Parametrix ENGINEERING • PLANNING • ENVIRONMENTAL SCIENCES

SITE NAME Evergreen Bremerton
FSID 2645
SIT 5.4

TECHNICAL MEMORANDUM

Date:	February 15, 2006
To:	Phil Williams, City of Bremerton Public Works
From:	Bill Webb, Parametrix
Subject:	Chevron Property Sediment Characterization Study
cc:	Phil Struck, Parametrix
Project Number:	255-1896-063 (03/01)
Project Name:	Pt Narrows Beach Sewer Replacement

INTRODUCTION

The purpose of this Technical Memorandum is to describe the results of the sediment characterization study conducted in the Port Washington Narrows and Smith Cove located in Bremerton, Washington (Figure 1). This study was conducted in support of a potential aquatic land lease from the state Department of Natural Resources (DNR) and potential acquisition of the Chevron property. Each area will be considered separately for purposes of this report. The first area is called the "sewer line corridor", and the second area is called the "Chevron property". Data from both areas will be used to make decisions regarding future projects planned by the City of Bremerton.

This investigation consisted of collecting a total of 25 sediment samples which were submitted for physical, chemical and bioassay analysis and comparison to applicable Sediment Quality Standards (SQS) described in Washington State Sediment Management Standards (SMS).

On November 21, 2005, a total of 8 (including duplicate) surface sediment grab samples were collected via boat from the area including Smith Cove extending south to the USS Turner Joy (stations S-1, S-2, S-6, and C-1 through C-5 – see Figure 2 attached). Samples were collected from the top 10 cm of sediment. On November 29, 2005, a total of 13 additional sediment samples were collected in the intertidal zone during an extreme low tide on and in the vicinity of the Chevron property and along the sewer corridor (samples S-3, S-4, S-5, and C-6 through C-10). Five sediment samples were collected from the surface to a depth of 10 cm, and 5 subsurface samples were collected from approximately 2 feet below ground surface (bgs) at the same locations as the surface sediment samples and three surface sediment samples were collected along the sewer corridor. On December 14, 2005 a surface sediment sample was collected for bioassay analysis from station C-1. At the request of the Department of Ecology (Ecology), three additional surface sediment samples were collected on January 06, 2006.

Sample locations are shown in Figures 2, 3, and 4 (attached). All sampling was conducted in accordance with the Ecology guidelines and the Sampling and Analysis Plan (SAP) for the site (Parametrix 2005).

FIELD OBSERVATIONS

Substrate in the sampling area generally consisted of sand, gravel and cobble ranging in size from silt and sand to cobbles greater than 1-ft in diameter. Due to the large percentage of cobbles at several stations, samples were difficult to obtain and required multiple grabs that were composited and homogenized.

Debris on the beach offshore of the former Chevron property included metal pipes, bricks, concrete, and rip-rap. A petroleum and sulfur odor was noted along an approximately 50-100 ft segment of shoreline on the northeast side of the site near the fueling pier. An unidentified staining was observed approximately two inches below ground surface. This staining was located in the vicinity of sample stations C-6 and C-8.

SAMPLING AND ANALYSIS

Sediment samples were analyzed for of the following contaminants in accordance with the SAP:

- Petroleum hydrocarbons using NWTPH-Dx
- Metals using EPA Method 6010/7470
- Semi-volatile organic compounds (SVOCs) and poly-aromatic hydrocarbons (PAHs) using EPA Method 8270
- Sediment Management Standards (SMS) parameters (including metals and semi-volatile organics), as specified in WAC 173-204-320.

Table 1 lists all sample numbers and analytical parameters for each sampling location. Analytical results were compared to the Marine Sediment Quality Standards (SQS) – WAC 173-204-320, (See Table 2 - attached) to assess sediment quality. For organic chemicals whose numerical criteria are TOC-normalized, tables include both dry-weight and TOC-normalized concentration values. Analytical results are shown in spreadsheet form in attached Table 2.

Table 1. Sample Location and Analytes

Site	Sample ID	Analytes
Sewer Line Corridor	S-1 through S-6	All SMS Parameters
Chevron Property	C-1 through C-4	All SMS Parameters, TPH-Dx
	C-5 through C-10	Metals, SVOCs, PAHS, TPH-Dx, TOC
	C-5-S through C-10-S	Metals, SVOCs, PAHS, TPH-Dx, TOC
	C-11 through C-13	PAHS, TOC
	C-8	Bioassay

RESULTS

Sewer Line Corridor

Six samples were collected in this area (S-1 through S-6) and analyzed for SMS parameters. No Sediment Quality Standard (SQS) was exceeded in any sample (See Table 2). Sediment along the proposed sewer line corridor generally contained trace concentrations of metals, semi-volatile organic compounds (SVOCs), poly aromatic hydrocarbons (PAHs), and petroleum compounds.

Chevron Property

A total of five sediment samples were collected offshore of the Chevron property, and 13 samples were collected within the intertidal area for chemical analysis. One sample was collected from station C-8 for

bioassay analysis. Offshore samples (C-1 through C-5) were collected in both the Port Washington Narrows and Smith Cove at estimated elevations that ranged from –2 ft to –12.8 ft. MLLW. No chemicals detected in off-shore samples exceeded SQS.

In the intertidal area, sample location C-8 exceeded SQS for fluoranthene, chrysene, benzofluoranthenes, and Total HPAHs. No other samples exceeded applicable SQS levels. Table 2 (attached) shows results in comparison to SQS.

Sediment chemistry laboratory analysis results are provided in the Data Attachment.

