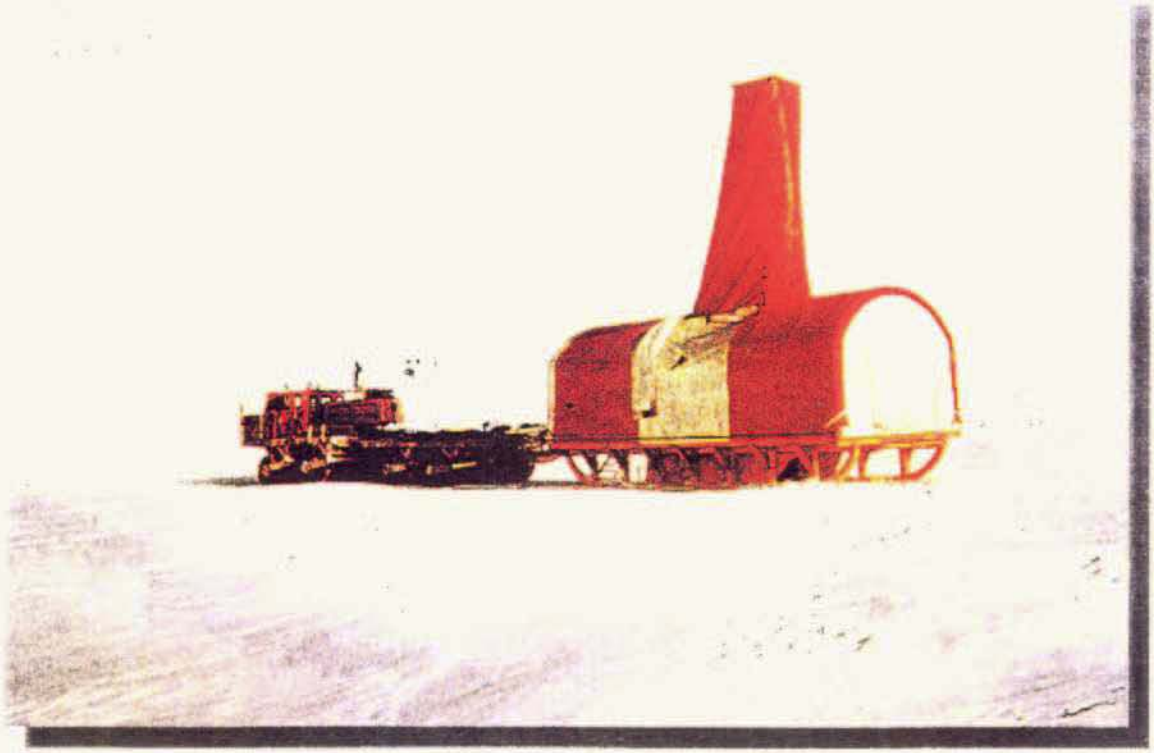


BP Exploration (Alaska) Inc.

Liberty Island Route

Water / Sediment Sampling
March 18-19, 1998

Revised and Corrected
Final Data Report - August 1998

MONTGOMERY WATSON

TABLE OF CONTENTS

Figures

Tables

Appendices

Revisions included in the August, 1998, Final Data Report.

This document was originally published in May of 1998. The document was revised and corrected following comments received by BPXA in a letter from Jeffery Walker of Minerals Management Service to Peter Hanley dated August 3, 1998. Issues raised by MMS include the following, followed with a response from Montgomery Watson.

1. **Discrepancy between field and laboratory turbidity.**

   A comparison of field and laboratory turbidity data to laboratory total suspended solids (TSS) data demonstrates some consistent patterns. Field turbidity data are uniformly higher that laboratory data for each individual water sample. Field turbidity data were reported to 3 significant figures, while BPXA laboratory data were reported to one significant figure, including 3 reported values of "0". We interpret "0" values from the BPXA laboratory to indicate less than a detection limit of 1.0 NTU. It is unreasonable to conclude that there would be "0" NTU's in the samples.

   The holding time limitation for turbidity is 48 hours. Sample results are subject to particle aggregation and settling between the time of sample collection and the time of analysis. The laboratory did not report date and time of analysis; thus, compliance with holding times cannot be verified. The laboratory turbidity values may be biased low due to the interaction between particles over time. Alternatively, field values may reflect the presence of tiny ice crystals that would exist in the field at sub-freezing temperatures, but not be apparent in the laboratory at standard temperatures above freezing. 1997 field notes from the Liberty Island Route water quality analyses note complications with field turbidity measurements due to ice formation.

   TSS analyses were performed on the seventh day of a seven-day holding time. Particles in seawater which make up TSS are subject to degradation by dissolution and/or biochemical reaction over time. TSS results may be biased low due to solute/solvent interaction in the manner suggested above for laboratory turbidity. Most of the TSS results were very close (within 150%) of the reported detection limit. Of the four values in excess of 200% of the stated detection limit, a consistent and reasonable relationship with turbidity can be discerned from both field and laboratory measurements. QC data reported by the laboratory showed good recovery of a spike sample at 60 mg/L TSS, but data is not provided which documents accuracy of reporting within 200% of the detection limit of 10 mg/L.

2. **pH below expected range.**

   pH data from the 1997 Liberty Island water quality sampling effort was in the range of 7.5 to 8.4, using methods and instrumentation identical to the 1998 effort. Other recent North Slope investigations have yielded seawater pH values ranging from as low as 5.8 (Endicott NPDES Environmental Monitoring, April, 1995) to 8.06 (Northstar Development Project 1997 Data Report). The Beckman meter used in each of these efforts is a model programmed for internal temperature compensation. The particular unit used in March of 1998 was factory calibrated and checked in January, and a field calibration was performed at each site. The gel-filled probe on this model is more reliable for cold weather sampling then other probe types. The electronic meter box is often suspect when exposed in cold weather sampling. We ensured that the meter box was kept warm in an insulated container to prevent effects of frost on the meter workings. Calibration or machine error is unlikely.

3. **Apparent density instability.**

Densities were calculated and presented in Table 2 of the May, 1998, data report from temperature and salinity data that were transcribed incorrectly from the field data sheets. This edition features an update to Table 2, with corrected values of field and laboratory data for all samples. The corrected table indicates a density instability in the water column at station 98BPXLI14, with water slightly warmer and fresher (-0.5°C, 27 ppt salinity, 1021.7 kg/m^3) underlying cooler saltier water (-1.0°C, 28 ppt salinity, 1022.5 kg/m^3). The calculated densities yield a false impression of precision in the salinity and temperature measurements. Temperature and salinity field instruments have a resolution of 0.5 degrees and 1 ppt, respectively. A small error in either the salinity or temperature measured in the field could lead to a resultant change in the relative density of the samples. Conductivity measurements for both sample depths are the same, suggesting that there is no significant difference in salinity or density within the water column.

Table 2 has also been expanded to include results of metals analyses of the water samples. Text has been corrected to reflect the appropriate ranges of values of various water quality measurements.

4. **Sample preservation.**

The previous edition stated incorrectly that samples were "cooled to 4° Celsius", which would be a common requirement for sampling in temperate weather. Samples from the March, 1998 sampling of the Beaufort Sea were maintained at temperatures less than +4^0 C prior to laboratory analysis.

Other changes made in the document include:

1. Section 1.1. Deleted reference to pipeline "shown in Figure 1". The pipeline alignment is not shown in that figure, although the proposed alignment is shown in Appendix A in documentation of the sample sites provided by BPXA contract surveyors.

2. Section 2.3. Added references to metals sampling of the water column and clarified procedures for field measurements of water quality.

3. Section 3.1. Corrected sample locations.

4. Section 3.2.1. Revised and added commentary on water quality results.

5. Section 4.1.8. Referenced summary statistics on Table 4.

6. Figures 2-6. Added information to titles and legends to indicate data are for sediment samples, taken from various depths below the sea floor.

7. Figure 9. Revised to more clearly represent findings with respect to water depth.

8. Table 1. Revised and condensed to single page.

9. Table 2. Expanded to 2 pages to present metals results.

1. INTRODUCTION

1.1 BACKGROUND

The Liberty Island Development Project involves offshore exploration and production of oil and gas resources within Foggy Island Bay between Endicott and Liberty #1 Ice Island in the ice-ridden Beaufort Sea. Oil and gas produced by the project are intended to be brought to existing onshore delivery facilities by way of offshore pipeline.

1.1.1 Water Quality Monitoring Objectives

In 1997, geochemical characterization of sediments and water quality took place along several potential offshore pipeline alignments. In 1998, a final proposed alignment was selected, requiring further characterization for project engineering and National Environmental Policy Act (NEPA) documentation. A series of sampling stations was identified by BP Exploration (Alaska) Inc. (BPXA) (Figure 1). A water quality and geochemical sampling plan was prepared by Woodward-Clyde and was amended through discussions with BP Exploration and Montgomery Watson on March 7 and in accordance with input from John Malik of U.S. Environmental Protection Agency (USEPA) and Barbara Reilly of the U.S. Army Corps of Engineers (USACE).

The objective of this field study was to provide baseline water and sediment characterization along the final proposed offshore pipeline alignment. These results augment the 1997 work performed by Montgomery Watson on three alternative alignments for the Liberty Island pipeline route, thus confirming and supplementing existing data and information to the BPXA Liberty project team on the nature and dispersal of sediments which may be disturbed in the trenching operations.

1.1.2 Monitoring Program Organization and Responsibilities

Montgomery Watson performed this work under the direction of Mary Cocklan-Vendl of the Health Safety, and Environment Department of BPXA. The BPXA Prudhoe Bay laboratory performed water analysis for BOD_5 and turbidity. Quanterra's laboratory in West Sacramento, California, performed the soil and water analysis for metal parameters. Multichem Analytical Service, (MAS) in Anchorage, Alaska, completed the remainder of the analyses for the soil parameters. Montgomery Watson's project team was directed by Project Manager, J. Brett Jokela, P.E. in conjunction with field operations supervisor Bonnie McLean. Field work was undertaken by Bonnie McLean, Senior Environmental Scientist and Associate Geologist Sharon Sadlon. Bonnie McLean is experienced in offshore winter field operations on the North Slope, having participated in water quality and sediment monitoring at the Endicott NPDES Monitoring Program, the 1996 Northstar Pilot Offshore Trenching Program, and the Liberty Island Route water/sediment sampling. Lynn DeGeorge, Senior Environmental Scientist, reviewed the chemical data.

BPXA provided transportation to and from Deadhorse, accommodations, and workspace for mobilization and sample shipment preparation at the Endicott Spill Response Warehouse, Building 608.

Duane Miller and Associates provided logistical support for the fieldwork, under a separate project task authorization with BPXA. Duane Miller and Associates provided on-ice transportation through subcontracts to equipment operators. A tundra Rolligon was supplied by CATCO. The Rolligon was used to transport a skid mounted warming safety shack and Discovery Drilling's CME-75 drill rig, stationed in a rig enclosure (see Photo cover and Appendix C). This equipment was mobilized to four pre-located stations and was used to drill through the ice, allowing water quality sampling measurements and soil sample collection.

1.2 DATA REPORT

This report describes sampling sites, analytes, and methodologies; presents analytical findings; and describes quality control established for this field effort.

2. MONITORING PROCEDURES

2.1 LOCATION AND PROBLEM STATEMENT

The final proposed pipeline alignment for the Liberty Island project was identified by BPXA Inc. on a transect extending north-northeast from shore at SE 1/4, Section 24, T.10N, R.17E., Umiat Meridian through Foggy Island Bay and terminating at the proposed island. Sampling locations were established approximately 1/3 and 2/3 the distance from shore to the proposed island (sample I.D. DMA98-14 & DMA98-9, respectively) and at the proposed island pipeline riser location (sample I.D. DMA98-2). A fourth location (sample I.D. DMA98-30) was approximately 600m NW of the proposed island DMA98-1). Sampling was conducted at these four (4) sites in water (ice) depths ranging from approximately 20.7 to 6.8feet. Ice thickness varied from approximately 5.2 to 4.6 feet.

A shallow trench, 8 to 12 feet below the sea floor, has been proposed for Liberty pipeline construction, using a large hydraulic excavator working from a thickened ice pad on top of the sea ice. A major consideration is the potential occurrence of contaminants, including trace metals and hydrocarbons in the sediments. A baseline of sediment chemical quality is necessary to evaluate potential effects of construction activity on the marine environment. Work by Montgomery Watson at the Northstar Development Project (Montgomery Watson, April 1, 1996) demonstrated that sediment dispersal from trenching activities is most likely short in duration and limited to a small area near the trench. However, associated with the disruption of the sediment by trenching is the potential for release of toxic contaminants from the sediments that may affect the viability of epibenthos and/or plankton which live in the shallow waters of the nearshore Beaufort Sea. Background levels of trace metals and volatile and semi-volatile organic compounds were documented by measuring their concentrations at three discrete depths beneath the sediment surface.

2.2 SAMPLE LOCATIONS AND MOBILIZATION

Sample sites were positioned along the final proposed pipeline route at the locations identified on the map attached as Figure 1 at the end of this section. The locations were staked and identified with respect to Alaska State Plane coordinates and latitude/longitude in advance by BPXA contract surveyor support. Each of the sampling locations was located by the field sampling crew by navigating a Rolligon vehicle using the GPS coordinates provided by the BPXA contract surveyor.

One Rolligon was used during the sampling regimen, and two skids were towed separately to each location. One skid held an enclosed CME-75 drill rig, which augered through the sea ice and drove and retrieved the split spoons for soil samples. The second skid held a warming shack in which extra equipment and supplies were stored.

2.3 SAMPLE COLLECTION PROCEDURES

Data collection at each station was performed in the following order:

1. Locate station using GPS positioning
2. Bore through ice, measure and record distances from drill rig floor to ice
3. Measure and record thickness of ice
4. Measure and record distances from top of water in hole to top of ice
5. Measure and record bottom depth (depth to seafloor)
6. Conduct salinity, conductivity/temperature profiles
7. Collect sample for dissolved oxygen (DO), turbidity, metals, and pH at each distinct stratum
8. Collect total suspended solids (TSS), turbidity (laboratory), BOD_5, and TOC samples at each discrete sample point
9. Drive and retrieve 4"x 2' split spoon from surface to 2 feet below surface
10. Collect soil samples from 0.5' to 1' for organic, metal, and grain size analyses
11. Drive and retrieve 4" x 2' split spoon from 2' to 4' below surface
12. Collect soil samples from 2' to 3' for organic, metal, and grain size analyses
13. Drive and retrieve 4"x 5' split spoon from surface to 8 to 10 feet below surface
14. Collect soil samples from 8' to 9' for organic, metal, and grain size analyses
15. Confirm GPS location and close out site

Station positioning (Activities 1 and 15) have been outlined in Section 2.2. Field measurements and conditions are contained in the field note forms supplied in Appendix A and are summarized in Table 2. Techniques for each of the other activities are discussed below:

Activity 2, Activity 3, and Activity 4: Sea Ice Thickness

The CME-75 enclosed drill rig-mounted auger was used to bore through the ice for water column and sediment sampling. Depth of the boring was monitored closely; the auger was withdrawn for depth checking and clearing of ice chips several times as the drilling progressed.

Ice thickness and depth to water surface were measured using a graduated sounding rod equipped with a small hook to catch the ice edge. The top of the "black" sea ice was used as a datum.

Activity 5: Bottom Depth

The bottom depth was measured using a sounding lead and calibrated brass chain. Ice-free water depth was calculated as the difference of depth to bottom and ice-depth. The maximum ice-free water depth was 16.7 feet deep at the sampling location DMA98-2.

Activity 6: Conduct Salinity(Conductivity)/Temperature profiles

Temperature, conductivity and salinity measurements were made at 0.5-foot increments through the water profile.

Activity 7: Measure Dissolved Oxygen Turbidity and pH at each sampling station

Dissolved oxygen (DO), turbidity, and pH were measured in the field, *ex-situ*, from samples taken at each of the sampling points within the water column.. DO measurements were completed with a Hach

2100 colorimeter and a high range (HR) standard. Field measurements for pH were made with a Beckman pH meter. Turbidity was measured by a Hach 2100P nephelometric turbidimeter.

Activity 8: Collect Samples for Turbidity, Total Organic Carbon, Biological Oxygen Demand, Metal, and Total Suspended Solids

Samples of under-ice free water were collected with a stainless steel point source sampler to document the occurrence of turbidity, total organic carbon (TOC), five-day biological oxygen demand (BOD_5), trace metals, and total suspended solids (TSS). Samples were contained in 1-liter, nalgene plastic bottles. Color and appearance were documented in the field note form for the site. Samples for turbidity and BOD_5 were submitted to the BPXA BOC laboratory for analysis. TSS and TOC samples were shipped off-site to be measured by MAS Laboratories in Anchorage. Metals samples were sent unfiltered to Quanterra Laboratories in Sacramento California for analysis of total arsenic, total barium, total chromium, total lead, and total mercury.

Activities 9 through 14: Sediment sampling

Soil samples were collected at three intervals in the following depth ranges below the soil/water interface: (1) one-half to one foot, (2) two to three feet, and (3) eight to nine feet.

In each instance, a split spoon was driven by a 340 lb. mechanical hammer with a 30-inch drop into the sediment. Each core was removed, drained, and troweled into sample jars, beginning with samples for volatile organics, and progressing to semivolatiles, total organic carbon, metals, and finally, grain size analysis.

Duplicate core samples were collected for all analyses at two stations (DMA98-2 and DMA98-30) selected at random in the field.

Activity 15: Site close-out

At the completion of each site sampling effort, the field team leader initialed the form to confirm that all field note form information had been entered. The final GPS location was recorded on the field note form prior to leaving the site.

3. MONITORING RESULTS

3.1 SAMPLING CHRONOLOGY

Sampling was performed over two days (two 12 hours shifts), from Wednesday, March 18, 1998 through Thursday, March 19, 1998. The following table relates the sampling order for this project:

Date	Site	Geodetic Location		Sampled by
03/18/98	DMA98-14	Lat: 70° 13' 43" N	Long: 147° 38' 45" W	BGM
03/18/98	DMA98-9	Lat: 70° 15' 11" N	Long: 147° 36' 7" W	BGM
03/18/98	DMA98-2	Lat: 70° 16' 38" N	Long: 147° 33' 31" W	SS
03/19/98	DMA98-30	Lat: 70° 16' 54" N	Long: 147° 34' 10" W	SS

BGM = Bonnie McLean, MW
SS = Sharon Sadlon, MW

3.1.1 Laboratory Analyses

BPXA BOC laboratory conducted analyses for turbidity and BOD_5. Other samples were analyzed by MAS Laboratory in Anchorage, Alaska and Quanterra Laboratory in West Sacramento, California. Appropriate methodologies are available in the following references:

- Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846, November 1990)
- Methods for Chemical Analysis of Water and Wastes (EPA 600/4-79-020, March 1982)

The following table summarizes project sampling requirements:

Measurement	Matrix	Method	Sample Container	Preservation Method	Holding Time
Salinity (Conductivity)	water	field measurement	field aliquot	n/a	n/a
Dissolved Oxygen	water	field measurement	field aliquot	*n/a*	*n/a*
Turbidity	water	field measurement EPA 180.1	field aliquot/ 500 ml. HDPE	n/a n/a	immediate 48 hours
Temperature	water	field measurement	in situ	n/a	immediate
pH	water	field measurement	field aliquot	n/a	immediate
BOD_5	water	EPA 405.1	1 liter HDPE	n/a	12 hours
Total Suspended Solids	water	SWA 160.2	500 ml HDPE	Held at 2°- 4°C	28 days
Total Organic Carbon	soil	SWA 415.1	4oz Clear Wide Mouth	Held at 2°- 4°C	28 days
Arsenic (As)	soil, water	SWA 6020	4oz Clear Wide Mouth	Held at 2°- 4°C	6 months
Barium (Ba),Total ionic	soil, water	SWA 6020	"	Held at 2°- 4°C	6 months
Chromium (Cr), Total	soil, water	SWA 6020	"	Held at 2°- 4°C	6 months
Lead (Pb)	soil, water	SWA 6020	"	Held at 2°- 4°C	6 months
Mercury (Hg)	soil, water	SWA 7471 - CV	"	Held at 2°- 4°C	28 days
Volatile Organic Compounds	soil	8260a	2oz Clear Wide Mouth	Held at 2°- 4°C	14 days
Semi-volatile Organic Compounds	soil	8270	4oz Clear Wide Mouth	Held at 2°- 4°C	14 days
Grain Size	soil	ASTM D-422	1L polyethylene bag	n/a	indefinite
Particle Size	soil	ASTM D2487	1 gal. bag	n/a	indefinite

3.2 ANALYTICAL RESULTS

Tables and figures documenting results are provided at the end of this section. Table 1 is a sample plan checklist identifying what analyses were run on each sample. Table 2 is a summary of water quality parameters, including field measurements. Table 3 lists results of grain size analysis. Table 4 is a summary of the analytical results for soils and water. All laboratory and field data are included in Appendices.

3.2.1 Sea Water

Field measurements showed temperatures of -1 to -2 degrees Celsius, with salinities in the range from 27 to 33 parts per thousand. pH ranged from 6.3 to 7.6, while dissolved oxygen ranged from 7.4 to 11.0 ppm.

Turbidity field measurements ranged from a low of 6.12 NTU to a high of 17.6 NTU. Turbidity laboratory measurements ranged from a low of 0 NTU to a high of 11 NTU. Field turbidity may have

been affected by ice crystals.

All BOD_5 results were less than 1 mg/l (the laboratory reporting limit). Total suspended solids ranged from a low of less than 10 mg/l to a high of 74 mg/l, as illustrated in Figure 9. Trace metals results show some detected levels of arsenic in the water column near the reporting limit. Barium was found in each water sample, ranging from 0.0175 mg/L to 0.0551 mg/L. No chromium, lead, or mercury was reported in any of the water samples.

3.2.2 Sediment Chemistry

Results of metals analyses are shown in Figures 2 through 6 at the end of this section. Less than detection limit results are assigned a value of "0" for statistical purposes in Table 4. Arsenic averaged 5.5 mg/kg throughout the pipeline alignment. The coefficient of variation (the standard deviation of the samples divided by the mean) for all of the sites was 39%.

Barium averaged 44.8 mg/kg across the pipeline alignment with a coefficient of variation of 33%.

Chromium averaged 12.2 mg/kg across the pipeline alignment with a coefficient of variation of 41%.

Mercury averaged 0.035 mg/kg across the pipeline alignment with a coefficient of variation of 78%.

Lead averaged 5.36 mg/kg across the pipeline alignment with a coefficient of variation of 52 %.

Sediment grain size data are illustrated in Figures 7 and 8. All samples were shown to be predominantly silt with a trace to some sand, with the exception of the deep sample at Station 14, which was predominantly sand.

There were no detections of volatile organic compounds (VOC).

Six components of the Semi-volatile Organic Compounds (SVOC) exceeded the minimum report detection limit (see Table 4). These compounds are: bis-(2-ethylhexyl)phthalate, Benzo(a)pyrene, and 2-Methylnapthalene, 4-Methyphenol (p-Cresol), Phenanthrene, and Phenol.

3.3 SEDIMENT QUALITY STANDARDS

Sediment quality standards are driven by the impacts of pollutants on benthic biota. State sediment quality standards have not been established by the state of Alaska, thus other benchmark criteria were sought for comparative analysis. As the work performed at Liberty Island is a baseline study of the water and sediment quality, all criteria are used for comparison only. Exceedances do not necessarily indicate concern.

Liberty Island Route sediment data were compared to the following benchmarks: EPA Ecotox Thresholds; Puget Sound Dredged Disposal Analysis; and EPA Region III's Risk-Based Concentrations.

EPA Ecotox Thresholds (ET): The EPA has developed a group of ecotoxicologically-based threshold criteria (ET) for use in ecological risk assessments at Superfund sites. The ETs are intended to provide technical information to EPA and other government employees but do not constitute rulemaking by the EPA. Benchmarks have been developed for surface water and sediments, with sediment benchmarks presented as sediment quality criteria (SQC) for fresh water and marine environments, sediment quality benchmarks (SQB), and effects range low (ERL). If neither SQC nor SQB has been calculated, the ERL will be used as the sediment ET. For the analytes detected at Liberty Island only ERLs have been

calculated. The ERL represents the lower 10th-percentile concentration associated with observation of biological effects. Accordingly, concentrations below the ERL would rarely be associated with adverse effects. Table 4 provides a summary of the analytical results and benchmark screening levels.

Puget Sound Dredged Disposal Analysis (PSDDA): PSDDA analytic methods and criteria have been established for the Puget Sound area in Washington state. PSDDA chemical analyses were developed by the collaborative efforts of EPA Region X (Seattle), the USACE and the Washington State Departments of Natural Resources and Ecology. The Washington Department of Ecology is responsible for issuing state certification for USACE Section 404 permits. Data and criteria are reviewed annually; however, no changes in numeric standards have been made since 1988.

Three levels of contaminant concentrations have been established by PSDDA: a screening level, a bioaccumulation level, and a maximum level. Standards for each level are derived from a statistical model, in which apparent effects thresholds are defined. The model is applied to a rigorously quality-controlled database of sediment chemistry and bio-effect data. The maximum level is the level of highest apparent effects. The screening level is established at either the lowest biological effects level or at 10% of the maximum effect level. Arsenic, lead, mercury, and 42 volatile and semi-volatile organic compounds are included in the list of PSDDA parameters. There are no PSSDA criteria for the barium or chromium species.

Liberty Island sediment results are uniformly below the PSDDA screening level criteria for all components shown in Table 4 except 4-Methylphenol (p-Cresol).

Risk-Based Concentrations (RBCs): EPA Region III has calculated separate carcinogenic and non-carcinogenic RBCs for various pathways of ingestion or inhalation. The lower of the two is presented in the RBC tables published by EPA Region III which are updated and distributed semi-annually. The various pathways include residential water, ambient air, edible fish, industrial soil ingestion, and residential soil ingestion (which are generally lower (more stringent) than industrial soil ingestion). There are no RBCs for diesel range organics.

Liberty Island sediment results are uniformly below the RBCs for all the metals sampled as shown in Table 4. Results of analyses for discrete volatile and semi-volatile compounds were all below detection levels, with the exception of Benzo(a)pyrene.

4. DOCUMENTATION AND REPORTING

4.1 FIELD DOCUMENTATION

The field team leader was responsible for maintaining records of field activities, including field analytical measurements, sample locations, and sample identification. Data was entered into a bound notebook while field activities were in progress. All field documents were supplied to the project manager at the end of the field investigation. Field results were incorporated into progress reports or final reports, as appropriate. A sample plan checklist was used to identify sample numbers, sample locations, sample matrices, analytical parameters, sample containers, and quality control samples. This checklist was prepared by the project manager prior to mobilization and provided the field team with a concise list of samples by location. The field team leader reviewed the checklist for completion following sample collection and prior to the shipment of samples or departing from the site.

4.1.1 Field Logbook

Logbooks and data forms are necessary to provide sufficient data and observations to enable participants to reconstruct events that occurred during the project and to refresh the memory of field personnel if called upon to give testimony during legal proceedings. All daily logs were kept in bound, waterproof notebooks containing numbered pages. All entries were dated and signed. No pages were removed for any reason. Unused pages were crossed through, signed, and dated by the field team leader or project manager. Corrections were made by drawing a single line through the original entry (so the original entry can still be read) and writing the corrected entry beside the original. Corrections were initialed and dated.

4.1.2 Field Note Forms

Field note forms were used to record all data pertaining to a particular sampling event at a single sampling station. Field note forms are designed to assist the field crews in completing the work at each station. Field note forms were reviewed for completeness and accuracy and initialed in the field by the field sampling task leader. Copies of the original field note forms are provided in Appendix A.

4.1.3 Chain-of-Custody Forms

The purpose of chain-of-custody procedures is to ensure that the integrity of samples is maintained during their collection, transportation, storage, and analysis. All chain-of-custody requirements comply with standard operating procedures indicated in EPA sample handling protocol. Chain-of-custody records are provided in Appendix B.

4.1.4 Photographs

Photographs were taken at the sampling locations as directed by the team leader. Selected photographs are provided in Appendix C. Documentation of a photograph is crucial to its validity as a representation of an existing situation.

4.1.5 Sample Documentation

The field crew recorded the location of all samples on scaled site maps.

Each sample was labeled and sealed immediately after collection. The sample label was filled out using waterproof ink and firmly affixed to the sample containers with clear waterproof tape. An alphanumeric code was assigned to each sample as an identification number to track samples at the site. The sample code is broken down as follows:

Year	Project	Sample Location	Sample matrix	Sample
98	BPXLI	2, 9, 14, 30	SD=Sediment	01=primary
			WA=Water	61=duplicate

The sample label contains the following identification:

Date and time of collection;
Sample identification number;
Analysis required (including analytical method number);
Preservation method used; and
Initials of field team member compiling samples.

Sample volume levels were marked on each liquid sample container. After the sample was collected,

pertinent information, such as sample identification number, date and time of sample collection, sample collection method, description of sample, and any field measurements (temperature, salinity, turbidity, etc.), were recorded on the field note form, and the recorder initialed the entry.

4.1.6 Laboratory Data Log

All data generated was reviewed by comparing and interpreting results from chromatograms (responses, stability, retention times), accuracy (mean percent recovery of spiked samples), and precision (reproducibility of results). Laboratory Data Sheets are presented in Appendix D.

4.1.7 Data Reporting and Data Deliverables

All laboratory-generated data was supplied in both hard copy and electronic formats in compliance with EPA Tier 1 guidelines.

4.1.8 Summary Statistics

Station values for water quality parameters have been summarized in tabular and graphic form. Statistics are calculated and presented in Table 4.

5. QUALITY ASSURANCE AND QUALITY CONTROL

5.1 QUALITY ASSURANCE OBJECTIVES

Characteristics used to assess generated data were precision, accuracy, representativeness, completeness, and comparability, often referred to as PARCC parameters. PARCC parameters were integrated throughout the work plan and applied throughout the data collection process.

Project goals expressed specific PARCC parameters necessary to meet regulatory requirements, such as maximum level. Performance goals were specifically related to indicator quality control (QC) samples as quantitative measures of PARCC parameters. For example, analysis of one duplicate in ten samples is a performance goal and the results of duplicate analyses are an indicator of precision. The completeness goal for all analytes is 87.5%, or 7 of 8 results.

Accuracy and Precision Criteria

	Laboratory Precision (Duplicate Relative Percent Difference)		Laboratory Accuracy (Laboratory Control Sample % Recovery)	
Total Suspended Solids	20		80-120	
Total Organic Carbon	20		80-120	
Grain Size	n/a		n/a	
Arsenic (As)	20		80-120	
Barium (Ba),Total ionic	20		80-120	
Chromium (Cr), Total	20		80-120	
Lead (Pb)	20		80-120	
Mercury (Hg)	20		80-120	
Volatile Organic Compounds	1,1-Dichloroethene	22	1,1-Dichloroethene	54-138
	Benzene	21	Benzene	70-130
	Trichloroethene (TCE)	24	Trichloroethene (TCE)	57-132
	Toluene	21	Toluene	71-129
	Chlorobenzene	21	Chlorobenzene	72-128
Semi-volatile Organic Compounds	Phenol	35	Phenol	28-110
	2-Chlorophenol	50	2-Chlorophenol	22-110
	1,4-Dichlorobenzene	27	1,4-Dichlorobenzene	21-110
	N-Nitroso-di-n-propylamine	38	N-Nitroso-di-n-propylamine	24-110
	1,2,4-Trichlorobenzene	23	1,2,4-Trichlorobenzene	32-110
	4-Chloro-3-methylphenol	33	4-Chloro-3-methylphenol	35-112
	Acenaphthene	19	4-Nitrophenol	29-127
	4-Nitrophenol	50	2,4-Dinitrotoluene	51-112
	2,4-Dinitrotoluene	47	Pentachlorophenol	41-133
	Pentachlorophenol	47	Pyrene	45-135
	Pyrene	36		

Note:

Only system monitoring compounds are listed for Volatile and Semi-volatile Organic Compounds.

n/a - Criteria do not apply due to the nature of the analysis

* - Because this parameter has no standard analysis method, Limits are advisory only.

5.2 CALIBRATION PROCEDURES

All instruments and equipment used during the sampling and analysis were operated, calibrated, and maintained according to the manufacturer's guidelines and recommendations as well as criteria set for the instrument in the applicable methodology references. Operation, calibration, and maintenance were performed by personnel properly trained in these procedures.

5.2.1 Field Equipment

Each field instrument was calibrated prior to use at each sample location and, in some instances where appropriate, before each use. These instruments include a portable digital temperature/salinity/ conductivity meter, pH meter, dissolved oxygen meter, and a turbidity meter. Calibration assured accurate readings for each day of use and was noted in the Field Notebook of the calibrator.

5.2.2 Laboratory Instrumentation

Laboratory capabilities were initially demonstrated for instrument and reagent/standards performed as well as accuracy and precision of analytical methodology. Brief descriptions of calibration procedures for major instrument types are presented in the previously referenced methodologies.

5.3 DATA VALIDATION SUMMARY

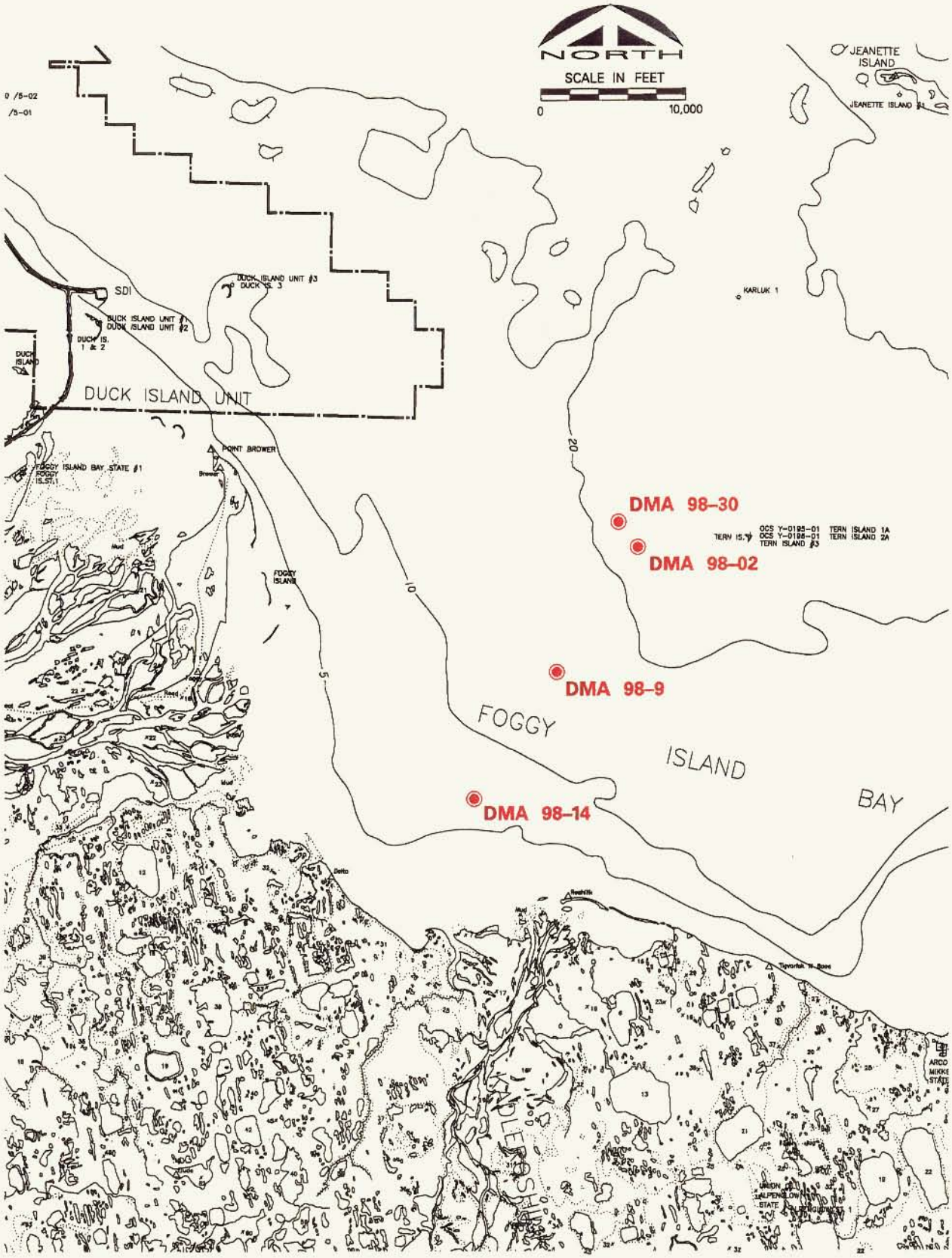
DATA VALIDATION SUMMARY

Thirteen water and fourteen sediment samples were collected March 18 and 19, 1998 and submitted to three laboratories for the suite of analyses summarized in the following table.

Laboratory	Analysis	Method
Prudhoe Bay Laboratory	BOD-5	
	Turbidity	
Quanterra Environmental Services	Mercury	EPA Method 7471
	Arsenic	EPA Method 6020
	Barium	EPA Method 6020
	Chromium	EPA Method 6020
	Lead	EPA Method 6020
MultiChem Analytical Services	Volatile Organic Compounds	EPA Method 8260A
	Semi-Volatile Organic Compounds	EPA Method 8270
	Total Organic Carbon	EPA Method 415.1
	Grain Size	
	Particle Size	
	Total Suspended Solids	EPA Method 160.2
	Hexachlorobenzene*	EPA Method 8081
	Hexachlorobutadiene*	EPA Method 8081

* - Hexachlorobenzene and Hexachlorobutadiene were analyzed using EPA Method 8081 to achieve lowest possible reporting levels. However, some samples with high moisture content yielded reporting levels above PSSDA action criteria.

Data were validated in accordance with accuracy and precision objectives established by the subcontracted laboratories: MultiChem Analytical Services (MAS) of Anchorage, Alaska, and Quanterra Environmental Services (Quanterra) of West Sacramento, California. In addition, data were evaluated for conformance with the Quality Assurance Objectives specified in Section 4 of the 1997 Technical Plan (MW, 1997). Acceptance criteria for accuracy, precision, and method reporting limits (MRLs) are provided in the laboratory reports. Where applicable, data validation guidance contained in the National Functional Guidelines for Organic and Inorganic Data Review (EPA, 1994) were followed. All data were considered valid as qualified using data quality objectives defined for the project.



MONTGOMERY WATSON

Anchorage, Alaska

FIGURE 1

BP EXPLORATION (ALASKA) INC.
LIBERTY ISLAND ROUTE WATER /SEDIMENT SAMPLING

1998 BOREHOLE SAMPLING LOCATIONS

JOB No. 1185 0101 TIME: 04-SEP-1998 08:38 FILE: S:\CAD\Proj\bpx\liberty\FIG1.DGN

Figure 2
Arsenic Concentrations in Sediment
by Sample Location

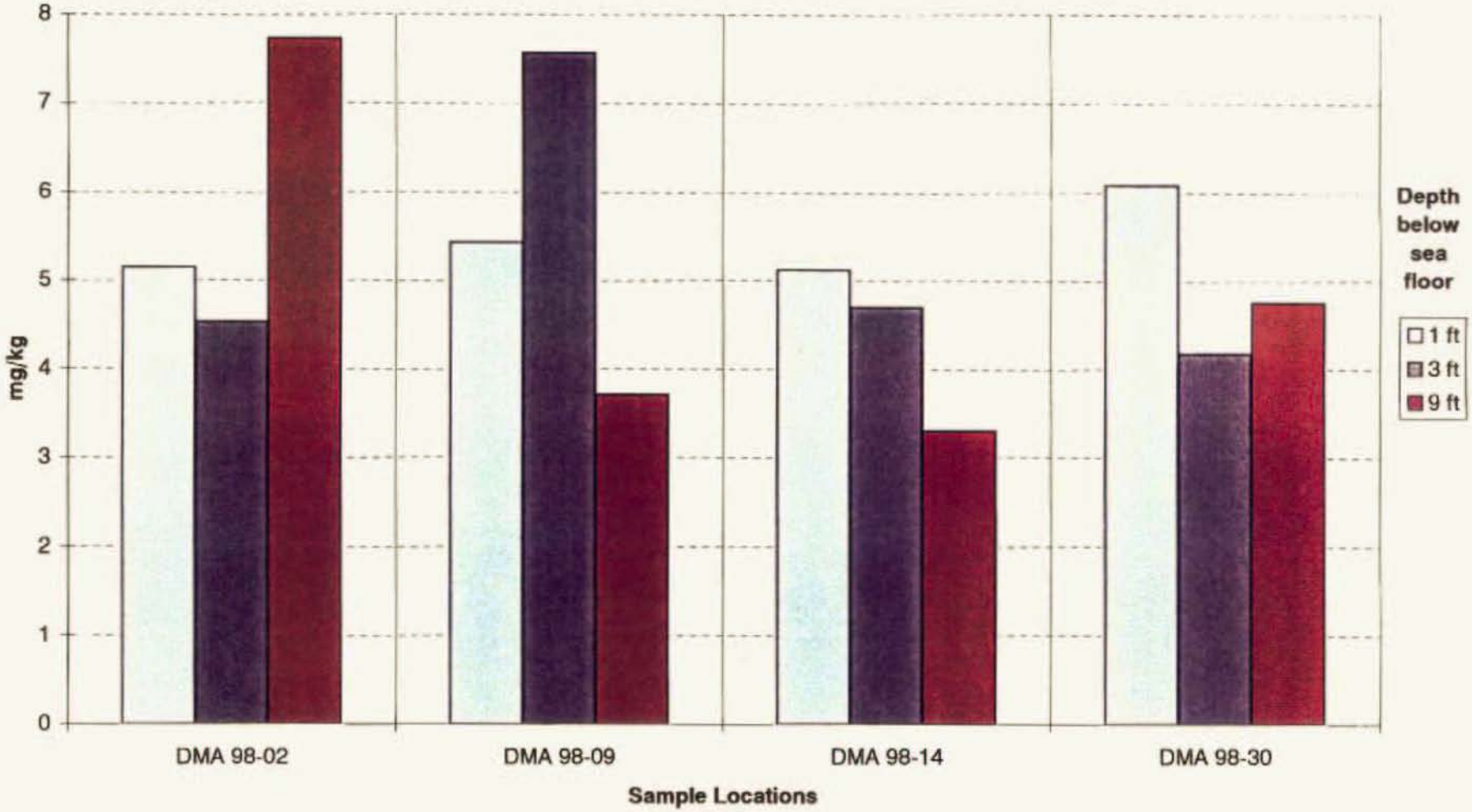


Figure 3
Barium Concentrations in Sediment
by Sample Location

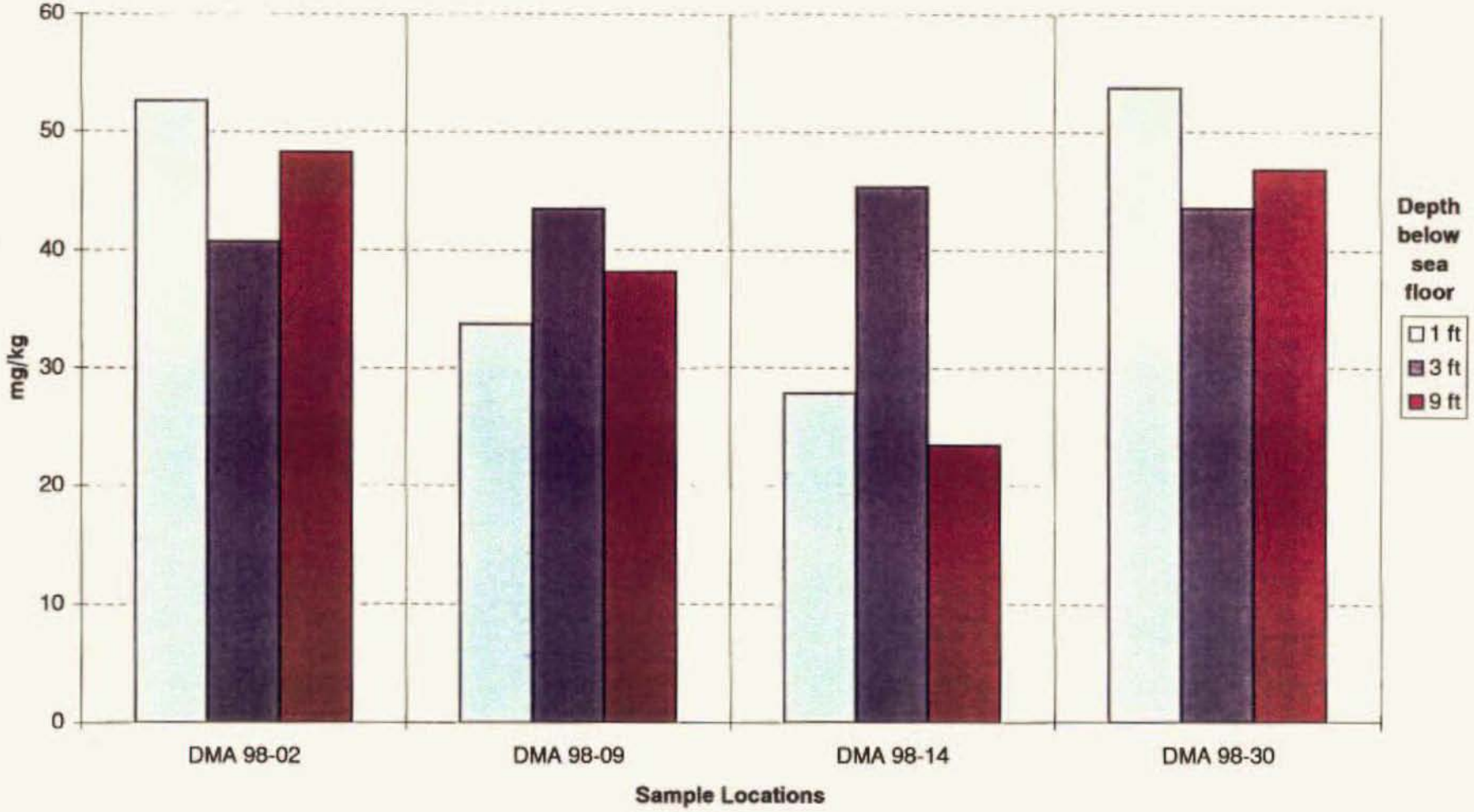


Figure 4
Chromium Concentrations in Sediment
by Sample Location

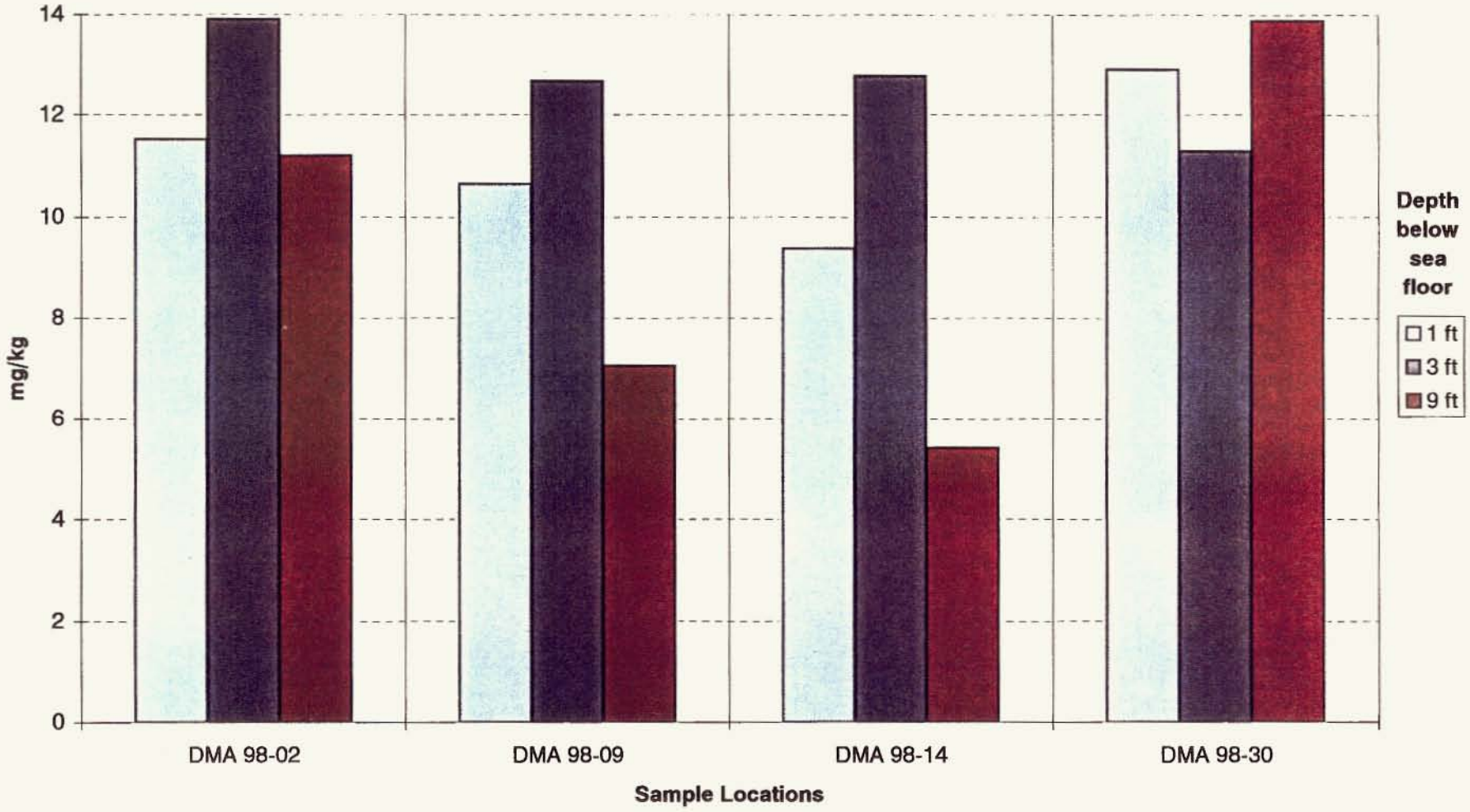


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Figure 4
Chromium Concentrations in Sediment
by Sample Location

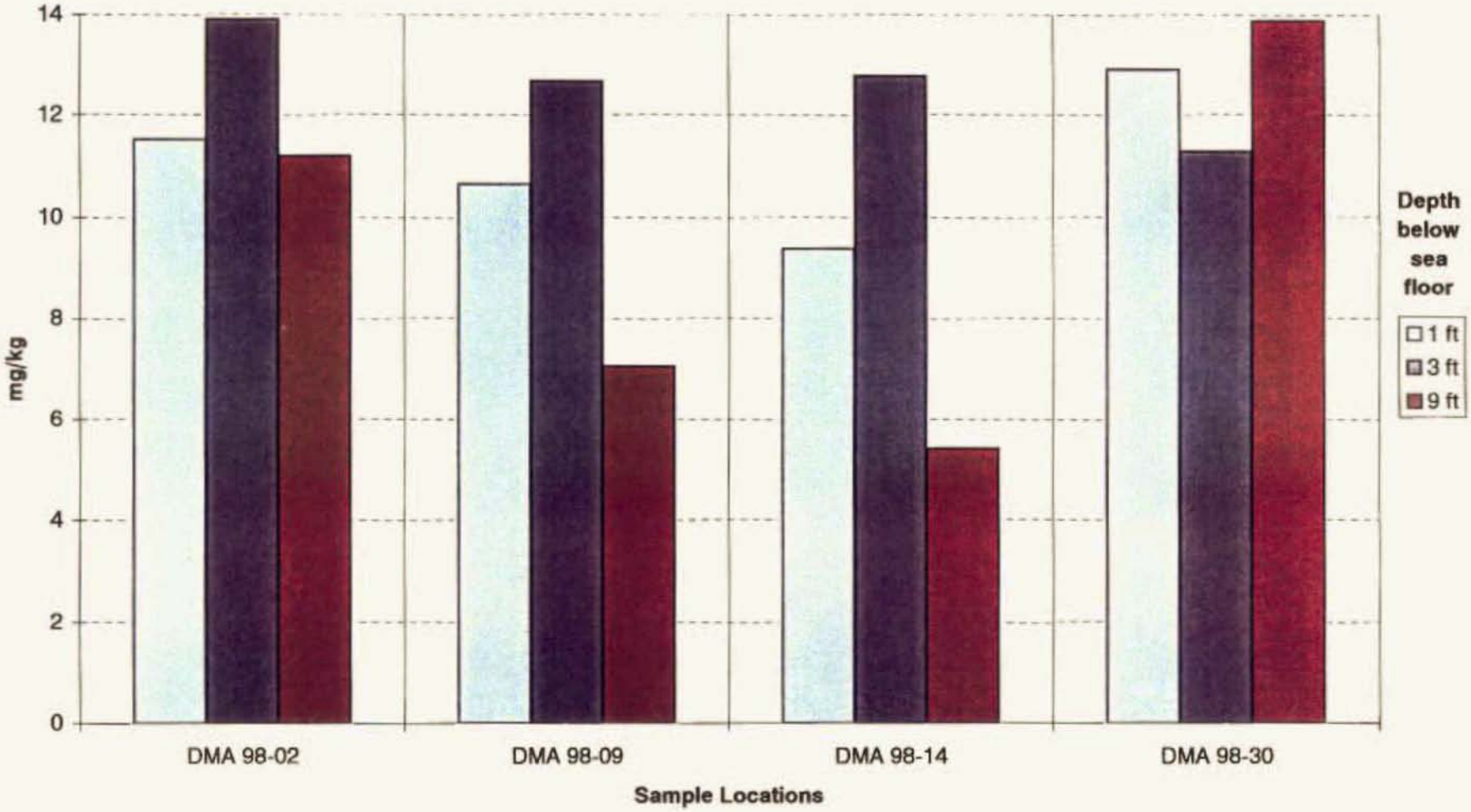


Figure 6
Mercury Concentrations in Sediment
by Sample Location

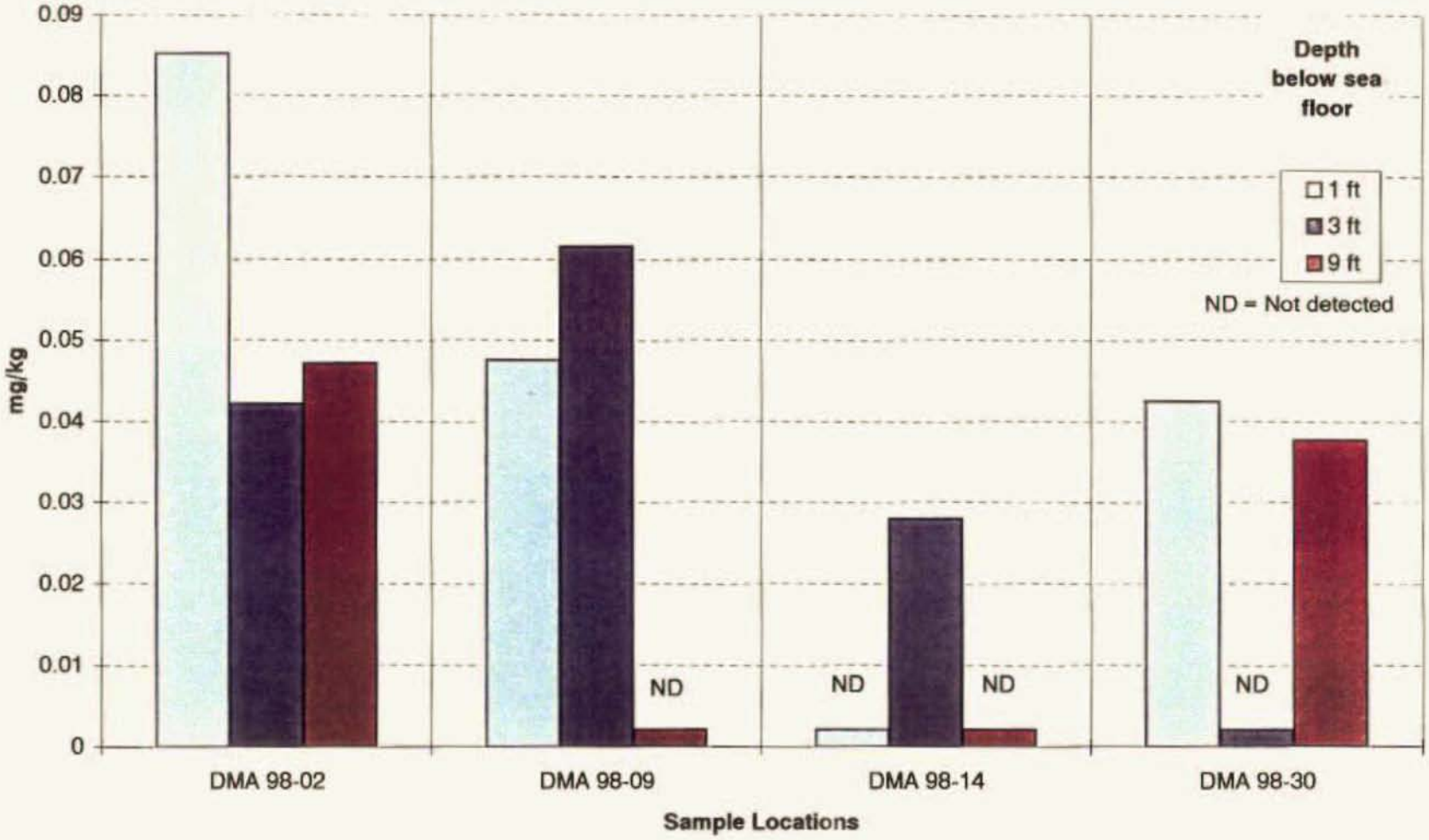


Figure 7
Grain Size Distribution

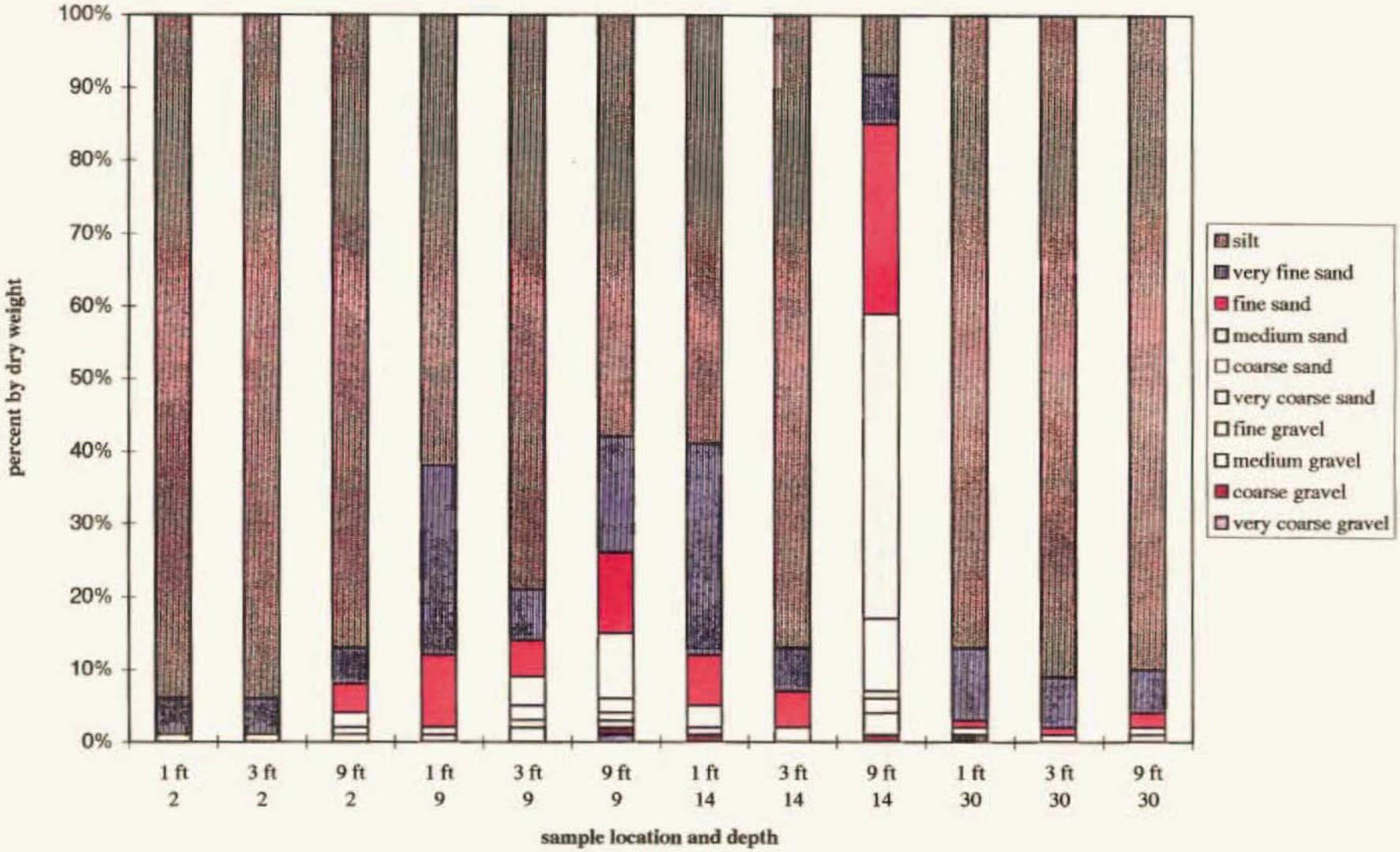


Figure 8
Grain Size Distribution by Sample Location
Sorted by Depth

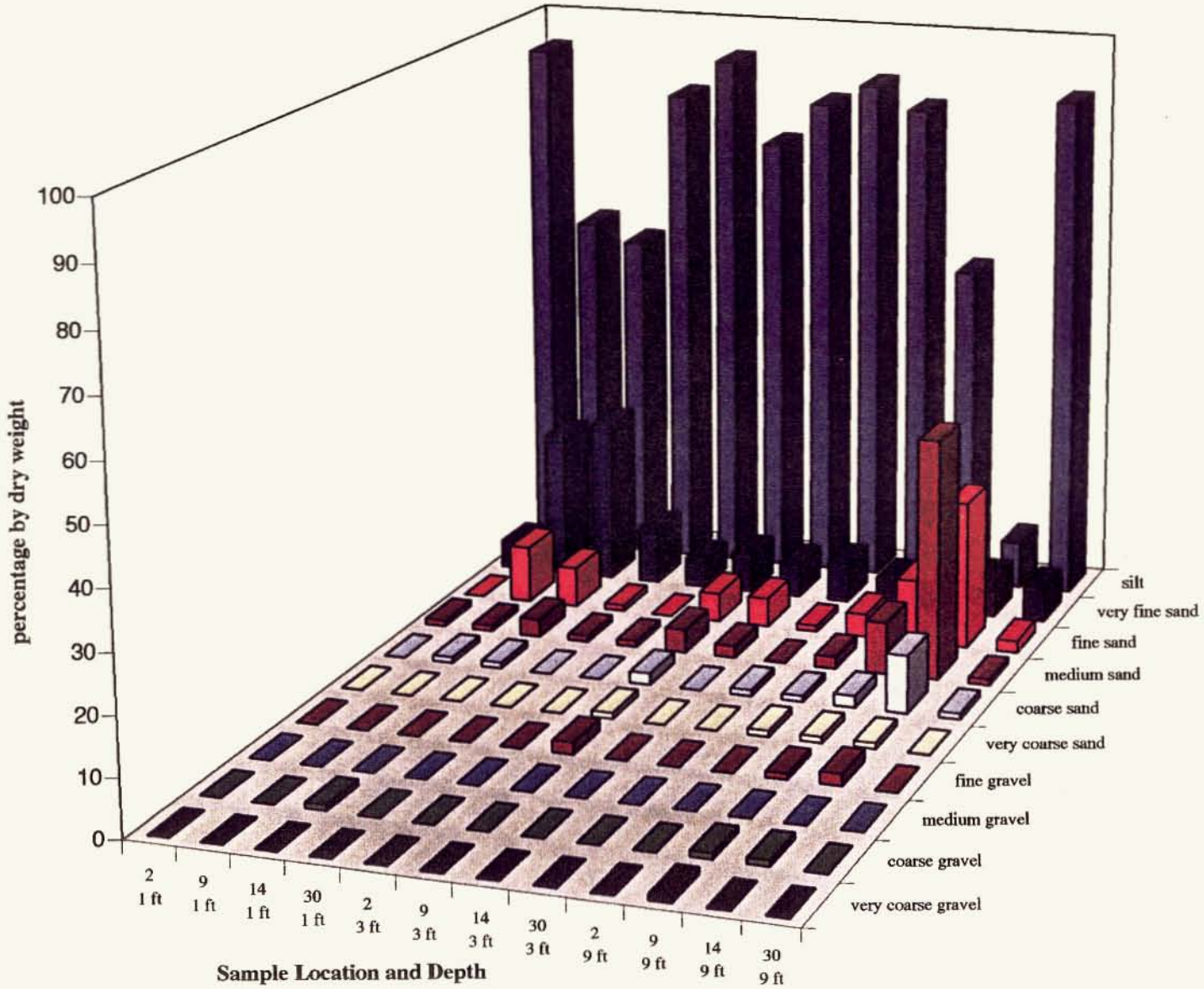
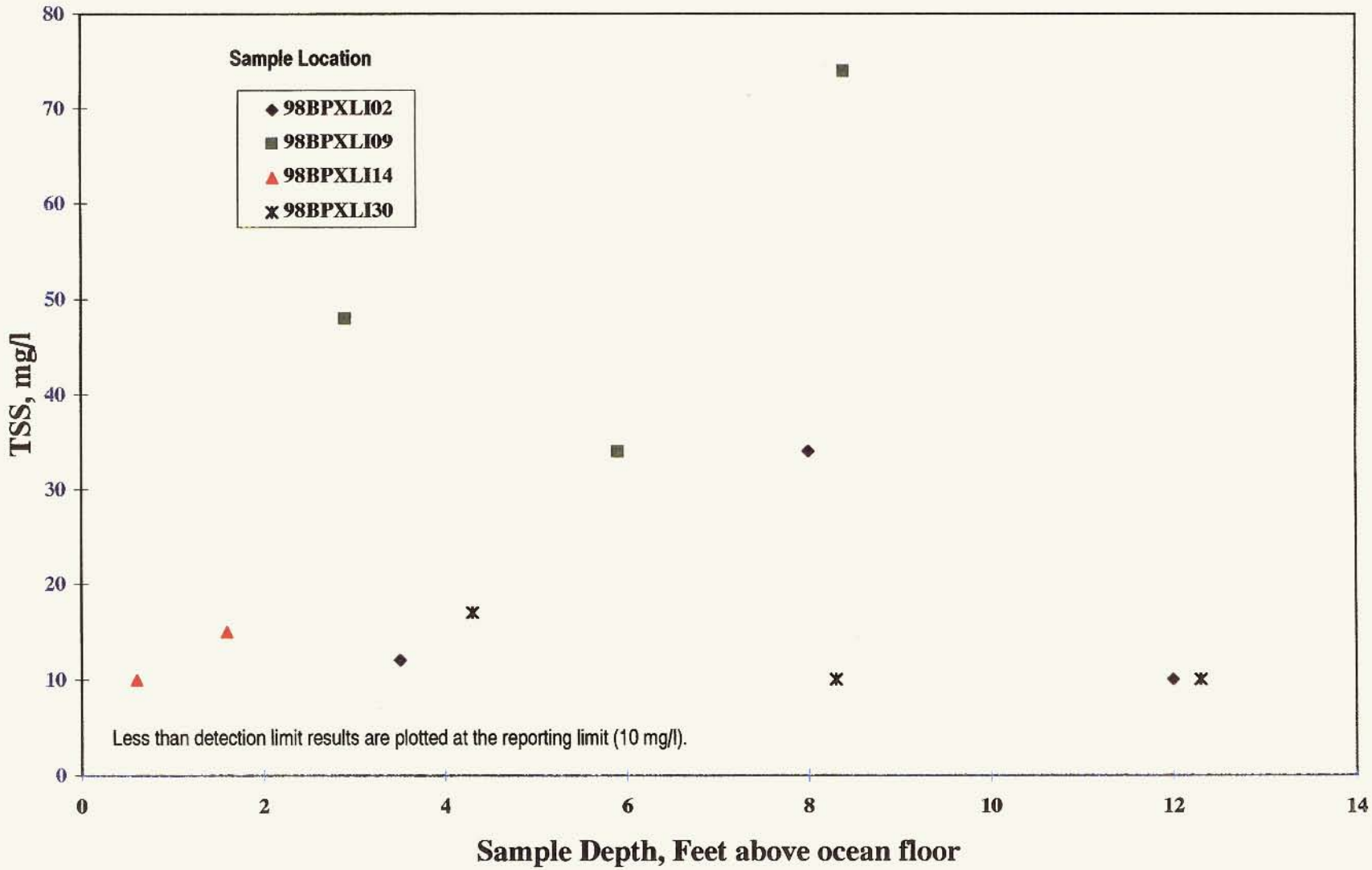


Figure 9
Total Suspended Solids by Water Depth



9/3/98

T LE 1

Sample Plan Checklist
Liberty Island Pipeline Routes
Water and Sediment Sampling

						MATRIX		FIELD PARAMETER						ANALYTICAL PARAMETERS								
Sample Identification	Borehole Number	Latitude	Longitude	Date	Time	Soil/Sediment	Sea Water	Temperature	Conductivity	Salinity	pH	Turbidity	Dissolved Oxygen	Total Suspended Solids (EPA 160.2)	BOD5/Turbidity	VOC (EPA 8260)	SVOC (EPA 8270)	TOC(415.1)	Mercury (EPA 7471)	Metals (EPA 6020)	Particle Size (ASTM D2487)	Grain Size (ASTM D442)	Field Duplicate
[redacted]																							
98BPXLI02SD1 (01)	DMA 98-2	70 16 38	147 33 31	3/18/98	2210	X										X	X	X	X	X	X	
98BPXLI02SD2 (03)	DMA 98-2	70 16 38	147 33 31	3/18/98	2230	X										X	X	X	X	X	X	
98BPXLI02SD62 (03)	DMA 98-2	70 16 38	147 33 31	3/18/98	2220	X										X	X	X	X	X	X	X
98BPXLI02SD3 (09)	DMA 98-2	70 16 38	147 33 31	3/18/98	2330	X										X	X	X	X	X	X	
[redacted]																						
98BPXLI09SD1 (01)	DMA 98-9	70 15 11	147 36 07	3/18/98	1610	X										X	X	X	X	X	X	
98BPXLI09SD2 (03)	DMA 98-9	70 15 11	147 36 07	3/18/98	1620	X										X	X	X	X	X	X	
98BPXLI09SD3 (09)	DMA 98-9	70 15 11	147 36 07	3/18/98	1630	X										X	X	X	X	X	X	
[redacted]																						
98BPXLI14SD01 (01)	DMA 98-14	70 13 43	147 38 45	3/18/98	1330	X										X	X	X	X	X	X	
98BPXLI14SD02 (03)	DMA 98-14	70 13 43	147 38 45	3/18/98	1345	X													X			
98BPXLI14SD03 (09)	DMA 98-14	70 13 43	147 38 45	3/18/98	1400	X										X	X	X	X	X	X	
[redacted]																						
98BPXLI30SD01 (01)	DMA 98-30	70 16 54	147 34 10	3/18/98	0250	X										X	X	X	X	X	X	
98BPXLI30SD02 (03)	DMA 98-30	70 16 54	147 34 10	3/18/98	0300	X										X	X	X	X	X	X	
98BPXLI30SD62 (03)	DMA 98-30	70 16 54	147 34 10	3/18/98	0310	X										X	X	X	X	X	X	X
98BPXLI30SD03 (09)	DMA 98-30	70 16 54	147 34 10	3/18/98	0330	X										X	X	X	X	X	X	

revised 9/4/98

Table 2
Water Quality Parameters
Liberty Island Pipeline Route
Water and Sediment Sampling

Station	Sample	Borehole Number	Date	Time	Depth to Water Surface (BTI) (ft)	Depth to Bottom (BTI) (ft)	Total Water Depth (ft)	Ice Thickness (ft)	Ice Free Water Depth (ft)	Sample Depth (BTI) (ft)	Temp (°C)	Salinity[2] (ppt)	Calculated[1] Seawater Density (kg/m^3)	Conductivity (umho's)	pH	Dissolved Oxygen (mg/l)	Field Turbidity (NTU)
[redacted]																	
98BPXLI09	WA01	DMA 98-09	3/18/98	1610	1.0	17	16	5.2	11.8	8.6	-2	32	1025.7	25050	7.4	7.7	13.3
98BPXLI09	WA02	DMA 98-09	3/18/98	1540	1.0	17	16	5.2	11.8	11.1	-2	32	1025.7	25050	7.2	8.5	8.4
98BPXLI09	WA03	DMA 98-09	3/18/98	1550	1.0	17	16	5.2	11.8	14.1	-2	32	1025.7	25050	6.9	7.4	12.5
[redacted]																	
98BPXLI30	WA01	DMA 98-30	3/19/98	120	1.2	21.1	19.9	4.9	16.2	8.8	-2	33	1026.6	26500	7.3	9.6	8.4
98BPXLI30	WA02	DMA 98-30	3/19/98	140	1.2	21.1	19.9	4.9	16.2	12.8	-2	33	1026.6	26000	7.6	9.7	11.7
98BPXLI30	WA03	DMA 98-30	3/19/98	200	1.2	21.1	19.9	4.9	16.2	16.8	-2	33	1026.6	26000	7.6	9.6	12.8

BTI = Below Top of Ice

Note::

1. Millero, F.J. and A. Poisson. 1981. International one-atmosphere equation of state of sea water. Deep- Sea Research, Vol. 28A, No. 6. p. 625-626
2. Salinity in Parts Per Thousand (ppt) converted from percent (%)

Table 2
Water Quality Parameters
Liberty Island Pipeline Route
Water and Sediment Sampling

Station	Sample	Sample Depth (BTI) (ft)	Sample Depth above Ocean Floor (ft)	BOD5	Lab Turbidity (NTU)	Total Organic Carbon (mg/L)	Total Suspended Solids (TSS) (mg/l)	Arsenic (mg/L)	Barium (mg/L)	Chromium (mg/L)	Lead (mg/L)	Mercury (mg/L)
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
98BPXLI09	WA01	8.6	8.4	<1	11	1.2	74	<.02	0.0200	<.01	<.01	<.0002
98BPXLI09	WA02	11	5.9	<1	7	1.2	34	<.02	0.0218	<.01	<.01	<.0002
98BPXLI09	WA03	14	2.9	<1	11	1.2	48	0.0202	0.0254	<.01	<.01	<.0002
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
98BPXLI30	WA01	8.8	12	<1	0	1.7	< 10	0.0206	0.0179	<.01	<.01	<.0002
98BPXLI30	WA02	13	8.3	<1	0	1.2	10	0.0226	0.0175	<.01	<.01	<.0002
98BPXLI30	WA03	17	4.3	<1	6	1.2	17	0.0213	0.0195	<.01	<.01	<.0002

BTI = Below Top of Ice

TABLE 3
Grain Size Results
Liberty Island Pipeline Routes
Water and Sediment Sampling
(all data are % by dry weight)

Sample Identification	Borehole Location	Depth (ft.)	Medium gravel (4.75 mm) No. 4	Fine Gravel (2.00 mm) No. 10	Very Coarse Sand (0.850 mm) No. 20	Coarse Sand (0.425 mm) No. 40	Medium Sand (0.250 mm) No. 60	Fine Sand (0.106 mm) No. 100	Very Fine Sand (0.075 mm) No. 200	Engineering Class	Frost Class
98BPXLI02SD01 (1.0)	DMA 98-2	0.5-1 ft.	100	100	100	100	99	99	94	Silt, ML	F4
98BPXLI02SD02 (3.0)	DMA 98-2	2-3 ft.	100	100	100	100	99	99	94	Silt, ML	F4
98BPXLI02SD03 (9.0)	DMA 98-2	8-9 ft.	100	100	99	98	96	92	87	Silt, ML	F4
98BPXLI09SD02 (1.0)	DMA 98-9	0.5-1 ft.	100	100	100	99	98	88	62	Silt, ML	F4
98BPXLI09SD02 (3.0)	DMA 98-9	2-3 ft.	100	98	97	95	91	86	79	Silt w/Sand	F4
98BPXLI09SD03 (9.0)	DMA 98-9	8-9 ft.	98	97	96	94	85	74	58	Sandy Silt, ML	F4
98BPXLI14SD01 (1.0)	DMA 98-14	0.5-1 ft.	99	99	99	98	95	88	59	Sandy Silt	F4
98BPXLI14SD02 (3.0)	DMA 98-14	2-3 ft.	100	100	100	100	98	93	87	Silt, ML	F4
98BPXLI14SD03 (9.0)	DMA 98-14	8-9 ft.	96	94	93	83	41	15	83	SP-SM	N/A
98BPXLI30SD01 (1.0)	DMA 98-30	0.5-1 ft.	99	99	99	99	98	97	87	Silt, ML	F4
98BPXLI30SD02 (3.0)	DMA 98-30	2-3 ft.	100	100	100	99	99	98	91	Silt, ML	F4
98BPXLI30SD03 (9.0)	DMA 98-30	8-9 ft.	100	100	100	99	98	96	90	Fat Clay, CH	F4

All Samples = PI (Non Plastic)

TABLE 4
Summary of Analytical Results and Benchmark Criteria
Liberty Island Pipeline Routes
Water and Sediment Sampling
(all data are % by dry weight)

		Project Values and Statistics							PSDDA Criteria				EPA Benchmarks	
Analyte	units	Minimum lab detection limit	Minimum report detection limit	Minimum result	Maximum result	Average result (includes 0 for ND)	STDEV	Coefficient of Variation	MDS for PSDDA	Screening Level	Bioaccumulation Level	Maximum Level	Risk Based Concentrations (RBC)	Ecotox Effects Range Low (ERL)
Soil														
Percent Moisture	PERCENT	0.0000	0.000	18	41	28.728	5.947	20.703	0.1	--	--	--	--	--
Total Metals (SW6020 & SW7471)														
Arsenic	MG/KG	0.1186	0.250	3.3052	11.2429	5.506	2.123	38.560	2.5	57	507.1	700	23	8.2
Barium	MG/KG	0.0275	0.125	23.4768	86.1714	44.824	14.668	32.723	--	--	--	--	5,500	--
Chromium	MG/KG	0.1073	0.250	5.4262	27.4382	12.229	5.000	40.890	--	--	--	--	78,000	81
Lead	MG/KG	0.0062	0.125	2.2282	13.8598	5.358	2.777	51.824	0.5	66	--	660	660	47
Mercury	MG/KG	0.0037	0.025	ND	0.0852	0.035	0.028	77.617	0.02	0.21	1.5	2.1	2.1	0.15
Volatile Organic Compounds (SW8260a)														
1,2-Dichlorobenzene	UG/KG	2.000	2.000	ND	ND	0	0	0	3.2	19	37	350	7,000,000	340 (2)
1,3-Dichlorobenzene	UG/KG	2.0000	2.000	ND	ND	0	0	0	3.2	170	1241	--	7,000,000	1,700 (2)
1,4-Dichlorobenzene	UG/KG	2.000	2.000	ND	ND	0	0	0	3.2	26	190	260	27,000	350 (2)
1,2,4-Trichlorobenzene	UG/KG	6.000	6.000	ND	ND	0	0	0	6	13	--	64	780,000	--
Ethylbenzene	UG/KG	2.0000	2.000	ND	ND	0	0	0	3.2	10	27	50	7,800,000	3,600 (2)
Hexachlorobenzene (SW8081) (1)	UG/KG	2.0000	2.000	ND	ND	0	0	0	12	23	168	230	--	--
Tetrachloroethene	UG/KG	2.0000	2.000	ND	ND	0	0	0	3.2	14	102	210	12,000	530 (2)
Trichloroethene	UG/KG	2.0000	2.000	ND	ND	0	0	0	3.2	160	1168	1600	58,000	1,600 (2)
Xylenes	UG/KG	2.0000	2.000	ND	ND	0	0	0	3.2	12	--	160	320,000	--
Semi-volatile Organic Compounds (SW8270a)														
Acenaphthene	UG/KG	21.000	21.000	ND	ND	0	0	0	20	63	--	630	4,700,000	1,100 (2)
Acenaphthylene	UG/KG	19.000	19.000	ND	ND	0	0	0	20	64	--	640	--	--
Anthracene	UG/KG	22.000	22.000	ND	ND	0	0	0	20	130	--	1300	23,000,000	--
bis-(2-ethylhexyl)phthalate	UG/KG	31.000	31.000	46	560	189.4286	164.4996	86.84	20	3100	13870	--	46,000	--
Benzo(a)anthracene	UG/KG	27.000	27.000	ND	ND	0	0	0	20	450	--	4500	880	--
Benzo(a)pyrene	UG/KG	23.000	23.000	ND	92	6.5714	24.5880	374.17	20	680	4964	6800	88	430 (2)
Benzo(b)fluoranthene	UG/KG	29.000	29.000	ND	ND	0	0	0	20	800	--	8000	880	--
Benzo(k)fluoranthene	UG/KG	36.000	36.000	ND	ND	0	0	0	20	800	--	8000	8,800	--
Benzo(g,h,i)perylene	UG/KG	37.000	37.000	ND	ND	0	0	0	20	540	--	5400	--	--

T, . . E 4
Summary of Analytical Results and Benchmark Criteria
Liberty Island Pipeline Routes
Water and Sediment Sampling
(all data are % by dry weight)

		Project Values and Statistics							PSDDA Criteria				EPA Benchmarks	
Analyte	units	Minimum lab detection limit	Minimum report detection limit	Minimum result	Maximum result	Average result (includes 0 for ND)	STDEV	Coefficient of Variation	MDS for PSDDA	Screening Level	Bioaccumulation Level	Maximum Level	Risk Based Concentrations (RBC)	Ecotox Effects Range Low (ERL)
Soil (continued)														
Semi-volatile Organic Compounds (SW8270a) (continued)														
Benzoic acid	UG/KG	150.000	150.000	ND	ND	0	0	0	100	400	--	690	310,000,000	--
Benzyl alcohol	UG/KG	32.000	32.000	ND	ND	0	0	0	6	25	--	73	23,000,000	--
Benzyl butyl phthalate	UG/KG	37.000	37.000	ND	ND	0	0	0	20	470	--	--	16,000,000	11,000 (2)
Chrysene	UG/KG	27.000	27.000	ND	ND	0	0	0	20	670	--	6700	88,000	--
Dibenzo(a,h)anthracene	UG/KG	38.000	38.000	ND	ND	0	0	0	20	120	--	1200	88	--
Dibenzofuran	UG/KG	21.000	21.000	ND	ND	0	0	0	20	54	--	540	310,000	2,000 (2)
Diethyl Phthalate	UG/KG	49.000	49.000	ND	ND	0	0	0	20	97	--	--	63,000,000	630 (2)
2,4-Dimethylphenol	UG/KG	19.000	19.000	ND	ND	0	0	0	6	29	--	50	--	--
Dimethyl phthalate	UG/KG	42.000	42.000	ND	ND	0	0	0	20	160	1168	--	780,000,000	--
Di-n-butyl phthalate	UG/KG	29.000	29.000	ND	ND	0	0	0	20	1400	10220	--	7,800,000	11,000 (2)
Di-n-octyl phthalate	UG/KG	35.000	35.000	ND	ND	0	0	0	20	6200	--	--	1,600,000	--
Fluoranthene	UG/KG	23.000	23.000	ND	ND	0	0	0	20	630	4600	6300	3,100,000	1,400 (2)
Fluorene	UG/KG	24.000	24.000	ND	ND	0	0	0	20	64	--	640	3,100,000	540 (2)
Hexachlorobutadiene (SW8081) (1)	UG/KG	2.000	2.000	ND	ND	0	0	0	20	29	212	290	8,200	--
Hexachloroethane	UG/KG	23.000	23.000	ND	ND	0	0	0	20	1400	10220	14000	46,000	1,000 (2)
Indeno(1,2,3-cd)pyrene	UG/KG	36.000	36.000	ND	ND	0	0	0	20	69	--	5200	880	--
2-Methylnaphthalene	UG/KG	20.000	20.000	ND	31	5.7857	11.5770	200.1	20	67	--	670	--	--
2-Methylphenol (o-Cresol)	UG/KG	20.000	20.000	ND	ND	0	0	0	6	20	--	72	3,900,000	--
4-Methylphenol (p-Cresol)	UG/KG	22.000	22.000	ND	280	31.6429	75.2898	237.94	20	120	--	1200	--	--
Naphthalene	UG/KG	21.000	21.000	ND	ND	0	0	0	20	210	--	2100	3,100,000	480 (2)
n-Nitrosodiphenylamine	UG/KG	25.000	25.000	ND	ND	0	0	0	12	28	161	220	130,000	--
Pentachlorophenol	UG/KG	35.000	35.000	ND	ND	0	0	0	61	100	504	690	5,300	--
Phenanthrene	UG/KG	24.000	24.000	ND	33	8.8571	14.5964	164.8	20	320	--	3200	--	1,100 (2)
Phenol	UG/KG	19.000	19.000	ND	38	2.7143	10.1559	374.17	20	120	876	1200	47,000,000	--
Pyrene	UG/KG	29.000	29.000	ND	ND	0	0	0	20	430	--	7300	2,300,000	660 (2)
Total Organic Carbon (TOC) (E415.1)	MG/KG	0.100	0.1	0.42	6.5	2.3057	1.6941	73.476	0.1	--	--	--	--	--

T. .E 4

Summary of Analytical Results and Benchmark Criteria
Liberty Island Pipeline Routes
Water and Sediment Sampling
(all data are % by dry weight)

			Project Values and Statistics							PSDDA Criteria				EPA Criteria	
	Analyte	units	Minimum lab detection limit	Minimum report detection limit	Minimum result	Maximum result	Average result (includes 0 for ND)	STDEV	Coefficient of Variation	MDS for PSDDA	Screening Level	Bioaccumulation Level	Maximum Level	Risk Based Concentrations (RBC)	Ecotox Effects Range Low (ERL)
Water															
Total Metals (SW6020 & SW7470)															
	Arsenic	MG/L	0.0114	0.020	ND	0.0226	0.0097	0.0109	112.575	--	--	--	--	0.011	0.036
	Barium	MG/L	0.0013	0.010	0.0175	0.0551	0.0252	0.0098	38.932	--	--	--	--	2.6	--
	Chromium	MG/L	0.0084	0.010	ND	ND	0	0	0	--	--	--	--	--	--
	Lead	MG/L	0.0007	0.010	ND	ND	0	0	0	--	--	--	--	--	0.0081
	Mercury	MG/L	0.0001	0.000	ND	ND	0	0	0	--	--	--	--	0.023	0.0011
Suspended Solids (E160.2)		MG/L	10.0000	10.000	ND	74	21.0769	21.4727	101.88	--	--	--	--	--	--
Total Organic Carbon (TOC) (E415.1)		MG/L	0.5000	0.500	1.1	1.7	1.3231	0.1833	13.852	--	--	--	--	--	--

Symbols

--	Not Applicable or Not Available	MG/KG	milligrams / kilogram
UG/KG	micrograms / kilogram	MG/L	milligrams / liter
		ND	not detected above the reporting limit

Footnotes

(1) Analyzed with an alternate method to achieve lower detection limits for comparison to PSDDA criteria.

(2) Ecotox value assumes the fraction of carbon in salt water sediments is 1%.

APPENDIX A
Field Notes and Logs

Montgomery Watson

BP Exploration (Alaska), .
LIBERTY ISLAND water/sediment samplir.
FIELD NOTE FORM

Station No. 98-02

Air Temp	1°F	Date	3/18/98
Wind	Se	Crew	Sharon Sadlon, Tom Calkin, Gary Garmer, Ken Halstea
Sky	clear	Start Time	19:30

ICE/Datum Below Platform Decking			Location	
a	Depth to Top of Ice	4.7	Description	Liberty Island
b	Depth to Bottom of Ice	9.3		
c	Depth to Seafloor	26		
d	Ice Thickness	4.6	Latitude	70-16-38
e	Ice Free Water	21.3	Longitude	147-33-31
f	Depth to Water	5.3	Northing	5953376.54 ASP
g	Water Column	20.7	Easting	307357.18 ASP

ADD .7 feet to sounder reading

Water Column Profile (every 0.5 feet) Datum Below Platform Decking

Depth (feet)	Temp °C	EC uhmos	DO mg/L	pH	Turbidity HNU		Salinity ppm	Temp (oC) for salinity	
26	-2	26000					33	-2	
25.5	-2	26000					33		
25.0	-2	26000					33		
24.5	-2	26000					33		
24.0	-2	26000					32		
[illegible]	-2	26000					32		
[illegible]	-2	26000					32		
[illegible]	-2	26000	10.9	6.4	9.3		32		WA03
[illegible]	-2	26000					32		
[illegible]	-2	26000					32		
[illegible]	-2	26000					32		
[illegible]	-2	26000					32		
[illegible]	-2	26000					32		
[illegible]	-2	26000					32		
[illegible]	-2	26000					32		
[illegible]	-2	26000					32		
[illegible]	-2	26000					32		
19.0	-2	25000	8.7	6.3	7.16		32		WA02
[illegible]	-2	25000					32		
[illegible]	-2	26000					32		

Water Sample(s) — add 1 foot to bomb depth measurement

	Depth	Time	Date	Methods
98BPXLI 02 WA01 & Dup 101	14.0	21:00	3/18/97	Bomb Dup 21:10
98BPXLI 02 WA02	18.0	21:30		Bomb
98BPXLI 02 WA03	22.5	22:00		Bomb

Sediment Samples

	Depth	Time	Date	Methods
98BPXLI 02 SD01(01)	0-1	22:10	3/18/97	SS.
98BPXLI 02 SD02(03)	2-3	22:30		
98BPXLI 02 SD03(06)	8-9	23:30		
Duplicate 98BPXLI 02 SD02 1(03)	0-1	22:20		

Comments

Meters used:
YSI 300PT-C-L STD. 1413
HACH 2100P, Turbidimeter 5.10 NTU STD reads 5.20 NTU
HACH, Colorimeter, DO, LR
YSI 33, S-T-L-pH, STD. 1413
Beckman φ11 pHmeter, STD. 487

Montgomery Watson

BP Exploration (Alaska), Inc.
LIBERTY ISLAND water/sediment sampling
FIELD NOTE FORM

pg 2 of 2

Station No. 98-02	Air Temp	Date	3-18-98
	Wind	Crew	
	Sky	Start Time	

ICE: Datum Below Platform Decking — Location

a	Depth to Top of Ice	4.7	Description	
b	Depth to Bottom of Ice	9.3		
c	Depth to Seafloor	26		
d	Ice Thickness		Latitude	
e	Ice Free Water		Longitude	
f	Depth to Water		Northing	
g	Water Column		Easting	

ADD .7 feet to sounder reading

Water Column Profile (every 0.5 feet): Datum Below Platform Decking

Depth (feet)	Temp °C	EC uhmos	DO mg/L %	pH	Turbidity HNU		Salinity ppm	Temp (oC) for salinity	
16.5	-2	26000					32	-2	
16.0	-2	26000					32		
15.5	-2	26000					32		
15.0	-2	26000					32		
14.5	-2	26000					32		
14.0	-2	26000	9.1	6.6	6.12		32		WA01
13.5	-2	26000					32		
13.0	-2	26000					32		
12.5	-2	26000					32		
12.0	-2	26000					32		
11.5	-2	26000					32		
11.0	-2	26000					32		
10.5	-2	26000					32		
10.0	-2	26000					32		
9.5	-2	26000					32		

Water Sample(s) — add 1 foot to bomb depth measurement

	Depth	Time	Date	Methods
98BPXLI__ __ WA01				
98BPXLI__ __ WA02				
98BPXLI__ __ WA03				

Sediment Samples

	Depth	Time	Date	Methods
98BPXLI__ __ SD01(01)				
98BPXLI__ __ SD02(03)				
98BPXLI__ __ SD03(06)				
Duplicate 98BPXLI__ __ SD6__1(01)				

Comments

Meters used:
YSI 300, T-C-L
HACH 2100P, Turbidimeter
HACH, Colorimeter, DO
YSI 33, S-T-L-pH

Montgomery Watson

pg 1 of 1

BP Exploration (Alaska), Inc.
LIBERTY ISLAND water/sediment sampling
FIELD NOTE FORM

98
Station No. 09

Air Temp	-29°F	Date	3-18-98
Wind	16 kn	Crew	BGM / WP
Sky	Clear	Start Time	1510 — 1700

ICE-Datum Below Platform Decking — Location

a	Depth to Top of Ice	4.4	Description	
b	Depth to Bottom of Ice	9.6		
c	Depth to Seafloor	21.4		
d	Ice Thickness	5.2	Latitude	70-16-38
e	Ice Free Water	13.2	Longitude	147-33-31
f	Depth to Water	5.4	Northing	5953376.54
g	Water Column	14.2	Easting	307397.18

ADD .7 feet to sounder reading

Water Column Profile (every 0.5 feet) - Datum Below Platform Decking

Depth (feet)	Temp °C	EC uhmos	DO mg/L %	pH	Turbidity HNU		Salinity ppm	Temp (oC) for salinity		
21.0	-2°	25050			Field		32	-2.0		
20.5	"	"					"			
20.0	"	"					"			
19.5	"	"					"			
19.0	"	"					"			
18.5	"	"	7.4	6.9	12.5		"			WA03
18.0	"	"					"			
17.5	"	"					"			
17.0	"	"					"			
16.5	"	"					"			
16.0	"	"					"			
15.5	"	"	8.5	7.2	8.4		"			WA02
15.0	"	"					"			
14.5	"	"					"			
14.0	"	"					"			
13.0	"	"	7.7	7.4	13.3		"	-2.0		WA01
12.0	"	"					"	-2.5		
11.0	"	"					"	-2.4		
10.0	"	"					"	-2.4		

Water Sample(s) — add 1 foot to bomb depth measurement

	Depth	Time	Date	Methods
98BPXLI 09 WA01	13.0	1530	3-18	"Bomb" pt source sampler
98BPXLI 09 WA02	15.5	1540	3-18	"
98BPXLI 09 WA03	18.5	1550	3-18	"

Sediment Samples

	Depth	Time	Date	Methods
98BPXLI 09 SD01(01)	.5-1	1610	3-18	SS, 18" x 4"
98BPXLI 09 SD02(03)	2-3	1620	3-18	↓
98BPXLI 09 SD03(04)	8-9	1630	3-18	↓
Duplicate 98BPXLI__ __ SD6__1(01) N/A				

Comments

Meters used:
YSI 3006T-C-L, 1413 STD ⇒ 1445
HACH 2100P, Turbidimeter, 53.1 ⇒ 53.4
HACH, Colorimeter, DO, LR
YSI 33, S-T-L-pH 1413 STD ⇒ 1441
Beckman 11, pH, STD 4 & 7
Decon complete

BGM

Montgomery Watson

98-

pg 1 of 1

BP Exploration (Alaska), Inc.
LIBERTY ISLAND water/sediment sampling
FIELD NOTE FORM

Station No. 14

Air Temp	-35	Date	3-18-98
Wind	15-20Kn	Crew	BGM
Sky	clear	Start Time	1215

ICE: Datum Below Platform Decking — **Location**

a		Depth to Top of Ice	4.3	Description	
b		Depth to Bottom of Ice	9.4		
c	1.4	Depth to Seafloor	12.1		
d		Ice Thickness	5.1	Latitude	70-13-43
e		Ice Free Water	3.3	Longitude	147-38-45
f		Depth to Water	5.3	Northing	5935509.00
g		Water Column	3.3	Easting	296088.00

ADD .7 feet to sounder reading

Water Column Profile (every 0.5 feet) Datum Below Platform Decking

Depth (feet)	Temp °C	EC uhmos	DO mg/l	pH	Turbidity HNU		Salinity ppm	Temp (oC) for salinity	
10.0	-1	24000	—	—	—		28	-1.8	
10.5	-1	24000	11.0	6.7	17.6		28	-1.0	WA 01
11.5	-.5	24000	—	—	—		27	-0.5	WA 02
12.0	0	24000	10.4	6.9	17.6		27	-0.5	

Water Sample(s) — add .7 foot to bomb depth measurement

	Depth	Time	Date	Methods
98BPXLI 14 WA01	10.2	1300	3-18	Bomb, Pt. Source Sampler
98BPXLI 14 WA02	11.8	1315	3-18	Bomb
98BPXLI WA03	N/A			

Sediment Samples

	Depth	Time	Date	Methods
98BPXLI 14 SD01(01)	5-1	1330	3-18	SS 18" x 4"
98BPXLI 14 SD02(03)	2-3	1345	3-18	↓
98BPXLI 14 SD03(09) 09	8-9	1400	3-18	↓
Duplicate 98BPXLI SD6 1(01)				

Comments

Meters used: YSI 3000T-C-L 1413 STD
HACH 2100P, Turbidimeter, 53.1 → 53.9 Beckman 11, pH 7 & 4 STD.
HACH, Colorimeter, DO, LR
YSI 33, S-T-L-pH,
Beckman 11, pH, STD. 4 & 7 used
Decon complete

BGM

Montgomery Watson

BP Exploration (Alaska), Inc.
LIBERTY ISLAND water/sediment sampling
FIELD NOTE FORM

Pg 1 of 2

Station No. 98-30

Air Temp	-3°F	Date	3/19/98
Wind	7E	Crew	Sharon Sadlon
Sky	Clear	Start Time	00:30

ICE-Datum Below Platform Decking / **Location**

a	Depth to Top of Ice	4.7	Description	Liberty Island
b	Depth to Bottom of Ice	9.6		
c	Depth to Seafloor	25.8	70 16 38.670N 147 34 10.662W	
d	Ice Thickness	4.9	Latitude	70-16-54
e	Ice Free Water	16.2	Longitude	147-34-10
f	Depth to Water	5.5	Northing	5955095 ASP
g	Water Column	20.3	Easting	306049

ADD .7 feet to sounder reading

Water Column Profile (every 0.5 feet) - Datum Below Platform Decking

Depth (feet)	Temp °C	EC uhmos	DO mg/l %	pH	Turbidity HNU		Salinity ppm	Temp (oC) for salinity	
25.5	-2	27000					33	-2	
25.0	-2	27000					33		
24.5	-2	26000					33		
24.0	-2	26000					33		
23.5	-2	26000					33		
23.0	-2	26000					33		
22.5	-2	26000					33		
22.0	-2	26000					33		
21.5	-2	26000	8.6/9.6	7.59/7.59	9.4/12.8		33		
21.0	-2	26000					33		
20.5	-2	26000					33		
20.0	-2	26000					33		
19.5	-2	26000					33		
19.0	-2	27000					33		
18.5	-2	27000					33		
18.0	-2	26000					33		
17.5	-2	26000	10.5/9.7	7.51/7.56	7.06/11.7		33		
17.0	-2	27000					33		
16.5	-2	26500					33		

Water Sample(s) — add 2.6 feet to bomb depth measurement

	Depth ft	Time	Date	Methods
98BPXLI30WA01	13.5	01:20	3/19/98	
98BPXLI30WA02 ~~03~~ 02	17.5	01:40		Dup 01:50
98BPXLI30WA03	21.5	02:00		

Sediment Samples

	Depth	Time	Date	Methods
98BPXLI30SD01(01)	0-1	02:50	3/19/98	
98BPXLI30SD02(03)	2-3	03:00		
98BPXLI30SD03(06)	8-9	03:30		
Duplicate 98BPXLI30SD6~~2~~3 1(0~~2~~3)	2-3	03:10		

Comments

Meters used:
YSI 3000T-C-L
HACH 2100P, Turbidimeter
HACH, Colorimeter, DO , LR
YSI 33, S-T-L-pH

Montgomery Watson

BP Exploration (Alaska), Inc.
LIBERTY ISLAND water/sediment sampling
FIELD NOTE FORM

pg 2 of 2

Station No. 96-30

Air Temp		Date	
Wind		Crew	
Sky		Start Time	

ICE - Datum Below Platform Decking

a	Depth to Top of Ice		
b	Depth to Bottom of Ice		
c	Depth to Seafloor		
d	Ice Thickness		
e	Ice Free Water		
f	Depth to Water		
g	Water Column		

Location

Description

Latitude	
Longitude	
Northing	
Easting	

ADD .7 feet to sounder reading

Water Column Profile (every 0.5 feet) - Datum Below Platform Decking

Depth (feet)	Temp °C	EC uhmos	DO %	pH	Turbidity HNU		Salinity ppm	Temp (oC) for salinity	
16.0	-2	26000					33	-2	
15.5	-2	26500					33		
15.0	-2	26500					33		
14.5	-2	27000					33		
14.0	-2	26000					33		
13.5	-2	26500	9.6	7.26	8.36		33		
13.0	-2	26000					33		
12.5	-2	26000					33		
12.0	-2	26500					33		
11.5	-2	26000					33		
11.0	-2	26000					33		
10.5	-2	26000					33		
10.0	-2	26500					33		
9.5	-2	26000					33		

Water Sample(s) - add 1 foot to bomb depth measurement

	Depth	Time	Date	Methods
98BPXLI___ WA01				
98BPXLI___ WA02				
98BPXLI___ WA03				

Sediment Samples

	Depth	Time	Date	Methods
98BPXLI___ SD01(01)				
98BPXLI___ SD02(03)				
98BPXLI___ SD03(06)				
Duplicate 98BPXLI___ SD6__1(01)				

Comments

Meters used: YSI 300, T-C-L
HACH 2100P, Turbidimeter
HACH, Colorimeter, DO
YSI 33, S-T-L-pH

Duane Miller & Associates
Arctic & Geotechnical Engineering
FIELD LOG

Project: LIBERTY Hole No. SB-02
Job No. 4114.33 Total Depth 20'
Contractor: [illegible] Operator [illegible] Logged By [illegible]
Sheet 1 of

Location of Hole LIBERTY SB-02 (MW)

4.7' DELL TO ICE
9.3' DELL TO BOTTOM ICE
21.0' DELL TO MUD

Conditions -1°F, SE, CLEAR

Rig Type [illegible]
Sampling Methods 4" SS
Hammer Wt. and Drop 340# 1:20"
Hammer Type MANUAL AUTOMATIC
Started TIME 7:43 PM DATE 3/18/98
Completed TIME 11:23 PM DATE 3/18/98

Hole Depth (Ft)				
Casing Depth (Ft)				
Water Depth (Ft)				
Time				
Date				

Surface Elevation _____ Datum _____

Instrumentation NONE

Backfilled TIME NA DATE _____ BY _____

Sample No.	Sample Depth	Sampler Type	Blows / 6-in.	Inches Driven	Inches Recovered	Depth in Feet	Sample	Graphic Log	Frozen?	
	0.0'	MW	Ø	18	18					0.0' - dark gray to blue SILT (ML), scattered bivalve shells, color change @ 1.2' to gray. Weight of hammer caused sample to saturate, no blows. Sample retained by MW.
	2.0	MW	3/10"	18		1, 2				
						3				3.0' - gray SAND (SP) w/ trace SILT, fine grained, loose. Sample retained by MW.
						4, 5, 6, 7				
	8.0	MW	Ø	18	18	8				8.0' - gray SILT (ML) w/ trace CLAY, soft. 8.0' to 8.4' brown ORGANICS w/ trace gray SILT. Sample retained by MW. Organics amorphous, odiferous.
			3			9				
			5							BOH @ 9.5' @ 2323 3/18/98. No PVC.
						10, 11				

Project LIBERTY Hole No. SB-02 (MW) Sheet 1 of 1

DMA 98-

Duane Miller & Associates
Arctic & Geotechnical Engineering
FIELD LOG

Project: LIBERTY Hole No. M-2
Job No. [illegible] Total Depth 9.5
Contractor: [illegible] Operator [illegible] Logged By [illegible]

Location of Hole [illegible] 98-[illegible] assistance
Sta. 104+[illegible], [illegible]

Conditions Drilling IC 4.4, Icec 5.2, H_2O=11.5
Dock to Mud 21'

Rig Type [illegible]
Sampling Methods 3.5" [illegible] from [illegible]
Hammer Wt. and Drop 140# [illegible]
Hammer Type MANUAL AUTOMATIC
Started TIME 3:15 PM DATE 18 MARCH
Completed TIME 5:45PM DATE 19 MARCH

Hole Depth (Ft)				
Casing Depth (Ft)				
Water Depth (Ft)				
Time				
Date				

Surface Elevation -17.0 Datum [illegible]
Instrumentation NONE

Backfilled TIME N/A DATE ____ BY ____

Sample No.	Sample Depth	Sampler Type	Blows / 6-in.	Inches Driven	Inches Recovered	Depth in Feet	Graphic Log
	0.0	S3P	1	6	6		
			1	6	6	1	
			2	6	6		
	2.0	S3P	1	6	6	2	
			1	6	6	3	
			2	6	6		
						4	
						5	
						6	
						7	
	8.0	S3P	5	6		8	
			5	6		9	
			7	6	4		
						10	TD 9.5
						11	

0.0-0.2 Brown Sand w/ scattered shell frag
0.2-0.5 black organic Silt w/ organic pieces, wood & shells
0.5-2.3 Dark Gray Silt
2.3-3.0 Two layers of brown fibrous peat w/ distinct odor of decomposition - with 2" interbedded gray silt layer
3.0-6.0 Dk Gray Silt
driller: "Sand" @ 6 ft
6.0-9.5 Interbedded Gray Sand and Dark Gray Silty

Project LIBERTY Hole No. M-2 Sheet [illegible]

DMA 98-14

Duane Miller & Associates
Arctic & Geotechnical Engineering
FIELD LOG

Project: LIBERTY
Job No. 4116.73
Hole No. M-1
Total Depth 0.
Sheet 1 of 1
Contractor: Discovery/CATCO
Operator Scott
Logged By Phillips/Acinum

Location of Hole 10 ft E of Loc DMA 98-14
Sta 207+87, 10'L
(meteor Sta 74+29, 3.3 L)

Rig Type CME-75
Sampling Methods 3.5" solid stem + SB
Hammer Wt. and Drop 340#, 30"
Hammer Type MANUAL AUTOMATIC ✓
Started TIME 12:30 PM DATE 18 MAR 98
Completed TIME 2:30 PM DATE 18 MAR 98

Conditions Deck to ice 4.4' Ice 5.1' H2O 1.1'
Deck to mud 12.4

Hole Depth (Ft)	9.5			
Casing Depth (Ft)	21.6			
Water Depth (Ft)	+7.7			
Time	1:00P			
Date	18 MAR			

Surface Elevation -7.7' Datum Mean surface

Instrumentation NONE

Backfilled TIME _____ DATE _____ BY _____

Sample No.	Sample Depth	Sampler Type	Blows/6in.	Inches Driven	Inches Recovered	Depth in Feet	Graphic Log
	DP	SB	2	6	6		
			3	6	6	1	
			3	6	6		
	1.5	SB	1	6	6	2	
			2	6	6		
			4	6	6	3	
						4	
						5	
						6	
						7	
	8.0	SB	2	6	6	8	
			3	6	6	9	
			2	6	6		
						10	
						11	

0.0 - 0.5 Brown Sand, Sand is medium grained, well sorted (SP)
0.5 - 4.5 Dk Gray Silt
4.5 - 9.5 Gray Sand w/ scattered small pebbles

Project Liberty Hole No. M-1 Sheet 1 of 1

Duane Miller & Associates
Arctic & Geotechnical Engineering
FIELD LOG

Project: LIBERTY | Hole No. 98-30 | Sheet 1 of 1
Job No. [illegible] | Total Depth 9.5
Contractor: DISCOVERY DRILL | Operator [illegible] | Logged By [illegible]

Location of Hole LIBERTY
98-30 (MW)

4.7' DECK TO ICE
9.6' DECK TO BOTTOM OF HOLE
25.8' DECK TO MUD
Conditions - 39°F, FE, CLEAR

Rig Type CRETE
Sampling Methods 4" SS
Hammer Wt. and Drop 340# 30"
Hammer Type MANUAL AUTOMATIC
Started TIME 12:10 PM DATE 3/19/98
Completed TIME 3:27 AM DATE 3/19/98

Hole Depth (Ft)				
Casing Depth (Ft)				
Water Depth (Ft)				
Time				
Date				

Surface Elevation _____ Datum _____

Instrumentation NONE

Backfilled TIME NA DATE _____ BY _____

Sample No.	Sample Depth	Sampler Type	Blows / 6-in.	Inches Driven	Inches Recovered	Depth in Feet	Sample	Graphic Log	Frozen?	
	0.0	MW	Ø 2 3	18	12	1				0.0'- gray SILT (ML) w/ trace black amorphous ORGANICS & trace fine SAND, scattered bivalve fragments, soft. Sample retained by MW. Weight of hammer moved sampler 0' to 0.5'.
		MW	Ø 2 5	18	15	2 3				2.0'- gray SAND (SW) w/ some SILT & 2 pieces subangular GRAVEL (0.6" & 1.5" Ø). 2.7' to 2.9'- trace amorphous ORGANICS w/ interlayer of gray SILT ≈ 0.2" thick. 2.9'- gray SILT (ML) w/ some CLAY, soft. Sample retained by MW.
	8.0	MW	2 3 4	18	16	4 5 6 7 8 9 10 11				8.0'- gray CLAY, firm. Sample retained by MW. BOH @ 9.3' @ 0327 3/19/98. AB PIC.

