metals, and TSS at Station P3.
1843	Collected Event 1 post-dump water samples for organics, metals, and TSS at Station P2.
1840	<i>Aquamonitor</i> departed survey area.
1910	Dropped off Ms. Cumming, Ms. Ickes, and Mr. Lyons at Pier 1 in East Boston.
2010	Arrive HCM.

Sunday, September 10, 2000

0529	Performed navigation calibration.
0534	<i>Aquamonitor</i> departed HCM.
0630	Arrived Pier 1, East Boston, to pick up Battelle and U.S. EPA staff.
0700	Arrive on site at cell M19. Clean pumping system. Check and record flow rate of pumping system. Container ship entering port delayed capping and sampling operations.
0720	Initiated monitoring/sampling activities along pre-dump reference transect. Collected Event 2 pre-dump water samples for organics, metals, and TSS at Station B1.
0723	Collected Event 2 pre-dump water samples for organics, metals, and TSS at Station B3.
0729	Collected Event 2 pre-dump water samples for organics, metals, and TSS at Station B2.
0802	Dredge <i>Manhattan Island</i> on site.
0835	Dredge began dumping at cell M19.
0851	Collected Event 2/Sample Set 1F water samples for organics, metals, and TSS along Standard Transect at M19.
0855	Collected Event 2/Sample Set 2H water samples for organics, metals, and TSS along Standard Transect at M19.
0858	Collected Event 2/Sample Set 3F water samples for organics, metals, and TSS along Standard Transect at M19.
0903	Dredge completed dumping at M19.
0911	Collected Event 2/Sample Set 4F water samples for organics, metals, and TSS along Standard Transect at M19.
0913	Collected Event 2/Sample Set 5H water samples for organics, metals, and TSS along Standard Transect at M19.
0926	Collected Event 2/Sample Set 6H water samples for organics, metals, and TSS along Standard Transect at M19.

	along Standard Transect at M19.
0928	Collected Event 2/Sample Set 7F water samples for organics, metals, and TSS along Standard Transect at M19.
0934	Collected Event 2/Sample Set 8H water samples for organics, metals, and TSS along Standard Transect at M19.
0941	Collected Event 2/Sample Set 9F water samples for organics, metals, and TSS along Standard Transect at M19. Dredge departs site.
1015	Collected Event 2 post-dump water samples for organics, metals, and TSS at Station P1.
1017	Collected Event 2 post-dump water samples for organics, metals, and TSS at Station P2.
1020	Collected Event 2 post-dump water samples for organics, metals, and TSS at Station P3.
1025	<i>Aquamonitor</i> departs survey area for Pier 1 to drop off L. Cumming, J. Ickes, and T. Lyons
1145	Arrived HCM. Repairs made to the pumping system. Sampling Team 1 departed.
2030	Sampling Team 2 arrived.
2120	<i>Aquamonitor</i> departed HCM and transited to Pier 1 to pick up additional crew.
2230	Arrive on site at M19. Sampling system cleaned and calibrated.
2300	System flow calibration completed.
2316	Collected Event 3 pre-dump water samples for organics, metals and TSS at Station B1.
2319	Collected Event 3 pre-dump water samples for organics, metals and TSS at Station B2.
2322	Collected Event 3 pre-dump water samples for organics, metals and TSS at Station B3.
2324	Pumping system turned off.

Monday, September 11, 2000

0001	<i>Manhattan Island</i> approached survey area. Personnel transferred from the tug <i>Little Joe</i> to the dredge.
0052	Pumping system turned on.
0114	Collected Event 3/Sample Set 1F water samples for organics, metals, and TSS along Standard Transect at M19.
0115	Dredge began dumping in other direction.

0116	Collected Event 3/Sample Set 2H water samples for organics, metals, and TSS along Standard Transect at M19.
0119	Collected Event 3/Sample Set 3F water samples for organics, metals, and TSS along Standard Transect at M19.
0121	Collected Event 3/Sample Set 4F water samples for organics, metals, and TSS along Standard Transect at M19.
0126	Collected Event 3/Sample Set 5H water samples for organics, metals, and TSS along Standard Transect at M19.
0130	Collected Event 3/Sample Set 6H water samples for organics, metals, and TSS along Standard Transect at M19.
0133	Collected Event 3/Sample Set 7F water samples for organics, metals, and TSS along Standard Transect at M19.
0135	Barge completed dumping and departs.
0140	Collected Event 3/Sample Set 8H water samples for organics, metals, and TSS along Standard Transect at M19.
0141	Collected Event 3/Sample Set 9F water samples for organics, metals, and TSS along Standard Transect at M19.
0145	Began "Figure 8" towing.
0225	Collected Event 3 post-dump water samples for organics, metals and TSS at Station P1, approximately 1 hour after dumping stopped. Sampler struck the bottom immediately following P1 sampling, and system components fouled with mud. Extent of repairs/cleaning deemed too time consuming to remain on station. P2 and P3 samplings canceled. Repairs initiated. Transited to Pier 1
0252	L. Cummings departed at Pier 1.
0430	Arrived HCM. Sampling team departs.
1300	Sampling Team arrived at HCM.
1335	<i>Aquamonitor</i> departs HCM. Pumping system flow rate was unacceptable during transit to cell M19. Repairs initiated during transit to and at the sampling site while awaiting the dredge.
1605	<i>Manhattan Island</i> arrived.
1615	Dredge began dumping (Event 4).
1634	Dumping completed and dredge departed site.
1647	Pumping system problems persisted. Event 4 Sampling suspended until the problem is corrected. <i>Aquamonitor</i> returned to HCM.

Tuesday, September 12, 2000

	Event 5 sampling was canceled.
2005	Depart HCM for Event 6 sampling.
2135	Collected Event 6 pre-dump water samples for organics, metals and TSS at Station B1.
2137	Collected Event 6 pre-dump water samples for organics, metals and TSS at Station B2.
2139	Collected Event 6 pre-dump water samples for organics, metals and TSS at Station B3.
2150	<i>Manhattan Island</i> arrives on site.
2205	Dredge began dumping.
2214	Collected Event 6/Sample Set 1F water samples for organics, metals, and TSS along Standard Transect at M19.
2217	Collected Event 6/Sample Set 2H water samples for organics, metals, and TSS along Standard Transect at M19.
2220	Collected Event 6/Sample Set 3F water samples for organics, metals, and TSS along Standard Transect at M19. In sand.
2225	Collected Event 6/Sample Set 4F water samples for organics, metals, and TSS along Standard Transect at M19.
2230	Collected Event 6/Sample Set 5H water samples for organics, metals, and TSS along Standard Transect at M19.
2231	Dumping completed. <i>Manhattan Island</i> departs.
2236	Collected Event 6/Sample Set 6H water samples for organics, metals, and TSS along Standard Transect at M19.
2237	Collected Event 6/Sample Set 7F water samples for organics, metals, and TSS along Standard Transect at M19.
2245	Collected Event 6/Sample Set 8H water samples for organics, metals, and TSS along Standard Transect at M19.
2247	Collected Event 6/Sample Set 9F water samples for organics, metals, and TSS along Standard Transect at M19.
2332	Collected Event 6 post-dump water samples for organics, metals and TSS at Station P1.
2334	Collected Event 6 post-dump water samples for organics, metals and TSS at Station P2.
2336	Collected Event 6 post-dump water samples for organics, metals and TSS at Station P3.

Wednesday, September 13, 2000

1135	<i>Aquamonitor</i> departs HCM. Sampling pump not working properly. Repairs initiated during transit to Pier 1.
1229	Picked up Ms. Ickes at Peir 1 and departed for M19. Pump repairs ongoing during transit to M19 and while awaiting the dredge.
1400	Dumping began (Event 7). Pump repairs continued.
1430	Pump repaired. Dumping completed. Initiated Figure 8-pattern sampling for turbidity measurements. Began Figure 8 at a point 200 m downcurrent and 2m above the bottom. Sampled in Figure 8 in the site at 2, 4, and 6 m above the bottom.
1500	Figure 8 sampling completed. Tubidity mostly >3%. Depart for HCM
1615	Arrive HCM.

Thursday, September 14, 2000

0145	Crew arrived at HCM.
0200	Departed HCM.
0333	Arrived CAD cell M8. Collected Event 8 pre-dump water samples for organics, metals and TSS at Station B1.
0335	Collected Event 8 pre-dump water samples for organics, metals and TSS at Station B2.
0338	Collected Event 8 pre-dump water samples for organics, metals and TSS at Station B3.
0430	<i>Manhattan Island</i> arrived on site.
0448	Begin dumping.
0453	Collected Event 8/Sample Set 1F water samples for organics, metals, and TSS along Standard Transect at M8.
0501	Collected Event 8/Sample Set 2H water samples for organics, metals, and TSS along Standard Transect at M8.
0505	Collected Event 8/Sample Set 3F water samples for organics, metals, and TSS along Standard Transect at M8.
0510	Completed dumping. <i>Manhattan Island</i> remained on site.
0513	Collected Event 8/Sample Set 4F water samples for organics, metals, and TSS along Standard Transect at M8.
0518	Collected Event 8/Sample Set 5H water samples for organics, metals, and TSS along Standard Transect at M8.

0525	Collected Event 8/Sample Set 6H water samples for organics, metals, and TSS along Standard Transect at M8.
0530	<i>Manhattan Island</i> departs.
0532	Collected Event 8/Sample Set 7F water samples for organics, metals, and TSS along Standard Transect at M8. Out of cell and downcurrent.
0534	Collected Event 8/Sample Set 8H water samples for organics, metals, and TSS along Standard Transect at M8.
0540	Collected Event 8/Sample Set 9F water samples for organics, metals, and TSS along Standard Transect at M8.
0611	Collected Event 8 post-dump water samples for organics, metals and TSS at Station P1.
0613	Collected Event 8 post-dump water samples for organics, metals and TSS at Station P2.
0616	Collected Event 8 post-dump water samples for organics, metals and TSS at Station P3.
0735	Arrive HCM.

Friday, September 15, 2000

0630	Crew arrived at HCM.
0655	Departed HCM for M8.
0800	On site.
0815	Cleaned system.
0832	Pre-dump cross calibration with ADCP completed.
0840	Advised by B. Cuzzelli that the dump site is cell M8.
0846	Collected Event 9 pre-dump water samples for organics, metals and TSS at Station B1.
0848	Collected Event 9 pre-dump water samples for organics, metals and TSS at Station B2.
0851	Collected Event 9 pre-dump water samples for organics, metals and TSS at Station B3.
0915	<i>Manhattan Island</i> arrived in the study area. Dredge advised W. Trulli (Battelle Chief Scientist) to cease and desist further communication with the dredge (reasons unknown to <i>Aquamonitor</i> crew. Sampled area west to east.
0941	Dredge began dumping.
0949	Encountered sand approximately 50 m short of the site.

0952	Collected Event 9/Sample Set 1F water samples for organics, metals, and TSS along Standard Transect at M8.
0956	Dumping completed.
0957	Collected Event 9/Sample Set 2H water samples for organics, metals, and TSS along Standard Transect at M8.
1000	Collected Event 9/Sample Set 3F water samples for organics, metals, and TSS along Standard Transect at M8.
1003	Collected Event 9/Sample Set 4F water samples for organics, metals, and TSS along Standard Transect at M8. <i>Manhattan Island</i> departs survey area.
1006	Collected Event 9/Sample Set 5H water samples for organics, metals, and TSS along Standard Transect at M8.
1011	Collected Event 9/Sample Set 6H water samples for organics, metals, and TSS along Standard Transect at M8.
1014	Collected Event 9/Sample Set 7F water samples for organics, metals, and TSS along Standard Transect at M8.
1023	Collected Event 9/Sample Set 8H water samples for organics, metals, and TSS along Standard Transect at M8.
1026	Collected Event 9/Sample Set 9F water samples for organics, metals, and TSS along Standard Transect at M8.
1040	Running Figure 8 tracks for turbidity measurements at 2, 4, and 6 m. Turbidity between 3 and 15%.
1101	Sampler hit bottom. Scoop mud going into Station P1. System re-cleaned.
1136	Collected Event 9 post-dump water samples for organics, metals and TSS at Station P1. Muddy sediments in organics sample. Cleaned with DCM and Milli-Q water, recalibrated.
1149	Collected Event 9 post-dump water samples for organics, metals and TSS at Station P2.
1151	Collected Event 9 post-dump water samples for organics, metals and TSS at Station P3.
1154	Depart site to return to HCM after pulling ADCP. Pumping system checked
1300	Arrive HCM. Continued equipment maintenance.
2015	Depart HCM for M8.
2335	Collected Event 10 pre-dump water samples for organics, metals and TSS at Station B1.
2338	Collected Event 10 pre-dump water samples for organics, metals and TSS at Station B2.

2342	Collected Event 10 pre-dump water samples for organics, metals and TSS at Station B3.
2355	<i>Manhattan Island</i> arrives at M8.

Saturday, September 16, 2000

0001	Dumping began.
0009	Collected Event 10/Sample Set 1F water samples for organics, metals, and TSS along Standard Transect at M8.
0015	Collected Event 10/Sample Set 2H water samples for organics, metals, and TSS along Standard Transect at M8.
0016	Dumping ended. <i>Manhattan Island</i> departed.
0020	Collected Event 10/Sample Set 3F water samples for organics, metals, and TSS along Standard Transect at M8.
0025	Collected Event 10/Sample Set 4F water samples for organics, metals, and TSS along Standard Transect at M8.
0027	Collected Event 10/Sample Set 5H water samples for organics, metals, and TSS along Standard Transect at M8.
0031	Collected Event 10/Sample Set 6H water samples for organics, metals, and TSS along Standard Transect at M8.
0035	Collected Event 10/Sample Set 7F water samples for organics, metals, and TSS along Standard Transect at M8.
0042	Collected Event 10/Sample Set 8H water samples for organics, metals, and TSS along Standard Transect at M8.
0045	Collected Event 10/Sample Set 9F water samples for organics, metals, and TSS along Standard Transect at M8.
0120	Pump not working, tripping breakers. Cleaned and deployed.
0133	Collected Event 10 post-dump water samples for organics, metals and TSS at Station P1.
0136	Collected Event 10 post-dump water samples for organics, metals and TSS at Station P2.
0140	Collected Event 10 post-dump water samples for organics, metals and TSS at Station P3.
0305	Crew departed at HCM.
1323	Departed HCM for cell M8.
1403	Advised by the tugboat <i>Little Joe</i> that the <i>Manhattan Island</i> is not due in the survey area until 1600-1630.

1435	Moored at Pier 1 to await the barge. Pumping system decontaminated.
1522	Departed Pier1 for survey area.
1535	Arrived survey area.
1543	Advised <i>Manhattan Island</i> estimated time of arrival at 1615.
1610	System experienced weak flow. Corrective maintenance and calibration performed.
1616	System deployed.
1641	System flow stopped. System retrieved and fixed.
1650	<i>Manhattan Island</i> set up on M19. Attempted to call dredge about setting up on M8, with no response. Attempted to call Bob Cuzzelli but his cell phone was turned off.
1705	<i>Manhattan Island</i> dumped at M19 instead of M8. <i>Manhattan Island</i> finished dumping at M8 and departs survey area. <i>Manhattan Island</i> did not respond to radio hails.
1712	Departed survey area for HCM.
1720	Followed tugboat <i>Little Joe</i> to discuss with Bob Cuzzelli the just-completed dumping at M8. Mr. Cuzzelli indicated he did not realize that they were dumping at the wrong site.
1824	Arrived HCM.

Wednesday, September 20, 2000

0730	Crew arrived. Equipment checks OK.
0820	Departed HCM for M8.
0921	Enter survey area and begin equipment decontamination.
0943	Collected Event 12 pre-dump water samples for organics, metals and TSS at Station B1.
0950	Collected Event 12 pre-dump water samples for organics, metals and TSS at Station B2.
0954	Collected Event 12 pre-dump water samples for organics, metals and TSS at Station B3.
1010	<i>Manhattan Island</i> arrived at M8 to dump west to east.
1025	<i>Manhattan Island</i> began dumping.
1034	Collected Event 12/Sample Set 1F water samples for organics, metals, and TSS along Standard Transect at M8.
1037	<i>Little Joe</i> moves to other side of <i>Manhattan Island</i> to help drop in reverse direction.

1039	Collected Event 12/Sample Set 2H water samples for organics, metals, and TSS along Standard Transect at M8.
1045	Collected Event 12/Sample Set 3F water samples for organics, metals, and TSS along Standard Transect at M8.
1049	Collected Event 12/Sample Set 4F water samples for organics, metals, and TSS along Standard Transect at M8.
1052	Dumping completed.
1055	Collected Event 12/Sample Set 5H water samples for organics, metals, and TSS along Standard Transect at M8.
1101	Collected Event 12/Sample Set 6H water samples for organics, metals, and TSS along Standard Transect at M8.
1105	Collected Event 12/Sample Set 7F water samples for organics, metals, and TSS along Standard Transect at M8.
1111	Collected Event 12/Sample Set 8H water samples for organics, metals, and TSS along Standard Transect at M8.
1113	Collected Event 12/Sample Set 9F water samples for organics, metals, and TSS along Standard Transect at M8.
1142	Complete Figure 8 runs.
1153	Collected Event 12 post-dump water samples for organics, metals and TSS at Station P1.
1157	Collected Event 12 post-dump water samples for organics, metals and TSS at Station P2.
1201	Collected Event 12 post-dump water samples for organics, metals and TSS at Station P3.
1205	Retrieved equipment and departed for HCM
1305	Arrived HCM. Demobilized.

Thursday, September 28, 2000

0756	Departed HCM.
0900	On station for Event 13 post-dumping activities. System cleaned.
0914	Equipment deployed.
0923	Collected Event 13 post-dumping water samples for organics, metals and TSS at Station 1F.
0927	Collected Event 13 post-dumping water samples for organics, metals and TSS at Station 2H.

0930	Collected Event 13 post-dumping water samples for organics, metals and TSS at Station 3F.
0933	Collected Event 13 post-dumping water samples for organics, metals and TSS at Station 4F.
0936	Collected Event 13 post-dumping water samples for organics, metals and TSS at Station 5H.
0939	Collected Event 13 post-dump water samples for organics, metals and TSS at Station 6H.
0942	Collected Event 13 post-dump water samples for organics, metals and TSS at Station 7F.
0944	Collected Event 13 post-dump water samples for organics, metals and TSS at Station 8H.
0947	Collected Event 13 post-dump water samples for organics, metals and TSS at Station 9F.
0950	Collected Event 13 post-dump water samples for organics, metals and TSS at Station 10H.
1000	Sampling completed.

4. Survey Results

Field sampling operations were successfully completed over a 23-day period during which 10 separate events at CAD cells M8 and M19 were sampled and 138 sample sets were collected (Table 5). One pre-capping event was sampled as a reference event to characterize baseline conditions prior to capping operations. One post-capping event was sampled to characterize post-dumping background conditions. Four capping events each at CAD cells M19 and M8 were sampled to characterize the extent of any resuspension of contaminate sediments caused by the capping operations. Equipment problems, primarily with the BOSS pump, were responsible for missing 3 additional capping events at cell M19. During the fourth cell M8 dumping event, sediments were actually dumped within cell M19.

In situ hydrographic measurements of conductivity, temperature, depth, turbidity, and transmissometry were collected during transit between stations (as much as possible) and to follow the plume after daily capping operations were suspended. In most cases these hydrographic measurements were taken at a depth of 2 m from the sea bottom, and in some cases the measurements were made and one or more additional depths located at 2-m increments above the bottom. During the survey, no apparent distinction in turbidity/transmissometry could be made between the resuspension plume and the ever-present visible capping material plume. Apparently, considerable concentrations of fine particles in the capping sand were resuspended to produce a long-lasting and well-defined plume that spanned the entire depth of the water column.

All field data (date, time, sampling coordinates, bathymetry, and sample depth) generated during this survey are presented in Appendix A.

Maps showing the actual sampling locations and transect lines between stations for each set of events conducted on each sampling day are presented in Appendix B. The transect lines are also color coded to indicate relative amount of turbidity.

Table 5. Actual Numbers and Types Transects Occupied and Samples Collected during the Capping Resuspension Survey in Boston Harbor, MA.

Type of Event	Number of Events	Numbers and Types of Transects per Event	Total Numbers of Samples		
			Organics	Metals	TSS
Pre-capping	2	5 locations within uncapped area	10	10	10
Capping	9	3 pre-dump background transects per event	24	24	24
		9 standard transects per event	72	72	72
		3 post-dump background transects per event	22	22	22
Post-capping	1	10 standard transects	10	10	10
<i>Total</i>	12	--	138	138	138

5. Problems Experienced, Actions Taken, and Recommendations

5.1. Schedule

- Miscommunication between the captain and chief scientist resulted in a third missed disposal event at cell M19. The captain did not receive the departure message and did not report to the *Aquamonitor* at the appointed time.
- Communications between the *Aquamonitor* and *Manhattan Island* (MI) were strained. The MI was reluctant to respond to our questions regarding disposal initiation, pattern of disposal, and time of arrival at the site. This made it very difficult to schedule operations and conduct them efficiently.
- A miscommunication between the U.S. Army Corps of Engineers observer allowed a capping-material dump at M19 that should have occurred at M8. Because Battelle completed monitoring operations at cell M19 and was monitoring at cell M8, the trip was unproductive for the survey team aboard the *Aquamonitor*, and more importantly was a needless expenditure of EPA funds.

5.2. Technical

- All instruments worked well throughout the survey. However, the large coarse-grained sand used as capping material severely wore the Teflon parts in the pump and slip ring assembly of the water sampling system. As a result, two disposal events at cell M19 were missed because repairs to the pumping system were necessary.

6. References

Battelle. 2000a. Quality Assurance Project Plan for Evaluation of Sediment Agitation and Mixing into the Surrounding Water Column from Capping Activities: Boston Harbor Site – Boston, Massachusetts. Report prepared for U.S. Environmental Protection Agency; Cincinnati, OH.

Battelle. 2000b. Survey Plan for Evaluation of Sediment Agitation and Mixing into the Surrounding Water Column from Capping Activities: Wyckoff/Eagle Harbor Site – Bainbridge Island, Washington . Report prepared for U.S. Environmental Protection Agency; Cincinnati, OH.

Fredette, T.J., P.E. Jackson, C.J. Demos, D.A. Hadden, S.H. Wolf, T.A. Nowak Jr., and E. DeAngelo. 2000. The Boston Harbor Navigation Improvement Project CAD Cells: Recommendations for Future Projects Based on Field Experience and Monitoring. Draft paper submitted to the June 2000 Western Dredging Association Conference, Warwick, RI.

Appendix A
Field Data for Samples

Table A-1. Field Data for Samples

SampleID	SurveyID	LevelID	Filename	MarkerID	StationID	Xposition	Yposition	Zposition	SampleDateTime	Bathymetry
CAD01021	CAD01	1	D:\CAD01\CAD01015.RAW	021	B1	-71.05	42.39	8.80	9/6/00 12:23	12.4
CAD01022	CAD01	2	D:\CAD01\CAD01015.RAW	022	B1	-71.06	42.39	9.70	9/6/00 12:23	14.8
CAD01023	CAD01	3	D:\CAD01\CAD01015.RAW	023	B1	-71.06	42.39	9.95	9/6/00 12:24	14.5
CAD01024	CAD01	1	D:\CAD01\CAD01015.RAW	024	B2	-71.06	42.39	12.69	9/6/00 12:24	16.4
CAD01025	CAD01	2	D:\CAD01\CAD01015.RAW	025	B2	-71.06	42.39	12.71	9/6/00 12:25	16.1
CAD01026	CAD01	3	D:\CAD01\CAD01015.RAW	026	B2	-71.06	42.39	12.69	9/6/00 12:25	16.1
CAD01027	CAD01	1	D:\CAD01\CAD01015.RAW	027	B3	-71.06	42.39	12.70	9/6/00 12:25	15.8
CAD01028	CAD01	2	D:\CAD01\CAD01015.RAW	028	B3	-71.06	42.39	9.84	9/6/00 12:26	12.6
CAD01029	CAD01	3	D:\CAD01\CAD01015.RAW	029	B3	-71.06	42.39	9.70	9/6/00 12:26	12.7
CAD0102A	CAD01	1	D:\CAD01\CAD01015.RAW	02A	P1	-71.06	42.39	9.69	9/6/00 12:27	12.8
CAD0102B	CAD01	2	D:\CAD01\CAD01015.RAW	02B	P1	-71.06	42.39	9.66	9/6/00 12:27	12.9
CAD0102C	CAD01	3	D:\CAD01\CAD01015.RAW	02C	P1	-71.06	42.39	9.60	9/6/00 12:28	12.7
CAD0102D	CAD01	1	D:\CAD01\CAD01015.RAW	02D	P2	-71.06	42.39	12.04	9/6/00 12:32	15.7
CAD0102E	CAD01	2	D:\CAD01\CAD01015.RAW	02E	P2	-71.06	42.39	13.28	9/6/00 12:32	15.6
CAD0102F	CAD01	3	D:\CAD01\CAD01015.RAW	02F	P2	-71.06	42.39	13.30	9/6/00 12:33	16.6
CAD0104A	CAD01	1	D:\CAD01\CAD01027.RAW	04A	B1	-71.06	42.39	7.48	9/6/00 14:13	15.5
CAD0104B	CAD01	2	D:\CAD01\CAD01027.RAW	04B	B1	-71.05	42.39	8.30	9/6/00 14:13	12.6
CAD0104C	CAD01	3	D:\CAD01\CAD01027.RAW	04C	B1	-71.05	42.39	10.81	9/6/00 14:14	18.5
CAD0104D	CAD01	1	D:\CAD01\CAD01027.RAW	04D	B2	-71.05	42.39	14.03	9/6/00 14:14	17.0
CAD0104E	CAD01	2	D:\CAD01\CAD01027.RAW	04E	B2	-71.05	42.39	14.96	9/6/00 14:15	18.2
CAD0104F	CAD01	3	D:\CAD01\CAD01027.RAW	04F	B2	-71.05	42.39	15.39	9/6/00 14:15	16.7
CAD01050	CAD01	1	D:\CAD01\CAD01027.RAW	050	B3	-71.05	42.39	13.68	9/6/00 14:18	16.8
CAD01051	CAD01	2	D:\CAD01\CAD01027.RAW	051	B3	-71.05	42.39	14.40	9/6/00 14:19	16.1
CAD01052	CAD01	3	D:\CAD01\CAD01027.RAW	052	B3	-71.05	42.39	14.24	9/6/00 14:19	16.2
CAD01053	CAD01	1	D:\CAD01\CAD01027.RAW	053	P1	-71.05	42.39	15.43	9/6/00 14:22	17.1
CAD01054	CAD01	2	D:\CAD01\CAD01027.RAW	054	P1	-71.05	42.39	14.10	9/6/00 14:22	16.8
CAD01055	CAD01	3	D:\CAD01\CAD01027.RAW	055	P1	-71.05	42.39	9.87	9/6/00 14:23	15.4
CAD01056	CAD01	1	D:\CAD01\CAD01027.RAW	056	P2	-71.05	42.38	11.32	9/6/00 14:24	13.5
CAD01057	CAD01	2	D:\CAD01\CAD01027.RAW	057	P2	-71.05	42.38	11.26	9/6/00 14:24	13.4
CAD01058	CAD01	3	D:\CAD01\CAD01027.RAW	058	P2	-71.05	42.38	8.82	9/6/00 14:25	13.2
CAD012AC	CAD01	1	D:\CAD01\CAD01049.RAW	2AC	B1	-71.06	42.39	12.84	9/9/00 15:59	14.9
CAD012AD	CAD01	2	D:\CAD01\CAD01049.RAW	2AD	B1	-71.05	42.39	13.08	9/9/00 15:59	12.5
CAD012AE	CAD01	3	D:\CAD01\CAD01049.RAW	2AE	B1	-71.05	42.39	11.02	9/9/00 16:00	18.0
CAD012AF	CAD01	1	D:\CAD01\CAD01049.RAW	2AF	B2	-71.05	42.39	15.02	9/9/00 16:01	16.0
CAD012B0	CAD01	2	D:\CAD01\CAD01049.RAW	2B0	B2	-71.05	42.39	13.92	9/9/00 16:01	16.7
CAD012B1	CAD01	3	D:\CAD01\CAD01049.RAW	2B1	B2	-71.05	42.39	12.78	9/9/00 16:01	16.4
CAD012B2	CAD01	1	D:\CAD01\CAD01049.RAW	2B2	B3	-71.05	42.38	10.51	9/9/00 16:02	12.5
CAD012B3	CAD01	2	D:\CAD01\CAD01049.RAW	2B3	B3	-71.05	42.38	10.63	9/9/00 16:03	12.8
CAD012B4	CAD01	3	D:\CAD01\CAD01049.RAW	2B4	B3	-71.05	42.38	6.87	9/9/00 16:03	13.5
CAD012BF	CAD01	1	D:\CAD01\CAD01053.RAW	2BF	1F	-71.05	42.39	16.62	9/9/00 16:59	17.7
CAD012C0	CAD01	2	D:\CAD01\CAD01053.RAW	2C0	1F	-71.05	42.39	14.62	9/9/00 17:00	16.5
CAD012C1	CAD01	3	D:\CAD01\CAD01053.RAW	2C1	1F	-71.05	42.39	14.47	9/9/00 17:00	16.4
CAD012C3	CAD01	1	D:\CAD01\CAD01053.RAW	2C3	2H	-71.05	42.39	11.89	9/9/00 17:03	16.4
CAD012C4	CAD01	2	D:\CAD01\CAD01053.RAW	2C4	2H	-71.05	42.39	13.64	9/9/00 17:04	15.7
CAD012C5	CAD01	3	D:\CAD01\CAD01053.RAW	2C5	2H	-71.05	42.39	14.51	9/9/00 17:04	17.8
CAD012C6	CAD01	1	D:\CAD01\CAD01053.RAW	2C6	3F	-71.05	42.38	15.70	9/9/00 17:05	17.6
CAD012C7	CAD01	2	D:\CAD01\CAD01053.RAW	2C7	3F	-71.05	42.38	10.45	9/9/00 17:05	12.9
CAD012C8	CAD01	3	D:\CAD01\CAD01053.RAW	2C8	3F	-71.05	42.38	10.25	9/9/00 17:06	12.6
CAD012CC	CAD01	1	D:\CAD01\CAD01054.RAW	2CC	4F	-71.05	42.39	8.74	9/9/00 17:07	16.6

SampleID	SurveyID	LevelID	Filename	MarkerID	StationID	Xposition	Yposition	Zposition	SampleDateTime	Bathymetry
CAD012CD	CAD01	2D	CAD01\CAD01054.RAW	2CD	4F	-71.05	42.39	14.72	9/9/00 17:08	16.8
CAD012CE	CAD01	3D	CAD01\CAD01054.RAW	2CE	4F	-71.05	42.39	10.54	9/9/00 17:08	13.6
CAD012CF	CAD01	1D	CAD01\CAD01054.RAW	2CF	5H	-71.05	42.39	14.17	9/9/00 17:10	17.1
CAD012D0	CAD01	2D	CAD01\CAD01054.RAW	2D0	5H	-71.05	42.39	14.20	9/9/00 17:10	18.3
CAD012D1	CAD01	3D	CAD01\CAD01054.RAW	2D1	5H	-71.05	42.38	10.28	9/9/00 17:11	13.2
CAD012D2	CAD01	1D	CAD01\CAD01054.RAW	2D2	6H	-71.05	42.39	14.74	9/9/00 17:12	17.1
CAD012D3	CAD01	2D	CAD01\CAD01054.RAW	2D3	6H	-71.05	42.39	12.25	9/9/00 17:13	17.3
CAD012D4	CAD01	3D	CAD01\CAD01054.RAW	2D4	6H	-71.05	42.39	18.24	9/9/00 17:13	17.1
CAD012D6	CAD01	1D	CAD01\CAD01054.RAW	2D6	7F	-71.05	42.39	8.15	9/9/00 17:17	18.5
CAD012D8	CAD01	2D	CAD01\CAD01054.RAW	2D8	7F	-71.05	42.38	10.31	9/9/00 17:17	12.9
CAD012D9	CAD01	3D	CAD01\CAD01054.RAW	2D9	7F	-71.06	42.39	9.44	9/9/00 17:18	15.1
CAD012DC	CAD01	1D	CAD01\CAD01055.RAW	2DC	8H	-71.06	42.39	7.58	9/9/00 17:23	13.2
CAD012DE	CAD01	2D	CAD01\CAD01055.RAW	2DE	8H	-71.06	42.39	11.36	9/9/00 17:23	15.5
CAD012DF	CAD01	3D	CAD01\CAD01055.RAW	2DF	8H	-71.05	42.39	10.88	9/9/00 17:24	18.5
CAD012E0	CAD01	1D	CAD01\CAD01055.RAW	2E0	9F	-71.05	42.39	13.53	9/9/00 17:25	17.2
CAD012E2	CAD01	2D	CAD01\CAD01055.RAW	2E2	9F	-71.05	42.39	13.97	9/9/00 17:26	16.8
CAD012E3	CAD01	3D	CAD01\CAD01055.RAW	2E3	9F	-71.05	42.39	2.76	9/9/00 17:27	13.6
CAD012EC	CAD01	1D	CAD01\CAD01059.RAW	2EC	P1	-71.05	42.38	10.79	9/9/00 18:33	14.3
CAD012EE	CAD01	2D	CAD01\CAD01059.RAW	2EE	P1	-71.05	42.39	12.97	9/9/00 18:34	17.3
CAD012EF	CAD01	3D	CAD01\CAD01059.RAW	2EF	P1	-71.05	42.39	14.39	9/9/00 18:35	17.5
CAD012F0	CAD01	1D	CAD01\CAD01059.RAW	2F0	P3	-71.06	42.39	13.62	9/9/00 18:37	15.9
CAD012F2	CAD01	2D	CAD01\CAD01059.RAW	2F2	P3	-71.06	42.39	10.81	9/9/00 18:38	18.0
CAD012F3	CAD01	3D	CAD01\CAD01059.RAW	2F3	P3	-71.06	42.39	9.26	9/9/00 18:39	17.0
CAD012F4	CAD01	1D	CAD01\CAD01059.RAW	2F4	P2	-71.05	42.39	13.57	9/9/00 18:42	17.0
CAD012F6	CAD01	2D	CAD01\CAD01059.RAW	2F6	P2	-71.05	42.39	12.29	9/9/00 18:43	14.8
CAD012F7	CAD01	3D	CAD01\CAD01059.RAW	2F7	P2	-71.05	42.38	8.38	9/9/00 18:44	14.4
CAD0130C	CAD01	1D	CAD01\CAD01069.RAW	30C	B1	-71.06	42.39	10.89	9/10/00 7:19	16.3
CAD0130D	CAD01	2D	CAD01\CAD01069.RAW	30D	B1	-71.06	42.39	10.67	9/10/00 7:20	15.4
CAD0130E	CAD01	3D	CAD01\CAD01069.RAW	30E	B1	-71.06	42.39	10.36	9/10/00 7:20	13.5
CAD0130F	CAD01	1D	CAD01\CAD01069.RAW	30F	B3	-71.06	42.39	10.39	9/10/00 7:22	14.0
CAD01310	CAD01	2D	CAD01\CAD01069.RAW	310	B3	-71.06	42.39	10.48	9/10/00 7:23	13.4
CAD01311	CAD01	3D	CAD01\CAD01069.RAW	311	B3	-71.06	42.39	10.52	9/10/00 7:23	13.6
CAD01312	CAD01	1D	CAD01\CAD01069.RAW	312	B2	-71.06	42.39	14.45	9/10/00 7:28	17.4
CAD01313	CAD01	2D	CAD01\CAD01069.RAW	313	B2	-71.06	42.39	14.67	9/10/00 7:29	17.9
CAD01314	CAD01	3D	CAD01\CAD01069.RAW	314	B2	-71.06	42.39	14.00	9/10/00 7:29	17.6
CAD0131F	CAD01	1D	CAD01\CAD01073.RAW	31F	1F	-71.05	42.38	15.59	9/10/00 8:51	17.5
CAD01320	CAD01	2D	CAD01\CAD01073.RAW	320	1F	-71.05	42.38	15.60	9/10/00 8:51	17.5
CAD01321	CAD01	3D	CAD01\CAD01073.RAW	321	1F	-71.05	42.38	15.67	9/10/00 8:52	17.5
CAD01322	CAD01	1D	CAD01\CAD01073.RAW	322	2H	-71.05	42.39	16.33	9/10/00 8:54	17.9
CAD01323	CAD01	2D	CAD01\CAD01073.RAW	323	2H	-71.05	42.39	16.25	9/10/00 8:55	18.5
CAD01324	CAD01	3D	CAD01\CAD01073.RAW	324	2H	-71.05	42.39	16.45	9/10/00 8:55	18.4
CAD01325	CAD01	1D	CAD01\CAD01073.RAW	325	3F	-71.05	42.39	16.08	9/10/00 8:58	18.2
CAD01326	CAD01	2D	CAD01\CAD01073.RAW	326	3F	-71.05	42.39	17.03	9/10/00 8:58	18.2
CAD01327	CAD01	3D	CAD01\CAD01073.RAW	327	3F	-71.05	42.39	17.04	9/10/00 8:59	18.3
CAD0132B	CAD01	1D	CAD01\CAD01074.RAW	32B	4F	-71.05	42.39	15.67	9/10/00 9:11	19.7
CAD0132C	CAD01	2D	CAD01\CAD01074.RAW	32C	4F	-71.05	42.39	15.74	9/10/00 9:11	19.8
CAD0132D	CAD01	3D	CAD01\CAD01074.RAW	32D	4F	-71.05	42.39	15.69	9/10/00 9:12	19.8
CAD0132E	CAD01	1D	CAD01\CAD01074.RAW	32E	5H	-71.05	42.39	18.48	9/10/00 9:12	19.8
CAD0132F	CAD01	2D	CAD01\CAD01074.RAW	32F	5H	-71.05	42.39	18.49	9/10/00 9:13	19.8
CAD01330	CAD01	3D	CAD01\CAD01074.RAW	330	5H	-71.05	42.39	18.53	9/10/00 9:13	19.8
CAD01331	CAD01	1D	CAD01\CAD01074.RAW	331	6H	-71.05	42.39	16.63	9/10/00 9:26	18.6

SampleID	SurveyID	LevelID	Filename	MarkerID	StationID	Xposition	Yposition	Zposition	SampleDateTime	Bathymetry
CAD01332	CAD01	2D	D:\CAD01\CAD01074.RAW	332	6H	-71.05	42.39	17.63	9/10/00 9:26	18.3
CAD01333	CAD01	3D	D:\CAD01\CAD01074.RAW	333	6H	-71.05	42.39	15.62	9/10/00 9:27	17.5
CAD01334	CAD01	1D	D:\CAD01\CAD01074.RAW	334	7F	-71.05	42.39	15.90	9/10/00 9:28	18.6
CAD01335	CAD01	2D	D:\CAD01\CAD01074.RAW	335	7F	-71.05	42.39	17.76	9/10/00 9:28	19.9
CAD01336	CAD01	3D	D:\CAD01\CAD01074.RAW	336	7F	-71.05	42.39	13.53	9/10/00 9:29	14.7
CAD01337	CAD01	1D	D:\CAD01\CAD01074.RAW	337	8H	-71.05	42.39	15.75	9/10/00 9:34	16.9
CAD01338	CAD01	2D	D:\CAD01\CAD01074.RAW	338	8H	-71.05	42.39	10.52	9/10/00 9:34	15.2
CAD01339	CAD01	3D	D:\CAD01\CAD01074.RAW	339	8H	-71.05	42.39	11.51	9/10/00 9:35	19.9
CAD0133A	CAD01	1D	D:\CAD01\CAD01074.RAW	33A	9F	-71.05	42.39	16.39	9/10/00 9:40	18.4
CAD0133B	CAD01	2D	D:\CAD01\CAD01074.RAW	33B	9F	-71.05	42.39	16.73	9/10/00 9:41	19.0
CAD0133C	CAD01	3D	D:\CAD01\CAD01074.RAW	33C	9F	-71.05	42.39	15.91	9/10/00 9:41	19.9
CAD01348	CAD01	1D	D:\CAD01\CAD01078.RAW	348	P1	-71.05	42.38	12.02	9/10/00 10:14	15.1
CAD01349	CAD01	2D	D:\CAD01\CAD01078.RAW	349	P1	-71.05	42.38	13.56	9/10/00 10:15	15.2
CAD0134A	CAD01	3D	D:\CAD01\CAD01078.RAW	34A	P1	-71.05	42.39	12.78	9/10/00 10:16	14.5
CAD0134B	CAD01	1D	D:\CAD01\CAD01078.RAW	34B	P2	-71.05	42.39	16.49	9/10/00 10:17	17.6
CAD0134C	CAD01	2D	D:\CAD01\CAD01078.RAW	34C	P2	-71.05	42.39	16.60	9/10/00 10:17	17.8
CAD0134D	CAD01	3D	D:\CAD01\CAD01078.RAW	34D	P2	-71.05	42.39	18.85	9/10/00 10:18	19.5
CAD0134E	CAD01	1D	D:\CAD01\CAD01078.RAW	34E	P3	-71.06	42.39	12.44	9/10/00 10:19	16.8
CAD0134F	CAD01	2D	D:\CAD01\CAD01078.RAW	34F	P3	-71.06	42.39	12.74	9/10/00 10:20	16.2
CAD01350	CAD01	3D	D:\CAD01\CAD01078.RAW	350	P3	-71.06	42.39	11.06	9/10/00 10:21	18.6
CAD01371	CAD01	1D	D:\CAD01\CAD01093.RAW	371	B1	-71.05	42.39	14.10	9/10/00 23:16	15.1
CAD01373	CAD01	2D	D:\CAD01\CAD01093.RAW	373	B1	-71.05	42.39	13.01	9/10/00 23:17	15.0
CAD01375	CAD01	3D	D:\CAD01\CAD01093.RAW	375	B1	-71.05	42.39	12.74	9/10/00 23:17	18.5
CAD01376	CAD01	1D	D:\CAD01\CAD01093.RAW	376	B2	-71.05	42.39	17.02	9/10/00 23:19	17.3
CAD01378	CAD01	2D	D:\CAD01\CAD01093.RAW	378	B2	-71.05	42.39	15.68	9/10/00 23:19	19.1
CAD01379	CAD01	3D	D:\CAD01\CAD01093.RAW	379	B2	-71.05	42.39	15.42	9/10/00 23:20	19.8
CAD0137A	CAD01	1D	D:\CAD01\CAD01093.RAW	37A	B3	-71.06	42.39	14.87	9/10/00 23:21	16.9
CAD0137C	CAD01	2D	D:\CAD01\CAD01093.RAW	37C	B3	-71.06	42.39	16.14	9/10/00 23:22	16.1
CAD0137D	CAD01	3D	D:\CAD01\CAD01093.RAW	37D	B3	-71.06	42.39	12.24	9/10/00 23:23	18.3
CAD01390	CAD01	1D	D:\CAD01\CAD01101.RAW	390	1F	-71.05	42.38	13.71	9/11/00 1:13	16.9
CAD01392	CAD01	2D	D:\CAD01\CAD01101.RAW	392	1F	-71.05	42.39	14.99	9/11/00 1:14	16.6
CAD01393	CAD01	3D	D:\CAD01\CAD01101.RAW	393	1F	-71.05	42.39	14.66	9/11/00 1:15	17.2
CAD01394	CAD01	1D	D:\CAD01\CAD01101.RAW	394	2H	-71.05	42.38	16.41	9/11/00 1:16	18.8
CAD01396	CAD01	2D	D:\CAD01\CAD01101.RAW	396	2H	-71.05	42.38	14.73	9/11/00 1:16	14.5
CAD01397	CAD01	3D	D:\CAD01\CAD01101.RAW	397	2H	-71.05	42.38	11.92	9/11/00 1:17	13.5
CAD01398	CAD01	1D	D:\CAD01\CAD01101.RAW	398	3F	-71.05	42.39	13.19	9/11/00 1:19	16.6
CAD0139A	CAD01	2D	D:\CAD01\CAD01101.RAW	39A	3F	-71.05	42.39	15.56	9/11/00 1:19	13.8
CAD0139E	CAD01	3D	D:\CAD01\CAD01102.RAW	39E	3F	-71.05	42.39	11.45	9/11/00 1:20	13.7
CAD0139F	CAD01	1D	D:\CAD01\CAD01102.RAW	39F	4F	-71.05	42.39	16.30	9/11/00 1:21	17.4
CAD013A0	CAD01	2D	D:\CAD01\CAD01102.RAW	3A0	4F	-71.05	42.39	15.06	9/11/00 1:21	18.5
CAD013A1	CAD01	3D	D:\CAD01\CAD01102.RAW	3A1	4F	-71.05	42.39	15.42	9/11/00 1:22	18.8
CAD013A2	CAD01	1D	D:\CAD01\CAD01102.RAW	3A2	5H	-71.05	42.39	15.20	9/11/00 1:26	19.0
CAD013A4	CAD01	2D	D:\CAD01\CAD01102.RAW	3A4	5H	-71.05	42.39	16.79	9/11/00 1:27	18.7
CAD013A5	CAD01	3D	D:\CAD01\CAD01102.RAW	3A5	5H	-71.05	42.39	16.43	9/11/00 1:27	18.4
CAD013A6	CAD01	1D	D:\CAD01\CAD01102.RAW	3A6	6H	-71.05	42.39	15.93	9/11/00 1:30	17.5
CAD013A8	CAD01	2D	D:\CAD01\CAD01102.RAW	3A8	6H	-71.05	42.39	16.18	9/11/00 1:30	18.6
CAD013A9	CAD01	3D	D:\CAD01\CAD01102.RAW	3A9	6H	-71.05	42.39	15.47	9/11/00 1:31	16.6
CAD013AA	CAD01	1D	D:\CAD01\CAD01102.RAW	3AA	7F	-71.05	42.39	15.52	9/11/00 1:33	16.8
CAD013AC	CAD01	2D	D:\CAD01\CAD01102.RAW	3AC	7F	-71.05	42.39	15.22	9/11/00 1:33	14.7
CAD013AD	CAD01	3D	D:\CAD01\CAD01102.RAW	3AD	7F	-71.05	42.39	10.11	9/11/00 1:34	14.0
CAD013B0	CAD01	1D	D:\CAD01\CAD01102.RAW	3B0	8H	-71.05	42.39	11.34	9/11/00 1:39	13.7
CAD013B2	CAD01	2D	D:\CAD01\CAD01102.RAW	3B2	8H	-71.05	42.39	12.25	9/11/00 1:40	17.2

SampleID	SurveyID	LevelID	Filename	MarkerID	StationID	Xposition	Yposition	Zposition	SampleDateTime	Bathymetry
CAD013B3	CAD01	3D	\CAD01\CAD01102.RAW	3B3	8H	-71.05	42.39	14.23	9/11/00 1:41	17.4
CAD013B4	CAD01	1D	\CAD01\CAD01102.RAW	3B4	9F	-71.05	42.39	14.61	9/11/00 1:41	17.2
CAD013B6	CAD01	2D	\CAD01\CAD01102.RAW	3B6	9F	-71.05	42.39	14.98	9/11/00 1:42	17.1
CAD013B7	CAD01	3D	\CAD01\CAD01102.RAW	3B7	9F	-71.05	42.39	14.13	9/11/00 1:42	16.2
CAD013C9	CAD01	1D	\CAD01\CAD01108.RAW	3C9	P1	-71.05	42.38	10.30	9/11/00 2:25	13.5
CAD013CB	CAD01	2D	\CAD01\CAD01108.RAW	3CB	P1	-71.05	42.39	14.00	9/11/00 2:25	13.5
CAD013CD	CAD01	3D	\CAD01\CAD01108.RAW	3CD	P1	-71.05	42.39	8.98	9/11/00 2:27	16.0
CAD01405	CAD01	1D	\CAD01\CAD01128.RAW	405	B1	-71.05	42.39	10.34	9/12/00 21:35	14.7
CAD01406	CAD01	2D	\CAD01\CAD01128.RAW	406	B1	-71.05	42.39	9.49	9/12/00 21:35	14.5
CAD01407	CAD01	3D	\CAD01\CAD01128.RAW	407	B1	-71.05	42.39	8.65	9/12/00 21:35	14.7
CAD01408	CAD01	1D	\CAD01\CAD01128.RAW	408	B2	-71.05	42.39	15.01	9/12/00 21:36	17.8
CAD01409	CAD01	2D	\CAD01\CAD01128.RAW	409	B2	-71.05	42.39	15.30	9/12/00 21:37	16.9
CAD0140A	CAD01	3D	\CAD01\CAD01128.RAW	40A	B2	-71.05	42.39	15.44	9/12/00 21:37	19.0
CAD0140B	CAD01	1D	\CAD01\CAD01128.RAW	40B	B3	-71.06	42.39	9.88	9/12/00 21:38	16.7
CAD0140C	CAD01	2D	\CAD01\CAD01128.RAW	40C	B3	-71.06	42.39	10.18	9/12/00 21:39	16.3
CAD0140D	CAD01	3D	\CAD01\CAD01128.RAW	40D	B3	-71.06	42.39	10.01	9/12/00 21:39	14.6
CAD01416	CAD01	1D	\CAD01\CAD01131.RAW	416	1F	-71.05	42.39	16.75	9/12/00 22:14	17.8
CAD01417	CAD01	2D	\CAD01\CAD01131.RAW	417	1F	-71.05	42.39	15.76	9/12/00 22:14	17.0
CAD01418	CAD01	3D	\CAD01\CAD01131.RAW	418	1F	-71.05	42.39	15.89	9/12/00 22:15	18.3
CAD01419	CAD01	1D	\CAD01\CAD01131.RAW	419	2H	-71.05	42.39	15.98	9/12/00 22:17	17.7
CAD0141A	CAD01	2D	\CAD01\CAD01131.RAW	41A	2H	-71.05	42.39	16.24	9/12/00 22:17	18.3
CAD0141B	CAD01	3D	\CAD01\CAD01131.RAW	41B	2H	-71.05	42.39	16.29	9/12/00 22:18	18.5
CAD0141C	CAD01	1D	\CAD01\CAD01131.RAW	41C	3F	-71.05	42.39	15.07	9/12/00 22:20	17.6
CAD0141D	CAD01	2D	\CAD01\CAD01131.RAW	41D	3F	-71.05	42.39	15.11	9/12/00 22:20	17.6
CAD0141E	CAD01	3D	\CAD01\CAD01131.RAW	41E	3F	-71.05	42.39	15.10	9/12/00 22:21	17.8
CAD0141F	CAD01	1D	\CAD01\CAD01131.RAW	41F	4F	-71.05	42.39	16.40	9/12/00 22:24	18.1
CAD01420	CAD01	2D	\CAD01\CAD01131.RAW	420	4F	-71.05	42.39	16.73	9/12/00 22:25	18.6
CAD01421	CAD01	3D	\CAD01\CAD01131.RAW	421	4F	-71.05	42.39	13.17	9/12/00 22:25	18.9
CAD01422	CAD01	1D	\CAD01\CAD01131.RAW	422	5H	-71.05	42.39	10.60	9/12/00 22:29	14.6
CAD01423	CAD01	2D	\CAD01\CAD01131.RAW	423	5H	-71.05	42.39	10.59	9/12/00 22:30	14.6
CAD01424	CAD01	3D	\CAD01\CAD01131.RAW	424	5H	-71.05	42.39	10.63	9/12/00 22:30	14.7
CAD01425	CAD01	1D	\CAD01\CAD01131.RAW	425	6H	-71.05	42.39	16.97	9/12/00 22:36	17.9
CAD01426	CAD01	2D	\CAD01\CAD01131.RAW	426	6H	-71.05	42.39	16.70	9/12/00 22:36	18.5
CAD01427	CAD01	3D	\CAD01\CAD01131.RAW	427	6H	-71.05	42.39	15.59	9/12/00 22:37	19.7
CAD01428	CAD01	1D	\CAD01\CAD01131.RAW	428	7F	-71.05	42.39	15.31	9/12/00 22:37	19.7
CAD01429	CAD01	2D	\CAD01\CAD01131.RAW	429	7F	-71.05	42.39	16.76	9/12/00 22:37	19.6
CAD0142A	CAD01	3D	\CAD01\CAD01131.RAW	42A	7F	-71.05	42.39	15.62	9/12/00 22:38	17.8
CAD0142B	CAD01	1D	\CAD01\CAD01131.RAW	42B	8H	-71.05	42.39	11.55	9/12/00 22:45	17.4
CAD0142C	CAD01	2D	\CAD01\CAD01131.RAW	42C	8H	-71.05	42.39	11.69	9/12/00 22:45	17.6
CAD0142D	CAD01	3D	\CAD01\CAD01131.RAW	42D	8H	-71.05	42.39	16.55	9/12/00 22:46	18.4
CAD0142E	CAD01	1D	\CAD01\CAD01131.RAW	42E	9F	-71.05	42.39	16.58	9/12/00 22:46	17.6
CAD0142F	CAD01	2D	\CAD01\CAD01131.RAW	42F	9F	-71.05	42.39	16.42	9/12/00 22:47	18.4
CAD01430	CAD01	3D	\CAD01\CAD01131.RAW	430	9F	-71.05	42.39	16.15	9/12/00 22:47	18.1
CAD01436	CAD01	1D	\CAD01\CAD01133.RAW	436	P1	-71.05	42.38	12.40	9/12/00 23:32	15.5
CAD01437	CAD01	2D	\CAD01\CAD01133.RAW	437	P1	-71.05	42.38	13.81	9/12/00 23:32	15.2
CAD01438	CAD01	3D	\CAD01\CAD01133.RAW	438	P1	-71.05	42.39	12.27	9/12/00 23:33	18.3
CAD01439	CAD01	1D	\CAD01\CAD01133.RAW	439	P2	-71.05	42.39	16.38	9/12/00 23:34	18.1
CAD0143A	CAD01	2D	\CAD01\CAD01133.RAW	43A	P2	-71.05	42.39	16.37	9/12/00 23:34	19.1
CAD0143B	CAD01	3D	\CAD01\CAD01133.RAW	43B	P2	-71.05	42.39	15.68	9/12/00 23:35	16.5
CAD0143C	CAD01	1D	\CAD01\CAD01133.RAW	43C	P3	-71.06	42.39	11.83	9/12/00 23:36	17.2
CAD0143D	CAD01	2D	\CAD01\CAD01133.RAW	43D	P3	-71.06	42.39	11.72	9/12/00 23:36	16.7
CAD01469	CAD01	1D	\CAD01\CAD01152.RAW	469	B1	-71.06	42.39	11.39	9/14/00 3:33	15.8

SampleID	SurveyID	LevelID	Filename	MarkerID	StationID	Xposition	Yposition	Zposition	SampleDateTime	Bathymetry
CAD0146A	CAD01	2D	CAD01\CAD01152.RAW	46A	B1	-71.06	42.39	11.09	9/14/00 3:34	13.9
CAD0146B	CAD01	3D	CAD01\CAD01152.RAW	46B	B1	-71.06	42.39	15.20	9/14/00 3:34	17.6
CAD0146C	CAD01	1D	CAD01\CAD01152.RAW	46C	B2	-71.06	42.39	15.38	9/14/00 3:35	17.6
CAD0146D	CAD01	2D	CAD01\CAD01152.RAW	46D	B2	-71.06	42.39	14.96	9/14/00 3:35	16.8
CAD0146E	CAD01	3D	CAD01\CAD01152.RAW	46E	B2	-71.06	42.39	14.84	9/14/00 3:36	17.3
CAD0146F	CAD01	1D	CAD01\CAD01152.RAW	46F	B3	-71.06	42.39	10.58	9/14/00 3:37	13.5
CAD01470	CAD01	2D	CAD01\CAD01152.RAW	470	B3	-71.06	42.39	9.37	9/14/00 3:38	11.4
CAD01471	CAD01	3D	CAD01\CAD01152.RAW	471	B3	-71.06	42.39	9.24	9/14/00 3:39	11.5
CAD0147D	CAD01	1D	CAD01\CAD01156.RAW	47D	1F	-71.06	42.39	14.86	9/14/00 4:52	16.1
CAD0147E	CAD01	2D	CAD01\CAD01156.RAW	47E	1F	-71.06	42.39	13.96	9/14/00 4:53	16.3
CAD0147F	CAD01	3D	CAD01\CAD01156.RAW	47F	1F	-71.06	42.39	13.95	9/14/00 4:53	16.5
CAD01480	CAD01	1D	CAD01\CAD01156.RAW	480	2H	-71.06	42.39	14.23	9/14/00 5:00	16.5
CAD01481	CAD01	2D	CAD01\CAD01156.RAW	481	2H	-71.06	42.39	14.33	9/14/00 5:01	15.9
CAD01482	CAD01	3D	CAD01\CAD01156.RAW	482	2H	-71.06	42.39	10.63	9/14/00 5:02	12.3
CAD01483	CAD01	1D	CAD01\CAD01156.RAW	483	3F	-71.06	42.39	14.45	9/14/00 5:04	16.3
CAD01484	CAD01	2D	CAD01\CAD01156.RAW	484	3F	-71.06	42.39	13.47	9/14/00 5:05	15.4
CAD01485	CAD01	3D	CAD01\CAD01156.RAW	485	3F	-71.06	42.39	13.50	9/14/00 5:06	15.3
CAD01486	CAD01	1D	CAD01\CAD01156.RAW	486	4F	-71.06	42.39	14.27	9/14/00 5:13	16.0
CAD01487	CAD01	2D	CAD01\CAD01156.RAW	487	4F	-71.06	42.39	14.34	9/14/00 5:13	15.8
CAD01488	CAD01	3D	CAD01\CAD01156.RAW	488	4F	-71.06	42.39	13.87	9/14/00 5:14	15.7
CAD01489	CAD01	1D	CAD01\CAD01156.RAW	489	5H	-71.06	42.39	12.57	9/14/00 5:17	14.6
CAD0148A	CAD01	2D	CAD01\CAD01156.RAW	48A	5H	-71.06	42.39	10.03	9/14/00 5:18	12.3
CAD0148B	CAD01	3D	CAD01\CAD01156.RAW	48B	5H	-71.06	42.39	10.06	9/14/00 5:19	12.4
CAD0148C	CAD01	1D	CAD01\CAD01156.RAW	48C	6H	-71.06	42.39	12.47	9/14/00 5:24	15.0
CAD0148D	CAD01	2D	CAD01\CAD01156.RAW	48D	6H	-71.06	42.39	13.30	9/14/00 5:25	15.8
CAD0148E	CAD01	3D	CAD01\CAD01156.RAW	48E	6H	-71.06	42.39	13.27	9/14/00 5:26	16.2
CAD0148F	CAD01	1D	CAD01\CAD01156.RAW	48F	7F	-71.06	42.39	9.85	9/14/00 5:32	14.5
CAD01490	CAD01	2D	CAD01\CAD01156.RAW	490	7F	-71.06	42.39	8.70	9/14/00 5:33	16.1
CAD01491	CAD01	3D	CAD01\CAD01156.RAW	491	7F	-71.06	42.39	14.35	9/14/00 5:33	16.3
CAD01492	CAD01	1D	CAD01\CAD01156.RAW	492	8H	-71.06	42.39	14.44	9/14/00 5:33	16.2
CAD01493	CAD01	2D	CAD01\CAD01156.RAW	493	8H	-71.06	42.39	12.67	9/14/00 5:34	15.6
CAD01494	CAD01	3D	CAD01\CAD01156.RAW	494	8H	-71.06	42.39	13.82	9/14/00 5:35	16.2
CAD01495	CAD01	1D	CAD01\CAD01156.RAW	495	9F	-71.06	42.39	13.68	9/14/00 5:39	16.3
CAD01496	CAD01	2D	CAD01\CAD01156.RAW	496	9F	-71.06	42.39	12.42	9/14/00 5:40	16.0
CAD01497	CAD01	3D	CAD01\CAD01156.RAW	497	9F	-71.06	42.39	9.18	9/14/00 5:41	12.2
CAD0149D	CAD01	1D	CAD01\CAD01158.RAW	49D	P1	-71.06	42.39	12.20	9/14/00 6:11	14.6
CAD0149E	CAD01	2D	CAD01\CAD01158.RAW	49E	P1	-71.06	42.39	12.96	9/14/00 6:12	13.5
CAD0149F	CAD01	3D	CAD01\CAD01158.RAW	49F	P1	-71.06	42.39	8.63	9/14/00 6:12	16.0
CAD014A0	CAD01	1D	CAD01\CAD01158.RAW	4A0	P2	-71.06	42.39	14.07	9/14/00 6:13	16.2
CAD014A1	CAD01	2D	CAD01\CAD01158.RAW	4A1	P2	-71.06	42.39	14.22	9/14/00 6:14	15.5
CAD014A2	CAD01	3D	CAD01\CAD01158.RAW	4A2	P2	-71.06	42.39	14.80	9/14/00 6:14	16.1
CAD014A3	CAD01	1D	CAD01\CAD01158.RAW	4A3	P3	-71.06	42.39	9.51	9/14/00 6:16	11.6
CAD014A4	CAD01	2D	CAD01\CAD01158.RAW	4A4	P3	-71.06	42.39	7.92	9/14/00 6:17	10.0
CAD014A5	CAD01	3D	CAD01\CAD01158.RAW	4A5	P3	-71.06	42.39	7.68	9/14/00 6:17	10.1
CAD014BF	CAD01	1D	CAD01\CAD01169.RAW	4BF	B1	-71.06	42.39	10.88	9/15/00 8:45	13.2
CAD014C0	CAD01	2D	CAD01\CAD01169.RAW	4C0	B1	-71.06	42.39	10.90	9/15/00 8:46	15.7
CAD014C1	CAD01	3D	CAD01\CAD01169.RAW	4C1	B1	-71.06	42.39	10.91	9/15/00 8:47	16.5
CAD014C2	CAD01	1D	CAD01\CAD01169.RAW	4C2	B2	-71.06	42.39	10.94	9/15/00 8:47	17.0
CAD014C3	CAD01	2D	CAD01\CAD01169.RAW	4C3	B2	-71.06	42.39	12.54	9/15/00 8:48	12.6
CAD014C4	CAD01	3D	CAD01\CAD01169.RAW	4C4	B2	-71.06	42.39	10.56	9/15/00 8:49	15.3
CAD014C5	CAD01	1D	CAD01\CAD01169.RAW	4C5	B3	-71.06	42.39	12.90	9/15/00 8:50	15.0
CAD014C6	CAD01	2D	CAD01\CAD01169.RAW	4C6	B3	-71.06	42.39	10.83	9/15/00 8:51	16.9

SampleID	SurveyID	LevelID	Filename	MarkerID	StationID	Xposition	Yposition	Zposition	SampleDateTime	Bathymetry
CAD014C7	CAD01	3	D:\CAD01\CAD01169.RAW	4C7	B3	-71.06	42.39	9.10	9/15/00 8:52	16.9
CAD014D4	CAD01	1	D:\CAD01\CAD01174.RAW	4D4	1F	-71.06	42.39	15.40	9/15/00 9:52	17.2
CAD014D5	CAD01	2	D:\CAD01\CAD01174.RAW	4D5	1F	-71.06	42.39	15.47	9/15/00 9:53	17.4
CAD014D6	CAD01	3	D:\CAD01\CAD01174.RAW	4D6	1F	-71.06	42.39	15.44	9/15/00 9:53	17.5
CAD014DB	CAD01	1	D:\CAD01\CAD01175.RAW	4DB	2H	-71.06	42.39	15.22	9/15/00 9:57	16.5
CAD014DC	CAD01	2	D:\CAD01\CAD01175.RAW	4DC	2H	-71.06	42.39	14.37	9/15/00 9:58	16.7
CAD014DD	CAD01	3	D:\CAD01\CAD01175.RAW	4DD	2H	-71.06	42.39	13.90	9/15/00 9:58	16.9
CAD014DE	CAD01	1	D:\CAD01\CAD01175.RAW	4DE	3F	-71.06	42.39	14.21	9/15/00 9:59	17.0
CAD014DF	CAD01	2	D:\CAD01\CAD01175.RAW	4DF	3F	-71.06	42.39	14.06	9/15/00 10:00	13.6
CAD014E0	CAD01	3	D:\CAD01\CAD01175.RAW	4E0	3F	-71.06	42.39	8.02	9/15/00 10:01	13.7
CAD014E4	CAD01	1	D:\CAD01\CAD01176.RAW	4E4	4F	-71.06	42.39	15.56	9/15/00 10:02	17.3
CAD014E5	CAD01	2	D:\CAD01\CAD01176.RAW	4E5	4F	-71.06	42.39	15.62	9/15/00 10:03	17.1
CAD014E6	CAD01	3	D:\CAD01\CAD01176.RAW	4E6	4F	-71.06	42.39	15.63	9/15/00 10:04	17.4
CAD014E7	CAD01	1	D:\CAD01\CAD01176.RAW	4E7	5H	-71.06	42.39	15.64	9/15/00 10:06	17.0
CAD014E8	CAD01	2	D:\CAD01\CAD01176.RAW	4E8	5H	-71.06	42.39	15.64	9/15/00 10:07	17.6
CAD014E9	CAD01	3	D:\CAD01\CAD01176.RAW	4E9	5H	-71.06	42.39	15.65	9/15/00 10:08	17.5
CAD014EA	CAD01	1	D:\CAD01\CAD01176.RAW	4EA	6H	-71.06	42.39	15.35	9/15/00 10:11	17.2
CAD014EB	CAD01	2	D:\CAD01\CAD01176.RAW	4EB	6H	-71.06	42.39	12.89	9/15/00 10:12	13.8
CAD014EC	CAD01	3	D:\CAD01\CAD01176.RAW	4EC	6H	-71.06	42.39	12.51	9/15/00 10:12	13.9
CAD014ED	CAD01	1	D:\CAD01\CAD01176.RAW	4ED	7F	-71.06	42.39	15.32	9/15/00 10:14	17.6
CAD014EE	CAD01	2	D:\CAD01\CAD01176.RAW	4EE	7F	-71.06	42.39	16.33	9/15/00 10:15	17.8
CAD014EF	CAD01	3	D:\CAD01\CAD01176.RAW	4EF	7F	-71.06	42.39	16.47	9/15/00 10:15	17.7
CAD014F3	CAD01	1	D:\CAD01\CAD01177.RAW	4F3	8H	-71.06	42.39	12.95	9/15/00 10:22	16.0
CAD014F4	CAD01	2	D:\CAD01\CAD01177.RAW	4F4	8H	-71.06	42.39	12.55	9/15/00 10:23	14.1
CAD014F5	CAD01	3	D:\CAD01\CAD01177.RAW	4F5	8H	-71.06	42.39	14.26	9/15/00 10:24	17.8
CAD014F6	CAD01	1	D:\CAD01\CAD01177.RAW	4F6	9F	-71.06	42.39	15.11	9/15/00 10:25	17.5
CAD014F7	CAD01	2	D:\CAD01\CAD01177.RAW	4F7	9F	-71.06	42.39	15.71	9/15/00 10:26	17.5
CAD014F8	CAD01	3	D:\CAD01\CAD01177.RAW	4F8	9F	-71.06	42.39	9.60	9/15/00 10:27	17.6
CAD01511	CAD01	1	D:\CAD01\CAD01185.RAW	511	P1	-71.06	42.39	13.15	9/15/00 11:36	15.0
CAD01512	CAD01	2	D:\CAD01\CAD01185.RAW	512	P1	-71.06	42.39	13.37	9/15/00 11:37	16.0
CAD01513	CAD01	3	D:\CAD01\CAD01185.RAW	513	P1	-71.06	42.39	15.66	9/15/00 11:38	18.1
CAD01514	CAD01	1	D:\CAD01\CAD01185.RAW	514	P2	-71.06	42.39	16.31	9/15/00 11:48	18.0
CAD01515	CAD01	2	D:\CAD01\CAD01185.RAW	515	P2	-71.06	42.39	16.58	9/15/00 11:49	18.8
CAD01519	CAD01	3	D:\CAD01\CAD01186.RAW	519	P2	-71.06	42.39	12.65	9/15/00 11:50	17.0
CAD0151A	CAD01	1	D:\CAD01\CAD01186.RAW	51A	P3	-71.06	42.39	14.53	9/15/00 11:50	16.9
CAD0151B	CAD01	2	D:\CAD01\CAD01186.RAW	51B	P3	-71.05	42.39	13.76	9/15/00 11:51	14.7
CAD0151C	CAD01	3	D:\CAD01\CAD01186.RAW	51C	P3	-71.05	42.39	13.01	9/15/00 11:52	19.2
CAD01523	CAD01	1	D:\CAD01\CAD01189.RAW	523	B1	-71.06	42.39	11.85	9/15/00 23:35	16.9
CAD01524	CAD01	2	D:\CAD01\CAD01189.RAW	524	B1	-71.06	42.39	12.66	9/15/00 23:35	16.7
CAD01525	CAD01	3	D:\CAD01\CAD01189.RAW	525	B1	-71.06	42.39	12.68	9/15/00 23:36	16.5
CAD01526	CAD01	1	D:\CAD01\CAD01189.RAW	526	B2	-71.06	42.39	16.55	9/15/00 23:38	18.5
CAD01527	CAD01	2	D:\CAD01\CAD01189.RAW	527	B2	-71.06	42.39	14.99	9/15/00 23:39	18.6
CAD01528	CAD01	3	D:\CAD01\CAD01189.RAW	528	B2	-71.06	42.39	14.99	9/15/00 23:40	18.3
CAD01529	CAD01	1	D:\CAD01\CAD01189.RAW	529	B3	-71.06	42.39	10.23	9/15/00 23:41	14.7
CAD0152A	CAD01	2	D:\CAD01\CAD01189.RAW	52A	B3	-71.06	42.39	11.54	9/15/00 23:42	14.3
CAD0152B	CAD01	3	D:\CAD01\CAD01189.RAW	52B	B3	-71.06	42.39	10.91	9/15/00 23:43	12.9
CAD01534	CAD01	1	D:\CAD01\CAD01192.RAW	534	1F	-71.06	42.39	17.22	9/16/00 0:09	18.6
CAD01535	CAD01	2	D:\CAD01\CAD01192.RAW	535	1F	-71.06	42.39	16.64	9/16/00 0:10	18.8
CAD01536	CAD01	3	D:\CAD01\CAD01192.RAW	536	1F	-71.06	42.39	10.41	9/16/00 0:10	18.5
CAD01538	CAD01	1	D:\CAD01\CAD01192.RAW	538	2H	-71.06	42.39	16.25	9/16/00 0:14	18.3
CAD01539	CAD01	2	D:\CAD01\CAD01192.RAW	539	2H	-71.06	42.39	16.40	9/16/00 0:15	18.5
CAD0153A	CAD01	3	D:\CAD01\CAD01192.RAW	53A	2H	-71.06	42.39	16.40	9/16/00 0:16	17.9

SampleID	SurveyID	LevelID	Filename	MarkerID	StationID	Xposition	Yposition	Zposition	SampleDateTime	Bathymetry
CAD0153B	CAD01	1D	:\CAD01\CAD01192.RAW	53B	3F	-71.06	42.39	16.48	9/16/00 0:19	17.6
CAD0153C	CAD01	2D	:\CAD01\CAD01192.RAW	53C	3F	-71.06	42.39	16.51	9/16/00 0:20	18.7
CAD0153D	CAD01	3D	:\CAD01\CAD01192.RAW	53D	3F	-71.06	42.39	16.57	9/16/00 0:21	18.7
CAD0153E	CAD01	1D	:\CAD01\CAD01192.RAW	53E	4F	-71.06	42.39	17.33	9/16/00 0:25	18.3
CAD0153F	CAD01	2D	:\CAD01\CAD01192.RAW	53F	4F	-71.06	42.39	16.94	9/16/00 0:26	18.4
CAD01540	CAD01	3D	:\CAD01\CAD01192.RAW	540	4F	-71.06	42.39	16.95	9/16/00 0:26	18.5
CAD01541	CAD01	1D	:\CAD01\CAD01192.RAW	541	5H	-71.06	42.39	16.92	9/16/00 0:26	18.5
CAD01542	CAD01	2D	:\CAD01\CAD01192.RAW	542	5H	-71.06	42.39	16.96	9/16/00 0:27	18.4
CAD01543	CAD01	3D	:\CAD01\CAD01192.RAW	543	5H	-71.06	42.39	12.89	9/16/00 0:28	15.1
CAD01544	CAD01	1D	:\CAD01\CAD01192.RAW	544	6H	-71.06	42.39	15.73	9/16/00 0:31	18.4
CAD01545	CAD01	2D	:\CAD01\CAD01192.RAW	545	6H	-71.06	42.39	17.24	9/16/00 0:32	18.5
CAD01546	CAD01	3D	:\CAD01\CAD01192.RAW	546	6H	-71.06	42.39	15.89	9/16/00 0:32	18.8
CAD01547	CAD01	1D	:\CAD01\CAD01192.RAW	547	7F	-71.06	42.39	17.29	9/16/00 0:35	18.7
CAD01548	CAD01	2D	:\CAD01\CAD01192.RAW	548	7F	-71.06	42.39	16.36	9/16/00 0:36	18.3
CAD01549	CAD01	3D	:\CAD01\CAD01192.RAW	549	7F	-71.06	42.39	17.99	9/16/00 0:37	18.8
CAD0154C	CAD01	1D	:\CAD01\CAD01192.RAW	54C	8H	-71.06	42.39	13.47	9/16/00 0:42	15.3
CAD0154D	CAD01	2D	:\CAD01\CAD01192.RAW	54D	8H	-71.06	42.39	14.26	9/16/00 0:42	15.5
CAD0154E	CAD01	3D	:\CAD01\CAD01192.RAW	54E	8H	-71.06	42.39	14.27	9/16/00 0:43	15.2
CAD0154F	CAD01	1D	:\CAD01\CAD01192.RAW	54F	9F	-71.06	42.39	15.92	9/16/00 0:44	17.9
CAD01550	CAD01	2D	:\CAD01\CAD01192.RAW	550	9F	-71.06	42.39	16.17	9/16/00 0:45	18.8
CAD01551	CAD01	3D	:\CAD01\CAD01192.RAW	551	9F	-71.06	42.39	11.38	9/16/00 0:46	14.9
CAD0155E	CAD01	1D	:\CAD01\CAD01197.RAW	55E	P1	-71.06	42.39	10.73	9/16/00 1:33	17.5
CAD0155F	CAD01	2D	:\CAD01\CAD01197.RAW	55F	P1	-71.06	42.39	12.48	9/16/00 1:34	17.4
CAD01560	CAD01	3D	:\CAD01\CAD01197.RAW	560	P1	-71.06	42.39	12.52	9/16/00 1:35	15.0
CAD01561	CAD01	1D	:\CAD01\CAD01197.RAW	561	P2	-71.06	42.39	16.74	9/16/00 1:35	18.9
CAD01562	CAD01	2D	:\CAD01\CAD01197.RAW	562	P2	-71.06	42.39	17.63	9/16/00 1:36	18.8
CAD01563	CAD01	3D	:\CAD01\CAD01197.RAW	563	P2	-71.06	42.39	15.83	9/16/00 1:37	18.4
CAD01564	CAD01	1D	:\CAD01\CAD01197.RAW	564	P3	-71.06	42.39	10.83	9/16/00 1:39	15.5
CAD01565	CAD01	2D	:\CAD01\CAD01197.RAW	565	P3	-71.06	42.39	10.94	9/16/00 1:40	16.0
CAD01566	CAD01	3D	:\CAD01\CAD01197.RAW	566	P3	-71.06	42.39	10.04	9/16/00 1:41	13.3
CAD01587	CAD01	1D	:\CAD01\CAD01212.RAW	587	B1	-71.06	42.39	14.41	9/16/00 16:35	15.8
CAD01588	CAD01	2D	:\CAD01\CAD01212.RAW	588	B1	-71.06	42.39	14.45	9/16/00 16:36	16.0
CAD01589	CAD01	3D	:\CAD01\CAD01212.RAW	589	B1	-71.06	42.39	8.29	9/16/00 16:37	15.9
CAD015AB	CAD01	1D	:\CAD01\CAD01226.RAW	5AB	B1	-71.06	42.39	13.08	9/20/00 9:43	15.3
CAD015AC	CAD01	2D	:\CAD01\CAD01226.RAW	5AC	B1	-71.06	42.39	13.25	9/20/00 9:44	15.1
CAD015AD	CAD01	3D	:\CAD01\CAD01226.RAW	5AD	B1	-71.06	42.39	13.26	9/20/00 9:44	15.0
CAD015B0	CAD01	1D	:\CAD01\CAD01226.RAW	5B0	B2	-71.06	42.39	14.04	9/20/00 9:50	15.8
CAD015B1	CAD01	2D	:\CAD01\CAD01226.RAW	5B1	B2	-71.06	42.39	14.05	9/20/00 9:50	15.9
CAD015B2	CAD01	3D	:\CAD01\CAD01226.RAW	5B2	B2	-71.06	42.39	14.06	9/20/00 9:51	15.9
CAD015B3	CAD01	1D	:\CAD01\CAD01226.RAW	5B3	B3	-71.06	42.39	10.34	9/20/00 9:53	12.4
CAD015B4	CAD01	2D	:\CAD01\CAD01226.RAW	5B4	B3	-71.06	42.39	10.31	9/20/00 9:54	12.5
CAD015B5	CAD01	3D	:\CAD01\CAD01226.RAW	5B5	B3	-71.06	42.39	10.38	9/20/00 9:54	12.5
CAD015C2	CAD01	1D	:\CAD01\CAD01231.RAW	5C2	1F	-71.06	42.39	13.07	9/20/00 10:34	14.7
CAD015C3	CAD01	2D	:\CAD01\CAD01231.RAW	5C3	1F	-71.06	42.39	12.85	9/20/00 10:35	13.0
CAD015C4	CAD01	3D	:\CAD01\CAD01231.RAW	5C4	1F	-71.06	42.39	12.33	9/20/00 10:35	14.0
CAD015C5	CAD01	1D	:\CAD01\CAD01231.RAW	5C5	2H	-71.06	42.39	13.94	9/20/00 10:38	15.9
CAD015C6	CAD01	2D	:\CAD01\CAD01231.RAW	5C6	2H	-71.06	42.39	13.92	9/20/00 10:39	16.0
CAD015C7	CAD01	3D	:\CAD01\CAD01231.RAW	5C7	2H	-71.06	42.39	10.26	9/20/00 10:39	15.8
CAD015CB	CAD01	1D	:\CAD01\CAD01232.RAW	5CB	3F	-71.06	42.39	13.44	9/20/00 10:45	15.3
CAD015CC	CAD01	2D	:\CAD01\CAD01232.RAW	5CC	3F	-71.06	42.39	12.79	9/20/00 10:45	13.2
CAD015CD	CAD01	3D	:\CAD01\CAD01232.RAW	5CD	3F	-71.06	42.39	10.33	9/20/00 10:46	12.7
CAD015CE	CAD01	1D	:\CAD01\CAD01232.RAW	5CE	4F	-71.06	42.39	14.07	9/20/00 10:49	15.9

SampleID	SurveyID	LevelID	Filename	MarkerID	StationID	Xposition	Yposition	Zposition	SampleDateTime	Bathymetry
CAD015CF	CAD01	2D	D:\CAD01\CAD01232.RAW	5CF	4F	-71.06	42.39	14.09	9/20/00 10:50	16.0
CAD015D0	CAD01	3D	D:\CAD01\CAD01232.RAW	5D0	4F	-71.06	42.39	6.96	9/20/00 10:50	16.1
CAD015D1	CAD01	1D	D:\CAD01\CAD01232.RAW	5D1	5H	-71.06	42.39	13.00	9/20/00 10:54	15.3
CAD015D2	CAD01	2D	D:\CAD01\CAD01232.RAW	5D2	5H	-71.06	42.39	13.12	9/20/00 10:55	15.4
CAD015D3	CAD01	3D	D:\CAD01\CAD01232.RAW	5D3	5H	-71.06	42.39	8.73	9/20/00 10:56	15.6
CAD015D4	CAD01	1D	D:\CAD01\CAD01232.RAW	5D4	6H	-71.06	42.39	13.77	9/20/00 11:01	15.8
CAD015D5	CAD01	2D	D:\CAD01\CAD01232.RAW	5D5	6H	-71.06	42.39	13.85	9/20/00 11:01	15.8
CAD015D6	CAD01	3D	D:\CAD01\CAD01232.RAW	5D6	6H	-71.06	42.39	13.88	9/20/00 11:02	15.9
CAD015D7	CAD01	1D	D:\CAD01\CAD01232.RAW	5D7	7F	-71.06	42.39	14.47	9/20/00 11:05	16.1
CAD015D9	CAD01	2D	D:\CAD01\CAD01232.RAW	5D9	7F	-71.06	42.39	14.46	9/20/00 11:05	16.0
CAD015DA	CAD01	3D	D:\CAD01\CAD01232.RAW	5DA	7F	-71.06	42.39	14.45	9/20/00 11:06	16.0
CAD015DC	CAD01	1D	D:\CAD01\CAD01232.RAW	5DC	8H	-71.06	42.39	9.34	9/20/00 11:10	14.5
CAD015DD	CAD01	2D	D:\CAD01\CAD01232.RAW	5DD	8H	-71.06	42.39	9.38	9/20/00 11:11	15.4
CAD015DE	CAD01	3D	D:\CAD01\CAD01232.RAW	5DE	8H	-71.06	42.39	11.56	9/20/00 11:12	16.2
CAD015DF	CAD01	1D	D:\CAD01\CAD01232.RAW	5DF	9F	-71.06	42.39	14.33	9/20/00 11:12	16.1
CAD015E0	CAD01	2D	D:\CAD01\CAD01232.RAW	5E0	9F	-71.06	42.39	14.30	9/20/00 11:13	15.6
CAD015E1	CAD01	3D	D:\CAD01\CAD01232.RAW	5E1	9F	-71.06	42.39	7.88	9/20/00 11:13	15.8
CAD015EF	CAD01	1D	D:\CAD01\CAD01237.RAW	5EF	P1	-71.06	42.39	11.06	9/20/00 11:52	12.9
CAD015F0	CAD01	2D	D:\CAD01\CAD01237.RAW	5F0	P1	-71.06	42.39	11.05	9/20/00 11:53	12.9
CAD015F1	CAD01	3D	D:\CAD01\CAD01237.RAW	5F1	P1	-71.06	42.39	11.05	9/20/00 11:54	13.1
CAD015F2	CAD01	1D	D:\CAD01\CAD01237.RAW	5F2	P2	-71.06	42.39	13.98	9/20/00 11:56	16.2
CAD015F3	CAD01	2D	D:\CAD01\CAD01237.RAW	5F3	P2	-71.06	42.39	13.93	9/20/00 11:57	16.2
CAD015F4	CAD01	3D	D:\CAD01\CAD01237.RAW	5F4	P2	-71.06	42.39	13.76	9/20/00 11:58	16.4
CAD015F5	CAD01	1D	D:\CAD01\CAD01237.RAW	5F5	P3	-71.06	42.39	11.90	9/20/00 12:00	15.2
CAD015F6	CAD01	2D	D:\CAD01\CAD01237.RAW	5F6	P3	-71.06	42.39	11.88	9/20/00 12:01	15.3
CAD015F7	CAD01	3D	D:\CAD01\CAD01237.RAW	5F7	P3	-71.06	42.39	11.93	9/20/00 12:02	15.5