BIOASSAY TESTING

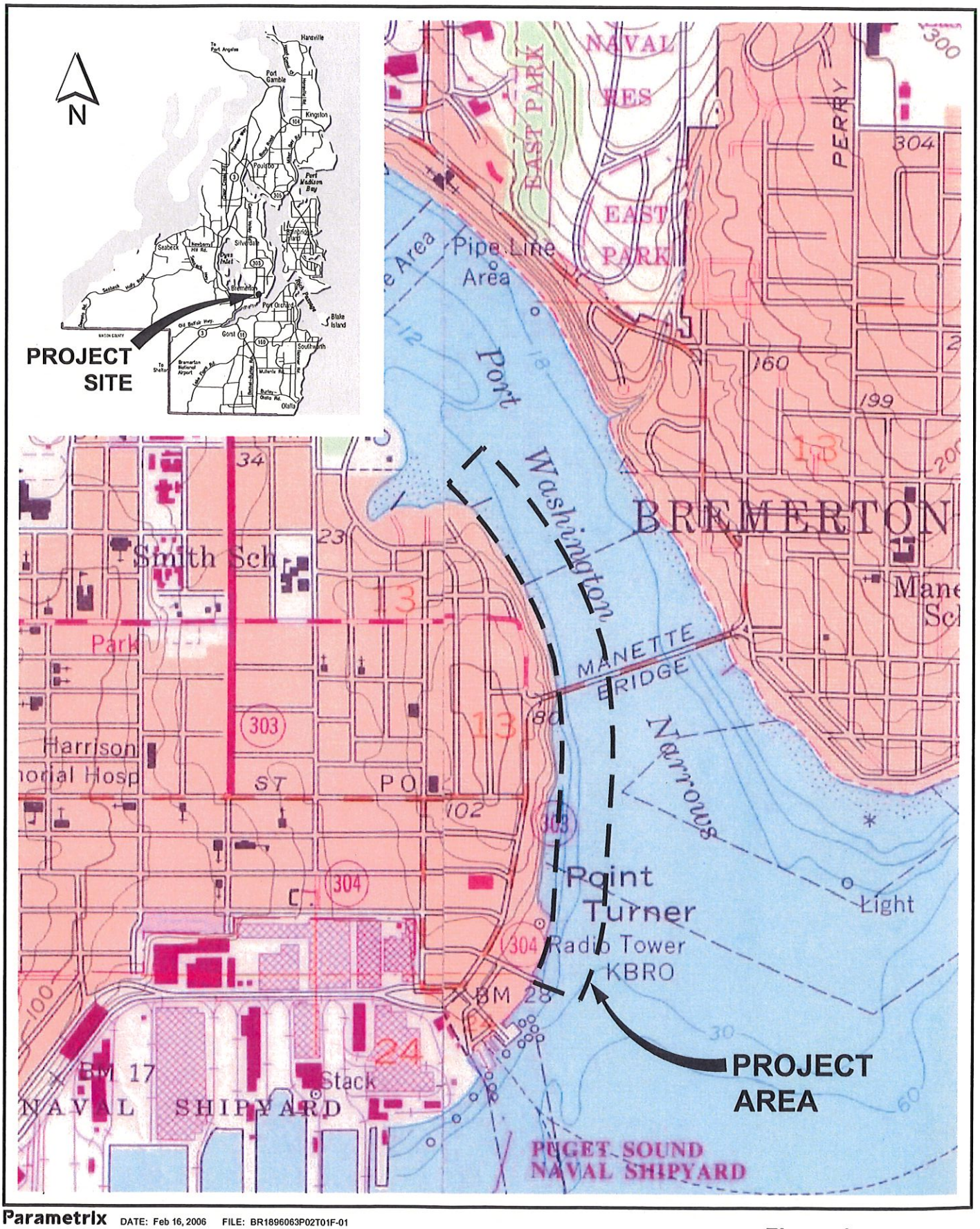
Based on chemistry sample results, no further action was necessary or warranted at any location except the surface sample from station C-8. Washington Administrative Code (WAC) 173-204-310 allows a confirmatory marine biological test (bioassay) to be performed (WAC 173-204-315) when one applicable chemical or human health criterion in WAC 173-204-320 through 173-204-340 is exceeded. Pursuant to this, an additional sample was collected from station C-8 and delivered on December 13, 2005 to Weston Environmental Laboratory in Port Gamble for bioassay analysis.

Bioassays were conducted pursuant to SMS requirements and consisted of the 48-hr larval Bay mussel (Mytilus galloprovincialis), the 10-day amphipod (*Eohaustoris estuaries*), and the 20-day juvenile polychaete worms (*Neanthes arenaceodentata*). Results were compared to both SQS and Cleanup Screening Levels. For all tests, there was no statistically significant difference between the test sediment from station C-8, and reference sediment. The confirmatory marine sediment bioassay tests demonstrate that sediment at the site pass SMS criteria. The complete bioassay report is provided in the Data Attachment.

CONCLUSIONS

Based on sampling results, sediments within both the sewer line corridor and adjacent to the former Chevron site meet applicable SMS requirements and no further sampling or cleanup action is necessary or warranted.

FIGURES



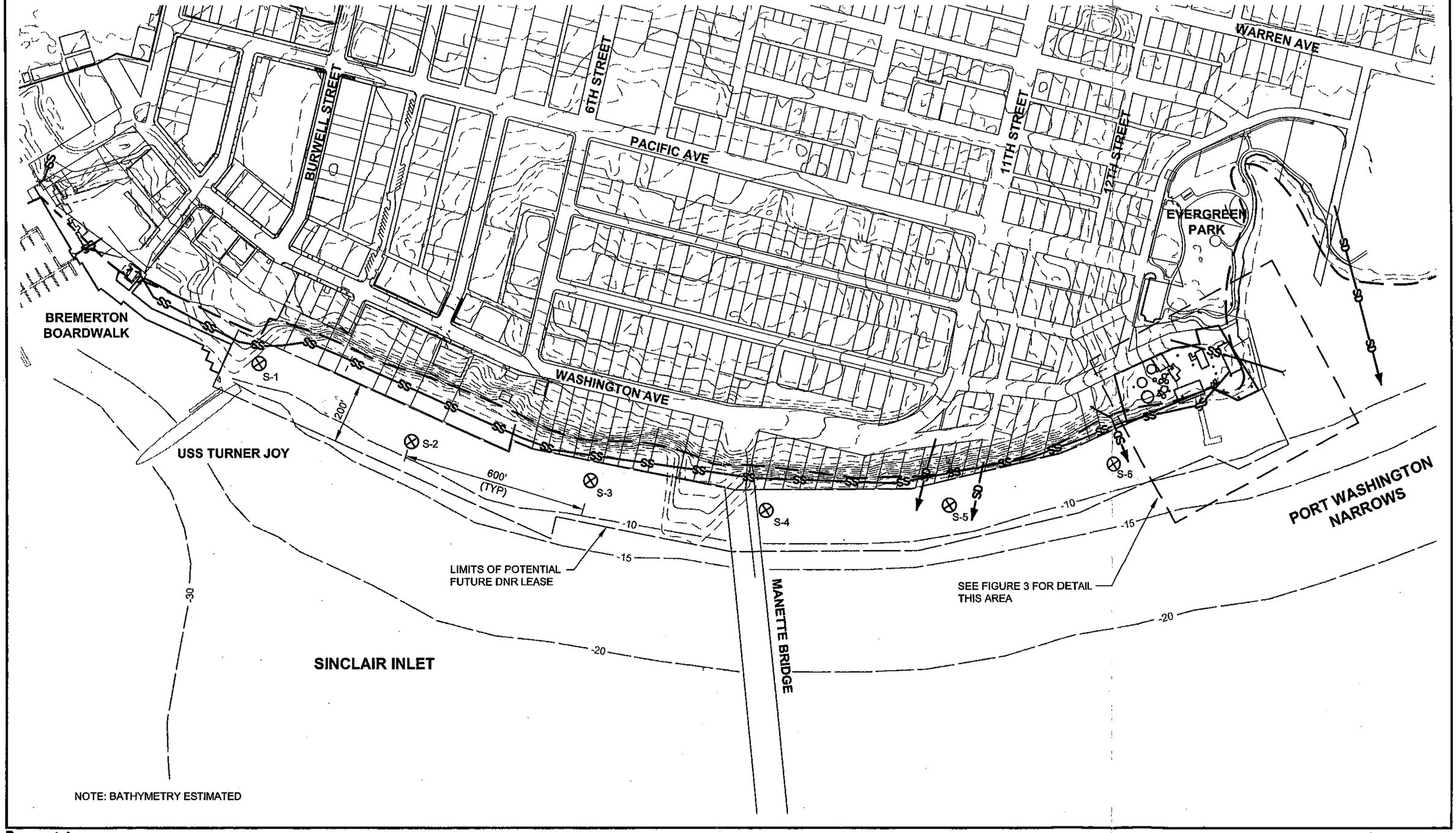
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SCALE IN FEET