Project LIBERTY Hole No. 98-30 Sheet 1 of 1

F. Robert Bell and Associates
Surveyors / Engineers
Prudhoe Bay
Phone 659-5000/5005
FAX 659-5065

Transmittal Cover Sheet

Post-it™ brand fax transmittal memo 7671	# of pages ▸ 2
To BONNIE McLEAN	From DUANE
Co. MW	Co.
Dept.	Phone #
Fax # 248-8884	Fax #

Date: March 24, 1998

To: Jeffrey Cotton
Fax: 564-5020
From: Steve Stoll
Subject: LIBERTY
Pages Following Cover: 1

THESE ARE THE REAL LOCATIONS DRILLED FOR YOU.

Comments:

Attached are two sheets with Liberty sketches.
The following are coords points you are interested in.

Current Zone: AK-3

>>Point number: 10201 DMA 98-30
Grid Northing: 5955095 Grid Easting: 306049
Convergence: -1-28-39 Scale factor: 0.999942732097
Latitude: 70-16-54 Longitude: 147-34-10

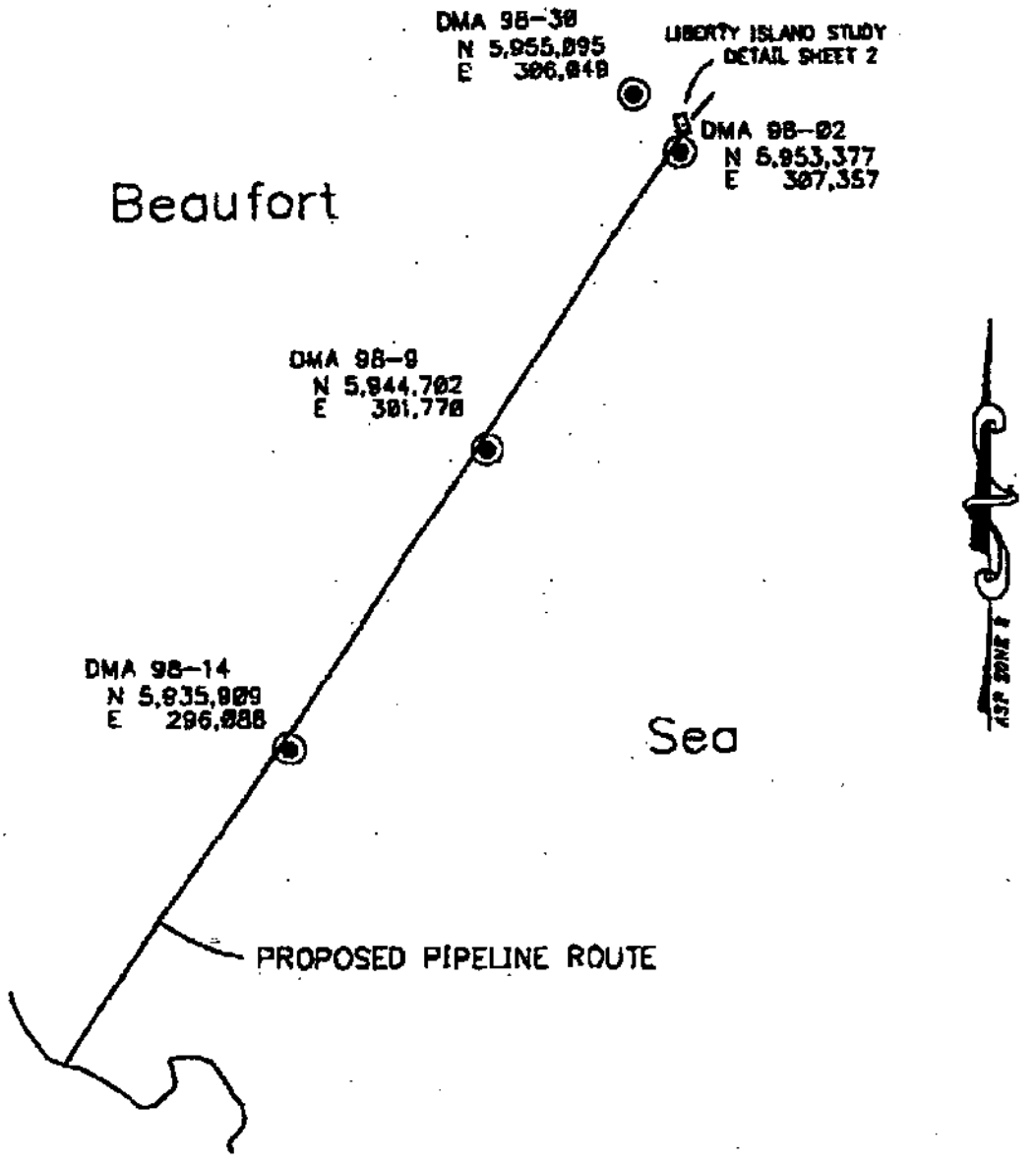
>>Point number: 10105 DMA 98-02
Northing: 5953376.54 Easting: 307357.18
Convergence: -1-28-02 Scale factor: 0.999942157796
Latitude: 70-16-38 Longitude: 147-33-31

>>Point number: 10116 DMA 98-9
Grid Northing: 5944702.00 Grid Easting: 301770.00
Convergence: -1-30-28 Scale factor: 0.999944638807
Latitude: 70-15-11 Longitude: 147-36-07

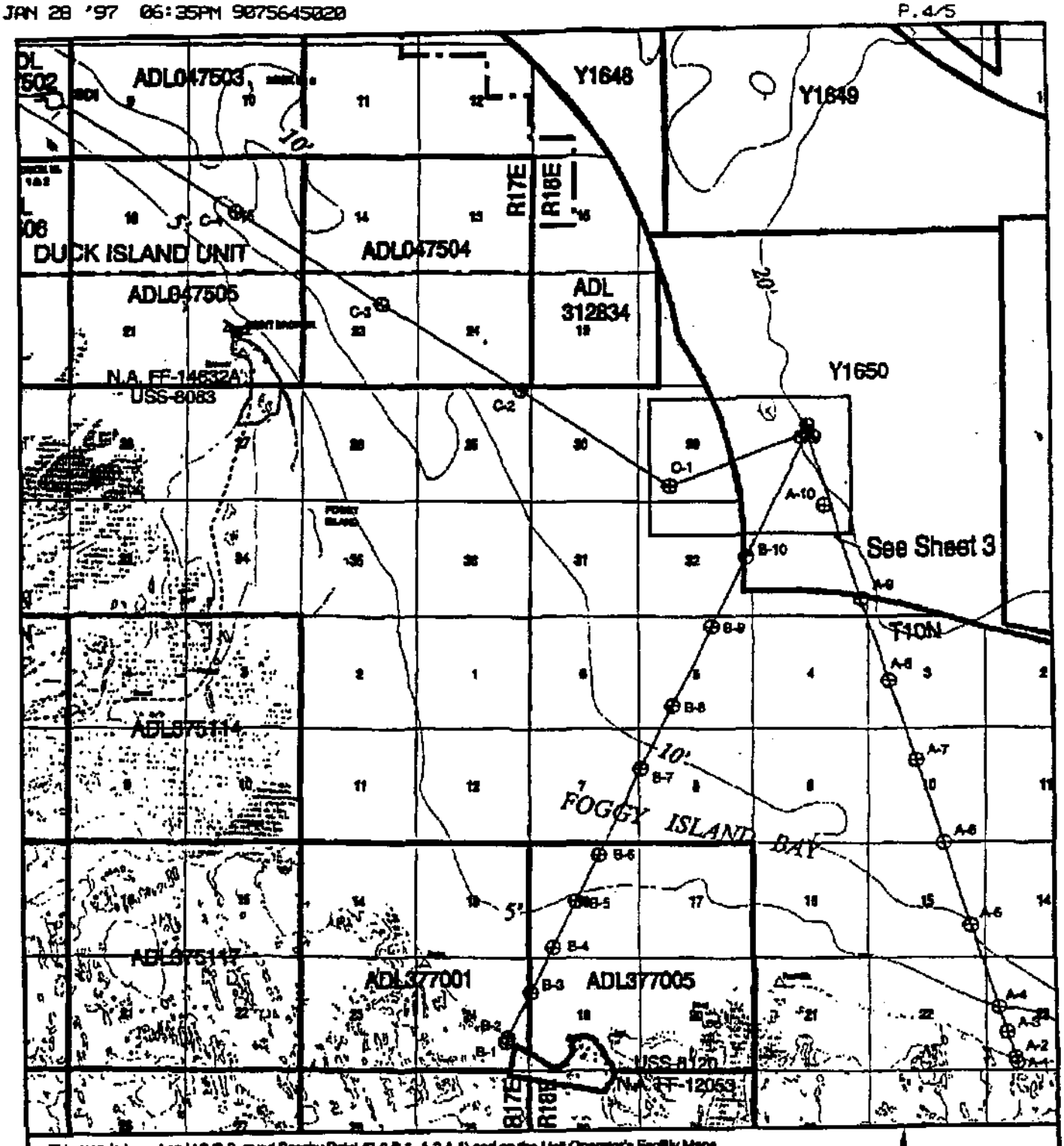
>>Point number: 10126 DMA 98-14
Grid Northing: 5935909.00 Grid Easting: 296088.00
Convergence: -1-32-56 Scale factor: 0.999947234682
Latitude: 70-13-43 Longitude: 147-38-45

NOTES

1. COORDINATES SHOWN ARE ALASKA STATE PLANE ZONE 3, NAD 1927.
2. LOCATION BASED ON STATION "DELTA" AND WCMC3 USS 8120.
3. REFERENCE GPS FILE: EX031998
4. DATES OF SURVEY: MARCH 18–19, 1998.



ISSUED FOR INFORMATION	F. Robert Hill Associates	STOLL / O'HANLEY / 3/24/98 / LEGUNA / 1" = 5000'	BP EXPLORATION
			LIBERTY ISLAND DRILLHOLE LOCATIONS
			SHEET 1 of 2



This map is based on U.S.G.S. quad Beechy Point (B-2,B-1, A-2,A-1) and on the Unit Operator's Facility Maps.

NORTH

⊕ Boring less than 50' deep

⊕ Boring greater than 50' deep

Within T11NR17E Sec. 8, 9, 14, 15, 16, 23, 24, 25
T11NR18E Sec. 29, 30, 32, 33
T10NR17E Sec. 24
T10NR18E Sec. 3, 4, 5, 7, 8, 10, 16, 18, 19, 22, 23

BP EXPLORATION (ALASKA) INC.

LIBERTY
GEOTECHNICAL
BORE HOLE LOCATIONS
PERMIT APPLICATION

DATE:	SCALE:	SHEET:
1/28/97	1" = 1.25 Mile	2 OF 3

bs13351.dgn

APPENDIX B
Chain of Custody Records

fax results to 248-8884

Montgomery Watson 4100 Spenard Road Anchorage AK 99517 (907)248-8883 Fax (907) 248-8884 ATTN: Lynn DeGeorge	Laboratory: PBOC Laboratory (BP) West Prudo Bay, Alaska (907) 659-4356 Attn: Al Kukla MW Job Number: 48-hour holding time			SOIL						WATER		
Sampler's Signature 1998	Bomchan			Cool to 4 degrees C						Turbidity- EPA 180.1 100 ml poly	BOD5- EPA 405.1 1 l poly	Comments
Date	Time	Sample ID	Matrix	Total Containers								
3-18	2100	98BPXLI 02 WA01	W	2						✓	✓	
3-18	2130	98BPXLI 02 WA02	W	2						✓	✓	
3-18	2200	98BPXLI 02 WA03	W	2						✓	✓	
3-18	1530	98BPXLI 09 WA01	W	2						✓	✓	
3-18	1540	98BPXLI 09 WA02	W	2						✓	✓	
3-18	1550	98BPXLI 09 WA03	W	2						✓	✓	
3-18	1300	98BPXLI 14 WA01	W	2						✓	✓	
3-18	1315	98BPXLI 14 WA02	W	2						✓	✓	
3-19	0200	98BPXLI 30 WA03	W	2						✓	✓	
3-19	0120	98BPXLI 30 WA01	W	2						✓	✓	
3-19	0140	98BPXLI 30 WA02	W	2						✓	✓	
		98BPXLI __ WA03										
3-19	0150	98BPXLI 30 WA6 2	W	1						NO	✓	BOD only
3-18	2110	98BPXLI 02 WA6 1	W	1						NO	✓	BOD only
		98BPXLI __ WA__										
		98BPXLI __ WA__										

Relinquished by:	Date Time	Hand Delivered (Y) N	Shipped Via N/A	Airbill Number Date Time
Received for Laboratory by:	Date Time	Cooler Temperature Upon Arrival °C		Laboratory Notified Faxed

Po' o

MAS 821354

Montgomery Watson
4100 Spenard Road
Anchorage AK 99517
(907)248-8313
Fax (907) 248-8384
ATTN: Lynn DeGeorge

Laboratory:
Multiform Analytical Services
2500 West International Airport Road
Anchorage, Alaska 99502
(907) 243-8273
(907) 243-8273 FAX
Attn: Mike Vogel

MW Job Number: 1189002
21-DAY TURNAROUND 330101

Sampler's Signature: 1998 [signature]

MAS#	Date	Time	Sample Identification	Matrix	Container	SOIL: VOCs - 8260 (2 x 2-oz amber glass)	SVOCs - 8270 (1 x 8-oz amber glass)	TOC - 415.1 (1 x 4-oz amber glass)	Grain Size - ASTM D422 (1 x 8-oz amber glass)	Particle Dens - ASTM D2487 (1 x 4-oz amber glass)		WATER: TPH - 1663 (250 ml poly)	TOC - 415.1 (1 x 250 ml amber)	Comments
-1	3-18	2210	98BPXL1 02 WA01	W	2							✓	✓	
-2	3-18	2130	98BPXL1 02 WA02	W	2							✓	✓	
-3	3-18	2200	98BPXL1 02 WA03	W	2							✓	✓	
-4	3-18	1530	98BPXL1 09 WA01	W	2							✓	✓	MS/MSD
-5	3-18	1540	98BPXL1 09 WA02	W	2							✓	✓	
-6	3-18	1550	98BPXL1 09 WA03	W	2							✓	✓	
-7	3-18	1300	98BPXL1 14 WA01	W	2							✓	✓	
-8	3-18	1315	98BPXL1 14 WA02	W	2							✓	✓	
-9	3-19	0200	98BPXL1 30 WA03	W	2							✓	✓	
-10	3-19	0120	98BPXL1 30 WA01	W	2							✓	✓	
-11	3-19	0140	98BPXL1 30 WA02	W	2							✓	✓	
			98BPXL1 ___ WA03											No Sample
-12	3-19	0150	98BPXL1 30 WA02		2							✓	✓	
-13	3-18	2110	98BPXL1 02 WA01		2							✓	✓	
			98BPXL1 ___ WA	LAST										
			98BPXL1 ___ WA											

Relinquished by: [signature] Date 3-20-98 Time 1000

Received for Laboratory by: [signature] Date 3/20 Time 10:00

Rush Delivered: Y N

Shipped Via:

Cooler Temperature: 4.8° 3.7° °C

Upon Arrival: 5.1° 11.7°

MAS# Number: Date: Time:

Laboratory Notified: Date:

P.2

BPXU nd

Pg 2 of 2

330101

Montgomery Watson
4100 Spenard Road
Anchorage AK 99517
(907)248-8883
Fax (907) 248-8884
ATTN: Lynn DeGeorge

Laboratory:
Multichem Analytical Services
2000 West International Airport Road
Anchorage, Alaska 99502
(907) 248-8273
(907) 248-8273 FAX
Attn: Mike Vogel

1189002, 330101 3/00
MW Job Number: G
110922.30101
21-DAY
TURNAROUND

MAS
821354

Sampler's Signature: [signature]

MAS#	Date	Time	Sample ID	Number	Container	SOIL VOCs- 8260b 2 x 2-oz amber glass	SVOCs- 8270 1 x 8-oz amber glass	TOC- 415.1 1 x 4-oz amber glass	Grain Size - ASTM D422 1 x 8-oz amber glass	Particle Size- ASTM D2487 1 x 4-oz amber glass		WATER TDS- 160.1 250 ml poly	TOC- 415.1 1 x 250 ml amber	Comments
-14	3-18	2210	98BPXLJ 02 SD01(01)	5	5	✓	✓	✓	✓	✓				
-15	3-18	2230	98BPXLJ 02 SD02(03)	5	5	✓	✓	✓	✓	✓				
-16	3-18	2330	98BPXLJ 02 SD03(09)	5	5	✓	✓	✓	✓	✓				
-17	3-18	1610	98BPXLJ 09 SD01(01)	5	5	✓	✓	✓	✓	✓				MS/MSD
-18	3-18	1620	98BPXLJ 09 SD02(03)	5	5	✓	✓	✓	✓	✓				
-19	3-18	1630	98BPXLJ 09 SD03(09)	5	5	✓	✓	✓	✓	✓				
-20	3-18	1330	98BPXLJ 14 SD01(01)	5	5	✓	✓	✓	✓	✓				
-21	3-18	1345	98BPXLJ 14 SD02(03)	5	5	✓	✓	✓	✓	✓				
-22	3-18	1400	98BPXLJ 14 SD03(09)	5	5	✓	✓	✓	✓	✓				
23	3-19	0230	98BPXLJ 30 SD01(01)	5	5	✓	✓	✓	✓	✓				
-24	3-19	0330	98BPXLJ 30 SD02(03)	5	5	✓	✓	✓	✓	✓				
-25	3-19	0330	98BPXLJ 30 SD03(09)	5	5	✓	✓	✓	✓	✓				
-26	3-19	0310	98BPXLJ 30 SD42(03)	5	3	✓	✓	✓						
-27	3-18	2200	98BPXLJ 02 SD62(03)	5	3	✓	✓	✓						
			98BPXLJ SD ( )											
			98BPXLJ SD ( )											

Relinquished by: [signature] Date 3-20-98 Time 1650 Hand Delivered Shipped Via

Received for Laboratory by: [signature] Date 3-20-98 Time 10:00 Cooler Temperature Upon Arrival °C

AAAR Number Date Time

Laboratory Work Bed Found

ultiChem Analytical Services, LLC **Anchorage, AK**

SAMPLE LOG-IN CHECKLIST

CESSION #: 821354 SUBCONTRACT WORK? YES / NO

NT NAME: Montgomery Watson TO LAB (circle): MAS-R OTHER: AKTestlab

GED-IN BY (print): Gary Fisher (sign): Gary Fisher

received: 3/20/98 Client's Cooler # (if any):

the project for: ACOE? YES / NO NAVY? YES / NO

Did cooler arrive with shipping document?	(Hand delivery) N/A	YES	NO
Are Custody seals present on cooler? YES / NO How many? Where?			
Seal date: Seal name: Intact?	N/A	YES	NO
Are Custody seals present on sample containers?		YES	NO
If "YES", intact?	N/A	YES	NO
s the Chain of Custody (C-O-C) sealed in plastic bag? YES / NO Taped to cooler lid?		YES	NO
Is the C-O-C complete? * Relinquished by client: YES / NO Analyses marked off:		YES	NO
C-O-C or other representative documents, letters, and/or shipping memos. Signed/received by lab:		YES	NO
s the C-O-C in agreement with samples received?			
Sample ID's: YES / NO Matrix:		YES	NO
Date sampled: YES / NO # Containers:		YES	NO
Has the main logbook been filled out properly?		YES	NO
If samples are RUSH has notice been given?	N/A	YES	NO
proper preservation indicated on label(s)?	N/A	YES	NO
Did pH check verify preservative indicated?	(Volatiles) N/A	YES	NO
re sufficient sample volume for analyses?		YES	NO
amples in proper containers? (see reference chart)		YES	NO
all samples within holding times for requested analysis?		YES	NO
all sample containers intact? (i.e. not broken, leaking...)		YES	NO
are samples individually bagged ?		YES	NO
re all volatile samples headspace-free (<pea-size for waters)?	N/A	YES	NO

ipping container (circle one): Cooler / Box / Other:

Type of packing material used (circle one): Bubble Wrap / Styrofoam Peanuts / Vermiculite / None

frigerant (circle one): Gel Ice / Loose Ice / Other: / None

s refrigerant frozen upon receipt? YES / NO

Cooler temperature(s): #3) 5.1°C #4) 11.7°C #1: 4.8 °C #2: 3.7 °C

e tagging check for QC:

ple ID's issued in order of appearance on C-O-C:	YES	NO
laced in appropriate areas of sample containers:	YES	NO

of reviewer:

ribe any "NO" items from checklist above: Sample #1 Time on label = 21:00, on COC = 2210, all else matches

mples #14-25 only four of each not five as listed on (COC), ~~Samples #1-13 only five of each not Two as listed.~~

ent contacted: YES / NO / N/A Date: Name of person contacted:

lient instructions or actions taken:

Quanterra Incorporated - West Sacramento
PROJECT RECEIPT CHECKLIST

Client Name: Montgomery Watson Log #: 50-2

Project # (LIMS ID): 98184 Project copied:

Location(s): W2E

		Initials	Date
Date Received: 3-21-98 Time Received: 0930		AH	3-21-98
Delivered by:	☒ Federal Express ☐ Airborne ☐ Courier Express ☐ DHL ☐ White Cotton Delivers ☐ UPS ☐ Over the counter (OTC) ☐ Go-Getters Other:		
Custody Seal Status:	☒ Intact ☐ Broken ☐ N/A		
Custody Seal Number(s):	17451, 17452		
Shipping Container(s):	☐ Quanterra ☒ Client ☐ N/A		
Temperature Record (in °C):			
COC#:	N/A		
Temp Blank:			
Ambient Temp:	4°C		
pH Measured:	☐ Yes ☐ Anomaly ☒ N/A		
Sample(s) Labeled By:			
Sample Labeling Checked By:			
Short Hold Time Notification:	Sample Receiving ☒ N/A		
	Wet Chem ☒ N/A		
	Metals (Filt/Pres) ☒ N/A		
☒ Complete shipment received in good condition, with appropriate temperatures, containers, and preservatives.	☐ N/A	✓	✓

☐ Anomaly (-ies)/comments: ☐ Temperature exceeded (2°C-6°C)

☐ PM notified ☒ N/A

Leave no spaces blank. Use "N/A" if not applicable. Initial and date all "N/A" entries. QA185 02/96 MCD

Montgomery Watson
4100 Spenard Road
Anchorage AK 99517
(907)248-8883
Fax (907) 248-8884
ATTN: Lynn DeGeorge

Laboratory:
Quanterra
880 Riverside Parkway
West Sacramento, CA 95605
(916) 374-4427
(916) 372-1059 FAX
Attn: Nile Ligi

MW Job Number:

21-DAY TURNAROUND

Sampler's Signature: Burcham

Date	Time	Sample ID	Matrix	Total Containers	SOIL: Metals- Mercury- 7471, Arsenic, Barium, Chromium, Lead- 6020, Ecc glass						WATER		Comments
					Cool to 4 degrees C								
3-18	2210	98BPXLI 02 SD01(01)	S	1	✓								
3-18	2230	98BPXLI 02 SD02(03)	S	1	✓								
3-18	2330	98BPXLI 02 SD03(09)	S	1	✓								
3-18	1610	98BPXLI 09 SD01(01)	S	1	✓								MS/MSD
3-18	1620	98BPXLI 09 SD02(03)	S	1	✓								
3-18	1630	98BPXLI 09 SD03(09)	S	1	✓								
3-18	1330	98BPXLI 14 SD01(01)	S	1	✓								
3-18	1345	98BPXLI 14 SD02(03)	S	1	✓								
3-18	1400	98BPXLI 14 SD03(09)	S	1	✓								
3-19	0250	98BPXLI 30 SD01(01)	S	1	✓								
3-19	0350	98BPXLI 30 SD02(03)	S	1	✓								
3-19	0330	98BPXLI 30 SD03(09)	S	1	✓								
3-18	2220	98BPXLI 02 SD62(03)	S	1	✓								
3-18	0310	98BPXLI 30 SD62(03)	S	1	✓								
		98BPXLI SD ( )						Last Item					
		98BPXLI SD ( )											80169535 8828

Relinquished by: Burcham	Date 3-19-98 Time 1700	Hand Delivered Y (N)	Shipped Via Fed Ex	Airbill Number	Date / Time
Received for Laboratory by: [illegible]	Date 3-19-98 Time 1100	Cooler Temperature Upon Arrival 40c	032198	Laboratory Notified Date	032198 15:30

Rec'd in good condition
032198 mer

P.03

Montgomery Watson
4100 Spenard Road
Anchorage AK 99517
(907)248-8883
Fax (907) 248-8884
ATTN: Lynn DeGeorge

Laboratory:
Quanterra
880 Riverside Parkway
West Sacramento, CA 95606
(916) 374-4427
(916) 372-1059 FAX
Attn: Nilo Ligi

MW Job Number:

21-DAY
TURNAROUND

Sampler's Signature: 1958 [signature]

Date	Time	Sample ID	Matrix	Total Container	SOIL						WATER	Metals Arsenic, Barium, Chromium, Lead- 6020, Mercury- 7471 1 poly	Comments
					Cool to 4 degree C							Cool to 4 degree C pH	
3-18	2100	98BPXLI02 WA01	W	1								✓	
3-18	2130	98BPXLI02 WA02	W	1								✓	
3-18	2200	98BPXLI02 WA03	W	1								✓	
3-18	1530	98BPXLI09 WA01	W	1								✓	
3-18	1540	98BPXLI09 WA02	W	1								✓	
3-18	1550	98BPXLI09 WA03	W	1								✓	
3-18	1300	98BPXLI14 WA01	W	1									
3-19	1315	98BPXLI14 WA02	W	1									
3-19	0200	98BPXLI30 WA03	W	1									
3-19	0120	98BPXLI30 WA01	W	1									
3-19	140	98BPXLI30 WA02	W	1									
		~~98BPXLI WA03~~			NO SAMPLE								
3-19	150	98BPXLI30 WA03	W	1									
3-18	2110	98BPXLI02 WA01	W	1									
		98BPXLI WA			LAST ITEM								
		98BPXLI WA											801695358828

Relinquished by: [signature]	Date 3-19-98 Time 1700	Hand Delivered Y N	Shipped Via Fed X	Airbill Number	Date Time
Received for Laboratory by: [signature]	Date 3-21-98 Time 1100	Cooler Temperature Upon Arrival 4°C °C		Laboratory Modified Field [signature]	03498 15:30

03298 MLP

seal in good condition

P.04

CALLAB-098184

:erra Environmental Services, Sacramento -
'verside Parkway

amento, California 95605
3-5600

Date Received : 21 MAR 98 09:30

mn DeGeorge
mery Watson -
penard Road
rage, Alaska
99517

248-8883 Fax: (907) 248-8884

Project ID,
EPA Case, RMA Lot : ICPMS Metals + Hg

P.O. Number :

Delivered By :

Storage Location : W2E

Logged in by : KGONYEA

l) and aqueous(13) samples received in good condition under
-of-Custody. Delivered by Federal Express.

ID	Client's label info		Date/Time Samp.	Containers
4-0001-SA	98BPXLI02SD01(01)		18 MAR 98 22:10	125CGJ
0002-SA	98BPXLI02SD02(03)		18 MAR 98 22:30	125CGJ
0003-SA	98BPXLI02SD03(09)		18 MAR 98 23:30	125CGJ
4-0004-SA	98BPXLI09SD01(01)		18 MAR 98 16:10	125CGJ
4-0004-MS	98BPXLI09SD01(01)	Matrix Spike	18 MAR 98 16:10	Matrix Spike
04-SD	98BPXLI09SD01(01)	Matrix Spike	18 MAR 98 16:10	Matrix Spike Dup
0005-SA	98BPXLI09SD02(03)		18 MAR 98 16:20	125CGJ
0006-SA	98BPXLI09SD03(09)		18 MAR 98 16:30	125CGJ
0007-SA	98BPXLI14SD01(01)		18 MAR 98 13:30	125CGJ
0008-SA	98BPXLI14SD02(03)		18 MAR 98 13:45	125CGJ
-0009-SA	98BPXLI14SD03(09)		18 MAR 98 14:00	125CGJ
4-0010-SA	98BPXLI30SD01(01)		19 MAR 98 02:50	125CGJ
0011-SA	98BPXLI30SD02(03)		19 MAR 98 03:00	125CGJ
0012-SA	98BPXLI30SD03(09)		19 MAR 98 03:30	125CGJ
-0013-SA	98BPXLI02SD62(03)		18 MAR 98 22:20	125CGJ
4-0014-SA	98BPXLI30SD62(03)		18 MAR 98 03:10	125CGJ
0015-SA	98BPXLI02WA01		18 MAR 98 21:00	500PBn
0016-SA	98BPXLI02WA02		18 MAR 98 21:30	500PBn
4-0017-SA	98BPXLI02WA03		18 MAR 98 22:00	500PBn
4-0018-SA	98BPXLI09WA01		18 MAR 98 15:30	500PBn
0019-SA	98BPXLI09WA02		18 MAR 98 15:40	500PBn
0020-SA	98BPXLI09WA03		18 MAR 98 15:50	500PBn
4-0021-SA	98BPXLI14WA01		18 MAR 98 13:00	500PBn
0022-SA	98BPXLI14WA02		18 MAR 98 13:15	500PBn
0023-SA	98BPXLI30WA03		19 MAR 98 02:00	500PBn

Samples not destroyed in testing are retained a maximum
of thirty (30) days unless otherwise requested.

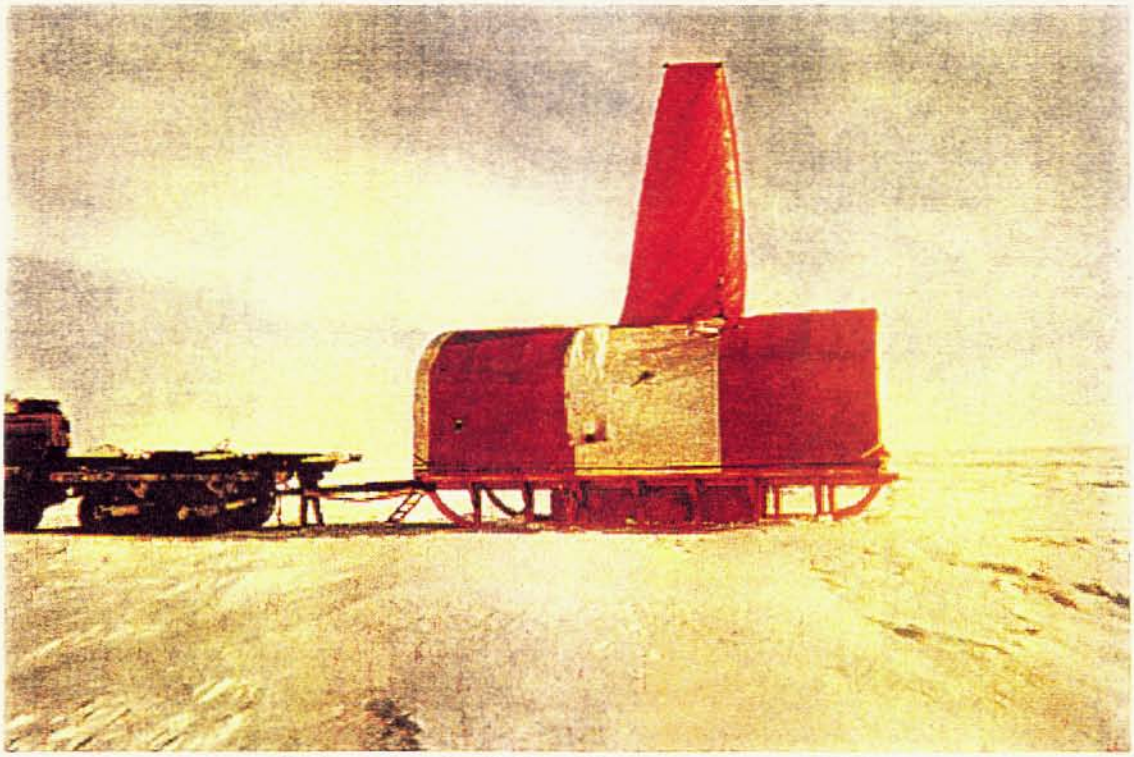
:t Manager:

)	Client's label info	Date/Time Samp.	Containers
024-SA	98BPXLI30WA01	19 MAR 98 01:20	500PBn
-0025-SA	98BPXLI30WA02	19 MAR 98 01:40	500PBn
0026-SA	98BPXLI30WA62	19 MAR 98 01:50	500PBn
B4-0027-SA	98BPXLI02WA61	18 MAR 98 21:10	500PBn

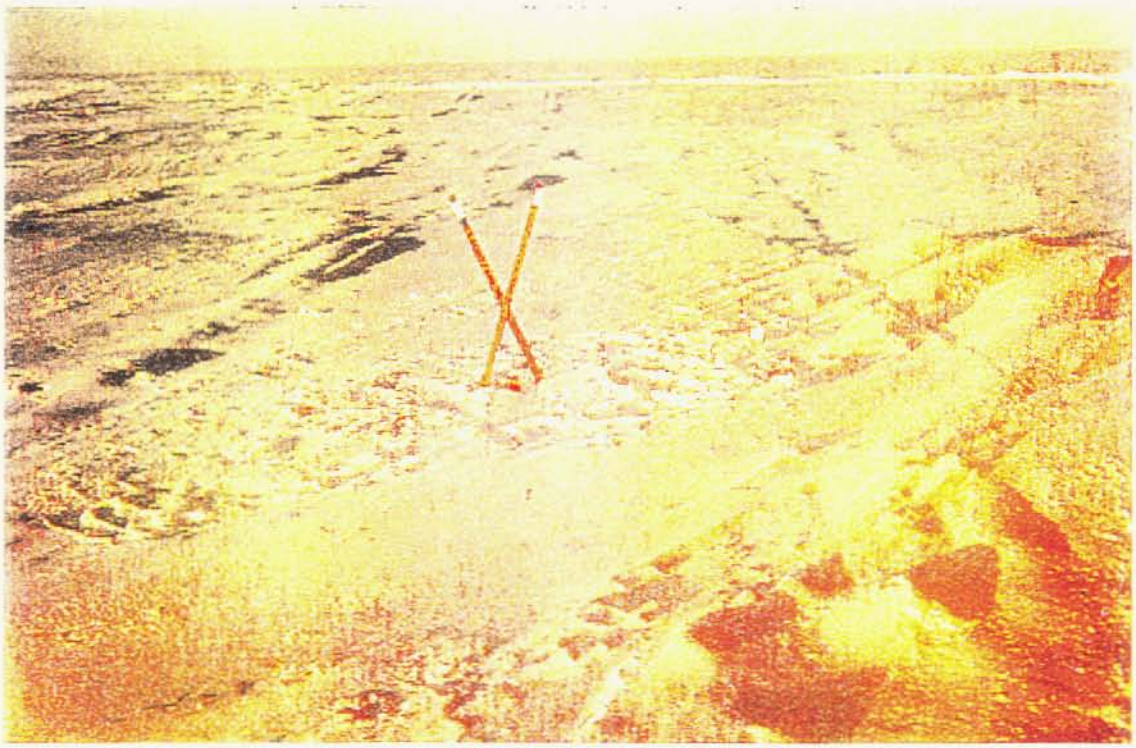
Samples not destroyed in testing are retained a maximum of thirty (30) days unless otherwise requested.

: Manager:

APPENDIX C
Photographs



Roligon and drill rig with enclosure on skid



Sampling location DMA 98-2

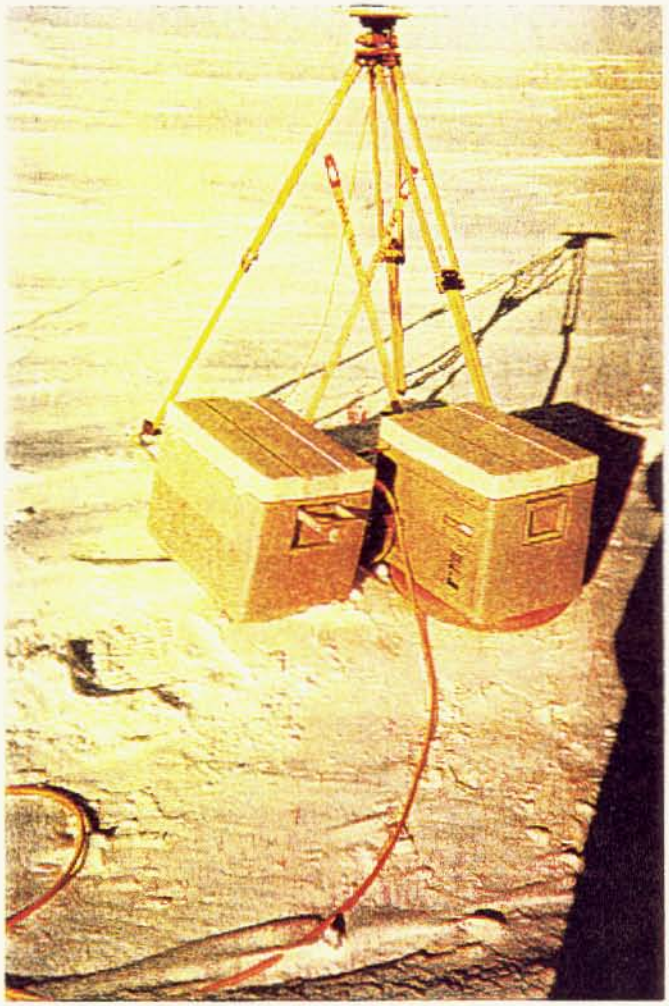
MONTGOMERY WATSON

Anchorage, Alaska

BP EXPLORATION (ALASKA) INC.
LIBERTY ISLAND ROUTE WATER / SEDIMENT SAMPLING

1998 SAMPLING LOCATION DMA 98-2

JOB No. 1 300101



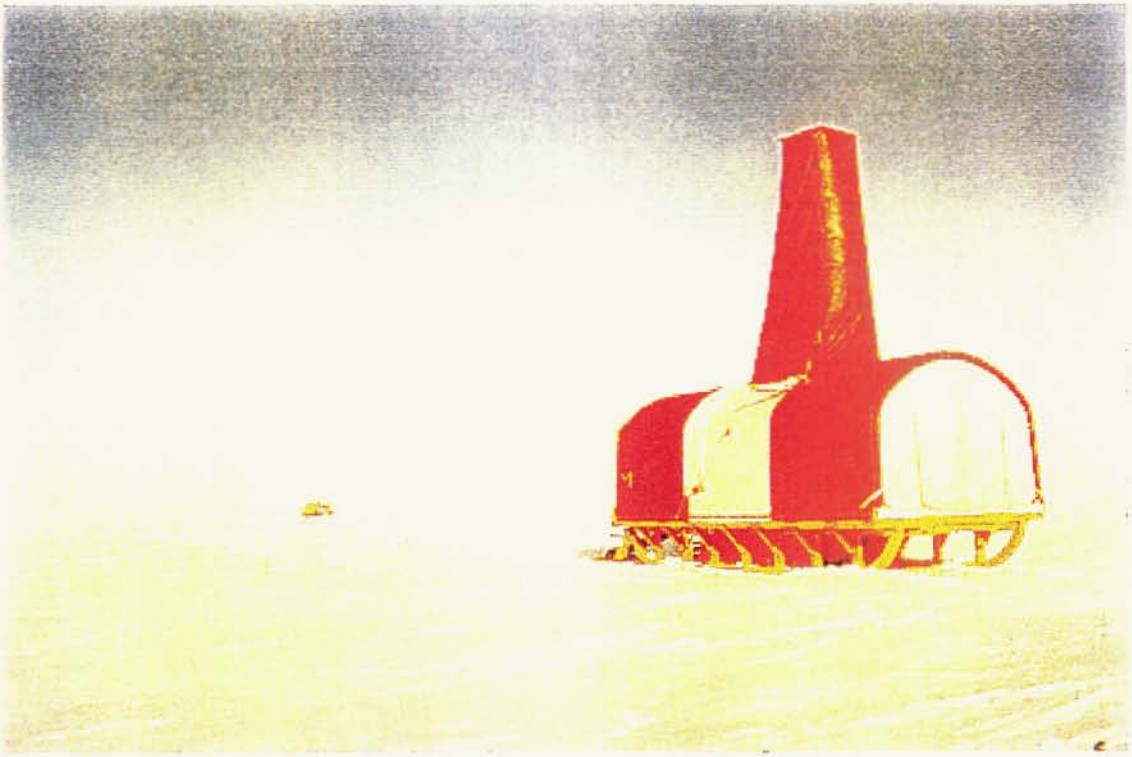
MONTGOMERY WATSON

Anchorage, Alaska

BP EXPLORATION (ALASKA) INC.
LIBERTY ISLAND ROUTE WATER / SEDIMENT SAMPLING

1998 SAMPLING LOCATION 98-9

JOB No. 1 300101



Drilling rig enclosure on skid at DMA 98-14

Sampling Location DMA 98-14

MONTGOMERY WATSON

Anchorage, Alaska

BP EXPLORATION (ALASKA) INC.
LIBERTY ISLAND ROUTE WATER / SEDIMENT SAMPLING

1998 SAMPLING LOCATION DMA 98-14

JOB No. 300101

APPENDIX D

a. Laboratory Data Sheets-Quanterra

Quanterra Incorporated
880 Riverside Parkway
West Sacramento, California 95605

916 373-5600 Telephone
916 372-1059 Fax

Quanterra Environmental Services

May 5, 1998

QUANTERRA INCORPORATED PROJECT NUMBER: 098184
PO/CONTRACT: NA

Lynn DeGeorge
Montgomery Watson
4100 Spenard Road
Anchorage, AK 99517

Dear Ms DeGeorge,

This report contains the analytical results for the fourteen soil and thirteen aqueous samples received under chain of custody by Quanterra Incorporated on March 21, 1998.

The case narrative is an integral part of this report.

If you have any questions, please feel free to call me at (916)374-4381.

Sincerely,

Jon Gildersleeve
Project Manager

Quanterra
Environmental Services

TABLE OF CONTENTS

QUANTERRA INCORPORATED PROJECT NUMBER 098184

Quanterra
Environmental Services

CASE NARRATIVE

QUANTERRA INCORPORATED PROJECT NUMBER 098184

General Comments

All samples were received in good condition. The cooler ambient temperature was was recorded to be 4°C.

All soil sample results are reported in dry weight.

Selected Metals - Methods 6020 & 7471

Due to matrix interference all aqueous samples were analyzed at 10x dilutions (when analyzed at 1x and 5x dilutions, CCV recoveries and CCV/CCB internal standard recoveries could not be maintained within criteria).

Matrix QC performed on sample 98BPXLI09SD01(01) (Lab Id: 098184-0004) had above limit recoveries of the spiked analyte Barium (161% and 131%). Re-analysis confirmed the high recoveries which are attributed to matrix.

There were no other anomalies associated with this project.

Quanterra
Environmental Services

Quanterra - Western Region

Quality Control Definitions

QC Parameter	Definition
QC Batch	A set of up to 20 field samples plus associated laboratory QC samples that are similar in composition (matrix) and that are processed within the same time period with the same reagent and standard lots.
Duplicate Control Sample (DCS)	Consist of a pair of LCSs analyzed within the same QC batch to monitor precision and accuracy independent of sample matrix effects. This QC is performed only if required by client or when insufficient sample is available to perform MS/MSD.
Duplicate Sample (DU)	A second aliquot of an environmental sample, taken from the same sample container when possible, that is processed independently with the first sample aliquot. The results are used to assess the effect of the sample matrix on the precision of the analytical process. The precision estimated using this sample is not necessarily representative of the precision for other samples in the batch.
Laboratory Control Sample (LCS)	A volume of reagent water for aqueous samples or a contaminant-free solid matrix (Ottawa sand) for soil and sediment samples which is spiked with known amounts of representative target analytes and required surrogates. An LCS is carried through the entire analytical process and is used to monitor the accuracy of the analytical process independent of potential matrix effects.
Matrix Spike and Matrix Spike Duplicate (MS/MSD)	A field sample fortified with known quantities of target analytes that are also added to the LCS. Matrix spike duplicate is a second matrix spike sample. MSs/MSDs are carried through the entire analytical process and are used to determine sample matrix effect on accuracy of the measurement system. The accuracy and precision estimated using MS/MSD is only representative of the precision of the sample that was spiked.
Method Blank (MB)	A sample composed of all the reagents (in the same quantities) in reagent water carried through the entire analytical process. The method blank is used to monitor the level of contamination introduced during sample preparation steps.
Surrogate Spike	Organic constituents not expected to be detected in environmental media and are added to every sample and QC at a known concentration. Surrogates are used to determine the efficiency of the sample preparation and the analytical process.

Source: Quanterra® Quality Control Program, Policy QA-003, Rev. 0, 8/19/96.

Quanterra
Environmental Services

SAMPLE DESCRIPTION INFORMATION
for
Montgomery Watson

Lab ID	Client ID		Matrix	Sampled Date	Sampled Time	Received Date
098184-0001-SA	98BPXLI02SD01(01)		SOIL	18 MAR 98	22:10	21 MAR 98
098184-0002-SA	98BPXLI02SD02(03)		SOIL	18 MAR 98	22:30	21 MAR 98
098184-0003-SA	98BPXLI02SD03(09)		SOIL	18 MAR 98	23:30	21 MAR 98
098184-0004-SA	98BPXLI09SD01(01)		SOIL	18 MAR 98	16:10	21 MAR 98
098184-0004-MS	98BPXLI09SD01(01)	Matrix Spike	SOIL	18 MAR 98	16:10	21 MAR 98
098184-0004-SD	98BPXLI09SD01(01)	Matrix Spike	SOIL	18 MAR 98	16:10	21 MAR 98
098184-0005-SA	98BPXLI09SD02(03)		SOIL	18 MAR 98	16:20	21 MAR 98
098184-0006-SA	98BPXLI09SD03(09)		SOIL	18 MAR 98	16:30	21 MAR 98
098184-0007-SA	98BPXLI14SD01(01)		SOIL	18 MAR 98	13:30	21 MAR 98
098184-0008-SA	98BPXLI14SD02(03)		SOIL	18 MAR 98	13:45	21 MAR 98
098184-0009-SA	98BPXLI14SD03(09)		SOIL	18 MAR 98	14:00	21 MAR 98
098184-0010-SA	98BPXLI30SD01(01)		SOIL	19 MAR 98	02:50	21 MAR 98
098184-0011-SA	98BPXLI30SD02(03)		SOIL	19 MAR 98	03:00	21 MAR 98
098184-0012-SA	98BPXLI30SD03(09)		SOIL	19 MAR 98	03:30	21 MAR 98
098184-0013-SA	98BPXLI02SD62(03)		SOIL	18 MAR 98	22:20	21 MAR 98
098184-0014-SA	98BPXLI30SD62(03)		SOIL	18 MAR 98	03:10	21 MAR 98
098184-0015-SA	98BPXLI02WA01		AQUEOUS	18 MAR 98	21:00	21 MAR 98
098184-0016-SA	98BPXLI02WA02		AQUEOUS	18 MAR 98	21:30	21 MAR 98
098184-0017-SA	98BPXLI02WA03		AQUEOUS	18 MAR 98	22:00	21 MAR 98
098184-0018-SA	98BPXLI09WA01		AQUEOUS	18 MAR 98	15:30	21 MAR 98
098184-0019-SA	98BPXLI09WA02		AQUEOUS	18 MAR 98	15:40	21 MAR 98
098184-0020-SA	98BPXLI09WA03		AQUEOUS	18 MAR 98	15:50	21 MAR 98
098184-0021-SA	98BPXLI14WA01		AQUEOUS	18 MAR 98	13:00	21 MAR 98
098184-0022-SA	98BPXLI14WA02		AQUEOUS	18 MAR 98	13:15	21 MAR 98
098184-0023-SA	98BPXLI30WA03		AQUEOUS	19 MAR 98	02:00	21 MAR 98
098184-0024-SA	98BPXLI30WA01		AQUEOUS	19 MAR 98	01:20	21 MAR 98
098184-0025-SA	98BPXLI30WA02		AQUEOUS	19 MAR 98	01:40	21 MAR 98
098184-0026-SA	98BPXLI30WA62		AQUEOUS	19 MAR 98	01:50	21 MAR 98
098184-0027-SA	98BPXLI02WA61		AQUEOUS	18 MAR 98	21:10	21 MAR 98
098184-0027-MS	98BPXLI02WA61		AQUEOUS	18 MAR 98	21:10	21 MAR 98
098184-0027-SD	98BPXLI02WA61		AQUEOUS	18 MAR 98	21:10	21 MAR 98

Montgomery Watson
4100 Spenard Road
Anchorage AK 99517
(907)248-8883
Fax (907) 248-8884
ATTN: Lynn DeGeorge

Laboratory:
Quanterra
880 Riverside Parkway
West Sacramento, CA 95606
(916) 374-4427
(916) 372-1059 FAX
Attn: Nilo Ligi

MW Job Number:

21-DAY TURNAROUND

Sampler's Signature 1498 Burcham

Cool to 4 degrees C

SOIL: Metals- Mercury- 7471, Arsenic, Barium, Chromium, Lead- 6020, 8-oz glass

WATER

Comments

Date	Time	Sample ID	Matrix	Total Containers	Metals- Mercury- 7471, Arsenic, Barium, Chromium, Lead- 6020, 8-oz glass								Comments
3-18	2210	98BPXLI 02 SD01(01)	S	1	✓								
3-18	2230	98BPXLI 02 SD02(03)	S	1	✓								
3-18	2330	98BPXLI 02 SD03(09)	S	1	✓								
3-18	1610	98BPXLI 09 SD01(01)	S	1	✓								MS/MSD
3-18	1620	98BPXLI 09 SD02(03)	S	1	✓								
3-18	1630	98BPXLI 09 SD03(09)	S	1	✓								
3-18	1330	98BPXLI 14 SD01(01)	S	1	✓								
3-18	1345	98BPXLI 14 SD02(03)	S	1	✓								
3-18	1400	98BPXLI 14 SD03(09)	S	1	✓								
3-19	0250	98BPXLI 30 SD01(01)	S	1	✓								
3-19	0300	98BPXLI 30 SD02(03)	S	1	✓								
3-19	0330	98BPXLI 30 SD03(09)	S	1	✓								
3-18	2220	98BPXLI 02 SD62(03)	S	1	✓								
3-18	0310	98BPXLI 30 SD62(03)	S	1	✓								
		98BPXLI __ SD__(__)						LAST	ITEM				
		98BPXLI __ SD__(__)											801695358828

Relinquished by: Burcham	Date 3-19-98 Time 1700	Hand Delivered Y (N)	Shipped Via Fedex	Airbill Number	Date / Time
Received for Laboratory by: Cindy Hyde	Date 3-21-98 Time 1100	Cooler Temperature Upon Arrival 4°C	032198 MM	Laboratory Notified Faxed Marla Deloe	032198 MMD 15:30

Rec'd in good condition 032198 MM

Montgomery Watson
4100 Spenard Road
Anchorage AK 99517
(907)248-8883
Fax (907) 248-8884
ATTN: Lynn DeGeorge

Laboratory:
Quanterra
880 Riverside Parkway
West Sacramento, CA 95606
(916) 374-4427
(916) 372-1059 FAX
Attn: Niki Ligi

MW Job Number:

21-DAY TURNAROUND

Sampler's Signature: 1958 [signature]

Date	Time	Sample ID	Matrix	Total Containers	SOIL						WATER	Metals Arsenic, Barium, Chromium, Lead- 6020, Mercury- 7471 1 l poly	Comments
					Cool to 4 degrees C						Cool to 4 degrees C	HNO_3	
3-18	2100	98BPXLI02 WA01	W	1								✓	
3-18	2130	98BPXLI02 WA02	W	1								✓	
3-18	2200	98BPXLI02 WA03	W	1								✓	
3-18	1530	98BPXLI09 WA01	W	1								✓	
3-18	1540	98BPXLI09 WA02	W	1								✓	
3-18	1550	98BPXLI09 WA03	W	1								✓	
3-18	1300	98BPXLI14 WA01	W	1									
3-18	1315	98BPXLI14 WA02	W	1									
3-19	0200	98BPXLI30 WA03	W	1									
3-19	0120	98BPXLI30 WA01	W	1									
3-19	140	98BPXLI30 WA02	W	1									
		~~98BPXLI___ WA03~~			NO SAMPLE								
3-19	150	98BPXLI30 WA6~~2~~	W	1									
3-19	2110	98BPXLI02 WA~~6~~1	W	1									
		~~98BPXLI___ WA__~~			LAST ITEM								
		98BPXLI___ WA__											

Relinquished by: [signature]	Date 3-19-98 Time 1700	Hand Delivered Y (N)	Shipped Via Fed X	Airbill Number 801695358828	Date Time
Received for Laboratory by: [signature]	Date 3-21-98 Time 1100	Cooler Temperature Upon Arrival 4°C	°C	Laboratory Notified Faxed [signature] 032498 15:30	

032198 MLP

Rec'd in good condition

Quanterra Incorporated - West Sacramento
PROJECT RECEIPT CHECKLIST

Client Name: Montgomery Watson Log #: 50-2

Project # (LIMS ID): 98184 Project copied:

Location(s): W2E

		Initials	Date
Date Received: 3-21-98 Time Received: 0930		AH	3-21-98

Delivered by:
- [x] Federal Express
- [ ] Airborne
- [ ] Courier Express
- [ ] DHL
- [ ] White Cotton Delivers
- [ ] UPS
- [ ] Over the counter (OTC)
- [ ] Ge-Getters

Other:

Custody Seal Status: [x] Intact [ ] Broken [ ] N/A

Custody Seal Number(s): 17451, 17452

Shipping Container(s): [ ] Quanterra [x] Client [ ] N/A

Temperature Record (in °C):

COC#: N/A

Temp Blank: ✓

Ambient Temp: 4°C

pH Measured: [ ] Yes [ ] Anomaly [x] N/A

Sample(s) Labeled By: .....

Sample Labeling Checked By: .....

Short Hold Time Notification:
- Sample Receiving [x] N/A
- Wet Chem [x] N/A
- Metals (Filt/Pres) [x] N/A

[x] Complete shipment received in good condition, with appropriate temperatures, containers, and preservatives. [ ] N/A

[ ] Anomaly (-ies)/comments: [ ] Temperature exceeded (2°C-6°C)

[ ] PM notified [x] N/A

Leave no spaces blank. Use "N/A" if not applicable. Initial and date all "N/A" entries. QA185 02/96 MCD

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
OA																				
OAh																				
GB																				
GBs																				
0AGB																				
0AGBn																				
0AGBs																				
0AGBna																				
GJ																				
0 AGB/AGJ																				
0AGJ																				
_CGJ																				
0CGJ																032198				
0CGJ	(#14)														#15-27					
5 CGJ/AGJ																				
/PJ																				
n/PJn																				
PB															(#15-27)					
PBn																				
PBna																				
PBzn/na																				
PB																				
PBn																				
PBna																				
PBzn/na																				
_"CT																				
lder/Filter																				
F																				
TRI																				
D Trap																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

a = hydrochloric acid na = sodium hydroxide n = nitric acid zn = zinc acetate s = sulfuric acid

* Number of VOA's with air bubbles present

Quanterra
Environmental Services

COELT Error Summary Report

Error Summary Log

05/04/98

EDF 1.2a All files present in deliverable.

Laboratory:	Quanterra Environmental Services, Sacramento, CA
Lab Report Number:	098184
Project Name:	General Analytical
Work Order Number:	N/A
Control Sheet Number:	N/A

Report Summary

Labreport	Sampid	Labsampid	Mtrx	QC	Anmcode	Extmcode	Logdate	Extdate	Anadate	Labloctd	Run Sub
098184	98BPXLI02SD01(01)	0981840001SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI02SD01(01)	0981840001SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI02SD01(01)	0981840001SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI02SD02(03)	0981840002SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI02SD02(03)	0981840002SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI02SD02(03)	0981840002SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI02SD03(09)	0981840003SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI02SD03(09)	0981840003SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI02SD03(09)	0981840003SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI02SD62(03)	0981840013SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI02SD62(03)	0981840013SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI02SD62(03)	0981840013SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI02WA01	0981840015SA	WG	CS	SW6020	SW3020	03/18/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI02WA01	0981840015SA	WG	CS	SW7470	METHOD	03/18/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI02WA02	0981840016SA	WG	CS	SW6020	SW3020	03/18/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI02WA02	0981840016SA	WG	CS	SW7470	METHOD	03/18/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI02WA03	0981840017SA	WG	CS	SW6020	SW3020	03/18/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI02WA03	0981840017SA	WG	CS	SW7470	METHOD	03/18/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI02WA61	0981840027SA	WG	CS	SW6020	SW3020	03/18/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI02WA61	0981840027SA	WG	CS	SW7470	METHOD	03/18/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI09SD01(01)	0981840004SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI09SD01(01)	0981840004SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI09SD01(01)	0981840004SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI09SD02(03)	0981840005SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI09SD02(03)	0981840005SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI09SD02(03)	0981840005SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI09SD03(09)	0981840006SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI09SD03(09)	0981840006SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI09SD03(09)	0981840006SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI09WA01	0981840018SA	WG	CS	SW6020	SW3020	03/18/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI09WA01	0981840018SA	WG	CS	SW7470	METHOD	03/18/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI09WA02	0981840019SA	WG	CS	SW6020	SW3020	03/18/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI09WA02	0981840019SA	WG	CS	SW7470	METHOD	03/18/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI09WA03	0981840020SA	WG	CS	SW6020	SW3020	03/18/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI09WA03	0981840020SA	WG	CS	SW7470	METHOD	03/18/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI14SD01(01)	0981840007SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI14SD01(01)	0981840007SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI14SD01(01)	0981840007SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI14SD02(03)	0981840008SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1

Report Summary

Labreport	Sampid	Labsampid	Mtrx	QC	Anmcode	Extncode	Logdate	Extdate	Anadate	Labloicll	Run Sub
098184	98BPXLI14SD02(03)	0981840008SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI14SD02(03)	0981840008SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI14SD03(09)	0981840009SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI14SD03(09)	0981840009SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI14SD03(09)	0981840009SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI14WA01	0981840021SA	WG	CS	SW6020	SW3020	03/18/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI14WA01	0981840021SA	WG	CS	SW7470	METHOD	03/18/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI14WA02	0981840022SA	WG	CS	SW6020	SW3020	03/18/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI14WA02	0981840022SA	WG	CS	SW7470	METHOD	03/18/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI30SD01(01)	0981840010SA	SO	CS	D2216	NONE	03/19/98	04/15/98	04/15/98	098184	1
098184	98BPXLI30SD01(01)	0981840010SA	SO	CS	SW6020	SW3050	03/19/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI30SD01(01)	0981840010SA	SO	CS	SW7471	METHOD	03/19/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI30SD02(03)	0981840011SA	SO	CS	D2216	NONE	03/19/98	04/15/98	04/15/98	098184	1
098184	98BPXLI30SD02(03)	0981840011SA	SO	CS	SW6020	SW3050	03/19/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI30SD02(03)	0981840011SA	SO	CS	SW7471	METHOD	03/19/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI30SD03(09)	0981840012SA	SO	CS	D2216	NONE	03/19/98	04/15/98	04/15/98	098184	1
098184	98BPXLI30SD03(09)	0981840012SA	SO	CS	SW6020	SW3050	03/19/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI30SD03(09)	0981840012SA	SO	CS	SW7471	METHOD	03/19/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI30SD62(03)	0981840014SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI30SD62(03)	0981840014SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI30SD62(03)	0981840014SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI30WA01	0981840024SA	WG	CS	SW6020	SW3020	03/19/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI30WA01	0981840024SA	WG	CS	SW7470	METHOD	03/19/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI30WA02	0981840025SA	WG	CS	SW6020	SW3020	03/19/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI30WA02	0981840025SA	WG	CS	SW7470	METHOD	03/19/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI30WA03	0981840023SA	WG	CS	SW6020	SW3020	03/19/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI30WA03	0981840023SA	WG	CS	SW7470	METHOD	03/19/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI30WA62	0981840026SA	WG	CS	SW6020	SW3020	03/19/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI30WA62	0981840026SA	WG	CS	SW7470	METHOD	03/19/98	04/10/98	04/10/98	W980409BX	1
		0981840004DU	SO	LR1	D2216	NONE	/ /	04/29/98	04/29/98	098184	1
		BS980403F	SQ	BS1	SW6020	SW3050	/ /	04/03/98	04/09/98	S980403FX	1
		LB980403F	SQ	LB1	SW6020	SW3050	/ /	04/03/98	04/09/98	S980403FX	1
		0981840004MS	SO	MS1	SW6020	SW3050	/ /	04/03/98	04/09/98	S980403FX	1
		0981840004SD	SO	SD1	SW6020	SW3050	/ /	04/03/98	04/09/98	S980403FX	1
		BS980410B	SQ	BS1	SW7471	METHOD	/ /	04/10/98	04/11/98	S980410BX	1
		LB980410B	SQ	LB1	SW7471	METHOD	/ /	04/10/98	04/11/98	S980410BX	1
		0981840004MS	SO	MS1	SW7471	METHOD	/ /	04/10/98	04/11/98	S980410BX	1
		0981840004SD	SO	SD1	SW7471	METHOD	/ /	04/10/98	04/11/98	S980410BX	1

Report Summary

Labreport	Sampid	Labsampid	Mtrx	QC	Anmcode	Exmcode	Logdate	Extdate	Anadate	Lablotctl	Run	Sub
		BS980402M	WQ	BS1	SW6020	SW3020	/ /	04/02/98	04/08/98	W980402MX	1	
		LB980402M	WQ	LB1	SW6020	SW3020	/ /	04/02/98	04/08/98	W980402MX	1	
		0981840027MS	WG	MS1	SW6020	SW3020	/ /	04/02/98	04/08/98	W980402MX	1	
		0981840027SD	WG	SD1	SW6020	SW3020	/ /	04/02/98	04/08/98	W980402MX	1	
		BS980409B	WQ	BS1	SW7470	METHOD	/ /	04/09/98	04/10/98	W980409BX	1	
		LB980409B	WQ	LB1	SW7470	METHOD	/ /	04/09/98	04/10/98	W980409BX	1	
		0981840027MS	WG	MS1	SW7470	METHOD	/ /	04/10/98	04/10/98	W980409BX	1	
		0981840027SD	WG	SD1	SW7470	METHOD	/ /	04/10/98	04/10/98	W980409BX	1	

Npdlsamp: Error Summary Log

05/04/98

Error type	Logcode	Projname	Npdlwo	Sampid	Matrix
There are no errors in this data file					

Npdlte: Error Summary Log

05/04/98

Error type	Labsampid	Qccode	Anmcode	Exlncode	Anadate	Run number
There are no errors in this data file					/ /	0

Npdlres: Error Summary Log

05/04/98

Error Type	Labsampid	Qccode	Matrix	Anlmcode	Pvccode	Analdate	Run number	Partabel
There are no errors in this data file						/ /	0	

Npdlq[illegible]rror Summary Log

05/04/98

Error type	Labiotcd	Animcode	Parlabel	Lccode	Labqcid
There are no errors in this data files					

Npdlcl: Error Summary Log

05/04/98

Error type	Clrevdate	Animcode	Eximcode	Parlabel	Clcode
There are no errors in this data file	/ /				

Quanterra
Environmental Services

Summary Report
Selected Metals

Laboratory Report Project Overview

EDF 1.2a

Laboratory:	Quanterra Environmental Services, Sacramento, CA
Lab Report Number:	098184
Project Name:	General Analytical
Work Order Number:	N/A
Control Sheet Number:	N/A

Report Summary

Labreport	Sampid	Labsampid	Mtrx	QC	Anmcode	Exmcode	Logdate	Extdate	Anadate	Labloctl	Run Sub
098184	98BPXLI02SD01(01)	0981840001SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI02SD01(01)	0981840001SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI02SD01(01)	0981840001SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI02SD02(03)	0981840002SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI02SD02(03)	0981840002SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI02SD02(03)	0981840002SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI02SD03(09)	0981840003SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI02SD03(09)	0981840003SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI02SD03(09)	0981840003SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI02SD62(03)	0981840013SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI02SD62(03)	0981840013SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI02SD62(03)	0981840013SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI02WA01	0981840015SA	WG	CS	SW6020	SW3020	03/18/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI02WA01	0981840015SA	WG	CS	SW7470	METHOD	03/18/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI02WA02	0981840016SA	WG	CS	SW6020	SW3020	03/18/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI02WA02	0981840016SA	WG	CS	SW7470	METHOD	03/18/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI02WA03	0981840017SA	WG	CS	SW6020	SW3020	03/18/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI02WA03	0981840017SA	WG	CS	SW7470	METHOD	03/18/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI02WA61	0981840027SA	WG	CS	SW6020	SW3020	03/18/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI02WA61	0981840027SA	WG	CS	SW7470	METHOD	03/18/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI09SD01(01)	0981840004SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI09SD01(01)	0981840004SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI09SD01(01)	0981840004SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI09SD02(03)	0981840005SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI09SD02(03)	0981840005SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI09SD02(03)	0981840005SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI09SD03(09)	0981840006SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI09SD03(09)	0981840006SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI09SD03(09)	0981840006SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI09WA01	0981840018SA	WG	CS	SW6020	SW3020	03/18/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI09WA01	0981840018SA	WG	CS	SW7470	METHOD	03/18/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI09WA02	0981840019SA	WG	CS	SW6020	SW3020	03/18/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI09WA02	0981840019SA	WG	CS	SW7470	METHOD	03/18/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI09WA03	0981840020SA	WG	CS	SW6020	SW3020	03/18/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI09WA03	0981840020SA	WG	CS	SW7470	METHOD	03/18/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI14SD01(01)	0981840007SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI14SD01(01)	0981840007SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1

Report Summary

Labrepoft	Sampid	Labsampid	Mtrx	QC	Anmcode	Extncode	Logdate	Extdate	Anadate	Labtotcd	Run Sub
098184	98BPXLI14SD01(01)	0981840007SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI14SD02(03)	0981840008SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI14SD02(03)	0981840008SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI14SD02(03)	0981840008SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI14SD03(09)	0981840009SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI14SD03(09)	0981840009SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI14SD03(09)	0981840009SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI14WA01	0981840021SA	WG	CS	SW6020	SW3020	03/18/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI14WA01	0981840021SA	WG	CS	SW7470	METHOD	03/18/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI14WA02	0981840022SA	WG	CS	SW6020	SW3020	03/18/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI14WA02	0981840022SA	WG	CS	SW7470	METHOD	03/18/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI30SD01(01)	0981840010SA	SO	CS	D2216	NONE	03/19/98	04/15/98	04/15/98	098184	1
098184	98BPXLI30SD01(01)	0981840010SA	SO	CS	SW6020	SW3050	03/19/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI30SD01(01)	0981840010SA	SO	CS	SW7471	METHOD	03/19/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI30SD02(03)	0981840011SA	SO	CS	D2216	NONE	03/19/98	04/15/98	04/15/98	098184	1
098184	98BPXLI30SD02(03)	0981840011SA	SO	CS	SW6020	SW3050	03/19/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI30SD02(03)	0981840011SA	SO	CS	SW7471	METHOD	03/19/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI30SD03(09)	0981840012SA	SO	CS	D2216	NONE	03/19/98	04/15/98	04/15/98	098184	1
098184	98BPXLI30SD03(09)	0981840012SA	SO	CS	SW6020	SW3050	03/19/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI30SD03(09)	0981840012SA	SO	CS	SW7471	METHOD	03/19/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI30SD62(03)	0981840014SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI30SD62(03)	0981840014SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI30SD62(03)	0981840014SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI30WA01	0981840024SA	WG	CS	SW6020	SW3020	03/19/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI30WA01	0981840024SA	WG	CS	SW7470	METHOD	03/19/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI30WA02	0981840025SA	WG	CS	SW6020	SW3020	03/19/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI30WA02	0981840025SA	WG	CS	SW7470	METHOD	03/19/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI30WA03	0981840023SA	WG	CS	SW6020	SW3020	03/19/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI30WA03	0981840023SA	WG	CS	SW7470	METHOD	03/19/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI30WA62	0981840026SA	WG	CS	SW6020	SW3020	03/19/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI30WA62	0981840026SA	WG	CS	SW7470	METHOD	03/19/98	04/10/98	04/10/98	W980409BX	1
		BS980402M	WQ	BS1	SW6020	SW3020	/ /	04/02/98	04/08/98	W980402MX	1
		BS980403F	SQ	BS1	SW6020	SW3050	/ /	04/03/98	04/09/98	S980403FX	1
		BS980409B	WQ	BS1	SW7470	METHOD	/ /	04/09/98	04/10/98	W980409BX	1
		BS980410B	SQ	BS1	SW7471	METHOD	/ /	04/10/98	04/11/98	S980410BX	1
		LB980402M	WQ	LB1	SW6020	SW3020	/ /	04/02/98	04/08/98	W980402MX	1
		LB980403F	SQ	LB1	SW6020	SW3050	/ /	04/03/98	04/09/98	S980403FX	1

Report Summary

Labreport	Sampid	Labsampid	Mtrx	QC	Anmcode	Exmcode	Logdate	Extdate	Anadate	Labloctrl	Run Sub
		LB980409B	WQ	LB1	SW7470	METHOD	/ /	04/09/98	04/10/98	W980409BX	1
		LB980410B	SQ	LB1	SW7471	METHOD	/ /	04/10/98	04/11/98	S980410BX	1
		0981840004DU	SO	LR1	D2216	NONE	/ /	04/29/98	04/29/98	098184	1
		0981840004MS	SO	MS1	SW6020	SW3050	/ /	04/03/98	04/09/98	S980403FX	1
		0981840004MS	SO	MS1	SW7471	METHOD	/ /	04/10/98	04/11/98	S980410BX	1
		0981840027MS	WG	MS1	SW6020	SW3020	/ /	04/02/98	04/08/98	W980402MX	1
		0981840027MS	WG	MS1	SW7470	METHOD	/ /	04/10/98	04/10/98	W980409BX	1
		0981840004SD	SO	SD1	SW6020	SW3050	/ /	04/03/98	04/09/98	S980403FX	1
		0981840004SD	SO	SD1	SW7471	METHOD	/ /	04/10/98	04/11/98	S980410BX	1
		0981840027SD	WG	SD1	SW6020	SW3020	/ /	04/02/98	04/08/98	W980402MX	1
		0981840027SD	WG	SD1	SW7470	METHOD	/ /	04/10/98	04/10/98	W980409BX	1

Quanterra Environmental Services, Sacramento, CA

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXL!02SD01(01)
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:2210
Lab Samp ID:0981840001SA

Basis: Dry
Matrix: Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.1320	0.2779PQL		5.1557	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Barium	0.0306	0.1390PQL		52.5717	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Chromium	0.1195	0.2779PQL		11.5260	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Lead	0.0069	0.1390PQL		5.7830	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI02SD02(03)
Descr/Location: 98B

Sample Date: 03/18/98
Sample Time: 2230
Lab Samp ID: 0981840002SA

Basis: Dry
Matrix: Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.1461	0.3075PQL		4.5284	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Barium	0.0338	0.1538PQL		40.7448	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Chromium	0.1322	0.3075PQL		13.9137	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Lead	0.0077	0.1538PQL		4.7311	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX

Approved by: Tony Hildebrand Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI02SD03(09)
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:2330
Lab Samp ID:0981840003SA

Basis: Dry
Matrix: Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.1354	0.2851PQL		7.7323	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Barium	0.0314	0.1426PQL		48.2845	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Chromium	0.1226	0.2851PQL		11.2065	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Lead	0.0071	0.1426PQL		6.4270	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI02SD62(03)
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:2220
Lab Samp ID:0981840013SA

Basis: Dry
Matrix: Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.1267	0.2668PQL		11.2429	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Barium	0.0293	0.1334PQL		86.1714	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Chromium	0.1147	0.2668PQL		27.4382	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Lead	0.0067	0.1334PQL		13.8598	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI09SD01(01)
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:1610
Lab Samp ID:0981840004SA

Basis: Dry
Matrix: Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.1407	0.2961PQL		5.4423	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Barium	0.0326	0.1481PQL		33.6984	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Chromium	0.1273	0.2961PQL		10.6462	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Lead	0.0074	0.1481PQL		4.8054	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI09SD02(03)	Sample Date:03/18/98	Basis: Dry
Descr/Location:	98B	Sample Time:1620	Matrix: Soil
		Lab Samp ID:0981840005SA	

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.1464	0.3082PQL		7.5678	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Barium	0.0339	0.1541PQL		43.4884	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Chromium	0.1325	0.3082PQL		12.6548	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Lead	0.0077	0.1541PQL		7.1493	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI09SD03(09)
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:1630
Lab Samp ID:0981840006SA

Basis: Dry
Matrix: Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.1187	0.2498PQL		3.7117	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Barium	0.0275	0.1249PQL		38.1624	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Chromium	0.1074	0.2498PQL		7.0558	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Lead	0.0062	0.1249PQL		3.0943	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI14SD01(01)
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:1330
Lab Samp ID:0981840007SA

Basis: Dry
Matrix: Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.1249	0.2629PQL		5.1296	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Barium	0.0289	0.1315PQL		27.9007	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Chromium	0.1131	0.2629PQL		9.3918	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Lead	0.0066	0.1315PQL		4.6579	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX

Approved by: Tom Hilderbrand Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI14SD02(03)
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:1345
Lab Samp ID:0981840008SA

Basis: Dry
Matrix: Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.1186	0.2496PQL		4.6997	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Barium	0.0275	0.1248PQL		45.3274	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Chromium	0.1073	0.2496PQL		12.7658	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Lead	0.0062	0.1248PQL		4.2933	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI14SD03(09)
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:1400
Lab Samp ID:0981840009SA

Basis: Dry
Matrix: Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.1286	0.2708PQL		3.3052	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Barium	0.0298	0.1354PQL		23.4768	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Chromium	0.1165	0.2708PQL		5.4262	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Lead	0.0068	0.1354PQL		2.2282	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX

Approved by: Jon Hildebrand Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI30SD01(01)
Descr/Location: 98B

Sample Date:03/19/98
Sample Time:0250
Lab Samp ID:0981840010SA

Basis: Dry
Matrix: Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.1330	0.2800PQL		6.0916	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Barium	0.0308	0.1400PQL		53.7164	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Chromium	0.1204	0.2800PQL		12.8973	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Lead	0.0070	0.1400PQL		5.7362	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI30SD02(03)	Sample Date:03/19/98	Basis: Dry
Descr/Location:	98B	Sample Time:0300	Matrix: Soil
		Lab Samp ID:0981840011SA	

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.1285	0.2706PQL		4.1759	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Barium	0.0298	0.1353PQL		43.5598	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Chromium	0.1164	0.2706PQL		11.3012	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Lead	0.0068	0.1353PQL		3.5541	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI30SD03(09)
Descr/Location: 98B

Sample Date:03/19/98
Sample Time:0330
Lab Samp ID:0981840012SA

Basis: Dry
Matrix: Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.1419	0.2988PQL		4.7554	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Barium	0.0329	0.1494PQL		46.8357	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Chromium	0.1285	0.2988PQL		13.8785	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Lead	0.0075	0.1494PQL		4.9353	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI30SD62(03)
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:0310
Lab Samp ID:0981840014SA

Basis: Dry
Matrix: Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.1307	0.2751PQL		3.5411	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Barium	0.0303	0.1376PQL		43.5918	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Chromium	0.1183	0.2751PQL		11.1048	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Lead	0.0069	0.1376PQL		3.7499	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI02SD01(01)	Sample Date:03/18/98	Basis: Dry
Descr/Location:	98B	Sample Time:2210	Matrix: Soil
		Lab Samp ID:0981840001SA	

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0042	0.0278PQL		0.0852	MG/KG dw	1.0	METHOD	SW7471	04/11/98	S980410BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI02SD02(03)	Sample Date: 03/18/98	Basis: Dry
Descr/Location:	98B	Sample Time: 2230	Matrix: Soil
		Lab Samp ID: 0981840002SA	

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0046	0.0308PQL		0.0423	MG/KG dw	1.0	METHOD	SW7471	04/11/98	S980410BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI02SD03(09)	Sample Date: 03/18/98	Basis: Dry
Descr/Location:	98B	Sample Time: 2330	Matrix: Soil
		Lab Samp ID: 0981840003SA	

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0043	0.0285PQL		0.0472	MG/KG dw	1.0	METHOD	SW7471	04/11/98	S980410BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI02SD62(03)
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:2220
Lab Samp ID:0981840013SA

Basis: Dry
Matrix: Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0040	0.0267PQL		0.0701	MG/KG dw	1.0	METHOD	SW7471	04/11/98	S980410BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI09SD01(01)	Sample Date:03/18/98	Basis: Dry
Descr/Location:	98B	Sample Time:1610	Matrix: Soil
		Lab Samp ID:0981840004SA	

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0044	0.0296PQL		0.0476	MG/KG dw	1.0	METHOD	SW7471	04/11/98	S980410BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXL!09SD02(03)	Sample Date:	03/18/98
Descr/Location:	98B	Sample Time:	1620
		Lab Samp ID:	0981840005SA
		Basis:	Dry
		Matrix:	Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0046	0.0308PQL		0.0616	MG/KG dw	1.0	METHOD	SW7471	04/11/98	S980410BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI09SD03(09)	Sample Date:	03/18/98
Descr/Location:	98B	Sample Time:	1630
		Lab Samp ID:	0981840006SA
		Basis:	Dry
		Matrix:	Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0037	0.0250PQL		ND	MG/KG dw	1.0	METHOD	SW7471	04/11/98	S980410BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI14SD01(01)
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:1330
Lab Samp ID:0981840007SA

Basis: Dry
Matrix: Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0039	0.0263PQL		ND	MG/KG dw	1.0	METHOD	SW7471	04/11/98	S980410BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI14SD02(03)	Sample Date:03/18/98	Basis: Dry
Descr/Location:	98B	Sample Time:1345	Matrix: Soil
		Lab Samp ID:0981840008SA	

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0037	0.0250PQL		0.0280	MG/KG dw	1.0	METHOD	SW7471	04/11/98	S980410BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI14SD03(09)
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:1400
Lab Samp ID:0981840009SA

Basis: Dry
Matrix: Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0041	0.0271PQL		ND	MG/KG dw	1.0	METHOD	SW7471	04/11/98	S980410BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI30SD01(01)	Sample Date:	03/19/98
Descr/Location:	98B	Sample Time:	0250
		Lab Samp ID:	0981840010SA
		Basis:	Dry
		Matrix:	Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0042	0.0280PQL		0.0426	MG/KG dw	1.0	METHOD	SW7471	04/11/98	S980410BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI30SD02(03)	Sample Date:03/19/98	Basis: Dry
Descr/Location:	98B	Sample Time:0300	Matrix: Soil
		Lab Samp ID:0981840011SA	

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0041	0.0271PQL		ND	MG/KG dw	1.0	METHOD	SW7471	04/11/98	S980410BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI30SD03(09)	Sample Date:	03/19/98
Descr/Location:	98B	Sample Time:	0330
		Lab Samp ID:	0981840012SA
		Basis:	Dry
		Matrix:	Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0045	0.0299PQL		0.0378	MG/KG dw	1.0	METHOD	SW7471	04/11/98	S980410BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI30SD62(03)	Sample Date:	03/18/98
Descr/Location:	98B	Sample Time:	0310
		Lab Samp ID:	0981840014SA
Basis:	Dry	Matrix:	Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0041	0.0275PQL		0.0337	MG/KG dw	1.0	METHOD	SW7471	04/11/98	S980410BX

Approved by: _____ Date: 6/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI02SD01(01)	Sample Date:	03/18/98
Descr/Location:	98B	Sample Time:	2210
		Lab Samp ID:	0981840001SA
		Basis:	Wet
		Matrix:	Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Percent Moisture	NA	NA		28.0400	PERCE ww	1.0	NONE	D2216	04/15/98	098184

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXL02SD02(03)	Sample Date:	03/18/98
Descr/Location:	98B	Sample Time:	2230
		Lab Samp ID:	0981840002SA
		Basis:	Wet
		Matrix:	Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Percent Moisture	NA	NA		34.9600	PERCE ww	1.0	NONE	D2216	04/15/98	098184

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI02SD03(09)	Sample Date:	03/18/98
Descr/Location:	98B	Sample Time:	2330
		Lab Samp ID:	0981840003SA
		Basis:	Wet
		Matrix:	Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Percent Moisture	NA	NA		29.8500	PERCE ww	1.0	NONE	D2216	04/15/98	098184

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI02SD62(03)
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:2220
Lab Samp ID:0981640013SA

Basis: Wet
Matrix: Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Percent Moisture	NA	NA		25.0300	PERCE ww	1.0	NONE	D2216	04/15/98	098184

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI09SD01(01)	Sample Date: 03/18/98	Basis: Wet
Descr/Location:	98B	Sample Time: 1810	Matrix: Soil
		Lab Samp ID: 0981840004SA	

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Percent Moisture	NA	NA		32.4600	PERCE ww	1.0	NONE	D2216	04/15/98	098184

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI09SD02(03)	Sample Date:03/18/98	Basis: Wet
Descr/Location:	98B	Sample Time:1620	Matrix: Soil
		Lab Samp ID:0981840005SA	

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Percent Moisture	NA	NA		35.1000	PERCE ww	1.0	NONE	D2216	04/15/98	098184

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI09SD03(09)	Sample Date:	03/18/98
Descr/Location:	98B	Sample Time:	1630
		Lab Samp ID:	0981840006SA
		Basis:	Wet
		Matrix:	Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Percent Moisture	NA	NA		19.9500	PERCE ww	1.0	NONE	D2216	04/15/98	098184

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI14SD01(01)
Descr/Location: 98B

Sample Date: 03/18/98
Sample Time: 1330
Lab Samp ID: 0981840007SA

Basis: Wet
Matrix: Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Percent Moisture	NA	NA		23.9300	PERCE ww	1.0	NONE	D2216	04/15/98	098184

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI14SD02(03)	Sample Date:	03/18/98
Descr/Location:	98B	Sample Time:	1345
		Lab Samp ID:	0981840008SA
		Basis:	Wet
		Matrix:	Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Percent Moisture	NA	NA		19.8800	PERCE ww	1.0	NONE	D2216	04/15/98	098184

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI14SD03(09)	Sample Date:	03/18/98
Descr/Location:	98B	Sample Time:	1400
		Lab Samp ID:	0981840009SA
		Basis:	Wet
		Matrix:	Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Percent Moisture	NA	NA		26.1500	PERCE ww	1.0	NONE	D2216	04/15/98	098184

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI30SD01(01)	Sample Date:03/19/98	Basis: Wet
Descr/Location:	98B	Sample Time:0250	Matrix: Soil
		Lab Samp ID:0981840010SA	

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Percent Moisture	NA	NA		28.5600	PERCE ww	1.0	NONE	D2216	04/15/98	098184

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI30SD02(03)	Sample Date:	03/19/98
Descr/Location:	98B	Sample Time:	0300
		Lab Samp ID:	0981840011SA
		Basis:	Wet
		Matrix:	Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Percent Moisture	NA	NA		26.0900	PERCE ww	1.0	NONE	D2216	04/15/98	098184

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI30SD03(09)	Sample Date:03/19/98	Basis: Wet
Descr/Location:	98B	Sample Time:0330	Matrix: Soil
		Lab Samp ID:0981840012SA	

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Percent Moisture	NA	NA		33.0700	PERCE ww	1.0	NONE	D2216	04/15/98	098184

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI30SD62(03)	Sample Date:	03/18/98
Descr/Location:	98B	Sample Time:	0310
		Lab Samp ID:	0981840014SA
		Basis:	Wet
		Matrix:	Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Percent Moisture	NA	NA		27.3000	PERCE ww	1.0	NONE	D2216	04/15/98	098184

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI02WA01
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:2100
Lab Samp ID:0981840015SA

Basis: Wet
Matrix: Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.0114	0.0200PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Barium	0.0013	0.0100PQL	DF	0.0257	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Chromium	0.0084	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Lead	0.0007	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX

DF: Reporting limits elevated due to matrix interferences

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI02WA02
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:2130
Lab Samp ID:0981840016SA

Basis: Wet
Matrix: Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.0114	0.0200PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Barium	0.0013	0.0100PQL	DF	0.0233	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Chromium	0.0084	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Lead	0.0007	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX

DF: Reporting limits elevated due to matrix interferences

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI02WA03
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:2200
Lab Samp ID:0981840017SA

Basis: Wet
Matrix: Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.0114	0.0200PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Barium	0.0013	0.0100PQL	DF	0.0203	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Chromium	0.0084	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Lead	0.0007	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX

DF: Reporting limits elevated due to matrix interferences

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI02WA61
Descr/Location: 98B

Sample Date: 03/18/98
Sample Time: 2110
Lab Samp ID: 0981840027SA

Basis: Wet
Matrix: Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.0114	0.0200PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Barium	0.0013	0.0100PQL	DF	0.0227	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Chromium	0.0084	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Lead	0.0007	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX

DF: Reporting limits elevated due to matrix interferences

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI09WA01
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:1530
Lab Samp ID:0981840018SA

Basis: Wet
Matrix: Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.0114	0.0200PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Barium	0.0013	0.0100PQL	DF	0.0200	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Chromium	0.0084	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Lead	0.0007	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX

DF: Reporting limits elevated due to matrix interferences

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI09WA02
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:1540
Lab Samp ID:0981840019SA

Basis: Wet
Matrix: Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.0114	0.0200PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Barium	0.0013	0.0100PQL	DF	0.0218	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Chromium	0.0084	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Lead	0.0007	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX

DF: Reporting limits elevated due to matrix interferences

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI09WA03
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:1550
Lab Samp ID:0981840020SA

Basis: Wet
Matrix: Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.0114	0.0200PQL	DF	0.0202	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Barium	0.0013	0.0100PQL	DF	0.0254	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Chromium	0.0084	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Lead	0.0007	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX

DF: Reporting limits elevated due to matrix interferences

Approved by: Tom Hildebrand Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI14WA01
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:1300
Lab Samp ID:0981840021SA

Basis: Wet
Matrix: Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.0114	0.0200PQL	DF	0.0204	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Barium	0.0013	0.0100PQL	DF	0.0551	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Chromium	0.0084	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Lead	0.0007	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX

DF: Reporting limits elevated due to matrix interferences

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI14WA02
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:1315
Lab Samp ID:0981840022SA

Basis: Wet
Matrix: Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.0114	0.0200PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Barium	0.0013	0.0100PQL	DF	0.0314	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Chromium	0.0084	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Lead	0.0007	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX

DF: Reporting limits elevated due to matrix interferences

Approved by: Tom Hildebrand Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI30WA01
Descr/Location: 98B

Sample Date:03/19/98
Sample Time:0120
Lab Samp ID:0981840024SA

Basis: Wet
Matrix: Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.0114	0.0200PQL	DF	0.0206	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Barium	0.0013	0.0100PQL	DF	0.0179	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Chromium	0.0084	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Lead	0.0007	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX

DF: Reporting limits elevated due to matrix interferences

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI30WA02
Descr/Location: 98B

Sample Date: 03/19/98
Sample Time: 0140
Lab Samp ID: 0981840025SA

Basis: Wet
Matrix: Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.0114	0.0200PQL	DF	0.0226	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Barium	0.0013	0.0100PQL	DF	0.0175	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Chromium	0.0084	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Lead	0.0007	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX

DF: Reporting limits elevated due to matrix interferences

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI30WA03
Descr/Location: 98B

Sample Date:03/19/98
Sample Time:0200
Lab Samp ID:0981840023SA

Basis: Wet
Matrix: Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.0114	0.0200PQL	DF	0.0213	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Barium	0.0013	0.0100PQL	DF	0.0195	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Chromium	0.0084	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Lead	0.0007	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX

DF: Reporting limits elevated due to matrix interferences

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI30WA62
Descr/Location: 98B

Sample Date:03/19/98
Sample Time:0150
Lab Samp ID:0981840026SA

Basis: Wet
Matrix: Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.0114	0.0200PQL	DF	0.0213	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Barium	0.0013	0.0100PQL	DF	0.0266	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Chromium	0.0084	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Lead	0.0007	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX

DF: Reporting limits elevated due to matrix interferences

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI02WA01	Sample Date:03/18/98	Basis: Wet
Descr/Location:	98B	Sample Time:2100	Matrix: Ground Water
		Lab Samp ID:0981840015SA	

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0001	0.0002PQL		ND	MG/L	ww 1.0	METHOD	SW7470	04/10/98	W980409BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI02WA02	Sample Date:03/18/98	Basis: Wet
Descr/Location:	98B	Sample Time:2130	Matrix: Ground Water
		Lab Samp ID:0981840016SA	

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0001	0.0002PQL		ND	MG/L	ww 1.0	METHOD	SW7470	04/10/98	W980409BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI02WA03	Sample Date:	03/18/98
Descr/Location:	98B	Sample Time:	2200
		Lab Samp ID:	0981840017SA
Basis:	Wet	Matrix:	Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0001	0.0002PQL		ND	MG/L	ww 1.0	METHOD	SW7470	04/10/98	W980409BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI02WA61	Sample Date:	03/18/98
Descr/Location:	98B	Sample Time:	2110
		Lab Samp ID:	0981840027SA
		Basis:	Wet
		Matrix:	Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0001	0.0002PQL		ND	MG/L	ww 1.0	METHOD	SW7470	04/10/98	W980409BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI09WA01
Descr/Location: 98B

Sample Date: 03/18/98
Sample Time: 1530
Lab Samp ID: 0981840018SA

Basis: Wet
Matrix: Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0001	0.0002PQL		ND	MG/L	ww 1.0	METHOD	SW7470	04/10/98	W980409BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI09WA02	Sample Date:	03/18/98
Descr/Location:	98B	Sample Time:	1540
		Lab Samp ID:	0981840019SA
Basis:	Wet	Matrix:	Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0001	0.0002PQL		ND	MG/L	ww 1.0	METHOD	SW7470	04/10/98	W980409BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI09WA03
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:1550
Lab Samp ID:0981840020SA

Basis: Wet
Matrix: Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0001	0.0002PQL		ND	MG/L	ww 1.0	METHOD	SW7470	04/10/98	W980409BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI14WA01
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:1300
Lab Samp ID:0981840021SA

Basis: Wet
Matrix: Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0001	0.0002PQL		ND	MG/L	ww 1.0	METHOD	SW7470	04/10/98	W980409BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI14WA02	Sample Date:	03/18/98
Descr/Location:	98B	Sample Time:	1315
		Lab Samp ID:	0981840022SA
		Basis:	Wet
		Matrix:	Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0001	0.0002PQL		ND	MG/L	ww 1.0	METHOD	SW7470	04/10/98	W980409BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI30WA01	Sample Date:	03/19/98
Descr/Location:	98B	Sample Time:	0120
		Lab Samp ID:	0981840024SA
		Basis:	Wet
		Matrix:	Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0001	0.0002PQL		ND	MG/L	ww 1.0	METHOD	SW7470	04/10/98	W980409BX

Approved by: _____ Date: 6/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI30WA02
Descr/Location: 98B

Sample Date: 03/19/98
Sample Time: 0140
Lab Samp ID: 0981840025SA

Basis: Wet
Matrix: Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0001	0.0002PQL		ND	MG/L ww	1.0	METHOD	SW7470	04/10/98	W980409BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI30WA03	Sample Date:	03/19/98
Descr/Location:	98B	Sample Time:	0200
		Lab Samp ID:	0981840023SA
		Basis:	Wet
		Matrix:	Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0001	0.0002PQL		ND	MG/L	ww 1.0	METHOD	SW7470	04/10/98	W980409BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI30WA62
Descr/Location: 98B

Sample Date: 03/19/98
Sample Time: 0150
Lab Samp ID: 0981840026SA

Basis: Wet
Matrix: Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0001	0.0002PQL		ND	MG/L	ww 1.0	METHOD	SW7470	04/10/98	W980409BX

Approved by: _____ Date: 5/5/98

QA/QC Report
Lab Duplicate Summary

Quanterra Environmental Services, Sacramento, CA

Lab Report No.: 098184 Date: 05/04/98

QC Batch: 098184
Matrix: Soil
Lab Samp ID: 0981840004DU
Basis: Wet

Project Name: General Analytical
Project No.: N/A
Field ID: 98BPXLI09SD01(01)
Lab Ref ID: 0981840004SA

Analyte	Analysis Method	Detection Limit	Reporting Limit		Result	Duplicate Result	Units	Average	RPD	Acceptance Criteria
Percent Moisture	D2216	NA	NA	PQL	32.4600	34.4600	PERCENT	33.4600	6.0	20MLR

QA/QC Report
Method Blank Summary

Quanterra Environmental Services, Sacramento, CA

Lab Report No.: 098184 Date: 05/04/98

QC Batch: S980403FX
Matrix: Soil/Solid Quality Control Matrix
Lab Samp ID: LB980403F

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date
Arsenic	0.0950	0.2000PQL		ND	MG/KG	1.0	SW3050	SW6020	04/09/98
Barium	0.0220	0.1000PQL		ND	MG/KG	1.0	SW3050	SW6020	04/09/98
Chromium	0.0860	0.2000PQL		ND	MG/KG	1.0	SW3050	SW6020	04/09/98
Lead	0.0050	0.1000PQL		ND	MG/KG	1.0	SW3050	SW6020	04/09/98

QA/QC Report
Matrix Spike/Duplicate Matrix Spike Summary

Quanterra Environmental Services, Sacramento, CA

Lab Report No.: 098184 Date: 05/04/98

QC Batch: S980403FX
Matrix: Soil
Lab Samp ID: 0981840004MS
Basis: Dry

Project Name: General Analytical
Project No.: N/A
Field ID: 98BPXLI09SD01(01)
Lab Ref ID: 0981840004SA

Analyte	Analysis Method	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Units		% Recoveries MS	% Recoveries DMS	% Recoveries RPD	Acceptance Criteria % Rec		Acceptance Criteria RPD
Arsenic	SW6020	29.612	29.612	5.4423	31.3480	32.5612	MG/KG	dw	87.5	91.6	4.8	125-75	MSA	35MSP
Barium	SW6020	29.6121	29.6121	33.6984	81.2348	72.5628	MG/KG	dw	1611	1311	21	125-75	MSA	35MSP
Chromium	SW6020	29.6120	29.6120	10.6462	41.7751	40.7374	MG/KG	dw	105	102	2.9	125-75	MSA	35MSP
Lead	SW6020	29.612	29.612	4.8054	30.7357	30.7762	MG/KG	dw	87.6	87.7	0.11	125-75	MSA	35MSP

QA Report
Blank Spike/Duplicate Blank Spike Summary

Quanterra Environmental Services, Sacramento, CA

Lab Report No.: 098184 Date: 05/04/98

QC Batch: S980403FX
Matrix: Soil/Solid Quality Control Matrix
Lab Samp ID: BS980403F

Analyte	Analysis Method	Spike Level LCS	Spike Level LCD	Spike Result LCS	Spike Result LCD	Units		% Recoveries LCS	% Recoveries LCD	% Recoveries RPD	Acceptance Criteria %Rec		Acceptance Criteria RPD
Arsenic	SW6020	20.0000	NA	17.3243	NA	MG/KG	dw	86.6	NA	NA	120-80	LSA	NA
Barium	SW6020	20.0000	NA	19.1559	NA	MG/KG	dw	95.8	NA	NA	120-80	LSA	NA
Chromium	SW6020	20.0000	NA	20.2187	NA	MG/KG	dw	101	NA	NA	120-80	LSA	NA
Lead	SW6020	20.0000	NA	21.0364	NA	MG/KG	dw	105	NA	NA	120-80	LSA	NA

QA/QC Report
Method Blank Summary

Quanterra Environmental Services, Sacramento, CA

Lab Report No.: 098184 Date: 05/04/98

QC Batch: S980410BX
Matrix: Soil/Solid Quality Control Matrix
Lab Samp ID: LB980410B

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date
Mercury	0.0030	0.0200PQL		ND	MG/KG	1.0	METHOD	SW7471	04/11/98

Matrix Spike/Duplicate Matrix Spike Summary

Quanterra Environmental Services, Sacramento, CA

Lab Report No.: 098184 Date: 05/04/98

QC Batch: S980410BX
Matrix: Soil
Lab Samp ID: 0981840004MS
Basis: Dry

Project Name: General Analytical
Project No.: N/A
Field ID: 98BPXLI09SD01(01)
Lab Ref ID: 0981840004SA

Analyte	Analysis Method	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Units	% Recoveries MS	% Recoveries DMS	% Recoveries RPD	Acceptance Criteria % Rec	Acceptance Criteria RPD
Mercury	SW7471	0.3702	0.3702	0.0476	0.4076	0.4091	MG/KG dw	97.2	97.6	0.41	125-75 MSA	35MSP

QA/QC Report
Blank Spike/Duplicate Blank Spike Summary

Quanterra Environmental Services, Sacramento, CA

Lab Report No.: 098184 Date: 05/04/98

QC Batch: S980410BX
Matrix: Soil/Solid Quality Control Matrix
Lab Samp ID: BS980410B

Analyte	Analysis Method	Spike Level LCS	Spike Level LCD	Spike Result LCS	Spike Result LCD	Units		% Recoveries LCS	% Recoveries LCD	% Recoveries RPD	Acceptance Criteria %Rec		Acceptance Criteria RPD
Mercury	SW7471	0.0833	NA	0.0864	NA	MG/KG	dw	104	NA	NA	125-75	LSA	NA

Method Bla. Summary

Quanterra Environmental Services, Sacramento, CA

Lab Report No.: 098184 Date: 05/04/98

QC Batch: W980402MX
Matrix: Water Quality Control Matrix
Lab Samp ID: LB980402M

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date
Arsenic	0.0011	0.0020PQL		ND	MG/L	1.0	SW3020	SW6020	04/08/98
Barium	0.0001	0.0010PQL		ND	MG/L	1.0	SW3020	SW6020	04/08/98
Chromium	0.0008	0.0010PQL		ND	MG/L	1.0	SW3020	SW6020	04/08/98
Lead	0.0001	0.0010PQL		ND	MG/L	1.0	SW3020	SW6020	04/08/98

QA/QC Report
Matrix Spike/Duplicate Matrix Spike Summary

Quanterra Environmental Services, Sacramento, CA

Lab Report No.: 098184 Date: 05/04/98

QC Batch: W980402MX
Matrix: Ground Water
Lab Samp ID: 0981840027MS
Basis: Wet

Project Name: General Analytical
Project No.: N/A
Field ID: 98BPXLI02WA61
Lab Ref ID: 0981840027SA

Analyte	Analysis Method	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Units		% Recoveries MS	% Recoveries DMS	% Recoveries RPD	Acceptance Criteria % Rec		Acceptance Criteria RPD
Arsenic	SW6020	0.2000	0.2000	ND	0.2014	0.2065	MG/L	ww	101	103	2.0	125-75	MSA	20MSP
Barium	SW6020	0.2000	0.2000	0.0227	0.2264	0.2282	MG/L	ww	102	103	0.98	125-75	MSA	20MSP
Chromium	SW6020	0.2000	0.2000	ND	0.2257	0.2176	MG/L	ww	113	109	3.6	125-75	MSA	20MSP
Lead	SW6020	0.2000	0.2000	ND	0.1738	0.1687	MG/L	ww	86.9	84.4	2.9	125-75	MSA	20MSP

QA Report
Blank Spike/Duplicate Blank Spike Summary

Quanterra Environmental Services, Sacramento, CA

Lab Report No.: 098184 Date: 05/04/98

QC Batch: W980402MX
Matrix: Water Quality Control Matrix
Lab Samp ID: BS980402M

Analyte	Analysis Method	Spike Level LCS	Spike Level LCD	Spike Result LCS	Spike Result LCD	Units		% Recoveries LCS	% Recoveries LCD	% Recoveries RPD	Acceptance Criteria %Rec		Acceptance Criteria RPD
Arsenic	SW6020	0.2000	NA	0.2017	NA	MG/L	ww	101	NA	NA	120-80	LSA	NA
Barium	SW6020	0.2000	NA	0.2020	NA	MG/L	ww	101	NA	NA	120-80	LSA	NA
Chromium	SW6020	0.2000	NA	0.2248	NA	MG/L	ww	112	NA	NA	120-80	LSA	NA
Lead	SW6020	0.2000	NA	0.2146	NA	MG/L	ww	107	NA	NA	120-80	LSA	NA

QA/QC Report
Method Blank Summary

Quanterra Environmental Services, Sacramento, CA

Lab Report No.: 098184 Date: 05/04/98

QC Batch: W980409BX
Matrix: Water Quality Control Matrix
Lab Samp ID: LB980409B

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date
Mercury	0.0001	0.0002PQL		ND	MG/L	1.0	METHOD	SW7470	04/10/98

Matrix Spike/Duplicate Matrix Spike Summary

Quanterra Environmental Services, Sacramento, CA

Lab Report No.: 098184 Date: 05/04/98

QC Batch: W980409BX
Matrix: Ground Water
Lab Samp ID: 0981840027MS
Basis: Wet

Project Name: General Analytical
Project No.: N/A
Field ID: 98BPXLI02WA61
Lab Ref ID: 0981840027SA

Analyte	Analysis Method	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Units		% Recoveries MS	% Recoveries DMS	% Recoveries RPD	Acceptance Criteria % Rec		Acceptance Criteria RPD
Mercury	SW7470	0.0010	0.0010	ND	0.0011	0.0010	MG/L	ww	110	100	9.5	120-80	MSA	20MSP

QA/QC Report
Blank Spike/Duplicate Blank Spike Summary

Quanterra Environmental Services, Sacramento, CA

Lab Report No.: 098184 Date: 05/04/98

QC Batch: W980409BX
Matrix: Water Quality Control Matrix
Lab Samp ID: BS980409B

Analyte	Analysis Method	Spike Level LCS	Spike Level LCD	Spike Result LCS	Spike Result LCD	Units		% Recoveries LCS	% Recoveries LCD	% Recoveries RPD	Acceptance Criteria %Rec	Acceptance Criteria RPD
Mercury	SW7470	0.0010	NA	0.0010	NA	MG/L	ww	100	NA	NA	120-80 LSA	NA

APPENDIX D

b. Laboratory Data Sheets-MultiChem

MultiChem
ANALYTICAL SERVICES

April 27, 1998

MAS I. D. # 821354

Montgomery Watson
4100 Spenard Road
Anchorage, AK 99517

Attn: Lynn DeGeorge

Project Name: Liberty Island Sediments

Project Number: 1189002.330101

Dear Ms. DeGeorge:

On March 20, 1998, MultiChem Analytical Services, LLC of Alaska received twenty seven samples for analysis in conjunction with the above listed project. The requested analyses were performed using EPA or equivalent methods. The reports of analyses and deliverables are enclosed. Below is an outline of the laboratories that participated in this project.