Appendix B-1

Survey Tracks CAD Cell M19, Boston Harbor, MA



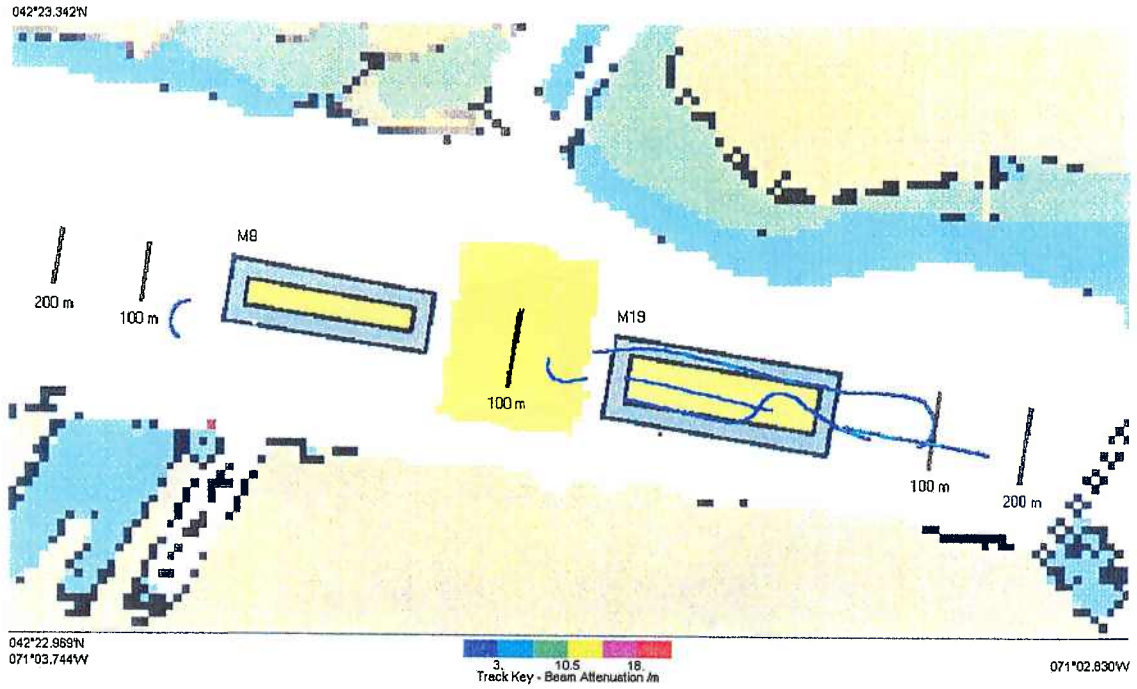


Figure B-1. Survey Track Pre Survey CAD Cell M19

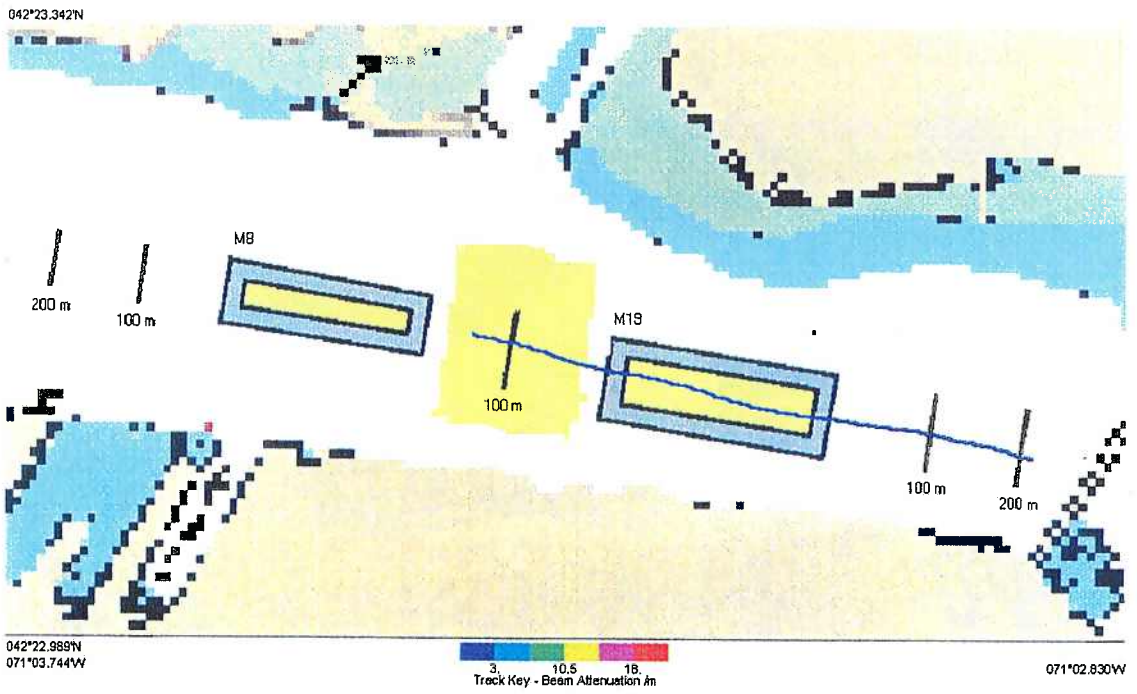


Figure B-2. Survey Track Pre Run 1 CAD Cell M19

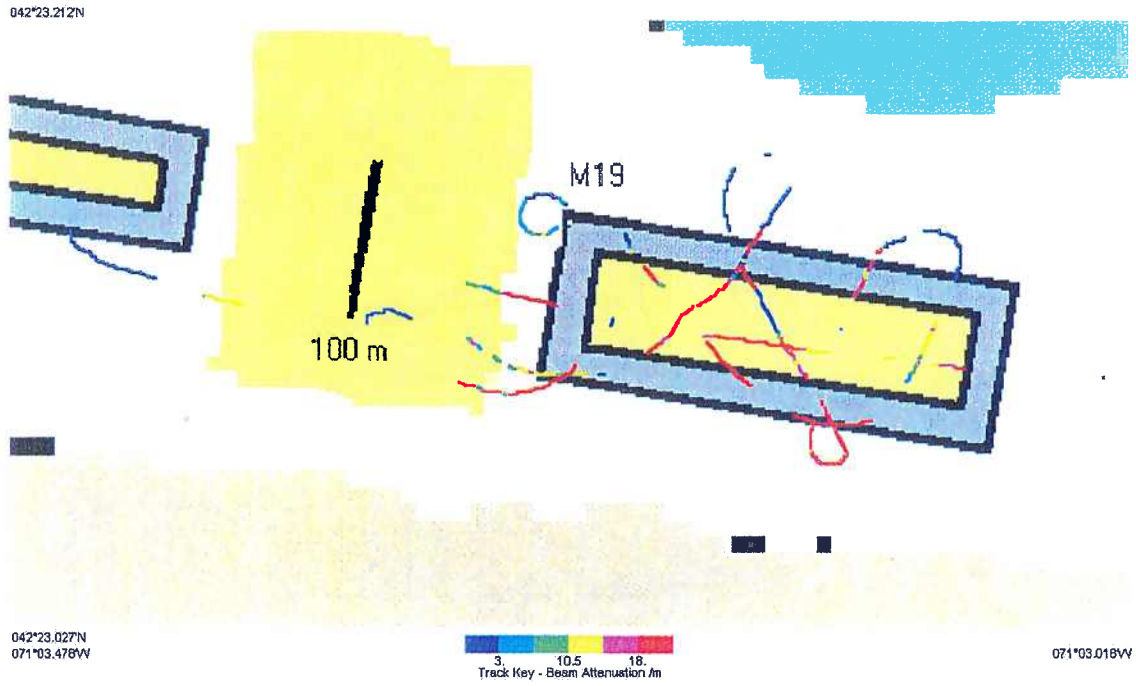


Figure B-3. Survey Track Run 1 CAD Cell M19 with BOSS Four Meters from the Sediment Surface

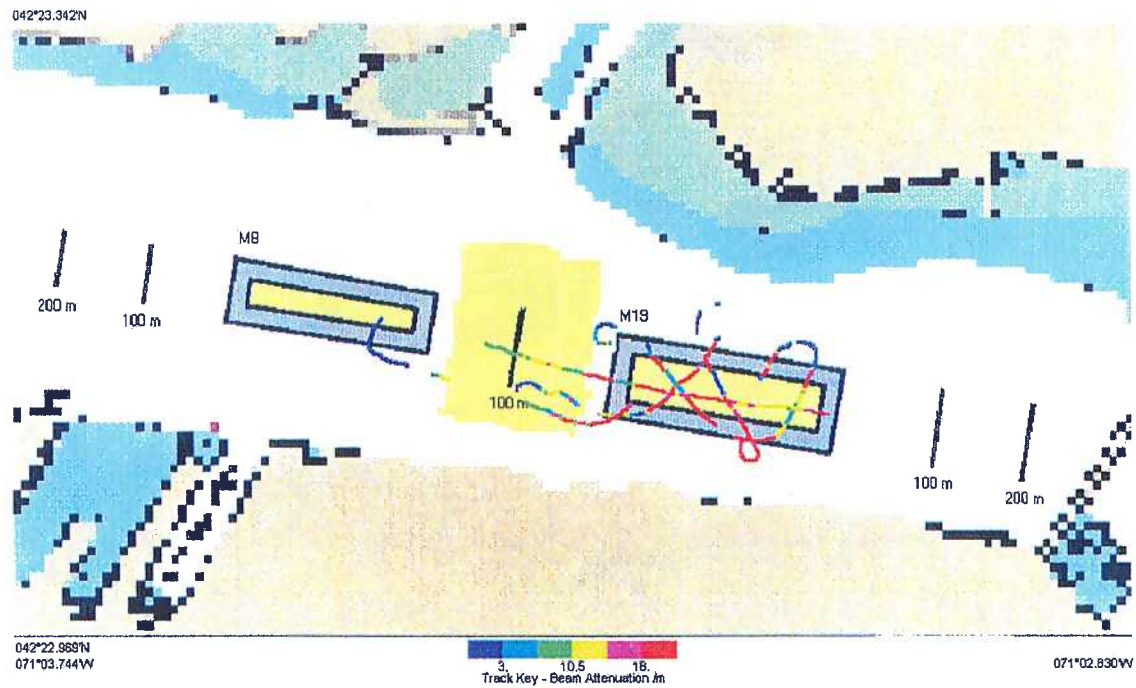


Figure B-4. Survey Track Run 1 CAD Cell M19 with BOSS Greater than 9.5 m Below Water Surface

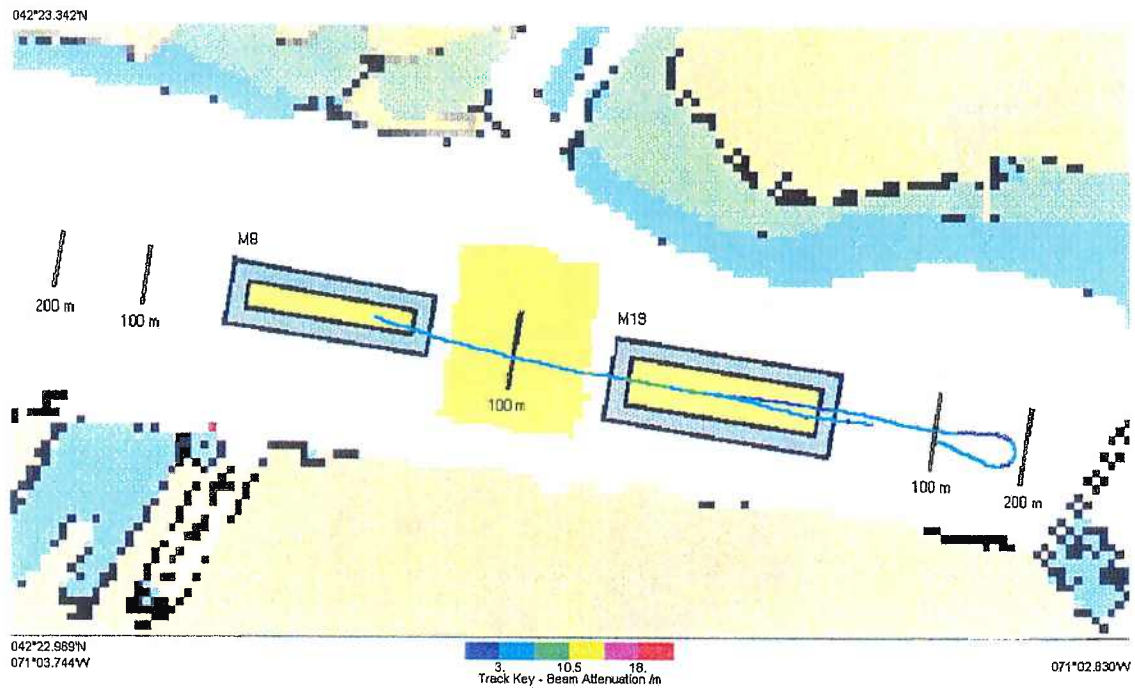


Figure B-5. Survey Track Post run 1 CAD Cell M19

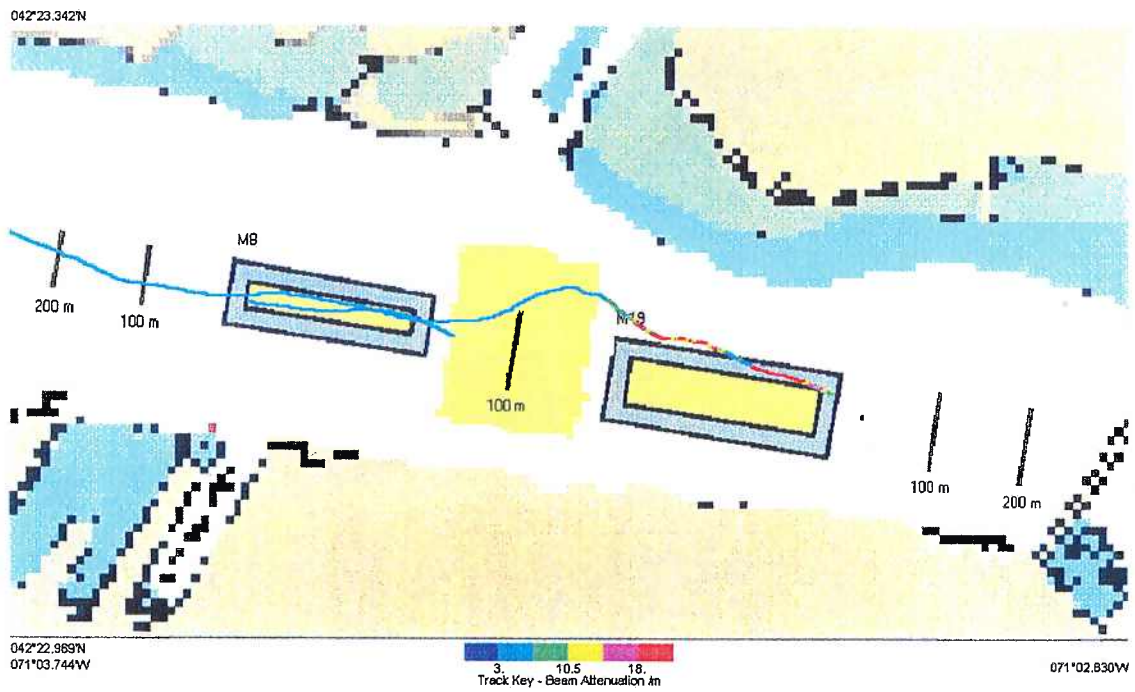


Figure B-6. Survey Track Pre run 2 CAD Cell M19

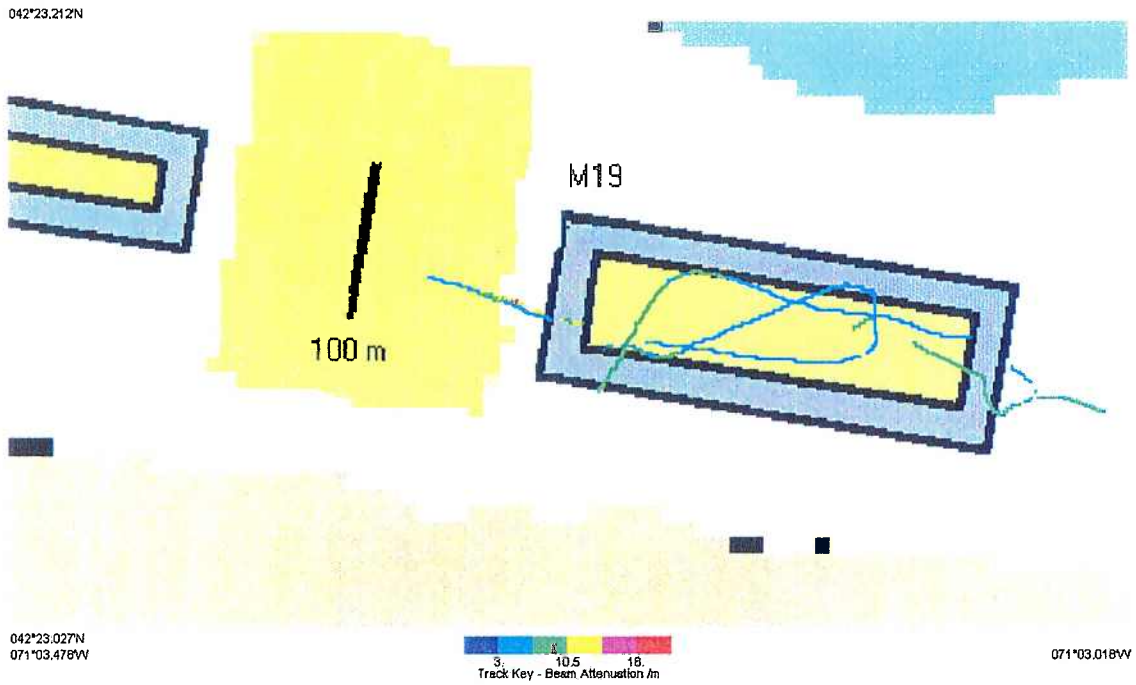


Figure B-7. Survey Track Run 2 CAD Cell M19 with BOSS Four Meters from the Sediment Surface

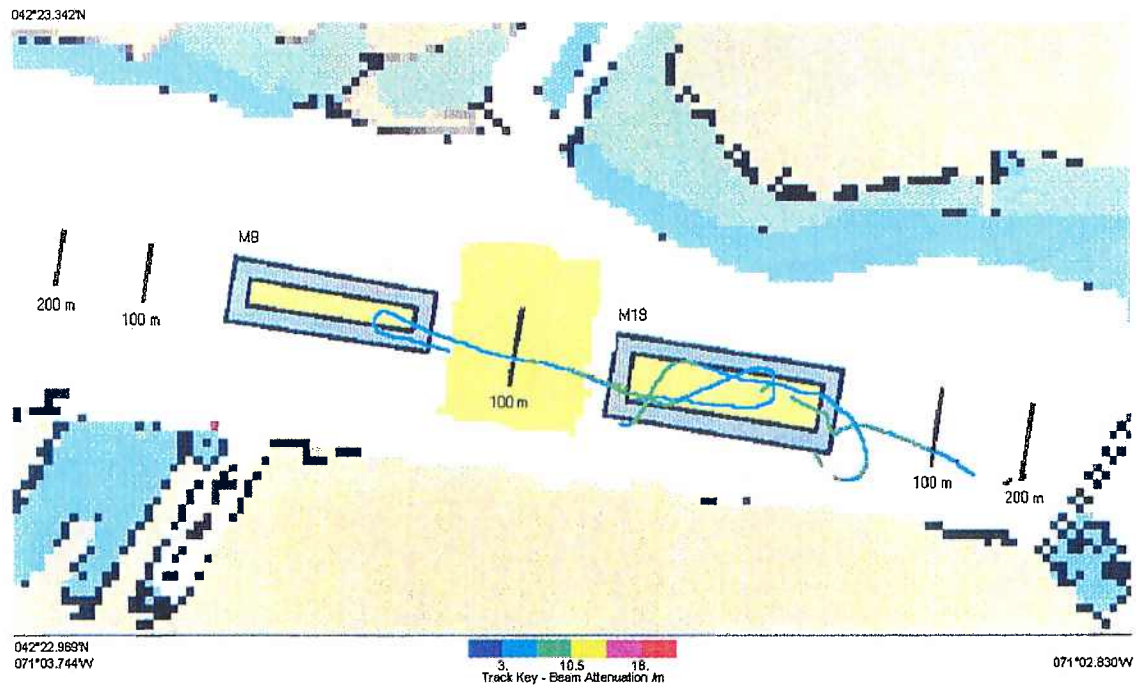


Figure B-8. Survey Track Run 2 CAD Cell M19 when BOSS is Greater than 9.5 Below Water Surface

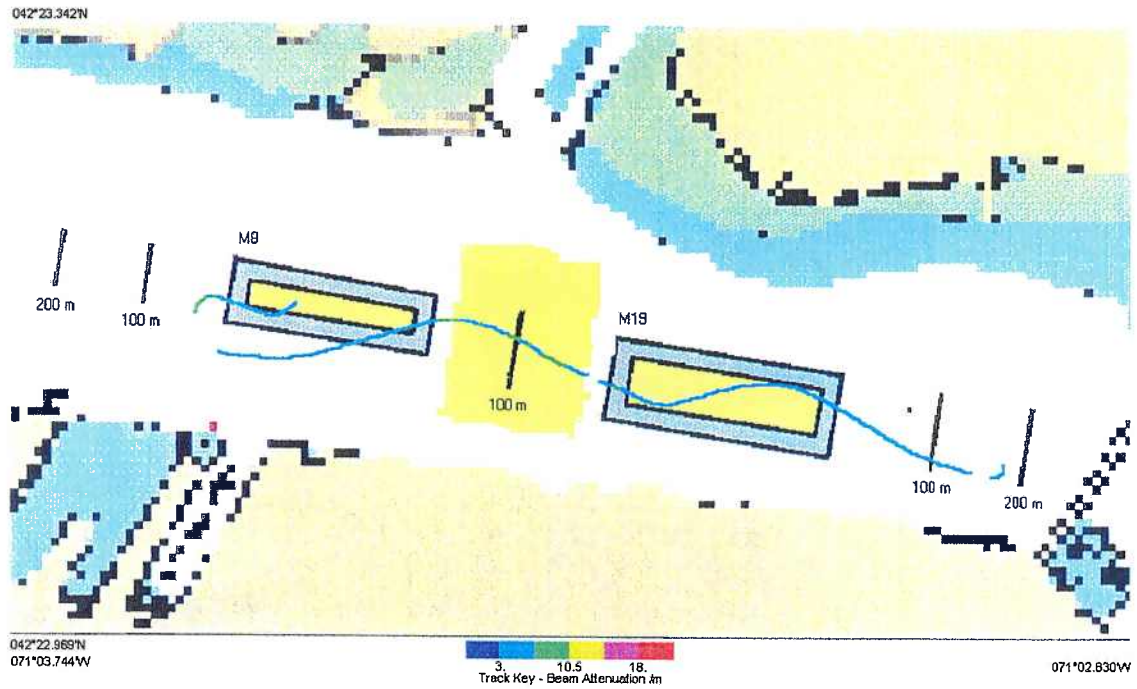


Figure B-9. Survey Track Post run 2 CAD Cell M19

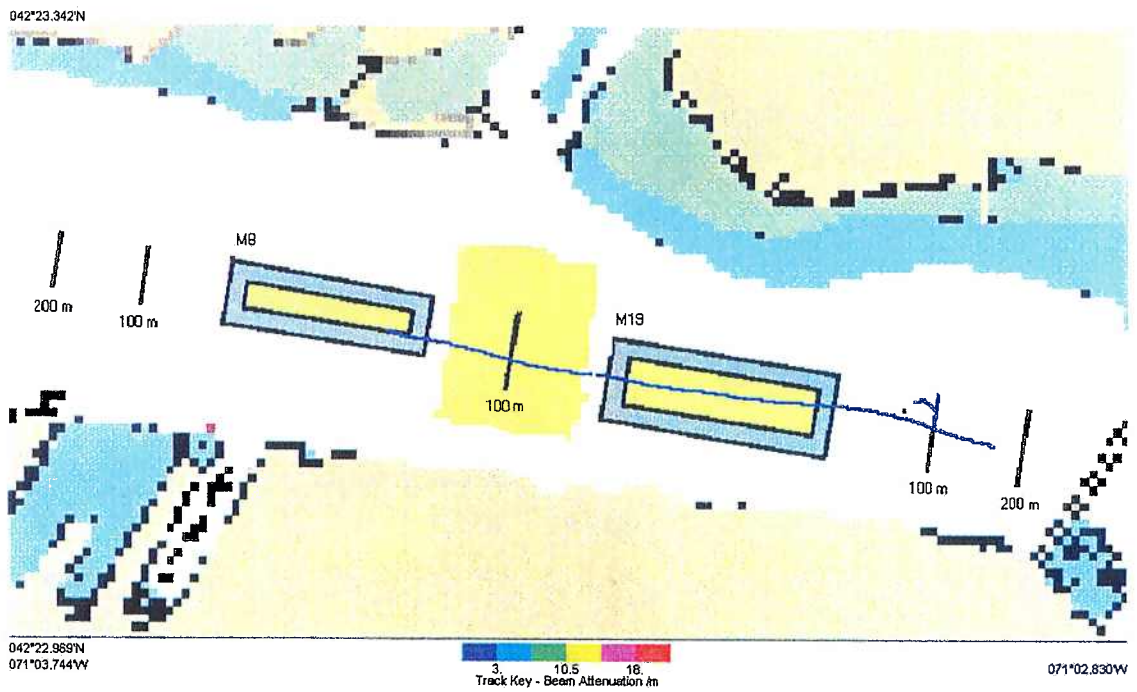


Figure B-10. Survey Track Pre run 3 CAD Cell M19

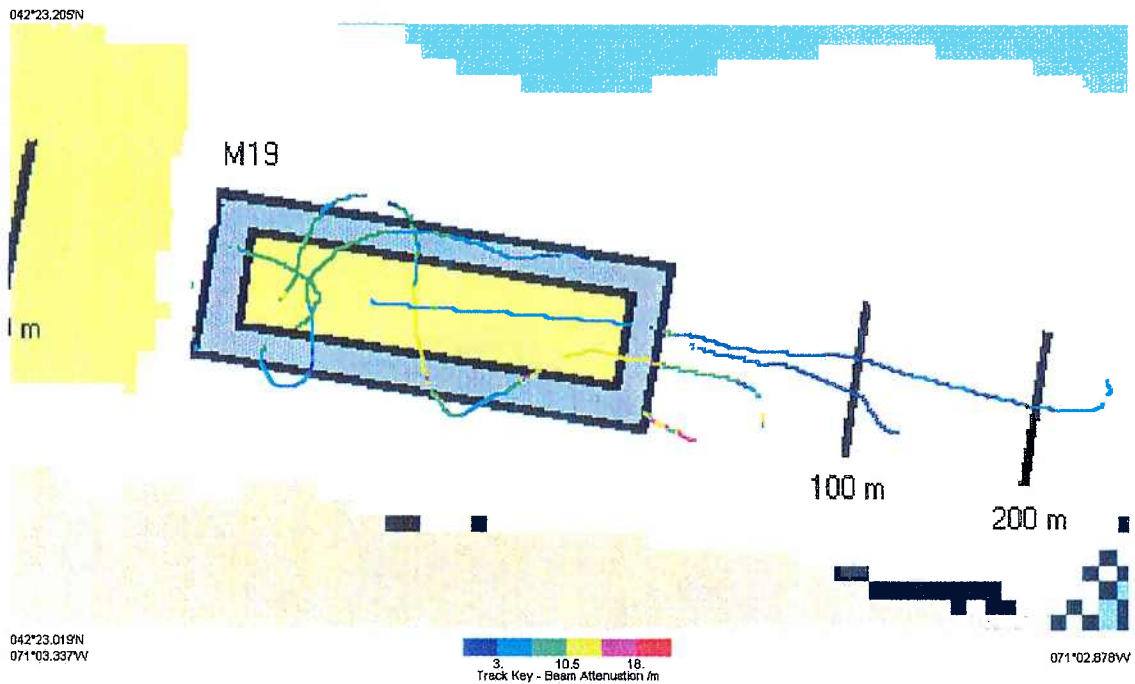


Figure B-11. Survey Track Run 3 CAD Cell M19 with BOSS Four Meters from the Sediment Surface

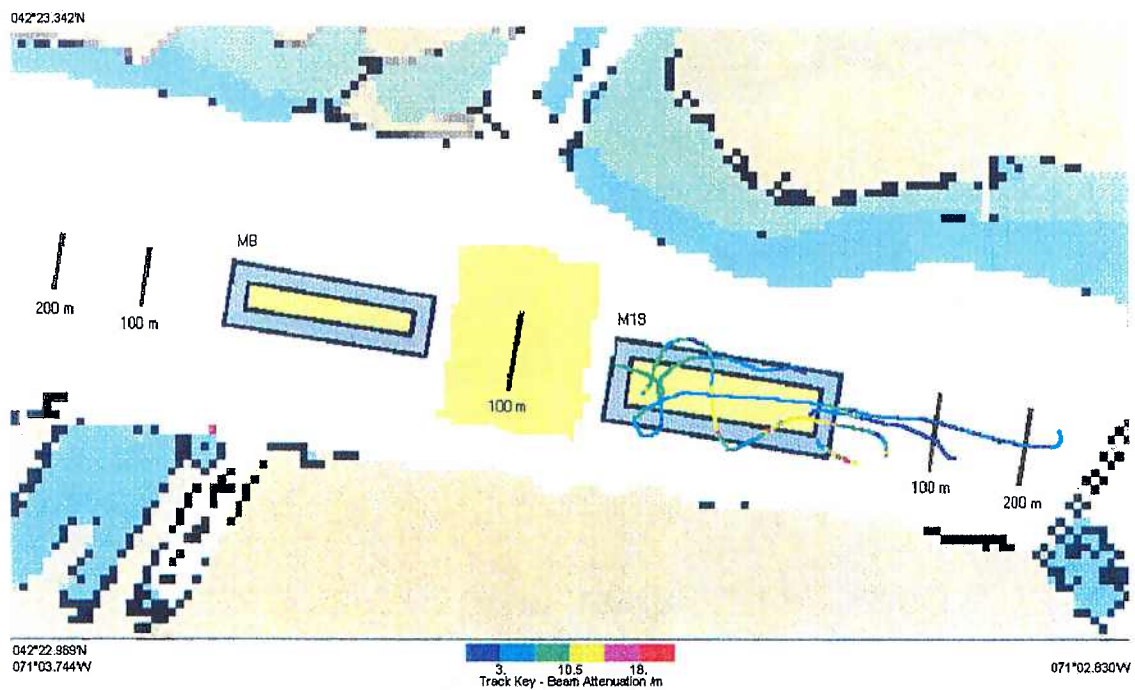


Figure B-12. Survey Track Run 3 CAD Cell M19 when BOSS is Greater than 9.5 Below Water Surface

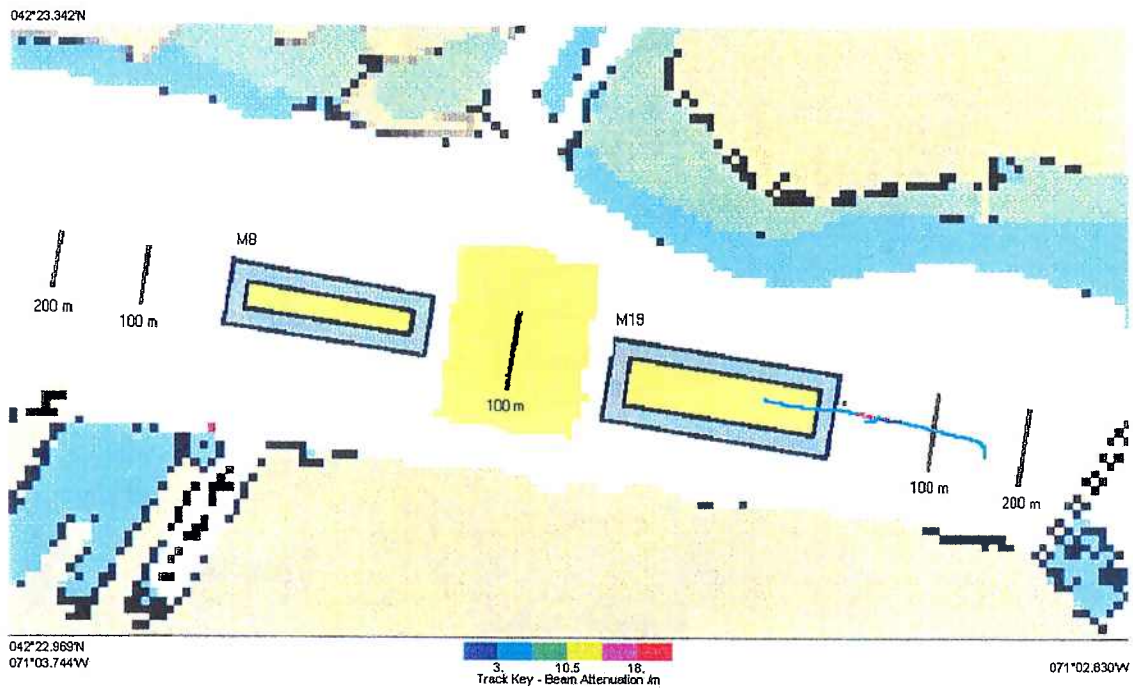


Figure B-13. Survey Track Post run 3 CAD Cell M19

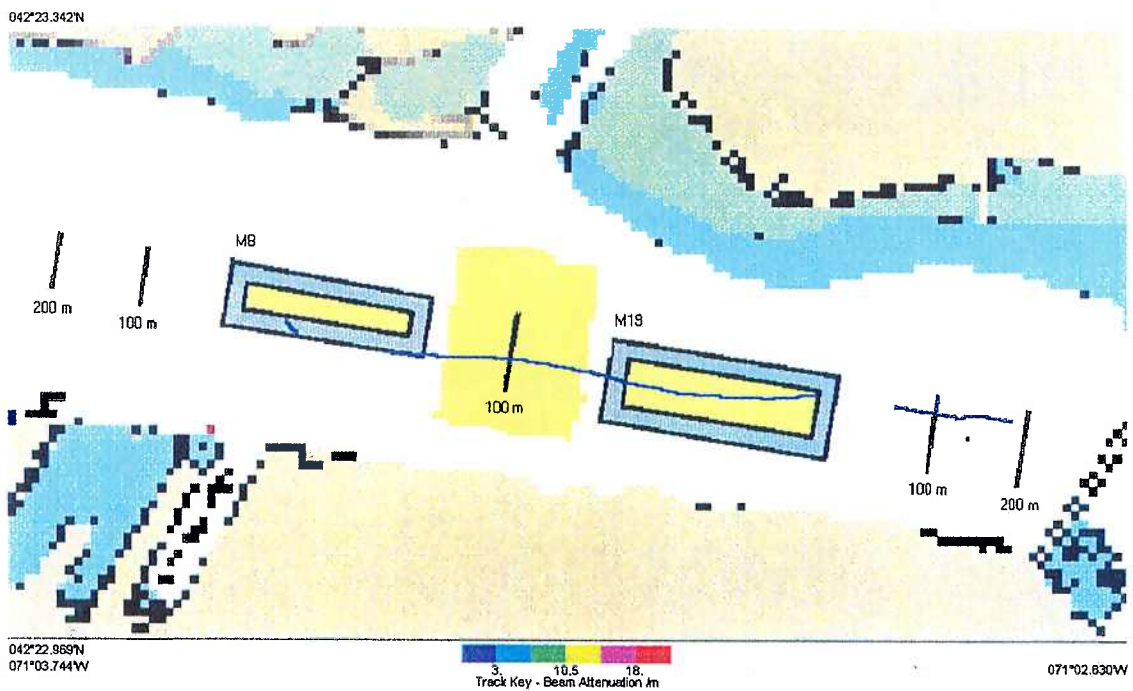


Figure B-14. Survey Track Pre run 4 CAD Cell M19

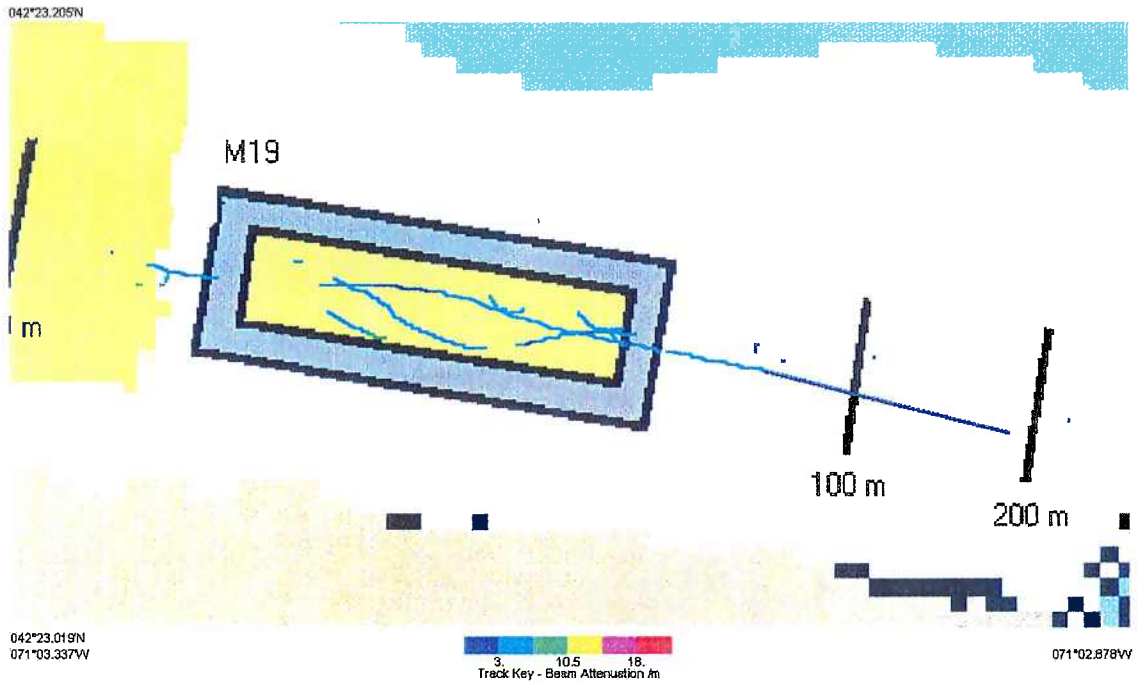


Figure B-15. Survey Track Run 4 CAD Cell M19 with BOSS Four Meters from the Sediment Surface

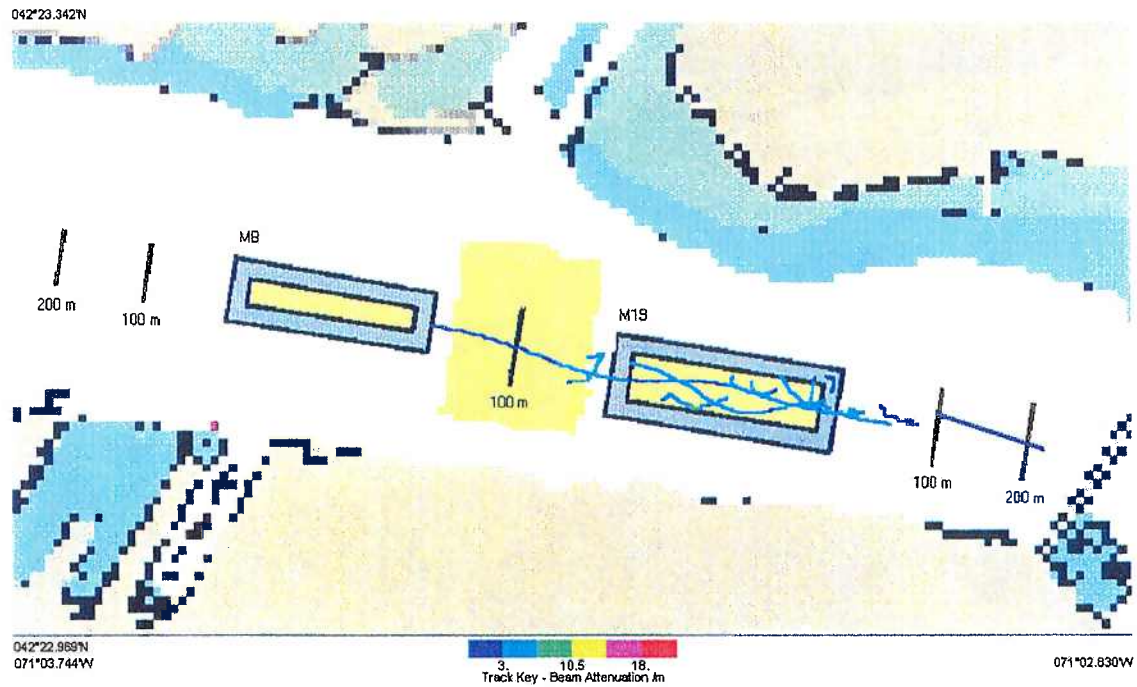


Figure B-16. Survey Track Run 4 CAD Cell M19 when BOSS is Greater than 9.5 Below Water Surface

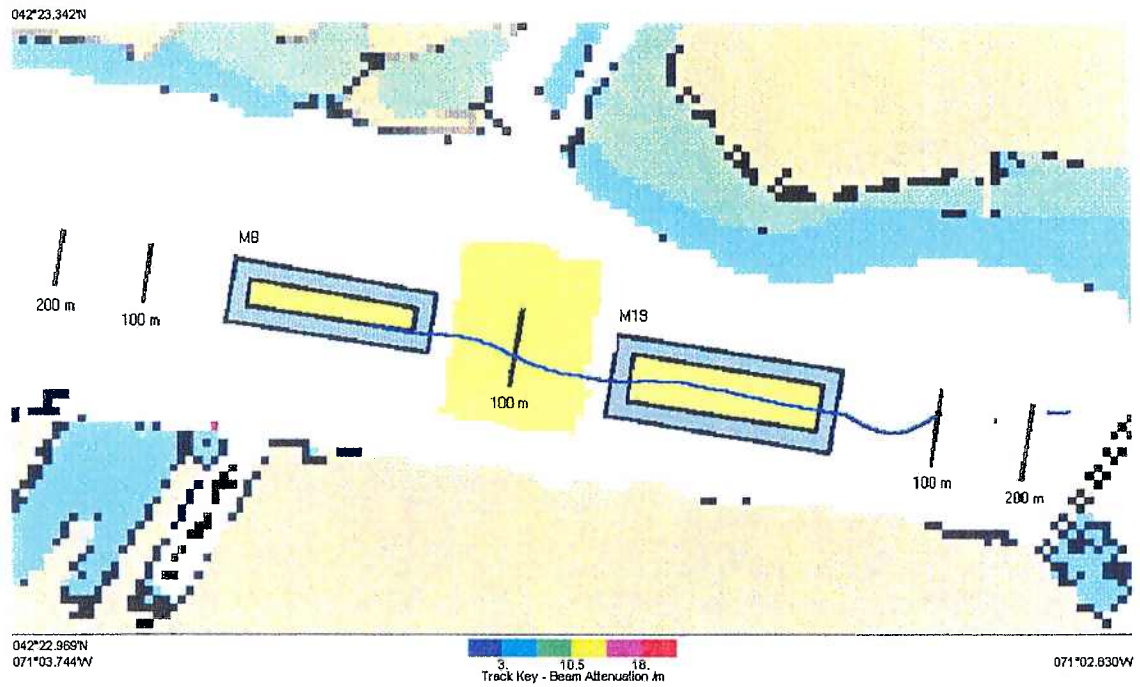


Figure B-17. Survey Track Post run 4 CAD Cell M19

Appendix B-2

Survey Tracks CAD Cell M8, Boston Harbor, MA

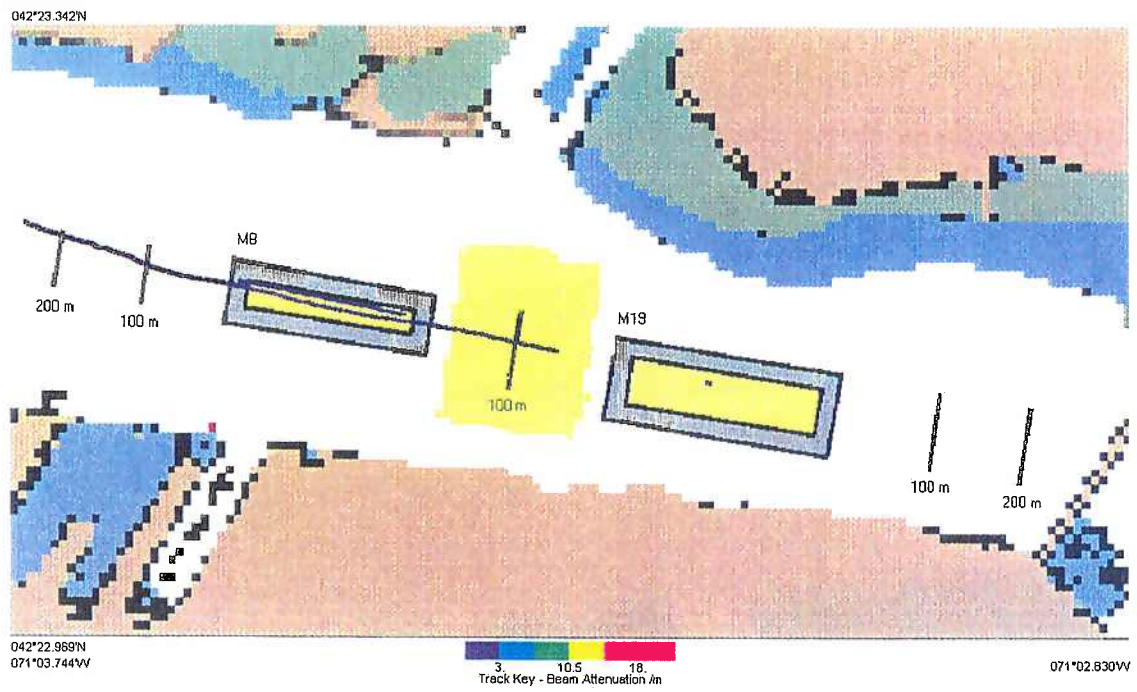


Figure B-18. Survey Track Pre Survey CAD Cell M8

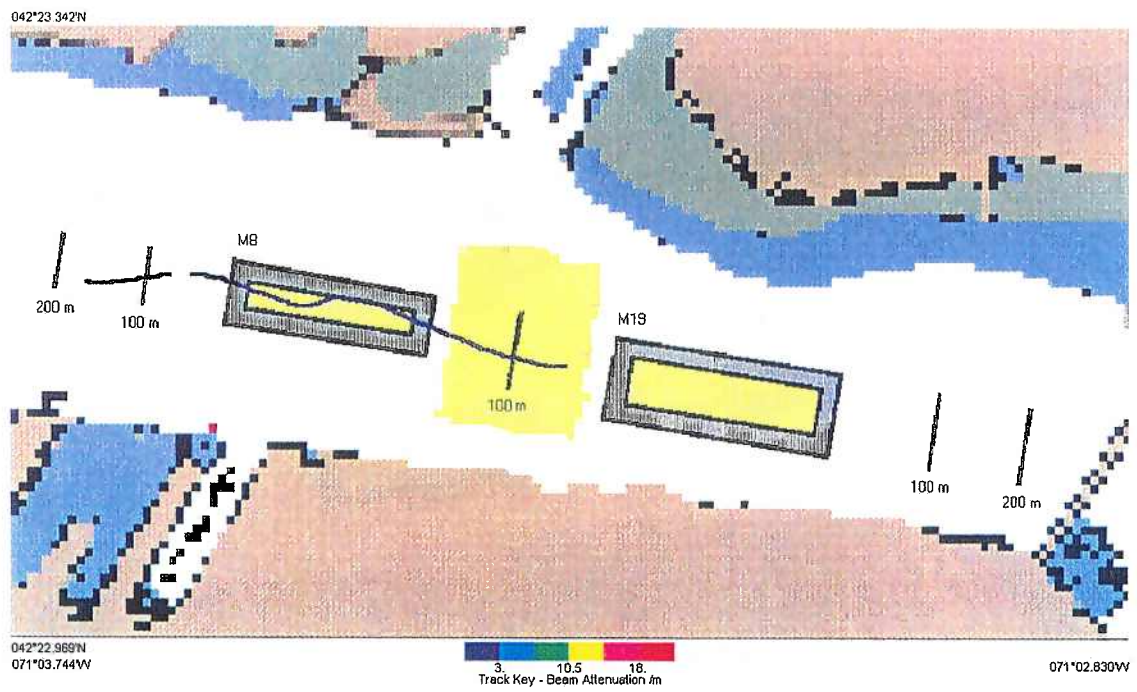


Figure B-19. Survey Track Pre run 5 CAD Cell M8

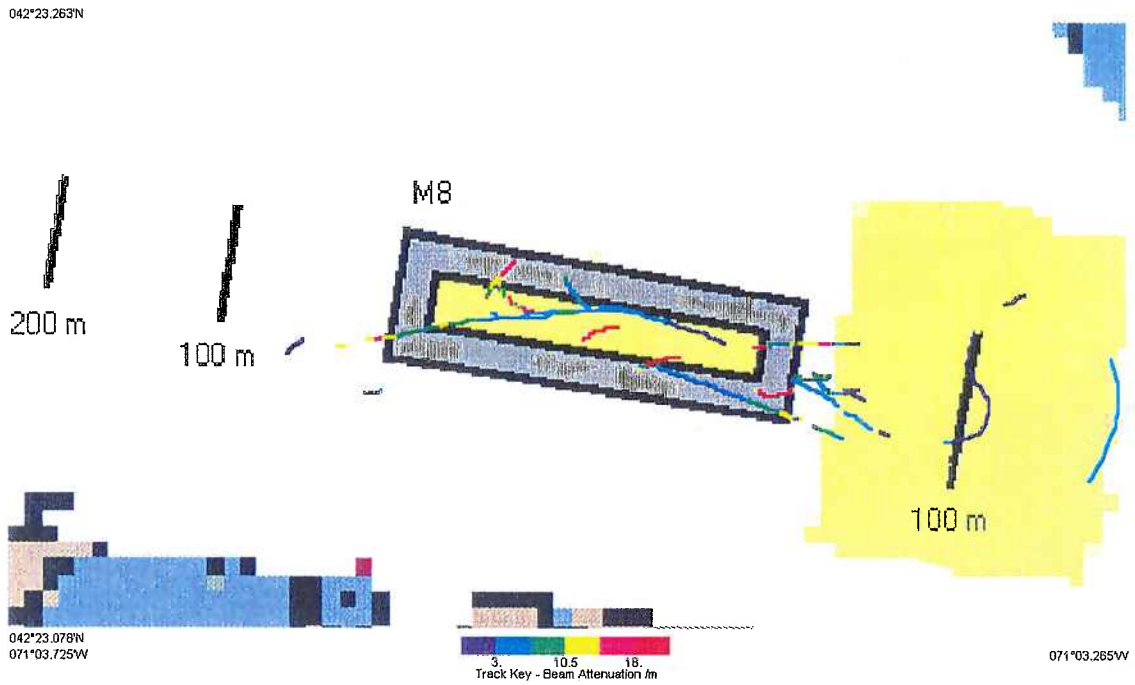


Figure B-20. Survey Track Run 5 CAD Cell M8 with BOSS Four Meters from the Sediment Surface

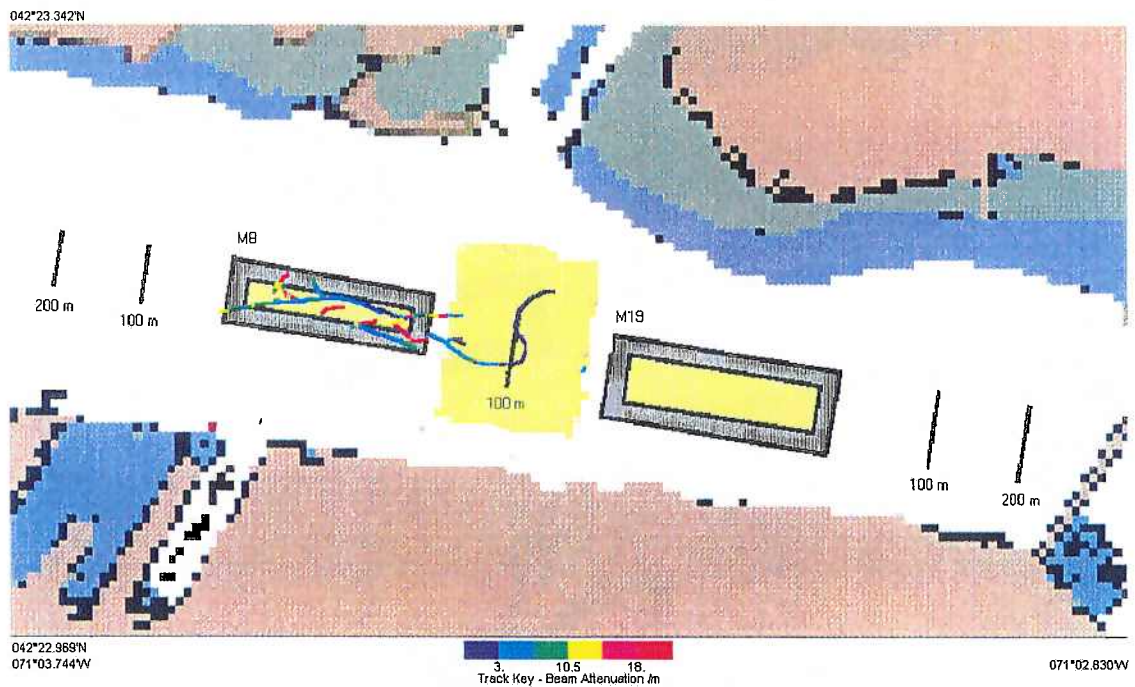


Figure B-21. Survey Track Run 5 CAD Cell M8 with BOSS Greater than 9.5 m Below Water Surface

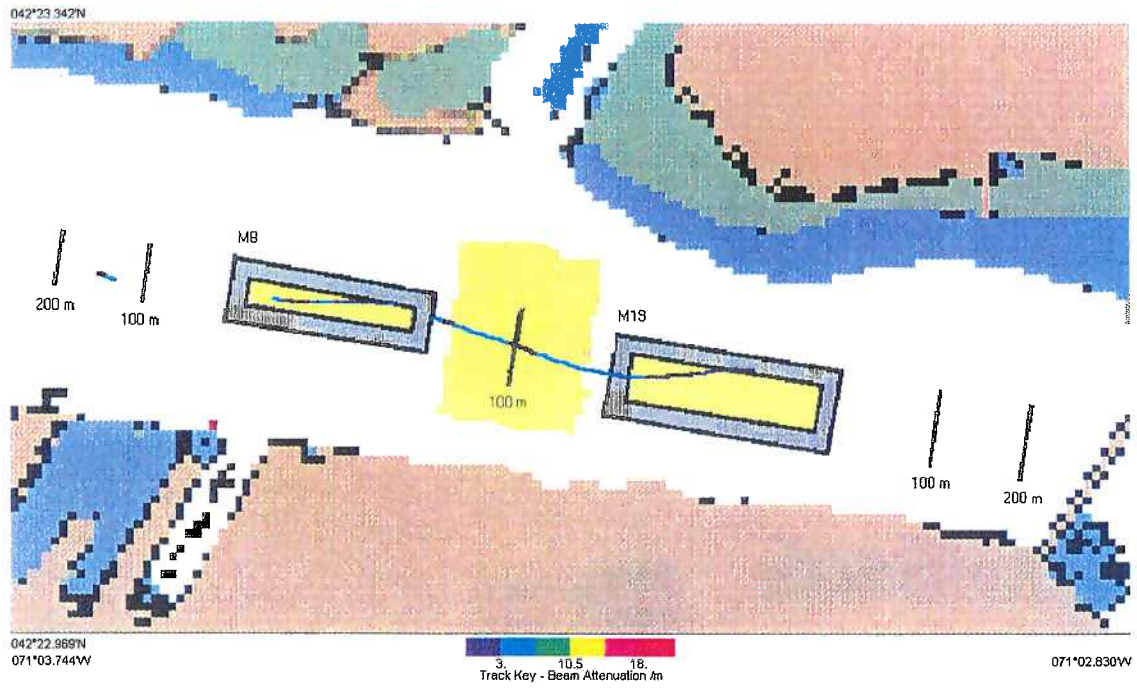


Figure B-22. Survey Track Post run 5 CAD Cell M8

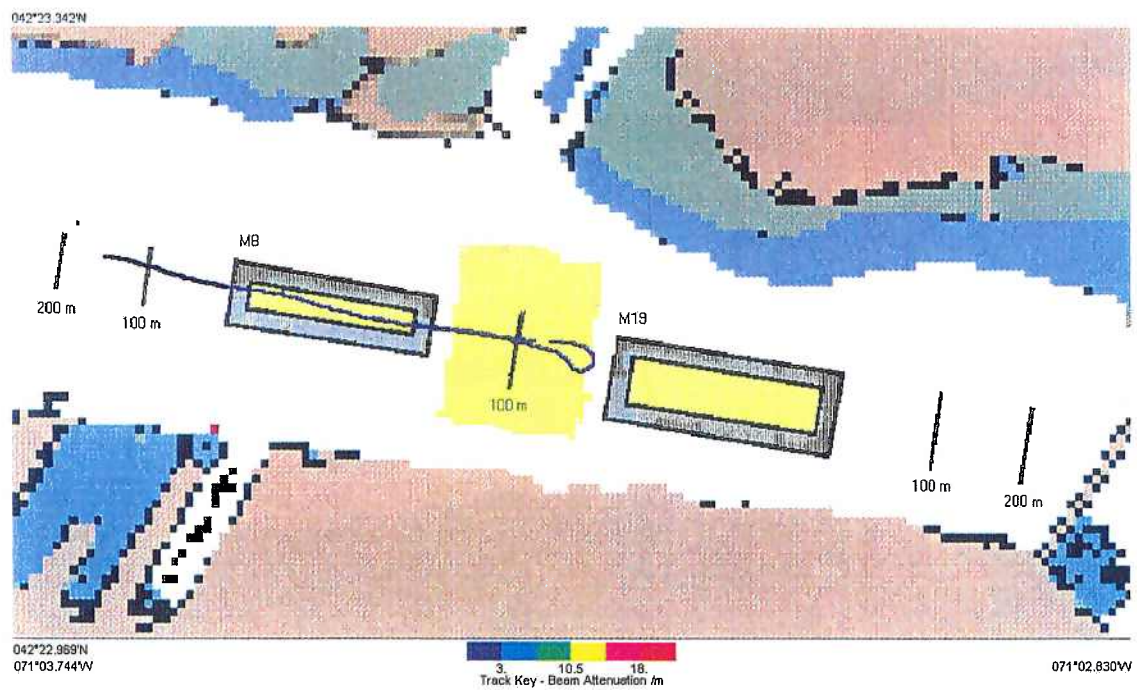


Figure B-23. Survey Track Pre run 6 CAD Cell M8

042°23.263'N

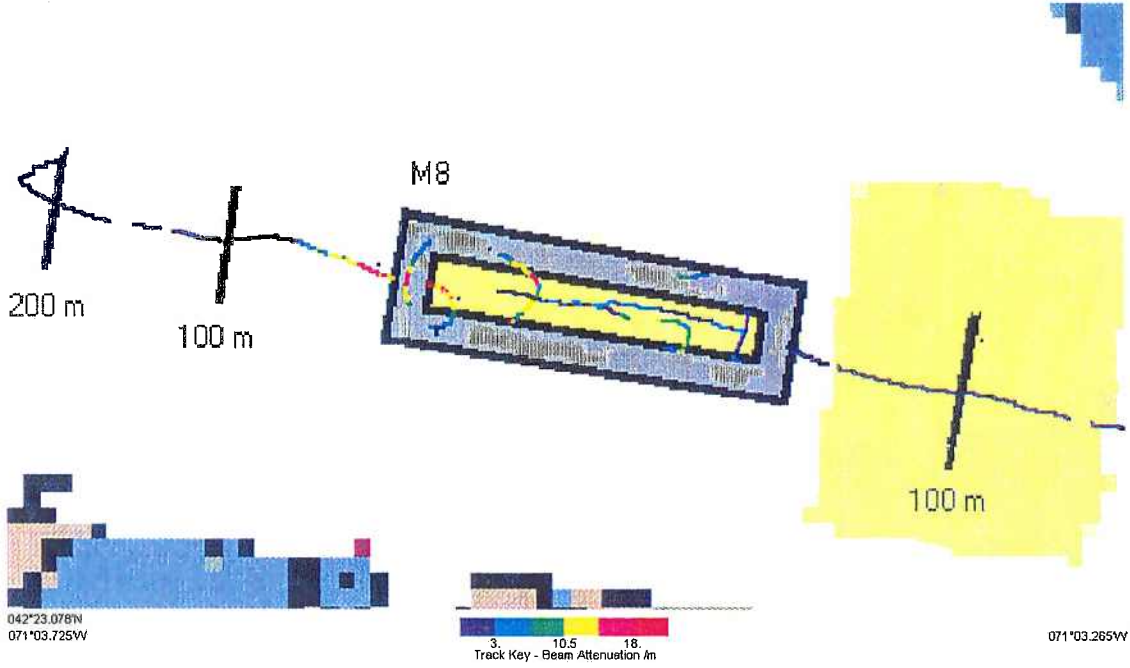


Figure B-24. Survey Track Run 6 CAD Cell M8 with BOSS Four Meters from the Sediment Surface

042°23.342'N

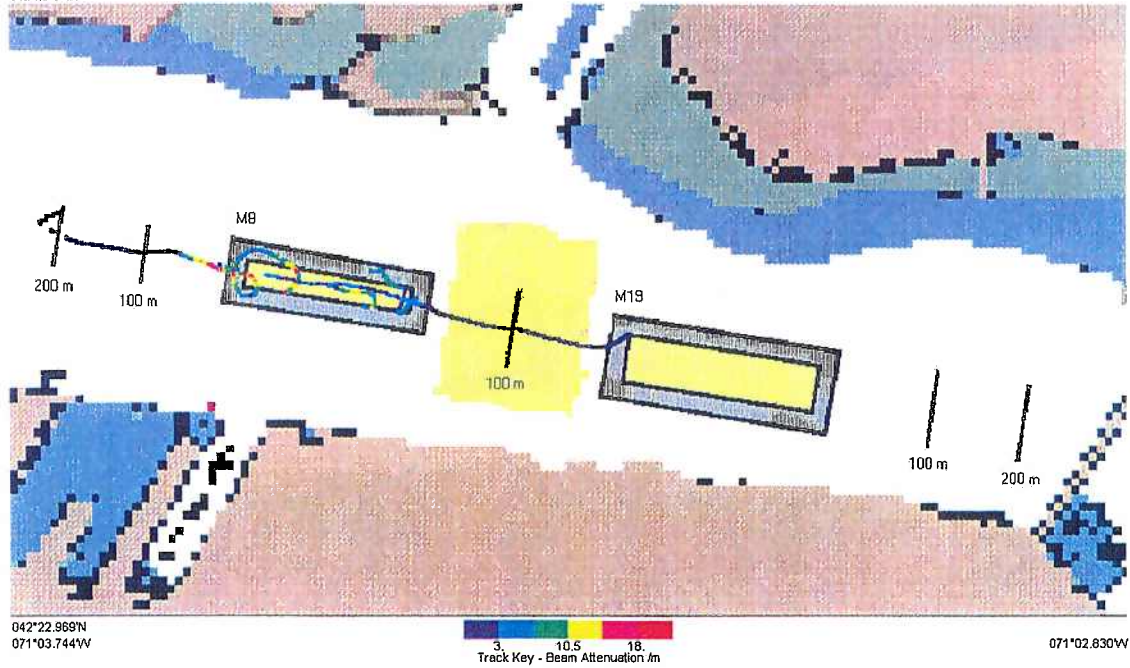


Figure B-25. Survey Track Run 6 CAD Cell M8 with BOSS Greater than 9.5 m Below Water Surface

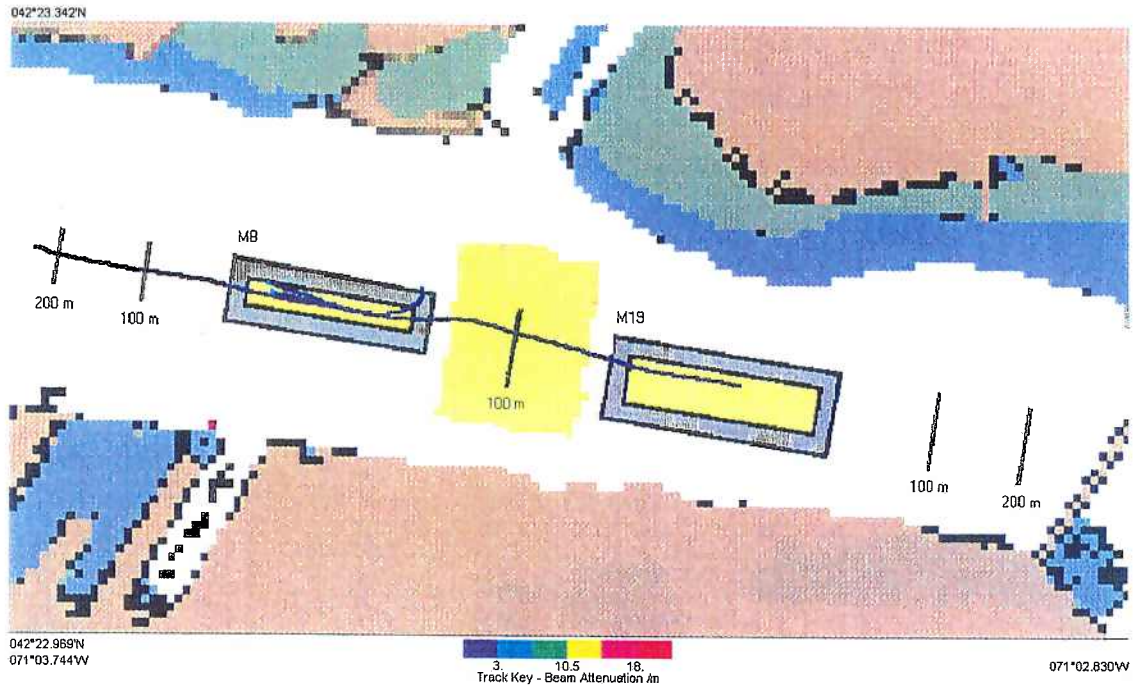


Figure B-26. Survey Track Post run 6 CAD Cell M8

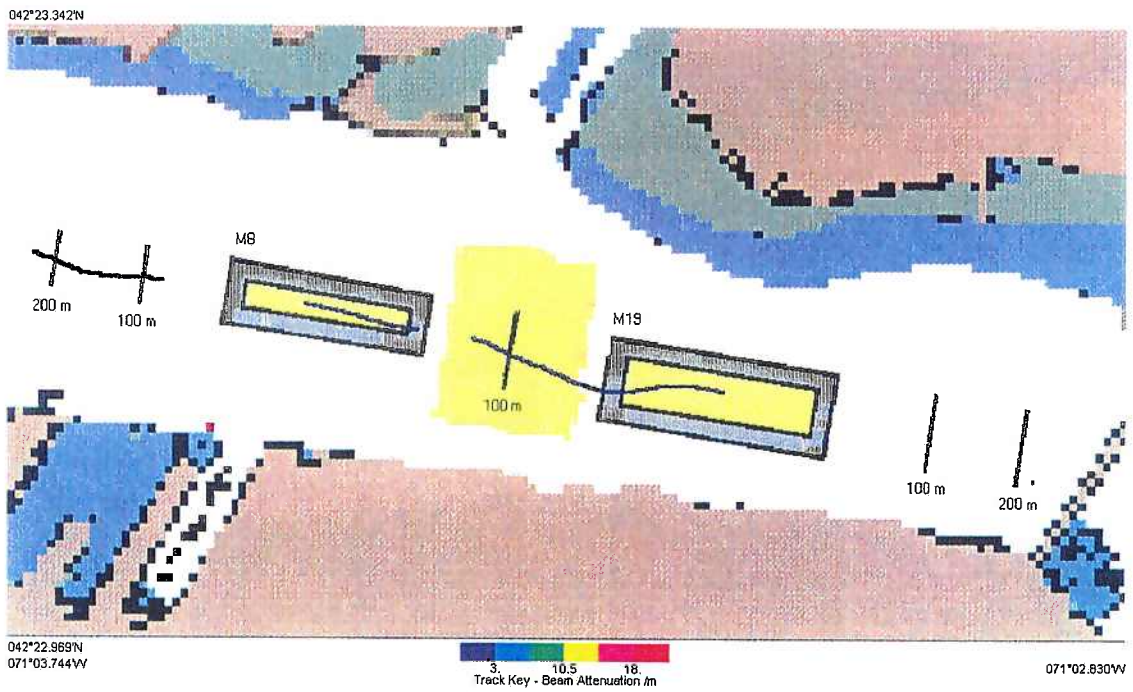


Figure B-27. Survey Track Pre run 7 CAD Cell M8

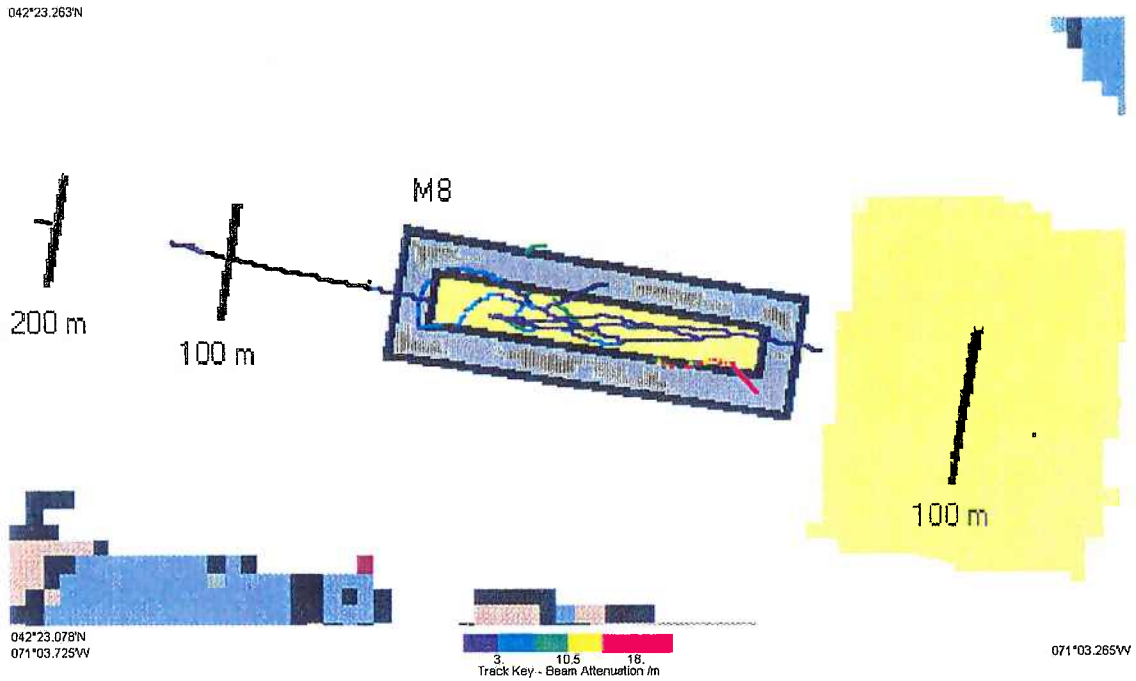


Figure B-28. Survey Track Run 7 CAD Cell M8 with BOSS Four Meters from the Sediment Surface

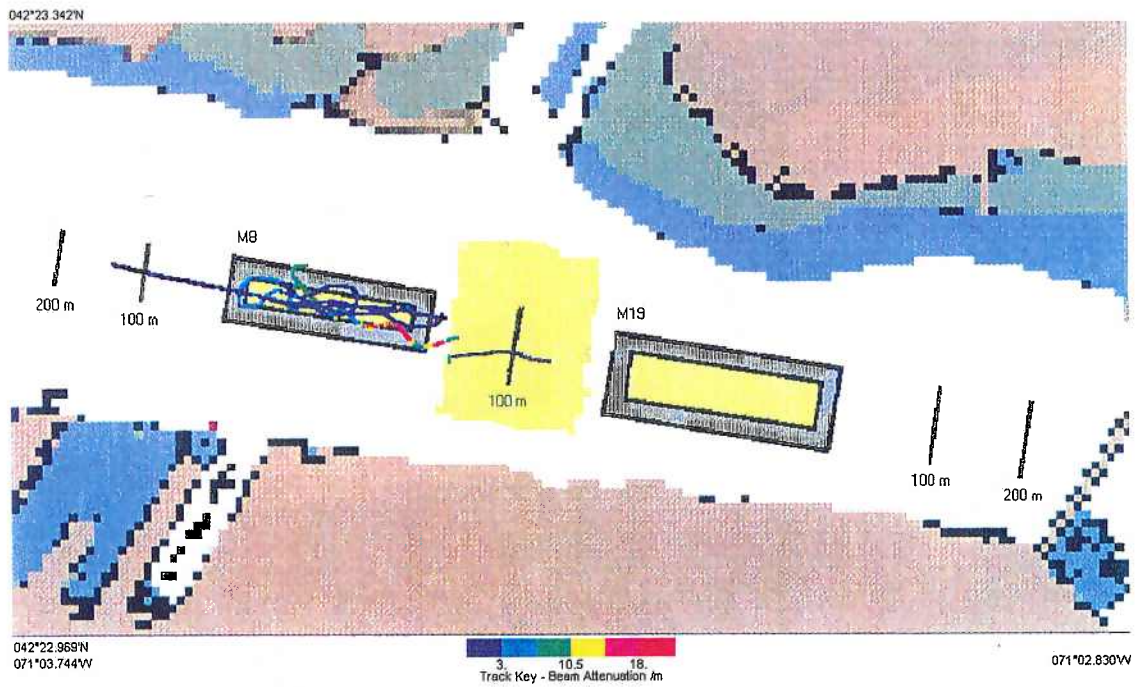


Figure B-29. Survey Track Run 7 CAD Cell M8 with BOSS Greater than 9.5 m Below Water Surface

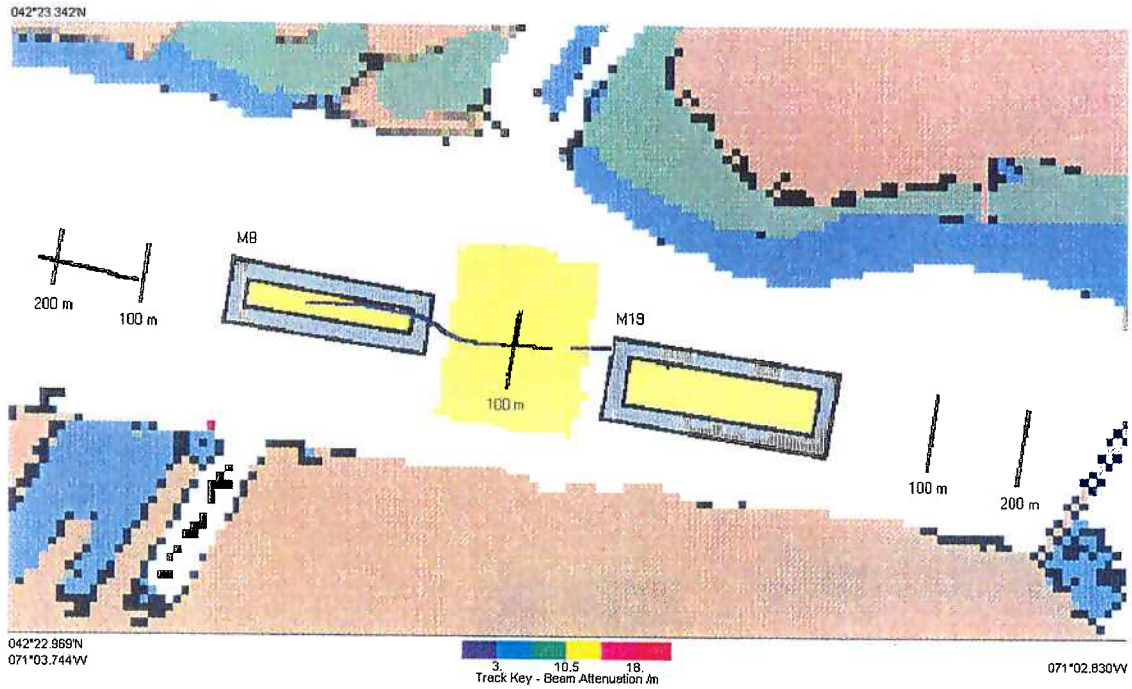


Figure B-30. Survey Track Post run 7 CAD Cell M8

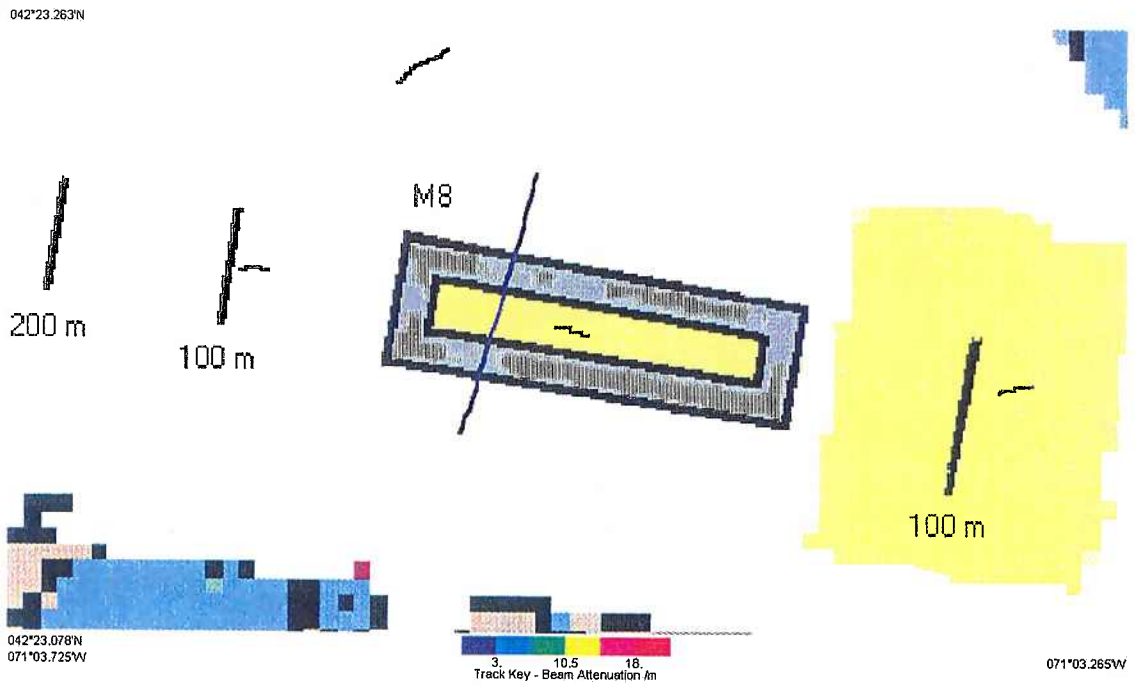


Figure B-31. Survey Track Pre run 8 CAD Cell M8

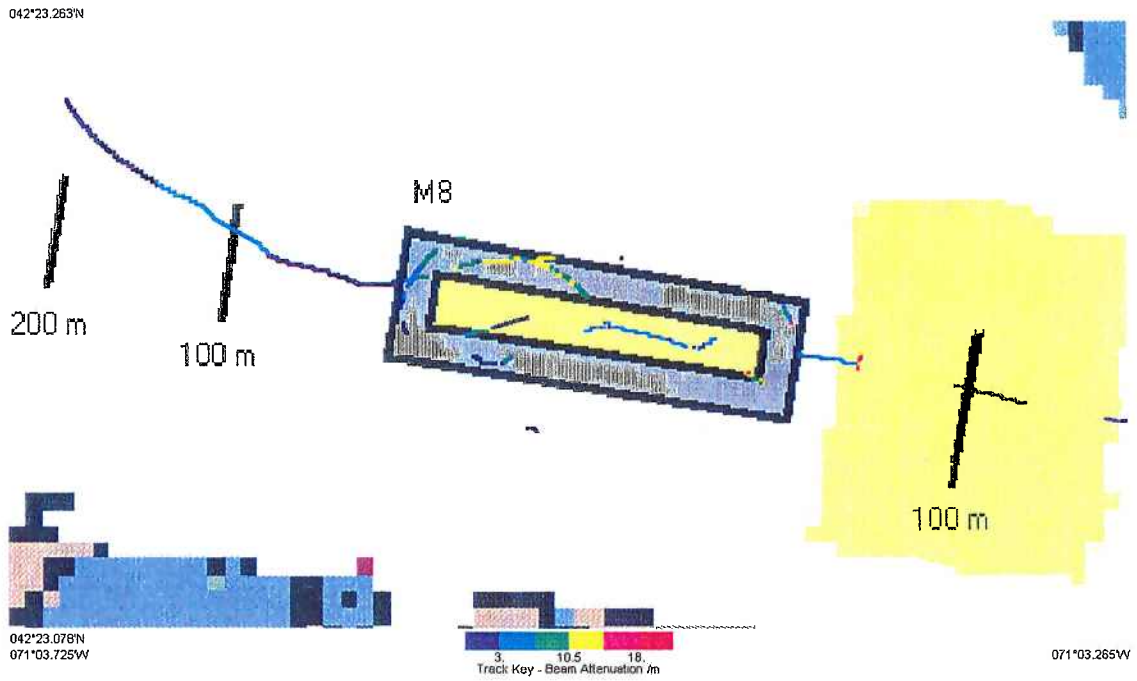


Figure B-32. Survey Track Run 8 CAD Cell M8 with BOSS Four Meters from the Sediment Surface

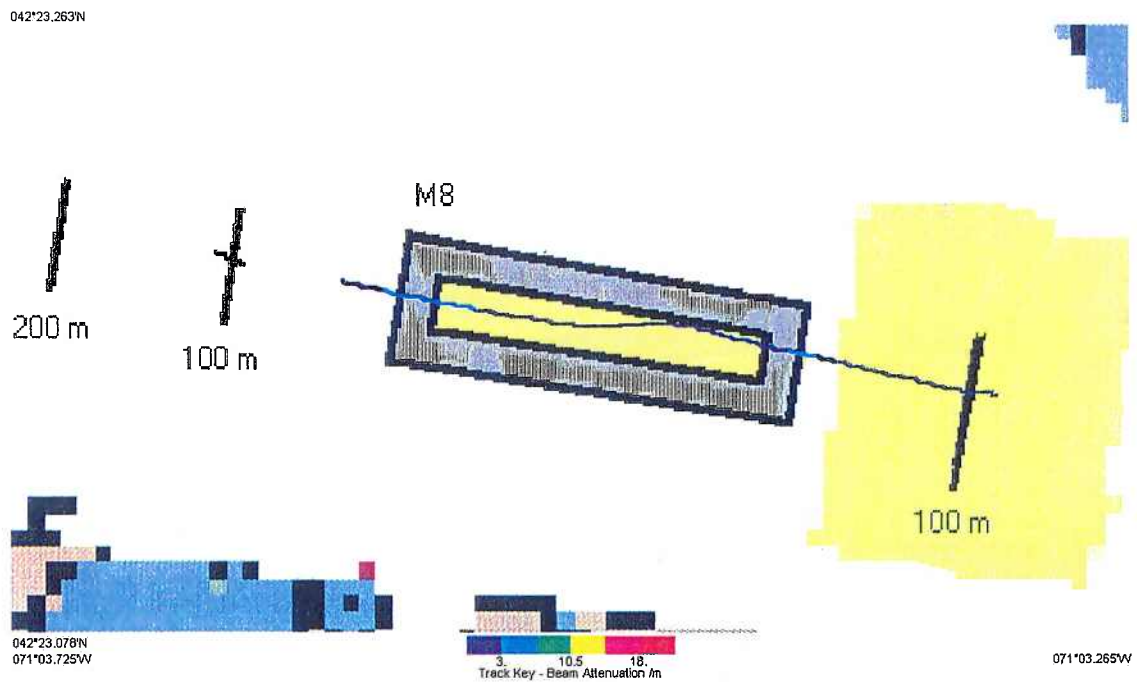


Figure B-33. Survey Track Post run 8 CAD Cell M8

Appendix C

TSS values based on Beam Attenuation

SurveyID	CODE	SampleID	STATION	DEPTH	TSS
CAD0	102D	_____	P2	12	2.73
CAD0		_____			3.07
CAD0	1050	_____	B3	13.7	3.65
CAD0		_____			4.475
CAD0	1053	_____	P1	15.4	2.585
CAD0		_____			2.93
CAD0	1021	_____	B1	8.8	2.165
CAD0		_____			2.47
CAD0	104D	_____	B2	14	2.46
CAD0		_____			3.175
CAD0	102A	_____	P1	9.7	3.25
CAD0		_____			3.86
CAD0	104A	_____	B1	7.5	2
CAD0		_____			2.19
CAD0	1027	_____	B3	12.7	2.575
CAD0		_____			2.62
CAD0	1056	_____	P2	11.3	3.545
CAD0		_____			4.175
CAD0	1024	_____	B2	12.7	2.45
CAD0		_____			2.37
CAD0	12B2	_____	B3	10.5	3.435
CAD0		_____			3.79
CAD0	12EC	_____	P1	10.8	9.01
CAD0		_____			9.185
CAD0	12AF	_____	B2	15	5.315
CAD0		_____			5.13
CAD0	12D2	_____	6H	14.7	114.44
CAD0		_____			113.675
CAD0	12F4	_____	P2	13.6	9.085
CAD0		_____			8.93
CAD0	12CF	_____	5H	14.2	39.11
CAD0		_____			40.82
CAD0	12C6	_____	3F	15.7	119.975
CAD0		_____			125.24
CAD0	12F0	_____	P3	13.6	9.74
CAD0		_____			9.175
CAD0	12BF	_____	1F	16.6	118.105
CAD0		_____			126.695
CAD0	12E0	_____	9F	13.5	45.3
CAD0		_____			47.845
CAD0	120C	_____	8H	7.6	21.415
CAD0		_____			21.5
CAD0	12C3	_____	2H	11.9	96.275
CAD0		_____			94.08
CAD0	12CC	_____	4F	8.7	68.555
CAD0		_____			74.555

SurveyID	CODE	SampleID	STATION	DEPTH	TSS
CAD0	12AC	_____	B1	12.8	4.44
CAD0		_____			4.685
CAD0	12D6	_____	7F	8.1	14.395
CAD0		_____			14.155
CAD0	133A	_____	9F	16.4	15.305
CAD0		_____			17.86
CAD0	134E	_____	P3	12.4	13.695
CAD0		_____			14.345
CAD0	1331	_____	6H	16.6	11.835
CAD0		_____			12.32
CAD0	137A	_____	B3	14.9	3.055
CAD0		_____			3.73
CAD0	1371	_____	B1	14.1	4.09
CAD0		_____			4.085
CAD0	1312	_____	B2	14.5	16.13
CAD0		_____			16.43
CAD0	1334	_____	7F	15.9	27.255
CAD0		_____			28.525
CAD0	130C	_____	B1	10.9	13.86
CAD0		_____			14.09
CAD0	1325	_____	3F	16.1	35.115
CAD0		_____			35.145
CAD0	1376	_____	B2	17	3.93
CAD0		_____			3.695
CAD0	1337	_____	8H	15.8	15.29
CAD0		_____			15.64
CAD0	134B	_____	P2	16.5	7.785
CAD0		_____			8.12
CAD0	131F	_____	1F	15.6	22.9
CAD0		_____			25.815
CAD0	132E	_____	5H	18.5	34.665
CAD0		_____			36.52
CAD0	1348	_____	P1	12	11.29
CAD0		_____			11.795
CAD0	130F	_____	B3	10.4	14.235
CAD0		_____			14.95
CAD0	132B	_____	4F	15.7	41.625
CAD0		_____			42.7
CAD0	1322	_____	2H	16.3	25.545
CAD0		_____			25.67
CAD0	13A6	_____	6H	15.9	8.24
CAD0		_____			8.78
CAD0	13C9	_____	P1	10.3	5.45
CAD0		_____			6.275
CAD0	13AA	_____	7F	15.5	9.255
CAD0		_____			9.66
CAD0	139F	_____	4F	16.3	30.805
CAD0		_____			32.83

SurveyID	CODE	SampleID	STATION	DEPTH	TSS
CAD0	13A2	_____	5H	15.2	19.98
CAD0		_____			21.685
CAD0	1394	_____	2H	16.4	52.425
CAD0		_____			54.425
CAD0	1390	_____	1F	13.7	26.205
CAD0		_____			27.34
CAD0	13B4	_____	9F	14.6	12.21
CAD0		_____			12.27
CAD0	13B0	_____	8H	11.3	8.955
CAD0		_____			9.37
CAD0	1398	_____	3F	13.2	22.33
CAD0		_____			22.395
CAD0	1410	_____	2H	16	18.565
CAD0		_____			19.425
CAD0	1428	_____	7F	15.3	11.72
CAD0		_____			11.78
CAD0	1422	_____	5H	10.6	21.76
CAD0		_____			22.08
CAD0	142B	_____	8H	11.6	8.515
CAD0		_____			8.72
CAD0	143C	_____	P3	11.8	3.735
CAD0		_____			3.935
CAD0	1439	_____	P2	16.4	4.86
CAD0		_____			4.425
CAD0	1425	_____	6H	17	18.02
CAD0		_____			17.18
CAD0	142E	_____	9F	16.6	7.475
CAD0		_____			7.595
CAD0	1436	_____	P1	12.4	3.545
CAD0		_____			3.43
CAD0	140B	_____	B3	9.9	4.615
CAD0		_____			4.045
CAD0	141F	_____	4F	16.4	24.235
CAD0		_____			25.825
CAD0	141C	_____	3F	15.1	16.015
CAD0		_____			16.935
CAD0	1416	_____	1F	16.8	40.5
CAD0		_____			36.93
CAD0	1408	_____	B2	15	5.64
CAD0		_____			5.195
CAD0	1405	_____	B1	10.3	5.48
CAD0		_____			5.1
CAD0	14A0	_____	P2	14.1	8.79
CAD0		_____			8.7
CAD0	1489	_____	5H	12.6	43.64
CAD0		_____			45.875
CAD0	1486	_____	4F	14.3	73.135
CAD0		_____			73.91

SurveyID	CODE	SampleID	STATION	DEPTH	TSS
CAD0	1480	_____	2H	14.2	68.96
CAD0		_____			72.675
CAD0	147D	_____	1F	14.9	102.96
CAD0		_____			102.37
CAD0	1483	_____	3F	14.5	91.41
CAD0		_____			96.895
CAD0	149D	_____	P1	12.2	9.145
CAD0		_____			9.315
CAD0	1495	_____	9F	13.7	12.865
CAD0		_____			13.055
CAD0	14A3	_____	P3	9.5	7.76
CAD0		_____			8.09
CAD0	146C	_____	B2	15.4	8.05
CAD0		_____			6.36
CAD0	146F	_____	B3	10.6	4.2
CAD0		_____			3.93
CAD0	1469	_____	B1	11.4	3.32
CAD0		_____			3.68
CAD0	1492	_____	8H	14.4	24.945
CAD0		_____			23.725
CAD0	148F	_____	7F	9.8	16.11
CAD0		_____			16.425
CAD0	148C	_____	6H	12.5	24.82
CAD0		_____			26.365
CAD0	154F	_____	9F	15.9	5.58
CAD0		_____			5.635
CAD0	1538	_____	2H	16.3	26.95
CAD0		_____			27.2
CAD0	153B	_____	3F	16.5	19.82
CAD0		_____			21.545
CAD0	1514	_____	P2	16.3	4.845
CAD0		_____			4.75
CAD0	1526	_____	B2	16.6	4.065
CAD0		_____			5.165
CAD0	14ED	_____	7F	15.3	12.135
CAD0		_____			11.795
CAD0	1544	_____	6H	15.7	6.47
CAD0		_____			8.65
CAD0	153E	_____	4F	17.3	7.075
CAD0		_____			7.675
CAD0	1534	_____	1F	17.2	189.225
CAD0		_____			194.245
CAD0	1511	_____	P1	13.2	4.615
CAD0		_____			5.44
CAD0	14EA	_____	6H	15.3	30.12
CAD0		_____			30.64
CAD0	14E4	_____	4F	15.6	29.115
CAD0		_____			31.885

SurveyID	CODE	SampleID	STATION	DEPTH	TSS
CAD0	14E7	_____	5H	14.2	38.305
CAD0		_____			37.955
CAD0	14DE	_____	3F	14.2	36.45
CAD0		_____			35.495
CAD0	14DB	_____	2H	15.2	38.1
CAD0		_____			37.055
CAD0	14F3	_____	8H	13	2.73
CAD0		_____			3.135
CAD0	14D4	_____	1F	15.4	51.845
CAD0		_____			52.12
CAD0	14C5	_____	B3	12.9	2.31
CAD0		_____			2.67
CAD0	154C	_____	8H	13.5	4.565
CAD0		_____			4.995
CAD0	14BF	_____	B3	10.9	2.85
CAD0		_____			2.875
CAD0	14C2	_____	B2	10.9	3.09
CAD0		_____			3.29
CAD0	1529	_____	B3	10.2	5.25
CAD0		_____			7.815
CAD0	151A	_____	P3	14.5	5.055
CAD0		_____			4.66
CAD0	14F6	_____	9F	15.1	10.72
CAD0		_____			11.285
CAD0	1547	_____	7F	17.3	5.765
CAD0		_____			5.965
CAD0	1523	_____	B1	11.8	5.185
CAD0		_____			5.165
CAD0	1541	_____	5H	16.9	9.515
CAD0		_____			10.36
CAD0	155E	_____	P1	10.7	4.155
CAD0		_____			4.44
CAD0	1564	_____	P3	10.8	3.805
CAD0		_____			4.295
CAD0	1561	_____	P2	16.7	3.225
CAD0		_____			3.585
CAD0	15C2	_____	1F	13.1	50.515
CAD0		_____			46.855
CAD0	15C5	_____	2H	13.9	8.945
CAD0		_____			9.235
CAD0	15DF	_____	9F	14.3	10.205
CAD0		_____			11.26
CAD0	15AB	_____	B1	13.1	3.89
CAD0		_____			4.6
CAD0	15CB	_____	3F	13.4	24.34
CAD0		_____			26.15
CAD0	15CE	_____	4F	14.1	35.355
CAD0		_____			37.17

SurveyID	CODE	SampleID	STATION	DEPTH	TSS
CAD0	15D1	_____	5H	13	12.635
CAD0		_____			14.115
CAD0	15D4	_____	6H	13.8	15.435
CAD0		_____			15.695
CAD0	15EF	_____	P1	11.1	4.45
CAD0		_____			4.51
CAD0	15F2	_____	P2	14	4.31
CAD0		_____			4.255
CAD0	15B0	_____	B2	14	4.04
CAD0		_____			4.565
CAD0	15B3	_____	B3	10.3	1.975
CAD0		_____			2.135
CAD0	15D7	_____	7F	14.5	11.575
CAD0		_____			12.345
CAD0	15DC	_____	8H	9.3	9.575
CAD0		_____			10.385
CAD0	15F5	_____	P3	11.9	2.79
CAD0		_____			2.935
CAD0	1610	_____	1F	12.4	4.25
CAD0		_____			4.035
CAD0	1613	_____	2H	14.5	3.525
CAD0		_____			3.695
CAD0	1616	_____	3F	13.5	3.29
CAD0		_____			3.66
CAD0	1619	_____	4F	16.7	3.175
CAD0		_____			3.39
CAD0	161C	_____	5H	10.7	2.255
CAD0		_____			2.525
CAD0	1620	_____	6H	10.7	2.97
CAD0		_____			3.38
CAD0	1623	_____	7F	15.5	2.24
CAD0		_____			2.105
CAD0	1626	_____	8H	15.1	2.43
CAD0		_____			2.495
CAD0	1629	_____	9F	15.8	3.865
CAD0		_____			3.76
CAD0	162C	_____	10H	10.2	1.59
		_____			1.56

Evaluation of Sediment Agitation and Mixing into the Surrounding Water Column from Capping Activities - Boston Harbor

APPENDIX B

CHAIN OF CUSTODY FORMS

Billing Information :
 Battelle
 505 King Avenue

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.