Figure 1
Pt Narrows Beach Sediment Study
Project Vicinity



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Approx Shoreline

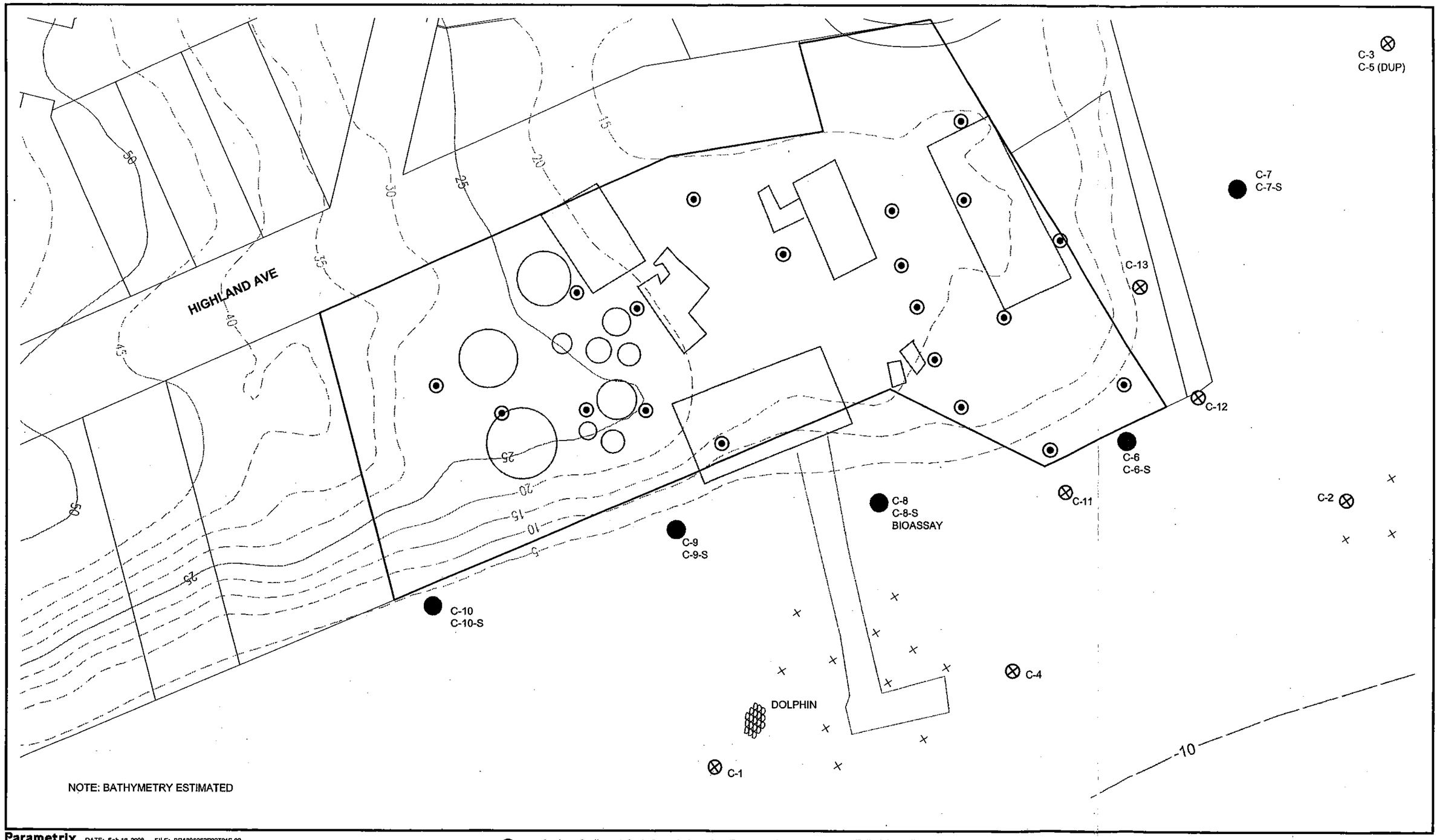
Sanitary Sewer

Storm Drain Outfall

Future DNR Lease Area

Sediment Grab Sample Location

Figure 2
Pt Narrows Beach
Sewer Line Corridor
Sediment Sample Locations



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SCALE IN FEET

- Surface Sediment Grab Sample Location (Dec. 2005)
- Intertidal Surface Grab and Subsurface (2-ft BGS) Sample (Dec. 2005)
- Monitoring Well
- × Failed Sampling Location Due to Large Cobble Substrate (Dec. 2005)
- Chevron Property

Figure 3
Former Chevron Site,
Sample Locations



Parametrix DATE: Feb 16, 2006 FILE: BR1896063P02T01F-03

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SCALE IN FEET

Figure 4
Pt Narrows Beach
Former Chevron Site
Sediment Sampling Locations

TABLES

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TECHNICAL MEMORANDUM

Date:	January 31, 2005
To:	Project File
From:	Stuart Currie
Subject:	Quality Assurance/Quality Control Review of Laboratory Data for the November 2005 and January 2006 Bremerton Sediment Sampling
cc:	Phil Struck Lara Linde
Project Number:	255-1896-063 (02/02)
Project Name:	Pt. Narrows Beach Sewer Replacement

This memorandum summarizes the results of an internal quality assurance/quality control (QA/QC) review of analytical results for sediment samples collected on November 21 and 29, 2005, and January 9, 2006. Twenty-four (24) surface grab sediment samples were collected and submitted to Analytical Resources, Inc. (ARI) in Tukwila, Washington for analysis for various Sediment Management Standards (SMS) parameters.