MAS-WA	Analysis Performed:	Volatile Organics (8260), Semivolatile Organics (8270), Pesticides/PCBs (8081), Total Organic Carbon (TOC) and Total Suspended Solids (TSS)
Dowl/Alaska Testlabs	Analysis Performed:	Grain Size and Particle Size Distribution (ASTM D-422)

***Please note:** this report is a partial report, containing all analyses and raw data with the exception of the 8270 results. These results are in the final stages and will be forwarded as quickly as possible.

Please do not hesitate to contact us at (907) 248-8273, if you have any questions or comments.

Sincerely,
MultiChem Analytical Services

Victoria L. Bayly
Project Manager

2000 West International Airport Road, Suite C7, Anchorage, Alaska 99502-1116 • 907-248-8273 • FAX 907-248-8274
g/office/letterhead

MultiChem
ANALYTICAL SERVICES

Sample ID. Cross Reference Sheet

Client: Montgomery Watson
Project #: 1189002.330101
Project Name: Liberty Island Sediments

MAS I.D.: 821354

MAS ID #		Client Description	Sample Date
821354	1	98BPXLI02WA01	3/18/98
821354	2	98BPXLI02WA02	3/18/98
821354	3	98BPXLI02WA03	3/18/98
821354	4	98BPXLI09WA01	3/18/98
821354	5	98BPXLI09WA02	3/18/98
821354	6	98BPXLI09WA03	3/18/98
821354	7	98BPXLI14WA01	3/18/98
821354	8	98BPXLI14WA02	3/18/98
821354	9	98BPXLI30WA03	3/19/98
821354	10	98BPXLI30WA01	3/19/98
821354	11	98BPXLI30WA02	3/19/98
821354	12	98BPXLI30WA62	3/19/98
821354	13	98BPXLI02WA61	3/18/98
821354	14	98BPXLI02SD01(01)	3/18/98
821354	15	98BPXLI02SD02(03)	3/18/98
821354	16	98BPXLI02SD03(09)	3/18/98
821354	17	98BPXLI09SD01(01)	3/18/98
821354	18	98BPXLI09SD02(03)	3/18/98
821354	19	98BPXLI09SD03(09)	3/18/98
821354	20	98BPXLI14SD01(01)	3/18/98
821354	21	98BPXLI14SD02(03)	3/18/98
821354	22	98BPXLI14SD03(09)	3/18/98
821354	23	98BPXLI30SD01(01)	3/19/98
821354	24	98BPXLI30SD02(03)	3/19/98
821354	25	98BPXLI30SD03(09)	3/19/98
821354	26	98BPXLI30SD62(03)	3/19/98
821354	27	98BPXLI02SD62(03)	3/18/98

MAS STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of the report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

BPX L

Pg 1 of 2

MAS 821354

Montgomery Watson
4100 Spenard Road
Anchorage AK 99517
(907)248-8883
Fax (907) 248-8884
ATTN: Lynn DeGeorge

Laboratory:
Multichem Analytical Services
2000 West International Airport Road
Anchorage, Alaska 99502
(907) 248-8273
(907) 248-8273 FAX
Attn: Mike Vogel

MW Job Number: 1187002
21-DAY 330101
TURNAROUND

3/20/98

Sampler's Signature 1958 Bmchan

MAS#	Date	Time	Sample ID	Matrix	Total Containers	SOIL: VOCs- 8260a 2 x 2-oz amber glass	SVOCs- 8270 1 x 8-oz amber glass	TOC- 415.1 1 x 4-oz amber glass	Grain Size - ASTM D422 1 x 8-oz amber glass	Particle Size- ASTM D2487 1 x 4-oz amber glass		WATER: TSS- 160.2 250 ml poly	TOC- 415.1 1 x 250 ml amber	Comments
						Cool to 4 degrees C.						Cool to 4 degrees C. H2SO4		
-1	3-18	2210	98BPXLI 02 WA01	W	2							✓	✓	
-2	3-18	2130	98BPXLI 02 WA02	W	2							✓	✓	
-3	3-18	2200	98BPXLI 02 WA03	W	2							✓	✓	
-4	3-18	1530	98BPXLI 09 WA01	W	2							✓	✓	MS/MSD
-5	3-18	1540	98BPXLI 09 WA02	W	2							✓	✓	
-6	3-18	1550	98BPXLI 09 WA03	W	2							✓	✓	
-7	3-18	1300	98BPXLI 14 WA01	W	2							✓	✓	
-8	3-18	1315	98BPXLI 14 WA02	W	2							✓	✓	
-9	3-19	0200	98BPXLI 30 WA03	W	2							✓	✓	
-10	3-19	0120	98BPXLI 30 WA01	W	2							✓	✓	
-11	3-19	0140	98BPXLI 30 WA02	W	2							✓	✓	
			~~98BPXLI ___ WA03~~											No Sample
-12	3-19	0150	98BPXLI 30 WA6 2		2							✓	✓	
-13	3-18	2110	98BPXLI 02 WA6 1		2							✓	✓	
			~~98BPXLI ___ WA___~~	LAST										
			98BPXLI ___ WA___											

Relinquished by: Bmchan	Date 3-20-98 Time 1050	Hand Delivered (Y) N	Shipped Via hand	Airbill Number	Date Time
Received for Laboratory by: Gary Fuller	Date 3/20/98 Time 1000	Cooler Temperature Upon Arrival 4.8° 3.7° 5.1° 11.7° °C		Laboratory Notified Faxed	

BPX L... ...land

P8 2 of 2

1189002.
330101

Montgomery Watson 4100 Spenard Road Anchorage AK 99517 (907)248-8883 Fax (907) 248-8884 ATTN: Lynn DeGeorge	Laboratory: Multichem Analytical Services 2000 West International Airport Road Anchorage, Alaska 99502 (907) 248-8273 (907) 248-8273 FAX Attn: Mike Vugal 1189002, 330101 3/30 MW Job Number: GP ~~1189022.30101~~ 21-DAY TURNAROUND	SOIL						WATER		MAS 821354
		VOCs- 8260a 2 x 2-oz amber glass	SVOCs- 8270 1 x 8-oz amber glass	TOC- 415.1 1 x 4-oz amber glass	Grain Size - ASTM D422 1 x 8-oz amber glass	Particle Size- ASTM D2487 1 x 4-oz amber glass	8081 B 3/31/98 per L. DeGeorge	TSS- 160.2 250 ml poly	TOC- 415.1 1 x 250 ml amber	Comments
Sampler's Signature 1998		Cool to 4 degrees C						Cool to 4 degrees C	H2SO4	

AS#	Date	Time	Sample ID	Matrix	Total Containers	VOCs	SVOCs	TOC	Grain Size	Particle Size	8081	TSS	TOC	Comments
-14	3-18	2210	98BPXLI 02 SD01(01)	S	5	✓	✓	✓	✓	✓	✓			8081 for hexachlorobenzene
-15	3-18	2230	98BPXLI 02 SD02(03)	S	5	↓	↓	↓	↓	↓	✓			+ -butadiene
-16	3-18	2330	98BPXLI 02 SD03(09)	S	5	↓	↓	↓	↓	↓	✓			8260 for 1,2,4-trichlorobenzene
-17	3-18	1610	98BPXLI 09 SD01(01)	S	5	↓	↓	↓	↓	↓	✓			MS/MSD B 3/31/98
-18	3-18	1620	98BPXLI 09 SD02(03)	S	5	↓	↓	↓	↓	↓	✓			
-19	3-18	1630	98BPXLI 09 SD03(09)	S	5	↓	↓	↓	↓	↓	✓			
-20	3-18	1330	98BPXLI 14 SD01(01)	S	5	↓	↓	↓	↓	↓	✓			
-21	3-18	1345	98BPXLI 14 SD02(03)	S	5	↓	↓	↓	↓	↓	✓			
-22	3-18	1400	98BPXLI 14 SD03(09)	S	5	↓	↓	↓	↓	↓	✓			
23	3-19	0250	98BPXLI 30 SD01(01)	S	5	↓	↓	↓	↓	↓	✓			
-24	3-18	0380	98BPXLI 30 SD02(03)	S	5	↓	↓	↓	✓	✓	✓			
-25	3-19	0330	98BPXLI 30 SD03(09)	S	5	✓	✓	✓	✓	✓	✓			
-26	3-19	0310	98BPXLI 30 SD6 2(03)	S	3	✓	✓	✓			✓			
-27	3-18	2200	98BPXLI 02 SD6 2(03)	S	3	✓	✓	✓			✓			
			98BPXLI ___ SD__(__)											
			98BPXLI ___ SD__(__)											

Relinquished by:	Date 3-20-98	Hand Delivered	Shipped Via hand	Airbill Number	Date
	Time 1600	N			Time
Received for Laboratory by: Gary Tyler	Date 3-20-98	Cooler Temperature Upon Arrival	°C	Laboratory Notified Faxed	
	Time 0:00				

MultiChem Analytical Services, LLC **Anchorage, AK**

SAMPLE LOG-IN CHECKLIST

CESSION #: 821354 SUBCONTRACT WORK? YES / NO

CLIENT NAME: Montgomery Watson TO LAB (circle): MAS-R / OTHER: Ak Test Labs

LOGGED-IN BY (print): Gary Fisher (sign): [signature]

Date received: 3/26/98 Client's Cooler # (if any):

Is the project for: ACOE? YES / NO NAVY? YES / NO

1.	Did cooler arrive with shipping document?	(Hand delivery) N/A	YES	NO
2.	Are Custody seals present on cooler? YES / NO How many? Where?			
	Seal date: Seal name:	Intact? N/A	YES	NO
3.	Are Custody seals present on sample containers?		YES	NO
	If "YES", intact?	N/A	YES	NO
4.	Is the Chain of Custody (C-O-C) sealed in plastic bag? YES / NO	Taped to cooler lid?	YES	NO
5.	Is the C-O-C complete? * Relinquished by client: YES / NO	Analyses marked off:	YES	NO
	* C-O-C or other representative documents, letters, and/or shipping memos.	Signed/received by lab:	YES	NO
6.	Is the C-O-C in agreement with samples received?			
	Sample ID's: YES / NO	Matrix:	YES	NO
	Date sampled: YES / NO	# Containers:	YES	NO
7.	Has the main logbook been filled out properly?		YES	NO
8.	If samples are RUSH has notice been given?	N/A	YES	NO
9.	Is proper preservation indicated on label(s)?	N/A	YES	NO
	Did pH check verify preservative indicated?	(Volatiles) N/A	YES	NO
11	Is there sufficient sample volume for analyses?		YES	NO
12	Are samples in proper containers? (see reference chart)		YES	NO
13	Are all samples within holding times for requested analysis?		YES	NO
14	Are all sample containers intact? (i.e. not broken, leaking...)		YES	NO
15	Are samples individually bagged ?		YES	NO
16	Are all volatile samples headspace-free (<pea-size for waters)?	N/A	YES	NO
17	Shipping container (circle one):	Cooler / Box / Other:		
18	Type of packing material used (circle one):	Bubble Wrap / Styrofoam Peanuts / Vermiculite / None		
19	Refrigerant (circle one):	Gel Ice / Loose Ice / Other: / None		
20	Was refrigerant frozen upon receipt?		YES	NO
21	Cooler temperature(s): #3) 5.1°C #4) 11.7°C #1: 4.8 °C	#2: 3.7 °C		

Sample tagging check for QC:

Sample ID's issued in order of appearance on C-O-C:	YES	NO
Tags placed in appropriate areas of sample containers:	YES	NO

Initials of reviewer:

Describe any "NO" items from checklist above: Sample #1 Time on label = 21:00, on COC = 2210, all else match. Samples #14-25 only Four of Each not Five as listed on COC. ~~Samples #1-13 only five Each not Four listed.~~

client contacted: YES / NO / N/A Date: Name of person contacted:

Describe client instructions or actions taken:

URGENT-
VERIFICATION
REQUESTED.
8

MultiChem
ANALYTICAL SERVICES

FAX Cover Sheet

To:	Lynn DeGeorge	FAX Number:	248-8884
Company:	Montgomery Watson	Date:	3/26/98
From:	Victoria (Tori) Bayly	No. of Pages (including cover page):	2
Phone:	907/248-8273		
Fax:	907/248/8274		

Lynn,
A couple of questions have arisen regarding the Liberty Island project. I apologize that I did not have time to go over this in detail before the samples arrived, but if we could clarify/verify now we will still be OK for TAT/Holding times, etc.

1) The original fax you sent to Mike with the compound lists and limits... we are assuming that the limits we are using are the ones under the PSDDA (1) SL column for screening levels (we have not seen the "blessed" copy of the QAAP yet). Based on this, it appears that according to the requested methods you have listed we would not be able to meet the limit for one compound. Under chlorinated hydrocarbons. 1,2,4-Trichlorobenzene by 8270 we can only reach a 15.4 mg/Kg reporting limit (table lists 13 mg/Kg). By 8260, we can reach a 5.0 mg/Kg, which is less than the limit requested. Which method would you prefer? Also, do you need us to report at the limits in your table, or can we report our limits as long as they are lower than yours?

Action: Please analyze for 1,2,4-trichlorobenzene using Method 8260 allowing us the achieve the lower detection limit (5.0 mg/kg).

You may use your reporting limits when providing the analytical results.

8270 limits
19.4
10.1

2) Two compounds requested by 8270 are actually analyzed by 8081... Hexachlorobenzene and hexachlorobutadiene. By 8270 we would not be able to meet the limits, and they are not on our normal list. We would need to add 8081 to the COC to accommodate these two compounds if you indeed require them.

Action: Please analyze for Hexachlorobenzene and Hexachlorobutadiene using Method 8081 instead of 8270 allowing us to achieve the lower detection limit.

Thank you for your help!

Signed LA DeGeorge

Date 3-31-97

Tori

2000 West International Airport Road, Suite C7, Anchorage, Alaska 99502-1116 • 907-248-8273 • FAX 907-248-8274

MultiChem
ANALYTICAL SERVICES

ADEC DATA PACKAGE
8260, 8270, TOC
8081, TSS

Client:

Montgomery Watson
Lynn DeGeorge

Project Name:
Liberty Island Sediments

Project Number:
1189002.330101

Accession No.:
821354

MultiChem
ANALYTICAL SERVICES

DATA PACKAGE

Grain Size and Particle Size Distribution

Client:

Montgomery Watson
Lynn DeGeorge

Project Name:
Liberty Island Sediments

Project Number:
1189002.330101

Accession No.:
821354

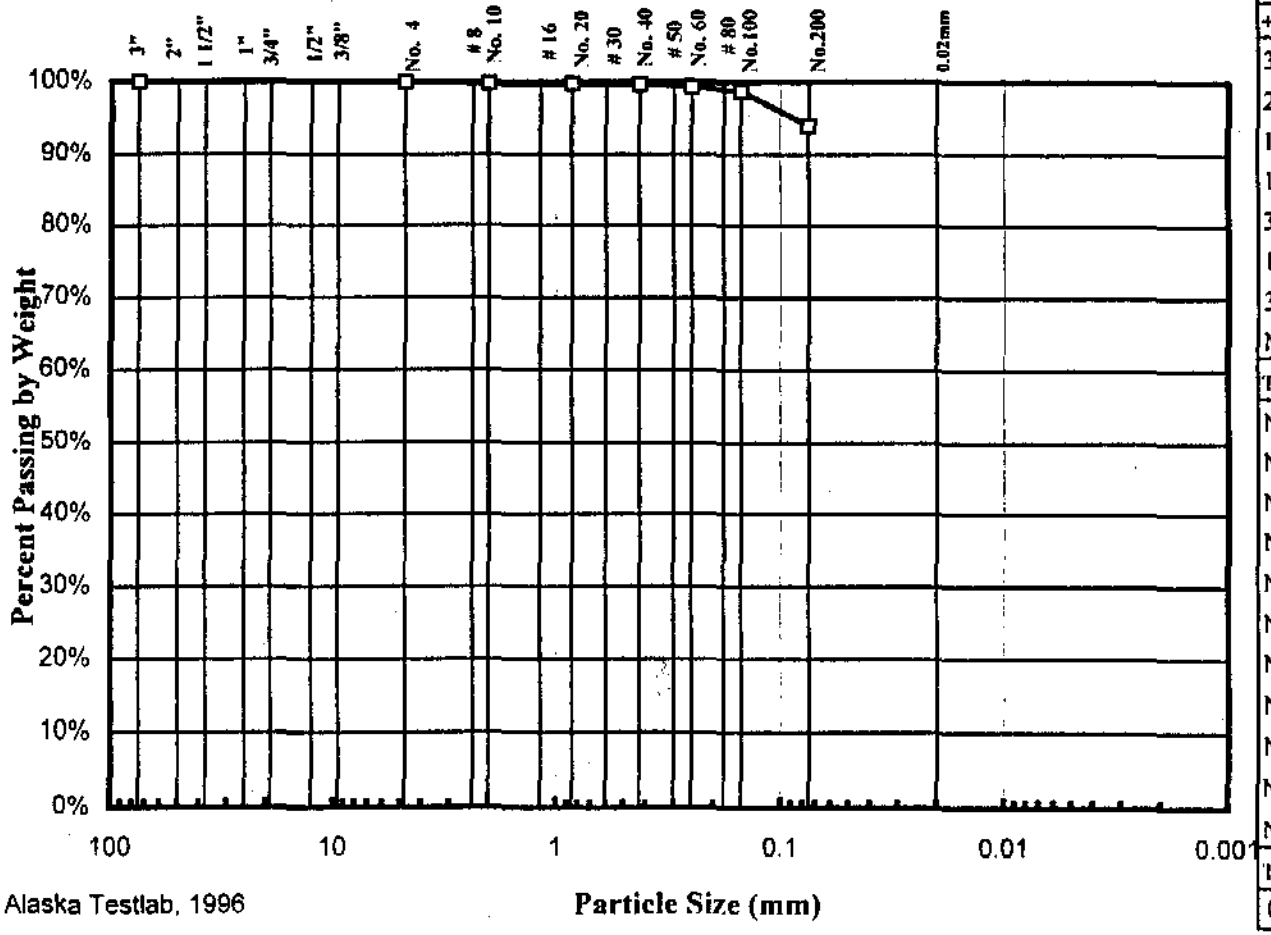
ALASKA TESTLAB
A Division of DOWL, Incorporated
4040 B Street Anchorage, Alaska 99503
(907) 562-2000 FAX (907) 563-3953

Client: MultiChem Analytical Services
Project: Liberty Island P.O. AK-8517
Location: 98BPXL102SD01(01)
Submitted by Client
PI = Non Plastic

PARTICLE-SIZE DISTRIBUTION

W.O. A27722
Lab No. 515
Received: March 20, 1998

Engineering Classification: SILT, ML
Frost Classification: F4



SIZE	PASSING	SPECIFICATION
+3 in Not Included in Test = ~0%		
3"		
2"		
1 1/2"		
1"		
3/4"		
1/2"		
3/8"		
No. 4	100%	
Total Wt. of Coarse Fraction = 346.4g		
No. 8		
No. 10	100%	
No. 16		
No. 20	100%	
No. 30		
No. 40	100%	
No. 50		
No. 60	99%	
No. 80		
No. 100	99%	
No. 200	94%	
Total Wt. of Fine Fraction = 0g		
0.02 mm		

© Alaska Testlab, 1996

David L. Andersen, P.E., General Manager

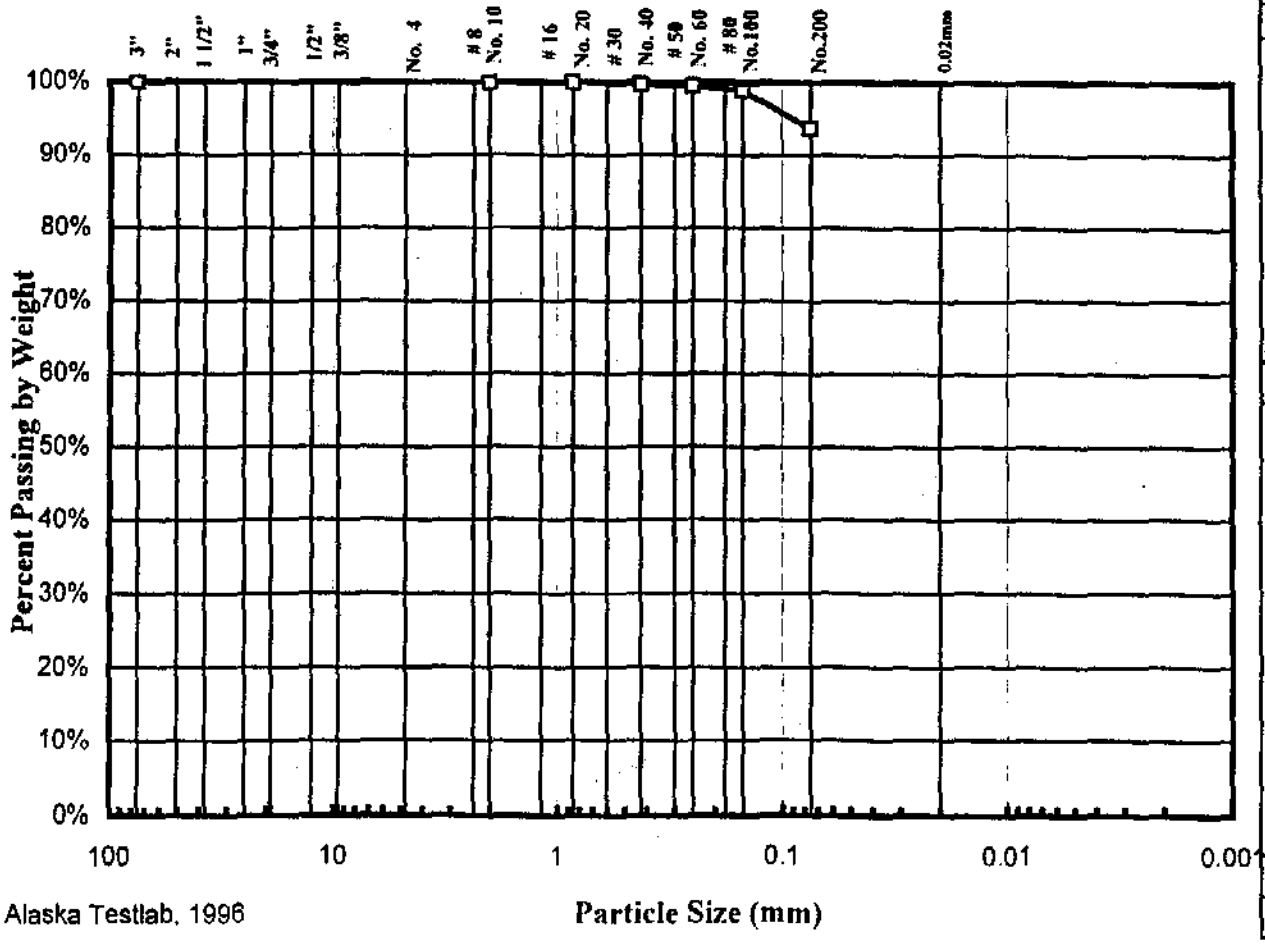
ALASKA TESTLAB
A Division of DOWL, Incorporated
4040 B Street Anchorage, Alaska 99503
(907) 562-2000 FAX (907) 563-3953

Client: MultiChem Analytical Services
Project: Liberty Island P.O. AK-8517
Location: 98BPXLI02SD02(03)
Submitted by Client
PI = Non Plastic

PARTICLE-SIZE DISTRIBUTION

W.O. A27722
Lab No. 516
Received: March 20, 1998

Engineering Classification: SILT, ML
Frost Classification: F4



SIZE	PASSING	SPECIFICATION
+3 in Not Included in Test = ~0%		
3"		
2"		
1 1/2"		
1"		
3/4"		
1/2"		
3/8"		
No. 4		
Total Wt. of Coarse Fraction = 141.5g		
No. 8		
No. 10	100%	
No. 16		
No. 20	100%	
No. 30		
No. 40	100%	
No. 50		
No. 60	100%	
No. 80		
No. 100	99%	
No. 200	94%	
Total Wt. of Fine Fraction = 0g		
0.02 mm		

© Alaska Testlab, 1996

David L. Andersen, P.E., General Manager

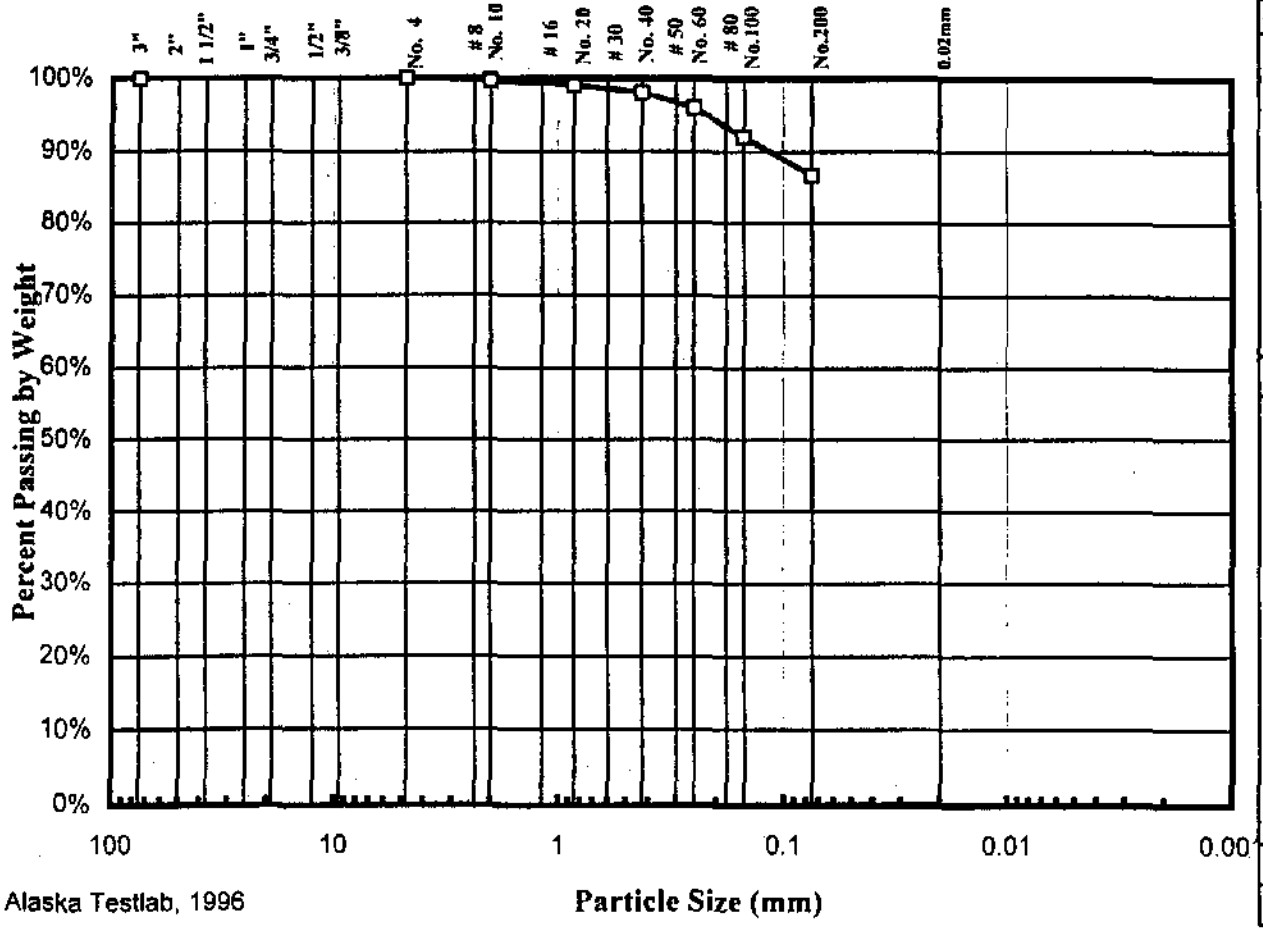
ALASKA TESTLAB
A Division of DOWL, Incorporated
4040 B Street Anchorage, Alaska 99503
(907) 562-2000 FAX (907) 563-3953

Client: MultiChem Analytical Services
Project: Liberty Island P.O. AK-8517
Location: 98BPXLI02SD03(09)
Submitted by Client
LL = 52, PI = 21

PARTICLE-SIZE DISTRIBUTION

W.O. A27722
Lab No. 517
Received: March 20, 1998

Engineering Classification: Elastic SILT, MH
Frost Classification: F4



SIZE	PASSING	SPECIFICATION
+3 in Not Included in Test = ~0%		
3"		
2"		
1 1/2"		
1"		
3/4"		
1/2"		
3/8"		
No. 4	100%	
Total Wt. of Coarse Fraction = 329.2g		
No. 8		
No. 10	100%	
No. 16		
No. 20	99%	
No. 30		
No. 40	98%	
No. 50		
No. 60	96%	
No. 80		
No. 100	92%	
No. 200	87%	
Total Wt. of Fine Fraction = 0g		
0.02 mm		

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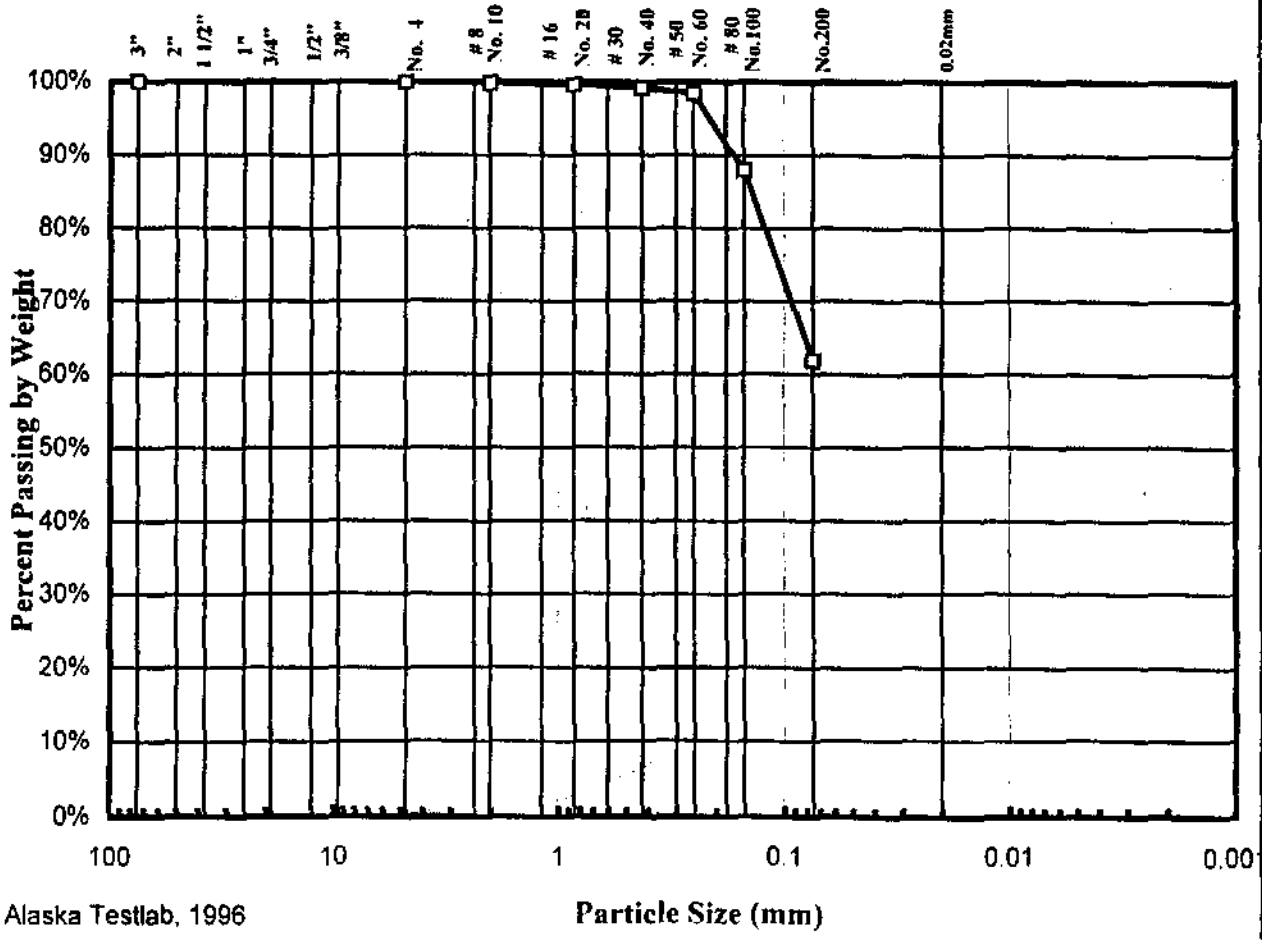
ALASKA TESTLAB
A Division of DOWL, Incorporated
4040 B Street Anchorage, Alaska 99503
(907) 562-2000 FAX (907) 563-3953

Client: MultiChem Analytical Services
Project: Liberty Island P.O. AK-8517
Location: 98BPXLI09SD01(01)
Submitted by Client
PI = Non Plastic

PARTICLE-SIZE DISTRIBUTION

W.O. A27722
Lab No. 518
Received: March 20, 1998

Engineering Classification: Sandy SILT, ML
Frost Classification: F4



SIZE	PASSING	SPECIFICATION
+3 in Not Included in Test = ~0%		
3"		
2"		
1 1/2"		
1"		
3/4"		
1/2"		
3/8"		
No. 4	100%	
Total Wt. of Coarse Fraction = 363g		
No. 8		
No. 10	100%	
No. 16		
No. 20	100%	
No. 30		
No. 40	99%	
No. 50		
No. 60	98%	
No. 80		
No. 100	88%	
No. 200	62%	
Total Wt. of Fine Fraction = 0g		
0.02 mm		

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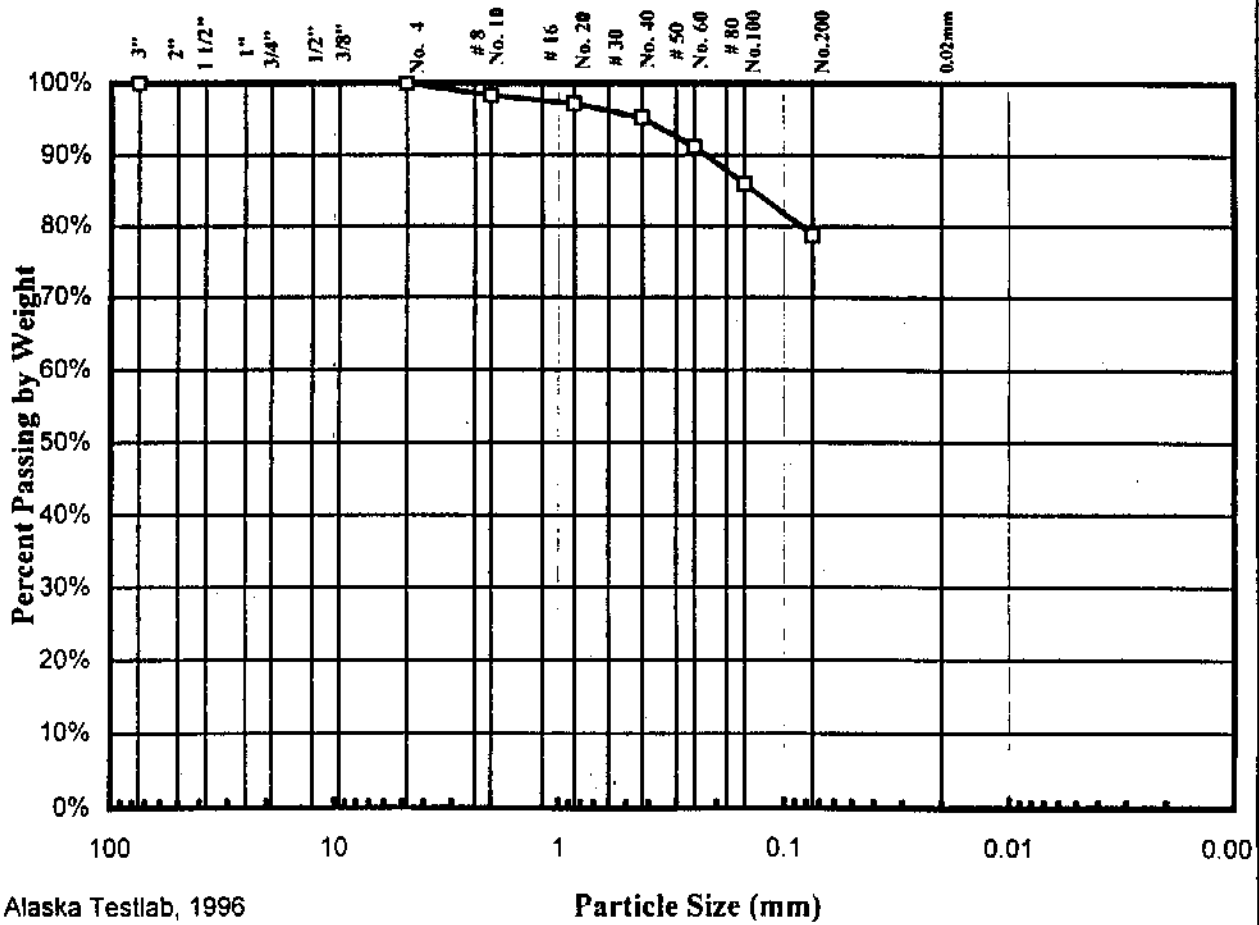
Client: MultiChem Analytical Services
Project: Liberty Island P.O. AK-8517
Location: 98BPXLI109SD02(03)
Submitted by Client
PI = Non Plastic

PARTICLE-SIZE DISTRIBUTION

W.O. A27722
Lab No. 519
Received: March 20, 1998

Engineering Classification: SILT with Sand, ML
Frost Classification: F4



SIZE	PASSING	SPECIFICATION
+3 in Not Included in Test = ~0%		
3"		
2"		
1 1/2"		
1"		
3/4"		
1/2"		
3/8"		
No. 4	100%	
Total Wt. of Coarse Fraction = 305g		
No. 8		
No. 10	98%	
No. 16		
No. 20	97%	
No. 30		
No. 40	95%	
No. 50		
No. 60	91%	
No. 80		
No. 100	86%	
No. 200	79%	
Total Wt. of Fine Fraction = 0g		
0.02 mm		

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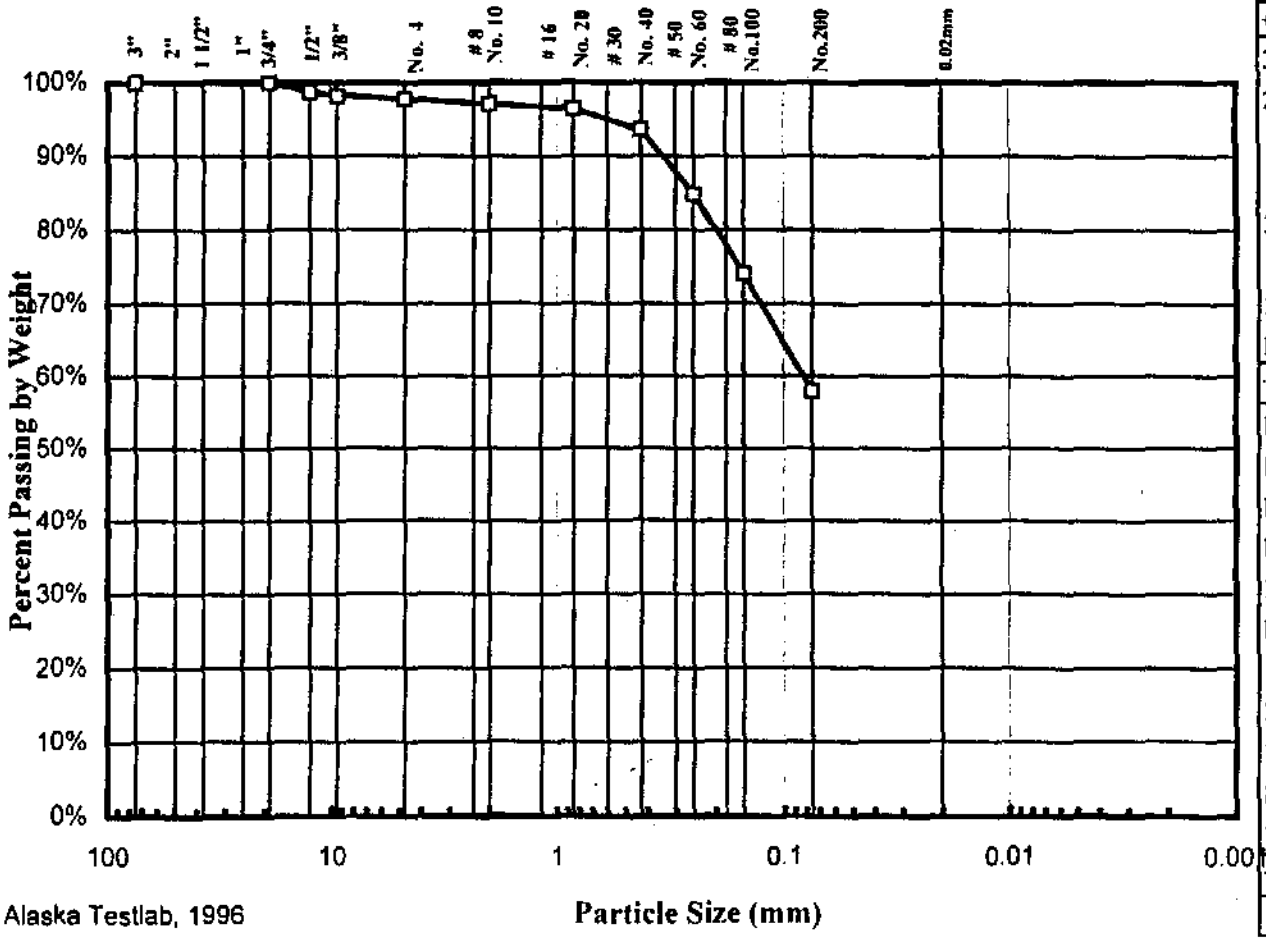
(907) 562-2000 FAX (907) 563-3953

Client: MultiChem Analytical Services
Project: Liberty Island P.O. AK-8517
Location: 98BXLI09SD03(09)
Submitted by Client
PI = Non Plastic

PARTICLE-SIZE DISTRIBUTION

W.O. A27722
Lab No. 520
Received: March 20, 1998

Engineering Classification: Sandy SILT, ML
Frost Classification: F4



SIZE	PASSING	SPECIFICATION
+3 in Not Included in Test = ~0%		
3"		
2"		
1 1/2"		
1"		
3/4"	100%	
1/2"	99%	
3/8"	98%	
No. 4	98%	
Total Wt. of Coarse Fraction = 526g		
No. 8		
No. 10	97%	
No. 16		
No. 20	96%	
No. 30		
No. 40	94%	
No. 50		
No. 60	85%	
No. 80		
No. 100	74%	
No. 200	58%	
Total Wt. of Fine Fraction = 514.1g		
0.02 mm		

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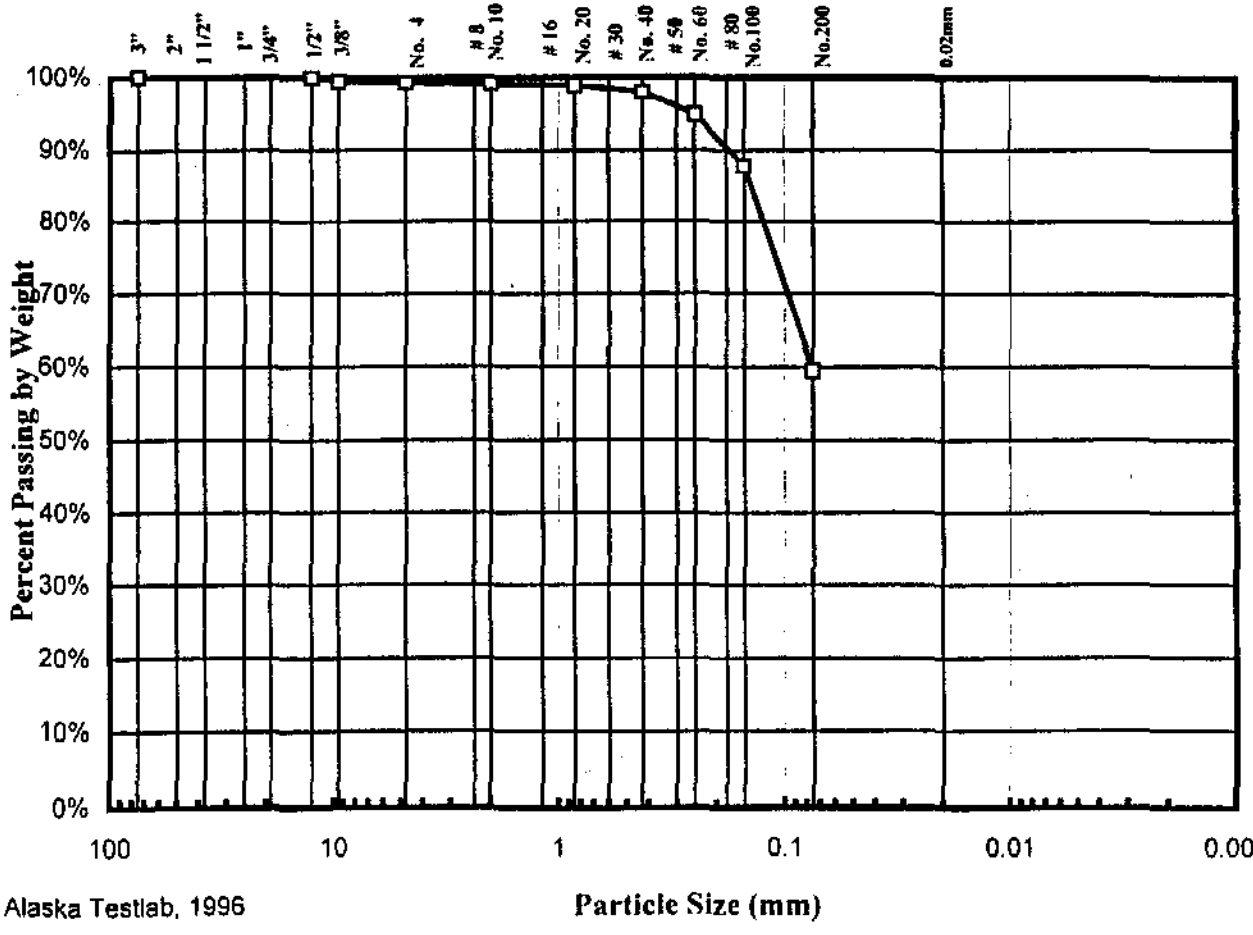
Client: MultiChem Analytical Services
Project: Liberty Island P.O. AK-8517
Location: 98BPXLI14SD01(01)
Submitted by Client
PI = Non Plastic

PARTICLE-SIZE DISTRIBUTION

W.O. A27722
Lab No. 521
Received: March 20, 1998

Engineering Classification: Sandy SILT, ML
Frost Classification: F4



SIZE	PASSING	SPECIFICATION
+3 in Not Included in Test = ~0%		
3"		
2"		
1 1/2"		
1"		
3/4"		
1/2"	100%	
3/8"	99%	
No. 4	99%	
Total Wt. of Coarse Fraction = 906g		
No. 8		
No. 10	99%	
No. 16		
No. 20	99%	
No. 30		
No. 40	98%	
No. 50		
No. 60	95%	
No. 80		
No. 100	88%	
No. 200	59%	
Total Wt. of Fine Fraction = 340.7g		
0.02 mm		

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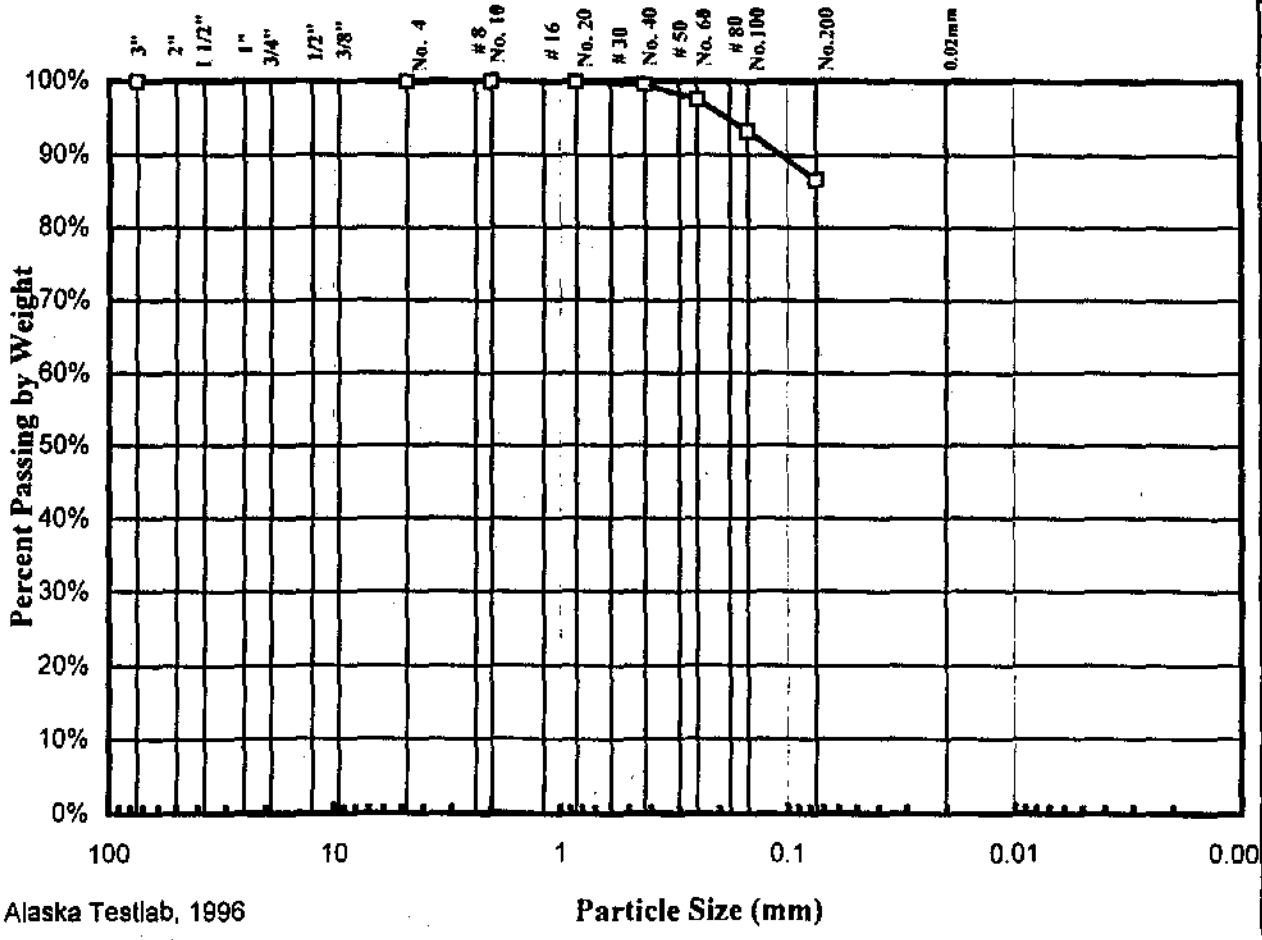
4040 B Street Anchorage, Alaska 99503
(907) 562-2000 FAX (907) 563-3953

Client: MultiChem Analytical Services
Project: Liberty Island P.O. AK-8517
Location: 98BPXLI14SD02(03)
Submitted by Client
PI = Non Plastic

PARTICLE-SIZE DISTRIBUTION

W.O. A27722
Lab No. 522
Received: March 20, 1998

Engineering Classification: SILT, ML
Frost Classification: F4



SIZE	PASSING	SPECIFICATION
+3 in Not Included in Test = ~0%		
3"		
2"		
1 1/2"		
1"		
3/4"		
1/2"		
3/8"		
No. 4	100%	
Total Wt. of Coarse Fraction = 360.1g		
No. 8		
No. 10	100%	
No. 16		
No. 20	100%	
No. 30		
No. 40	100%	
No. 50		
No. 60	98%	
No. 80		
No. 100	93%	
No. 200	87%	
Total Wt. of Fine Fraction = 0g		
0.02 mm		

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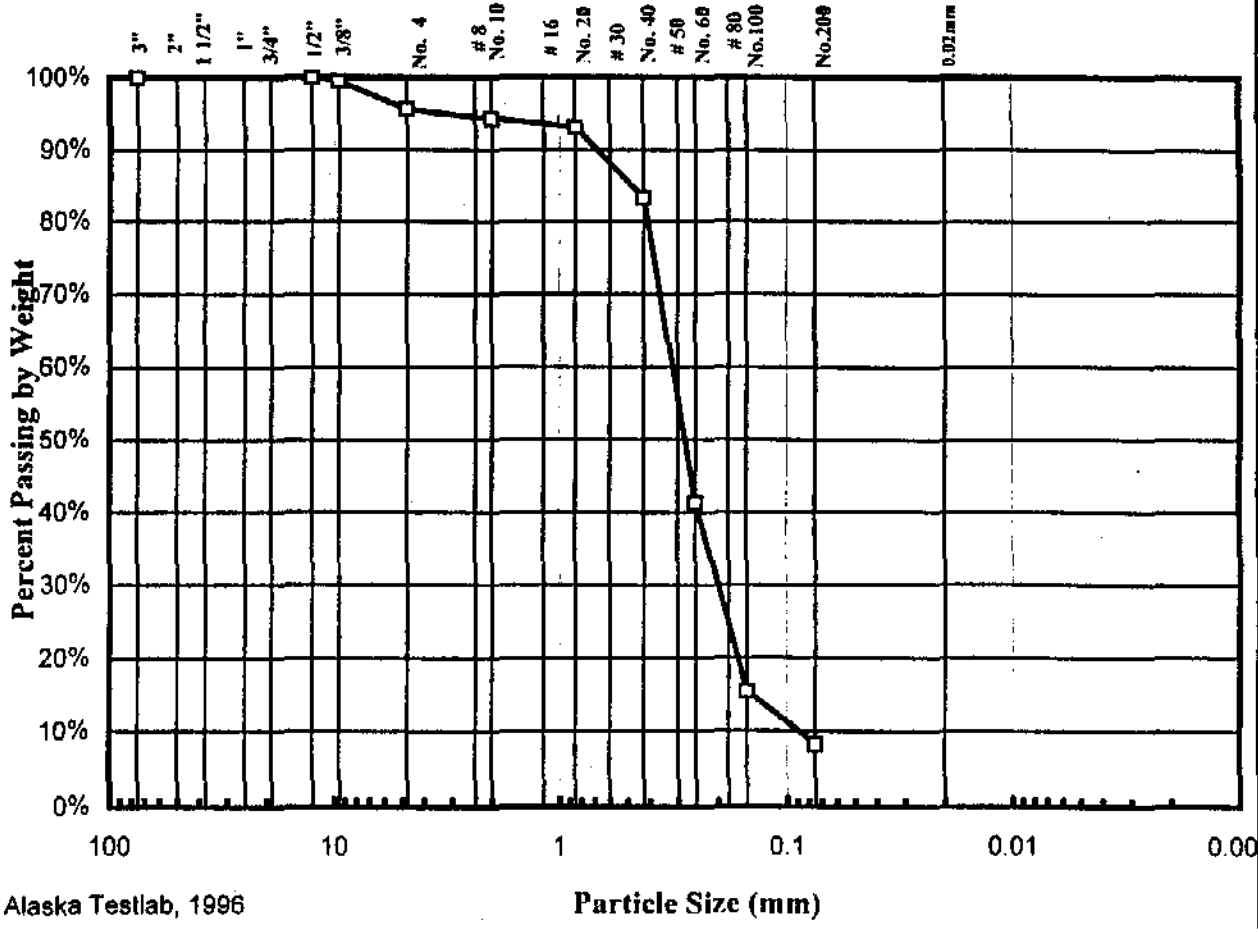
(907) 562-2000 FAX (907) 563-3953

Client: MultiChem Analytical Services
Project: Liberty Island P.O. AK-8517
Location: 98BPXLI14SD03(09)
Submitted by Client
PI = Non Plastic

PARTICLE-SIZE DISTRIBUTION

W.O. A27722
Lab No. 523
Received: March 20, 1998

Engineering Classification: Poorly Graded SAND with Silt , SP-SM
Frost Classification: Not Measured



SIZE	PASSING	SPECIFICATION
+3 in Not Included in Test = -0%		
3"		
2"		
1 1/2"		
1"		
3/4"		
1/2"	100%	
3/8"	99%	
No. 4	96%	
Total Wt. of Coarse Fraction = 848.6g		
No. 8		
No. 10	94%	
No. 16		
No. 20	93%	
No. 30		
No. 40	83%	
No. 50		
No. 60	41%	
No. 80		
No. 100	15%	
No. 200	8.3%	
Total Wt. of Fine Fraction = 380.4g		
0.02 mm		

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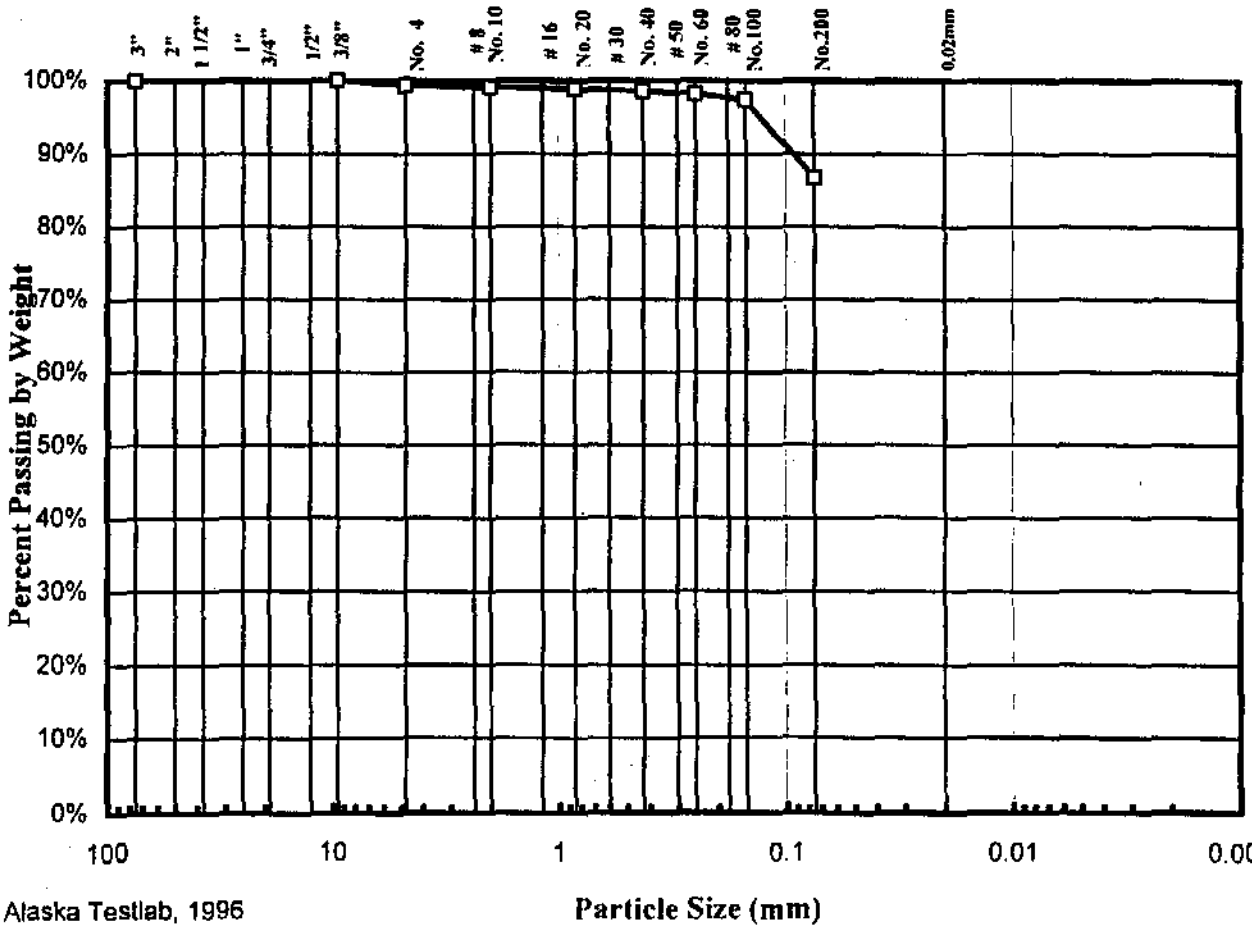
4040 B Street Anchorage, Alaska 99503
(907) 562-2000 FAX (907) 563-3953

Client: MultiChem Analytical Services
Project: Liberty Island P.O. AK-8517
Location: 98BPXLI30SD01(01)
Submitted by Client
PI = Non Plastic

PARTICLE-SIZE DISTRIBUTION

W.O. A27722
Lab No. 524
Received: March 20, 1998

Engineering Classification: SILT, ML
Frost Classification: F4



SIZE	PASSING	SPECIFICATION
+3 in Not Included in Test = ~0%		
3"		
2"		
1 1/2"		
1"		
3/4"		
1/2"		
3/8"	100%	
No. 4	99%	
Total Wt. of Coarse Fraction = 491.9g		
No. 8		
No. 10	99%	
No. 16		
No. 20	99%	
No. 30		
No. 40	99%	
No. 50		
No. 60	98%	
No. 80		
No. 100	97%	
No. 200	87%	
Total Wt. of Fine Fraction = 307.8g		
0.02 mm		

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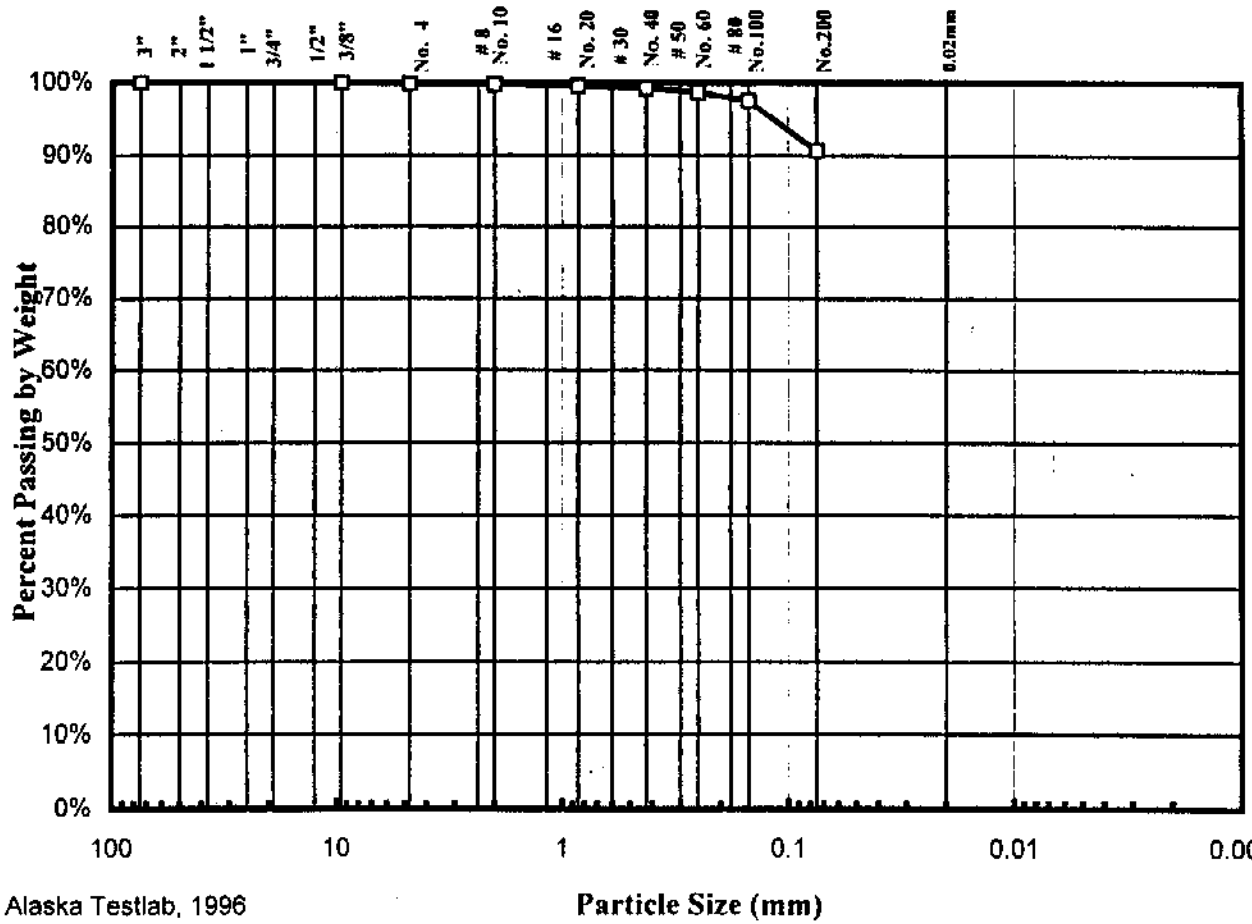
4040 B Street Anchorage, Alaska 99503
(907) 562-2000 FAX (907) 563-3953

Client: MultiChem Analytical Services
Project: Liberty Island P.O. AK-8517
Location: 98BPXLI30SD02(03)
Submitted by Client
PI = Non Plastic

PARTICLE-SIZE DISTRIBUTION

W.O. A27722
Lab No. 525
Received: March 20, 1998

Engineering Classification: SILT, ML
Frost Classification: F4



SIZE	PASSING	SPECIFICATION
+3 in Not Included in Test = ~0%		
3"		
2"		
1 1/2"		
1"		
3/4"		
1/2"		
3/8"	100%	
No. 4	100%	
Total Wt. of Coarse Fraction = 623.4g		
No. 8		
No. 10	100%	
No. 16		
No. 20	100%	
No. 30		
No. 40	99%	
No. 50		
No. 60	99%	
No. 80		
No. 100	98%	
No. 200	91%	
Total Wt. of Fine Fraction = 339.2g		
0.02 mm		

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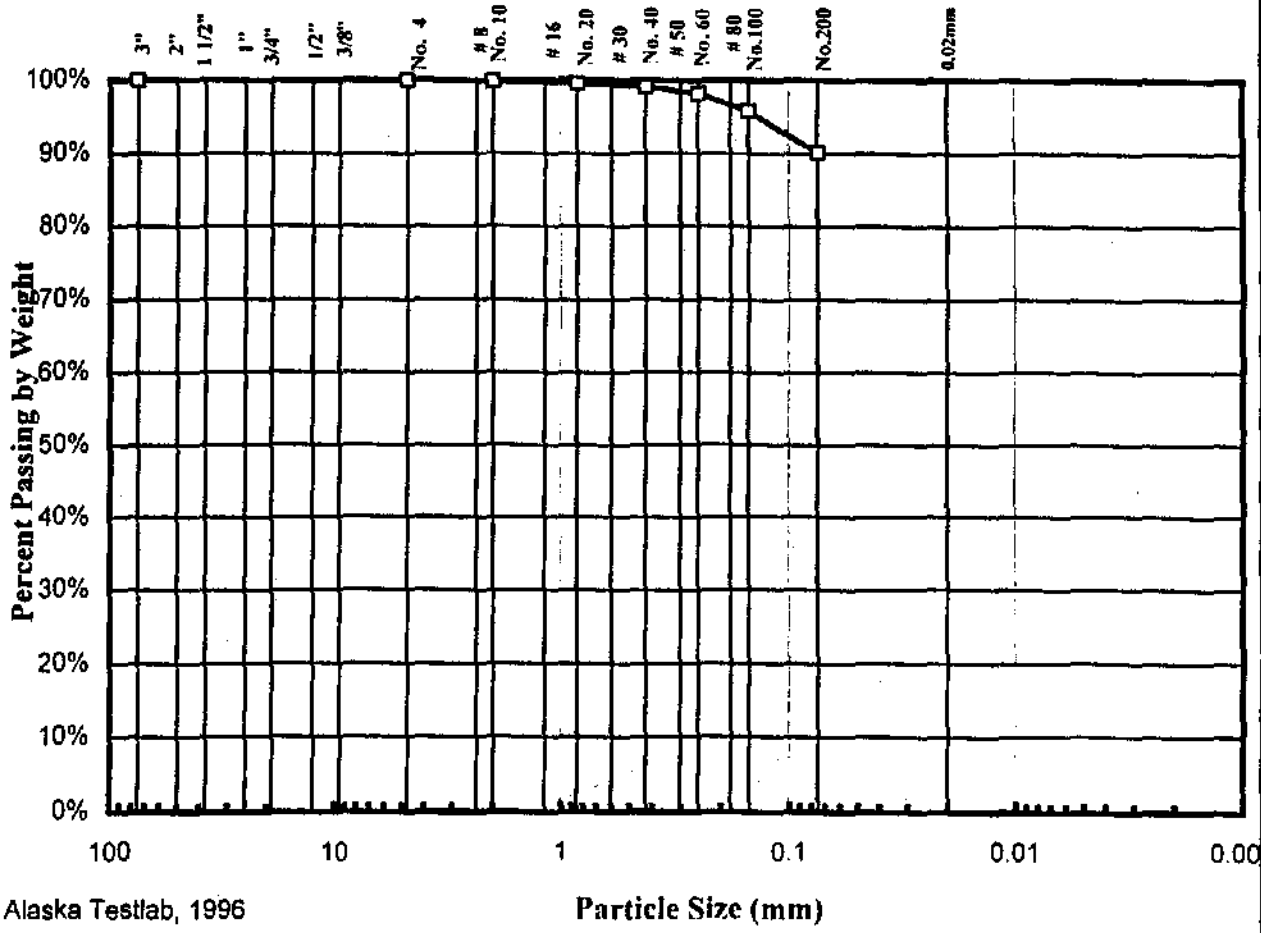
(907) 562-2000 FAX (907) 563-3953

Client: MultiChem Analytical Services
Project: Liberty Island P.O. AK-8517
Location: 98BPXL130SD03(09)
Submitted by Client
LL = 52, PI = 24

PARTICLE-SIZE DISTRIBUTION

W.O. A27722
Lab No. 526
Received: March 20, 1998

Engineering Classification: Fat CLAY, CH
Frost Classification: F4



SIZE	PASSING	SPECIFICATION
+3 in Not Included in Test = ~0%		
3"		
2"		
1 1/2"		
1"		
3/4"		
1/2"		
3/8"		
No. 4	100%	
Total Wt. of Coarse Fraction = 306.7g		
No. 8		
No. 10	100%	
No. 16		
No. 20	100%	
No. 30		
No. 40	99%	
No. 50		
No. 60	98%	
No. 80		
No. 100	96%	
No. 200	90%	
Total Wt. of Fine Fraction = 306.7g		
0.02 mm		

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MultiChem
ANALYTICAL SERVICES

MAS I.D. # 821354
UST - 026

April 24, 1998

Montgomery Watson
4100 Spenard
Anchorage AK 99517-2901

Attention : Lynn DeGeorge

Project Number : 1189002.330101

Project Name : Liberty Island

Dear Ms. DeGeorge:

On March 21, 1998, MultiChem Analytical Services received 27 samples for analysis. The samples were analyzed with EPA methodology or equivalent methods as specified in the attached analytical schedule. The results, sample cross reference, and quality control data are enclosed.

This is a partial report including all analyses with the exception of the semivolatile analysis. This data will be sent as soon as it becomes available.

Sincerely,

Elaine M. Walker

Elaine M. Walker
Project Manager

EMW/hal/trm

Enclosure

560 Naches Avenue SW, Suite 101, Renton, Washington 98055-2200 • 425-228-8335 • FAX 425-228-8336 • 1-800-609-0580 • info@multichem.com

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

SAMPLE CROSS REFERENCE SHEET

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND

MAS #	CLIENT DESCRIPTION	DATE SAMPLED	MATRIX
821354-1	98BPXLI02WA01	03/18/98	WATER
821354-2	98BPXLI02WA02	03/18/98	WATER
821354-3	98BPXLI02WA03	03/18/98	WATER
821354-4	98BPXLI09WA01	03/18/98	WATER
821354-5	98BPXLI09WA02	03/18/98	WATER
821354-6	98BPXLI09WA03	03/18/98	WATER
821354-7	98BPXLI14WA01	03/18/98	WATER
821354-8	98BPXLI14WA02	03/18/98	WATER
821354-9	98BPXLI30WA03	03/19/98	WATER
821354-10	98BPXLI30WA01	03/19/98	WATER
821354-11	98BPXLI30WA02	03/19/98	WATER
821354-12	98BPXLI30WA62	03/19/98	WATER
821354-13	98BPXLI02WA61	03/18/98	WATER
821354-14	98BPXLI02SD01(01)	03/18/98	SEDIMENT
821354-15	98BPXLI02SD02(03)	03/18/98	SEDIMENT
821354-16	98BPXLI02SD03(09)	03/18/98	SEDIMENT
821354-17	98BPXLI09SD01(01)	03/18/98	SEDIMENT
821354-18	98BPXLI09SD02(03)	03/18/98	SEDIMENT
821354-19	98BPXLI09SD03(09)	03/18/98	SEDIMENT
821354-20	98BPXLI14SD01(01)	03/18/98	SEDIMENT
821354-21	98BPXLI14SD02(03)	03/18/98	SEDIMENT
821354-22	98BPXLI14SD03(09)	03/18/98	SEDIMENT
821354-23	98BPXLI30SD01(01)	03/19/98	SEDIMENT
821354-24	98BPXLI30SD02(03)	03/19/98	SEDIMENT
821354-25	98BPXLI30SD03(09)	03/19/98	SEDIMENT
821354-26	98BPXLI30SD62(03)	03/19/98	SEDIMENT
821354-27	98BPXLI02SD62(03)	03/18/98	SEDIMENT

----- TOTALS -----

MATRIX	# SAMPLES
WATER	13
SEDIMENT	14

MAS STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of the report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

ANALYTICAL SCHEDULE

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND

ANALYSIS	TECHNIQUE	REFERENCE	LAB
VOLATILE ORGANICS ANALYSIS	GCMS	EPA 8260A	R
HEXACHLOROBENZENE/HEXACHLOROBUTADIENE	GC/ECD	EPA 8081A MODIFIED	R
TOTAL ORGANIC CARBON	TOC ANALYZER	EPA 415.1	R
TOTAL ORGANIC CARBON	TOC ANALYZER	EPA 415.1 MODIFIED	R
TOTAL SUSPENDED SOLIDS	GRAVIMETRIC	EPA 160.2	R
MOISTURE	GRAVIMETRIC	CLP ILM04.0	R

R = MAS - Renton
ANC = MAS - Anchorage
SUB = Subcontract

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

CASE NARRATIVE

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND

CASE NARRATIVE: VOLATILE ORGANICS ANALYSIS

The following anomaly was associated with the preparation and/or analysis of the samples in this accession:

The 118% recovery of the surrogate spiking compound bromofluorobenzene exceeded the current MultiChem recovery range of 66-116% in the sample identified as 821354-17 (98BPXLI09SD01(01)). Since this anomaly indicated a potential high bias with no reportable concentration of any target compound found in the sample, the anomaly was flagged "H" for reporting purposes. No further corrective action was performed.

All other associated quality assurance/quality control (QA/QC) parameters were within established MultiChem control limits.

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: N/A
PROJECT #	: 1189002.330101	DATE RECEIVED	: N/A
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: N/A
CLIENT I.D.	: METHOD BLANK	DATE ANALYZED	: 03/30/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8260A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
TRICHLOROETHENE	<2
TETRACHLOROETHENE	<2
ETHYLBENZENE	<2
TOTAL XYLENES	<2
1,3-DICHLOROBENZENE	<2
1,4-DICHLOROBENZENE	<2
1,2-DICHLOROBENZENE	<2
1,2,4-TRICHLOROBENZENE	<5

SURROGATE PERCENT RECOVERY		LIMITS
1,2-DICHLOROETHANE-D4	102	67 - 150
TOLUENE-D8	104	85 - 116
BROMOFLUOROBENZENE	96	66 - 116

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: N/A
PROJECT #	: 1189002.330101	DATE RECEIVED	: N/A
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: N/A
CLIENT I.D.	: METHOD BLANK	DATE ANALYZED	: 03/30/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8260A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
TRICHLOROETHENE	<2
TETRACHLOROETHENE	<2
ETHYLBENZENE	<2
TOTAL XYLENES	<2
1,3-DICHLOROBENZENE	<2
1,4-DICHLOROBENZENE	<2
1,2-DICHLOROBENZENE	<2
1,2,4-TRICHLOROBENZENE	<5

SURROGATE PERCENT RECOVERY		LIMITS
1,2-DICHLOROETHANE-D4	102	67 - 150
TOLUENE-D8	105	85 - 116
BROMOFLUOROBENZENE	95	66 - 116

MAS I.D. # 821354-14

MultiChem
ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: N/A
CLIENT I.D.	: 98BPXLI02SD01(01)	DATE ANALYZED	: 03/30/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8260A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
TRICHLOROETHENE	<3
TETRACHLOROETHENE	<3
ETHYLBENZENE	<3
TOTAL XYLENES	<3
1,3-DICHLOROBENZENE	<3
1,4-DICHLOROBENZENE	<3
1,2-DICHLOROBENZENE	<3
1,2,4-TRICHLOROBENZENE	<7

SURROGATE PERCENT RECOVERY		LIMITS
1,2-DICHLOROETHANE-D4	104	67 - 150
TOLUENE-D8	103	85 - 116
BROMOFLUOROBENZENE	98	66 - 116

MAS I.D. # 821354-15

MultiChem
ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: N/A
CLIENT I.D.	: 98BPXLI02SD02(03)	DATE ANALYZED	: 03/30/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8260A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
TRICHLOROETHENE	<3
TETRACHLOROETHENE	<3
ETHYLBENZENE	<3
TOTAL XYLENES	<3
1,3-DICHLOROBENZENE	<3
1,4-DICHLOROBENZENE	<3
1,2-DICHLOROBENZENE	<3
1,2,4-TRICHLOROBENZENE	<7

SURROGATE PERCENT RECOVERY		LIMITS
1,2-DICHLOROETHANE-D4	105	67 - 150
TOLUENE-D8	104	85 - 116
BROMOFLUOROBENZENE	98	66 - 116

MAS I.D. # 821354-16

MultiChem
ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: N/A
CLIENT I.D.	: 98BPXLI02SD03(09)	DATE ANALYZED	: 03/30/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8260A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
TRICHLOROETHENE	<3
TETRACHLOROETHENE	<3
ETHYLBENZENE	<3
TOTAL XYLENES	<3
1,3-DICHLOROBENZENE	<3
1,4-DICHLOROBENZENE	<3
1,2-DICHLOROBENZENE	<3
1,2,4-TRICHLOROBENZENE	<8

SURROGATE PERCENT RECOVERY		LIMITS
1,2-DICHLOROETHANE-D4	102	67 - 150
TOLUENE-D8	105	85 - 116
BROMOFLUOROBENZENE	98	66 - 116

MAS I.D. # 821354-17

MultiChem
ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: N/A
CLIENT I.D.	: 98BPXLI09SD01(01)	DATE ANALYZED	: 03/30/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8260A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
TRICHLOROETHENE	<3
TETRACHLOROETHENE	<3
ETHYLBENZENE	<3
TOTAL XYLENES	<3
1,3-DICHLOROBENZENE	<3
1,4-DICHLOROBENZENE	<3
1,2-DICHLOROBENZENE	<3
1,2,4-TRICHLOROBENZENE	<8

SURROGATE PERCENT RECOVERY		LIMITS
1,2-DICHLOROETHANE-D4	102	67 - 150
TOLUENE-D8	103	85 - 116
BROMOFLUOROBENZENE	118 H	66 - 116

H = Out of limits.

MAS I.D. # 821354-18

MultiChem
ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: N/A
CLIENT I.D.	: 98BPXLI09SD02(03)	DATE ANALYZED	: 03/30/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8260A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
TRICHLOROETHENE	<3
TETRACHLOROETHENE	<3
ETHYLBENZENE	<3
TOTAL XYLENES	<3
1,3-DICHLOROBENZENE	<3
1,4-DICHLOROBENZENE	<3
1,2-DICHLOROBENZENE	<3
1,2,4-TRICHLOROBENZENE	<8

SURROGATE PERCENT RECOVERY		LIMITS
1,2-DICHLOROETHANE-D4	104	67 - 150
TOLUENE-D8	104	85 - 116
BROMOFLUOROBENZENE	99	66 - 116

MAS I.D. # 821354-19

MultiChem
ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: N/A
CLIENT I.D.	: 98BPXLI09SD03(09)	DATE ANALYZED	: 03/30/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8260A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
TRICHLOROETHENE	<3
TETRACHLOROETHENE	<3
ETHYLBENZENE	<3
TOTAL XYLENES	<3
1,3-DICHLOROBENZENE	<3
1,4-DICHLOROBENZENE	<3
1,2-DICHLOROBENZENE	<3
1,2,4-TRICHLOROBENZENE	<7

SURROGATE PERCENT RECOVERY		LIMITS
1,2-DICHLOROETHANE-D4	105	67 - 150
TOLUENE-D8	104	85 - 116
BROMOFLUOROBENZENE	97	66 - 116

MAS I.D. # 821354-20

MultiChem
ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: N/A
CLIENT I.D.	: 98BPXLI14SD01(01)	DATE ANALYZED	: 03/30/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8260A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
TRICHLOROETHENE	<3
TETRACHLOROETHENE	<3
ETHYLBENZENE	<3
TOTAL XYLENES	<3
1,3-DICHLOROBENZENE	<3
1,4-DICHLOROBENZENE	<3
1,2-DICHLOROBENZENE	<3
1,2,4-TRICHLOROBENZENE	<6

SURROGATE PERCENT RECOVERY		LIMITS
1,2-DICHLOROETHANE-D4	101	67 - 150
TOLUENE-D8	101	85 - 116
BROMOFLUOROBENZENE	116	66 - 116

MAS I.D. # 821354-21

MultiChem
ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: N/A
CLIENT I.D.	: 98BPXLI14SD02(03)	DATE ANALYZED	: 03/30/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8260A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
TRICHLOROETHENE	<3
TETRACHLOROETHENE	<3
ETHYLBENZENE	<3
TOTAL XYLENES	<3
1,3-DICHLOROBENZENE	<3
1,4-DICHLOROBENZENE	<3
1,2-DICHLOROBENZENE	<3
1,2,4-TRICHLOROBENZENE	<6

SURROGATE PERCENT RECOVERY		LIMITS
1,2-DICHLOROETHANE-D4	107	67 - 150
TOLUENE-D8	104	85 - 116
BROMOFLUOROBENZENE	99	66 - 116

MAS I.D. # 821354-22

MultiChem
ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: N/A
CLIENT I.D.	: 98BPXLI14SD03(09)	DATE ANALYZED	: 03/30/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8260A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
TRICHLOROETHENE	<2
TETRACHLOROETHENE	<2
ETHYLBENZENE	<2
TOTAL XYLENES	<2
1,3-DICHLOROBENZENE	<2
1,4-DICHLOROBENZENE	<2
1,2-DICHLOROBENZENE	<2
1,2,4-TRICHLOROBENZENE	<6

SURROGATE PERCENT RECOVERY		LIMITS
1,2-DICHLOROETHANE-D4	105	67 - 150
TOLUENE-D8	104	85 - 116
BROMOFLUOROBENZENE	99	66 - 116

MAS I.D. # 821354-23

MultiChem
ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/19/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: N/A
CLIENT I.D.	: 98BPXLI30SD01(01)	DATE ANALYZED	: 03/30/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8260A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
TRICHLOROETHENE	<3
TETRACHLOROETHENE	<3
ETHYLBENZENE	<3
TOTAL XYLENES	<3
1,3-DICHLOROBENZENE	<3
1,4-DICHLOROBENZENE	<3
1,2-DICHLOROBENZENE	<3
1,2,4-TRICHLOROBENZENE	<8

SURROGATE PERCENT RECOVERY		LIMITS
1,2-DICHLOROETHANE-D4	104	67 - 150
TOLUENE-D8	104	85 - 116
BROMOFLUOROBENZENE	99	66 - 116

MAS I.D. # 821354-24

MultiChem
ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/19/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: N/A
CLIENT I.D.	: 98BPXLI30SD02(03)	DATE ANALYZED	: 03/30/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8260A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
TRICHLOROETHENE	<3
TETRACHLOROETHENE	<3
ETHYLBENZENE	<3
TOTAL XYLENES	<3
1,3-DICHLOROBENZENE	<3
1,4-DICHLOROBENZENE	<3
1,2-DICHLOROBENZENE	<3
1,2,4-TRICHLOROBENZENE	<7

SURROGATE PERCENT RECOVERY		LIMITS
1,2-DICHLOROETHANE-D4	103	67 - 150
TOLUENE-D8	103	85 - 116
BROMOFLUOROBENZENE	106	66 - 116

MAS I.D. # 821354-25

MultiChem
ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/19/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: N/A
CLIENT I.D.	: 98BPXLI30SD03(09)	DATE ANALYZED	: 03/31/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8260A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
TRICHLOROETHENE	<3
TETRACHLOROETHENE	<3
ETHYLBENZENE	<3
TOTAL XYLENES	<3
1,3-DICHLOROBENZENE	<3
1,4-DICHLOROBENZENE	<3
1,2-DICHLOROBENZENE	<3
1,2,4-TRICHLOROBENZENE	<6

SURROGATE PERCENT RECOVERY		LIMITS
1,2-DICHLOROETHANE-D4	107	67 - 150
TOLUENE-D8	104	85 - 116
BROMOFLUOROBENZENE	98	66 - 116

MAS I.D. # 821354-26

MultiChem
ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/19/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: N/A
CLIENT I.D.	: 98BPXLI30SD62(03)	DATE ANALYZED	: 03/31/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8260A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
TRICHLOROETHENE	<3
TETRACHLOROETHENE	<3
ETHYLBENZENE	<3
TOTAL XYLENES	<3
1,3-DICHLOROBENZENE	<3
1,4-DICHLOROBENZENE	<3
1,2-DICHLOROBENZENE	<3
1,2,4-TRICHLOROBENZENE	<7

SURROGATE PERCENT RECOVERY		LIMITS
1,2-DICHLOROETHANE-D4	107	67 - 150
TOLUENE-D8	106	85 - 116
BROMOFLUOROBENZENE	97	66 - 116

MAS I.D. # 821354-27

MultiChem
ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: N/A
CLIENT I.D.	: 98BPXLI02SD62(03)	DATE ANALYZED	: 03/31/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8260A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
TRICHLOROETHENE	<3
TETRACHLOROETHENE	<3
ETHYLBENZENE	<3
TOTAL XYLENES	<3
1,3-DICHLOROBENZENE	<3
1,4-DICHLOROBENZENE	<3
1,2-DICHLOROBENZENE	<3
1,2,4-TRICHLOROBENZENE	<7

SURROGATE PERCENT RECOVERY		LIMITS
1,2-DICHLOROETHANE-D4	106	67 - 150
TOLUENE-D8	104	85 - 116
BROMOFLUOROBENZENE	99	66 - 116

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS
QUALITY CONTROL DATA

CLIENT	: MONTGOMERY WATSON	SAMPLE I.D. #	: BLANK
PROJECT #	: 1189002.330101	DATE EXTRACTED	: N/A
PROJECT NAME	: LIBERTY ISLAND	DATE ANALYZED	: 03/30/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8260A		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
TRICHLOROETHENE	<2.00	50.0	49.4	99	N/A	N/A	N/A

CONTROL LIMITS	% REC.	RPD
TRICHLOROETHENE	81 - 129	20

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
1,2-DICHLOROETHANE-D4	103	N/A	67 - 150
TOLUENE-D8	104	N/A	85 - 116
BROMOFLUOROBENZENE	97	N/A	66 - 116

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS
QUALITY CONTROL DATA

CLIENT	: MONTGOMERY WATSON	SAMPLE I.D. #	: BLANK
PROJECT #	: 1189002.330101	DATE EXTRACTED	: N/A
PROJECT NAME	: LIBERTY ISLAND	DATE ANALYZED	: 03/30/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8260A		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
TRICHLOROETHENE	<2.00	50.0	49.0	98	N/A	N/A	N/A

CONTROL LIMITS	% REC.	RPD
TRICHLOROETHENE	81 - 129	20

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
1,2-DICHLOROETHANE-D4	101	N/A	67 - 150
TOLUENE-D8	105	N/A	85 - 116
BROMOFLUOROBENZENE	95	N/A	66 - 116

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS
QUALITY CONTROL DATA

CLIENT	: MONTGOMERY WATSON	SAMPLE I.D. #	: 821354-17
PROJECT #	: 1189002.330101	DATE EXTRACTED	: N/A
PROJECT NAME	: LIBERTY ISLAND	DATE ANALYZED	: 03/30/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8260A		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
TRICHLOROETHENE	<3.39	84.7	75.0	89	69.9	83	7

CONTROL LIMITS	% REC.	RPD
TRICHLOROETHENE	77 - 134	20

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
1,2-DICHLOROETHANE-D4	108	104	67 - 150
TOLUENE-D8	100	102	85 - 116
BROMOFLUOROBENZENE	115	101	66 - 116

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

CASE NARRATIVE

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND

CASE NARRATIVE: HEXACHLOROBENZENE/HEXACHLOROBUTADIENE ANALYSIS

There were no anomalies associated with the preparation and/or analysis of the samples in this accession.