255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
 TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder : BMI00092242

Client:
 Battelle Memorial Institute
 505 King Avenue

Company Phone/Fax TEL : (614) 424-7358 FAX : (614) 424-3667	Secondary Phone/Fax TEL : (614) 424-3723 FAX : (614) 424-3667
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Job : MWRA Harbor and Outfall Monitoring Program
 PO : Client's COC # : none

Report Due By : 5:00 PM On : 06-Oct-00

EDD Required : Yes

Sampled by : Client

Cooler Temp : 12°C

22-Sep-00

Report Attention : Jennifer Ickes

QC Level : S4 = Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Collection Matrix	Collection Date	No. of Bottles				Requested Tests								Sample Remarks		
				ORG	SUB	TAT	PWS #	200_8	MERCURY									
BMI00092242-01A	CAD0133AMM 1	AQ	09/10/00 09:40	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se									RCRAMetals 8
BMI00092242-02A	CAD01348MM 1	AQ	09/10/00 10:14	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se									RCRA Metals
BMI00092242-03A	CAD0134BMM 1	AQ	09/10/00 10:17	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se									RCRA Metals
BMI00092242-04A	CAD0134EMM 1	AQ	09/10/00 10:19	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se									RCRA Metals
BMI00092242-05A	CAD01371MM 1	AQ	09/10/00 11:16	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se									RCRA Metals
BMI00092242-06A	CAD01376MM 1	AQ	09/10/00 11:19	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se									RCRA Metals
BMI00092242-07A	CAD0137AMM 1	AQ	09/10/00 11:21	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se									RCRA Metals

Comments: No security seals, real and blue ice melted. Contract No. S274 RCRA 8 Metals for all samples. Kam.

	Signature	Print Name	Company	Date/Time
Relinquished by:				
Received by:	<i>K Murray</i>	<i>K Murray</i>	<i>AAI</i>	<i>9/22/00 1005</i>
Relinquished by:				
Received by:				

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
 Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information :
 Battelle
 505 King Avenue

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.

255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
 TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder : BMI00092242

Client:
 Battelle Memorial Institute
 505 King Avenue
 Columbus, OH 43201

Company Phone/Fax	Secondary Phone/Fax
TEL : (614) 424-7358	TEL : (614) 424-3723
FAX : (614) 424-3667	FAX : (614) 424-3667
Job : MWRA Harbor and Outfall Monitoring Program	
PO :	Client's COC # : none

Report Due By : 5:00 PM On : 06-Oct-00

EDD Required : Yes

Sampled by : Client

Report Attention : Jennifer Ickes

Cooler Temp : 12°C 22-Sep-00

QC Level : S4 = Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Collection Matrix	Collection Date	No. of Bottles				Requested Tests						Sample Remarks		
				ORG	SUB	TAT	PWS #	200_5	MERCURY							
BMI00092242-08A	CAD01390MM 1	AQ	09/11/00 01:13	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA Metals. Filter sample prior to analysis, and analyze for both aqueous and solid phase.
BMI00092242-09A	CAD01394MM 1	AQ	09/11/00 01:16	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA Metals. Filter sample prior to analysis, and analyze for both aqueous and solid phase.
BMI00092242-10A	CAD01398MM 1	AQ	09/11/00 01:19	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA Metals
BMI00092242-11A	CAD0139FMM 1	AQ	09/11/00 01:21	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA Metals
BMI00092242-12A	CAD013A2MM 1	AQ	09/11/00 01:26	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA Metals
BMI00092242-13A	CAD013A6MM 1	AQ	09/11/00 01:30	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA Metals

Comments: No security seals, real and blue ice melted. Contract No. S274

Signature	Print Name	Company	Date/Time
Relinquished by:			
Received by: <i>K Murray</i>	<i>K Murray</i>	<i>AAI</i>	<i>9/22/00 1405</i>
Relinquished by:			
Received by:			

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.

The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.

Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information :
 Balleile
 505 King Avenue

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.

255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
 TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder : BMI00092242

Client:
 Battelle Memorial Institute
 505 King Avenue

Company Phone/Fax
 TEL : (614) 424-7358
 FAX : (614) 424-3667

Secondary Phone/Fax
 TEL : (614) 424-3723
 FAX : (614) 424-3667

Report Due By : 5:00 PM On : 06-Oct-00

EDD Required : Yes

Sampled by : Client

Columbus, OH 43201
 Report Attention : Jennifer Ickes

Job : MWRA Harbor and Outfall Monitoring Program
 PO :

Client's COC # : none

Cooler Temp : 12 °C 22-Sep-00

QC Level : S4 = Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Collection Matrix	Collection Date	No. of Bottles				Requested Tests								Sample Remarks	
				ORG	SUB	TAT	PWS #	200_8	MERCURY								
BMI00092242-14A	CAD013AAMM 1	AQ	09/11/00 01:33	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA Metals
BMI00092242-15A	CAD013B0MM 1	AQ	09/11/00 01:39	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA Metals
BMI00092242-16A	CAD013B4MM 1	AQ	09/11/00 01:41	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA Metals
BMI00092242-17A	CAD013C9MM 1	AQ	09/11/00 02:25	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA Metals
BMI00092242-18A	CAD015ABMM 1	AQ	09/20/00 09:43	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA Metals
BMI00092242-19A	CAD015B0MM 1	AQ	09/20/00 09:50	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA Metals
BMI00092242-20A	CAD015B3MM 1	AQ	09/20/00 09:53	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA Metals

Comments: No security seals, real and blue ice melted. Contract No. S274

	Signature	Print Name	Company	Date/Time
Relinquished by:				
Received by:	<i>K Murray</i>	<i>K Murray</i>	<i>AAI</i>	<i>9/22/00 1005</i>
Relinquished by:				
Received by:				

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
 The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
 Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information :
 Battelle
 505 King Avenue

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.

255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778

TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder : BMI00092242

Client:
 Battelle Memorial Institute
 505 King Avenue

Columbus, OH 43201

Report Attention : Jennifer Ickes

Company Phone/Fax

TEL : (614) 424-7358

FAX : (614) 424-3667

Secondary Phone/Fax

TEL : (614) 424-3723

FAX : (614) 424-3667

Job : MWRA Harbor and Outfall Monitoring Program

PO :

Client's COC # : none

Report Due By : 5:00 PM On : 06-Oct-00

EDD Required : Yes

Sampled by : Client

Cooler Temp : 12 °C

22-Sep-00

QC Level : S4 = Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Collection Matrix	Collection Date	No. of Bottles				Requested Tests								Sample Remarks
				ORG	SUB	TAT	PWS #	200_8	MERCURY							
BMI00092242-21A	CAD015C2MM 1	AQ	09/20/00 10:34	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA Metals
BMI00092242-22A	CAD015C5MM 1	AQ	09/20/00 10:38	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA Metals
BMI00092242-23A	CAD015CBMM 1	AQ	09/20/00 10:45	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA Metals
BMI00092242-24A	CAD015CEMM 1	AQ	09/20/00 10:49	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA Metals
BMI00092242-25A	CAD015D1MM 1	AQ	09/20/00 10:54	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA Metals
BMI00092242-26A	CAD015D4MM 1	AQ	09/20/00 11:01	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA Metals
BMI00092242-27A	CAD015D7MM 1	AQ	09/20/00 11:05	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA Metals

Comments: No security seals, real and blue ice melted. Contract No. S274

	Signature	Print Name	Company	Date/Time
Relinquished by:				
Received by:	<i>K Murray</i>	<i>K Murray</i>	<i>AAI</i>	<i>9/22/00 1005</i>
Relinquished by:				
Received by:				

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.

The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.

Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information :
 Battelle
 505 King Avenue

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.

255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
 TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder : BMI00092242

Client:
 Battelle Memorial Institute
 505 King Avenue

Company Phone/Fax TEL : (614) 424-7358 FAX : (614) 424-3667	Secondary Phone/Fax TEL : (614) 424-3723 FAX : (614) 424-3667
---	---

Report Due By : 5:00 PM On : 06-Oct-00

EDD Required : Yes

Sampled by : Client

Columbus, OH 43201
 Report Attention : Jennifer Ickes

Job : MWRA Harbor and Outfall Monitoring Program
 PO : Client's COC # : none

Cooler Temp : 12 °C 22-Sep-00

QC Level : S4 = Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles			PWS #	Requested Tests						Sample Remarks	
				ORG	SUB	TAT		200_8	MERCURY						
BMI00092242-28A	CAD015DCMM 1	AQ	09/20/00 11:10	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se						RCRA Metals
BMI00092242-29A	CAD015DFMM 1	AQ	09/20/00 11:12	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se						RCRA Metals
BMI00092242-30A	CAD015EFMM 1	AQ	09/20/00 11:52	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se						RCRA Metals
BMI00092242-31A	CAD015F2MM 1	AQ	09/20/00 11:56	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se						RCRA Metals
BMI00092242-32A	CAD015F5MM 1	AQ	09/20/00 12:00	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se						RCRA Metals

Comments: No security seals, real and blue ice melted. Contract No. S274

	Signature	Print Name	Company	Date/Time
Relinquished by:				
Received by:	<i>[Signature]</i>	K Murray	AAI	9/22/00 1005
Relinquished by:				
Received by:				

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
 Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Alpha Analytical, Inc.

255 Glendale Avenue
 Suite 21
 Sparks, Nevada 89431-5778
 Phone: (775) 355-1044
 Fax: (775) 355-0406

SUB CHAIN-OF-CUSTODY RECORD

Work Order : BMI00092242

Report Due By : 5:00 PM
 On : 06-Oct-00

*Please reference the Work Order number on all reports and invoices.
 *Also please include the dates of analysis and detection limits.

Subcontractor:

Sierra Environmental Monitoring
 1135 Financial Blvd.

TEL: (702) 857-2400

FAX: (702) 857-2404

EDD Required:

Yes

Required QC:

Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Reno, NV 89502

Acct #:

22-Sep-00

Alpha's Sample ID	Client's Sample ID	Matrix	Collection Date	Type (#) of Bottles			Requested Tests		Comments
				Sulfuric	Nitric	Other	E200.8	SW7470	
BMI00092242-01A	CAD0133AMM1	Aqueous	09/10/00 09:40		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA Metals
BMI00092242-02A	CAD01348MM1	Aqueous	09/10/00 10:14		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA Metals
BMI00092242-03A	CAD0134BMM1	Aqueous	09/10/00 10:17		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA Metals
BMI00092242-04A	CAD0134EMM1	Aqueous	09/10/00 10:19		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA Metals
BMI00092242-05A	CAD01371MM1	Aqueous	09/10/00 11:16		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA Metals
BMI00092242-06A	CAD01376MM1	Aqueous	09/10/00 11:19		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA Metals
BMI00092242-07A	CAD0137AMM1	Aqueous	09/10/00 11:21		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA Metals
BMI00092242-08A	CAD01390MM1	Aqueous	09/11/00 01:13		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA Metals. Filter sample prior to analysis, and analyze for both aqueous and solid phase.

Comments:

CA samples. Note comment for samples -08 and -09. *RCRA + E Metals per all samples. Temp 18°C JW*

HOLD -08-09 per Kathy@Alpha until we hear from client

Kateel & Dess per Alpha & JK 9-26-00

Relinquished by:	<i>[Signature]</i>	Date/Time:	<i>9/26/00 1345</i>	Received by:	<i>[Signature]</i>	Date/Time:	<i>9-22-00 1345</i>
Relinquished by:		Date/Time:		Received by:		Date/Time:	

Alpha Analytical, Inc.

255 Glendale Avenue
 Suite 21
 Sparks, Nevada 89431-5778
 Phone: (775) 355-1044
 Fax: (775) 355-0406

Subcontractor:
 Sierra Environmental Monitoring
 1135 Financial Blvd.

Reno, NV 89502

SUB CHAIN-OF-CUSTODY RECORD

Work Order : BMI00092242

*Please reference the Work Order number on all reports and invoices.
 *Also please include the dates of analysis and detection limits.

TEL: (702) 857-2400

FAX: (702) 857-2404

Acct #:

EDD Required:

Yes

Report Due By : 5:00 PM
 On : 06-Oct-00

Required QC:
 Final Rpt, MBLK, LCS, MS/MSD With Surrogates

22-Sep-00

Alpha's Sample ID	Client's Sample ID	Matrix	Collection Date	Type (#) of Bottles			Requested Tests		Comments
				Sulfuric	Nitric	Other	E200.8	SW7470	
BMI00092242-09A	CAD01394MM1	Aqueous	09/11/00 01:16		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA Metals. Filter sample prior to analysis, and analyze for both aqueous and solid phase.
BMI00092242-10A	CAD01398MM1	Aqueous	09/11/00 01:19		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA Metals
BMI00092242-11A	CAD0139FMM1	Aqueous	09/11/00 01:21		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA Metals
BMI00092242-12A	CAD013A2MM1	Aqueous	09/11/00 01:26		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA Metals
BMI00092242-13A	CAD013A6MM1	Aqueous	09/11/00 01:30		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA Metals
BMI00092242-14A	CAD013AAMM1	Aqueous	09/11/00 01:33		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA Metals
BMI00092242-15A	CAD013B0MM1	Aqueous	09/11/00 01:39		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA Metals
BMI00092242-16A	CAD013B4MM1	Aqueous	09/11/00 01:41		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA Metals

Comments: CA samples.

Relinquished by: <i>[Signature]</i>	Date/Time: <i>9/24/00 1345</i>	Received by: <i>[Signature]</i>	Date/Time: <i>9-22-00 1345</i>
Relinquished by:		Received by:	

Alpha Analytical, Inc.

255 Glendale Avenue
 Suite 21
 Sparks, Nevada 89431-5778
 Phone: (775) 355-1044
 Fax: (775) 355-0406

Subcontractor:

Sierra Environmental Monitoring
 1135 Financial Blvd.

Reno, NV 89502

SUB CHAIN-OF-CUSTODY RECORD

Work Order : BMI00092242

*Please reference the Work Order number on all reports and invoices.

*Also please include the dates of analysis and detection limits.

TEL: (702) 857-2400

FAX: (702) 857-2404

Acct #:

EDD Required:

Yes

Page of

Report Due By : 5:00 PM

On : 06-Oct-00

Required QC:

Final Rpt, MBLK, LCS, MS/MSD With Surrogates

22-Sep-00

Alpha's Sample ID	Client's Sample ID	Matrix	Collection Date	Type (#) of Bottles			Requested Tests		Comments
				Sulfuric	Nitric	Other	E200.8	SW7470	
BMI00092242-17A	CAD013C9MM1	Aqueous	09/11/00 02:25		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA Metals
BMI00092242-18A	CAD015ABMM1	Aqueous	09/20/00 09:43		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA Metals
BMI00092242-19A	CAD015B0MM1	Aqueous	09/20/00 09:50		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA Metals
BMI00092242-20A	CAD015B3MM1	Aqueous	09/20/00 09:53		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA Metals
BMI00092242-21A	CAD015C2MM1	Aqueous	09/20/00 10:34		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA Metals
BMI00092242-22A	CAD015C5MM1	Aqueous	09/20/00 10:38		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA Metals
BMI00092242-23A	CAD015CBMM1	Aqueous	09/20/00 10:45		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA Metals
BMI00092242-24A	CAD015CEMM1	Aqueous	09/20/00 10:49		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA Metals

Comments: CA samples.

Date/Time

Date/Time

Relinquished by:

Relinquished by:

Received by:

Received by:

Handwritten signature and date

Handwritten signature and date: Mike B... 9-22-00

Handwritten number: 1345

Alpha Analytical, Inc.

255 Glendale Avenue
 Suite 21
 Sparks, Nevada 89431-5778
 Phone: (775) 355-1044
 Fax: (775) 355-0406

Subcontractor:
 Sierra Environmental Monitoring
 1135 Financial Blvd.
 Reno, NV 89502

SUB CHAIN-OF-CUSTODY RECORD

Report Due By : 5:00 PM
 On : 06-Oct-00

Work Order : BMI00092242

*Please reference the Work Order number on all reports and invoices.
 *Also please include the dates of analysis and detection limits.

TEL: (702) 857-2400
 FAX: (702) 857-2404
 Acct #:

EDD Required:
Yes

Required QC:
 Final Rpt, MBLK, LCS, MS/MSD With Surrogates

22-Sep-00

Alpha's Sample ID	Client's Sample ID	Matrix	Collection Date	Type (.#) of Bottles			Requested Tests		Comments
				Sulfuric	Nitric	Other	E200.8	SW7470	
BMI00092242-25A	CAD015D1MM1	Aqueous	09/20/00 10:54		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA Metals
BMI00092242-26A	CAD015D4MM1	Aqueous	09/20/00 11:01		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA Metals
BMI00092242-27A	CAD015D7MM1	Aqueous	09/20/00 11:05		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA Metals
BMI00092242-28A	CAD015DCMM1	Aqueous	09/20/00 11:10		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA Metals
BMI00092242-29A	CAD015DFMM1	Aqueous	09/20/00 11:12		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA Metals
BMI00092242-30A	CAD015EFMM1	Aqueous	09/20/00 11:52		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA Metals
BMI00092242-31A	CAD015F2MM1	Aqueous	09/20/00 11:56		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA Metals
BMI00092242-32A	CAD015F5MM1	Aqueous	09/20/00 12:00		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA Metals

Comments: CA samples.

Relinquished by:	<i>[Signature]</i>	Date/Time: <u>9/20/00 1345</u>	Received by:	<i>[Signature]</i>	Date/Time: <u>9-22-00 1345</u>
Relinquished by:			Received by:		

Billing Information :
 Battelle
 505 King Avenue

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.
 255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
 TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder : BMI00092241

Client:
 Battelle Memorial Institute
 505 King Avenue

Company Phone/Fax TEL : (614) 424-7358 FAX : (614) 424-3667	Secondary Phone/Fax TEL : (614) 424-3723 FAX : (614) 424-3667
---	---

Report Due By : 5:00 PM On : 06-Oct-00

Columbus, OH 43201
 Report Attention : Jennifer Ickes

Job : MWRA Harbor and Outfall Monitoring Program
 PO : Client's COC # : none

EDD Required : Yes

Sampled by : Client

Cooler Temp : 12 °C

22-Sep-00

QC Level : S4 = Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Collection Matrix	Collection Date	No. of Bottles				Requested Tests								Sample Remarks
				ORG	SUB	TAT	PWS #	200_8	MERCURY							
BMI00092241-01A	CAD01021MM 1	AQ	09/06/00 12:23	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals
BMI00092241-02A	CAD01024MM 1	AQ	09/06/00 12:24	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals
BMI00092241-03A	CAD01027MM 1	AQ	09/06/00 12:25	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals
BMI00092241-04A	CAD0102AMM 1	AQ	09/06/00 12:27	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals
BMI00092241-05A	CAD0102DMM 1	AQ	09/06/00 12:32	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals
BMI00092241-06A	CAD0104AMM 1	AQ	09/06/00 14:13	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals
BMI00092241-07A	CAD0104DMM 1	AQ	09/06/00 14:14	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals

Comments: No security seals, real and blue ice melted. Contract No. S274 *Amended per Jennifer 9/26, need -29, -44, -45, and -59 analyzed for solid & aqueous phases*

	Signature	Print Name	Company	Date/Time
Relinquished by:				
Received by:	<i>K Murray</i>	<i>K Murray</i>	<i>AAI</i>	<i>9/22/00 10:05</i>
Relinquished by:				
Received by:				

*phases
KAN*

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
 The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
 Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information :
 Battelle
 505 King Avenue

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.

255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
 TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder : BMI00092241

Client:
 Battelle Memorial Institute
 505 King Avenue

Company Phone/Fax TEL : (614) 424-7358 FAX : (614) 424-3667	Secondary Phone/Fax TEL : (614) 424-3723 FAX : (614) 424-3667
---	---

Job : MWRA Harbor and Outfall Monitoring Program
 PO : Client's COC # : none

Report Due By : 5:00 PM On : 06-Oct-00

EDD Required : Yes

Sampled by : Client

Columbus, OH 43201
 Report Attention : Jennifer Ickes

Cooler Temp : 12 °C 22-Sep-00

QC Level : S4 = Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Collection Matrix	Collection Date	No. of Bottles			Requested Tests								Sample Remarks		
				ORG	SUB	TAT	PWS #	200_8	MERCURY								
BMI00092241-08A	CAD01050MM 1	AQ	09/06/00 14:18	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals
BMI00092241-09A	CAD01053MM 1	AQ	09/06/00 14:22	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals
BMI00092241-10A	CAD01056MM 1	AQ	09/06/00 14:24	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals
BMI00092241-11A	CAD01405MM 1	AQ	09/12/00 21:35	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals
BMI00092241-12A	CAD01408MM 1	AQ	09/12/00 21:36	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals
BMI00092241-13A	CAD0140BMM 1	AQ	09/12/00 21:38	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals
BMI00092241-14A	CAD01416MM 1	AQ	09/12/00 22:14	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals

Comments: No security seals, real and blue ice melted. Contract No. S274

	Signature	Print Name	Company	Date/Time
Relinquished by:				
Received by:	<i>K Murray</i>	K Murray	AAI	9/22/00 1005
Relinquished by:				
Received by:				

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.

The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.

Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information :
 Battelle
 505 King Avenue

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.

255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
 TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder : BMI00092241

Client:
 Battelle Memorial Institute
 505 King Avenue

Company Phone/Fax	Secondary Phone/Fax
TEL : (614) 424-7358	TEL : (614) 424-3723
FAX : (614) 424-3667	FAX : (614) 424-3667

Report Due By : 5:00 PM On : 06-Oct-00

Columbus, OH 43201
 Report Attention : Jennifer Ickes

Job : MWRA Harbor and Outfall Monitoring Program
 PO : Client's COC # : none

EDD Required : Yes

Sampled by : Client

Cooler Temp : 12 °C 22-Sep-00

QC Level : S4 = Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Collection Matrix	Collection Date	No. of Bottles			PWS #	Requested Tests						Sample Remarks	
				ORG	SUB	TAT		200_8	MERCURY						
BMI00092241-15A	CAD01419MM 1	AQ	09/12/00 22:17	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se						RCRA 8 Metals
BMI00092241-16A	CAD0141CMM 1	AQ	09/12/00 22:20	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se						RCRA 8 Metals
BMI00092241-17A	CAD0141FMM 1	AQ	09/12/00 22:24	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se						RCRA 8 Metals
BMI00092241-18A	CAD01422MM 1	AQ	09/12/00 22:29	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se						RCRA 8 Metals
BMI00092241-19A	CAD01425MM 1	AQ	09/12/00 22:36	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se						RCRA 8 Metals
BMI00092241-20A	CAD01428MM 1	AQ	09/12/00 22:37	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se						RCRA 8 Metals
BMI00092241-21A	CAD0142BMM 1	AQ	09/12/00 22:45	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se						RCRA 8 Metals

Comments: No security seals, real and blue ice melted. Contract No. S274

	Signature	Print Name	Company	Date/Time
Relinquished by:				
Received by:	<i>K Murray</i>	K Murray	AAI	9/22/00 1005
Relinquished by:				
Received by:				

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
 The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
 Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information :
 Battelle
 505 King Avenue

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.

255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
 TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder : BMI00092241

Client:
 Battelle Memorial Institute
 505 King Avenue

Company Phone/Fax
 TEL : (614) 424-7358
 FAX : (614) 424-3667

Secondary Phone/Fax
 TEL : (614) 424-3723
 FAX : (614) 424-3667

Report Due By : 5:00 PM On : 06-Oct-00

EDD Required : Yes

Sampled by : Client

Columbus, OH 43201
 Report Attention : Jennifer Ickes

Job : MWRA Harbor and Outfall Monitoring Program
 PO : Client's COC # : none

Cooler Temp : 12 °C 22-Sep-00

QC Level : S4 = Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Collection Matrix	Collection Date	No. of Bottles			Requested Tests								Sample Remarks	
				ORG	SUB	TAT	PWS #	200_8	MERCURY							
BMI00092241-22A	CAD0142EMM 1	AQ	09/12/00 22:46	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals
BMI00092241-23A	CAD01436MM 1	AQ	09/12/00 23:32	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals
BMI00092241-24A	CAD01439MM 1	AQ	09/12/00 23:34	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals
BMI00092241-25A	CAD0143CMM 1	AQ	09/12/00 23:36	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals
BMI00092241-26A	CAD01469MM 1	AQ	09/14/00 03:33	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals
BMI00092241-27A	CAD0146CMM 1	AQ	09/14/00 03:35	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals
BMI00092241-28A	CAD0146FMM 1	AQ	09/14/00 03:37	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals

Comments: No security seals, real and blue ice melted. Contract No. S274

	Signature	Print Name	Company	Date/Time
Relinquished by:				
Received by:	<i>K Murray</i>	K Murray	AAI	9/22/00 1005
Relinquished by:				
Received by:				

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report. Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information :
 Battelle
 505 King Avenue

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.

255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
 TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder : BMI00092241

Client:
 Battelle Memorial Institute
 505 King Avenue

Company Phone/Fax
 TEL : (614) 424-7358
 FAX : (614) 424-3667

Secondary Phone/Fax
 TEL : (614) 424-3723
 FAX : (614) 424-3667

Report Due By : 5:00 PM On : 06-Oct-00

EDD Required : Yes

Sampled by : Client

Columbus, OH 43201
 Report Attention : Jennifer Ickes

Job : MWRA Harbor and Outfall Monitoring Program
 PO : Client's COC # : none

Cooler Temp : 12 °C 22-Sep-00

QC Level : S4 = Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Collection Matrix	Collection Date	No. of Bottles			PWS #	Requested Tests						Sample Remarks	
				ORG	SUB	TAT		200_8	MERCURY						
BMI00092241-29A	CAD0147DMM 1	AQ	09/14/00 04:52	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se						RCRA 8 Metals <i>Solid/ag phase</i>
BMI00092241-30A	CAD01480MM 1	AQ	09/14/00 05:00	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se						RCRA 8 Metals
BMI00092241-31A	CAD01483MM 1	AQ	09/14/00 05:04	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se						RCRA 8 Metals
BMI00092241-32A	CAD01486MM 1	AQ	09/14/00 05:13	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se						RCRA 8 Metals
BMI00092241-33A	CAD01489MM 1	AQ	09/14/00 05:17	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se						RCRA 8 Metals
BMI00092241-34A	CAD0148CMM 1	AQ	09/14/00 05:24	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se						RCRA 8 Metals
BMI00092241-35A	CAD0148FMM 1	AQ	09/14/00 05:32	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se						RCRA 8 Metals

Comments: No security seals, real and blue ice melted. Contract No. S274

	Signature	Print Name	Company	Date/Time
Relinquished by:				
Received by:	<i>K Murray</i>	<i>K Murray</i>	<i>AAT</i>	<i>9/22/00 1005</i>
Relinquished by:				
Received by:				

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
 Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information :
 Battelle
 505 King Avenue

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.

255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
 TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder : BMI00092241

Client:
 Battelle Memorial Institute
 505 King Avenue

Company Phone/Fax TEL : (614) 424-7358 FAX : (614) 424-3667	Secondary Phone/Fax TEL : (614) 424-3723 FAX : (614) 424-3667
---	---

Report Due By : 5:00 PM On : 06-Oct-00

EDD Required : Yes

Columbus, OH 43201

Sampled by : Client

Report Attention : Jennifer Ickes

Job : MWRA Harbor and Outfall Monitoring Program
 PO : Client's COC # : none

Cooler Temp : 12 °C 22-Sep-00

QC Level : S4 = Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Collection Matrix	Collection Date	No. of Bottles			PWS #	Requested Tests								Sample Remarks	
				ORG	SUB	TAT		200_8	MERCURY								
BMI00092241-36A	CAD01492MM 1	AQ	09/14/00 05:33	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals
BMI00092241-37A	CAD01495MM 1	AQ	09/14/00 05:39	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals
BMI00092241-38A	CAD0149DMM 1	AQ	09/14/00 06:11	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals
BMI00092241-39A	CAD014A0MM 1	AQ	09/14/00 06:13	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals
BMI00092241-40A	CAD014A3MM 1	AQ	09/14/00 06:16	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals
BMI00092241-41A	CAD014BFMM 1	AQ	09/15/00 08:45	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals
BMI00092241-42A	CAD014C2MM 1	AQ	09/15/00 08:47	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals

Comments: No security seals, real and blue ice melted. Contract No. S274

	Signature	Print Name	Company	Date/Time
Relinquished by:				
Received by:	<i>K Murray</i>	K Murray	AAI	1/22/00 1025
Relinquished by:				
Received by:				

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.

The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.

Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information :
 Battelle
 505 King Avenue

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.

255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
 TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder : BMI00092241

Client:
 Battelle Memorial Institute
 505 King Avenue

Company Phone/Fax TEL : (614) 424-7358 FAX : (614) 424-3667	Secondary Phone/Fax TEL : (614) 424-3723 FAX : (614) 424-3667
Job : MWRA Harbor and Outfall Monitoring Program	
PO :	
Client's COC # : none	

Report Due By : 5:00 PM On : 06-Oct-00

EDD Required : Yes

Sampled by : Client

Columbus, OH 43201

Report Attention : Jennifer Ickes

Cooler Temp : 12 °C 22-Sep-00

QC Level : S4 = Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Collection Matrix	Date	No. of Bottles				Requested Tests								Sample Remarks	
				ORG	SUB	TAT	PWS #	200_8	MERCURY								
BMI00092241-43A	CAD014C5MM 1	AQ	09/15/00 08:50	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals
BMI00092241-44A	CAD014D4MM 1	AQ	09/15/00 09:52	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals <i>solid/ag phase</i>
BMI00092241-45A	CAD014DBMM 1	AQ	09/15/00 09:57	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals <i>solid/ag phase</i>
BMI00092241-46A	CAD014DEMM 1	AQ	09/15/00 09:59	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals
BMI00092241-47A	CAD014E4MM 1	AQ	09/15/00 10:02	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals
BMI00092241-48A	CAD014E7MM 1	AQ	09/15/00 10:06	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals
BMI00092241-49A	CAD014EAMM 1	AQ	09/15/00 10:11	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals

Comments: No security seals, real and blue ice melted. Contract No. S274

	Signature	Print Name	Company	Date/Time
Relinquished by:				
Received by:	<i>K Murray</i>	K Murray	AAI	9/22/00 1005
Relinquished by:				
Received by:				

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
 The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
 Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information :
 Battelle
 505 King Avenue

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.
 255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
 TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder : BMI00092241

Client:
 Battelle Memorial Institute
 505 King Avenue

Report Due By : 5:00 PM On : 06-Oct-00

Company Phone/Fax TEL : (614) 424-7358 FAX : (614) 424-3667	Secondary Phone/Fax TEL : (614) 424-3723 FAX : (614) 424-3667
Job : MWRA Harbor and Outfall Monitoring Program	
PO : Client's COC # : none	

EDD Required : Yes

Sampled by : Client

Columbus, OH 43201
 Report Attention : Jennifer Ickes

Cooler Temp : 12°C 22-Sep-00

QC Level : S4 = Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Collection Matrix	Collection Date	No. of Bottles				Requested Tests								Sample Remarks	
				ORG	SUB	TAT	PWS #	200_8	MERCURY								
BMI00092241-50A	CAD014EDMM1	AQ	09/15/00 10:14	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals
BMI00092241-51A	CAD014F3MM1	AQ	09/15/00 10:22	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals
BMI00092241-52A	CAD014F6MM1	AQ	09/15/00 10:25	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals
BMI00092241-53A	CAD01511MM1	AQ	09/15/00 11:36	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals
BMI00092241-54A	CAD01514MM1	AQ	09/15/00 11:48	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals
BMI00092241-55A	CAD0151AMM1	AQ	09/15/00 11:50	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals
BMI00092241-56A	CAD01523MM1	AQ	09/15/00 23:35	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals

Comments: No security seals, real and blue ice melted. Contract No. S274

	Signature	Print Name	Company	Date/Time
Relinquished by:				
Received by:	<i>K Murray</i>	K Murray	AM	9/27/00 1:00
Relinquished by:				
Received by:				

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.

The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.

Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information :
 Battelle
 505 King Avenue

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.
 255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
 TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder : BMI00092241

Client:
 Battelle Memorial Institute
 505 King Avenue

Company Phone/Fax TEL : (614) 424-7358 FAX : (614) 424-3667	Secondary Phone/Fax TEL : (614) 424-3723 FAX : (614) 424-3667
---	---

Report Due By : 5:00 PM On : 06-Oct-00

Columbus, OH 43201
 Report Attention : Jennifer Ickes

Job : MWRA Harbor and Outfall Monitoring Program
 PO : Client's COC # : none

EDD Required : Yes

Sampled by : Client

Cooler Temp : 12 °C 22-Sep-00

QC Level : S4 = Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Collection Matrix	Collection Date	No. of Bottles			PWS #	Requested Tests								Sample Remarks
				ORG	SUB	TAT		200_8	MERCURY							
BMI00092241-50A	CAD014EDMM 1	AQ	09/15/00 10:14	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals
BMI00092241-51A	CAD014F3MM 1	AQ	09/15/00 10:22	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals
BMI00092241-52A	CAD014F6MM 1	AQ	09/15/00 10:25	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals
BMI00092241-53A	CAD01511MM 1	AQ	09/15/00 11:36	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals
BMI00092241-54A	CAD01514MM 1	AQ	09/15/00 11:48	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals
BMI00092241-55A	CAD0151AMM 1	AQ	09/15/00 11:50	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals
BMI00092241-56A	CAD01523MM 1	AQ	09/15/00 23:35	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals

Comments: No security seals, real and blue ice melted. Contract No. S274

	Signature	Print Name	Company	Date/Time
Relinquished by:				
Received by:	<i>K Murray</i>	<i>K Murray</i>	<i>AAI</i>	<i>9/22/00 1000</i>
Relinquished by:				
Received by:				

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
 The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
 Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information :
 Battelle
 505 King Avenue

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.

255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
 TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder : BMI00092241

Client:
 Battelle Memorial Institute
 505 King Avenue

Report Due By : 5:00 PM On : 06-Oct-00

Company Phone/Fax TEL : (614) 424-7358 FAX : (614) 424-3667	Secondary Phone/Fax TEL : (614) 424-3723 FAX : (614) 424-3667
Job : MWRA Harbor and Outfall Monitoring Program	
PO : Client's COC # : none	

EDD Required : Yes

Sampled by : Client

Columbus, OH 43201
 Report Attention : Jennifer Ickes

Cooler Temp : 12 °C 22-Sep-00

QC Level : S4 = Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Collection Matrix	Collection Date	No. of Bottles			PWS #	Requested Tests								Sample Remarks
				ORG	SUB	TAT		200_8	MERCURY							
BMI00092241-57A	CAD01526MM 1	AQ	09/15/00 23:38	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals
BMI00092241-58A	CAD01529MM 1	AQ	09/15/00 23:41	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals
BMI00092241-59A	CAD01534MM 1	AQ	09/15/00 12:09	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals <i>Solid/ag phase</i>
BMI00092241-60A	CAD01538MM 1	AQ	09/15/00 00:14	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals
BMI00092241-61A	CAD0153BMM 1	AQ	09/15/00 00:19	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals
BMI00092241-62A	CAD0153EMM 1	AQ	09/15/00 00:25	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals
BMI00092241-63A	CAD01541MM 1	AQ	09/15/00 00:26	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals

Comments: No security seals, real and blue ice melted. Contract No. S274

	Signature	Print Name	Company	Date/Time
Relinquished by:				
Received by:	<i>K Murray</i>	<i>K Murray</i>	<i>AM</i>	<i>9/22/00 1005</i>
Relinquished by:				
Received by:				

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.

The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.

Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information :
 Battelle
 505 King Avenue

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.

255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
 TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder : BMI00092241

Client:
 Battelle Memorial Institute
 505 King Avenue

Company Phone/Fax TEL : (614) 424-7358 FAX : (614) 424-3667	Secondary Phone/Fax TEL : (614) 424-3723 FAX : (614) 424-3667
---	---

Report Due By : 5:00 PM On : 06-Oct-00

EDD Required : Yes

Sampled by : Client

Columbus, OH 43201
 Report Attention : Jennifer Ickes

Job : MWRA Harbor and Outfall Monitoring Program
 PO : Client's COC # : none

Cooler Temp : 12 °C 22-Sep-00

QC Level : S4 = Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles			PWS #	Requested Tests								Sample Remarks
				ORG	SUB	TAT		200_8	MERCURY							
BMI00092241-64A	CAD01544MM 1	AQ	09/15/00 00:31	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals
BMI00092241-65A	CAD01547MM 1	AQ	09/15/00 00:35	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals
BMI00092241-66A	CAD0154CMM 1	AQ	09/15/00 00:42	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals
BMI00092241-67A	CAD0154FMM 1	AQ	09/15/00 00:44	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals
BMI00092241-68A	CAD0155EMM 1	AQ	09/16/00 01:33	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals
BMI00092241-69A	CAD01561MM 1	AQ	09/16/00 01:35	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals
BMI00092241-70A	CAD01564MM 1	AQ	09/16/00 01:39	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals

Comments: No security seals, real and blue ice melted. Contract No. S274

	Signature	Print Name	Company	Date/Time
Relinquished by:				
Received by:	<i>K Murray</i>	K Murray	AAI	9/22/00 1005
Relinquished by:				
Received by:				

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
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 Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information :
 Battelle
 505 King Avenue

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.

255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
 TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder : BMI00092241

Client:
 Battelle Memorial Institute
 505 King Avenue

Company Phone/Fax

TEL : (614) 424-7358
 FAX : (614) 424-3667

Secondary Phone/Fax

TEL : (614) 424-3723
 FAX : (614) 424-3667

Report Due By : 5:00 PM On : 06-Oct-00

EDD Required : Yes

Sampled by : Client

Columbus, OH 43201

Job : MWRA Harbor and Outfall Monitoring Program

Client's COC # : none

Cooler Temp : 12 °C

22-Sep-00

Report Attention : Jennifer Ickes

QC Level : S4 = Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Collection Matrix	Collection Date	No. of Bottles				Requested Tests								Sample Remarks	
				ORG	SUB	TAT	PWS #	200_8	MERCURY								
BMI00092241-71A	CAD012ACMM 1	AQ	09/09/00 15:59	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals
BMI00092241-72A	CAD012AFMM 1	AQ	09/09/00 16:01	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals
BMI00092241-73A	CAD012B2MM 1	AQ	09/09/00 16:02	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals
BMI00092241-74A	CAD012BFMM 1	AQ	09/09/00 16:59	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals. Filter prior to analysis and analyze for aqueous and solid phase.
BMI00092241-75A	CAD012C3MM 1	AQ	09/09/00 17:03	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals. Filter prior to analysis and analyze for aqueous and solid phase.
BMI00092241-76A	CAD012C6MM 1	AQ	09/09/00 17:05	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals
BMI00092241-77A	CAD012CCMM 1	AQ	09/09/00 17:07	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals

Comments: No security seals, real and blue ice melted. Contract No. S274

	Signature	Print Name	Company	Date/Time
Relinquished by:				
Received by:	<i>K Murray</i>	K Murray	AAI	9/22/00 1005
Relinquished by:				
Received by:				

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.

The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.

Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information :
 Battelle
 505 King Avenue

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.

255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
 TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder : BMI00092241

Client:
 Battelle Memorial Institute
 505 King Avenue

Company Phone/Fax	Secondary Phone/Fax
TEL : (614) 424-7358	TEL : (614) 424-3723
FAX : (614) 424-3667	FAX : (614) 424-3667
Job : MWRA Harbor and Outfall Monitoring Program	
PO :	Client's COC # : none

Report Due By : 5:00 PM On : 06-Oct-00

EDD Required : Yes

Sampled by : Client

Columbus, OH 43201
 Report Attention : Jennifer Ickes

Cooler Temp : 12°C 22-Sep-00

QC Level : S4 = Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Collection Matrix	Collection Date	No. of Bottles				Requested Tests								Sample Remarks
				ORG	SUB	TAT	PWS #	200_8	MERCURY							
BMI00092241-92A	CAD0132BMM 1	AQ	09/10/00 09:11	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals
BMI00092241-93A	CAD0132EMM 1	AQ	09/10/00 09:12	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals
BMI00092241-94A	CAD01331MM 1	AQ	09/10/00 09:26	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals
BMI00092241-95A	CAD01334MM 1	AQ	09/10/00 09:28	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals
BMI00092241-96A	CAD01337MM 1	AQ	09/10/00 09:34	0	1	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se							RCRA 8 Metals

Comments: No security seals, real and blue ice melted. Contract No. S274

	Signature	Print Name	Company	Date/Time
Relinquished by:				
Received by:	<i>K Murray</i>	K Murray	AAI	9/22/00 1005
Relinquished by:				
Received by:				

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
 The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
 Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Alpha Analytical, Inc.

255 Glendale Avenue
 Suite 21
 Sparks, Nevada 89431-5778
 Phone: (775) 355-1044
 Fax: (775) 355-0406

SUB CHAIN-OF-CUSTODY RECORD

Work Order : BMI00092241

Report Due By : 5:00 PM
 On : 06-Oct-00

*Please reference the Work Order number on all reports and invoices.
 *Also please include the dates of analysis and detection limits.

Subcontractor:

Sierra Environmental Monitoring
 1135 Financial Blvd.

TEL: (702) 857-2400

EDD Required:

Required QC:
 Final Rpt, MBLK, LCS, MS/MSD With Surrogates

FAX: (702) 857-2404

Yes

Reno, NV 89502

Acct #:

22-Sep-00

Alpha's Sample ID	Client's Sample ID	Matrix	Collection Date	Type (#) of Bottles			Requested Tests		Comments
				Sulfuric	Nitric	Other	E200.8	SW7470	
BMI00092241-01A	CAD01021MM1	Aqueous	09/06/00 12:23		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-02A	CAD01024MM1	Aqueous	09/06/00 12:24		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-03A	CAD01027MM1	Aqueous	09/06/00 12:25		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-04A	CAD0102AMM1	Aqueous	09/06/00 12:27		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-05A	CAD0102DMM1	Aqueous	09/06/00 12:32		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-06A	CAD0104AMM1	Aqueous	09/06/00 14:13		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-07A	CAD0104DMM1	Aqueous	09/06/00 14:14		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-08A	CAD01050MM1	Aqueous	09/06/00 14:18		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals

Comments: CA samples. Note comment on -74 and -75.

*HOLD - 74 & 75 per Alpha
 Temp 18°C per (OK)
 Do total & Filter of metals per Alpha & JK
 9-26-00*

Relinquished by: <i>[Signature]</i>	Date/Time: <i>9/22/00 1345</i>	Received by: <i>Mh. Benish</i>	Date/Time: <i>9-22-00 1345</i>
Relinquished by:	Date/Time:	Received by:	Date/Time:

Alpha Analytical, Inc.

255 Glendale Avenue
 Suite 21
 Sparks, Nevada 89431-5778
 Phone: (775) 355-1044
 Fax: (775) 355-0406

SUB CHAIN-OF-CUSTODY RECORD

Report Due By : 5:00 PM
On : 06-Oct-00

Work Order : BMI00092241

***Please reference the Work Order number on all reports and invoices.**
***Also please include the dates of analysis and detection limits.**

Subcontractor:

Sierra Environmental Monitoring
 1135 Financial Blvd.

Reno, NV 89502

TEL: (702) 857-2400

FAX: (702) 857-2404

Acct #:

EDD Required:

Yes

Required QC:
 Final Rpt, MBLK, LCS, MS/MSD With Surrogates

22-Sep-00

Alpha's Sample ID	Client's Sample ID	Matrix	Collection Date	Type (#) of Bottles			Requested Tests		Comments
				Sulfuric	Nitric	Other	E200.8	SW7470	
BMI00092241-09A	CAD01053MM1	Aqueous	09/06/00 14:22			OTHER (1)	Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-10A	CAD01056MM1	Aqueous	09/06/00 14:24			OTHER (1)	Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-11A	CAD01405MM1	Aqueous	09/12/00 21:35			OTHER (1)	Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-12A	CAD01408MM1	Aqueous	09/12/00 21:36			OTHER (1)	Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-13A	CAD01408MM1	Aqueous	09/12/00 21:38			OTHER (1)	Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-14A	CAD01416MM1	Aqueous	09/12/00 22:14			OTHER (1)	Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-15A	CAD01419MM1	Aqueous	09/12/00 22:17			OTHER (1)	Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-16A	CAD0141CMM1	Aqueous	09/12/00 22:20			OTHER (1)	Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals

Comments:

Relinquished by:	<i>[Signature]</i>	Date/Time	Received by:	<i>[Signature]</i>	Date/Time
		9/24/00 1345			9-22-00 1345
Relinquished by:			Received by:		

Alpha Analytical, Inc.

255 Glendale Avenue
 Suite 21
 Sparks, Nevada 89431-5778
 Phone: (775) 355-1044
 Fax: (775) 355-0406

SUB CHAIN-OF-CUSTODY RECORD

Work Order : BMI00092241

Report Due By : 5:00 PM
 On : 06-Oct-00

*Please reference the Work Order number on all reports and invoices.

*Also please include the dates of analysis and detection limits.

Required QC:

Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Subcontractor:

Sierra Environmental Monitoring
 1135 Financial Blvd.

TEL: (702) 857-2400

EDD Required:

FAX: (702) 857-2404

Yes

Reno, NV 89502

Acct #:

22-Sep-00

Alpha's Sample ID	Client's Sample ID	Matrix	Collection Date	Type (#) of Bottles			Requested Tests		Comments
				Sulfuric	Nitric	Other	E200.8	SW7470	
BMI00092241-17A	CAD0141FMM1	Aqueous	09/12/00 22:24		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-18A	CAD01422MM1	Aqueous	09/12/00 22:29		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-19A	CAD01425MM1	Aqueous	09/12/00 22:36		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-20A	CAD01428MM1	Aqueous	09/12/00 22:37		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-21A	CAD01428MM1	Aqueous	09/12/00 22:45		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-22A	CAD0142EMM1	Aqueous	09/12/00 22:46		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-23A	CAD01436MM1	Aqueous	09/12/00 23:32		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-24A	CAD01439MM1	Aqueous	09/12/00 23:34		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals

Comments: CA samples.

Relinquished by: _____	Date/Time: <u>9-22-00 1345</u>	Received by: <u>Mike Burt</u>	Date/Time: <u>9-22-00 1345</u>
Relinquished by: _____	Date/Time: _____	Received by: _____	Date/Time: _____

Alpha Analytical, Inc.

255 Glendale Avenue
 Suite 21
 Sparks, Nevada 89431-5778
 Phone: (775) 355-1044
 Fax: (775) 355-0406

SUB CHAIN-OF-CUSTODY RECORD

Work Order : BMI00092241

*Please reference the Work Order number on all reports and invoices.
 *Also please include the dates of analysis and detection limits.

Report Due By : 5:00 PM
 On : 06-Oct-00

Subcontractor:

Sierra Environmental Monitoring
 1135 Financial Blvd.

TEL: (702) 857-2400

FAX: (702) 857-2404

EDD Required:

Yes

Required QC:

Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Reno, NV 89502

Acct #:

22-Sep-00

Alpha's Sample ID	Client's Sample ID	Matrix	Collection Date	Type (#) of Bottles			Requested Tests		Comments
				Sulfuric	Nitric	Other	E200.8	SW7470	
BMI00092241-25A	CAD0143CMM1	Aqueous	09/12/00 23:36		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-26A	CAD01469MM1	Aqueous	09/14/00 03:33		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-27A	CAD0146CMM1	Aqueous	09/14/00 03:35		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-28A	CAD0146FMM1	Aqueous	09/14/00 03:37		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-29A	CAD0147DMM1	Aqueous	09/14/00 04:52		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-30A	CAD01480MM1	Aqueous	09/14/00 05:00		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-31A	CAD01483MM1	Aqueous	09/14/00 05:04		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-32A	CAD01486MM1	Aqueous	09/14/00 05:13		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals

Comments: CA samples.

Relinquished by: <u>[Signature]</u>	Date/Time: <u>9/22/00 1345</u>	Received by: <u>[Signature]</u>	Date/Time: <u>9-22-00 1345</u>
Relinquished by: _____	Date/Time: _____	Received by: _____	Date/Time: _____

Alpha Analytical, Inc.

255 Glendale Avenue
 Suite 21
 Sparks, Nevada 89431-5778
 Phone: (775) 355-1044
 Fax: (775) 355-0406

Subcontractor:

Sierra Environmental Monitoring
 1135 Financial Blvd.

Reno, NV 89502

SUB CHAIN-OF-CUSTODY RECORD

Work Order : BMI00092241

*Please reference the Work Order number on all reports and invoices.
 *Also please include the dates of analysis and detection limits.

TEL: (702) 857-2400

FAX: (702) 857-2404

Acct #:

EDD Required:

Yes

Report Due By : 5:00 PM
 On : 06-Oct-00

Required QC:

Final Rpt, MBLK, LCS, MS/MSD With Surrogates

22-Sep-00

Alpha's Sample ID	Client's Sample ID	Matrix	Collection Date	Type (#) of Bottles			Requested Tests		Comments
				Sulfuric	Nitric	Other	E200.8	SW7470	
BMI00092241-33A	CAD01489MM1	Aqueous	09/14/00 05:17		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-34A	CAD0148CMM1	Aqueous	09/14/00 05:24		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-35A	CAD0148FMM1	Aqueous	09/14/00 05:32		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-36A	CAD01492MM1	Aqueous	09/14/00 05:33		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-37A	CAD01495MM1	Aqueous	09/14/00 05:39		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-38A	CAD0149DMM1	Aqueous	09/14/00 06:11		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-39A	CAD014A0MM1	Aqueous	09/14/00 06:13		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-40A	CAD014A3MM1	Aqueous	09/14/00 06:16		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals

Comments: CA samples.

Relinquished by: <u>[Signature]</u>	Date/Time: <u>9/22/00 1545</u>	Received by: <u>[Signature]</u>	Date/Time: <u>9-22-00 1345</u>
Relinquished by:	Date/Time:	Received by:	Date/Time:

Alpha Analytical, Inc.

255 Glendale Avenue
Suite 21
Sparks, Nevada 89431-5778
Phone: (775) 355-1044
Fax: (775) 355-0406

Subcontractor:

Sierra Environmental Monitoring
1135 Financial Blvd.

Reno, NV 89502

SUB CHAIN-OF-CUSTODY RECORD

Work Order : BMI00092241

***Please reference the Work Order number on all reports and invoices.**

***Also please include the dates of analysis and detection limits.**

TEL: (702) 857-2400

FAX: (702) 857-2404

Acct #:

EDD Required:

Yes

Report Due By : 5:00 PM

On : 06-Oct-00

Required QC:

Final Rpt, MBLK, LCS, MS/MSD With Surrogates

22-Sep-00

Alpha's Sample ID	Client's Sample ID	Matrix	Collection Date	Type (#) of Bottles			Requested Tests		Comments
				Sulfuric	Nitric	Other	E200.8	SW7470	
BMI00092241-41A	CAD014BFMM1	Aqueous	09/15/00 08:45		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-42A	CAD014C2MM1	Aqueous	09/15/00 08:47		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-43A	CAD014C5MM1	Aqueous	09/15/00 08:50		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-44A	CAD014D4MM1	Aqueous	09/15/00 09:52		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-45A	CAD014DBMM1	Aqueous	09/15/00 09:57		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-46A	CAD014DEMM1	Aqueous	09/15/00 09:59		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-47A	CAD014E4MM1	Aqueous	09/15/00 10:02		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-48A	CAD014E7MM1	Aqueous	09/15/00 10:06		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals

Comments: CA samples.

Date/Time

Date/Time

Relinquished by:

Relinquished by:

Received by:

Received by:

9/22/00 1345

[Signature] 9-22-00 1345

Alpha Analytical, Inc.

255 Glendale Avenue
 Suite 21
 Sparks, Nevada 89431-5778
 Phone: (775) 355-1044
 Fax: (775) 355-0406

Subcontractor:

Sierra Environmental Monitoring
 1135 Financial Blvd.

Reno, NV 89502

SUB CHAIN-OF-CUSTODY RECORD

Report Due By : 5:00 PM

On : 06-Oct-00

Work Order : BMI00092241

***Please reference the Work Order number on all reports and invoices.**

***Also please include the dates of analysis and detection limits.**

Required QC:

Final Rpt, MBLK, LCS, MS/MSD With Surrogates

TEL: (702) 857-2400

EDD Required:

FAX: (702) 857-2404

Yes

Acct #:

22-Sep-00

Alpha's Sample ID	Client's Sample ID	Matrix	Collection Date	Type (#) of Bottles			Requested Tests		Comments
				Sulfuric	Nitric	Other	E200.8	SW7470	
BMI00092241-49A	CAD014EAMM1	Aqueous	09/15/00 10:11		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-50A	CAD014EDMM1	Aqueous	09/15/00 10:14		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-51A	CAD014F3MM1	Aqueous	09/15/00 10:22		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-52A	CAD014F6MM1	Aqueous	09/15/00 10:25		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-53A	CAD01511MM1	Aqueous	09/15/00 11:36		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-54A	CAD01514MM1	Aqueous	09/15/00 11:48		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-55A	CAD0151AMM1	Aqueous	09/15/00 11:50		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-56A	CAD01523MM1	Aqueous	09/15/00 23:35		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals

Comments: CA samples.

Relinquished by:	<i>[Signature]</i>	Date/Time	Received by:	<i>[Signature]</i>
		7/24/00 1345		
Relinquished by:			Received by:	

Alpha Analytical, Inc.

255 Glendale Avenue
 Suite 21
 Sparks, Nevada 89431-5778
 Phone: (775) 355-1044
 Fax: (775) 355-0406

SUB CHAIN-OF-CUSTODY RECORD

Work Order : BMI00092241

*Please reference the Work Order number on all reports and invoices.
 *Also please include the dates of analysis and detection limits.

Report Due By : 5:00 PM
 On : 06-Oct-00

Subcontractor:

Sierra Environmental Monitoring
 1135 Financial Blvd.

Reno, NV 89502

TEL: (702) 857-2400

FAX: (702) 857-2404

Acct #:

EDD Required:

Yes

Required QC:

Final Rpt, MBLK, LCS, MS/MSD With Surrogates

22-Sep-00

Alpha's Sample ID	Client's Sample ID	Matrix	Collection Date	Type (#) of Bottles			Requested Tests		Comments
				Sulfuric	Nitric	Other	E200.8	SW7470	
BMI00092241-57A	CAD01526MM1	Aqueous	09/15/00 23:38		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-58A	CAD01528MM1	Aqueous	09/15/00 23:41		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-59A	CAD01534MM1	Aqueous	09/15/00 12:09		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-60A	CAD01538MM1	Aqueous	09/15/00 00:14		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-61A	CAD01538MM1	Aqueous	09/15/00 00:19		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-62A	CAD0153EMM1	Aqueous	09/15/00 00:25		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-63A	CAD01541MM1	Aqueous	09/15/00 00:26		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-64A	CAD01544MM1	Aqueous	09/15/00 00:31		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals

Comments: CA samples.

Relinquished by: <i>[Signature]</i>	Date/Time: <u>9/22/00 1345</u>	Received by: <i>[Signature]</i>	Date/Time: <u>9-22-00 1345</u>
Relinquished by:		Received by:	

Alpha Analytical, Inc.

255 Glendale Avenue
 Suite 21
 Sparks, Nevada 89431-5778
 Phone: (775) 355-1044
 Fax: (775) 355-0406

SUB CHAIN-OF-CUSTODY RECORD

Page of

Report Due By : 5:00 PM
On : 06-Oct-00

Work Order : BMI00092241

***Please reference the Work Order number on all reports and invoices.**

***Also please include the dates of analysis and detection limits.**

Subcontractor:

Sierra Environmental Monitoring
 1135 Financial Blvd.

TEL: (702) 857-2400

EDD Required:

FAX: (702) 857-2404

Yes

Required QC:
 Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Reno, NV 89502

Acct #:

22-Sep-00

Alpha's Sample ID	Client's Sample ID	Matrix	Collection Date	Type (#) of Bottles			Requested Tests		Comments
				Sulfuric	Nitric	Other	E200.8	SW7470	
BMI00092241-65A	CAD01547MM1	Aqueous	09/15/00 00:35		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-66A	CAD0154CMM1	Aqueous	09/15/00 00:42		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-67A	CAD0154FMM1	Aqueous	09/15/00 00:44		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-68A	CAD0155EMM1	Aqueous	09/16/00 01:33		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-69A	CAD01561MM1	Aqueous	09/16/00 01:35		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-70A	CAD01564MM1	Aqueous	09/16/00 01:39		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-71A	CAD012ACMM1	Aqueous	09/09/00 15:59		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-72A	CAD012AFMM1	Aqueous	09/09/00 16:01		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals

Comments: CA samples.

Date/Time

Date/Time

Relinquished by:

Received by:

Relinquished by:

Received by:

7/22/00 1345

W.H. Bush - 9-22-00 1345

Alpha Analytical, Inc.

255 Glendale Avenue
 Suite 21
 Sparks, Nevada 89431-5778
 Phone: (775) 355-1044
 Fax: (775) 355-0406

SUB CHAIN-OF-CUSTODY RECORD

Report Due By : 5:00 PM
On : 06-Oct-00

Work Order : BMI00092241

***Please reference the Work Order number on all reports and invoices.**
***Also please include the dates of analysis and detection limits.**

Subcontractor:

Sierra Environmental Monitoring
 1135 Financial Blvd.

TEL: (702) 857-2400

FAX: (702) 857-2404

EDD Required:

Yes

Required QC:

Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Reno, NV 89502

Acct #:

22-Sep-00

Alpha's Sample ID	Client's Sample ID	Matrix	Collection Date	Type (#) of Bottles			Requested Tests		Comments
				Sulfuric	Nitric	Other	E200.8	SW7470	
BMI00092241-73A	CAD012B2MM1	Aqueous	09/09/00 16:02			OTHER (1)	Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-74A	CAD012BFMM1	Aqueous	09/09/00 16:59			OTHER (1)	Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals. Filter prior to analysis and analyze for aqueous and solid phase.
BMI00092241-75A	CAD012C3MM1	Aqueous	09/09/00 17:03			OTHER (1)	Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals. Filter prior to analysis and analyze for aqueous and solid phase.
BMI00092241-76A	CAD012C6MM1	Aqueous	09/09/00 17:05			OTHER (1)	Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-77A	CAD012CCMM1	Aqueous	09/09/00 17:07			OTHER (1)	Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-78A	CAD012CFMM1	Aqueous	09/09/00 17:10			OTHER (1)	Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-79A	CAD012D2MM1	Aqueous	09/09/00 17:12			OTHER (1)	Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-80A	CAD012D6MM1	Aqueous	09/09/00 17:17			OTHER (1)	Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals

Comments: CA samples.

Relinquished by: <i>[Signature]</i>	Date/Time: <i>9-22-00 1345</i>	Received by: <i>[Signature]</i>	Date/Time: <i>9-22-00 1345</i>
Relinquished by:	Date/Time:	Received by:	Date/Time:

Alpha Analytical, Inc.

255 Glendale Avenue
 Suite 21
 Sparks, Nevada 89431-5778
 Phone: (775) 355-1044
 Fax: (775) 355-0406

SUB CHAIN-OF-CUSTODY RECORD

Report Due By : 5:00 PM
On : 06-Oct-00

Work Order : BMI00092241

***Please reference the Work Order number on all reports and invoices.**
***Also please include the dates of analysis and detection limits.**

Required QC:

Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Subcontractor:

Sierra Environmental Monitoring
 1135 Financial Blvd.

TEL: (702) 857-2400

EDD Required:

FAX: (702) 857-2404

Yes

Reno, NV 89502

Acct #:

22-Sep-00

Alpha's Sample ID	Client's Sample ID	Matrix	Collection Date	Type (#) of Bottles			Requested Tests		Comments
				Sulfuric	Nitric	Other	E200.8	SW7470	
BMI00092241-81A	CAD012DCMM1	Aqueous	09/09/00 17:23		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-82A	CAD012EOMM1	Aqueous	09/09/00 17:25		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-83A	CAD012ECMM1	Aqueous	09/09/00 18:33		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-84A	CAD012F0MM1	Aqueous	09/09/00 18:37		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-85A	CAD012F4MM1	Aqueous	09/09/00 18:42		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-86A	CAD0130CMM1	Aqueous	09/10/00 07:19		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-87A	CAD0130FMM1	Aqueous	09/10/00 07:22		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-88A	CAD01312MM1	Aqueous	09/10/00 07:28		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals

Comments: CA samples.

Relinquished by: <u>[Signature]</u>	Date/Time: <u>9/22/00 1345</u>	Received by: <u>[Signature]</u>	Date/Time: <u>9-22-00 1345</u>
Relinquished by:		Received by:	

Alpha Analytical, Inc.

255 Glendale Avenue
Suite 21
Sparks, Nevada 89431-5778
Phone: (775) 355-1044
Fax: (775) 355-0406

SUB CHAIN-OF-CUSTODY RECORD

Work Order : BMI00092241

Report Due By : 5:00 PM
On : 06-Oct-00

*Please reference the Work Order number on all reports and invoices.
*Also please include the dates of analysis and detection limits.

Subcontractor:

Sierra Environmental Monitoring
1135 Financial Blvd.

TEL: (702) 857-2400

EDD Required:

FAX: (702) 857-2404

Yes

Required QC:

Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Reno, NV 89502

Acct #:

22-Sep-00

Alpha's Sample ID	Client's Sample ID	Matrix	Collection Date	Type (.#) of Bottles			Requested Tests		Comments
				Sulfuric	Nitric	Other	E200.8	SW7470	
BMI00092241-89A	CAD0131FMM1	Aqueous	09/10/00 08:51		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-90A	CAD01322MM1	Aqueous	09/10/00 08:54		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-91A	CAD01325MM1	Aqueous	09/10/00 08:58		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-92A	CAD0132BMM1	Aqueous	09/10/00 09:11		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-93A	CAD0132EMM1	Aqueous	09/10/00 09:12		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-94A	CAD01331MM1	Aqueous	09/10/00 09:26		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-95A	CAD01334MM1	Aqueous	09/10/00 09:28		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals
BMI00092241-96A	CAD01337MM1	Aqueous	09/10/00 09:34		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals

Comments: CA samples.

Relinquished by: <i>[Signature]</i>	Date/Time: <i>9/22/00 1345</i>	Received by: <i>Mike Bish</i>	Date/Time: <i>9-22-00 1345</i>
Relinquished by:		Received by:	

Alpha Analytical, Inc.

255 Glendale Avenue
Suite 21
Sparks, Nevada 89431-5778
Phone: (775) 355-1044
Fax: (775) 355-0406

SUB CHAIN-OF-CUSTODY RECORD

Work Order : BMI00092241

Page of

Report Due By : 5:00 PM

On : 06-Oct-00

*Please reference the Work Order number on all reports and invoices.
*Also please include the dates of analysis and detection limits.

Subcontractor:

Sierra Environmental Monitoring
1135 Financial Blvd.

Reno, NV 89502

TEL: (702) 857-2400

FAX: (702) 857-2404

Acct #:

EDD Required:

Yes

Required QC:

Final Rpt, MBLK, LCS, MS/MSD With Surrogates

26-Sep-00

Alpha's Sample ID	Client's Sample ID	Matrix	Collection Date	Type (#) of Bottles			Requested Tests		Comments
				Sulfuric	Nitric	Other	E200.8	SW7470	
BMI00092241-29A	CAD0147DMM1	Aqueous	09/14/00 04:52		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals. Filter prior to analysis and analyze for aqueous and solid phase.
BMI00092241-44A	CAD014D4MM1	Aqueous	09/15/00 09:52		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals. Filter prior to analysis and analyze for aqueous and solid phase.
BMI00092241-45A	CAD014DBMM1	Aqueous	09/15/00 09:57		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals. Filter prior to analysis and analyze for aqueous and solid phase.
BMI00092241-59A	CAD01534MM1	Aqueous	09/15/00 12:09		OTHER (1)		Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals. Filter prior to analysis and analyze for aqueous and solid phase.

Comments: ^{KMM} Amended COC. These 4 ~~additional~~ samples need to be analyzed for the aqueous and solid phase.

Whatever we can do

		Date/Time			Date/Time
Relinquished by:	<i>K Murray</i>		Received by:		
Relinquished by:			Received by:		

Billing Information :
 Battelle
 505 King Avenue

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.
 255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
 TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder : BMI00101664

Client:
 Battelle Memorial Institute
 505 King Avenue

Company Phone/Fax
 TEL : (614) 424-7358
 FAX : (614) 424-3667

Secondary Phone/Fax
 TEL : (614) 424-3723
 FAX : (614) 424-3667

Report Due By : 5:00 PM On : 30-Oct-00

Columbus, OH 43201
 Report Attention : Jennifer Ickes

Job : MWRA Harbor and Outfall Monitoring Program
 PO : Client's COC # : none

EDD Required : Yes

Sampled by : Client

Cooler Temp : 4 °C **16-Oct-00**

QC Level : S4 = Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Collection Matrix	Date	No. of Bottles			Requested Tests								Sample Remarks		
				ORG	SUB	TAT	PWS #	200_8	MERCURY								
BMI00101664-01A	CAD01610MM1	AQ	09/28/00 09:22	1	0	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals,subcontracted to SEM.
BMI00101664-02A	CAD01613MM1	AQ	09/28/00 09:26	1	0	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals,subcontracted to SEM.
BMI00101664-03A	CAD01616MM1	AQ	09/28/00 09:29	1	0	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals,subcontracted to SEM.
BMI00101664-04A	CAD1619MM1	AQ	09/28/00 09:32	1	0	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals,subcontracted to SEM.
BMI00101664-05A	CAD0161CMM1	AQ	09/28/00 09:35	1	0	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals,subcontracted to SEM.

Comments: No security seals preset. Blue and real ice frozen. Contract No.S274. RCRA 8 metals for all samples,subcontracted to SEM.

	Signature	Print Name	Company	Date/Time
Relinquished by:				
Received by:	<i>Jacopo Moranni</i>	T. Debirovanni	Alpha	10/16/00 2:46pm
Relinquished by:				
Received by:				

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
 Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information :
 Battelle
 505 King Avenue

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.
 255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
 TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder : BMI00101664

Client:
 Battelle Memorial Institute
 505 King Avenue

Company Phone/Fax
 TEL : (614) 424-7358
 FAX : (614) 424-3667

Secondary Phone/Fax
 TEL : (614) 424-3723
 FAX : (614) 424-3667

Report Due By : 5:00 PM On : 30-Oct-00

EDD Required : Yes

Sampled by : Client

Columbus, OH 43201
 Report Attention : Jennifer Ickes

Job : MWRA Harbor and Outfall Monitoring Program
 PO : Client's COC # : none

Cooler Temp : 4 °C 16-Oct-00

QC Level : S4 = Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Collection Matrix	No. of Bottles Date	ORG	SUB	TAT	PWS #	Requested Tests								Sample Remarks	
								200_8	MERCURY								
BMI00101664-06A	CAD01620MM 1	AQ	09/28/00 09:38	1	0	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals,subcontracted to SEM.
BMI00101664-07A	CAD01623MM 1	AQ	09/28/00 09:41	1	0	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals,subcontracted to SEM.
BMI00101664-08A	CAD01626MM 1	AQ	09/28/00 09:44	1	0	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals,subcontracted to SEM.
BMI00101664-09A	CAD01629MM 1	AQ	09/28/00 09:47	1	0	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals,subcontracted to SEM.
BMI00101664-10A	CAD0162CMM 1	AQ	09/28/00 09:50	1	0	10		As, Be, Cd, Cr, Pb, Hg, Ag, Se	As, Be, Cd, Cr, Pb, Hg, Ag, Se								RCRA 8 Metals,subcontracted to SEM.

Comments: No security seals preset. Blue and real ice frozen. Contract No.S274. RCRA 8 metals for all samples,subcontracted to SEM.

	Signature	Print Name	Company	Date/Time
Relinquished by:				
Received by:	<i>Jacopo R. Giovanni</i>	T. De Giovanni	Alpha	10/16/00 2:46pm
Relinquished by:				
Received by:				

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.

The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.

Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Alpha Analytical, Inc.

255 Glendale Avenue
 Suite 21
 Sparks, Nevada 89431-5778
 Phone: (775) 355-1044
 Fax: (775) 355-0406

SUB CHAIN-OF-CUSTODY RECORD

Report Due By : 5:00 PM

On : 10/30/00

Work Order : BMI00101664

*Please reference the Work Order number on all reports and invoices.
 *Also please include the dates of analysis and detection limits.

Subcontractor:

Sierra Environmental Monitoring
 1135 Financial Blvd.

Reno, NV 89502

TEL: (702) 857-2400

FAX: (702) 857-2404

Acct #:

EDD Required:

Yes

Required QC:

Final Rpt, MBLK, LCS, MS/MSD With Surrogates

16-Oct-00

Alpha's Sample ID	Client's Sample ID	Matrix	Collection Date	Type (#) of Bottles			Requested Tests		Comments
				Sulfuric	Nitric	Other	E200.8	SW7470	
BMI00101664-01A	CAD01610MM1	Aqueous	09/28/00 09:22				Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals, subcontracted to SEM.
BMI00101664-02A	CAD01613MM1	Aqueous	09/28/00 09:26				Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals, subcontracted to SEM.
BMI00101664-03A	CAD01616MM1	Aqueous	09/28/00 09:29				Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals, subcontracted to SEM.
BMI00101664-04A	CAD1619MM1	Aqueous	09/28/00 09:32				Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals, subcontracted to SEM.
BMI00101664-05A	CAD0161CMM1	Aqueous	09/28/00 09:35				Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals, subcontracted to SEM.
BMI00101664-06A	CAD01620MM1	Aqueous	09/28/00 09:38				Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals, subcontracted to SEM.
BMI00101664-07A	CAD01623MM1	Aqueous	09/28/00 09:41				Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals, subcontracted to SEM.
BMI00101664-08A	CAD01626MM1	Aqueous	09/28/00 09:44				Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals, subcontracted to SEM.

Comments: 200.8=RCRA 8 metals(As,Be,Cd,Cr,Pb,Hg,Ag,Se)

Emp 110 gw PH (OK)

Relinquished by: <i>J. Lavaretto</i>	Date/Time: <i>10/16/00 3:45</i>	Received by: <i>Jamie Ward</i>	Date/Time: <i>10/16/00 15:45</i>
Relinquished by: _____	Date/Time: _____	Received by: _____	Date/Time: _____

Alpha Analytical, Inc.

255 Glendale Avenue
 Suite 21
 Sparks, Nevada 89431-5778
 Phone: (775) 355-1044
 Fax: (775) 355-0406

SUB CHAIN-OF-CUSTODY RECORD

Report Due By : 5:00 PM
On : 10/30/00

Work Order : BMI00101664

***Please reference the Work Order number on all reports and invoices.**
***Also please include the dates of analysis and detection limits.**

Subcontractor:

Sierra Environmental Monitoring
 1135 Financial Blvd.

Reno, NV 89502

TEL: (702) 857-2400
 FAX: (702) 857-2404
 Acct #:

EDD Required:
Yes

Required QC:
 Final Rpt, MBLK, LCS, MS/MSD With Surrogates

16-Oct-00

Alpha's Sample ID	Client's Sample ID	Matrix	Collection Date	Type (#) of Bottles			Requested Tests		Comments
				Sulfuric	Nitric	Other	E200.8	SW7470	
BMI00101664-09A	CAD01629MM1	Aqueous	09/28/00 09:47				Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals, subcontracted to SEM.
BMI00101664-10A	CAD0162CMM1	Aqueous	09/28/00 09:50				Inorganics by EPA Method 200.8 (200.8)	MERCURY, Total (MERCURY)	RCRA 8 Metals, subcontracted to SEM.

Comments: 200.8=RCRA 8 metals(As,Be,Cd,Cr,Pb,Hg,Ag,Se)

Relinquished by: <u>Maurice</u>	Date/Time: <u>10/16/00 3:45</u>	Received by: <u>Jameel Ward</u>	Date/Time: <u>10/16/00 1:54</u>
Relinquished by: _____	Date/Time: _____	Received by: _____	Date/Time: _____

MWRA Harbor and Outfall Monitoring Program

Contract No. S274

Chain-of-Custody Form

Today's Date : 9/28/00 10:08:51 AM

Laboratory : Alpha Analytical, Inc.

Chain-of-Custody # : CAD01-MM-0500

Survey ID : CAD01











Analysis ID : MM

Analysis Description : Major metals

00101664

(Phone)

(Fax)

Bottle ID :	Bottle ID :	Sampling Date :	Station ID :	Ck 1	Ck 2	Ck 3	Ck 4
	-01 CAD01610MM1	9/28/00 9:22:57 AM	1F	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	-02 CAD01613MM1	9/28/00 9:26:31 AM	2H	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	-03 CAD01616MM1	9/28/00 9:29:35 AM	3F	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	-04 CAD01619MM1	9/28/00 9:32:41 AM	4F	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	-05 CAD0161CMM1	9/28/00 9:35:47 AM	5H	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	-06 CAD01620MM1	9/28/00 9:38:53 AM	6H	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	-07 CAD01623MM1	9/28/00 9:41:42 AM	7F	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	-08 CAD01626MM1	9/28/00 9:44:29 AM	8H	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	-09 CAD01629MM1	9/28/00 9:47:23 AM	9F	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	-10 CAD0162CMM1	9/28/00 9:50:26 AM	10H	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Shipping Condition - Room Temperature: _____

Cold(ice): ^{4°C}

Frozen(dry ice): _____

Received Condition - Room Temperature: _____

Cold(ice): _____

Frozen(dry ice): _____

Relinquished By / Date / Time / Company / Transport-Airbill #	Received By / Date / Time / Company
<i>John Kelly / 9-28-00 / 10:30 / BOS / Hunt</i>	<i>L. Short / 9-28-00 / 10:30 / BOS</i>
<i>L. Short / 10-13-00 / 10:45 / BOS</i>	<i>Flacypoliovanni / 10/11/00 / 2:46pm</i>

Evaluation of Sediment Agitation and Mixing into the Surrounding Water Column from Capping Activities - Boston Harbor

APPENDIX C

QUALITY CONTROL REPORTS

August 27, 2001

Jennifer Ickes
Battelle Memorial Institute
Columbus, OH

Subject: Delivery of QC Deliverable from Battelle Duxbury's WA3-26: Boston Cap Project for PAH/ECD/TPH Analyses

Dear Jennifer:

This letter provides a summary of the data quality for analyses Battelle's Duxbury Operations (BDO) has performed in order to determine the concentrations of TPH, PCB, and PAH analytes from the analytical task: WA3-26: Boston Cap Project.

WA3-26: Boston Cap Project

Samples were safely received at our lab on September 2000. A total of 5 sediment samples, 148 water samples, and 9 filter samples, along with the appropriate quality control (QC) samples, were processed and analyzed in 12 analytical batches for both 8270M (PAH), 8081M (PCB) and 8015M (TPH) analyses (as defined in the Project's QAPP).

Sample extractions and handling went smoothly

All of these data have been thoroughly reviewed and validated by BDO's independent Quality Assurance Unit, as well as by staff of the chemistry department, as per the Project QAPP.

Specific Quality Control Sample Information

The quality control (QC) sample data quality objectives (DQOs) were largely met for this project, thereby supporting the overall reliability and quality of the reported data. The overall data set was excellent. There are isolated exceedences with some of the analyses, however there is no impact on the overall quality of the data. Below is a listing and discussion of the QC for the data set.

All samples:

- Sample Holding Times. All sample holding times were met.

There were 63 QC criteria of 3438 QC data points outside of acceptance criteria.

PCB data:

- Procedural (Method) Blanks. A method or procedural blank (PB) was processed and analyzed with each analytical batch of samples. The PB's data quality objectives (DQOs) were consistently met as defined in the Project QAPP.
- Laboratory Control Sample Recovery. A laboratory control sample (LCS) was processed and analyzed with each analytical batch of samples. The target compound recoveries consistently met the DQOs for both the 8081M analyses as defined in the Project QAPP.
- Matrix Spike Recovery and Precision. One matrix spike (MS) sample was processed with the field samples in each analytical batch of samples. The target compound recoveries consistently met the DQOs for both the 8081M analyses as defined in the Project QAPP.
- Internal Standard Recoveries. Surrogate internal standards (SIS) and recovery internal standard compounds (RIS) were added to each field and QC sample to monitor the sample processing efficiency.

For samples analyzed by 8081M, surrogate recoveries were within criteria in all but 5 samples. Four of the five samples had artificially high surrogate recoveries, which was due to an interfering, unidentified compound(s) that co-eluted with the surrogates. The fifth sample had a low surrogate recovery and was noted in the sample preparation records.

- Sample Duplicates. A sample duplicate (DUP) was processed and analyzed with each analytical batch of samples. The DUP's data quality objectives (DQOs) were consistently met as defined in the Project QAPP.

There were 9 QC criteria of 950 QC data points outside of acceptance criteria.

PAH data:

- Procedural (Method) Blanks. A method or procedural blank (PB) was processed and analyzed with each analytical batch of samples. The PB's data quality objectives (DQOs) were consistently met as defined in the Project QAPP with one exception. The PB in Batch #00-407 was contaminated. There was no sample left for re-extraction, however all other QC data was excellent including the LCS and MS, and the water data was consistent with those found in other batches.
- Laboratory Control Sample Recovery. A laboratory control sample (LCS) was processed and analyzed with each analytical batch of samples. The target compound recoveries consistently met the DQOs for both the 8270M analyses as defined in the Project QAPP with one exception. There was 127% recovery of fluoranthene in Batch #00-408. This appears to be an isolated incident and should have no impact on the data.
- Matrix Spike Recovery and Precision. One matrix spike (MS) sample was processed with the field samples in each analytical batch of samples. The target compound recoveries consistently met the DQOs for both the 8270M analyses as defined in the Project QAPP.
- Internal Standard Recoveries. Surrogate internal standards (SIS) and recovery internal standard

compounds (RIS) were added to each field and QC sample to monitor the sample processing efficiency.

- For samples analyzed by 8270M, surrogate recoveries were within criteria in all but 10 samples. X8602 had a low naphthalene-d8 recovery, which is usually indicative of rapid concentration. The other surrogates were just outside of acceptance criteria. The data are not impacted by these exceedences.
- Sample Duplicates. A sample duplicate (DUP) was processed and analyzed with each analytical batch of samples. The DUP's data quality objectives (DQOs) were consistently met as defined in the Project QAPP with a few isolated exceptions. The data are not impacted by these exceedences.

There were 45 QC criteria of 2261 QC data points outside of acceptance criteria.

TPH data:

- Procedural (Method) Blanks. A method or procedural blank (PB) was processed and analyzed with each analytical batch of samples. The PB's data quality objectives (DQOs) were consistently met as defined in the Project QAPP.
- Laboratory Control Sample Recovery. A laboratory control sample (LCS) was processed and analyzed with each analytical batch of samples. The target compound recoveries consistently met the DQOs for both the 8015M analyses as defined in the Project QAPP with some exceptions. Two of the LCS samples had some analytes outside of criteria. The data are not impacted by these exceedences.
- Matrix Spike Recovery and Precision. One matrix spike (MS) sample was processed with the field samples in each analytical batch of samples. The target compound recoveries consistently met the DQOs for both the 8015M analyses as defined in the Project QAPP with two exceptions. Two of the MS samples had one analyte outside of criteria each.
- Internal Standard Recoveries. Surrogate internal standards (SIS) and recovery internal standard compounds (RIS) were added to each field and QC sample to monitor the sample processing efficiency.

For samples analyzed by 8015M, surrogate recoveries were within criteria in all but 5 samples. Four of the five samples had artificially high surrogate recoveries, which was due to an interfering, unidentified compound(s) that co-eluted with the surrogates. The fifth sample had a low surrogate recovery and was noted in the sample preparation records.

- Sample Duplicates. A sample duplicate (DUP) was processed and analyzed with each analytical batch of samples. The DUP's data quality objectives (DQOs) were consistently met as defined in the Project QAPP.

There were 9 QC criteria of 227 QC data points outside of acceptance criteria.

Please do not hesitate to give us a call if you would like to discuss these data or if I can provide any further assistance.

Sincerely,

Robert Lizotte, Jr.
Research Scientist



Laboratory Analysis Report

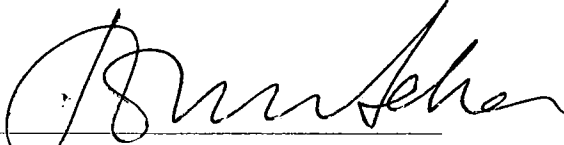
**Sierra
Environmental
Monitoring, Inc.**

Alpha Analytical

255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 10/16/2000
Client: ALP-855
Taken by: Client
Report: 36912
PO #:

Approved By: _____


Sierra Environmental Monitoring, Inc

Date: _____

10-16-00

This report is applicable only to the sample received by the laboratory. The liability of the laboratory is limited to the amount paid for this report. This report is for the exclusive use of the client to whom it is addressed and upon the condition that the client assumes all liability for the further distribution of the report or its contents.