Final laboratory data (ARI Reports IU01, IU50, IV18, IV58, and IX82) were submitted to Parametrix via hardcopy Tier II data reports. All data were reviewed using laboratory quality criteria specified in the ARI (2006) Quality Assurance Plan (QAP)[1] and qualifiers were applied where judged appropriate. This review included evaluation of the following (where applicable):

- Preparation and analytical holding times;
- Laboratory method blanks;
- Laboratory control samples (LCS) and LCS duplicates (LCSD)[2];
- Laboratory replicates;
- Matrix spike (MS) and MS duplicates (MSD); and
- Surrogate compound recoveries.

All samples were analyzed within the required holding times and the appropriate methods were used. Analytical accuracy and precision were determined to be generally acceptable based on this review. Specific instances of out of control laboratory QC results were identified and data qualifiers were assigned based on results that exceeded laboratory QC criteria. Table 1 summarizes all qualified data. No data were rejected and all data reported should be considered valid, representative of the samples collected, and acceptable for further use.

[1] ARI. 2006. Quality Assurance Plan. Revision 12-006. Prepared by Analytical Resources, Inc., Tukwila, WA. January 16, 2006.
[2] LCS/LCSD may also be referred to as Blank Spike/Blank Spike Duplicate.

Table 1. Qualified Bremerton Sediment Data

Sample ID	Analyte	Result	Unit	Qualifier	Reason
C-1	Antimony	6	mg/kg dw	UJ	MS recovery was <75%.
C-10	Antimony	6	mg/kg dw	UJ	MS recovery was <75%.
C-10-S	Antimony	6	mg/kg dw	UJ	MS recovery was <75%.
C-2	Antimony	6	mg/kg dw	UJ	MS recovery was <75%.
C-3	Antimony	7	mg/kg dw	UJ	MS recovery was <75%.
C-4	Antimony	7	mg/kg dw	UJ	MS recovery was <75%.
C-5	Antimony	8	mg/kg dw	UJ	MS recovery was <75%.
C-6	Antimony	6	mg/kg dw	UJ	MS recovery was <75%.
C-6-S	Antimony	6	mg/kg dw	UJ	MS recovery was <75%.
C-7	Antimony	6	mg/kg dw	UJ	MS recovery was <75%.
C-7-S	Antimony	6	mg/kg dw	UJ	MS recovery was <75%.
C-8	Antimony	10	mg/kg dw	UJ	MS recovery was <75%.
C-8-S	Antimony	6	mg/kg dw	UJ	MS recovery was <75%.
C-9	Antimony	6	mg/kg dw	UJ	MS recovery was <75%.
C-9-S	Antimony	6	mg/kg dw	UJ	MS recovery was <75%.
S-1	Antimony	6	mg/kg dw	UJ	MS recovery was <75%.
S-2	Antimony	6	mg/kg dw	UJ	MS recovery was <75%.
S-3	Antimony	10	mg/kg dw	UJ	MS recovery was <75%.
S-4	Antimony	6	mg/kg dw	UJ	MS recovery was <75%.
S-5	Antimony	6	mg/kg dw	UJ	MS recovery was <75%.
S-6	Antimony	6	mg/kg dw	UJ	MS recovery was <75%.
C-1	bis(2-Ethylhexyl)phthalate	20	ug/kg dw	UB	Analyte detected in MB @ >MRL; sample result was ≤MRL.
C-2	bis(2-Ethylhexyl)phthalate	28	ug/kg dw	UB	Analyte detected in MB @ >MRL; sample result was ≤MB conc.
C-3	bis(2-Ethylhexyl)phthalate	76	ug/kg dw	JB	Analyte detected in MB @ >MRL; sample result was ≤5X MB conc.
C-4	bis(2-Ethylhexyl)phthalate	20	ug/kg dw	UB	Analyte detected in MB @ >MRL; sample result was ≤MRL.
C-5	bis(2-Ethylhexyl)phthalate	76	ug/kg dw	JB	Analyte detected in MB @ >MRL; sample result was ≤5X MB conc.
S-1	bis(2-Ethylhexyl)phthalate	28	ug/kg dw	UB	Analyte detected in MB @ >MRL; sample result was ≤MB conc.
S-2	bis(2-Ethylhexyl)phthalate	35	ug/kg dw	JB	Analyte detected in MB @ >MRL; sample result was ≤5X MB conc.
S-6	bis(2-Ethylhexyl)phthalate	19	ug/kg dw	UB	Analyte detected in MB @ >MRL; sample result was ≤MRL.
C-10	Chromium	23.3	mg/kg dw	J	MS recovery was >125%.
C-10-S	Chromium	18.8	mg/kg dw	J	MS recovery was >125%.
C-6	Chromium	16.5	mg/kg dw	J	MS recovery was >125%.
C-6-S	Chromium	19.8	mg/kg dw	J	MS recovery was >125%.
C-7	Chromium	20	mg/kg dw	J	MS recovery was >125%.
C-7-S	Chromium	24.8	mg/kg dw	J	MS recovery was >125%.
C-8	Chromium	15	mg/kg dw	J	MS recovery was >125%.
C-8-S	Chromium	19.2	mg/kg dw	J	MS recovery was >125%.
C-9	Chromium	20.1	mg/kg dw	J	MS recovery was >125%.
C-9-S	Chromium	16.6	mg/kg dw	J	MS recovery was >125%.