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

HEXACHLOROBENZENE/HEXACHLOROBUTADIENE ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: N/A
PROJECT #	: 1189002.330101	DATE RECEIVED	: N/A
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 04/01/98
CLIENT I.D.	: METHOD BLANK	DATE ANALYZED	: 04/08/98
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8081A (MODIFIED)	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
HEXACHLOROBENZENE	<0.0017
HEXACHLOROBUTADIENE	<0.0017

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	116	28 - 138
TETRACHLORO-M-XYLENE	90	43 - 119

MAS I.D. # 821354-14

MultiChem
ANALYTICAL SERVICES

HEXACHLOROBENZENE/HEXACHLOROBUTADIENE ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 04/01/98
CLIENT I.D.	: 98BPXLI02SD01(01)	DATE ANALYZED	: 04/08/98
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8081A (MODIFIED)	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
HEXACHLOROBENZENE	<0.0023
HEXACHLOROBUTADIENE	<0.0023

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	108	28 - 138
TETRACHLORO-M-XYLENE	81	43 - 119

MAS I.D. # 821354-15

MultiChem
ANALYTICAL SERVICES

HEXACHLOROBENZENE/HEXACHLOROBUTADIENE ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 04/01/98
CLIENT I.D.	: 98BPXLI02SD02(03)	DATE ANALYZED	: 04/08/98
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8081A (MODIFIED)	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
HEXACHLOROBENZENE	<0.0025
HEXACHLOROBUTADIENE	<0.0025

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	109	28 - 138
TETRACHLORO-M-XYLENE	84	43 - 119

MAS I.D. # 821354-16

MultiChem
ANALYTICAL SERVICES

HEXACHLOROBENZENE/HEXACHLOROBUTADIENE ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 04/01/98
CLIENT I.D.	: 98BPXLI02SD03(09)	DATE ANALYZED	: 04/08/98
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8081A (MODIFIED)	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
HEXACHLOROBENZENE	<0.0025
HEXACHLOROBUTADIENE	<0.0025

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	106	28 - 138
TETRACHLORO-M-XYLENE	83	43 - 119

MAS I.D. # 821354-17

MultiChem
ANALYTICAL SERVICES

HEXACHLOROBENZENE/HEXACHLOROBUTADIENE ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 04/01/98
CLIENT I.D.	: 98BPXLI09SD01(01)	DATE ANALYZED	: 04/08/98
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8081A (MODIFIED)	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
HEXACHLOROBENZENE	<0.0028
HEXACHLOROBUTADIENE	<0.0028

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	114	28 - 138
TETRACHLORO-M-XYLENE	92	43 - 119

MAS I.D. # 821354-18

MultiChem
ANALYTICAL SERVICES

HEXACHLOROBENZENE/HEXACHLOROBUTADIENE ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 04/01/98
CLIENT I.D.	: 98BPXLI09SD02(03)	DATE ANALYZED	: 04/09/98
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8081A (MODIFIED)	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
HEXACHLOROBENZENE	<0.0027
HEXACHLOROBUTADIENE	<0.0027

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	113	28 - 138
TETRACHLORO-M-XYLENE	92	43 - 119

MAS I.D. # 821354-19

MultiChem
ANALYTICAL SERVICES

HEXACHLOROBENZENE/HEXACHLOROBUTADIENE ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 04/01/98
CLIENT I.D.	: 98BPXLI09SD03(09)	DATE ANALYZED	: 04/09/98
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8081A (MODIFIED)	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
HEXACHLOROBENZENE	<0.0022
HEXACHLOROBUTADIENE	<0.0022

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	111	28 - 138
TETRACHLORO-M-XYLENE	92	43 - 119

MAS I.D. # 821354-20

MultiChem
ANALYTICAL SERVICES

HEXACHLOROBENZENE/HEXACHLOROBUTADIENE ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 04/01/98
CLIENT I.D.	: 98BPXLI14SD01(01)	DATE ANALYZED	: 04/09/98
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8081A (MODIFIED)	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
HEXACHLOROBENZENE	<0.0021
HEXACHLOROBUTADIENE	<0.0021

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	112	28 - 138
TETRACHLORO-M-XYLENE	85	43 - 119

MAS I.D. # 821354-21

MultiChem
ANALYTICAL SERVICES

HEXACHLOROBENZENE/HEXACHLOROBUTADIENE ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 04/01/98
CLIENT I.D.	: 98BPXLI14SD02(03)	DATE ANALYZED	: 04/09/98
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8081A (MODIFIED)	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
HEXACHLOROBENZENE	<0.0022
HEXACHLOROBUTADIENE	<0.0022

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	116	28 - 138
TETRACHLORO-M-XYLENE	92	43 - 119

MAS I.D. # 821354-22

MultiChem
ANALYTICAL SERVICES

HEXACHLOROBENZENE/HEXACHLOROBUTADIENE ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 04/01/98
CLIENT I.D.	: 98BPXLI14SD03(09)	DATE ANALYZED	: 04/09/98
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8081A (MODIFIED)	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
HEXACHLOROBENZENE	<0.0020
HEXACHLOROBUTADIENE	<0.0020

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	112	28 - 138
TETRACHLORO-M-XYLENE	85	43 - 119

MAS I.D. # 821354-23

MultiChem
ANALYTICAL SERVICES

HEXACHLOROBENZENE/HEXACHLOROBUTADIENE ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/19/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 04/01/98
CLIENT I.D.	: 98BPXLI30SD01(01)	DATE ANALYZED	: 04/09/98
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8081A (MODIFIED)	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
HEXACHLOROBENZENE	<0.0026
HEXACHLOROBUTADIENE	<0.0026

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	115	28 - 138
TETRACHLORO-M-XYLENE	90	43 - 119

MAS I.D. # 821354-24

MultiChem
ANALYTICAL SERVICES

HEXACHLOROBENZENE/HEXACHLOROBUTADIENE ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/19/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 04/01/98
CLIENT I.D.	: 98BPXLI30SD02(03)	DATE ANALYZED	: 04/09/98
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8081A (MODIFIED)	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
HEXACHLOROBENZENE	<0.0023
HEXACHLOROBUTADIENE	<0.0023

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	111	28 - 138
TETRACHLORO-M-XYLENE	88	43 - 119

MAS I.D. # 821354-25

MultiChem
ANALYTICAL SERVICES

HEXACHLOROBENZENE/HEXACHLOROBUTADIENE ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/19/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 04/01/98
CLIENT I.D.	: 98BPXLI30SD03(09)	DATE ANALYZED	: 04/09/98
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8081A (MODIFIED)	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
HEXACHLOROBENZENE	<0.0022
HEXACHLOROBUTADIENE	<0.0022

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	111	28 - 138
TETRACHLORO-M-XYLENE	88	43 - 119

MAS I.D. # 821354-26

MultiChem
ANALYTICAL SERVICES

HEXACHLOROBENZENE/HEXACHLOROBUTADIENE ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/19/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 04/01/98
CLIENT I.D.	: 98BPXLI30SD62(03)	DATE ANALYZED	: 04/09/98
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8081A (MODIFIED)	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
HEXACHLOROBENZENE	<0.0024
HEXACHLOROBUTADIENE	<0.0024

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	121	28 - 138
TETRACHLORO-M-XYLENE	95	43 - 119

MAS I.D. # 821354-27

MultiChem
ANALYTICAL SERVICES

HEXACHLOROBENZENE/HEXACHLOROBUTADIENE ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 04/01/98
CLIENT I.D.	: 98BPXLI02SD62(03)	DATE ANALYZED	: 04/09/98
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8081A (MODIFIED)	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
HEXACHLOROBENZENE	<0.0025
HEXACHLOROBUTADIENE	<0.0025

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	113	28 - 138
TETRACHLORO-M-XYLENE	90	43 - 119

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

HEXACHLOROBENZENE/HEXACHLOROBUTADIENE ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	SAMPLE I.D. #	: BLANK
PROJECT #	: 1189002.330101	DATE EXTRACTED	: 04/01/98
PROJECT NAME	: LIBERTY ISLAND	DATE ANALYZED	: 04/08/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8081A (MODIFIED)		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
HEXACHLOROBENZENE	<0.00167	0.0167	0.0129	77	N/A	N/A	N/A
HEXACHLOROBUTADIENE	<0.00167	0.0167	0.0153	92	N/A	N/A	N/A

CONTROL LIMITS	% REC.	RPD
HEXACHLOROBENZENE	20 - 160	50
HEXACHLOROBUTADIENE	20 - 160	50

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
DECACHLOROBIPHENYL	113	N/A	28 - 138
TETRACHLORO-M-XYLENE	85	N/A	43 - 119

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

HEXACHLOROBENZENE/HEXACHLOROBUTADIENE ANALYSIS
DATA SUMMARY

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND
SAMPLE MATRIX : SOIL
EPA METHOD : 8081A (MODIFIED)

SAMPLE I.D. # : 821354-17
DATE EXTRACTED : 04/01/98
DATE ANALYZED : 04/08/98
UNITS : ug/Kg

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
HEXACHLOROBENZENE	<0.00282	0.0282	0.0189	67	0.0154	55	20
HEXACHLOROBUTADIENE	<0.00282	0.0282	0.0289	102	0.0273	97	6

CONTROL LIMITS	% REC.	RPD
HEXACHLOROBENZENE	20 - 160	50
HEXACHLOROBUTADIENE	20 - 160	50

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
DECACHLOROBIPHENYL	116	111	28 - 138
TETRACHLORO-M-XYLENE	95	87	43 - 119

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

CASE NARRATIVE

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND

CASE NARRATIVE: GENERAL CHEMISTRY ANALYSIS

The following anomalies were associated with the preparation and/or analysis of the samples in this accession:

The bottles containing the total organic carbon (TOC) aliquots for samples 821354-10 (98BPXLI30WA01) and 821354-12 (98BPXLI30WA62) were cracked and broken. The samples were transferred to new amber bottle containers.

The percent recovery of the first continuing calibration verification (CCV) in the April 3, 1998, TOC analytical run was outside the required control limits of 90-110% due to a bad injection. The samples affected were the method blank, laboratory control samples (LCSs) and 821354-15 (98BPXLI02SD02(03). The CCV was reanalyzed for verification and percent recovery was within control limits. Another sample, 821354-16 (98BPXLI02SD03(09) was reanalyzed for verification. The relative percent difference (RPD) between the initial and reanalyzed result for the sample was less than 1%. After reanalysis of the CCV and sample 821354-16 (98BPXLI02SD03(09), the instrument was determined to be stable. Therefore, analysis was resumed and TOC results for the blank, LCS and 821354-15 (98BPXLI02SD02(03) were reported from the analytical run.

All other associated quality assurance/quality control (QA/QC) parameters were within established MultiChem control limits.

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

GENERAL CHEMISTRY ANALYSIS

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND

MATRIX : WATER

PARAMETER	DATE PREPARED	DATE ANALYZED
TOTAL ORGANIC CARBON (SAMPLES -1 THRU -6)	N/A	03/25/98
TOTAL ORGANIC CARBON (SAMPLES -7 THRU -13)	N/A	03/26/98
TOTAL SUSPENDED SOLIDS	03/25/98	03/26/98

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

GENERAL CHEMISTRY ANALYSIS
DATA SUMMARY

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND

MATRIX : WATER
UNITS : mg/L

MAS I.D. #	CLIENT I.D.	TOTAL ORGANIC CARBON	TOTAL SUSPENDED SOLIDS
821354-1	98BPXLI02WA01	1.5	<10
821354-2	98BPXLI02WA02	1.6	34
821354-3	98BPXLI02WA03	1.1	12
821354-4	98BPXLI09WA01	1.2	74
821354-5	98BPXLI09WA02	1.2	34
821354-6	98BPXLI09WA03	1.2	48
821354-7	98BPXLI14WA01	1.4	15
821354-8	98BPXLI14WA02	1.3	<10
821354-9	98BPXLI30WA03	1.2	17
821354-10	98BPXLI30WA01	1.7	<10
821354-11	98BPXLI30WA02	1.2	10
821354-12	98BPXLI30WA62	1.2	13
821354-13	98BPXLI02WA61	1.4	17
BLANK	-	<0.50	<10
BLANK	-	<0.50	N/A

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

GENERAL CHEMISTRY ANALYSIS
QUALITY CONTROL DATA

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND

MATRIX : WATER
UNITS : mg/L

PARAMETER	MAS I.D.	SAMPLE RESULT	DUP RESULT	RPD	SPIKED RESULT	SPIKE ADDED	% REC.
TOTAL ORGANIC CARBON	BLANK	<0.500	N/A	N/A	2.16	2.00	108
TOTAL ORGANIC CARBON	BLANK	<0.500	N/A	N/A	2.20	2.00	110
TOTAL ORGANIC CARBON	821354-1	1.45	1.52	5	3.43	2.00	99
TOTAL ORGANIC CARBON	821354-7	1.43	1.47	3	3.33	2.00	95
TOTAL SUSPENDED SOLIDS	BLANK	<10.0	N/A	N/A	60.0	60.6	99
TOTAL SUSPENDED SOLIDS	821354-1	<10.0	<10.0	NC	N/A	N/A	N/A

NC = Not calculable.

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

GENERAL CHEMISTRY ANALYSIS

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND

MATRIX : SOIL

PARAMETER	DATE PREPARED	DATE ANALYZED
TOTAL ORGANIC CARBON (SAMPLE -14)	03/28/98	04/01/98
TOTAL ORGANIC CARBON (SAMPLES -15 THRU -19)	03/28/98	04/03/98
TOTAL ORGANIC CARBON (SAMPLES -20 THRU -27)	03/28/98	04/06/98

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

GENERAL CHEMISTRY ANALYSIS
DATA SUMMARY

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND

MATRIX : SOIL
UNITS : mg/Kg

MAS I.D. #	CLIENT I.D.	TOTAL ORGANIC CARBON	
821354-14	98BPXLI02SD01(01)	1.4	D4
821354-15	98BPXLI02SD02(03)	1.9	D4
821354-16	98BPXLI02SD03(09)	4.9	D0
821354-17	98BPXLI09SD01(01)	3.9	D5
821354-18	98BPXLI09SD02(03)	6.5	D0
821354-19	98BPXLI09SD03(09)	2.8	D5
821354-20	98BPXLI14SD01(01)	0.56	D4
821354-21	98BPXLI14SD02(03)	1.7	D5
821354-22	98BPXLI14SD03(09)	0.42	D4
821354-23	98BPXLI30SD01(01)	1.6	D4
821354-24	98BPXLI30SD02(03)	1.6	D5
821354-25	98BPXLI30SD03(09)	1.8	D4
821354-26	98BPXLI30SD62(03)	1.6	D4
821354-27	98BPXLI02SD62(03)	1.6	D4
BLANK	-	<0.010	
BLANK	-	<0.010	
LANK	-	<0.010	

D4 = Value from a 10 fold diluted analysis.
D0 = Value from a 40 fold diluted analysis.
D5 = Value from a 20 fold diluted analysis.

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

GENERAL CHEMISTRY ANALYSIS
QUALITY CONTROL DATA

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND

MATRIX : SOIL
UNITS : mg/Kg

PARAMETER	MAS I.D.	SAMPLE RESULT	DUP RESULT	RPD	SPIKED RESULT	SPIKE ADDED	% REC.
TOTAL ORGANIC CARBON	BLANK(LCS)	<0.0100	N/A	N/A	0.382	0.375	102
TOTAL ORGANIC CARBON	BLANK(LCS)	<0.0100	N/A	N/A	0.437	0.375	117
TOTAL ORGANIC CARBON	BLANK(LCS)	<0.0100	N/A	N/A	0.422	0.375	113
TOTAL ORGANIC CARBON	821354-14	1.41	1.56	10	1.91	0.496	101
TOTAL ORGANIC CARBON	821354-24	1.62	1.53	6	2.58	1.02	94

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

GENERAL CHEMISTRY ANALYSIS

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND

MATRIX : SOIL

PARAMETER	DATE ANALYZED
MOISTURE	03/24/98

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

GENERAL CHEMISTRY ANALYSIS
DATA SUMMARY

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND

MATRIX : SOIL
UNITS : %

MAS I.D. #	CLIENT I.D.	MOISTURE
821354-14	98BPXLI02SD01(01)	29
821354-15	98BPXLI02SD02(03)	33
821354-16	98BPXLI02SD03(09)	34
821354-17	98BPXLI09SD01(01)	41
821354-18	98BPXLI09SD02(03)	39
821354-19	98BPXLI09SD03(09)	25
821354-20	98BPXLI14SD01(01)	21
821354-21	98BPXLI14SD02(03)	23
821354-22	98BPXLI14SD03(09)	18
821354-23	98BPXLI30SD01(01)	36
821354-24	98BPXLI30SD02(03)	28
821354-25	98BPXLI30SD03(09)	23
821354-26	98BPXLI30SD62(03)	31
821354-27	98BPXLI02SD62(03)	33

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

GENERAL CHEMISTRY ANALYSIS
QUALITY CONTROL DATA

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND

MATRIX : SOIL
UNITS : %

PARAMETER	MAS I.D.	SAMPLE RESULT	DUP RESULT	RPD	SPIKED RESULT	SPIKE ADDED	% REC
MOISTURE	821354-23	36	36	0	N/A	N/A	N/A
MOISTURE	821354-27	33	33	0	N/A	N/A	N/A

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{|(\text{Sample Result} - \text{Duplicate Result})|}{\text{Average Result}} \times 100$$

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BPX L[illegible] Island

Pg 1 of 2

MAS 821354

Montgomery Watson
4100 Spenard Road
Anchorage AK 99517
(907)248-8883
Fax (907) 248-8884
ATTN: Lynn DeGeorge

Laboratory:
Multichem Analytical Services
2000 West International Airport Road
Anchorage, Alaska 99502
(907) 248-8273
(907) 248-8273 FAX
Attn: Mike Vogel

MW Job Number: 1189002
21-DAY 330101
TURNAROUND

Sampler's Signature 1998 Bonchean

MAS#	Date	Time	Sample ID	Matrix	Total Containers	SOIL: VOCs- 8260a 2 x 2-oz amber glass	SVOCs- 8270 1 x 8-oz amber glass	TOC-415.1 1 x 4-oz amber glass	Grain Size - ASTM D422 1 x 8-oz amber glass	Particle Size- ASTM D2487 1 x 4-oz amber glass		WATER: TSS- 160.2 250 ml poly	TOC-415.1 1 x 250 ml amber	Comments
						Cool to 4 degrees C						Cool to 4 degrees C H2SO4		
-1	3-18	2210	98BPXLI 02 WA01	W	2							✓	✓	
-2	3-18	2130	98BPXLI 02 WA02	W	2							✓	✓	
-3	3-18	2200	98BPXLI 02 WA03	W	2							✓	✓	
-4	3-18	1530	98BPXLI 09 WA01	W	2							✓	✓	MS/MSD
-5	3-18	1540	98BPXLI 09 WA02	W	2							✓	✓	
-6	3-18	1550	98BPXLI 09 WA03	W	2							✓	✓	
-7	3-18	1300	98BPXLI 14 WA01	W	2							✓	✓	
-8	3-18	1315	98BPXLI 14 WA02	W	2							✓	✓	
-9	3-19	0200	98BPXLI 30 WA03	W	2							✓	✓	
-10	3-19	0120	98BPXLI 30 WA01	W	2							✓	✓	
-11	3-19	0140	98BPXLI 30 WA02	W	2							✓	✓	
			~~98BPXLI WA03~~											No Sample
-12	3-19	0150	98BPXLI 30 WA6 2		2							✓	✓	
-13	3-18	2110	98BPXLI 02 WA6 1		2							✓	✓	
			~~98BPXLI WA~~	LAST										
			98BPXLI WA											

ADEC
21 cal day.

Relinquished by: Bonchean	Date 3-20-98 Time 1000	Hand Delivered (Y) N	Shipped Via
Received for Laboratory by: Gary Fisher	Date 3/20 Time 10:00	Cooler Temperature Upon Arrival 4.8° 3.7° 5.1° 11.7° °C	Laboratory Notified Faxed

Airbill Number | Date | Time

N.Z. Jonathan Nash 3/21/98 0930

Island

P8 2 of 2

109002.
330101

Montgomery Watson 4100 Spenard Road Anchorage AK 99517 (907)248-8883 Fax (907) 248-8884 ATTN: Lynn DeGeorge	Laboratory: Multichem Analytical Services 2000 West International Airport Road Anchorage, Alaska 99502 (907) 248-8273 (907) 248-8273 FAX Attn: Mike Vogat 1189002, 330101 3/00 MW Job Number: G ~~1189022, 30101~~ 21-DAY TURNAROUND			SOIL						WATER		MAS 821354 ADEC
				VOCs- 8260a 2 x 2-oz amber glass	SVOCs- 8270 1 x 8-oz amber glass	TOC- 415.1 1 x 4-oz amber glass	Grain Size - ASTM D422 1 x 8-oz amber glass	Particle Size- ASTM D2487 1 x 4-oz amber glass		TSS- 160.2 250 ml poly	TOC- 415.1 1 x 250 ml amber	Comments
Sampler's Signature 1998				Cool to 4 degrees C						Cool to 4 degrees C H2SO4		

MAS#	Date	Time	Sample ID	Matrix	Total Containers	VOCs- 8260a	SVOCs- 8270	TOC- 415.1	Grain Size - ASTM D422	Particle Size- ASTM D2487		TSS- 160.2	TOC- 415.1	Comments
-14	3-18	2210	98BPXLI 02 SD01(01)	S	5	✓	✓	✓	✓	✓				
-15	3-18	2230	98BPXLI 02 SD02(03)	S	5									
-16	3-18	2330	98BPXLI 02 SD03(09)	S	5									
-17	3-18	1610	98BPXLI 09 SD01(01)	S	5									MS/MSD
-18	3-18	1620	98BPXLI 09 SD02(03)	S	5									
-19	3-18	1630	98BPXLI 09 SD03(09)	S	5									
-20	3-18	1330	98BPXLI 14 SD01(01)	S	5									
-21	3-18	1345	98BPXLI 14 SD02(03)	S	5									
-22	3-18	1400	98BPXLI 14 SD03(09)	S	5									
-23	3-19	0250	98BPXLI 30 SD01(01)	S	5									
-24	3-19	0300	98BPXLI 30 SD02(03)	S	5				✓	✓				
-25	3-19	0330	98BPXLI 30 SD03(09)	S	5	✓	✓	✓	✓	✓				
-26	3-19	0310	98BPXLI 30 SD62(03)	S	3	✓	✓	✓						
-27	3-18	2200	98BPXLI 02 SD62(03)	S	3	✓	✓	✓						
			98BPXLI __ SD__(__)											
			98BPXLI __ SD__(__)											

Relinquished by:	Date 3-20-98 Time 1000	Hand Delivered N	Shipped Via	Airbill Number	Date Time
Received for Laboratory by:	Date 3-20-98 Time 0:00	Cooler Temperature Upon Arrival °C		Laboratory Notified Dated	

LC. 3/21/98 0930

GW 3/2

NON-CONFORMANCES?
(Y) N #1
(if Y see other side)

MultiChem Analytical Services
SAMPLE LOG-IN CHECKLIST

DATE: 3/21/98
TIME: 0930
INITIALS: JVD

ACCESSION NO. 821354
CLIENT: MAS-AK
PROJECT: LIBERTY ISLAND

Shipping:

Type:	COC Seals:	Intact?	Packing Material:
X Cooler	X Ship. Cont.	(Y) N	Styrofoam
Box	On Bottles	Y N	X Bubble Bags
Other	None		Foam Vial Packs
			Other

Refrigerant:	Frozen?	Received Via:	
X Gel Ice Pack	(Y) N	Hand Delivery	X Courier
Loose Ice	Y N	Federal Express	UPS
Other	Y N	Airborne	Taxi
None		Other:	X Goldstreak

Sample Information:

Samp. #	Bottle #	Type			
14	42	Soil	Soil VOAs	0 headspace (Y) N	N
13	26	Water	Water VOAs	0 headspace Y N	N
		Product		Preserved? Y N	
		Other		Trip blanks? Y N	

Condition of Samples:

Containers:
Intact? (Bottle/Lid) (Y) N
Correct Type? (Y) N

CA #

Waters Preserved? (if needed) (Y) N N

ID's Match C.O.C. (Y) N N

Temperature: 1.5 C #1 CA NO.
(See corrective action on reverse side for explanation if temperature is outside of the MAS recommended range.)

LAB USE ONLY: ☐ NO NOTICE ☐ SENDOUTS NEEDED BY:
☐ COC/TAT DOES NOT MATCH NOTICE ☐ NEED TEST(S) VERIFIED BY CLIENT

COMMENTS:

(if Y see other side)

MultiChem Analytical Services
Corrective Action Sheet

ACCESSION # 821354

CORRECTIVE ACTION AREA

PLAIN CORRECTIVE ACTION:

CA NO.	CA NO.	CA NO.
_____Salvaged Sample	_____Replaced Bottle	_____Verified Id w/Client
_____Replaced Lid	_____Notified P.M.	_____Notified Client
_____Preserved Sample w/_____		

Comments:

Temperature: 1.5 C #-1 CA NO.

_____Comments: Samples were received outside of the MAS recommended temperature range (4 C+/- 2 C) Samples were received within 5 hours of collection and may not have had sufficient time to equilibrate with coolant. A temperature range from 2 to 15 degrees Celsius is considered acceptable. The samples will be analyzed as scheduled unless directed otherwise by client.

X Comments: Samples were received outside of the MAS recommended temperature range (4 C+/- 2 C) The samples will be analyzed as scheduled unless directed otherwise by client.

Tech.Signature/Date: [illegible] 3/21/98 P.M. Signature/Date: S Walker 3/24/98

CORRECTIVE ACTION TAKEN:

Explain Action Taken:

Alaska Airlines

GOLDSTREAK PACKAGE EXPRESS

Airline	Origin	AIR WAYBILL Number
027-	ANC	5247 4295

From Shipper: MULTICHEM ANALYTICAL SVCS

Address: 2000 W INT'L A/P RD #C7

Phone: 907-248-0273

City: ANCHORAGE State: AK

Zip Code: 99507

Shipper's Signature SUBJECT TO RATE AUDIT | Date | Time a.m. p.m.

The Federal Aviation Administration requires Alaska Airlines to inform you of the following: Shipper's Security Notification:

I certify that this shipment does not contain any unauthorized explosives, destructive devices or hazardous materials. I consent to a search of this shipment. I am aware that this endorsement and original signature, along with other shipping documents, will be retained on file until the shipment is delivered.

Type of first personal identification reviewed: _____
Matching photo ID? Indicate: Yes or No _____
Number appearing on ID _____

Type of second personal identification reviewed: _____
Matching photo ID? Indicate: Yes or No _____
Number appearing on ID _____

Contents: NORMAL VARGOT

Insured Value

Declared Value of Customs

Remarks: KEEP COOL

To Consignee: (Complete Consignee information required on package) MULTICHEM ANALYTICAL SVCS

Address: 560 NACHES AVE SW #101

Phone: 425-228-0335

City: RENTON State: WA

Zip Code: 98055

Consignee's Printed Name - Signature (Received in Good Order Except as Noted) | Time a.m. p.m. | Date

Origin Courier Signature | Date | Time a.m. p.m. | Destination Courier Signature | Date | Time a.m. p.m.

Total Pieces: 3

Total Weight: 1.5

MULTIPLE PIECES FOR AS FLIGHTS ONLY

Please ✓ if Live Animal ☐

Form of Payment

☐ Cash ☐ Check ☐ GBL–Attach GBL

☒ AS / QX Account Number X 2744223 0745

☐ Credit Card Number

Validate Approval (Required for all except cash and GBL)

Executed By: Date/Time a.m. p.m.

Carrier	Flight	Destination	E.T.A.
AS			

CHECK ONE ONLY

☒ AIRPORT TO AIRPORT SERVICE

ENTER → AS COURIER CHARGES

PICK-UP ONLY ☐ AS AGENT

DELIVERY ONLY ☐ AS AGENT

DOOR TO DOOR ☐ AS AGENT

AS 800 SERVICES (800) 634-7113

PCS.	WT. RANGE	RATE	CHARGE
	GSX LETTER		
	1-15		
	16-50		
	51-70		
	71-100		
Subtotal Charges			
Other Charges			
1st Carrier			
2nd Carrier			
3rd Carrier			
Tax (Offline only)			
Pickup (NON AS COURIER)			
Delivery (NON AS COURIER)			
Special Service			
Insurance			
TOTAL			

Shipper to complete all shaded areas

Door-To-Door Service: (800) 634-7113

Airline	Origin	AIR WAYBILL Number
027-	ANC	5247 4295

This is a non-negotiable AIR WAYBILL subject to the terms and conditions set forth on the reverse of shipper's copy.

Thank you for shipping with Alaska Airlines

P.O. Box 68900
Seattle, WA 98168

Consignee Memo

MultiChem
ANALYTICAL SERVICES

April 30, 1998

MAS I. D. # 821354

Montgomery Watson
4100 Spenard Road
Anchorage, AK 99517

Attn: Lynn DeGeorge

Project Name: Liberty Island Sediments

Project Number: 1189002.330101

Dear Ms. DeGeorge:

On March 20, 1998, MultiChem Analytical Services, LLC of Alaska received twenty seven samples for analysis in conjunction with the above listed project. The requested analyses were performed using EPA or equivalent methods. The reports of analyses and deliverables are enclosed. Below is an outline of the laboratories that participated in this project.

MAS-WA	Analysis Performed:	Volatile Organics (8260), Semivolatile Organics (8270), Pesticides/PCBs (8081), Total Organic Carbon (TOC) and Total Suspended Solids (TSS)
Dowl/Alaska Testlabs	Analysis Performed:	Grain Size and Particle Size Distribution (ASTM D-422)

***Please note:** this report contains results for the Semivolatile Organics (8270), which completes this file. The electronic deliverables are currently in progress, and will be E-mailed directly to you as quickly as possible.

Please do not hesitate to contact us at (907) 248-8273, if you have any questions or comments.

Sincerely,
MultiChem Analytical Services

Victoria L. Bayly
Project Manager

2000 West International Airport Road, Suite C7, Anchorage, Alaska 99502-1116 • 907-248-8273 • FAX 907-248-8274
g/office/letterhead

MultiChem
ANALYTICAL SERVICES

MAS I.D. # 821354
UST - 026

April 29, 1998

Montgomery Watson
4100 Spenard
Anchorage AK 99517-2901

Attention : Lynn DeGeorge

Project Number : 1189002.330101

Project Name : Liberty Island

Dear Ms. DeGeorge:

On March 21, 1998, MultiChem Analytical Services received 27 samples for analysis. The samples were analyzed with EPA methodology or equivalent methods as specified in the attached analytical schedule. The results, sample cross reference, and quality control data are enclosed.

This is a partial report containing results for the semivolatile analysis only. All other data has been previously forwarded under separate cover.

Sincerely,

Elaine M. Walker

Elaine M. Walker
Project Manager

EMW/hal/trm

Enclosure

560 Naches Avenue SW, Suite 101, Renton, Washington 98055-2200 • 425-228-8335 • FAX 425-228-8336 • 1-800-609-0580 • info@multichem.com

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

SAMPLE CROSS REFERENCE SHEET

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND

MAS #	CLIENT DESCRIPTION	DATE SAMPLED	MATRIX
821354-1	98BPXLI02WA01	03/18/98	WATER
821354-2	98BPXLI02WA02	03/18/98	WATER
821354-3	98BPXLI02WA03	03/18/98	WATER
821354-4	98BPXLI09WA01	03/18/98	WATER
821354-5	98BPXLI09WA02	03/18/98	WATER
821354-6	98BPXLI09WA03	03/18/98	WATER
821354-7	98BPXLI14WA01	03/18/98	WATER
821354-8	98BPXLI14WA02	03/18/98	WATER
821354-9	98BPXLI30WA03	03/19/98	WATER
821354-10	98BPXLI30WA01	03/19/98	WATER
821354-11	98BPXLI30WA02	03/19/98	WATER
821354-12	98BPXLI30WA62	03/19/98	WATER
821354-13	98BPXLI02WA61	03/18/98	WATER
821354-14	98BPXLI02SD01(01)	03/18/98	SEDIMENT
821354-15	98BPXLI02SD02(03)	03/18/98	SEDIMENT
821354-16	98BPXLI02SD03(09)	03/18/98	SEDIMENT
821354-17	98BPXLI09SD01(01)	03/18/98	SEDIMENT
821354-18	98BPXLI09SD02(03)	03/18/98	SEDIMENT
821354-19	98BPXLI09SD03(09)	03/18/98	SEDIMENT
821354-20	98BPXLI14SD01(01)	03/18/98	SEDIMENT
821354-21	98BPXLI14SD02(03)	03/18/98	SEDIMENT
821354-22	98BPXLI14SD03(09)	03/18/98	SEDIMENT
821354-23	98BPXLI30SD01(01)	03/19/98	SEDIMENT
821354-24	98BPXLI30SD02(03)	03/19/98	SEDIMENT
821354-25	98BPXLI30SD03(09)	03/19/98	SEDIMENT
821354-26	98BPXLI30SD62(03)	03/19/98	SEDIMENT
821354-27	98BPXLI02SD62(03)	03/18/98	SEDIMENT

----- TOTALS -----

MATRIX	# SAMPLES
WATER	13
SEDIMENT	14

MAS STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of the report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

ANALYTICAL SCHEDULE

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND

ANALYSIS	TECHNIQUE	REFERENCE	LAB
SEMIVOLATILE ORGANICS ANALYSIS	GCMS	EPA 8270A	R

R = MAS - Renton
ANC = MAS - Anchorage
SUB = Subcontract

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

CASE NARRATIVE

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND

CASE NARRATIVE: SEMIVOLATILE ORGANICS ANALYSIS

The following anomalies were associated with the preparation and/or analysis of the samples in this accession:

Base/Neutral Fractions
Bis(2-ethylhexyl)phthalate was detected in several samples from this set. This is a common laboratory and field contaminant because of its use in plastics. Note that this compound was also detected in the associated method blank at a level below our method detection limit (MDL).

Recoveries of the surrogate nitrobenzene-d5 from sample extracts 821354-15 (98BPXLI02SD02[03]), 821354-19 (98BPXLI09SD03[09]), 821354-20 (98BPXLI14SD01[01]) and 821354-21 (98BPXLI14SD02[03]) fell below MultiChem control limits. No action was performed since all other surrogate recoveries were within limits.

The initial analysis of the blank spike and blank spike duplicate (BS/BSD) samples showed several recovery and relative percent difference (RPD) values which exceeded MultiChem's advisory limits. The BS and BSD were reanalyzed and all recoveries and RPDs were within limits with the exception of n-nitrosodiphenylamine, which had recoveries slightly lower than our advisory limit. No further corrective action was performed since these control limits are advisory (not statistically generated due to insufficient data points) and all other spike recoveries were within limits.

The RPD between recoveries of the compounds pyrene and bis(2-ethylhexyl)phthalate from the matrix spike and matrix spike duplicate samples (MS/MSD) exceeded the MultiChem advisory limit of 20%. No corrective action was performed since both recoveries were within limits and limits are only advisory. These RPD values were flagged with "H".

The responses of continuing calibration check (CCC) compound pentachlorophenol from the CCCs preceding the base/neutral extract set fell below the method control limit. No corrective action was performed since this compound (and all other phenols) was analyzed in the acid fraction and was not a target compound in the base/neutral fraction.

Acid Fractions
Benzoic acid was detected in the associated method blank at a concentration below the reporting limit. This compound was also detected in several samples from this set, at concentrations below our MDL.

CONTINUED ON NEXT PAGE

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

CASE NARRATIVE
CONTINUED

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND

CASE NARRATIVE: SEMIVOLATILE ORGANICS ANALYSIS

This sample set was extracted along with a BS and a BSD. However, one of these extracts was blown dry during the concentration step. Therefore, results were reported for only a BS.

Recoveries of 2-4-dimethylphenol and benzyl alcohol from the associated BS sample fell below MultiChem control limits. Recoveries of benzyl alcohol from the MS/MSD also fell below MultiChem control limits. No action was performed since all control limits are only advisory.

All other associated quality assurance/quality control (QA/QC) parameters were within established MultiChem control limits.

MAS I.D. # 821354-14

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI02SD01(01)	DATE ANALYZED	: 04/06/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: ug/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
PHENOL	38
2-METHYLPHENOL	<23
4-METHYLPHENOL	<25
2,4-DIMETHYLPHENOL	<21
PENTACHLOROPHENOL	<41
BENZYL ALCOHOL	<37
BENZOIC ACID	<180

SURROGATE PERCENT RECOVERY		LIMITS
PHENOL-D5	79	39 - 132
2-FLUOROPHENOL	69	36 - 130
2,4,6-TRIBROMOPHENOL	100	13 - 133

MAS I.D. # 821354-14

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI02SD01(01)	DATE ANALYZED	: 04/22/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: mg/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
NAPHTHALENE	<0.024
ACENAPHTHYLENE	<0.022
ACENAPHTHENE	<0.024
FLUORENE	<0.027
PHENANTHRENE	0.033
ANTHRACENE	<0.025
2-METHYLNAPHTHALENE	0.025
FLUORANTHENE	<0.026
PYRENE	<0.033
BENZO(A)ANTHRACENE	<0.031
CHRYSENE	<0.031
BENZO(B)FLUORANTHENE	<0.033
BENZO(K)FLUORANTHENE	<0.042
BENZO(A)PYRENE	<0.027
INDENO(1,2,3-CD)PYRENE	<0.042
DIBENZO(A,H)ANTHRACENE	<0.043
BENZO(G,H,I)PERYLENE	<0.043
1,2-DICHLOROBENZENE	<0.026
1,4-DICHLOROBENZENE	<0.023
1,2,4-TRICHLOROBENZENE	<0.022
DIBENZOFURAN	<0.024
HEXACHLOROETHANE	<0.026
N-NITROSODIPHENYLAMINE	<0.029
DIMETHYLPHTHALATE	<0.048
DIETHYLPHTHALATE	<0.057
DI-N-BUTYLPHTHALATE	<0.033
BUTYLBENZYLPHTHALATE	<0.043
BIS(2-ETHYLHEXYL)PHTHALATE	0.056
DI-N-OCTYLPHTHALATE	<0.040

SURROGATE PERCENT RECOVERY		LIMITS
NITROBENZENE-D5	57	41 - 117
2-FLUOROBIPHENYL	71	36 - 128
TERPHENYL-D14	88	38 - 146

MAS I.D. # 821354-15

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI02SD02(03)	DATE ANALYZED	: 04/06/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: ug/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
PHENOL	<23
2-METHYLPHENOL	<24
4-METHYLPHENOL	<26
2,4-DIMETHYLPHENOL	<23
PENTACHLOROPHENOL	<43
BENZYL ALCOHOL	<39
BENZOIC ACID	<190

SURROGATE PERCENT RECOVERY		LIMITS
PHENOL-D5	99	39 - 132
2-FLUOROPHENOL	83	36 - 130
2,4,6-TRIBROMOPHENOL	104	13 - 133

MAS I.D. # 821354-15

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI02SD02(03)	DATE ANALYZED	: 04/22/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: mg/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
NAPHTHALENE	<0.025
ACENAPHTHYLENE	<0.023
ACENAPHTHENE	<0.025
FLUORENE	<0.029
PHENANTHRENE	0.031
ANTHRACENE	<0.027
2-METHYLNAPHTHALENE	<0.025
FLUORANTHENE	<0.028
PYRENE	<0.035
BENZO(A)ANTHRACENE	<0.033
CHRYSENE	<0.033
BENZO(B)FLUORANTHENE	<0.035
BENZO(K)FLUORANTHENE	<0.044
BENZO(A)PYRENE	<0.028
INDENO(1,2,3-CD)PYRENE	<0.044
DIBENZO(A,H)ANTHRACENE	<0.046
BENZO(G,H,I)PERYLENE	<0.046
1,2-DICHLOROBENZENE	<0.027
1,4-DICHLOROBENZENE	<0.025
1,2,4-TRICHLOROBENZENE	<0.023
DIBENZOFURAN	<0.026
HEXACHLOROETHANE	<0.028
N-NITROSODIPHENYLAMINE	<0.030
DIMETHYLPHTHALATE	<0.051
DIETHYLPHTHALATE	<0.060
DI-N-BUTYLPHTHALATE	<0.035
BUTYLBENZYLPHTHALATE	<0.046
BIS(2-ETHYLHEXYL)PHTHALATE	0.046
DI-N-OCTYLPHTHALATE	<0.043

SURROGATE PERCENT RECOVERY		LIMITS
NITROBENZENE-D5	30 H	41 - 117
2-FLUOROBIPHENYL	64	36 - 128
TERPHENYL-D14	74	38 - 146

H = Out of limits.

MAS I.D. # 821354-16

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI02SD03(09)	DATE ANALYZED	: 04/06/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: ug/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
PHENOL	<23
2-METHYLPHENOL	<25
4-METHYLPHENOL	64
2,4-DIMETHYLPHENOL	<23
PENTACHLOROPHENOL	<44
BENZYL ALCOHOL	<40
BENZOIC ACID	<190

SURROGATE PERCENT RECOVERY		LIMITS
PHENOL-D5	100	39 - 132
2-FLUOROPHENOL	82	36 - 130
2,4,6-TRIBROMOPHENOL	100	13 - 133

MAS I.D. # 821354-16

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI02SD03(09)	DATE ANALYZED	: 04/22/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: mg/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
NAPHTHALENE	<0.026
ACENAPHTHYLENE	<0.023
ACENAPHTHENE	<0.026
FLUORENE	<0.029
PHENANTHRENE	<0.029
ANTHRACENE	<0.027
2-METHYLNAPHTHALENE	<0.025
FLUORANTHENE	<0.028
PYRENE	<0.035
BENZO(A)ANTHRACENE	<0.033
CHRYSENE	<0.034
BENZO(B)FLUORANTHENE	<0.036
BENZO(K)FLUORANTHENE	<0.045
BENZO(A)PYRENE	<0.029
INDENO(1,2,3-CD)PYRENE	<0.045
DIBENZO(A,H)ANTHRACENE	<0.047
BENZO(G,H,I)PERYLENE	<0.046
1,2-DICHLOROBENZENE	<0.028
1,4-DICHLOROBENZENE	<0.025
1,2,4-TRICHLOROBENZENE	<0.023
DIBENZOFURAN	<0.026
HEXACHLOROETHANE	<0.028
N-NITROSODIPHENYLAMINE	<0.031
DIMETHYLPHTHALATE	<0.052
DIETHYLPHTHALATE	<0.061
DI-N-BUTYLPHTHALATE	<0.036
BUTYLBENZYLPHTHALATE	<0.046
BIS(2-ETHYLHEXYL)PHTHALATE	0.27
DI-N-OCTYLPHTHALATE	<0.043

SURROGATE PERCENT RECOVERY		LIMITS
NITROBENZENE-D5	48	41 - 117
2-FLUOROBIPHENYL	71	36 - 128
TERPHENYL-D14	91	38 - 146

MAS I.D. # 821354-17

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI09SD01(01)	DATE ANALYZED	: 04/06/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: ug/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
PHENOL	<26
2-METHYLPHENOL	<28
4-METHYLPHENOL	<30
2,4-DIMETHYLPHENOL	<26
PENTACHLOROPHENOL	<49
BENZYL ALCOHOL	<45
BENZOIC ACID	<210

SURROGATE PERCENT RECOVERY		LIMITS
PHENOL-D5	94	39 - 132
2-FLUOROPHENOL	87	36 - 130
2,4,6-TRIBROMOPHENOL	83	13 - 133

MAS I.D. # 821354-17

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI09SD01(01)	DATE ANALYZED	: 04/22/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: mg/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
NAPHTHALENE	<0.029
ACENAPHTHYLENE	<0.026
ACENAPHTHENE	<0.029
FLUORENE	<0.033
PHENANTHRENE	<0.033
ANTHRACENE	<0.030
2-METHYLNAPHTHALENE	<0.028
FLUORANTHENE	<0.032
PYRENE	<0.040
BENZO(A)ANTHRACENE	<0.037
CHRYSENE	<0.038
BENZO(B)FLUORANTHENE	<0.040
BENZO(K)FLUORANTHENE	<0.050
BENZO(A)PYRENE	<0.032
NDENO(1,2,3-CD)PYRENE	<0.050
DIBENZO(A,H)ANTHRACENE	<0.052
BENZO(G,H,I)PERYLENE	<0.052
1,2-DICHLOROBENZENE	<0.031
1,4-DICHLOROBENZENE	<0.028
1,2,4-TRICHLOROBENZENE	<0.026
DIBENZOFURAN	<0.029
HEXACHLOROETHANE	<0.032
N-NITROSODIPHENYLAMINE	<0.035
DIMETHYLPHTHALATE	<0.058
DIETHYLPHTHALATE	<0.068
DI-N-BUTYLPHTHALATE	<0.040
BUTYLBENZYLPHTHALATE	<0.052
BIS(2-ETHYLHEXYL)PHTHALATE	0.11
DI-N-OCTYLPHTHALATE	<0.048

SURROGATE PERCENT RECOVERY		LIMITS
NITROBENZENE-D5	42	41 - 117
2-FLUOROBIPHENYL	54	36 - 128
TERPHENYL-D14	100	38 - 146

MAS I.D. # 821354-18

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI09SD02(03)	DATE ANALYZED	: 04/07/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: ug/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
PHENOL	<25
2-METHYLPHENOL	<27
4-METHYLPHENOL	62
2,4-DIMETHYLPHENOL	<25
PENTACHLOROPHENOL	<48
BENZYL ALCOHOL	<43
BENZOIC ACID	<210

SURROGATE PERCENT RECOVERY		LIMITS
PHENOL-D5	93	39 - 132
2-FLUOROPHENOL	77	36 - 130
2,4,6-TRIBROMOPHENOL	84	13 - 133

MAS I.D. # 821354-18

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI09SD02(03)	DATE ANALYZED	: 04/23/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: mg/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
NAPHTHALENE	<0.028
ACENAPHTHYLENE	<0.025
ACENAPHTHENE	<0.028
FLUORENE	<0.032
PHENANTHRENE	<0.032
ANTHRACENE	<0.029
2-METHYLNAPHTHALENE	<0.027
FLUORANTHENE	<0.031
PYRENE	<0.038
BENZO(A)ANTHRACENE	<0.036
CHRYSENE	<0.036
BENZO(B)FLUORANTHENE	<0.039
BENZO(K)FLUORANTHENE	<0.049
BENZO(A)PYRENE	0.092
INDENO(1,2,3-CD)PYRENE	<0.049
DIBENZO(A,H)ANTHRACENE	<0.050
BENZO(G,H,I)PERYLENE	<0.050
1,2-DICHLOROBENZENE	<0.030
1,4-DICHLOROBENZENE	<0.027
1,2,4-TRICHLOROBENZENE	<0.025
DIBENZOFURAN	<0.028
HEXACHLOROETHANE	<0.031
N-NITROSODIPHENYLAMINE	<0.033
DIMETHYLPHTHALATE	<0.056
DIETHYLPHTHALATE	<0.066
DI-N-BUTYLPHTHALATE	<0.039
BUTYLBENZYLPHTHALATE	<0.050
BIS(2-ETHYLHEXYL)PHTHALATE	0.32
DI-N-OCTYLPHTHALATE	<0.047

SURROGATE PERCENT RECOVERY		LIMITS
NITROBENZENE-D5	48	41 - 117
2-FLUOROBIPHENYL	73	36 - 128
TERPHENYL-D14	109	38 - 146

MAS I.D. # 821354-19

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI09SD03(09)	DATE ANALYZED	: 04/07/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: ug/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
PHENOL	<21
2-METHYLPHENOL	<22
4-METHYLPHENOL	37
2,4-DIMETHYLPHENOL	<20
PENTACHLOROPHENOL	<39
BENZYL ALCOHOL	<35
BENZOIC ACID	<170

SURROGATE PERCENT RECOVERY		LIMITS
PHENOL-D5	98	39 - 132
2-FLUOROPHENOL	89	36 - 130
2,4,6-TRIBROMOPHENOL	92	13 - 133

MAS I.D. # 821354-19

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI09SD03(09)	DATE ANALYZED	: 04/23/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: mg/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
NAPHTHALENE	<0.023
ACENAPHTHYLENE	<0.020
ACENAPHTHENE	<0.023
FLUORENE	<0.026
PHENANTHRENE	<0.026
ANTHRACENE	<0.024
2-METHYLNAPHTHALENE	<0.022
FLUORANTHENE	<0.025
PYRENE	<0.031
BENZO(A)ANTHRACENE	<0.029
CHRYSENE	<0.030
BENZO(B)FLUORANTHENE	<0.031
BENZO(K)FLUORANTHENE	<0.039
BENZO(A)PYRENE	<0.025
INDENO(1,2,3-CD)PYRENE	<0.039
DIBENZO(A,H)ANTHRACENE	<0.041
BENZO(G,H,I)PERYLENE	<0.041
1,2-DICHLOROBENZENE	<0.024
1,4-DICHLOROBENZENE	<0.022
1,2,4-TRICHLOROBENZENE	<0.021
DIBENZOFURAN	<0.023
HEXACHLOROETHANE	<0.025
N-NITROSODIPHENYLAMINE	<0.027
DIMETHYLPHTHALATE	<0.046
DIETHYLPHTHALATE	<0.054
DI-N-BUTYLPHTHALATE	<0.031
BUTYLBENZYLPHTHALATE	<0.041
BIS(2-ETHYLHEXYL)PHTHALATE	0.19
DI-N-OCTYLPHTHALATE	<0.038

SURROGATE PERCENT RECOVERY		LIMITS
NITROBENZENE-D5	34 H	41 - 117
2-FLUOROBIPHENYL	75	36 - 128
TERPHENYL-D14	116	38 - 146

H = Out of limits.

MAS I.D. # 821354-20

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI14SD01(01)	DATE ANALYZED	: 04/07/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: ug/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
PHENOL	<19
2-METHYLPHENOL	<21
4-METHYLPHENOL	<22
2,4-DIMETHYLPHENOL	<19
PENTACHLOROPHENOL	<37
BENZYL ALCOHOL	<33
BENZOIC ACID	<160

SURROGATE PERCENT RECOVERY		LIMITS
PHENOL-D5	105	39 - 132
2-FLUOROPHENOL	96	36 - 130
2,4,6-TRIBROMOPHENOL	94	13 - 133

MAS I.D. # 821354-20

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI14SD01(01)	DATE ANALYZED	: 04/23/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: mg/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
NAPHTHALENE	<0.022
ACENAPHTHYLENE	<0.019
ACENAPHTHENE	<0.021
FLUORENE	<0.025
PHENANTHRENE	<0.025
ANTHRACENE	<0.023
2-METHYLNAPHTHALENE	<0.021
FLUORANTHENE	<0.024
PYRENE	<0.030
BENZO(A)ANTHRACENE	<0.028
CHRYSENE	<0.028
BENZO(B)FLUORANTHENE	<0.030
BENZO(K)FLUORANTHENE	<0.037
BENZO(A)PYRENE	<0.024
INDENO(1,2,3-CD)PYRENE	<0.037
DIBENZO(A,H)ANTHRACENE	<0.039
BENZO(G,H,I)PERYLENE	<0.039
1,2-DICHLOROBENZENE	<0.023
1,4-DICHLOROBENZENE	<0.021
1,2,4-TRICHLOROBENZENE	<0.019
DIBENZOFURAN	<0.022
HEXACHLOROETHANE	<0.024
N-NITROSODIPHENYLAMINE	<0.026
DIMETHYLPHTHALATE	<0.043
DIETHYLPHTHALATE	<0.051
DI-N-BUTYLPHTHALATE	<0.030
BUTYLBENZYLPHTHALATE	<0.039
BIS(2-ETHYLHEXYL)PHTHALATE	0.091
DI-N-OCTYLPHTHALATE	<0.036

SURROGATE PERCENT RECOVERY		LIMITS
NITROBENZENE-D5	34 H	41 - 117
2-FLUOROBIPHENYL	52	36 - 128
TERPHENYL-D14	95	38 - 146

H = Out of limits.

MAS I.D. # 821354-21

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI14SD02(03)	DATE ANALYZED	: 04/07/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: ug/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
PHENOL	<20
2-METHYLPHENOL	<21
4-METHYLPHENOL	<23
2,4-DIMETHYLPHENOL	<20
PENTACHLOROPHENOL	<38
BENZYL ALCOHOL	<34
BENZOIC ACID	<160

SURROGATE PERCENT RECOVERY		LIMITS
PHENOL-D5	106	39 - 132
2-FLUOROPHENOL	93	36 - 130
2,4,6-TRIBROMOPHENOL	103	13 - 133

MAS I.D. # 821354-21

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI14SD02(03)	DATE ANALYZED	: 04/23/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: mg/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
NAPHTHALENE	<0.022
ACENAPHTHYLENE	<0.020
ACENAPHTHENE	<0.022
FLUORENE	<0.025
PHENANTHRENE	0.027
ANTHRACENE	<0.023
2-METHYLNAPHTHALENE	<0.022
FLUORANTHENE	<0.024
PYRENE	<0.030
BENZO(A)ANTHRACENE	<0.028
CHRYSENE	<0.029
BENZO(B)FLUORANTHENE	<0.031
BENZO(K)FLUORANTHENE	<0.038
BENZO(A)PYRENE	<0.025
INDENO(1,2,3-CD)PYRENE	<0.038
DIBENZO(A,H)ANTHRACENE	<0.040
BENZO(G,H,I)PERYLENE	<0.040
1,2-DICHLOROBENZENE	<0.024
1,4-DICHLOROBENZENE	<0.021
1,2,4-TRICHLOROBENZENE	<0.020
DIBENZOFURAN	<0.022
HEXACHLOROETHANE	<0.024
N-NITROSODIPHENYLAMINE	<0.026
DIMETHYLPHTHALATE	<0.044
DIETHYLPHTHALATE	<0.052
DI-N-BUTYLPHTHALATE	<0.031
BUTYLBENZYLPHTHALATE	<0.040
BIS(2-ETHYLHEXYL)PHTHALATE	0.48
DI-N-OCTYLPHTHALATE	<0.037

SURROGATE PERCENT RECOVERY		LIMITS
NITROBENZENE-D5	28 H	41 - 117
2-FLUOROBIPHENYL	64	36 - 128
TERPHENYL-D14	87	38 - 146

H = Out of limits.

MAS I.D. # 821354-22

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI14SD03(09)	DATE ANALYZED	: 04/07/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: ug/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
PHENOL	<19
2-METHYLPHENOL	<20
4-METHYLPHENOL	<22
2,4-DIMETHYLPHENOL	<19
PENTACHLOROPHENOL	<35
BENZYL ALCOHOL	<32
BENZOIC ACID	<150

SURROGATE PERCENT RECOVERY		LIMITS
PHENOL-D5	67	39 - 132
2-FLUOROPHENOL	53	36 - 130
2,4,6-TRIBROMOPHENOL	96	13 - 133

MAS I.D. # 821354-22

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI14SD03(09)	DATE ANALYZED	: 04/23/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: mg/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
NAPHTHALENE	<0.021
ACENAPHTHYLENE	<0.019
ACENAPHTHENE	<0.021
FLUORENE	<0.024
PHENANTHRENE	<0.024
ANTHRACENE	<0.022
2-METHYLNAPHTHALENE	<0.020
FLUORANTHENE	<0.023
PYRENE	<0.029
BENZO(A)ANTHRACENE	<0.027
CHRYSENE	<0.027
BENZO(B)FLUORANTHENE	<0.029
BENZO(K)FLUORANTHENE	<0.036
BENZO(A)PYRENE	<0.023
NDENO(1,2,3-CD)PYRENE	<0.036
DIBENZO(A,H)ANTHRACENE	<0.038
BENZO(G,H,I)PERYLENE	<0.037
1,2-DICHLOROBENZENE	<0.022
1,4-DICHLOROBENZENE	<0.020
1,2,4-TRICHLOROBENZENE	<0.019
DIBENZOFURAN	<0.021
HEXACHLOROETHANE	<0.023
N-NITROSODIPHENYLAMINE	<0.025
DIMETHYLPHTHALATE	<0.042
DIETHYLPHTHALATE	<0.049
DI-N-BUTYLPHTHALATE	<0.029
BUTYLBENZYLPHTHALATE	<0.037
BIS(2-ETHYLHEXYL)PHTHALATE	0.065
DI-N-OCTYLPHTHALATE	<0.035

SURROGATE PERCENT RECOVERY		LIMITS
NITROBENZENE-D5	51	41 - 117
2-FLUOROBIPHENYL	56	36 - 128
TERPHENYL-D14	77	38 - 146

MAS I.D. # 821354-23

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/19/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI30SD01(01)	DATE ANALYZED	: 04/07/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: ug/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
PHENOL	<24
2-METHYLPHENOL	<26
4-METHYLPHENOL	<28
2,4-DIMETHYLPHENOL	<24
PENTACHLOROPHENOL	<45
BENZYL ALCOHOL	<41
BENZOIC ACID	<200

SURROGATE PERCENT RECOVERY		LIMITS
PHENOL-D5	70	39 - 132
2-FLUOROPHENOL	59	36 - 130
2,4,6-TRIBROMOPHENOL	96	13 - 133

MAS I.D. # 821354-23

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/19/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI30SD01(01)	DATE ANALYZED	: 04/23/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: mg/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
NAPHTHALENE	<0.027
ACENAPHTHYLENE	<0.024
ACENAPHTHENE	<0.026
FLUORENE	<0.030
PHENANTHRENE	<0.030
ANTHRACENE	<0.028
2-METHYLNAPHTHALENE	<0.026
FLUORANTHENE	<0.029
PYRENE	<0.037
BENZO(A)ANTHRACENE	<0.034
CHRYSENE	<0.035
BENZO(B)FLUORANTHENE	<0.037
BENZO(K)FLUORANTHENE	<0.046
BENZO(A)PYRENE	<0.030
INDENO(1,2,3-CD)PYRENE	<0.046
DIBENZO(A,H)ANTHRACENE	<0.048
BENZO(G,H,I)PERYLENE	<0.048
1,2-DICHLOROBENZENE	<0.028
1,4-DICHLOROBENZENE	<0.026
1,2,4-TRICHLOROBENZENE	<0.024
DIBENZOFURAN	<0.027
HEXACHLOROETHANE	<0.029
N-NITROSODIPHENYLAMINE	<0.032
DIMETHYLPHTHALATE	<0.053
DIETHYLPHTHALATE	<0.063
DI-N-BUTYLPHTHALATE	<0.037
BUTYLBENZYLPHTHALATE	<0.048
BIS(2-ETHYLHEXYL)PHTHALATE	0.072
DI-N-OCTYLPHTHALATE	<0.045

SURROGATE PERCENT RECOVERY		LIMITS
NITROBENZENE-D5	54	41 - 117
2-FLUOROBIPHENYL	53	36 - 128
TERPHENYL-D14	72	38 - 146

MAS I.D. # 821354-24

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/19/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI30SD02(03)	DATE ANALYZED	: 04/07/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: ug/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
PHENOL	<21
2-METHYLPHENOL	<23
4-METHYLPHENOL	<25
2,4-DIMETHYLPHENOL	<21
PENTACHLOROPHENOL	<40
BENZYL ALCOHOL	<37
BENZOIC ACID	<180

SURROGATE PERCENT RECOVERY		LIMITS
PHENOL-D5	100	39 - 132
2-FLUOROPHENOL	85	36 - 130
2,4,6-TRIBROMOPHENOL	106	13 - 133

MAS I.D. # 821354-24

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/19/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI30SD02(03)	DATE ANALYZED	: 04/23/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: mg/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
NAPHTHALENE	<0.024
ACENAPHTHYLENE	<0.021
ACENAPHTHENE	<0.023
FLUORENE	<0.027
PHENANTHRENE	<0.027
ANTHRACENE	<0.025
2-METHYLNAPHTHALENE	<0.023
FLUORANTHENE	<0.026
PYRENE	<0.033
BENZO(A)ANTHRACENE	<0.030
CHRYSENE	<0.031
BENZO(B)FLUORANTHENE	<0.033
BENZO(K)FLUORANTHENE	<0.041
BENZO(A)PYRENE	<0.026
INDENO(1,2,3-CD)PYRENE	<0.041
DIBENZO(A,H)ANTHRACENE	<0.043
BENZO(G,H,I)PERYLENE	<0.043
1,2-DICHLOROBENZENE	<0.025
1,4-DICHLOROBENZENE	<0.023
1,2,4-TRICHLOROBENZENE	<0.021
DIBENZOFURAN	<0.024
HEXACHLOROETHANE	<0.026
N-NITROSODIPHENYLAMINE	<0.028
DIMETHYLPHTHALATE	<0.048
DIETHYLPHTHALATE	<0.056
DI-N-BUTYLPHTHALATE	<0.033
BUTYLBENZYLPHTHALATE	<0.043
BIS(2-ETHYLHEXYL)PHTHALATE	0.21
DI-N-OCTYLPHTHALATE	<0.040

SURROGATE PERCENT RECOVERY		LIMITS
NITROBENZENE-D5	53	41 - 117
2-FLUOROBIPHENYL	60	36 - 128
TERPHENYL-D14	86	38 - 146

MAS I.D. # 821354-25

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/19/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI30SD03(09)	DATE ANALYZED	: 04/07/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: ug/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
PHENOL	<20
2-METHYLPHENOL	<21
4-METHYLPHENOL	280
2,4-DIMETHYLPHENOL	<20
PENTACHLOROPHENOL	<38
BENZYL ALCOHOL	<34
BENZOIC ACID	<160

SURROGATE PERCENT RECOVERY		LIMITS
PHENOL-D5	106	39 - 132
2-FLUOROPHENOL	90	36 - 130
2,4,6-TRIBROMOPHENOL	110	13 - 133

MAS I.D. # 821354-25

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/19/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI30SD03(09)	DATE ANALYZED	: 04/23/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: mg/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
NAPHTHALENE	<0.022
ACENAPHTHYLENE	<0.020
ACENAPHTHENE	<0.022
FLUORENE	<0.025
PHENANTHRENE	0.033
ANTHRACENE	<0.023
2-METHYLNAPHTHALENE	0.025
FLUORANTHENE	<0.024
PYRENE	<0.030
BENZO(A)ANTHRACENE	<0.028
CHRYSENE	<0.029
BENZO(B)FLUORANTHENE	<0.031
BENZO(K)FLUORANTHENE	<0.038
BENZO(A)PYRENE	<0.025
INDENO(1,2,3-CD)PYRENE	<0.038
DIBENZO(A,H)ANTHRACENE	<0.040
BENZO(G,H,I)PERYLENE	<0.040
1,2-DICHLOROBENZENE	<0.024
1,4-DICHLOROBENZENE	<0.021
1,2,4-TRICHLOROBENZENE	<0.020
DIBENZOFURAN	<0.022
HEXACHLOROETHANE	<0.024
N-NITROSODIPHENYLAMINE	<0.026
DIMETHYLPHTHALATE	<0.044
DIETHYLPHTHALATE	<0.052
DI-N-BUTYLPHTHALATE	<0.031
BUTYLBENZYLPHTHALATE	<0.040
BIS(2-ETHYLHEXYL)PHTHALATE	0.56
DI-N-OCTYLPHTHALATE	<0.037

SURROGATE PERCENT RECOVERY		LIMITS
NITROBENZENE-D5	47	41 - 117
2-FLUOROBIPHENYL	70	36 - 128
TERPHENYL-D14	95	38 - 146

MAS I.D. # 821354-26

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/19/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI30SD62(03)	DATE ANALYZED	: 04/07/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: ug/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
PHENOL	<22
2-METHYLPHENOL	<24
4-METHYLPHENOL	<26
2,4-DIMETHYLPHENOL	<22
PENTACHLOROPHENOL	<42
BENZYL ALCOHOL	<38
BENZOIC ACID	<180

SURROGATE PERCENT RECOVERY		LIMITS
PHENOL-D5	78	39 - 132
2-FLUOROPHENOL	66	36 - 130
2,4,6-TRIBROMOPHENOL	98	13 - 133

MAS I.D. # 821354-26

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/19/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI30SD62(03)	DATE ANALYZED	: 04/23/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: mg/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
NAPHTHALENE	<0.025
ACENAPHTHYLENE	<0.022
ACENAPHTHENE	<0.024
FLUORENE	<0.028
PHENANTHRENE	<0.028
ANTHRACENE	<0.026
2-METHYLNAPHTHALENE	<0.024
FLUORANTHENE	<0.027
PYRENE	<0.034
BENZO(A)ANTHRACENE	<0.032
CHRYSENE	<0.032
BENZO(B)FLUORANTHENE	<0.034
BENZO(K)FLUORANTHENE	<0.043
BENZO(A)PYRENE	<0.027
INDENO(1,2,3-CD)PYRENE	<0.043
DIBENZO(A,H)ANTHRACENE	<0.045
BENZO(G,H,I)PERYLENE	<0.044
1,2-DICHLOROBENZENE	<0.026
1,4-DICHLOROBENZENE	<0.024
1,2,4-TRICHLOROBENZENE	<0.022
DIBENZOFURAN	<0.025
HEXACHLOROETHANE	<0.027
N-NITROSODIPHENYLAMINE	<0.030
DIMETHYLPHTHALATE	<0.050
DIETHYLPHTHALATE	<0.058
DI-N-BUTYLPHTHALATE	<0.034
BUTYLBENZYLPHTHALATE	<0.044
BIS(2-ETHYLHEXYL)PHTHALATE	0.13
DI-N-OCTYLPHTHALATE	<0.041

SURROGATE PERCENT RECOVERY		LIMITS
NITROBENZENE-D5	48	41 - 117
2-FLUOROBIPHENYL	58	36 - 128
TERPHENYL-D14	84	38 - 146

MAS I.D. # 821354-27

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI02SD62(03)	DATE ANALYZED	: 04/07/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: ug/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
PHENOL	<23
2-METHYLPHENOL	<24
4-METHYLPHENOL	<26
2,4-DIMETHYLPHENOL	<23
PENTACHLOROPHENOL	<43
BENZYL ALCOHOL	<39
BENZOIC ACID	<190

SURROGATE PERCENT RECOVERY		LIMITS
PHENOL-D5	106	39 - 132
2-FLUOROPHENOL	87	36 - 130
2,4,6-TRIBROMOPHENOL	107	13 - 133

MAS I.D. # 821354-27

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI02SD62(03)	DATE ANALYZED	: 04/23/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: mg/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
NAPHTHALENE	<0.025
ACENAPHTHYLENE	<0.023
ACENAPHTHENE	<0.025
FLUORENE	<0.029
PHENANTHRENE	<0.029
ANTHRACENE	<0.027
2-METHYLNAPHTHALENE	0.031
FLUORANTHENE	<0.028
PYRENE	<0.035
BENZO(A)ANTHRACENE	<0.033
CHRYSENE	<0.033
BENZO(B)FLUORANTHENE	<0.035
BENZO(K)FLUORANTHENE	<0.044
BENZO(A)PYRENE	<0.028
NDENO(1,2,3-CD)PYRENE	<0.044
DIBENZO(A,H)ANTHRACENE	<0.046
BENZO(G,H,I)PERYLENE	<0.046
1,2-DICHLOROBENZENE	<0.027
1,4-DICHLOROBENZENE	<0.025
1,2,4-TRICHLOROBENZENE	<0.023
DIBENZOFURAN	<0.026
HEXACHLOROETHANE	<0.028
N-NITROSODIPHENYLAMINE	<0.030
DIMETHYLPHTHALATE	<0.051
DIETHYLPHTHALATE	<0.060
DI-N-BUTYLPHTHALATE	<0.035
BUTYLBENZYLPHTHALATE	<0.046
BIS(2-ETHYLHEXYL)PHTHALATE	0.052
DI-N-OCTYLPHTHALATE	<0.043

SURROGATE PERCENT RECOVERY		LIMITS
NITROBENZENE-D5	43	41 - 117
2-FLUOROBIPHENYL	64	36 - 128
TERPHENYL-D14	67	38 - 146

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: N/A
PROJECT #	: 1189002.330101	DATE RECEIVED	: N/A
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: METHOD BLANK	DATE ANALYZED	: 04/23/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: mg/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
NAPHTHALENE	<0.017
ACENAPHTHYLENE	<0.015
ACENAPHTHENE	<0.017
FLUORENE	<0.019
PHENANTHRENE	<0.019
ANTHRACENE	<0.018
2-METHYLNAPHTHALENE	<0.017
FLUORANTHENE	<0.019
PYRENE	<0.023
BENZO(A)ANTHRACENE	<0.022
CHRYSENE	<0.022
BENZO(B)FLUORANTHENE	<0.024
BENZO(K)FLUORANTHENE	<0.030
BENZO(A)PYRENE	<0.019
INDENO(1,2,3-CD)PYRENE	<0.030
DIBENZO(A,H)ANTHRACENE	<0.031
BENZO(G,H,I)PERYLENE	<0.031
1,2-DICHLOROBENZENE	<0.018
1,4-DICHLOROBENZENE	<0.017
1,2,4-TRICHLOROBENZENE	<0.015
DIBENZOFURAN	<0.017
HEXACHLOROETHANE	<0.019
N-NITROSODIPHENYLAMINE	<0.020
DIMETHYLPHTHALATE	<0.034
DIETHYLPHTHALATE	<0.040
DI-N-BUTYLPHTHALATE	<0.024
BUTYLBENZYLPHTHALATE	<0.031
BIS(2-ETHYLHEXYL)PHTHALATE	<0.025
DI-N-OCTYLPHTHALATE	<0.029

SURROGATE PERCENT RECOVERY		LIMITS
NITROBENZENE-D5	73	41 - 117
2-FLUOROBIPHENYL	65	36 - 128
TERPHENYL-D14	75	38 - 146

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: N/A
PROJECT #	: 1189002.330101	DATE RECEIVED	: N/A
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: METHOD BLANK	DATE ANALYZED	: 04/06/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: ug/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
PHENOL	<15
2-METHYLPHENOL	<16
4-METHYLPHENOL	<18
2,4-DIMETHYLPHENOL	<15
PENTACHLOROPHENOL	<29
BENZYL ALCOHOL	<26
BENZOIC ACID	<130

SURROGATE PERCENT RECOVERY		LIMITS
PHENOL-D5	95	39 - 132
2-FLUOROPHENOL	80	36 - 130
2,4,6-TRIBROMOPHENOL	47	13 - 133

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
QUALITY CONTROL DATA

CLIENT	: MONTGOMERY WATSON	SAMPLE I.D. #	: BLANK
PROJECT #	: 1189002.330101	DATE EXTRACTED	: 03/24/98
PROJECT NAME	: LIBERTY ISLAND	DATE ANALYZED	: 04/06/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: ug/Kg
EPA METHOD	: 8270A		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
PHENOL	<15.4	200	191	96	N/A	N/A	N/A
2-METHYLPHENOL	<16.4	200	173	87	N/A	N/A	N/A
4-METHYLPHENOL	<17.7	200	169	85	N/A	N/A	N/A
2,4-DIMETHYLPHENOL	<15.2	200	17.4	9H	N/A	N/A	N/A
PENTACHLOROPHENOL	<29.0	200	162	81	N/A	N/A	N/A
BENZYL ALCOHOL	<26.3	400	137	34H	N/A	N/A	N/A
BENZOIC ACID	3.39	1000	673	67	N/A	N/A	N/A

CONTROL LIMITS	% REC.	RPD
PHENOL	40 - 160	20
2-METHYLPHENOL	40 - 160	20
4-METHYLPHENOL	40 - 160	20
2,4-DIMETHYLPHENOL	40 - 160	20
PENTACHLOROPHENOL	40 - 160	20
BENZYL ALCOHOL	40 - 160	20
BENZOIC ACID	40 - 160	20

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
PHENOL-D5	119	N/A	39 - 132
2-FLUOROPHENOL	108	N/A	36 - 130
2,4,6-TRIBROMOPHENOL	86	N/A	13 - 133

H = Out of limits.

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
QUALITY CONTROL DATA

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND
SAMPLE MATRIX : SEDIMENT
EPA METHOD : 8270A

SAMPLE I.D. # : BLANK
DATE EXTRACTED : 03/24/98
DATE ANALYZED : 04/23/98
UNITS : mg/Kg

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
NAPHTHALENE	<0.0170	0.400	0.323	81	0.316	79	2
ACENAPHTHYLENE	<0.0153	0.400	0.300	75	0.298	74	1
ACENAPHTHENE	<0.0169	0.400	0.299	75	0.299	75	0
FLUORENE	<0.0194	0.400	0.325	81	0.312	78	4
PHENANTHRENE	<0.0194	0.400	0.317	79	0.306	76	4
ANTHRACENE	<0.0179	0.400	0.291	73	0.295	74	1
2-METHYLNAPHTHALENE	<0.0166	0.400	0.313	78	0.304	76	3
FLUORANTHENE	<0.0188	0.400	0.369	92	0.362	90	2
PYRENE	<0.0234	0.400	0.409	102	0.368	92	11
BENZO(A)ANTHRACENE	<0.0218	0.400	0.401	100	0.365	91	9
CHRYSENE	<0.0222	0.400	0.400	100	0.357	89	11
BENZO(B)FLUORANTHENE	<0.0236	0.400	0.330	83	0.307	77	7
BENZO(K)FLUORANTHENE	<0.0296	0.400	0.357	89	0.328	82	8
BENZO(A)PYRENE	<0.0189	0.400	0.313	78	0.298	74	5
INDENO(1,2,3-CD)PYRENE	<0.0296	0.400	0.335	84	0.304	76	10
DIBENZO(A,H)ANTHRACENE	<0.0308	0.400	0.311	78	0.281	70	10
BENZO(G,H,I)PERYLENE	<0.0306	0.400	0.343	86	0.309	77	10
1,2-DICHLOROBENZENE	<0.0182	0.400	0.272	68	0.265	66	3
1,4-DICHLOROBENZENE	<0.0165	0.400	0.269	67	0.261	65	3
1,2,4-TRICHLOROBENZENE	<0.0154	0.400	0.293	73	0.289	72	1
DIBENZOFURAN	<0.0173	0.400	0.316	79	0.312	78	1
HEXACHLOROETHANE	<0.0187	0.400	0.321	80	0.312	78	3
N-NITROSODIPHENYLAMINE	<0.0204	0.400	0.138	35H	0.149	37H	8
DIMETHYLPHTHALATE	<0.0342	0.400	0.197	49	0.207	52	5
DIETHYLPHTHALATE	<0.0402	0.400	0.305	76	0.303	76	1
DI-N-BUTYLPHTHALATE	<0.0236	0.400	0.363	91	0.354	88	3
BUTYLBENZYLPHTHALATE	<0.0306	0.400	0.377	94	0.347	87	8
BIS(2-ETHYLHEXYL)PHTHALATE	<0.0254	0.400	0.507	127	0.451	113	12
DI-N-OCTYLPHTHALATE	<0.0286	0.400	0.426	107	0.383	96	11

H = Out of limits.

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MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
QUALITY CONTROL DATA
CONTINUED

CLIENT	: MONTGOMERY WATSON	SAMPLE I.D. #	: BLANK
PROJECT #	: 1189002.330101	DATE EXTRACTED	: 03/24/98
PROJECT NAME	: LIBERTY ISLAND	DATE ANALYZED	: 04/23/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: mg/Kg
EPA METHOD	: 8270A		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD

CONTROL LIMITS	% REC.	RPD
NAPHTHALENE	40 - 160	20
ACENAPHTHYLENE	40 - 160	20
ACENAPHTHENE	40 - 160	20
FLUORENE	40 - 160	20
PHENANTHRENE	40 - 160	20
ANTHRACENE	40 - 160	20
2-METHYLNAPHTHALENE	40 - 160	20
FLUORANTHENE	40 - 160	20
PYRENE	40 - 160	20
BENZO(A)ANTHRACENE	40 - 160	20
CHRYSENE	40 - 160	20
BENZO(B)FLUORANTHENE	40 - 160	20
BENZO(K)FLUORANTHENE	40 - 160	20
BENZO(A)PYRENE	40 - 160	20
INDENO(1,2,3-CD)PYRENE	40 - 160	20
DIBENZO(A,H)ANTHRACENE	40 - 160	20
BENZO(G,H,I)PERYLENE	40 - 160	20
1,2-DICHLOROBENZENE	40 - 160	20
1,4-DICHLOROBENZENE	40 - 160	20
1,2,4-TRICHLOROBENZENE	40 - 160	20
DIBENZOFURAN	40 - 160	20
HEXACHLOROETHANE	40 - 160	20
N-NITROSODIPHENYLAMINE	40 - 160	20
DIMETHYLPHTHALATE	40 - 160	20
DIETHYLPHTHALATE	40 - 160	20
DI-N-BUTYLPHTHALATE	40 - 160	20
BUTYLBENZYLPHTHALATE	40 - 160	20
BIS(2-ETHYLHEXYL)PHTHALATE	40 - 160	20
DI-N-OCTYLPHTHALATE	40 - 160	20

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
NITROBENZENE-D5	84	83	41 - 117
2-FLUOROBIPHENYL	72	70	36 - 128
TERPHENYL-D14	97	87	38 - 146

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
QUALITY CONTROL DATA

CLIENT	: MONTGOMERY WATSON	SAMPLE I.D. #	: 821354-17
PROJECT #	: 1189002.330101	DATE EXTRACTED	: 03/24/98
PROJECT NAME	: LIBERTY ISLAND	DATE ANALYZED	: 04/06/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: ug/Kg
EPA METHOD	: 8270A		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
PHENOL	10.1	339	280	80	264	75	6
2-METHYLPHENOL	<27.8	339	303	89	285	84	6
4-METHYLPHENOL	17.3	339	333	93	313	87	6
2,4-DIMETHYLPHENOL	<25.8	339	235	69	223	66	5
PENTACHLOROPHENOL	<49.2	339	166	49	197	58	17
BENZYL ALCOHOL	2.46	678	226	33H	212	31H	6
BENZOIC ACID	44.2	1690	1610	93	1540	89	4

CONTROL LIMITS	% REC.	RPD
PHENOL	40 - 160	20
2-METHYLPHENOL	40 - 160	20
4-METHYLPHENOL	40 - 160	20
,4-DIMETHYLPHENOL	40 - 160	20
PENTACHLOROPHENOL	40 - 160	20
BENZYL ALCOHOL	40 - 160	20
BENZOIC ACID	40 - 160	20

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
PHENOL-D5	99	95	39 - 132
2-FLUOROPHENOL	93	85	36 - 130
2,4,6-TRIBROMOPHENOL	86	88	13 - 133

H = Out of limits.

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
QUALITY CONTROL DATA

CLIENT	: MONTGOMERY WATSON	SAMPLE I.D. #	: 821354-17
PROJECT #	: 1189002.330101	DATE EXTRACTED	: 03/24/98
PROJECT NAME	: LIBERTY ISLAND	DATE ANALYZED	: 04/22/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: mg/Kg
EPA METHOD	: 8270A		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPI
NAPHTHALENE	<0.0289	0.678	0.427	63	0.458	68	7
ACENAPHTHYLENE	<0.0259	0.678	0.522	77	0.558	82	7
ACENAPHTHENE	<0.0286	0.678	0.520	77	0.548	81	5
FLUORENE	<0.0329	0.678	0.573	85	0.594	88	4
PHENANTHRENE	<0.0329	0.678	0.609	90	0.643	95	5
ANTHRACENE	<0.0303	0.678	0.560	83	0.577	85	3
2-METHYLNAPHTHALENE	<0.0281	0.678	0.489	72	0.511	75	4
FLUORANTHENE	<0.0318	0.678	0.663	98	0.696	103	5
PYRENE	<0.0397	0.678	0.677	100	0.858	127	24H
BENZO(A)ANTHRACENE	<0.0369	0.678	0.654	96	0.702	104	7
CHRYSENE	<0.0376	0.678	0.701	103	0.853	126	20
BENZO(B)FLUORANTHENE	<0.0400	0.678	0.597	88	0.581	86	3
BENZO(K)FLUORANTHENE	<0.0502	0.678	0.523	77	0.599	88	14
BENZO(A)PYRENE	<0.0321	0.678	0.570	84	0.591	87	4
INDENO(1,2,3-CD)PYRENE	<0.0502	0.678	0.580	86	0.616	91	6
DIBENZO(A,H)ANTHRACENE	<0.0522	0.678	0.541	80	0.568	84	5
BENZO(G,H,I)PERYLENE	<0.0519	0.678	0.608	90	0.647	95	6
1,2-DICHLOROBENZENE	<0.0308	0.678	0.333	49	0.354	52	6
1,4-DICHLOROBENZENE	<0.0280	0.678	0.315	46	0.347	51	10
1,2,4-TRICHLOROBENZENE	<0.0261	0.678	0.390	58	0.415	61	6
DIBENZOFURAN	<0.0294	0.678	0.560	83	0.590	87	5
HEXACHLOROETHANE	<0.0317	0.678	0.337	50	0.345	51	2
N-NITROSODIPHENYLAMINE	<0.0346	0.678	0.465	69	0.528	78	13
DIMETHYLPHTHALATE	<0.0580	0.678	0.369	54	0.359	53	3
DIETHYLPHTHALATE	<0.0681	0.678	0.552	81	0.571	84	3
DI-N-BUTYLPHTHALATE	<0.0400	0.678	0.623	92	0.638	94	2
BUTYLBENZYLPHTHALATE	<0.0519	0.678	0.624	92	0.761	112	20
BIS(2-ETHYLHEXYL)PHTHALATE	0.114	0.678	0.848	108	1.05	138	21I
DI-N-OCTYLPHTHALATE	<0.0485	0.678	0.590	87	0.621	92	5

H = Out of limits.

CONTINUED ON NEXT PAGE

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
QUALITY CONTROL DATA
CONTINUED

CLIENT	: MONTGOMERY WATSON	SAMPLE I.D. #	: 821354-17
PROJECT #	: 1189002.330101	DATE EXTRACTED	: 03/24/98
PROJECT NAME	: LIBERTY ISLAND	DATE ANALYZED	: 04/22/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: mg/Kg
EPA METHOD	: 8270A		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD

CONTROL LIMITS	% REC.	RPD
NAPHTHALENE	40 - 160	20
ACENAPHTHYLENE	40 - 160	20
ACENAPHTHENE	40 - 160	20
FLUORENE	40 - 160	20
PHENANTHRENE	40 - 160	20
ANTHRACENE	40 - 160	20
2-METHYLNAPHTHALENE	40 - 160	20
FLUORANTHENE	40 - 160	20
PYRENE	40 - 160	20
ENZO(A)ANTHRACENE	40 - 160	20
CHRYSENE	40 - 160	20
BENZO(B)FLUORANTHENE	40 - 160	20
BENZO(K)FLUORANTHENE	40 - 160	20
BENZO(A)PYRENE	40 - 160	20
INDENO(1,2,3-CD)PYRENE	40 - 160	20
DIBENZO(A,H)ANTHRACENE	40 - 160	20
BENZO(G,H,I)PERYLENE	40 - 160	20
1,2-DICHLOROBENZENE	40 - 160	20
1,4-DICHLOROBENZENE	40 - 160	20
1,2,4-TRICHLOROBENZENE	40 - 160	20
DIBENZOFURAN	40 - 160	20
HEXACHLOROETHANE	40 - 160	20
N-NITROSODIPHENYLAMINE	40 - 160	20
DIMETHYLPHTHALATE	40 - 160	20
DIETHYLPHTHALATE	40 - 160	20
DI-N-BUTYLPHTHALATE	40 - 160	20
BUTYLBENZYLPHTHALATE	40 - 160	20
BIS(2-ETHYLHEXYL)PHTHALATE	40 - 160	20
DI-N-OCTYLPHTHALATE	40 - 160	20

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
NITROBENZENE-D5	56	62	41 - 117
2-FLUOROBIPHENYL	69	74	36 - 128
TERPHENYL-D14	95	123	38 - 146

Pg 1 of 8

MAS 821354

Montgomery Watson
4100 Spenard Road
Anchorage AK 99517
(907)248-8883
Fax (907) 248-8884
ATTN: Lynn DeGeorge

Laboratory:
Mobichem Analytical Services
2000 West International Airport Road
Anchorage, Alaska 99502
(907) 248-8273
(907) 248-8273 FAX
Attn: Mike Vogel

MW Job Number: 1189022
21-DAY TURNAROUND 330101

Sampler's Signature: 1998 Bonchean

ADEC
21 cal day.

MAS#	Date	Time	Sample ID	Matrix	Total Containers	SOIL: VOCs- 8260a 2 x 2-oz amber glass	SVOCs- 8270 1 x 8-oz amber glass	TOC-415.1 1 x 4-oz amber glass	Grain Size - ASTM D422 1 x 8-oz amber glass	Particle Size- ASTM D2487 1 x 4-oz amber glass		WATER: TSS- 160.2 250 ml poly	TOC- 415.1 1 x 250 ml amber	Comments
-1	3-18	2210	98BPXLI 02 WA01	W	2							✓	✓	
-2	3-18	2130	98BPXLI 02 WA02	W	2							✓	✓	
-3	3-18	2200	98BPXLI 02 WA03	W	2							✓	✓	
-4	3-18	1530	98BPXLI 09 WA01	W	2							✓	✓	MS/MSD
-5	3-18	1540	98BPXLI 09 WA02	W	2							✓	✓	
-6	3-18	1550	98BPXLI 09 WA03	W	2							✓	✓	
-7	3-18	1300	98BPXLI 14 WA01	W	2							✓	✓	
-8	3-18	1315	98BPXLI 14 WA02	W	2							✓	✓	
-9	3-19	0200	98BPXLI 30 WA03	W	2							✓	✓	
-10	3-19	0120	98BPXLI 30 WA01	W	2							✓	✓	
-11	3-19	0140	98BPXLI 30 WA02	W	2							✓	✓	
			98BPXLI ___ WA03											No Sample
-12	3-19	0150	98BPXLI 30 WA6 2		2							✓	✓	
-13	3-18	2110	98BPXLI 02 WA6 1		2							✓	✓	
			98BPXLI ___ WA___											
			98BPXLI ___ WA___											

Relinquished by: [signature] Date 3-20-98 Time 1000

Received for Laboratory by: [signature] Date 3/20 Time 10:00

Hand Delivered: Y N

Shipped Via:

Cooler Temperature Upon Arrival: 4.8° 3.7° 5.1° 11.7° °C

Airbill Number

Date

Time

Laboratory Notified

Faxed

RER [signature] 3/21/98 0930

1 relinq

A Limited Liability Company

P8 2 of 2

1189002.
330101

Montgomery Watson
4100 Spenard Road
Anchorage AK 99517
(907)248-8883
Fax (907) 248-8884
ATTN: Lynn DeGeorge

Laboratory:
Mollichem Analytical Services
2000 West International Airport Road
Anchorage, Alaska 99502
(907) 248-8273
(907) 248-8273 FAX
Attn: Mike Vogel

1189002, 330101 3/20
MW Job Number: G F
~~1189022.30101~~
21-DAY
TURNAROUND

MAS
821354

ADEC

Sampler's Signature: 1998 [signature]

MAS#	Date	Time	Sample ID	Matrix	Total Containers	SOIL: VOCs- 8260a, 2 x 2-oz amber glass	SOIL: SVOCs- 8270, 1 x 8-oz amber glass	SOIL: TOC-415.1, 1 x 4-oz amber glass	SOIL: Grain Size - ASTM D422, 1 x 8-oz amber glass	SOIL: Particle Size- ASTM D2487, 1 x 4-oz amber glass		WATER: TSS- 160.2, 250 ml poly	WATER: TOC-415.1, 1 x 250 ml amber	Comments
						Cool to 4 degrees C						Cool to 4 degrees C	H2SO4	
-14	3-18	2210	98BPXLI 02 SD01(01)	S	5	✓	✓	✓	✓	✓				
-15	3-18	2230	98BPXLI 02 SD02(03)	S	5									
-16	3-18	2330	98BPXLI 02 SD03(09)	S	5									
-17	3-18	1610	98BPXLI 09 SD01(01)	S	5									MS/MSD
-18	3-18	1620	98BPXLI 09 SD02(03)	S	5									
-19	3-18	1630	98BPXLI 09 SD03(09)	S	5									
-20	3-18	1330	98BPXLI 14 SD01(01)	S	5									
-21	3-18	1345	98BPXLI 14 SD02(03)	S	5									
-22	3-18	1400	98BPXLI 14 SD03(09)	S	5									
-23	3-19	0250	98BPXLI 30 SD01(01)	S	5									
-24	3-19	0300	98BPXLI 30 SD02(03)	S	5				✓	✓				
-25	3-19	0330	98BPXLI 30 SD03(09)	S	5	✓	✓	✓	✓	✓				
-26	3-19	0310	98BPXLI 30 SD62(03)	S	3	✓	✓	✓						
-27	3-18	2200	98BPXLI 02 SD62(03)	S	3	✓	✓	✓						
			98BPXLI __ __ SD__(__)											
			98BPXLI __ __ SD__(__)											

Relinquished by: [signature]	Date 3-20-98	Hand Delivered	Shipped Via	Airbill Number	Date
	Time 1000	Y N			Time
Received for Laboratory by: [signature]	Date 3-20-98	Cooler Temperature	°C	Laboratory Notified	
	Time 10:00	Upon Arrival		Faxed	

[signature] 3/21/98 0930

NON-CONFORMANCES:
(Y) N #1
(if Y see other side)

MultiChem Analytical Services
SAMPLE LOG-IN CHECKLIST

DATE: 3/21/98
TIME: 0930
INITIALS: JVD

ACCESSION NO. 821354
CLIENT: MAS-AK
PROJECT: LIBERTY ISLAND

Shipping:

Type:	COC Seals:	Intact?	Packing Material:
X Cooler	X Ship. Cont.	(Y) N	Styrofoam
Box	On Bottles	Y N	X Bubble Bags
Other	None		Foam Vial Packs
			Other

Refrigerant:	Frozen?	Received Via:	
X Gel Ice Pack	(Y) N	Hand Delivery	X Courier
Loose Ice	Y N	Federal Express	UPS
Other	Y N	Airborne	Taxi
None		Other:	X Goldstreak

Sample Information:

Samp. #	Bottle #
14	42
13	26

Type				
Soil	Soil VOAs	0 headspace	(Y) N	N
Water	Water VOAs	0 headspace	Y N	N
Product		Preserved?	Y N	
Other		Trip blanks?	Y N	

Condition of Samples:
Containers:
Intact? (Bottle/Lid) (Y) N
Correct Type? (Y) N

~~Waters Preserved?~~ (Y) N N
CA # ~~(if needed)~~

ID's Match C.O.C. (Y) N N

Temperature: 1.5 C #1 CA NO.
(See corrective action on reverse side for explanation if temperature is outside of the MAS recommended range.)

LAB USE ONLY: ☐ NO NOTICE ☐ SEND OUTS NEEDED BY ___
☐ COC/TAT DOES NOT MATCH NOTICE ☐ NEED TEST(S) VERIFIED BY CLIENT

COMMENTS:

MultiChem Analytical Services
Corrective Action Sheet

ACCESSION # 821354

CORRECTIVE ACTION AREA

PLAIN CORRECTIVE ACTION:

CA NO.	CA NO.	CA NO.
_____Salvaged Sample	_____Replaced Bottle	_____Verified Id w/Client
_____Replaced Lid	_____Notified P.M.	_____Notified Client
_____Preserved Sample w/_____		

Comments:

Temperature: 1.5 C #1 CA NO.

____ Comments: Samples were received outside of the MAS recommended temperature range (4 C+/- 2 C) Samples were received within 5 hours of collection and may not have had sufficient time to equilibrate with coolant. A temperature range from 2 to 15 degrees Celsius is considered acceptable. The samples will be analyzed as scheduled unless directed otherwise by client.

X Comments: Samples were received outside of the MAS recommended temperature range (4 C+/- 2 C) The samples will be analyzed as scheduled unless directed otherwise by client.

Tech.Signature/Date: [illegible] 3/21/98 P.M. Signature/Date: S Walker 3/24/98

CORRECTIVE ACTION TAKEN:

Explain Action Taken:

Alaska Airlines

GOLDSTREAK PACKAGE EXPRESS

Airline: 027- | Origin: ANC | AIR WAYBILL Number: 5247 4295

From Shipper: MULTICHEM ANALYTICAL SVCS

Address: 2000 W INTL A/P RD #7

Phone: 907-248-3273

City: ANCHORAGE | State: AK | Zip Code: 99502

Shipper's Signature SUBJECT TO RATE AUDIT | Date | Time a.m. p.m.

The Federal Aviation Administration requires Alaska Airlines to inform you of the following "Shipper's Security Notification":

I certify that this shipment does not contain any unauthorized explosives, destructive devices or hazardous materials. I consent to a search of this shipment. I am aware that this endorsement and original signature, along with other shipping documents, will be retained on file until the shipment is delivered.

Type of first personal identification reviewed: _____
Matching photo ID? Indicate: Yes or No _____
Number appearing on ID _____

Type of second personal identification reviewed: _____
Matching photo ID? Indicate: Yes or No _____
Number appearing on ID _____

Contents: NONHAZ MATERIAL

Insured Value

Declared Value of Customs

Remarks: KEEP COOL

To Consignee: (Complete Consignee information required on package) MULTICHEM ANALYTICAL SVCS

Address: 560 NAGHES AVE SW #101

Phone: 425-226-0335

City: RENTON | State: WA | Zip Code: 98055

Consignee's Printed Name - Signature (Received in Good Order Except as Noted) | Time a.m. p.m. | Date

Origin Courier Signature | Date | Time a.m. p.m. | Destination Courier Signature | Date | Time a.m. p.m.

Airline: 027- | Origin: ANC | AIR WAYBILL Number: 5247 4295

Total Pieces: 3

Total Weight: 124

MULTIPLE PIECES FOR AS FLIGHTS ONLY

Please ✓ if Live Animal ☐

Form of Payment
☐ Cash ☐ Check ☐ GBL—Attach GBL
☐ AS / QX Account Number 27442286 40
☐ Credit Card Number

Validata Approval (Required for all except cash and GBL)

Executed By: Date/Time a.m. p.m.

Carrier	Flight	Destination	E.T.A.
AS			

CHECK ONE ONLY

☒ AIRPORT TO AIRPORT SERVICE

PICK-UP ONLY ☐ AS AGENT | DELIVERY ONLY ☐ AS AGENT | DOOR TO DOOR ☐ AS AGENT

AS 800 SERVICES (800) 634-7113

POS.	WT. RANGE	RATE	CHARGE
	GSK LETTER		
	1-15		
	16-50		
	51-70		
	71-100		
	Subtotal Charges		

Other Charges

1st Carrier	
2nd Carrier	
3rd Carrier	
Tax (Offline only)	
ENTER → AS COURIER CHARGES	
Pickup (NON AS COURIER)	
Delivery (NON AS COURIER)	
Special Service	
Insurance	
TOTAL	

Shipper to complete all shaded areas

Door-To-Door Service: (800) 634-7113

This is a non-negotiable AIR WAYBILL subject to the terms and conditions set forth on the reverse of shipper's copy.

Thank you for shipping with Alaska Airlines

P.O. Box 68900
Seattle, WA 98168

Consignee Memo

APPENDIX D

c. Laboratory Data Sheet-BPX

Prudhoe Bay Laboratory
Analysis Report

Record File: 98030213
Sample Type: 1201

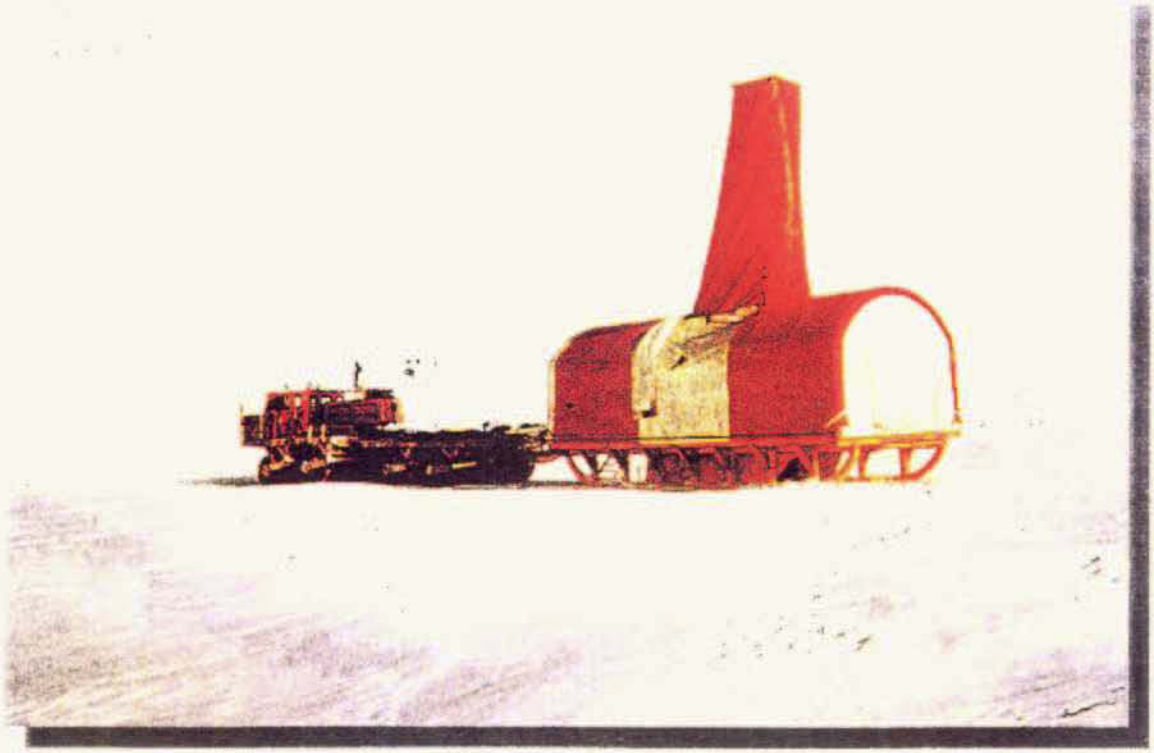
ample ID		PB09347	PB09348	PB09349	PB09350	PB09351	PB09352
ate		03/18/98	03/18/98	03/18/98	03/18/98	03/18/98	03/18/98
me		21:00	21:30	22:00	15:30	15:40	15:50
acility		Endicott	Endicott	Endicott	Endicott	Endicott	Endicott
id/Module		N/A	N/A	N/A	N/A	N/A	N/A
ell		N/A	N/A	N/A	N/A	N/A	N/A
ocation		98BPXLI 02 WA01	98BPXLI 02 WA02	98BPXLI 02 WA03	98BPXLI 09 WA01	98BPXLI 09 WA02	98BPXLI 09 WA03
escription		seawater	seawater	seawater	seawater	seawater	seawater
mments							
ests	UOM	Results	Results	Results	Results	Results	Results
OD	mg/L	<1	<1	<1	<1	<1	<1
rbidity	NTU	2	5	0	11	7	11

mple ID		PB09353	PB09354	PB09355	PB09356	PB09357	PB09358
ate		03/18/98	03/18/98	03/19/98	03/19/98	03/19/98	03/19/98
me		13:00	13:15	02:00	01:20	01:40	01:50
cility		Endicott	Endicott	Endicott	Endicott	Endicott	Endicott
id/Module		N/A	N/A	N/A	N/A	N/A	N/A
Vell		N/A	N/A	N/A	N/A	N/A	N/A
[illegible]		98BPXLI 14 WA01	98BPXLI 14 WA02	98BPXLI 30 WA03	98BPXLI 30 WA01	98BPXLI 30 WA02	98BPXLI 30 WA62
escription		seawater	seawater	seawater	seawater	seawater	seawater
mments							
sts	UOM	Results	Results	Results	Results	Results	Results
OD	mg/L	<1	<1	<1	<1	<1	<1
urbidity	NTU	1	3	6	0	0	---

Sample ID		PB09359					
Date		03/18/98					
Time		21:10					
Facility		Endicott					
Skid/Module		N/A					
Well		N/A					
Location		98BPXLI 02 WA61					
Description		seawater					
Comments							
Tests	UOM	Results					
BOD	mg/L	<1					
Turbidity	NTU	---					

one: 659-4861 (659-4357 no longer in use). Fax: 659-4313.