Sierra
Environmental
Monitoring, Inc.
Project ID:

BMI00092242

Quality Control Report

An Addendum to SEM Report Number: 36912

Parameter	LCS, % Recovery	MS, % Recovery	MSD, % Recovery	RPD, %	Method Blank
Arsenic - ICP-MS	96.9	89.2	93.0	2.67	< 0.02 mg/L
Arsenic - ICP-MS	96.9	89.2	93.0	4.21	< 0.02 mg/L
Arsenic - ICP-MS	96.9	89.2	93.0	9.20	< 0.02 mg/L
Arsenic - ICP-MS	96.9	89.2	93.0	2.67	< 0.02 mg/L
Arsenic - ICP-MS	96.9	89.2	93.0	4.21	< 0.02 mg/L
Arsenic - ICP-MS	96.9	89.2	93.0	9.20	< 0.02 mg/L
Barium - ICP-MS	93.7	89.6	90.9	5.30	< 0.02 mg/L
Barium - ICP-MS	93.7	89.6	90.9	4.62	< 0.02 mg/L
Barium - ICP-MS	93.7	89.6	90.9	8.65	< 0.02 mg/L
Barium - ICP-MS	93.7	89.6	90.9	5.30	< 0.02 mg/L
Barium - ICP-MS	93.7	89.6	90.9	4.62	< 0.02 mg/L
Barium - ICP-MS	93.7	89.6	90.9	8.65	< 0.02 mg/L
Barium - ICP-MS	93.7	89.6	90.9	5.30	< 0.5 mg/L
Barium - ICP-MS	93.7	89.6	90.9	4.62	< 0.5 mg/L
Barium - ICP-MS	93.7	89.6	90.9	8.65	< 0.5 mg/L
Cadmium - ICP-MS	95.7	85.6	89.1	1.55	< 0.02 mg/L
Cadmium - ICP-MS	95.7	85.6	89.1	2.99	< 0.02 mg/L
Cadmium - ICP-MS	95.7	85.6	89.1	9.99	< 0.02 mg/L
Cadmium - ICP-MS	95.7	85.6	89.1	1.55	< 0.02 mg/L
Cadmium - ICP-MS	95.7	85.6	89.1	2.99	< 0.02 mg/L
Cadmium - ICP-MS	95.7	85.6	89.1	9.99	< 0.02 mg/L
Chromium - ICP-MS	95.4	99.5	96.1	0.00	< 0.05 mg/L
Chromium - ICP-MS	95.4	99.5	96.1	4.08	< 0.05 mg/L
Chromium - ICP-MS	95.4	99.5	96.1	10.64	< 0.05 mg/L
Chromium - ICP-MS	95.4	99.5	96.1	0.00	< 0.02 mg/L

Legend: LCS, Laboratory Control Standard; MS, Matrix Spike; MSD, Matrix Spike Duplicate;
RPD, Relative Percent Difference

Thursday, October 19, 2000

Page 1 of 3

William F. Pillsbury
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John Kobza, Ph.D.
John C. Seher
Managers



Sierra
Environmental
Monitoring, Inc.
Project ID: BMI00092242

Quality Control Report

An Addendum to SEM Report Number: 36912

BMI00092242

Parameter	LCS, % Recovery	MS, % Recovery	MSD, % Recovery	RPD, %	Method Blank
Chromium - ICP-MS	95.4	99.5	96.1	4.08	<0.02 mg/L
Chromium - ICP-MS	95.4	99.5	96.1	10.64	<0.02 mg/L
Chromium - ICP-MS	95.4	99.5	96.1	0.00	<0.04 mg/L
Chromium - ICP-MS	95.4	99.5	96.1	4.08	<0.04 mg/L
Chromium - ICP-MS	95.4	99.5	96.1	10.64	<0.04 mg/L
Lead - ICP-MS	93.6	80.5	88.1	4.42	< 0.02 mg/L
Lead - ICP-MS	93.6	80.5	88.1	3.91	< 0.02 mg/L
Lead - ICP-MS	93.6	80.5	88.1	9.02	< 0.02 mg/L
Lead - ICP-MS	93.6	80.5	88.1	4.42	<0.02 mg/L
Lead - ICP-MS	93.6	80.5	88.1	3.91	<0.02 mg/L
Lead - ICP-MS	93.6	80.5	88.1	9.02	<0.02 mg/L
Mercury - AA Cold Vapor	103.2	94.8	97.2	5.54	< 0.0005 mg/L
Mercury - AA Cold Vapor	103.2	94.8	97.2	3.52	< 0.0005 mg/L
Mercury - AA Cold Vapor	103.2	94.8	97.2	0.21	< 0.0005 mg/L
Mercury - AA Cold Vapor	103.2	94.8	97.2	1.89	< 0.0005 mg/L
Selenium - ICP-MS	96.0	78.0	74.4	7.62	< 0.02 mg/L
Selenium - ICP-MS	96.0	78.0	74.4	4.72	< 0.02 mg/L
Selenium - ICP-MS	96.0	78.0	74.4	13.11	< 0.02 mg/L
Selenium - ICP-MS	96.0	78.0	74.4	7.62	<0.02 mg/L
Selenium - ICP-MS	96.0	78.0	74.4	4.72	<0.02 mg/L
Selenium - ICP-MS	96.0	78.0	74.4	13.11	<0.02 mg/L
Selenium - ICP-MS	96.0	78.0	74.4	7.62	<0.2 mg/L
Selenium - ICP-MS	96.0	78.0	74.4	4.72	<0.2 mg/L
Selenium - ICP-MS	96.0	78.0	74.4	13.11	<0.2 mg/L
Silver - ICP-MS	98.3	81.0	86.5	1.63	< 0.02 mg/L

Legend: LCS, Laboratory Control Standard; MS, Matrix Spike; MSD, Matrix Spike Duplicate;
RPD, Relative Percent Difference

Thursday, October 19, 2000

Page 2 of 3

William F. Pillsbury
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sem@sem-analytical.com

John Kobza, Ph.D.
John C. Seher
Managers



Sierra
Environmental
Monitoring, Inc.
Project ID:

BMI00092242

Quality Control Report

n Addendum to SEM Report Number: 36912

Parameter	LCS, % Recovery	MS, % Recovery	MSD, % Recovery	RPD, %	Method Blank
Silver - ICP-MS	98.3	81.0	86.5	5.07	< 0.02 mg/L
Silver - ICP-MS	98.3	81.0	86.5	11.08	< 0.02 mg/L
Silver - ICP-MS	98.3	81.0	86.5	2.70	< 0.02 mg/L
Silver - ICP-MS	98.3	81.0	86.5	1.63	< 0.02 mg/L
Silver - ICP-MS	98.3	81.0	86.5	5.07	< 0.02 mg/L
Silver - ICP-MS	98.3	81.0	86.5	11.08	< 0.02 mg/L
Silver - ICP-MS	98.3	81.0	86.5	2.70	< 0.02 mg/L

Legend: LCS, Laboratory Control Standard; MS, Matrix Spike; MSD, Matrix Spike Duplicate;
RPD, Relative Percent Difference

Thursday, October 19, 2000

Page 3 of 3

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John Kobza, Ph.D.
John C. Seher
Managers



Laboratory Analysis Report

**Sierra
Environmental
Monitoring, Inc.**

Alpha Analytical

255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 10/16/2000
Client: ALP-855
Taken by: Client
Report: 36913
PO #:

Approved By: _____

A handwritten signature in black ink, appearing to read "John C. Seher", is written over a horizontal line.

Sierra Environmental Monitoring, Inc

Date: _____

10-16-00

This report is applicable only to the sample received by the laboratory. The liability of the laboratory is limited to the amount paid for this report. This report is for the exclusive use of the client to whom it is addressed and upon the condition that the client assumes all liability for the further distribution of the report or its contents.



Sierra
Environmental
Monitoring, Inc.
Project ID:

BMI00092241

Quality Control Report

n Addendum to SEM Report Number: 36913

Parameter	LCS, % Recovery	MS, % Recovery	MSD, % Recovery	RPD, %	Method Blank
Arsenic - ICP-MS	94.7	89.2	91.1	9.20	< 0.02 mg/L
Arsenic - ICP-MS	94.7	89.2	91.1	1.59	< 0.02 mg/L
Arsenic - ICP-MS	94.7	89.2	91.1	10.63	< 0.02 mg/L
Arsenic - ICP-MS	94.7	89.2	91.1	3.39	< 0.02 mg/L
Arsenic - ICP-MS	94.7	89.2	91.1	7.81	< 0.02 mg/L
Arsenic - ICP-MS	94.7	89.2	91.1	9.20	< 0.02 mg/L
Arsenic - ICP-MS	94.7	89.2	91.1	1.59	< 0.02 mg/L
Arsenic - ICP-MS	94.7	89.2	91.1	10.63	< 0.02 mg/L
Arsenic - ICP-MS	94.7	89.2	91.1	3.39	< 0.02 mg/L
Arsenic - ICP-MS	94.7	89.2	91.1	7.81	< 0.02 mg/L
Barium - ICP-MS	93.7	89.6	91.1	8.65	< 0.02 mg/L
Barium - ICP-MS	93.7	89.6	91.1	1.78	< 0.02 mg/L
Barium - ICP-MS	93.7	89.6	91.1	2.96	< 0.02 mg/L
Barium - ICP-MS	93.7	89.6	91.1	1.43	< 0.02 mg/L
Barium - ICP-MS	93.7	89.6	91.1	7.70	< 0.02 mg/L
Barium - ICP-MS	93.7	89.6	91.1	8.65	< 0.02 mg/L
Barium - ICP-MS	93.7	89.6	91.1	1.78	< 0.02 mg/L
Barium - ICP-MS	93.7	89.6	91.1	2.96	< 0.02 mg/L
Barium - ICP-MS	93.7	89.6	91.1	1.43	< 0.02 mg/L
Barium - ICP-MS	93.7	89.6	91.1	7.70	< 0.02 mg/L
Barium - ICP-MS	93.7	89.6	91.1	8.65	< 0.5 mg/L
Barium - ICP-MS	93.7	89.6	91.1	1.78	< 0.5 mg/L
Barium - ICP-MS	93.7	89.6	91.1	2.96	< 0.5 mg/L
Barium - ICP-MS	93.7	89.6	91.1	1.43	< 0.5 mg/L
Barium - ICP-MS	93.7	89.6	91.1	7.70	< 0.5 mg/L

Legend: LCS, Laboratory Control Standard; MS, Matrix Spike; MSD, Matrix Spike Duplicate;
RPD, Relative Percent Difference

Thursday, October 19, 2000

Page 1 of 5

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John Kobza, Ph.D.
John C. Seher
Managers



Sierra
Environmental
Monitoring, Inc.
Project ID:

BMI00092241

Quality Control Report

An Addendum to SEM Report Number: 36913

Parameter	LCS, % Recovery	MS, % Recovery	MSD, % Recovery	RPD, %	Method Blank
Cadmium - ICP-MS	95.6	85.6	90.5	9.99	< 0.02 mg/L
Cadmium - ICP-MS	95.6	85.6	90.5	0.44	< 0.02 mg/L
Cadmium - ICP-MS	95.6	85.6	90.5	3.59	< 0.02 mg/L
Cadmium - ICP-MS	95.6	85.6	90.5	1.32	< 0.02 mg/L
Cadmium - ICP-MS	95.6	85.6	90.5	0.33	< 0.02 mg/L
Cadmium - ICP-MS	95.6	85.6	90.5	9.99	< 0.02 mg/L
Cadmium - ICP-MS	95.6	85.6	90.5	0.44	< 0.02 mg/L
Cadmium - ICP-MS	95.6	85.6	90.5	3.59	< 0.02 mg/L
Cadmium - ICP-MS	95.6	85.6	90.5	1.32	< 0.02 mg/L
Cadmium - ICP-MS	95.6	85.6	90.5	0.33	< 0.02 mg/L
Chromium - ICP-MS	93.8	99.5	98.4	10.64	< 0.05 mg/L
Chromium - ICP-MS	93.8	99.5	98.4	1.01	< 0.05 mg/L
Chromium - ICP-MS	93.8	99.5	98.4	5.69	< 0.05 mg/L
Chromium - ICP-MS	93.8	99.5	98.4	3.82	< 0.05 mg/L
Chromium - ICP-MS	93.8	99.5	98.4	0.96	< 0.05 mg/L
Chromium - ICP-MS	93.8	99.5	98.4	10.64	< 0.02 mg/L
Chromium - ICP-MS	93.8	99.5	98.4	1.01	< 0.02 mg/L
Chromium - ICP-MS	93.8	99.5	98.4	5.69	< 0.02 mg/L
Chromium - ICP-MS	93.8	99.5	98.4	3.82	< 0.02 mg/L
Chromium - ICP-MS	93.8	99.5	98.4	0.96	< 0.02 mg/L
Chromium - ICP-MS	93.8	99.5	98.4	10.64	< 0.04 mg/L
Chromium - ICP-MS	93.8	99.5	98.4	1.01	< 0.04 mg/L
Chromium - ICP-MS	93.8	99.5	98.4	5.69	< 0.04 mg/L
Chromium - ICP-MS	93.8	99.5	98.4	3.82	< 0.04 mg/L
Chromium - ICP-MS	93.8	99.5	98.4	0.96	< 0.04 mg/L

Legend: LCS, Laboratory Control Standard; MS, Matrix Spike; MSD, Matrix Spike Duplicate;
RPD, Relative Percent Difference

Thursday, October 19, 2000

Page 2 of 5

William F. Pillsbury
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John Kobza, Ph.D.
John C. Seher
Managers



Sierra
Environmental
Monitoring, Inc.
Project ID:

BMI00092241

Quality Control Report

n Addendum to SEM Report Number: 36913

Parameter	LCS, % Recovery	MS, % Recovery	MSD, % Recovery	RPD, %	Method Blank
Chromium - ICP-MS	93.8	99.5	98.4	10.64	<0.05 mg/L
Chromium - ICP-MS	93.8	99.5	98.4	1.01	<0.05 mg/L
Chromium - ICP-MS	93.8	99.5	98.4	5.69	<0.05 mg/L
Chromium - ICP-MS	93.8	99.5	98.4	3.82	<0.05 mg/L
Chromium - ICP-MS	93.8	99.5	98.4	0.96	<0.05 mg/L
Lead - ICP-MS	93.6	80.5	85.2	9.02	< 0.02 mg/L
Lead - ICP-MS	93.6	80.5	85.2	1.86	< 0.02 mg/L
Lead - ICP-MS	93.6	80.5	85.2	2.93	< 0.02 mg/L
Lead - ICP-MS	93.6	80.5	85.2	5.33	< 0.02 mg/L
Lead - ICP-MS	93.6	80.5	85.2	1.00	< 0.02 mg/L
Lead - ICP-MS	93.6	80.5	85.2	9.02	<0.02 mg/L
Lead - ICP-MS	93.6	80.5	85.2	1.86	<0.02 mg/L
Lead - ICP-MS	93.6	80.5	85.2	2.93	<0.02 mg/L
Lead - ICP-MS	93.6	80.5	85.2	5.33	<0.02 mg/L
Lead - ICP-MS	93.6	80.5	85.2	1.00	<0.02 mg/L
Mercury - AA Cold Vapor	99.6	97.4	97.2	2.55	< 0.0005 mg/L
Mercury - AA Cold Vapor	99.6	97.4	97.2	0.21	< 0.0005 mg/L
Mercury - AA Cold Vapor	99.6	97.4	97.2	1.71	< 0.0005 mg/L
Mercury - AA Cold Vapor	99.6	97.4	97.2	1.97	< 0.0005 mg/L
Mercury - AA Cold Vapor	99.6	97.4	97.2	1.24	< 0.0005 mg/L
Mercury - AA Cold Vapor	99.6	97.4	97.2	1.22	< 0.0005 mg/L
Mercury - AA Cold Vapor	99.6	97.4	97.2	1.89	< 0.0005 mg/L
Selenium - ICP-MS	90.0	62.5	88.8	13.11	< 0.02 mg/L
Selenium - ICP-MS	90.0	62.5	88.8	3.39	< 0.02 mg/L
Selenium - ICP-MS	90.0	62.5	88.8	13.84	< 0.02 mg/L

Legend: LCS, Laboratory Control Standard; MS, Matrix Spike; MSD, Matrix Spike Duplicate;
RPD, Relative Percent Difference

Thursday, October 19, 2000

Page 3 of 5

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John C. Seher
Managers



Sierra
Environmental
Monitoring, Inc.
Project ID:

BMI00092241

Quality Control Report

An Addendum to SEM Report Number: 36913

Parameter	LCS, % Recovery	MS, % Recovery	MSD, % Recovery	RPD, %	Method Blank
Selenium - ICP-MS	90.0	62.5	88.8	27.83	< 0.02 mg/L
Selenium - ICP-MS	90.0	62.5	88.8	35.20	< 0.02 mg/L
Selenium - ICP-MS	90.0	62.5	88.8	13.11	<0.02 mg/L
Selenium - ICP-MS	90.0	62.5	88.8	3.39	<0.02 mg/L
Selenium - ICP-MS	90.0	62.5	88.8	13.84	<0.02 mg/L
Selenium - ICP-MS	90.0	62.5	88.8	27.83	<0.02 mg/L
Selenium - ICP-MS	90.0	62.5	88.8	35.20	<0.02 mg/L
Selenium - ICP-MS	90.0	62.5	88.8	13.11	<0.05 mg/L
Selenium - ICP-MS	90.0	62.5	88.8	3.39	<0.05 mg/L
Selenium - ICP-MS	90.0	62.5	88.8	13.84	<0.05 mg/L
Selenium - ICP-MS	90.0	62.5	88.8	27.83	<0.05 mg/L
Selenium - ICP-MS	90.0	62.5	88.8	35.20	<0.05 mg/L
Selenium - ICP-MS	90.0	62.5	88.8	13.11	<0.2 mg/L
Selenium - ICP-MS	90.0	62.5	88.8	3.39	<0.2 mg/L
Selenium - ICP-MS	90.0	62.5	88.8	13.84	<0.2 mg/L
Selenium - ICP-MS	90.0	62.5	88.8	27.83	<0.2 mg/L
Selenium - ICP-MS	90.0	62.5	88.8	35.20	<0.2 mg/L
Silver - ICP-MS	98.3	81.0	87.0	11.08	< 0.02 mg/L
Silver - ICP-MS	98.3	81.0	87.0	1.71	< 0.02 mg/L
Silver - ICP-MS	98.3	81.0	87.0	1.53	< 0.02 mg/L
Silver - ICP-MS	98.3	81.0	87.0	2.67	< 0.02 mg/L
Silver - ICP-MS	98.3	81.0	87.0	0.52	< 0.02 mg/L
Silver - ICP-MS	98.3	81.0	87.0	2.70	< 0.02 mg/L
Silver - ICP-MS	98.3	81.0	87.0	11.08	<0.02 mg/L
Silver - ICP-MS	98.3	81.0	87.0	1.71	<0.02 mg/L

Legend: LCS, Laboratory Control Standard; MS, Matrix Spike; MSD, Matrix Spike Duplicate; RPD, Relative Percent Difference

Thursday, October 19, 2000

Page 4 of 5

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John Kobza, Ph.D.
John C. Seher
Managers



Quality Control Report

Sierra
Environmental
Monitoring, Inc.
Project ID:

BMI00092241

n Addendum to SEM Report Number: 36913

Parameter	LCS, % Recovery	MS, % Recovery	MSD, % Recovery	RPD, %	Method Blank
Silver - ICP-MS	98.3	81.0	87.0	1.53	<0.02 mg/L
Silver - ICP-MS	98.3	81.0	87.0	2.67	<0.02 mg/L
Silver - ICP-MS	98.3	81.0	87.0	0.52	<0.02 mg/L
Silver - ICP-MS	98.3	81.0	87.0	2.70	<0.02 mg/L

Legend: LCS, Laboratory Control Standard; MS, Matrix Spike; MSD, Matrix Spike Duplicate;
RPD, Relative Percent Difference

Thursday, October 19, 2000

Page 5 of 5

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Laboratory Analysis Report

Sierra
Environmental
Monitoring, Inc.

Alpha Analytical

255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 10/25/00
Client: ALP-855
Taken by: Client
Report: 37235
PO #:

Approved By: _____

A handwritten signature in black ink, appearing to read "John C. Seher", is written over a horizontal line.

Sierra Environmental Monitoring, Inc

Date: _____

10-25-00

This report is applicable only to the sample received by the laboratory. The liability of the laboratory is limited to the amount paid for this report. This report is for the exclusive use of the client to whom it is addressed and upon the condition that the client assumes all liability for the further distribution of the report or its contents.



Sierra
Environmental
Monitoring, Inc.

Quality Control Report

An Addendum to SEM Report Number: 37235

<i>Parameter</i>	<i>MS, % Recovery</i>	<i>MSD, % Recovery</i>	<i>RPD, %</i>	<i>Method Blank</i>
Arsenic - ICP-MS	105.0	97.9	7.00	<0.005 mg/L
Barium - ICP-MS	102.0	92.0	10.31	<0.005 mg/L
Cadmium - ICP-MS	96.8	91.6	5.52	<0.005 mg/L
Chromium - ICP-MS	94.7	89.0	6.21	<0.005 mg/L
Lead - ICP-MS	91.4	85.7	6.44	<0.005 mg/L
Mercury - AA Cold Vapor	69.0	71.2	3.14	<0.0005 mg/L
Selenium - ICP-MS	92.4	72.9	23.59	<0.005 mg/L
Silver - ICP-MS	91.5	84.5	7.95	<0.005 mg/L

**Legend: LCS, Laboratory Control Standard; MS, Matrix Spike; MSD, Matrix Spike Duplicate;
RPD, Relative Percent Difference**

Wednesday, October 25, 2000

Page 1 of 1

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John C. Seher
Managers



Evaluation of Sediment Agitation and Mixing into the Surrounding Water Column from Capping Activities - Boston Harbor

APPENDIX D

TPH LABORATORY-REPORTED SAMPLE DATA WITH QC QUALIFIERS



Project Name: WA 3-26 BOSTON
 CAP PROJECT
 Project Number: G464426-
 EPA11DUXLAB

Client ID:	Procedural Blank:	LCS for FID	LOAD #20	LOAD #24	LOAD #24
Battelle Sample ID:	YH91PB	YH92LCS	YH94MS	X9001	X9001DUP
Battelle Batch ID:	00-441	00-441	00-441	00-441	00-441
Collection Date	NA	NA	09/22/00	09/24/00	09/24/00
Dilution Factor	2.00	2.00	2.00	2.00	2.00
Sample Weight (g):	31.00	NA	16.17	29.40	30.46
Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample Area:	15885.193	NA	NA	18648.783	15317.051
DCM Area:	15336.625	15336.625	15336.625	15336.625	15336.625
OTP Area:	115.903	119.961	99.379	117.869	123.969
Androstane Area:	272.133	267.829	291.170	281.825	281.020
SCA Sample Corrected Area:	160.532	NA	NA	2912.464	ND
Androstane Amount (ug):	20.200	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.218	20.218	20.218	20.218	20.218
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.636	3.636	3.636	3.636	3.636
Dilution Factor:	2.000	2.000	2.000	2.000	2.000
AVE RF:	0.989	0.989	0.989	0.989	0.989
OTP RF:	1.076	1.076	1.076	1.076	1.076
MDL ug	4.761	NA	9.128	5.020	4.846
OTP Surrogate Recovery:	79	83	63	78	82
Total Hydrocarbons:	0.47 J	NA	NA	14.03	4.85

ND - Not Detected
 NA - Not Applicable.

J - Analyte detected below the MDL
 B - Analyte detected at a level greater than 3* MDL in PB
 ME - Significant matrix interference estimated value
 U - Analyte not detected
 & - QC value outside the accuracy data quality objective.
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Project Name: WA 3-26 BOSTON
 CAP PROJECT
 Project Number: G464426-
 EPA11DUXLAB

Surrogate Corrected

Client ID:	LOAD #20	LOAD #21	LOAD #22	LOAD #23	Standard Reference Material 1944 BDO#991222-02
Battelle Sample ID:	X8997	X8998	X8999	X9000	YH96SRM
Battelle Batch ID:	00-441	00-441	00-441	00-441	00-441
Collection Date	09/22/00	09/22/00	09/23/00	09/23/00	NA
Dilution Factor	2.00	2.00	2.00	2.00	2.00
Sample Weight (g):	33.37	31.00	29.99	30.14	2.02
Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample Area:	14199.915	15614.044	16281.691	16481.273	65450.66
DCM Area:	15336.625	15336.625	15336.625	15336.625	15336.63
OTP Area:	118.464	113.244	117.875	119.181	113.44
Androstane Area:	275.438	268.840	279.490	291.056	247.64
SCA Sample Corrected Area:	ND	ND	547.701	734.411	49752.95
Androstane Amount (ug):	20.200	20.200	20.200	20.200	20.20
OTP Amount (ug):	20.218	20.218	20.218	20.218	20.22
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005	3.00
PAH SIS Amount (ug):	3.636	3.636	3.636	3.636	3.64
					0.00
Dilution Factor:	2.000	2.000	2.000	2.000	2.00
AVE RF:	0.989	0.989	0.989	0.989	0.99
OTP RF:	1.076	1.076	1.076	1.076	1.08
MDL ug	4.423	4.761	4.922	4.897	73.07
OTP Surrogate Recovery:	80	78	78	76	85.07
Total Hydrocarbons:	U 4.42 U	4.76 U	2.35 J	3.10 J	4058.04

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Project Name: WA 3-26 BOSTON CAP PROJ

Project Number: G464426-EPA11DUXLAB

Client ID:	Filter from CAD01394OR1	Filter from CAD01534OR1	Filter from CAD014D4OR1	Filter from CAD014DBOR1	Filter from CAD0147DOR1	Filter from CAD01480OR1
Battelle Sample ID:	X8437-F	X8567-F	X8582-F	X8583-F	X8597-F	X8598-F
Battelle Batch ID:	00-425	00-425	00-425	00-425	00-425	00-425
Collection date	09/11/00	09/15/00	09/15/00	09/15/00	09/14/00	09/14/00
Dilution Factor	2.00	2.00	2.00	2.00	2.00	2.00
Sample Volume(l):	2.00	2.00	2.00	2.00	2.00	2.00
Units:	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Sample Area:	17477.225	16233.306	16341.659	16752.555	15906.434	17097.975
DCM Area:	15182.440	15020.065	15020.065	15020.065	15020.065	15020.065
OTP Area:	115.386	116.686	163.780	178.340	108.979	155.001
Androstane Area:	265.651	373.633	352.333	416.047	339.513	554.391
SCA Sample Corrected Area:	1913.748	722.922	805.481	1138.103	437.877	1368.518
Androstane Amount (ug):	20.200	20.200	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.218	20.218	20.218	20.218	20.218	20.218
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.636	3.636	3.636	3.636	3.636	3.636
Dilution Factor:	2.000	2.000	2.000	2.000	2.000	2.000
AVE RF:	0.989	0.989	0.989	0.989	0.989	0.989
OTP RF:	1.076	1.076	1.076	1.076	1.076	1.076
MDL VALUE ug/L	78.40	78.40	78.40	78.40	78.40	78.40
OTP Surrogate Recovery:	81	58	86	80	60	52
Total Hydrocarbons:	142.32	34.70 J	41.87 J	51.05 J	21.52 J	45.60 J

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 MDL in PB
 ME - Significant matrix interference estimated
 value
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 data quality objective.
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 precision
 data quality objective -but meets
 contingency criteria



Project Name: WA 3-26 BOSTON CAP PROJECT

Project Number: G464426-EPA11DUXLAB

Client ID:	Procedural Blank	FID LCS	Filter from CAD012BFOR1	Filter from CAD012C3OR1	Filter from CAD01390OR1
Battelle Sample ID:	YH09PB	YH10LCS	X8406-F	X8407-F	X8436-F
Battelle Batch ID:	00-425	00-425	00-425	00-425	00-425
Collection date	NA	NA	09/09/00	09/09/00	09/11/00
Dilution Factor	2.00	2.00	2.00	2.00	2.00
Sample Volume(l):	2.00	2.00	2.00	2.00	2.00
Units:	ug/l	ug/l	ug/l	ug/l	ug/l
Sample Area:	15944.140	NA	17756.658	24519.291	15762.235
DCM Area:	15182.440	15182.440	15182.440	15182.440	15182.440
OTP Area:	135.900	126.386	73.696	111.228	66.022
Androstane Area:	281.638	279.651	284.514	264.452	261.183
SCA Sample Corrected Area:	344.162	NA	2216.008	8961.171	252.590
Androstane Amount (ug):	20.200	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.218	20.218	20.218	20.218	20.218
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.636	3.636	3.636	3.636	3.636
Dilution Factor:	2.000	2.000	2.000	2.000	2.000
AVE RF:	0.989	0.989	0.989	0.989	0.989
OTP RF:	1.076	1.076	1.076	1.076	1.076
MDL VALUE ug/L	78.40	78.40	78.40	78.40	78.40
OTP Surrogate Recovery:	90	84	48	78	47
Total Hydrocarbons:	20.14 J	NA	154.26	687.28	14.93 J

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 MDL in PB
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Project Name: WA 3-26 BOSTON CAP
 PROJECT
 Project Number: G464426-

Client ID:	Procedural Blank:	Laboratory Control Sample	IC
Battelle Sample ID:	YE17PB	YE18LCS	SC0755,6,1
Battelle Batch ID:	00-352	00-352	00-352
Collection Date	NA	NA	NA
Dilution Factor	2.00	2.00	1.00
Sample Volume(l):	1.80	2.00	NA
Units:	ug/l	ug/l	ug/l
Sample Area:	16033.56	0.00	0.00
DCM Area:	15541.62	15541.62	15541.62
OTP Area:	151.33	156.68	186.44
Androstane Area:	267.43	280.44	172.05
SCA Sample Corrected Area:	73.18	ND	NA
Androstane Amount (ug):	20.20	20.20	19.94
OTP Amount (ug):	20.28	20.28	20.20
PAH RIS Amount (ug):	3.00	3.00	3.00
PAH SIS Amount (ug):	3.60	3.60	3.60
Dilution Factor:	2.00	2.00	1.00
AVE RF:	0.99	0.99	0.99
OTP RF:	1.08	1.08	1.08
MDL ug/l	87.11	78.40	NA
OTP Surrogate Recovery:	105	103	99
Total Hydrocarbons:	0.87 J	NA U	NA

NA - Not Applicable.

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Project Name: WA 3-26 BOSTON CAP
 PROJECT
 Project Number: G464426-

Client ID:	CAD0104AOR1	CAD0104DOR1	CAD01050OR1	CAD01053OR1
Battelle Sample ID:	X7967	X7968	X7969	X7970
Battelle Batch ID:	00-352	00-352	00-352	00-352
Collection Date	09/06/00	09/06/00	09/06/00	09/06/00
Dilution Factor	2.00	2.00	2.00	2.00
Sample Volume(l):	2.00	2.00	2.00	2.00
Units:	ug/l	ug/l	ug/l	ug/l
Sample Area:	16400.97	16391.88	16291.47	16359.11
DCM Area:	15541.62	15541.62	15541.62	15541.62
OTP Area:	144.38	154.89	133.45	138.65
Androstane Area:	280.93	281.20	285.07	292.20
SCA Sample Corrected Area:	434.04	414.17	331.33	386.64
Androstane Amount (ug):	20.20	20.20	20.20	20.20
OTP Amount (ug):	20.28	20.28	20.28	20.28
PAH RIS Amount (ug):	3.00	3.00	3.00	3.00
PAH SIS Amount (ug):	3.60	3.60	3.60	3.60
Dilution Factor:	2.00	2.00	2.00	2.00
AVE RF:	0.99	0.99	0.99	0.99
OTP RF:	1.08	1.08	1.08	1.08
MDL ug/l	78.40	78.40	78.40	78.40
OTP Surrogate Recovery:	95	102	87	88
Total Hydrocarbons:	26.75 J	25.28 J	18.93 J	22.22 J

NA - Not Applicable.

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B- Analyte detected at a level greater than 3* MDL in PB
ME - Significant matrix interference estimated value
U analyte not detected
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Project Name: WA 3-26 BOSTON
 CAP PROJECT
 Project Number: G464426-

Client ID:	Procedural Blank	LCS for FID:	CAD012ACOR1	CAD01322OR1
Battelle Sample ID:	YF10PB	YF11LCS	YF13MS	X8422
Battelle Batch ID:	00-371	00-371	00-371	00-371
Collection Date	Water	Water	Water	Water
Dilution Factor	2.00	2.00	2.00	2.00
Sample Volume(l):	1.85	2.00	1.00	1.00
Units:	ug/l	ug/l	ug/l	ug/l
Sample Area:	15725.541	0.000	0.000	16224.857
DCM Area:	15155.258	15155.258	15155.258	15155.258
OTP Area:	118.570	123.010	127.064	125.850
Androstane Area:	256.743	247.319	261.460	267.433
SCA Sample Corrected Area:	194.970	ND	ND	676.316
Androstane Amount (ug):	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.284	20.284	20.284	20.284
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.603	3.603	3.603	3.603
Dilution Factor:	2.000	2.000	2.000	2.000
AVE RF:	0.989	0.989	0.989	0.989
OTP RF:	1.076	1.076	1.076	1.076
MDL VALUE ug/l	84.76	78.40	156.80	156.80
OTP Surrogate Recovery:	85	92	90	87
Total Hydrocarbons:	11.57 J	NA	NA	93.69 J

ND-Not Detected

J - Analyte detected below the MDL

B - Analyte detected at a level greater than 3* MDL in PB

ME - Significant matrix interference estimated value

U Analyte not detected

& - QC value outside the accuracy or data quality objective.

-- QC value outside the accuracy or precision data quality objective -but meets contingency criteria



Project Name: WA 3-26 BOSTON
 CAP PROJECT
 Project Number: G464426-

Client ID:	CAD01322OR1	CAD012ACOR1	CAD012AFOR1	CAD012B2OR1
Battelle Sample ID:	X8422DUP	X8403	X8404	X8405
Battelle Batch ID:	00-371	00-371	00-371	00-371
Collection Date	Water	Water	Water	Water
Dilution Factor	2.00	2.00	2.00	2.00
Sample Volume(l):	1.00	1.00	1.00	2.00
Units:	ug/l	ug/l	ug/l	ug/l
Sample Area:	15648.875	15904.875	15510.237	16247.303
DCM Area:	15155.258	15155.258	15155.258	15155.258
OTP Area:	123.807	120.145	121.771	128.114
Androstane Area:	261.966	259.849	257.017	268.876
SCA Sample Corrected Area:	107.844	369.623	ND	695.055
Androstane Amount (ug):	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.284	20.284	20.284	20.284
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.603	3.603	3.603	3.603
Dilution Factor:	2.000	2.000	2.000	2.000
AVE RF:	0.989	0.989	0.989	0.989
OTP RF:	1.076	1.076	1.076	1.076
MDL VALUE ug/l	156.80	156.80	156.80	78.40
OTP Surrogate Recovery:	87	86	88	88
Total Hydrocarbons:	7.20 J	48.49 J	156.80 U	47.99 J

ND-Not Detected
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 U Analyte not detected
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 ~ - QC value outside the accuracy or precision data quality objective -but meets contingency criteria



Project Name: WA 3-26 BOSTON
 CAP PROJECT
 Project Number: G464426-

Client ID:	CAD012BFOR1	CAD012C3OR1	CAD012C6OR1	CAD012CCOR1
Battelle Sample ID:	X8406	X8407	X8408	X8409
Battelle Batch ID:	00-371	00-371	00-371	00-371
Collection Date	Water	Water	Water	Water
Dilution Factor	2.00	2.00	2.00	2.00
Sample Volume(l):	2.00	2.00	2.00	2.00
Units:	ug/l	ug/l	ug/l	ug/l
Sample Area:	15943.924	16134.387	19760.939	15576.685
DCM Area:	15155.258	15155.258	15155.258	15155.258
OTP Area:	126.057	127.741	132.481	127.896
Androstane Area:	268.911	258.839	261.145	260.783
SCA Sample Corrected Area:	393.698	592.549	4212.055	ND
Androstane Amount (ug):	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.284	20.284	20.284	20.284
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.603	3.603	3.603	3.603
Dilution Factor:	2.000	2.000	2.000	2.000
AVE RF:	0.989	0.989	0.989	0.989
OTP RF:	1.076	1.076	1.076	1.076
MDL VALUE ug/l	78.40	78.40	78.40	78.40
OTP Surrogate Recovery:	87	91	94	91
Total Hydrocarbons:	25.10 J	41.95 J	324.63	78.40 U

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Project Name: WA 3-26 BOSTON
 CAP PROJECT
 Project Number: G464426-

Client ID:	CAD012CFOR1	CAD012D2OR1	CAD012D6OR1	CAD012DCOR1
Battelle Sample ID:	X8410	X8411	X8412	X8413
Battelle Batch ID:	00-371	00-371	00-371	00-371
Collection Date	Water	Water	Water	Water
Dilution Factor	2.00	2.00	2.00	2.00
Sample Volume(l):	2.00	2.00	2.00	2.00
Units:	ug/l	ug/l	ug/l	ug/l
Sample Area:	17320.881	19726.238	15821.592	16051.463
DCM Area:	15155.258	15155.258	15155.258	15155.258
OTP Area:	129.020	132.892	131.999	128.441
Androstane Area:	267.671	278.265	269.142	264.381
SCA Sample Corrected Area:	1768.932	4159.823	265.193	503.383
Androstane Amount (ug):	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.284	20.284	20.284	20.284
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.603	3.603	3.603	3.603
Dilution Factor:	2.000	2.000	2.000	2.000
AVE RF:	0.989	0.989	0.989	0.989
OTP RF:	1.076	1.076	1.076	1.076
MDL VALUE ug/l	78.40	78.40	78.40	78.40
OTP Surrogate Recovery:	89	88	91	90
Total Hydrocarbons:	130.17	300.53	15.32 J	34.08 J

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Project Name: WA 3-26 BOSTON
 CAP PROJECT
 Project Number: G464426-

Client ID:	CAD012E0OR1	CAD012ECOR1	CAD012F0OR1	CAD012F4OR1
Battelle Sample ID:	X8414	X8415	X8416	X8417
Battelle Batch ID:	00-371	00-371	00-371	00-371
Collection Date	Water	Water	Water	Water
Dilution Factor	2.00	2.00	2.00	2.00
Sample Volume(l):	2.00	2.00	2.00	2.00
Units:	ug/l	ug/l	ug/l	ug/l
Sample Area:	18773.342	15229.387	16206.071	16030.012
DCM Area:	15155.258	15155.258	15155.258	15155.258
OTP Area:	124.239	127.021	127.968	130.525
Androstane Area:	257.609	261.342	269.956	274.737
SCA Sample Corrected Area:	3236.236	ND	652.889	469.492
Androstane Amount (ug):	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.284	20.284	20.284	20.284
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.603	3.603	3.603	3.603
Dilution Factor:	2.000	2.000	2.000	2.000
AVE RF:	0.989	0.989	0.989	0.989
OTP RF:	1.076	1.076	1.076	1.076
MDL VALUE ug/l	78.40	78.40	78.40	78.40
OTP Surrogate Recovery:	89	90	88	88
Total Hydrocarbons:	251.78	78.40 U	44.59 J	30.10 J

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Project Name: WA 3-26 BOSTON
 CAP PROJECT
 Project Number: G464426-

Client ID:	CAD0130COR1	CAD0130FOR1	CAD01312OR1	CAD0131FOR1
Battelle Sample ID:	X8418	X8419	X8420	X8421
Battelle Batch ID:	00-371	00-371	00-371	00-371
Collection Date	Water	Water	Water	Water
Dilution Factor	2.00	2.00	2.00	2.00
Sample Volume(l):	2.00	2.00	2.00	2.00
Units:	ug/l	ug/l	ug/l	ug/l
Sample Area:	15256.302	16665.953	16417.883	16325.866
DCM Area:	15155.258	15155.258	15155.258	15155.258
OTP Area:	131.625	127.441	126.879	124.330
Androstane Area:	276.830	260.238	258.251	256.545
SCA Sample Corrected Area:	ND	1123.016	877.495	789.733
Androstane Amount (ug):	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.284	20.284	20.284	20.284
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.603	3.603	3.603	3.603
Dilution Factor:	2.000	2.000	2.000	2.000
AVE RF:	0.989	0.989	0.989	0.989
OTP RF:	1.076	1.076	1.076	1.076
MDL VALUE ug/l	78.40	78.40	78.40	78.40
OTP Surrogate Recovery:	88	91	91	90
Total Hydrocarbons:	78.40 U	83.33	64.59 J	58.07 J

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Project Name: WA 3-26 BOSTON CAP PROJECT

Project Number: G464426-EPA11DUXLAB

Client ID:	Procedural Blank:	LCS for FID:	CAD01325OR1	CAD0132EOR1
Battelle Sample ID:	YF15PB	YF16LCS	YF18MS	X8425
Battelle Batch ID:	00-372	00-372	00-372	00-372
Collection Date	NA	NA	09/10/00	09/10/00
Dilution Factor	2.00	2.00	2.00	2.00
Sample Volume(l):	1.00	2.00	1.00	1.00
Units:	ug/l	ug/l	ug/l	ug/l
Sample Area:	15743.855	0.000	0.000	15787.140
DCM Area:	15147.564	15147.564	15147.564	15147.564
OTP Area:	118.859	85.907	123.768	124.341
Androstane Area:	268.575	287.184	280.480	288.320
SCA Sample Corrected Area:	208.857	ND	ND	226.915
Androstane Amount (ug):	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.284	20.284	20.284	20.284
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.603	3.603	3.603	3.603
Dilution Factor:	2.000	2.000	2.000	2.000
AVE RF:	0.989	0.989	0.989	0.989
OTP RF:	1.076	1.076	1.076	1.076
MDL ug/l	156.80	78.40	156.80	156.80
OTP Surrogate Recovery:	82	55	82	80
Total Hydrocarbons:	22.15 J	NA	156.80 U	22.54

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 3* MDL in PB
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 estimated value
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 precision data quality objective -but meets
 contingency criteria



Project Name: WA 3-26 BOSTON CAP PR

Project Number: G464426-EPA11DUXLAB

Client ID:	CAD0132EOR1	CAD01325OR1	CAD0132BOR1
Battelle Sample ID:	X8425DUP	X8423	X8424
Battelle Batch ID:	00-372	00-372	00-372
Collection Date	09/10/00	09/10/00	09/10/00
Dilution Factor	2.00	2.00	2.00
Sample Volume(l):	1.00	1.00	1.00
Units:	ug/l	ug/l	ug/l
Sample Area:	16101.591	14566.922	15564.311
DCM Area:	15147.564	15147.564	15147.564
OTP Area:	126.117	124.852	121.453
Androstane Area:	284.494	283.686	270.833
SCA Sample Corrected Area:	543.416	ND	ND
Androstane Amount (ug):	20.200	20.200	20.200
OTP Amount (ug):	20.284	20.284	20.284
PAH RIS Amount (ug):	3.005	3.005	3.005
PAH SIS Amount (ug):	3.603	3.603	3.603
Dilution Factor:	2.000	2.000	2.000
AVE RF:	0.989	0.989	0.989
OTP RF:	1.076	1.076	1.076
MDL ug/l	156.80	156.80	156.80
OTP Surrogate Recovery:	82	81	83
Total Hydrocarbons:	J 68.41 J	156.80 U	156.80 U

ND-Not Detected

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Project Name: WA 3-26 BOSTON
 CAP PROJECT
 Project Number: G464426-
 EPA11DUXLAB

Client ID:	Procedural Blank:	LCS for FID:	CAD01331OR1	CAD013C9OR1
Battelle Sample ID:	YF74PB	YF75LCS	YF77MS	X8445
Battelle Batch ID:	00-393	00-393	00-393	00-393
Collection Date	NA	NA	09/10/00	09/11/00
Dilution Factor	2.00	2.00	2.00	2.00
Sample Volume(l):	1.85	2.00	1.00	1.00
Units:	ug/L	ug/L	ug/L	ug/L
Sample Area:	15705.254	NA	NA	15942.517
DCM Area:	14759.394	14759.394	14759.394	13247.422
OTP Area:	153.263	156.942	156.140	117.828
Androstane Area:	348.959	329.940	326.156	261.627
SCA Sample Corrected Area:	443.638	NA	NA	2315.640
Androstane Amount (ug):	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.284	20.284	20.284	20.284
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.603	3.603	3.603	3.603
Dilution Factor:	2.000	2.000	2.000	2.000
AVE RF:	1.001	1.001	1.001	0.989
OTP RF:	1.053	1.053	1.053	1.076
MDL VALUE ug/l	84.76	78.40	156.80	156.80
OTP Surrogate Recovery:	83	90	91	83
Total Hydrocarbons:	22.54 J	NA	NA	351.94

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Project Name: WA 3-26 BOSTON
 CAP PROJECT
 Project Number: G464426-
 EPA11DUXLAB

Client ID:	CAD013C9OR1	CAD01331OR1	CAD01334OR1	CAD01337OR1
Battelle Sample ID:	X8445DUP	X8426	X8427	X8428
Battelle Batch ID:	00-393	00-393	00-393	00-393
Collection Date	09/11/00	09/10/00	09/10/00	09/10/00
Dilution Factor	2.00	2.00	2.00	2.00
Sample Volume(l):	1.00	1.00	1.00	2.00
Units:	ug/L	ug/L	ug/L	ug/L
Sample Area:	16209.212	15901.982	16025.136	16459.805
DCM Area:	13247.422	14759.394	14759.394	14759.394
OTP Area:	117.482	150.294	153.031	149.613
Androstane Area:	246.712	328.504	327.228	322.180
SCA Sample Corrected Area:	2597.596	663.790	785.483	1228.618
Androstane Amount (ug):	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.284	20.284	20.284	20.284
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.603	3.603	3.603	3.603
Dilution Factor:	2.000	2.000	2.000	2.000
AVE RF:	0.989	1.001	1.001	1.001
OTP RF:	1.076	1.053	1.053	1.053
MDL VALUE ug/l	156.80	156.80	156.80	78.40
OTP Surrogate Recovery:	88	87	88	88
Total Hydrocarbons:	420.48	71.94 J	87.27 J	72.15 J

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Project Name: WA 3-26 BOSTON
 CAP PROJECT
 Project Number: G464426-
 EPA11DUXLAB

Client ID:	CAD0133AOR1	CAD01348OR1	CAD0134BOR1	CAD0134EOR1
Battelle Sample ID:	X8429	X8430	X8431	X8432
Battelle Batch ID:	00-393	00-393	00-393	00-393
Collection Date	09/10/00	09/10/00	09/10/00	09/10/00
Dilution Factor	2.00	2.00	2.00	2.00
Sample Volume(l):	2.00	2.00	2.00	2.00
Units:	ug/L	ug/L	ug/L	ug/L
Sample Area:	16754.652	15860.855	16281.910	16449.537
DCM Area:	14759.394	14759.394	14759.394	14759.394
OTP Area:	144.378	122.452	159.389	156.580
Androstane Area:	303.622	343.661	328.246	315.073
SCA Sample Corrected Area:	1547.258	635.348	1034.881	1218.490
Androstane Amount (ug):	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.284	20.284	20.284	20.284
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.603	3.603	3.603	3.603
Dilution Factor:	2.000	2.000	2.000	2.000
AVE RF:	1.001	1.001	1.001	1.001
OTP RF:	1.053	1.053	1.053	1.053
MDL VALUE ug/l	78.40	78.40	78.40	78.40
OTP Surrogate Recovery:	90	67	92	94
Total Hydrocarbons:	98.03	32.50 J	58.82 J	73.24 J

ND-Not Dected

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Project Name: WA 3-26 BOSTON
 CAP PROJECT
 Project Number: G464426-
 EPA11DUXLAB

Client ID:	CAD01371OR1	CAD01376OR1	CAD0137AOR1	CAD01390OR1
Battelle Sample ID:	X8433	X8434	X8435	X8436
Battelle Batch ID:	00-393	00-393	00-393	00-393
Collection Date	09/10/00	09/10/00	09/10/00	09/11/00
Dilution Factor	2.00	2.00	2.00	2.00
Sample Volume(l):	2.00	2.00	2.00	2.00
Units:	ug/L	ug/L	ug/L	ug/L
Sample Area:	16043.073	16813.703	16059.394	16043.911
DCM Area:	14759.394	14759.394	14759.394	14759.394
OTP Area:	162.604	158.235	156.729	152.708
Androstane Area:	342.326	351.263	340.232	335.188
SCA Sample Corrected Area:	778.749	1544.811	803.039	796.621
Androstane Amount (ug):	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.284	20.284	20.284	20.284
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.603	3.603	3.603	3.603
Dilution Factor:	2.000	2.000	2.000	2.000
AVE RF:	1.001	1.001	1.001	1.001
OTP RF:	1.053	1.053	1.053	1.053
MDL VALUE ug/l	78.40	78.40	78.40	78.40
OTP Surrogate Recovery:	90	85	87	86
Total Hydrocarbons:	41.10 J	83.94	42.82 J	43.15 J

ND-Not Detected

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Project Name: WA 3-26 BOSTON
 CAP PROJECT
 Project Number: G464426-
 EPA11DUXLAB

Client ID:	CAD01394OR1	CAD01398OR1	CAD0139FOR1	CAD013A2OR1
Battelle Sample ID:	X8437	X8438	X8439	X8440
Battelle Batch ID:	00-393	00-393	00-393	00-393
Collection Date	09/11/00	09/11/00	09/11/00	09/11/00
Dilution Factor	2.00	2.00	2.00	2.00
Sample Volume(l):	2.00	2.00	2.00	2.00
Units:	ug/L	ug/L	ug/L	ug/L
Sample Area:	16330.122	16389.561	16350.870	16257.830
DCM Area:	14759.394	14759.394	14759.394	14759.394
OTP Area:	160.185	152.603	157.581	160.666
Androstane Area:	339.659	347.389	332.377	335.259
SCA Sample Corrected Area:	1070.884	1130.175	1101.518	1002.511
Androstane Amount (ug):	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.284	20.284	20.284	20.284
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.603	3.603	3.603	3.603
Dilution Factor:	2.000	2.000	2.000	2.000
AVE RF:	1.001	1.001	1.001	1.001
OTP RF:	1.053	1.053	1.053	1.053
MDL VALUE ug/l	78.40	78.40	78.40	78.40
OTP Surrogate Recovery:	89	83	90	91
Total Hydrocarbons:	58.82 J	60.85 J	62.07 J	55.54 J

ND-Not Detected

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ME - Significant matrix interference estimated value

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Project Name: WA 3-26 BOSTON
 CAP PROJECT
 Project Number: G464426-
 EPA11DUXLAB

Client ID:	CAD013A6OR1	CAD013AAOR1	CAD013B0OR1	CAD013B4OR1
Battelle Sample ID:	X8441	X8442	X8443	X8444
Battelle Batch ID:	00-393	00-393	00-393	00-393
Collection Date	09/11/00	09/11/00	09/11/00	09/11/00
Dilution Factor	2.00	2.00	2.00	2.00
Sample Volume(l):	2.00	2.00	2.00	2.00
Units:	ug/L	ug/L	ug/L	ug/L
Sample Area:	16976.891	16297.170	16609.557	16360.765
DCM Area:	13247.422	13247.422	13247.422	13247.422
OTP Area:	120.066	113.561	121.296	118.611
Androstane Area:	262.360	250.956	250.654	262.192
SCA Sample Corrected Area:	3347.043	2685.231	2990.185	2732.540
Androstane Amount (ug):	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.284	20.284	20.284	20.284
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.603	3.603	3.603	3.603
Dilution Factor:	2.000	2.000	2.000	2.000
AVE RF:	0.989	0.989	0.989	0.989
OTP RF:	1.076	1.076	1.076	1.076
MDL VALUE ug/l	78.40	78.40	78.40	78.40
OTP Surrogate Recovery:	85	84	90	84
Total Hydrocarbons:	255.76	213.74	238.85	208.06

ND-Not Detected

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ME - Significant matrix interference estimated value

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Project Name: WA 3-26 BOSTON
 CAP PROJECT
 Project Number: G464426-
 EPA11DUXLAB

Client ID:	Procedural Blank:	LCS for FID	CAD01405OR1	CAD0143COR1
Battelle Sample ID:	YG28PB	YG29LCS	YG31MS	X8623
Battelle Batch ID:	00-405	00-405	00-405	00-405
Collection Date	NA	NA	09/12/00	09/12/00
Dilution Factor	2.00	2.00	2.00	2.00
Sample Volume(l):	1.80	2.00	1.00	1.00
Units:	ug/l	ug/l	ug/l	ug/l
Sample Area:	16626.646	NA	NA	15314.521
DCM Area:	16030.312	16030.312	16030.312	15075.366
OTP Area:	107.223	125.945	127.503	123.264
Androstane Area:	276.366	284.585	277.566	251.589
SCA Sample Corrected Area:	212.745	NA	NA	ND
Androstane Amount (ug):	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.284	20.284	20.284	20.284
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.603	3.603	3.603	3.603
Dilution Factor:	2.000	2.000	2.000	2.000
AVE RF:	0.989	0.989	0.989	0.989
OTP RF:	1.076	1.076	1.076	1.076
MDL VALUE ug	87.11	78.40	156.80	156.80
OTP Surrogate Recovery:	72	82	85	91
Total Hydrocarbons:	12.13 J	NA	NA	156.80 U

NA-Not Applicable.

ND-Not Detected

J- Analyte detected below the MDL

B-Analyte detected at a level greater than 3* MDL in PB

ME - Significant matrix interference estimated value

U Analyte not detected

& - QC value outside the accuracy or data quality objective.

-- QC value outside the accuracy or precision data quality objective -but meets contingency criteria



Project Name: WA 3-26 BOSTON
 CAP PROJECT
 Project Number: G464426-
 EPA11DUXLAB

Client ID:	CAD0143COR1	CAD01405OR1	CAD01408OR1	CAD0140BOR1
Battelle Sample ID:	X8623DUP	X8609	X8610	X8611
Battelle Batch ID:	00-405	00-405	00-405	00-405
Collection Date	09/12/00	09/12/00	09/12/00	09/12/00
Dilution Factor	2.00	2.00	2.00	2.00
Sample Volume(l):	1.00	1.00	1.00	2.00
Units:	ug/l	ug/l	ug/l	ug/l
Sample Area:	16017.566	16603.219	16312.979	16822.996
DCM Area:	15075.366	16030.312	16030.312	16030.312
OTP Area:	121.182	116.767	117.227	124.095
Androstane Area:	304.171	280.673	289.865	305.922
SCA Sample Corrected Area:	516.847	175.467	ND	362.667
Androstane Amount (ug):	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.284	20.284	20.284	20.284
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.603	3.603	3.603	3.603
Dilution Factor:	2.000	2.000	2.000	2.000
AVE RF:	0.989	0.989	0.989	0.989
OTP RF:	1.076	1.076	1.076	1.076
MDL VALUE ug	156.80	156.80	156.80	78.40
OTP Surrogate Recovery:	74	77	75	75
Total Hydrocarbons:	59.80 J	15.93 J	156.80 U	19.41 J

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 ME - Significant matrix interference estimated value
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... Putting Technology To Work

Project Name: WA 3-26 BOSTON
CAP PROJECT
Project Number: G464426-
EPA11DUXLAB

Client ID:	CAD01416OR1	CAD01419OR1	CAD0141COR1	CAD0141FOR1
Battelle Sample ID:	X8612	X8613	X8614	X8615
Battelle Batch ID:	00-405	00-405	00-405	00-405
Collection Date	09/12/00	09/12/00	09/12/00	09/12/00
Dilution Factor	2.00	2.00	2.00	2.00
Sample Volume(l):	2.00	2.00	2.00	2.00
Units:	ug/l	ug/l	ug/l	ug/l
Sample Area:	16767.227	16409.033	16498.639	17112.378
DCM Area:	15075.366	15075.366	15075.366	15075.366
OTP Area:	186.875	159.903	150.137	165.694
Androstane Area:	439.586	369.966	356.202	367.633
SCA Sample Corrected Area:	1065.400	803.798	916.934	1503.685
Androstane Amount (ug):	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.284	20.284	20.284	20.284
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.603	3.603	3.603	3.603
Dilution Factor:	2.000	2.000	2.000	2.000
AVE RF:	0.989	0.989	0.989	0.989
OTP RF:	1.076	1.076	1.076	1.076
MDL VALUE ug	78.40	78.40	78.40	78.40
OTP Surrogate Recovery:	79	80	78	83
Total Hydrocarbons:	44.70 J	39.57 J	47.77 J	78.73

NA-Not Applicable.

ND-Not Detected

J- Analyte detected below the MDL

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ME - Significant matrix interference estimated value

U Analyte not detected

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Project Name: WA 3-26 BOSTON
 CAP PROJECT
 Project Number: G464426-
 EPA11DUXLAB

Client ID:	CAD01422OR1	CAD01425OR1	CAD01428OR1	CAD0142BOR1
Battelle Sample ID:	X8616	X8617	X8618	X8619
Battelle Batch ID:	00-405	00-405	00-405	00-405
Collection Date	09/12/00	09/12/00	09/12/00	09/12/00
Dilution Factor	2.00	2.00	2.00	2.00
Sample Volume(l):	2.00	2.00	2.00	2.00
Units:	ug/l	ug/l	ug/l	ug/l
Sample Area:	16399.672	15938.676	16154.371	15669.509
DCM Area:	15075.366	15075.366	15075.366	15075.366
OTP Area:	134.528	122.122	129.651	131.190
Androstane Area:	317.867	265.585	273.072	299.019
SCA Sample Corrected Area:	871.911	475.603	676.282	163.934
Androstane Amount (ug):	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.284	20.284	20.284	20.284
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.603	3.603	3.603	3.603
Dilution Factor:	2.000	2.000	2.000	2.000
AVE RF:	0.989	0.989	0.989	0.989
OTP RF:	1.076	1.076	1.076	1.076
MDL VALUE ug	78.40	78.40	78.40	78.40
OTP Surrogate Recovery:	78	85	88	81
Total Hydrocarbons:	51.22 J	31.77 J	45.78 J	6.39 J

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Battelle

... Putting Technology To Work

Project Name: WA 3-26 BOSTON
CAP PROJECT
Project Number: G464426-
EPA11DUXLAB

Client ID:	CAD0142EOR1	CAD01436OR1	CAD01439OR1
Battelle Sample ID:	X8620	X8621	X8622
Battelle Batch ID:	00-405	00-405	00-405
Collection Date	09/12/00	09/12/00	09/12/00
Dilution Factor	2.00	2.00	2.00
Sample Volume(l):	2.00	2.00	2.00
Units:	ug/l	ug/l	ug/l
Sample Area:	15940.971	15825.529	15967.413
DCM Area:	15075.366	15075.366	15075.366
OTP Area:	125.723	120.483	118.325
Androstane Area:	290.247	274.744	281.199
SCA Sample Corrected Area:	449.635	354.936	492.523
Androstane Amount (ug):	20.200	20.200	20.200
OTP Amount (ug):	20.284	20.284	20.284
PAH RIS Amount (ug):	3.005	3.005	3.005
PAH SIS Amount (ug):	3.603	3.603	3.603
Dilution Factor:	2.000	2.000	2.000
AVE RF:	0.989	0.989	0.989
OTP RF:	1.076	1.076	1.076
MDL VALUE ug	78.40	78.40	78.40
OTP Surrogate Recovery:	80	81	78
Total Hydrocarbons:	26.83 J	21.58 J	30.97 J

NA-Not Applicable.

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Project Name: WA 3-26 BOSTON
 CAP PROJECT
 Project Number: G464426-
 EPA11DUXLAB

Client ID:	Procedural Blank	LCS for FID	CAD01469OR1	CAD014DBOR1
Battelle Sample ID:	YG33PB	YG34LCS	YG36MS	X8583
Battelle Batch ID:	00-406	00-406	00-406	00-406
Collection Date	NA	NA	09/14/00	09/15/00
Dilution Factor	2.00	2.00	2.00	2.00
Sample Volume(l):	1.85	1.00	1.00	1.00
Units:	ug/l	ug/l	ug/l	ug/l
Sample Area:	16178.952	0.000	0.000	18711.111
DCM Area:	15522.477	15522.477	15522.477	15522.477
OTP Area:	126.698	129.845	121.049	138.014
Androstane Area:	284.358	287.723	284.229	319.991
SCA Sample Corrected Area:	245.419	ND	ND	2730.629
Androstane Amount (ug):	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.284	20.284	20.284	20.284
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.603	3.603	3.603	3.603
Dilution Factor:	2.000	2.000	2.000	2.000
AVE RF:	0.989	0.989	0.989	0.989
OTP RF:	1.076	1.076	1.076	1.076
MDL VALUE ug/l	84.76	156.80	156.80	156.80
OTP Surrogate Recovery:	82	84	79	80
Total Hydrocarbons:	13.86 J	NA	NA	338.97

ND-Not Detected
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Project Name: WA 3-26 BOSTON
 CAP PROJECT
 Project Number: G464426-
 EPA11DUXLAB

Client ID:	CAD014DBOR1	CAD01469OR1	CAD0146COR1	CAD0146FOR1
Battelle Sample ID:	X8583DUP	X8594	X8595	X8596
Battelle Batch ID:	00-406	00-406	00-406	00-406
Collection Date	09/15/00	09/14/00	09/14/00	09/14/00
Dilution Factor	2.00	2.00	2.00	2.00
Sample Volume(l):	1.00	1.00	1.00	2.00
Units:	ug/l	ug/l	ug/l	ug/l
Sample Area:	16855.150	16281.556	16173.608	16765.906
DCM Area:	15522.477	15522.477	15522.477	15522.477
OTP Area:	140.865	113.668	118.359	133.448
Androstane Area:	300.918	267.082	282.404	310.705
SCA Sample Corrected Area:	890.890	378.329	250.368	799.276
Androstane Amount (ug):	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.284	20.284	20.284	20.284
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.603	3.603	3.603	3.603
Dilution Factor:	2.000	2.000	2.000	2.000
AVE RF:	0.989	0.989	0.989	0.989
OTP RF:	1.076	1.076	1.076	1.076
MDL VALUE ug/l	156.80	156.80	156.80	78.40
OTP Surrogate Recovery:	87	79	78	80
Total Hydrocarbons:	111.33 J	48.25 J	26.60 J	47.74 J

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Project Name: WA 3-26 BOSTON
 CAP PROJECT
 Project Number: G464426-
 EPA11DUXLAB

Client ID:	CAD0147DOR1	CAD01480OR1	CAD01483OR1	CAD01486OR1
Battelle Sample ID:	X8597	X8598	X8599	X8600
Battelle Batch ID:	00-406	00-406	00-406	00-406
Collection Date	09/14/00	09/14/00	09/14/00	09/14/00
Dilution Factor	2.00	2.00	2.00	2.00
Sample Volume(l):	2.00	2.00	2.00	2.00
Units:	ug/l	ug/l	ug/l	ug/l
Sample Area:	16665.971	16471.738	17074.283	17134.203
DCM Area:	15522.477	15522.477	15522.477	15522.477
OTP Area:	148.700	155.762	130.929	128.788
Androstane Area:	291.846	292.544	281.074	280.854
SCA Sample Corrected Area:	702.948	500.955	1139.803	1202.084
Androstane Amount (ug):	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.284	20.284	20.284	20.284
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.603	3.603	3.603	3.603
Dilution Factor:	2.000	2.000	2.000	2.000
AVE RF:	0.989	0.989	0.989	0.989
OTP RF:	1.076	1.076	1.076	1.076
MDL VALUE ug/l	78.40	78.40	78.40	78.40
OTP Surrogate Recovery:	94	99	86	85
Total Hydrocarbons:	44.39 J	30.17 J	78.02 J	82.61

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 meets contingency criteria



Project Name: WA 3-26 BOSTON
 CAP PROJECT
 Project Number: G464426-
 EPA11DUXLAB

Client ID:	CAD01489OR1	CAD0148COR1	CAD0148FOR1	CAD01492OR1
Battelle Sample ID:	X8601	X8602	X8603	X8604
Battelle Batch ID:	00-406	00-406	00-406	00-406
Collection Date	09/14/00	09/14/00	09/14/00	09/14/00
Dilution Factor	2.00	2.00	2.00	2.00
Sample Volume(l):	2.00	2.00	2.00	2.00
Units:	ug/l	ug/l	ug/l	ug/l
Sample Area:	16356.890	17120.975	17586.373	16792.848
DCM Area:	15522.477	15522.477	15522.477	15522.477
OTP Area:	133.461	133.983	131.192	129.429
Androstane Area:	298.192	291.593	284.644	298.330
SCA Sample Corrected Area:	402.760	1172.922	1648.060	842.612
Androstane Amount (ug):	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.284	20.284	20.284	20.284
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.603	3.603	3.603	3.603
Dilution Factor:	2.000	2.000	2.000	2.000
AVE RF:	0.989	0.989	0.989	0.989
OTP RF:	1.076	1.076	1.076	1.076
MDL VALUE ug/l	78.40	78.40	78.40	78.40
OTP Surrogate Recovery:	83	85	85	80
Total Hydrocarbons:	22.78 J	77.35 J	113.45	52.88 J

ND-Not Detected
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Project Name: WA 3-26 BOSTON
 CAP PROJECT
 Project Number: G464426-
 EPA11DUXLAB

Client ID:	CAD01495OR1	CAD0149DOR1	CAD014A0OR1	CAD014A3OR1
Battelle Sample ID:	X8605	X8606	X8607	X8608
Battelle Batch ID:	00-406	00-406	00-406	00-406
Collection Date	09/14/00	09/14/00	09/14/00	09/14/00
Dilution Factor	2.00	2.00	2.00	2.00
Sample Volume(l):	2.00	2.00	2.00	2.00
Units:	ug/l	ug/l	ug/l	ug/l
Sample Area:	16536.615	16504.012	16252.591	18444.746
DCM Area:	15522.477	15522.477	15522.477	15522.477
OTP Area:	131.400	115.852	124.072	120.584
Androstane Area:	295.601	256.479	284.792	289.224
SCA Sample Corrected Area:	587.137	609.204	321.250	2512.461
Androstane Amount (ug):	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.284	20.284	20.284	20.284
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.603	3.603	3.603	3.603
Dilution Factor:	2.000	2.000	2.000	2.000
AVE RF:	0.989	0.989	0.989	0.989
OTP RF:	1.076	1.076	1.076	1.076
MDL VALUE ug/l	78.40	78.40	78.40	78.40
OTP Surrogate Recovery:	82	84	81	77
Total Hydrocarbons:	35.76 J	43.71 J	18.23 J	172.62

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Project Name: WA 3-26 BOSTON
 CAP PROJECT
 Project Number: G464426-
 EPA11DUXLAB

Client ID:	CAD014BFOR1	CAD014C2OR1	CAD014C5OR1	CAD014D4OR1
Battelle Sample ID:	X8579	X8580	X8581	X8582
Battelle Batch ID:	00-406	00-406	00-406	00-406
Collection Date	09/15/00	09/15/00	09/15/00	09/15/00
Dilution Factor	2.00	2.00	2.00	2.00
Sample Volume(l):	2.00	2.00	2.00	2.00
Units:	ug/l	ug/l	ug/l	ug/l
Sample Area:	16865.328	16680.660	16633.686	16821.000
DCM Area:	15522.477	15522.477	15522.477	15522.477
OTP Area:	131.539	131.096	134.211	154.861
Androstane Area:	292.522	280.117	290.201	294.550
SCA Sample Corrected Area:	918.790	746.970	686.797	849.112
Androstane Amount (ug):	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.284	20.284	20.284	20.284
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.603	3.603	3.603	3.603
Dilution Factor:	2.000	2.000	2.000	2.000
AVE RF:	0.989	0.989	0.989	0.989
OTP RF:	1.076	1.076	1.076	1.076
MDL VALUE ug/l	78.40	78.40	78.40	78.40
OTP Surrogate Recovery:	83	87	86	97
Total Hydrocarbons:	59.35 J	49.66 J	43.53 J	54.07 J

ND-Not Detected

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ME - Significant matrix interference estimated value

U - Analyte not detected

& - QC value outside the accuracy or data quality objective.

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Project Name: WA 3-26 BOSTON
 CAP PROJECT
 Project Number: G464426-
 EPA11DUXLAB

Client ID:	Procedural Blank:	LCS for FID:	CAD014DEOR1	CAD01547OR1
Battelle Sample ID:	YG38PB	YG39LCS	YG41MS	X8573
Battelle Batch ID:	00-407	00-407	00-407	00-407
Collection date	NA	NA	NA	09/15/00
Dilution Factor	2.00	2.00	2.00	2.00
Sample Volume(l):	1.85	2.00	1.00	1.00
Units:	ug/l	ug/l	ug/l	ug/l
Sample Area:	16751.826	NA	NA	15614.383
DCM Area:	14463.697	14463.697	14463.697	14463.697
OTP Area:	197.332	163.090	168.464	157.705
Androstane Area:	442.790	354.594	357.500	320.064
SCA Sample Corrected Area:	1648.007	NA	NA	672.917
Androstane Amount (ug):	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.284	20.284	20.284	20.284
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.603	3.603	3.603	3.603
Dilution Factor:	2.000	2.000	2.000	2.000
AVE RF:	1.001	1.001	1.001	1.001
OTP RF:	1.053	1.053	1.053	1.053
MDL VALUE ug/l	84.76	78.40	156.80	156.80
OTP Surrogate Recovery:	84	87	89	93
Total Hydrocarbons:	76.00 J	NA	NA	75.24 J

NA-Not Applicable.
 ND-Not Detected
 J- Analyte detected below the MDL
 B-Analyte detected at a level greater than 3* MDL in PB
 ME - Significant matrix interference estimated value
 U Analyte not detected
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Project Name: WA 3-26 BOSTON
 CAP PROJECT
 Project Number: G464426-
 EPA11DUXLAB

Client ID:	CAD01547OR1	CAD014DEOR1	CAD014E4OR1	CAD014E7OR1
Battelle Sample ID:	X8573DUP	X8584	X8585	X8586
Battelle Batch ID:	00-407	00-407	00-407	00-407
Collection date	09/15/00	09/15/00	09/15/00	09/15/00
Dilution Factor	2.00	2.00	2.00	2.00
Sample Volume(l):	1.00	1.00	1.00	2.00
Units:	ug/l	ug/l	ug/l	ug/l
Sample Area:	15465.141	15865.512	15693.479	16907.676
DCM Area:	14463.697	14463.697	14463.697	14463.697
OTP Area:	164.997	165.620	157.720	163.662
Androstane Area:	374.898	356.946	345.408	363.726
SCA Sample Corrected Area:	461.549	879.249	726.654	1916.591
Androstane Amount (ug):	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.284	20.284	20.284	20.284
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.603	3.603	3.603	3.603
Dilution Factor:	2.000	2.000	2.000	2.000
AVE RF:	1.001	1.001	1.001	1.001
OTP RF:	1.053	1.053	1.053	1.053
MDL VALUE ug/l	156.80	156.80	156.80	78.40
OTP Surrogate Recovery:	83	88	86	85
Total Hydrocarbons:	40.08 J	89.80 J	75.29 J	101.53

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 ND-Not Detected
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 ME - Significant matrix interference estimated value
 U Analyte not detected
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Project Name: WA 3-26 BOSTON
 CAP PROJECT
 Project Number: G464426-
 EPA11DUXLAB

Client ID:	CAD014EAOR1	CAD014EDOR1	CAD014F3OR1	CAD014F6OR1
Battelle Sample ID:	X8587	X8588	X8589	X8590
Battelle Batch ID:	00-407	00-407	00-407	00-407
Collection date	09/15/00	09/15/00	09/15/00	09/15/00
Dilution Factor	2.00	2.00	2.00	2.00
Sample Volume(l):	2.00	2.00	2.00	2.00
Units:	ug/l	ug/l	ug/l	ug/l
Sample Area:	15890.675	16214.619	15776.024	15981.193
DCM Area:	14463.697	14463.697	14463.697	14463.697
OTP Area:	158.248	173.992	162.762	157.122
Androstane Area:	344.170	366.508	350.896	350.168
SCA Sample Corrected Area:	924.560	1210.422	798.669	1010.206
Androstane Amount (ug):	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.284	20.284	20.284	20.284
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.603	3.603	3.603	3.603
Dilution Factor:	2.000	2.000	2.000	2.000
AVE RF:	1.001	1.001	1.001	1.001
OTP RF:	1.053	1.053	1.053	1.053
MDL VALUE ug/l	78.40	78.40	78.40	78.40
OTP Surrogate Recovery:	87	90	88	85
Total Hydrocarbons:	49.40 J	61.84 J	41.12 J	53.41 J

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Project Name: WA 3-26 BOSTON
 CAP PROJECT
 Project Number: G464426-
 EPA11DUXLAB

Client ID:	CAD01511OR1	CAD01514OR1	CAD0151AOR1	CAD01523OR1
Battelle Sample ID:	X8591	X8592	X8593	X8564
Battelle Batch ID:	00-407	00-407	00-407	00-407
Collection date	09/15/00	09/15/00	09/15/00	09/15/00
Dilution Factor	2.00	2.00	2.00	2.00
Sample Volume(l):	2.00	2.00	2.00	2.00
Units:	ug/l	ug/l	ug/l	ug/l
Sample Area:	15797.486	16212.533	16415.920	15809.036
DCM Area:	14463.697	14463.697	14463.697	14463.697
OTP Area:	155.702	165.886	164.575	176.920
Androstane Area:	351.281	358.486	342.263	380.259
SCA Sample Corrected Area:	826.806	1224.464	1445.385	788.160
Androstane Amount (ug):	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.284	20.284	20.284	20.284
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.603	3.603	3.603	3.603
Dilution Factor:	2.000	2.000	2.000	2.000
AVE RF:	1.001	1.001	1.001	1.001
OTP RF:	1.053	1.053	1.053	1.053
MDL VALUE ug/l	78.40	78.40	78.40	78.40
OTP Surrogate Recovery:	84	88	91	88
Total Hydrocarbons:	42.69 J	64.12 J	80.41	37.02 J

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Project Name: WA 3-26 BOSTON
 CAP PROJECT
 Project Number: G464426-
 EPA11DUXLAB

Client ID:	CAD01526OR1	CAD01529OR1	CAD01534OR1	CAD01538OR1
Battelle Sample ID:	X8565	X8566	X8567	X8568
Battelle Batch ID:	00-407	00-407	00-407	00-407
Collection date	09/15/00	09/15/00	09/15/00	09/15/00
Dilution Factor	2.00	2.00	2.00	2.00
Sample Volume(l):	2.00	2.00	2.00	2.00
Units:	ug/l	ug/l	ug/l	ug/l
Sample Area:	15893.704	15972.594	16018.827	16428.100
DCM Area:	14463.697	14463.697	14463.697	14463.697
OTP Area:	157.377	178.801	187.430	169.423
Androstane Area:	344.922	394.566	352.519	372.336
SCA Sample Corrected Area:	927.708	935.530	1015.181	1422.644
Androstane Amount (ug):	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.284	20.284	20.284	20.284
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.603	3.603	3.603	3.603
Dilution Factor:	2.000	2.000	2.000	2.000
AVE RF:	1.001	1.001	1.001	1.001
OTP RF:	1.053	1.053	1.053	1.053
MDL VALUE ug/l	78.40	78.40	78.40	78.40
OTP Surrogate Recovery:	86	86	101	86
Total Hydrocarbons:	49.47 J	43.04 J	53.31 J	72.30 J

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Project Name: WA 3-26 BOSTON
 CAP PROJECT
 Project Number: G464426-
 EPA11DUXLAB

Client ID:	CAD0153BOR1	CAD0153EOR1	CAD01541OR1	CAD01544OR1
Battelle Sample ID:	X8569	X8570	X8571	X8572
Battelle Batch ID:	00-407	00-407	00-407	00-407
Collection date	09/15/00	09/15/00	09/15/00	09/15/00
Dilution Factor	2.00	2.00	2.00	2.00
Sample Volume(l):	2.00	2.00	2.00	2.00
Units:	ug/l	ug/l	ug/l	ug/l
Sample Area:	16094.649	15830.227	16294.820	16360.988
DCM Area:	14463.697	14463.697	14463.697	14463.697
OTP Area:	182.230	160.143	161.993	165.292
Androstane Area:	377.165	323.491	367.577	363.475
SCA Sample Corrected Area:	1071.557	882.896	1301.553	1368.524
Androstane Amount (ug):	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.284	20.284	20.284	20.284
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.603	3.603	3.603	3.603
Dilution Factor:	2.000	2.000	2.000	2.000
AVE RF:	1.001	1.001	1.001	1.001
OTP RF:	1.053	1.053	1.053	1.053
MDL VALUE ug/l	78.40	78.40	78.40	78.40
OTP Surrogate Recovery:	91	94	83	86
Total Hydrocarbons:	52.53 J	50.27 J	66.65 J	71.17 J

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Project Name: WA 3-26 BOSTON
 CAP PROJECT
 Project Number: G464426-
 EPA11DUXLAB

Client ID:	Procedural Blank:	LCS for FID:	CAD0154COR1	CAD01564OR1
Battelle Sample ID:	YG43PB	YG44LCS	YG46MS	X8578
Battelle Batch ID:	00-408	00-408	00-408	00-408
Collection Date	NA	NA	09/15/00	09/16/00
Dilution Factor	2.00	2.00	2.00	2.00
Sample Volume(l):	1.40	2.00	1.00	1.00
Units:	ug/l	ug/l	ug/l	ug/l
Sample Area:	16245.397	NA	NA	15499.273
DCM Area:	14953.904	NA	NA	14775.867
OTP Area:	156.949	182.287	141.202	168.321
Androstane Area:	335.170	341.762	328.091	367.646
SCA Sample Corrected Area:	799.374	NA	NA	187.439
Androstane Amount (ug):	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.284	20.284	20.284	20.284
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.603	3.603	3.603	3.603
Dilution Factor:	2.000	2.000	2.000	2.000
AVE RF:	1.001	1.001	1.001	1.001
OTP RF:	1.053	1.053	1.053	1.053
MDL VALUE ug/l	112.00	78.40	156.80	156.80
OTP Surrogate Recovery:	89	101	81	87
Total Hydrocarbons:	61.89 J	NA	NA	10.96 J

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Project Name: WA 3-26 BOSTON
 CAP PROJECT
 Project Number: G464426-
 EPA11DUXLAB

Client ID:	CAD01564OR1	CAD0154COR1	CAD0154FOR1	CAD0155EOR1	CAD01561OR1
Battelle Sample ID:	X8578DUP	X8574	X8575	X8576	X8577
Battelle Batch ID:	00-408	00-408	00-408	00-408	00-408
Collection Date	09/16/00	09/15/00	09/15/00	09/16/00	09/16/00
Dilution Factor	2.00	2.00	2.00	2.00	2.00
Sample Volume(l):	1.00	1.00	1.00	2.00	2.00
Units:	ug/l	ug/l	ug/l	ug/l	ug/l
Sample Area:	16736.141	15845.896	15628.851	15906.083	16417.303
DCM Area:	14775.867	14953.904	14953.904	14953.904	14775.867
OTP Area:	180.740	157.855	160.220	158.382	184.160
Androstane Area:	391.389	357.739	362.945	344.073	390.010
SCA Sample Corrected Area:	1388.145	376.398	151.782	449.724	1067.266
Androstane Amount (ug):	20.200	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.284	20.284	20.284	20.284	20.284
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.603	3.603	3.603	3.603	3.603
Dilution Factor:	2.000	2.000	2.000	2.000	2.000
AVE RF:	1.001	1.001	1.001	1.001	1.001
OTP RF:	1.053	1.053	1.053	1.053	1.053
MDL VALUE ug/l	156.80	156.80	156.80	78.40	78.40
OTP Surrogate Recovery:	87	83	83	87	89
Total Hydrocarbons:	133.53 J	32.85 J	7.27 J	21.57 J	50.42 J

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Project Name: WA 3-26 BOSTON CAP
 PROJECT
 Project Number: G464426-
 EPA11DUXLAB

Client ID:	Procedural Blank	LCS for FID:	CAD015ABOR1	CAD015F5OR1
Battelle Sample ID:	YH01PB	YH02LCS	YH04MS	X8877
Battelle Batch ID:	00-422	00-422	00-422	00-422
Collection date	NA	NA	09/20/00	09/20/00
Dilution Factor	2.00	2.00	2.00	2.00
Sample Volume(l):	1.80	2.00	1.00	1.00
Units:	ug/l	ug/l	ug/l	ug/l
Sample Area:	15794.636	NA	NA	16053.931
DCM Area:	15072.746	15072.746	15072.746	15072.746
OTP Area:	122.365	132.605	125.030	113.449
Androstane Area:	273.478	287.219	257.559	260.068
SCA Sample Corrected Area:	326.047	NA	NA	607.668
Androstane Amount (ug):	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.218	20.218	20.218	20.218
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.636	3.636	3.636	3.636
Dilution Factor:	2.000	2.000	2.000	2.000
AVE RF:	0.989	0.989	0.989	0.989
OTP RF:	1.076	1.076	1.076	1.076
MDL VALUE ug/l	87.11	78.40	156.80	156.80
OTP Surrogate Recovery:	83	86	90	81
Total Hydrocarbons:	21.70 J	NA	NA	85.80 J

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Project Name: WA 3-26 BOSTON CAP
 PROJECT
 Project Number: G464426-
 EPA11DUXLAB

Client ID:	CAD015F5OR1	CAD015ABOR1	CAD015B0OR1	CAD015B3OR1
Battelle Sample ID:	X8877DUP	X8863	X8864	X8865
Battelle Batch ID:	00-422	00-422	00-422	00-422
Collection date	09/20/00	09/20/00	09/20/00	09/20/00
Dilution Factor	2.00	2.00	2.00	2.00
Sample Volume(l):	1.00	1.00	1.00	2.00
Units:	ug/l	ug/l	ug/l	ug/l
Sample Area:	16680.422	16057.196	15474.909	15687.028
DCM Area:	15072.746	15072.746	15072.746	15072.746
OTP Area:	113.234	124.760	117.945	116.537
Androstane Area:	250.700	254.738	269.628	280.667
SCA Sample Corrected Area:	1243.742	604.952	14.590	217.078
Androstane Amount (ug):	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.218	20.218	20.218	20.218
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.636	3.636	3.636	3.636
Dilution Factor:	2.000	2.000	2.000	2.000
AVE RF:	0.989	0.989	0.989	0.989
OTP RF:	1.076	1.076	1.076	1.076
MDL VALUE ug/l	156.80	156.80	156.80	78.40
OTP Surrogate Recovery:	84	91	81	77
Total Hydrocarbons:	193.01	87.36 J	156.80 U	10.97 J

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Project Name: WA 3-26 BOSTON CAP
 PROJECT
 Project Number: G464426-
 EPA11DUXLAB

Client ID:	CAD015C2OR1	CAD015C5OR1	CAD015CBOR1	CAD015CEOR1
Battelle Sample ID:	X8866	X8867	X8868	X8869
Battelle Batch ID:	00-422	00-422	00-422	00-422
Collection date	09/20/00	09/20/00	09/20/00	09/20/00
Dilution Factor	2.00	2.00	2.00	2.00
Sample Volume(l):	2.00	2.00	2.00	2.00
Units:	ug/l	ug/l	ug/l	ug/l
Sample Area:	16134.201	15830.161	15981.814	15814.108
DCM Area:	15072.746	15072.746	15072.746	15072.746
OTP Area:	118.855	120.449	115.817	134.021
Androstane Area:	264.669	284.096	287.497	288.746
SCA Sample Corrected Area:	677.931	352.870	505.754	318.595
Androstane Amount (ug):	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.218	20.218	20.218	20.218
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.636	3.636	3.636	3.636
Dilution Factor:	2.000	2.000	2.000	2.000
AVE RF:	0.989	0.989	0.989	0.989
OTP RF:	1.076	1.076	1.076	1.076
MDL VALUE ug/l	78.40	78.40	78.40	78.40
OTP Surrogate Recovery:	83	79	75	86
Total Hydrocarbons:	47.49 J	20.55 J	31.11 J	17.71 J

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Project Name: WA 3-26 BOSTON CAP
 PROJECT
 Project Number: G464426-
 EPA11DUXLAB

Client ID:	CAD015D1OR1	CAD015D4OR1	CAD015D7OR1	CAD015DCOR1
Battelle Sample ID:	X8870	X8871	X8872	X8873
Battelle Batch ID:	00-422	00-422	00-422	00-422
Collection date	09/20/00	09/20/00	09/20/00	09/20/00
Dilution Factor	2.00	2.00	2.00	2.00
Sample Volume(l):	2.00	2.00	2.00	2.00
Units:	ug/l	ug/l	ug/l	ug/l
Sample Area:	15518.403	16177.673	18263.006	16423.867
DCM Area:	15072.746	15072.746	15072.746	15072.746
OTP Area:	123.070	129.450	120.167	120.530
Androstane Area:	283.947	300.036	287.586	276.549
SCA Sample Corrected Area:	38.640	675.441	2782.507	954.042
Androstane Amount (ug):	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.218	20.218	20.218	20.218
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.636	3.636	3.636	3.636
Dilution Factor:	2.000	2.000	2.000	2.000
AVE RF:	0.989	0.989	0.989	0.989
OTP RF:	1.076	1.076	1.076	1.076
MDL VALUE ug/l	78.40	78.40	78.40	78.40
OTP Surrogate Recovery:	80	80	78	81
Total Hydrocarbons:	78.40 U	41.16 J	192.79	65.64 J

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Project Name: WA 3-26 BOSTON CAP
 PROJECT
 Project Number: G464426-
 EPA11DUXLAB

Client ID:	CAD0162COR1	CAD01610OR1	CAD01613OR1	CAD01616OR1
Battelle Sample ID:	X8991DUP	X8982	X8983	X8984
Battelle Batch ID:	00-436	00-436	00-436	00-436
Collection date	09/28/00	09/28/00	09/28/00	09/28/00
Dilution Factor	2.00	2.00	2.00	2.00
Sample Volume(l):	1.00	1.00	1.00	2.00
Units:	ug/l	ug/l	ug/l	ug/l
Sample Area:	16372.017	17011.797	16165.121	16499.098
DCM Area:	15075.366	15075.366	15075.366	15075.366
OTP Area:	124.070	129.385	138.987	138.457
Androstane Area:	283.312	273.861	308.801	305.507
SCA Sample Corrected Area:	889.269	1533.185	641.967	979.768
Androstane Amount (ug):	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.218	20.218	20.218	20.218
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.636	3.636	3.636	3.636
Dilution Factor:	2.000	2.000	2.000	2.000
AVE RF:	0.989	0.989	0.989	0.989
OTP RF:	1.076	1.076	1.076	1.076
MDL VALUE ug/l	156.80	156.80	156.80	78.40
OTP Surrogate Recovery:	81	88	84	84
Total Hydrocarbons:	118.57 J	219.05	75.28 J	60.68 J

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 U Analyte not detected
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Project Name: WA 3-26 BOSTON CAP
 PROJECT
 Project Number: G464426-
 EPA11DUXLAB

Client ID:	CAD01619OR1	CAD0161COR1	CAD01620OR1	CAD01623OR1
Battelle Sample ID:	X8985	X8986	X8987	X8988
Battelle Batch ID:	00-436	00-436	00-436	00-436
Collection date	09/28/00	09/28/00	09/28/00	09/28/00
Dilution Factor	2.00	2.00	2.00	2.00
Sample Volume(l):	2.00	2.00	2.00	2.00
Units:	ug/l	ug/l	ug/l	ug/l
Sample Area:	16646.258	16495.145	16629.533	16831.939
DCM Area:	15075.366	15075.366	15075.366	15075.366
OTP Area:	129.286	130.139	137.665	136.940
Androstane Area:	291.442	282.545	293.595	278.599
SCA Sample Corrected Area:	1150.164	1007.095	1122.907	1341.034
Androstane Amount (ug):	20.200	20.200	20.200	20.200
OTP Amount (ug):	20.218	20.218	20.218	20.218
PAH RIS Amount (ug):	3.005	3.005	3.005	3.005
PAH SIS Amount (ug):	3.636	3.636	3.636	3.636
Dilution Factor:	2.000	2.000	2.000	2.000
AVE RF:	0.989	0.989	0.989	0.989
OTP RF:	1.076	1.076	1.076	1.076
MDL VALUE ug/l	78.40	78.40	78.40	78.40
OTP Surrogate Recovery:	82	86	87	91
Total Hydrocarbons:	75.78 J	67.98 J	73.30 J	93.49

NA-Not Applicable.
 ND-Not Detected
 J- Analyte detected below the MDL
 B - Analyte detected at a level greater than 3* MDL in PB
 ME - Significant matrix interference estimated value
 U Analyte not detected
 & - QC value outside the accuracy or data quality objective.
 ~ - QC value outside the accuracy or precision data quality objective -but meets contingency criteria



Project Name: WA 3-26 BOSTON CAP
 PROJECT
 Project Number: G464426-
 EPA11DUXLAB

Client ID:	CAD01626OR1	CAD01629OR1
Battelle Sample ID:	X8989	X8990
Battelle Batch ID:	00-436	00-436
Collection date	09/28/00	09/28/00
Dilution Factor	2.00	2.00
Sample Volume(l):	2.00	2.00
Units:	ug/l	ug/l
Sample Area:	16188.718	16179.137
DCM Area:	15075.366	15075.366
OTP Area:	129.658	126.239
Androstane Area:	328.034	271.413
SCA Sample Corrected Area:	655.660	706.119
Androstane Amount (ug):	20.200	20.200
OTP Amount (ug):	20.218	20.218
PAH RIS Amount (ug):	3.005	3.005
PAH SIS Amount (ug):	3.636	3.636
Dilution Factor:	2.000	2.000
AVE RF:	0.989	0.989
OTP RF:	1.076	1.076
MDL VALUE ug/l	78.40	78.40
OTP Surrogate Recovery:	73	86
Total Hydrocarbons:	36.00 J	48.31 J

NA-Not Applicable.
 ND-Not Detected
 J- Analyte detected below the MDL
 B - Analyte detected at a level greater than 3* MDL in PB
 ME - Significant matrix interference estimated value
 U Analyte not detected
 & - QC value outside the accuracy or data quality objective.
 ~ - QC value outside the accuracy or precision data quality objective -but meets contingency criteria

Evaluation of Sediment Agitation and Mixing into the Surrounding Water Column from Capping Activities - Boston Harbor

APPENDIX E

PAH LABORATORY-REPORTED SAMPLE DATA WITH QC QUALIFIERS



Project Name: WA3-26 (Boston Cap Project)

Project Number: G464426-
EPA11DUXLAB

Client ID:	Procedural Blank	LOAD #20	SRM 1944	LOAD #21
Lab ID:	YH91PB	X8997	YH96SRM	X8998
Batch ID:	00-441	00-441	00-441	00-441
Sample Collection Date:	NA	09/22/00	NA	09/22/00
Dilution Factor:	2.00	2.00	2.00	2.00
Sample Dry Weight (g):	31.00	33.37	2.02	31.00
Units:	ng/g	ng/g	ng/g	ng/g

Naphthalene	0.20 J	1.26 J	1050.56	1.34 J
Acenaphthylene	0.05 U	0.05 U	704.77	0.02 J
Acenaphthene	0.03 U	0.03 U	326.48	0.07
Fluorene	0.05 U	0.12	456.36	0.16
Phenanthrene	0.03 J	0.53	4812.64	0.47
Anthracene	0.05 U	0.04 J	1353.35	0.07
Fluoranthene	0.02 J	0.32	7864.70	0.14
Pyrene	0.03 J	0.22	7868.99	0.13
Benzo(a)anthracene	0.03 U	0.11	4028.55	0.05
Chrysene	0.03 U	0.22	5117.97	0.11
Benzo(b)fluoranthene	0.04 U	0.09	3703.69	0.06
Benzo(k)fluoranthene	0.03 U	0.08	3104.50	0.05
Benzo(a)pyrene	0.04 U	0.05	2963.20	0.03 J
Indeno(1,2,3-c,d)pyrene	0.02 U	0.04	2280.73	0.02 U
Dibenz(a,h)anthracene	0.04 U	0.04 U	636.09	0.04 U
Benzo(g,h,i)perylene	0.04	0.08	2130.81	0.11

Surrogate Recoveries (%):				
Naphthalene-d8	75	73	61	63
Phenanthrene-d10	68	75	76	72
Chrysene-d12	78	84	82	87

Surrogate Recoveries (%):

Naphthalene-d8	75	73	61	63
Phenanthrene-d10	68	75	76	72
Chrysene-d12	78	84	82	87

U= Analyte not detected.