Table 1. Qualified Bremerton Sediment Data

Sample ID	Analyte	Result	Unit	Qualifier	Reason
S-3	Chromium	11	mg/kg dw	J	MS recovery was >125%.
S-4	Chromium	22.2	mg/kg dw	J	MS recovery was >125%.
S-5	Chromium	33.8	mg/kg dw	J	MS recovery was >125%.
C-10	Copper	20.8	mg/kg dw	J	Duplicate RPD was >20%.
C-10-S	Copper	16.1	mg/kg dw	J	Duplicate RPD was >20%.
C-6	Copper	15.3	mg/kg dw	J	Duplicate RPD was >20%.
C-6-S	Copper	17.2	mg/kg dw	J	Duplicate RPD was >20%.
C-7	Copper	11.6	mg/kg dw	J	Duplicate RPD was >20%.
C-7-S	Copper	10.7	mg/kg dw	J	Duplicate RPD was >20%.
C-8	Copper	15.8	mg/kg dw	J	Duplicate RPD was >20%.
C-8-S	Copper	19.5	mg/kg dw	J	Duplicate RPD was >20%.
C-9	Copper	19.0	mg/kg dw	J	Duplicate RPD was >20%.
C-9-S	Copper	14.8	mg/kg dw	J	Duplicate RPD was >20%.
S-3	Copper	9.9	mg/kg dw	J	Duplicate RPD was >20%.
S-4	Copper	29.1	mg/kg dw	J	Duplicate RPD was >20%.
S-5	Copper	32.7	mg/kg dw	J	Duplicate RPD was >20%.
C-1	Sulfides	0.91	mg/kg	UJ	Duplicate RPD was >30%.
C-2	Sulfides	6.5	mg/kg	J	Duplicate RPD was >30%.
C-3	Sulfides	580	mg/kg	J	Duplicate RPD was >30%.
C-4	Sulfides	17	mg/kg	J	Duplicate RPD was >30%.
C-5	Sulfides	500	mg/kg	J	Duplicate RPD was >30%.
S-1	Sulfides	11	mg/kg	J	Duplicate RPD was >30%.
S-2	Sulfides	4.9	mg/kg	J	Duplicate RPD was >30%.
S-6	Sulfides	1.3	mg/kg	UJ	Duplicate RPD was >30%.

J Analyte was detected; the reported concentration should be considered an estimate
JB Analyte was detected; the reported concentration should be considered an estimate based on blank contamination
MB Method blank
MRL Method reporting limit
UB Analyte should be considered not detected at the reported concentration based on blank contamination
UJ Analyte was not detected and the reporting limit should be considered an estimate

Table 2. Summary of sediment sampling results, ormer Chevron Property and sewer line corridor, City of Bremerton, Washington. Samples collected December 2005 and January 2006.