Analyzed by: DB
Don Brink
907 659 4861



BP Exploration (Alaska) Inc.

Liberty Island Route

Water / Sediment Sampling
March 18-19, 1998

Revised and Corrected
Final Data Report - August 1998

MONTGOMERY WATSON

TABLE OF CONTENTS

Figures

Tables

Appendices

Revisions included in the August, 1998, Final Data Report.

This document was originally published in May of 1998. The document was revised and corrected following comments received by BPXA in a letter from Jeffery Walker of Minerals Management Service to Peter Hanley dated August 3, 1998. Issues raised by MMS include the following, followed with a response from Montgomery Watson.

1. **Discrepancy between field and laboratory turbidity.**

   A comparison of field and laboratory turbidity data to laboratory total suspended solids (TSS) data demonstrates some consistent patterns. Field turbidity data are uniformly higher that laboratory data for each individual water sample. Field turbidity data were reported to 3 significant figures, while BPXA laboratory data were reported to one significant figure, including 3 reported values of "0". We interpret "0" values from the BPXA laboratory to indicate less than a detection limit of 1.0 NTU. It is unreasonable to conclude that there would be "0" NTU's in the samples.

   The holding time limitation for turbidity is 48 hours. Sample results are subject to particle aggregation and settling between the time of sample collection and the time of analysis. The laboratory did not report date and time of analysis; thus, compliance with holding times cannot be verified. The laboratory turbidity values may be biased low due to the interaction between particles over time. Alternatively, field values may reflect the presence of tiny ice crystals that would exist in the field at sub-freezing temperatures, but not be apparent in the laboratory at standard temperatures above freezing. 1997 field notes from the Liberty Island Route water quality analyses note complications with field turbidity measurements due to ice formation.

   TSS analyses were performed on the seventh day of a seven-day holding time. Particles in seawater which make up TSS are subject to degradation by dissolution and/or biochemical reaction over time. TSS results may be biased low due to solute/solvent interaction in the manner suggested above for laboratory turbidity. Most of the TSS results were very close (within 150%) of the reported detection limit. Of the four values in excess of 200% of the stated detection limit, a consistent and reasonable relationship with turbidity can be discerned from both field and laboratory measurements. QC data reported by the laboratory showed good recovery of a spike sample at 60 mg/L TSS, but data is not provided which documents accuracy of reporting within 200% of the detection limit of 10 mg/L.

2. **pH below expected range.**

   pH data from the 1997 Liberty Island water quality sampling effort was in the range of 7.5 to 8.4, using methods and instrumentation identical to the 1998 effort. Other recent North Slope investigations have yielded seawater pH values ranging from as low as 5.8 (Endicott NPDES Environmental Monitoring, April, 1995) to 8.06 (Northstar Development Project 1997 Data Report). The Beckman meter used in each of these efforts is a model programmed for internal temperature compensation. The particular unit used in March of 1998 was factory calibrated and checked in January, and a field calibration was performed at each site. The gel-filled probe on this model is more reliable for cold weather sampling then other probe types. The electronic meter box is often suspect when exposed in cold weather sampling. We ensured that the meter box was kept warm in an insulated container to prevent effects of frost on the meter workings. Calibration or machine error is unlikely.

3. **Apparent density instability.**

Densities were calculated and presented in Table 2 of the May, 1998, data report from temperature and salinity data that were transcribed incorrectly from the field data sheets. This edition features an update to Table 2, with corrected values of field and laboratory data for all samples. The corrected table indicates a density instability in the water column at station 98BPXLI14, with water slightly warmer and fresher (-0.5°C, 27 ppt salinity, 1021.7 kg/m^3) underlying cooler saltier water (-1.0°C, 28 ppt salinity, 1022.5 kg/m^3). The calculated densities yield a false impression of precision in the salinity and temperature measurements. Temperature and salinity field instruments have a resolution of 0.5 degrees and 1 ppt, respectively. A small error in either the salinity or temperature measured in the field could lead to a resultant change in the relative density of the samples. Conductivity measurements for both sample depths are the same, suggesting that there is no significant difference in salinity or density within the water column.

Table 2 has also been expanded to include results of metals analyses of the water samples. Text has been corrected to reflect the appropriate ranges of values of various water quality measurements.

4. **Sample preservation.**

The previous edition stated incorrectly that samples were "cooled to 4° Celsius", which would be a common requirement for sampling in temperate weather. Samples from the March, 1998 sampling of the Beaufort Sea were maintained at temperatures less than +4^0 C prior to laboratory analysis.

Other changes made in the document include:

1. Section 1.1. Deleted reference to pipeline "shown in Figure 1". The pipeline alignment is not shown in that figure, although the proposed alignment is shown in Appendix A in documentation of the sample sites provided by BPXA contract surveyors.

2. Section 2.3. Added references to metals sampling of the water column and clarified procedures for field measurements of water quality.

3. Section 3.1. Corrected sample locations.

4. Section 3.2.1. Revised and added commentary on water quality results.

5. Section 4.1.8. Referenced summary statistics on Table 4.

6. Figures 2-6. Added information to titles and legends to indicate data are for sediment samples, taken from various depths below the sea floor.

7. Figure 9. Revised to more clearly represent findings with respect to water depth.

8. Table 1. Revised and condensed to single page.

9. Table 2. Expanded to 2 pages to present metals results.

1. INTRODUCTION

1.1 BACKGROUND

The Liberty Island Development Project involves offshore exploration and production of oil and gas resources within Foggy Island Bay between Endicott and Liberty #1 Ice Island in the ice-ridden Beaufort Sea. Oil and gas produced by the project are intended to be brought to existing onshore delivery facilities by way of offshore pipeline.

1.1.1 Water Quality Monitoring Objectives

In 1997, geochemical characterization of sediments and water quality took place along several potential offshore pipeline alignments. In 1998, a final proposed alignment was selected, requiring further characterization for project engineering and National Environmental Policy Act (NEPA) documentation. A series of sampling stations was identified by BP Exploration (Alaska) Inc. (BPXA) (Figure 1). A water quality and geochemical sampling plan was prepared by Woodward-Clyde and was amended through discussions with BP Exploration and Montgomery Watson on March 7 and in accordance with input from John Malik of U.S. Environmental Protection Agency (USEPA) and Barbara Reilly of the U.S. Army Corps of Engineers (USACE).

The objective of this field study was to provide baseline water and sediment characterization along the final proposed offshore pipeline alignment. These results augment the 1997 work performed by Montgomery Watson on three alternative alignments for the Liberty Island pipeline route, thus confirming and supplementing existing data and information to the BPXA Liberty project team on the nature and dispersal of sediments which may be disturbed in the trenching operations.

1.1.2 Monitoring Program Organization and Responsibilities

Montgomery Watson performed this work under the direction of Mary Cocklan-Vendl of the Health Safety, and Environment Department of BPXA. The BPXA Prudhoe Bay laboratory performed water analysis for BOD_5 and turbidity. Quanterra's laboratory in West Sacramento, California, performed the soil and water analysis for metal parameters. Multichem Analytical Service, (MAS) in Anchorage, Alaska, completed the remainder of the analyses for the soil parameters. Montgomery Watson's project team was directed by Project Manager, J. Brett Jokela, P.E. in conjunction with field operations supervisor Bonnie McLean. Field work was undertaken by Bonnie McLean, Senior Environmental Scientist and Associate Geologist Sharon Sadlon. Bonnie McLean is experienced in offshore winter field operations on the North Slope, having participated in water quality and sediment monitoring at the Endicott NPDES Monitoring Program, the 1996 Northstar Pilot Offshore Trenching Program, and the Liberty Island Route water/sediment sampling. Lynn DeGeorge, Senior Environmental Scientist, reviewed the chemical data.

BPXA provided transportation to and from Deadhorse, accommodations, and workspace for mobilization and sample shipment preparation at the Endicott Spill Response Warehouse, Building 608.

Duane Miller and Associates provided logistical support for the fieldwork, under a separate project task authorization with BPXA. Duane Miller and Associates provided on-ice transportation through subcontracts to equipment operators. A tundra Rolligon was supplied by CATCO. The Rolligon was used to transport a skid mounted warming safety shack and Discovery Drilling's CME-75 drill rig, stationed in a rig enclosure (see Photo cover and Appendix C). This equipment was mobilized to four pre-located stations and was used to drill through the ice, allowing water quality sampling measurements and soil sample collection.

1.2 DATA REPORT

This report describes sampling sites, analytes, and methodologies; presents analytical findings; and describes quality control established for this field effort.

2. MONITORING PROCEDURES

2.1 LOCATION AND PROBLEM STATEMENT

The final proposed pipeline alignment for the Liberty Island project was identified by BPXA Inc. on a transect extending north-northeast from shore at SE 1/4, Section 24, T.10N, R.17E., Umiat Meridian through Foggy Island Bay and terminating at the proposed island. Sampling locations were established approximately 1/3 and 2/3 the distance from shore to the proposed island (sample I.D. DMA98-14 & DMA98-9, respectively) and at the proposed island pipeline riser location (sample I.D. DMA98-2). A fourth location (sample I.D. DMA98-30) was approximately 600m NW of the proposed island DMA98-1). Sampling was conducted at these four (4) sites in water (ice) depths ranging from approximately 20.7 to 6.8feet. Ice thickness varied from approximately 5.2 to 4.6 feet.

A shallow trench, 8 to 12 feet below the sea floor, has been proposed for Liberty pipeline construction, using a large hydraulic excavator working from a thickened ice pad on top of the sea ice. A major consideration is the potential occurrence of contaminants, including trace metals and hydrocarbons in the sediments. A baseline of sediment chemical quality is necessary to evaluate potential effects of construction activity on the marine environment. Work by Montgomery Watson at the Northstar Development Project (Montgomery Watson, April 1, 1996) demonstrated that sediment dispersal from trenching activities is most likely short in duration and limited to a small area near the trench. However, associated with the disruption of the sediment by trenching is the potential for release of toxic contaminants from the sediments that may affect the viability of epibenthos and/or plankton which live in the shallow waters of the nearshore Beaufort Sea. Background levels of trace metals and volatile and semi-volatile organic compounds were documented by measuring their concentrations at three discrete depths beneath the sediment surface.

2.2 SAMPLE LOCATIONS AND MOBILIZATION

Sample sites were positioned along the final proposed pipeline route at the locations identified on the map attached as Figure 1 at the end of this section. The locations were staked and identified with respect to Alaska State Plane coordinates and latitude/longitude in advance by BPXA contract surveyor support. Each of the sampling locations was located by the field sampling crew by navigating a Rolligon vehicle using the GPS coordinates provided by the BPXA contract surveyor.

One Rolligon was used during the sampling regimen, and two skids were towed separately to each location. One skid held an enclosed CME-75 drill rig, which augered through the sea ice and drove and retrieved the split spoons for soil samples. The second skid held a warming shack in which extra equipment and supplies were stored.

2.3 SAMPLE COLLECTION PROCEDURES

Data collection at each station was performed in the following order:

1. Locate station using GPS positioning
2. Bore through ice, measure and record distances from drill rig floor to ice
3. Measure and record thickness of ice
4. Measure and record distances from top of water in hole to top of ice
5. Measure and record bottom depth (depth to seafloor)
6. Conduct salinity, conductivity/temperature profiles
7. Collect sample for dissolved oxygen (DO), turbidity, metals, and pH at each distinct stratum
8. Collect total suspended solids (TSS), turbidity (laboratory), BOD_5, and TOC samples at each discrete sample point
9. Drive and retrieve 4"x 2' split spoon from surface to 2 feet below surface
10. Collect soil samples from 0.5' to 1' for organic, metal, and grain size analyses
11. Drive and retrieve 4" x 2' split spoon from 2' to 4' below surface
12. Collect soil samples from 2' to 3' for organic, metal, and grain size analyses
13. Drive and retrieve 4"x 5' split spoon from surface to 8 to 10 feet below surface
14. Collect soil samples from 8' to 9' for organic, metal, and grain size analyses
15. Confirm GPS location and close out site

Station positioning (Activities 1 and 15) have been outlined in Section 2.2. Field measurements and conditions are contained in the field note forms supplied in Appendix A and are summarized in Table 2. Techniques for each of the other activities are discussed below:

Activity 2, Activity 3, and Activity 4: Sea Ice Thickness

The CME-75 enclosed drill rig-mounted auger was used to bore through the ice for water column and sediment sampling. Depth of the boring was monitored closely; the auger was withdrawn for depth checking and clearing of ice chips several times as the drilling progressed.

Ice thickness and depth to water surface were measured using a graduated sounding rod equipped with a small hook to catch the ice edge. The top of the "black" sea ice was used as a datum.

Activity 5: Bottom Depth

The bottom depth was measured using a sounding lead and calibrated brass chain. Ice-free water depth was calculated as the difference of depth to bottom and ice-depth. The maximum ice-free water depth was 16.7 feet deep at the sampling location DMA98-2.

Activity 6: Conduct Salinity(Conductivity)/Temperature profiles

Temperature, conductivity and salinity measurements were made at 0.5-foot increments through the water profile.

Activity 7: Measure Dissolved Oxygen Turbidity and pH at each sampling station

Dissolved oxygen (DO), turbidity, and pH were measured in the field, *ex-situ*, from samples taken at each of the sampling points within the water column.. DO measurements were completed with a Hach

2100 colorimeter and a high range (HR) standard. Field measurements for pH were made with a Beckman pH meter. Turbidity was measured by a Hach 2100P nephelometric turbidimeter.

Activity 8: Collect Samples for Turbidity, Total Organic Carbon, Biological Oxygen Demand, Metal, and Total Suspended Solids

Samples of under-ice free water were collected with a stainless steel point source sampler to document the occurrence of turbidity, total organic carbon (TOC), five-day biological oxygen demand (BOD_5), trace metals, and total suspended solids (TSS). Samples were contained in 1-liter, nalgene plastic bottles. Color and appearance were documented in the field note form for the site. Samples for turbidity and BOD_5 were submitted to the BPXA BOC laboratory for analysis. TSS and TOC samples were shipped off-site to be measured by MAS Laboratories in Anchorage. Metals samples were sent unfiltered to Quanterra Laboratories in Sacramento California for analysis of total arsenic, total barium, total chromium, total lead, and total mercury.

Activities 9 through 14: Sediment sampling

Soil samples were collected at three intervals in the following depth ranges below the soil/water interface: (1) one-half to one foot, (2) two to three feet, and (3) eight to nine feet.

In each instance, a split spoon was driven by a 340 lb. mechanical hammer with a 30-inch drop into the sediment. Each core was removed, drained, and troweled into sample jars, beginning with samples for volatile organics, and progressing to semivolatiles, total organic carbon, metals, and finally, grain size analysis.

Duplicate core samples were collected for all analyses at two stations (DMA98-2 and DMA98-30) selected at random in the field.

Activity 15: Site close-out

At the completion of each site sampling effort, the field team leader initialed the form to confirm that all field note form information had been entered. The final GPS location was recorded on the field note form prior to leaving the site.

3. MONITORING RESULTS

3.1 SAMPLING CHRONOLOGY

Sampling was performed over two days (two 12 hours shifts), from Wednesday, March 18, 1998 through Thursday, March 19, 1998. The following table relates the sampling order for this project:

Date	Site	Geodetic Location		Sampled by
03/18/98	DMA98-14	Lat: 70° 13' 43" N	Long: 147° 38' 45" W	BGM
03/18/98	DMA98-9	Lat: 70° 15' 11" N	Long: 147° 36' 7" W	BGM
03/18/98	DMA98-2	Lat: 70° 16' 38" N	Long: 147° 33' 31" W	SS
03/19/98	DMA98-30	Lat: 70° 16' 54" N	Long: 147° 34' 10" W	SS

BGM = Bonnie McLean, MW
SS = Sharon Sadlon, MW

3.1.1 Laboratory Analyses

BPXA BOC laboratory conducted analyses for turbidity and BOD_5. Other samples were analyzed by MAS Laboratory in Anchorage, Alaska and Quanterra Laboratory in West Sacramento, California. Appropriate methodologies are available in the following references:

- Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846, November 1990)
- Methods for Chemical Analysis of Water and Wastes (EPA 600/4-79-020, March 1982)

The following table summarizes project sampling requirements:

Measurement	Matrix	Method	Sample Container	Preservation Method	Holding Time
Salinity (Conductivity)	water	field measurement	field aliquot	n/a	n/a
Dissolved Oxygen	water	field measurement	field aliquot	*n/a*	*n/a*
Turbidity	water	field measurement EPA 180.1	field aliquot/ 500 ml. HDPE	n/a n/a	immediate 48 hours
Temperature	water	field measurement	in situ	n/a	immediate
pH	water	field measurement	field aliquot	n/a	immediate
BOD_5	water	EPA 405.1	1 liter HDPE	n/a	12 hours
Total Suspended Solids	water	SWA 160.2	500 ml HDPE	Held at 2°- 4°C	28 days
Total Organic Carbon	soil	SWA 415.1	4oz Clear Wide Mouth	Held at 2°- 4°C	28 days
Arsenic (As)	soil, water	SWA 6020	4oz Clear Wide Mouth	Held at 2°- 4°C	6 months
Barium (Ba),Total ionic	soil, water	SWA 6020	"	Held at 2°- 4°C	6 months
Chromium (Cr), Total	soil, water	SWA 6020	"	Held at 2°- 4°C	6 months
Lead (Pb)	soil, water	SWA 6020	"	Held at 2°- 4°C	6 months
Mercury (Hg)	soil, water	SWA 7471 - CV	"	Held at 2°- 4°C	28 days
Volatile Organic Compounds	soil	8260a	2oz Clear Wide Mouth	Held at 2°- 4°C	14 days
Semi-volatile Organic Compounds	soil	8270	4oz Clear Wide Mouth	Held at 2°- 4°C	14 days
Grain Size	soil	ASTM D-422	1L polyethylene bag	n/a	indefinite
Particle Size	soil	ASTM D2487	1 gal. bag	n/a	indefinite

3.2 ANALYTICAL RESULTS

Tables and figures documenting results are provided at the end of this section. Table 1 is a sample plan checklist identifying what analyses were run on each sample. Table 2 is a summary of water quality parameters, including field measurements. Table 3 lists results of grain size analysis. Table 4 is a summary of the analytical results for soils and water. All laboratory and field data are included in Appendices.

3.2.1 Sea Water

Field measurements showed temperatures of -1 to -2 degrees Celsius, with salinities in the range from 27 to 33 parts per thousand. pH ranged from 6.3 to 7.6, while dissolved oxygen ranged from 7.4 to 11.0 ppm.

Turbidity field measurements ranged from a low of 6.12 NTU to a high of 17.6 NTU. Turbidity laboratory measurements ranged from a low of 0 NTU to a high of 11 NTU. Field turbidity may have

been affected by ice crystals.

All BOD_5 results were less than 1 mg/l (the laboratory reporting limit). Total suspended solids ranged from a low of less than 10 mg/l to a high of 74 mg/l, as illustrated in Figure 9. Trace metals results show some detected levels of arsenic in the water column near the reporting limit. Barium was found in each water sample, ranging from 0.0175 mg/L to 0.0551 mg/L. No chromium, lead, or mercury was reported in any of the water samples.

3.2.2 Sediment Chemistry

Results of metals analyses are shown in Figures 2 through 6 at the end of this section. Less than detection limit results are assigned a value of "0" for statistical purposes in Table 4. Arsenic averaged 5.5 mg/kg throughout the pipeline alignment. The coefficient of variation (the standard deviation of the samples divided by the mean) for all of the sites was 39%.

Barium averaged 44.8 mg/kg across the pipeline alignment with a coefficient of variation of 33%.

Chromium averaged 12.2 mg/kg across the pipeline alignment with a coefficient of variation of 41%.

Mercury averaged 0.035 mg/kg across the pipeline alignment with a coefficient of variation of 78%.

Lead averaged 5.36 mg/kg across the pipeline alignment with a coefficient of variation of 52 %.

Sediment grain size data are illustrated in Figures 7 and 8. All samples were shown to be predominantly silt with a trace to some sand, with the exception of the deep sample at Station 14, which was predominantly sand.

There were no detections of volatile organic compounds (VOC).

Six components of the Semi-volatile Organic Compounds (SVOC) exceeded the minimum report detection limit (see Table 4). These compounds are: bis-(2-ethylhexyl)phthalate, Benzo(a)pyrene, and 2-Methylnapthalene, 4-Methyphenol (p-Cresol), Phenanthrene, and Phenol.

3.3 SEDIMENT QUALITY STANDARDS

Sediment quality standards are driven by the impacts of pollutants on benthic biota. State sediment quality standards have not been established by the state of Alaska, thus other benchmark criteria were sought for comparative analysis. As the work performed at Liberty Island is a baseline study of the water and sediment quality, all criteria are used for comparison only. Exceedances do not necessarily indicate concern.

Liberty Island Route sediment data were compared to the following benchmarks: EPA Ecotox Thresholds; Puget Sound Dredged Disposal Analysis; and EPA Region III's Risk-Based Concentrations.

EPA Ecotox Thresholds (ET): The EPA has developed a group of ecotoxicologically-based threshold criteria (ET) for use in ecological risk assessments at Superfund sites. The ETs are intended to provide technical information to EPA and other government employees but do not constitute rulemaking by the EPA. Benchmarks have been developed for surface water and sediments, with sediment benchmarks presented as sediment quality criteria (SQC) for fresh water and marine environments, sediment quality benchmarks (SQB), and effects range low (ERL). If neither SQC nor SQB has been calculated, the ERL will be used as the sediment ET. For the analytes detected at Liberty Island only ERLs have been

calculated. The ERL represents the lower 10th-percentile concentration associated with observation of biological effects. Accordingly, concentrations below the ERL would rarely be associated with adverse effects. Table 4 provides a summary of the analytical results and benchmark screening levels.

Puget Sound Dredged Disposal Analysis (PSDDA): PSDDA analytic methods and criteria have been established for the Puget Sound area in Washington state. PSDDA chemical analyses were developed by the collaborative efforts of EPA Region X (Seattle), the USACE and the Washington State Departments of Natural Resources and Ecology. The Washington Department of Ecology is responsible for issuing state certification for USACE Section 404 permits. Data and criteria are reviewed annually; however, no changes in numeric standards have been made since 1988.

Three levels of contaminant concentrations have been established by PSDDA: a screening level, a bioaccumulation level, and a maximum level. Standards for each level are derived from a statistical model, in which apparent effects thresholds are defined. The model is applied to a rigorously quality-controlled database of sediment chemistry and bio-effect data. The maximum level is the level of highest apparent effects. The screening level is established at either the lowest biological effects level or at 10% of the maximum effect level. Arsenic, lead, mercury, and 42 volatile and semi-volatile organic compounds are included in the list of PSDDA parameters. There are no PSSDA criteria for the barium or chromium species.

Liberty Island sediment results are uniformly below the PSDDA screening level criteria for all components shown in Table 4 except 4-Methylphenol (p-Cresol).

Risk-Based Concentrations (RBCs): EPA Region III has calculated separate carcinogenic and non-carcinogenic RBCs for various pathways of ingestion or inhalation. The lower of the two is presented in the RBC tables published by EPA Region III which are updated and distributed semi-annually. The various pathways include residential water, ambient air, edible fish, industrial soil ingestion, and residential soil ingestion (which are generally lower (more stringent) than industrial soil ingestion). There are no RBCs for diesel range organics.

Liberty Island sediment results are uniformly below the RBCs for all the metals sampled as shown in Table 4. Results of analyses for discrete volatile and semi-volatile compounds were all below detection levels, with the exception of Benzo(a)pyrene.

4. DOCUMENTATION AND REPORTING

4.1 FIELD DOCUMENTATION

The field team leader was responsible for maintaining records of field activities, including field analytical measurements, sample locations, and sample identification. Data was entered into a bound notebook while field activities were in progress. All field documents were supplied to the project manager at the end of the field investigation. Field results were incorporated into progress reports or final reports, as appropriate. A sample plan checklist was used to identify sample numbers, sample locations, sample matrices, analytical parameters, sample containers, and quality control samples. This checklist was prepared by the project manager prior to mobilization and provided the field team with a concise list of samples by location. The field team leader reviewed the checklist for completion following sample collection and prior to the shipment of samples or departing from the site.

4.1.1 Field Logbook

Logbooks and data forms are necessary to provide sufficient data and observations to enable participants to reconstruct events that occurred during the project and to refresh the memory of field personnel if called upon to give testimony during legal proceedings. All daily logs were kept in bound, waterproof notebooks containing numbered pages. All entries were dated and signed. No pages were removed for any reason. Unused pages were crossed through, signed, and dated by the field team leader or project manager. Corrections were made by drawing a single line through the original entry (so the original entry can still be read) and writing the corrected entry beside the original. Corrections were initialed and dated.

4.1.2 Field Note Forms

Field note forms were used to record all data pertaining to a particular sampling event at a single sampling station. Field note forms are designed to assist the field crews in completing the work at each station. Field note forms were reviewed for completeness and accuracy and initialed in the field by the field sampling task leader. Copies of the original field note forms are provided in Appendix A.

4.1.3 Chain-of-Custody Forms

The purpose of chain-of-custody procedures is to ensure that the integrity of samples is maintained during their collection, transportation, storage, and analysis. All chain-of-custody requirements comply with standard operating procedures indicated in EPA sample handling protocol. Chain-of-custody records are provided in Appendix B.

4.1.4 Photographs

Photographs were taken at the sampling locations as directed by the team leader. Selected photographs are provided in Appendix C. Documentation of a photograph is crucial to its validity as a representation of an existing situation.

4.1.5 Sample Documentation

The field crew recorded the location of all samples on scaled site maps.

Each sample was labeled and sealed immediately after collection. The sample label was filled out using waterproof ink and firmly affixed to the sample containers with clear waterproof tape. An alphanumeric code was assigned to each sample as an identification number to track samples at the site. The sample code is broken down as follows:

Year	Project	Sample Location	Sample matrix	Sample
98	BPXLI	2, 9, 14, 30	SD=Sediment	01=primary
			WA=Water	61=duplicate

The sample label contains the following identification:

Date and time of collection;
Sample identification number;
Analysis required (including analytical method number);
Preservation method used; and
Initials of field team member compiling samples.

Sample volume levels were marked on each liquid sample container. After the sample was collected,

pertinent information, such as sample identification number, date and time of sample collection, sample collection method, description of sample, and any field measurements (temperature, salinity, turbidity, etc.), were recorded on the field note form, and the recorder initialed the entry.

4.1.6 Laboratory Data Log

All data generated was reviewed by comparing and interpreting results from chromatograms (responses, stability, retention times), accuracy (mean percent recovery of spiked samples), and precision (reproducibility of results). Laboratory Data Sheets are presented in Appendix D.

4.1.7 Data Reporting and Data Deliverables

All laboratory-generated data was supplied in both hard copy and electronic formats in compliance with EPA Tier 1 guidelines.

4.1.8 Summary Statistics

Station values for water quality parameters have been summarized in tabular and graphic form. Statistics are calculated and presented in Table 4.

5. QUALITY ASSURANCE AND QUALITY CONTROL

5.1 QUALITY ASSURANCE OBJECTIVES

Characteristics used to assess generated data were precision, accuracy, representativeness, completeness, and comparability, often referred to as PARCC parameters. PARCC parameters were integrated throughout the work plan and applied throughout the data collection process.

Project goals expressed specific PARCC parameters necessary to meet regulatory requirements, such as maximum level. Performance goals were specifically related to indicator quality control (QC) samples as quantitative measures of PARCC parameters. For example, analysis of one duplicate in ten samples is a performance goal and the results of duplicate analyses are an indicator of precision. The completeness goal for all analytes is 87.5%, or 7 of 8 results.

Accuracy and Precision Criteria

	Laboratory Precision (Duplicate Relative Percent Difference)		Laboratory Accuracy (Laboratory Control Sample % Recovery)	
Total Suspended Solids	20		80-120	
Total Organic Carbon	20		80-120	
Grain Size	n/a		n/a	
Arsenic (As)	20		80-120	
Barium (Ba),Total ionic	20		80-120	
Chromium (Cr), Total	20		80-120	
Lead (Pb)	20		80-120	
Mercury (Hg)	20		80-120	
Volatile Organic Compounds	1,1-Dichloroethene	22	1,1-Dichloroethene	54-138
	Benzene	21	Benzene	70-130
	Trichloroethene (TCE)	24	Trichloroethene (TCE)	57-132
	Toluene	21	Toluene	71-129
	Chlorobenzene	21	Chlorobenzene	72-128
Semi-volatile Organic Compounds	Phenol	35	Phenol	28-110
	2-Chlorophenol	50	2-Chlorophenol	22-110
	1,4-Dichlorobenzene	27	1,4-Dichlorobenzene	21-110
	N-Nitroso-di-n-propylamine	38	N-Nitroso-di-n-propylamine	24-110
	1,2,4-Trichlorobenzene	23	1,2,4-Trichlorobenzene	32-110
	4-Chloro-3-methylphenol	33	4-Chloro-3-methylphenol	35-112
	Acenaphthene	19	4-Nitrophenol	29-127
	4-Nitrophenol	50	2,4-Dinitrotoluene	51-112
	2,4-Dinitrotoluene	47	Pentachlorophenol	41-133
	Pentachlorophenol	47	Pyrene	45-135
	Pyrene	36		

Note:

Only system monitoring compounds are listed for Volatile and Semi-volatile Organic Compounds.

n/a - Criteria do not apply due to the nature of the analysis

* - Because this parameter has no standard analysis method, Limits are advisory only.

5.2 CALIBRATION PROCEDURES

All instruments and equipment used during the sampling and analysis were operated, calibrated, and maintained according to the manufacturer's guidelines and recommendations as well as criteria set for the instrument in the applicable methodology references. Operation, calibration, and maintenance were performed by personnel properly trained in these procedures.

5.2.1 Field Equipment

Each field instrument was calibrated prior to use at each sample location and, in some instances where appropriate, before each use. These instruments include a portable digital temperature/salinity/ conductivity meter, pH meter, dissolved oxygen meter, and a turbidity meter. Calibration assured accurate readings for each day of use and was noted in the Field Notebook of the calibrator.

5.2.2 Laboratory Instrumentation

Laboratory capabilities were initially demonstrated for instrument and reagent/standards performed as well as accuracy and precision of analytical methodology. Brief descriptions of calibration procedures for major instrument types are presented in the previously referenced methodologies.

5.3 DATA VALIDATION SUMMARY

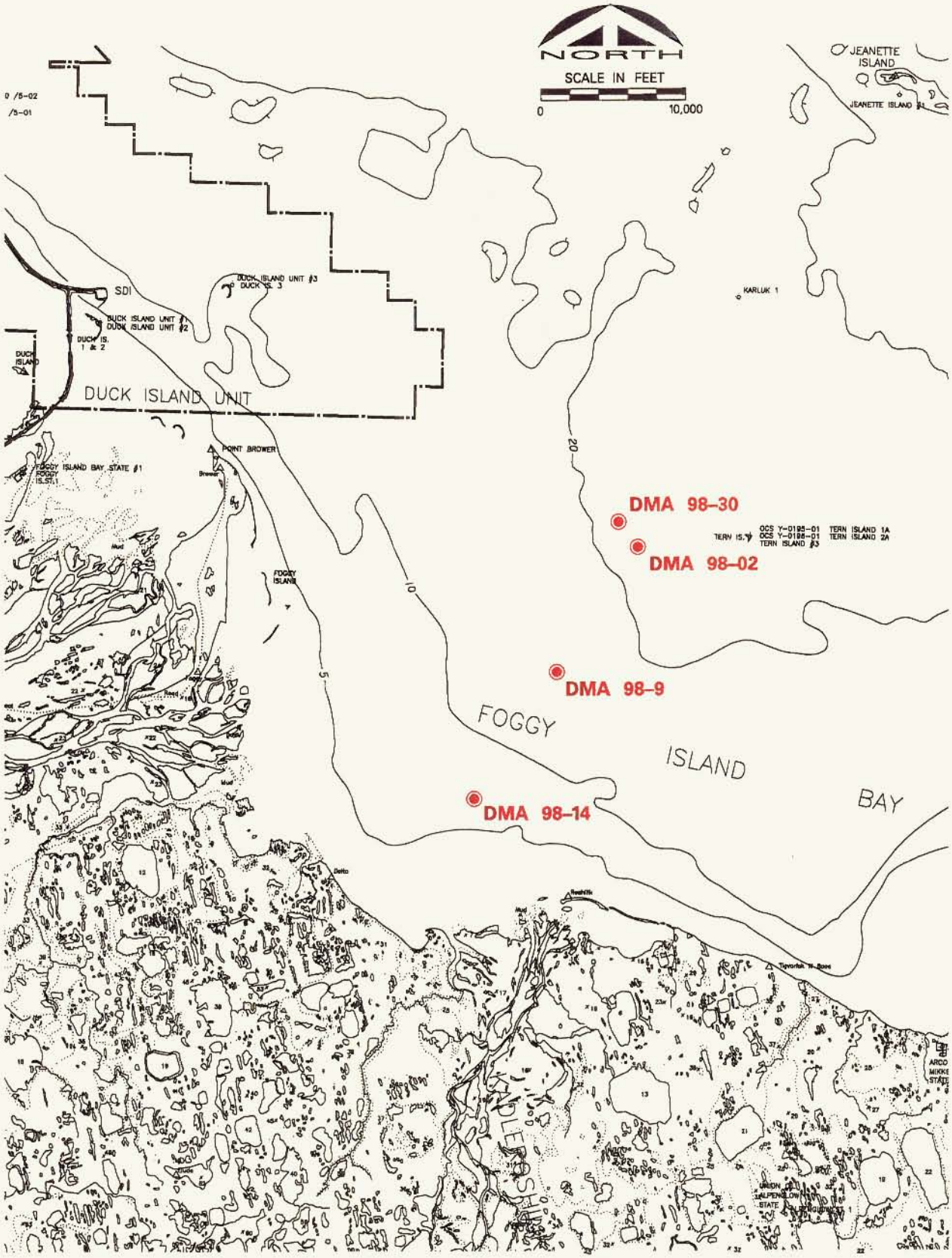
DATA VALIDATION SUMMARY

Thirteen water and fourteen sediment samples were collected March 18 and 19, 1998 and submitted to three laboratories for the suite of analyses summarized in the following table.

Laboratory	Analysis	Method
Prudhoe Bay Laboratory	BOD-5	
	Turbidity	
Quanterra Environmental Services	Mercury	EPA Method 7471
	Arsenic	EPA Method 6020
	Barium	EPA Method 6020
	Chromium	EPA Method 6020
	Lead	EPA Method 6020
MultiChem Analytical Services	Volatile Organic Compounds	EPA Method 8260A
	Semi-Volatile Organic Compounds	EPA Method 8270
	Total Organic Carbon	EPA Method 415.1
	Grain Size	
	Particle Size	
	Total Suspended Solids	EPA Method 160.2
	Hexachlorobenzene*	EPA Method 8081
	Hexachlorobutadiene*	EPA Method 8081

* - Hexachlorobenzene and Hexachlorobutadiene were analyzed using EPA Method 8081 to achieve lowest possible reporting levels. However, some samples with high moisture content yielded reporting levels above PSSDA action criteria.

Data were validated in accordance with accuracy and precision objectives established by the subcontracted laboratories: MultiChem Analytical Services (MAS) of Anchorage, Alaska, and Quanterra Environmental Services (Quanterra) of West Sacramento, California. In addition, data were evaluated for conformance with the Quality Assurance Objectives specified in Section 4 of the 1997 Technical Plan (MW, 1997). Acceptance criteria for accuracy, precision, and method reporting limits (MRLs) are provided in the laboratory reports. Where applicable, data validation guidance contained in the National Functional Guidelines for Organic and Inorganic Data Review (EPA, 1994) were followed. All data were considered valid as qualified using data quality objectives defined for the project.



MONTGOMERY WATSON

Anchorage, Alaska

FIGURE 1

BP EXPLORATION (ALASKA) INC.
LIBERTY ISLAND ROUTE WATER /SEDIMENT SAMPLING

1998 BOREHOLE SAMPLING LOCATIONS

JOB No. 1185 0101 TIME: 04-SEP-1998 08:38 FILE: S:\CAD\Proj\bpx\liberty\FIG1.DGN

Figure 2
Arsenic Concentrations in Sediment
by Sample Location

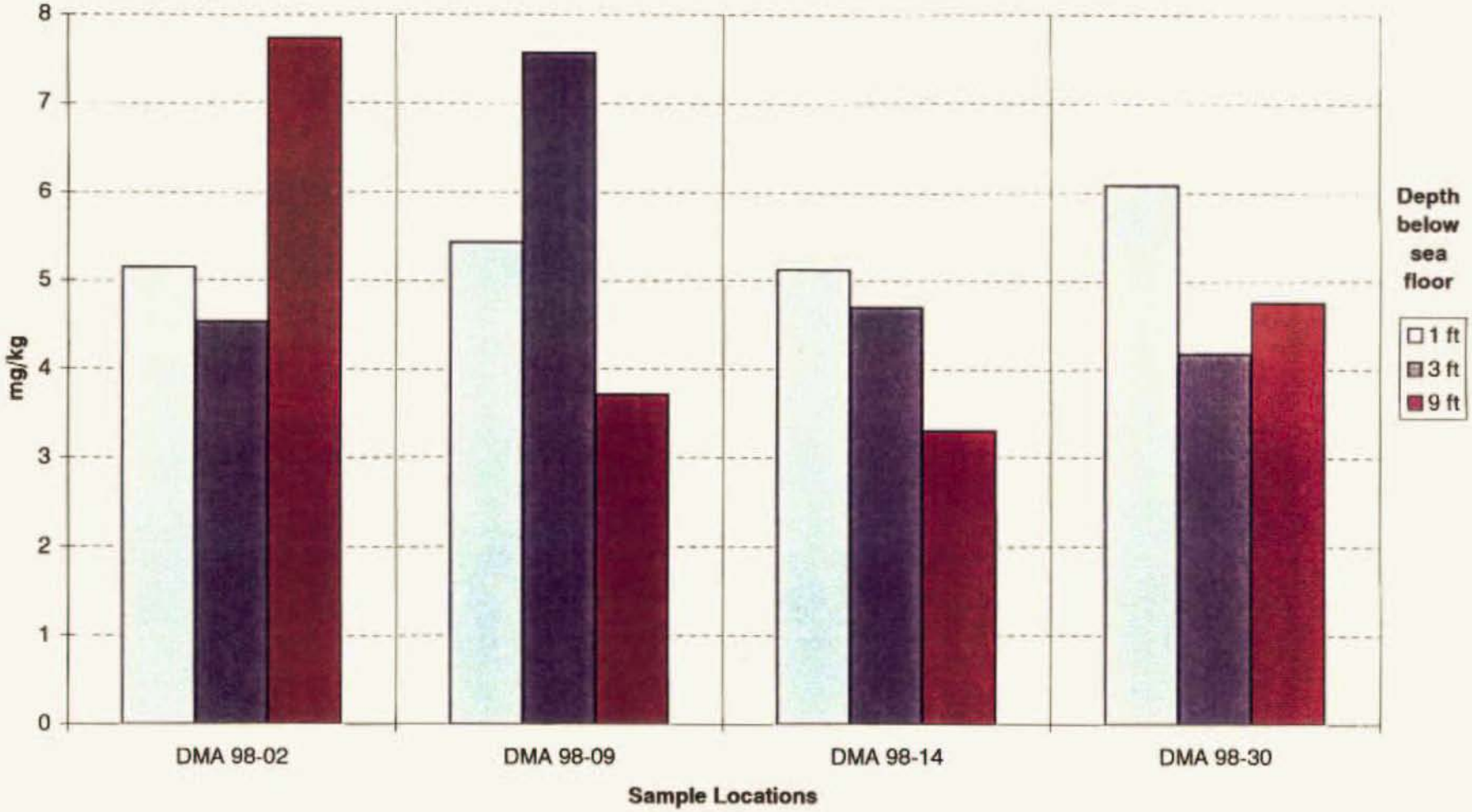


Figure 3
Barium Concentrations in Sediment
by Sample Location

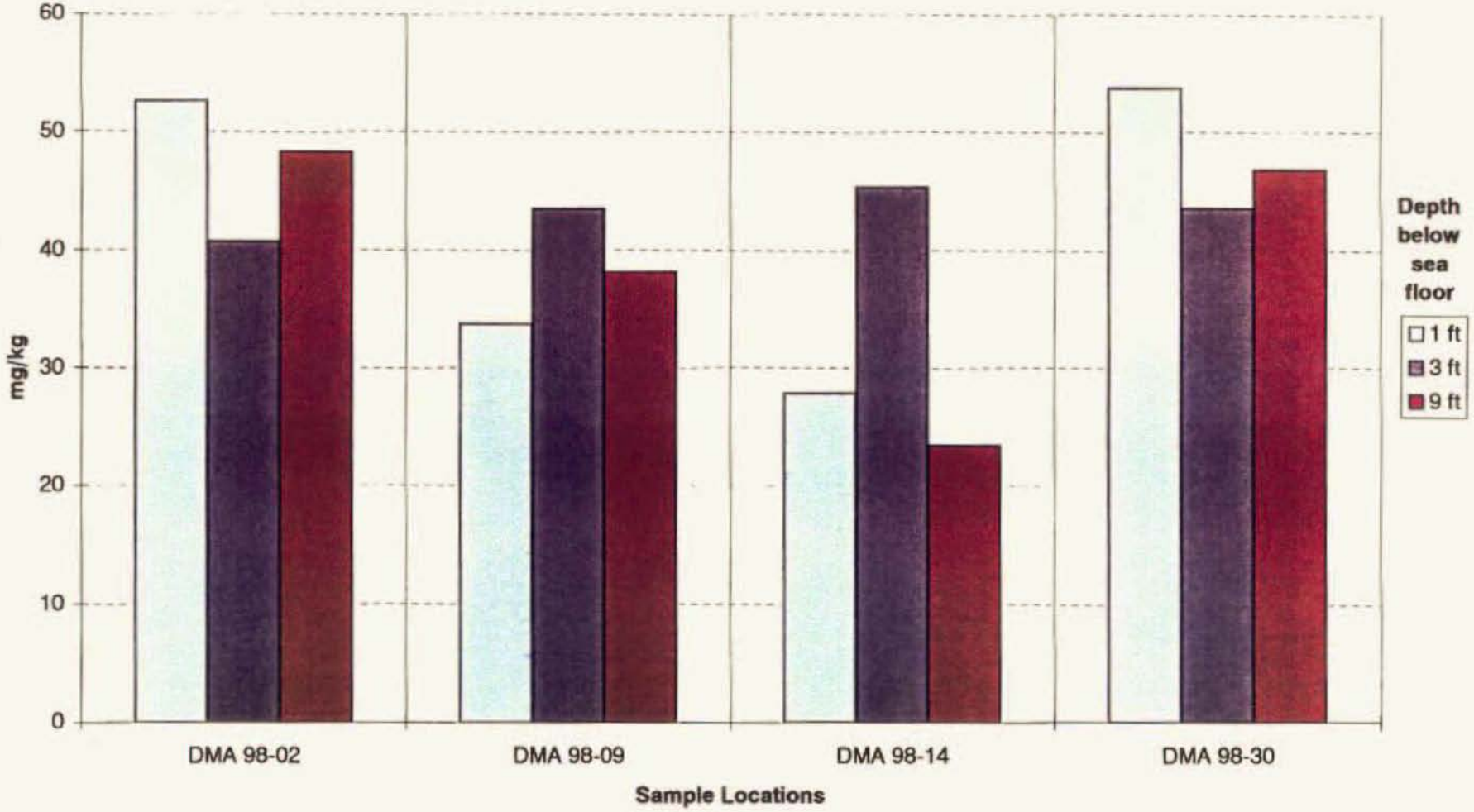


Figure 4
Chromium Concentrations in Sediment
by Sample Location

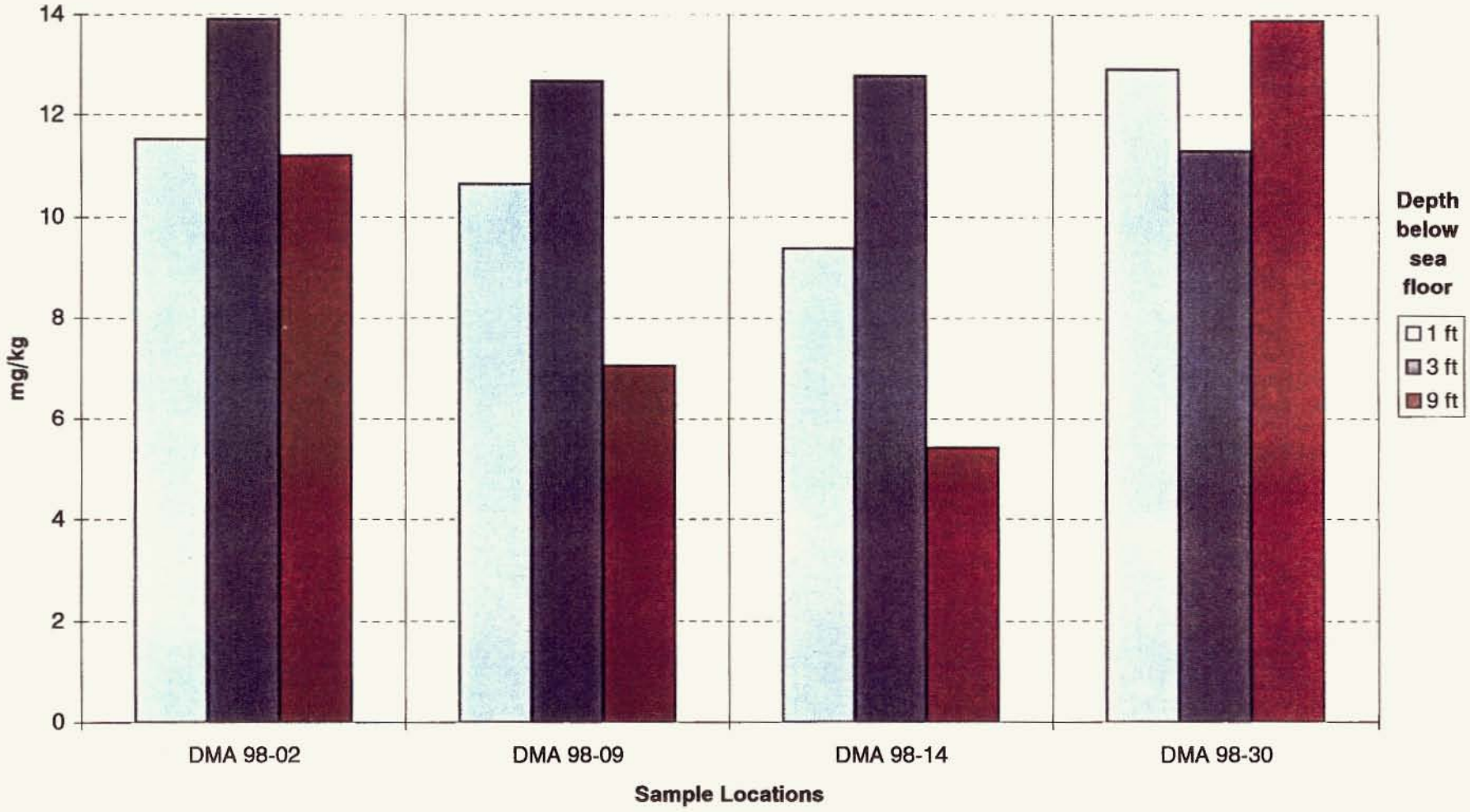


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Figure 4
Chromium Concentrations in Sediment
by Sample Location

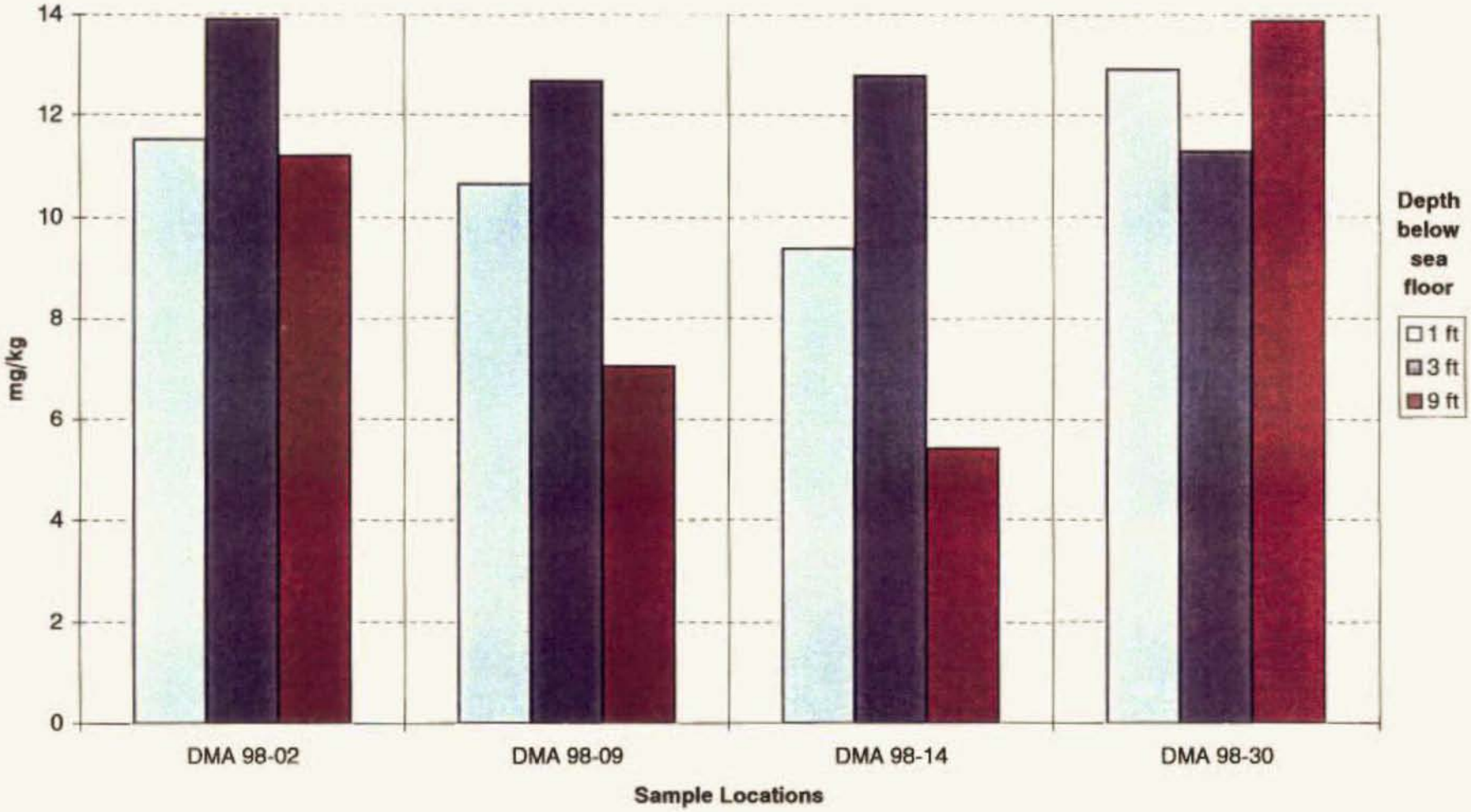


Figure 6
Mercury Concentrations in Sediment
by Sample Location

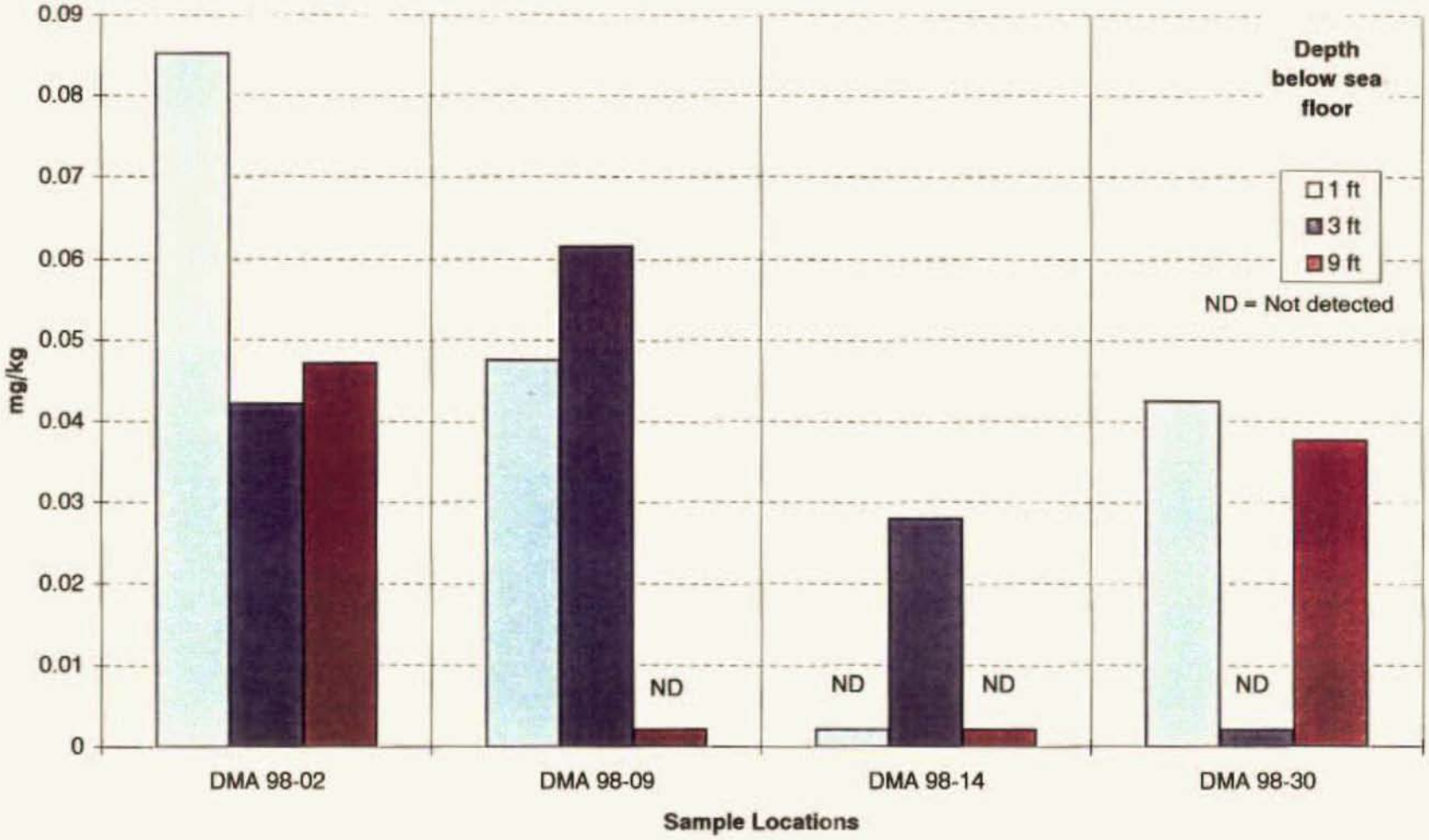


Figure 7
Grain Size Distribution

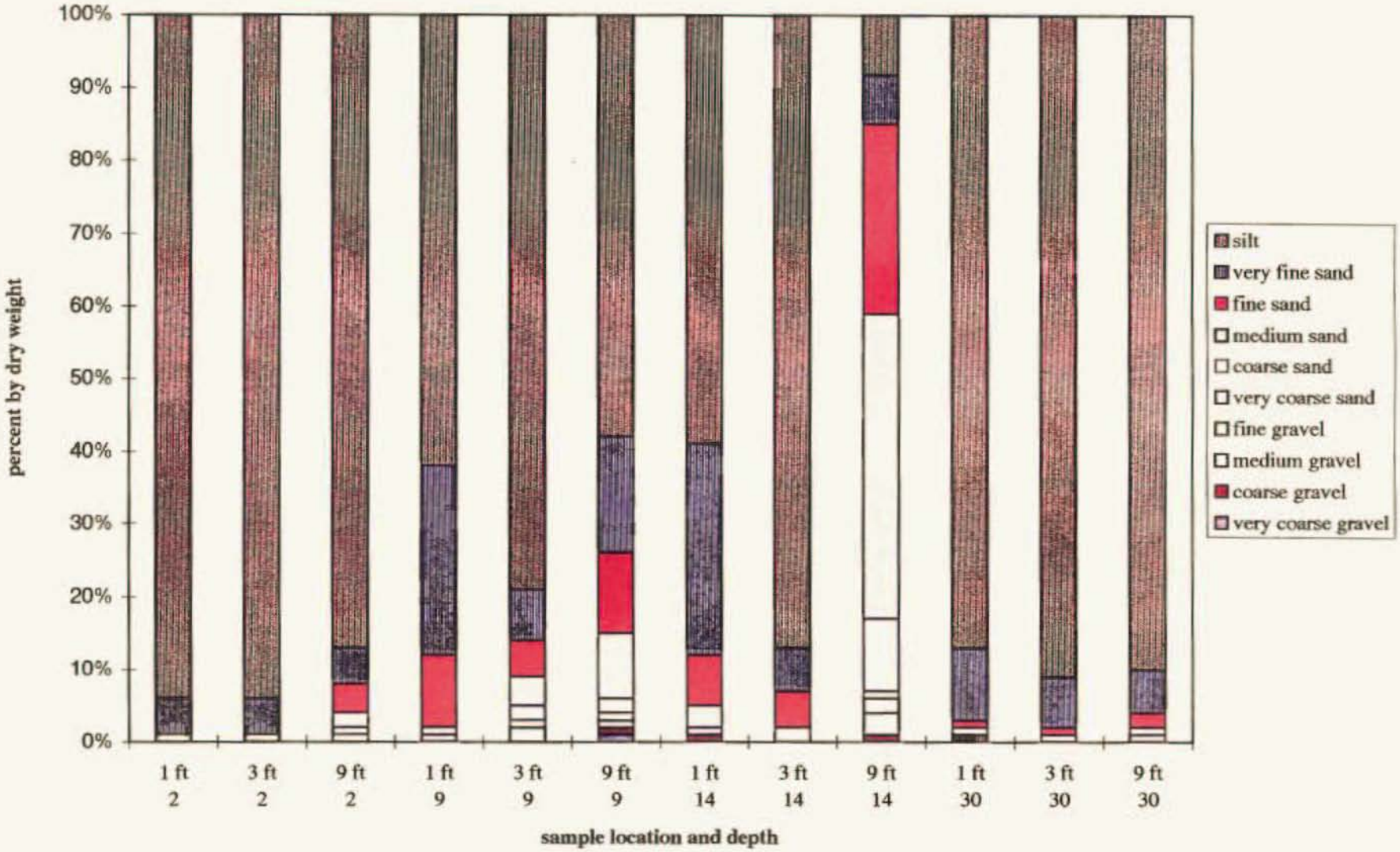


Figure 8
Grain Size Distribution by Sample Location
Sorted by Depth

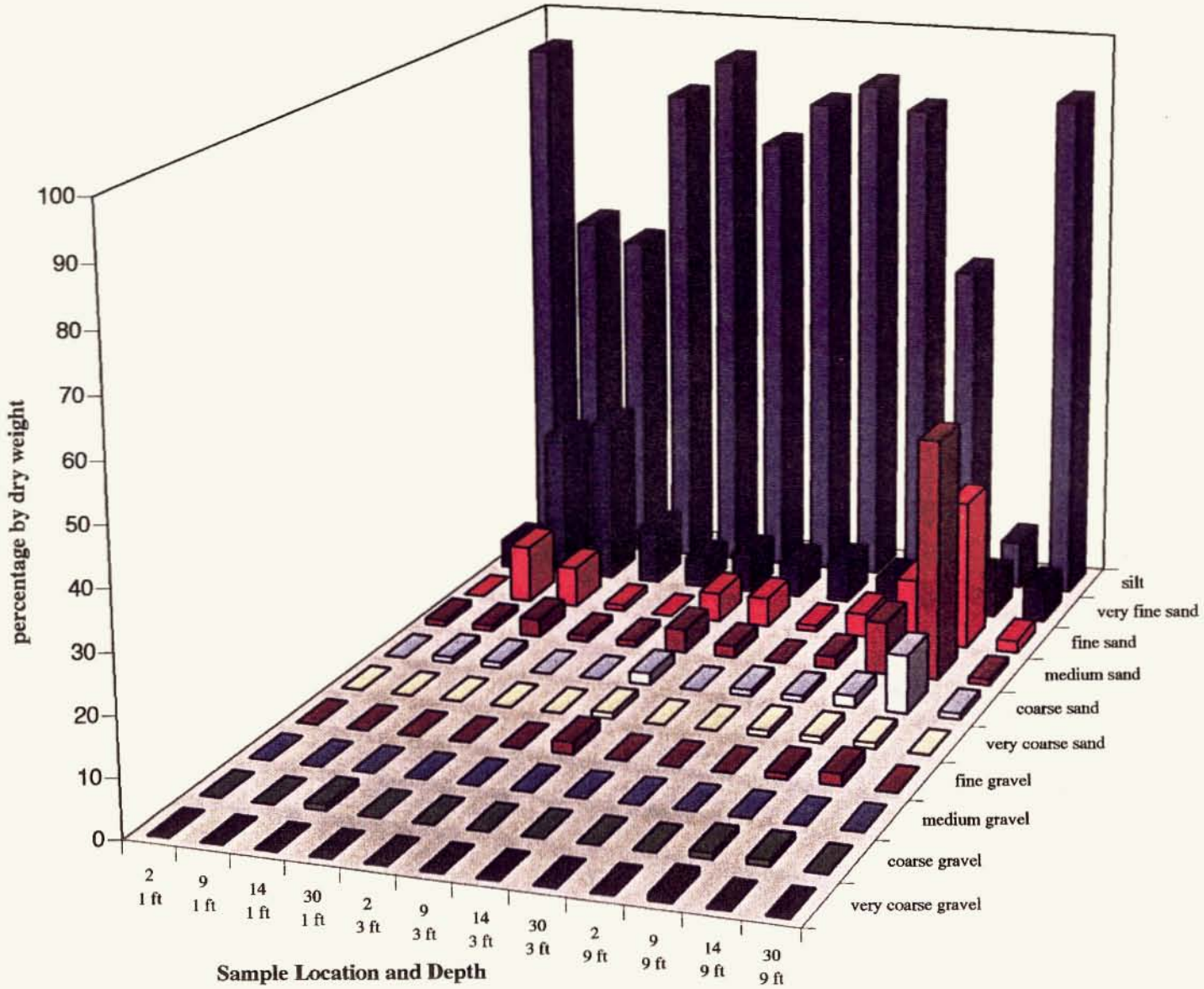
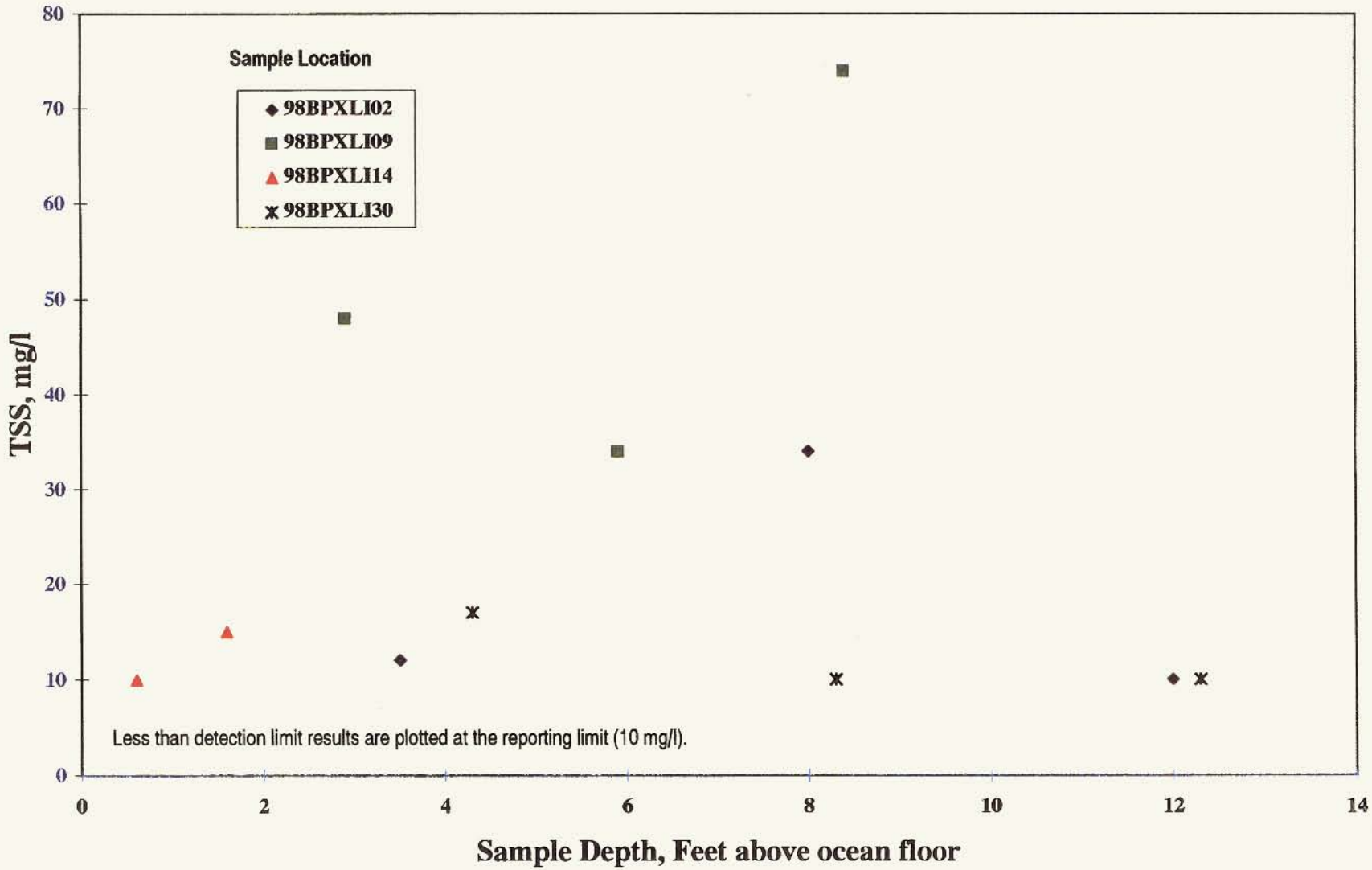


Figure 9
Total Suspended Solids by Water Depth



9/3/98

T LE 1

Sample Plan Checklist
Liberty Island Pipeline Routes
Water and Sediment Sampling

						MATRIX		FIELD PARAMETER						ANALYTICAL PARAMETERS								
Sample Identification	Borehole Number	Latitude	Longitude	Date	Time	Soil/Sediment	Sea Water	Temperature	Conductivity	Salinity	pH	Turbidity	Dissolved Oxygen	Total Suspended Solids (EPA 160.2)	BOD5/Turbidity	VOC (EPA 8260)	SVOC (EPA 8270)	TOC(415.1)	Mercury (EPA 7471)	Metals (EPA 6020)	Particle Size (ASTM D2487)	Grain Size (ASTM D442)	Field Duplicate
[redacted]																							
98BPXLI02SD1 (01)	DMA 98-2	70 16 38	147 33 31	3/18/98	2210	X										X	X	X	X	X	X	
98BPXLI02SD2 (03)	DMA 98-2	70 16 38	147 33 31	3/18/98	2230	X										X	X	X	X	X	X	
98BPXLI02SD62 (03)	DMA 98-2	70 16 38	147 33 31	3/18/98	2220	X										X	X	X	X	X	X	X
98BPXLI02SD3 (09)	DMA 98-2	70 16 38	147 33 31	3/18/98	2330	X										X	X	X	X	X	X	
[redacted]																						
98BPXLI09SD1 (01)	DMA 98-9	70 15 11	147 36 07	3/18/98	1610	X										X	X	X	X	X	X	
98BPXLI09SD2 (03)	DMA 98-9	70 15 11	147 36 07	3/18/98	1620	X										X	X	X	X	X	X	
98BPXLI09SD3 (09)	DMA 98-9	70 15 11	147 36 07	3/18/98	1630	X										X	X	X	X	X	X	
[redacted]																						
98BPXLI14SD01 (01)	DMA 98-14	70 13 43	147 38 45	3/18/98	1330	X										X	X	X	X	X	X	
98BPXLI14SD02 (03)	DMA 98-14	70 13 43	147 38 45	3/18/98	1345	X													X			
98BPXLI14SD03 (09)	DMA 98-14	70 13 43	147 38 45	3/18/98	1400	X										X	X	X	X	X	X	
[redacted]																						
98BPXLI30SD01 (01)	DMA 98-30	70 16 54	147 34 10	3/18/98	0250	X										X	X	X	X	X	X	
98BPXLI30SD02 (03)	DMA 98-30	70 16 54	147 34 10	3/18/98	0300	X										X	X	X	X	X	X	
98BPXLI30SD62 (03)	DMA 98-30	70 16 54	147 34 10	3/18/98	0310	X										X	X	X	X	X	X	X
98BPXLI30SD03 (09)	DMA 98-30	70 16 54	147 34 10	3/18/98	0330	X										X	X	X	X	X	X	

revised 9/4/98

Table 2
Water Quality Parameters
Liberty Island Pipeline Route
Water and Sediment Sampling

Station	Sample	Borehole Number	Date	Time	Depth to Water Surface (BTI) (ft)	Depth to Bottom (BTI) (ft)	Total Water Depth (ft)	Ice Thickness (ft)	Ice Free Water Depth (ft)	Sample Depth (BTI) (ft)	Temp (°C)	Salinity[2] (ppt)	Calculated[1] Seawater Density (kg/m^3)	Conductivity (umho's)	pH	Dissolved Oxygen (mg/l)	Field Turbidity (NTU)
[redacted]																	
98BPXLI09	WA01	DMA 98-09	3/18/98	1610	1.0	17	16	5.2	11.8	8.6	-2	32	1025.7	25050	7.4	7.7	13.3
98BPXLI09	WA02	DMA 98-09	3/18/98	1540	1.0	17	16	5.2	11.8	11.1	-2	32	1025.7	25050	7.2	8.5	8.4
98BPXLI09	WA03	DMA 98-09	3/18/98	1550	1.0	17	16	5.2	11.8	14.1	-2	32	1025.7	25050	6.9	7.4	12.5
[redacted]																	
98BPXLI30	WA01	DMA 98-30	3/19/98	120	1.2	21.1	19.9	4.9	16.2	8.8	-2	33	1026.6	26500	7.3	9.6	8.4
98BPXLI30	WA02	DMA 98-30	3/19/98	140	1.2	21.1	19.9	4.9	16.2	12.8	-2	33	1026.6	26000	7.6	9.7	11.7
98BPXLI30	WA03	DMA 98-30	3/19/98	200	1.2	21.1	19.9	4.9	16.2	16.8	-2	33	1026.6	26000	7.6	9.6	12.8

BTI = Below Top of Ice

Note::

1. Millero, F.J. and A. Poisson. 1981. International one-atmosphere equation of state of sea water. Deep- Sea Research, Vol. 28A, No. 6. p. 625-626
2. Salinity in Parts Per Thousand (ppt) converted from percent (%)

Table 2
Water Quality Parameters
Liberty Island Pipeline Route
Water and Sediment Sampling

Station	Sample	Sample Depth (BTI) (ft)	Sample Depth above Ocean Floor (ft)	BOD5	Lab Turbidity (NTU)	Total Organic Carbon (mg/L)	Total Suspended Solids (TSS) (mg/l)	Arsenic (mg/L)	Barium (mg/L)	Chromium (mg/L)	Lead (mg/L)	Mercury (mg/L)
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
98BPXLI09	WA01	8.6	8.4	<1	11	1.2	74	<.02	0.0200	<.01	<.01	<.0002
98BPXLI09	WA02	11	5.9	<1	7	1.2	34	<.02	0.0218	<.01	<.01	<.0002
98BPXLI09	WA03	14	2.9	<1	11	1.2	48	0.0202	0.0254	<.01	<.01	<.0002
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
98BPXLI30	WA01	8.8	12	<1	0	1.7	< 10	0.0206	0.0179	<.01	<.01	<.0002
98BPXLI30	WA02	13	8.3	<1	0	1.2	10	0.0226	0.0175	<.01	<.01	<.0002
98BPXLI30	WA03	17	4.3	<1	6	1.2	17	0.0213	0.0195	<.01	<.01	<.0002

BTI = Below Top of Ice

TABLE 3
Grain Size Results
Liberty Island Pipeline Routes
Water and Sediment Sampling
(all data are % by dry weight)

Sample Identification	Borehole Location	Depth (ft.)	Medium gravel (4.75 mm) No. 4	Fine Gravel (2.00 mm) No. 10	Very Coarse Sand (0.850 mm) No. 20	Coarse Sand (0.425 mm) No. 40	Medium Sand (0.250 mm) No. 60	Fine Sand (0.106 mm) No. 100	Very Fine Sand (0.075 mm) No. 200	Engineering Class	Frost Class
98BPXLI02SD01 (1.0)	DMA 98-2	0.5-1 ft.	100	100	100	100	99	99	94	Silt, ML	F4
98BPXLI02SD02 (3.0)	DMA 98-2	2-3 ft.	100	100	100	100	99	99	94	Silt, ML	F4
98BPXLI02SD03 (9.0)	DMA 98-2	8-9 ft.	100	100	99	98	96	92	87	Silt, ML	F4
98BPXLI09SD02 (1.0)	DMA 98-9	0.5-1 ft.	100	100	100	99	98	88	62	Silt, ML	F4
98BPXLI09SD02 (3.0)	DMA 98-9	2-3 ft.	100	98	97	95	91	86	79	Silt w/Sand	F4
98BPXLI09SD03 (9.0)	DMA 98-9	8-9 ft.	98	97	96	94	85	74	58	Sandy Silt, ML	F4
98BPXLI14SD01 (1.0)	DMA 98-14	0.5-1 ft.	99	99	99	98	95	88	59	Sandy Silt	F4
98BPXLI14SD02 (3.0)	DMA 98-14	2-3 ft.	100	100	100	100	98	93	87	Silt, ML	F4
98BPXLI14SD03 (9.0)	DMA 98-14	8-9 ft.	96	94	93	83	41	15	83	SP-SM	N/A
98BPXLI30SD01 (1.0)	DMA 98-30	0.5-1 ft.	99	99	99	99	98	97	87	Silt, ML	F4
98BPXLI30SD02 (3.0)	DMA 98-30	2-3 ft.	100	100	100	99	99	98	91	Silt, ML	F4
98BPXLI30SD03 (9.0)	DMA 98-30	8-9 ft.	100	100	100	99	98	96	90	Fat Clay, CH	F4

All Samples = PI (Non Plastic)

TABLE 4
Summary of Analytical Results and Benchmark Criteria
Liberty Island Pipeline Routes
Water and Sediment Sampling
(all data are % by dry weight)

		Project Values and Statistics							PSDDA Criteria				EPA Benchmarks	
Analyte	units	Minimum lab detection limit	Minimum report detection limit	Minimum result	Maximum result	Average result (includes 0 for ND)	STDEV	Coefficient of Variation	MDS for PSDDA	Screening Level	Bioaccumulation Level	Maximum Level	Risk Based Concentrations (RBC)	Ecotox Effects Range Low (ERL)
Soil														
Percent Moisture	PERCENT	0.0000	0.000	18	41	28.728	5.947	20.703	0.1	--	--	--	--	--
Total Metals (SW6020 & SW7471)														
Arsenic	MG/KG	0.1186	0.250	3.3052	11.2429	5.506	2.123	38.560	2.5	57	507.1	700	23	8.2
Barium	MG/KG	0.0275	0.125	23.4768	86.1714	44.824	14.668	32.723	--	--	--	--	5,500	--
Chromium	MG/KG	0.1073	0.250	5.4262	27.4382	12.229	5.000	40.890	--	--	--	--	78,000	81
Lead	MG/KG	0.0062	0.125	2.2282	13.8598	5.358	2.777	51.824	0.5	66	--	660	660	47
Mercury	MG/KG	0.0037	0.025	ND	0.0852	0.035	0.028	77.617	0.02	0.21	1.5	2.1	2.1	0.15
Volatile Organic Compounds (SW8260a)														
1,2-Dichlorobenzene	UG/KG	2.000	2.000	ND	ND	0	0	0	3.2	19	37	350	7,000,000	340 (2)
1,3-Dichlorobenzene	UG/KG	2.0000	2.000	ND	ND	0	0	0	3.2	170	1241	--	7,000,000	1,700 (2)
1,4-Dichlorobenzene	UG/KG	2.000	2.000	ND	ND	0	0	0	3.2	26	190	260	27,000	350 (2)
1,2,4-Trichlorobenzene	UG/KG	6.000	6.000	ND	ND	0	0	0	6	13	--	64	780,000	--
Ethylbenzene	UG/KG	2.0000	2.000	ND	ND	0	0	0	3.2	10	27	50	7,800,000	3,600 (2)
Hexachlorobenzene (SW8081) (1)	UG/KG	2.0000	2.000	ND	ND	0	0	0	12	23	168	230	--	--
Tetrachloroethene	UG/KG	2.0000	2.000	ND	ND	0	0	0	3.2	14	102	210	12,000	530 (2)
Trichloroethene	UG/KG	2.0000	2.000	ND	ND	0	0	0	3.2	160	1168	1600	58,000	1,600 (2)
Xylenes	UG/KG	2.0000	2.000	ND	ND	0	0	0	3.2	12	--	160	320,000	--
Semi-volatile Organic Compounds (SW8270a)														
Acenaphthene	UG/KG	21.000	21.000	ND	ND	0	0	0	20	63	--	630	4,700,000	1,100 (2)
Acenaphthylene	UG/KG	19.000	19.000	ND	ND	0	0	0	20	64	--	640	--	--
Anthracene	UG/KG	22.000	22.000	ND	ND	0	0	0	20	130	--	1300	23,000,000	--
bis-(2-ethylhexyl)phthalate	UG/KG	31.000	31.000	46	560	189.4286	164.4996	86.84	20	3100	13870	--	46,000	--
Benzo(a)anthracene	UG/KG	27.000	27.000	ND	ND	0	0	0	20	450	--	4500	880	--
Benzo(a)pyrene	UG/KG	23.000	23.000	ND	92	6.5714	24.5880	374.17	20	680	4964	6800	88	430 (2)
Benzo(b)fluoranthene	UG/KG	29.000	29.000	ND	ND	0	0	0	20	800	--	8000	880	--
Benzo(k)fluoranthene	UG/KG	36.000	36.000	ND	ND	0	0	0	20	800	--	8000	8,800	--
Benzo(g,h,i)perylene	UG/KG	37.000	37.000	ND	ND	0	0	0	20	540	--	5400	--	--

T, . . E 4
Summary of Analytical Results and Benchmark Criteria
Liberty Island Pipeline Routes
Water and Sediment Sampling
(all data are % by dry weight)

		Project Values and Statistics							PSDDA Criteria				EPA Benchmarks	
Analyte	units	Minimum lab detection limit	Minimum report detection limit	Minimum result	Maximum result	Average result (includes 0 for ND)	STDEV	Coefficient of Variation	MDS for PSDDA	Screening Level	Bioaccumulation Level	Maximum Level	Risk Based Concentrations (RBC)	Ecotox Effects Range Low (ERL)
Soil (continued)														
Semi-volatile Organic Compounds (SW8270a) (continued)														
Benzoic acid	UG/KG	150.000	150.000	ND	ND	0	0	0	100	400	--	690	310,000,000	--
Benzyl alcohol	UG/KG	32.000	32.000	ND	ND	0	0	0	6	25	--	73	23,000,000	--
Benzyl butyl phthalate	UG/KG	37.000	37.000	ND	ND	0	0	0	20	470	--	--	16,000,000	11,000 (2)
Chrysene	UG/KG	27.000	27.000	ND	ND	0	0	0	20	670	--	6700	88,000	--
Dibenzo(a,h)anthracene	UG/KG	38.000	38.000	ND	ND	0	0	0	20	120	--	1200	88	--
Dibenzofuran	UG/KG	21.000	21.000	ND	ND	0	0	0	20	54	--	540	310,000	2,000 (2)
Diethyl Phthalate	UG/KG	49.000	49.000	ND	ND	0	0	0	20	97	--	--	63,000,000	630 (2)
2,4-Dimethylphenol	UG/KG	19.000	19.000	ND	ND	0	0	0	6	29	--	50	--	--
Dimethyl phthalate	UG/KG	42.000	42.000	ND	ND	0	0	0	20	160	1168	--	780,000,000	--
Di-n-butyl phthalate	UG/KG	29.000	29.000	ND	ND	0	0	0	20	1400	10220	--	7,800,000	11,000 (2)
Di-n-octyl phthalate	UG/KG	35.000	35.000	ND	ND	0	0	0	20	6200	--	--	1,600,000	--
Fluoranthene	UG/KG	23.000	23.000	ND	ND	0	0	0	20	630	4600	6300	3,100,000	1,400 (2)
Fluorene	UG/KG	24.000	24.000	ND	ND	0	0	0	20	64	--	640	3,100,000	540 (2)
Hexachlorobutadiene (SW8081) (1)	UG/KG	2.000	2.000	ND	ND	0	0	0	20	29	212	290	8,200	--
Hexachloroethane	UG/KG	23.000	23.000	ND	ND	0	0	0	20	1400	10220	14000	46,000	1,000 (2)
Indeno(1,2,3-cd)pyrene	UG/KG	36.000	36.000	ND	ND	0	0	0	20	69	--	5200	880	--
2-Methylnaphthalene	UG/KG	20.000	20.000	ND	31	5.7857	11.5770	200.1	20	67	--	670	--	--
2-Methylphenol (o-Cresol)	UG/KG	20.000	20.000	ND	ND	0	0	0	6	20	--	72	3,900,000	--
4-Methylphenol (p-Cresol)	UG/KG	22.000	22.000	ND	280	31.6429	75.2898	237.94	20	120	--	1200	--	--
Naphthalene	UG/KG	21.000	21.000	ND	ND	0	0	0	20	210	--	2100	3,100,000	480 (2)
n-Nitrosodiphenylamine	UG/KG	25.000	25.000	ND	ND	0	0	0	12	28	161	220	130,000	--
Pentachlorophenol	UG/KG	35.000	35.000	ND	ND	0	0	0	61	100	504	690	5,300	--
Phenanthrene	UG/KG	24.000	24.000	ND	33	8.8571	14.5964	164.8	20	320	--	3200	--	1,100 (2)
Phenol	UG/KG	19.000	19.000	ND	38	2.7143	10.1559	374.17	20	120	876	1200	47,000,000	--
Pyrene	UG/KG	29.000	29.000	ND	ND	0	0	0	20	430	--	7300	2,300,000	660 (2)
Total Organic Carbon (TOC) (E415.1)	MG/KG	0.100	0.1	0.42	6.5	2.3057	1.6941	73.476	0.1	--	--	--	--	--

T. .E 4

Summary of Analytical Results and Benchmark Criteria
Liberty Island Pipeline Routes
Water and Sediment Sampling
(all data are % by dry weight)

			Project Values and Statistics							PSDDA Criteria				EPA Criteria	
	Analyte	units	Minimum lab detection limit	Minimum report detection limit	Minimum result	Maximum result	Average result (includes 0 for ND)	STDEV	Coefficient of Variation	MDS for PSDDA	Screening Level	Bioaccumulation Level	Maximum Level	Risk Based Concentrations (RBC)	Ecotox Effects Range Low (ERL)
Water															
Total Metals (SW6020 & SW7470)															
	Arsenic	MG/L	0.0114	0.020	ND	0.0226	0.0097	0.0109	112.575	--	--	--	--	0.011	0.036
	Barium	MG/L	0.0013	0.010	0.0175	0.0551	0.0252	0.0098	38.932	--	--	--	--	2.6	--
	Chromium	MG/L	0.0084	0.010	ND	ND	0	0	0	--	--	--	--	--	--
	Lead	MG/L	0.0007	0.010	ND	ND	0	0	0	--	--	--	--	--	0.0081
	Mercury	MG/L	0.0001	0.000	ND	ND	0	0	0	--	--	--	--	0.023	0.0011
Suspended Solids (E160.2)		MG/L	10.0000	10.000	ND	74	21.0769	21.4727	101.88	--	--	--	--	--	--
Total Organic Carbon (TOC) (E415.1)		MG/L	0.5000	0.500	1.1	1.7	1.3231	0.1833	13.852	--	--	--	--	--	--

Symbols

--	Not Applicable or Not Available	MG/KG	milligrams / kilogram
UG/KG	micrograms / kilogram	MG/L	milligrams / liter
		ND	not detected above the reporting limit

Footnotes

(1) Analyzed with an alternate method to achieve lower detection limits for comparison to PSDDA criteria.

(2) Ecotox value assumes the fraction of carbon in salt water sediments is 1%.

APPENDIX A
Field Notes and Logs

Montgomery Watson

BP Exploration (Alaska), .
LIBERTY ISLAND water/sediment samplir.
FIELD NOTE FORM

Station No. 98-02

Air Temp	1°F	Date	3/18/98
Wind	Se	Crew	Sharon Sadlon, Tom Calkin, Gary Garmer, Ken Halstea
Sky	clear	Start Time	19:30

ICE/Datum Below Platform Decking			Location	
a	Depth to Top of Ice	4.7	Description	Liberty Island
b	Depth to Bottom of Ice	9.3		
c	Depth to Seafloor	26		
d	Ice Thickness	4.6	Latitude	70-16-38
e	Ice Free Water	21.3	Longitude	147-33-31
f	Depth to Water	5.3	Northing	5953376.54 ASP
g	Water Column	20.7	Easting	307357.18 ASP

ADD .7 feet to sounder reading

Water Column Profile (every 0.5 feet) Datum Below Platform Decking

Depth (feet)	Temp °C	EC uhmos	DO mg/L	pH	Turbidity HNU		Salinity ppm	Temp (oC) for salinity	
26	-2	26000					33	-2	
25.5	-2	26000					33		
25.0	-2	26000					33		
24.5	-2	26000					33		
24.0	-2	26000					32		
[illegible]	-2	26000					32		
[illegible]	-2	26000					32		
[illegible]	-2	26000	10.9	6.4	9.3		32		WA03
[illegible]	-2	26000					32		
[illegible]	-2	26000					32		
[illegible]	-2	26000					32		
[illegible]	-2	26000					32		
[illegible]	-2	26000					32		
[illegible]	-2	26000					32		
[illegible]	-2	26000					32		
[illegible]	-2	26000					32		
[illegible]	-2	26000					32		
19.0	-2	25000	8.7	6.3	7.16		32		WA02
[illegible]	-2	25000					32		
[illegible]	-2	26000					32		

Water Sample(s) — add 1 foot to bomb depth measurement

	Depth	Time	Date	Methods
98BPXLI 02 WA01 & Dup 101	14.0	21:00	3/18/97	Bomb Dup 21:10
98BPXLI 02 WA02	18.0	21:30		Bomb
98BPXLI 02 WA03	22.5	22:00		Bomb

Sediment Samples

	Depth	Time	Date	Methods
98BPXLI 02 SD01(01)	0-1	22:10	3/18/97	SS.
98BPXLI 02 SD02(03)	2-3	22:30		
98BPXLI 02 SD03(06)	8-9	23:30		
Duplicate 98BPXLI 02 SD02 1(03)	0-1	22:20		

Comments

Meters used:
YSI 300PT-C-L STD. 1413
HACH 2100P, Turbidimeter 5.10 NTU STD reads 5.20 NTU
HACH, Colorimeter, DO, LR
YSI 33, S-T-L-pH, STD. 1413
Beckman φ11 pHmeter, STD. 487

Montgomery Watson

BP Exploration (Alaska), Inc.
LIBERTY ISLAND water/sediment sampling
FIELD NOTE FORM

pg 2 of 2

Station No. 98-02	Air Temp	Date	3-18-98
	Wind	Crew	
	Sky	Start Time	

ICE: Datum Below Platform Decking — Location

a	Depth to Top of Ice	4.7	Description	
b	Depth to Bottom of Ice	9.3		
c	Depth to Seafloor	26		
d	Ice Thickness		Latitude	
e	Ice Free Water		Longitude	
f	Depth to Water		Northing	
g	Water Column		Easting	

ADD .7 feet to sounder reading

Water Column Profile (every 0.5 feet): Datum Below Platform Decking

Depth (feet)	Temp °C	EC uhmos	DO mg/L %	pH	Turbidity HNU		Salinity ppm	Temp (oC) for salinity	
16.5	-2	26000					32	-2	
16.0	-2	26000					32		
15.5	-2	26000					32		
15.0	-2	26000					32		
14.5	-2	26000					32		
14.0	-2	26000	9.1	6.6	6.12		32		WA01
13.5	-2	26000					32		
13.0	-2	26000					32		
12.5	-2	26000					32		
12.0	-2	26000					32		
11.5	-2	26000					32		
11.0	-2	26000					32		
10.5	-2	26000					32		
10.0	-2	26000					32		
9.5	-2	26000					32		

Water Sample(s) — add 1 foot to bomb depth measurement

	Depth	Time	Date	Methods
98BPXLI__ __ WA01				
98BPXLI__ __ WA02				
98BPXLI__ __ WA03				

Sediment Samples

	Depth	Time	Date	Methods
98BPXLI__ __ SD01(01)				
98BPXLI__ __ SD02(03)				
98BPXLI__ __ SD03(06)				
Duplicate 98BPXLI__ __ SD6__1(01)				

Comments

Meters used:
YSI 300, T-C-L
HACH 2100P, Turbidimeter
HACH, Colorimeter, DO
YSI 33, S-T-L-pH

Montgomery Watson

pg 1 of 1

BP Exploration (Alaska), Inc.
LIBERTY ISLAND water/sediment sampling
FIELD NOTE FORM

98
Station No. 09

Air Temp	-29°F	Date	3-18-98
Wind	16 kn	Crew	BGM / WP
Sky	Clear	Start Time	1510 — 1700

ICE-Datum Below Platform Decking — Location

a	Depth to Top of Ice	4.4	Description	
b	Depth to Bottom of Ice	9.6		
c	Depth to Seafloor	21.4		
d	Ice Thickness	5.2	Latitude	70-16-38
e	Ice Free Water	13.2	Longitude	147-33-31
f	Depth to Water	5.4	Northing	5953376.54
g	Water Column	14.2	Easting	307397.18

ADD .7 feet to sounder reading

Water Column Profile (every 0.5 feet) - Datum Below Platform Decking

Depth (feet)	Temp °C	EC uhmos	DO mg/L %	pH	Turbidity HNU		Salinity ppm	Temp (oC) for salinity		
21.0	-2°	25050			Field		32	-2.0		
20.5	"	"					"			
20.0	"	"					"			
19.5	"	"					"			
19.0	"	"					"			
18.5	"	"	7.4	6.9	12.5		"			WA03
18.0	"	"					"			
17.5	"	"					"			
17.0	"	"					"			
16.5	"	"					"			
16.0	"	"					"			
15.5	"	"	8.5	7.2	8.4		"			WA02
15.0	"	"					"			
14.5	"	"					"			
14.0	"	"					"			
13.0	"	"	7.7	7.4	13.3		"	-2.0		WA01
12.0	"	"					"	-2.5		
11.0	"	"					"	-2.4		
10.0	"	"					"	-2.4		

Water Sample(s) — add 1 foot to bomb depth measurement

	Depth	Time	Date	Methods
98BPXLI 09 WA01	13.0	1530	3-18	"Bomb" pt source sampler
98BPXLI 09 WA02	15.5	1540	3-18	"
98BPXLI 09 WA03	18.5	1550	3-18	"

Sediment Samples

	Depth	Time	Date	Methods
98BPXLI 09 SD01(01)	.5-1	1610	3-18	SS, 18" x 4"
98BPXLI 09 SD02(03)	2-3	1620	3-18	↓
98BPXLI 09 SD03(04)	8-9	1630	3-18	↓
Duplicate 98BPXLI__ __ SD6__1(01) N/A				

Comments

Meters used:
YSI 3006T-C-L, 1413 STD ⇒ 1445
HACH 2100P, Turbidimeter, 53.1 ⇒ 53.4
HACH, Colorimeter, DO, LR
YSI 33, S-T-L-pH 1413 STD ⇒ 1441
Beckman 11, pH, STD 4 & 7
Decon complete

BGM

Montgomery Watson

98-

pg 1 of 1

BP Exploration (Alaska), Inc.
LIBERTY ISLAND water/sediment sampling
FIELD NOTE FORM

Station No. 14

Air Temp	-35	Date	3-18-98
Wind	15-20Kn	Crew	BGM
Sky	clear	Start Time	1215

ICE: Datum Below Platform Decking — **Location**

a		Depth to Top of Ice	4.3	Description	
b		Depth to Bottom of Ice	9.4		
c	1.4	Depth to Seafloor	12.1		
d		Ice Thickness	5.1	Latitude	70-13-43
e		Ice Free Water	3.3	Longitude	147-38-45
f		Depth to Water	5.3	Northing	5935509.00
g		Water Column	3.3	Easting	296088.00

ADD .7 feet to sounder reading

Water Column Profile (every 0.5 feet) Datum Below Platform Decking

Depth (feet)	Temp °C	EC uhmos	DO mg/l	pH	Turbidity HNU		Salinity ppm	Temp (oC) for salinity	
10.0	-1	24000	—	—	—		28	-1.8	
10.5	-1	24000	11.0	6.7	17.6		28	-1.0	WA 01
11.5	-.5	24000	—	—	—		27	-0.5	WA 02
12.0	0	24000	10.4	6.9	17.6		27	-0.5	

Water Sample(s) — add .7 foot to bomb depth measurement

	Depth	Time	Date	Methods
98BPXLI 14 WA01	10.2	1300	3-18	Bomb, Pt. Source Sampler
98BPXLI 14 WA02	11.8	1315	3-18	Bomb
98BPXLI WA03	N/A			

Sediment Samples

	Depth	Time	Date	Methods
98BPXLI 14 SD01(01)	5-1	1330	3-18	SS 18" x 4"
98BPXLI 14 SD02(03)	2-3	1345	3-18	↓
98BPXLI 14 SD03(09) 09	8-9	1400	3-18	↓
Duplicate 98BPXLI SD6 1(01)				

Comments

Meters used: YSI 3000T-C-L 1413 STD
HACH 2100P, Turbidimeter, 53.1 → 53.9 Beckman 11, pH 7 & 4 STD.
HACH, Colorimeter, DO, LR
YSI 33, S-T-L-pH,
Beckman 11, pH, STD. 4 & 7 used
Decon complete

BGM

Montgomery Watson

BP Exploration (Alaska), Inc.
LIBERTY ISLAND water/sediment sampling
FIELD NOTE FORM

Pg 1 of 2

Station No. 98-30

Air Temp	-3°F	Date	3/19/98
Wind	7E	Crew	Sharon Sadlon
Sky	Clear	Start Time	00:30

ICE-Datum Below Platform Decking / **Location**

a	Depth to Top of Ice	4.7	Description	Liberty Island
b	Depth to Bottom of Ice	9.6		
c	Depth to Seafloor	25.8	70 16 38.670N 147 34 10.662W	
d	Ice Thickness	4.9	Latitude	70-16-54
e	Ice Free Water	16.2	Longitude	147-34-10
f	Depth to Water	5.5	Northing	5955095 ASP
g	Water Column	20.3	Easting	306049

ADD .7 feet to sounder reading

Water Column Profile (every 0.5 feet) - Datum Below Platform Decking

Depth (feet)	Temp °C	EC uhmos	DO mg/l %	pH	Turbidity HNU		Salinity ppm	Temp (oC) for salinity	
25.5	-2	27000					33	-2	
25.0	-2	27000					33		
24.5	-2	26000					33		
24.0	-2	26000					33		
23.5	-2	26000					33		
23.0	-2	26000					33		
22.5	-2	26000					33		
22.0	-2	26000					33		
21.5	-2	26000	8.6/9.6	7.59/7.59	9.4/12.8		33		
21.0	-2	26000					33		
20.5	-2	26000					33		
20.0	-2	26000					33		
19.5	-2	26000					33		
19.0	-2	27000					33		
18.5	-2	27000					33		
18.0	-2	26000					33		
17.5	-2	26000	10.5/9.7	7.51/7.56	7.06/11.7		33		
17.0	-2	27000					33		
16.5	-2	26500					33		

Water Sample(s) — add 2.6 feet to bomb depth measurement

	Depth ft	Time	Date	Methods
98BPXLI30WA01	13.5	01:20	3/19/98	
98BPXLI30WA02 ~~03~~ 02	17.5	01:40		Dup 01:50
98BPXLI30WA03	21.5	02:00		

Sediment Samples

	Depth	Time	Date	Methods
98BPXLI30SD01(01)	0-1	02:50	3/19/98	
98BPXLI30SD02(03)	2-3	03:00		
98BPXLI30SD03(06)	8-9	03:30		
Duplicate 98BPXLI30SD6~~2~~3 1(0~~2~~3)	2-3	03:10		

Comments

Meters used:
YSI 3000T-C-L
HACH 2100P, Turbidimeter
HACH, Colorimeter, DO , LR
YSI 33, S-T-L-pH

Montgomery Watson

BP Exploration (Alaska), Inc.
LIBERTY ISLAND water/sediment sampling
FIELD NOTE FORM

pg 2 of 2

Station No. 96-30

Air Temp		Date	
Wind		Crew	
Sky		Start Time	

ICE - Datum Below Platform Decking

a	Depth to Top of Ice		
b	Depth to Bottom of Ice		
c	Depth to Seafloor		
d	Ice Thickness		
e	Ice Free Water		
f	Depth to Water		
g	Water Column		

Location

Description

Latitude	
Longitude	
Northing	
Easting	

ADD .7 feet to sounder reading

Water Column Profile (every 0.5 feet) - Datum Below Platform Decking

Depth (feet)	Temp °C	EC uhmos	DO %	pH	Turbidity HNU		Salinity ppm	Temp (oC) for salinity	
16.0	-2	26000					33	-2	
15.5	-2	26500					33		
15.0	-2	26500					33		
14.5	-2	27000					33		
14.0	-2	26000					33		
13.5	-2	26500	9.6	7.26	8.36		33		
13.0	-2	26000					33		
12.5	-2	26000					33		
12.0	-2	26500					33		
11.5	-2	26000					33		
11.0	-2	26000					33		
10.5	-2	26000					33		
10.0	-2	26500					33		
9.5	-2	26000					33		

Water Sample(s) - add 1 foot to bomb depth measurement

	Depth	Time	Date	Methods
98BPXLI___ WA01				
98BPXLI___ WA02				
98BPXLI___ WA03				

Sediment Samples

	Depth	Time	Date	Methods
98BPXLI___ SD01(01)				
98BPXLI___ SD02(03)				
98BPXLI___ SD03(06)				
Duplicate 98BPXLI___ SD6__1(01)				

Comments

Meters used: YSI 300, T-C-L
HACH 2100P, Turbidimeter
HACH, Colorimeter, DO
YSI 33, S-T-L-pH

Duane Miller & Associates
Arctic & Geotechnical Engineering
FIELD LOG

Project: LIBERTY Hole No. SB-02
Job No. 4114.33 Total Depth 20'
Contractor: [illegible] Operator [illegible] Logged By [illegible]
Sheet 1 of

Location of Hole LIBERTY SB-02 (MW)

4.7' DELL TO ICE
9.3' DELL TO BOTTOM ICE
21.0' DELL TO MUD

Conditions -1°F, SE, CLEAR

Rig Type [illegible]
Sampling Methods 4" SS
Hammer Wt. and Drop 340# 1:20"
Hammer Type MANUAL AUTOMATIC
Started TIME 7:43 PM DATE 3/18/98
Completed TIME 11:23 PM DATE 3/18/98

Hole Depth (Ft)				
Casing Depth (Ft)				
Water Depth (Ft)				
Time				
Date				

Surface Elevation _____ Datum _____

Instrumentation NONE

Backfilled TIME NA DATE _____ BY _____

Sample No.	Sample Depth	Sampler Type	Blows / 6-in.	Inches Driven	Inches Recovered	Depth in Feet	Sample	Graphic Log	Frozen?	
	0.0'	MW	Ø	18	18					0.0' - dark gray to blue SILT (ML), scattered bivalve shells, color change @ 1.2' to gray. Weight of hammer caused sample to saturate, no blows. Sample retained by MW.
	2.0	MW	3/10"	18		1, 2				
						3				3.0' - gray SAND (SP) w/ trace SILT, fine grained, loose. Sample retained by MW.
						4, 5, 6, 7				
	8.0	MW	Ø	18	18	8				8.0' - gray SILT (ML) w/ trace CLAY, soft. 8.0' to 8.4' brown ORGANICS w/ trace gray SILT. Sample retained by MW. Organics amorphous, odiferous.
			3			9				
			5							BOH @ 9.5' @ 2323 3/18/98. No PVC.
						10, 11				

Project LIBERTY Hole No. SB-02 (MW) Sheet 1 of 1

DMA 98-

Duane Miller & Associates
Arctic & Geotechnical Engineering
FIELD LOG

Project: LIBERTY Hole No. M-2
Job No. [illegible] Total Depth 9.5
Contractor: [illegible] Operator [illegible] Logged By [illegible]

Location of Hole [illegible] 98-[illegible] assistance
Sta. 104+[illegible], [illegible]

Conditions Drilling IC 4.4, Icec 5.2, H_2O=11.5
Dock to Mud 21'

Rig Type [illegible]
Sampling Methods 3.5" [illegible] from [illegible]
Hammer Wt. and Drop 140# [illegible]
Hammer Type MANUAL AUTOMATIC
Started TIME 3:15 PM DATE 18 MARCH
Completed TIME 5:45PM DATE 19 MARCH

Hole Depth (Ft)				
Casing Depth (Ft)				
Water Depth (Ft)				
Time				
Date				

Surface Elevation -17.0 Datum [illegible]
Instrumentation NONE

Backfilled TIME N/A DATE ____ BY ____

Sample No.	Sample Depth	Sampler Type	Blows / 6-in.	Inches Driven	Inches Recovered	Depth in Feet	Graphic Log
	0.0	S3P	1	6	6		
			1	6	6	1	
			2	6	6		
	2.0	S3P	1	6	6	2	
			1	6	6	3	
			2	6	6		
						4	
						5	
						6	
						7	
	8.0	S3P	5	6		8	
			5	6		9	
			7	6	4		
						10	TD 9.5
						11	

0.0-0.2 Brown Sand w/ scattered shell frag
0.2-0.5 black organic Silt w/ organic pieces, wood & shells
0.5-2.3 Dark Gray Silt
2.3-3.0 Two layers of brown fibrous peat w/ distinct odor of decomposition - with 2" interbedded gray silt layer
3.0-6.0 Dk Gray Silt
driller: "Sand" @ 6 ft
6.0-9.5 Interbedded Gray Sand and Dark Gray Silty

Project LIBERTY Hole No. M-2 Sheet [illegible]

DMA 98-14

Duane Miller & Associates
Arctic & Geotechnical Engineering
FIELD LOG

Project: LIBERTY
Job No. 4116.73
Hole No. M-1
Total Depth 0.
Sheet 1 of 1
Contractor: Discovery/CATCO
Operator Scott
Logged By Phillips/Acinum

Location of Hole 10 ft E of Loc DMA 98-14
Sta 207+87, 10'L
(meteor Sta 74+29, 3.3 L)

Rig Type CME-75
Sampling Methods 3.5" solid stem + SB
Hammer Wt. and Drop 340#, 30"
Hammer Type MANUAL AUTOMATIC ✓
Started TIME 12:30 PM DATE 18 MAR 98
Completed TIME 2:30 PM DATE 18 MAR 98

Conditions Deck to ice 4.4' Ice 5.1' H2O 1.1'
Deck to mud 12.4

Hole Depth (Ft)	9.5			
Casing Depth (Ft)	21.6			
Water Depth (Ft)	+7.7			
Time	1:00P			
Date	18 MAR			

Surface Elevation -7.7' Datum Mean surface

Instrumentation NONE

Backfilled TIME _____ DATE _____ BY _____

Sample No.	Sample Depth	Sampler Type	Blows/6in.	Inches Driven	Inches Recovered	Depth in Feet	Graphic Log
	DP	SB	2	6	6		
			3	6	6	1	
			3	6	6		
	1.5	SB	1	6	6	2	
			2	6	6		
			4	6	6	3	
						4	
						5	
						6	
						7	
	8.0	SB	2	6	6	8	
			3	6	6	9	
			2	6	6		
						10	
						11	

0.0 - 0.5 Brown Sand, Sand is medium grained, well sorted (SP)
0.5 - 4.5 Dk Gray Silt
4.5 - 9.5 Gray Sand w/ scattered small pebbles

Project Liberty Hole No. M-1 Sheet 1 of 1

Duane Miller & Associates
Arctic & Geotechnical Engineering
FIELD LOG

Project: LIBERTY | Hole No. 98-30 | Sheet 1 of 1
Job No. [illegible] | Total Depth 9.5
Contractor: DISCOVERY DRILL | Operator [illegible] | Logged By [illegible]

Location of Hole LIBERTY
98-30 (MW)

4.7' DECK TO ICE
9.6' DECK TO BOTTOM OF HOLE
25.8' DECK TO MUD
Conditions - 39°F, FE, CLEAR

Rig Type CRETE
Sampling Methods 4" SS
Hammer Wt. and Drop 340# 30"
Hammer Type MANUAL AUTOMATIC
Started TIME 12:10 PM DATE 3/19/98
Completed TIME 3:27 AM DATE 3/19/98

Hole Depth (Ft)				
Casing Depth (Ft)				
Water Depth (Ft)				
Time				
Date				

Surface Elevation _____ Datum _____

Instrumentation NONE

Backfilled TIME NA DATE _____ BY _____

Sample No.	Sample Depth	Sampler Type	Blows / 6-in.	Inches Driven	Inches Recovered	Depth in Feet	Sample	Graphic Log	Frozen?	
	0.0	MW	Ø 2 3	18	12	1				0.0'- gray SILT (ML) w/ trace black amorphous ORGANICS & trace fine SAND, scattered bivalve fragments, soft. Sample retained by MW. Weight of hammer moved sampler 0' to 0.5'.
		MW	Ø 2 5	18	15	2 3				2.0'- gray SAND (SW) w/ some SILT & 2 pieces subangular GRAVEL (0.6" & 1.5" Ø). 2.7' to 2.9'- trace amorphous ORGANICS w/ interlayer of gray SILT ≈ 0.2" thick. 2.9'- gray SILT (ML) w/ some CLAY, soft. Sample retained by MW.
	8.0	MW	2 3 4	18	16	4 5 6 7 8 9 10 11				8.0'- gray CLAY, firm. Sample retained by MW. BOH @ 9.3' @ 0327 3/19/98. AB PIC.