J= Analyte detected below the MDL.

&= Value outside accuracy or precision DQO.



Project Name: WA3-26 (Boston Cap Project)

Project Number: G464426-EPA11DUXLAB

Client ID:	LOAD #22	LOAD #23	LOAD #24	LOAD #24
Lab ID:	X8999	X9000	X9001	X9001DUP
Batch ID:	00-441	00-441	00-441	00-441
Sample Collection Date:	09/23/00	09/23/00	09/24/00	09/24/00
Dilution Factor:	2.00	2.00	2.00	2.00
Sample Dry Weight (g):	29.99	30.14	29.40	30.46
Units:	ng/g	ng/g	ng/g	ng/g

Naphthalene	0.98 J	0.95 J	1.87 J	2.45 J
Acenaphthylene	0.04 J	0.23	0.05 U	0.05
Acenaphthene	0.04	0.04	0.11	0.07
Fluorene	0.09	0.16	0.14	0.14
Phenanthrene	0.67	0.71	1.54	1.38
Anthracene	0.08	0.26	0.12	0.15
Fluoranthene	1.32	0.87	4.54	3.43
Pyrene	0.85	0.89	2.09	1.81
Benzo(a)anthracene	0.42	0.69	1.09	0.83
Chrysene	0.66	1.12	1.43	1.11
Benzo(b)fluoranthene	0.44	0.44	0.50	0.57
Benzo(k)fluoranthene	0.36	0.54	0.44	0.54
Benzo(a)pyrene	0.19	0.47	0.23	0.32
Indeno(1,2,3-c,d)pyrene	0.21	0.34	0.14	0.27
Dibenz(a,h)anthracene	0.07	0.14	0.06	0.08
Benzo(g,h,i)perylene	0.24	0.39	0.16	0.32

Surrogate Recoveries (%)				
Naphthalene-d8	68	64	65	73
Phenanthrene-d10	73	69	72	77
Chrysene-d12	84	79	79	83

U= Analyte not detected.

J= Analyte detected below the MDL.

&= Value outside accuracy or precision DQO.



Project Name: WA3-26 (Boston
Cap Project)

Project Number: G464426-
EPA11DUXLAB

Client ID:	Procedural Blank	CAD012BFOR1	CAD012C3OR1	CAD01390OR1	CAD01394OR1
Lab ID:	YH09PB	X8406-F	X8407-F	X8436-F	X8437-F
Batch ID:	00-425	00-425	00-425	00-425	00-425
Sample Collection Date:	NA	09/09/00	09/09/00	09/11/00	09/11/00
Dilution Factor:	2.00	2.00	2.00	2.00	2.00
Sample Volume (L):	2.00	2.00	2.00	2.00	2.00
Units:	ng/L	ng/L	ng/L	ng/L	ng/L

Naphthalene	5.47 J	43.17	286.01	12.35 J	30.26
Acenaphthylene	0.50 U	17.04	131.35	1.63	5.73
Acenaphthene	0.64 U	3.84	34.08	0.64 U	1.01
Fluorene	0.59 U	6.22	47.98	1.04	2.79
Phenanthrene	0.28 J	22.19	171.65	3.61	10.22
Anthracene	0.42 U	17.98	155.17	1.82	7.27
Fluoranthene	0.53 U	95.39	690.77	15.54	33.35
Pyrene	0.57 U	102.37	687.16	13.77	35.99
Benzo(a)anthracene	0.83 U	47.83	415.79	6.64	17.08
Chrysene	0.44 U	48.16	394.01	5.91	19.99
Benzo(b)fluoranthene	0.51 U	39.04	319.34	5.59	17.63
Benzo(k)fluoranthene	0.52 U	49.95	381.08	5.74	18.60
Benzo(a)pyrene	0.78 U	54.88	436.74	5.98	18.74
Indeno(1,2,3-c,d)pyrene	1.10 U	36.42	294.56	3.77	13.15
Dibenz(a,h)anthracene	1.25 U	8.23	73.06	0.89 J	3.27
Benzo(g,h,i)perylene	0.68 U	36.93	291.48	3.57	13.07

Surrogate Recoveries (%):

Naphthalene-d8	86	33 &	56	38	50
Phenanthrene-d10	77	45 &	74	43 &	75
Chrysene-d12	73	49 &	77	46 &	81

U= Analyte not detected.

J= Analyte detected below the
Sample Specific MDL.

&= Value outside accuracy or
precision DQO.



Project Name: WA3-26 (Boston
Cap Project)

Project Number: G464426-
EPA11DUXLAB

Client ID:	CAD01534OR1	CAD014D4OR1	CAD014DBOR1	CAD0147DOR1	CAD01480OR1
Lab ID:	X8567-F	X8582-F	X8583-F	X8597-F	X8598-F
Batch ID:	00-425	00-425	00-425	00-425	00-425
Sample Collection Date:	09/15/00	09/15/00	09/15/00	09/14/00	09/14/00
Dilution Factor:	2.00	2.00	2.00	2.00	2.00
Sample Volume (L):	2.00	2.00	2.00	2.00	2.00
Units:	ng/L	ng/L	ng/L	ng/L	ng/L

Naphthalene	13.15 J	16.23 J	29.71	16.62 J	25.41
Acenaphthylene	1.26	1.21	2.44	1.57	3.22
Acenaphthene	0.59 J	0.60 J	1.00	0.56 J	1.81
Fluorene	1.43	1.15	1.63	1.01	3.76
Phenanthrene	4.20	3.55	4.90	2.77	12.15
Anthracene	2.55	2.41	3.18	1.75	3.86
Fluoranthene	9.06	13.12	16.13	8.60	40.86
Pyrene	8.37	10.50	15.32	8.70	33.11
Benzo(a)anthracene	3.54	4.18	7.78	3.56	11.71
Chrysene	4.39	5.68	8.69	4.97	13.98
Benzo(b)fluoranthene	3.92	4.64	6.80	3.84	12.47
Benzo(k)fluoranthene	4.22	4.70	8.13	4.83	12.55
Benzo(a)pyrene	3.65	4.36	8.88	3.05	2.36
Indeno(1,2,3-c,d)pyrene	2.75	2.92	4.80	2.96	7.54
Dibenz(a,h)anthracene	1.17 J	0.81 J	1.89	0.70 J	2.02
Benzo(g,h,i)perylene	2.99	3.29	5.48	3.00	8.10

Surrogate Recoveries (%)					
Naphthalene-d8	34 &	63	51	43	40
Phenanthrene-d10	48 &	76	74	52 &	43 &
Chrysene-d12	50 &	79	77	53 &	40 &

U= Analyte not detected.

J= Analyte detected below the
Sample Specific MDL.

&= Value outside accuracy or
precision DQO.



Project Name: WA3-26 (Boston
Cap Project)

Project Number: G464426-
EPA11DUXLAB

Client ID:	Procedural Blank	CAD01021OR1	CAD01024OR1	CAD01027OR1
Lab ID:	YE17PB	X7962	X7963	X7964
Batch ID:	00-352	00-352	00-352	00-352
Sample Collection Date:	NA	09/06/00	09/06/00	09/06/00
Dilution Factor:	2.00	2.00	2.00	2.11
Sample Volume (L):	2.00	1.00	1.00	2.00
Units:	ng/L	ng/L	ng/L	ng/L

Naphthalene	4.04 J	11.39 J	8.89 J	6.03 J
Acenaphthylene	1.00 U	1.90	0.97 J	1.13
Acenaphthene	1.28 U	1.54	1.28 U	0.68 J
Fluorene	1.18 U	2.20	1.18 U	0.86 J
Phenanthrene	0.90 U	2.47	1.64	1.12
Anthracene	0.84 U	2.76	1.27	1.25
Fluoranthene	1.06 U	17.76	8.85	9.21
Pyrene	1.14 U	14.61	9.23	9.39
Benzo(a)anthracene	0.41 J	3.29	2.16	2.25
Chrysene	0.45 J	5.12	3.05	2.91
Benzo(b)fluoranthene	1.02 U	2.61	1.02 U	1.41
Benzo(k)fluoranthene	1.04 U	1.55	1.04 U	1.18
Benzo(a)pyrene	1.56 U	2.06	1.56 U	1.31 J
Indeno(1,2,3-c,d)pyrene	2.20 U	1.17 J	2.20 U	0.88 J
Dibenz(a,h)anthracene	2.50 U	2.50 U	2.50 U	2.63 U
Benzo(g,h,i)perylene	1.36 U	1.83	1.36 U	1.11 J

Surrogate Recoveries (%):

Naphthalene-d8	84	67	64	60
Phenanthrene-d10	92	87	80	89
Chrysene-d12	102	99	91	100

U= Analyte not detected.
J= Analyte detected below the
MDL.
&= Value outside accuracy or
precision DQO.



Project Name: WA3-26 (Boston
Cap Project)

Project Number: G464426-
EPA11DUXLAB

Client ID:	CAD0102AOR1	CAD0102DOR1	CAD0104AOR1	CAD0104DOR1
Lab ID:	X7965	X7966	X7967	X7968
Batch ID:	00-352	00-352	00-352	00-352
Sample Collection Date:	09/06/00	09/06/00	09/06/00	09/06/00
Dilution Factor:	2.00	2.00	2.00	2.00
Sample Volume (L):	2.00	2.00	2.00	2.00
Units:	ng/L	ng/L	ng/L	ng/L

Naphthalene	5.97 J	6.30 J	6.81 J	5.40 J
Acenaphthylene	1.29	1.00	1.72	0.96 J
Acenaphthene	1.07 J	0.64 J	2.15	0.91 J
Fluorene	1.09 J	0.72 J	1.95	0.91 J
Phenanthrene	1.51	1.04	1.73	1.16
Anthracene	1.81	1.42	3.38	1.40
Fluoranthene	17.62	10.41	20.20	10.23
Pyrene	19.04	10.10	15.68	10.34
Benzo(a)anthracene	2.46	2.10	2.83	2.04
Chrysene	3.42	2.85	4.07	2.99
Benzo(b)fluoranthene	1.87	1.61	2.32	1.70
Benzo(k)fluoranthene	1.53	1.35	1.73	1.89
Benzo(a)pyrene	1.56 J	1.49 J	1.63	1.55 J
Indeno(1,2,3-c,d)pyrene	0.84 J	0.89 J	1.06 J	0.84 J
Dibenz(a,h)anthracene	2.50 U	2.50 U	2.50 U	2.50 U
Benzo(g,h,i)perylene	1.06 J	0.95 J	1.13 J	1.15 J

Surrogate Recoveries (%):

Naphthalene-d8	72	54	57	69
Phenanthrene-d10	94	84	89	93
Chrysene-d12	105	94	100	108

U= Analyte not detected.

J= Analyte detected below the
MDL.

&= Value outside accuracy or
precision DQO.



Project Name: WA3-26 (Boston
Cap Project)

Project Number: G464426-
EPA11DUXLAB

Client ID:	CAD01050OR1	CAD01053OR1	CAD01056OR1	CAD01056OR1
Lab ID:	X7969	X7970	X7971	X7971DUP
Batch ID:	00-352	00-352	00-352	00-352
Sample Collection Date:	09/06/00	09/06/00	09/06/00	09/06/00
Dilution Factor:	2.00	2.00	2.00	2.00
Sample Volume (L):	2.00	2.00	1.00	1.00
Units:	ng/L	ng/L	ng/L	ng/L
<hr/>				
Naphthalene	6.42 J	4.98 J	10.83 J	13.03 J
Acenaphthylene	0.84 J	0.76 J	1.66	1.17
Acenaphthene	0.87 J	0.77 J	1.22 J	1.58
Fluorene	0.98 J	0.74 J	1.37	1.80
Phenanthrene	1.45	1.02	2.42	2.21
Anthracene	1.19	0.94	2.14	2.18
Fluoranthene	9.72	8.35	14.36	14.89
Pyrene	9.83	8.19	13.89	13.43
Benzo(a)anthracene	2.11	1.32 J	3.17	3.01
Chrysene	2.96	2.12	4.21	4.25
Benzo(b)fluoranthene	2.03	0.97 J	2.54	2.82
Benzo(k)fluoranthene	1.54	0.94 J	2.73	2.63
Benzo(a)pyrene	1.90	1.07 J	2.78	2.69
Indeno(1,2,3-c,d)pyrene	0.98 J	2.20 U	1.27 J	1.37 J
Dibenz(a,h)anthracene	2.50 U	2.50 U	2.50 U	1.23 J
Benzo(g,h,i)perylene	1.23 J	1.36 U	1.50	2.21

Surrogate Recoveries (%):

Naphthalene-d8	55	61	66	78
Phenanthrene-d10	80	82	85	90
Chrysene-d12	91	88	97	102

U= Analyte not detected.
J= Analyte detected below the
MDL.

&= Value outside accuracy or
precision DQO.



Project Name: WA3-26 (Boston
Cap Project)
Project Number: G464426-
EPA11DUXLAB

Client ID:	Procedural Blank	CAD012ACOR1	CAD012AFOR1	CAD012B2OR1
Lab ID:	YF10PB	X8403	X8404	X8405
Batch ID:	00-371	00-371	00-371	00-371
Sample Collection Date:	NA	09/09/00	09/09/00	09/09/00
Dilution Factor:	2.00	2.00	2.00	2.00
Sample Volume (L):	2.00	1.00	1.00	2.00
Units:	ng/L	ng/L	ng/L	ng/L

Naphthalene	4.40 J	10.80 J	12.54 J	9.83 J
Acenaphthylene	0.50 U	1.63	1.23	1.50
Acenaphthene	0.64 U	0.82 J	0.52 J	0.39 J
Fluorene	0.59 U	0.89 J	0.64 J	0.85
Phenanthrene	0.20 J	1.50	1.17	1.82
Anthracene	0.42 U	1.58	1.43	2.06
Fluoranthene	0.53 U	13.07	10.46	17.82
Pyrene	0.57 U	11.74	9.61	14.47
Benzo(a)anthracene	0.83 U	2.41	2.15	2.92
Chrysene	0.09 J	4.58	3.11	4.19
Benzo(b)fluoranthene	0.51 U	2.47	2.09	2.39
Benzo(k)fluoranthene	0.52 U	2.56	2.07	2.41
Benzo(a)pyrene	0.78 U	2.73	1.91	2.21
Indeno(1,2,3-c,d)pyrene	1.10 U	1.62 J	1.03 J	1.31
Dibenz(a,h)anthracene	1.25 U	0.88 J	2.50 U	0.41 J
Benzo(g,h,i)perylene	0.40 J	2.55	1.84	1.76

Surrogate Recoveries (%):

Naphthalene-d8	72	63	63	67
Phenanthrene-d10	76	80	82	83
Chrysene-d12	85	90	89	88

U= Analyte not detected.

J= Analyte detected below the
MDL.

&= Value outside accuracy or
precision DQO.



Project Name: WA3-26 (Boston
Cap Project)
Project Number: G464426-
EPA11DUXLAB

Client ID:	CAD012BFOR1	CAD012C3OR1	CAD012C6OR1	CAD012CCOR1
Lab ID:	X8406	X8407	X8408	X8409
Batch ID:	00-371	00-371	00-371	00-371
Sample Collection Date:	09/09/00	09/09/00	09/09/00	09/09/00
Dilution Factor:	2.00	2.00	2.00	2.00
Sample Volume (L):	2.00	2.00	2.00	2.00
Units:	ng/L	ng/L	ng/L	ng/L

Naphthalene	5.89 J	5.08 J	96.87	36.23
Acenaphthylene	2.52	3.33	35.92	12.90
Acenaphthene	9.61	20.46	13.41	3.60
Fluorene	3.31	10.76	17.86	5.49
Phenanthrene	1.58	2.76	58.51	19.64
Anthracene	3.53	12.07	34.08	8.89
Fluoranthene	67.10	155.43	289.63	104.72
Pyrene	68.26	186.19	340.17	118.17
Benzo(a)anthracene	6.09	15.50	106.83	31.27
Chrysene	6.84	14.96	139.37	42.70
Benzo(b)fluoranthene	1.17	1.77	111.10	35.58
Benzo(k)fluoranthene	0.86	1.31	108.34	34.71
Benzo(a)pyrene	1.04	1.53	0.78 U	1.64
Indeno(1,2,3-c,d)pyrene	0.31 J	0.30 J	74.29	23.30
Dibenz(a,h)anthracene	1.25 U	1.25 U	17.11	5.15
Benzo(g,h,i)perylene	0.62 J	0.62 J	75.04	24.32

Surrogate Recoveries (%):				
Naphthalene-d8	61	65	66	68
Phenanthrene-d10	80	85	92	89
Chrysene-d12	87	92	97	93

U= Analyte not detected.
J= Analyte detected below the
MDL.
&= Value outside accuracy or
precision DQO.



Project Name: WA3-26 (Boston
 Cap Project)
 Project Number: G464426-
 EPA11DUXLAB

Client ID:	CAD012CFOR1	CAD012D2OR1	CAD012D6OR1	CAD012DCOR1
Lab ID:	X8410	X8411	X8412	X8413
Batch ID:	00-371	00-371	00-371	00-371
Sample Collection Date:	09/09/00	09/09/00	09/09/00	09/09/00
Dilution Factor:	2.00	2.00	2.00	2.00
Sample Volume (L):	2.00	2.00	2.00	2.00
Units:	ng/L	ng/L	ng/L	ng/L

Naphthalene	43.43	93.53	15.00 J	9.95 J
Acenaphthylene	18.56	53.46	6.59	2.64
Acenaphthene	4.95	14.64	1.50	0.47 J
Fluorene	7.46	19.51	2.43	1.45
Phenanthrene	25.20	62.17	5.84	2.77
Anthracene	21.15	59.76	6.54	3.46
Fluoranthene	117.51	311.64	49.87	21.66
Pyrene	126.29	370.64	58.15	21.73
Benzo(a)anthracene	57.10	152.60	16.38	5.71
Chrysene	63.88	156.95	16.68	6.92
Benzo(b)fluoranthene	56.50	135.74	12.25	3.74
Benzo(k)fluoranthene	58.21	128.15	12.32	3.73
Benzo(a)pyrene	55.63	142.69	13.35	3.64
Indeno(1,2,3-c,d)pyrene	40.72	94.55	7.89	2.17
Dibenz(a,h)anthracene	9.30	21.86	1.88	0.53 J
Benzo(g,h,i)perylene	40.23	94.53	8.81	2.47

Surrogate Recoveries (%):				
Naphthalene-d8	59	61	63	66
Phenanthrene-d10	84	84	85	85
Chrysene-d12	90	90	89	88

U= Analyte not detected.
 J= Analyte detected below the
 MDL.
 &= Value outside accuracy or
 precision DQO.



Project Name: WA3-26 (Boston
Cap Project)
Project Number: G464426-
EPA11DUXLAB

Client ID:	CAD012E0OR1	CAD012ECOR1	CAD012F0OR1	CAD012F4OR1
Lab ID:	X8414	X8415	X8416	X8417
Batch ID:	00-371	00-371	00-371	00-371
Sample Collection Date:	09/09/00	09/09/00	09/09/00	09/09/00
Dilution Factor:	2.00	2.00	2.00	2.00
Sample Volume (L):	2.00	2.00	2.00	2.00
Units:	ng/L	ng/L	ng/L	ng/L

Naphthalene	61.04	10.88 J	13.42 J	11.78 J
Acenaphthylene	32.06	3.13	3.71	3.53
Acenaphthene	15.85	0.71	1.30	1.55
Fluorene	14.91	1.53	2.08	2.13
Phenanthrene	37.03	3.40	4.79	4.28
Anthracene	39.04	3.44	4.92	4.67
Fluoranthene	253.53	21.88	34.21	33.72
Pyrene	310.29	21.39	39.01	38.17
Benzo(a)anthracene	94.27	7.08	10.95	9.00
Chrysene	93.08	8.68	11.82	11.61
Benzo(b)fluoranthene	70.98	7.16	9.37	7.11
Benzo(k)fluoranthene	77.23	6.40	9.32	7.32
Benzo(a)pyrene	71.81	6.00	9.80	6.85
Indeno(1,2,3-c,d)pyrene	48.95	3.87	5.78	4.10
Dibenz(a,h)anthracene	11.36	0.90 J	1.40	1.17 J
Benzo(g,h,i)perylene	51.21	4.28	6.29	4.54

Surrogate Recoveries (%):				
Naphthalene-d8	66	65	63	63
Phenanthrene-d10	85	86	83	81
Chrysene-d12	90	87	83	83

Surrogate Recoveries (%):

Naphthalene-d8	66	65	63	63
Phenanthrene-d10	85	86	83	81
Chrysene-d12	90	87	83	83

U= Analyte not detected.

J= Analyte detected below the
MDL.

&= Value outside accuracy or
precision DQO.



Project Name: WA3-26 (Boston
Cap Project)
Project Number: G464426-
EPA11DUXLAB

Client ID:	CAD0130COR1	CAD0130FOR1	CAD01312OR1	CAD0131FOR1
Lab ID:	X8418	X8419	X8420	X8421
Batch ID:	00-371	00-371	00-371	00-371
Sample Collection Date:	09/10/00	09/10/00	09/10/00	09/10/00
Dilution Factor:	2.00	2.00	2.00	2.00
Sample Volume (L):	2.00	2.00	2.00	2.00
Units:	ng/L	ng/L	ng/L	ng/L

Naphthalene	21.75	28.39	23.12	18.69 J
Acenaphthylene	6.61	6.41	7.60	3.29
Acenaphthene	1.13	1.65	1.76	0.92
Fluorene	2.48	3.66	3.33	1.77
Phenanthrene	6.81	8.52	9.29	4.26
Anthracene	6.75	7.99	8.30	3.45
Fluoranthene	42.79	45.35	49.72	26.49
Pyrene	44.58	44.50	49.43	25.58
Benzo(a)anthracene	11.66	12.09	13.69	6.60
Chrysene	15.10	15.66	17.85	9.08
Benzo(b)fluoranthene	11.24	12.18	14.17	6.44
Benzo(k)fluoranthene	12.25	11.58	14.07	6.37
Benzo(a)pyrene	10.65	9.78	10.36	5.99
Indeno(1,2,3-c,d)pyrene	6.66	6.68	8.17	3.17
Dibenz(a,h)anthracene	1.70	1.84	1.84	0.68 J
Benzo(g,h,i)perylene	7.37	7.44	8.89	3.68

Surrogate Recoveries (%):

Naphthalene-d8	72	74	68	66
Phenanthrene-d10	84	85	83	81
Chrysene-d12	85	86	85	83

U= Analyte not detected.

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MDL.

&= Value outside accuracy or
precision DQO.



Project Name: WA3-26 (Boston
 Cap Project)
 Project Number: G464426-
 EPA11DUXLAB

Client ID:	CAD01322OR1	CAD01322OR1
Lab ID:	X8422	X8422DUP
Batch ID:	00-371	00-371
Sample Collection Date:	09/10/00	09/10/00
Dilution Factor:	2.00	2.00
Sample Volume (L):	1.00	1.00
Units:	ng/L	ng/L

Naphthalene	18.25 J	17.83 J
Acenaphthylene	3.07	3.27
Acenaphthene	1.54	1.18 J
Fluorene	2.19	1.65
Phenanthrene	3.93	4.01
Anthracene	3.18	3.40
Fluoranthene	23.60	23.84
Pyrene	22.29	22.37
Benzo(a)anthracene	5.75	5.94
Chrysene	7.13	8.62
Benzo(b)fluoranthene	5.40	5.66
Benzo(k)fluoranthene	5.40	6.51
Benzo(a)pyrene	5.34	5.55
Indeno(1,2,3-c,d)pyrene	2.45	2.33
Dibenz(a,h)anthracene	1.07 J	2.50 U
Benzo(g,h,i)perylene	3.34	3.26

Surrogate Recoveries (%):		
Naphthalene-d8	63	64
Phenanthrene-d10	80	76
Chrysene-d12	79	77

U= Analyte not detected.
 J= Analyte detected below the
 MDL.
 &= Value outside accuracy or
 precision DQO.



Project Name: WA3-26 (Boston
 Cap Project)
 Project Number: G464426-
 EPA11DUXLAB

Client ID:	Procedural Blank	CAD01325OR1	CAD0132BOR1	CAD0132EOR1	CAD0132EOR1
Lab ID:	YF15PB	X8423	X8424	X8425	X8425DUP
Batch ID:	00-372	00-372	00-372	00-372	00-372
Sample Collection Date:	NA	09/10/00	09/10/00	09/10/00	09/10/00
Dilution Factor:	2.00	2.00	2.00	2.00	2.00
Sample Volume (L):	2.00	1.00	1.00	1.00	1.00
Units:	ng/L	ng/L	ng/L	ng/L	ng/L
<hr/>					
Naphthalene	3.64 J	7.74 J	25.69 J	6.99 J	11.34 J
Acenaphthylene	1.00 U	1.76	8.14	1.47	3.52
Acenaphthene	1.28 U	0.75 J	1.89	1.28 U	0.96 J
Fluorene	1.18 U	0.92 J	9.60	1.02 J	1.65
Phenanthrene	0.90 U	1.83	33.35	1.11	3.73
Anthracene	0.84 U	1.93	26.64	1.83	3.96
Fluoranthene	0.35 J	18.81	47.93	18.63	28.81
Pyrene	0.49 J	18.77	49.23	21.93	32.14
Benzo(a)anthracene	1.52 J	3.29	36.74	3.57	7.35
Chrysene	1.79	4.38	95.07	4.72	8.50
Benzo(b)fluoranthene	0.77 J	2.71	13.83	2.39	6.36
Benzo(k)fluoranthene	0.69 J	2.10	18.65	2.57	6.78
Benzo(a)pyrene	1.56 U	3.06	16.41	1.79	6.68
Indeno(1,2,3-c,d)pyrene	2.20 U	2.08 J	9.21	0.91 J	3.64
Dibenz(a,h)anthracene	2.50 U	2.50 U	2.19 J	2.50 U	2.50 U
Benzo(g,h,i)perylene	1.36 U	1.75	10.11	1.58	4.04
<hr/>					
Surrogate Recoveries (%):					
Naphthalene-d8	66	52	56	57	54
Phenanthrene-d10	71	73	74	70	72
Chrysene-d12	81	79	86	80	83

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 MDL.
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 precision DQO.



Project Name: WA3-26 (Boston
 Cap Project)
 Project Number: G464426-
 EPA11DUXLAB

Client ID:	Procedural Blank	CAD01331OR1	CAD01334OR1	CAD01337OR1
Lab ID:	YF74PB	X8426	X8427	X8428
Batch ID:	00-393	00-393	00-393	00-393
Sample Collection Date:	NA	09/10/00	09/10/00	09/10/00
Dilution Factor:	2.00	2.00	2.00	2.00
Sample Volume (L):	1.00	1.00	1.00	2.00
Units:	ng/L	ng/L	ng/L	ng/L

Naphthalene	10.93 J	22.35 J	34.09 J	21.87
Acenaphthylene	0.34 J	2.02	3.66	3.50
Acenaphthene	1.28 U	0.79 J	0.89 J	0.94
Fluorene	0.89 J	1.17 J	1.62	1.89
Phenanthrene	1.00	3.12	5.70	4.45
Anthracene	0.84 U	2.45	4.13	3.41
Fluoranthene	1.06 U	19.42	34.04	35.38
Pyrene	1.14 U	19.63	35.08	35.96
Benzo(a)anthracene	1.66 U	7.11	9.73	9.62
Chrysene	0.88 U	9.58	13.04	13.00
Benzo(b)fluoranthene	1.02 U	5.00	9.21	8.46
Benzo(k)fluoranthene	1.04 U	5.65	10.53	10.29
Benzo(a)pyrene	1.56 U	5.50	9.91	8.91
Indeno(1,2,3-c,d)pyrene	2.20 U	2.94	5.27	5.45
Dibenz(a,h)anthracene	2.50 U	1.68 J	2.12 J	1.43
Benzo(g,h,i)perylene	1.36 U	3.53	6.45	6.26

Surrogate Recoveries (%):

Naphthalene-d8	64	59	58	60
Phenanthrene-d10	69	73	75	80
Chrysene-d12	77	98	88	90

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Project Name: WA3-26 (Boston
Cap Project)
Project Number: G464426-
EPA11DUXLAB

Client ID:	CAD0133AOR1	CAD01348OR1	CAD0134BOR1	CAD0134EOR1	CAD01371OR1
Lab ID:	X8429	X8430	X8431	X8432	X8433
Batch ID:	00-393	00-393	00-393	00-393	00-393
Sample Collection Date:	09/10/00	09/10/00	09/10/00	09/10/00	09/10/00
Dilution Factor:	2.00	2.00	2.00	2.00	2.00
Sample Volume (L):	2.00	2.00	2.00	2.00	2.00
Units:	ng/L	ng/L	ng/L	ng/L	ng/L
<hr/>					
Naphthalene	13.30 J	8.12 J	11.93 J	11.68 J	8.86 J
Acenaphthylene	1.72	0.69	1.60	2.09	0.93
Acenaphthene	0.75	0.36 J	0.44 J	0.68	1.38
Fluorene	1.38	0.55 J	1.04	1.44	1.87
Phenanthrene	13.71	1.08	2.59	2.62	5.90
Anthracene	3.05	0.86	1.80	3.14	1.97
Fluoranthene	45.72	11.77	17.27	25.52	27.71
Pyrene	137.21	12.00	17.20	25.46	20.68
Benzo(a)anthracene	6.11	2.04	4.42	5.22	3.65
Chrysene	8.28	3.03	6.45	7.20	5.21
Benzo(b)fluoranthene	4.16	1.57	3.91	4.24	2.14
Benzo(k)fluoranthene	5.40	1.71	5.04	5.12	2.45
Benzo(a)pyrene	5.19	1.23	3.84	4.60	2.22
Indeno(1,2,3-c,d)pyrene	3.42	0.94 J	2.28	2.65	1.55
Dibenz(a,h)anthracene	1.08 J	1.25 U	0.67 J	0.78 J	1.25 U
Benzo(g,h,i)perylene	7.48	1.16	2.83	3.28	2.48

Surrogate Recoveries (%):

Naphthalene-d8	61	47	66	65	67
Phenanthrene-d10	81	57 &	80	81	86
Chrysene-d12	89	64	89	88	92

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MDL.

&= Value outside accuracy or
precision DQO.



Project Name: WA3-26 (Boston
Cap Project)
Project Number: G464426-
EPA11DUXLAB

Client ID:	CAD01376OR1	CAD0137AOR1	CAD01390OR1	CAD01394OR1	CAD01398OR1
Lab ID:	X8434	X8435	X8436	X8437	X8438
Batch ID:	00-393	00-393	00-393	00-393	00-393
Sample Collection Date:	09/10/00	09/10/00	09/11/00	09/11/00	09/11/00
Dilution Factor:	2.00	2.00	2.00	2.00	2.00
Sample Volume (L):	2.00	2.00	2.00	2.00	2.00
Units:	ng/L	ng/L	ng/L	ng/L	ng/L

Naphthalene	10.49 J	11.61 J	9.58	8.68	21.44
Acenaphthylene	0.88	1.09	0.89	0.70	4.17
Acenaphthene	0.49 J	0.61	0.99 J	0.64 U	0.63
Fluorene	0.83	0.87	1.25	0.95	3.71
Phenanthrene	1.39	1.41	1.94	0.64	14.11
Anthracene	0.70	1.00	1.07	0.91	6.31
Fluoranthene	11.69	13.49	43.97	22.46	32.26
Pyrene	10.05	11.63	30.92	19.94	28.40
Benzo(a)anthracene	1.84	2.05	2.66	1.92	7.72
Chrysene	3.22	4.03	3.18	2.74	11.86
Benzo(b)fluoranthene	1.53	1.84	0.47	0.51 U	7.19
Benzo(k)fluoranthene	1.33	2.30	0.53	0.52 U	8.75
Benzo(a)pyrene	1.22	1.00	0.78 U	0.78 U	7.98
Indeno(1,2,3-c,d)pyrene	0.86 J	1.34	1.10 U	1.10 U	5.81
Dibenz(a,h)anthracene	0.77 J	1.25 U	1.25 U	1.25 U	1.33
Benzo(g,h,i)perylene	1.60	2.14	1.11	1.03	6.88

Surrogate Recoveries (%):

Naphthalene-d8	64	62	69	62	59
Phenanthrene-d10	76	81	78	81	73
Chrysene-d12	85	88	85	89	81

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&= Value outside accuracy or
precision DQO.



Project Name: WA3-26 (Boston
Cap Project)
Project Number: G464426-
EPA11DUXLAB

Client ID:	CAD0139FOR1	CAD013A2OR1	CAD013A6OR1	CAD013AAOR1	CAD013B0OR1
Lab ID:	X8439	X8440	X8441	X8442	X8443
Batch ID:	00-393	00-393	00-393	00-393	00-393
Sample Collection Date:	09/11/00	09/11/00	09/11/00	09/11/00	09/11/00
Dilution Factor:	2.00	2.00	2.00	2.00	2.00
Sample Volume (L):	2.00	2.00	2.00	2.00	2.00
Units:	ng/L	ng/L	ng/L	ng/L	ng/L

	CAD0139FOR1	CAD013A2OR1	CAD013A6OR1	CAD013AAOR1	CAD013B0OR1
Naphthalene	27.49 J	24.49 J	11.11 J	12.02 J	17.51 J
Acenaphthylene	3.63	3.20	1.15	1.90	1.71
Acenaphthene	1.50 J	1.56 J	0.57	0.62 J	0.66
Fluorene	2.72	2.21	1.07	1.20	1.36
Phenanthrene	7.30	6.58	1.32	2.57	3.54
Anthracene	4.58	4.32	1.51	2.01	2.06
Fluoranthene	33.21	30.89	20.82	21.49	22.21
Pyrene	31.68	29.08	17.48	19.34	19.66
Benzo(a)anthracene	11.73	9.30	2.81	4.70	4.11
Chrysene	15.76	12.81	4.12	6.77	6.21
Benzo(b)fluoranthene	9.80	7.40	2.20	3.90	3.12
Benzo(k)fluoranthene	11.74	9.52	2.23	5.00	4.08
Benzo(a)pyrene	10.49	8.41	2.03	3.89	3.16
Indeno(1,2,3-c,d)pyrene	7.02	6.18	1.46	2.70	2.30
Dibenz(a,h)anthracene	1.92 J	1.66 J	0.69 J	0.75	0.76
Benzo(g,h,i)perylene	7.57	6.54	2.30	3.57	3.12

Surrogate Recoveries (%):

	CAD0139FOR1	CAD013A2OR1	CAD013A6OR1	CAD013AAOR1	CAD013B0OR1
Naphthalene-d8	62	64	61	61	63
Phenanthrene-d10	81	81	76	77	82
Chrysene-d12	90	90	85	85	88

U= Analyte not detected.

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MDL.

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precision DQO.



Project Name: WA3-26 (Boston
 Cap Project)
 Project Number: G464426-
 EPA11DUXLAB

Client ID:	CAD013B4OR1	CAD013C9OR1	CAD013C9OR1
Lab ID:	X8444	X8445	X8445DUP
Batch ID:	00-393	00-393	00-393
Sample Collection Date:	09/11/00	09/11/00	09/11/00
Dilution Factor:	2.00	2.00	2.00
Sample Volume (L):	2.00	1.00	1.00
Units:	ng/L	ng/L	ng/L

Naphthalene	8.64 J	14.80 J	15.60 J
Acenaphthylene	1.33	1.64	1.66
Acenaphthene	0.51	1.28 U	1.28 U
Fluorene	0.91	0.99 J	1.18 U
Phenanthrene	1.19	1.76	2.14
Anthracene	1.71	1.76	2.15
Fluoranthene	19.85	23.09	26.06
Pyrene	16.42	20.79	22.16
Benzo(a)anthracene	3.36	3.75	3.72
Chrysene	4.69	6.14	6.10
Benzo(b)fluoranthene	2.38	2.60	2.71
Benzo(k)fluoranthene	2.64	3.28	3.31
Benzo(a)pyrene	2.38	2.93	2.82
Indeno(1,2,3-c,d)pyrene	1.48	2.17 J	1.88 J
Dibenz(a,h)anthracene	1.25 U	2.50 U	2.50 U
Benzo(g,h,i)perylene	2.02	2.57	3.44

Surrogate Recoveries (%):

Naphthalene-d8	62	61	66
Phenanthrene-d10	77	76	81
Chrysene-d12	85	87	91

U= Analyte not detected.
 J= Analyte detected below the
 MDL.
 &= Value outside accuracy or
 precision DQO.



Project Name: WA3-26 (Boston
Cap Project)

Project Number: G464426-
EPA11DUXLAB

Client ID:	Procedural Blank	CAD01405OR1	CAD01408OR1	CAD0140BOR1
Lab ID:	YG28PB	X8609	X8610	X8611
Batch ID:	00-405	00-405	00-405	00-405
Sample Collection Date:	NA	09/12/00	09/12/00	09/12/00
Dilution Factor:	2.00	2.00	2.00	2.00
Sample Volume (L):	2.00	1.00	1.00	2.00
Units:	ng/L	ng/L	ng/L	ng/L

Naphthalene	12.25 J	17.38 J	19.36 J	10.85 J
Acenaphthylene	0.50 U	1.00 U	1.00 U	0.81
Acenaphthene	0.64 U	1.28 U	1.28 U	1.28
Fluorene	0.59 U	1.18 U	1.18 U	0.80
Phenanthrene	0.45 U	1.07	0.90 U	1.01
Anthracene	0.65	2.93	0.84 U	2.41
Fluoranthene	0.53 U	13.31	12.96	25.76
Pyrene	0.57 U	12.40	13.70	20.92
Benzo(a)anthracene	0.83 U	2.14	2.20	2.69
Chrysene	0.44 U	3.07	3.14	3.50
Benzo(b)fluoranthene	0.51 U	1.91	2.23	2.01
Benzo(k)fluoranthene	0.52 U	1.74	1.71	1.57
Benzo(a)pyrene	0.78 U	1.54 J	1.22 J	1.27
Indeno(1,2,3-c,d)pyrene	1.10 U	2.20 U	2.20 U	0.73 J
Dibenz(a,h)anthracene	1.25 U	2.50 U	2.50 U	1.25 U
Benzo(g,h,i)perylene	0.68 U	1.52	2.00	1.18

Surrogate Recovery %:				
Naphthalene-d8	50	56	60	59
Phenanthrene-d10	57 &	61	67	69
Chrysene-d12	66	76	82	83

U= Analyte not detected.
J= Analyte detected below the
Sample Specific MDL.
&= Value outside accuracy or
precision DQO.



Project Name: WA3-26 (Boston
Cap Project)

Project Number: G464426-
EPA11DUXLAB

Client ID:	CAD01416OR1	CAD01419OR1	CAD0141COR1	CAD0141FOR1	CAD01422OR1
Lab ID:	X8612	X8613	X8614	X8615	X8616
Batch ID:	00-405	00-405	00-405	00-405	00-405
Sample Collection Date:	09/12/00	09/12/00	09/12/00	09/12/00	09/12/00
Dilution Factor:	2.00	2.00	2.00	2.00	2.00
Sample Volume (L):	2.00	2.00	2.00	2.00	2.00
Units:	ng/L	ng/L	ng/L	ng/L	ng/L

Naphthalene	15.56 J	15.02 J	14.50 J	37.91	17.91
Acenaphthylene	1.41	1.30	1.29	0.50 U	1.86
Acenaphthene	0.64 U	0.64 U	0.64 U	0.64 U	1.35
Fluorene	0.59 U	0.59 U	0.59 U	0.59 U	1.45
Phenanthrene	1.98	2.05	1.75	5.25	3.43
Anthracene	3.21	1.84	2.05	14.70	3.59
Fluoranthene	24.48	22.83	25.13	38.42	29.88
Pyrene	21.11	20.00	20.64	26.65	26.82
Benzo(a)anthracene	4.28	3.13	3.38	5.04	5.01
Chrysene	6.85	4.79	4.85	6.98	8.66
Benzo(b)fluoranthene	4.08	3.26	3.44	5.25	5.54
Benzo(k)fluoranthene	3.23	2.73	2.80	4.37	4.80
Benzo(a)pyrene	2.54	2.41	2.71	1.65	3.31
Indeno(1,2,3-c,d)pyrene	1.90	1.70	1.61	2.18	2.53
Dibenz(a,h)anthracene	1.25 U	1.25 U	1.25 U	1.25 U	1.25
Benzo(g,h,i)perylene	2.19	2.33	2.13	2.62	3.93

Surrogate Recovery %:					
Naphthalene-d8	63	62	61	63	62
Phenanthrene-d10	73	75	72	73	72
Chrysene-d12	88	87	85	87	87

U= Analyte not detected.
J= Analyte detected below the
Sample Specific MDL.
&= Value outside accuracy or
precision DQO.



Project Name: WA3-26 (Boston
Cap Project)

Project Number: G464426-
EPA11DUXLAB

Client ID:	CAD01425OR1	CAD01428OR1	CAD0142BOR1	CAD0142EOR1
Lab ID:	X8617	X8618	X8619	X8620
Batch ID:	00-405	00-405	00-405	00-405
Sample Collection Date:	09/12/00	09/12/00	09/12/00	09/12/00
Dilution Factor:	2.00	2.00	2.00	2.00
Sample Volume (L):	2.00	2.00	2.00	2.00
Units:	ng/L	ng/L	ng/L	ng/L

Analyte		CAD01425OR1	CAD01428OR1	CAD0142BOR1	CAD0142EOR1
Naphthalene	J	11.99 J	13.29 J	9.20 J	9.31 J
Acenaphthylene		1.62	1.61	1.16	1.12
Acenaphthene		0.64 U	0.64 U	0.64 U	0.64 U
Fluorene		0.59 U	0.59 U	0.59 U	0.59 U
Phenanthrene		2.48	2.06	1.44	1.85
Anthracene		2.41	3.17	2.22	1.34
Fluoranthene		26.29	23.90	27.60	19.42
Pyrene		22.24	21.30	23.16	16.82
Benzo(a)anthracene		4.31	3.62	3.15	2.60
Chrysene		5.73	6.77	6.16	4.47
Benzo(b)fluoranthene		3.97	3.24	2.72	2.61
Benzo(k)fluoranthene		3.59	3.30	2.07	2.35
Benzo(a)pyrene		2.25	2.52	2.00	0.78 U
Indeno(1,2,3-c,d)pyrene		1.10 U	1.70	1.29	1.38
Dibenz(a,h)anthracene	U	1.25 U	1.25 U	1.25 U	1.25 U
Benzo(g,h,i)perylene		2.52	2.37	1.72	1.59

Surrogate Recovery %:

Surrogate	CAD01425OR1	CAD01428OR1	CAD0142BOR1	CAD0142EOR1
Naphthalene-d8	70	71	66	65
Phenanthrene-d10	80	82	76	74
Chrysene-d12	93	92	87	86

U= Analyte not detected.
J= Analyte detected below the
Sample Specific MDL.
&= Value outside accuracy or
precision DQO.



Project Name: WA3-26 (Boston
Cap Project)

Project Number: G464426-
EPA11DUXLAB

Client ID:	CAD01436OR1	CAD01439OR1	CAD0143COR1	CAD0143COR1
Lab ID:	X8621	X8622	X8623	X8623DUP
Batch ID:	00-405	00-405	00-405	00-405
Sample Collection Date:	09/12/00	09/12/00	09/12/00	09/12/00
Dilution Factor:	2.00	2.00	2.00	2.00
Sample Volume (L):	2.00	2.00	1.00	1.00
Units:	ng/L	ng/L	ng/L	ng/L

Naphthalene	15.38 J	9.00 J	23.35 J	16.10 J
Acenaphthylene	1.13	0.94	1.00 U	1.00 U
Acenaphthene	0.68	0.64 U	1.28 U	1.28 U
Fluorene	0.61	0.59 U	1.18 U	1.18 U
Phenanthrene	0.92	1.36	0.90 U	0.90 U
Anthracene	4.05	1.76	0.84 U	0.84 U
Fluoranthene	23.93	14.11	15.14	12.85
Pyrene	19.01	14.49	13.79	11.33
Benzo(a)anthracene	2.17	2.48	1.62 J	1.82
Chrysene	3.41	3.64	3.35	3.44
Benzo(b)fluoranthene	1.85	2.20	2.40	1.61
Benzo(k)fluoranthene	1.53	1.78	2.17	1.19
Benzo(a)pyrene	1.24	1.60	1.56 U	2.58
Indeno(1,2,3-c,d)pyrene	1.10 U	1.15	2.20 U	2.20 U
Dibenz(a,h)anthracene	1.25 U	1.25 U	2.50 U	2.50 U
Benzo(g,h,i)perylene	1.41	1.58	1.36 U	1.36 U

Surrogate Recovery %:				
Naphthalene-d8	65	64	80	66
Phenanthrene-d10	73	71	82	67
Chrysene-d12	85	82	92	75

Surrogate Recovery %:

Naphthalene-d8	65	64	80	66
Phenanthrene-d10	73	71	82	67
Chrysene-d12	85	82	92	75

U= Analyte not detected.

J= Analyte detected below the
Sample Specific MDL.

&= Value outside accuracy or
precision DQO.



Project Name: WA3-26 (Boston
Cap Project)
Project Number: G464426-
EPA11DUXLAB

Client ID:	Procedural Blank	CAD01469OR1	CAD0146COR1	CAD0146FOR1
Lab ID:	YG33PB	X8594	X8595	X8596
Batch ID:	00-406	00-406	00-406	00-406
Sample Collection Date:	NA	09/14/00	09/14/00	09/14/00
Dilution Factor:	2.00	2.00	2.00	2.00
Sample Volume (L):	2.00	1.00	1.00	2.00
Units:	ng/L	ng/L	ng/L	ng/L

Naphthalene	11.11 J	35.39 J	25.75 J	12.73 J
Acenaphthylene	0.50 U	2.24	0.98 J	0.66
Acenaphthene	0.64 U	2.55	0.73 J	0.28 J
Fluorene	0.59 U	2.36	0.81 J	0.50 J
Phenanthrene	0.45 U	2.81	1.10	0.58
Anthracene	0.42 U	2.44	1.27	0.89
Fluoranthene	0.53 U	11.66	8.14	9.33
Pyrene	0.57 U	10.75	7.79	8.04
Benzo(a)anthracene	0.83 U	5.00	1.39 J	1.12
Chrysene	0.44 U	5.22	2.42	1.86
Benzo(b)fluoranthene	0.51 U	2.84	0.92 J	0.68
Benzo(k)fluoranthene	0.52 U	3.21	1.30	0.96
Benzo(a)pyrene	0.78 U	3.57	1.38 J	0.55 J
Indeno(1,2,3-c,d)pyrene	1.10 U	2.56	0.71 J	0.54 J
Dibenz(a,h)anthracene	1.25 U	1.67 J	2.50 U	0.22 J
Benzo(g,h,i)perylene	0.68 U	3.19	1.54	0.74

Surrogate Recoveries (%):

Naphthalene-d8	76	64	58	59
Phenanthrene-d10	77	72	70	76
Chrysene-d12	83	88	80	85

U= Analyte not detected.

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precision DQO.



Project Name: WA3-26 (Boston
Cap Project)
Project Number: G464426-
EPA11DUXLAB

Client ID:	CAD0147DOR1	CAD01480OR1	CAD01483OR1	CAD01486OR1	CAD01489OR1
Lab ID:	X8597	X8598	X8599	X8600	X8601
Batch ID:	00-406	00-406	00-406	00-406	00-406
Sample Collection Date:	09/14/00	09/14/00	09/14/00	09/14/00	09/14/00
Dilution Factor:	2.00	2.00	2.00	2.00	2.00
Sample Volume (L):	2.00	2.00	2.00	2.00	2.00
Units:	ng/L	ng/L	ng/L	ng/L	ng/L
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Naphthalene	6.40 J	9.72 J	32.81	46.14	20.56
Acenaphthylene	1.58	1.11	12.30	11.53	4.15
Acenaphthene	2.01	3.15	7.77	13.36	6.77
Fluorene	2.36	1.45	6.86	14.20	3.95
Phenanthrene	2.64	0.50	18.80	37.04	6.49
Anthracene	3.09	2.74	18.34	29.20	8.00
Fluoranthene	15.91	53.18	159.21	200.21	112.85
Pyrene	14.61	36.44	116.41	138.15	76.50
Benzo(a)anthracene	3.36	3.21	44.32	56.71	18.54
Chrysene	4.10	3.95	43.55	81.45	18.41
Benzo(b)fluoranthene	1.86	0.48 J	37.96	26.70	8.06
Benzo(k)fluoranthene	2.33	0.46 J	35.11	37.34	11.55
Benzo(a)pyrene	2.39	0.49 J	33.85	32.16	10.21
Indeno(1,2,3-c,d)pyrene	1.67	1.10 U	20.55	21.45	5.20
Dibenz(a,h)anthracene	1.53	1.25 U	4.76	4.91	1.23 J
Benzo(g,h,i)perylene	2.07	0.56 J	19.94	20.17	5.84

Surrogate Recoveries (%):					
Naphthalene-d8	62	65	67	69	64
Phenanthrene-d10	78	80	84	81	82
Chrysene-d12	86	89	95	89	90

U= Analyte not detected.
J= Analyte detected below the MDL.
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precision DQO.



Project Name: WA3-26 (Boston
Cap Project)
Project Number: G464426-
EPA11DUXLAB

Client ID:	CAD0148COR1	CAD0148FOR1	CAD01492OR1	CAD01495OR1	CAD0149DOR1
Lab ID:	X8602	X8603	X8604	X8605	X8606
Batch ID:	00-406	00-406	00-406	00-406	00-406
Sample Collection Date:	09/14/00	09/14/00	09/14/00	09/14/00	09/14/00
Dilution Factor:	2.00	2.00	2.00	2.00	2.00
Sample Volume (L):	2.00	2.00	2.00	2.00	2.00
Units:	ng/L	ng/L	ng/L	ng/L	ng/L

Naphthalene	9.99 J	16.88 J	25.62	11.86 J	24.45
Acenaphthylene	3.12	1.73	2.02	1.29	1.40
Acenaphthene	2.61	2.43	2.19	1.19	0.96
Fluorene	2.15	2.30	1.90	1.38	1.42
Phenanthrene	5.24	3.34	2.83	2.05	1.37
Anthracene	4.85	4.40	3.84	2.69	2.39
Fluoranthene	93.18	41.94	44.28	34.98	22.41
Pyrene	65.34	30.40	32.90	26.05	18.09
Benzo(a)anthracene	13.03	7.84	8.21	4.92	3.43
Chrysene	21.27	8.36	8.76	5.96	4.31
Benzo(b)fluoranthene	5.38	3.72	3.90	2.10	1.71
Benzo(k)fluoranthene	8.09	4.60	5.57	2.58	2.36
Benzo(a)pyrene	5.08	4.47	5.11	2.53	2.29
Indeno(1,2,3-c,d)pyrene	3.20	2.28	2.82	1.45	1.06 J
Dibenz(a,h)anthracene	0.72 J	0.39 J	0.63 J	0.26 J	1.25 U
Benzo(g,h,i)perylene	3.53	2.30	3.13	1.34	1.60

Surrogate Recoveries (%):

Naphthalene-d8	11 &	62	57	52	60
Phenanthrene-d10	98	78	76	76	82
Chrysene-d12	111	88	86	87	90

U= Analyte not detected.

J= Analyte detected below the MDL.

&= Value outside accuracy or
precision DQO.



Project Name: WA3-26 (Boston
Cap Project)
Project Number: G464426-
EPA11DUXLAB

Client ID:	CAD014A0OR1	CAD014A3OR1	CAD014BFOR1	CAD014C2OR1	CAD014C5OR1
Lab ID:	X8607	X8608	X8579	X8580	X8581
Batch ID:	00-406	00-406	00-406	00-406	00-406
Sample Collection Date:	09/14/00	09/14/00	09/15/00	09/15/00	09/15/00
Dilution Factor:	2.00	2.00	2.00	2.00	2.00
Sample Volume (L):	2.00	2.00	2.00	2.00	2.00
Units:	ng/L	ng/L	ng/L	ng/L	ng/L

Naphthalene	10.58 J	13.72 J	10.68 J	8.40 J	8.77 J
Acenaphthylene	1.05	4.44	1.24	1.07	0.89
Acenaphthene	1.17	16.53	0.69	1.40	1.35
Fluorene	1.30	9.18	1.27	1.29	1.08
Phenanthrene	1.46	14.94	0.72	0.70	0.78
Anthracene	1.95	9.79	1.58	1.56	1.23
Fluoranthene	23.11	101.34	14.46	14.12	12.53
Pyrene	17.62	104.59	12.28	11.73	10.73
Benzo(a)anthracene	2.92	13.55	1.74	1.39	1.33
Chrysene	4.09	12.34	2.86	2.08	2.33
Benzo(b)fluoranthene	1.47	5.80	0.95	0.62	0.71
Benzo(k)fluoranthene	1.75	7.75	1.25	0.63	0.77
Benzo(a)pyrene	1.50	9.77	1.15	0.75 J	0.74 J
Indeno(1,2,3-c,d)pyrene	0.73 J	4.19	0.59 J	1.10 U	0.37 J
Dibenz(a,h)anthracene	1.25 U	0.94 J	1.25 U	1.25 U	1.25 U
Benzo(g,h,i)perylene	0.99	5.62	0.94	0.60 J	0.70

Surrogate Recoveries (%):

Naphthalene-d8	56	62	70	75	72
Phenanthrene-d10	77	78	79	84	82
Chrysene-d12	86	85	85	90	87

U= Analyte not detected.

J= Analyte detected below the MDL.

&= Value outside accuracy or
precision DQO.



Project Name: WA3-26 (Boston
Cap Project)
Project Number: G464426-
EPA11DUXLAB

Client ID:	CAD014D4OR1	CAD014DBOR1	CAD014DBOR1
Lab ID:	X8582	X8583	X8583DUP
Batch ID:	00-406	00-406	00-406
Sample Collection Date:	09/15/00	09/15/00	09/15/00
Dilution Factor:	2.00	2.00	2.00
Sample Volume (L):	2.00	1.00	1.00
Units:	ng/L	ng/L	ng/L

Naphthalene	8.41 J	16.14 J	9.64 J
Acenaphthylene	0.99	0.98 J	1.11
Acenaphthene	2.21	3.52	3.80
Fluorene	1.64	2.14	2.18
Phenanthrene	0.44 J	1.34	1.39
Anthracene	1.60	1.89	1.49
Fluoranthene	25.61	18.42	20.09
Pyrene	18.10	14.18	14.82
Benzo(a)anthracene	1.57	1.26 J	1.48 J
Chrysene	2.29	2.00	2.27
Benzo(b)fluoranthene	0.51 U	1.02 U	1.02 U
Benzo(k)fluoranthene	0.52 U	1.04 U	1.04 U
Benzo(a)pyrene	0.78 U	1.56 U	1.56 U
Indeno(1,2,3-c,d)pyrene	1.10 U	2.20 U	2.20 U
Dibenz(a,h)anthracene	1.25 U	2.50 U	2.50 U
Benzo(g,h,i)perylene	0.68 U	1.36 U	1.36 U

Surrogate Recoveries (%):

Naphthalene-d8	67	51	58
Phenanthrene-d10	80	66	74
Chrysene-d12	85	75	82

U= Analyte not detected.

J= Analyte detected below the MDL.

&= Value outside accuracy or
precision DQO.



Project Name: WA3-26 (Boston
Cap Project)
Project Number: G464426-
EPA11DUXLAB

Client ID:	Procedural Blank	CAD014DEOR1	CAD014E4OR1	CAD014E7OR1
Lab ID:	YG38PB	X8584	X8585	X8586
Batch ID:	00-407	00-407	00-407	00-407
Sample Collection Date:	NA	09/15/00	09/15/00	09/15/00
Dilution Factor:	2.00	2.00	2.00	2.00
Sample Volume (L):	2.00	1.00	1.00	2.00
Units:	ng/L	ng/L	ng/L	ng/L

Naphthalene	21.45	22.75 J	15.19 J	22.22
Acenaphthylene	0.50 U	2.57	1.51	2.47
Acenaphthene	0.64 U	3.41	2.09	4.17
Fluorene	2.36 B	2.59	2.01	2.89
Phenanthrene	7.05 B	4.35	2.14	5.00
Anthracene	0.42 U	4.17	2.26	5.06
Fluoranthene	8.19 B	41.82	29.94	52.11
Pyrene	35.93 B	34.55	24.67	41.49
Benzo(a)anthracene	0.83 U	8.19	4.20	9.49
Chrysene	0.44 U	9.49	6.24	12.15
Benzo(b)fluoranthene	0.51 U	7.19	3.59	7.18
Benzo(k)fluoranthene	0.52 U	6.76	2.77	7.34
Benzo(a)pyrene	0.78 U	6.14	3.07	6.29
Indeno(1,2,3-c,d)pyrene	1.10 U	3.22	1.67 J	3.99
Dibenz(a,h)anthracene	1.25 U	2.50 U	2.50 U	1.25 U
Benzo(g,h,i)perylene	3.19 B	3.82	1.77	4.01

Surrogate Recovery %:

Naphthalene-d8	72	65	60	58
Phenanthrene-d10	77	78	79	77
Chrysene-d12	88	97	93	89

U= Analyte not detected.

J= Analyte detected below the
Sample Specific MDL.

&= Value outside accuracy or
precision DQO.



Project Name: WA3-26 (Boston
Cap Project)
Project Number: G464426-
EPA11DUXLAB

Client ID:	CAD014EAOR1	CAD014EDOR1	CAD014F3OR1	CAD014F6OR1	CAD01511OR1
Lab ID:	X8587	X8588	X8589	X8590	X8591
Batch ID:	00-407	00-407	00-407	00-407	00-407
Sample Collection Date:	09/15/00	09/15/00	09/15/00	09/15/00	09/15/00
Dilution Factor:	2.00	2.00	2.00	2.00	2.00
Sample Volume (L):	2.00	2.00	2.00	2.00	2.00
Units:	ng/L	ng/L	ng/L	ng/L	ng/L

Naphthalene	15.38 J	12.98 J	3.75 J	8.49 J	16.65 J
Acenaphthylene	1.99	1.38	0.50 U	1.38	1.01
Acenaphthene	2.23	0.64 U	0.64 U	2.24	2.56
Fluorene	1.86	0.59 U	0.59 U	1.80	1.80
Phenanthrene	3.27	1.65	1.39	1.93	1.36
Anthracene	3.02	1.56	1.36	2.39	1.66
Fluoranthene	35.54	18.75	13.70	21.39	14.14
Pyrene	30.81	16.94	12.71	18.30	13.56
Benzo(a)anthracene	8.73	3.44	1.78	3.98	2.71
Chrysene	12.24	4.73	2.80	4.70	3.75
Benzo(b)fluoranthene	11.38	3.18	1.43	3.12	1.69
Benzo(k)fluoranthene	10.57	2.80	1.25	2.87	1.50
Benzo(a)pyrene	9.95	2.49	1.24	2.90	1.33
Indeno(1,2,3-c,d)pyrene	7.71	1.71	1.10 U	1.46	1.10 U
Dibenz(a,h)anthracene	1.58	1.25 U	1.25 U	1.25 U	1.25 U
Benzo(g,h,i)perylene	8.61	1.43	0.68 U	1.71	0.68 U

Surrogate Recovery %:

Naphthalene-d8	64	66	16 &	66	68
Phenanthrene-d10	80	79	87	76	78
Chrysene-d12	93	90	101	90	87

U= Analyte not detected.

J= Analyte detected below the
Sample Specific MDL.

&= Value outside accuracy or
precision DQO.



Project Name: WA3-26 (Boston
Cap Project)
Project Number: G464426-
EPA11DUXLAB

Client ID:	CAD01514OR1	CAD0151AOR1	CAD01523OR1	CAD01526OR1	CAD01529OR1
Lab ID:	X8592	X8593	X8564	X8565	X8566
Batch ID:	00-407	00-407	00-407	00-407	00-407
Sample Collection Date:	09/15/00	09/15/00	09/15/00	09/15/00	09/15/00
Dilution Factor:	2.00	2.00	2.00	2.00	2.00
Sample Volume (L):	2.00	2.00	2.00	2.00	2.00
Units:	ng/L	ng/L	ng/L	ng/L	ng/L

Naphthalene	13.08 J	15.30 J	13.08 J	9.63 J	9.59 J
Acenaphthylene	1.08	1.23	0.99	0.83	0.50 U
Acenaphthene	2.27	1.75	1.17	1.17	1.79
Fluorene	0.85	1.04	0.84	0.82	1.51
Phenanthrene	1.59	2.83	3.25	1.42	1.59
Anthracene	1.58	1.68	2.01	1.59	1.62
Fluoranthene	15.01	13.20	16.51	11.94	14.91
Pyrene	14.67	13.45	14.49	11.61	13.07
Benzo(a)anthracene	2.61	2.41	2.50	1.98	1.91
Chrysene	4.04	4.02	4.57	2.90	2.83
Benzo(b)fluoranthene	2.13	2.67	2.35	1.88	1.39
Benzo(k)fluoranthene	1.95	2.42	2.14	1.32	1.27
Benzo(a)pyrene	1.58	2.21	1.82	1.31	1.16
Indeno(1,2,3-c,d)pyrene	1.10 U	1.10 U	1.10 U	1.10 U	1.10 U
Dibenz(a,h)anthracene	1.25 U	1.25 U	1.25 U	1.25 U	1.25 U
Benzo(g,h,i)perylene	0.91	1.20	0.68 U	0.68 U	0.68 U

Surrogate Recovery %:					
Naphthalene-d8	66	67	61	57	55
Phenanthrene-d10	79	81	79	78	76
Chrysene-d12	90	92	89	90	90

U= Analyte not detected.
J= Analyte detected below the
Sample Specific MDL.
&= Value outside accuracy or
precision DQO.



Project Name: WA3-26 (Boston
Cap Project)
Project Number: G464426-
EPA11DUXLAB

Client ID:	CAD01534OR1	CAD01538OR1	CAD0153BOR1	CAD0153EOR1	CAD01541OR1
Lab ID:	X8567	X8568	X8569	X8570	X8571
Batch ID:	00-407	00-407	00-407	00-407	00-407
Sample Collection Date:	09/15/00	09/15/00	09/15/00	09/15/00	09/15/00
Dilution Factor:	2.00	2.00	2.00	2.00	2.00
Sample Volume (L):	2.00	2.00	2.00	2.00	2.00
Units:	ng/L	ng/L	ng/L	ng/L	ng/L
<hr/>					
Naphthalene	9.97 J	18.31 J	18.82 J	13.13 J	15.20 J
Acenaphthylene	0.50 U	2.79	1.98	1.72	1.96
Acenaphthene	1.23	7.02	2.96	2.33	3.36
Fluorene	1.12	4.94	1.88	1.89	1.91
Phenanthrene	0.45 U	8.96	3.31	5.43	2.45
Anthracene	0.42 U	7.22	2.65	2.80	2.17
Fluoranthene	16.15	43.64	24.96	24.83	18.94
Pyrene	13.48	34.32	21.60	22.65	16.53
Benzo(a)anthracene	1.00	11.57	5.45	5.19	4.00
Chrysene	1.78	17.84	6.51	5.81	5.27
Benzo(b)fluoranthene	0.51 U	7.47	5.08	4.21	3.18
Benzo(k)fluoranthene	0.52 U	7.91	5.00	3.93	3.54
Benzo(a)pyrene	0.78 U	6.48	4.42	3.55	3.46
Indeno(1,2,3-c,d)pyrene	1.10 U	3.18	2.36	1.93	2.42
Dibenz(a,h)anthracene	1.25 U	1.25 U	1.25 U	1.25 U	1.25 U
Benzo(g,h,i)perylene	0.68 U	3.56	2.83	2.10	2.76
<hr/>					
Surrogate Recovery %:					
Naphthalene-d8	51	53	67	71	61
Phenanthrene-d10	77	79	85	86	76
Chrysene-d12	91	95	97	99	82

U= Analyte not detected.
J= Analyte detected below the
Sample Specific MDL.
&= Value outside accuracy or
precision DQO.



Project Name: WA3-26 (Boston
 Cap Project)
 Project Number: G464426-
 EPA11DUXLAB

Client ID:	CAD01544OR1	CAD01547OR1	CAD01547OR1
Lab ID:	X8572	X8573	X8573DUP
Batch ID:	00-407	00-407	00-407
Sample Collection Date:	09/15/00	09/15/00	09/15/00
Dilution Factor:	2.00	2.00	2.00
Sample Volume (L):	2.00	1.00	1.00
Units:	ng/L	ng/L	ng/L

Naphthalene	15.12 J	34.18 J	21.42 J
Acenaphthylene	1.20	1.00 U	1.00 U
Acenaphthene	2.40	1.28 U	1.28 U
Fluorene	1.62	1.18 U	1.18 U
Phenanthrene	2.44	2.95	1.62
Anthracene	2.56	9.07	1.38
Fluoranthene	15.21	13.35	12.69
Pyrene	14.19	13.05	11.53
Benzo(a)anthracene	2.79	2.48	1.82
Chrysene	3.94	4.66	3.09
Benzo(b)fluoranthene	2.18	2.19	1.94
Benzo(k)fluoranthene	2.32	2.02	1.75
Benzo(a)pyrene	1.82	2.05	1.79
Indeno(1,2,3-c,d)pyrene	1.38	2.20 U	2.20 U
Dibenz(a,h)anthracene	1.25 U	2.50 U	2.50 U
Benzo(g,h,i)perylene	1.57	1.36 U	1.36 U

Surrogate Recovery %:			
Naphthalene-d8	67	75	66
Phenanthrene-d10	77	82	73
Chrysene-d12	84	88	72

U= Analyte not detected.
 J= Analyte detected below the
 Sample Specific MDL.
 &= Value outside accuracy or
 precision DQO.



Project Name: WA3-26 (Boston
Cap Project)
Project Number: G464426-
EPA11DUXLAB

Client ID:	Procedural Blank	CAD0154COR1	CAD0154FOR1	CAD0155EOR1
Lab ID:	YG43PB	X8574	X8575	X8576
Batch ID:	00-408	00-408	00-408	00-408
Sample Collection Date:	NA	09/15/00	09/15/00	09/16/00
Dilution Factor:	2.00	2.00	2.00	2.00
Sample Volume (L):	2.00	1.00	1.00	2.00
Units:	ng/L	ng/L	ng/L	ng/L

Naphthalene	13.45 J	22.68 J	11.99 J	22.58
Acenaphthylene	0.50 U	1.00 U	1.00 U	0.58
Acenaphthene	0.64 U	3.23	2.44	1.51
Fluorene	0.59 U	1.57	1.47	1.03
Phenanthrene	0.45 U	1.51	1.71	3.50
Anthracene	0.42 U	1.68	1.69	8.13
Fluoranthene	0.53 U	14.69	12.83	12.56
Pyrene	0.57 U	11.86	11.38	9.62
Benzo(a)anthracene	0.83 U	2.16	2.01	1.60
Chrysene	0.44 U	2.60	3.27	2.28
Benzo(b)fluoranthene	0.51 U	1.02 U	1.02 U	1.31
Benzo(k)fluoranthene	0.52 U	1.04 U	1.04 U	1.15
Benzo(a)pyrene	0.78 U	1.56 U	1.56 U	0.50 J
Indeno(1,2,3-c,d)pyrene	1.10 U	2.20 U	2.20 U	1.10 U
Dibenz(a,h)anthracene	1.25 U	2.50 U	2.50 U	1.25 U
Benzo(g,h,i)perylene	0.68 U	1.36 U	1.36 U	1.00

Surrogate Recovery %:				
Naphthalene-d8	74	65	61	55
Phenanthrene-d10	75	77	73	66
Chrysene-d12	82	88	82	77

U= Analyte not detected.
J= Analyte detected below the
Sample Specific MDL.
&= Value outside accuracy or
precision DQO.



Project Name: WA3-26 (Boston
Cap Project)
Project Number: G464426-
EPA11DUXLAB

Client ID:	CAD01561OR1	CAD01564OR1	CAD01564OR1
Lab ID:	X8577	X8578	X8578DUP
Batch ID:	00-408	00-408	00-408
Sample Collection Date:	09/16/00	09/16/00	09/16/00
Dilution Factor:	2.00	2.00	2.00
Sample Volume (L):	2.00	1.00	1.00
Units:	ng/L	ng/L	ng/L

Naphthalene	23.63	48.98	105.10
Acenaphthylene	0.70	1.00 U	1.00 U
Acenaphthene	1.06	2.33	2.79
Fluorene	0.89	1.29	1.47
Phenanthrene	1.69	9.67	3.59
Anthracene	3.93	10.45	7.91
Fluoranthene	11.91	13.30	15.56
Pyrene	9.96	15.67	12.56
Benzo(a)anthracene	2.14	2.98	2.53
Chrysene	3.12	4.32	3.72
Benzo(b)fluoranthene	1.96	1.02 U	2.32
Benzo(k)fluoranthene	1.50	1.04 U	1.04 U
Benzo(a)pyrene	1.09	1.56 U	1.56 U
Indeno(1,2,3-c,d)pyrene	1.11	2.20 U	2.20 U
Dibenz(a,h)anthracene	1.25 U	2.50 U	2.50 U
Benzo(g,h,i)perylene	1.59	1.36 U	1.36 U

Surrogate Recovery %:

Naphthalene-d8	61	49	53
Phenanthrene-d10	74	67	70
Chrysene-d12	90	90	91

U= Analyte not detected.

J= Analyte detected below the
Sample Specific MDL.

&= Value outside accuracy or
precision DQO.



Project Name: WA3-26 (Boston
Cap Project)

Project Number: G464426-
EPA11DUXLAB

Client ID:	Procedural Blank	CAD015ABOR1	CAD015B0OR1	CAD015B3OR1
Lab ID:	YH01PB	X8863	X8864	X8865
Batch ID:	00-422	00-422	00-422	00-422
Sample Collection Date:	NA	09/20/00	09/20/00	09/20/00
Dilution Factor:	2.00	2.00	2.00	2.00
Sample Volume (L):	2.00	1.00	1.00	2.00
Units:	ng/L	ng/L	ng/L	ng/L

Naphthalene	7.05 J	25.46 J	15.52 J	11.09 J
Acenaphthylene	0.50 U	1.96	1.34	0.58
Acenaphthene	0.64 U	0.97 J	0.75 J	0.37 J
Fluorene	0.09 J	1.43	0.88 J	0.49 J
Phenanthrene	0.21 J	3.67	1.67	0.53
Anthracene	0.42 U	1.59	2.93	2.06
Fluoranthene	0.53 U	10.49	9.61	6.70
Pyrene	0.57 U	9.54	8.57	6.10
Benzo(a)anthracene	0.83 U	2.64	2.15	0.90
Chrysene	0.44 U	4.27	3.43	1.32
Benzo(b)fluoranthene	0.51 U	2.53	2.10	0.59
Benzo(k)fluoranthene	0.52 U	2.46	2.98	0.45 J
Benzo(a)pyrene	0.78 U	2.17	2.96	0.56 J
Indeno(1,2,3-c,d)pyrene	1.10 U	1.55 J	1.11 J	1.10 U
Dibenz(a,h)anthracene	1.25 U	2.50 U	2.50 U	1.25 U
Benzo(g,h,i)perylene	0.68 U	1.65	1.30 J	0.40 J

Surrogate Recoveries (%):				
Naphthalene-d8	74	70	74	53
Phenanthrene-d10	69	82	69	65
Chrysene-d12	70	88	67	73

U= Analyte not detected.
J= Analyte detected below the
Sample Specific MDL.
&= Value outside accuracy or
precision DQO.



Project Name: WA3-26 (Boston
Cap Project)

Project Number: G464426-
EPA11DUXLAB

Client ID:	CAD015C2OR1	CAD015C5OR1	CAD015CBOR1	CAD015CEOR1
Lab ID:	X8866	X8867	X8868	X8869
Batch ID:	00-422	00-422	00-422	00-422
Sample Collection Date:	09/20/00	09/20/00	09/20/00	09/20/00
Dilution Factor:	2.00	2.00	2.00	2.00
Sample Volume (L):	2.00	2.00	2.00	2.00
Units:	ng/L	ng/L	ng/L	ng/L

Naphthalene	22.41	19.40 J	24.21	17.09 J
Acenaphthylene	2.07	2.06	2.52	1.87
Acenaphthene	0.87	0.55 J	0.93	0.76
Fluorene	1.36	0.86	1.98	1.34
Phenanthrene	3.44	2.59	4.59	2.51
Anthracene	5.04	2.36	7.44	2.92
Fluoranthene	22.35	15.64	22.30	19.29
Pyrene	21.37	14.70	21.41	17.62
Benzo(a)anthracene	5.12	4.46	6.46	3.98
Chrysene	7.46	5.69	9.03	5.59
Benzo(b)fluoranthene	6.16	4.80	6.23	4.39
Benzo(k)fluoranthene	6.05	4.19	6.36	4.12
Benzo(a)pyrene	2.25	4.32	5.19	3.62
Indeno(1,2,3-c,d)pyrene	3.17	3.09	3.70	2.54
Dibenz(a,h)anthracene	0.86 J	0.58 J	0.79 J	0.64 J
Benzo(g,h,i)perylene	3.59	3.38	4.02	2.55

Surrogate Recoveries (%):				
Naphthalene-d8	56	49	49	51
Phenanthrene-d10	72	65	63	71
Chrysene-d12	78	70	64	75

U= Analyte not detected.
J= Analyte detected below the
Sample Specific MDL.
&= Value outside accuracy or
precision DQO.



Project Name: WA3-26 (Boston
Cap Project)

Project Number: G464426-
EPA11DUXLAB

Client ID:	CAD015D1OR1	CAD015D4OR1	CAD015D7OR1	CAD015DCOR1	CAD015DFOR1
Lab ID:	X8870	X8871	X8872	X8873	X8874
Batch ID:	00-422	00-422	00-422	00-422	00-422
Sample Collection Date:	09/20/00	09/20/00	09/20/00	09/20/00	09/20/00
Dilution Factor:	2.00	2.00	2.00	2.00	2.00
Sample Volume (L):	2.00	2.00	2.00	2.00	2.00
Units:	ng/L	ng/L	ng/L	ng/L	ng/L

Naphthalene	15.72 J	21.72	21.17	11.05 J	19.04 J
Acenaphthylene	0.97	1.84	2.38	1.42	3.53
Acenaphthene	0.66	0.98	1.69	0.59 J	0.59 J
Fluorene	0.80	1.35	1.93	0.91	1.19
Phenanthrene	1.41	3.84	16.24	2.30	2.29
Anthracene	2.34	3.29	8.71	1.60	6.43
Fluoranthene	12.01	19.41	34.00	12.86	15.91
Pyrene	11.39	17.62	80.85	12.17	16.40
Benzo(a)anthracene	2.26	4.68	11.20	3.27	6.02
Chrysene	2.99	7.20	42.03	4.86	12.10
Benzo(b)fluoranthene	2.34	5.21	11.22	3.41	6.08
Benzo(k)fluoranthene	1.72	4.67	8.46	3.13	5.55
Benzo(a)pyrene	1.55	3.73	9.04	1.69	4.88
Indeno(1,2,3-c,d)pyrene	1.17	2.32	5.04	1.80	3.85
Dibenz(a,h)anthracene	1.25 U	0.64 J	1.22 J	0.46 J	0.80 J
Benzo(g,h,i)perylene	1.33	2.80	7.52	1.85	4.04

Surrogate Recoveries (%):

Naphthalene-d8	48	48	58	50	51
Phenanthrene-d10	66	64	69	70	61
Chrysene-d12	69	72	84	74	69

U= Analyte not detected.

J= Analyte detected below the
Sample Specific MDL.

&= Value outside accuracy or
precision DQO.



Project Name: WA3-26 (Boston
Cap Project)

Project Number: G464426-
EPA11DUXLAB

Client ID:	CAD015EFOR1	CAD015F2OR1	CAD015F5OR1	CAD015F5OR1
Lab ID:	X8875	X8876	X8877	X8877-DUP
Batch ID:	00-422	00-422	00-422	00-422
Sample Collection Date:	09/20/00	09/20/00	09/20/00	09/20/00
Dilution Factor:	2.00	2.00	2.00	2.00
Sample Volume (L):	2.00	2.00	1.00	1.00
Units:	ng/L	ng/L	ng/L	ng/L

Naphthalene	11.47 J	12.57 J	15.72 J	24.52 J
Acenaphthylene	1.47	1.23	0.77 J	1.71
Acenaphthene	0.57 J	0.63 J	1.14 J	0.85 J
Fluorene	1.20	0.82	1.57	2.12
Phenanthrene	3.29	1.66	2.31	3.03
Anthracene	2.24	2.85	1.62	3.79
Fluoranthene	10.41	11.40	8.41	12.27
Pyrene	9.86	9.56	7.29	10.47
Benzo(a)anthracene	5.16	2.86	1.48 J	3.76
Chrysene	6.93	4.01	2.46	4.49
Benzo(b)fluoranthene	4.14	2.86	1.45	2.86
Benzo(k)fluoranthene	3.94	2.52	1.63	2.72
Benzo(a)pyrene	3.70	2.13	1.48 J	3.23
Indeno(1,2,3-c,d)pyrene	1.71	1.13	0.97 J	1.31 J
Dibenz(a,h)anthracene	0.53 J	1.25 U	2.50 U	2.50 U
Benzo(g,h,i)perylene	2.04	1.34	1.10 J	1.34 J

Surrogate Recoveries (%):				
Naphthalene-d8	52	46	60	54
Phenanthrene-d10	70	64	71	72
Chrysene-d12	74	71	75	76

U= Analyte not detected.
J= Analyte detected below the
Sample Specific MDL.
&= Value outside accuracy or
precision DQO.



Project Name: WA3-26 (Boston
Cap Project)
Project Number: G464426-
EPA11DUXLAB

Client ID:	Procedural Blank	CAD01610OR1	CAD01613OR1	CAD01616OR1
Lab ID:	YH64PB	X8982	X8983	X8984
Batch ID:	00-436	00-436	00-436	00-436
Sample Collection Date:	NA	09/28/00	09/28/00	09/28/00
Dilution Factor:	2.00	2.00	2.00	2.00
Sample Volume (L):	2.00	1.00	1.00	2.00
Units:	ng/L	ng/L	ng/L	ng/L

Naphthalene	10.12 J	18.88 J	19.95 J	9.35 J
Acenaphthylene	0.50 U	2.03	1.25	1.03
Acenaphthene	0.64 U	3.96	2.66	2.12
Fluorene	0.59 U	2.20	1.83	1.72
Phenanthrene	0.36 J	3.34	2.27	1.91
Anthracene	0.80	2.84	2.19	1.43
Fluoranthene	0.53 U	13.95	14.83	12.86
Pyrene	0.57 U	13.50	12.92	12.70
Benzo(a)anthracene	0.83 U	3.58	2.26	2.13
Chrysene	0.44 U	4.78	3.78	3.40
Benzo(b)fluoranthene	0.51 U	3.55	2.79	2.03
Benzo(k)fluoranthene	0.52 U	2.76	2.07	1.88
Benzo(a)pyrene	0.78 U	3.78	2.42	1.86
Indeno(1,2,3-c,d)pyrene	1.10 U	1.84 J	1.29 J	0.85 J
Dibenz(a,h)anthracene	1.25 U	2.50 U	2.50 U	1.25 U
Benzo(g,h,i)perylene	0.68 U	1.94	1.44	1.12

Surrogate Recoveries (%):

Naphthalene-d8	73	64	63	60
Phenanthrene-d10	76	76	74	78
Chrysene-d12	89	94	87	91

U= Analyte not detected.

J= Analyte detected below the
Sample Specific MDL.

&= Value outside accuracy or
precision DQO.



Project Name: WA3-26 (Boston
Cap Project)
Project Number: G464426-
EPA11DUXLAB

Client ID:	CAD01619OR1	CAD0161COR1	CAD01620OR1	CAD01623OR1
Lab ID:	X8985	X8986	X8987	X8988
Batch ID:	00-436	00-436	00-436	00-436
Sample Collection Date:	09/28/00	09/28/00	09/28/00	09/28/00
Dilution Factor:	2.00	2.00	2.00	2.00
Sample Volume (L):	2.00	2.00	2.00	2.00
Units:	ng/L	ng/L	ng/L	ng/L

Naphthalene	8.35 J	8.54 J	9.41 J	10.13 J
Acenaphthylene	0.91	1.03	0.78	0.72
Acenaphthene	1.77	2.18	2.11	2.09
Fluorene	1.26	1.46	1.32	1.08
Phenanthrene	1.96	1.61	1.02	1.05
Anthracene	1.51	1.39	1.07	1.14
Fluoranthene	11.80	15.11	11.65	11.63
Pyrene	11.67	13.09	11.04	11.11
Benzo(a)anthracene	2.31	2.10	1.32	1.21
Chrysene	3.22	2.90	2.20	2.05
Benzo(b)fluoranthene	2.04	1.57	1.09	0.92
Benzo(k)fluoranthene	1.90	1.29	0.89	0.87
Benzo(a)pyrene	1.94	1.43	1.15	0.69 J
Indeno(1,2,3-c,d)pyrene	0.96 J	0.78 J	0.64 J	0.38 J
Dibenz(a,h)anthracene	0.35 J	1.25 U	1.25 U	1.25 U
Benzo(g,h,i)perylene	1.19	0.95	0.69	0.62 J

Surrogate Recoveries (%):

Naphthalene-d8	57	64	66	70
Phenanthrene-d10	75	77	80	82
Chrysene-d12	89	81	92	96

U= Analyte not detected.