ANALYTE	SQS	SIZM/ SCSL	UNITS	C-1	C-2	C-3	C-4	C-5	S-1	S-2	S-6	S-3	S-4	S-5	C-6	C-7	C-8	C-9	C-10	C-6-S	C-7-S	C-8-S	C-9-S	C-10-S	C-11	C-12	C-13
Total Solids			%	77	74.9	63.2	74.1	62.7	78.5	80.6	76.6	80.9	81	84.6											82.6	71.9	73.5
Preserved Total Solids			%	76.7	72.3	59.2	73.8	64.9	77.1	77.1	73.7	81.7	81.3	85.2													
Total Volatile Solids			%	1.23	2.15	2.86	1.59	3.13	1.6	1.75	1.26	1.81	1.42	1.38													
N-Ammonia			mg-N/kg	6.97	13	9.92	6.51	10.5	7.26	4.95	4.28	6.03	1.47	0.66													
Sulfide			mg/kg	0.91 UJ	6.5 J	580 J	17 J	500 J	11 J	4.9 J	1.3 UJ	29	1.5 U	1.5 U													
Total Organic Carbon			%	0.593	0.81	1.65	0.468	2.24	0.461	0.409	0.426	0.421	0.28	0.269	0.380	0.526	0.528	0.492	0.503	0.269	1.140	0.305	0.205	0.167	0.392	0.631	1.040
Antimony			mg/kg dw	6 UJ	6 UJ	7 UJ	7 UJ	8 UJ	6 UJ	6 UJ	6 UJ	10 UJ	6 UJ	6 UJ	6 UJ	6 UJ	10 UJ	6 UJ	6 UJ	6 UJ	6 UJ	6 UJ	6 UJ	6 UJ			
Arsenic	57	93	mg/kg dw	6 U	6 U	7 U	7 U	8 U	6 U	6 U	6 U	10 U	6 U	6 U	6 U	6 U	10 U	6 U	6	6 U	6 U	6 U	6 U	6 U			
Cadmium	5.1	6.7	mg/kg dw	0.3 U	0.3	0.5	0.3	0.5	0.3	0.2 U	0.2 U	0.6 U	0.3	0.2 U	0.3 U	0.2 U	0.6 U	0.2 U	0.2 U	0.2	0.2 U	0.2 U	0.2 U	0.2 U			
Chromium	260	270	mg/kg dw	18.6	14.1	20.8	18.8	21.9	17.5	13.3	16.3	11 J	22.2 J	33.8 J	16.5 J	20 J	15 J	20.1 J	23.3 J	19.8 J	24.8 J	19.2 J	16.6 J	18.8 J			
Copper	390	390	mg/kg dw	15.4	15	19.6	16.7	19.8	16.3	8.6	15.1	9.9 J	29.1 J	32.7 J	15.3 J	11.6 J	15.8 J	19 J	20.8 J	17.2 J	10.7 J	19.5 J	14.8 J	16.1 J			
Lead	450	530	mg/kg dw	15	13	27	16	21	14	12	24	16	82	34	26	14	16	18	23	31	13	28	23	147			
Mercury	0.41	0.59	mg/kg dw	0.06 U	0.06 U	0.09	0.06 U	0.09	0.05 U	0.06	0.05 U	0.06 U	0.04	0.04 U	0.07 U	0.05 U	0.21	0.05 U	0.05 U	0.04 U	0.21	0.06	0.05 U	0.05 U			
Nickel			mg/kg dw	18	17	20	20	22	20	13	16	13	24	26	18	25	16	24	24	22	21	22	17	22			
Silver	6.1	6.1	mg/kg dw	0.4 U	0.4 U	0.4 U	0.4 U	0.5 U	0.4 U	0.3 U	0.4 U	0.8 U	0.4 U	0.4	0.4 U	0.4 U	0.9 U	0.3 U	0.4 U	0.3 U	0.3 U	0.4 U	0.4 U	0.3 U			
Zinc	410	960	mg/kg dw	45.7	40.1	49.8	47.4	48.3	36	27.1	46.4	38	65.1	120	57.6	51.2	44	49.5	63.1	72.4	37.2	60	45.7	111			
Naphthalene	99	170	mg/kg oc	3.37 U	2.47 U	1.16 U	4.27 U	0.89 U	4.34 U	3.91 J	4.46 U	4.51 U	6.79 U	7.46 U	5.26 U	3.80 U	3.79 U	4.07 U	5.17	7.06 U	1.75 U	4.26 J	9.27 U	11.38 U	4.85 U	3.01 U	1.92 U
Acenaphthylene	66	66	mg/kg oc	3.37 U	1.85 J	2.06	2.99 J	1.83	4.34 U	4.65 J	4.46 U	4.51 U	6.79 U	7.46 U	5.26 U	3.80 U	7.01	4.07 U	3.78 U	7.06 U	1.23 J	3.93 J	9.27 U	11.38 U	4.85 U	3.01 U	1.92 U
Acenaphthene	16	57	mg/kg oc	3.37 U	2.47 U	1.15 U	4.27 U	0.89 U	4.34 U	4.89 U	4.46 U	4.51 U	6.79 U	7.46 U	5.26 U	3.80 U	3.79 U	4.07 U	3.78 U	7.06 U	1.75 U	6.23 U	9.27 U	11.38 U	4.85 U	3.01 U	1.92 U
Fluorene	23	79	mg/kg oc	3.37 U	2.47 U	1.15 U	4.27 U	0.94	4.34 U	4.89 U	4.46 U	4.51 U	6.79 U	7.46 U	5.26 U	3.80 U	3.79 U	4.07 U	3.78 U	7.06 U	1.75 U	6.23 U	9.27 U	11.38 U	4.85 U	3.01 U	1.92 U
Phenanthrene	100	480	mg/kg oc	3.37 U	7.41	7.27	4.49	8.93	3.47 J	15.65	4.46 U	6.89	3.93 J	7.46 U	3.42 J	3.61 J	16.86	11.38	7.36	7.06 U	2.28	5.90 J	5.85 J	9.58 J	4.85 U	4.28	1.92
Anthracene	220	1200	mg/kg oc	3.37 U	2.35 J	3.39	4.27 U	5.80	4.34 U	2.93 J	4.46 U	4.51 U	6.79 U	7.46 U	5.26 U	3.80 U	6.44	4.07 U	3.78 U	7.06 U	2.46	7.21	4.68 J	11.38 U	4.85 U	3.01 U	1.92 U
Total LPAHs	370	780	mg/kg oc	3.37 U	11.60	12.73	7.48	17.50	3.47	27.14	4.46 U	6.89	3.93	7.46 U	3.42	3.61	30.30	11.38	12.52	3.05 U	5.96	21.31	10.54	9.58	4.85 U	4.28	1.92
2-Methylnaphthalene	38	64	mg/kg oc	3.37 U	2.47 U	1.15 U	4.27 U	0.89 U	4.34 U	4.89 U	4.46 U	4.51 U	6.79 U	7.46 U	5.26 U	3.80 U	3.79 U	4.07 U	3.78 U	7.06 U	1.75 U	5.90 J	9.27 U	11.38 U	4.85 U	3.01 U	1.92 U
Fluoranthene	160	1200	mg/kg oc	2.87 J	13.58	29.70	14.96	25.45	6.68	24.45	3.99 J	14.01	5.71 J	7.46 U	28.95	7.03	567.12	9.15	9.15	7.06 J	13.16	52.46	21.46	59.88	5.10	14.74	6.15
Pyrene	1000	1400	mg/kg oc	2.87 J	11.23	23.03	12.39	21.43	5.64	19.80	2.58 J	9.98	4.29 J	7.46 U	13.16	5.13	208.33	7.32	4.77	9.67	11.40	42.62	15.61	31.14	4.85 U	12.52	5.77
Benzo(a)anthracene	110	270	mg/kg oc	3.37 U	5.43	10.91	10.68	8.93	2.62 J	9.05	4.46 U	5.70	6.79 U	7.46 U	5.00 J	2.66 J	54.92	3.86 J	2.78 J	4.46 J	5.44	19.67	8.78 J	7.78 J	4.85 U	6.66	2.69
Chrysene	110	460	mg/kg oc	2.53 J	8.64	15.76	12.39	12.05	3.69 J	11.00	3.05 J	6.89	3.57 J	7.46 U	7.89 J	3.80	136.36	4.07	3.18 J	7.06 U	6.58	21.64	11.71	16.77	6.38	8.08	3.75