Project LIBERTY Hole No. 98-30 Sheet 1 of 1

F. Robert Bell and Associates
Surveyors / Engineers
Prudhoe Bay
Phone 659-5000/5005
FAX 659-5065

Transmittal Cover Sheet

Post-it™ brand fax transmittal memo 7671	# of pages ▸ 2
To BONNIE McLEAN	From DUANE
Co. MW	Co.
Dept.	Phone #
Fax # 248-8884	Fax #

Date: March 24, 1998

To: Jeffrey Cotton
Fax: 564-5020
From: Steve Stoll
Subject: LIBERTY
Pages Following Cover: 1

THESE ARE THE REAL LOCATIONS DRILLED FOR YOU.

Comments:

Attached are two sheets with Liberty sketches.
The following are coords points you are interested in.

Current Zone: AK-3

>>Point number: 10201 DMA 98-30
Grid Northing: 5955095 Grid Easting: 306049
Convergence: -1-28-39 Scale factor: 0.999942732097
Latitude: 70-16-54 Longitude: 147-34-10

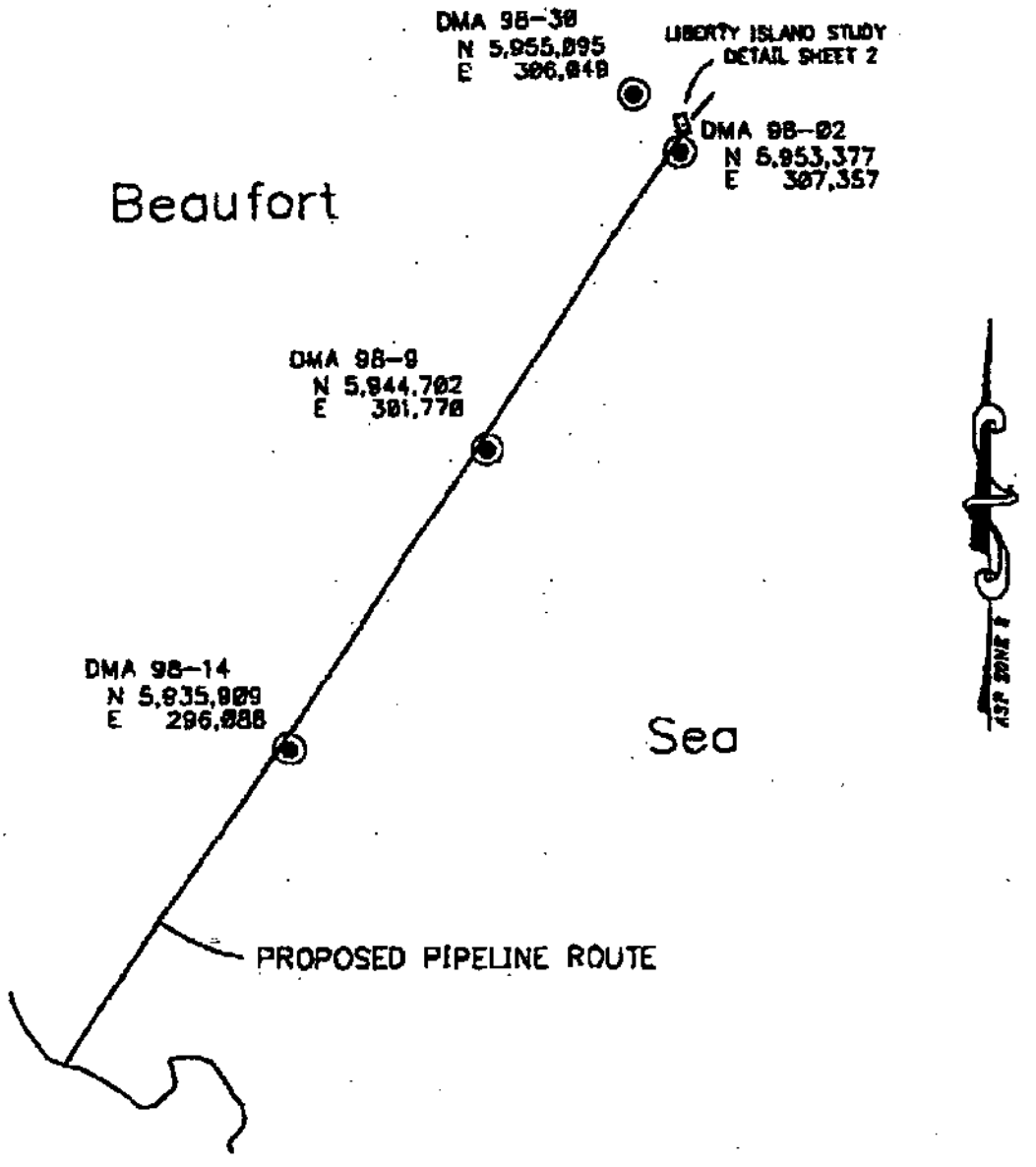
>>Point number: 10105 DMA 98-02
Northing: 5953376.54 Easting: 307357.18
Convergence: -1-28-02 Scale factor: 0.999942157796
Latitude: 70-16-38 Longitude: 147-33-31

>>Point number: 10116 DMA 98-9
Grid Northing: 5944702.00 Grid Easting: 301770.00
Convergence: -1-30-28 Scale factor: 0.999944638807
Latitude: 70-15-11 Longitude: 147-36-07

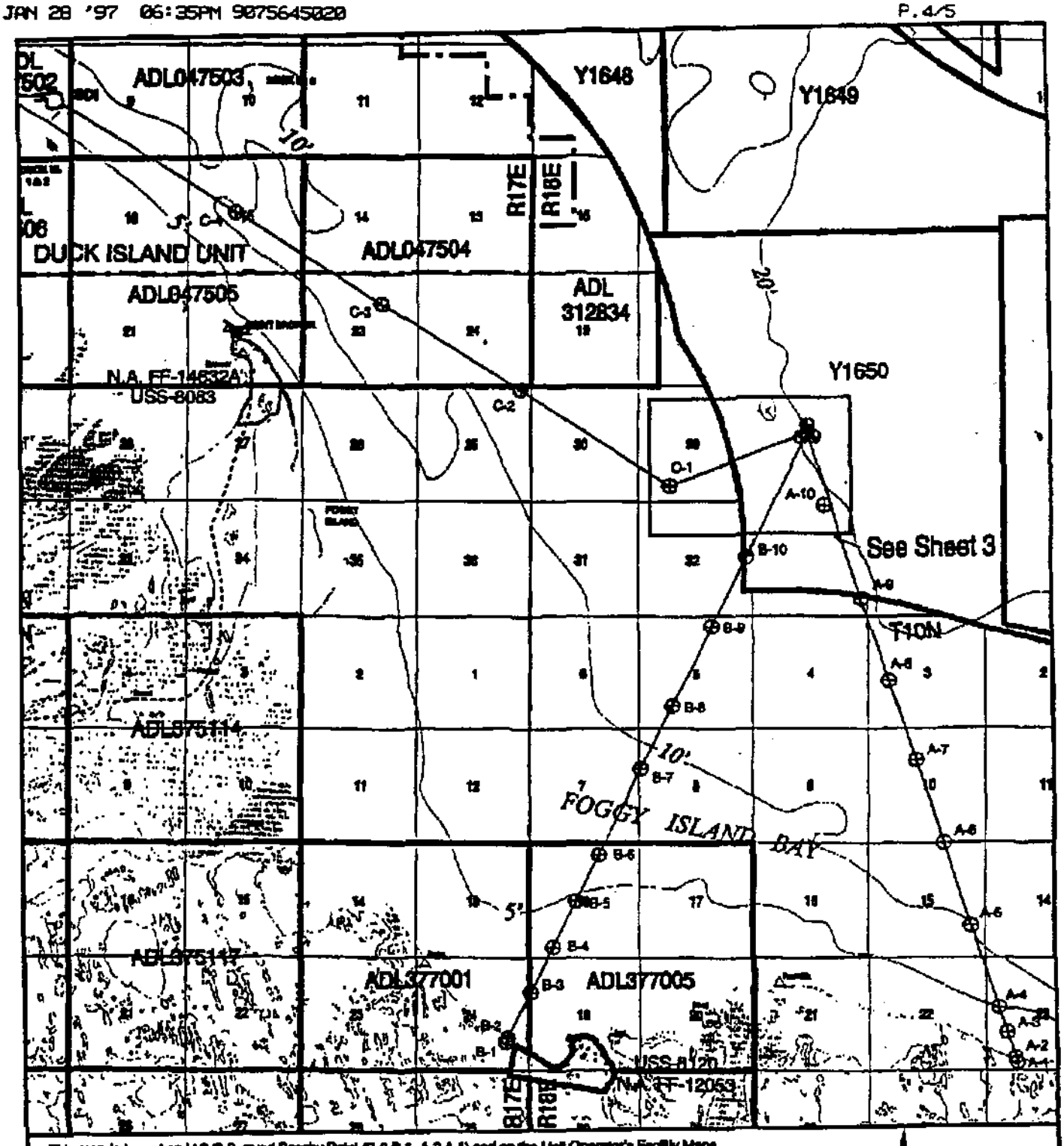
>>Point number: 10126 DMA 98-14
Grid Northing: 5935909.00 Grid Easting: 296088.00
Convergence: -1-32-56 Scale factor: 0.999947234682
Latitude: 70-13-43 Longitude: 147-38-45

NOTES

1. COORDINATES SHOWN ARE ALASKA STATE PLANE ZONE 3, NAD 1927.
2. LOCATION BASED ON STATION "DELTA" AND WCMC3 USS 8120.
3. REFERENCE GPS FILE: EX031998
4. DATES OF SURVEY: MARCH 18–19, 1998.



ISSUED FOR INFORMATION	F. Robert Hill Associates	STOLL / O'HANLEY / 3/24/98 / LEGUNA / 1" = 5000'	BP EXPLORATION
			LIBERTY ISLAND DRILLHOLE LOCATIONS
			SHEET 1 of 2



This map is based on U.S.G.S. quad Beechy Point (B-2,B-1, A-2,A-1) and on the Unit Operator's Facility Maps.

NORTH

⊕ Boring less than 50' deep

⊕ Boring greater than 50' deep

Within T11NR17E Sec. 8, 9, 14, 15, 16, 23, 24, 25
T11NR18E Sec. 29, 30, 32, 33
T10NR17E Sec. 24
T10NR18E Sec. 3, 4, 5, 7, 8, 10, 16, 18, 19, 22, 23

BP EXPLORATION (ALASKA) INC.

LIBERTY
GEOTECHNICAL
BORE HOLE LOCATIONS
PERMIT APPLICATION

DATE:	SCALE:	SHEET:
1/28/97	1" = 1.25 Mile	2 OF 3

bs13351.dgn

APPENDIX B
Chain of Custody Records

fax results to 248-8884

Montgomery Watson 4100 Spenard Road Anchorage AK 99517 (907)248-8883 Fax (907) 248-8884 ATTN: Lynn DeGeorge	Laboratory: PBOC Laboratory (BP) West Prudo Bay, Alaska (907) 659-4356 Attn: Al Kukla MW Job Number: 48-hour holding time			SOIL						WATER		
Sampler's Signature 1998	Bomchan			Cool to 4 degrees C						Turbidity- EPA 180.1 100 ml poly	BOD5- EPA 405.1 1 l poly	Comments
Date	Time	Sample ID	Matrix	Total Containers								
3-18	2100	98BPXLI 02 WA01	W	2						✓	✓	
3-18	2130	98BPXLI 02 WA02	W	2						✓	✓	
3-18	2200	98BPXLI 02 WA03	W	2						✓	✓	
3-18	1530	98BPXLI 09 WA01	W	2						✓	✓	
3-18	1540	98BPXLI 09 WA02	W	2						✓	✓	
3-18	1550	98BPXLI 09 WA03	W	2						✓	✓	
3-18	1300	98BPXLI 14 WA01	W	2						✓	✓	
3-18	1315	98BPXLI 14 WA02	W	2						✓	✓	
3-19	0200	98BPXLI 30 WA03	W	2						✓	✓	
3-19	0120	98BPXLI 30 WA01	W	2						✓	✓	
3-19	0140	98BPXLI 30 WA02	W	2						✓	✓	
		98BPXLI __ WA03										
3-19	0150	98BPXLI 30 WA6 2	W	1						NO	✓	BOD only
3-18	2110	98BPXLI 02 WA6 1	W	1						NO	✓	BOD only
		98BPXLI __ WA__										
		98BPXLI __ WA__										

Relinquished by:	Date Time	Hand Delivered (Y) N	Shipped Via N/A	Airbill Number Date Time
Received for Laboratory by:	Date Time	Cooler Temperature Upon Arrival °C		Laboratory Notified Faxed

Po' o

MAS 821354

Montgomery Watson
4100 Spenard Road
Anchorage AK 99517
(907)248-8313
Fax (907) 248-8384
ATTN: Lynn DeGeorge

Laboratory:
Multiform Analytical Services
2500 West International Airport Road
Anchorage, Alaska 99502
(907) 243-8273
(907) 243-8273 FAX
Attn: Mike Vogel

MW Job Number: 1189002
21-DAY TURNAROUND 330101

Sampler's Signature: 1998 [signature]

MAS#	Date	Time	Sample Identification	Matrix	Container	SOIL: VOCs - 8260 (2 x 2-oz amber glass)	SVOCs - 8270 (1 x 8-oz amber glass)	TOC - 415.1 (1 x 4-oz amber glass)	Grain Size - ASTM D422 (1 x 8-oz amber glass)	Particle Dens - ASTM D2487 (1 x 4-oz amber glass)		WATER: TPH - 1663 (250 ml poly)	TOC - 415.1 (1 x 250 ml amber)	Comments
-1	3-18	2210	98BPXL1 02 WA01	W	2							✓	✓	
-2	3-18	2130	98BPXL1 02 WA02	W	2							✓	✓	
-3	3-18	2200	98BPXL1 02 WA03	W	2							✓	✓	
-4	3-18	1530	98BPXL1 09 WA01	W	2							✓	✓	MS/MSD
-5	3-18	1540	98BPXL1 09 WA02	W	2							✓	✓	
-6	3-18	1550	98BPXL1 09 WA03	W	2							✓	✓	
-7	3-18	1300	98BPXL1 14 WA01	W	2							✓	✓	
-8	3-18	1315	98BPXL1 14 WA02	W	2							✓	✓	
-9	3-19	0200	98BPXL1 30 WA03	W	2							✓	✓	
-10	3-19	0120	98BPXL1 30 WA01	W	2							✓	✓	
-11	3-19	0140	98BPXL1 30 WA02	W	2							✓	✓	
			98BPXL1 ___ WA03											No Sample
-12	3-19	0150	98BPXL1 30 WA02		2							✓	✓	
-13	3-18	2110	98BPXL1 02 WA01		2							✓	✓	
			98BPXL1 ___ WA	LAST										
			98BPXL1 ___ WA											

Relinquished by: [signature] Date 3-20-98 Time 1000

Received for Laboratory by: [signature] Date 3/20 Time 10:00

Rush Delivered: Y N

Shipped Via:

Cooler Temperature: 4.8° 3.7° °C

Upon Arrival: 5.1° 11.7°

MAS# Number: Date: Time:

Laboratory Notified: Date:

P.2

BPXU nd

Pg 2 of 2

330101

Montgomery Watson
4100 Spenard Road
Anchorage AK 99517
(907)248-8883
Fax (907) 248-8884
ATTN: Lynn DeGeorge

Laboratory:
Multichem Analytical Services
2000 West International Airport Road
Anchorage, Alaska 99502
(907) 248-8273
(907) 248-8273 FAX
Attn: Mike Vogel

1189002, 330101 3/00
MW Job Number: G
110922.30101
21-DAY
TURNAROUND

MAS
821354

Sampler's Signature: [signature]

MAS#	Date	Time	Sample ID	Number	Container	SOIL VOCs- 8260b 2 x 2-oz amber glass	SVOCs- 8270 1 x 8-oz amber glass	TOC- 415.1 1 x 4-oz amber glass	Grain Size - ASTM D422 1 x 8-oz amber glass	Particle Size- ASTM D2487 1 x 4-oz amber glass		WATER TDS- 160.1 250 ml poly	TOC- 415.1 1 x 250 ml amber	Comments
-14	3-18	2210	98BPXLJ 02 SD01(01)	5	5	✓	✓	✓	✓	✓				
-15	3-18	2230	98BPXLJ 02 SD02(03)	5	5	✓	✓	✓	✓	✓				
-16	3-18	2330	98BPXLJ 02 SD03(09)	5	5	✓	✓	✓	✓	✓				
-17	3-18	1610	98BPXLJ 09 SD01(01)	5	5	✓	✓	✓	✓	✓				MS/MSD
-18	3-18	1620	98BPXLJ 09 SD02(03)	5	5	✓	✓	✓	✓	✓				
-19	3-18	1630	98BPXLJ 09 SD03(09)	5	5	✓	✓	✓	✓	✓				
-20	3-18	1330	98BPXLJ 14 SD01(01)	5	5	✓	✓	✓	✓	✓				
-21	3-18	1345	98BPXLJ 14 SD02(03)	5	5	✓	✓	✓	✓	✓				
-22	3-18	1400	98BPXLJ 14 SD03(09)	5	5	✓	✓	✓	✓	✓				
23	3-19	0230	98BPXLJ 30 SD01(01)	5	5	✓	✓	✓	✓	✓				
-24	3-19	0330	98BPXLJ 30 SD02(03)	5	5	✓	✓	✓	✓	✓				
-25	3-19	0330	98BPXLJ 30 SD03(09)	5	5	✓	✓	✓	✓	✓				
-26	3-19	0310	98BPXLJ 30 SD42(03)	5	3	✓	✓	✓						
-27	3-18	2200	98BPXLJ 02 SD62(03)	5	3	✓	✓	✓						
			98BPXLJ SD ( )											
			98BPXLJ SD ( )											

Relinquished by: [signature] Date 3-20-98 Time 1650 Hand Delivered Shipped Via

Received for Laboratory by: [signature] Date 3-20-98 Time 10:00 Cooler Temperature Upon Arrival °C

AAAR Number Date Time

Laboratory Work Bed Found

ultiChem Analytical Services, LLC **Anchorage, AK**

SAMPLE LOG-IN CHECKLIST

CESSION #: 821354 SUBCONTRACT WORK? YES / NO

NT NAME: Montgomery Watson TO LAB (circle): MAS-R OTHER: AKTestlab

GED-IN BY (print): Gary Fisher (sign): Gary Fisher

received: 3/20/98 Client's Cooler # (if any):

the project for: ACOE? YES / NO NAVY? YES / NO

Did cooler arrive with shipping document?	(Hand delivery) N/A	YES	NO
Are Custody seals present on cooler? YES / NO How many? Where?			
Seal date: Seal name: Intact?	N/A	YES	NO
Are Custody seals present on sample containers?		YES	NO
If "YES", intact?	N/A	YES	NO
s the Chain of Custody (C-O-C) sealed in plastic bag? YES / NO Taped to cooler lid?		YES	NO
Is the C-O-C complete? * Relinquished by client: YES / NO Analyses marked off:		YES	NO
C-O-C or other representative documents, letters, and/or shipping memos. Signed/received by lab:		YES	NO
s the C-O-C in agreement with samples received?			
Sample ID's: YES / NO Matrix:		YES	NO
Date sampled: YES / NO # Containers:		YES	NO
Has the main logbook been filled out properly?		YES	NO
If samples are RUSH has notice been given?	N/A	YES	NO
proper preservation indicated on label(s)?	N/A	YES	NO
Did pH check verify preservative indicated?	(Volatiles) N/A	YES	NO
re sufficient sample volume for analyses?		YES	NO
amples in proper containers? (see reference chart)		YES	NO
all samples within holding times for requested analysis?		YES	NO
all sample containers intact? (i.e. not broken, leaking...)		YES	NO
are samples individually bagged ?		YES	NO
re all volatile samples headspace-free (<pea-size for waters)?	N/A	YES	NO

ipping container (circle one): Cooler / Box / Other:

Type of packing material used (circle one): Bubble Wrap / Styrofoam Peanuts / Vermiculite / None

frigerant (circle one): Gel Ice / Loose Ice / Other: / None

s refrigerant frozen upon receipt? YES / NO

Cooler temperature(s): #3) 5.1°C #4) 11.7°C #1: 4.8 °C #2: 3.7 °C

e tagging check for QC:

ple ID's issued in order of appearance on C-O-C:	YES	NO
laced in appropriate areas of sample containers:	YES	NO

of reviewer:

ribe any "NO" items from checklist above: Sample #1 Time on label = 21:00, on COC = 2210, all else matches

mples #14-25 only four of each not five as listed on (COC), ~~Samples #1-13 only five of each not Two as listed.~~

ent contacted: YES / NO / N/A Date: Name of person contacted:

lient instructions or actions taken:

Quanterra Incorporated - West Sacramento
PROJECT RECEIPT CHECKLIST

Client Name: Montgomery Watson Log #: 50-2

Project # (LIMS ID): 98184 Project copied:

Location(s): W2E

		Initials	Date
Date Received: 3-21-98 Time Received: 0930		AH	3-21-98
Delivered by:	☒ Federal Express ☐ Airborne ☐ Courier Express ☐ DHL ☐ White Cotton Delivers ☐ UPS ☐ Over the counter (OTC) ☐ Go-Getters Other:		
Custody Seal Status:	☒ Intact ☐ Broken ☐ N/A		
Custody Seal Number(s):	17451, 17452		
Shipping Container(s):	☐ Quanterra ☒ Client ☐ N/A		
Temperature Record (in °C):			
COC#:	N/A		
Temp Blank:			
Ambient Temp:	4°C		
pH Measured:	☐ Yes ☐ Anomaly ☒ N/A		
Sample(s) Labeled By:			
Sample Labeling Checked By:			
Short Hold Time Notification:	Sample Receiving ☒ N/A		
	Wet Chem ☒ N/A		
	Metals (Filt/Pres) ☒ N/A		
☒ Complete shipment received in good condition, with appropriate temperatures, containers, and preservatives.	☐ N/A	✓	✓

☐ Anomaly (-ies)/comments: ☐ Temperature exceeded (2°C-6°C)

☐ PM notified ☒ N/A

Leave no spaces blank. Use "N/A" if not applicable. Initial and date all "N/A" entries. QA185 02/96 MCD

Montgomery Watson
4100 Spenard Road
Anchorage AK 99517
(907)248-8883
Fax (907) 248-8884
ATTN: Lynn DeGeorge

Laboratory:
Quanterra
880 Riverside Parkway
West Sacramento, CA 95605
(916) 374-4427
(916) 372-1059 FAX
Attn: Nile Ligi

MW Job Number:

21-DAY TURNAROUND

Sampler's Signature: Burcham

Date	Time	Sample ID	Matrix	Total Containers	SOIL: Metals- Mercury- 7471, Arsenic, Barium, Chromium, Lead- 6020, Ecc glass						WATER		Comments
					Cool to 4 degrees C								
3-18	2210	98BPXLI 02 SD01(01)	S	1	✓								
3-18	2230	98BPXLI 02 SD02(03)	S	1	✓								
3-18	2330	98BPXLI 02 SD03(09)	S	1	✓								
3-18	1610	98BPXLI 09 SD01(01)	S	1	✓								MS/MSD
3-18	1620	98BPXLI 09 SD02(03)	S	1	✓								
3-18	1630	98BPXLI 09 SD03(09)	S	1	✓								
3-18	1330	98BPXLI 14 SD01(01)	S	1	✓								
3-18	1345	98BPXLI 14 SD02(03)	S	1	✓								
3-18	1400	98BPXLI 14 SD03(09)	S	1	✓								
3-19	0250	98BPXLI 30 SD01(01)	S	1	✓								
3-19	0350	98BPXLI 30 SD02(03)	S	1	✓								
3-19	0330	98BPXLI 30 SD03(09)	S	1	✓								
3-18	2220	98BPXLI 02 SD62(03)	S	1	✓								
3-18	0310	98BPXLI 30 SD62(03)	S	1	✓								
		98BPXLI SD ( )						Last Item					
		98BPXLI SD ( )											80169535 8828

Relinquished by: Burcham	Date 3-19-98 Time 1700	Hand Delivered Y (N)	Shipped Via Fed Ex	Airbill Number	Date / Time
Received for Laboratory by: [illegible]	Date 3-19-98 Time 1100	Cooler Temperature Upon Arrival 40c	032198	Laboratory Notified Date	032198 15:30

Rec'd in good condition
032198 mer

P.03

Montgomery Watson
4100 Spenard Road
Anchorage AK 99517
(907)248-8883
Fax (907) 248-8884
ATTN: Lynn DeGeorge

Laboratory:
Quanterra
880 Riverside Parkway
West Sacramento, CA 95606
(916) 374-4427
(916) 372-1059 FAX
Attn: Nilo Ligi

MW Job Number:

21-DAY
TURNAROUND

Sampler's Signature: 1958 [signature]

Date	Time	Sample ID	Matrix	Total Container	SOIL						WATER	Metals Arsenic, Barium, Chromium, Lead- 6020, Mercury- 7471 1 poly	Comments
					Cool to 4 degree C							Cool to 4 degree C pH	
3-18	2100	98BPXLI02 WA01	W	1								✓	
3-18	2130	98BPXLI02 WA02	W	1								✓	
3-18	2200	98BPXLI02 WA03	W	1								✓	
3-18	1530	98BPXLI09 WA01	W	1								✓	
3-18	1540	98BPXLI09 WA02	W	1								✓	
3-18	1550	98BPXLI09 WA03	W	1								✓	
3-18	1300	98BPXLI14 WA01	W	1									
3-19	1315	98BPXLI14 WA02	W	1									
3-19	0200	98BPXLI30 WA03	W	1									
3-19	0120	98BPXLI30 WA01	W	1									
3-19	140	98BPXLI30 WA02	W	1									
		~~98BPXLI WA03~~			NO SAMPLE								
3-19	150	98BPXLI30 WA03	W	1									
3-18	2110	98BPXLI02 WA01	W	1									
		98BPXLI WA			LAST ITEM								
		98BPXLI WA											801695358828

Relinquished by: [signature]	Date 3-19-98 Time 1700	Hand Delivered Y N	Shipped Via Fed X	Airbill Number	Date Time
Received for Laboratory by: [signature]	Date 3-21-98 Time 1100	Cooler Temperature Upon Arrival 4°C °C		Laboratory Modified Field [signature]	03498 15:30

03298 MLP

seal in good condition

P.04

CALLAB-098184

:erra Environmental Services, Sacramento -
'verside Parkway

amento, California 95605
3-5600

Date Received : 21 MAR 98 09:30

mn DeGeorge
mery Watson -
penard Road
rage, Alaska
99517

248-8883 Fax: (907) 248-8884

Project ID,
EPA Case, RMA Lot : ICPMS Metals + Hg

P.O. Number :

Delivered By :

Storage Location : W2E

Logged in by : KGONYEA

l) and aqueous(13) samples received in good condition under
-of-Custody. Delivered by Federal Express.

ID	Client's label info		Date/Time Samp.	Containers
4-0001-SA	98BPXLI02SD01(01)		18 MAR 98 22:10	125CGJ
0002-SA	98BPXLI02SD02(03)		18 MAR 98 22:30	125CGJ
0003-SA	98BPXLI02SD03(09)		18 MAR 98 23:30	125CGJ
4-0004-SA	98BPXLI09SD01(01)		18 MAR 98 16:10	125CGJ
4-0004-MS	98BPXLI09SD01(01)	Matrix Spike	18 MAR 98 16:10	Matrix Spike
04-SD	98BPXLI09SD01(01)	Matrix Spike	18 MAR 98 16:10	Matrix Spike Dup
0005-SA	98BPXLI09SD02(03)		18 MAR 98 16:20	125CGJ
0006-SA	98BPXLI09SD03(09)		18 MAR 98 16:30	125CGJ
0007-SA	98BPXLI14SD01(01)		18 MAR 98 13:30	125CGJ
0008-SA	98BPXLI14SD02(03)		18 MAR 98 13:45	125CGJ
-0009-SA	98BPXLI14SD03(09)		18 MAR 98 14:00	125CGJ
4-0010-SA	98BPXLI30SD01(01)		19 MAR 98 02:50	125CGJ
0011-SA	98BPXLI30SD02(03)		19 MAR 98 03:00	125CGJ
0012-SA	98BPXLI30SD03(09)		19 MAR 98 03:30	125CGJ
-0013-SA	98BPXLI02SD62(03)		18 MAR 98 22:20	125CGJ
4-0014-SA	98BPXLI30SD62(03)		18 MAR 98 03:10	125CGJ
0015-SA	98BPXLI02WA01		18 MAR 98 21:00	500PBn
0016-SA	98BPXLI02WA02		18 MAR 98 21:30	500PBn
4-0017-SA	98BPXLI02WA03		18 MAR 98 22:00	500PBn
4-0018-SA	98BPXLI09WA01		18 MAR 98 15:30	500PBn
0019-SA	98BPXLI09WA02		18 MAR 98 15:40	500PBn
0020-SA	98BPXLI09WA03		18 MAR 98 15:50	500PBn
4-0021-SA	98BPXLI14WA01		18 MAR 98 13:00	500PBn
0022-SA	98BPXLI14WA02		18 MAR 98 13:15	500PBn
0023-SA	98BPXLI30WA03		19 MAR 98 02:00	500PBn

Samples not destroyed in testing are retained a maximum
of thirty (30) days unless otherwise requested.

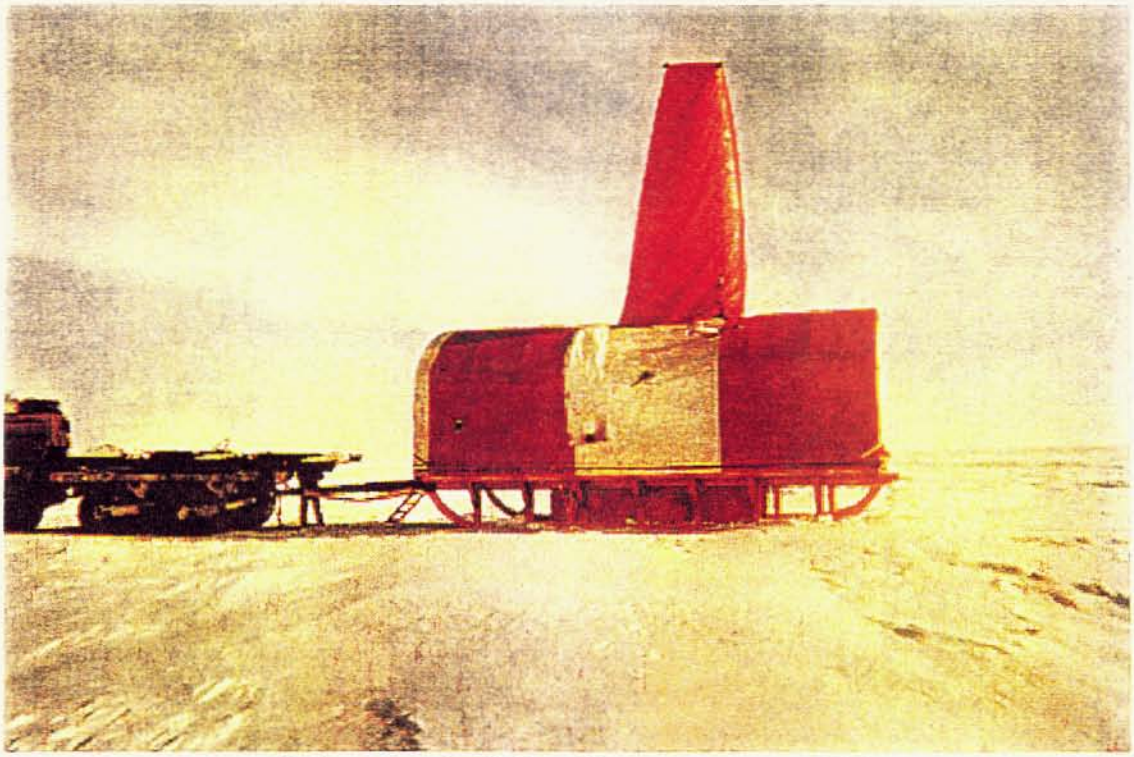
:t Manager:

)	Client's label info	Date/Time Samp.	Containers
024-SA	98BPXLI30WA01	19 MAR 98 01:20	500PBn
-0025-SA	98BPXLI30WA02	19 MAR 98 01:40	500PBn
0026-SA	98BPXLI30WA62	19 MAR 98 01:50	500PBn
B4-0027-SA	98BPXLI02WA61	18 MAR 98 21:10	500PBn

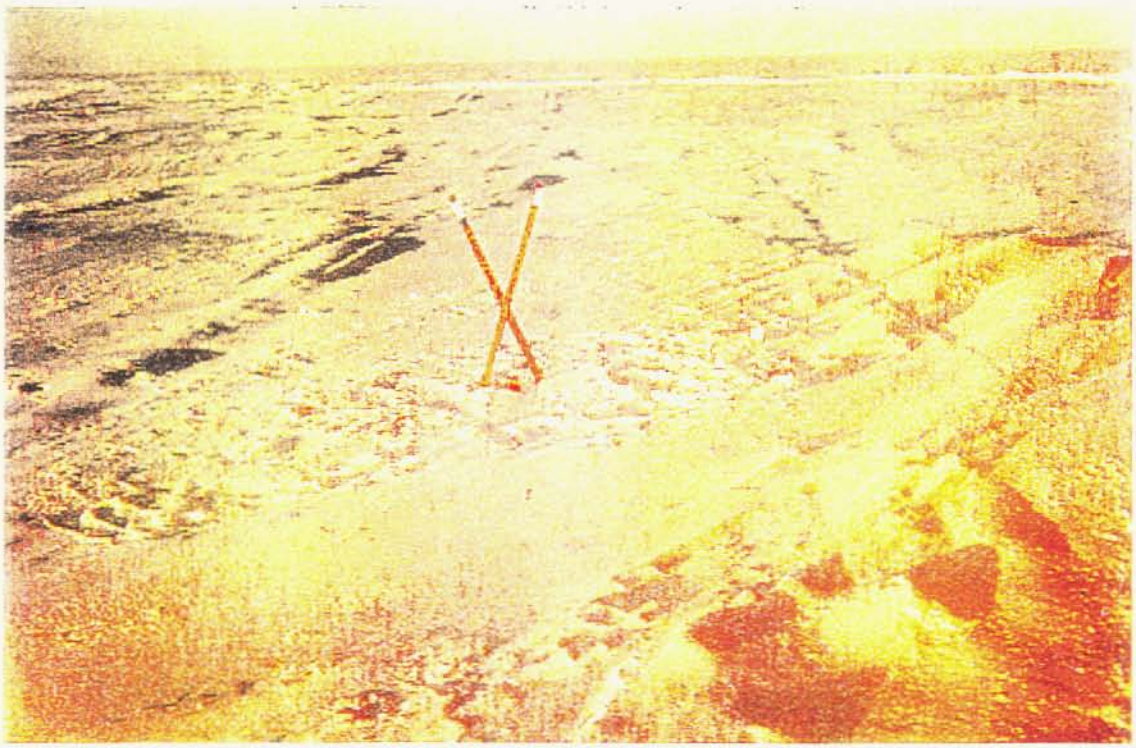
Samples not destroyed in testing are retained a maximum of thirty (30) days unless otherwise requested.

: Manager:

APPENDIX C
Photographs



Roligon and drill rig with enclosure on skid



Sampling location DMA 98-2

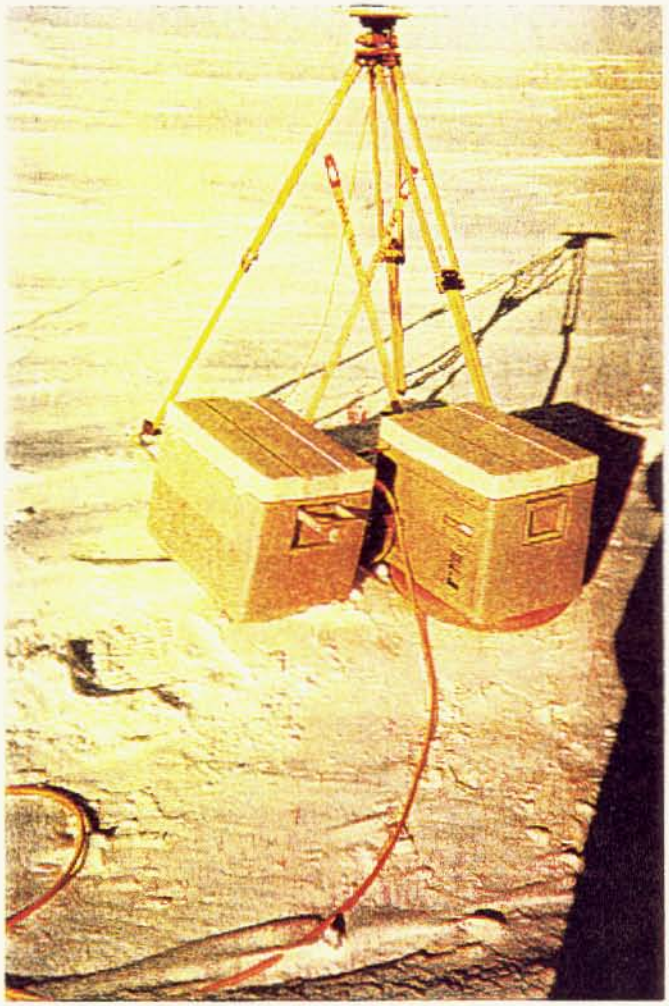
MONTGOMERY WATSON

Anchorage, Alaska

BP EXPLORATION (ALASKA) INC.
LIBERTY ISLAND ROUTE WATER / SEDIMENT SAMPLING

1998 SAMPLING LOCATION DMA 98-2

JOB No. 1 300101



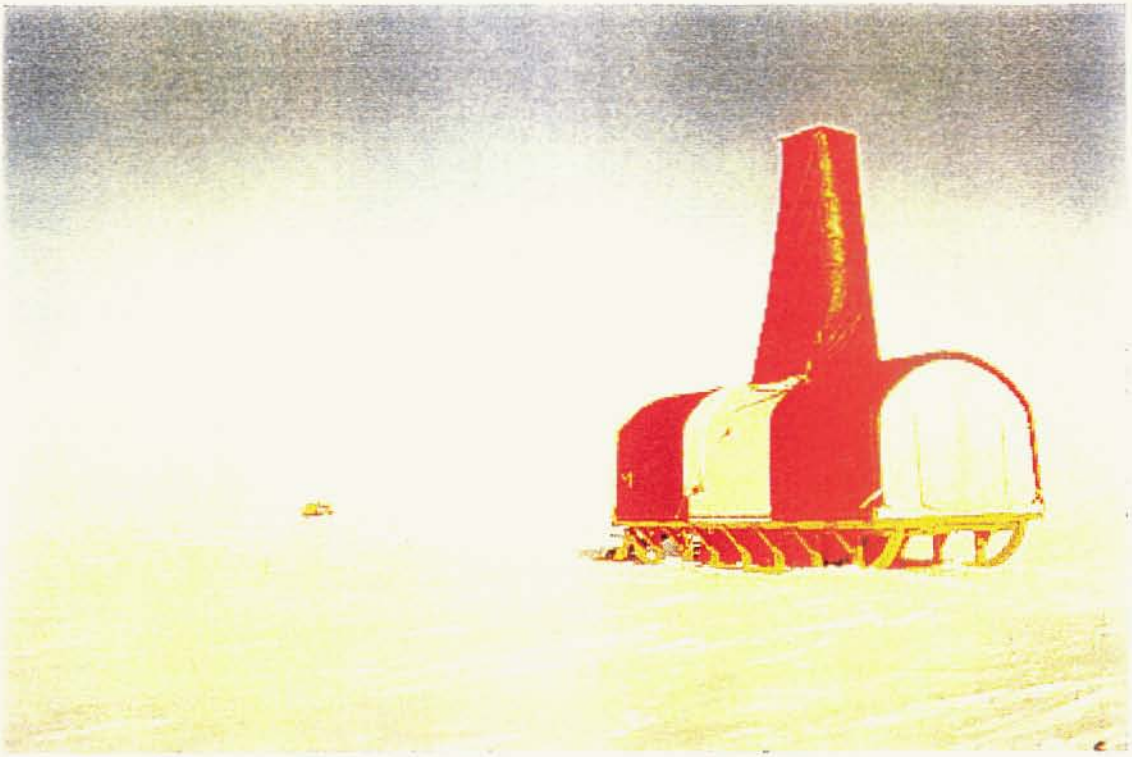
MONTGOMERY WATSON

Anchorage, Alaska

BP EXPLORATION (ALASKA) INC.
LIBERTY ISLAND ROUTE WATER / SEDIMENT SAMPLING

1998 SAMPLING LOCATION 98-9

JOB No. 1 300101



Drilling rig enclosure on skid at DMA 98-14

Sampling Location DMA 98-14

MONTGOMERY WATSON

Anchorage, Alaska

BP EXPLORATION (ALASKA) INC.
LIBERTY ISLAND ROUTE WATER / SEDIMENT SAMPLING

1998 SAMPLING LOCATION DMA 98-14

JOB No. 300101

APPENDIX D

a. Laboratory Data Sheets-Quanterra

Quanterra Incorporated
880 Riverside Parkway
West Sacramento, California 95605

916 373-5600 Telephone
916 372-1059 Fax

Quanterra Environmental Services

May 5, 1998

QUANTERRA INCORPORATED PROJECT NUMBER: 098184
PO/CONTRACT: NA

Lynn DeGeorge
Montgomery Watson
4100 Spenard Road
Anchorage, AK 99517

Dear Ms DeGeorge,

This report contains the analytical results for the fourteen soil and thirteen aqueous samples received under chain of custody by Quanterra Incorporated on March 21, 1998.

The case narrative is an integral part of this report.

If you have any questions, please feel free to call me at (916)374-4381.

Sincerely,

Jon Gildersleeve
Project Manager

Quanterra
Environmental Services

TABLE OF CONTENTS

QUANTERRA INCORPORATED PROJECT NUMBER 098184

Quanterra
Environmental Services

CASE NARRATIVE

QUANTERRA INCORPORATED PROJECT NUMBER 098184

General Comments

All samples were received in good condition. The cooler ambient temperature was was recorded to be 4°C.

All soil sample results are reported in dry weight.

Selected Metals - Methods 6020 & 7471

Due to matrix interference all aqueous samples were analyzed at 10x dilutions (when analyzed at 1x and 5x dilutions, CCV recoveries and CCV/CCB internal standard recoveries could not be maintained within criteria).

Matrix QC performed on sample 98BPXLI09SD01(01) (Lab Id: 098184-0004) had above limit recoveries of the spiked analyte Barium (161% and 131%). Re-analysis confirmed the high recoveries which are attributed to matrix.

There were no other anomalies associated with this project.

Quanterra
Environmental Services

Quanterra - Western Region

Quality Control Definitions

QC Parameter	Definition
QC Batch	A set of up to 20 field samples plus associated laboratory QC samples that are similar in composition (matrix) and that are processed within the same time period with the same reagent and standard lots.
Duplicate Control Sample (DCS)	Consist of a pair of LCSs analyzed within the same QC batch to monitor precision and accuracy independent of sample matrix effects. This QC is performed only if required by client or when insufficient sample is available to perform MS/MSD.
Duplicate Sample (DU)	A second aliquot of an environmental sample, taken from the same sample container when possible, that is processed independently with the first sample aliquot. The results are used to assess the effect of the sample matrix on the precision of the analytical process. The precision estimated using this sample is not necessarily representative of the precision for other samples in the batch.
Laboratory Control Sample (LCS)	A volume of reagent water for aqueous samples or a contaminant-free solid matrix (Ottawa sand) for soil and sediment samples which is spiked with known amounts of representative target analytes and required surrogates. An LCS is carried through the entire analytical process and is used to monitor the accuracy of the analytical process independent of potential matrix effects.
Matrix Spike and Matrix Spike Duplicate (MS/MSD)	A field sample fortified with known quantities of target analytes that are also added to the LCS. Matrix spike duplicate is a second matrix spike sample. MSs/MSDs are carried through the entire analytical process and are used to determine sample matrix effect on accuracy of the measurement system. The accuracy and precision estimated using MS/MSD is only representative of the precision of the sample that was spiked.
Method Blank (MB)	A sample composed of all the reagents (in the same quantities) in reagent water carried through the entire analytical process. The method blank is used to monitor the level of contamination introduced during sample preparation steps.
Surrogate Spike	Organic constituents not expected to be detected in environmental media and are added to every sample and QC at a known concentration. Surrogates are used to determine the efficiency of the sample preparation and the analytical process.

Source: Quanterra® Quality Control Program, Policy QA-003, Rev. 0, 8/19/96.

Quanterra
Environmental Services

SAMPLE DESCRIPTION INFORMATION
for
Montgomery Watson

Lab ID	Client ID		Matrix	Sampled Date	Sampled Time	Received Date
098184-0001-SA	98BPXLI02SD01(01)		SOIL	18 MAR 98	22:10	21 MAR 98
098184-0002-SA	98BPXLI02SD02(03)		SOIL	18 MAR 98	22:30	21 MAR 98
098184-0003-SA	98BPXLI02SD03(09)		SOIL	18 MAR 98	23:30	21 MAR 98
098184-0004-SA	98BPXLI09SD01(01)		SOIL	18 MAR 98	16:10	21 MAR 98
098184-0004-MS	98BPXLI09SD01(01)	Matrix Spike	SOIL	18 MAR 98	16:10	21 MAR 98
098184-0004-SD	98BPXLI09SD01(01)	Matrix Spike	SOIL	18 MAR 98	16:10	21 MAR 98
098184-0005-SA	98BPXLI09SD02(03)		SOIL	18 MAR 98	16:20	21 MAR 98
098184-0006-SA	98BPXLI09SD03(09)		SOIL	18 MAR 98	16:30	21 MAR 98
098184-0007-SA	98BPXLI14SD01(01)		SOIL	18 MAR 98	13:30	21 MAR 98
098184-0008-SA	98BPXLI14SD02(03)		SOIL	18 MAR 98	13:45	21 MAR 98
098184-0009-SA	98BPXLI14SD03(09)		SOIL	18 MAR 98	14:00	21 MAR 98
098184-0010-SA	98BPXLI30SD01(01)		SOIL	19 MAR 98	02:50	21 MAR 98
098184-0011-SA	98BPXLI30SD02(03)		SOIL	19 MAR 98	03:00	21 MAR 98
098184-0012-SA	98BPXLI30SD03(09)		SOIL	19 MAR 98	03:30	21 MAR 98
098184-0013-SA	98BPXLI02SD62(03)		SOIL	18 MAR 98	22:20	21 MAR 98
098184-0014-SA	98BPXLI30SD62(03)		SOIL	18 MAR 98	03:10	21 MAR 98
098184-0015-SA	98BPXLI02WA01		AQUEOUS	18 MAR 98	21:00	21 MAR 98
098184-0016-SA	98BPXLI02WA02		AQUEOUS	18 MAR 98	21:30	21 MAR 98
098184-0017-SA	98BPXLI02WA03		AQUEOUS	18 MAR 98	22:00	21 MAR 98
098184-0018-SA	98BPXLI09WA01		AQUEOUS	18 MAR 98	15:30	21 MAR 98
098184-0019-SA	98BPXLI09WA02		AQUEOUS	18 MAR 98	15:40	21 MAR 98
098184-0020-SA	98BPXLI09WA03		AQUEOUS	18 MAR 98	15:50	21 MAR 98
098184-0021-SA	98BPXLI14WA01		AQUEOUS	18 MAR 98	13:00	21 MAR 98
098184-0022-SA	98BPXLI14WA02		AQUEOUS	18 MAR 98	13:15	21 MAR 98
098184-0023-SA	98BPXLI30WA03		AQUEOUS	19 MAR 98	02:00	21 MAR 98
098184-0024-SA	98BPXLI30WA01		AQUEOUS	19 MAR 98	01:20	21 MAR 98
098184-0025-SA	98BPXLI30WA02		AQUEOUS	19 MAR 98	01:40	21 MAR 98
098184-0026-SA	98BPXLI30WA62		AQUEOUS	19 MAR 98	01:50	21 MAR 98
098184-0027-SA	98BPXLI02WA61		AQUEOUS	18 MAR 98	21:10	21 MAR 98
098184-0027-MS	98BPXLI02WA61		AQUEOUS	18 MAR 98	21:10	21 MAR 98
098184-0027-SD	98BPXLI02WA61		AQUEOUS	18 MAR 98	21:10	21 MAR 98

Montgomery Watson
4100 Spenard Road
Anchorage AK 99517
(907)248-8883
Fax (907) 248-8884
ATTN: Lynn DeGeorge

Laboratory:
Quanterra
880 Riverside Parkway
West Sacramento, CA 95606
(916) 374-4427
(916) 372-1059 FAX
Attn: Nilo Ligi

MW Job Number:

21-DAY TURNAROUND

Sampler's Signature 1498 Burcham

Cool to 4 degrees C

SOIL: Metals- Mercury- 7471, Arsenic, Barium, Chromium, Lead- 6020, 8-oz glass

WATER

Comments

Date	Time	Sample ID	Matrix	Total Containers	Metals- Mercury- 7471, Arsenic, Barium, Chromium, Lead- 6020, 8-oz glass								Comments
3-18	2210	98BPXLI 02 SD01(01)	S	1	✓								
3-18	2230	98BPXLI 02 SD02(03)	S	1	✓								
3-18	2330	98BPXLI 02 SD03(09)	S	1	✓								
3-18	1610	98BPXLI 09 SD01(01)	S	1	✓								MS/MSD
3-18	1620	98BPXLI 09 SD02(03)	S	1	✓								
3-18	1630	98BPXLI 09 SD03(09)	S	1	✓								
3-18	1330	98BPXLI 14 SD01(01)	S	1	✓								
3-18	1345	98BPXLI 14 SD02(03)	S	1	✓								
3-18	1400	98BPXLI 14 SD03(09)	S	1	✓								
3-19	0250	98BPXLI 30 SD01(01)	S	1	✓								
3-19	0300	98BPXLI 30 SD02(03)	S	1	✓								
3-19	0330	98BPXLI 30 SD03(09)	S	1	✓								
3-18	2220	98BPXLI 02 SD62(03)	S	1	✓								
3-18	0310	98BPXLI 30 SD62(03)	S	1	✓								
		98BPXLI __ SD__(__)						LAST	ITEM				
		98BPXLI __ SD__(__)											801695358828

Relinquished by: Burcham	Date 3-19-98 Time 1700	Hand Delivered Y (N)	Shipped Via Fedex	Airbill Number	Date / Time
Received for Laboratory by: Cindy Hyde	Date 3-21-98 Time 1100	Cooler Temperature Upon Arrival 4°C	032198 MM	Laboratory Notified Faxed Marla Deloe	032198 MMD 15:30

Rec'd in good condition 032198 MM

Montgomery Watson
4100 Spenard Road
Anchorage AK 99517
(907)248-8883
Fax (907) 248-8884
ATTN: Lynn DeGeorge

Laboratory:
Quanterra
880 Riverside Parkway
West Sacramento, CA 95606
(916) 374-4427
(916) 372-1059 FAX
Attn: Niki Ligi

MW Job Number:

21-DAY TURNAROUND

Sampler's Signature: 1958 [signature]

Date	Time	Sample ID	Matrix	Total Containers	SOIL						WATER	Metals Arsenic, Barium, Chromium, Lead- 6020, Mercury- 7471 1 l poly	Comments
					Cool to 4 degrees C						Cool to 4 degrees C	HNO_3	
3-18	2100	98BPXLI02 WA01	W	1								✓	
3-18	2130	98BPXLI02 WA02	W	1								✓	
3-18	2200	98BPXLI02 WA03	W	1								✓	
3-18	1530	98BPXLI09 WA01	W	1								✓	
3-18	1540	98BPXLI09 WA02	W	1								✓	
3-18	1550	98BPXLI09 WA03	W	1								✓	
3-18	1300	98BPXLI14 WA01	W	1									
3-18	1315	98BPXLI14 WA02	W	1									
3-19	0200	98BPXLI30 WA03	W	1									
3-19	0120	98BPXLI30 WA01	W	1									
3-19	140	98BPXLI30 WA02	W	1									
		~~98BPXLI___ WA03~~			NO SAMPLE								
3-19	150	98BPXLI30 WA6~~2~~	W	1									
3-19	2110	98BPXLI02 WA~~6~~1	W	1									
		~~98BPXLI___ WA__~~			LAST ITEM								
		98BPXLI___ WA__											

Relinquished by: [signature]	Date 3-19-98 Time 1700	Hand Delivered Y (N)	Shipped Via Fed X	Airbill Number 801695358828	Date Time
Received for Laboratory by: [signature]	Date 3-21-98 Time 1100	Cooler Temperature Upon Arrival 4°C	°C	Laboratory Notified Faxed [signature] 032498 15:30	

032198 MLP

Rec'd in good condition

Quanterra Incorporated - West Sacramento
PROJECT RECEIPT CHECKLIST

Client Name: Montgomery Watson Log #: 50-2

Project # (LIMS ID): 98184 Project copied:

Location(s): W2E

		Initials	Date
Date Received: 3-21-98 Time Received: 0930		AH	3-21-98

Delivered by:
- [x] Federal Express
- [ ] Airborne
- [ ] Courier Express
- [ ] DHL
- [ ] White Cotton Delivers
- [ ] UPS
- [ ] Over the counter (OTC)
- [ ] Ge-Getters

Other:

Custody Seal Status: [x] Intact [ ] Broken [ ] N/A

Custody Seal Number(s): 17451, 17452

Shipping Container(s): [ ] Quanterra [x] Client [ ] N/A

Temperature Record (in °C):

COC#: N/A

Temp Blank: ✓

Ambient Temp: 4°C

pH Measured: [ ] Yes [ ] Anomaly [x] N/A

Sample(s) Labeled By: .....

Sample Labeling Checked By: .....

Short Hold Time Notification:
- Sample Receiving [x] N/A
- Wet Chem [x] N/A
- Metals (Filt/Pres) [x] N/A

[x] Complete shipment received in good condition, with appropriate temperatures, containers, and preservatives. [ ] N/A

[ ] Anomaly (-ies)/comments: [ ] Temperature exceeded (2°C-6°C)

[ ] PM notified [x] N/A

Leave no spaces blank. Use "N/A" if not applicable. Initial and date all "N/A" entries. QA185 02/96 MCD

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
OA																				
OAh																				
GB																				
GBs																				
0AGB																				
0AGBn																				
0AGBs																				
0AGBna																				
GJ																				
0 AGB/AGJ																				
0AGJ																				
_CGJ																				
0CGJ																032198				
0CGJ	(#14)														#15-27					
5 CGJ/AGJ																				
/PJ																				
n/PJn																				
PB															(#15-27)					
PBn																				
PBna																				
PBzn/na																				
PB																				
PBn																				
PBna																				
PBzn/na																				
_"CT																				
lder/Filter																				
F																				
TRI																				
D Trap																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

a = hydrochloric acid na = sodium hydroxide n = nitric acid zn = zinc acetate s = sulfuric acid

* Number of VOA's with air bubbles present

Quanterra
Environmental Services

COELT Error Summary Report

Error Summary Log

05/04/98

EDF 1.2a All files present in deliverable.

Laboratory:	Quanterra Environmental Services, Sacramento, CA
Lab Report Number:	098184
Project Name:	General Analytical
Work Order Number:	N/A
Control Sheet Number:	N/A

Report Summary

Labreport	Sampid	Labsampid	Mtrx	QC	Anmcode	Extmcode	Logdate	Extdate	Anadate	Labloctd	Run Sub
098184	98BPXLI02SD01(01)	0981840001SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI02SD01(01)	0981840001SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI02SD01(01)	0981840001SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI02SD02(03)	0981840002SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI02SD02(03)	0981840002SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI02SD02(03)	0981840002SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI02SD03(09)	0981840003SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI02SD03(09)	0981840003SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI02SD03(09)	0981840003SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI02SD62(03)	0981840013SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI02SD62(03)	0981840013SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI02SD62(03)	0981840013SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI02WA01	0981840015SA	WG	CS	SW6020	SW3020	03/18/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI02WA01	0981840015SA	WG	CS	SW7470	METHOD	03/18/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI02WA02	0981840016SA	WG	CS	SW6020	SW3020	03/18/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI02WA02	0981840016SA	WG	CS	SW7470	METHOD	03/18/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI02WA03	0981840017SA	WG	CS	SW6020	SW3020	03/18/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI02WA03	0981840017SA	WG	CS	SW7470	METHOD	03/18/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI02WA61	0981840027SA	WG	CS	SW6020	SW3020	03/18/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI02WA61	0981840027SA	WG	CS	SW7470	METHOD	03/18/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI09SD01(01)	0981840004SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI09SD01(01)	0981840004SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI09SD01(01)	0981840004SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI09SD02(03)	0981840005SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI09SD02(03)	0981840005SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI09SD02(03)	0981840005SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI09SD03(09)	0981840006SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI09SD03(09)	0981840006SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI09SD03(09)	0981840006SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI09WA01	0981840018SA	WG	CS	SW6020	SW3020	03/18/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI09WA01	0981840018SA	WG	CS	SW7470	METHOD	03/18/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI09WA02	0981840019SA	WG	CS	SW6020	SW3020	03/18/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI09WA02	0981840019SA	WG	CS	SW7470	METHOD	03/18/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI09WA03	0981840020SA	WG	CS	SW6020	SW3020	03/18/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI09WA03	0981840020SA	WG	CS	SW7470	METHOD	03/18/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI14SD01(01)	0981840007SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI14SD01(01)	0981840007SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI14SD01(01)	0981840007SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI14SD02(03)	0981840008SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1

Report Summary

Labreport	Sampid	Labsampid	Mtrx	QC	Anmcode	Extncode	Logdate	Extdate	Anadate	Labloicll	Run Sub
098184	98BPXLI14SD02(03)	0981840008SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI14SD02(03)	0981840008SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI14SD03(09)	0981840009SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI14SD03(09)	0981840009SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI14SD03(09)	0981840009SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI14WA01	0981840021SA	WG	CS	SW6020	SW3020	03/18/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI14WA01	0981840021SA	WG	CS	SW7470	METHOD	03/18/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI14WA02	0981840022SA	WG	CS	SW6020	SW3020	03/18/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI14WA02	0981840022SA	WG	CS	SW7470	METHOD	03/18/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI30SD01(01)	0981840010SA	SO	CS	D2216	NONE	03/19/98	04/15/98	04/15/98	098184	1
098184	98BPXLI30SD01(01)	0981840010SA	SO	CS	SW6020	SW3050	03/19/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI30SD01(01)	0981840010SA	SO	CS	SW7471	METHOD	03/19/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI30SD02(03)	0981840011SA	SO	CS	D2216	NONE	03/19/98	04/15/98	04/15/98	098184	1
098184	98BPXLI30SD02(03)	0981840011SA	SO	CS	SW6020	SW3050	03/19/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI30SD02(03)	0981840011SA	SO	CS	SW7471	METHOD	03/19/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI30SD03(09)	0981840012SA	SO	CS	D2216	NONE	03/19/98	04/15/98	04/15/98	098184	1
098184	98BPXLI30SD03(09)	0981840012SA	SO	CS	SW6020	SW3050	03/19/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI30SD03(09)	0981840012SA	SO	CS	SW7471	METHOD	03/19/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI30SD62(03)	0981840014SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI30SD62(03)	0981840014SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI30SD62(03)	0981840014SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI30WA01	0981840024SA	WG	CS	SW6020	SW3020	03/19/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI30WA01	0981840024SA	WG	CS	SW7470	METHOD	03/19/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI30WA02	0981840025SA	WG	CS	SW6020	SW3020	03/19/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI30WA02	0981840025SA	WG	CS	SW7470	METHOD	03/19/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI30WA03	0981840023SA	WG	CS	SW6020	SW3020	03/19/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI30WA03	0981840023SA	WG	CS	SW7470	METHOD	03/19/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI30WA62	0981840026SA	WG	CS	SW6020	SW3020	03/19/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI30WA62	0981840026SA	WG	CS	SW7470	METHOD	03/19/98	04/10/98	04/10/98	W980409BX	1
		0981840004DU	SO	LR1	D2216	NONE	/ /	04/29/98	04/29/98	098184	1
		BS980403F	SQ	BS1	SW6020	SW3050	/ /	04/03/98	04/09/98	S980403FX	1
		LB980403F	SQ	LB1	SW6020	SW3050	/ /	04/03/98	04/09/98	S980403FX	1
		0981840004MS	SO	MS1	SW6020	SW3050	/ /	04/03/98	04/09/98	S980403FX	1
		0981840004SD	SO	SD1	SW6020	SW3050	/ /	04/03/98	04/09/98	S980403FX	1
		BS980410B	SQ	BS1	SW7471	METHOD	/ /	04/10/98	04/11/98	S980410BX	1
		LB980410B	SQ	LB1	SW7471	METHOD	/ /	04/10/98	04/11/98	S980410BX	1
		0981840004MS	SO	MS1	SW7471	METHOD	/ /	04/10/98	04/11/98	S980410BX	1
		0981840004SD	SO	SD1	SW7471	METHOD	/ /	04/10/98	04/11/98	S980410BX	1

Report Summary

Labreport	Sampid	Labsampid	Mtrx	QC	Anmcode	Exmcode	Logdate	Extdate	Anadate	Lablotctl	Run	Sub
		BS980402M	WQ	BS1	SW6020	SW3020	/ /	04/02/98	04/08/98	W980402MX	1	
		LB980402M	WQ	LB1	SW6020	SW3020	/ /	04/02/98	04/08/98	W980402MX	1	
		0981840027MS	WG	MS1	SW6020	SW3020	/ /	04/02/98	04/08/98	W980402MX	1	
		0981840027SD	WG	SD1	SW6020	SW3020	/ /	04/02/98	04/08/98	W980402MX	1	
		BS980409B	WQ	BS1	SW7470	METHOD	/ /	04/09/98	04/10/98	W980409BX	1	
		LB980409B	WQ	LB1	SW7470	METHOD	/ /	04/09/98	04/10/98	W980409BX	1	
		0981840027MS	WG	MS1	SW7470	METHOD	/ /	04/10/98	04/10/98	W980409BX	1	
		0981840027SD	WG	SD1	SW7470	METHOD	/ /	04/10/98	04/10/98	W980409BX	1	

Npdlsamp: Error Summary Log

05/04/98

Error type	Logcode	Projname	Npdlwo	Sampid	Matrix
There are no errors in this data file					

Npdlte: Error Summary Log

05/04/98

Error type	Labsampid	Qccode	Anmcode	Exlncode	Anadate	Run number
There are no errors in this data file					/ /	0

Npdlres: Error Summary Log

05/04/98

Error Type	Labsampid	Qccode	Matrix	Anlmcode	Pvccode	Analdate	Run number	Partabel
There are no errors in this data file						/ /	0	

Npdlq[illegible]rror Summary Log

05/04/98

Error type	Labiotcd	Animcode	Parlabel	Lccode	Labqcid
There are no errors in this data files					

Npdlcl: Error Summary Log

05/04/98

Error type	Clrevdate	Animcode	Eximcode	Parlabel	Clcode
There are no errors in this data file	/ /				

Quanterra
Environmental Services

Summary Report
Selected Metals

Laboratory Report Project Overview

EDF 1.2a

Laboratory:	Quanterra Environmental Services, Sacramento, CA
Lab Report Number:	098184
Project Name:	General Analytical
Work Order Number:	N/A
Control Sheet Number:	N/A

Report Summary

Labreport	Sampid	Labsampid	Mtrx	QC	Anmcode	Exmcode	Logdate	Extdate	Anadate	Labloctl	Run Sub
098184	98BPXLI02SD01(01)	0981840001SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI02SD01(01)	0981840001SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI02SD01(01)	0981840001SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI02SD02(03)	0981840002SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI02SD02(03)	0981840002SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI02SD02(03)	0981840002SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI02SD03(09)	0981840003SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI02SD03(09)	0981840003SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI02SD03(09)	0981840003SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI02SD62(03)	0981840013SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI02SD62(03)	0981840013SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI02SD62(03)	0981840013SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI02WA01	0981840015SA	WG	CS	SW6020	SW3020	03/18/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI02WA01	0981840015SA	WG	CS	SW7470	METHOD	03/18/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI02WA02	0981840016SA	WG	CS	SW6020	SW3020	03/18/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI02WA02	0981840016SA	WG	CS	SW7470	METHOD	03/18/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI02WA03	0981840017SA	WG	CS	SW6020	SW3020	03/18/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI02WA03	0981840017SA	WG	CS	SW7470	METHOD	03/18/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI02WA61	0981840027SA	WG	CS	SW6020	SW3020	03/18/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI02WA61	0981840027SA	WG	CS	SW7470	METHOD	03/18/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI09SD01(01)	0981840004SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI09SD01(01)	0981840004SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI09SD01(01)	0981840004SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI09SD02(03)	0981840005SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI09SD02(03)	0981840005SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI09SD02(03)	0981840005SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI09SD03(09)	0981840006SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI09SD03(09)	0981840006SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI09SD03(09)	0981840006SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI09WA01	0981840018SA	WG	CS	SW6020	SW3020	03/18/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI09WA01	0981840018SA	WG	CS	SW7470	METHOD	03/18/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI09WA02	0981840019SA	WG	CS	SW6020	SW3020	03/18/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI09WA02	0981840019SA	WG	CS	SW7470	METHOD	03/18/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI09WA03	0981840020SA	WG	CS	SW6020	SW3020	03/18/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI09WA03	0981840020SA	WG	CS	SW7470	METHOD	03/18/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI14SD01(01)	0981840007SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI14SD01(01)	0981840007SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1

Report Summary

Labrepoft	Sampid	Labsampid	Mtrx	QC	Anmcode	Extncode	Logdate	Extdate	Anadate	Labtotcd	Run Sub
098184	98BPXLI14SD01(01)	0981840007SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI14SD02(03)	0981840008SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI14SD02(03)	0981840008SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI14SD02(03)	0981840008SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI14SD03(09)	0981840009SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI14SD03(09)	0981840009SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI14SD03(09)	0981840009SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI14WA01	0981840021SA	WG	CS	SW6020	SW3020	03/18/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI14WA01	0981840021SA	WG	CS	SW7470	METHOD	03/18/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI14WA02	0981840022SA	WG	CS	SW6020	SW3020	03/18/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI14WA02	0981840022SA	WG	CS	SW7470	METHOD	03/18/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI30SD01(01)	0981840010SA	SO	CS	D2216	NONE	03/19/98	04/15/98	04/15/98	098184	1
098184	98BPXLI30SD01(01)	0981840010SA	SO	CS	SW6020	SW3050	03/19/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI30SD01(01)	0981840010SA	SO	CS	SW7471	METHOD	03/19/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI30SD02(03)	0981840011SA	SO	CS	D2216	NONE	03/19/98	04/15/98	04/15/98	098184	1
098184	98BPXLI30SD02(03)	0981840011SA	SO	CS	SW6020	SW3050	03/19/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI30SD02(03)	0981840011SA	SO	CS	SW7471	METHOD	03/19/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI30SD03(09)	0981840012SA	SO	CS	D2216	NONE	03/19/98	04/15/98	04/15/98	098184	1
098184	98BPXLI30SD03(09)	0981840012SA	SO	CS	SW6020	SW3050	03/19/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI30SD03(09)	0981840012SA	SO	CS	SW7471	METHOD	03/19/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI30SD62(03)	0981840014SA	SO	CS	D2216	NONE	03/18/98	04/15/98	04/15/98	098184	1
098184	98BPXLI30SD62(03)	0981840014SA	SO	CS	SW6020	SW3050	03/18/98	04/03/98	04/09/98	S980403FX	1
098184	98BPXLI30SD62(03)	0981840014SA	SO	CS	SW7471	METHOD	03/18/98	04/10/98	04/11/98	S980410BX	1
098184	98BPXLI30WA01	0981840024SA	WG	CS	SW6020	SW3020	03/19/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI30WA01	0981840024SA	WG	CS	SW7470	METHOD	03/19/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI30WA02	0981840025SA	WG	CS	SW6020	SW3020	03/19/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI30WA02	0981840025SA	WG	CS	SW7470	METHOD	03/19/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI30WA03	0981840023SA	WG	CS	SW6020	SW3020	03/19/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI30WA03	0981840023SA	WG	CS	SW7470	METHOD	03/19/98	04/10/98	04/10/98	W980409BX	1
098184	98BPXLI30WA62	0981840026SA	WG	CS	SW6020	SW3020	03/19/98	04/02/98	04/08/98	W980402MX	1
098184	98BPXLI30WA62	0981840026SA	WG	CS	SW7470	METHOD	03/19/98	04/10/98	04/10/98	W980409BX	1
		BS980402M	WQ	BS1	SW6020	SW3020	/ /	04/02/98	04/08/98	W980402MX	1
		BS980403F	SQ	BS1	SW6020	SW3050	/ /	04/03/98	04/09/98	S980403FX	1
		BS980409B	WQ	BS1	SW7470	METHOD	/ /	04/09/98	04/10/98	W980409BX	1
		BS980410B	SQ	BS1	SW7471	METHOD	/ /	04/10/98	04/11/98	S980410BX	1
		LB980402M	WQ	LB1	SW6020	SW3020	/ /	04/02/98	04/08/98	W980402MX	1
		LB980403F	SQ	LB1	SW6020	SW3050	/ /	04/03/98	04/09/98	S980403FX	1

Report Summary

Labreport	Sampid	Labsampid	Mtrx	QC	Anmcode	Exmcode	Logdate	Extdate	Anadate	Labloctrl	Run Sub
		LB980409B	WQ	LB1	SW7470	METHOD	/ /	04/09/98	04/10/98	W980409BX	1
		LB980410B	SQ	LB1	SW7471	METHOD	/ /	04/10/98	04/11/98	S980410BX	1
		0981840004DU	SO	LR1	D2216	NONE	/ /	04/29/98	04/29/98	098184	1
		0981840004MS	SO	MS1	SW6020	SW3050	/ /	04/03/98	04/09/98	S980403FX	1
		0981840004MS	SO	MS1	SW7471	METHOD	/ /	04/10/98	04/11/98	S980410BX	1
		0981840027MS	WG	MS1	SW6020	SW3020	/ /	04/02/98	04/08/98	W980402MX	1
		0981840027MS	WG	MS1	SW7470	METHOD	/ /	04/10/98	04/10/98	W980409BX	1
		0981840004SD	SO	SD1	SW6020	SW3050	/ /	04/03/98	04/09/98	S980403FX	1
		0981840004SD	SO	SD1	SW7471	METHOD	/ /	04/10/98	04/11/98	S980410BX	1
		0981840027SD	WG	SD1	SW6020	SW3020	/ /	04/02/98	04/08/98	W980402MX	1
		0981840027SD	WG	SD1	SW7470	METHOD	/ /	04/10/98	04/10/98	W980409BX	1

Quanterra Environmental Services, Sacramento, CA

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXL!02SD01(01)
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:2210
Lab Samp ID:0981840001SA

Basis: Dry
Matrix: Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.1320	0.2779PQL		5.1557	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Barium	0.0306	0.1390PQL		52.5717	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Chromium	0.1195	0.2779PQL		11.5260	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Lead	0.0069	0.1390PQL		5.7830	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI02SD02(03)
Descr/Location: 98B

Sample Date: 03/18/98
Sample Time: 2230
Lab Samp ID: 0981840002SA

Basis: Dry
Matrix: Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.1461	0.3075PQL		4.5284	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Barium	0.0338	0.1538PQL		40.7448	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Chromium	0.1322	0.3075PQL		13.9137	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Lead	0.0077	0.1538PQL		4.7311	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX

Approved by: Tony Hildebrand Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI02SD03(09)
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:2330
Lab Samp ID:0981840003SA

Basis: Dry
Matrix: Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.1354	0.2851PQL		7.7323	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Barium	0.0314	0.1426PQL		48.2845	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Chromium	0.1226	0.2851PQL		11.2065	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Lead	0.0071	0.1426PQL		6.4270	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI02SD62(03)
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:2220
Lab Samp ID:0981840013SA

Basis: Dry
Matrix: Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.1267	0.2668PQL		11.2429	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Barium	0.0293	0.1334PQL		86.1714	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Chromium	0.1147	0.2668PQL		27.4382	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Lead	0.0067	0.1334PQL		13.8598	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI09SD01(01)
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:1610
Lab Samp ID:0981840004SA

Basis: Dry
Matrix: Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.1407	0.2961PQL		5.4423	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Barium	0.0326	0.1481PQL		33.6984	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Chromium	0.1273	0.2961PQL		10.6462	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Lead	0.0074	0.1481PQL		4.8054	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI09SD02(03)	Sample Date:03/18/98	Basis: Dry
Descr/Location:	98B	Sample Time:1620	Matrix: Soil
		Lab Samp ID:0981840005SA	

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.1464	0.3082PQL		7.5678	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Barium	0.0339	0.1541PQL		43.4884	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Chromium	0.1325	0.3082PQL		12.6548	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Lead	0.0077	0.1541PQL		7.1493	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI09SD03(09)
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:1630
Lab Samp ID:0981840006SA

Basis: Dry
Matrix: Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.1187	0.2498PQL		3.7117	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Barium	0.0275	0.1249PQL		38.1624	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Chromium	0.1074	0.2498PQL		7.0558	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Lead	0.0062	0.1249PQL		3.0943	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI14SD01(01)
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:1330
Lab Samp ID:0981840007SA

Basis: Dry
Matrix: Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.1249	0.2629PQL		5.1296	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Barium	0.0289	0.1315PQL		27.9007	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Chromium	0.1131	0.2629PQL		9.3918	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Lead	0.0066	0.1315PQL		4.6579	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX

Approved by: Tom Hilderbrand Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI14SD02(03)
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:1345
Lab Samp ID:0981840008SA

Basis: Dry
Matrix: Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.1186	0.2496PQL		4.6997	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Barium	0.0275	0.1248PQL		45.3274	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Chromium	0.1073	0.2496PQL		12.7658	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Lead	0.0062	0.1248PQL		4.2933	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI14SD03(09)
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:1400
Lab Samp ID:0981840009SA

Basis: Dry
Matrix: Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.1286	0.2708PQL		3.3052	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Barium	0.0298	0.1354PQL		23.4768	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Chromium	0.1165	0.2708PQL		5.4262	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Lead	0.0068	0.1354PQL		2.2282	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX

Approved by: Jon Hildebrand Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI30SD01(01)
Descr/Location: 98B

Sample Date:03/19/98
Sample Time:0250
Lab Samp ID:0981840010SA

Basis: Dry
Matrix: Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.1330	0.2800PQL		6.0916	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Barium	0.0308	0.1400PQL		53.7164	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Chromium	0.1204	0.2800PQL		12.8973	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Lead	0.0070	0.1400PQL		5.7362	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI30SD02(03)	Sample Date:03/19/98	Basis: Dry
Descr/Location:	98B	Sample Time:0300	Matrix: Soil
		Lab Samp ID:0981840011SA	

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.1285	0.2706PQL		4.1759	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Barium	0.0298	0.1353PQL		43.5598	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Chromium	0.1164	0.2706PQL		11.3012	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Lead	0.0068	0.1353PQL		3.5541	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI30SD03(09)
Descr/Location: 98B

Sample Date:03/19/98
Sample Time:0330
Lab Samp ID:0981840012SA

Basis: Dry
Matrix: Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.1419	0.2988PQL		4.7554	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Barium	0.0329	0.1494PQL		46.8357	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Chromium	0.1285	0.2988PQL		13.8785	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Lead	0.0075	0.1494PQL		4.9353	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI30SD62(03)
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:0310
Lab Samp ID:0981840014SA

Basis: Dry
Matrix: Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.1307	0.2751PQL		3.5411	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Barium	0.0303	0.1376PQL		43.5918	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Chromium	0.1183	0.2751PQL		11.1048	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX
Lead	0.0069	0.1376PQL		3.7499	MG/KG dw	1.0	SW3050	SW6020	04/09/98	S980403FX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI02SD01(01)	Sample Date:03/18/98	Basis: Dry
Descr/Location:	98B	Sample Time:2210	Matrix: Soil
		Lab Samp ID:0981840001SA	

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0042	0.0278PQL		0.0852	MG/KG dw	1.0	METHOD	SW7471	04/11/98	S980410BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI02SD02(03)	Sample Date: 03/18/98	Basis: Dry
Descr/Location:	98B	Sample Time: 2230	Matrix: Soil
		Lab Samp ID: 0981840002SA	

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0046	0.0308PQL		0.0423	MG/KG dw	1.0	METHOD	SW7471	04/11/98	S980410BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI02SD03(09)	Sample Date: 03/18/98	Basis: Dry
Descr/Location:	98B	Sample Time: 2330	Matrix: Soil
		Lab Samp ID: 0981840003SA	

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0043	0.0285PQL		0.0472	MG/KG dw	1.0	METHOD	SW7471	04/11/98	S980410BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI02SD62(03)
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:2220
Lab Samp ID:0981840013SA

Basis: Dry
Matrix: Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0040	0.0267PQL		0.0701	MG/KG dw	1.0	METHOD	SW7471	04/11/98	S980410BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI09SD01(01)	Sample Date:03/18/98	Basis: Dry
Descr/Location:	98B	Sample Time:1610	Matrix: Soil
		Lab Samp ID:0981840004SA	

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0044	0.0296PQL		0.0476	MG/KG dw	1.0	METHOD	SW7471	04/11/98	S980410BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXL!09SD02(03)	Sample Date:	03/18/98
Descr/Location:	98B	Sample Time:	1620
		Lab Samp ID:	0981840005SA
		Basis:	Dry
		Matrix:	Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0046	0.0308PQL		0.0616	MG/KG dw	1.0	METHOD	SW7471	04/11/98	S980410BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI09SD03(09)	Sample Date:	03/18/98
Descr/Location:	98B	Sample Time:	1630
		Lab Samp ID:	0981840006SA
		Basis:	Dry
		Matrix:	Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0037	0.0250PQL		ND	MG/KG dw	1.0	METHOD	SW7471	04/11/98	S980410BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI14SD01(01)
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:1330
Lab Samp ID:0981840007SA

Basis: Dry
Matrix: Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0039	0.0263PQL		ND	MG/KG dw	1.0	METHOD	SW7471	04/11/98	S980410BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI14SD02(03)	Sample Date:03/18/98	Basis: Dry
Descr/Location:	98B	Sample Time:1345	Matrix: Soil
		Lab Samp ID:0981840008SA	

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0037	0.0250PQL		0.0280	MG/KG dw	1.0	METHOD	SW7471	04/11/98	S980410BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI14SD03(09)
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:1400
Lab Samp ID:0981840009SA

Basis: Dry
Matrix: Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0041	0.0271PQL		ND	MG/KG dw	1.0	METHOD	SW7471	04/11/98	S980410BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI30SD01(01)	Sample Date:	03/19/98
Descr/Location:	98B	Sample Time:	0250
		Lab Samp ID:	0981840010SA
		Basis:	Dry
		Matrix:	Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0042	0.0280PQL		0.0426	MG/KG dw	1.0	METHOD	SW7471	04/11/98	S980410BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI30SD02(03)	Sample Date:03/19/98	Basis: Dry
Descr/Location:	98B	Sample Time:0300	Matrix: Soil
		Lab Samp ID:0981840011SA	

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0041	0.0271PQL		ND	MG/KG dw	1.0	METHOD	SW7471	04/11/98	S980410BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI30SD03(09)	Sample Date:	03/19/98
Descr/Location:	98B	Sample Time:	0330
		Lab Samp ID:	0981840012SA
		Basis:	Dry
		Matrix:	Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0045	0.0299PQL		0.0378	MG/KG dw	1.0	METHOD	SW7471	04/11/98	S980410BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI30SD62(03)	Sample Date:	03/18/98
Descr/Location:	98B	Sample Time:	0310
		Lab Samp ID:	0981840014SA
Basis:	Dry	Matrix:	Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0041	0.0275PQL		0.0337	MG/KG dw	1.0	METHOD	SW7471	04/11/98	S980410BX

Approved by: _____ Date: 6/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI02SD01(01)	Sample Date:	03/18/98
Descr/Location:	98B	Sample Time:	2210
		Lab Samp ID:	0981840001SA
		Basis:	Wet
		Matrix:	Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Percent Moisture	NA	NA		28.0400	PERCE ww	1.0	NONE	D2216	04/15/98	098184

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXL02SD02(03)	Sample Date:	03/18/98
Descr/Location:	98B	Sample Time:	2230
		Lab Samp ID:	0981840002SA
		Basis:	Wet
		Matrix:	Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Percent Moisture	NA	NA		34.9600	PERCE ww	1.0	NONE	D2216	04/15/98	098184

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI02SD03(09)	Sample Date:	03/18/98
Descr/Location:	98B	Sample Time:	2330
		Lab Samp ID:	0981840003SA
		Basis:	Wet
		Matrix:	Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Percent Moisture	NA	NA		29.8500	PERCE ww	1.0	NONE	D2216	04/15/98	098184

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI02SD62(03)
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:2220
Lab Samp ID:0981640013SA

Basis: Wet
Matrix: Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Percent Moisture	NA	NA		25.0300	PERCE ww	1.0	NONE	D2216	04/15/98	098184

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI09SD01(01)	Sample Date: 03/18/98	Basis: Wet
Descr/Location:	98B	Sample Time: 1810	Matrix: Soil
		Lab Samp ID: 0981840004SA	

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Percent Moisture	NA	NA		32.4600	PERCE ww	1.0	NONE	D2216	04/15/98	098184

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI09SD02(03)	Sample Date:03/18/98	Basis: Wet
Descr/Location:	98B	Sample Time:1620	Matrix: Soil
		Lab Samp ID:0981840005SA	

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Percent Moisture	NA	NA		35.1000	PERCE ww	1.0	NONE	D2216	04/15/98	098184

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI09SD03(09)	Sample Date:	03/18/98
Descr/Location:	98B	Sample Time:	1630
		Lab Samp ID:	0981840006SA
		Basis:	Wet
		Matrix:	Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Percent Moisture	NA	NA		19.9500	PERCE ww	1.0	NONE	D2216	04/15/98	098184

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI14SD01(01)
Descr/Location: 98B

Sample Date: 03/18/98
Sample Time: 1330
Lab Samp ID: 0981840007SA

Basis: Wet
Matrix: Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Percent Moisture	NA	NA		23.9300	PERCE ww	1.0	NONE	D2216	04/15/98	098184

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI14SD02(03)	Sample Date:	03/18/98
Descr/Location:	98B	Sample Time:	1345
		Lab Samp ID:	0981840008SA
		Basis:	Wet
		Matrix:	Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Percent Moisture	NA	NA		19.8800	PERCE ww	1.0	NONE	D2216	04/15/98	098184

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI14SD03(09)	Sample Date:	03/18/98
Descr/Location:	98B	Sample Time:	1400
		Lab Samp ID:	0981840009SA
		Basis:	Wet
		Matrix:	Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Percent Moisture	NA	NA		26.1500	PERCE ww	1.0	NONE	D2216	04/15/98	098184

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI30SD01(01)	Sample Date:03/19/98	Basis: Wet
Descr/Location:	98B	Sample Time:0250	Matrix: Soil
		Lab Samp ID:0981840010SA	

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Percent Moisture	NA	NA		28.5600	PERCE ww	1.0	NONE	D2216	04/15/98	098184

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI30SD02(03)	Sample Date:	03/19/98
Descr/Location:	98B	Sample Time:	0300
		Lab Samp ID:	0981840011SA
		Basis:	Wet
		Matrix:	Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Percent Moisture	NA	NA		26.0900	PERCE ww	1.0	NONE	D2216	04/15/98	098184

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI30SD03(09)	Sample Date:03/19/98	Basis: Wet
Descr/Location:	98B	Sample Time:0330	Matrix: Soil
		Lab Samp ID:0981840012SA	

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Percent Moisture	NA	NA		33.0700	PERCE ww	1.0	NONE	D2216	04/15/98	098184

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI30SD62(03)	Sample Date:	03/18/98
Descr/Location:	98B	Sample Time:	0310
		Lab Samp ID:	0981840014SA
		Basis:	Wet
		Matrix:	Soil

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Percent Moisture	NA	NA		27.3000	PERCE ww	1.0	NONE	D2216	04/15/98	098184

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI02WA01
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:2100
Lab Samp ID:0981840015SA

Basis: Wet
Matrix: Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.0114	0.0200PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Barium	0.0013	0.0100PQL	DF	0.0257	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Chromium	0.0084	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Lead	0.0007	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX

DF: Reporting limits elevated due to matrix interferences

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI02WA02
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:2130
Lab Samp ID:0981840016SA

Basis: Wet
Matrix: Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.0114	0.0200PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Barium	0.0013	0.0100PQL	DF	0.0233	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Chromium	0.0084	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Lead	0.0007	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX

DF: Reporting limits elevated due to matrix interferences

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI02WA03
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:2200
Lab Samp ID:0981840017SA

Basis: Wet
Matrix: Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.0114	0.0200PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Barium	0.0013	0.0100PQL	DF	0.0203	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Chromium	0.0084	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Lead	0.0007	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX

DF: Reporting limits elevated due to matrix interferences

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI02WA61
Descr/Location: 98B

Sample Date: 03/18/98
Sample Time: 2110
Lab Samp ID: 0981840027SA

Basis: Wet
Matrix: Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.0114	0.0200PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Barium	0.0013	0.0100PQL	DF	0.0227	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Chromium	0.0084	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Lead	0.0007	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX

DF: Reporting limits elevated due to matrix interferences

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI09WA01
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:1530
Lab Samp ID:0981840018SA

Basis: Wet
Matrix: Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.0114	0.0200PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Barium	0.0013	0.0100PQL	DF	0.0200	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Chromium	0.0084	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Lead	0.0007	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX

DF: Reporting limits elevated due to matrix interferences

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI09WA02
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:1540
Lab Samp ID:0981840019SA

Basis: Wet
Matrix: Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.0114	0.0200PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Barium	0.0013	0.0100PQL	DF	0.0218	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Chromium	0.0084	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Lead	0.0007	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX

DF: Reporting limits elevated due to matrix interferences

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI09WA03
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:1550
Lab Samp ID:0981840020SA

Basis: Wet
Matrix: Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.0114	0.0200PQL	DF	0.0202	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Barium	0.0013	0.0100PQL	DF	0.0254	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Chromium	0.0084	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Lead	0.0007	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX

DF: Reporting limits elevated due to matrix interferences

Approved by: Tom Hildebrand Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI14WA01
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:1300
Lab Samp ID:0981840021SA

Basis: Wet
Matrix: Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.0114	0.0200PQL	DF	0.0204	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Barium	0.0013	0.0100PQL	DF	0.0551	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Chromium	0.0084	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Lead	0.0007	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX

DF: Reporting limits elevated due to matrix interferences

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI14WA02
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:1315
Lab Samp ID:0981840022SA

Basis: Wet
Matrix: Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.0114	0.0200PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Barium	0.0013	0.0100PQL	DF	0.0314	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Chromium	0.0084	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Lead	0.0007	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX

DF: Reporting limits elevated due to matrix interferences

Approved by: Tom Hildebrand Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI30WA01
Descr/Location: 98B

Sample Date:03/19/98
Sample Time:0120
Lab Samp ID:0981840024SA

Basis: Wet
Matrix: Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.0114	0.0200PQL	DF	0.0206	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Barium	0.0013	0.0100PQL	DF	0.0179	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Chromium	0.0084	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Lead	0.0007	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX

DF: Reporting limits elevated due to matrix interferences

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI30WA02
Descr/Location: 98B

Sample Date: 03/19/98
Sample Time: 0140
Lab Samp ID: 0981840025SA

Basis: Wet
Matrix: Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.0114	0.0200PQL	DF	0.0226	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Barium	0.0013	0.0100PQL	DF	0.0175	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Chromium	0.0084	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Lead	0.0007	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX

DF: Reporting limits elevated due to matrix interferences

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI30WA03
Descr/Location: 98B

Sample Date:03/19/98
Sample Time:0200
Lab Samp ID:0981840023SA

Basis: Wet
Matrix: Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.0114	0.0200PQL	DF	0.0213	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Barium	0.0013	0.0100PQL	DF	0.0195	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Chromium	0.0084	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Lead	0.0007	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX

DF: Reporting limits elevated due to matrix interferences

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI30WA62
Descr/Location: 98B

Sample Date:03/19/98
Sample Time:0150
Lab Samp ID:0981840026SA

Basis: Wet
Matrix: Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Arsenic	0.0114	0.0200PQL	DF	0.0213	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Barium	0.0013	0.0100PQL	DF	0.0266	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Chromium	0.0084	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX
Lead	0.0007	0.0100PQL	DF	ND	MG/L	ww 10	SW3020	SW6020	04/08/98	W980402MX

DF: Reporting limits elevated due to matrix interferences

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI02WA01	Sample Date:03/18/98	Basis: Wet
Descr/Location:	98B	Sample Time:2100	Matrix: Ground Water
		Lab Samp ID:0981840015SA	

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0001	0.0002PQL		ND	MG/L	ww 1.0	METHOD	SW7470	04/10/98	W980409BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI02WA02	Sample Date:03/18/98	Basis: Wet
Descr/Location:	98B	Sample Time:2130	Matrix: Ground Water
		Lab Samp ID:0981840016SA	

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0001	0.0002PQL		ND	MG/L	ww 1.0	METHOD	SW7470	04/10/98	W980409BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI02WA03	Sample Date:	03/18/98
Descr/Location:	98B	Sample Time:	2200
		Lab Samp ID:	0981840017SA
Basis:	Wet	Matrix:	Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0001	0.0002PQL		ND	MG/L	ww 1.0	METHOD	SW7470	04/10/98	W980409BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI02WA61	Sample Date:	03/18/98
Descr/Location:	98B	Sample Time:	2110
		Lab Samp ID:	0981840027SA
		Basis:	Wet
		Matrix:	Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0001	0.0002PQL		ND	MG/L	ww 1.0	METHOD	SW7470	04/10/98	W980409BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI09WA01
Descr/Location: 98B

Sample Date: 03/18/98
Sample Time: 1530
Lab Samp ID: 0981840018SA

Basis: Wet
Matrix: Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0001	0.0002PQL		ND	MG/L	ww 1.0	METHOD	SW7470	04/10/98	W980409BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI09WA02	Sample Date:	03/18/98
Descr/Location:	98B	Sample Time:	1540
		Lab Samp ID:	0981840019SA
Basis:	Wet	Matrix:	Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0001	0.0002PQL		ND	MG/L	ww 1.0	METHOD	SW7470	04/10/98	W980409BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI09WA03
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:1550
Lab Samp ID:0981840020SA

Basis: Wet
Matrix: Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0001	0.0002PQL		ND	MG/L	ww 1.0	METHOD	SW7470	04/10/98	W980409BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI14WA01
Descr/Location: 98B

Sample Date:03/18/98
Sample Time:1300
Lab Samp ID:0981840021SA

Basis: Wet
Matrix: Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0001	0.0002PQL		ND	MG/L	ww 1.0	METHOD	SW7470	04/10/98	W980409BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI14WA02	Sample Date:	03/18/98
Descr/Location:	98B	Sample Time:	1315
		Lab Samp ID:	0981840022SA
		Basis:	Wet
		Matrix:	Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0001	0.0002PQL		ND	MG/L	ww 1.0	METHOD	SW7470	04/10/98	W980409BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI30WA01	Sample Date:	03/19/98
Descr/Location:	98B	Sample Time:	0120
		Lab Samp ID:	0981840024SA
		Basis:	Wet
		Matrix:	Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0001	0.0002PQL		ND	MG/L	ww 1.0	METHOD	SW7470	04/10/98	W980409BX

Approved by: _____ Date: 6/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI30WA02
Descr/Location: 98B

Sample Date: 03/19/98
Sample Time: 0140
Lab Samp ID: 0981840025SA

Basis: Wet
Matrix: Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0001	0.0002PQL		ND	MG/L ww	1.0	METHOD	SW7470	04/10/98	W980409BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name:	General Analytical	Project No:	N/A
Field ID:	98BPXLI30WA03	Sample Date:	03/19/98
Descr/Location:	98B	Sample Time:	0200
		Lab Samp ID:	0981840023SA
		Basis:	Wet
		Matrix:	Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0001	0.0002PQL		ND	MG/L	ww 1.0	METHOD	SW7470	04/10/98	W980409BX

Approved by: _____ Date: 5/5/98

Lab Report No.: 098184 Date: 05/04/98

Project Name: General Analytical

Project No: N/A

Field ID: 98BPXLI30WA62
Descr/Location: 98B

Sample Date: 03/19/98
Sample Time: 0150
Lab Samp ID: 0981840026SA

Basis: Wet
Matrix: Ground Water

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date	QC Batch
Mercury	0.0001	0.0002PQL		ND	MG/L	ww 1.0	METHOD	SW7470	04/10/98	W980409BX

Approved by: _____ Date: 5/5/98

QA/QC Report
Lab Duplicate Summary

Quanterra Environmental Services, Sacramento, CA

Lab Report No.: 098184 Date: 05/04/98

QC Batch: 098184
Matrix: Soil
Lab Samp ID: 0981840004DU
Basis: Wet

Project Name: General Analytical
Project No.: N/A
Field ID: 98BPXLI09SD01(01)
Lab Ref ID: 0981840004SA

Analyte	Analysis Method	Detection Limit	Reporting Limit		Result	Duplicate Result	Units	Average	RPD	Acceptance Criteria
Percent Moisture	D2216	NA	NA	PQL	32.4600	34.4600	PERCENT	33.4600	6.0	20MLR

QA/QC Report
Method Blank Summary

Quanterra Environmental Services, Sacramento, CA

Lab Report No.: 098184 Date: 05/04/98

QC Batch: S980403FX
Matrix: Soil/Solid Quality Control Matrix
Lab Samp ID: LB980403F

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date
Arsenic	0.0950	0.2000PQL		ND	MG/KG	1.0	SW3050	SW6020	04/09/98
Barium	0.0220	0.1000PQL		ND	MG/KG	1.0	SW3050	SW6020	04/09/98
Chromium	0.0860	0.2000PQL		ND	MG/KG	1.0	SW3050	SW6020	04/09/98
Lead	0.0050	0.1000PQL		ND	MG/KG	1.0	SW3050	SW6020	04/09/98

QA/QC Report
Matrix Spike/Duplicate Matrix Spike Summary

Quanterra Environmental Services, Sacramento, CA

Lab Report No.: 098184 Date: 05/04/98

QC Batch: S980403FX
Matrix: Soil
Lab Samp ID: 0981840004MS
Basis: Dry

Project Name: General Analytical
Project No.: N/A
Field ID: 98BPXLI09SD01(01)
Lab Ref ID: 0981840004SA

Analyte	Analysis Method	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Units		% Recoveries MS	% Recoveries DMS	% Recoveries RPD	Acceptance Criteria % Rec		Acceptance Criteria RPD
Arsenic	SW6020	29.612	29.612	5.4423	31.3480	32.5612	MG/KG	dw	87.5	91.6	4.8	125-75	MSA	35MSP
Barium	SW6020	29.6121	29.6121	33.6984	81.2348	72.5628	MG/KG	dw	1611	1311	21	125-75	MSA	35MSP
Chromium	SW6020	29.6120	29.6120	10.6462	41.7751	40.7374	MG/KG	dw	105	102	2.9	125-75	MSA	35MSP
Lead	SW6020	29.612	29.612	4.8054	30.7357	30.7762	MG/KG	dw	87.6	87.7	0.11	125-75	MSA	35MSP

QA Report
Blank Spike/Duplicate Blank Spike Summary

Quanterra Environmental Services, Sacramento, CA

Lab Report No.: 098184 Date: 05/04/98

QC Batch: S980403FX
Matrix: Soil/Solid Quality Control Matrix
Lab Samp ID: BS980403F

Analyte	Analysis Method	Spike Level LCS	Spike Level LCD	Spike Result LCS	Spike Result LCD	Units		% Recoveries LCS	% Recoveries LCD	% Recoveries RPD	Acceptance Criteria %Rec		Acceptance Criteria RPD
Arsenic	SW6020	20.0000	NA	17.3243	NA	MG/KG	dw	86.6	NA	NA	120-80	LSA	NA
Barium	SW6020	20.0000	NA	19.1559	NA	MG/KG	dw	95.8	NA	NA	120-80	LSA	NA
Chromium	SW6020	20.0000	NA	20.2187	NA	MG/KG	dw	101	NA	NA	120-80	LSA	NA
Lead	SW6020	20.0000	NA	21.0364	NA	MG/KG	dw	105	NA	NA	120-80	LSA	NA

QA/QC Report
Method Blank Summary

Quanterra Environmental Services, Sacramento, CA

Lab Report No.: 098184 Date: 05/04/98

QC Batch: S980410BX
Matrix: Soil/Solid Quality Control Matrix
Lab Samp ID: LB980410B

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date
Mercury	0.0030	0.0200PQL		ND	MG/KG	1.0	METHOD	SW7471	04/11/98

Matrix Spike/Duplicate Matrix Spike Summary

Quanterra Environmental Services, Sacramento, CA

Lab Report No.: 098184 Date: 05/04/98

QC Batch: S980410BX
Matrix: Soil
Lab Samp ID: 0981840004MS
Basis: Dry

Project Name: General Analytical
Project No.: N/A
Field ID: 98BPXLI09SD01(01)
Lab Ref ID: 0981840004SA

Analyte	Analysis Method	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Units	% Recoveries MS	% Recoveries DMS	% Recoveries RPD	Acceptance Criteria % Rec	Acceptance Criteria RPD
Mercury	SW7471	0.3702	0.3702	0.0476	0.4076	0.4091	MG/KG dw	97.2	97.6	0.41	125-75 MSA	35MSP

QA/QC Report
Blank Spike/Duplicate Blank Spike Summary

Quanterra Environmental Services, Sacramento, CA

Lab Report No.: 098184 Date: 05/04/98

QC Batch: S980410BX
Matrix: Soil/Solid Quality Control Matrix
Lab Samp ID: BS980410B

Analyte	Analysis Method	Spike Level LCS	Spike Level LCD	Spike Result LCS	Spike Result LCD	Units		% Recoveries LCS	% Recoveries LCD	% Recoveries RPD	Acceptance Criteria %Rec		Acceptance Criteria RPD
Mercury	SW7471	0.0833	NA	0.0864	NA	MG/KG	dw	104	NA	NA	125-75	LSA	NA

Method Bla. Summary

Quanterra Environmental Services, Sacramento, CA

Lab Report No.: 098184 Date: 05/04/98

QC Batch: W980402MX
Matrix: Water Quality Control Matrix
Lab Samp ID: LB980402M

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date
Arsenic	0.0011	0.0020PQL		ND	MG/L	1.0	SW3020	SW6020	04/08/98
Barium	0.0001	0.0010PQL		ND	MG/L	1.0	SW3020	SW6020	04/08/98
Chromium	0.0008	0.0010PQL		ND	MG/L	1.0	SW3020	SW6020	04/08/98
Lead	0.0001	0.0010PQL		ND	MG/L	1.0	SW3020	SW6020	04/08/98

QA/QC Report
Matrix Spike/Duplicate Matrix Spike Summary

Quanterra Environmental Services, Sacramento, CA

Lab Report No.: 098184 Date: 05/04/98

QC Batch: W980402MX
Matrix: Ground Water
Lab Samp ID: 0981840027MS
Basis: Wet

Project Name: General Analytical
Project No.: N/A
Field ID: 98BPXLI02WA61
Lab Ref ID: 0981840027SA

Analyte	Analysis Method	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Units		% Recoveries MS	% Recoveries DMS	% Recoveries RPD	Acceptance Criteria % Rec		Acceptance Criteria RPD
Arsenic	SW6020	0.2000	0.2000	ND	0.2014	0.2065	MG/L	ww	101	103	2.0	125-75	MSA	20MSP
Barium	SW6020	0.2000	0.2000	0.0227	0.2264	0.2282	MG/L	ww	102	103	0.98	125-75	MSA	20MSP
Chromium	SW6020	0.2000	0.2000	ND	0.2257	0.2176	MG/L	ww	113	109	3.6	125-75	MSA	20MSP
Lead	SW6020	0.2000	0.2000	ND	0.1738	0.1687	MG/L	ww	86.9	84.4	2.9	125-75	MSA	20MSP

QA Report
Blank Spike/Duplicate Blank Spike Summary

Quanterra Environmental Services, Sacramento, CA

Lab Report No.: 098184 Date: 05/04/98

QC Batch: W980402MX
Matrix: Water Quality Control Matrix
Lab Samp ID: BS980402M

Analyte	Analysis Method	Spike Level LCS	Spike Level LCD	Spike Result LCS	Spike Result LCD	Units		% Recoveries LCS	% Recoveries LCD	% Recoveries RPD	Acceptance Criteria %Rec		Acceptance Criteria RPD
Arsenic	SW6020	0.2000	NA	0.2017	NA	MG/L	ww	101	NA	NA	120-80	LSA	NA
Barium	SW6020	0.2000	NA	0.2020	NA	MG/L	ww	101	NA	NA	120-80	LSA	NA
Chromium	SW6020	0.2000	NA	0.2248	NA	MG/L	ww	112	NA	NA	120-80	LSA	NA
Lead	SW6020	0.2000	NA	0.2146	NA	MG/L	ww	107	NA	NA	120-80	LSA	NA

QA/QC Report
Method Blank Summary

Quanterra Environmental Services, Sacramento, CA

Lab Report No.: 098184 Date: 05/04/98

QC Batch: W980409BX
Matrix: Water Quality Control Matrix
Lab Samp ID: LB980409B

Analyte	Detection Limit	Reporting Limit	Note	Result	Units	Dil	Prep Method	Analysis Method	Analysis Date
Mercury	0.0001	0.0002PQL		ND	MG/L	1.0	METHOD	SW7470	04/10/98

Matrix Spike/Duplicate Matrix Spike Summary

Quanterra Environmental Services, Sacramento, CA

Lab Report No.: 098184 Date: 05/04/98

QC Batch: W980409BX
Matrix: Ground Water
Lab Samp ID: 0981840027MS
Basis: Wet

Project Name: General Analytical
Project No.: N/A
Field ID: 98BPXLI02WA61
Lab Ref ID: 0981840027SA

Analyte	Analysis Method	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Units		% Recoveries MS	% Recoveries DMS	% Recoveries RPD	Acceptance Criteria % Rec		Acceptance Criteria RPD
Mercury	SW7470	0.0010	0.0010	ND	0.0011	0.0010	MG/L	ww	110	100	9.5	120-80	MSA	20MSP

QA/QC Report
Blank Spike/Duplicate Blank Spike Summary

Quanterra Environmental Services, Sacramento, CA

Lab Report No.: 098184 Date: 05/04/98

QC Batch: W980409BX
Matrix: Water Quality Control Matrix
Lab Samp ID: BS980409B

Analyte	Analysis Method	Spike Level LCS	Spike Level LCD	Spike Result LCS	Spike Result LCD	Units		% Recoveries LCS	% Recoveries LCD	% Recoveries RPD	Acceptance Criteria %Rec	Acceptance Criteria RPD
Mercury	SW7470	0.0010	NA	0.0010	NA	MG/L	ww	100	NA	NA	120-80 LSA	NA

APPENDIX D

b. Laboratory Data Sheets-MultiChem

MultiChem
ANALYTICAL SERVICES

April 27, 1998

MAS I. D. # 821354

Montgomery Watson
4100 Spenard Road
Anchorage, AK 99517

Attn: Lynn DeGeorge

Project Name: Liberty Island Sediments

Project Number: 1189002.330101

Dear Ms. DeGeorge:

On March 20, 1998, MultiChem Analytical Services, LLC of Alaska received twenty seven samples for analysis in conjunction with the above listed project. The requested analyses were performed using EPA or equivalent methods. The reports of analyses and deliverables are enclosed. Below is an outline of the laboratories that participated in this project.