J= Analyte detected below the
Sample Specific MDL.

&= Value outside accuracy or
precision DQO.



Project Name: WA3-26 (Boston
Cap Project)
Project Number: G464426-
EPA11DUXLAB

Client ID:	CAD01626OR1	CAD01629OR1	CAD0162COR1	CAD0162COR1
Lab ID:	X8989	X8990	X8991	X8991DUP
Batch ID:	00-436	00-436	00-436	00-436
Sample Collection Date:	09/28/00	09/28/00	09/28/00	09/28/00
Dilution Factor:	2.00	2.00	2.00	2.00
Sample Volume (L):	2.00	2.00	1.00	1.00
Units:	ng/L	ng/L	ng/L	ng/L

Naphthalene	7.53 J	7.14 J	11.24 J	13.53 J
Acenaphthylene	0.72	1.32	0.89 J	1.04
Acenaphthene	1.56	3.14	1.88	2.62
Fluorene	1.26	1.69	1.39	1.45
Phenanthrene	1.14	2.33	1.21	1.47
Anthracene	1.37	1.77	1.60	1.73
Fluoranthene	9.84	15.30	12.06	13.78
Pyrene	10.00	14.67	12.15	13.86
Benzo(a)anthracene	1.30	2.80	1.28 J	1.87
Chrysene	2.05	3.58	2.23	2.95
Benzo(b)fluoranthene	0.99	2.17	1.02 U	1.60
Benzo(k)fluoranthene	1.07	1.92	1.04 U	1.29
Benzo(a)pyrene	1.02	2.06	0.84 J	1.41 J
Indeno(1,2,3-c,d)pyrene	0.56 J	1.16	2.20 U	2.20 U
Dibenz(a,h)anthracene	1.25 U	1.25 U	2.50 U	2.50 U
Benzo(g,h,i)perylene	0.60 J	1.22	0.72 J	0.82 J

Surrogate Recoveries (%):				
Naphthalene-d8	51	67	67	68
Phenanthrene-d10	66	79	69	75
Chrysene-d12	74	92	80	85

U= Analyte not detected.
J= Analyte detected below the
Sample Specific MDL.
&= Value outside accuracy or
precision DQO.

Evaluation of Sediment Agitation and Mixing into the Surrounding Water Column from Capping Activities - Boston Harbor

APPENDIX F

PCB LABORATORY-REPORTED SAMPLE DATA WITH QC QUALIFIERS



Field Sample Data

Project Name WA3-26 Boston Cap Project
 Project Number G464426-EPA11DUXLAB

Client ID	LOAD #20	LOAD #21	LOAD #22	LOAD #23	LOAD #24
Sample ID	X8997-ECD	X8998-ECD	X8999-ECD	X9000-ECD	X9001-ECD
Batch ID	00-441	00-441	00-441	00-441	00-441
Collection Date	22-Sep-00	22-Sep-00	23-Sep-00	23-Sep-00	24-Sep-00
Dilution Factor	2.000	2.000	2.000	2.000	2.000
Sample Dry Wt. (g)	33.37	31.00	29.99	30.14	29.40
Units	ng/g - Dry Wt.	ng/g - Dry Wt.	ng/g - Dry Wt.	ng/g - Dry Wt.	ng/g - Dry Wt.

PCB8	0.15 U	0.16 U	0.16 U	0.16 U	0.17 U
PCB18	0.07 U	0.07 U	0.08 U	0.08 U	0.08 U
PCB28	0.10 U	0.11 U	0.11 U	0.11 U	0.11 U
PCB44	0.09 U	0.10 U	0.10 U	0.10 U	0.10 U
PCB52	0.10 U	0.10 U	0.11 U	0.11 U	0.11 U
PCB66	0.11 U	0.11 U	0.12 U	0.12 U	0.12 U
PCB101	0.09 U	0.10 U	0.10 U	0.10 U	0.10 U
PCB105	0.08 U	0.09 U	0.09 U	0.09 U	0.09 U
PCB118	0.10 U	0.11 U	0.12 U	0.12 U	0.12 U
PCB128	0.17 U	0.18 U	0.19 U	0.19 U	0.19 U
PCB138	0.09 U	0.09 U	0.10 U	0.10 U	0.10 U
PCB153	0.13 U	0.14 U	0.14 U	0.14 U	0.15 U
PCB170	0.09 U	0.09 U	0.10 U	0.10 U	0.10 U
PCB180	0.09 U	0.10 U	0.10 U	0.10 U	0.10 U
PCB187	0.08 U	0.09 U	0.09 U	0.09 U	0.10 U
PCB195	0.08 U	0.09 U	0.09 U	0.09 U	0.09 U
PCB206	0.08 U	0.08 U	0.09 U	0.09 U	0.09 U
PCB209	0.08 U	0.09 U	0.09 U	0.09 U	0.10 U

Surrogate Recoveries:

PCB34	99	96	97	104	102
PCB112	87	91	92	97	94

J - Analyte detected below the ssMDL.

U - Analyte not detected.

& - QC value outside the accuracy or precision DQO.



Project Name: WA3-26 Boston
 Cap Project
 Project Number: G464426-
 EPA11DUXLAB

Field Sample Data

Client ID	CAD012BFOR1	CAD012C3OR1	CAD01390OR1	CAD01394OR1
Sample ID	X8406-F-ECD	X8407-F-ECD	X8436-F-ECD	X8437-F-ECD
Batch ID	00-425	00-425	00-425	00-425
Collection Date	09-Sep-00	09-Sep-00	11-Sep-00	11-Sep-00
Dilution Factor	2.000	2.000	2.000	2.000
Sample Volume (L)	2.00	2.00	2.00	2.00
Units	ng/L	ng/L	ng/L	ng/L

PCB8	9.60 U	9.60 U	9.60 U	9.60 U
PCB18	0.83 U	0.83 U	0.83 U	0.83 U
PCB28	0.37 J	2.53	1.04 U	1.04 U
PCB44	0.40 J	3.27	0.87 U	0.87 U
PCB52	0.86 U	6.41	0.13 J	0.62 J
PCB66	0.46 J	4.15	0.89 U	0.20 J
PCB101	0.69 U	8.64	0.11 J	0.48 J
PCB105	0.60	3.99	0.35 U	0.37
PCB118	1.43	9.56	0.52 U	0.39 J
PCB128	0.44 J	1.91	0.84 U	0.84 U
PCB138	0.80 U	12.98	0.80 U	1.69
PCB153	1.83	12.21	0.64 U	0.71
PCB170	2.11	10.51	0.61 U	0.62
PCB180	0.97	3.81	0.26 J	0.53 J
PCB187	0.46 J	2.97	0.25 J	0.84
PCB195	0.65 U	0.59 J	0.65 U	0.45 J
PCB206	0.73 U	0.32 J	0.73 U	0.73 U
PCB209	0.76 U	0.39 J	0.76 U	0.76 U

Total PCB

Surrogate Recoveries:

PCB34	58	89	36 &	86
PCB112	56	79	34 &	82

J - Analyte detected below the
 ssMDL.

U - Analyte not detected.

& - QC value outside the accuracy
 or precision DQO.



Field Sample Data

Project Name: WA3-26 Boston
 Cap Project
 Project Number: G464426-
 EPA11DUXLAB

Client ID	CAD01534OR1	CAD014D4OR1	CAD014DBOR1	CAD0147DOR1	CAD01480OR1
Sample ID	X8567-F-ECD	X8582-F-ECD	X8583-F-ECD	X8597-F-ECD	X8598-F-ECD
Batch ID	00-425	00-425	00-425	00-425	00-425
Collection Date	15-Sep-00	15-Sep-00	15-Sep-00	14-Sep-00	14-Sep-00
Dilution Factor	2.000	2.000	2.000	2.000	2.000
Sample Volume (L)	2.00	2.00	1.00	2.00	2.00
Units	ng/L	ng/L	ng/L	ng/L	ng/L

PCB8	9.60 U	9.60 U	19.20 U	9.60 U	9.60 U
PCB18	0.83 U	0.83 U	1.66 U	0.83 U	0.83 U
PCB28	1.04 U	0.09 J	2.08 U	0.12 J	0.20 J
PCB44	0.87 U	0.13 J	1.74 U	0.87 U	0.20 J
PCB52	0.25 J	0.30 J	0.53 J	0.21 J	0.45 J
PCB66	0.09 J	0.09 J	0.20 J	0.89 U	0.15 J
PCB101	0.21 J	0.21 J	0.58 J	0.22 J	0.60 J
PCB105	0.35 U	0.17 J	0.40 J	0.16 J	0.27 J
PCB118	0.20 J	0.35 J	0.82 J	0.30 J	0.58
PCB128	0.84 U	0.84 U	1.68 U	0.84 U	0.12 J
PCB138	0.80 U	0.38 J	0.78 J	0.60 J	1.34
PCB153	0.64 U	0.37 J	0.87 J	0.33 J	0.65
PCB170	0.61 U	0.86	1.43	0.94	0.92
PCB180	0.39 J	6.15	1.43	0.53 J	0.73
PCB187	0.52 U	0.20 J	0.61 J	0.21 J	0.26 J
PCB195	0.65 U	0.11 J	0.11 J	0.05 J	0.12 J
PCB206	0.73 U	0.73 U	1.46 U	0.73 U	0.73 U
PCB209	0.76 U	0.76 U	1.52 U	0.76 U	0.76 U
<hr/>					
Total PCB		9.39	7.74	3.65	6.58
<i>Surrogate Recoveries:</i>					
PCB34	59	94	86	67	62
PCB112	57	89	84	63	60

J - Analyte detected below the
 ssMDL.
 U - Analyte not detected.
 & - QC value outside the accuracy
 or precision DQO.



Field Sample Data

Project Name: WA3-26 Boston
 Cap Project
 Project Number: G464426-
 EPA11DUXLAB

Client ID	CAD01021OR1	CAD01024OR1	CAD01027OR1	CAD0102AOR1
Sample ID	X7962-ECD	X7963-ECD	X7964-ECD	X7965-ECD
Batch ID	00-352	00-352	00-352	00-352
Collection Date	06-Sep-00	06-Sep-00	06-Sep-00	06-Sep-00
Dilution Factor	2.000	2.000	2.106	2.000
Sample Volume (L)	1.00	1.00	2.00	2.00
Units	ng/L	ng/L	ng/L	ng/L

PCB8	19.20 U	19.20 U	10.11 U	9.60
PCB18	1.66 U	1.66 U	0.88 U	0.83
PCB28	2.08 U	2.08 U	1.09 U	1.04
PCB44	1.74 U	1.74 U	0.92 U	0.87
PCB52	1.72 U	1.72 U	0.91 U	0.86
PCB66	1.79 U	1.79 U	0.94 U	0.89
PCB101	1.37 U	1.37 U	0.72 U	0.69
PCB105	0.69 U	0.69 U	0.36 U	0.35
PCB118	1.04 U	1.04 U	0.55 U	0.52
PCB128	1.68 U	1.68 U	0.88 U	0.84
PCB138	1.59 U	1.59 U	0.84 U	0.80
PCB153	1.28 U	1.28 U	0.67 U	0.64
PCB170	1.22 U	1.22 U	0.64 U	0.61
PCB180	1.15 U	1.15 U	0.61 U	0.58
PCB187	1.03 U	1.03 U	0.54 U	0.52
PCB195	1.30 U	1.30 U	0.69 U	0.65
PCB206	1.46 U	1.46 U	0.77 U	0.73
PCB209	1.52 U	1.52 U	0.80 U	0.76

Surrogate Recoveries:

PCB34	95	83	100	93
PCB112	109	98	114	105

J - Analyte detected below the ssMDL.
 U - Analyte not detected.
 & - QC value outside the accuracy or precision DQO.



Project Name: WA3-26 Boston
 Cap Project
 Project Number: G464426-
 EPA11DUXLAB

Client ID	CAD0102DOR1	CAD0104AOR1	CAD0104DOR1
Sample ID	X7966-ECD	X7967-ECD	X7968-ECD
Batch ID	00-352	00-352	00-352
Collection Date	06-Sep-00	06-Sep-00	06-Sep-00
Dilution Factor	2.000	2.000	2.000
Sample Volume (L)	2.00	2.00	2.00
Units	ng/L	ng/L	ng/L

PCB8	U	9.60 U	9.60 U	9.60 U
PCB18	U	0.83 U	0.83 U	0.83 U
PCB28	U	1.04 U	1.04 U	1.04 U
PCB44	U	0.87 U	0.87 U	0.87 U
PCB52	U	0.86 U	0.86 U	0.86 U
PCB66	U	0.89 U	0.89 U	0.89 U
PCB101	U	0.69 U	0.69 U	0.69 U
PCB105	U	0.35 U	0.35 U	0.35 U
PCB118	U	0.52 U	0.52 U	0.52 U
PCB128	U	0.84 U	0.84 U	0.84 U
PCB138	U	0.80 U	0.80 U	0.80 U
PCB153	U	0.64 U	0.64 U	0.64 U
PCB170	U	0.61 U	0.61 U	0.61 U
PCB180	U	0.58 U	0.58 U	0.58 U
PCB187	U	0.52 U	0.52 U	0.52 U
PCB195	U	0.65 U	0.65 U	0.65 U
PCB206	U	0.73 U	0.73 U	0.73 U
PCB209	U	0.76 U	0.76 U	0.76 U

Surrogate Recoveries:

PCB34	99	94	95
PCB112	106	106	110

J - Analyte detected below the
 ssMDL.

U - Analyte not detected.

& - QC value outside the
 accuracy or precision DQO.



Field Sample Data

Project Name: WA3-26 Boston
 Cap Project
 Project Number: G464426-
 EPA11DUXLAB

Client ID	CAD01050OR1	CAD01053OR1	CAD01056OR1
Sample ID	X7969-ECD	X7970-ECD	X7971-ECD
Batch ID	00-352	00-352	00-352
Collection Date	06-Sep-00	06-Sep-00	06-Sep-00
Dilution Factor	2.000	2.000	2.000
Sample Volume (L)	2.00	2.00	1.00
Units	ng/L	ng/L	ng/L

PCB8	9.60 U	9.60 U	19.20 U
PCB18	0.83 U	0.83 U	1.66 U
PCB28	1.04 U	1.04 U	2.08 U
PCB44	0.87 U	0.87 U	1.74 U
PCB52	0.86 U	0.86 U	1.72 U
PCB66	0.89 U	0.89 U	1.79 U
PCB101	0.69 U	0.69 U	1.37 U
PCB105	0.35 U	0.35 U	0.69 U
PCB118	0.52 U	0.52 U	1.04 U
PCB128	0.84 U	0.84 U	1.68 U
PCB138	0.80 U	0.80 U	1.59 U
PCB153	0.64 U	0.64 U	1.28 U
PCB170	0.61 U	0.61 U	1.22 U
PCB180	0.58 U	0.58 U	1.15 U
PCB187	0.52 U	0.52 U	1.03 U
PCB195	0.65 U	0.65 U	1.30 U
PCB206	0.73 U	0.73 U	1.46 U
PCB209	0.76 U	0.76 U	1.52 U

Surrogate Recoveries:

PCB34	85	90	94
PCB112	98	100	104

J - Analyte detected below the ssMDL.

U - Analyte not detected.

& - QC value outside the accuracy or precision DQO.



Field Sample Data

Project Name: WA3-26 Boston
 Cap Project
 Project Number: G464426-
 EPA11DUXLAB

Client ID	CAD012ACOR1	CAD012AFOR1	CAD012B2OR1	CAD012BFOR1	CAD012C3OR1	CAD012C6OR1
Sample ID	X8403-ECD	X8404-ECD	X8405-ECD	X8406-ECD	X8407-ECD	X8408-ECD
Batch ID	00-371	00-371	00-371	00-371	00-371	00-371
Collection Date	09-Sep-00	09-Sep-00	09-Sep-00	09-Sep-00	09-Sep-00	09-Sep-00
Dilution Factor	2.000	2.000	2.000	2.000	2.000	2.000
Sample Volume (L)	1.00	1.00	2.00	2.00	2.00	2.00
Units	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L

PCB8	19.20 U	19.20 U	9.60 U	9.60 U	9.60 U	9.60 U
PCB18	1.66 U	1.66 U	0.83 U	0.83 U	0.83 U	0.83 U
PCB28	2.08 U	2.08 U	1.04 U	1.04 U	1.04 U	1.04 U
PCB44	1.74 U	1.74 U	0.87 U	0.87 U	0.87 U	0.87 U
PCB52	1.72 U	1.72 U	0.86 U	0.86 U	0.86 U	0.86 U
PCB66	1.78 U	1.78 U	0.89 U	0.89 U	0.89 U	0.89 U
PCB101	1.38 U	1.38 U	0.69 U	0.69 U	0.69 U	3.36
PCB105	0.70 U	0.70 U	0.35 U	0.35 U	0.35 U	1.17
PCB118	1.04 U	1.04 U	0.52 U	0.52 U	0.52 U	2.98
PCB128	1.68 U	1.68 U	0.84 U	0.84 U	0.84 U	0.50 J
PCB138	1.60 U	1.60 U	0.80 U	0.80 U	0.80 U	4.29
PCB153	1.28 U	1.28 U	0.64 U	0.64 U	0.64 U	4.00
PCB170	1.22 U	1.22 U	0.61 U	0.61 U	0.61 U	0.61 U
PCB180	1.16 U	1.16 U	0.58 U	0.58 U	0.58 U	1.63
PCB187	1.04 U	1.04 U	0.52 U	0.52 U	0.52 U	0.82
PCB195	1.30 U	1.30 U	0.65 U	0.65 U	0.65 U	0.33 J
PCB206	1.46 U	1.46 U	0.73 U	0.73 U	0.73 U	0.73 U
PCB209	1.52 U	1.52 U	0.76 U	0.76 U	0.76 U	0.76 U

Surrogate Recoveries:

PCB34	75	74	118	91	93	97
PCB112	89	89	54	93	95	90

J - Analyte detected below the ssMDL.

U - Analyte not detected.

& - QC value outside the accuracy or precision DQO.



Field Sample Data

Project Name: WA3-26 Boston
 Cap Project
 Project Number: G464426-
 EPA11DUXLAB

Client ID	CAD012CCOR1	CAD012CFOR1	CAD012D2OR1	CAD012D6OR1	CAD012DCOR1	CAD012E0OR1
Sample ID	X8409-ECD	X8410-ECD	X8411-ECD	X8412-ECD	X8413-ECD	X8414-ECD
Batch ID	00-371	00-371	00-371	00-371	00-371	00-371
Collection Date	09-Sep-00	09-Sep-00	09-Sep-00	09-Sep-00	09-Sep-00	09-Sep-00
Dilution Factor	2.000	2.000	2.000	2.000	2.000	2.000
Sample Volume (L)	2.00	2.00	2.00	2.00	2.00	2.00
Units	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L

PCB8	9.60 U	9.60 U	9.60 U	9.60 U	9.60 U	9.60 U
PCB18	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U
PCB28	1.04 U	1.04 U	1.04 U	1.04 U	1.04 U	1.04 U
PCB44	0.87 U	0.87 U	1.09	0.87 U	0.87 U	0.87 U
PCB52	0.86 U	0.75 J	1.73	0.56 J	0.86 U	0.69 J
PCB66	0.89 U	0.33 J	1.20	0.89 U	0.89 U	0.89 U
PCB101	1.10	1.29	3.73	0.41 J	0.69 U	0.52 J
PCB105	0.36	0.53	1.32	0.14 J	0.35 U	0.19 J
PCB118	1.05	1.24	3.11	0.44 J	0.52 U	0.49 J
PCB128	0.84 U	0.84 U	0.61 J	0.84 U	0.84 U	0.84 U
PCB138	2.24	6.98	6.04	3.56	0.96	2.09
PCB153	1.40	2.04	4.22	0.48 J	0.64 U	0.75
PCB170	0.61 U	0.61 U	0.61 U	0.61 U	0.61 U	0.61 U
PCB180	0.91	1.67	2.06	0.33 J	0.58 U	0.58 U
PCB187	0.32 J	0.70	1.03	0.52 U	0.52 U	0.52 U
PCB195	0.65 U	0.65 U	0.21 J	0.65 U	0.65 U	0.65 U
PCB206	0.73 U	3.18	0.24 J	0.09 J	0.73 U	0.73 U
PCB209	0.76 U	0.76 U	0.13 J	0.76 U	0.76 U	0.76 U

Surrogate Recoveries:

PCB34	84	92	97	86	86	87
PCB112	95	92	86	99	95	95

J - Analyte detected below the ssMDL.

U - Analyte not detected.

& - QC value outside the accuracy or precision DQO.



Field Sample Data

Project Name: WA3-26 Boston
 Cap Project
 Project Number: G464426-
 EPA11DUXLAB

Client ID	CAD012ECOR1	CAD012F0OR1	CAD012F4OR1	CAD0130COR1	CAD0130FOR1	CAD01312OR1
Sample ID	X8415-ECD	X8416-ECD	X8417-ECD	X8418-ECD	X8419-ECD	X8420-ECD
Batch ID	00-371	00-371	00-371	00-371	00-371	00-371
Collection Date	09-Sep-00	09-Sep-00	09-Sep-00	10-Sep-00	10-Sep-00	10-Sep-00
Dilution Factor	2.000	2.000	2.000	2.000	2.000	2.000
Sample Volume (L)	2.00	2.00	2.00	2.00	2.00	2.00
Units	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L

PCB8	9.60 U	9.60 U	9.60 U	9.60 U	9.60 U	9.60 U
PCB18	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U
PCB28	1.04 U	1.04 U	1.04 U	1.04 U	1.04 U	1.04 U
PCB44	0.87 U	0.87 U	0.87 U	0.87 U	0.87 U	0.87 U
PCB52	0.86 U	0.57 J	0.78 J	1.58	0.82 J	0.70 J
PCB66	0.89 U	0.89 U	0.89 U	0.81 J	0.89 U	0.89 U
PCB101	0.39 J	0.47 J	0.23 J	2.45	0.54 J	0.63 J
PCB105	0.35 U	0.23 J	0.23 J	0.77	0.19 J	0.21 J
PCB118	0.52 U	0.45 J	0.29 J	2.17	0.46 J	0.40 J
PCB128	0.84 U	0.84 U	0.84 U	0.32 J	0.84 U	0.84 U
PCB138	1.83	2.33	1.79	4.07	1.65	1.71
PCB153	0.64 U	0.58 J	0.51 J	2.98	0.82	0.84
PCB170	0.61 U	0.61 U	0.61 U	0.61 U	0.61 U	0.61 U
PCB180	0.58 U	0.58 U	0.58 U	1.60	0.44 J	0.58 U
PCB187	0.52 U	0.52 U	0.52 U	0.79	0.52 U	0.52 U
PCB195	0.65 U	0.65 U	0.65 U	0.22 J	0.65 U	0.65 U
PCB206	0.73 U	0.73 U	0.73 U	0.26 J	0.73 U	0.73 U
PCB209	0.76 U	0.76 U	0.76 U	0.76 U	0.76 U	0.76 U

Surrogate Recoveries:

PCB34	86	88	90	95	89	81
PCB112	97	100	88	83	89	89

J - Analyte detected below the ssMDL.

U - Analyte not detected.

& - QC value outside the accuracy or precision DQO.



Field Sample Data

Project Name: WA3-26 Boston
 Cap Project
 Project Number: G464426-
 EPA11DUXLAB

Client ID	CAD0131FOR1	CAD01322OR1
Sample ID	X8421-ECD	X8422-ECD
Batch ID	00-371	00-371
Collection Date	10-Sep-00	10-Sep-00
Dilution Factor	2.000	2.000
Sample Volume (L)	2.00	1.00
Units	ng/L	ng/L

PCB8	9.60 U	19.20 U
PCB18	0.83 U	1.66 U
PCB28	1.04 U	2.08 U
PCB44	0.87 U	1.74 U
PCB52	0.70 J	1.72 U
PCB66	0.89 U	1.78 U
PCB101	0.31 J	1.38 U
PCB105	0.16 J	0.70 U
PCB118	0.28 J	1.04 U
PCB128	0.84 U	1.68 U
PCB138	1.12	1.64
PCB153	0.45 J	1.28 U
PCB170	0.61 U	1.22 U
PCB180	0.34 J	1.16 U
PCB187	0.52 U	1.04 U
PCB195	0.65 U	1.30 U
PCB206	0.73 U	1.46 U
PCB209	0.76 U	1.52 U

Surrogate Recoveries:

PCB34	84	87
PCB112	90	88

J - Analyte detected below the
 ssMDL.

U - Analyte not detected.

& - QC value outside the
 accuracy or precision DQO.



Field Sample Data

Project Name WA3-26 Boston Cap Project
 Project Number G464426-EPA11DUXLAB

Client ID	CAD01325OR1	CAD0132BOR1	CAD0132EOR1
Sample ID	X8423-ECD	X8424-ECD	X8425-ECD
Batch ID	00-372	00-372	00-372
Collection Date	10-Sep-00	10-Sep-00	10-Sep-00
Dilution Factor	2.000	2.000	2.000
Sample Volume (L)	1.00	1.00	1.00
Units	ng/L	ng/L	ng/L

PCB8	19.20 U	19.20 U	19.20 U
PCB18	1.66 U	1.66 U	1.66 U
PCB28	2.08 U	2.08 U	2.08 U
PCB44	1.74 U	1.74 U	1.74 U
PCB52	1.72 U	1.72 U	1.72 U
PCB66	1.79 U	1.79 U	1.79 U
PCB101	1.37 U	1.37 U	1.37 U
PCB105	0.69 U	0.69 U	0.69 U
PCB118	1.04 U	1.04 U	1.04 U
PCB128	1.68 U	1.68 U	1.68 U
PCB138	1.59 U	1.59 U	1.59 U
PCB153	1.28 U	1.28 U	1.28 U
PCB170	1.22 U	1.22 U	1.22 U
PCB180	1.15 U	1.15 U	1.15 U
PCB187	1.03 U	1.03 U	1.03 U
PCB195	1.30 U	1.30 U	1.30 U
PCB206	1.46 U	1.46 U	1.46 U
PCB209	1.52 U	1.52 U	1.52 U

Surrogate Recoveries:

PCB34	85	82	86
PCB112	94	99	97

J - Analyte detected below the ssMDL.
 U - Analyte not detected.
 & - QC value outside the accuracy or precision DQO.



Field Sample Data

Project Name: WA3-26 Boston
 Cap Project
 Project Number: G464426-
 EPA11DUXLAB

Client ID	CAD01331OR1	CAD01334OR1	CAD01337OR1	CAD0133AOR1	CAD01348OR1	CAD0134BOR1
Sample ID	X8426-ECD	X8427-ECD	X8428-ECD	X8429-ECD	X8430-ECD	X8431-ECD
Batch ID	00-393	00-393	00-393	00-393	00-393	00-393
Collection Date	10-Sep-00	10-Sep-00	10-Sep-00	10-Sep-00	10-Sep-00	10-Sep-00
Dilution Factor	2.000	2.000	2.000	2.000	2.000	2.000
Sample Volume (L)	1.00	1.00	2.00	2.00	2.00	2.00
Units	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L

PCB8	19.20 U	19.20 U	9.60 U	9.60 U	9.60 U	9.60 U
PCB18	1.66 U	1.66 U	0.83 U	0.58 J	0.83 U	0.83 U
PCB28	2.08 U	2.08 U	1.04 U	1.04 U	1.04 U	1.04 U
PCB44	0.35 J	1.74 U	0.24 J	0.20 J	0.16 J	0.15 J
PCB52	0.86 J	1.72 U	0.62 J	0.55 J	0.39 J	0.41 J
PCB66	1.78 U	1.78 U	0.17 J	0.15 J	0.89 U	0.89 U
PCB101	0.58 J	0.61 J	0.57 J	0.28 J	0.24 J	0.33 J
PCB105	0.70 U	0.70 U	0.16 J	0.35 U	0.35 U	0.35 U
PCB118	0.41 J	0.52 J	0.46 J	0.28 J	0.52 U	0.26 J
PCB128	1.68 U	1.68 U	0.07 J	0.84 U	0.84 U	0.84 U
PCB138	1.60 U	1.60 U	0.79 J	0.29 J	0.80 U	0.80 U
PCB153	1.28 U	1.28 U	0.55 J	0.64 U	0.64 U	0.64 U
PCB170	1.22 U	1.22 U	0.61 U	0.61 U	0.61 U	0.61 U
PCB180	0.40 J	0.35 J	0.52 J	0.33 J	0.58 U	0.22 J
PCB187	1.04 U	1.04 U	0.10 J	0.52 U	0.52 U	0.52 U
PCB195	0.19 J	0.25 J	0.65 U	0.65 U	0.65 U	0.65 U
PCB206	1.46 U	1.46 U	0.73 U	0.73 U	0.73 U	0.73 U
PCB209	1.52 U	1.52 U	0.76 U	0.76 U	0.76 U	0.76 U

Surrogate Recoveries:

PCB34	89	83	86	79	73	90
PCB112	87	86	85	81	73	87

J - Analyte detected below the
 ssMDL.

U - Analyte not detected.

& - QC value outside the
 accuracy or precision DQO.



Field Sample Data

Project Name: WA3-26 Boston
 Cap Project
 Project Number: G464426-
 EPA11DUXLAB

Client ID	CAD0134EOR1	CAD01371OR1	CAD01376OR1	CAD0137AOR1	CAD01390OR1	CAD01394OR1
Sample ID	X8432-ECD	X8433-ECD	X8434-ECD	X8435-ECD	X8436-ECD	X8437-ECD
Batch ID	00-393	00-393	00-393	00-393	00-393	00-393
Collection Date	10-Sep-00	10-Sep-00	10-Sep-00	10-Sep-00	11-Sep-00	11-Sep-00
Dilution Factor	2.000	2.000	2.000	2.000	2.000	2.000
Sample Volume (L)	2.00	2.00	2.00	2.00	2.00	2.00
Units	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L

PCB8	9.60 U	9.60 U	9.60 U	9.60 U	9.60 U	9.60 U
PCB18	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U
PCB28	1.04 U	1.04 U	1.04 U	1.04 U	1.04 U	1.04 U
PCB44	0.87 U	0.18 J	0.18 J	0.87 U	0.24 J	0.29 J
PCB52	0.49 J	0.47 J	0.50 J	0.51 J	0.68 J	0.52 J
PCB66	0.89 U	0.89 U	0.89 U	0.89 U	0.89 U	0.89 U
PCB101	0.44 J	0.18 J	0.24 J	0.20 J	0.69 U	0.69 U
PCB105	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U
PCB118	0.29 J	0.16 J	0.52 U	0.17 J	0.52 U	0.52 U
PCB128	0.84 U	0.84 U	0.84 U	0.84 U	0.84 U	0.84 U
PCB138	0.80 U	0.80 U	0.80 U	0.80 U	0.80 U	0.80 U
PCB153	0.64 U	0.64 U	0.64 U	0.64 U	0.64 U	0.64 U
PCB170	0.61 U	0.61 U	0.61 U	0.61 U	0.61 U	0.61 U
PCB180	0.58 U	0.58 U	0.18 J	0.58 U	0.58 U	0.58 U
PCB187	0.52 U	0.52 U	0.52 U	0.52 U	0.52 U	0.52 U
PCB195	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U
PCB206	0.73 U	0.73 U	0.73 U	0.73 U	0.73 U	0.25 J
PCB209	0.76 U	0.76 U	0.76 U	0.76 U	0.76 U	0.76 U

Surrogate Recoveries:

PCB34	90	91	95	83	98	110
PCB112	85	91	90	84	84	84

J - Analyte detected below the ssMDL.

U - Analyte not detected.

& - QC value outside the accuracy or precision DQO.



Field Sample Data

Project Name: WA3-26 Boston
 Cap Project
 Project Number: G464426-
 EPA11DUXLAB

Client ID	CAD01398OR1	CAD0139FOR1	CAD013A2OR1	CAD013A6OR1	CAD013AAOR1	CAD013B0OR1
Sample ID	X8438-ECD	X8439-ECD	X8440-ECD	X8441-ECD	X8442-ECD	X8443-ECD
Batch ID	00-393	00-393	00-393	00-393	00-393	00-393
Collection Date	11-Sep-00	11-Sep-00	11-Sep-00	11-Sep-00	11-Sep-00	11-Sep-00
Dilution Factor	2.000	2.000	2.000	2.000	2.000	2.000
Sample Volume (L)	2.00	2.00	2.00	2.00	2.00	2.00
Units	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L

PCB8	9.60 U	9.60 U	9.60 U	9.60 U	9.60 U	9.60 U
PCB18	0.83 U	0.83 U	0.83 U	0.33 J	0.62 J	0.68 J
PCB28	1.04 U	1.04 U	1.04 U	1.04 U	0.27 J	1.04 U
PCB44	0.25 J	0.26 J	0.22 J	0.20 J	0.20 J	0.16 J
PCB52	0.59 J	0.61 J	0.64 J	0.50 J	0.59 J	0.46 J
PCB66	0.17 J	0.19 J	0.23 J	0.13 J	0.16 J	0.89 U
PCB101	0.52 J	0.57 J	0.56 J	0.33 J	0.32 J	0.34 J
PCB105	0.13 J	0.22 J	0.35 U	0.35 U	0.35 U	0.35 U
PCB118	0.36 J	0.43 J	0.41 J	0.20 J	0.31 J	0.23 J
PCB128	0.84 U	0.84 U	0.84 U	0.84 U	0.84 U	0.84 U
PCB138	0.80 U	0.39 J	0.55 J	0.80 U	0.47 J	0.40 J
PCB153	0.44 J	0.60 J	0.64 U	0.64 U	0.64 U	0.64 U
PCB170	0.61 U	0.61 U	0.61 U	0.61 U	0.61 U	0.61 U
PCB180	0.37 J	0.36 J	0.34 J	0.24 J	0.36 J	0.25 J
PCB187	0.52 U	0.12 J	0.11 J	0.52 U	0.52 U	0.52 U
PCB195	0.08 J	0.65 U	0.65 U	0.23 J	0.06 J	0.19 J
PCB206	0.73 U	0.73 U	0.73 U	0.73 U	0.73 U	0.73 U
PCB209	0.76 U	0.76 U	0.76 U	0.76 U	0.76 U	0.76 U

Surrogate Recoveries:

PCB34	90	95	99	89	97	87
PCB112	88	89	90	88	89	84

J - Analyte detected below the
 ssMDL.

U - Analyte not detected.

& - QC value outside the
 accuracy or precision DQO.



Field Sample Data

Project Name: WA3-26 Boston
Cap Project
Project Number: G464426-
EPA11DUXLAB

Client ID	CAD013B4OR1	CAD013C9OR1
Sample ID	X8444-ECD	X8445-ECD
Batch ID	00-393	00-393
Collection Date	11-Sep-00	11-Sep-00
Dilution Factor	2.000	2.000
Sample Volume (L)	2.00	1.00
Units	ng/L	ng/L

PCB8	9.60 U	19.20 U
PCB18	0.41 J	0.63 J
PCB28	1.04 U	2.08 U
PCB44	0.17 J	0.21 J
PCB52	0.45 J	0.68 J
PCB66	0.89 U	1.78 U
PCB101	0.21 J	0.38 J
PCB105	0.35 U	0.70 U
PCB118	0.16 J	0.23 J
PCB128	0.84 U	1.68 U
PCB138	0.25 J	0.32 J
PCB153	0.64 U	1.28 U
PCB170	0.61 U	1.22 U
PCB180	0.18 J	0.61 J
PCB187	0.52 U	0.19 J
PCB195	0.65 U	1.30 U
PCB206	0.73 U	1.46 U
PCB209	0.76 U	1.52 U

Surrogate Recoveries:

PCB34	91	90
PCB112	84	84

J - Analyte detected below the
ssMDL.

U - Analyte not detected.

& - QC value outside the
accuracy or precision DQO.



Field Sample Data

Project Name: WA3-26 Boston
 Cap Project
 Project Number: G464426-
 EPA11DUXLAB

Client ID	CAD01405OR1	CAD01408OR1	CAD0140BOR1	CAD01416OR1	CAD01419OR1
Sample ID	X8609-ECD	X8610-ECD	X8611-ECD	X8612-ECD	X8613-ECD
Batch ID	00-405	00-405	00-405	00-405	00-405
Collection Date	12-Sep-00	12-Sep-00	12-Sep-00	12-Sep-00	12-Sep-00
Dilution Factor	2.000	2.000	2.000	2.000	2.000
Sample Volume (L)	1.00	1.00	2.00	2.00	2.00
Units	ng/L	ng/L	ng/L	ng/L	ng/L

PCB8	19.20 U	19.20 U	9.60 U	9.60 U	9.60 U
PCB18	1.66 U	1.66 U	0.83 U	0.83 U	0.83 U
PCB28	2.08 U	2.08 U	1.04 U	1.04 U	1.04 U
PCB44	1.74 U	1.74 U	0.87 U	0.87 U	0.87 U
PCB52	1.72 U	1.72 U	0.86 U	0.86 U	0.86 U
PCB66	1.78 U	1.78 U	0.89 U	0.89 U	0.89 U
PCB101	1.38 U	1.38 U	0.69 U	0.69 U	0.69 U
PCB105	0.70 U	0.70 U	0.35 U	0.35 U	0.35 U
PCB118	1.04 U	1.04 U	0.52 U	0.52 U	0.52 U
PCB128	1.68 U	1.68 U	0.84 U	0.84 U	0.84 U
PCB138	1.60 U	1.60 U	0.80 U	0.80 U	0.74 J
PCB153	1.28 U	1.28 U	0.64 U	0.64 U	0.64 U
PCB170	1.22 U	1.22 U	0.61 U	0.61 U	0.61 U
PCB180	1.16 U	1.16 U	0.58 U	0.58 U	0.58 U
PCB187	1.04 U	1.04 U	0.52 U	0.52 U	0.52 U
PCB195	1.30 U	1.30 U	0.65 U	0.65 U	0.65 U
PCB206	1.46 U	1.46 U	0.73 U	0.73 U	0.73 U
PCB209	1.52 U	1.52 U	0.76 U	0.76 U	0.76 U

Surrogate Recoveries:

PCB34	86	80	77	88	84
PCB112	89	87	82	96	86

J - Analyte detected below the
 ssMDL.

U - Analyte not detected.

& - QC value outside the
 accuracy or precision DQO.



Field Sample Data

Project Name: WA3-26 Boston
 Cap Project
 Project Number: G464426-
 EPA11DUXLAB

Client ID	CAD0141COR1	CAD0141FOR1	CAD01422OR1	CAD01425OR1	CAD01428OR1	CAD0142BOR1
Sample ID	X8614-ECD	X8615-ECD	X8616-ECD	X8617-ECD	X8618-ECD	X8619-ECD
Batch ID	00-405	00-405	00-405	00-405	00-405	00-405
Collection Date	12-Sep-00	12-Sep-00	12-Sep-00	12-Sep-00	12-Sep-00	12-Sep-00
Dilution Factor	2.000	2.000	2.000	2.000	2.000	2.000
Sample Volume (L)	2.00	2.00	2.00	2.00	2.00	2.00
Units	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L

PCB8	9.60 U	9.60 U	9.60 U	9.60 U	9.60 U	9.60 U
PCB18	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U
PCB28	1.04 U	1.04 U	1.04 U	1.04 U	1.04 U	1.04 U
PCB44	0.87 U	0.87 U	0.87 U	0.87 U	0.87 U	0.87 U
PCB52	0.86 U	0.86 U	0.64 J	0.86 U	0.72 J	0.55 J
PCB66	0.89 U	0.89 U	0.89 U	2.83	0.89 U	0.89 U
PCB101	0.69 U	0.69 U	0.36 J	0.69 U	0.69 U	0.69 U
PCB105	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U
PCB118	0.52 U	0.52 U	0.25 J	0.40 J	0.52 U	0.52 U
PCB128	0.84 U	0.84 U	0.84 U	0.84 U	0.84 U	0.84 U
PCB138	0.80 U	2.61	2.85	0.80 U	0.86	0.86
PCB153	0.64 U	0.64 U	0.64 U	0.64 U	0.64 U	0.64 U
PCB170	0.61 U	0.61 U	0.61 U	0.61 U	0.61 U	0.61 U
PCB180	0.58 U	0.58 U	2.34	0.58 U	0.72	0.58 U
PCB187	0.52 U	0.52 U	1.32	0.52 U	0.52 U	0.52 U
PCB195	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U
PCB206	0.73 U	0.73 U	0.73 U	0.73 U	0.73 U	0.73 U
PCB209	0.76 U	0.76 U	0.76 U	0.76 U	0.76 U	0.76 U

Surrogate Recoveries:

PCB34	20 &	84	90	151 &	86	62
PCB112	23 &	91	99	19 &	93	69

J - Analyte detected below the ssMDL.

U - Analyte not detected.

& - QC value outside the accuracy or precision DQO.



Field Sample Data

Project Name: WA3-26 Boston
 Cap Project
 Project Number: G464426-
 EPA11DUXLAB

Client ID	CAD0142EOR1	CAD01436OR1	CAD01439OR1	CAD0143COR1	CAD0143COR1
Sample ID	X8620-ECD	X8621-ECD	X8622-ECD	X8623-ECD	X8623DUP-ECD
Batch ID	00-405	00-405	00-405	00-405	00-405
Collection Date	12-Sep-00	12-Sep-00	12-Sep-00	12-Sep-00	12-Sep-00
Dilution Factor	2.000	2.000	2.000	2.000	2.000
Sample Volume (L)	2.00	2.00	2.00	2.00	2.00
Units	ng/L	ng/L	ng/L	ng/L	ng/L

PCB8	9.60 U	9.60 U	9.60 U	9.60 U	9.60 U
PCB18	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U
PCB28	1.04 U	1.04 U	1.04 U	1.04 U	1.04 U
PCB44	0.87 U	0.87 U	0.87 U	0.87 U	0.87 U
PCB52	0.49 J	0.45 J	0.49 J	0.86 U	0.43 J
PCB66	0.89 U	0.89 U	0.89 U	0.89 U	0.89 U
PCB101	0.34 J	0.69 U	0.69 U	0.69 U	0.69 U
PCB105	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U
PCB118	0.39 J	0.52 U	0.52 U	0.52 U	0.52 U
PCB128	0.84 U	0.84 U	0.84 U	0.84 U	0.84 U
PCB138	3.45	1.11	0.99	0.47 J	0.47 J
PCB153	0.64 U	0.64 U	0.64 U	0.64 U	0.64 U
PCB170	1.19	0.61 U	0.61 U	0.61 U	0.61 U
PCB180	1.34	0.58 U	0.58 U	0.58 U	0.58 U
PCB187	0.52 U	0.52 U	0.52 U	0.52 U	0.52 U
PCB195	1.67	0.65 U	0.65 U	0.65 U	0.65 U
PCB206	8.52	0.73 U	0.73 U	0.73 U	0.73 U
PCB209	6.40	0.76 U	0.76 U	0.76 U	0.76 U

Surrogate Recoveries:					
PCB34	100	87	86	89	79
PCB112	86	91	88	93	83

J - Analyte detected below the ssMDL.

U - Analyte not detected.

& - QC value outside the accuracy or precision DQO.



Field Sample Data

Project Name: WA3-26 Boston
 Cap Project
 Project Number: G464426-
 EPA11DUXLAB

Client ID	CAD01469OR1	CAD0146COR1	CAD0146FOR1	CAD0147DOR1	CAD01480OR1
Sample ID	X8594-ECD	X8595-ECD	X8596-ECD	X8597-ECD	X8598-ECD
Batch ID	00-406	00-406	00-406	00-406	00-406
Collection Date	14-Sep-00	14-Sep-00	14-Sep-00	14-Sep-00	14-Sep-00
Dilution Factor	2.000	2.000	2.000	2.000	2.000
Sample Volume (L)	1.00	1.00	2.00	2.00	2.00
Units	ng/L	ng/L	ng/L	ng/L	ng/L

PCB8	19.20 U	19.20 U	9.60 U	9.60 U	9.60 U
PCB18	1.66 U	1.66 U	0.83 U	0.83 U	0.83 U
PCB28	2.08 U	2.08 U	1.04 U	1.04 U	1.04 U
PCB44	1.74 U	1.74 U	0.87 U	0.87 U	0.87 U
PCB52	1.72 U	1.72 U	0.86 U	0.86 U	0.86 U
PCB66	1.78 U	1.78 U	0.89 U	0.89 U	0.89 U
PCB101	1.38 U	1.38 U	0.69 U	0.69 U	0.69 U
PCB105	0.70 U	0.70 U	0.35 U	0.35 U	0.35 U
PCB118	1.04 U	1.04 U	0.52 U	0.52 U	0.52 U
PCB128	1.68 U	1.68 U	0.84 U	0.84 U	0.84 U
PCB138	1.60 U	1.60 U	0.80 U	0.80 U	0.80 U
PCB153	1.28 U	1.28 U	0.64 U	0.64 U	0.64 U
PCB170	1.22 U	1.22 U	0.61 U	0.61 U	0.61 U
PCB180	28.30	11.25	0.58 U	0.58 U	0.58 U
PCB187	1.04 U	1.04 U	0.52 U	0.52 U	0.52 U
PCB195	1.30 U	1.30 U	0.65 U	0.65 U	0.65 U
PCB206	1.46 U	1.46 U	0.73 U	0.73 U	0.73 U
PCB209	1.52 U	1.52 U	0.76 U	0.76 U	0.76 U

Surrogate Recoveries:

PCB34	73	84	90	55	96
PCB112	80	90	96	63	102

J - Analyte detected below the ssMDL.

U - Analyte not detected.

& - QC value outside the accuracy or precision DQO.



Field Sample Data

Project Name: WA3-26 Boston
 Cap Project
 Project Number: G464426-
 EPA11DUXLAB

Client ID	CAD01483OR1	CAD01486OR1	CAD01489OR1	CAD0148COR1	CAD0148FOR1	CAD01492OR1
Sample ID	X8599-ECD	X8600-ECD	X8601-ECD	X8602-ECD	X8603-ECD	X8604-ECD
Batch ID	00-406	00-406	00-406	00-406	00-406	00-406
Collection Date	14-Sep-00	14-Sep-00	14-Sep-00	14-Sep-00	14-Sep-00	14-Sep-00
Dilution Factor	2.000	2.000	2.000	2.000	2.000	2.000
Sample Volume (L)	2.00	2.00	2.00	2.00	2.00	2.00
Units	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L

PCB8	9.60 U	9.60 U	9.60 U	9.60 U	9.60 U	9.60 U
PCB18	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U
PCB28	1.04 U	1.04 U	1.04 U	1.04 U	1.04 U	1.04 U
PCB44	0.67 J	0.75 J	0.87 U	0.87 U	0.87 U	0.87 U
PCB52	0.74 J	1.09	0.91	0.59 J	0.55 J	0.70 J
PCB66	0.42 J	0.65 J	0.89 U	0.89 U	0.89 U	0.89 U
PCB101	1.21	1.49	0.76	0.42 J	0.36 J	0.40 J
PCB105	0.45	0.58	0.20 J	0.09 J	0.35 U	0.10 J
PCB118	1.24	1.21	0.47 J	0.36 J	0.43 J	0.39 J
PCB128	0.84 U	0.84 U	0.84 U	0.84 U	0.84 U	0.84 U
PCB138	3.51	2.98	2.06	2.31	1.59	1.75
PCB153	1.77	1.82	0.76	0.39 J	0.64 U	0.42 J
PCB170	0.61 U	0.61 U	0.61 U	0.61 U	0.61 U	0.61 U
PCB180	4.48	1.04	0.58 U	0.58 U	0.26 J	0.49 J
PCB187	0.52 U	0.39 J	0.52 U	0.52 U	0.52 U	0.47 J
PCB195	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U
PCB206	0.73 U	0.73 U	0.73 U	0.73 U	0.73 U	0.73 U
PCB209	0.76 U	0.76 U	0.76 U	0.76 U	0.76 U	0.76 U

Surrogate Recoveries:

PCB34	86	93	96	94	84	84
PCB112	99	94	103	100	96	97

J - Analyte detected below the ssMDL.

U - Analyte not detected.

& - QC value outside the accuracy or precision DQO.



Field Sample Data

Project Name: WA3-26 Boston
 Cap Project
 Project Number: G464426-
 EPA11DUXLAB

Client ID	CAD01495OR1	CAD0149DOR1	CAD014A0OR1	CAD014A3OR1	CAD014BFOR1	CAD014C2OR1
Sample ID	X8605-ECD	X8606-ECD	X8607-ECD	X8608-ECD	X8579-ECD	X8580-ECD
Batch ID	00-406	00-406	00-406	00-406	00-406	00-406
Collection Date	14-Sep-00	14-Sep-00	14-Sep-00	14-Sep-00	15-Sep-00	15-Sep-00
Dilution Factor	2.000	2.000	2.000	2.000	2.000	2.000
Sample Volume (L)	2.00	2.00	2.00	2.00	2.00	2.00
Units	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L

PCB8	9.60 U	9.60 U	9.60 U	9.60 U	9.60 U	9.60 U
PCB18	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U
PCB28	1.04 U	1.04 U	1.04 U	1.04 U	1.04 U	1.04 U
PCB44	0.87 U	0.87 U	0.87 U	1.84	0.87 U	0.87 U
PCB52	0.47 J	0.43 J	0.49 J	1.12	0.35 J	0.33 J
PCB66	0.89 U	0.89 U	0.89 U	0.89 U	0.89 U	0.89 U
PCB101	0.25 J	0.23 J	0.17 J	0.28 J	0.33 J	0.69 U
PCB105	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U
PCB118	0.16 J	0.13 J	0.12 J	0.25 J	0.52 U	0.52 U
PCB128	0.84 U	0.84 U	0.84 U	0.84 U	0.84 U	0.84 U
PCB138	1.31	1.02	0.80 U	1.13	0.90	1.35
PCB153	0.64 U	0.64 U	0.64 U	0.64 U	0.64 U	0.64 U
PCB170	0.61 U	0.61 U	0.61 U	0.61 U	0.61 U	0.61 U
PCB180	0.21 J	0.29 J	0.41 J	0.58 U	2.26	0.31 J
PCB187	0.52 U	0.52 U	0.52 U	0.31 J	1.89	0.52 U
PCB195	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U
PCB206	0.73 U	0.73 U	0.73 U	0.73 U	0.73 U	0.73 U
PCB209	0.76 U	0.76 U	0.76 U	0.76 U	0.76 U	0.76 U

Surrogate Recoveries:

PCB34	86	78	83	86	91	85
PCB112	102	90	94	90	96	95

J - Analyte detected below the ssMDL.

U - Analyte not detected.

& - QC value outside the accuracy or precision DQO.



Field Sample Data

Project Name: WA3-26 Boston
 Cap Project
 Project Number: G464426-
 EPA11DUXLAB

Client ID	CAD014C5OR1	CAD014D4OR1	CAD014DBOR1
Sample ID	X8581-ECD	X8582-ECD	X8583-ECD
Batch ID	00-406	00-406	00-406
Collection Date	15-Sep-00	15-Sep-00	15-Sep-00
Dilution Factor	2.000	2.000	2.000
Sample Volume (L)	2.00	2.00	1.00
Units	ng/L	ng/L	ng/L

PCB8	9.60 U	9.60 U	19.20 U
PCB18	0.83 U	0.83 U	1.66 U
PCB28	1.04 U	1.04 U	2.08 U
PCB44	0.87 U	0.87 U	1.74 U
PCB52	0.53 J	0.47 J	0.88 J
PCB66	0.89 U	0.89 U	1.78 U
PCB101	0.69 U	0.69 U	1.38 U
PCB105	0.35 U	0.35 U	0.70 U
PCB118	0.52 U	0.52 U	1.04 U
PCB128	0.84 U	0.84 U	1.68 U
PCB138	0.77 J	0.80 U	1.60 U
PCB153	0.64 U	0.64 U	1.28 U
PCB170	0.61 U	0.61 U	1.22 U
PCB180	0.21 J	0.58 U	1.16 U
PCB187	0.52 U	0.52 U	1.04 U
PCB195	0.65 U	0.65 U	1.30 U
PCB206	0.73 U	0.73 U	1.46 U
PCB209	0.76 U	0.76 U	1.52 U

Surrogate Recoveries:

PCB34	84	94	94
PCB112	89	96	97

J - Analyte detected below the
 ssMDL.

U - Analyte not detected.

& - QC value outside the
 accuracy or precision DQO.



Field Sample Data

Project Name: WA3-26 Boston
 Cap Project
 Project Number: G464426-
 EPA11DUXLAB

Client ID	CAD014DEOR1	CAD014E4OR1	CAD014E7OR1	CAD014EAOR1
Sample ID	X8584-ECD	X8585-ECD	X8586-ECD	X8587-ECD
Batch ID	00-407	00-407	00-407	00-407
Collection Date	15-Sep-00	15-Sep-00	15-Sep-00	15-Sep-00
Dilution Factor	2.000	2.000	2.000	2.000
Sample Volume (L)	1.00	1.00	2.00	2.00
Units	ng/L	ng/L	ng/L	ng/L

PCB8	19.20 U	19.20 U	9.60 U	9.60 U
PCB18	1.66 U	1.66 U	0.83 U	0.83 U
PCB28	2.08 U	2.08 U	1.04 U	1.04 U
PCB44	1.74 U	1.74 U	0.87 U	0.87 U
PCB52	1.72 U	1.72 U	0.51 J	0.49 J
PCB66	1.78 U	1.78 U	0.89 U	0.89 U
PCB101	1.38 U	1.38 U	0.49 J	0.56 J
PCB105	0.70 U	0.70 U	0.35 U	0.35 U
PCB118	1.04 U	1.04 U	0.36 J	0.52 U
PCB128	1.68 U	1.68 U	0.84 U	0.84 U
PCB138	1.60 U	1.60 U	0.38 J	0.80 U
PCB153	1.28 U	1.28 U	0.64 U	0.64 U
PCB170	1.22 U	1.22 U	0.48 J	0.41 J
PCB180	1.16 U	1.16 U	0.28 J	0.58 U
PCB187	1.04 U	1.04 U	0.52 U	0.52 U
PCB195	1.30 U	1.30 U	0.65 U	0.65 U
PCB206	1.46 U	1.46 U	0.73 U	0.73 U
PCB209	1.52 U	1.52 U	0.76 U	0.76 U

Surrogate Recoveries:

PCB34	86	86	91	95
PCB112	97	97	100	103

J - Analyte detected below the
 ssMDL.
 U - Analyte not detected.
 & - QC value outside the
 accuracy or precision DQO.



Project Name: WA3-26 Boston
 Cap Project
 Project Number: G464426-
 EPA11DUXLAB

Client ID	CAD014EDOR1	CAD014F3OR1	CAD014F6OR1	CAD01511OR1
Sample ID	X8588-ECD	X8589-ECD	X8590-ECD	X8591-ECD
Batch ID	00-407	00-407	00-407	00-407
Collection Date	15-Sep-00	15-Sep-00	15-Sep-00	15-Sep-00
Dilution Factor	2.000	2.000	2.000	2.000
Sample Volume (L)	2.00	2.00	2.00	2.00
Units	ng/L	ng/L	ng/L	ng/L

PCB8	9.60 U	9.60 U	9.60 U	9.60 U
PCB18	0.83 U	0.83 U	0.83 U	0.83 U
PCB28	1.04 U	1.04 U	1.04 U	1.04 U
PCB44	0.87 U	0.87 U	0.87 U	0.87 U
PCB52	0.86 U	0.86 U	0.86 U	0.86 U
PCB66	0.89 U	0.89 U	0.89 U	0.89 U
PCB101	0.69 U	0.69 U	0.69 U	0.69 U
PCB105	0.35 U	0.35 U	0.35 U	0.35 U
PCB118	0.52 U	0.52 U	0.52 U	0.52 U
PCB128	0.84 U	0.84 U	0.84 U	0.84 U
PCB138	0.80 U	0.80 U	0.80 U	0.80 U
PCB153	0.64 U	0.64 U	0.64 U	0.64 U
PCB170	0.27 J	0.13 J	0.28 J	0.23 J
PCB180	0.32 J	0.21 J	0.31 J	0.22 J
PCB187	0.52 U	0.52 U	0.52 U	0.52 U
PCB195	0.65 U	0.65 U	0.65 U	0.65 U
PCB206	0.73 U	0.73 U	0.73 U	0.73 U
PCB209	0.76 U	0.76 U	0.76 U	0.76 U

Surrogate Recoveries:

PCB34	94	89	91	84
PCB112	103	98	97	92

J - Analyte detected below the ssMDL.
 U - Analyte not detected.
 & - QC value outside the accuracy or precision DQO.



Field Sample Data

Project Name: WA3-26 Boston
 Cap Project
 Project Number: G464426-
 EPA11DUXLAB

Client ID	CAD01514OR1	CAD0151AOR1	CAD01523OR1	CAD01526OR1
Sample ID	X8592-ECD	X8593-ECD	X8564-ECD	X8565-ECD
Batch ID	00-407	00-407	00-407	00-407
Collection Date	15-Sep-00	15-Sep-00	15-Sep-00	15-Sep-00
Dilution Factor	2.000	2.000	2.000	2.000
Sample Volume (L)	2.00	2.00	2.00	2.00
Units	ng/L	ng/L	ng/L	ng/L
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PCB8	9.60 U	9.60 U	9.60 U	9.60 U
PCB18	0.83 U	0.83 U	0.83 U	0.83 U
PCB28	1.04 U	1.04 U	1.04 U	1.04 U
PCB44	0.87 U	0.87 U	0.87 U	0.87 U
PCB52	0.36 J	0.36 J	0.38 J	0.30 J
PCB66	0.89 U	0.89 U	0.89 U	0.89 U
PCB101	0.25 J	0.42 J	0.69 U	0.51 J
PCB105	0.35 U	0.35 U	0.35 U	0.35 U
PCB118	0.52 U	0.52 U	0.52 U	0.52 U
PCB128	0.84 U	0.84 U	0.84 U	0.84 U
PCB138	0.80 U	0.80 U	0.80 U	0.80 U
PCB153	0.64 U	0.64 U	0.64 U	0.64 U
PCB170	0.29 J	0.42 J	0.25 J	0.18 J
PCB180	0.19 J	0.23 J	0.23 J	0.19 J
PCB187	0.52 U	0.52 U	0.52 U	0.52 U
PCB195	0.65 U	0.65 U	0.65 U	0.65 U
PCB206	0.73 U	0.73 U	0.73 U	0.73 U
PCB209	0.76 U	0.76 U	0.76 U	0.76 U
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Surrogate Recoveries:

PCB34	100	92	100	88
PCB112	105	99	106	94

J - Analyte detected below the ssMDL.

U - Analyte not detected.

& - QC value outside the accuracy or precision DQO.



Field Sample Data

Project Name: WA3-26 Boston
 Cap Project
 Project Number: G464426-
 EPA11DUXLAB

Client ID	CAD01529OR1	CAD01534OR1	CAD01538OR1	CAD0153BOR1
Sample ID	X8566-ECD	X8567-ECD	X8568-ECD	X8569-ECD
Batch ID	00-407	00-407	00-407	00-407
Collection Date	15-Sep-00	15-Sep-00	15-Sep-00	15-Sep-00
Dilution Factor	2.000	2.000	2.000	2.000
Sample Volume (L)	2.00	2.00	2.00	2.00
Units	ng/L	ng/L	ng/L	ng/L

PCB8	9.60 U	9.60 U	9.60 U	9.60 U
PCB18	0.83 U	0.83 U	0.83 U	0.83 U
PCB28	1.04 U	1.04 U	1.04 U	1.04 U
PCB44	0.87 U	0.87 U	0.30 J	0.22 J
PCB52	0.86 U	0.43 J	0.42 J	0.43 J
PCB66	0.89 U	0.89 U	0.89 U	0.89 U
PCB101	0.69 U	0.69 U	0.54 J	0.57 J
PCB105	0.35 U	0.35 U	0.35 U	0.35 U
PCB118	0.52 U	0.52 U	0.49 J	0.36 J
PCB128	0.84 U	0.84 U	0.84 U	0.84 U
PCB138	0.80 U	0.80 U	0.80 U	0.10 J
PCB153	0.64 U	0.64 U	0.64 U	0.18 J
PCB170	0.34 J	0.61 U	0.61 U	0.61 U
PCB180	0.16 J	0.33 J	0.27 J	0.32 J
PCB187	0.52 U	0.52 U	0.52 U	0.52 U
PCB195	0.65 U	0.65 U	0.65 U	0.65 U
PCB206	0.73 U	0.73 U	0.73 U	0.73 U
PCB209	0.76 U	0.76 U	0.76 U	0.76 U

Surrogate Recoveries:

PCB34	89	83	85	97
PCB112	99	97	99	102

J - Analyte detected below the ssMDL.

U - Analyte not detected.

& - QC value outside the accuracy or precision DQO.



Field Sample Data

Project Name: WA3-26 Boston
 Cap Project
 Project Number: G464426-
 EPA11DUXLAB

Client ID	CAD0153EOR1	CAD01541OR1	CAD01544OR1	CAD01547OR1
Sample ID	X8570-ECD	X8571-ECD	X8572-ECD	X8573-ECD
Batch ID	00-407	00-407	00-407	00-407
Collection Date	15-Sep-00	15-Sep-00	15-Sep-00	15-Sep-00
Dilution Factor	2.000	2.000	2.000	2.000
Sample Volume (L)	2.00	2.00	2.00	1.00
Units	ng/L	ng/L	ng/L	ng/L

PCB8	9.60 U	9.60 U	9.60 U	19.20 U
PCB18	0.83 U	0.83 U	0.83 U	1.66 U
PCB28	1.04 U	1.04 U	1.04 U	2.08 U
PCB44	0.31 J	0.15 J	0.21 J	1.74 U
PCB52	0.30 J	0.46 J	0.43 J	0.48 J
PCB66	0.89 U	0.89 U	0.89 U	1.78 U
PCB101	0.35 J	0.37 J	0.56 J	0.22 J
PCB105	0.35 U	0.35 U	0.35 U	0.70 U
PCB118	0.52 U	0.52 U	0.16 J	1.04 U
PCB128	0.84 U	0.84 U	0.84 U	1.68 U
PCB138	0.80 U	0.31 J	0.80 U	1.60 U
PCB153	0.64 U	0.64 U	0.64 U	1.28 U
PCB170	0.61 U	0.61 U	0.61 U	1.22 U
PCB180	0.33 J	0.31 J	0.23 J	0.56 J
PCB187	0.52 U	0.52 U	0.52 U	1.04 U
PCB195	0.65 U	0.65 U	0.65 U	1.30 U
PCB206	0.73 U	0.73 U	0.73 U	1.46 U
PCB209	0.76 U	0.76 U	0.76 U	1.52 U

Surrogate Recoveries:

PCB34	85	94	90	81
PCB112	88	98	96	83

J - Analyte detected below the
 ssMDL.

U - Analyte not detected.

& - QC value outside the
 accuracy or precision DQO.



Field Sample Data

Project Name WA3-26 Boston Cap Project
 Project Number G464426-EPA11DUXLAB

Client ID	CAD0154COR1	CAD0154FOR1	CAD0155EOR1	CAD01561OR1	CAD01564OR1
Sample ID	X8574-ECD	X8575-ECD	X8576-ECD	X8577-ECD	X8578-ECD
Batch ID	00-408	00-408	00-408	00-408	00-408
Collection Date	15-Sep-00	15-Sep-00	16-Sep-00	16-Sep-00	16-Sep-00
Dilution Factor	2,000	2,000	2,000	2,000	2,000
Sample Volume (L)	1.00	1.00	2.00	2.00	1.00
Units	ng/L	ng/L	ng/L	ng/L	ng/L

PCB8	19.20 U	19.20 U	9.60 U	9.60 U	19.20 U
PCB18	1.66 U	1.66 U	0.83 U	0.83 U	1.66 U
PCB28	2.08 U	2.08 U	1.04 U	1.04 U	2.08 U
PCB44	0.40 J	0.18 J	0.87 U	0.20 J	1.74 U
PCB52	0.79 J	0.56 J	0.29 J	0.38 J	0.49 J
PCB66	0.32 J	1.78 U	0.89 U	0.89 U	1.78 U
PCB101	0.56 J	0.40 J	0.21 J	0.24 J	1.38 U
PCB105	0.70 U	0.70 U	0.35 U	0.35 U	0.70 U
PCB118	0.36 J	0.19 J	0.52 U	0.14 J	1.04 U
PCB128	0.23 J	1.68 U	0.84 U	0.84 U	1.68 U
PCB138	0.59 J	1.60 U	0.80 U	0.80 U	1.60 U
PCB153	1.28 U	1.28 U	0.64 U	0.64 U	1.28 U
PCB170	0.43 J	1.22 U	0.61 U	0.61 U	1.22 U
PCB180	0.53 J	0.24 J	0.58 U	0.37 J	0.31 J
PCB187	0.23 J	1.04 U	0.52 U	0.52 U	1.04 U
PCB195	0.25 J	1.30 U	0.65 U	0.13 J	1.30 U
PCB206	0.22 J	1.46 U	0.73 U	0.73 U	1.46 U
PCB209	0.17 J	1.52 U	0.76 U	0.76 U	1.52 U

Surrogate Recoveries:

PCB34	100	92	75	90	83
PCB112	96	93	72	90	88

J - Analyte detected below the ssMDL.

U - Analyte not detected.

& - QC value outside the accuracy or precision DQO.



Field Sample Data

Project Name: WA3-26 Boston
 Cap Project
 Project Number: G464426-
 EPA11DUXLAB

Client ID	CAD015ABOR1	CAD015B0OR1	CAD015B3OR1	CAD015C2OR1
Sample ID	X8863-ECD	X8864-ECD	X8865-ECD	X8866-ECD
Batch ID	00-422	00-422	00-422	00-422
Collection Date	20-Sep-00	20-Sep-00	20-Sep-00	20-Sep-00
Dilution Factor	2.000	2.000	2.000	2.000
Sample Volume (L)	1.00	1.00	2.00	2.00
Units	ng/L	ng/L	ng/L	ng/L

PCB8	19.20 U	19.20 U	9.60 U	9.60 U
PCB18	1.66 U	1.66 U	0.83 U	0.83 U
PCB28	2.08 U	2.08 U	1.04 U	1.04 U
PCB44	1.74 U	1.74 U	0.87 U	0.87 U
PCB52	1.72 U	0.62 J	0.86 U	0.86 U
PCB66	1.78 U	1.78 U	0.89 U	0.89 U
PCB101	1.38 U	1.38 U	0.69 U	0.69 U
PCB105	0.70 U	0.70 U	0.35 U	0.35 U
PCB118	1.04 U	1.04 U	0.52 U	0.52 U
PCB128	1.68 U	1.68 U	0.84 U	0.84 U
PCB138	1.60 U	1.60 U	0.80 U	0.80 U
PCB153	1.28 U	1.28 U	0.64 U	0.64 U
PCB170	1.22 U	1.22 U	0.61 U	0.61 U
PCB180	1.16 U	0.34 J	0.58 U	0.58 U
PCB187	1.04 U	1.04 U	0.52 U	0.52 U
PCB195	1.30 U	1.30 U	0.65 U	0.65 U
PCB206	1.46 U	1.46 U	0.73 U	0.73 U
PCB209	1.52 U	1.52 U	0.76 U	0.76 U

Surrogate Recoveries:

PCB34	85	90	143 &	2 &
PCB112	90	95	66	4 &

J - Analyte detected below the ssMDL.

U - Analyte not detected.

& - QC value outside the accuracy or precision DQO.



Project Name: WA3-26 Boston
 Cap Project
 Project Number: G464426-
 EPA11DUXLAB

Client ID	CAD015C5OR1	CAD015CBOR1	CAD015CEOR1	CAD015D1OR1
Sample ID	X8867-ECD	X8868-ECD	X8869-ECD	X8870-ECD
Batch ID	00-422	00-422	00-422	00-422
Collection Date	20-Sep-00	20-Sep-00	20-Sep-00	20-Sep-00
Dilution Factor	2.000	2.000	2.000	2.000
Sample Volume (L)	2.00	2.00	2.00	2.00
Units	ng/L	ng/L	ng/L	ng/L

PCB8	9.60 U	9.60 U	9.60 U	9.60 U
PCB18	0.83 U	0.83 U	0.83 U	0.83 U
PCB28	1.04 U	1.04 U	1.04 U	1.04 U
PCB44	0.87 U	0.87 U	0.87 U	0.12 J
PCB52	0.82 J	0.53 J	0.48 J	0.47 J
PCB66	0.27 J	0.89 U	0.89 U	0.89 U
PCB101	0.59 J	0.39 J	0.31 J	0.29 J
PCB105	0.35 U	0.35 U	0.35 U	0.35 U
PCB118	0.67	0.32 J	0.26 J	0.20 J
PCB128	0.84 U	0.84 U	0.84 U	0.84 U
PCB138	0.80 U	0.80 U	0.80 U	0.80 U
PCB153	0.64 U	0.64 U	0.64 U	0.64 U
PCB170	1.00	0.63	0.61 U	0.61 U
PCB180	0.59	0.36 J	0.31 J	0.50 J
PCB187	0.52 U	0.11 J	0.52 U	0.27 J
PCB195	0.65 U	0.65 U	0.15 J	0.33 J
PCB206	0.73 U	0.73 U	0.73 U	0.25 J
PCB209	0.76 U	0.76 U	0.76 U	0.76 U

Surrogate Recoveries:

PCB34	161 &	82	96	87
PCB112	177 &	95	104	98

J - Analyte detected below the
 ssMDL.

U - Analyte not detected.

& - QC value outside the
 accuracy or precision DQO.



Field Sample Data

Project Name: WA3-26 Boston
 Cap Project
 Project Number: G464426-
 EPA11DUXLAB

Client ID	CAD015D4OR1	CAD015D7OR1	CAD015DCOR1	CAD015DFOR1
Sample ID	X8871-ECD	X8872-ECD	X8873-ECD	X8874-ECD
Batch ID	00-422	00-422	00-422	00-422
Collection Date	20-Sep-00	20-Sep-00	20-Sep-00	20-Sep-00
Dilution Factor	2.000	2.000	2.000	2.000
Sample Volume (L)	2.00	2.00	2.00	2.00
Units	ng/L	ng/L	ng/L	ng/L

PCB8	9.60 U	9.60 U	9.60 U	9.60 U
PCB18	0.83 U	0.84	0.56 J	0.50 J
PCB28	1.04 U	1.04 U	1.04 U	1.04 U
PCB44	0.14 J	1.66	0.09 J	0.87 U
PCB52	0.43 J	1.38	0.43 J	0.40 J
PCB66	0.11 J	0.89 U	0.89 U	0.10 J
PCB101	0.38 J	0.69 U	0.28 J	0.33 J
PCB105	0.13 J	0.35 U	0.35 U	0.08 J
PCB118	0.26 J	0.52 U	0.20 J	0.22 J
PCB128	0.84 U	0.84 U	0.84 U	0.84 U
PCB138	0.32 J	0.80 U	0.80 U	0.80 U
PCB153	0.32 J	0.64 U	0.64 U	0.28 J
PCB170	0.36 J	0.61 U	0.61 U	0.61 U
PCB180	0.31 J	0.58 U	0.27 J	0.25 J
PCB187	0.10 J	0.52 U	0.52 U	0.52 U
PCB195	0.03 J	0.65 U	0.07 J	0.65 U
PCB206	0.73 U	0.73 U	0.73 U	0.73 U
PCB209	0.76 U	0.76 U	0.76 U	0.76 U

Surrogate Recoveries:

PCB34	88	115	91	88
PCB112	100	90	93	95

J - Analyte detected below the ssMDL.

U - Analyte not detected.

& - QC value outside the accuracy or precision DQO.



Field Sample Data

Project Name: WA3-26 Boston
 Cap Project
 Project Number: G464426-
 EPA11DUXLAB

Client ID	CAD015EFOR1	CAD015F2OR1	CAD015F5OR1
Sample ID	X8875-ECD	X8876-ECD	X8877-ECD
Batch ID	00-422	00-422	00-422
Collection Date	20-Sep-00	20-Sep-00	20-Sep-00
Dilution Factor	2.000	2.000	2.000
Sample Volume (L)	2.00	2.00	1.00
Units	ng/L	ng/L	ng/L
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PCB8	9.60 U	9.60 U	19.20 U
PCB18	0.35 J	0.83 U	1.66 U
PCB28	0.12 J	1.04 U	2.08 U
PCB44	0.11 J	0.87 U	1.74 U
PCB52	0.32 J	0.86 U	1.72 U
PCB66	0.07 J	0.89 U	1.78 U
PCB101	0.28 J	0.21 J	1.38 U
PCB105	0.35 U	0.35 U	0.70 U
PCB118	0.17 J	0.52 U	1.04 U
PCB128	0.84 U	0.84 U	1.68 U
PCB138	0.80 U	0.80 U	1.60 U
PCB153	0.64 U	0.64 U	1.28 U
PCB170	0.61 U	0.61 U	1.22 U
PCB180	0.27 J	0.52 J	0.39 J
PCB187	0.52 U	0.52 U	1.04 U
PCB195	0.06 J	0.65 U	1.30 U
PCB206	0.73 U	0.73 U	1.46 U
PCB209	0.76 U	0.76 U	1.52 U
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<i>Surrogate Recoveries:</i>			
PCB34	83	83	89
PCB112	96	93	93

J - Analyte detected below the
 ssMDL.
 U - Analyte not detected.
 & - QC value outside the
 accuracy or precision DQO.



Field Sample Data

Project Name: WA3-26 Boston
 Cap Project
 Project Number: G464426-
 EPA11DUXLAB

Client ID	CAD01610OR1	CAD01613OR1	CAD01616OR1	CAD01619OR1
Sample ID	X8982-ECD	X8983-ECD	X8984-ECD	X8985-ECD
Batch ID	00-436	00-436	00-436	00-436
Collection Date	28-Sep-00	28-Sep-00	28-Sep-00	28-Sep-00
Dilution Factor	2.000	2.000	2.000	2.000
Sample Volume (L)	1.00	1.00	2.00	2.00
Units	ng/L	ng/L	ng/L	ng/L

PCB8	19.20 U	19.20 U	9.60 U	9.60 U
PCB18	1.66 U	1.66 U	0.83 U	0.83 U
PCB28	2.08 U	2.08 U	1.04 U	1.04 U
PCB44	1.74 U	1.74 U	0.10 J	0.87 U
PCB52	0.37 J	1.72 U	0.29 J	0.33 J
PCB66	1.78 U	1.78 U	0.89 U	0.89 U
PCB101	1.38 U	1.38 U	0.25 J	0.69 U
PCB105	0.70 U	0.70 U	0.35 U	0.35 U
PCB118	1.04 U	1.04 U	0.52 U	0.52 U
PCB128	1.68 U	1.68 U	0.84 U	0.84 U
PCB138	1.60 U	1.60 U	0.19 J	0.80 U
PCB153	1.28 U	1.28 U	0.64 U	0.64 U
PCB170	1.22 U	1.22 U	0.61 U	0.61 U
PCB180	1.16 U	1.16 U	0.34 J	0.36 J
PCB187	1.04 U	1.04 U	0.52 U	0.52 U
PCB195	1.30 U	1.30 U	0.65 U	0.65 U
PCB206	1.46 U	1.46 U	0.73 U	0.73 U
PCB209	1.52 U	1.52 U	0.76 U	0.76 U

Surrogate Recoveries:

PCB34	91	89	90	100
PCB112	93	97	96	102

J - Analyte detected below the ssMDL.

U - Analyte not detected.

& - QC value outside the accuracy or precision DQO.



Battelle

... Putting Technology To Work

Project Name: WA3-26 Boston
Cap Project
Project Number: G464426-
EPA11DUXLAB

Client ID	CAD0161COR1	CAD01620OR1	CAD01623OR1	CAD01626OR1
Sample ID	X8986-ECD	X8987-ECD	X8988-ECD	X8989-ECD
Batch ID	00-436	00-436	00-436	00-436
Collection Date	28-Sep-00	28-Sep-00	28-Sep-00	28-Sep-00
Dilution Factor	2.000	2.000	2.000	2.000
Sample Volume (L)	2.00	2.00	2.00	2.00
Units	ng/L	ng/L	ng/L	ng/L

PCB8	9.60 U	9.60 U	9.60 U	9.60 U
PCB18	0.83 U	0.83 U	0.83 U	0.83 U
PCB28	1.04 U	1.04 U	1.04 U	1.04 U
PCB44	0.87 U	0.87 U	0.87 U	0.87 U
PCB52	0.32 J	0.86 U	0.30 J	0.29 J
PCB66	0.89 U	0.89 U	0.89 U	0.89 U
PCB101	0.17 J	0.69 U	0.69 U	0.23 J
PCB105	0.35 U	0.35 U	0.35 U	0.35 U
PCB118	0.52 U	0.52 U	0.52 U	0.52 U
PCB128	0.84 U	0.84 U	0.84 U	0.84 U
PCB138	0.80 U	0.80 U	0.80 U	0.80 U
PCB153	0.64 U	0.64 U	0.64 U	0.64 U
PCB170	0.61 U	0.61 U	0.61 U	0.61 U
PCB180	0.34 J	0.45 J	0.32 J	0.33 J
PCB187	0.52 U	0.52 U	0.52 U	0.52 U
PCB195	0.65 U	0.65 U	0.65 U	0.65 U
PCB206	0.73 U	0.73 U	0.73 U	0.73 U
PCB209	0.76 U	0.76 U	0.76 U	0.76 U

Surrogate Recoveries:

PCB34	92	91	87	87
PCB112	95	95	90	90

J - Analyte detected below the ssMDL.

U - Analyte not detected.

& - QC value outside the accuracy or precision DQO.



Field Sample Data

Project Name: WA3-26 Boston
Cap Project
Project Number: G464426-
EPA11DUXLAB

Client ID	CAD01629OR1	CAD0162COR1
Sample ID	X8990-ECD	X8991-ECD
Batch ID	00-436	00-436
Collection Date	28-Sep-00	28-Sep-00
Dilution Factor	2.000	2.000
Sample Volume (L)	2.00	1.00
Units	ng/L	ng/L

PCB8	9.60 U	19.20 U
PCB18	0.83 U	1.66 U
PCB28	1.04 U	2.08 U
PCB44	0.12 J	1.74 U
PCB52	0.45 J	0.44 J
PCB66	0.89 U	1.78 U
PCB101	0.35 J	1.38 U
PCB105	0.35 U	0.70 U
PCB118	0.52 U	1.04 U
PCB128	0.84 U	1.68 U
PCB138	0.80 U	1.60 U
PCB153	0.64 U	1.28 U
PCB170	0.61 U	1.22 U
PCB180	0.57 J	1.16 U
PCB187	0.52 U	1.04 U
PCB195	0.65 U	1.30 U
PCB206	0.73 U	1.46 U
PCB209	0.76 U	1.52 U

Surrogate Recoveries:

PCB34	97	88
PCB112	99	92

J - Analyte detected below the
ssMDL.
U - Analyte not detected.
& - QC value outside the
accuracy or precision DQO.

APPENDIX G

RCRA 8 METALS LABORATORY-REPORTED SAMPLE DATA



Laboratory Analysis Report

Sierra Environmental Monitoring, Inc.

Alpha Analytical

255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 10/16/2000
Client: ALP-855
Taken by: Client
Report: 36912
PO #:

Sample ID: 00009-1161 **Customer Sample ID:** BMI00092242-08 - CAD01390MM1-Total **Date Sampled:** 9/11/2000 **Time Sampled:** **Date Received:** 9/22/2000

Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/29/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Faulstich	10/2/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Faulstich	10/11/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Faulstich	10/2/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Faulstich	10/2/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	10/2/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Faulstich	10/2/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/4/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Faulstich	10/2/2000

Sample ID: 200009-1162 **Customer Sample ID:** BMI00092242-08 - CAD01390MM1-Dissolved **Date Sampled:** 9/11/2000 **Time Sampled:** **Date Received:** 9/22/2000

Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Sample Filtration	SEM - SOP	Completed			Tretten	10/2/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Faulstich	10/11/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Faulstich	10/11/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	10/2/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Faulstich	10/11/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	10/2/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	10/2/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/4/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Faulstich	10/11/2000



Laboratory Analysis Report

Sierra Environmental Monitoring, Inc.

Alpha Analytical

255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 10/16/2000
Client: ALP-855
Taken by: Client
Report: 36912
PO #:

Sample ID: S200009-1163 Customer Sample ID: BMI00092242-09 - CAD01394MM1-Total Date Sampled: 9/11/2000 Time Sampled: Date Received: 9/22/2000

Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/29/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Faulstich	10/2/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Faulstich	10/2/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Faulstich	10/2/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Faulstich	10/2/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	10/2/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Faulstich	10/2/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/4/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Faulstich	10/2/2000

Sample ID: S200009-1164 Customer Sample ID: BMI00092242-09 - CAD01394MM1-Dissolved Date Sampled: 9/11/2000 Time Sampled: Date Received: 9/22/2000

Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Sample Filtration	SEM - SOP	Completed			Tretten	10/2/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Faulstich	10/11/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Faulstich	10/11/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	10/2/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Faulstich	10/11/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	10/2/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	10/2/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/4/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Faulstich	10/11/2000



Laboratory Analysis Report

**Sierra
Environmental
Monitoring, Inc.**

Alpha Analytical

255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 10/16/2000
Client: ALP-855
Taken by: Client
Report: 36912
PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
200009-0892	BMI00092242-01 - CAD0133AMM1	9/10/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/25/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/27/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/26/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0893	BMI00092242-02 - CAD01338MM1	9/10/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/25/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/27/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/26/2000



Laboratory Analysis Report

**Sierra
Environmental
Monitoring, Inc.**

Alpha Analytical

255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 10/16/2000
Client: ALP-855
Taken by: Client
Report: 36912
PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0894	BMI00092242-03 - CAD0134BMM1	9/10/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/25/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/27/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/26/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0895	BMI00092242-04 - CAD0134EMM1	9/10/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/25/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/27/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/26/2000



Laboratory Analysis Report

Sierra Environmental Monitoring, Inc.

Alpha Analytical

255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 10/16/2000
Client: ALP-855
Taken by: Client
Report: 36912
PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
200009-0896	BMI00092242-05 - CAD01371MM1	9/10/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/25/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/27/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/26/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0897	BMI00092242-06 - CAD01376MM1	9/10/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/25/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/27/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/26/2000



Laboratory Analysis Report

Sierra Environmental Monitoring, Inc.

Alpha Analytical

255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 10/16/2000
Client: ALP-855
Taken by: Client
Report: 36912
PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0898	BMI00092242-07 - CAD0137AMM1	9/10/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/25/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/27/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/26/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0899	BMI00092242-10 - CAD01398MM1	9/11/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/25/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/27/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/26/2000



Laboratory Analysis Report

Sierra Environmental Monitoring, Inc.

Alpha Analytical

255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 10/16/2000
Client: ALP-855
Taken by: Client
Report: 36912
PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
200009-0900	BMI00092242-11 - CAD0139FMM1	9/11/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/25/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/27/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/26/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
3200009-0901	BMI00092242-12 - CAD013A2MM1	9/11/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/25/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/27/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/26/2000



Laboratory Analysis Report

Sierra Environmental Monitoring, Inc.

Alpha Analytical

255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 10/16/2000
Client: ALP-855
Taken by: Client
Report: 36912
PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0902	BMI00092242-13 - CAD013A6MM1	9/11/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/25/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/27/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/26/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0903	BMI00092242-14 - CAD013AAMM1	9/11/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/25/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/27/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/26/2000



Laboratory Analysis Report

**Sierra
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Alpha Analytical

255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 10/16/2000
Client: ALP-855
Taken by: Client
Report: 36912
PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
200009-0904	BMI00092242-15 - CAD013B0MM1	9/11/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/25/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/27/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/26/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0905	BMI00092242-16 - CAD013B4MM1	9/11/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/25/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/27/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/26/2000



Laboratory Analysis Report

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Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0906	BMI00092242-17 - CAD013C9MM1	9/11/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/25/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/27/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/26/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0907	BMI00092242-18 - CAD015ABMM1	9/20/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/25/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/27/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/26/2000



Laboratory Analysis Report

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Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
200009-0908	BMI00092242-19 - CAD015B0MM1	9/20/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/25/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.04	mg/L	0.04	Tretten	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/27/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/26/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0909	BMI00092242-20 - CAD015B3MM1	9/20/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/25/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/27/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/26/2000



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Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0910	BMI00092242-21 - CAD015C2MM1	9/20/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/25/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/27/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/26/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0911	BMI00092242-22 - CAD015C5MM1	9/20/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/25/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/27/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/26/2000



Laboratory Analysis Report

**Sierra
Environmental
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Sparks, NV 89431

Date: 10/16/2000
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Report: 36912
PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
00009-0912	BMI00092242-23 - CAD015CBMM1	9/20/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/25/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/27/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/26/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
0200009-0913	BMI00092242-24 - CAD015CEMM1	9/20/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/25/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	0.0013	mg/L	0.0005	Kobza	9/27/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/26/2000



Laboratory Analysis Report

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Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0914	BMI00092242-25 - CAD015D1MM1	9/20/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/25/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/27/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/26/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0915	BMI00092242-26 - CAD015D4MM1	9/20/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/25/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/27/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/26/2000



Laboratory Analysis Report

**Sierra
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PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
200009-0916	BMI00092242-27 - CAD015D7MM1	9/20/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/25/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/27/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/26/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0917	BMI00092242-28 - CAD015DCMM1	9/20/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.041	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/27/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000



Laboratory Analysis Report

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Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0918	BMI00092242-29 - CAD015DFMM1	9/20/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.054	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/27/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0919	BMI00092242-30 - CAD015EFMM1	9/20/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	0.03	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.056	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/27/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000



Laboratory Analysis Report

Sierra Environmental Monitoring, Inc.

Alpha Analytical

255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 10/16/2000
Client: ALP-855
Taken by: Client
Report: 36912
PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
200009-0920	BMI00092242-31 - CAD015F2MM1	9/20/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.057	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/27/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0921	BMI00092242-32 - CAD015F5MM1	9/20/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	0.027	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.057	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/27/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000



Laboratory Analysis Report

Sierra Environmental Monitoring, Inc.

Alpha Analytical

255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 10/16/2000
Client: ALP-855
Taken by: Client
Report: 36913
PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0922	BMI00092241-01 - CAD01021MM1	9/6/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.056	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/27/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0923	BMI00092241-02 - CAD01024MM1	9/6/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	0.024	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.06	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/27/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000



Laboratory Analysis Report

**Sierra
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255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 10/16/2000
Client: ALP-855
Taken by: Client
Report: 36913
PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
200009-0924	BMI00092241-03 - CAD01027MM1	9/6/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.061	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/28/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0925	BMI00092241-04 - CAD0102AMM1	9/6/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.059	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/28/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000



Laboratory Analysis Report

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Report: 36913
PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0926	BMI00092241-05 - CAD0102DMM1	9/6/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	0.031	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.06	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/28/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0927	BMI00092241-06 - CAD0104AMM1	9/6/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.064	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/28/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000



Laboratory Analysis Report

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Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
200009-0928	BMI00092241-07 - CAD0104DMM1	9/6/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.059	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/28/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0929	BMI00092241-08 - CAD01050MM1	9/6/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	0.035	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.059	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/28/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000



Laboratory Analysis Report

Sierra Environmental Monitoring, Inc.