Benzo(b)fluoranthene			*mg/kg oc*	*3.37 U*	*7.41*	*13.94*	*15.60*	*10.71*	*5.21*	*19.07*	*2.35 J*	*5.23*	*6.79 U*	*7.46 U*	*6.84*	*3.80*	*130.68*	*3.86 J*	*3.76*	*5.20 J*	*6.40*	*23.61*	*15.61*	*14.97*	*4.85 U*	*9.19*	*3.56*
Benzo(k)fluoranthene			*mg/kg oc*	*3.37 U*	*6.42*	*12.73*	*12.39*	*12.50*	*3.04 J*	*12.96*	*3.52 J*	*5.94*	*6.79 U*	*7.46 U*	*5.26*	*2.09 J*	*125.00*	*4.07*	*2.39 J*	*3.72 J*	*4.74*	*14.43*	*12.88*	*7.19 J*	*4.85 U*	*6.34*	*2.69*
Benzofluoranthenes	230	450	mg/kg oc	3.37 U	13.83	26.67	27.99	23.21	8.24	32.03	5.87	11.16	6.79 U	7.46 U	12.11	5.89	255.68	7.93	6.16	8.92	11.14	38.03	26.29	22.16	4.85 U	15.53	6.25
Benzo(a)pyrene	99	210	mg/kg oc	3.37 U	6.30	12.12	15.17	10.71	3.47 J	14.91	4.46 U	5.94	6.79 U	7.46 U	3.95 J	3.23 J	54.92	4.86	2.98 J	5.95 J	6.58	23.28	9.27	7.19 J	4.85 U	7.61	3.17
Indeno(1,2,3-cd)pyrene	34	88	mg/kg oc	3.37 U	1.60 J	2.55	3.63	2.46	4.34 U	3.67 J	4.46 U	3.33 J	6.79 U	7.46 U	5.26 U	3.80 U	16.29	4.07 U	3.78 U	7.06 U	1.58 J	5.25 J	9.27 U	11.38 U	4.85 U	3.80	1.92 U
Dibenz(a,h)anthracene	12	33	mg/kg oc	3.37 U	2.47 U	0.91 J	4.27 U	0.71 J	4.34 U	4.89 U	4.46 U	4.51 U	6.79 U	7.46 U	5.26 U	3.80 U	4.36	4.07 U	3.78 U	7.06 U	1.75 U	6.23 U	9.27 U	11.38 U	4.85 U	3.01 U	1.92 U
Benzo(g,h,i)perylene	31	78	mg/kg oc	3.37 U	1.73 J	2.61	3.85 J	2.46	4.34 U	3.18 J	4.46 U	4.04 J	6.79 U	7.46 U	5.26 U	3.80 U	13.26	4.07 U	3.78 U	7.06 U	1.67 J	6.56	9.27 U	11.38 U	4.85 U	4.28	2.02
Total HPAHs	960	5300	mg/kg oc	8.26	62.35	124.24	101.07	107.41	32.54	116.09	15.49	61.05	13.57	7.46 U	71.05	27.76	1331.25	37.20	29.03	36.06	57.54	209.51	95.12	144.91	11.48	73.22	29.81
1,2-Dichlorobenzene	2.3	2.3	mg/kg oc	3.37 U	2.47 U	1.15 U	4.27 U	0.89 U	4.34 U	4.89 U	4.46 U	4.51 U	6.79 U	7.46 U	5.26 U	3.80 U	3.79 U	4.07 U	3.78 U	7.06 U	1.75 U	6.23 U	9.27 U	11.38 U			
1,4-Dichlorobenzene	3.1	9	mg/kg oc	3.37 U	2.47 U	1.15 U	4.27 U	0.89 U	4.34 U	4.89 U	4.46 U	4.51 U	6.79 U	7.46 U	5.26 U	3.80 U	3.79 U	4.07 U	3.78 U	7.06 U	1.75 U	6.23 U	9.27 U	11.38 U			
1,2,4-Trichlorobenzene	0.81	1.8	mg/kg oc	3.37 U	2.47 U	1.16 U	4.27 U	0.89 U	4.34 U	4.89 U	4.46 U	4.51 U	6.79 U	7.46 U	5.26 U	3.80 U	3.79 U	4.07 U	3.78 U	7.06 U	1.76 U	6.23 U	9.27 U	11.38 U			
Hexachlorobenzene	0.38	2.3	mg/kg oc	0.17 U	0.12 U	0.06 U	0.21 U	0.05 U	0.22 U	0.23 U	0.23 U	0.23 U	0.35 U	0.36 U	5.26 U	3.80 U	3.79 U	4.07 U	3.78 U	7.06 U	1.75 U	6.23 U	9.27 U	11.38 U			
Dimethylphthalate	53	53	mg/kg oc	3.37 U	2.47 U	1.15 U	4.27 U	0.89 U	4.34 U	4.89 U	4.46 U	4.51 U	6.79 U	7.46 U	5.26 U	3.80 U	3.79 U	4.07 U	3.78 U	7.06 U	1.75 U	6.23 U	9.27 U	11.38 U			
Diethylphthalate	61	110	mg/kg oc	3.37 U	2.35 J	0.91 J	4.27 U	0.45 J	4.34 U	3.91 J	2.82 J	4.51 U	6.79 U	7.46 U	5.26 U	3.80 U	3.79 U	4.07 U	3.78 U	7.06 U	1.75 U	6.23 U	9.27 U	11.38 U			
Di-n-butylphthalate	220	1700	mg/kg oc	3.20 J	2.96	2.12	4.49	1.16	5.21	5.38	5.63	4.51 U	6.79 U	7.46 U	5.26 U	3.80 U	3.79 U	4.07 U	3.78 U	7.81	1.75 U	6.23 U	9.27 U	11.38 U			
Butylbenzylphthalate	4.9	64	mg/kg oc	3.37 U	2.47 U	1.15 U	4.27 U	0.89 U	4.34 U	4.89 U	4.46 U	4.51 U	6.79 U	7.46 U	5.26 U	3.80 U	3.79 U	4.07 U	3.78 U	7.06 U	1.75 U	6.23 U	9.27 U	11.38 U			
Bis(2-ethylhexyl)phthalate	47	78	mg/kg oc	3.37 UB	3.46 UB	4.61 JB	4.27 UB	3.39 JB	6.07 UB	8.56 JB	4.46 UB	3.33 J	4.64 J	7.46 U	3.42 J	3.42 J	3.79 U	4.07 U	10.34	9.29	1.40 J	13.11	7.80 J	9.58 J			
Di-n-octylphthalate	58	4500	mg/kg oc	3.37 U	2.47 U	1.15 U	4.27 U	0.89 U	4.34 U	4.89 U	4.46 U	4.51 U	6.79 U	7.46 U	5.26 U	3.80 U	3.79 U	4.07 U	35.79	7.06 U	1.75 U	6.23 U	9.27 U	11.38 U			
Dibenzofuran	15	58	mg/kg oc	3.37 U	2.47 U	1.15 U	4.27 U	0.89 U	4.34 U	4.89 U	4.46 U	4.51 U	6.79 U	7.46 U	5.26 U	3.80 U	3.79 U	4.07 U	3.78 U	7.06 U	1.75 U	6.23 U	9.27 U	11.38 U	4.85 U	3.01 U	1.92 U
Hexachlorobutadiene	3.9	6.2	mg/kg oc	0.17 U	0.12 U	0.06 U	0.21 U	0.05 U	0.22 U	0.23 U	0.23 U	0.23 U	0.35 U	0.36 U	5.26 U	3.80 U	3.79 U	4.07 U	3.78 U	7.06 U	1.75 U	6.23 U	9.27 U	11.38 U			
N-Nitrosodiphenylamine	11	11	mg/kg oc	3.37 U	2.47 U	1.16 U	4.27 U	0.89 U	4.34 U	4.89 U	4.46 U	4.51 U	6.79 U	7.46 U	5.26 U	3.80 U	3.79 U	4.07 U	3.78 U	7.06 U	1.75 U	6.23 U	9.27 U	11.38 U			
Phenol	420	1200	ug/kg dw	72	340	19 U	16 J	20 U	20 U	14 J	22	38	19 U	20 U	20 U	20 U	20 U	20 U	19 U	19 U	20 U	19 U	19 U	130			