MAS-WA	Analysis Performed:	Volatile Organics (8260), Semivolatile Organics (8270), Pesticides/PCBs (8081), Total Organic Carbon (TOC) and Total Suspended Solids (TSS)
Dowl/Alaska Testlabs	Analysis Performed:	Grain Size and Particle Size Distribution (ASTM D-422)

***Please note:** this report is a partial report, containing all analyses and raw data with the exception of the 8270 results. These results are in the final stages and will be forwarded as quickly as possible.

Please do not hesitate to contact us at (907) 248-8273, if you have any questions or comments.

Sincerely,
MultiChem Analytical Services

Victoria L. Bayly
Project Manager

2000 West International Airport Road, Suite C7, Anchorage, Alaska 99502-1116 • 907-248-8273 • FAX 907-248-8274
g/office/letterhead

MultiChem
ANALYTICAL SERVICES

Sample ID. Cross Reference Sheet

Client: Montgomery Watson
Project #: 1189002.330101
Project Name: Liberty Island Sediments

MAS I.D.: 821354

MAS ID #		Client Description	Sample Date
821354	1	98BPXLI02WA01	3/18/98
821354	2	98BPXLI02WA02	3/18/98
821354	3	98BPXLI02WA03	3/18/98
821354	4	98BPXLI09WA01	3/18/98
821354	5	98BPXLI09WA02	3/18/98
821354	6	98BPXLI09WA03	3/18/98
821354	7	98BPXLI14WA01	3/18/98
821354	8	98BPXLI14WA02	3/18/98
821354	9	98BPXLI30WA03	3/19/98
821354	10	98BPXLI30WA01	3/19/98
821354	11	98BPXLI30WA02	3/19/98
821354	12	98BPXLI30WA62	3/19/98
821354	13	98BPXLI02WA61	3/18/98
821354	14	98BPXLI02SD01(01)	3/18/98
821354	15	98BPXLI02SD02(03)	3/18/98
821354	16	98BPXLI02SD03(09)	3/18/98
821354	17	98BPXLI09SD01(01)	3/18/98
821354	18	98BPXLI09SD02(03)	3/18/98
821354	19	98BPXLI09SD03(09)	3/18/98
821354	20	98BPXLI14SD01(01)	3/18/98
821354	21	98BPXLI14SD02(03)	3/18/98
821354	22	98BPXLI14SD03(09)	3/18/98
821354	23	98BPXLI30SD01(01)	3/19/98
821354	24	98BPXLI30SD02(03)	3/19/98
821354	25	98BPXLI30SD03(09)	3/19/98
821354	26	98BPXLI30SD62(03)	3/19/98
821354	27	98BPXLI02SD62(03)	3/18/98

MAS STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of the report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

BPX L

Pg 1 of 2

MAS 821354

Montgomery Watson
4100 Spenard Road
Anchorage AK 99517
(907)248-8883
Fax (907) 248-8884
ATTN: Lynn DeGeorge

Laboratory:
Multichem Analytical Services
2000 West International Airport Road
Anchorage, Alaska 99502
(907) 248-8273
(907) 248-8273 FAX
Attn: Mike Vogel

MW Job Number: 1187002
21-DAY 330101
TURNAROUND

3/20/98

Sampler's Signature 1958 Bmchan

MAS#	Date	Time	Sample ID	Matrix	Total Containers	SOIL: VOCs- 8260a 2 x 2-oz amber glass	SVOCs- 8270 1 x 8-oz amber glass	TOC- 415.1 1 x 4-oz amber glass	Grain Size - ASTM D422 1 x 8-oz amber glass	Particle Size- ASTM D2487 1 x 4-oz amber glass		WATER: TSS- 160.2 250 ml poly	TOC- 415.1 1 x 250 ml amber	Comments
						Cool to 4 degrees C.						Cool to 4 degrees C. H2SO4		
-1	3-18	2210	98BPXLI 02 WA01	W	2							✓	✓	
-2	3-18	2130	98BPXLI 02 WA02	W	2							✓	✓	
-3	3-18	2200	98BPXLI 02 WA03	W	2							✓	✓	
-4	3-18	1530	98BPXLI 09 WA01	W	2							✓	✓	MS/MSD
-5	3-18	1540	98BPXLI 09 WA02	W	2							✓	✓	
-6	3-18	1550	98BPXLI 09 WA03	W	2							✓	✓	
-7	3-18	1300	98BPXLI 14 WA01	W	2							✓	✓	
-8	3-18	1315	98BPXLI 14 WA02	W	2							✓	✓	
-9	3-19	0200	98BPXLI 30 WA03	W	2							✓	✓	
-10	3-19	0120	98BPXLI 30 WA01	W	2							✓	✓	
-11	3-19	0140	98BPXLI 30 WA02	W	2							✓	✓	
			~~98BPXLI ___ WA03~~											No Sample
-12	3-19	0150	98BPXLI 30 WA6 2		2							✓	✓	
-13	3-18	2110	98BPXLI 02 WA6 1		2							✓	✓	
			~~98BPXLI ___ WA___~~	LAST										
			98BPXLI ___ WA___											

Relinquished by: Bmchan	Date 3-20-98 Time 1050	Hand Delivered (Y) N	Shipped Via hand	Airbill Number	Date Time
Received for Laboratory by: Gary Fuller	Date 3/20/98 Time 1000	Cooler Temperature Upon Arrival 4.8° 3.7° 5.1° 11.7° °C		Laboratory Notified Faxed	

BPX L... ...land

P8 2 of 2

1189002.
330101

Montgomery Watson 4100 Spenard Road Anchorage AK 99517 (907)248-8883 Fax (907) 248-8884 ATTN: Lynn DeGeorge	Laboratory: Multichem Analytical Services 2000 West International Airport Road Anchorage, Alaska 99502 (907) 248-8273 (907) 248-8273 FAX Attn: Mike Vugal 1189002, 330101 3/30 MW Job Number: GP ~~1189022.30101~~ 21-DAY TURNAROUND	SOIL						WATER		MAS 821354
		VOCs- 8260a 2 x 2-oz amber glass	SVOCs- 8270 1 x 8-oz amber glass	TOC- 415.1 1 x 4-oz amber glass	Grain Size - ASTM D422 1 x 8-oz amber glass	Particle Size- ASTM D2487 1 x 4-oz amber glass	8081 B 3/31/98 per L. DeGeorge	TSS- 160.2 250 ml poly	TOC- 415.1 1 x 250 ml amber	Comments
Sampler's Signature 1998		Cool to 4 degrees C						Cool to 4 degrees C	H2SO4	

AS#	Date	Time	Sample ID	Matrix	Total Containers	VOCs	SVOCs	TOC	Grain Size	Particle Size	8081	TSS	TOC	Comments
-14	3-18	2210	98BPXLI 02 SD01(01)	S	5	✓	✓	✓	✓	✓	✓			8081 for hexachlorobenzene
-15	3-18	2230	98BPXLI 02 SD02(03)	S	5	↓	↓	↓	↓	↓	✓			+ -butadiene
-16	3-18	2330	98BPXLI 02 SD03(09)	S	5	↓	↓	↓	↓	↓	✓			8260 for 1,2,4-trichlorobenzene
-17	3-18	1610	98BPXLI 09 SD01(01)	S	5	↓	↓	↓	↓	↓	✓			MS/MSD B 3/31/98
-18	3-18	1620	98BPXLI 09 SD02(03)	S	5	↓	↓	↓	↓	↓	✓			
-19	3-18	1630	98BPXLI 09 SD03(09)	S	5	↓	↓	↓	↓	↓	✓			
-20	3-18	1330	98BPXLI 14 SD01(01)	S	5	↓	↓	↓	↓	↓	✓			
-21	3-18	1345	98BPXLI 14 SD02(03)	S	5	↓	↓	↓	↓	↓	✓			
-22	3-18	1400	98BPXLI 14 SD03(09)	S	5	↓	↓	↓	↓	↓	✓			
23	3-19	0250	98BPXLI 30 SD01(01)	S	5	↓	↓	↓	↓	↓	✓			
-24	3-18	0380	98BPXLI 30 SD02(03)	S	5	↓	↓	↓	✓	✓	✓			
-25	3-19	0330	98BPXLI 30 SD03(09)	S	5	✓	✓	✓	✓	✓	✓			
-26	3-19	0310	98BPXLI 30 SD6 2(03)	S	3	✓	✓	✓			✓			
-27	3-18	2200	98BPXLI 02 SD6 2(03)	S	3	✓	✓	✓			✓			
			98BPXLI ___ SD__(__)											
			98BPXLI ___ SD__(__)											

Relinquished by:	Date 3-20-98	Hand Delivered	Shipped Via hand	Airbill Number	Date
	Time 1600	N			Time
Received for Laboratory by: Gary Tyler	Date 3-20-98	Cooler Temperature Upon Arrival	°C	Laboratory Notified Faxed	
	Time 0:00				

MultiChem Analytical Services, LLC **Anchorage, AK**

SAMPLE LOG-IN CHECKLIST

CESSION #: 821354 SUBCONTRACT WORK? YES / NO

CLIENT NAME: Montgomery Watson TO LAB (circle): MAS-R / OTHER: Ak Test Labs

LOGGED-IN BY (print): Gary Fisher (sign): [signature]

Date received: 3/26/98 Client's Cooler # (if any):

Is the project for: ACOE? YES / NO NAVY? YES / NO

1.	Did cooler arrive with shipping document?	(Hand delivery) N/A	YES	NO
2.	Are Custody seals present on cooler? YES / NO How many? Where?			
	Seal date: Seal name:	Intact? N/A	YES	NO
3.	Are Custody seals present on sample containers?		YES	NO
	If "YES", intact?	N/A	YES	NO
4.	Is the Chain of Custody (C-O-C) sealed in plastic bag? YES / NO	Taped to cooler lid?	YES	NO
5.	Is the C-O-C complete? * Relinquished by client: YES / NO	Analyses marked off:	YES	NO
	* C-O-C or other representative documents, letters, and/or shipping memos.	Signed/received by lab:	YES	NO
6.	Is the C-O-C in agreement with samples received?			
	Sample ID's: YES / NO	Matrix:	YES	NO
	Date sampled: YES / NO	# Containers:	YES	NO
7.	Has the main logbook been filled out properly?		YES	NO
8.	If samples are RUSH has notice been given?	N/A	YES	NO
9.	Is proper preservation indicated on label(s)?	N/A	YES	NO
	Did pH check verify preservative indicated?	(Volatiles) N/A	YES	NO
11	Is there sufficient sample volume for analyses?		YES	NO
12	Are samples in proper containers? (see reference chart)		YES	NO
13	Are all samples within holding times for requested analysis?		YES	NO
14	Are all sample containers intact? (i.e. not broken, leaking...)		YES	NO
15	Are samples individually bagged ?		YES	NO
16	Are all volatile samples headspace-free (<pea-size for waters)?	N/A	YES	NO
17	Shipping container (circle one):	Cooler / Box / Other:		
18	Type of packing material used (circle one):	Bubble Wrap / Styrofoam Peanuts / Vermiculite / None		
19	Refrigerant (circle one):	Gel Ice / Loose Ice / Other: / None		
20	Was refrigerant frozen upon receipt?		YES	NO
21	Cooler temperature(s): #3) 5.1°C #4) 11.7°C #1: 4.8 °C	#2: 3.7 °C		

Sample tagging check for QC:

Sample ID's issued in order of appearance on C-O-C:	YES	NO
Tags placed in appropriate areas of sample containers:	YES	NO

Initials of reviewer:

Describe any "NO" items from checklist above: Sample #1 Time on label = 21:00, on COC = 2210, all else match. Samples #14-25 only Four of Each not Five as listed on COC. ~~Samples #1-13 only five Each not Four listed.~~

client contacted: YES / NO / N/A Date: Name of person contacted:

Describe client instructions or actions taken:

URGENT-
VERIFICATION
REQUESTED.
8

MultiChem
ANALYTICAL SERVICES

FAX Cover Sheet

To:	Lynn DeGeorge	FAX Number:	248-8884
Company:	Montgomery Watson	Date:	3/26/98
From:	Victoria (Tori) Bayly	No. of Pages (including cover page):	2
Phone:	907/248-8273		
Fax:	907/248/8274		

Lynn,
A couple of questions have arisen regarding the Liberty Island project. I apologize that I did not have time to go over this in detail before the samples arrived, but if we could clarify/verify now we will still be OK for TAT/Holding times, etc.

1) The original fax you sent to Mike with the compound lists and limits... we are assuming that the limits we are using are the ones under the PSDDA (1) SL column for screening levels (we have not seen the "blessed" copy of the QAAP yet). Based on this, it appears that according to the requested methods you have listed we would not be able to meet the limit for one compound. Under chlorinated hydrocarbons. 1,2,4-Trichlorobenzene by 8270 we can only reach a 15.4 mg/Kg reporting limit (table lists 13 mg/Kg). By 8260, we can reach a 5.0 mg/Kg, which is less than the limit requested. Which method would you prefer? Also, do you need us to report at the limits in your table, or can we report our limits as long as they are lower than yours?

Action: Please analyze for 1,2,4-trichlorobenzene using Method 8260 allowing us the achieve the lower detection limit (5.0 mg/kg).

You may use your reporting limits when providing the analytical results.

8270 limits
19.4
10.1

2) Two compounds requested by 8270 are actually analyzed by 8081... Hexachlorobenzene and hexachlorobutadiene. By 8270 we would not be able to meet the limits, and they are not on our normal list. We would need to add 8081 to the COC to accommodate these two compounds if you indeed require them.

Action: Please analyze for Hexachlorobenzene and Hexachlorobutadiene using Method 8081 instead of 8270 allowing us to achieve the lower detection limit.

Thank you for your help!

Signed LA DeGeorge

Date 3-31-97

Tori

2000 West International Airport Road, Suite C7, Anchorage, Alaska 99502-1116 • 907-248-8273 • FAX 907-248-8274

MultiChem
ANALYTICAL SERVICES

ADEC DATA PACKAGE
8260, 8270, TOC
8081, TSS

Client:

Montgomery Watson
Lynn DeGeorge

Project Name:
Liberty Island Sediments

Project Number:
1189002.330101

Accession No.:
821354

MultiChem
ANALYTICAL SERVICES

DATA PACKAGE

Grain Size and Particle Size Distribution

Client:

Montgomery Watson
Lynn DeGeorge

Project Name:
Liberty Island Sediments

Project Number:
1189002.330101

Accession No.:
821354

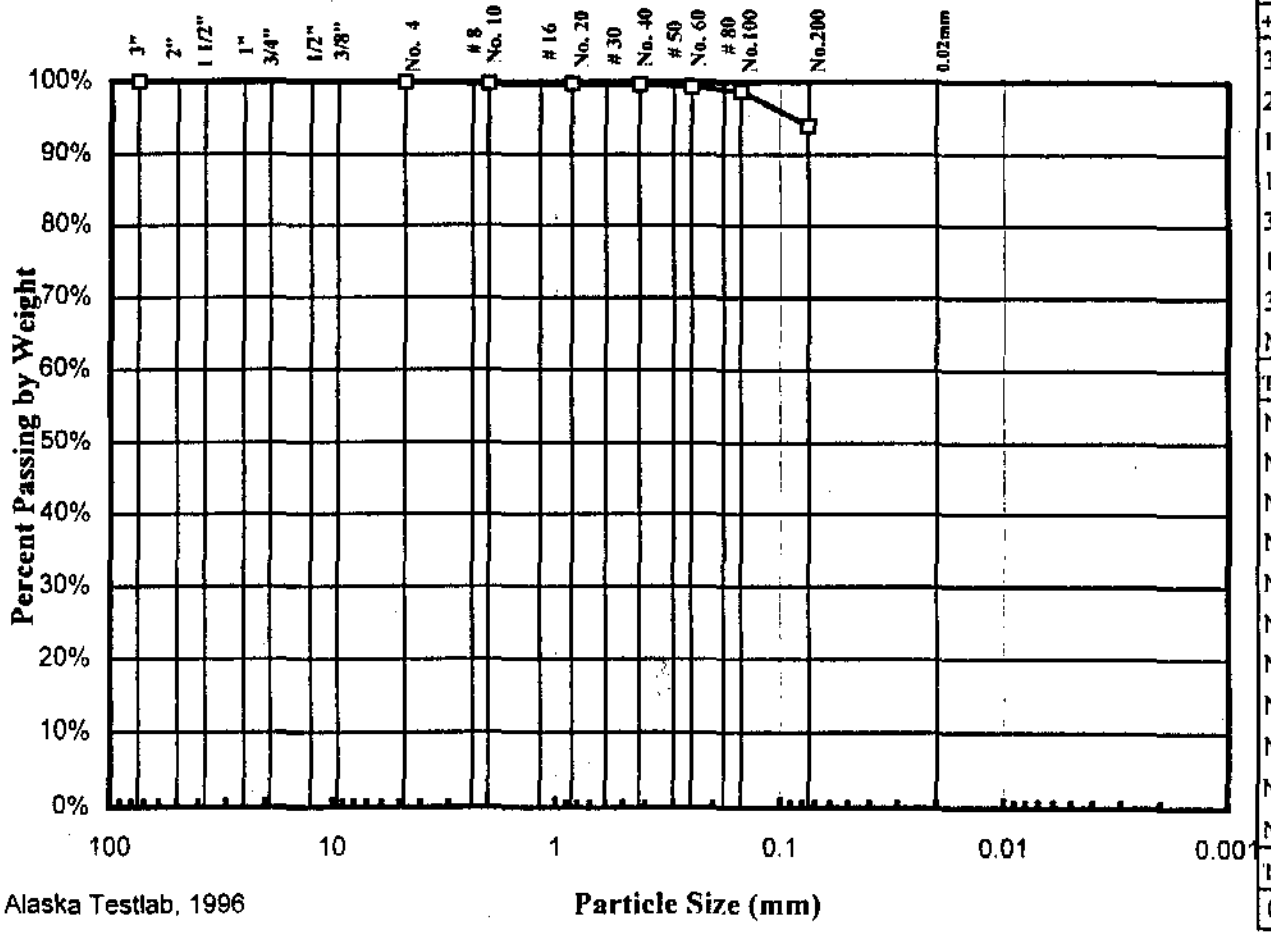
ALASKA TESTLAB
A Division of DOWL, Incorporated
4040 B Street Anchorage, Alaska 99503
(907) 562-2000 FAX (907) 563-3953

Client: MultiChem Analytical Services
Project: Liberty Island P.O. AK-8517
Location: 98BPXL102SD01(01)
Submitted by Client
PI = Non Plastic

PARTICLE-SIZE DISTRIBUTION

W.O. A27722
Lab No. 515
Received: March 20, 1998

Engineering Classification: SILT, ML
Frost Classification: F4



SIZE	PASSING	SPECIFICATION
+3 in Not Included in Test = ~0%		
3"		
2"		
1 1/2"		
1"		
3/4"		
1/2"		
3/8"		
No. 4	100%	
Total Wt. of Coarse Fraction = 346.4g		
No. 8		
No. 10	100%	
No. 16		
No. 20	100%	
No. 30		
No. 40	100%	
No. 50		
No. 60	99%	
No. 80		
No. 100	99%	
No. 200	94%	
Total Wt. of Fine Fraction = 0g		
0.02 mm		

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David L. Andersen, P.E., General Manager

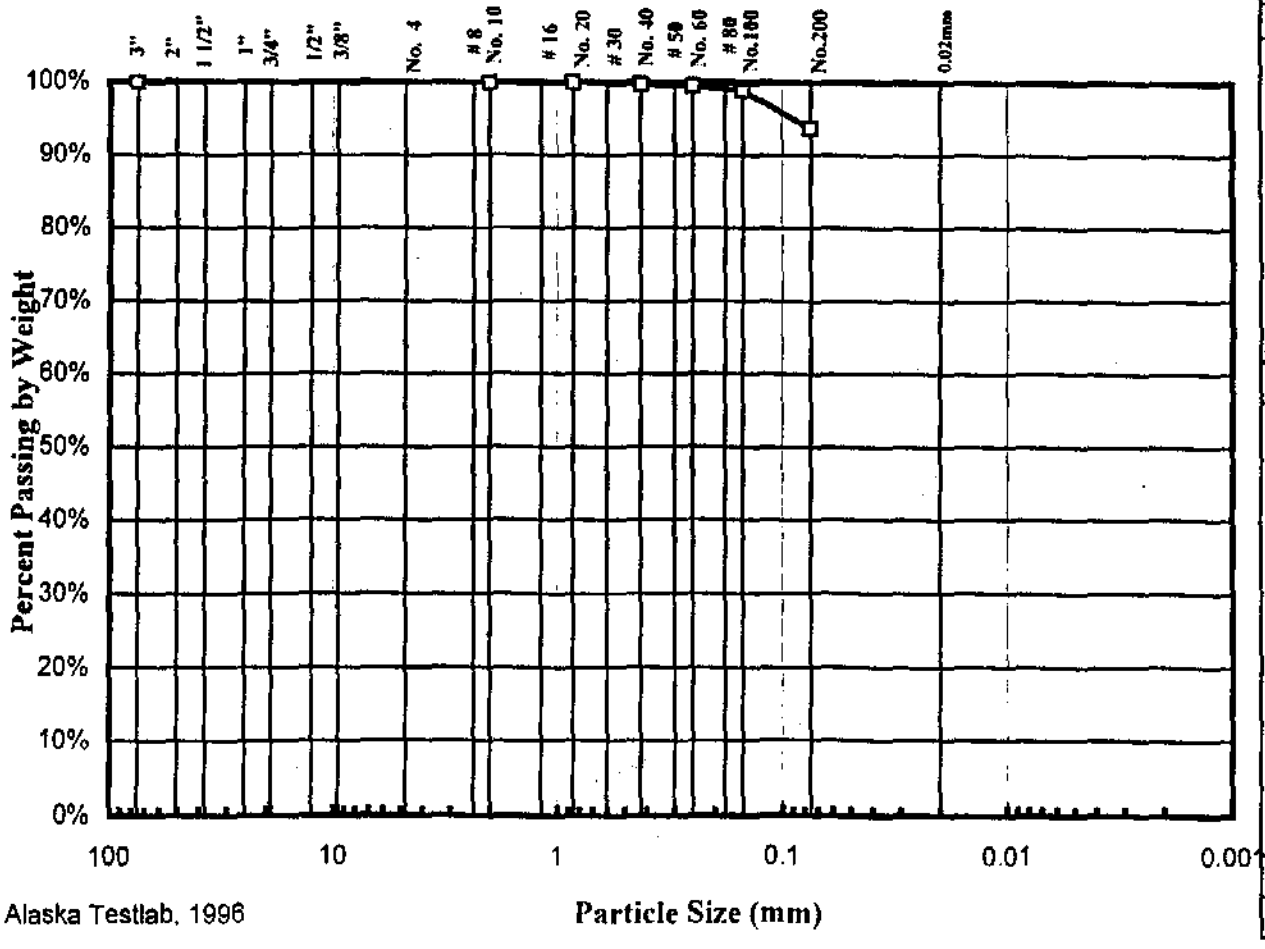
ALASKA TESTLAB
A Division of DOWL, Incorporated
4040 B Street Anchorage, Alaska 99503
(907) 562-2000 FAX (907) 563-3953

Client: MultiChem Analytical Services
Project: Liberty Island P.O. AK-8517
Location: 98BPXLI02SD02(03)
Submitted by Client
PI = Non Plastic

PARTICLE-SIZE DISTRIBUTION

W.O. A27722
Lab No. 516
Received: March 20, 1998

Engineering Classification: SILT, ML
Frost Classification: F4



SIZE	PASSING	SPECIFICATION
+3 in Not Included in Test = ~0%		
3"		
2"		
1 1/2"		
1"		
3/4"		
1/2"		
3/8"		
No. 4		
Total Wt. of Coarse Fraction = 141.5g		
No. 8		
No. 10	100%	
No. 16		
No. 20	100%	
No. 30		
No. 40	100%	
No. 50		
No. 60	100%	
No. 80		
No. 100	99%	
No. 200	94%	
Total Wt. of Fine Fraction = 0g		
0.02 mm		

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David L. Andersen, P.E., General Manager

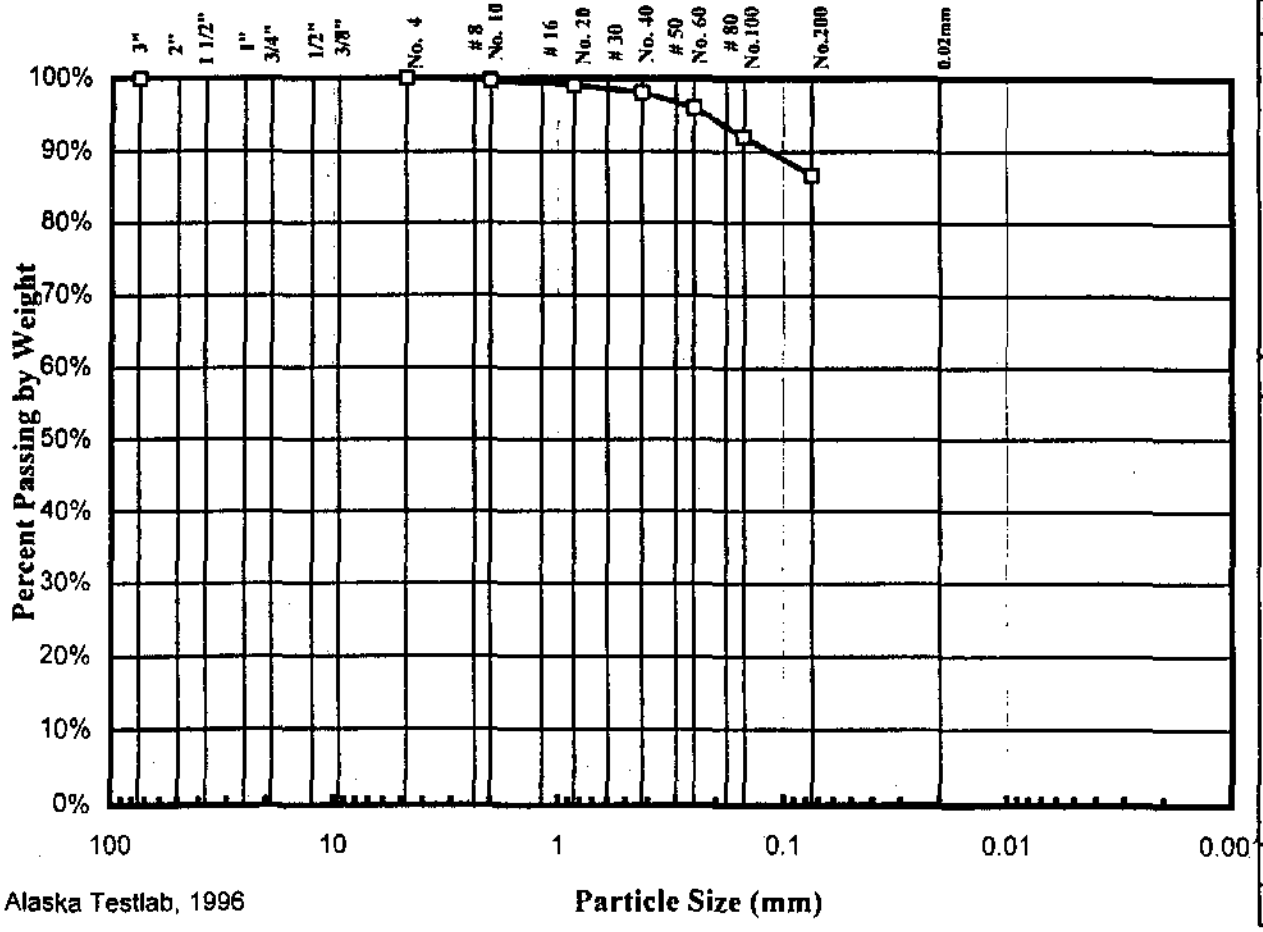
ALASKA TESTLAB
A Division of DOWL, Incorporated
4040 B Street Anchorage, Alaska 99503
(907) 562-2000 FAX (907) 563-3953

Client: MultiChem Analytical Services
Project: Liberty Island P.O. AK-8517
Location: 98BPXLI02SD03(09)
Submitted by Client
LL = 52, PI = 21

PARTICLE-SIZE DISTRIBUTION

W.O. A27722
Lab No. 517
Received: March 20, 1998

Engineering Classification: Elastic SILT, MH
Frost Classification: F4



SIZE	PASSING	SPECIFICATION
+3 in Not Included in Test = ~0%		
3"		
2"		
1 1/2"		
1"		
3/4"		
1/2"		
3/8"		
No. 4	100%	
Total Wt. of Coarse Fraction = 329.2g		
No. 8		
No. 10	100%	
No. 16		
No. 20	99%	
No. 30		
No. 40	98%	
No. 50		
No. 60	96%	
No. 80		
No. 100	92%	
No. 200	87%	
Total Wt. of Fine Fraction = 0g		
0.02 mm		

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David L. Andersen, P.E., General Manager

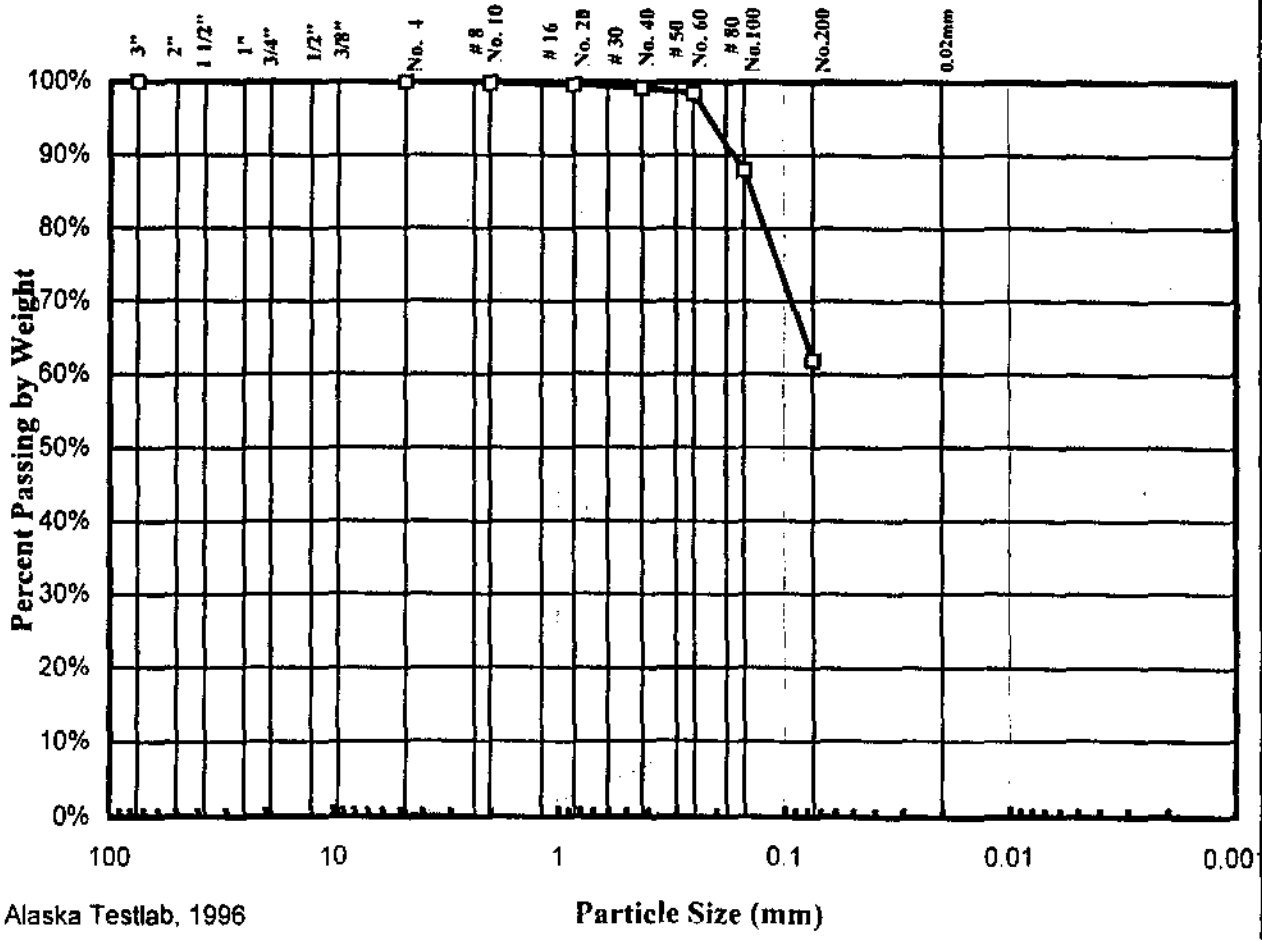
ALASKA TESTLAB
A Division of DOWL, Incorporated
4040 B Street Anchorage, Alaska 99503
(907) 562-2000 FAX (907) 563-3953

Client: MultiChem Analytical Services
Project: Liberty Island P.O. AK-8517
Location: 98BPXLI09SD01(01)
Submitted by Client
PI = Non Plastic

PARTICLE-SIZE DISTRIBUTION

W.O. A27722
Lab No. 518
Received: March 20, 1998

Engineering Classification: Sandy SILT, ML
Frost Classification: F4



SIZE	PASSING	SPECIFICATION
+3 in Not Included in Test = ~0%		
3"		
2"		
1 1/2"		
1"		
3/4"		
1/2"		
3/8"		
No. 4	100%	
Total Wt. of Coarse Fraction = 363g		
No. 8		
No. 10	100%	
No. 16		
No. 20	100%	
No. 30		
No. 40	99%	
No. 50		
No. 60	98%	
No. 80		
No. 100	88%	
No. 200	62%	
Total Wt. of Fine Fraction = 0g		
0.02 mm		

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David L. Andersen, P.E., General Manager

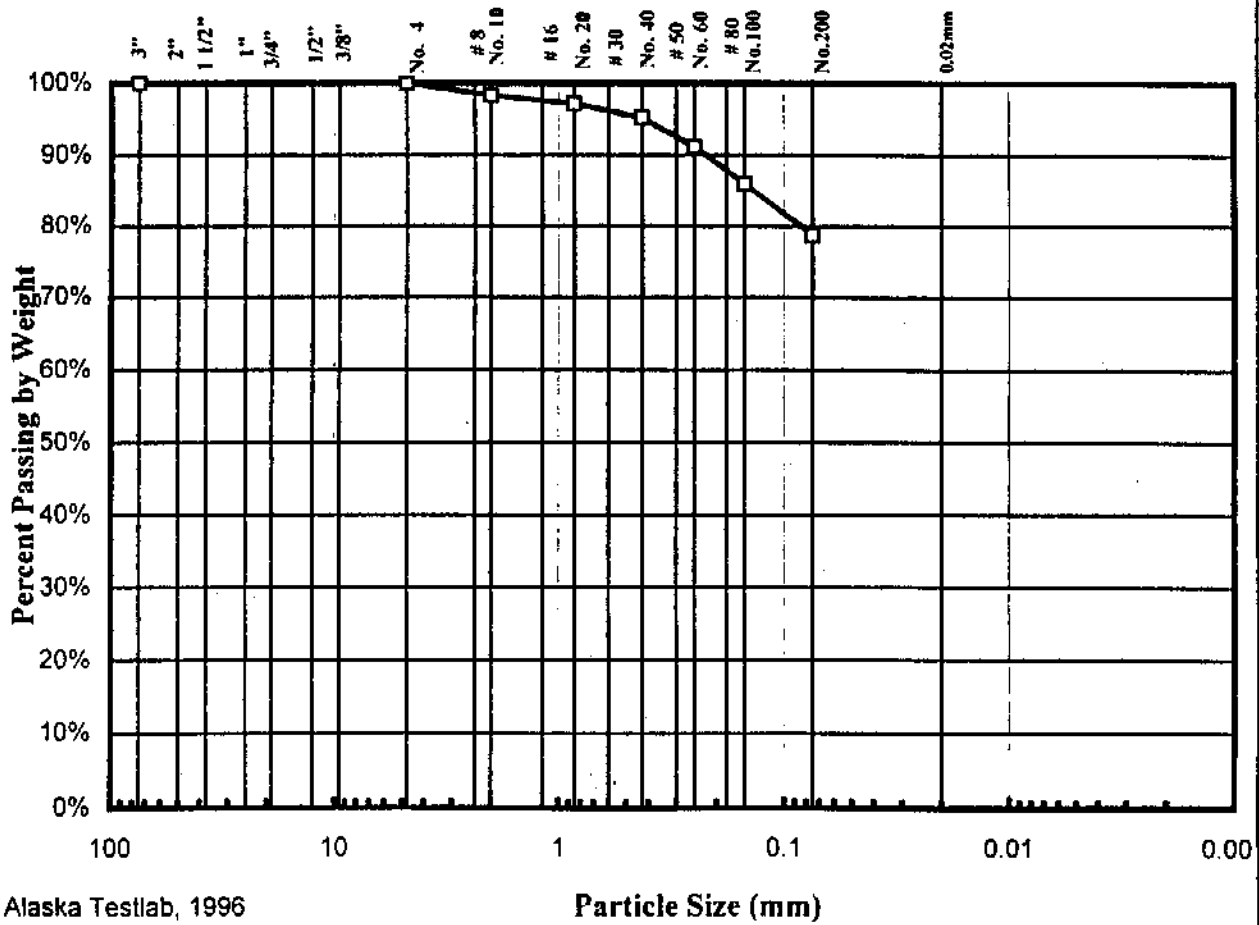
ALASKA TESTLAB
A Division of DOWL, Incorporated
4040 B Street Anchorage, Alaska 99503
(907) 562-2000 FAX (907) 563-3953

Client: MultiChem Analytical Services
Project: Liberty Island P.O. AK-8517
Location: 98BPXLI109SD02(03)
Submitted by Client
PI = Non Plastic

PARTICLE-SIZE DISTRIBUTION

W.O. A27722
Lab No. 519
Received: March 20, 1998

Engineering Classification: SILT with Sand, ML
Frost Classification: F4



SIZE	PASSING	SPECIFICATION
+3 in Not Included in Test = ~0%		
3"		
2"		
1 1/2"		
1"		
3/4"		
1/2"		
3/8"		
No. 4	100%	
Total Wt. of Coarse Fraction = 305g		
No. 8		
No. 10	98%	
No. 16		
No. 20	97%	
No. 30		
No. 40	95%	
No. 50		
No. 60	91%	
No. 80		
No. 100	86%	
No. 200	79%	
Total Wt. of Fine Fraction = 0g		
0.02 mm		

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David L. Andersen, P.E., General Manager

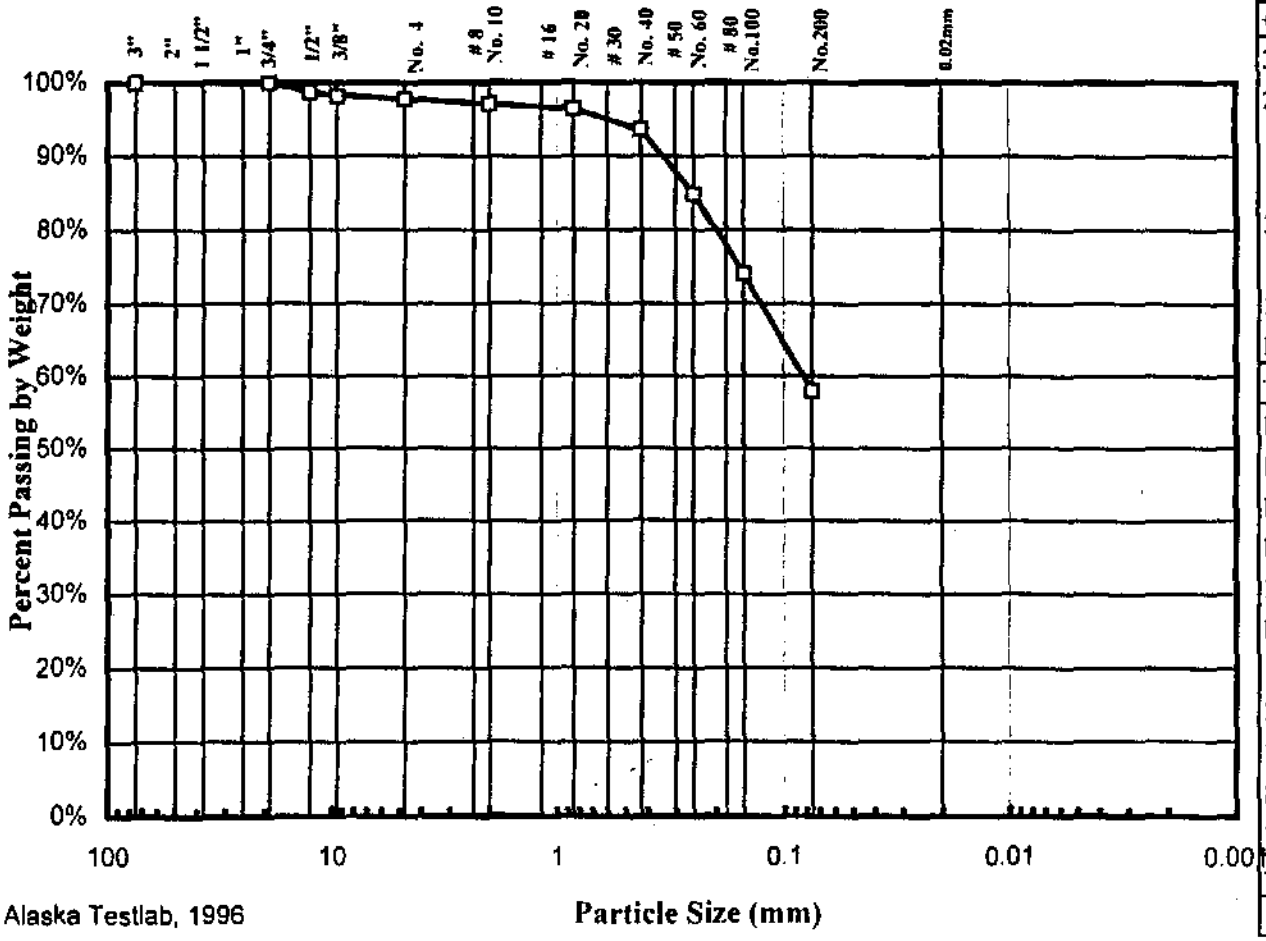
ALASKA TESTLAB
A Division of DOWL, Incorporated
4040 B Street Anchorage, Alaska 99503
(907) 562-2000 FAX (907) 563-3953

Client: MultiChem Analytical Services
Project: Liberty Island P.O. AK-8517
Location: 98BXLI09SD03(09)
Submitted by Client
PI = Non Plastic

PARTICLE-SIZE DISTRIBUTION

W.O. A27722
Lab No. 520
Received: March 20, 1998

Engineering Classification: Sandy SILT, ML
Frost Classification: F4



SIZE	PASSING	SPECIFICATION
+3 in Not Included in Test = ~0%		
3"		
2"		
1 1/2"		
1"		
3/4"	100%	
1/2"	99%	
3/8"	98%	
No. 4	98%	
Total Wt. of Coarse Fraction = 526g		
No. 8		
No. 10	97%	
No. 16		
No. 20	96%	
No. 30		
No. 40	94%	
No. 50		
No. 60	85%	
No. 80		
No. 100	74%	
No. 200	58%	
Total Wt. of Fine Fraction = 514.1g		
0.02 mm		

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David L. Andersen, P.E., General Manager

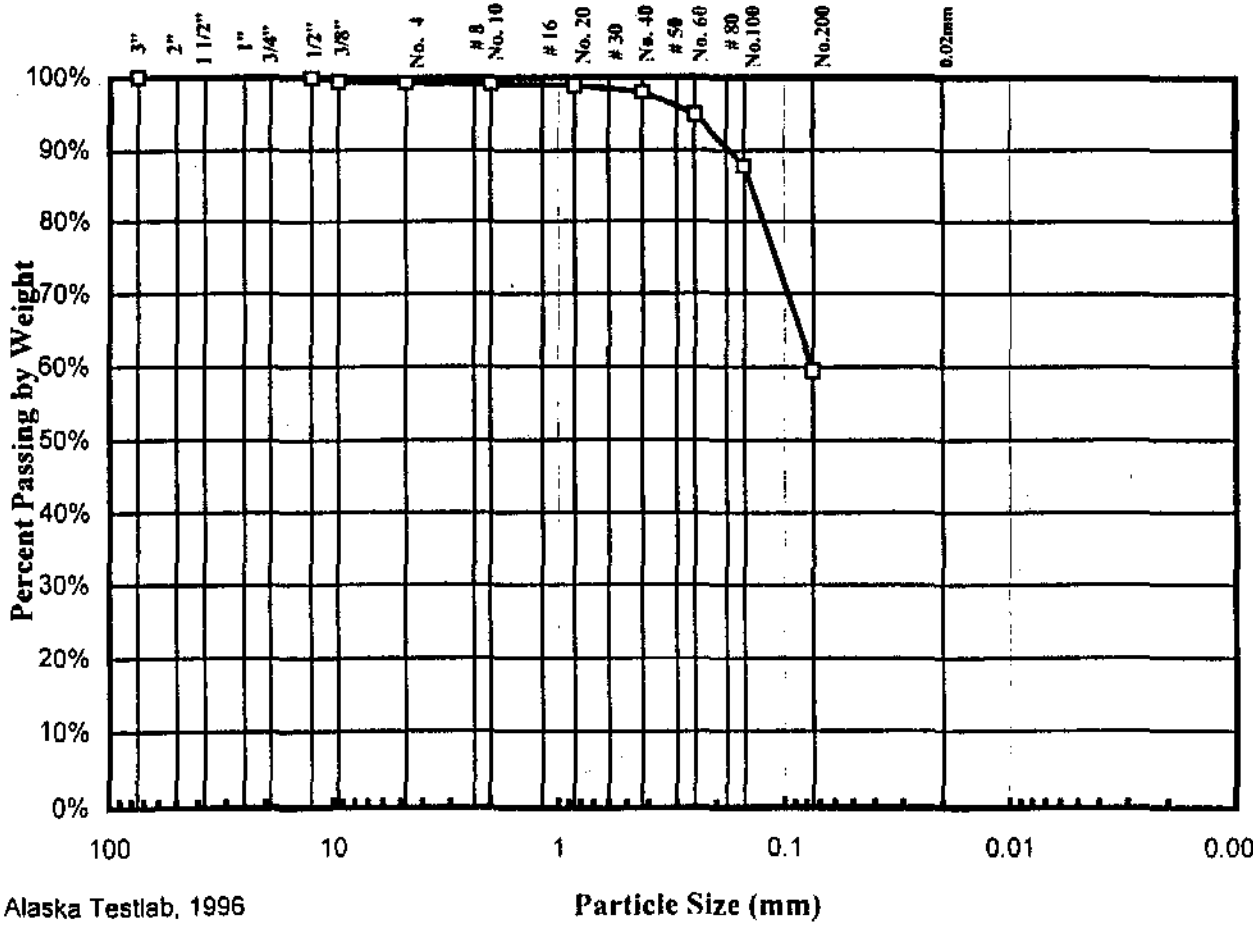
ALASKA TESTLAB
A Division of DOWL, Incorporated
4040 B Street Anchorage, Alaska 99503
(907) 562-2000 FAX (907) 563-3953

Client: MultiChem Analytical Services
Project: Liberty Island P.O. AK-8517
Location: 98BPXLI14SD01(01)
Submitted by Client
PI = Non Plastic

PARTICLE-SIZE DISTRIBUTION

W.O. A27722
Lab No. 521
Received: March 20, 1998

Engineering Classification: Sandy SILT, ML
Frost Classification: F4



SIZE	PASSING	SPECIFICATION
+3 in Not Included in Test = ~0%		
3"		
2"		
1 1/2"		
1"		
3/4"		
1/2"	100%	
3/8"	99%	
No. 4	99%	
Total Wt. of Coarse Fraction = 906g		
No. 8		
No. 10	99%	
No. 16		
No. 20	99%	
No. 30		
No. 40	98%	
No. 50		
No. 60	95%	
No. 80		
No. 100	88%	
No. 200	59%	
Total Wt. of Fine Fraction = 340.7g		
0.02 mm		

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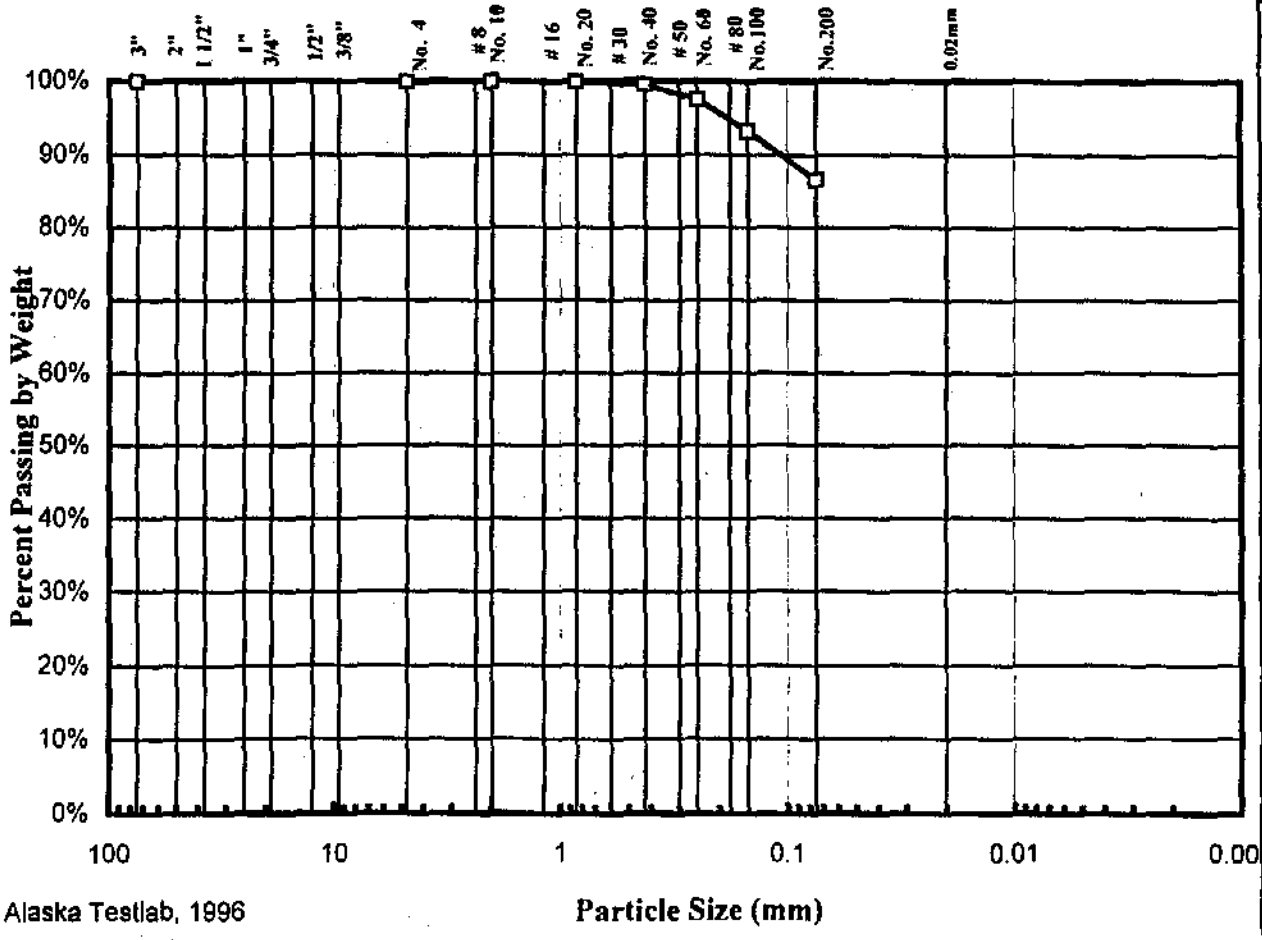
4040 B Street Anchorage, Alaska 99503
(907) 562-2000 FAX (907) 563-3953

Client: MultiChem Analytical Services
Project: Liberty Island P.O. AK-8517
Location: 98BPXLI14SD02(03)
Submitted by Client
PI = Non Plastic

PARTICLE-SIZE DISTRIBUTION

W.O. A27722
Lab No. 522
Received: March 20, 1998

Engineering Classification: SILT, ML
Frost Classification: F4



SIZE	PASSING	SPECIFICATION
+3 in Not Included in Test = ~0%		
3"		
2"		
1 1/2"		
1"		
3/4"		
1/2"		
3/8"		
No. 4	100%	
Total Wt. of Coarse Fraction = 360.1g		
No. 8		
No. 10	100%	
No. 16		
No. 20	100%	
No. 30		
No. 40	100%	
No. 50		
No. 60	98%	
No. 80		
No. 100	93%	
No. 200	87%	
Total Wt. of Fine Fraction = 0g		
0.02 mm		

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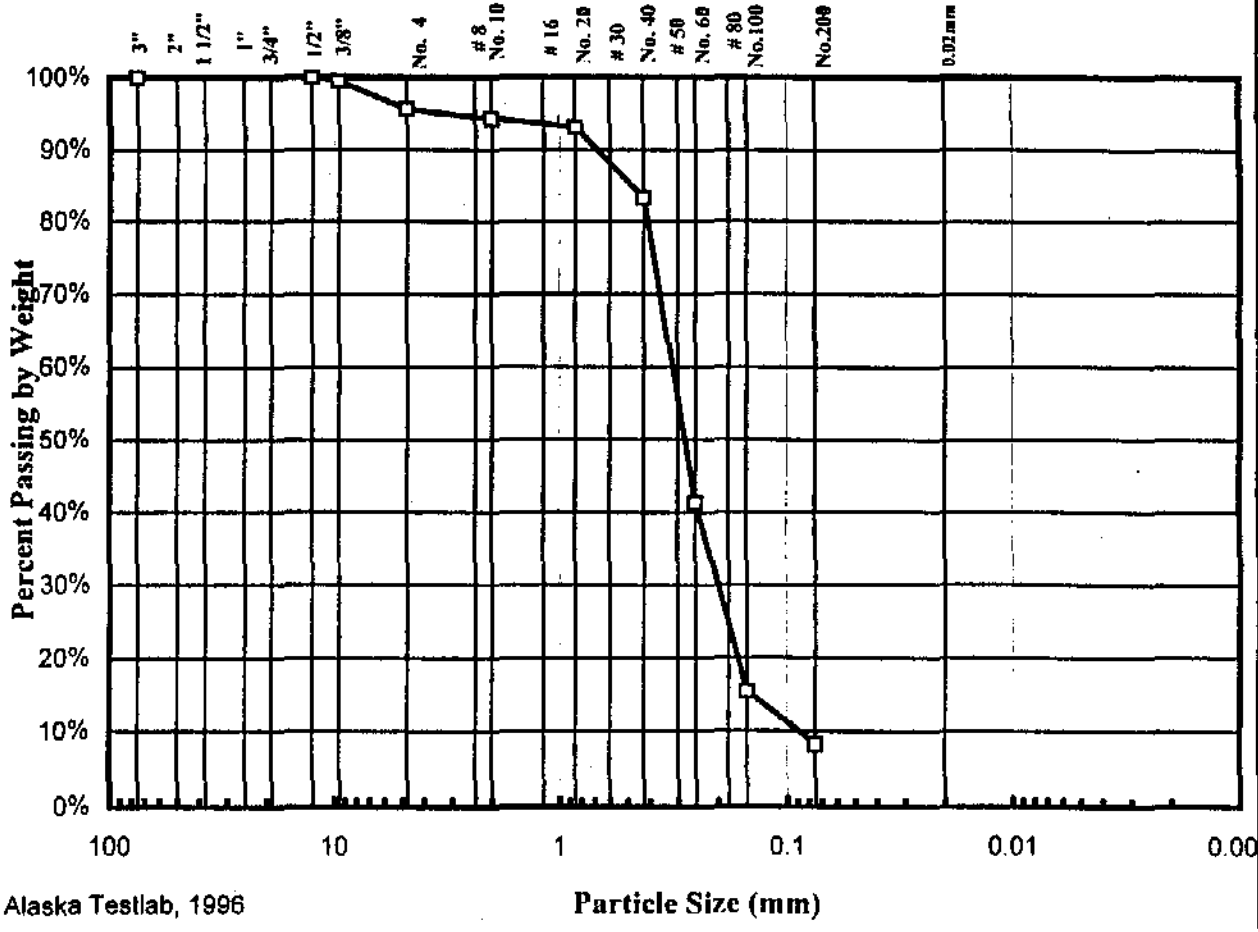
4040 B Street Anchorage, Alaska 99503
(907) 562-2000 FAX (907) 563-3953

Client: MultiChem Analytical Services
Project: Liberty Island P.O. AK-8517
Location: 98BPXLI14SD03(09)
Submitted by Client
PI = Non Plastic

PARTICLE-SIZE DISTRIBUTION

W.O. A27722
Lab No. 523
Received: March 20, 1998

Engineering Classification: Poorly Graded SAND with Silt , SP-SM
Frost Classification: Not Measured



SIZE	PASSING	SPECIFICATION
+3 in Not Included in Test = -0%		
3"		
2"		
1 1/2"		
1"		
3/4"		
1/2"	100%	
3/8"	99%	
No. 4	96%	
Total Wt. of Coarse Fraction = 848.6g		
No. 8		
No. 10	94%	
No. 16		
No. 20	93%	
No. 30		
No. 40	83%	
No. 50		
No. 60	41%	
No. 80		
No. 100	15%	
No. 200	8.3%	
Total Wt. of Fine Fraction = 380.4g		
0.02 mm		

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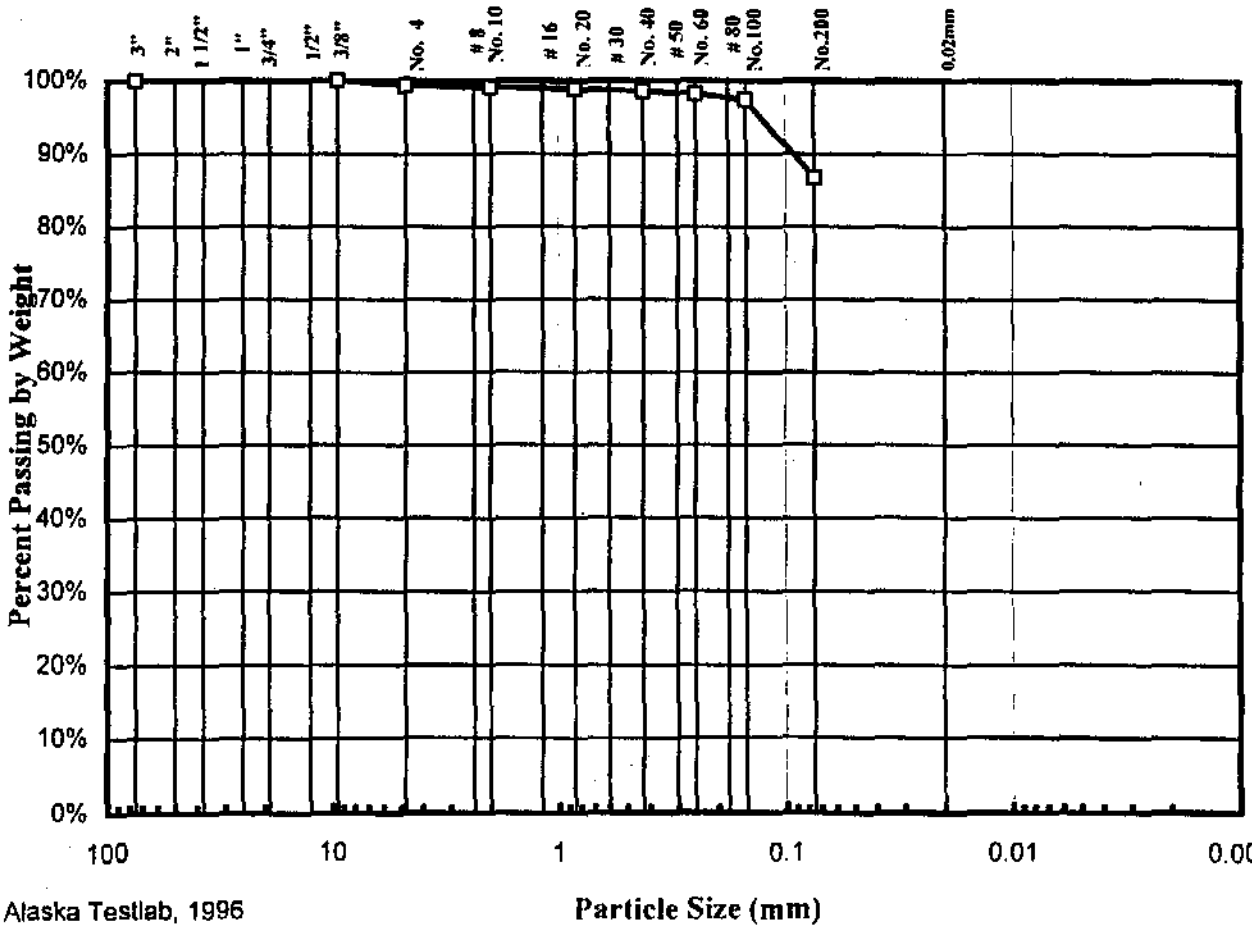
4040 B Street Anchorage, Alaska 99503
(907) 562-2000 FAX (907) 563-3953

Client: MultiChem Analytical Services
Project: Liberty Island P.O. AK-8517
Location: 98BPXLI30SD01(01)
Submitted by Client
PI = Non Plastic

PARTICLE-SIZE DISTRIBUTION

W.O. A27722
Lab No. 524
Received: March 20, 1998

Engineering Classification: SILT, ML
Frost Classification: F4



SIZE	PASSING	SPECIFICATION
+3 in Not Included in Test = ~0%		
3"		
2"		
1 1/2"		
1"		
3/4"		
1/2"		
3/8"	100%	
No. 4	99%	
Total Wt. of Coarse Fraction = 491.9g		
No. 8		
No. 10	99%	
No. 16		
No. 20	99%	
No. 30		
No. 40	99%	
No. 50		
No. 60	98%	
No. 80		
No. 100	97%	
No. 200	87%	
Total Wt. of Fine Fraction = 307.8g		
0.02 mm		

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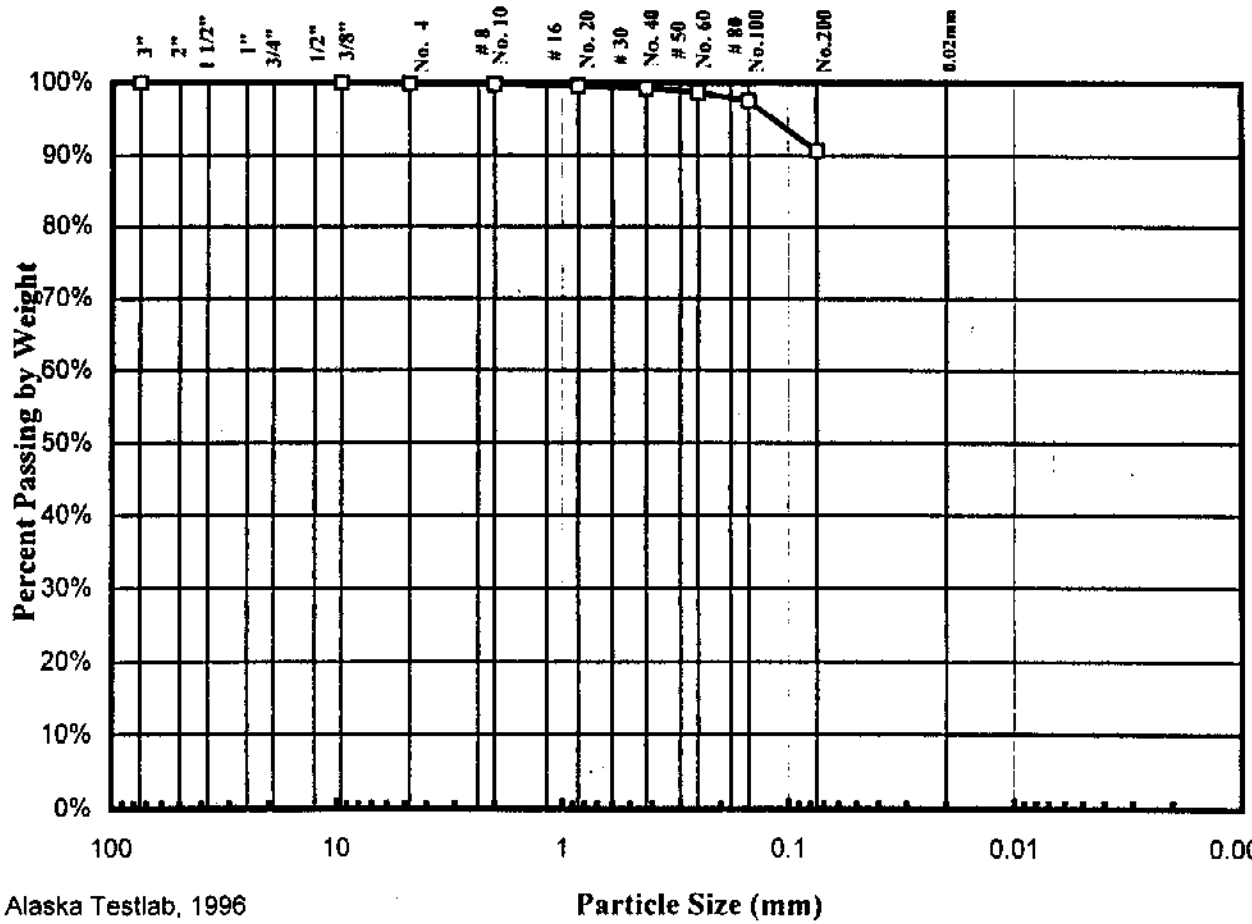
4040 B Street Anchorage, Alaska 99503
(907) 562-2000 FAX (907) 563-3953

Client: MultiChem Analytical Services
Project: Liberty Island P.O. AK-8517
Location: 98BPXLI30SD02(03)
Submitted by Client
PI = Non Plastic

PARTICLE-SIZE DISTRIBUTION

W.O. A27722
Lab No. 525
Received: March 20, 1998

Engineering Classification: SILT, ML
Frost Classification: F4



SIZE	PASSING	SPECIFICATION
+3 in Not Included in Test = ~0%		
3"		
2"		
1 1/2"		
1"		
3/4"		
1/2"		
3/8"	100%	
No. 4	100%	
Total Wt. of Coarse Fraction = 623.4g		
No. 8		
No. 10	100%	
No. 16		
No. 20	100%	
No. 30		
No. 40	99%	
No. 50		
No. 60	99%	
No. 80		
No. 100	98%	
No. 200	91%	
Total Wt. of Fine Fraction = 339.2g		
0.02 mm		

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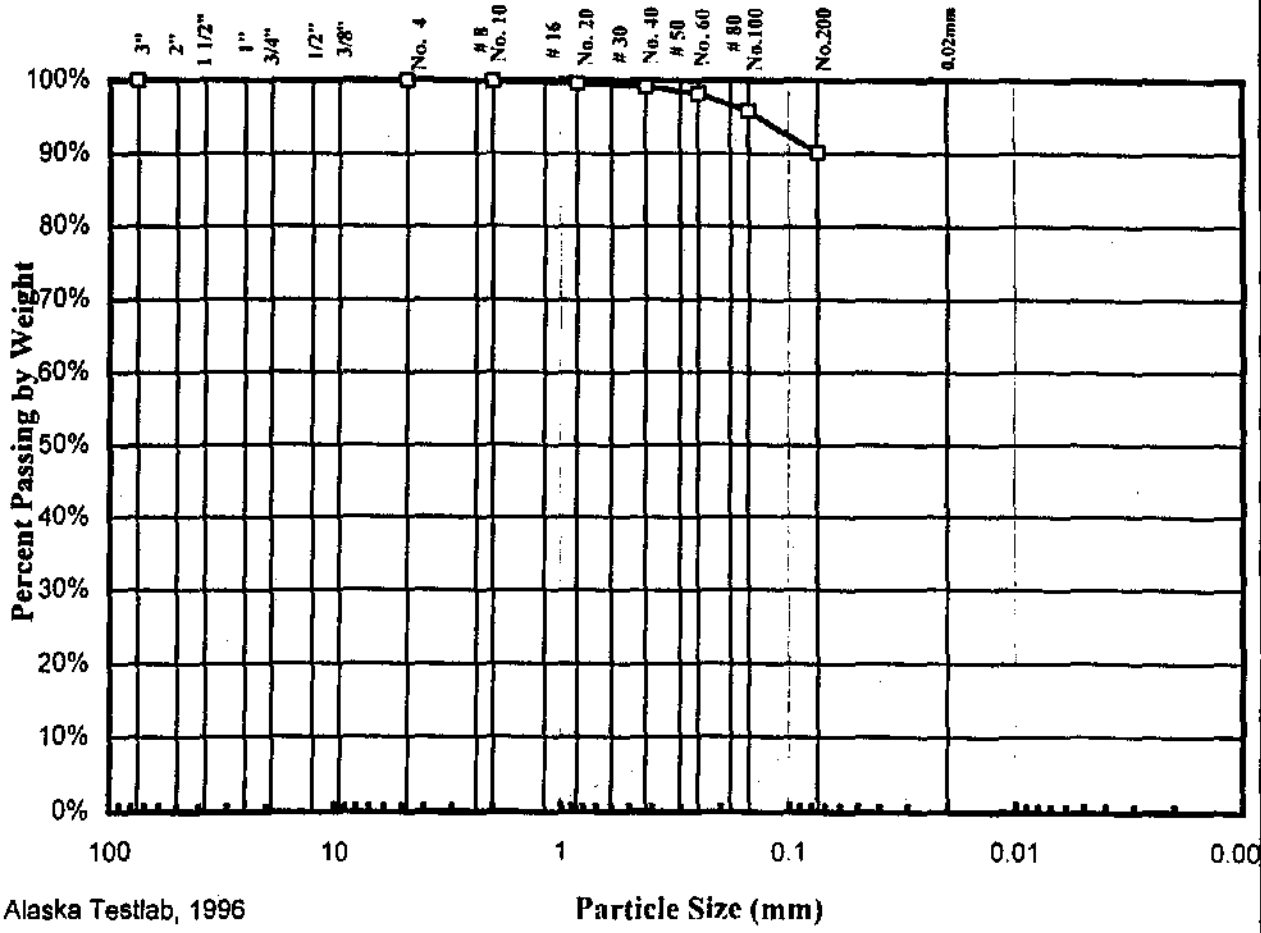
A Division of DOWL, Incorporated
4040 B Street Anchorage, Alaska 99503
(907) 562-2000 FAX (907) 563-3953

Client: MultiChem Analytical Services
Project: Liberty Island P.O. AK-8517
Location: 98BPXL130SD03(09)
Submitted by Client
LL = 52, PI = 24

PARTICLE-SIZE DISTRIBUTION

W.O. A27722
Lab No. 526
Received: March 20, 1998

Engineering Classification: Fat CLAY, CH
Frost Classification: F4



SIZE	PASSING	SPECIFICATION
+3 in Not Included in Test = ~0%		
3"		
2"		
1 1/2"		
1"		
3/4"		
1/2"		
3/8"		
No. 4	100%	
Total Wt. of Coarse Fraction = 306.7g		
No. 8		
No. 10	100%	
No. 16		
No. 20	100%	
No. 30		
No. 40	99%	
No. 50		
No. 60	98%	
No. 80		
No. 100	96%	
No. 200	90%	
Total Wt. of Fine Fraction = 306.7g		
0.02 mm		

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MultiChem
ANALYTICAL SERVICES

MAS I.D. # 821354
UST - 026

April 24, 1998

Montgomery Watson
4100 Spenard
Anchorage AK 99517-2901

Attention : Lynn DeGeorge

Project Number : 1189002.330101

Project Name : Liberty Island

Dear Ms. DeGeorge:

On March 21, 1998, MultiChem Analytical Services received 27 samples for analysis. The samples were analyzed with EPA methodology or equivalent methods as specified in the attached analytical schedule. The results, sample cross reference, and quality control data are enclosed.

This is a partial report including all analyses with the exception of the semivolatile analysis. This data will be sent as soon as it becomes available.

Sincerely,

Elaine M. Walker

Elaine M. Walker
Project Manager

EMW/hal/trm

Enclosure

560 Naches Avenue SW, Suite 101, Renton, Washington 98055-2200 • 425-228-8335 • FAX 425-228-8336 • 1-800-609-0580 • info@multichem.com

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

SAMPLE CROSS REFERENCE SHEET

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND

MAS #	CLIENT DESCRIPTION	DATE SAMPLED	MATRIX
821354-1	98BPXLI02WA01	03/18/98	WATER
821354-2	98BPXLI02WA02	03/18/98	WATER
821354-3	98BPXLI02WA03	03/18/98	WATER
821354-4	98BPXLI09WA01	03/18/98	WATER
821354-5	98BPXLI09WA02	03/18/98	WATER
821354-6	98BPXLI09WA03	03/18/98	WATER
821354-7	98BPXLI14WA01	03/18/98	WATER
821354-8	98BPXLI14WA02	03/18/98	WATER
821354-9	98BPXLI30WA03	03/19/98	WATER
821354-10	98BPXLI30WA01	03/19/98	WATER
821354-11	98BPXLI30WA02	03/19/98	WATER
821354-12	98BPXLI30WA62	03/19/98	WATER
821354-13	98BPXLI02WA61	03/18/98	WATER
821354-14	98BPXLI02SD01(01)	03/18/98	SEDIMENT
821354-15	98BPXLI02SD02(03)	03/18/98	SEDIMENT
821354-16	98BPXLI02SD03(09)	03/18/98	SEDIMENT
821354-17	98BPXLI09SD01(01)	03/18/98	SEDIMENT
821354-18	98BPXLI09SD02(03)	03/18/98	SEDIMENT
821354-19	98BPXLI09SD03(09)	03/18/98	SEDIMENT
821354-20	98BPXLI14SD01(01)	03/18/98	SEDIMENT
821354-21	98BPXLI14SD02(03)	03/18/98	SEDIMENT
821354-22	98BPXLI14SD03(09)	03/18/98	SEDIMENT
821354-23	98BPXLI30SD01(01)	03/19/98	SEDIMENT
821354-24	98BPXLI30SD02(03)	03/19/98	SEDIMENT
821354-25	98BPXLI30SD03(09)	03/19/98	SEDIMENT
821354-26	98BPXLI30SD62(03)	03/19/98	SEDIMENT
821354-27	98BPXLI02SD62(03)	03/18/98	SEDIMENT

----- TOTALS -----

MATRIX	# SAMPLES
WATER	13
SEDIMENT	14

MAS STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of the report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

ANALYTICAL SCHEDULE

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND

ANALYSIS	TECHNIQUE	REFERENCE	LAB
VOLATILE ORGANICS ANALYSIS	GCMS	EPA 8260A	R
HEXACHLOROBENZENE/HEXACHLOROBUTADIENE	GC/ECD	EPA 8081A MODIFIED	R
TOTAL ORGANIC CARBON	TOC ANALYZER	EPA 415.1	R
TOTAL ORGANIC CARBON	TOC ANALYZER	EPA 415.1 MODIFIED	R
TOTAL SUSPENDED SOLIDS	GRAVIMETRIC	EPA 160.2	R
MOISTURE	GRAVIMETRIC	CLP ILM04.0	R

R = MAS - Renton
ANC = MAS - Anchorage
SUB = Subcontract

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

CASE NARRATIVE

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND

CASE NARRATIVE: VOLATILE ORGANICS ANALYSIS

The following anomaly was associated with the preparation and/or analysis of the samples in this accession:

The 118% recovery of the surrogate spiking compound bromofluorobenzene exceeded the current MultiChem recovery range of 66-116% in the sample identified as 821354-17 (98BPXLI09SD01(01)). Since this anomaly indicated a potential high bias with no reportable concentration of any target compound found in the sample, the anomaly was flagged "H" for reporting purposes. No further corrective action was performed.

All other associated quality assurance/quality control (QA/QC) parameters were within established MultiChem control limits.

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: N/A
PROJECT #	: 1189002.330101	DATE RECEIVED	: N/A
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: N/A
CLIENT I.D.	: METHOD BLANK	DATE ANALYZED	: 03/30/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8260A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
TRICHLOROETHENE	<2
TETRACHLOROETHENE	<2
ETHYLBENZENE	<2
TOTAL XYLENES	<2
1,3-DICHLOROBENZENE	<2
1,4-DICHLOROBENZENE	<2
1,2-DICHLOROBENZENE	<2
1,2,4-TRICHLOROBENZENE	<5

SURROGATE PERCENT RECOVERY		LIMITS
1,2-DICHLOROETHANE-D4	102	67 - 150
TOLUENE-D8	104	85 - 116
BROMOFLUOROBENZENE	96	66 - 116

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: N/A
PROJECT #	: 1189002.330101	DATE RECEIVED	: N/A
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: N/A
CLIENT I.D.	: METHOD BLANK	DATE ANALYZED	: 03/30/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8260A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
TRICHLOROETHENE	<2
TETRACHLOROETHENE	<2
ETHYLBENZENE	<2
TOTAL XYLENES	<2
1,3-DICHLOROBENZENE	<2
1,4-DICHLOROBENZENE	<2
1,2-DICHLOROBENZENE	<2
1,2,4-TRICHLOROBENZENE	<5

SURROGATE PERCENT RECOVERY		LIMITS
1,2-DICHLOROETHANE-D4	102	67 - 150
TOLUENE-D8	105	85 - 116
BROMOFLUOROBENZENE	95	66 - 116

MAS I.D. # 821354-14

MultiChem
ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: N/A
CLIENT I.D.	: 98BPXLI02SD01(01)	DATE ANALYZED	: 03/30/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8260A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
TRICHLOROETHENE	<3
TETRACHLOROETHENE	<3
ETHYLBENZENE	<3
TOTAL XYLENES	<3
1,3-DICHLOROBENZENE	<3
1,4-DICHLOROBENZENE	<3
1,2-DICHLOROBENZENE	<3
1,2,4-TRICHLOROBENZENE	<7

SURROGATE PERCENT RECOVERY		LIMITS
1,2-DICHLOROETHANE-D4	104	67 - 150
TOLUENE-D8	103	85 - 116
BROMOFLUOROBENZENE	98	66 - 116

MAS I.D. # 821354-15

MultiChem
ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: N/A
CLIENT I.D.	: 98BPXLI02SD02(03)	DATE ANALYZED	: 03/30/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8260A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
TRICHLOROETHENE	<3
TETRACHLOROETHENE	<3
ETHYLBENZENE	<3
TOTAL XYLENES	<3
1,3-DICHLOROBENZENE	<3
1,4-DICHLOROBENZENE	<3
1,2-DICHLOROBENZENE	<3
1,2,4-TRICHLOROBENZENE	<7

SURROGATE PERCENT RECOVERY		LIMITS
1,2-DICHLOROETHANE-D4	105	67 - 150
TOLUENE-D8	104	85 - 116
BROMOFLUOROBENZENE	98	66 - 116

MAS I.D. # 821354-16

MultiChem
ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: N/A
CLIENT I.D.	: 98BPXLI02SD03(09)	DATE ANALYZED	: 03/30/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8260A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
TRICHLOROETHENE	<3
TETRACHLOROETHENE	<3
ETHYLBENZENE	<3
TOTAL XYLENES	<3
1,3-DICHLOROBENZENE	<3
1,4-DICHLOROBENZENE	<3
1,2-DICHLOROBENZENE	<3
1,2,4-TRICHLOROBENZENE	<8

SURROGATE PERCENT RECOVERY		LIMITS
1,2-DICHLOROETHANE-D4	102	67 - 150
TOLUENE-D8	105	85 - 116
BROMOFLUOROBENZENE	98	66 - 116

MAS I.D. # 821354-17

MultiChem
ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: N/A
CLIENT I.D.	: 98BPXLI09SD01(01)	DATE ANALYZED	: 03/30/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8260A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
TRICHLOROETHENE	<3
TETRACHLOROETHENE	<3
ETHYLBENZENE	<3
TOTAL XYLENES	<3
1,3-DICHLOROBENZENE	<3
1,4-DICHLOROBENZENE	<3
1,2-DICHLOROBENZENE	<3
1,2,4-TRICHLOROBENZENE	<8

SURROGATE PERCENT RECOVERY		LIMITS
1,2-DICHLOROETHANE-D4	102	67 - 150
TOLUENE-D8	103	85 - 116
BROMOFLUOROBENZENE	118 H	66 - 116

H = Out of limits.

MAS I.D. # 821354-18

MultiChem
ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: N/A
CLIENT I.D.	: 98BPXLI09SD02(03)	DATE ANALYZED	: 03/30/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8260A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
TRICHLOROETHENE	<3
TETRACHLOROETHENE	<3
ETHYLBENZENE	<3
TOTAL XYLENES	<3
1,3-DICHLOROBENZENE	<3
1,4-DICHLOROBENZENE	<3
1,2-DICHLOROBENZENE	<3
1,2,4-TRICHLOROBENZENE	<8

SURROGATE PERCENT RECOVERY		LIMITS
1,2-DICHLOROETHANE-D4	104	67 - 150
TOLUENE-D8	104	85 - 116
BROMOFLUOROBENZENE	99	66 - 116

MAS I.D. # 821354-19

MultiChem
ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: N/A
CLIENT I.D.	: 98BPXLI09SD03(09)	DATE ANALYZED	: 03/30/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8260A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
TRICHLOROETHENE	<3
TETRACHLOROETHENE	<3
ETHYLBENZENE	<3
TOTAL XYLENES	<3
1,3-DICHLOROBENZENE	<3
1,4-DICHLOROBENZENE	<3
1,2-DICHLOROBENZENE	<3
1,2,4-TRICHLOROBENZENE	<7

SURROGATE PERCENT RECOVERY		LIMITS
1,2-DICHLOROETHANE-D4	105	67 - 150
TOLUENE-D8	104	85 - 116
BROMOFLUOROBENZENE	97	66 - 116

MAS I.D. # 821354-20

MultiChem
ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: N/A
CLIENT I.D.	: 98BPXLI14SD01(01)	DATE ANALYZED	: 03/30/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8260A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
TRICHLOROETHENE	<3
TETRACHLOROETHENE	<3
ETHYLBENZENE	<3
TOTAL XYLENES	<3
1,3-DICHLOROBENZENE	<3
1,4-DICHLOROBENZENE	<3
1,2-DICHLOROBENZENE	<3
1,2,4-TRICHLOROBENZENE	<6

SURROGATE PERCENT RECOVERY		LIMITS
1,2-DICHLOROETHANE-D4	101	67 - 150
TOLUENE-D8	101	85 - 116
BROMOFLUOROBENZENE	116	66 - 116

MAS I.D. # 821354-21

MultiChem
ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: N/A
CLIENT I.D.	: 98BPXLI14SD02(03)	DATE ANALYZED	: 03/30/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8260A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
TRICHLOROETHENE	<3
TETRACHLOROETHENE	<3
ETHYLBENZENE	<3
TOTAL XYLENES	<3
1,3-DICHLOROBENZENE	<3
1,4-DICHLOROBENZENE	<3
1,2-DICHLOROBENZENE	<3
1,2,4-TRICHLOROBENZENE	<6

SURROGATE PERCENT RECOVERY		LIMITS
1,2-DICHLOROETHANE-D4	107	67 - 150
TOLUENE-D8	104	85 - 116
BROMOFLUOROBENZENE	99	66 - 116

MAS I.D. # 821354-22

MultiChem
ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: N/A
CLIENT I.D.	: 98BPXLI14SD03(09)	DATE ANALYZED	: 03/30/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8260A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
TRICHLOROETHENE	<2
TETRACHLOROETHENE	<2
ETHYLBENZENE	<2
TOTAL XYLENES	<2
1,3-DICHLOROBENZENE	<2
1,4-DICHLOROBENZENE	<2
1,2-DICHLOROBENZENE	<2
1,2,4-TRICHLOROBENZENE	<6

SURROGATE PERCENT RECOVERY		LIMITS
1,2-DICHLOROETHANE-D4	105	67 - 150
TOLUENE-D8	104	85 - 116
BROMOFLUOROBENZENE	99	66 - 116

MAS I.D. # 821354-23

MultiChem
ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/19/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: N/A
CLIENT I.D.	: 98BPXLI30SD01(01)	DATE ANALYZED	: 03/30/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8260A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
TRICHLOROETHENE	<3
TETRACHLOROETHENE	<3
ETHYLBENZENE	<3
TOTAL XYLENES	<3
1,3-DICHLOROBENZENE	<3
1,4-DICHLOROBENZENE	<3
1,2-DICHLOROBENZENE	<3
1,2,4-TRICHLOROBENZENE	<8

SURROGATE PERCENT RECOVERY		LIMITS
1,2-DICHLOROETHANE-D4	104	67 - 150
TOLUENE-D8	104	85 - 116
BROMOFLUOROBENZENE	99	66 - 116

MAS I.D. # 821354-24

MultiChem
ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/19/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: N/A
CLIENT I.D.	: 98BPXLI30SD02(03)	DATE ANALYZED	: 03/30/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8260A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
TRICHLOROETHENE	<3
TETRACHLOROETHENE	<3
ETHYLBENZENE	<3
TOTAL XYLENES	<3
1,3-DICHLOROBENZENE	<3
1,4-DICHLOROBENZENE	<3
1,2-DICHLOROBENZENE	<3
1,2,4-TRICHLOROBENZENE	<7

SURROGATE PERCENT RECOVERY		LIMITS
1,2-DICHLOROETHANE-D4	103	67 - 150
TOLUENE-D8	103	85 - 116
BROMOFLUOROBENZENE	106	66 - 116

MAS I.D. # 821354-25

MultiChem
ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/19/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: N/A
CLIENT I.D.	: 98BPXLI30SD03(09)	DATE ANALYZED	: 03/31/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8260A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
TRICHLOROETHENE	<3
TETRACHLOROETHENE	<3
ETHYLBENZENE	<3
TOTAL XYLENES	<3
1,3-DICHLOROBENZENE	<3
1,4-DICHLOROBENZENE	<3
1,2-DICHLOROBENZENE	<3
1,2,4-TRICHLOROBENZENE	<6

SURROGATE PERCENT RECOVERY		LIMITS
1,2-DICHLOROETHANE-D4	107	67 - 150
TOLUENE-D8	104	85 - 116
BROMOFLUOROBENZENE	98	66 - 116

MAS I.D. # 821354-26

MultiChem
ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/19/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: N/A
CLIENT I.D.	: 98BPXLI30SD62(03)	DATE ANALYZED	: 03/31/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8260A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
TRICHLOROETHENE	<3
TETRACHLOROETHENE	<3
ETHYLBENZENE	<3
TOTAL XYLENES	<3
1,3-DICHLOROBENZENE	<3
1,4-DICHLOROBENZENE	<3
1,2-DICHLOROBENZENE	<3
1,2,4-TRICHLOROBENZENE	<7

SURROGATE PERCENT RECOVERY		LIMITS
1,2-DICHLOROETHANE-D4	107	67 - 150
TOLUENE-D8	106	85 - 116
BROMOFLUOROBENZENE	97	66 - 116

MAS I.D. # 821354-27

MultiChem
ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: N/A
CLIENT I.D.	: 98BPXLI02SD62(03)	DATE ANALYZED	: 03/31/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8260A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
TRICHLOROETHENE	<3
TETRACHLOROETHENE	<3
ETHYLBENZENE	<3
TOTAL XYLENES	<3
1,3-DICHLOROBENZENE	<3
1,4-DICHLOROBENZENE	<3
1,2-DICHLOROBENZENE	<3
1,2,4-TRICHLOROBENZENE	<7

SURROGATE PERCENT RECOVERY		LIMITS
1,2-DICHLOROETHANE-D4	106	67 - 150
TOLUENE-D8	104	85 - 116
BROMOFLUOROBENZENE	99	66 - 116

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS
QUALITY CONTROL DATA

CLIENT	: MONTGOMERY WATSON	SAMPLE I.D. #	: BLANK
PROJECT #	: 1189002.330101	DATE EXTRACTED	: N/A
PROJECT NAME	: LIBERTY ISLAND	DATE ANALYZED	: 03/30/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8260A		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
TRICHLOROETHENE	<2.00	50.0	49.4	99	N/A	N/A	N/A

CONTROL LIMITS	% REC.	RPD
TRICHLOROETHENE	81 - 129	20

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
1,2-DICHLOROETHANE-D4	103	N/A	67 - 150
TOLUENE-D8	104	N/A	85 - 116
BROMOFLUOROBENZENE	97	N/A	66 - 116

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS
QUALITY CONTROL DATA

CLIENT	: MONTGOMERY WATSON	SAMPLE I.D. #	: BLANK
PROJECT #	: 1189002.330101	DATE EXTRACTED	: N/A
PROJECT NAME	: LIBERTY ISLAND	DATE ANALYZED	: 03/30/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8260A		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
TRICHLOROETHENE	<2.00	50.0	49.0	98	N/A	N/A	N/A

CONTROL LIMITS	% REC.	RPD
TRICHLOROETHENE	81 - 129	20

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
1,2-DICHLOROETHANE-D4	101	N/A	67 - 150
TOLUENE-D8	105	N/A	85 - 116
BROMOFLUOROBENZENE	95	N/A	66 - 116

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS
QUALITY CONTROL DATA

CLIENT	: MONTGOMERY WATSON	SAMPLE I.D. #	: 821354-17
PROJECT #	: 1189002.330101	DATE EXTRACTED	: N/A
PROJECT NAME	: LIBERTY ISLAND	DATE ANALYZED	: 03/30/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8260A		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
TRICHLOROETHENE	<3.39	84.7	75.0	89	69.9	83	7

CONTROL LIMITS	% REC.	RPD
TRICHLOROETHENE	77 - 134	20

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
1,2-DICHLOROETHANE-D4	108	104	67 - 150
TOLUENE-D8	100	102	85 - 116
BROMOFLUOROBENZENE	115	101	66 - 116

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

CASE NARRATIVE

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND

CASE NARRATIVE: HEXACHLOROBENZENE/HEXACHLOROBUTADIENE ANALYSIS

There were no anomalies associated with the preparation and/or analysis of the samples in this accession.