Alpha Analytical

255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 10/16/2000
Client: ALP-855
Taken by: Client
Report: 36913
PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0930	BMI00092241-09 - CAD01053MM1	9/6/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.061	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/28/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0931	BMI00092241-10 - CAD01056MM1	9/6/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	0.027	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.059	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/28/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000



Laboratory Analysis Report

Sierra Environmental Monitoring, Inc.

Alpha Analytical

255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 10/16/2000
Client: ALP-855
Taken by: Client
Report: 36913
PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
200009-0992	BMI00092241-71 - CAD012ACMM1	9/9/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Tretten	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/2/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/27/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
3200009-0993	BMI00092241-72 - CAD012AFMM1	9/9/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Tretten	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/2/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/29/2000



Laboratory Analysis Report

Sierra
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255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 10/16/2000
Client: ALP-855
Taken by: Client
Report: 36913
PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0994	BMI00092241-73 - CAD012B2MM1	9/9/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Tretten	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/2/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/27/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0995	BMI00092241-76 - CAD012C6MM1	9/9/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Tretten	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	0.047	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/2/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/27/2000



Laboratory Analysis Report

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Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
200009-0996	BMI00092241-77 - CAD012CCMM1	9/9/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Tretten	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/2/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/27/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
3200009-0997	BMI00092241-78 - CAD012CFMM1	9/9/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/27/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/2/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/29/2000



Laboratory Analysis Report

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PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0998	BMI00092241-79 - CAD012D2MM1	9/9/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/27/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/2/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/27/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0999	BMI00092241-80 - CAD012D6MM1	9/9/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/27/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	0.041	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/2/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/27/2000



Laboratory Analysis Report

Sierra Environmental Monitoring, Inc.

Alpha Analytical

255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 10/16/2000
Client: ALP-855
Taken by: Client
Report: 36913
PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
200009-1000	BMI00092241-81 - CAD012DCMM1	9/9/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/27/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/2/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/27/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-1001	BMI00092241-82 - CAD012E0MM1	9/9/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/27/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/2/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/27/2000



Laboratory Analysis Report

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Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-1002	BMI00092241-83 - CAD012ECMM1	9/9/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/27/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/2/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/29/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-1003	BMI00092241-84 - CAD012F0MM1	9/9/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/27/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/2/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/29/2000



Laboratory Analysis Report

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Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
200009-1004	BMI00092241-85 - CAD012F4MM1	9/9/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/27/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/2/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/27/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-1005	BMI00092241-86 - CAD0130MM1	9/10/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/27/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/2/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/27/2000



Laboratory Analysis Report

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PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-1006	BMI00092241-87 - CAD0130FMM1	9/10/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/27/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/2/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/27/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-1007	BMI00092241-88 - CAD01312MM1	9/10/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/27/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/2/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/29/2000



Laboratory Analysis Report

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PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
200009-1008	BMI00092241-89 - CAD0131FMM1	9/10/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/27/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/2/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/29/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
320009-1009	BMI00092241-90 - CAD01322MM1	9/10/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/27/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/2/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/27/2000



Laboratory Analysis Report

Sierra
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255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 10/16/2000
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Taken by: Client
Report: 36913
PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-1010	BMI00092241-91 - CAD01325MM1	9/10/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/27/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/2/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/27/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-1011	BMI00092241-92 - CAD0132BMM1	9/10/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/27/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/2/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/27/2000



Laboratory Analysis Report

**Sierra
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255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 10/16/2000
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PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
200009-1012	BMI00092241-93 - CAD0132EMM1	9/10/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/27/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/2/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/29/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-1013	BMI00092241-94 - CAD01331MM1	9/10/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/27/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/2/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/27/2000



Laboratory Analysis Report

**Sierra
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Sparks, NV 89431

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PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-1014	BMI00092241-95 - CAD01334MM1	9/10/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/27/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/2/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/27/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-1015	BMI00092241-96 - CAD01337MM1	9/10/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/27/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/2/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/27/2000



Laboratory Analysis Report

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Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
200009-1153	BMI00092241-74 - CAD012BFMM1-Total	9/9/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/29/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Faulstich	10/2/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Faulstich	10/2/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Faulstich	10/2/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Faulstich	10/2/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	10/2/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Faulstich	10/2/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/4/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Faulstich	10/2/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-1154	BMI00092241-74 - CAD012BFMM1-Dissolved	9/9/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Sample Filtration	SEM - SOP	Completed			Tretten	10/2/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	10/2/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Faulstich	10/11/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	10/2/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Faulstich	10/11/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	10/2/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	10/2/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/4/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Faulstich	10/11/2000



Laboratory Analysis Report

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PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-1155	BMI00092241-75 - CAD012C3MM1-Total	9/9/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/29/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Faulstich	10/2/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Faulstich	10/2/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Faulstich	10/2/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Faulstich	10/2/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	10/2/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Faulstich	10/2/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/4/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Faulstich	10/2/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-1156	BMI00092241-75 - CAD012C3MM1-Dissolved	9/9/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Sample Filtration	SEM - SOP	Completed			Tretten	10/2/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	10/2/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Faulstich	10/11/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	10/2/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Faulstich	10/11/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	10/2/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	10/2/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/4/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Faulstich	10/11/2000



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PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
200009-1157	BMI00092241-29 - CAD0147DMM1-Dissolved	9/14/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Sample Filtration	SEM - SOP	Completed			Tretten	10/2/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	10/2/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Faulstich	10/11/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	10/2/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Faulstich	10/11/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	10/2/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	10/2/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/4/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Faulstich	10/11/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-1158	BMI00092241-44 - CAD014D4MM1-Dissolved	9/15/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Sample Filtration	SEM - SOP	Completed			Tretten	10/2/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	10/2/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Faulstich	10/11/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	10/2/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Faulstich	10/11/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	10/2/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	10/2/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/4/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Faulstich	10/11/2000



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Client: ALP-855
Taken by: Client
Report: 36913
PO #:

Sample ID: S200009-1159 Customer Sample ID: BMI00092241-45 - CAD014DBMM1-Dissolved
Date Sampled: 9/9/2000 Time Sampled: Date Received: 9/22/2000

Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Sample Filtration	SEM - SOP	Completed			Tretten	10/2/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	10/2/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Faulstich	10/11/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	10/2/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Faulstich	10/11/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	10/2/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	10/2/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/4/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Faulstich	10/11/2000

Sample ID: S200009-1160 Customer Sample ID: BMI00092241-59 - CAD01534MM1-Dissolved
Date Sampled: 9/9/2000 Time Sampled: Date Received: 9/22/2000

Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Sample Filtration	SEM - SOP	Completed			Tretten	10/2/2000
Arsenic - ICP-MS	EPA 200.8	<0.05	mg/L	0.05	Tretten	10/5/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Faulstich	10/11/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	10/2/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Faulstich	10/11/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	10/2/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	10/2/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/4/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Faulstich	10/11/2000



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PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
00009-0932	BMI00092241-11 - CAD01405MM1	9/12/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.06	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	0.025	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/28/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0933	BMI00092241-12 - CAD01408MM1	9/12/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.058	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	0.024	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/28/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000



Laboratory Analysis Report

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Report: 36913
PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0934	BMI00092241-13 - CAD0140BMM1	9/12/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	0.027	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.057	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	0.024	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/28/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0935	BMI00092241-14 - CAD01416MM1	9/12/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	0.024	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.058	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	0.024	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/28/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000



Laboratory Analysis Report

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Date: 10/16/2000
Client: ALP-855
Taken by: Client
Report: 36913
PO #:

Sample ID: 200009-0936 Customer Sample ID: BMI00092241-15 - CAD01419MM1 Date Sampled: 9/12/2000 Time Sampled: Date Received: 9/22/2000

Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.061	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	0.024	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/28/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000

Sample ID: 3200009-0937 Customer Sample ID: BMI00092241-16 - CAD0141CMM1 Date Sampled: 9/12/2000 Time Sampled: Date Received: 9/22/2000

Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.059	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	< 0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	0.024	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/28/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000



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Report: 36913
PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0942	BMI00092241-21 - CAD0142BMM1	9/12/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.056	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	0.024	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/28/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0943	BMI00092241-22 - CAD0142EMM1	9/12/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.057	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	0.024	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000



Laboratory Analysis Report

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Client: ALP-855
Taken by: Client
Report: 36913
PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
00009-0944	BMI00092241-23 - CAD01436MM1	9/12/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	0.028	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.058	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	0.024	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
00009-0945	BMI00092241-24 - CAD01439MM1	9/12/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	0.026	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.056	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	0.024	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000



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Date: 10/16/2000
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Taken by: Client
Report: 36913
PO #:

Sample ID: S200009-0946 Customer Sample ID: BMI00092241-25 - CAD0143CMM1 Date Sampled: 9/12/2000 Time Sampled: Date Received: 9/22/2000

Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.047	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000

Sample ID: S200009-0947 Customer Sample ID: BMI00092241-26 - CAD01469MM1 Date Sampled: 9/14/2000 Time Sampled: Date Received: 9/22/2000

Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.048	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000



Laboratory Analysis Report

Sierra Environmental Monitoring, Inc.

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255 Glendale Avenue Suite 21
Sparks, NV 89431

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Report: 36913
PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
200009-0948	BMI00092241-27 - CAD0146CMM1	9/14/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.047	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0949	BMI00092241-28 - CAD0146FMM1	9/14/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.048	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000



Laboratory Analysis Report

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Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0950	BMI00092241-29 - CAD0147DMM1	9/14/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.055	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0951	BMI00092241-30 - CAD01480MM1	9/14/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.057	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000



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Report: 36913
PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
200009-0952	BMI00092241-31 - CAD01483MM1	9/14/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.057	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
320009-0953	BMI00092241-32 - CAD01486MM1	9/14/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	0.026	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.056	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000



Laboratory Analysis Report

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PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0954	BMI00092241-33 - CAD01489MM1	9/14/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	0.02	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.056	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0955	BMI00092241-34 - CAD0148CMM1	9/14/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	0.036	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.052	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000



Laboratory Analysis Report

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PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
200009-0956	BMI00092241-35 - CAD0148FMM1	9/14/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.049	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
3200009-0957	BMI00092241-36 - CAD01492MM1	9/14/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.056	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000



Laboratory Analysis Report

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PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0958	BMI00092241-37 - CAD01495MM1	9/14/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.053	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0959	BMI00092241-38 - CAD0149DMM1	9/14/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	0.022	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.052	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000



Laboratory Analysis Report

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Report: 36913
PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
00009-0960	BMI00092241-39 - CAD014A0MM1	9/14/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.052	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0961	BMI00092241-40 - CAD014A3MM1	9/14/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.049	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000



Laboratory Analysis Report

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Client: ALP-855
Taken by: Client
Report: 36913
PO #:

Sample ID: S200009-0962 Customer Sample ID: BMI00092241-41 - CAD014BFMM1 Date Sampled: 9/15/2000 Time Sampled: Date Received: 9/22/2000

Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	0.029	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.051	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000

Sample ID: S200009-0963 Customer Sample ID: BMI00092241-42 - CAD014C2MM1 Date Sampled: 9/15/2000 Time Sampled: Date Received: 9/22/2000

Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/26/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Chromium - ICP-MS	EPA 200.8	0.052	mg/L	0.04	Lambert	9/26/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/26/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/26/2000



Laboratory Analysis Report

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Date: 10/16/2000
Client: ALP-855
Taken by: Client
Report: 36913
PO #:

Sample ID: 00009-0964 Customer Sample ID: BMI00092241-43 - CAD014C5MM1 Date Sampled: 9/15/2000 Time Sampled: Date Received: 9/22/2000

Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/27/2000
Chromium - ICP-MS	EPA 200.8	0.056	mg/L	0.04	Lambert	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/27/2000

Sample ID: S20009-0965 Customer Sample ID: BMI00092241-44 - CAD014D4MM1 Date Sampled: 9/15/2000 Time Sampled: Date Received: 9/22/2000

Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/27/2000
Chromium - ICP-MS	EPA 200.8	0.063	mg/L	0.04	Lambert	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/27/2000



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PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0966	BMI00092241-45 - CAD014DBMM1	9/15/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Lambert	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/27/2000
Chromium - ICP-MS	EPA 200.8	0.056	mg/L	0.04	Lambert	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Lambert	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Lambert	9/27/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0967	BMI00092241-46 - CAD014DEMM1	9/15/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Tretten	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/27/2000



Laboratory Analysis Report

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Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
200009-0968	BMI00092241-47 - CAD014E4MM1	9/15/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Tretten	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/27/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0969	BMI00092241-48 - CAD014E7MM1	9/15/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Tretten	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	0.044	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/27/2000



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PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0970	BMI00092241-49 - CAD014EAMM1	9/15/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Tretten	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/27/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0971	BMI00092241-50 - CAD014EDMM1	9/15/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Tretten	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/27/2000



Laboratory Analysis Report

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Taken by: Client
Report: 36913
PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
00009-0972	BMI00092241-51 - CAD014F3MM1	9/15/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Tretten	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/27/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
320009-0973	BMI00092241-52 - CAD014F6MM1	9/15/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Tretten	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/27/2000



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PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0974	BMI00092241-53 - CAD01511MM1	9/15/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Tretten	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/29/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0975	BMI00092241-54 - CAD01514MM1	9/15/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Tretten	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/29/2000



Laboratory Analysis Report

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Date: 10/16/2000
Client: ALP-855
Taken by: Client
Report: 36913
PO #:

Sample ID: 200009-0976 Customer Sample ID: BMI00092241-55 - CAD0151AMM1 Date Sampled: 9/15/2000 Time Sampled: Date Received: 9/22/2000

Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Tretten	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/29/2000

Sample ID: S200009-0977 Customer Sample ID: BMI00092241-56 - CAD01523MM1 Date Sampled: 9/15/2000 Time Sampled: Date Received: 9/22/2000

Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Tretten	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/29/2000



Laboratory Analysis Report

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Date: 10/16/2000
Client: ALP-855
Taken by: Client
Report: 36913
PO #:

Sample ID: S200009-0978 Customer Sample ID: BMI00092241-57 - CAD01526MM1 Date Sampled: 9/15/2000 Time Sampled: Date Received: 9/22/2000

Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Tretten	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/29/2000

Sample ID: S200009-0979 Customer Sample ID: BMI00092241-58 - CAD01529MM1 Date Sampled: 9/15/2000 Time Sampled: Date Received: 9/22/2000

Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Tretten	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/29/2000



Laboratory Analysis Report

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Date: 10/16/2000
Client: ALP-855
Taken by: Client
Report: 36913
PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
200009-0980	BMI00092241-59 - CAD01534MM1	9/15/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Tretten	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/29/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0981	BMI00092241-60 - CAD01538MM1	9/15/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Tretten	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/29/2000



Laboratory Analysis Report

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Date: 10/16/2000
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Taken by: Client
Report: 36913
PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0982	BMI00092241-61 - CAD0153BMM/1	9/15/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Tretten	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	9/29/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/29/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0983	BMI00092241-62 - CAD0153EMM1	9/15/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Tretten	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/2/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/29/2000



Laboratory Analysis Report

**Sierra
Environmental
Monitoring, Inc.**

Alpha Analytical

255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 10/16/2000
Client: ALP-855
Taken by: Client
Report: 36913
PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
200009-0984	BMI00092241-63 - CAD01541MM1	9/15/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Tretten	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/2/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/29/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
3200009-0985	BMI00092241-64 - CAD01544MM1	9/15/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Tretten	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/2/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/29/2000



Laboratory Analysis Report

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Taken by: Client
Report: 36913
PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0986	BMI00092241-65 - CAD01547MM1	9/15/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Tretten	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/2/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/29/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0987	BMI00092241-66 - CAD0154CMM1	9/15/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Tretten	9/26/2000
Arsenic - ICP-MS	EPA 200.8	0.04	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/2/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/29/2000



Laboratory Analysis Report

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Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
200009-0988	BMI00092241-67 - CAD0154FMM1	9/15/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Tretten	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/2/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/29/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0989	BMI00092241-68 - CAD0155EMM1	9/16/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Tretten	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/2/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/29/2000



Laboratory Analysis Report

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Report: 36913
PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0990	BMI00092241-69 - CAD01561MM1	9/16/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Tretten	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/2/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/29/2000

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200009-0991	BMI00092241-70 - CAD01564MM1	9/16/2000		9/22/2000		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Tretten	9/26/2000
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Barium - ICP-MS	EPA 200.8	<0.5	mg/L	0.5	Tretten	9/27/2000
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Chromium - ICP-MS	EPA 200.8	<0.04	mg/L	0.04	Tretten	9/27/2000
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Tretten	9/27/2000
Mercury - AA Cold Vapor	EPA 245.1	< 0.0005	mg/L	0.0005	Kobza	10/2/2000
Selenium - ICP-MS	EPA 200.8	<0.2	mg/L	0.2	Tretten	9/29/2000



Laboratory Analysis Report

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Date: 10/25/00
Client: ALP-855
Taken by: Client
Report: 37235
PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
200010-0663	BMI00101664-01 - CAD01610MM1	9/28/00		10/16/00		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	10/20/00
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Barium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Chromium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Mercury - AA Cold Vapor	EPA 245.1	<0.0005	mg/L	0.0005	Kobza	10/18/00
Selenium - ICP-MS	EPA 200.8	0.031	mg/L	0.02	Rivera	10/20/00

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
200010-0664	BMI00101664-02 - CAD01613MM1	9/28/00		10/16/00		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	10/20/00
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Barium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Chromium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Mercury - AA Cold Vapor	EPA 245.1	<0.0005	mg/L	0.0005	Kobza	10/18/00
Selenium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00



Laboratory Analysis Report

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255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 10/25/00
Client: ALP-855
Taken by: Client
Report: 37235
PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200010-0665	BMI00101664-03 - CAD01616MM1	9/28/00		10/16/00		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	10/20/00
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Barium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Chromium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Mercury - AA Cold Vapor	EPA 245.1	<0.0005	mg/L	0.0005	Kobza	10/18/00
Selenium - ICP-MS	EPA 200.8	0.059	mg/L	0.02	Rivera	10/20/00

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200010-0666	BMI00101664-04 - CAD01619MM1	9/28/00		10/16/00		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	10/20/00
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Barium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Chromium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Mercury - AA Cold Vapor	EPA 245.1	<0.0005	mg/L	0.0005	Kobza	10/18/00
Selenium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00



Laboratory Analysis Report

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Sparks, NV 89431

Date: 10/25/00
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Taken by: Client
Report: 37235
PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
200010-0667	BMI00101664-05 - CAD0161CMM1	9/28/00		10/16/00		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	10/20/00
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Barium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Chromium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Mercury - AA Cold Vapor	EPA 245.1	<0.0005	mg/L	0.0005	Kobza	10/18/00
Selenium - ICP-MS	EPA 200.8	0.17	mg/L	0.02	Rivera	10/20/00

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200010-0668	BMI00101664-06 - CAD01620MM1	9/28/00		10/16/00		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	10/20/00
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Barium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Chromium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Mercury - AA Cold Vapor	EPA 245.1	<0.0005	mg/L	0.0005	Kobza	10/18/00
Selenium - ICP-MS	EPA 200.8	0.023	mg/L	0.02	Rivera	10/20/00



Laboratory Analysis Report

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Sparks, NV 89431

Date: 10/25/00
Client: ALP-855
Taken by: Client
Report: 37235
PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200010-0669	BMI00101664-07 - CAD01623MM1	9/28/00		10/16/00		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	10/20/00
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Barium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Chromium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Mercury - AA Cold Vapor	EPA 245.1	<0.0005	mg/L	0.0005	Kobza	10/18/00
Selenium - ICP-MS	EPA 200.8	0.072	mg/L	0.02	Rivera	10/20/00

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200010-0670	BMI00101664-08 - CAD01626MM1	9/28/00		10/16/00		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	10/20/00
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Barium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Chromium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Mercury - AA Cold Vapor	EPA 245.1	<0.0005	mg/L	0.0005	Kobza	10/18/00
Selenium - ICP-MS	EPA 200.8	0.036	mg/L	0.02	Rivera	10/20/00



Laboratory Analysis Report

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Sparks, NV 89431

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Taken by: Client
Report: 37235
PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
200010-0671	BMI00101664-09 - CAD01629MM1	9/28/00		10/16/00		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	10/20/00
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Barium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Chromium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Lead - ICP-MS	EPA 200.8	0.15	mg/L	0.02	Rivera	10/20/00
Mercury - AA Cold Vapor	EPA 245.1	<0.0005	mg/L	0.0005	Kobza	10/18/00
Selenium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received		
S200010-0672	BMI00101664-10 - CAD0162CMM1	9/28/00		10/16/00		
Parameter	Method	Result	Units Of Measure	Detection Limit	Analyst	Date Analyzed
Total Recoverable Metals - Acid	EPA 200.2	Completed			Kleinworth	10/20/00
Arsenic - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Barium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Cadmium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Chromium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Silver - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Lead - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00
Mercury - AA Cold Vapor	EPA 245.1	<0.0005	mg/L	0.0005	Kobza	10/18/00
Selenium - ICP-MS	EPA 200.8	<0.02	mg/L	0.02	Rivera	10/20/00

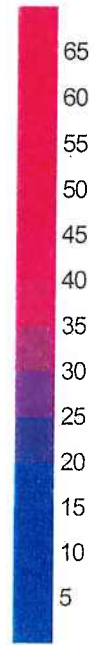
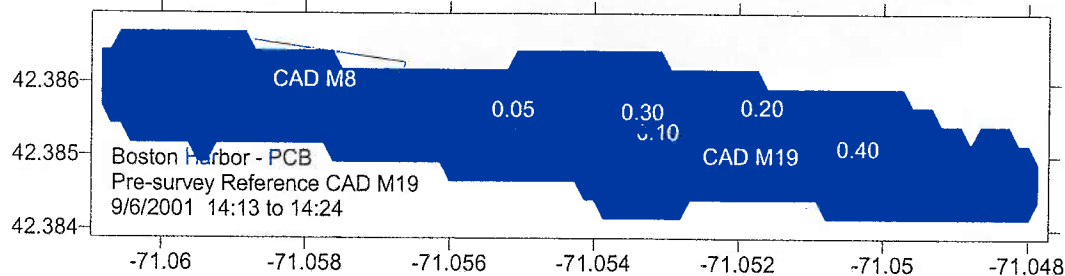
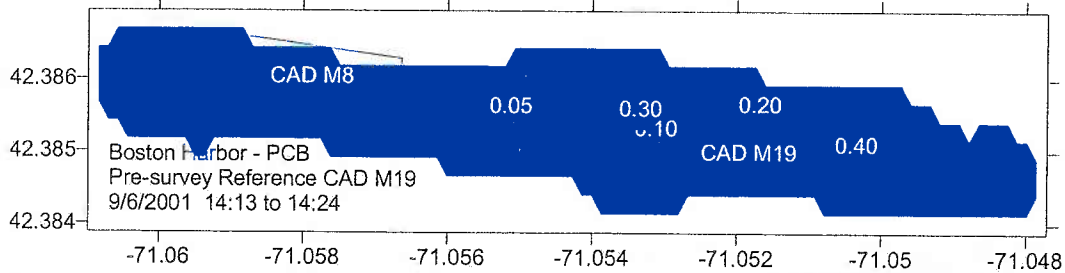
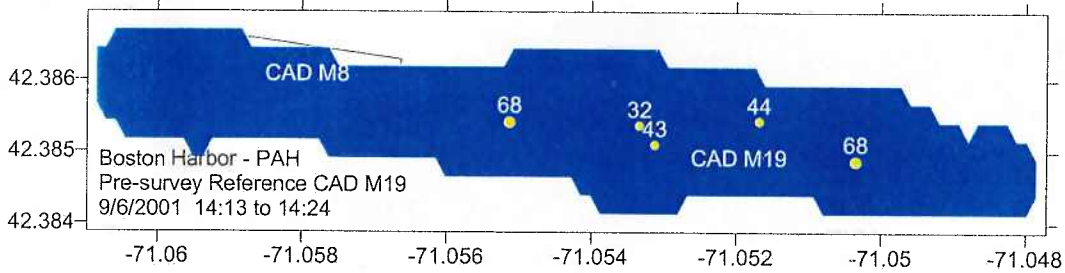
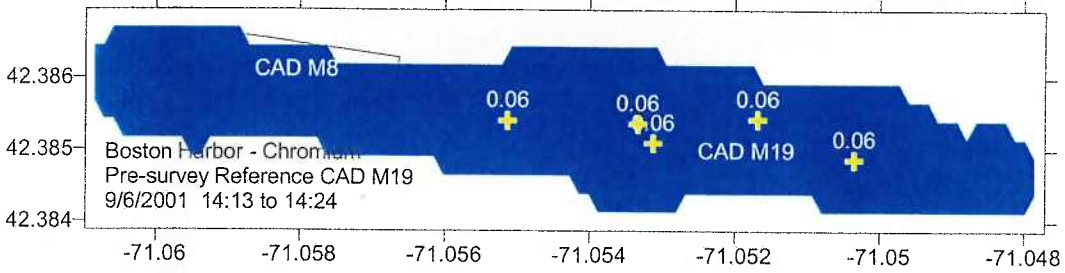
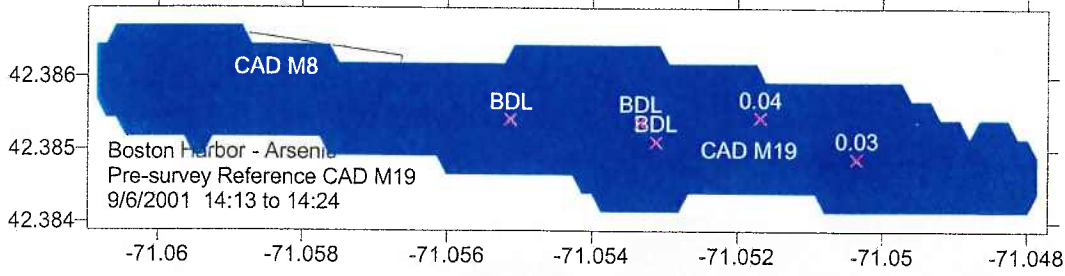


Evaluation of Sediment Agitation and Mixing into the Surrounding Water Column from Capping - Boston Harbor

APPENDIX H

TSS AND CONTAMINANT OF CONCERN 2-DIMENSIONAL PLOTS

Pre Survey CAD Cell M19 All Contaminants



TSS Concentration (mg/L)

PAH Concentration (ng/L)

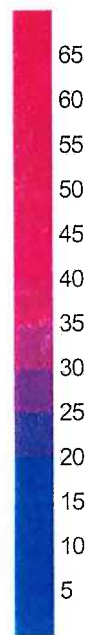
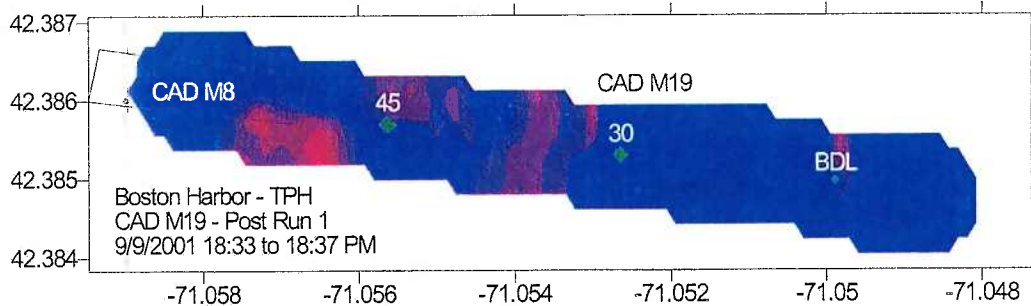
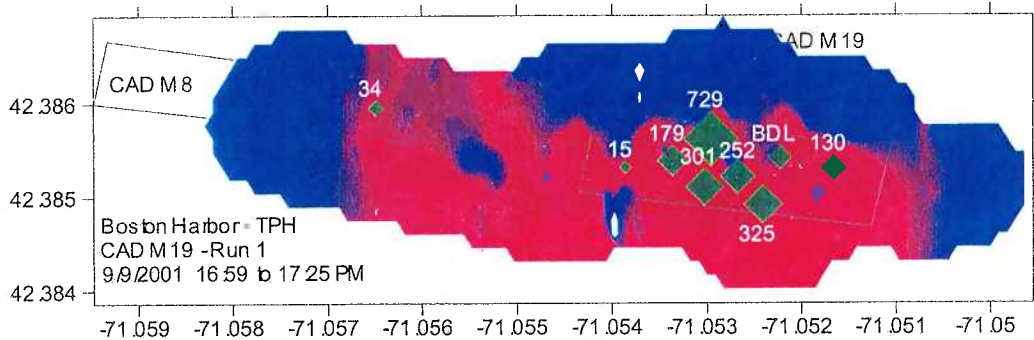
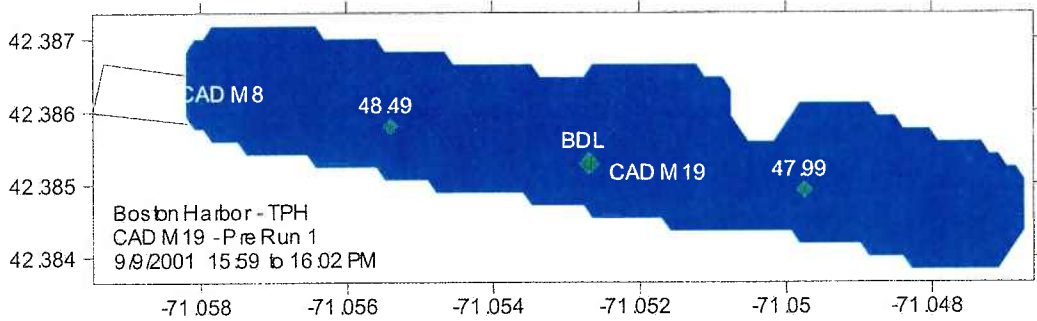
PCB Concentration (ng/L)

TPH Concentration (µg/L)

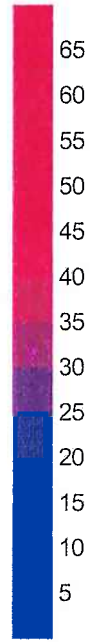
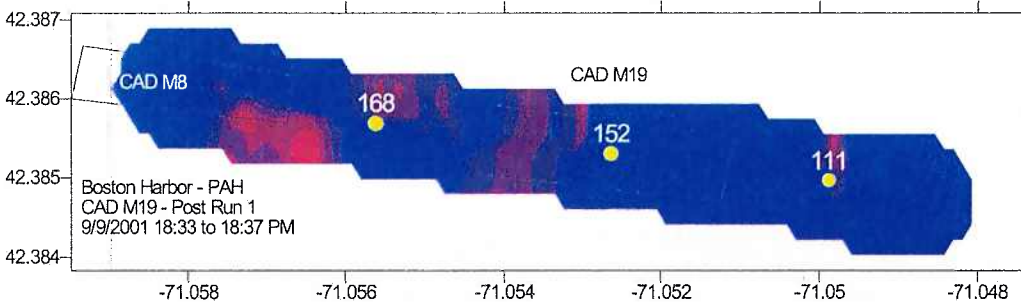
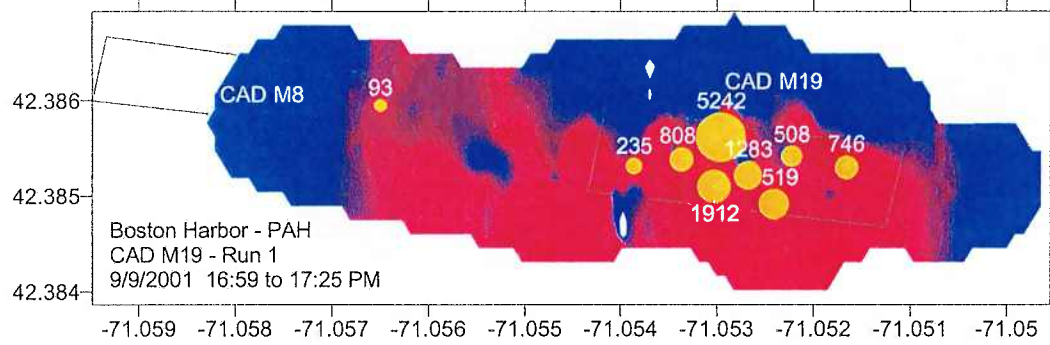
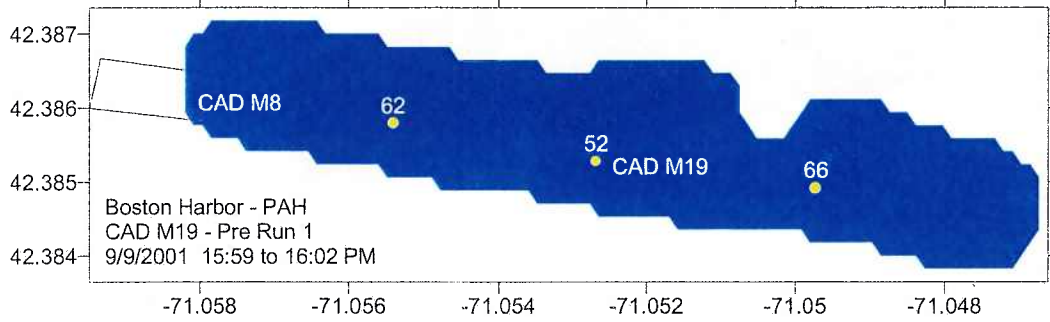
Arsenic Concentration (mg/L)

Chromium Concentration (mg/L)

Run 1 CAD Cell M19 - TPH



Run 1 CAD Cell M19 - PAH

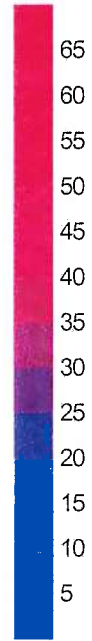
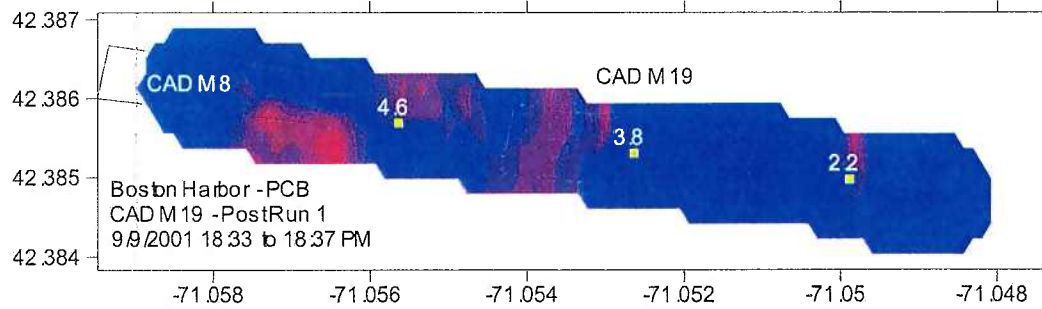
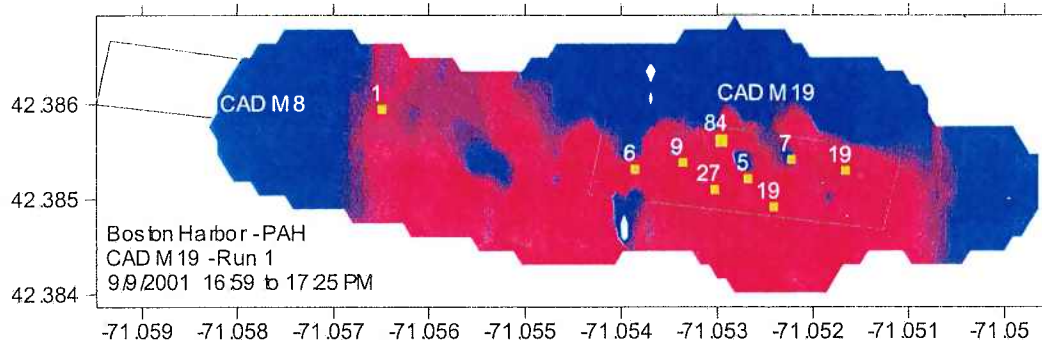
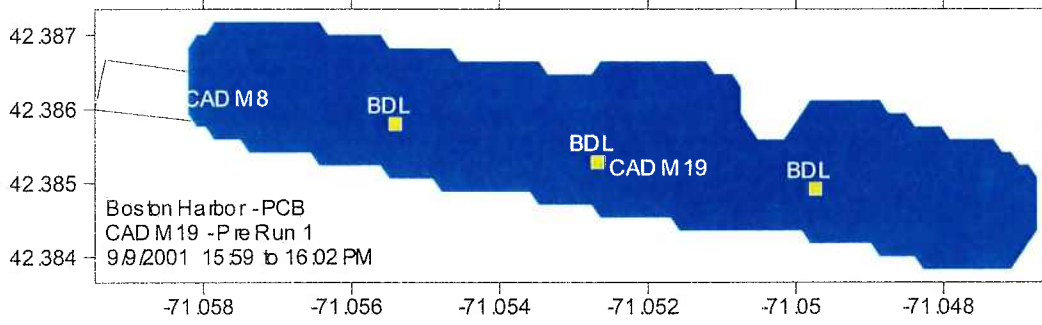


TSS Concentration (mg/L)



PAH Concentration (ng/L)

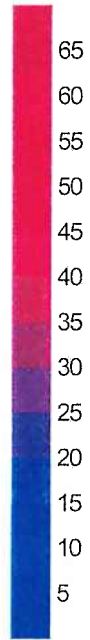
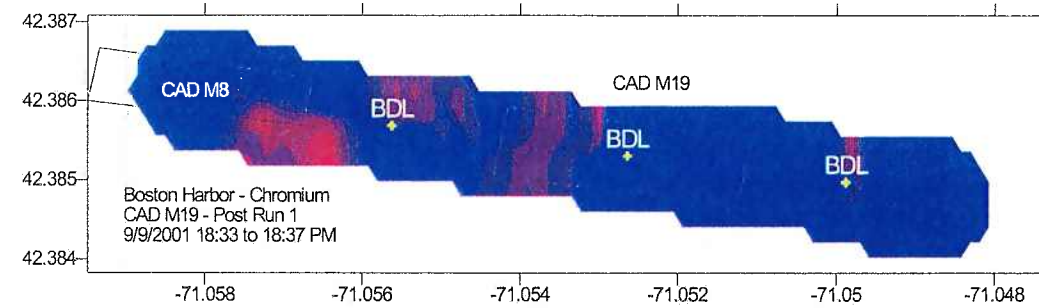
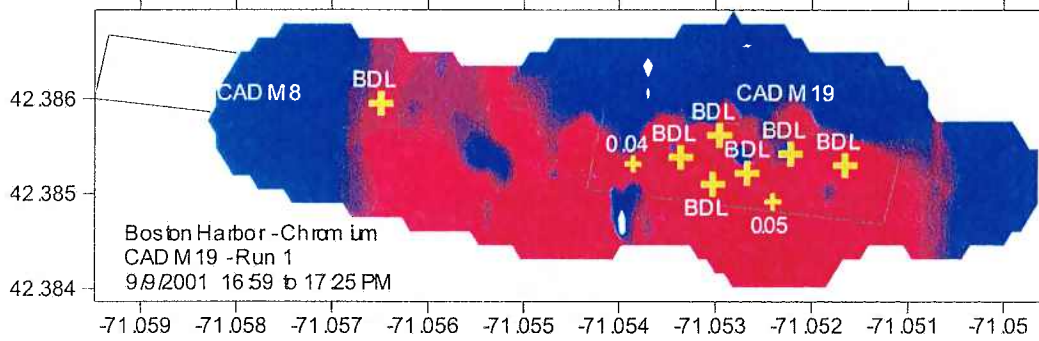
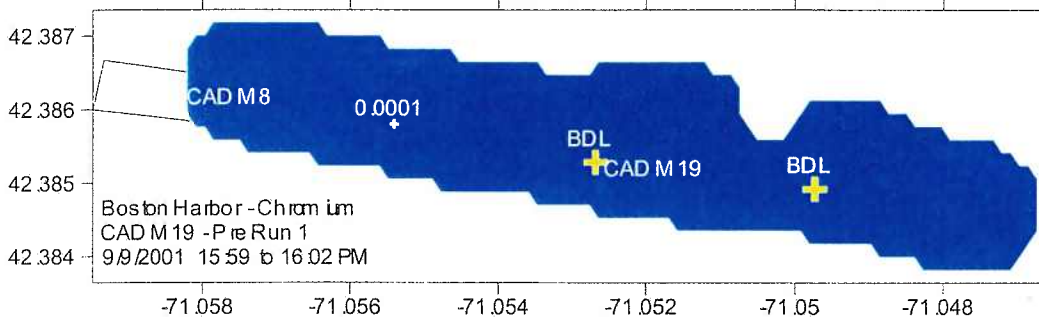
Run 1 CAD Cell M19 - PCB



TSS Concentration (mg/L)

PCB Concentration (ng/L)

Run 1 CAD Cell M19 - Cr

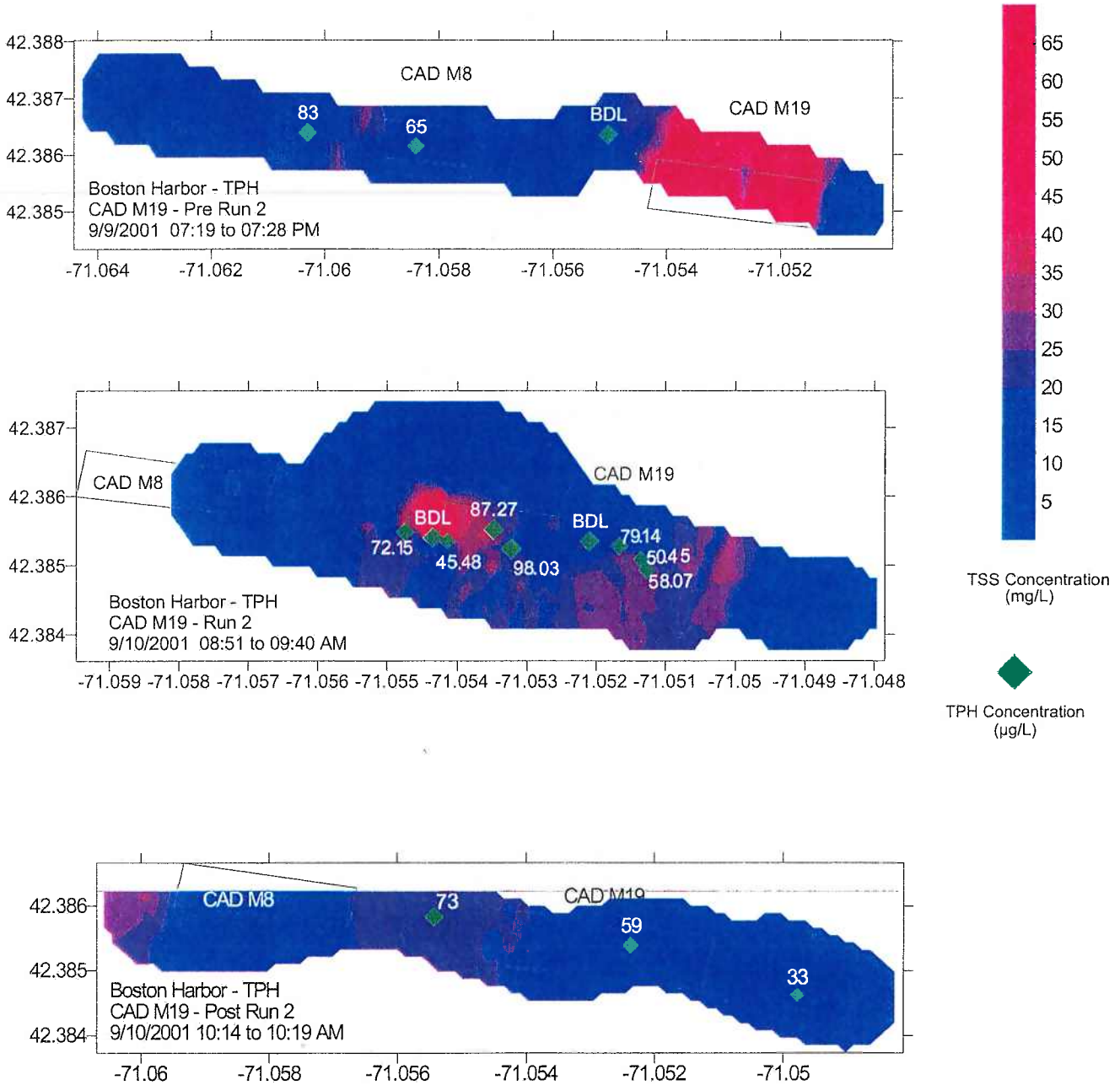


TSS Concentration (mg/L)

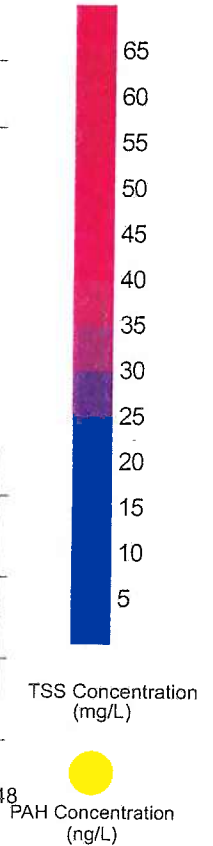
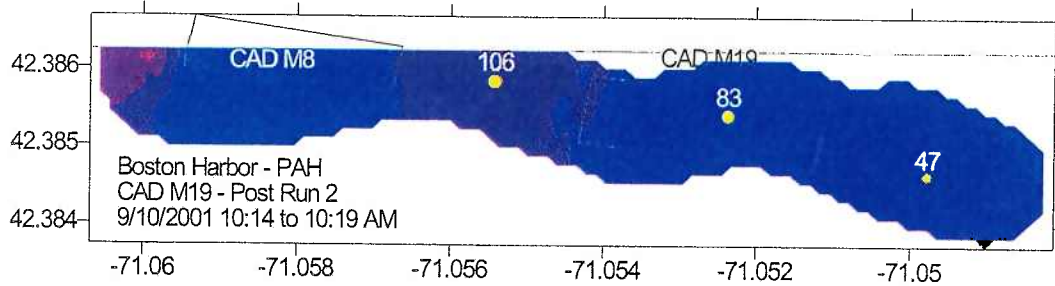
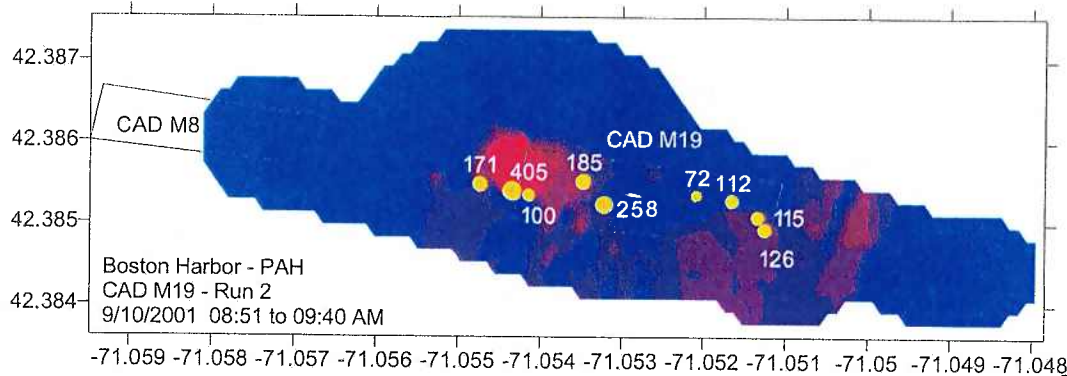
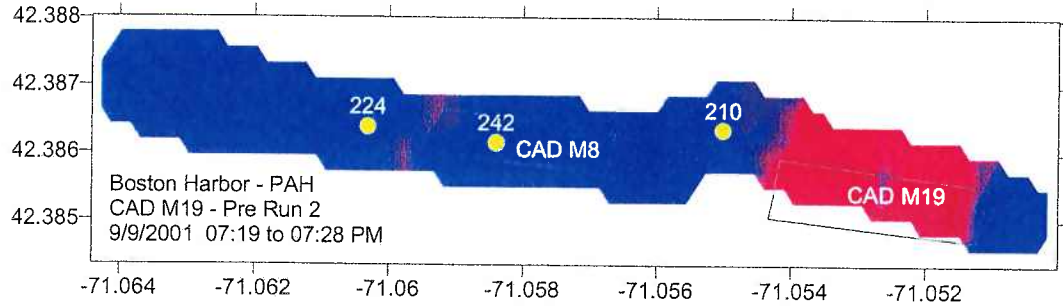


Chromium Concentration (mg/L)

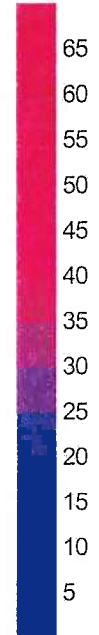
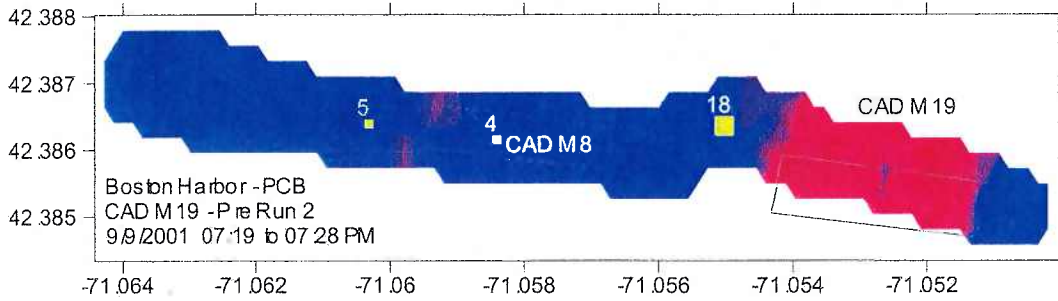
Run 2 CAD Cell M19 - TPH



Run 2 CAD Cell M19 - PAH



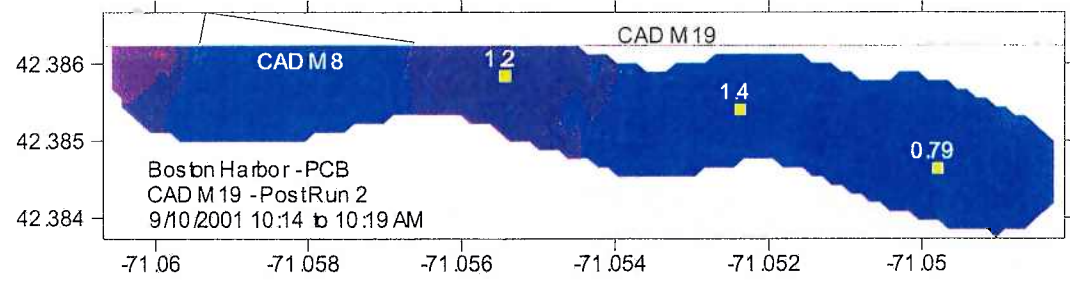
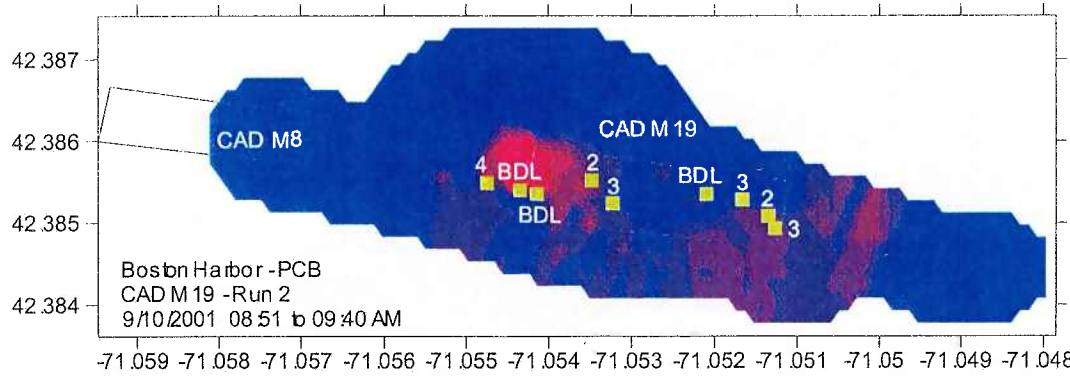
Run 2 CAD Cell M19 - PCB



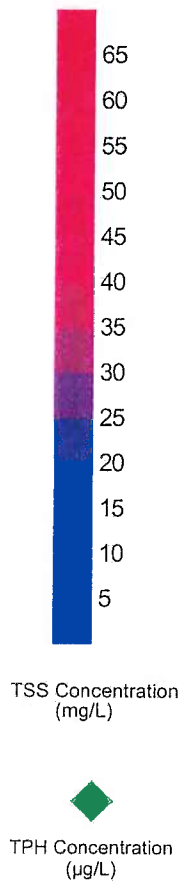
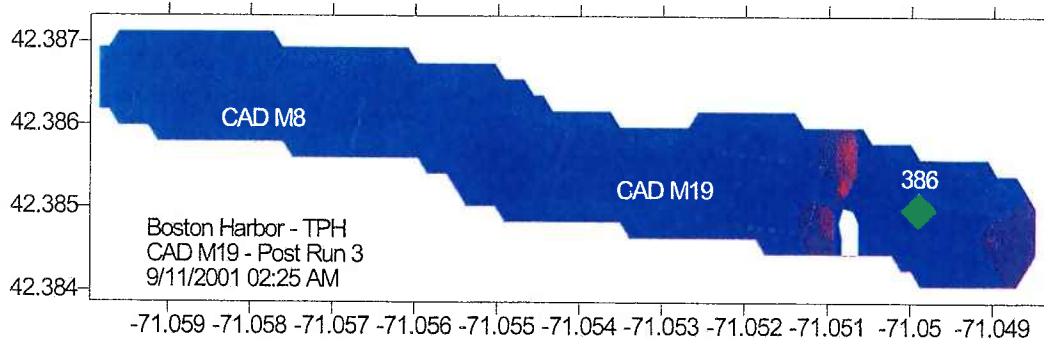
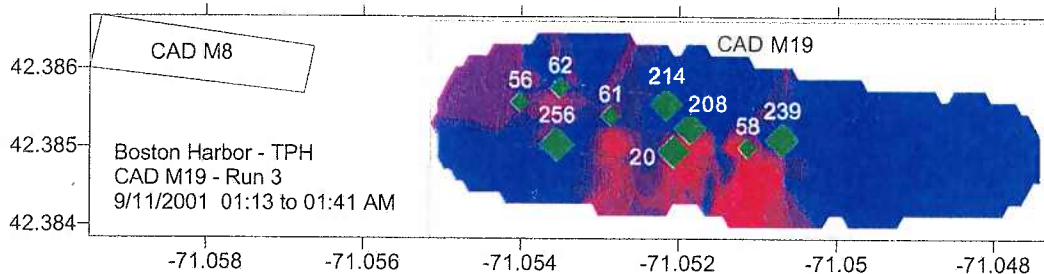
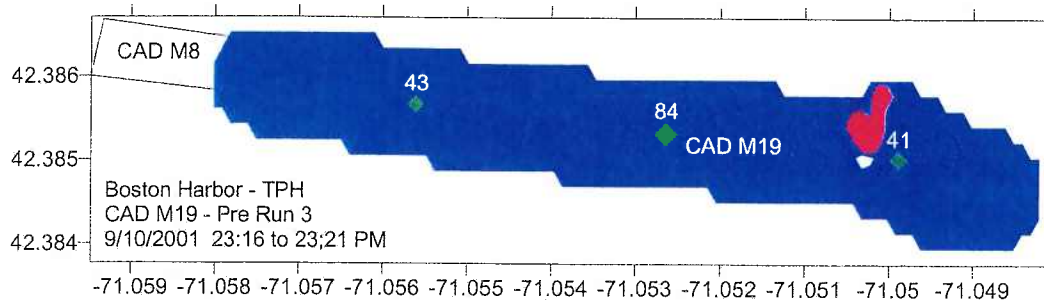
TSS Concentration (mg/L)



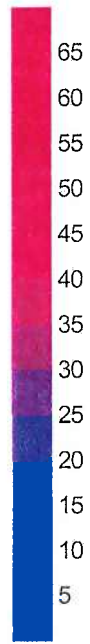
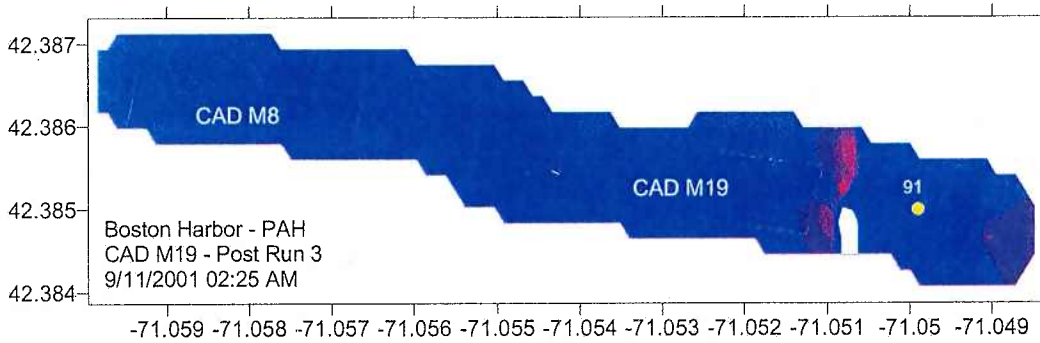
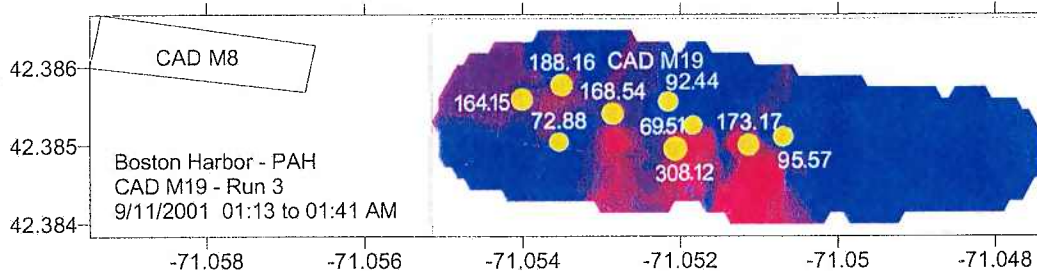
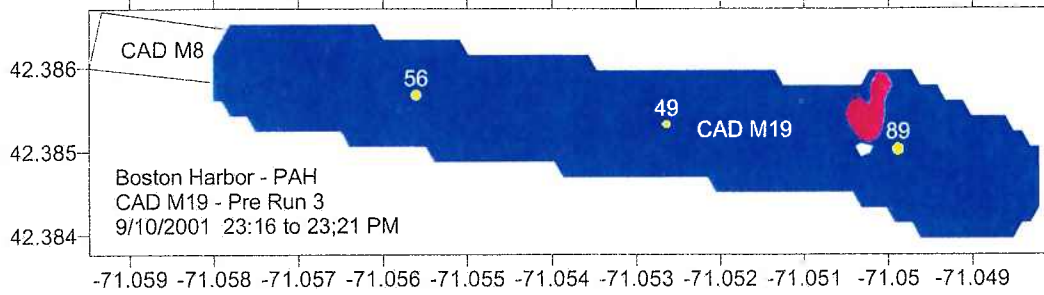
PCB Concentration (ng/L)



Run 3 CAD Cell M19 - TPH



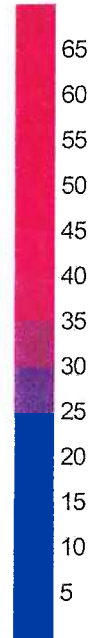
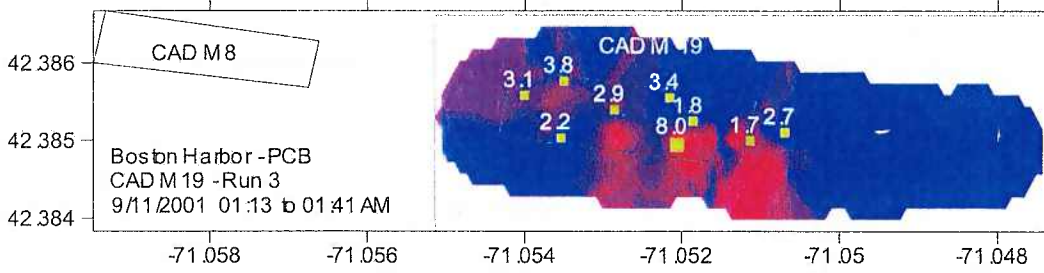
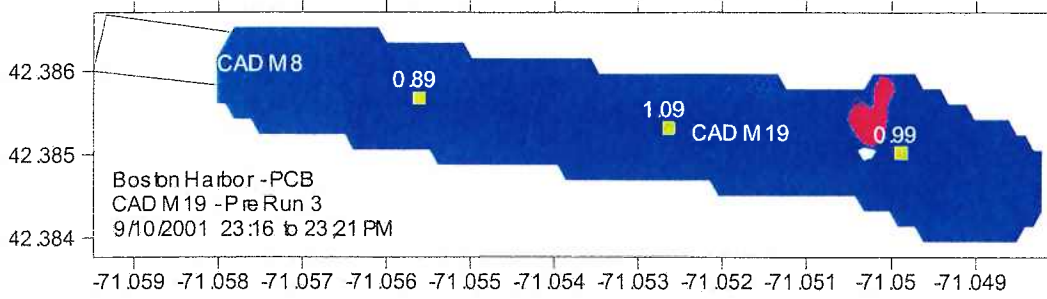
Run 3 CAD Cell M19 - PAH



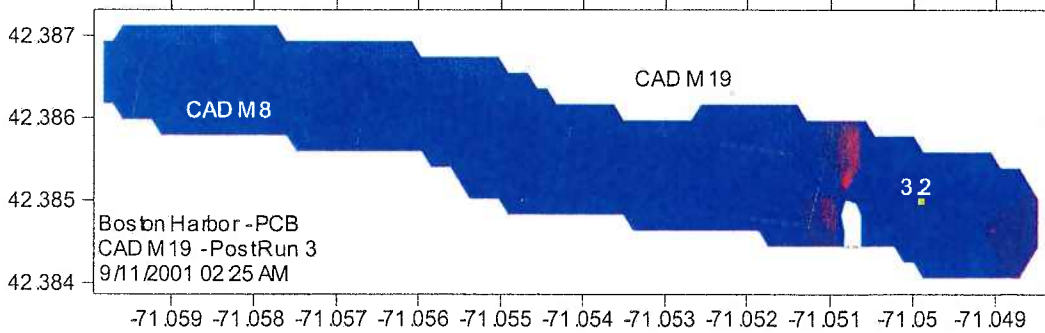
TSS Concentration (mg/L)

PAH Concentration (ng/L)

Run 3 CAD Cell M19 - PCB

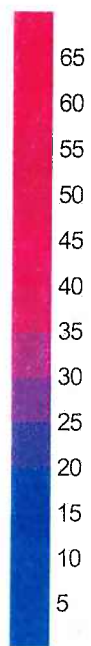
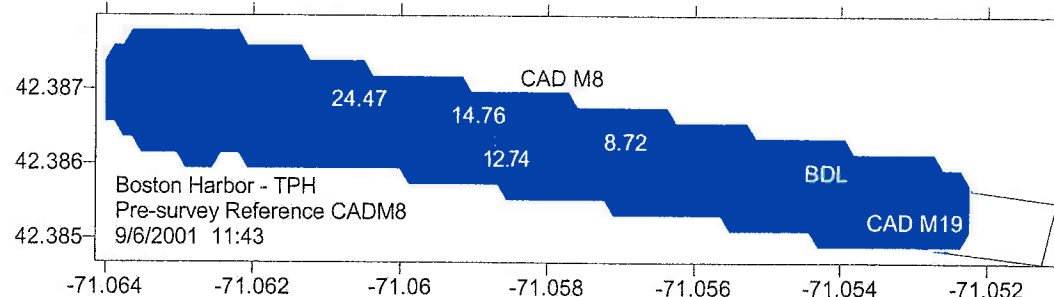
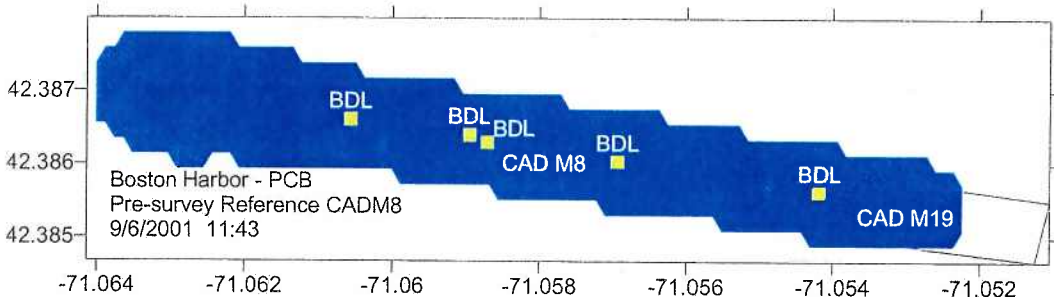
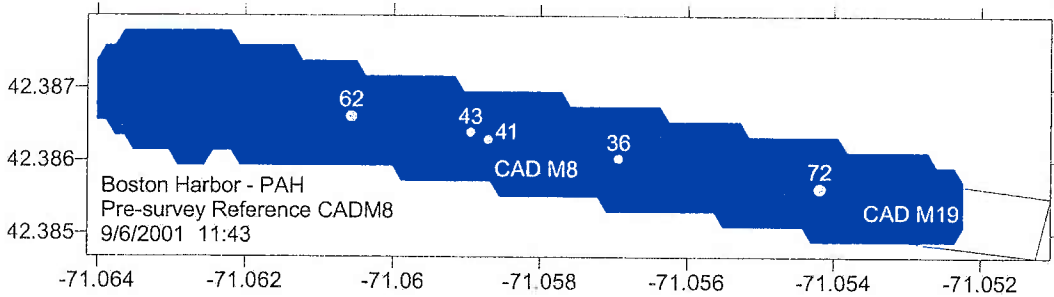
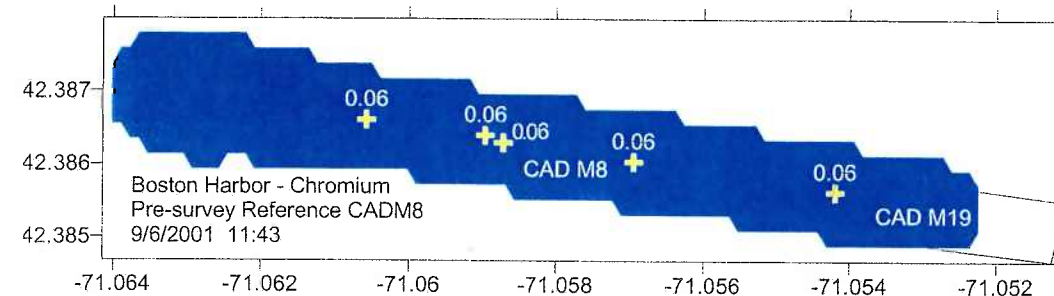
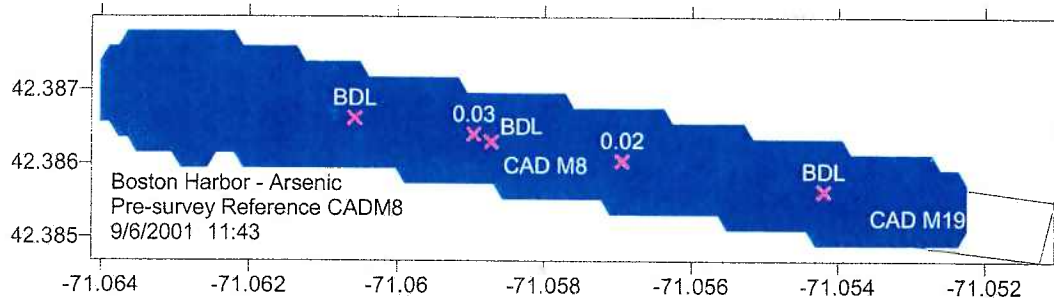


TSS Concentration (mg/L)




 PCB Concentration (ng/L)

Pre Survey CAD Cell M8 All Contaminants



TSS Concentration (mg/L)

PAH Concentration (ng/L)

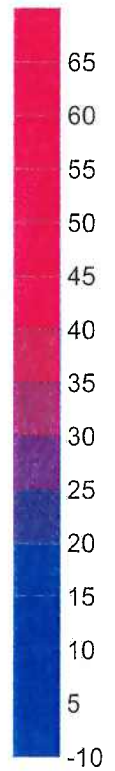
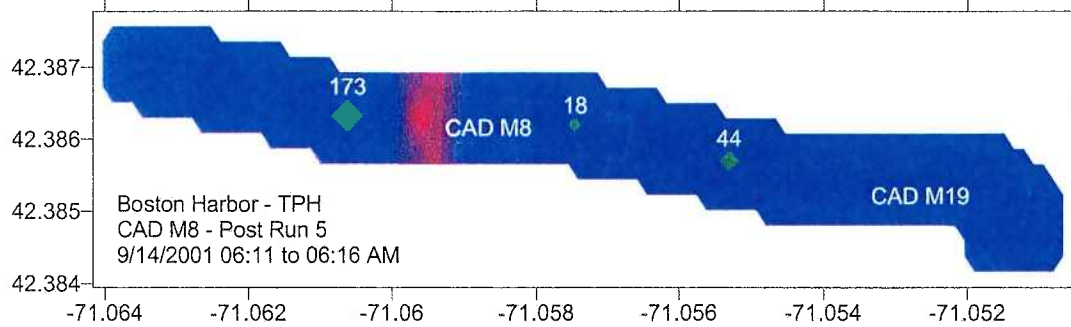
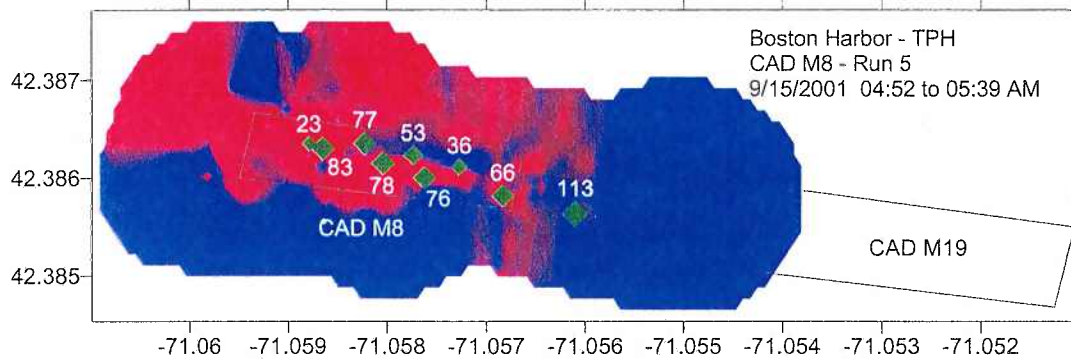
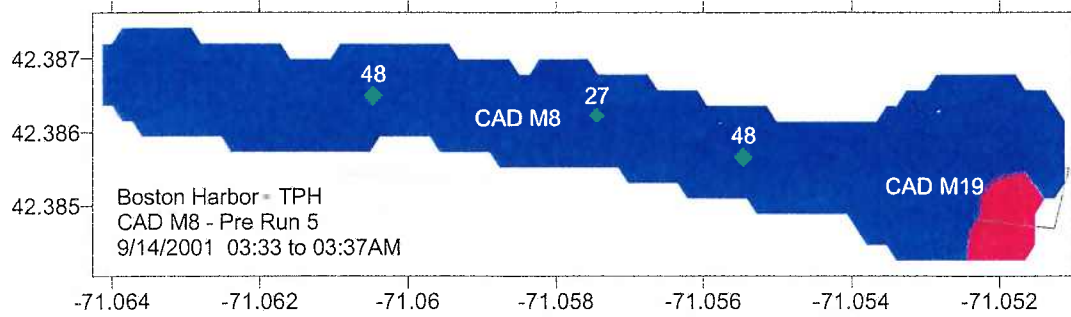
PCB Concentration (ng/L)

TPH Concentration (µg/L)

Arsenic Concentration (mg/L)

Chromium Concentration (mg/L)

Run 5 CAD Cell M8 - TPH

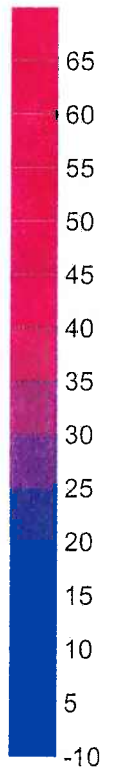
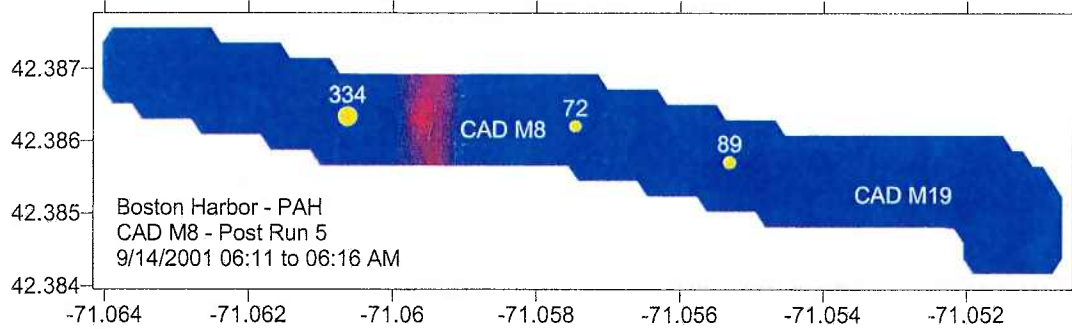
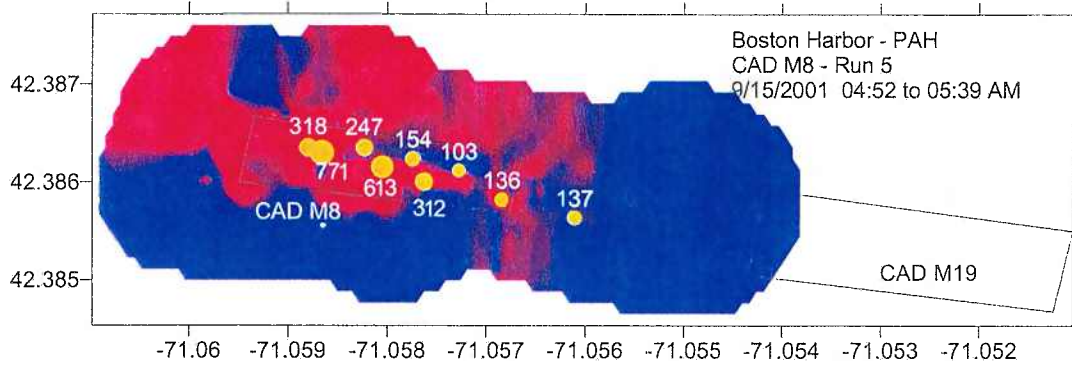
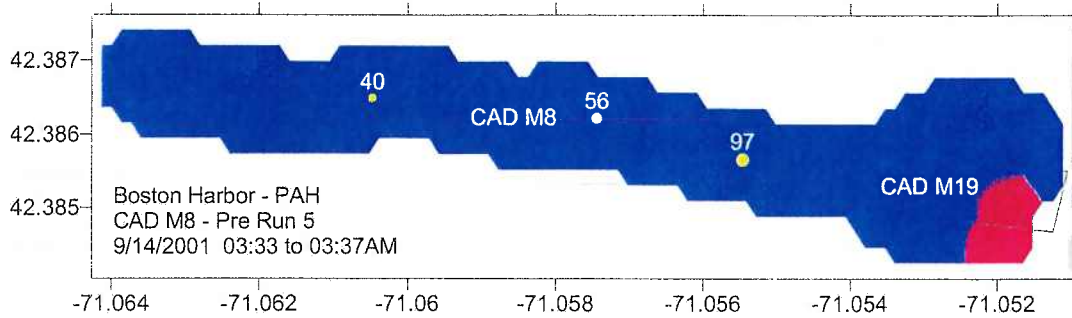


TSS Concentration (mg/L)



TPH Concentration (µg/L)

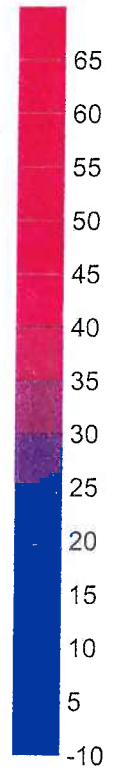
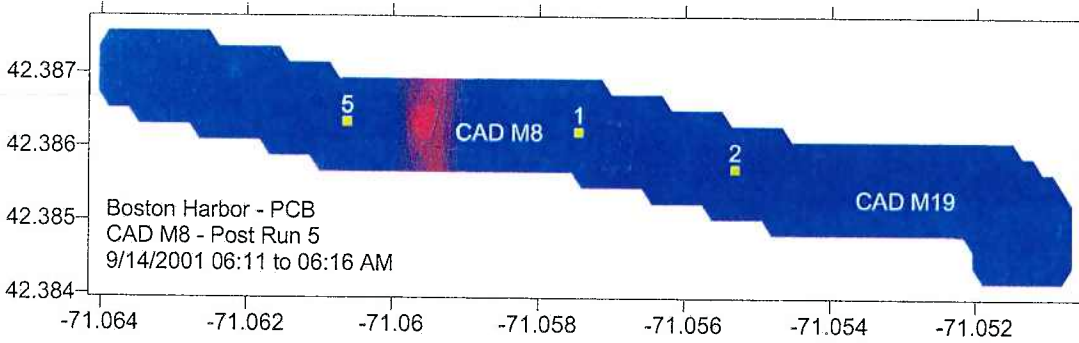
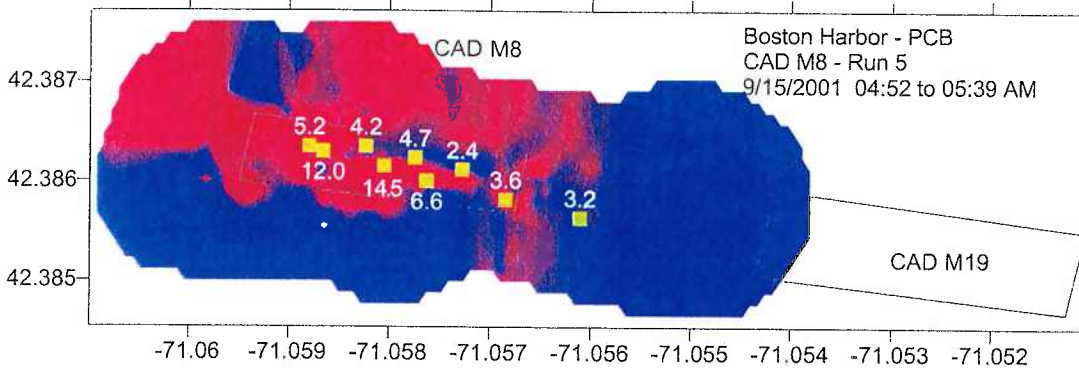
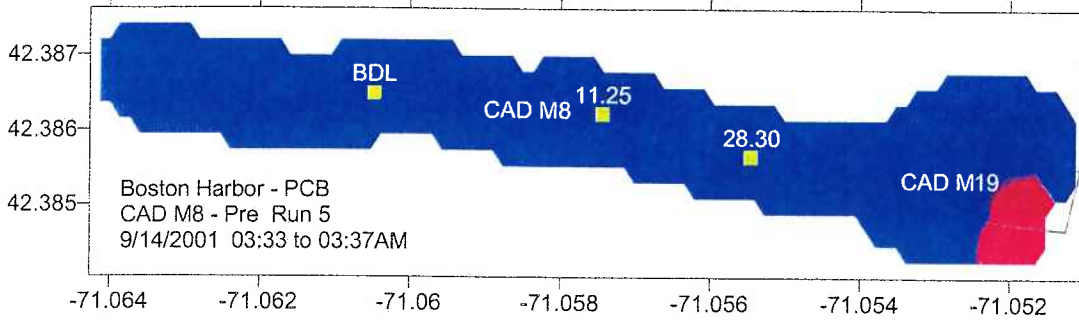
Run 5 CAD Cell M8 - PAH



TSS Concentration (mg/L)

PAH Concentration (ng/L)

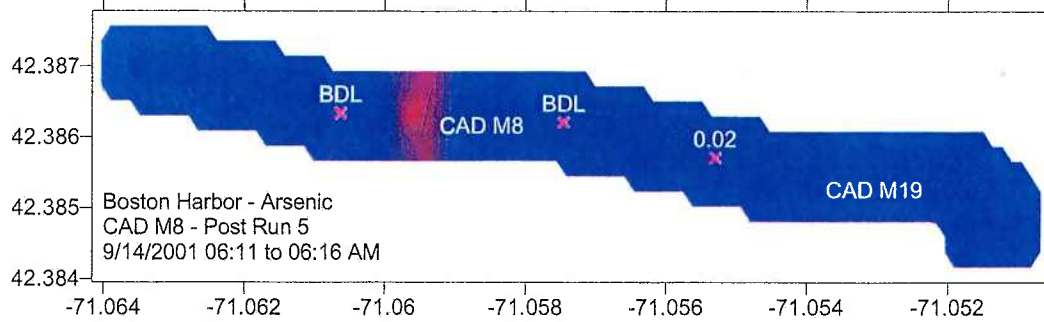
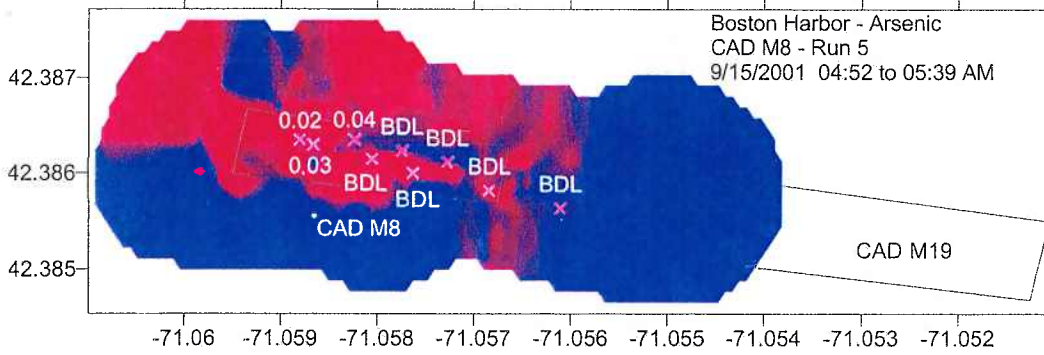
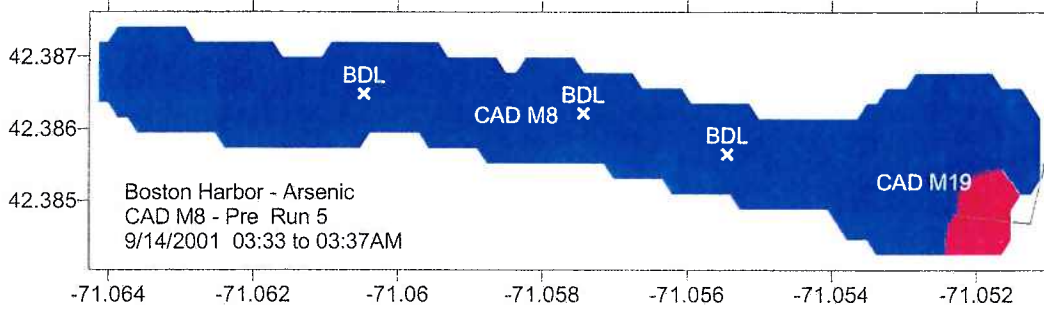
Run 5 CAD Cell M8 - PCB



TSS Concentration (mg/L)

PCB Concentration (ng/L)

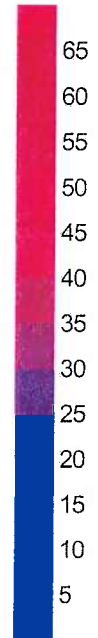
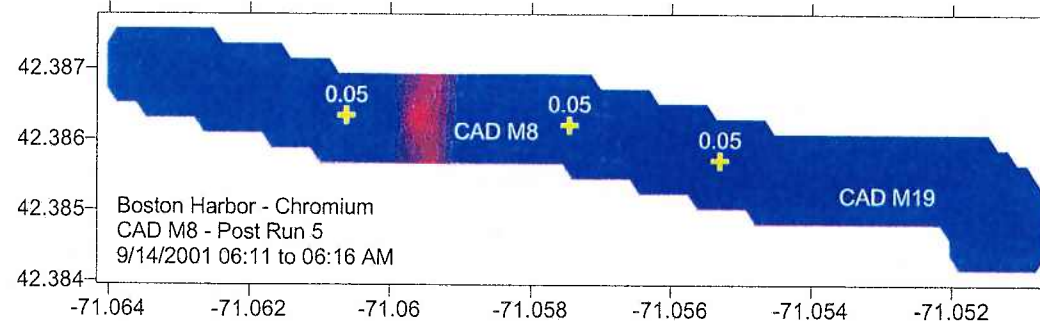
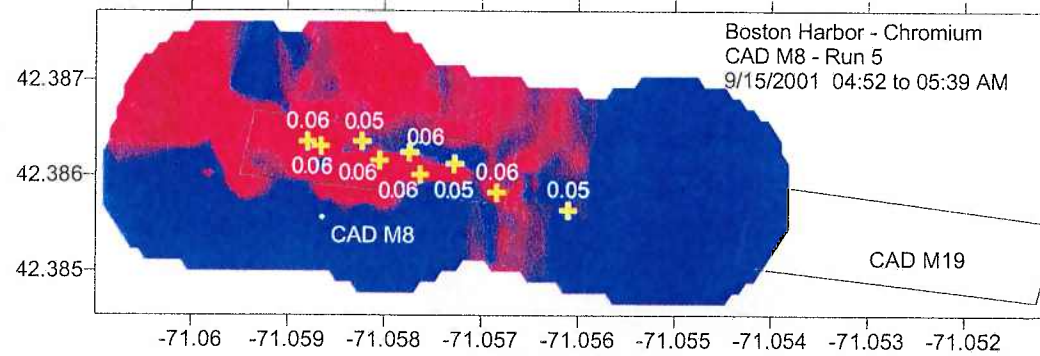
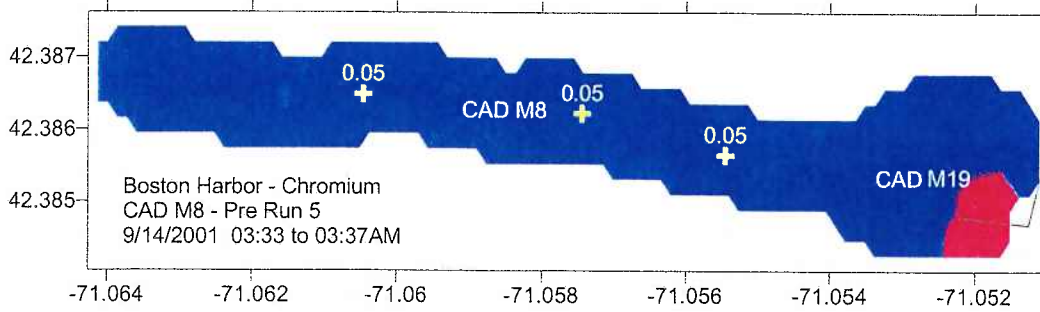
Run 5 CAD Cell M8 - As



TSS Concentration (mg/L)

Arsenic Concentration (mg/L)

Run 5 CAD Cell M8 - Cr

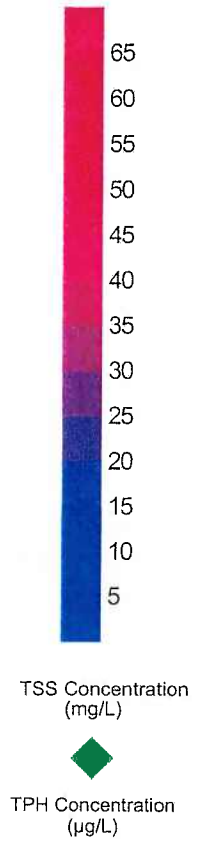
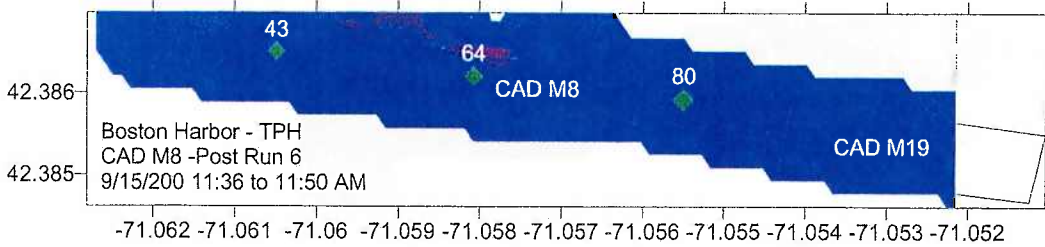
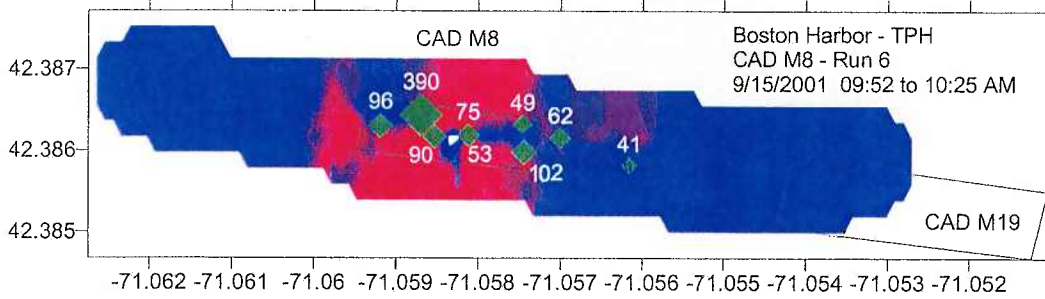
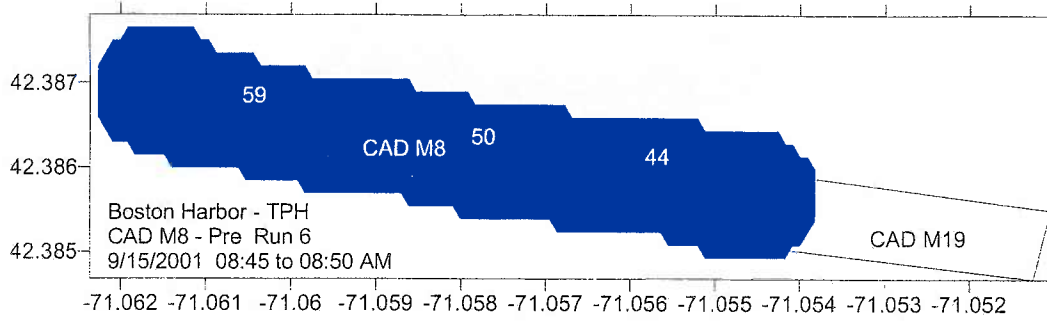


TSS Concentration (mg/L)

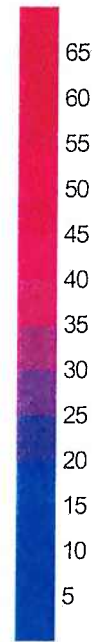
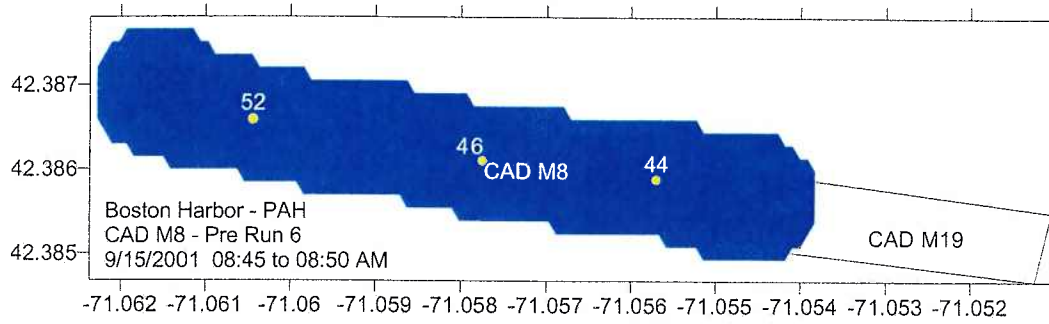


Chromium Concentration (mg/L)

Run 6 CAD Cell M8 - TPH



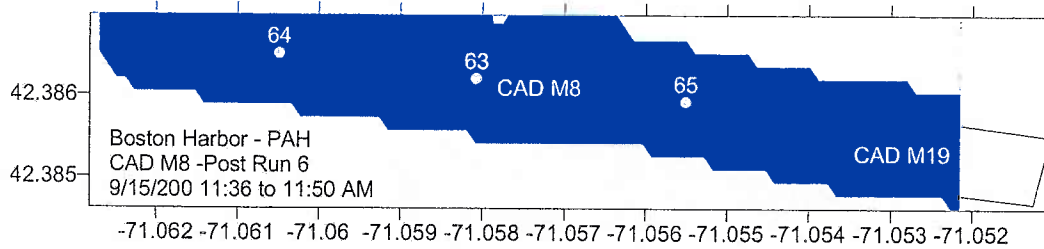
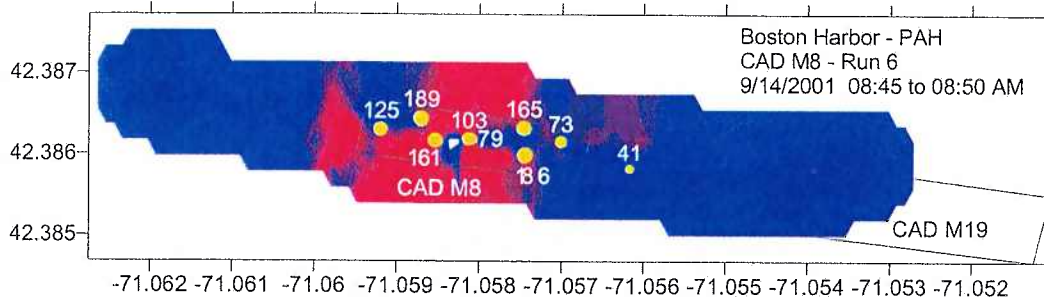
Run 6 CAD Cell M8 - PAH



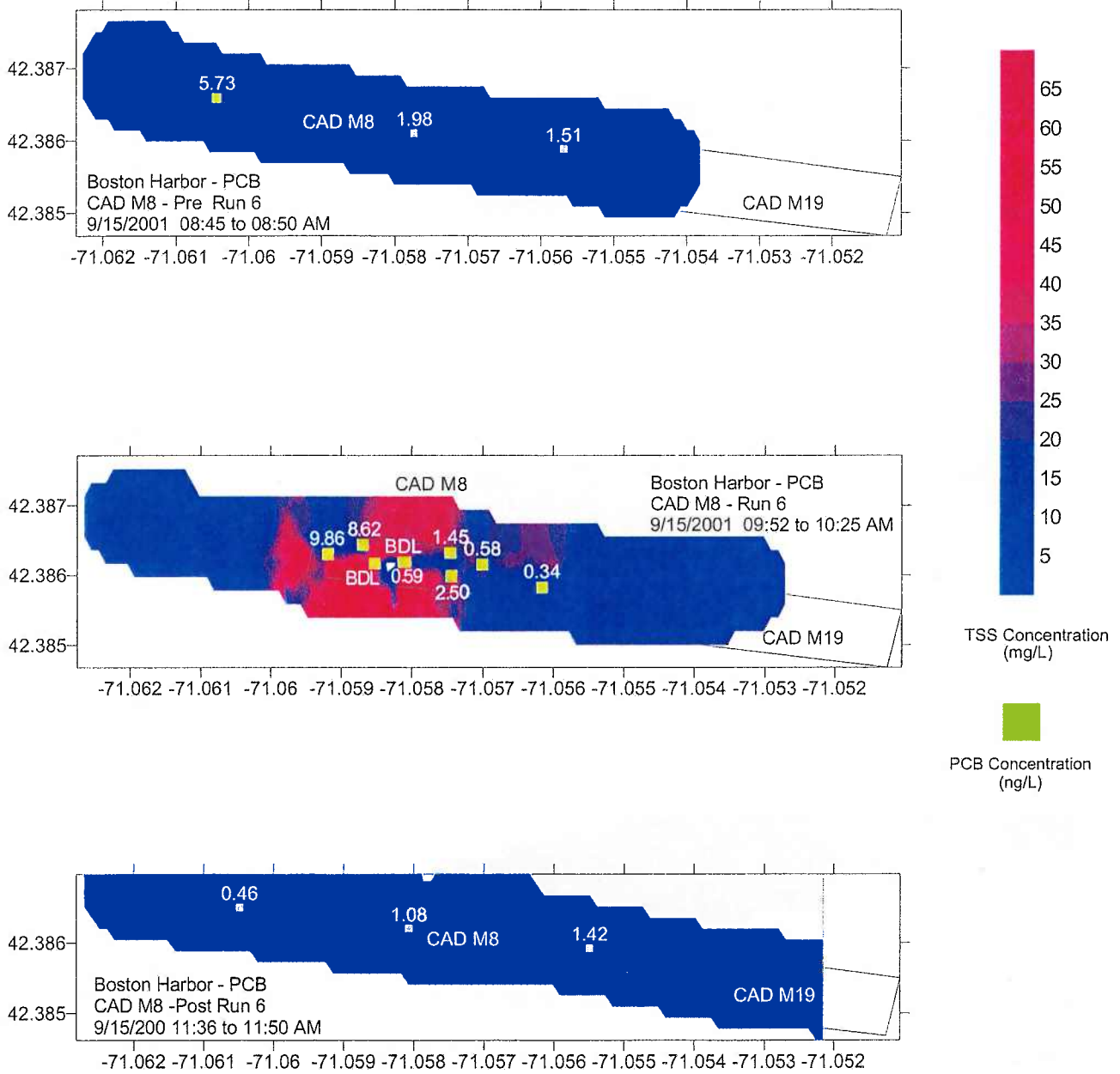
TSS Concentration (mg/L)



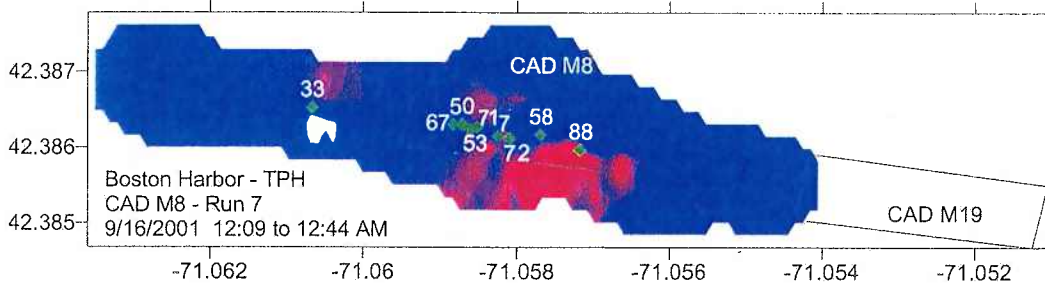
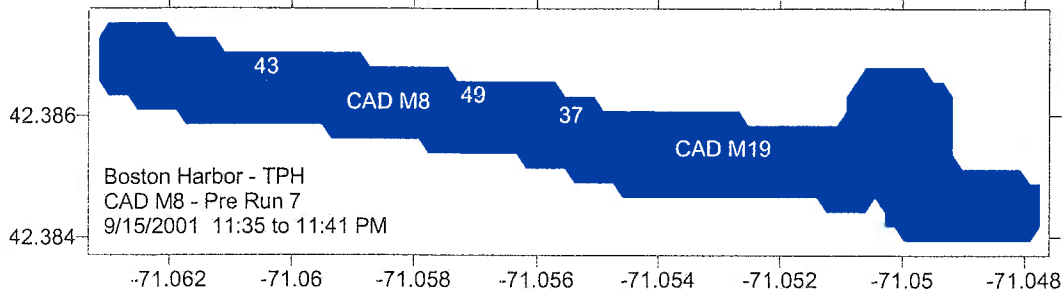
PAH Concentration (ng/L)



Run 6 CAD Cell M8 - PCB

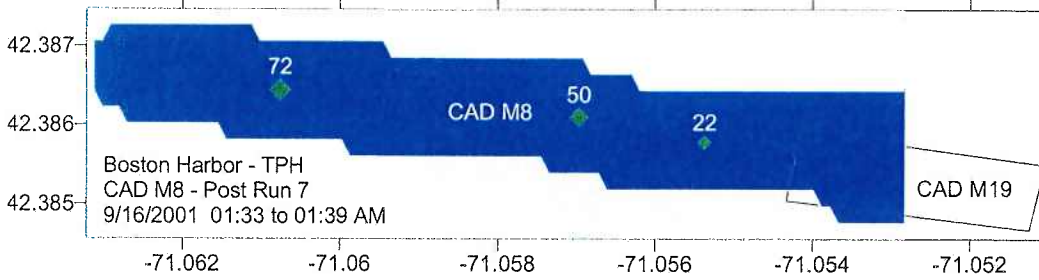


Run 7 CAD Cell M8 - TPH

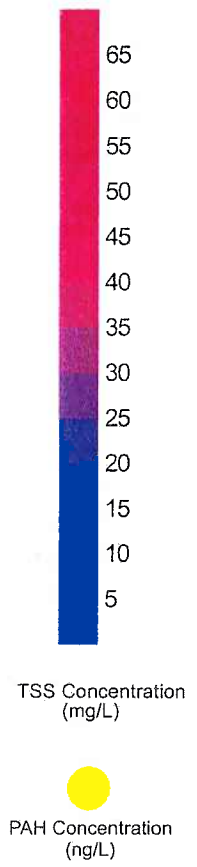
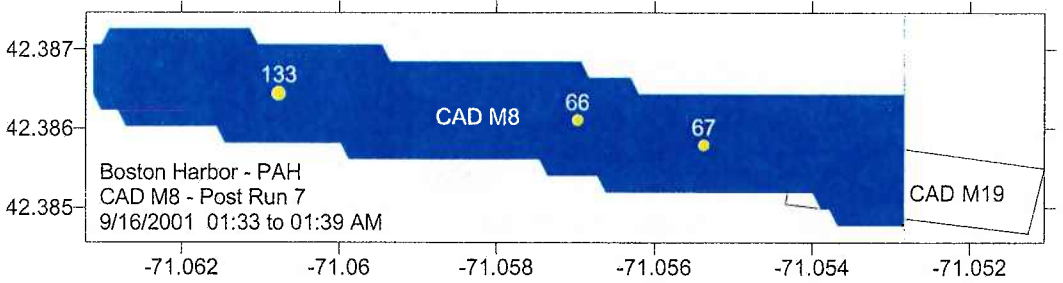
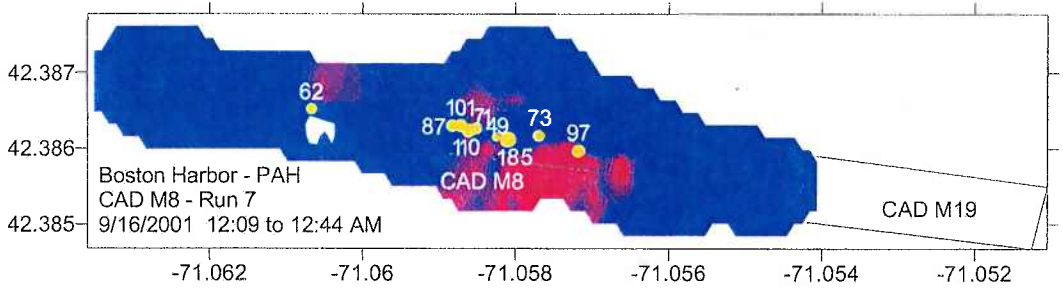
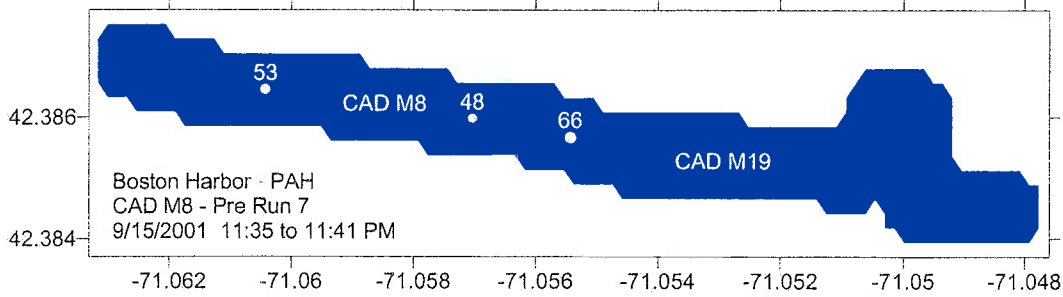


TSS Concentration (mg/L)

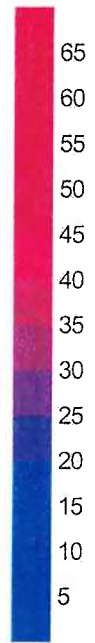
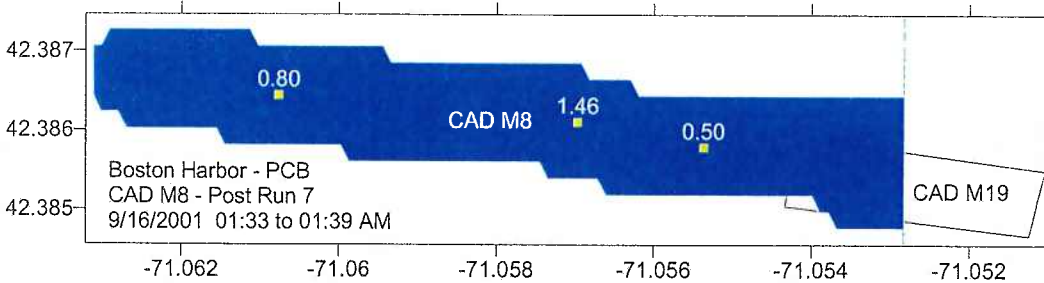
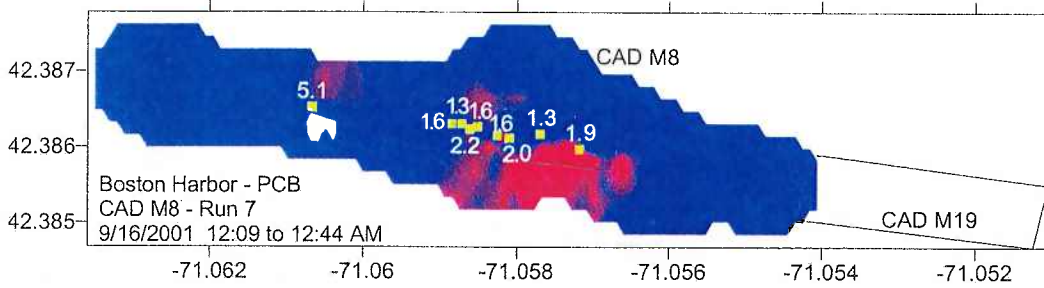
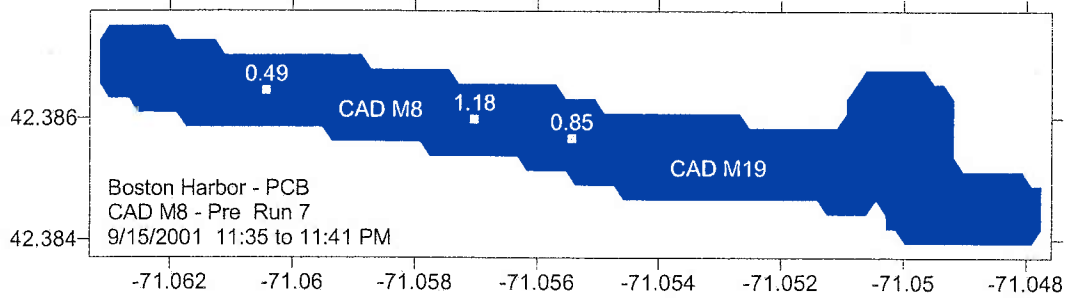
TPH Concentration (µg/L)



Run 7 CAD Cell M8 - PAH

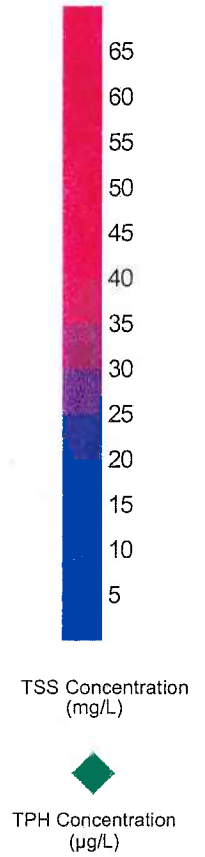
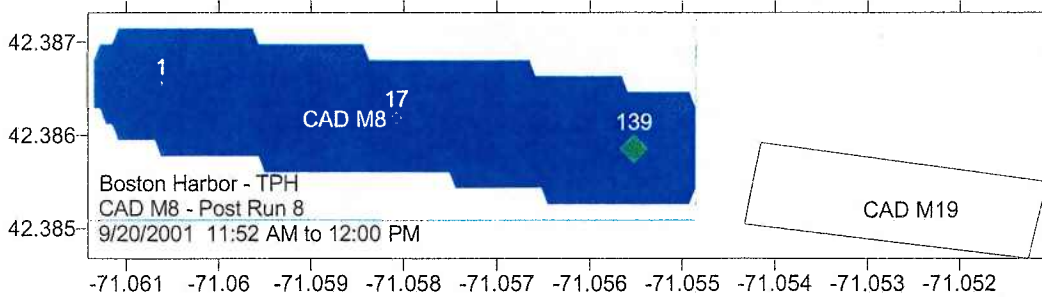
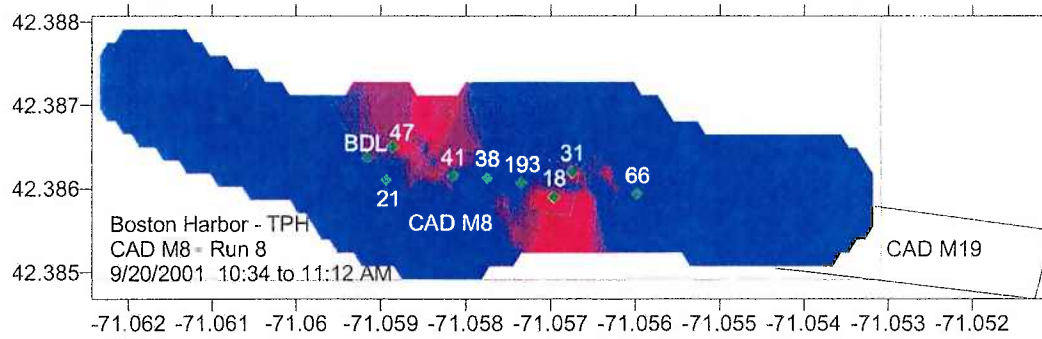
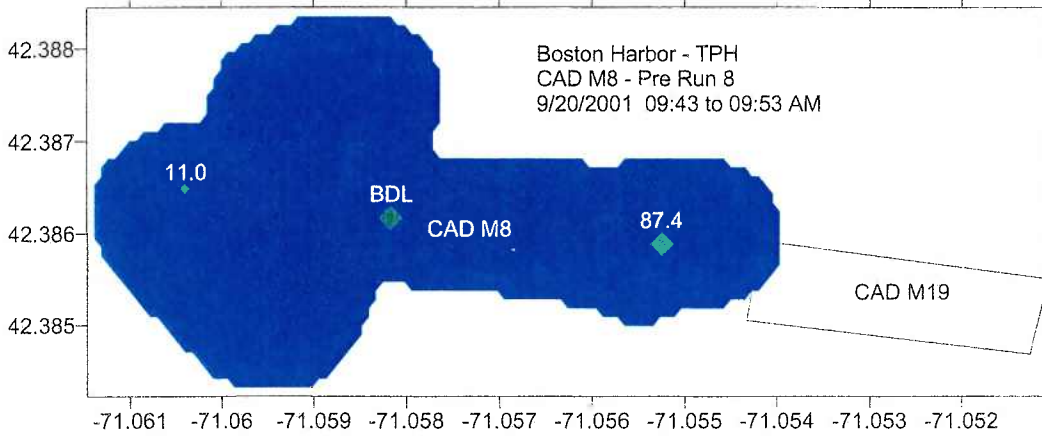


Run 7 CAD Cell M8 - PCB

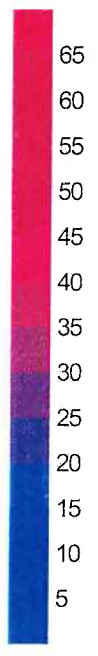
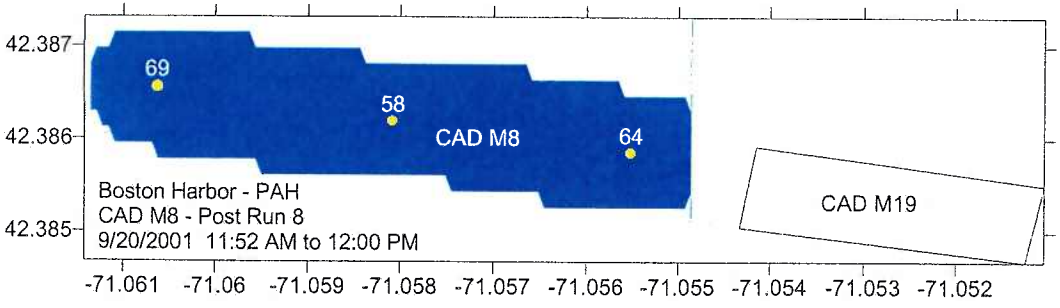
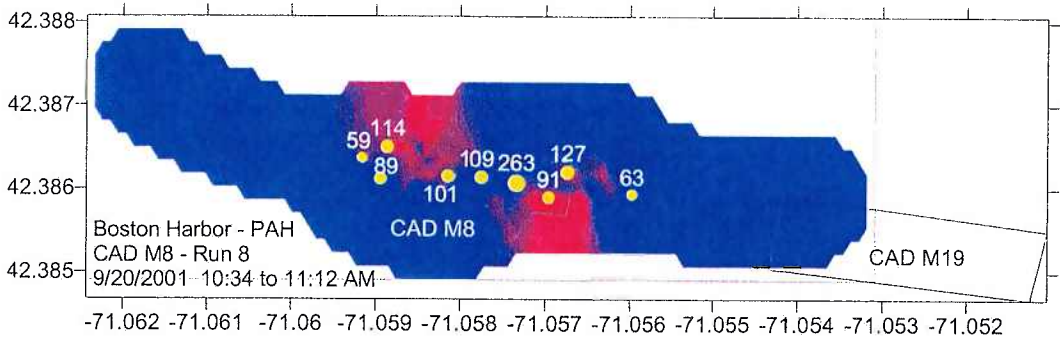
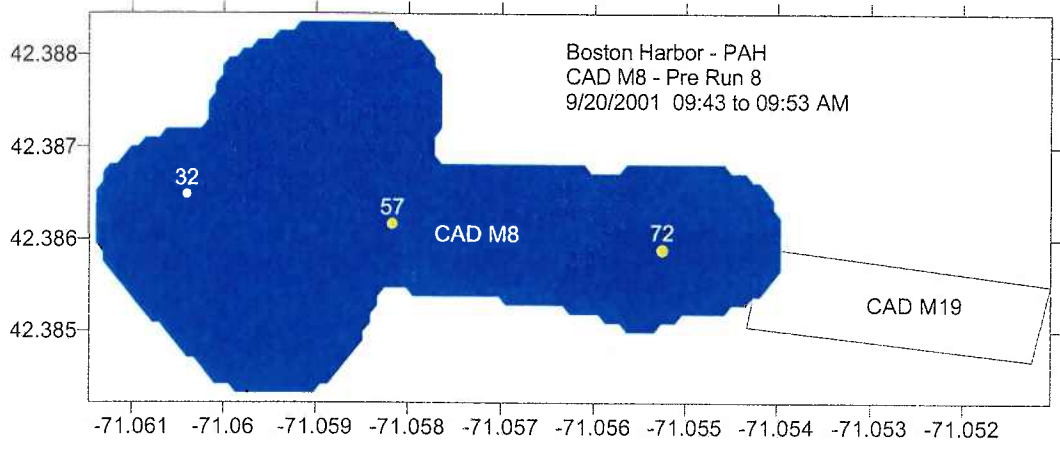


PCB Concentration (ng/L)

Run 8 CAD Cell M8 - TPH



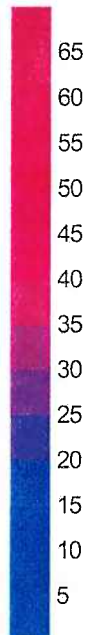
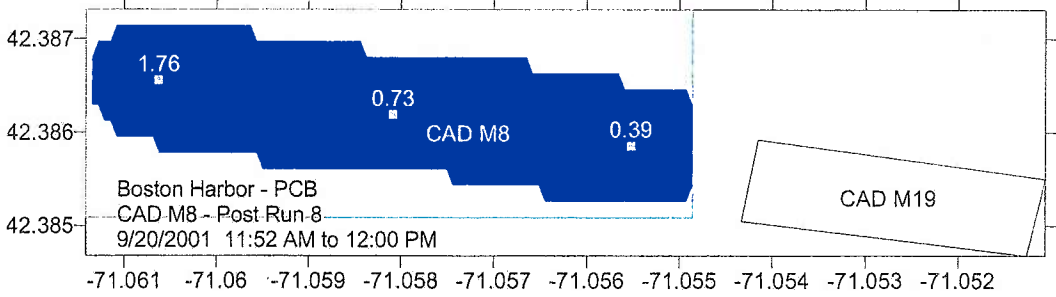
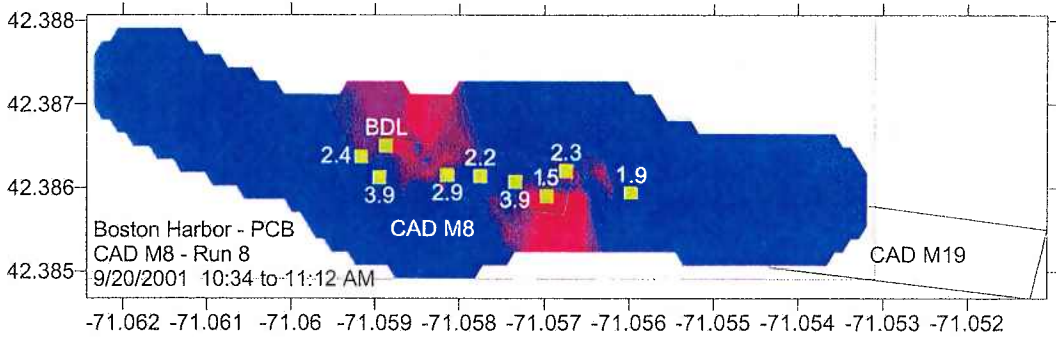
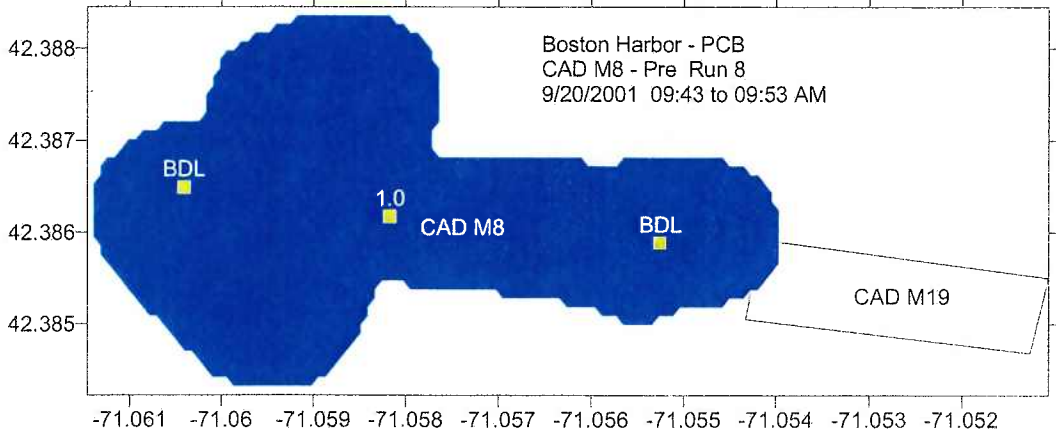
Run 8 CAD Cell M8 - PAH



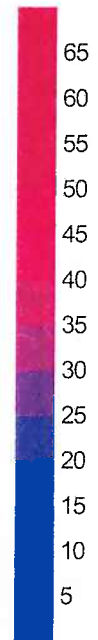
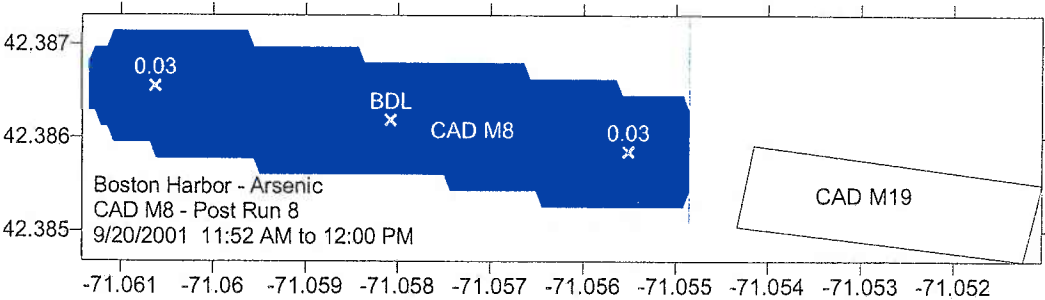
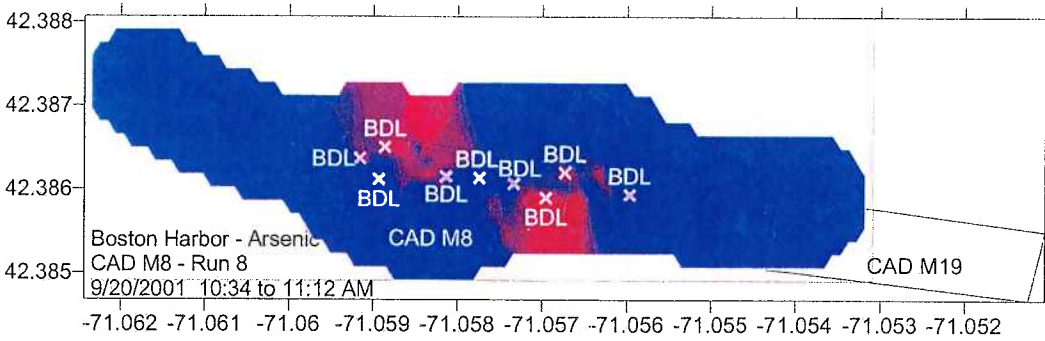
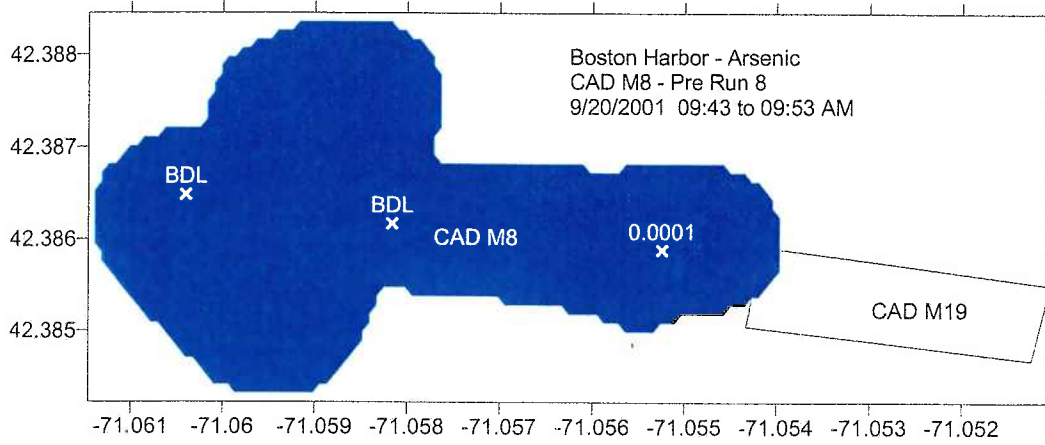
TSS Concentration (mg/L)

● PAH Concentration (ng/L)

Run 8 CAD Cell M8 - PCB



Run 8 CAD Cell M8 - As

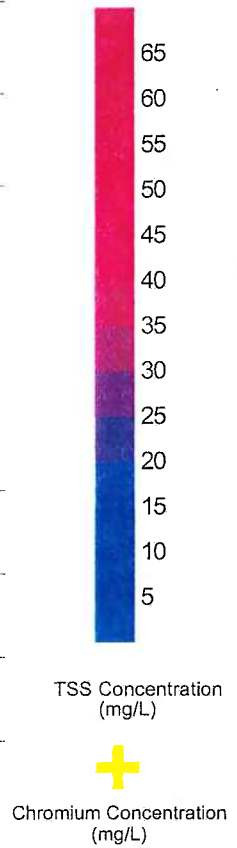
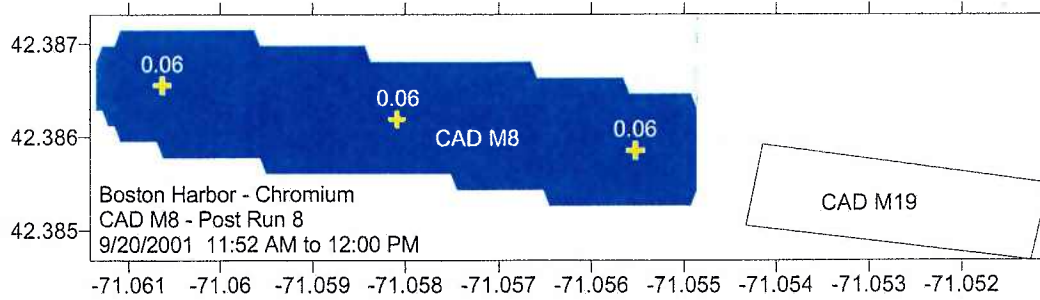
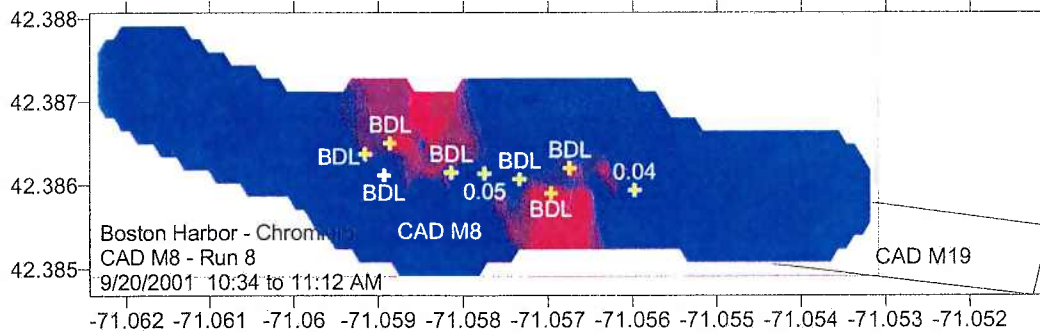
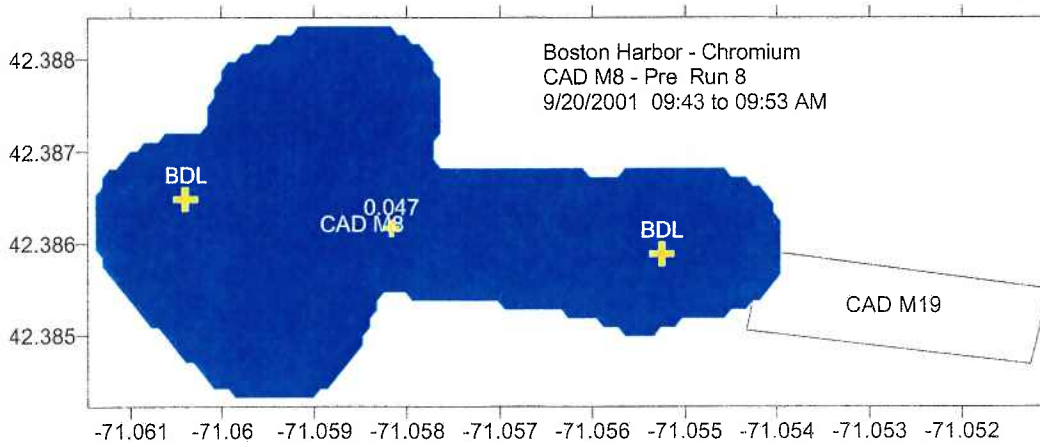


TSS Concentration (mg/L)

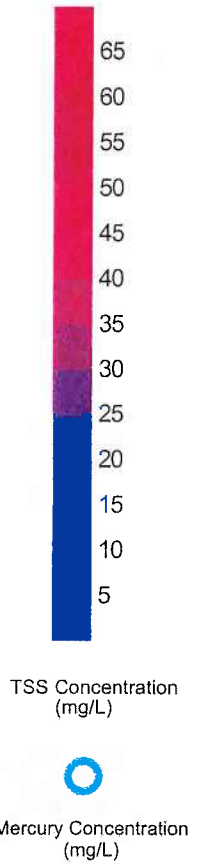
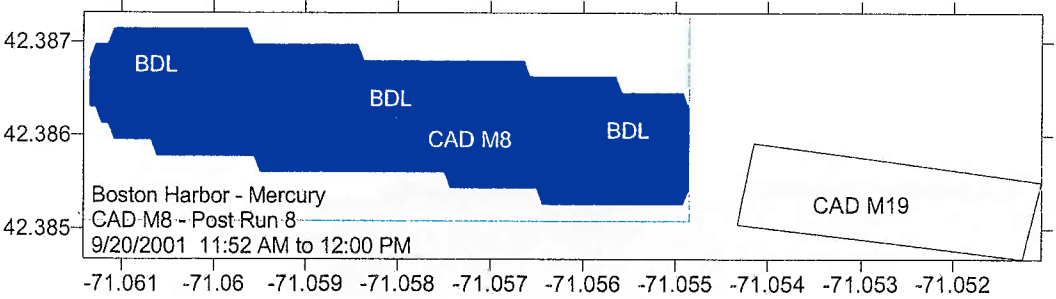
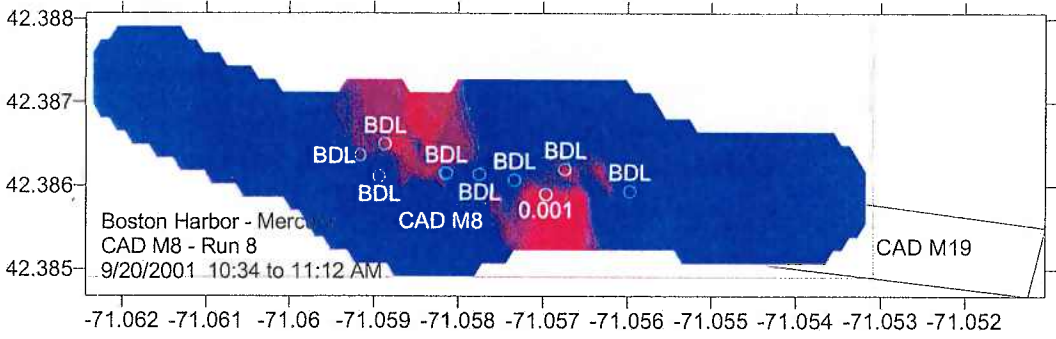
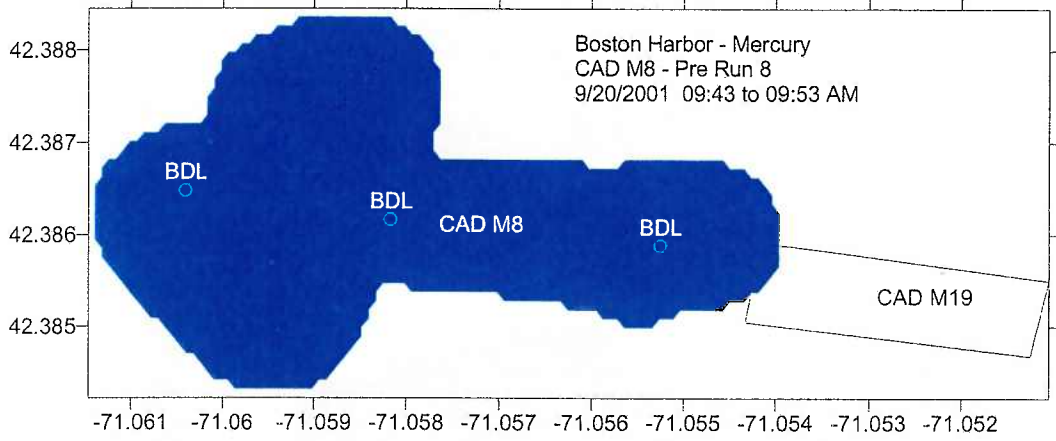
x

Arsenic Concentration (mg/L)

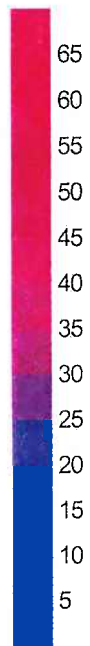
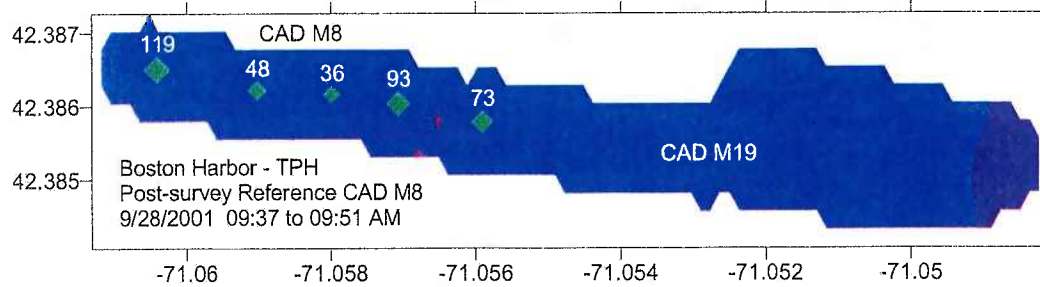
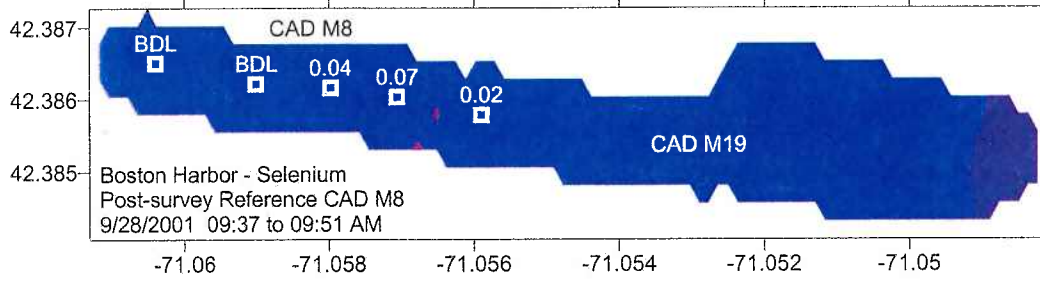
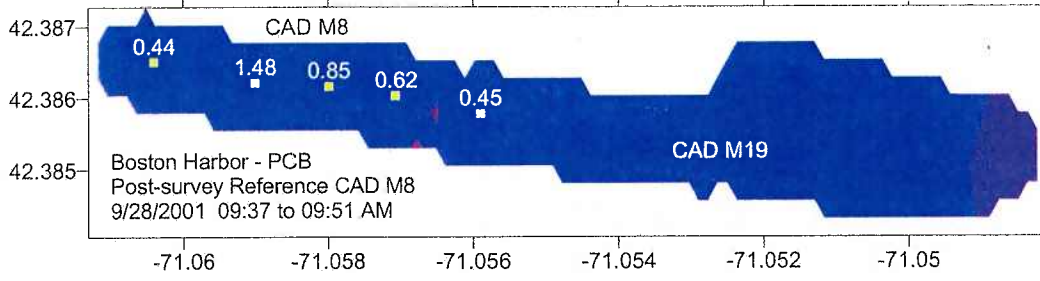
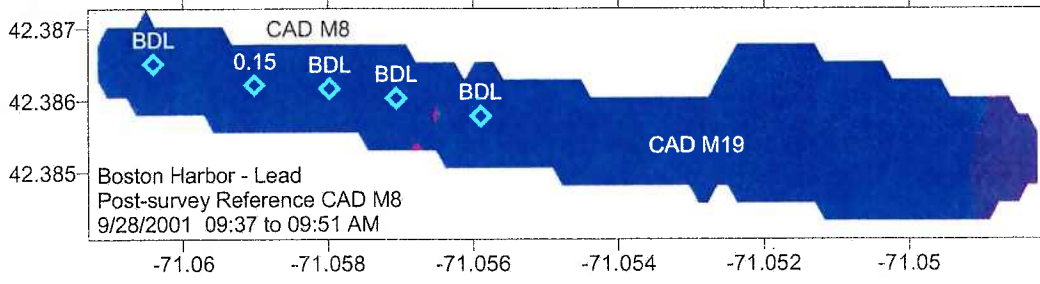
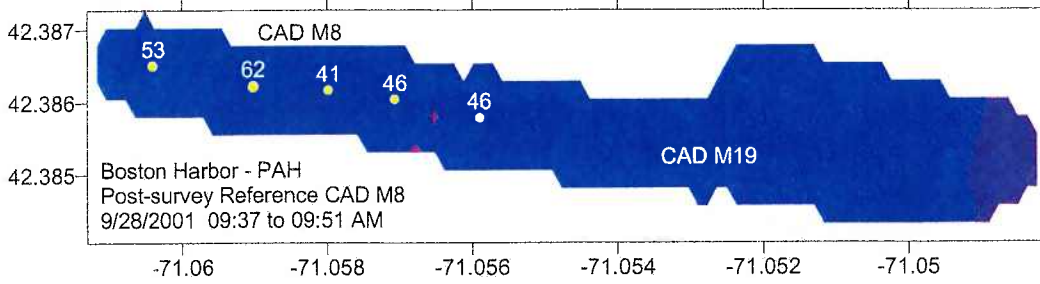
Run 8 CAD Cell M8 - Cr



Run 8 CAD Cell M8 - Hg



Post Survey CAD Cell M8 All Analytes



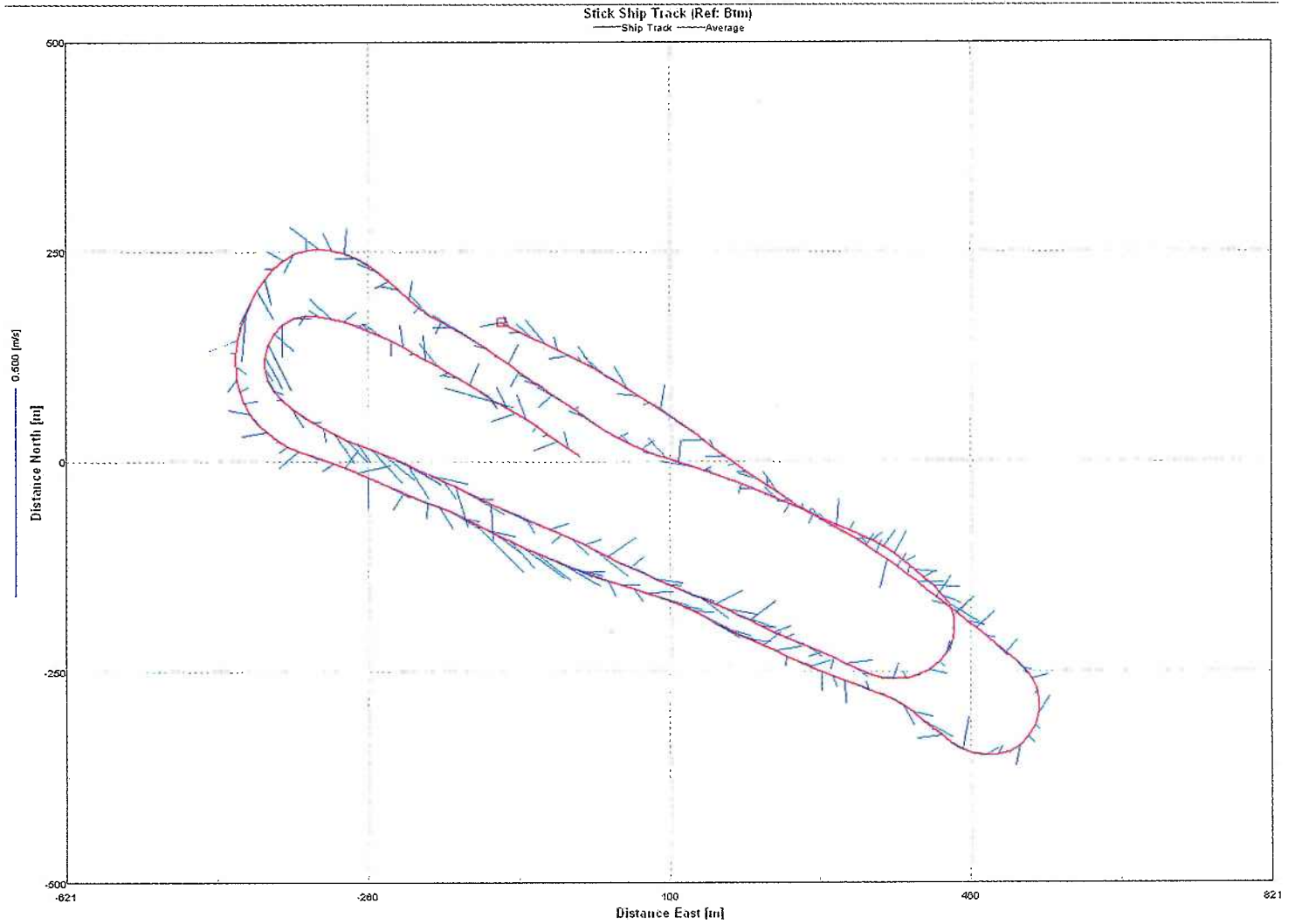
- TSS Concentration (mg/L)
- PAH Concentration (ng/L)
- PCB Concentration (ng/L)
- TPH Concentration (µg/L)
- Selenium Concentration (mg/L)
- Lead Concentration (mg/L)

Evaluation of Sediment Agitation and Mixing into the Surrounding Water Column from Capping Activities - Boston Harbor

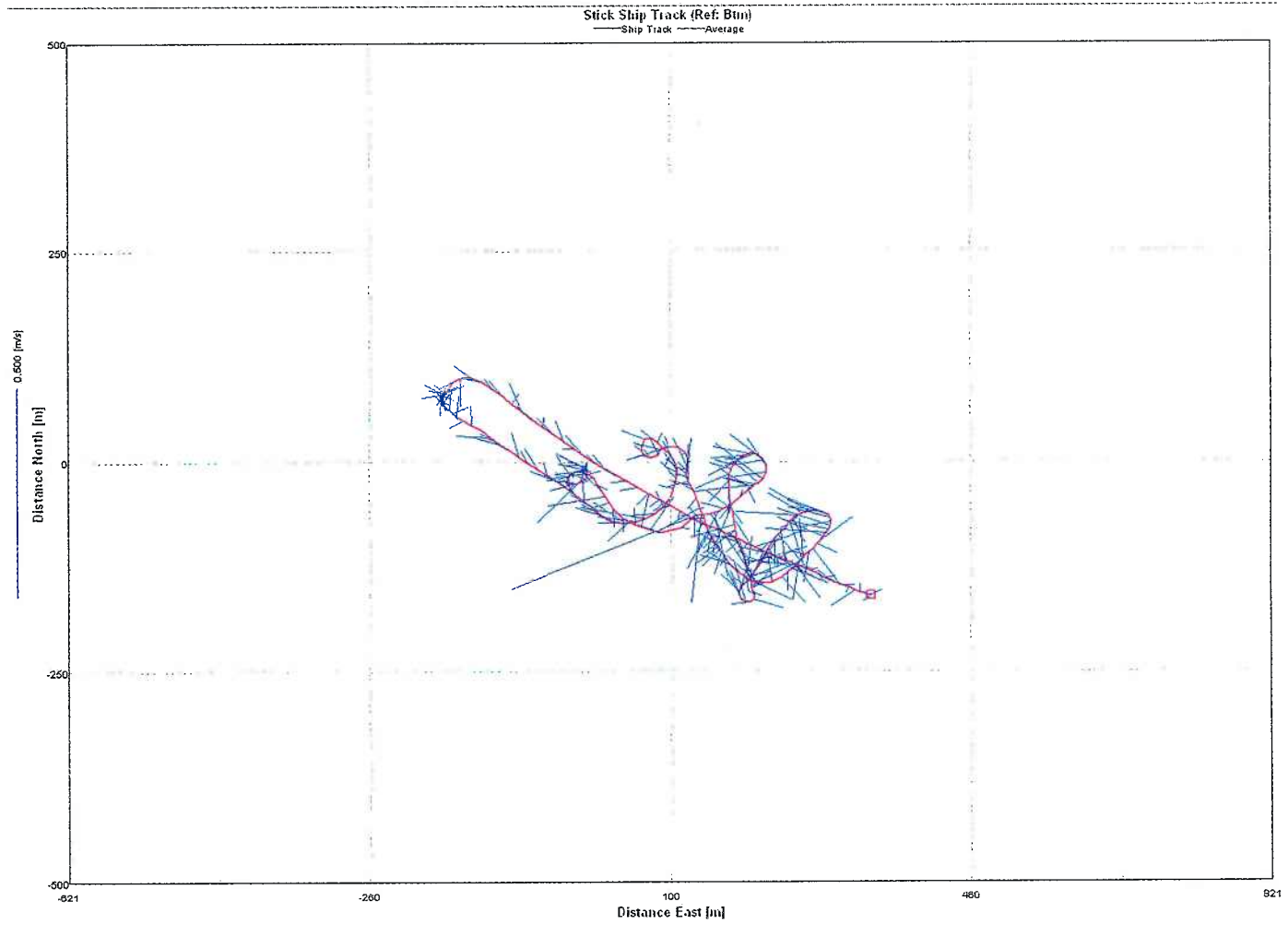
APPENDIX I

AVERAGE CURRENT VELOCITY PLOTS

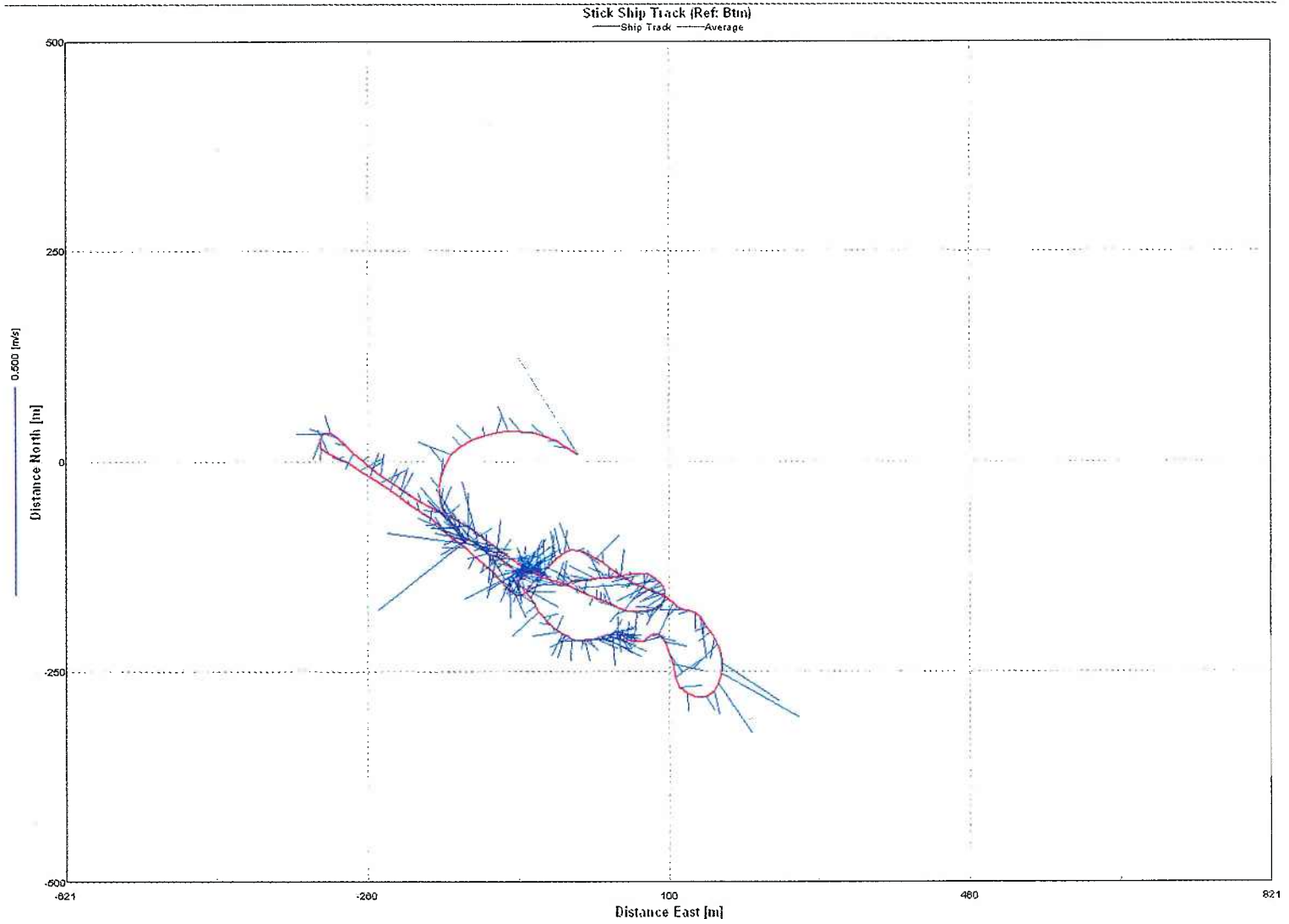
9/6



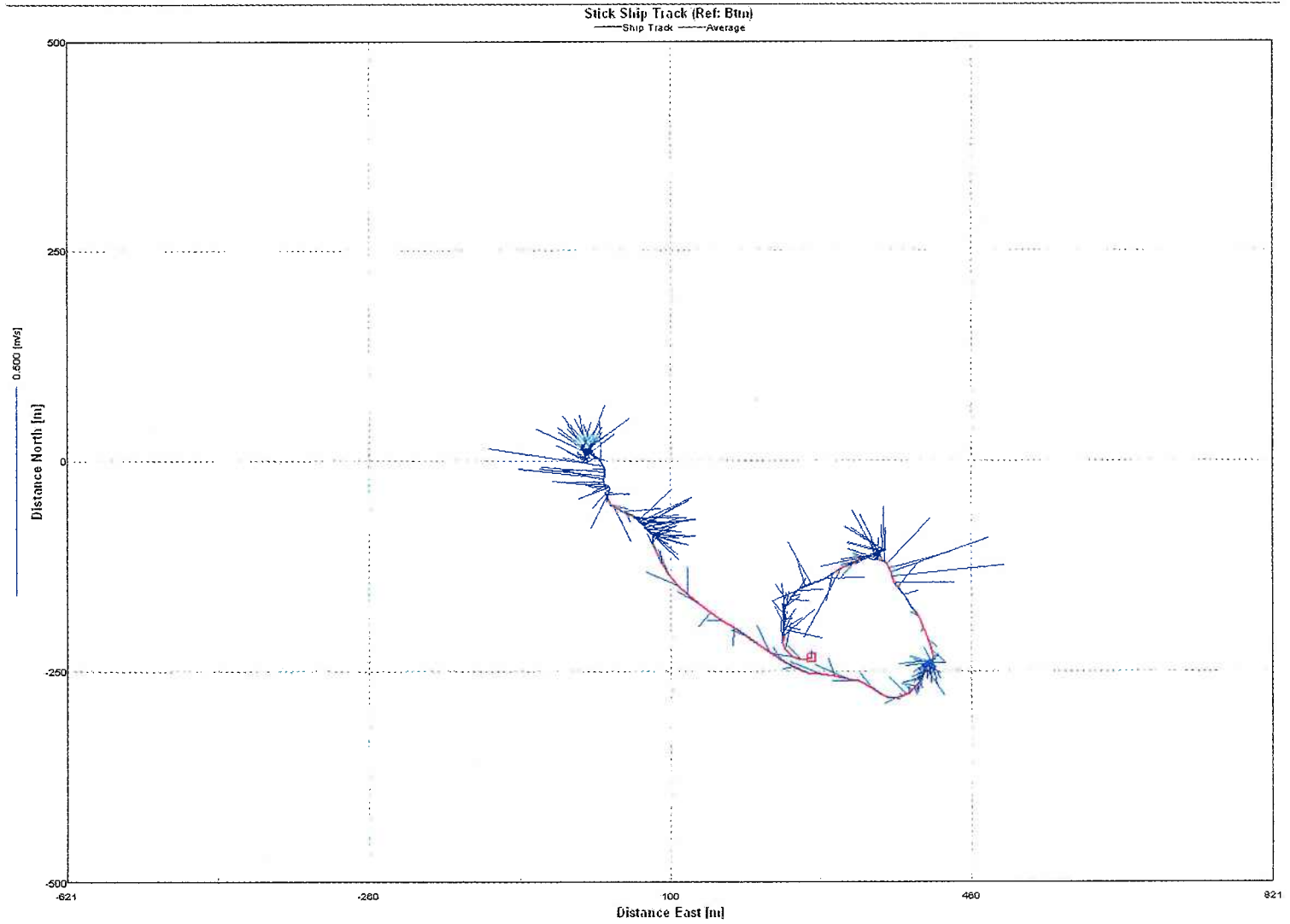
9/9



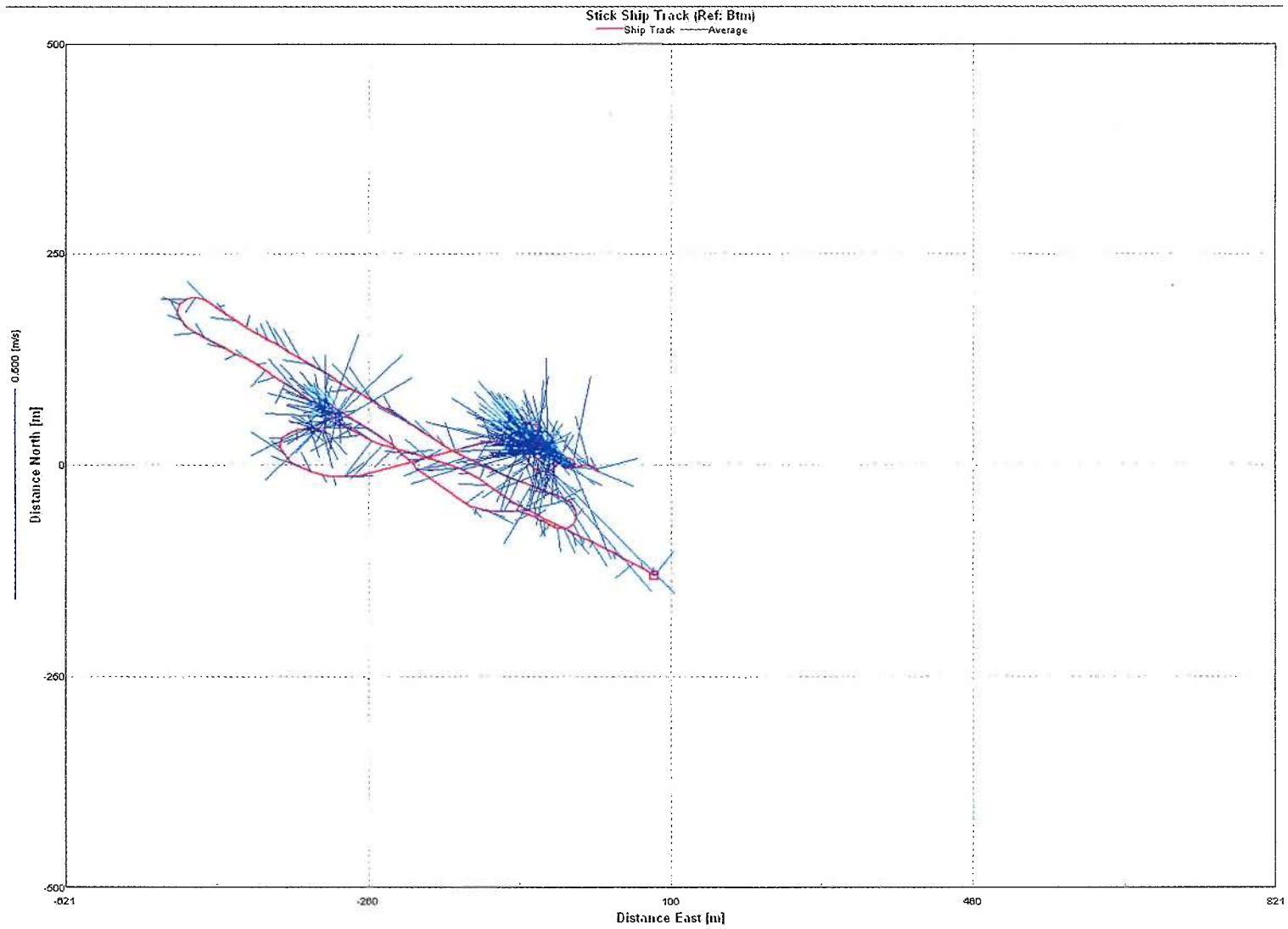
9/10



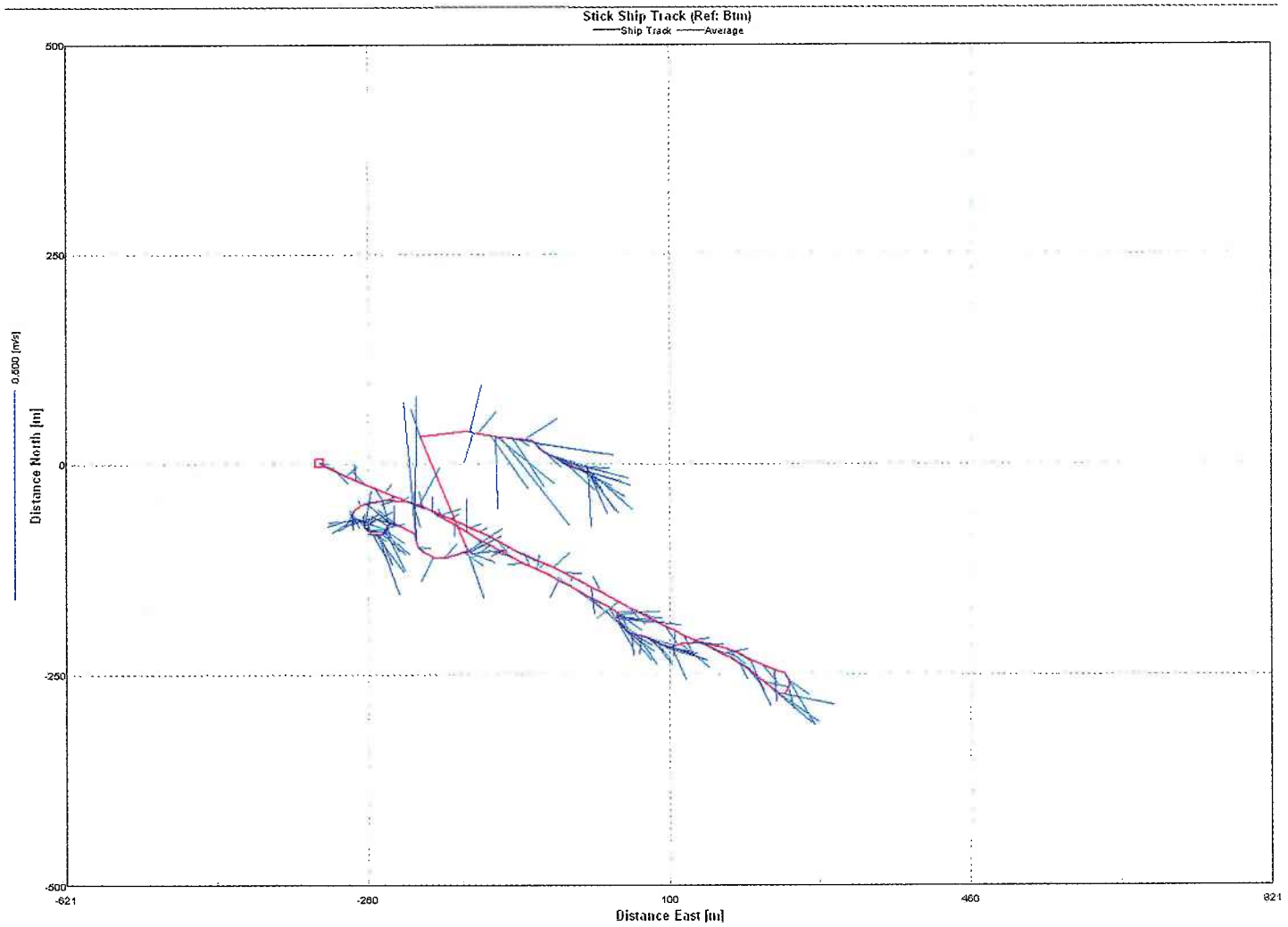
9/11



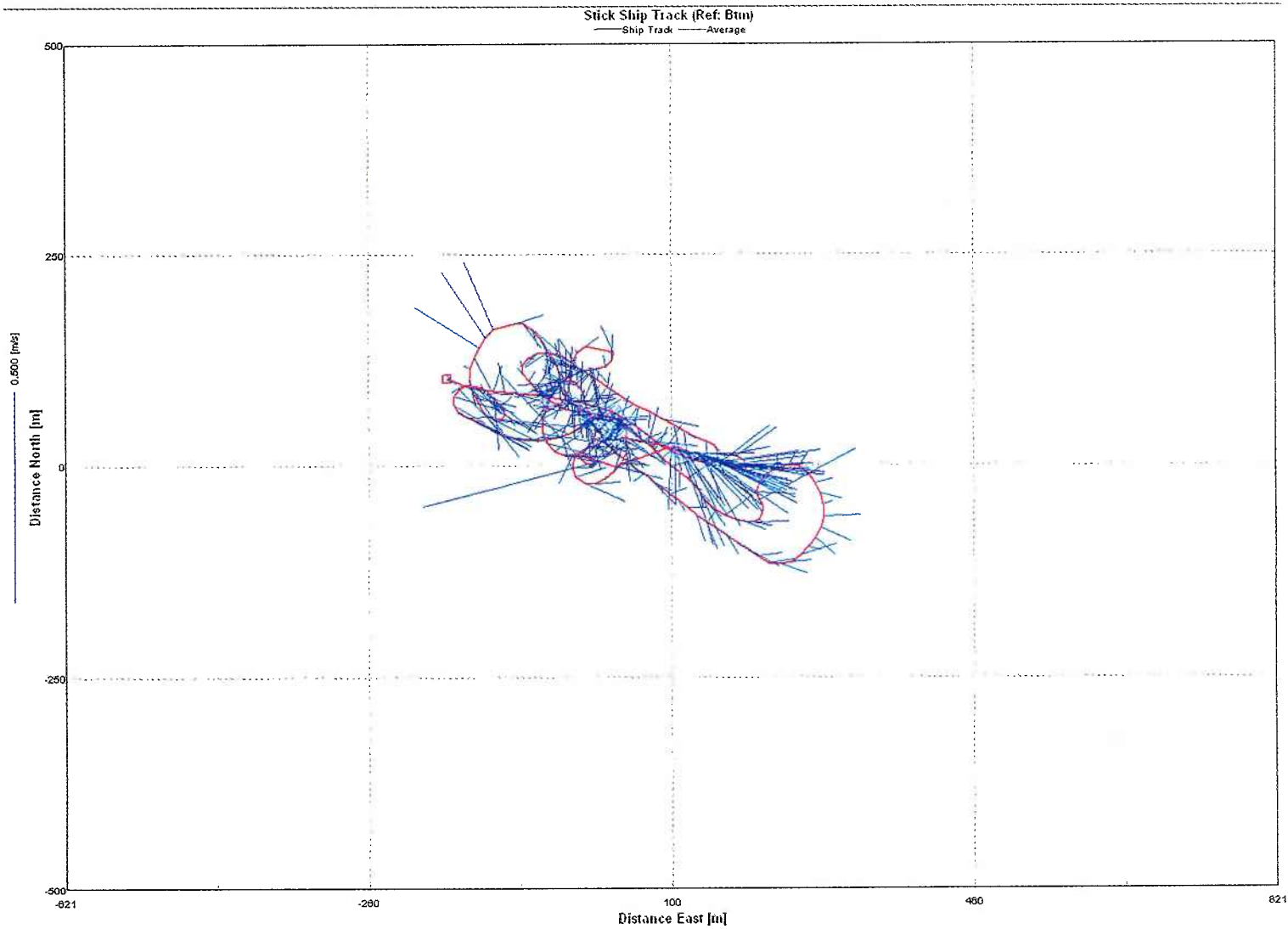
9/12



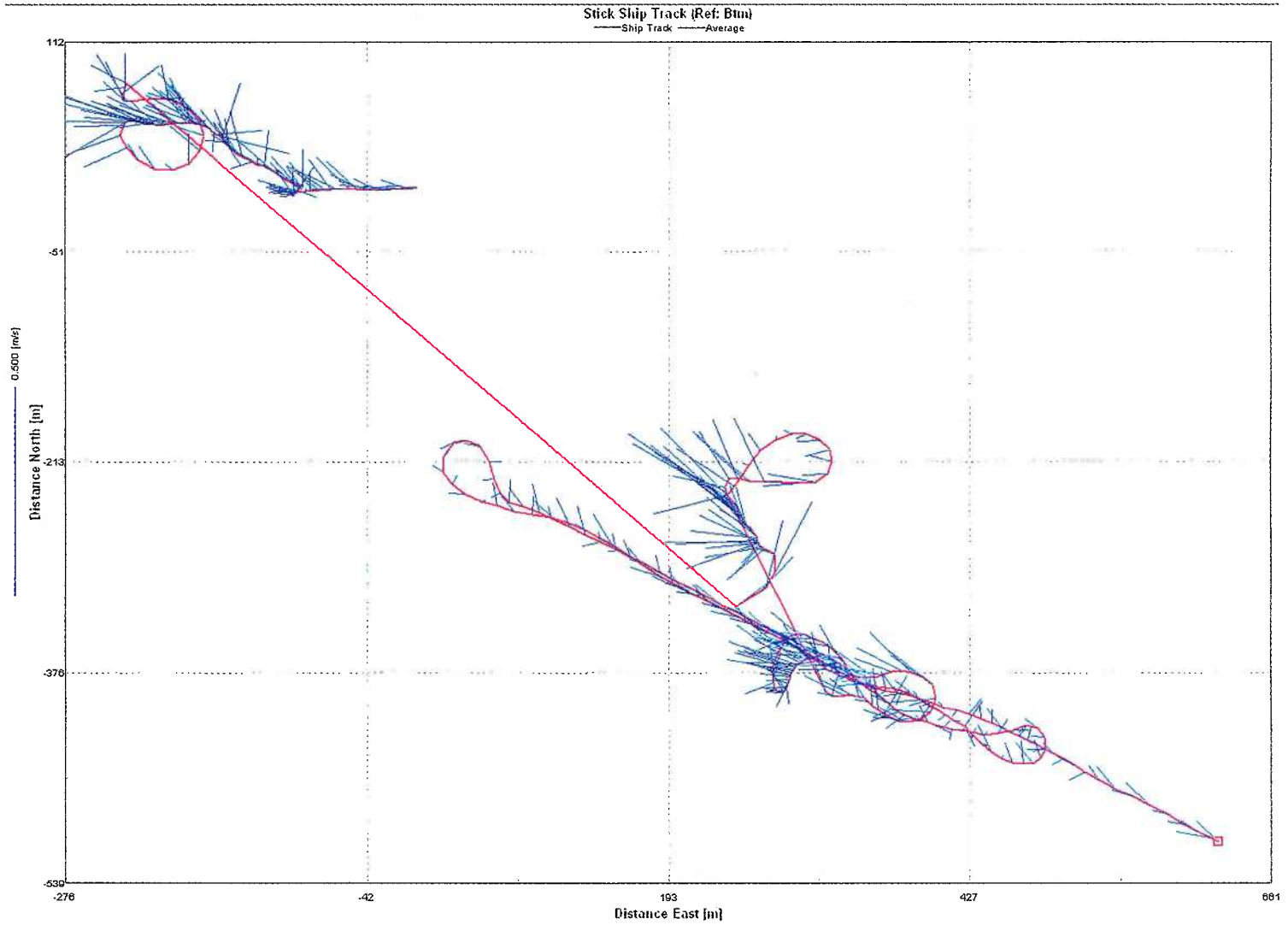
9/13



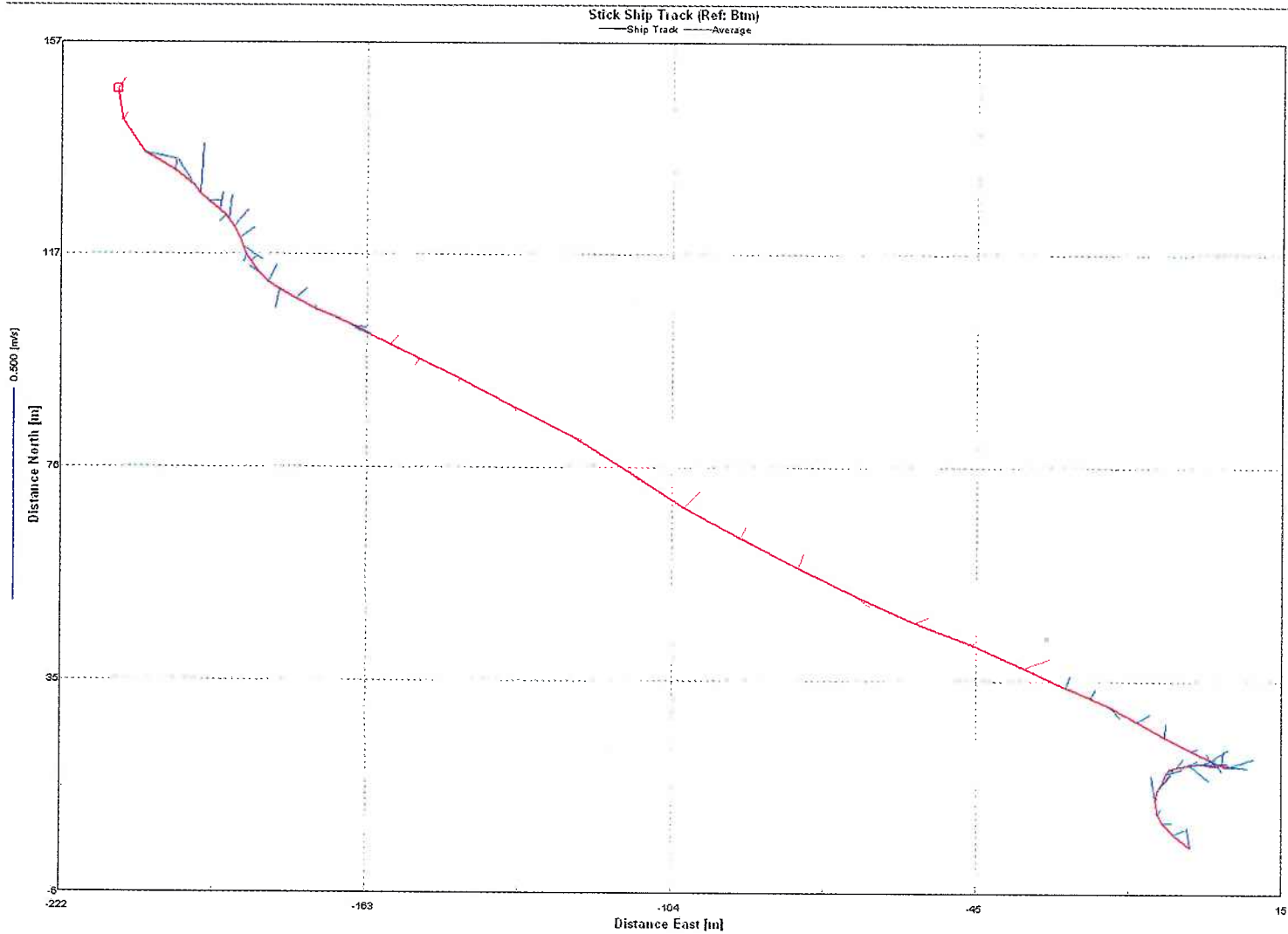
9/14



9/15



9/16



9/20