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

HEXACHLOROBENZENE/HEXACHLOROBUTADIENE ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: N/A
PROJECT #	: 1189002.330101	DATE RECEIVED	: N/A
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 04/01/98
CLIENT I.D.	: METHOD BLANK	DATE ANALYZED	: 04/08/98
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8081A (MODIFIED)	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
HEXACHLOROBENZENE	<0.0017
HEXACHLOROBUTADIENE	<0.0017

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	116	28 - 138
TETRACHLORO-M-XYLENE	90	43 - 119

MAS I.D. # 821354-14

MultiChem
ANALYTICAL SERVICES

HEXACHLOROBENZENE/HEXACHLOROBUTADIENE ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 04/01/98
CLIENT I.D.	: 98BPXLI02SD01(01)	DATE ANALYZED	: 04/08/98
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8081A (MODIFIED)	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
HEXACHLOROBENZENE	<0.0023
HEXACHLOROBUTADIENE	<0.0023

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	108	28 - 138
TETRACHLORO-M-XYLENE	81	43 - 119

MAS I.D. # 821354-15

MultiChem
ANALYTICAL SERVICES

HEXACHLOROBENZENE/HEXACHLOROBUTADIENE ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 04/01/98
CLIENT I.D.	: 98BPXLI02SD02(03)	DATE ANALYZED	: 04/08/98
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8081A (MODIFIED)	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
HEXACHLOROBENZENE	<0.0025
HEXACHLOROBUTADIENE	<0.0025

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	109	28 - 138
TETRACHLORO-M-XYLENE	84	43 - 119

MAS I.D. # 821354-16

MultiChem
ANALYTICAL SERVICES

HEXACHLOROBENZENE/HEXACHLOROBUTADIENE ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 04/01/98
CLIENT I.D.	: 98BPXLI02SD03(09)	DATE ANALYZED	: 04/08/98
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8081A (MODIFIED)	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
HEXACHLOROBENZENE	<0.0025
HEXACHLOROBUTADIENE	<0.0025

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	106	28 - 138
TETRACHLORO-M-XYLENE	83	43 - 119

MAS I.D. # 821354-17

MultiChem
ANALYTICAL SERVICES

HEXACHLOROBENZENE/HEXACHLOROBUTADIENE ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 04/01/98
CLIENT I.D.	: 98BPXLI09SD01(01)	DATE ANALYZED	: 04/08/98
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8081A (MODIFIED)	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
HEXACHLOROBENZENE	<0.0028
HEXACHLOROBUTADIENE	<0.0028

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	114	28 - 138
TETRACHLORO-M-XYLENE	92	43 - 119

MAS I.D. # 821354-18

MultiChem
ANALYTICAL SERVICES

HEXACHLOROBENZENE/HEXACHLOROBUTADIENE ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 04/01/98
CLIENT I.D.	: 98BPXLI09SD02(03)	DATE ANALYZED	: 04/09/98
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8081A (MODIFIED)	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
HEXACHLOROBENZENE	<0.0027
HEXACHLOROBUTADIENE	<0.0027

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	113	28 - 138
TETRACHLORO-M-XYLENE	92	43 - 119

MAS I.D. # 821354-19

MultiChem
ANALYTICAL SERVICES

HEXACHLOROBENZENE/HEXACHLOROBUTADIENE ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 04/01/98
CLIENT I.D.	: 98BPXLI09SD03(09)	DATE ANALYZED	: 04/09/98
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8081A (MODIFIED)	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
HEXACHLOROBENZENE	<0.0022
HEXACHLOROBUTADIENE	<0.0022

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	111	28 - 138
TETRACHLORO-M-XYLENE	92	43 - 119

MAS I.D. # 821354-20

MultiChem
ANALYTICAL SERVICES

HEXACHLOROBENZENE/HEXACHLOROBUTADIENE ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 04/01/98
CLIENT I.D.	: 98BPXLI14SD01(01)	DATE ANALYZED	: 04/09/98
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8081A (MODIFIED)	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
HEXACHLOROBENZENE	<0.0021
HEXACHLOROBUTADIENE	<0.0021

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	112	28 - 138
TETRACHLORO-M-XYLENE	85	43 - 119

MAS I.D. # 821354-21

MultiChem
ANALYTICAL SERVICES

HEXACHLOROBENZENE/HEXACHLOROBUTADIENE ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 04/01/98
CLIENT I.D.	: 98BPXLI14SD02(03)	DATE ANALYZED	: 04/09/98
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8081A (MODIFIED)	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
HEXACHLOROBENZENE	<0.0022
HEXACHLOROBUTADIENE	<0.0022

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	116	28 - 138
TETRACHLORO-M-XYLENE	92	43 - 119

MAS I.D. # 821354-22

MultiChem
ANALYTICAL SERVICES

HEXACHLOROBENZENE/HEXACHLOROBUTADIENE ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 04/01/98
CLIENT I.D.	: 98BPXLI14SD03(09)	DATE ANALYZED	: 04/09/98
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8081A (MODIFIED)	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
HEXACHLOROBENZENE	<0.0020
HEXACHLOROBUTADIENE	<0.0020

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	112	28 - 138
TETRACHLORO-M-XYLENE	85	43 - 119

MAS I.D. # 821354-23

MultiChem
ANALYTICAL SERVICES

HEXACHLOROBENZENE/HEXACHLOROBUTADIENE ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/19/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 04/01/98
CLIENT I.D.	: 98BPXLI30SD01(01)	DATE ANALYZED	: 04/09/98
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8081A (MODIFIED)	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
HEXACHLOROBENZENE	<0.0026
HEXACHLOROBUTADIENE	<0.0026

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	115	28 - 138
TETRACHLORO-M-XYLENE	90	43 - 119

MAS I.D. # 821354-24

MultiChem
ANALYTICAL SERVICES

HEXACHLOROBENZENE/HEXACHLOROBUTADIENE ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/19/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 04/01/98
CLIENT I.D.	: 98BPXLI30SD02(03)	DATE ANALYZED	: 04/09/98
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8081A (MODIFIED)	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
HEXACHLOROBENZENE	<0.0023
HEXACHLOROBUTADIENE	<0.0023

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	111	28 - 138
TETRACHLORO-M-XYLENE	88	43 - 119

MAS I.D. # 821354-25

MultiChem
ANALYTICAL SERVICES

HEXACHLOROBENZENE/HEXACHLOROBUTADIENE ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/19/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 04/01/98
CLIENT I.D.	: 98BPXLI30SD03(09)	DATE ANALYZED	: 04/09/98
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8081A (MODIFIED)	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
HEXACHLOROBENZENE	<0.0022
HEXACHLOROBUTADIENE	<0.0022

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	111	28 - 138
TETRACHLORO-M-XYLENE	88	43 - 119

MAS I.D. # 821354-26

MultiChem
ANALYTICAL SERVICES

HEXACHLOROBENZENE/HEXACHLOROBUTADIENE ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/19/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 04/01/98
CLIENT I.D.	: 98BPXLI30SD62(03)	DATE ANALYZED	: 04/09/98
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8081A (MODIFIED)	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
HEXACHLOROBENZENE	<0.0024
HEXACHLOROBUTADIENE	<0.0024

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	121	28 - 138
TETRACHLORO-M-XYLENE	95	43 - 119

MAS I.D. # 821354-27

MultiChem
ANALYTICAL SERVICES

HEXACHLOROBENZENE/HEXACHLOROBUTADIENE ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 04/01/98
CLIENT I.D.	: 98BPXLI02SD62(03)	DATE ANALYZED	: 04/09/98
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8081A (MODIFIED)	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
HEXACHLOROBENZENE	<0.0025
HEXACHLOROBUTADIENE	<0.0025

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	113	28 - 138
TETRACHLORO-M-XYLENE	90	43 - 119

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

HEXACHLOROBENZENE/HEXACHLOROBUTADIENE ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	SAMPLE I.D. #	: BLANK
PROJECT #	: 1189002.330101	DATE EXTRACTED	: 04/01/98
PROJECT NAME	: LIBERTY ISLAND	DATE ANALYZED	: 04/08/98
SAMPLE MATRIX	: SOIL	UNITS	: ug/Kg
EPA METHOD	: 8081A (MODIFIED)		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
HEXACHLOROBENZENE	<0.00167	0.0167	0.0129	77	N/A	N/A	N/A
HEXACHLOROBUTADIENE	<0.00167	0.0167	0.0153	92	N/A	N/A	N/A

CONTROL LIMITS	% REC.	RPD
HEXACHLOROBENZENE	20 - 160	50
HEXACHLOROBUTADIENE	20 - 160	50

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
DECACHLOROBIPHENYL	113	N/A	28 - 138
TETRACHLORO-M-XYLENE	85	N/A	43 - 119

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

HEXACHLOROBENZENE/HEXACHLOROBUTADIENE ANALYSIS
DATA SUMMARY

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND
SAMPLE MATRIX : SOIL
EPA METHOD : 8081A (MODIFIED)

SAMPLE I.D. # : 821354-17
DATE EXTRACTED : 04/01/98
DATE ANALYZED : 04/08/98
UNITS : ug/Kg

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
HEXACHLOROBENZENE	<0.00282	0.0282	0.0189	67	0.0154	55	20
HEXACHLOROBUTADIENE	<0.00282	0.0282	0.0289	102	0.0273	97	6

CONTROL LIMITS	% REC.	RPD
HEXACHLOROBENZENE	20 - 160	50
HEXACHLOROBUTADIENE	20 - 160	50

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
DECACHLOROBIPHENYL	116	111	28 - 138
TETRACHLORO-M-XYLENE	95	87	43 - 119

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

CASE NARRATIVE

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND

CASE NARRATIVE: GENERAL CHEMISTRY ANALYSIS

The following anomalies were associated with the preparation and/or analysis of the samples in this accession:

The bottles containing the total organic carbon (TOC) aliquots for samples 821354-10 (98BPXLI30WA01) and 821354-12 (98BPXLI30WA62) were cracked and broken. The samples were transferred to new amber bottle containers.

The percent recovery of the first continuing calibration verification (CCV) in the April 3, 1998, TOC analytical run was outside the required control limits of 90-110% due to a bad injection. The samples affected were the method blank, laboratory control samples (LCSs) and 821354-15 (98BPXLI02SD02(03). The CCV was reanalyzed for verification and percent recovery was within control limits. Another sample, 821354-16 (98BPXLI02SD03(09) was reanalyzed for verification. The relative percent difference (RPD) between the initial and reanalyzed result for the sample was less than 1%. After reanalysis of the CCV and sample 821354-16 (98BPXLI02SD03(09), the instrument was determined to be stable. Therefore, analysis was resumed and TOC results for the blank, LCS and 821354-15 (98BPXLI02SD02(03) were reported from the analytical run.

All other associated quality assurance/quality control (QA/QC) parameters were within established MultiChem control limits.

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

GENERAL CHEMISTRY ANALYSIS

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND

MATRIX : WATER

PARAMETER	DATE PREPARED	DATE ANALYZED
TOTAL ORGANIC CARBON (SAMPLES -1 THRU -6)	N/A	03/25/98
TOTAL ORGANIC CARBON (SAMPLES -7 THRU -13)	N/A	03/26/98
TOTAL SUSPENDED SOLIDS	03/25/98	03/26/98

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

GENERAL CHEMISTRY ANALYSIS
DATA SUMMARY

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND

MATRIX : WATER
UNITS : mg/L

MAS I.D. #	CLIENT I.D.	TOTAL ORGANIC CARBON	TOTAL SUSPENDED SOLIDS
821354-1	98BPXLI02WA01	1.5	<10
821354-2	98BPXLI02WA02	1.6	34
821354-3	98BPXLI02WA03	1.1	12
821354-4	98BPXLI09WA01	1.2	74
821354-5	98BPXLI09WA02	1.2	34
821354-6	98BPXLI09WA03	1.2	48
821354-7	98BPXLI14WA01	1.4	15
821354-8	98BPXLI14WA02	1.3	<10
821354-9	98BPXLI30WA03	1.2	17
821354-10	98BPXLI30WA01	1.7	<10
821354-11	98BPXLI30WA02	1.2	10
821354-12	98BPXLI30WA62	1.2	13
821354-13	98BPXLI02WA61	1.4	17
BLANK	-	<0.50	<10
BLANK	-	<0.50	N/A

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

GENERAL CHEMISTRY ANALYSIS
QUALITY CONTROL DATA

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND

MATRIX : WATER
UNITS : mg/L

PARAMETER	MAS I.D.	SAMPLE RESULT	DUP RESULT	RPD	SPIKED RESULT	SPIKE ADDED	% REC.
TOTAL ORGANIC CARBON	BLANK	<0.500	N/A	N/A	2.16	2.00	108
TOTAL ORGANIC CARBON	BLANK	<0.500	N/A	N/A	2.20	2.00	110
TOTAL ORGANIC CARBON	821354-1	1.45	1.52	5	3.43	2.00	99
TOTAL ORGANIC CARBON	821354-7	1.43	1.47	3	3.33	2.00	95
TOTAL SUSPENDED SOLIDS	BLANK	<10.0	N/A	N/A	60.0	60.6	99
TOTAL SUSPENDED SOLIDS	821354-1	<10.0	<10.0	NC	N/A	N/A	N/A

NC = Not calculable.

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

GENERAL CHEMISTRY ANALYSIS

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND

MATRIX : SOIL

PARAMETER	DATE PREPARED	DATE ANALYZED
TOTAL ORGANIC CARBON (SAMPLE -14)	03/28/98	04/01/98
TOTAL ORGANIC CARBON (SAMPLES -15 THRU -19)	03/28/98	04/03/98
TOTAL ORGANIC CARBON (SAMPLES -20 THRU -27)	03/28/98	04/06/98

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

GENERAL CHEMISTRY ANALYSIS
DATA SUMMARY

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND

MATRIX : SOIL
UNITS : mg/Kg

MAS I.D. #	CLIENT I.D.	TOTAL ORGANIC CARBON	
821354-14	98BPXLI02SD01(01)	1.4	D4
821354-15	98BPXLI02SD02(03)	1.9	D4
821354-16	98BPXLI02SD03(09)	4.9	D0
821354-17	98BPXLI09SD01(01)	3.9	D5
821354-18	98BPXLI09SD02(03)	6.5	D0
821354-19	98BPXLI09SD03(09)	2.8	D5
821354-20	98BPXLI14SD01(01)	0.56	D4
821354-21	98BPXLI14SD02(03)	1.7	D5
821354-22	98BPXLI14SD03(09)	0.42	D4
821354-23	98BPXLI30SD01(01)	1.6	D4
821354-24	98BPXLI30SD02(03)	1.6	D5
821354-25	98BPXLI30SD03(09)	1.8	D4
821354-26	98BPXLI30SD62(03)	1.6	D4
821354-27	98BPXLI02SD62(03)	1.6	D4
BLANK	-	<0.010	
BLANK	-	<0.010	
LANK	-	<0.010	

D4 = Value from a 10 fold diluted analysis.
D0 = Value from a 40 fold diluted analysis.
D5 = Value from a 20 fold diluted analysis.

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

GENERAL CHEMISTRY ANALYSIS
QUALITY CONTROL DATA

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND

MATRIX : SOIL
UNITS : mg/Kg

PARAMETER	MAS I.D.	SAMPLE RESULT	DUP RESULT	RPD	SPIKED RESULT	SPIKE ADDED	% REC.
TOTAL ORGANIC CARBON	BLANK(LCS)	<0.0100	N/A	N/A	0.382	0.375	102
TOTAL ORGANIC CARBON	BLANK(LCS)	<0.0100	N/A	N/A	0.437	0.375	117
TOTAL ORGANIC CARBON	BLANK(LCS)	<0.0100	N/A	N/A	0.422	0.375	113
TOTAL ORGANIC CARBON	821354-14	1.41	1.56	10	1.91	0.496	101
TOTAL ORGANIC CARBON	821354-24	1.62	1.53	6	2.58	1.02	94

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

GENERAL CHEMISTRY ANALYSIS

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND

MATRIX : SOIL

PARAMETER	DATE ANALYZED
MOISTURE	03/24/98

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

GENERAL CHEMISTRY ANALYSIS
DATA SUMMARY

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND

MATRIX : SOIL
UNITS : %

MAS I.D. #	CLIENT I.D.	MOISTURE
821354-14	98BPXLI02SD01(01)	29
821354-15	98BPXLI02SD02(03)	33
821354-16	98BPXLI02SD03(09)	34
821354-17	98BPXLI09SD01(01)	41
821354-18	98BPXLI09SD02(03)	39
821354-19	98BPXLI09SD03(09)	25
821354-20	98BPXLI14SD01(01)	21
821354-21	98BPXLI14SD02(03)	23
821354-22	98BPXLI14SD03(09)	18
821354-23	98BPXLI30SD01(01)	36
821354-24	98BPXLI30SD02(03)	28
821354-25	98BPXLI30SD03(09)	23
821354-26	98BPXLI30SD62(03)	31
821354-27	98BPXLI02SD62(03)	33

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

GENERAL CHEMISTRY ANALYSIS
QUALITY CONTROL DATA

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND

MATRIX : SOIL
UNITS : %

PARAMETER	MAS I.D.	SAMPLE RESULT	DUP RESULT	RPD	SPIKED RESULT	SPIKE ADDED	% REC
MOISTURE	821354-23	36	36	0	N/A	N/A	N/A
MOISTURE	821354-27	33	33	0	N/A	N/A	N/A

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{|(\text{Sample Result} - \text{Duplicate Result})|}{\text{Average Result}} \times 100$$

10 Kenton
BPX L[illegible] Island

Pg 1 of 2

MAS 821354

Montgomery Watson
4100 Spenard Road
Anchorage AK 99517
(907)248-8883
Fax (907) 248-8884
ATTN: Lynn DeGeorge

Laboratory:
Multichem Analytical Services
2000 West International Airport Road
Anchorage, Alaska 99502
(907) 248-8273
(907) 248-8273 FAX
Attn: Mike Vogel

MW Job Number: 1189002
21-DAY 330101
TURNAROUND

Sampler's Signature 1998 Bonchean

MAS#	Date	Time	Sample ID	Matrix	Total Containers	SOIL: VOCs- 8260a 2 x 2-oz amber glass	SVOCs- 8270 1 x 8-oz amber glass	TOC-415.1 1 x 4-oz amber glass	Grain Size - ASTM D422 1 x 8-oz amber glass	Particle Size- ASTM D2487 1 x 4-oz amber glass		WATER: TSS- 160.2 250 ml poly	TOC-415.1 1 x 250 ml amber	Comments
						Cool to 4 degrees C						Cool to 4 degrees C H2SO4		
-1	3-18	2210	98BPXLI 02 WA01	W	2							✓	✓	
-2	3-18	2130	98BPXLI 02 WA02	W	2							✓	✓	
-3	3-18	2200	98BPXLI 02 WA03	W	2							✓	✓	
-4	3-18	1530	98BPXLI 09 WA01	W	2							✓	✓	MS/MSD
-5	3-18	1540	98BPXLI 09 WA02	W	2							✓	✓	
-6	3-18	1550	98BPXLI 09 WA03	W	2							✓	✓	
-7	3-18	1300	98BPXLI 14 WA01	W	2							✓	✓	
-8	3-18	1315	98BPXLI 14 WA02	W	2							✓	✓	
-9	3-19	0200	98BPXLI 30 WA03	W	2							✓	✓	
-10	3-19	0120	98BPXLI 30 WA01	W	2							✓	✓	
-11	3-19	0140	98BPXLI 30 WA02	W	2							✓	✓	
			~~98BPXLI WA03~~											No Sample
-12	3-19	0150	98BPXLI 30 WA6 2		2							✓	✓	
-13	3-18	2110	98BPXLI 02 WA6 1		2							✓	✓	
			~~98BPXLI WA~~	LAST										
			98BPXLI WA											

ADEC
21 cal day.

Relinquished by: Bonchean	Date 3-20-98 Time 1000	Hand Delivered (Y) N	Shipped Via
Received for Laboratory by: Gary Fisher	Date 3/20 Time 10:00	Cooler Temperature Upon Arrival 4.8° 3.7° 5.1° 11.7° °C	Laboratory Notified Faxed

Airbill Number | Date | Time

N.Z. Jonathan Nash 3/21/98 0930

Island

P8 2 of 2

109002.
330101

Montgomery Watson 4100 Spenard Road Anchorage AK 99517 (907)248-8883 Fax (907) 248-8884 ATTN: Lynn DeGeorge	Laboratory: Multichem Analytical Services 2000 West International Airport Road Anchorage, Alaska 99502 (907) 248-8273 (907) 248-8273 FAX Attn: Mike Vogat 1189002, 330101 3/00 MW Job Number: G ~~1189022, 30101~~ 21-DAY TURNAROUND			SOIL						WATER		MAS 821354 ADEC
				VOCs- 8260a 2 x 2-oz amber glass	SVOCs- 8270 1 x 8-oz amber glass	TOC- 415.1 1 x 4-oz amber glass	Grain Size - ASTM D422 1 x 8-oz amber glass	Particle Size- ASTM D2487 1 x 4-oz amber glass		TSS- 160.2 250 ml poly	TOC- 415.1 1 x 250 ml amber	Comments
Sampler's Signature 1998				Cool to 4 degrees C						Cool to 4 degrees C H2SO4		

MAS#	Date	Time	Sample ID	Matrix	Total Containers	VOCs- 8260a	SVOCs- 8270	TOC- 415.1	Grain Size - ASTM D422	Particle Size- ASTM D2487		TSS- 160.2	TOC- 415.1	Comments
-14	3-18	2210	98BPXLI 02 SD01(01)	S	5	✓	✓	✓	✓	✓				
-15	3-18	2230	98BPXLI 02 SD02(03)	S	5									
-16	3-18	2330	98BPXLI 02 SD03(09)	S	5									
-17	3-18	1610	98BPXLI 09 SD01(01)	S	5									MS/MSD
-18	3-18	1620	98BPXLI 09 SD02(03)	S	5									
-19	3-18	1630	98BPXLI 09 SD03(09)	S	5									
-20	3-18	1330	98BPXLI 14 SD01(01)	S	5									
-21	3-18	1345	98BPXLI 14 SD02(03)	S	5									
-22	3-18	1400	98BPXLI 14 SD03(09)	S	5									
-23	3-19	0250	98BPXLI 30 SD01(01)	S	5									
-24	3-19	0300	98BPXLI 30 SD02(03)	S	5				✓	✓				
-25	3-19	0330	98BPXLI 30 SD03(09)	S	5	✓	✓	✓	✓	✓				
-26	3-19	0310	98BPXLI 30 SD62(03)	S	3	✓	✓	✓						
-27	3-18	2200	98BPXLI 02 SD62(03)	S	3	✓	✓	✓						
			98BPXLI __ SD__(__)											
			98BPXLI __ SD__(__)											

Relinquished by:	Date 3-20-98 Time 1000	Hand Delivered N	Shipped Via	Airbill Number	Date Time
Received for Laboratory by:	Date 3-20-98 Time 0:00	Cooler Temperature Upon Arrival °C		Laboratory Notified Dated	

LC. 3/21/98 0930

GW 3/2

NON-CONFORMANCES?
(Y) N #1
(if Y see other side)

MultiChem Analytical Services
SAMPLE LOG-IN CHECKLIST

DATE: 3/21/98
TIME: 0930
INITIALS: JVD

ACCESSION NO. 821354
CLIENT: MAS-AK
PROJECT: LIBERTY ISLAND

Shipping:

Type:	COC Seals:	Intact?	Packing Material:
X Cooler	X Ship. Cont.	(Y) N	Styrofoam
Box	On Bottles	Y N	X Bubble Bags
Other	None		Foam Vial Packs
			Other

Refrigerant:	Frozen?	Received Via:	
X Gel Ice Pack	(Y) N	Hand Delivery	X Courier
Loose Ice	Y N	Federal Express	UPS
Other	Y N	Airborne	Taxi
None		Other:	X Goldstreak

Sample Information:

Samp. #	Bottle #	Type			
14	42	Soil	Soil VOAs	0 headspace (Y) N	N
13	26	Water	Water VOAs	0 headspace Y N	N
		Product		Preserved? Y N	
		Other		Trip blanks? Y N	

Condition of Samples:

Containers:
Intact? (Bottle/Lid) (Y) N
Correct Type? (Y) N

CA #

Waters Preserved? (if needed) (Y) N N

ID's Match C.O.C. (Y) N N

Temperature: 1.5 C #1 CA NO.
(See corrective action on reverse side for explanation if temperature is outside of the MAS recommended range.)

LAB USE ONLY: ☐ NO NOTICE ☐ SENDOUTS NEEDED BY:
☐ COC/TAT DOES NOT MATCH NOTICE ☐ NEED TEST(S) VERIFIED BY CLIENT

COMMENTS:

(if Y see other side)

MultiChem Analytical Services
Corrective Action Sheet

ACCESSION # 821354

CORRECTIVE ACTION AREA

PLAIN CORRECTIVE ACTION:

CA NO.	CA NO.	CA NO.
_____Salvaged Sample	_____Replaced Bottle	_____Verified Id w/Client
_____Replaced Lid	_____Notified P.M.	_____Notified Client
_____Preserved Sample w/_____		

Comments:

Temperature: 1.5 C #-1 CA NO.

_____Comments: Samples were received outside of the MAS recommended temperature range (4 C+/- 2 C) Samples were received within 5 hours of collection and may not have had sufficient time to equilibrate with coolant. A temperature range from 2 to 15 degrees Celsius is considered acceptable. The samples will be analyzed as scheduled unless directed otherwise by client.

X Comments: Samples were received outside of the MAS recommended temperature range (4 C+/- 2 C) The samples will be analyzed as scheduled unless directed otherwise by client.

Tech.Signature/Date: [illegible] 3/21/98 P.M. Signature/Date: S Walker 3/24/98

CORRECTIVE ACTION TAKEN:

Explain Action Taken:

Alaska Airlines

GOLDSTREAK PACKAGE EXPRESS

Airline	Origin	AIR WAYBILL Number
027-	ANC	5247 4295

From Shipper: MULTICHEM ANALYTICAL SVCS

Address: 2000 W INT'L A/P RD #C7

Phone: 907-248-0273

City: ANCHORAGE State: AK

Zip Code: 99507

Shipper's Signature SUBJECT TO RATE AUDIT | Date | Time a.m. p.m.

The Federal Aviation Administration requires Alaska Airlines to inform you of the following: Shipper's Security Notification:

I certify that this shipment does not contain any unauthorized explosives, destructive devices or hazardous materials. I consent to a search of this shipment. I am aware that this endorsement and original signature, along with other shipping documents, will be retained on file until the shipment is delivered.

Type of first personal identification reviewed: _____
Matching photo ID? Indicate: Yes or No _____
Number appearing on ID _____

Type of second personal identification reviewed: _____
Matching photo ID? Indicate: Yes or No _____
Number appearing on ID _____

Contents: NORMAL VARGOT

Insured Value

Declared Value of Customs

Remarks: KEEP COOL

To Consignee: (Complete Consignee information required on package) MULTICHEM ANALYTICAL SVCS

Address: 560 NACHES AVE SW #101

Phone: 425-228-0335

City: RENTON State: WA

Zip Code: 98055

Consignee's Printed Name - Signature (Received in Good Order Except as Noted) | Time a.m. p.m. | Date

Origin Courier Signature | Date | Time a.m. p.m. | Destination Courier Signature | Date | Time a.m. p.m.

Total Pieces: 3

Total Weight: 1.5

MULTIPLE PIECES FOR AS FLIGHTS ONLY

Please ✓ if Live Animal ☐

Form of Payment

☐ Cash ☐ Check ☐ GBL–Attach GBL

☒ AS / QX Account Number X 2744223 0745

☐ Credit Card Number

Validate Approval (Required for all except cash and GBL)

Executed By: Date/Time a.m. p.m.

Carrier	Flight	Destination	E.T.A.
AS			

CHECK ONE ONLY

☒ AIRPORT TO AIRPORT SERVICE

ENTER → AS COURIER CHARGES

PICK-UP ONLY ☐ AS AGENT

DELIVERY ONLY ☐ AS AGENT

DOOR TO DOOR ☐ AS AGENT

AS 800 SERVICES (800) 634-7113

PCS.	WT. RANGE	RATE	CHARGE
	GSX LETTER		
	1-15		
	16-50		
	51-70		
	71-100		
Subtotal Charges			
Other Charges			
1st Carrier			
2nd Carrier			
3rd Carrier			
Tax (Offline only)			
Pickup (NON AS COURIER)			
Delivery (NON AS COURIER)			
Special Service			
Insurance			
TOTAL			

Shipper to complete all shaded areas

Door-To-Door Service: (800) 634-7113

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MultiChem
ANALYTICAL SERVICES

April 30, 1998

MAS I. D. # 821354

Montgomery Watson
4100 Spenard Road
Anchorage, AK 99517

Attn: Lynn DeGeorge

Project Name: Liberty Island Sediments

Project Number: 1189002.330101

Dear Ms. DeGeorge:

On March 20, 1998, MultiChem Analytical Services, LLC of Alaska received twenty seven samples for analysis in conjunction with the above listed project. The requested analyses were performed using EPA or equivalent methods. The reports of analyses and deliverables are enclosed. Below is an outline of the laboratories that participated in this project.

MAS-WA	Analysis Performed:	Volatile Organics (8260), Semivolatile Organics (8270), Pesticides/PCBs (8081), Total Organic Carbon (TOC) and Total Suspended Solids (TSS)
Dowl/Alaska Testlabs	Analysis Performed:	Grain Size and Particle Size Distribution (ASTM D-422)

***Please note:** this report contains results for the Semivolatile Organics (8270), which completes this file. The electronic deliverables are currently in progress, and will be E-mailed directly to you as quickly as possible.

Please do not hesitate to contact us at (907) 248-8273, if you have any questions or comments.

Sincerely,
MultiChem Analytical Services

Victoria L. Bayly
Project Manager

2000 West International Airport Road, Suite C7, Anchorage, Alaska 99502-1116 • 907-248-8273 • FAX 907-248-8274
g/office/letterhead

MultiChem
ANALYTICAL SERVICES

MAS I.D. # 821354
UST - 026

April 29, 1998

Montgomery Watson
4100 Spenard
Anchorage AK 99517-2901

Attention : Lynn DeGeorge

Project Number : 1189002.330101

Project Name : Liberty Island

Dear Ms. DeGeorge:

On March 21, 1998, MultiChem Analytical Services received 27 samples for analysis. The samples were analyzed with EPA methodology or equivalent methods as specified in the attached analytical schedule. The results, sample cross reference, and quality control data are enclosed.

This is a partial report containing results for the semivolatile analysis only. All other data has been previously forwarded under separate cover.

Sincerely,

Elaine M. Walker

Elaine M. Walker
Project Manager

EMW/hal/trm

Enclosure

560 Naches Avenue SW, Suite 101, Renton, Washington 98055-2200 • 425-228-8335 • FAX 425-228-8336 • 1-800-609-0580 • info@multichem.com

MAS I.D. # 821354

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SAMPLE CROSS REFERENCE SHEET

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND

MAS #	CLIENT DESCRIPTION	DATE SAMPLED	MATRIX
821354-1	98BPXLI02WA01	03/18/98	WATER
821354-2	98BPXLI02WA02	03/18/98	WATER
821354-3	98BPXLI02WA03	03/18/98	WATER
821354-4	98BPXLI09WA01	03/18/98	WATER
821354-5	98BPXLI09WA02	03/18/98	WATER
821354-6	98BPXLI09WA03	03/18/98	WATER
821354-7	98BPXLI14WA01	03/18/98	WATER
821354-8	98BPXLI14WA02	03/18/98	WATER
821354-9	98BPXLI30WA03	03/19/98	WATER
821354-10	98BPXLI30WA01	03/19/98	WATER
821354-11	98BPXLI30WA02	03/19/98	WATER
821354-12	98BPXLI30WA62	03/19/98	WATER
821354-13	98BPXLI02WA61	03/18/98	WATER
821354-14	98BPXLI02SD01(01)	03/18/98	SEDIMENT
821354-15	98BPXLI02SD02(03)	03/18/98	SEDIMENT
821354-16	98BPXLI02SD03(09)	03/18/98	SEDIMENT
821354-17	98BPXLI09SD01(01)	03/18/98	SEDIMENT
821354-18	98BPXLI09SD02(03)	03/18/98	SEDIMENT
821354-19	98BPXLI09SD03(09)	03/18/98	SEDIMENT
821354-20	98BPXLI14SD01(01)	03/18/98	SEDIMENT
821354-21	98BPXLI14SD02(03)	03/18/98	SEDIMENT
821354-22	98BPXLI14SD03(09)	03/18/98	SEDIMENT
821354-23	98BPXLI30SD01(01)	03/19/98	SEDIMENT
821354-24	98BPXLI30SD02(03)	03/19/98	SEDIMENT
821354-25	98BPXLI30SD03(09)	03/19/98	SEDIMENT
821354-26	98BPXLI30SD62(03)	03/19/98	SEDIMENT
821354-27	98BPXLI02SD62(03)	03/18/98	SEDIMENT

----- TOTALS -----

MATRIX	# SAMPLES
WATER	13
SEDIMENT	14

MAS STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of the report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

ANALYTICAL SCHEDULE

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND

ANALYSIS	TECHNIQUE	REFERENCE	LAB
SEMIVOLATILE ORGANICS ANALYSIS	GCMS	EPA 8270A	R

R = MAS - Renton
ANC = MAS - Anchorage
SUB = Subcontract

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

CASE NARRATIVE

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND

CASE NARRATIVE: SEMIVOLATILE ORGANICS ANALYSIS

The following anomalies were associated with the preparation and/or analysis of the samples in this accession:

Base/Neutral Fractions
Bis(2-ethylhexyl)phthalate was detected in several samples from this set. This is a common laboratory and field contaminant because of its use in plastics. Note that this compound was also detected in the associated method blank at a level below our method detection limit (MDL).

Recoveries of the surrogate nitrobenzene-d5 from sample extracts 821354-15 (98BPXLI02SD02[03]), 821354-19 (98BPXLI09SD03[09]), 821354-20 (98BPXLI14SD01[01]) and 821354-21 (98BPXLI14SD02[03]) fell below MultiChem control limits. No action was performed since all other surrogate recoveries were within limits.

The initial analysis of the blank spike and blank spike duplicate (BS/BSD) samples showed several recovery and relative percent difference (RPD) values which exceeded MultiChem's advisory limits. The BS and BSD were reanalyzed and all recoveries and RPDs were within limits with the exception of n-nitrosodiphenylamine, which had recoveries slightly lower than our advisory limit. No further corrective action was performed since these control limits are advisory (not statistically generated due to insufficient data points) and all other spike recoveries were within limits.

The RPD between recoveries of the compounds pyrene and bis(2-ethylhexyl)phthalate from the matrix spike and matrix spike duplicate samples (MS/MSD) exceeded the MultiChem advisory limit of 20%. No corrective action was performed since both recoveries were within limits and limits are only advisory. These RPD values were flagged with "H".

The responses of continuing calibration check (CCC) compound pentachlorophenol from the CCCs preceding the base/neutral extract set fell below the method control limit. No corrective action was performed since this compound (and all other phenols) was analyzed in the acid fraction and was not a target compound in the base/neutral fraction.

Acid Fractions
Benzoic acid was detected in the associated method blank at a concentration below the reporting limit. This compound was also detected in several samples from this set, at concentrations below our MDL.

CONTINUED ON NEXT PAGE

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

CASE NARRATIVE
CONTINUED

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND

CASE NARRATIVE: SEMIVOLATILE ORGANICS ANALYSIS

This sample set was extracted along with a BS and a BSD. However, one of these extracts was blown dry during the concentration step. Therefore, results were reported for only a BS.

Recoveries of 2-4-dimethylphenol and benzyl alcohol from the associated BS sample fell below MultiChem control limits. Recoveries of benzyl alcohol from the MS/MSD also fell below MultiChem control limits. No action was performed since all control limits are only advisory.

All other associated quality assurance/quality control (QA/QC) parameters were within established MultiChem control limits.

MAS I.D. # 821354-14

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI02SD01(01)	DATE ANALYZED	: 04/06/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: ug/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
PHENOL	38
2-METHYLPHENOL	<23
4-METHYLPHENOL	<25
2,4-DIMETHYLPHENOL	<21
PENTACHLOROPHENOL	<41
BENZYL ALCOHOL	<37
BENZOIC ACID	<180

SURROGATE PERCENT RECOVERY		LIMITS
PHENOL-D5	79	39 - 132
2-FLUOROPHENOL	69	36 - 130
2,4,6-TRIBROMOPHENOL	100	13 - 133

MAS I.D. # 821354-14

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI02SD01(01)	DATE ANALYZED	: 04/22/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: mg/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
NAPHTHALENE	<0.024
ACENAPHTHYLENE	<0.022
ACENAPHTHENE	<0.024
FLUORENE	<0.027
PHENANTHRENE	0.033
ANTHRACENE	<0.025
2-METHYLNAPHTHALENE	0.025
FLUORANTHENE	<0.026
PYRENE	<0.033
BENZO(A)ANTHRACENE	<0.031
CHRYSENE	<0.031
BENZO(B)FLUORANTHENE	<0.033
BENZO(K)FLUORANTHENE	<0.042
BENZO(A)PYRENE	<0.027
INDENO(1,2,3-CD)PYRENE	<0.042
DIBENZO(A,H)ANTHRACENE	<0.043
BENZO(G,H,I)PERYLENE	<0.043
1,2-DICHLOROBENZENE	<0.026
1,4-DICHLOROBENZENE	<0.023
1,2,4-TRICHLOROBENZENE	<0.022
DIBENZOFURAN	<0.024
HEXACHLOROETHANE	<0.026
N-NITROSODIPHENYLAMINE	<0.029
DIMETHYLPHTHALATE	<0.048
DIETHYLPHTHALATE	<0.057
DI-N-BUTYLPHTHALATE	<0.033
BUTYLBENZYLPHTHALATE	<0.043
BIS(2-ETHYLHEXYL)PHTHALATE	0.056
DI-N-OCTYLPHTHALATE	<0.040

SURROGATE PERCENT RECOVERY		LIMITS
NITROBENZENE-D5	57	41 - 117
2-FLUOROBIPHENYL	71	36 - 128
TERPHENYL-D14	88	38 - 146

MAS I.D. # 821354-15

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI02SD02(03)	DATE ANALYZED	: 04/06/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: ug/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
PHENOL	<23
2-METHYLPHENOL	<24
4-METHYLPHENOL	<26
2,4-DIMETHYLPHENOL	<23
PENTACHLOROPHENOL	<43
BENZYL ALCOHOL	<39
BENZOIC ACID	<190

SURROGATE PERCENT RECOVERY		LIMITS
PHENOL-D5	99	39 - 132
2-FLUOROPHENOL	83	36 - 130
2,4,6-TRIBROMOPHENOL	104	13 - 133

MAS I.D. # 821354-15

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI02SD02(03)	DATE ANALYZED	: 04/22/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: mg/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
NAPHTHALENE	<0.025
ACENAPHTHYLENE	<0.023
ACENAPHTHENE	<0.025
FLUORENE	<0.029
PHENANTHRENE	0.031
ANTHRACENE	<0.027
2-METHYLNAPHTHALENE	<0.025
FLUORANTHENE	<0.028
PYRENE	<0.035
BENZO(A)ANTHRACENE	<0.033
CHRYSENE	<0.033
BENZO(B)FLUORANTHENE	<0.035
BENZO(K)FLUORANTHENE	<0.044
BENZO(A)PYRENE	<0.028
INDENO(1,2,3-CD)PYRENE	<0.044
DIBENZO(A,H)ANTHRACENE	<0.046
BENZO(G,H,I)PERYLENE	<0.046
1,2-DICHLOROBENZENE	<0.027
1,4-DICHLOROBENZENE	<0.025
1,2,4-TRICHLOROBENZENE	<0.023
DIBENZOFURAN	<0.026
HEXACHLOROETHANE	<0.028
N-NITROSODIPHENYLAMINE	<0.030
DIMETHYLPHTHALATE	<0.051
DIETHYLPHTHALATE	<0.060
DI-N-BUTYLPHTHALATE	<0.035
BUTYLBENZYLPHTHALATE	<0.046
BIS(2-ETHYLHEXYL)PHTHALATE	0.046
DI-N-OCTYLPHTHALATE	<0.043

SURROGATE PERCENT RECOVERY		LIMITS
NITROBENZENE-D5	30 H	41 - 117
2-FLUOROBIPHENYL	64	36 - 128
TERPHENYL-D14	74	38 - 146

H = Out of limits.

MAS I.D. # 821354-16

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI02SD03(09)	DATE ANALYZED	: 04/06/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: ug/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
PHENOL	<23
2-METHYLPHENOL	<25
4-METHYLPHENOL	64
2,4-DIMETHYLPHENOL	<23
PENTACHLOROPHENOL	<44
BENZYL ALCOHOL	<40
BENZOIC ACID	<190

SURROGATE PERCENT RECOVERY		LIMITS
PHENOL-D5	100	39 - 132
2-FLUOROPHENOL	82	36 - 130
2,4,6-TRIBROMOPHENOL	100	13 - 133

MAS I.D. # 821354-16

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI02SD03(09)	DATE ANALYZED	: 04/22/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: mg/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
NAPHTHALENE	<0.026
ACENAPHTHYLENE	<0.023
ACENAPHTHENE	<0.026
FLUORENE	<0.029
PHENANTHRENE	<0.029
ANTHRACENE	<0.027
2-METHYLNAPHTHALENE	<0.025
FLUORANTHENE	<0.028
PYRENE	<0.035
BENZO(A)ANTHRACENE	<0.033
CHRYSENE	<0.034
BENZO(B)FLUORANTHENE	<0.036
BENZO(K)FLUORANTHENE	<0.045
BENZO(A)PYRENE	<0.029
INDENO(1,2,3-CD)PYRENE	<0.045
DIBENZO(A,H)ANTHRACENE	<0.047
BENZO(G,H,I)PERYLENE	<0.046
1,2-DICHLOROBENZENE	<0.028
1,4-DICHLOROBENZENE	<0.025
1,2,4-TRICHLOROBENZENE	<0.023
DIBENZOFURAN	<0.026
HEXACHLOROETHANE	<0.028
N-NITROSODIPHENYLAMINE	<0.031
DIMETHYLPHTHALATE	<0.052
DIETHYLPHTHALATE	<0.061
DI-N-BUTYLPHTHALATE	<0.036
BUTYLBENZYLPHTHALATE	<0.046
BIS(2-ETHYLHEXYL)PHTHALATE	0.27
DI-N-OCTYLPHTHALATE	<0.043

SURROGATE PERCENT RECOVERY		LIMITS
NITROBENZENE-D5	48	41 - 117
2-FLUOROBIPHENYL	71	36 - 128
TERPHENYL-D14	91	38 - 146

MAS I.D. # 821354-17

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI09SD01(01)	DATE ANALYZED	: 04/06/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: ug/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
PHENOL	<26
2-METHYLPHENOL	<28
4-METHYLPHENOL	<30
2,4-DIMETHYLPHENOL	<26
PENTACHLOROPHENOL	<49
BENZYL ALCOHOL	<45
BENZOIC ACID	<210

SURROGATE PERCENT RECOVERY		LIMITS
PHENOL-D5	94	39 - 132
2-FLUOROPHENOL	87	36 - 130
2,4,6-TRIBROMOPHENOL	83	13 - 133

MAS I.D. # 821354-17

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI09SD01(01)	DATE ANALYZED	: 04/22/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: mg/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
NAPHTHALENE	<0.029
ACENAPHTHYLENE	<0.026
ACENAPHTHENE	<0.029
FLUORENE	<0.033
PHENANTHRENE	<0.033
ANTHRACENE	<0.030
2-METHYLNAPHTHALENE	<0.028
FLUORANTHENE	<0.032
PYRENE	<0.040
BENZO(A)ANTHRACENE	<0.037
CHRYSENE	<0.038
BENZO(B)FLUORANTHENE	<0.040
BENZO(K)FLUORANTHENE	<0.050
BENZO(A)PYRENE	<0.032
NDENO(1,2,3-CD)PYRENE	<0.050
DIBENZO(A,H)ANTHRACENE	<0.052
BENZO(G,H,I)PERYLENE	<0.052
1,2-DICHLOROBENZENE	<0.031
1,4-DICHLOROBENZENE	<0.028
1,2,4-TRICHLOROBENZENE	<0.026
DIBENZOFURAN	<0.029
HEXACHLOROETHANE	<0.032
N-NITROSODIPHENYLAMINE	<0.035
DIMETHYLPHTHALATE	<0.058
DIETHYLPHTHALATE	<0.068
DI-N-BUTYLPHTHALATE	<0.040
BUTYLBENZYLPHTHALATE	<0.052
BIS(2-ETHYLHEXYL)PHTHALATE	0.11
DI-N-OCTYLPHTHALATE	<0.048

SURROGATE PERCENT RECOVERY		LIMITS
NITROBENZENE-D5	42	41 - 117
2-FLUOROBIPHENYL	54	36 - 128
TERPHENYL-D14	100	38 - 146

MAS I.D. # 821354-18

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI09SD02(03)	DATE ANALYZED	: 04/07/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: ug/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
PHENOL	<25
2-METHYLPHENOL	<27
4-METHYLPHENOL	62
2,4-DIMETHYLPHENOL	<25
PENTACHLOROPHENOL	<48
BENZYL ALCOHOL	<43
BENZOIC ACID	<210

SURROGATE PERCENT RECOVERY		LIMITS
PHENOL-D5	93	39 - 132
2-FLUOROPHENOL	77	36 - 130
2,4,6-TRIBROMOPHENOL	84	13 - 133

MAS I.D. # 821354-18

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI09SD02(03)	DATE ANALYZED	: 04/23/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: mg/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
NAPHTHALENE	<0.028
ACENAPHTHYLENE	<0.025
ACENAPHTHENE	<0.028
FLUORENE	<0.032
PHENANTHRENE	<0.032
ANTHRACENE	<0.029
2-METHYLNAPHTHALENE	<0.027
FLUORANTHENE	<0.031
PYRENE	<0.038
BENZO(A)ANTHRACENE	<0.036
CHRYSENE	<0.036
BENZO(B)FLUORANTHENE	<0.039
BENZO(K)FLUORANTHENE	<0.049
BENZO(A)PYRENE	0.092
INDENO(1,2,3-CD)PYRENE	<0.049
DIBENZO(A,H)ANTHRACENE	<0.050
BENZO(G,H,I)PERYLENE	<0.050
1,2-DICHLOROBENZENE	<0.030
1,4-DICHLOROBENZENE	<0.027
1,2,4-TRICHLOROBENZENE	<0.025
DIBENZOFURAN	<0.028
HEXACHLOROETHANE	<0.031
N-NITROSODIPHENYLAMINE	<0.033
DIMETHYLPHTHALATE	<0.056
DIETHYLPHTHALATE	<0.066
DI-N-BUTYLPHTHALATE	<0.039
BUTYLBENZYLPHTHALATE	<0.050
BIS(2-ETHYLHEXYL)PHTHALATE	0.32
DI-N-OCTYLPHTHALATE	<0.047

SURROGATE PERCENT RECOVERY		LIMITS
NITROBENZENE-D5	48	41 - 117
2-FLUOROBIPHENYL	73	36 - 128
TERPHENYL-D14	109	38 - 146

MAS I.D. # 821354-19

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI09SD03(09)	DATE ANALYZED	: 04/07/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: ug/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
PHENOL	<21
2-METHYLPHENOL	<22
4-METHYLPHENOL	37
2,4-DIMETHYLPHENOL	<20
PENTACHLOROPHENOL	<39
BENZYL ALCOHOL	<35
BENZOIC ACID	<170

SURROGATE PERCENT RECOVERY		LIMITS
PHENOL-D5	98	39 - 132
2-FLUOROPHENOL	89	36 - 130
2,4,6-TRIBROMOPHENOL	92	13 - 133

MAS I.D. # 821354-19

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI09SD03(09)	DATE ANALYZED	: 04/23/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: mg/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
NAPHTHALENE	<0.023
ACENAPHTHYLENE	<0.020
ACENAPHTHENE	<0.023
FLUORENE	<0.026
PHENANTHRENE	<0.026
ANTHRACENE	<0.024
2-METHYLNAPHTHALENE	<0.022
FLUORANTHENE	<0.025
PYRENE	<0.031
BENZO(A)ANTHRACENE	<0.029
CHRYSENE	<0.030
BENZO(B)FLUORANTHENE	<0.031
BENZO(K)FLUORANTHENE	<0.039
BENZO(A)PYRENE	<0.025
INDENO(1,2,3-CD)PYRENE	<0.039
DIBENZO(A,H)ANTHRACENE	<0.041
BENZO(G,H,I)PERYLENE	<0.041
1,2-DICHLOROBENZENE	<0.024
1,4-DICHLOROBENZENE	<0.022
1,2,4-TRICHLOROBENZENE	<0.021
DIBENZOFURAN	<0.023
HEXACHLOROETHANE	<0.025
N-NITROSODIPHENYLAMINE	<0.027
DIMETHYLPHTHALATE	<0.046
DIETHYLPHTHALATE	<0.054
DI-N-BUTYLPHTHALATE	<0.031
BUTYLBENZYLPHTHALATE	<0.041
BIS(2-ETHYLHEXYL)PHTHALATE	0.19
DI-N-OCTYLPHTHALATE	<0.038

SURROGATE PERCENT RECOVERY		LIMITS
NITROBENZENE-D5	34 H	41 - 117
2-FLUOROBIPHENYL	75	36 - 128
TERPHENYL-D14	116	38 - 146

H = Out of limits.

MAS I.D. # 821354-20

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI14SD01(01)	DATE ANALYZED	: 04/07/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: ug/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
PHENOL	<19
2-METHYLPHENOL	<21
4-METHYLPHENOL	<22
2,4-DIMETHYLPHENOL	<19
PENTACHLOROPHENOL	<37
BENZYL ALCOHOL	<33
BENZOIC ACID	<160

SURROGATE PERCENT RECOVERY		LIMITS
PHENOL-D5	105	39 - 132
2-FLUOROPHENOL	96	36 - 130
2,4,6-TRIBROMOPHENOL	94	13 - 133

MAS I.D. # 821354-20

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI14SD01(01)	DATE ANALYZED	: 04/23/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: mg/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
NAPHTHALENE	<0.022
ACENAPHTHYLENE	<0.019
ACENAPHTHENE	<0.021
FLUORENE	<0.025
PHENANTHRENE	<0.025
ANTHRACENE	<0.023
2-METHYLNAPHTHALENE	<0.021
FLUORANTHENE	<0.024
PYRENE	<0.030
BENZO(A)ANTHRACENE	<0.028
CHRYSENE	<0.028
BENZO(B)FLUORANTHENE	<0.030
BENZO(K)FLUORANTHENE	<0.037
BENZO(A)PYRENE	<0.024
INDENO(1,2,3-CD)PYRENE	<0.037
DIBENZO(A,H)ANTHRACENE	<0.039
BENZO(G,H,I)PERYLENE	<0.039
1,2-DICHLOROBENZENE	<0.023
1,4-DICHLOROBENZENE	<0.021
1,2,4-TRICHLOROBENZENE	<0.019
DIBENZOFURAN	<0.022
HEXACHLOROETHANE	<0.024
N-NITROSODIPHENYLAMINE	<0.026
DIMETHYLPHTHALATE	<0.043
DIETHYLPHTHALATE	<0.051
DI-N-BUTYLPHTHALATE	<0.030
BUTYLBENZYLPHTHALATE	<0.039
BIS(2-ETHYLHEXYL)PHTHALATE	0.091
DI-N-OCTYLPHTHALATE	<0.036

SURROGATE PERCENT RECOVERY		LIMITS
NITROBENZENE-D5	34 H	41 - 117
2-FLUOROBIPHENYL	52	36 - 128
TERPHENYL-D14	95	38 - 146

H = Out of limits.

MAS I.D. # 821354-21

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI14SD02(03)	DATE ANALYZED	: 04/07/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: ug/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
PHENOL	<20
2-METHYLPHENOL	<21
4-METHYLPHENOL	<23
2,4-DIMETHYLPHENOL	<20
PENTACHLOROPHENOL	<38
BENZYL ALCOHOL	<34
BENZOIC ACID	<160

SURROGATE PERCENT RECOVERY		LIMITS
PHENOL-D5	106	39 - 132
2-FLUOROPHENOL	93	36 - 130
2,4,6-TRIBROMOPHENOL	103	13 - 133

MAS I.D. # 821354-21

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI14SD02(03)	DATE ANALYZED	: 04/23/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: mg/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
NAPHTHALENE	<0.022
ACENAPHTHYLENE	<0.020
ACENAPHTHENE	<0.022
FLUORENE	<0.025
PHENANTHRENE	0.027
ANTHRACENE	<0.023
2-METHYLNAPHTHALENE	<0.022
FLUORANTHENE	<0.024
PYRENE	<0.030
BENZO(A)ANTHRACENE	<0.028
CHRYSENE	<0.029
BENZO(B)FLUORANTHENE	<0.031
BENZO(K)FLUORANTHENE	<0.038
BENZO(A)PYRENE	<0.025
INDENO(1,2,3-CD)PYRENE	<0.038
DIBENZO(A,H)ANTHRACENE	<0.040
BENZO(G,H,I)PERYLENE	<0.040
1,2-DICHLOROBENZENE	<0.024
1,4-DICHLOROBENZENE	<0.021
1,2,4-TRICHLOROBENZENE	<0.020
DIBENZOFURAN	<0.022
HEXACHLOROETHANE	<0.024
N-NITROSODIPHENYLAMINE	<0.026
DIMETHYLPHTHALATE	<0.044
DIETHYLPHTHALATE	<0.052
DI-N-BUTYLPHTHALATE	<0.031
BUTYLBENZYLPHTHALATE	<0.040
BIS(2-ETHYLHEXYL)PHTHALATE	0.48
DI-N-OCTYLPHTHALATE	<0.037

SURROGATE PERCENT RECOVERY		LIMITS
NITROBENZENE-D5	28 H	41 - 117
2-FLUOROBIPHENYL	64	36 - 128
TERPHENYL-D14	87	38 - 146

H = Out of limits.

MAS I.D. # 821354-22

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI14SD03(09)	DATE ANALYZED	: 04/07/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: ug/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
PHENOL	<19
2-METHYLPHENOL	<20
4-METHYLPHENOL	<22
2,4-DIMETHYLPHENOL	<19
PENTACHLOROPHENOL	<35
BENZYL ALCOHOL	<32
BENZOIC ACID	<150

SURROGATE PERCENT RECOVERY		LIMITS
PHENOL-D5	67	39 - 132
2-FLUOROPHENOL	53	36 - 130
2,4,6-TRIBROMOPHENOL	96	13 - 133

MAS I.D. # 821354-22

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI14SD03(09)	DATE ANALYZED	: 04/23/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: mg/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
NAPHTHALENE	<0.021
ACENAPHTHYLENE	<0.019
ACENAPHTHENE	<0.021
FLUORENE	<0.024
PHENANTHRENE	<0.024
ANTHRACENE	<0.022
2-METHYLNAPHTHALENE	<0.020
FLUORANTHENE	<0.023
PYRENE	<0.029
BENZO(A)ANTHRACENE	<0.027
CHRYSENE	<0.027
BENZO(B)FLUORANTHENE	<0.029
BENZO(K)FLUORANTHENE	<0.036
BENZO(A)PYRENE	<0.023
NDENO(1,2,3-CD)PYRENE	<0.036
DIBENZO(A,H)ANTHRACENE	<0.038
BENZO(G,H,I)PERYLENE	<0.037
1,2-DICHLOROBENZENE	<0.022
1,4-DICHLOROBENZENE	<0.020
1,2,4-TRICHLOROBENZENE	<0.019
DIBENZOFURAN	<0.021
HEXACHLOROETHANE	<0.023
N-NITROSODIPHENYLAMINE	<0.025
DIMETHYLPHTHALATE	<0.042
DIETHYLPHTHALATE	<0.049
DI-N-BUTYLPHTHALATE	<0.029
BUTYLBENZYLPHTHALATE	<0.037
BIS(2-ETHYLHEXYL)PHTHALATE	0.065
DI-N-OCTYLPHTHALATE	<0.035

SURROGATE PERCENT RECOVERY		LIMITS
NITROBENZENE-D5	51	41 - 117
2-FLUOROBIPHENYL	56	36 - 128
TERPHENYL-D14	77	38 - 146

MAS I.D. # 821354-23

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/19/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI30SD01(01)	DATE ANALYZED	: 04/07/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: ug/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
PHENOL	<24
2-METHYLPHENOL	<26
4-METHYLPHENOL	<28
2,4-DIMETHYLPHENOL	<24
PENTACHLOROPHENOL	<45
BENZYL ALCOHOL	<41
BENZOIC ACID	<200

SURROGATE PERCENT RECOVERY		LIMITS
PHENOL-D5	70	39 - 132
2-FLUOROPHENOL	59	36 - 130
2,4,6-TRIBROMOPHENOL	96	13 - 133

MAS I.D. # 821354-23

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/19/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI30SD01(01)	DATE ANALYZED	: 04/23/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: mg/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
NAPHTHALENE	<0.027
ACENAPHTHYLENE	<0.024
ACENAPHTHENE	<0.026
FLUORENE	<0.030
PHENANTHRENE	<0.030
ANTHRACENE	<0.028
2-METHYLNAPHTHALENE	<0.026
FLUORANTHENE	<0.029
PYRENE	<0.037
BENZO(A)ANTHRACENE	<0.034
CHRYSENE	<0.035
BENZO(B)FLUORANTHENE	<0.037
BENZO(K)FLUORANTHENE	<0.046
BENZO(A)PYRENE	<0.030
INDENO(1,2,3-CD)PYRENE	<0.046
DIBENZO(A,H)ANTHRACENE	<0.048
BENZO(G,H,I)PERYLENE	<0.048
1,2-DICHLOROBENZENE	<0.028
1,4-DICHLOROBENZENE	<0.026
1,2,4-TRICHLOROBENZENE	<0.024
DIBENZOFURAN	<0.027
HEXACHLOROETHANE	<0.029
N-NITROSODIPHENYLAMINE	<0.032
DIMETHYLPHTHALATE	<0.053
DIETHYLPHTHALATE	<0.063
DI-N-BUTYLPHTHALATE	<0.037
BUTYLBENZYLPHTHALATE	<0.048
BIS(2-ETHYLHEXYL)PHTHALATE	0.072
DI-N-OCTYLPHTHALATE	<0.045

SURROGATE PERCENT RECOVERY		LIMITS
NITROBENZENE-D5	54	41 - 117
2-FLUOROBIPHENYL	53	36 - 128
TERPHENYL-D14	72	38 - 146

MAS I.D. # 821354-24

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/19/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI30SD02(03)	DATE ANALYZED	: 04/07/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: ug/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
PHENOL	<21
2-METHYLPHENOL	<23
4-METHYLPHENOL	<25
2,4-DIMETHYLPHENOL	<21
PENTACHLOROPHENOL	<40
BENZYL ALCOHOL	<37
BENZOIC ACID	<180

SURROGATE PERCENT RECOVERY		LIMITS
PHENOL-D5	100	39 - 132
2-FLUOROPHENOL	85	36 - 130
2,4,6-TRIBROMOPHENOL	106	13 - 133

MAS I.D. # 821354-24

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/19/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI30SD02(03)	DATE ANALYZED	: 04/23/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: mg/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
NAPHTHALENE	<0.024
ACENAPHTHYLENE	<0.021
ACENAPHTHENE	<0.023
FLUORENE	<0.027
PHENANTHRENE	<0.027
ANTHRACENE	<0.025
2-METHYLNAPHTHALENE	<0.023
FLUORANTHENE	<0.026
PYRENE	<0.033
BENZO(A)ANTHRACENE	<0.030
CHRYSENE	<0.031
BENZO(B)FLUORANTHENE	<0.033
BENZO(K)FLUORANTHENE	<0.041
BENZO(A)PYRENE	<0.026
INDENO(1,2,3-CD)PYRENE	<0.041
DIBENZO(A,H)ANTHRACENE	<0.043
BENZO(G,H,I)PERYLENE	<0.043
1,2-DICHLOROBENZENE	<0.025
1,4-DICHLOROBENZENE	<0.023
1,2,4-TRICHLOROBENZENE	<0.021
DIBENZOFURAN	<0.024
HEXACHLOROETHANE	<0.026
N-NITROSODIPHENYLAMINE	<0.028
DIMETHYLPHTHALATE	<0.048
DIETHYLPHTHALATE	<0.056
DI-N-BUTYLPHTHALATE	<0.033
BUTYLBENZYLPHTHALATE	<0.043
BIS(2-ETHYLHEXYL)PHTHALATE	0.21
DI-N-OCTYLPHTHALATE	<0.040

SURROGATE PERCENT RECOVERY		LIMITS
NITROBENZENE-D5	53	41 - 117
2-FLUOROBIPHENYL	60	36 - 128
TERPHENYL-D14	86	38 - 146

MAS I.D. # 821354-25

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/19/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI30SD03(09)	DATE ANALYZED	: 04/07/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: ug/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
PHENOL	<20
2-METHYLPHENOL	<21
4-METHYLPHENOL	280
2,4-DIMETHYLPHENOL	<20
PENTACHLOROPHENOL	<38
BENZYL ALCOHOL	<34
BENZOIC ACID	<160

SURROGATE PERCENT RECOVERY		LIMITS
PHENOL-D5	106	39 - 132
2-FLUOROPHENOL	90	36 - 130
2,4,6-TRIBROMOPHENOL	110	13 - 133

MAS I.D. # 821354-25

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/19/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI30SD03(09)	DATE ANALYZED	: 04/23/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: mg/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
NAPHTHALENE	<0.022
ACENAPHTHYLENE	<0.020
ACENAPHTHENE	<0.022
FLUORENE	<0.025
PHENANTHRENE	0.033
ANTHRACENE	<0.023
2-METHYLNAPHTHALENE	0.025
FLUORANTHENE	<0.024
PYRENE	<0.030
BENZO(A)ANTHRACENE	<0.028
CHRYSENE	<0.029
BENZO(B)FLUORANTHENE	<0.031
BENZO(K)FLUORANTHENE	<0.038
BENZO(A)PYRENE	<0.025
INDENO(1,2,3-CD)PYRENE	<0.038
DIBENZO(A,H)ANTHRACENE	<0.040
BENZO(G,H,I)PERYLENE	<0.040
1,2-DICHLOROBENZENE	<0.024
1,4-DICHLOROBENZENE	<0.021
1,2,4-TRICHLOROBENZENE	<0.020
DIBENZOFURAN	<0.022
HEXACHLOROETHANE	<0.024
N-NITROSODIPHENYLAMINE	<0.026
DIMETHYLPHTHALATE	<0.044
DIETHYLPHTHALATE	<0.052
DI-N-BUTYLPHTHALATE	<0.031
BUTYLBENZYLPHTHALATE	<0.040
BIS(2-ETHYLHEXYL)PHTHALATE	0.56
DI-N-OCTYLPHTHALATE	<0.037

SURROGATE PERCENT RECOVERY		LIMITS
NITROBENZENE-D5	47	41 - 117
2-FLUOROBIPHENYL	70	36 - 128
TERPHENYL-D14	95	38 - 146

MAS I.D. # 821354-26

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/19/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI30SD62(03)	DATE ANALYZED	: 04/07/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: ug/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
PHENOL	<22
2-METHYLPHENOL	<24
4-METHYLPHENOL	<26
2,4-DIMETHYLPHENOL	<22
PENTACHLOROPHENOL	<42
BENZYL ALCOHOL	<38
BENZOIC ACID	<180

SURROGATE PERCENT RECOVERY		LIMITS
PHENOL-D5	78	39 - 132
2-FLUOROPHENOL	66	36 - 130
2,4,6-TRIBROMOPHENOL	98	13 - 133

MAS I.D. # 821354-26

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/19/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI30SD62(03)	DATE ANALYZED	: 04/23/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: mg/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
NAPHTHALENE	<0.025
ACENAPHTHYLENE	<0.022
ACENAPHTHENE	<0.024
FLUORENE	<0.028
PHENANTHRENE	<0.028
ANTHRACENE	<0.026
2-METHYLNAPHTHALENE	<0.024
FLUORANTHENE	<0.027
PYRENE	<0.034
BENZO(A)ANTHRACENE	<0.032
CHRYSENE	<0.032
BENZO(B)FLUORANTHENE	<0.034
BENZO(K)FLUORANTHENE	<0.043
BENZO(A)PYRENE	<0.027
INDENO(1,2,3-CD)PYRENE	<0.043
DIBENZO(A,H)ANTHRACENE	<0.045
BENZO(G,H,I)PERYLENE	<0.044
1,2-DICHLOROBENZENE	<0.026
1,4-DICHLOROBENZENE	<0.024
1,2,4-TRICHLOROBENZENE	<0.022
DIBENZOFURAN	<0.025
HEXACHLOROETHANE	<0.027
N-NITROSODIPHENYLAMINE	<0.030
DIMETHYLPHTHALATE	<0.050
DIETHYLPHTHALATE	<0.058
DI-N-BUTYLPHTHALATE	<0.034
BUTYLBENZYLPHTHALATE	<0.044
BIS(2-ETHYLHEXYL)PHTHALATE	0.13
DI-N-OCTYLPHTHALATE	<0.041

SURROGATE PERCENT RECOVERY		LIMITS
NITROBENZENE-D5	48	41 - 117
2-FLUOROBIPHENYL	58	36 - 128
TERPHENYL-D14	84	38 - 146

MAS I.D. # 821354-27

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI02SD62(03)	DATE ANALYZED	: 04/07/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: ug/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
PHENOL	<23
2-METHYLPHENOL	<24
4-METHYLPHENOL	<26
2,4-DIMETHYLPHENOL	<23
PENTACHLOROPHENOL	<43
BENZYL ALCOHOL	<39
BENZOIC ACID	<190

SURROGATE PERCENT RECOVERY		LIMITS
PHENOL-D5	106	39 - 132
2-FLUOROPHENOL	87	36 - 130
2,4,6-TRIBROMOPHENOL	107	13 - 133

MAS I.D. # 821354-27

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: 03/18/98
PROJECT #	: 1189002.330101	DATE RECEIVED	: 03/21/98
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: 98BPXLI02SD62(03)	DATE ANALYZED	: 04/23/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: mg/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
NAPHTHALENE	<0.025
ACENAPHTHYLENE	<0.023
ACENAPHTHENE	<0.025
FLUORENE	<0.029
PHENANTHRENE	<0.029
ANTHRACENE	<0.027
2-METHYLNAPHTHALENE	0.031
FLUORANTHENE	<0.028
PYRENE	<0.035
BENZO(A)ANTHRACENE	<0.033
CHRYSENE	<0.033
BENZO(B)FLUORANTHENE	<0.035
BENZO(K)FLUORANTHENE	<0.044
BENZO(A)PYRENE	<0.028
NDENO(1,2,3-CD)PYRENE	<0.044
DIBENZO(A,H)ANTHRACENE	<0.046
BENZO(G,H,I)PERYLENE	<0.046
1,2-DICHLOROBENZENE	<0.027
1,4-DICHLOROBENZENE	<0.025
1,2,4-TRICHLOROBENZENE	<0.023
DIBENZOFURAN	<0.026
HEXACHLOROETHANE	<0.028
N-NITROSODIPHENYLAMINE	<0.030
DIMETHYLPHTHALATE	<0.051
DIETHYLPHTHALATE	<0.060
DI-N-BUTYLPHTHALATE	<0.035
BUTYLBENZYLPHTHALATE	<0.046
BIS(2-ETHYLHEXYL)PHTHALATE	0.052
DI-N-OCTYLPHTHALATE	<0.043

SURROGATE PERCENT RECOVERY		LIMITS
NITROBENZENE-D5	43	41 - 117
2-FLUOROBIPHENYL	64	36 - 128
TERPHENYL-D14	67	38 - 146

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: N/A
PROJECT #	: 1189002.330101	DATE RECEIVED	: N/A
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: METHOD BLANK	DATE ANALYZED	: 04/23/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: mg/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
NAPHTHALENE	<0.017
ACENAPHTHYLENE	<0.015
ACENAPHTHENE	<0.017
FLUORENE	<0.019
PHENANTHRENE	<0.019
ANTHRACENE	<0.018
2-METHYLNAPHTHALENE	<0.017
FLUORANTHENE	<0.019
PYRENE	<0.023
BENZO(A)ANTHRACENE	<0.022
CHRYSENE	<0.022
BENZO(B)FLUORANTHENE	<0.024
BENZO(K)FLUORANTHENE	<0.030
BENZO(A)PYRENE	<0.019
INDENO(1,2,3-CD)PYRENE	<0.030
DIBENZO(A,H)ANTHRACENE	<0.031
BENZO(G,H,I)PERYLENE	<0.031
1,2-DICHLOROBENZENE	<0.018
1,4-DICHLOROBENZENE	<0.017
1,2,4-TRICHLOROBENZENE	<0.015
DIBENZOFURAN	<0.017
HEXACHLOROETHANE	<0.019
N-NITROSODIPHENYLAMINE	<0.020
DIMETHYLPHTHALATE	<0.034
DIETHYLPHTHALATE	<0.040
DI-N-BUTYLPHTHALATE	<0.024
BUTYLBENZYLPHTHALATE	<0.031
BIS(2-ETHYLHEXYL)PHTHALATE	<0.025
DI-N-OCTYLPHTHALATE	<0.029

SURROGATE PERCENT RECOVERY		LIMITS
NITROBENZENE-D5	73	41 - 117
2-FLUOROBIPHENYL	65	36 - 128
TERPHENYL-D14	75	38 - 146

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: MONTGOMERY WATSON	DATE SAMPLED	: N/A
PROJECT #	: 1189002.330101	DATE RECEIVED	: N/A
PROJECT NAME	: LIBERTY ISLAND	DATE EXTRACTED	: 03/24/98
CLIENT I.D.	: METHOD BLANK	DATE ANALYZED	: 04/06/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: ug/Kg
EPA METHOD	: 8270A	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
PHENOL	<15
2-METHYLPHENOL	<16
4-METHYLPHENOL	<18
2,4-DIMETHYLPHENOL	<15
PENTACHLOROPHENOL	<29
BENZYL ALCOHOL	<26
BENZOIC ACID	<130

SURROGATE PERCENT RECOVERY		LIMITS
PHENOL-D5	95	39 - 132
2-FLUOROPHENOL	80	36 - 130
2,4,6-TRIBROMOPHENOL	47	13 - 133

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
QUALITY CONTROL DATA

CLIENT	: MONTGOMERY WATSON	SAMPLE I.D. #	: BLANK
PROJECT #	: 1189002.330101	DATE EXTRACTED	: 03/24/98
PROJECT NAME	: LIBERTY ISLAND	DATE ANALYZED	: 04/06/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: ug/Kg
EPA METHOD	: 8270A		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
PHENOL	<15.4	200	191	96	N/A	N/A	N/A
2-METHYLPHENOL	<16.4	200	173	87	N/A	N/A	N/A
4-METHYLPHENOL	<17.7	200	169	85	N/A	N/A	N/A
2,4-DIMETHYLPHENOL	<15.2	200	17.4	9H	N/A	N/A	N/A
PENTACHLOROPHENOL	<29.0	200	162	81	N/A	N/A	N/A
BENZYL ALCOHOL	<26.3	400	137	34H	N/A	N/A	N/A
BENZOIC ACID	3.39	1000	673	67	N/A	N/A	N/A

CONTROL LIMITS	% REC.	RPD
PHENOL	40 - 160	20
2-METHYLPHENOL	40 - 160	20
4-METHYLPHENOL	40 - 160	20
2,4-DIMETHYLPHENOL	40 - 160	20
PENTACHLOROPHENOL	40 - 160	20
BENZYL ALCOHOL	40 - 160	20
BENZOIC ACID	40 - 160	20

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
PHENOL-D5	119	N/A	39 - 132
2-FLUOROPHENOL	108	N/A	36 - 130
2,4,6-TRIBROMOPHENOL	86	N/A	13 - 133

H = Out of limits.

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
QUALITY CONTROL DATA

CLIENT : MONTGOMERY WATSON
PROJECT # : 1189002.330101
PROJECT NAME : LIBERTY ISLAND
SAMPLE MATRIX : SEDIMENT
EPA METHOD : 8270A

SAMPLE I.D. # : BLANK
DATE EXTRACTED : 03/24/98
DATE ANALYZED : 04/23/98
UNITS : mg/Kg

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
NAPHTHALENE	<0.0170	0.400	0.323	81	0.316	79	2
ACENAPHTHYLENE	<0.0153	0.400	0.300	75	0.298	74	1
ACENAPHTHENE	<0.0169	0.400	0.299	75	0.299	75	0
FLUORENE	<0.0194	0.400	0.325	81	0.312	78	4
PHENANTHRENE	<0.0194	0.400	0.317	79	0.306	76	4
ANTHRACENE	<0.0179	0.400	0.291	73	0.295	74	1
2-METHYLNAPHTHALENE	<0.0166	0.400	0.313	78	0.304	76	3
FLUORANTHENE	<0.0188	0.400	0.369	92	0.362	90	2
PYRENE	<0.0234	0.400	0.409	102	0.368	92	11
BENZO(A)ANTHRACENE	<0.0218	0.400	0.401	100	0.365	91	9
CHRYSENE	<0.0222	0.400	0.400	100	0.357	89	11
BENZO(B)FLUORANTHENE	<0.0236	0.400	0.330	83	0.307	77	7
BENZO(K)FLUORANTHENE	<0.0296	0.400	0.357	89	0.328	82	8
BENZO(A)PYRENE	<0.0189	0.400	0.313	78	0.298	74	5
INDENO(1,2,3-CD)PYRENE	<0.0296	0.400	0.335	84	0.304	76	10
DIBENZO(A,H)ANTHRACENE	<0.0308	0.400	0.311	78	0.281	70	10
BENZO(G,H,I)PERYLENE	<0.0306	0.400	0.343	86	0.309	77	10
1,2-DICHLOROBENZENE	<0.0182	0.400	0.272	68	0.265	66	3
1,4-DICHLOROBENZENE	<0.0165	0.400	0.269	67	0.261	65	3
1,2,4-TRICHLOROBENZENE	<0.0154	0.400	0.293	73	0.289	72	1
DIBENZOFURAN	<0.0173	0.400	0.316	79	0.312	78	1
HEXACHLOROETHANE	<0.0187	0.400	0.321	80	0.312	78	3
N-NITROSODIPHENYLAMINE	<0.0204	0.400	0.138	35H	0.149	37H	8
DIMETHYLPHTHALATE	<0.0342	0.400	0.197	49	0.207	52	5
DIETHYLPHTHALATE	<0.0402	0.400	0.305	76	0.303	76	1
DI-N-BUTYLPHTHALATE	<0.0236	0.400	0.363	91	0.354	88	3
BUTYLBENZYLPHTHALATE	<0.0306	0.400	0.377	94	0.347	87	8
BIS(2-ETHYLHEXYL)PHTHALATE	<0.0254	0.400	0.507	127	0.451	113	12
DI-N-OCTYLPHTHALATE	<0.0286	0.400	0.426	107	0.383	96	11

H = Out of limits.

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MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
QUALITY CONTROL DATA
CONTINUED

CLIENT	: MONTGOMERY WATSON	SAMPLE I.D. #	: BLANK
PROJECT #	: 1189002.330101	DATE EXTRACTED	: 03/24/98
PROJECT NAME	: LIBERTY ISLAND	DATE ANALYZED	: 04/23/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: mg/Kg
EPA METHOD	: 8270A		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD

CONTROL LIMITS	% REC.	RPD
NAPHTHALENE	40 - 160	20
ACENAPHTHYLENE	40 - 160	20
ACENAPHTHENE	40 - 160	20
FLUORENE	40 - 160	20
PHENANTHRENE	40 - 160	20
ANTHRACENE	40 - 160	20
2-METHYLNAPHTHALENE	40 - 160	20
FLUORANTHENE	40 - 160	20
PYRENE	40 - 160	20
BENZO(A)ANTHRACENE	40 - 160	20
CHRYSENE	40 - 160	20
BENZO(B)FLUORANTHENE	40 - 160	20
BENZO(K)FLUORANTHENE	40 - 160	20
BENZO(A)PYRENE	40 - 160	20
INDENO(1,2,3-CD)PYRENE	40 - 160	20
DIBENZO(A,H)ANTHRACENE	40 - 160	20
BENZO(G,H,I)PERYLENE	40 - 160	20
1,2-DICHLOROBENZENE	40 - 160	20
1,4-DICHLOROBENZENE	40 - 160	20
1,2,4-TRICHLOROBENZENE	40 - 160	20
DIBENZOFURAN	40 - 160	20
HEXACHLOROETHANE	40 - 160	20
N-NITROSODIPHENYLAMINE	40 - 160	20
DIMETHYLPHTHALATE	40 - 160	20
DIETHYLPHTHALATE	40 - 160	20
DI-N-BUTYLPHTHALATE	40 - 160	20
BUTYLBENZYLPHTHALATE	40 - 160	20
BIS(2-ETHYLHEXYL)PHTHALATE	40 - 160	20
DI-N-OCTYLPHTHALATE	40 - 160	20

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
NITROBENZENE-D5	84	83	41 - 117
2-FLUOROBIPHENYL	72	70	36 - 128
TERPHENYL-D14	97	87	38 - 146

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
QUALITY CONTROL DATA

CLIENT	: MONTGOMERY WATSON	SAMPLE I.D. #	: 821354-17
PROJECT #	: 1189002.330101	DATE EXTRACTED	: 03/24/98
PROJECT NAME	: LIBERTY ISLAND	DATE ANALYZED	: 04/06/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: ug/Kg
EPA METHOD	: 8270A		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
PHENOL	10.1	339	280	80	264	75	6
2-METHYLPHENOL	<27.8	339	303	89	285	84	6
4-METHYLPHENOL	17.3	339	333	93	313	87	6
2,4-DIMETHYLPHENOL	<25.8	339	235	69	223	66	5
PENTACHLOROPHENOL	<49.2	339	166	49	197	58	17
BENZYL ALCOHOL	2.46	678	226	33H	212	31H	6
BENZOIC ACID	44.2	1690	1610	93	1540	89	4

CONTROL LIMITS	% REC.	RPD
PHENOL	40 - 160	20
2-METHYLPHENOL	40 - 160	20
4-METHYLPHENOL	40 - 160	20
,4-DIMETHYLPHENOL	40 - 160	20
PENTACHLOROPHENOL	40 - 160	20
BENZYL ALCOHOL	40 - 160	20
BENZOIC ACID	40 - 160	20

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
PHENOL-D5	99	95	39 - 132
2-FLUOROPHENOL	93	85	36 - 130
2,4,6-TRIBROMOPHENOL	86	88	13 - 133

H = Out of limits.

MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
QUALITY CONTROL DATA

CLIENT	: MONTGOMERY WATSON	SAMPLE I.D. #	: 821354-17
PROJECT #	: 1189002.330101	DATE EXTRACTED	: 03/24/98
PROJECT NAME	: LIBERTY ISLAND	DATE ANALYZED	: 04/22/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: mg/Kg
EPA METHOD	: 8270A		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPI
NAPHTHALENE	<0.0289	0.678	0.427	63	0.458	68	7
ACENAPHTHYLENE	<0.0259	0.678	0.522	77	0.558	82	7
ACENAPHTHENE	<0.0286	0.678	0.520	77	0.548	81	5
FLUORENE	<0.0329	0.678	0.573	85	0.594	88	4
PHENANTHRENE	<0.0329	0.678	0.609	90	0.643	95	5
ANTHRACENE	<0.0303	0.678	0.560	83	0.577	85	3
2-METHYLNAPHTHALENE	<0.0281	0.678	0.489	72	0.511	75	4
FLUORANTHENE	<0.0318	0.678	0.663	98	0.696	103	5
PYRENE	<0.0397	0.678	0.677	100	0.858	127	24H
BENZO(A)ANTHRACENE	<0.0369	0.678	0.654	96	0.702	104	7
CHRYSENE	<0.0376	0.678	0.701	103	0.853	126	20
BENZO(B)FLUORANTHENE	<0.0400	0.678	0.597	88	0.581	86	3
BENZO(K)FLUORANTHENE	<0.0502	0.678	0.523	77	0.599	88	14
BENZO(A)PYRENE	<0.0321	0.678	0.570	84	0.591	87	4
INDENO(1,2,3-CD)PYRENE	<0.0502	0.678	0.580	86	0.616	91	6
DIBENZO(A,H)ANTHRACENE	<0.0522	0.678	0.541	80	0.568	84	5
BENZO(G,H,I)PERYLENE	<0.0519	0.678	0.608	90	0.647	95	6
1,2-DICHLOROBENZENE	<0.0308	0.678	0.333	49	0.354	52	6
1,4-DICHLOROBENZENE	<0.0280	0.678	0.315	46	0.347	51	10
1,2,4-TRICHLOROBENZENE	<0.0261	0.678	0.390	58	0.415	61	6
DIBENZOFURAN	<0.0294	0.678	0.560	83	0.590	87	5
HEXACHLOROETHANE	<0.0317	0.678	0.337	50	0.345	51	2
N-NITROSODIPHENYLAMINE	<0.0346	0.678	0.465	69	0.528	78	13
DIMETHYLPHTHALATE	<0.0580	0.678	0.369	54	0.359	53	3
DIETHYLPHTHALATE	<0.0681	0.678	0.552	81	0.571	84	3
DI-N-BUTYLPHTHALATE	<0.0400	0.678	0.623	92	0.638	94	2
BUTYLBENZYLPHTHALATE	<0.0519	0.678	0.624	92	0.761	112	20
BIS(2-ETHYLHEXYL)PHTHALATE	0.114	0.678	0.848	108	1.05	138	21I
DI-N-OCTYLPHTHALATE	<0.0485	0.678	0.590	87	0.621	92	5

H = Out of limits.

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MAS I.D. # 821354

MultiChem
ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS
QUALITY CONTROL DATA
CONTINUED

CLIENT	: MONTGOMERY WATSON	SAMPLE I.D. #	: 821354-17
PROJECT #	: 1189002.330101	DATE EXTRACTED	: 03/24/98
PROJECT NAME	: LIBERTY ISLAND	DATE ANALYZED	: 04/22/98
SAMPLE MATRIX	: SEDIMENT	UNITS	: mg/Kg
EPA METHOD	: 8270A		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD

CONTROL LIMITS	% REC.	RPD
NAPHTHALENE	40 - 160	20
ACENAPHTHYLENE	40 - 160	20
ACENAPHTHENE	40 - 160	20
FLUORENE	40 - 160	20
PHENANTHRENE	40 - 160	20
ANTHRACENE	40 - 160	20
2-METHYLNAPHTHALENE	40 - 160	20
FLUORANTHENE	40 - 160	20
PYRENE	40 - 160	20
ENZO(A)ANTHRACENE	40 - 160	20
CHRYSENE	40 - 160	20
BENZO(B)FLUORANTHENE	40 - 160	20
BENZO(K)FLUORANTHENE	40 - 160	20
BENZO(A)PYRENE	40 - 160	20
INDENO(1,2,3-CD)PYRENE	40 - 160	20
DIBENZO(A,H)ANTHRACENE	40 - 160	20
BENZO(G,H,I)PERYLENE	40 - 160	20
1,2-DICHLOROBENZENE	40 - 160	20
1,4-DICHLOROBENZENE	40 - 160	20
1,2,4-TRICHLOROBENZENE	40 - 160	20
DIBENZOFURAN	40 - 160	20
HEXACHLOROETHANE	40 - 160	20
N-NITROSODIPHENYLAMINE	40 - 160	20
DIMETHYLPHTHALATE	40 - 160	20
DIETHYLPHTHALATE	40 - 160	20
DI-N-BUTYLPHTHALATE	40 - 160	20
BUTYLBENZYLPHTHALATE	40 - 160	20
BIS(2-ETHYLHEXYL)PHTHALATE	40 - 160	20
DI-N-OCTYLPHTHALATE	40 - 160	20

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
NITROBENZENE-D5	56	62	41 - 117
2-FLUOROBIPHENYL	69	74	36 - 128
TERPHENYL-D14	95	123	38 - 146

Pg 1 of 8

MAS 821354

Montgomery Watson
4100 Spenard Road
Anchorage AK 99517
(907)248-8883
Fax (907) 248-8884
ATTN: Lynn DeGeorge

Laboratory:
Mobichem Analytical Services
2000 West International Airport Road
Anchorage, Alaska 99502
(907) 248-8273
(907) 248-8273 FAX
Attn: Mike Vogel

MW Job Number: 1189022
21-DAY TURNAROUND 330101

Sampler's Signature: 1998 Bonchean

ADEC
21 cal day.

MAS#	Date	Time	Sample ID	Matrix	Total Containers	SOIL: VOCs- 8260a 2 x 2-oz amber glass	SVOCs- 8270 1 x 8-oz amber glass	TOC-415.1 1 x 4-oz amber glass	Grain Size - ASTM D422 1 x 8-oz amber glass	Particle Size- ASTM D2487 1 x 4-oz amber glass		WATER: TSS- 160.2 250 ml poly	TOC- 415.1 1 x 250 ml amber	Comments
-1	3-18	2210	98BPXLI 02 WA01	W	2							✓	✓	
-2	3-18	2130	98BPXLI 02 WA02	W	2							✓	✓	
-3	3-18	2200	98BPXLI 02 WA03	W	2							✓	✓	
-4	3-18	1530	98BPXLI 09 WA01	W	2							✓	✓	MS/MSD
-5	3-18	1540	98BPXLI 09 WA02	W	2							✓	✓	
-6	3-18	1550	98BPXLI 09 WA03	W	2							✓	✓	
-7	3-18	1300	98BPXLI 14 WA01	W	2							✓	✓	
-8	3-18	1315	98BPXLI 14 WA02	W	2							✓	✓	
-9	3-19	0200	98BPXLI 30 WA03	W	2							✓	✓	
-10	3-19	0120	98BPXLI 30 WA01	W	2							✓	✓	
-11	3-19	0140	98BPXLI 30 WA02	W	2							✓	✓	
			98BPXLI ___ WA03											No Sample
-12	3-19	0150	98BPXLI 30 WA6 2		2							✓	✓	
-13	3-18	2110	98BPXLI 02 WA6 1		2							✓	✓	
			98BPXLI ___ WA___											
			98BPXLI ___ WA___											

Relinquished by: [signature] Date 3-20-98 Time 1000

Received for Laboratory by: [signature] Date 3/20 Time 10:00

Hand Delivered: Y N

Shipped Via:

Cooler Temperature Upon Arrival: 4.8° 3.7° 5.1° 11.7° °C

Airbill Number

Date

Time

Laboratory Notified

Faxed

RER [signature] 3/21/98 0930

1 relinq

A Limited Liability Company

P8 2 of 2

1189002.
330101

Montgomery Watson
4100 Spenard Road
Anchorage AK 99517
(907)248-8883
Fax (907) 248-8884
ATTN: Lynn DeGeorge

Laboratory:
Mollichem Analytical Services
2000 West International Airport Road
Anchorage, Alaska 99502
(907) 248-8273
(907) 248-8273 FAX
Attn: Mike Vogel

1189002, 330101 3/20
MW Job Number: G F
~~1189022.30101~~
21-DAY
TURNAROUND

MAS
821354

ADEC

Sampler's Signature: 1998 [signature]

MAS#	Date	Time	Sample ID	Matrix	Total Containers	SOIL: VOCs- 8260a, 2 x 2-oz amber glass	SOIL: SVOCs- 8270, 1 x 8-oz amber glass	SOIL: TOC-415.1, 1 x 4-oz amber glass	SOIL: Grain Size - ASTM D422, 1 x 8-oz amber glass	SOIL: Particle Size- ASTM D2487, 1 x 4-oz amber glass		WATER: TSS- 160.2, 250 ml poly	WATER: TOC-415.1, 1 x 250 ml amber	Comments
						Cool to 4 degrees C						Cool to 4 degrees C	H2SO4	
-14	3-18	2210	98BPXLI 02 SD01(01)	S	5	✓	✓	✓	✓	✓				
-15	3-18	2230	98BPXLI 02 SD02(03)	S	5									
-16	3-18	2330	98BPXLI 02 SD03(09)	S	5									
-17	3-18	1610	98BPXLI 09 SD01(01)	S	5									MS/MSD
-18	3-18	1620	98BPXLI 09 SD02(03)	S	5									
-19	3-18	1630	98BPXLI 09 SD03(09)	S	5									
-20	3-18	1330	98BPXLI 14 SD01(01)	S	5									
-21	3-18	1345	98BPXLI 14 SD02(03)	S	5									
-22	3-18	1400	98BPXLI 14 SD03(09)	S	5									
-23	3-19	0250	98BPXLI 30 SD01(01)	S	5									
-24	3-19	0300	98BPXLI 30 SD02(03)	S	5				✓	✓				
-25	3-19	0330	98BPXLI 30 SD03(09)	S	5	✓	✓	✓	✓	✓				
-26	3-19	0310	98BPXLI 30 SD62(03)	S	3	✓	✓	✓						
-27	3-18	2200	98BPXLI 02 SD62(03)	S	3	✓	✓	✓						
			98BPXLI __ __ SD__(__)											
			98BPXLI __ __ SD__(__)											

Relinquished by: [signature]	Date 3-20-98	Hand Delivered	Shipped Via	Airbill Number	Date
	Time 1000	Y N			Time
Received for Laboratory by: [signature]	Date 3-20-98	Cooler Temperature	°C	Laboratory Notified	
	Time 10:00	Upon Arrival		Faxed	

[signature] 3/21/98 0930

NON-CONFORMANCES:
(Y) N #1
(if Y see other side)

MultiChem Analytical Services
SAMPLE LOG-IN CHECKLIST

DATE: 3/21/98
TIME: 0930
INITIALS: JVD

ACCESSION NO. 821354
CLIENT: MAS-AK
PROJECT: LIBERTY ISLAND

Shipping:

Type:	COC Seals:	Intact?	Packing Material:
X Cooler	X Ship. Cont.	(Y) N	Styrofoam
Box	On Bottles	Y N	X Bubble Bags
Other	None		Foam Vial Packs
			Other

Refrigerant:	Frozen?	Received Via:	
X Gel Ice Pack	(Y) N	Hand Delivery	X Courier
Loose Ice	Y N	Federal Express	UPS
Other	Y N	Airborne	Taxi
None		Other:	X Goldstreak

Sample Information:

Samp. #	Bottle #
14	42
13	26

Type				
Soil	Soil VOAs	0 headspace	(Y) N	N
Water	Water VOAs	0 headspace	Y N	N
Product		Preserved?	Y N	
Other		Trip blanks?	Y N	

Condition of Samples:
Containers:
Intact? (Bottle/Lid) (Y) N
Correct Type? (Y) N

~~Waters Preserved?~~ (Y) N N
CA # ~~(if needed)~~

ID's Match C.O.C. (Y) N N

Temperature: 1.5 C #1 CA NO.
(See corrective action on reverse side for explanation if temperature is outside of the MAS recommended range.)

LAB USE ONLY: ☐ NO NOTICE ☐ SEND OUTS NEEDED BY ___
☐ COC/TAT DOES NOT MATCH NOTICE ☐ NEED TEST(S) VERIFIED BY CLIENT

COMMENTS:

MultiChem Analytical Services
Corrective Action Sheet

ACCESSION # 821354

CORRECTIVE ACTION AREA

PLAIN CORRECTIVE ACTION:

CA NO.	CA NO.	CA NO.
_____Salvaged Sample	_____Replaced Bottle	_____Verified Id w/Client
_____Replaced Lid	_____Notified P.M.	_____Notified Client
_____Preserved Sample w/_____		

Comments:

Temperature: 1.5 C #1 CA NO.

____ Comments: Samples were received outside of the MAS recommended temperature range (4 C+/- 2 C) Samples were received within 5 hours of collection and may not have had sufficient time to equilibrate with coolant. A temperature range from 2 to 15 degrees Celsius is considered acceptable. The samples will be analyzed as scheduled unless directed otherwise by client.

X Comments: Samples were received outside of the MAS recommended temperature range (4 C+/- 2 C) The samples will be analyzed as scheduled unless directed otherwise by client.

Tech.Signature/Date: [illegible] 3/21/98 P.M. Signature/Date: S Walker 3/24/98

CORRECTIVE ACTION TAKEN:

Explain Action Taken:

Alaska Airlines

GOLDSTREAK PACKAGE EXPRESS

Airline: 027- | Origin: ANC | AIR WAYBILL Number: 5247 4295

From Shipper: MULTICHEM ANALYTICAL SVCS

Address: 2000 W INTL A/P RD #7

Phone: 907-248-3273

City: ANCHORAGE | State: AK | Zip Code: 99502

Shipper's Signature SUBJECT TO RATE AUDIT | Date | Time a.m. p.m.

The Federal Aviation Administration requires Alaska Airlines to inform you of the following "Shipper's Security Notification":

I certify that this shipment does not contain any unauthorized explosives, destructive devices or hazardous materials. I consent to a search of this shipment. I am aware that this endorsement and original signature, along with other shipping documents, will be retained on file until the shipment is delivered.

Type of first personal identification reviewed: _____
Matching photo ID? Indicate: Yes or No _____
Number appearing on ID _____

Type of second personal identification reviewed: _____
Matching photo ID? Indicate: Yes or No _____
Number appearing on ID _____

Contents: NONHAZ MATERIAL

Insured Value

Declared Value of Customs

Remarks: KEEP COOL

To Consignee: (Complete Consignee information required on package) MULTICHEM ANALYTICAL SVCS

Address: 560 NAGHES AVE SW #101

Phone: 425-226-0335

City: RENTON | State: WA | Zip Code: 98055

Consignee's Printed Name - Signature (Received in Good Order Except as Noted) | Time a.m. p.m. | Date

Origin Courier Signature | Date | Time a.m. p.m. | Destination Courier Signature | Date | Time a.m. p.m.

Airline: 027- | Origin: ANC | AIR WAYBILL Number: 5247 4295

Total Pieces: 3

Total Weight: 124

MULTIPLE PIECES FOR AS FLIGHTS ONLY

Please ✓ if Live Animal ☐

Form of Payment
☐ Cash ☐ Check ☐ GBL—Attach GBL
☐ AS / QX Account Number 27442286 40
☐ Credit Card Number

Validata Approval (Required for all except cash and GBL)

Executed By: Date/Time a.m. p.m.

Carrier	Flight	Destination	E.T.A.
AS			

CHECK ONE ONLY

☒ AIRPORT TO AIRPORT SERVICE

PICK-UP ONLY ☐ AS AGENT | DELIVERY ONLY ☐ AS AGENT | DOOR TO DOOR ☐ AS AGENT

AS 800 SERVICES (800) 634-7113

POS.	WT. RANGE	RATE	CHARGE
	GSK LETTER		
	1-15		
	16-50		
	51-70		
	71-100		
	Subtotal Charges		

Other Charges

1st Carrier	
2nd Carrier	
3rd Carrier	
Tax (Offline only)	
ENTER → AS COURIER CHARGES	
Pickup (NON AS COURIER)	
Delivery (NON AS COURIER)	
Special Service	
Insurance	
TOTAL	

Shipper to complete all shaded areas

Door-To-Door Service: (800) 634-7113

This is a non-negotiable AIR WAYBILL subject to the terms and conditions set forth on the reverse of shipper's copy.

Thank you for shipping with Alaska Airlines

P.O. Box 68900
Seattle, WA 98168

Consignee Memo

APPENDIX D

c. Laboratory Data Sheet-BPX

Prudhoe Bay Laboratory
Analysis Report

Record File: 98030213
Sample Type: 1201

ample ID		PB09347	PB09348	PB09349	PB09350	PB09351	PB09352
ate		03/18/98	03/18/98	03/18/98	03/18/98	03/18/98	03/18/98
me		21:00	21:30	22:00	15:30	15:40	15:50
acility		Endicott	Endicott	Endicott	Endicott	Endicott	Endicott
id/Module		N/A	N/A	N/A	N/A	N/A	N/A
ell		N/A	N/A	N/A	N/A	N/A	N/A
ocation		98BPXLI 02 WA01	98BPXLI 02 WA02	98BPXLI 02 WA03	98BPXLI 09 WA01	98BPXLI 09 WA02	98BPXLI 09 WA03
escription		seawater	seawater	seawater	seawater	seawater	seawater
mments							
ests	UOM	Results	Results	Results	Results	Results	Results
OD	mg/L	<1	<1	<1	<1	<1	<1
rbidity	NTU	2	5	0	11	7	11

mple ID		PB09353	PB09354	PB09355	PB09356	PB09357	PB09358
ate		03/18/98	03/18/98	03/19/98	03/19/98	03/19/98	03/19/98
me		13:00	13:15	02:00	01:20	01:40	01:50
cility		Endicott	Endicott	Endicott	Endicott	Endicott	Endicott
id/Module		N/A	N/A	N/A	N/A	N/A	N/A
Vell		N/A	N/A	N/A	N/A	N/A	N/A
[illegible]		98BPXLI 14 WA01	98BPXLI 14 WA02	98BPXLI 30 WA03	98BPXLI 30 WA01	98BPXLI 30 WA02	98BPXLI 30 WA62
escription		seawater	seawater	seawater	seawater	seawater	seawater
mments							
sts	UOM	Results	Results	Results	Results	Results	Results
OD	mg/L	<1	<1	<1	<1	<1	<1
urbidity	NTU	1	3	6	0	0	---

Sample ID		PB09359					
Date		03/18/98					
Time		21:10					
Facility		Endicott					
Skid/Module		N/A					
Well		N/A					
Location		98BPXLI 02 WA61					
Description		seawater					
Comments							
Tests	UOM	Results					
BOD	mg/L	<1					
Turbidity	NTU	---					

one: 659-4861 (659-4357 no longer in use). Fax: 659-4313.

Analyzed by: DB
Don Brink
907 659 4861