2-Methylphenol	63	63	ug/kg dw	20 U	20 U	19 U	20 U	20 U	20 U	20 U	19 U	17 J	19 U	20 U	20 U	20 U	20 U	20 U	19 U	19 U	20 U	19 U	19 U	19 U			
4-Methylphenol	670	670	ug/kg dw	20 U	12 J	19 U	20 U	20 U	20 U	20 U	19 U	19 U	19 U	20 U	20 U	20 U	20 U	20 U	19 U	19 U	20 U	19 U	19 U	19 U			
2,4-Dimethylphenol	29	29	ug/kg dw	20 U	20 U	19 U	20 U	20 U	20 U	20 U	19 U	19 U	19 U	20 U	20 U	20 U	20 U	20 U	19 U	19 U	20 U	19 U	19 U	19 U			
Pentachlorophenol	360	690	ug/kg dw	99 U	99 U	96 U	97 U	98 U	98 U	98 U	97 U	95 U	96 U	99 U	98 U	98 U	97 U	99 U	95 U	97 U	98 U	96 U	96 U	96 U			
Benzyl Alcohol	57	73	ug/kg dw	20 U	20 U	19 U	20 U	20 U	20 U	20 U	19 U	19 U	19 U	20 U	20 U	20 U	20 U	20 U	19 U	19 U	20 U	19 U	19 U	19 U			
Benzoic Acid	650	650	ug/kg dw	200 U	200 U	190 U	200 U	200 U	200 U	200 U	190 U	190 U	190 U	200 U	200 U	200 U	200 U	200 U	190 U	190 U	200 U	190 U	190 U	190 U			
gamma-BHC (Lindane)			ug/kg dw	0.99 U	0.99 U	0.98 U	0.97 U	1.1 U	1 U	0.96 U	0.97 U	0.96 U	0.98 U	0.97 U	--	--	--	--	--	--	--	--	--	--			
Heptachlor			ug/kg dw	0.99 U	0.99 U	0.98 U	0.97 U	1.1 U	1 U	0.96 U	0.97 U	0.96 U	0.98 U	0.97 U	--	--	--	--	--	--	--	--	--	--			
Aldrin			ug/kg dw	0.99 U	0.99 U	0.98 U	0.97 U	1.1 U	1 U	0.96 U	0.97 U	0.96 U	0.98 U	0.97 U	--	--	--	--	--	--	--	--	--	--			
Dieldrin			ug/kg dw	2 U	2 U	2 U	2 U	2.2 U	2 U	1.9 U	1.9 U	1.9 U	2 U	2 U	--	--	--	--	--	--	--	--	--	--			
4,4'-DDE			ug/kg dw	2 U	2 U	2 U	2 U	2.2 U	2 U	1.9 U	1.9 U	1.9 U	2 U	2 U	--	--	--	--	--	--	--	--	--	--			
4,4'-DDD			ug/kg dw	2 U	2 U	2 U	2 U	2.2 U	2 U	1.9 U	1.9 U	1.9 U	2 U	2 U	--	--	--	--	--	--	--	--	--	--			
4,4'-DDT			ug/kg dw	2 U	2 U	2 U	2 U	2.2 U	2 U	1.9 U	1.9 U	1.9 U	2 U	2 U	--	--	--	--	--	--	--	--	--	--			
gamma Chlordane			ug/kg dw	0.99 U	0.99 U	0.98 U	0.97 U	1.1 U	1 U	0.96 U	0.97 U	0.96 U	0.98 U	0.97 U	--	--	--	--	--	--	--	--	--	--			
alpha Chlordane			ug/kg dw	0.99 U	0.99 U	0.98 U	0.97 U	1.1 U	1 U	0.96 U	0.97 U	0.96 U	0.98 U	0.97 U	--	--	--	--	--	--	--	--	--	--			
Aroclor 1016			mg/kg oc	3.37 U	2.47 U	1.15 U	4.06 U	0.89 U	4.34 U	4.89 U	4.46 U	4.75 U	6.79 U	7.46 U	--	--	--	--	--	--	--	--	--	--			
Aroclor 1221			mg/kg oc	3.37 U	2.47 U	1.15 U	4.06 U	0.89 U	4.34 U	4.89 U	4.46 U	4.75 U	6.79 U	7.46 U	--	--	--	--	--	--	--	--	--	--			
Aroclor 1232			mg/kg oc	3.37 U	2.47 U	1.15 U	4.06 U	0.89 U	4.34 U	4.89 U	4.46 U	4.75 U	6.79 U	7.46 U	--	--	--	--	--	--	--	--	--	--			
Aroclor 1242			mg/kg oc	3.37 U	2.47 U	1.15 U	4.06 U	0.89 U	4.34 U	4.89 U	4.46 U	4.75 U	6.79 U	7.46 U	--	--	--	--	--	--	--	--	--	--			
Aroclor 1248			mg/kg oc	3.37 U	2.47 U	1.15 U	4.06 U	0.89 U	4.34 U	4.89 U	4.46 U	4.75 U	6.79 U	7.46 U	--	--	--	--	--	--	--	--	--	--			
Aroclor 1254			mg/kg oc	3.37 U	2.47 U	1.15 U	4.06 U	0.89 U	4.34 U	4.89 U	4.46 U	4.75 U	6.79 U	7.46 U	--	--	--	--	--	--	--	--	--	--			
Aroclor 1260			mg/kg oc	3.37 U	2.47 U	4.24	4.06 U	0.89 U	4.34 U	4.89 U	4.46 U	4.75 U	6.79 U	7.46 U	--	--	--	--	--	--	--	--	--	--			
Total PCBs	12	65	mg/kg oc	3.37 U	2.47 U	4.24	4.06 U	0.89 U	4.34 U	4.89 U	4.46 U	4.75 U	6.79 U	7.46 U	--	--	--	--	--	--	--	--	--	--			
Diesel			mg/kg dw	6 U	26	27	20	40	--	--	--	7.5	6 U	6 U	11	8.1	6.7	6.2 U	6 U	29	7.7	11	5.9 U	5.9 U			
Motor Oil			mg/kg dw	17	140	110	50	160	--	--	--	26	12 U	12 U	55	29	47	30	16	78	27	68	12 U	12 U			

111	Exceeds SQS
111	Not detected but TOC normalized result exceeds SQS.

CHEMISTRY LABORATORY DATA

CHEMISTRY DATA FOR SAMPLES

C-1
C-2
C-3
C-4
C-5
S-1
S-2
S-6

Analytical Resources, Incorporated
Analytical Chemists and Consultants

7 December 2005

David Gillingham
Parametrix, Inc.
411 108th Avenue NE
Suite 1800
Bellevue, WA 98004-5571

RE: Client Project: Bremerton Sediments
ARI Job No. IU50

Dear David:

Please find enclosed the original chain of custody records (COC) and the final results for the samples from the project referenced above. Analytical Resources, Inc accepted thirteen sediment samples intact on November 30, 2005. The samples were received with no discrepancies in the paperwork. The samples were analyzed for SVOAs, pesticides, PCBs, NWTPH-Dx, grain size, total metals and conventional parameters as requested.

A small amount of zinc was detected in the method blank associated with the metals analyses of these samples. Zinc was detected in all samples associated with this blank. Since the concentrations of zinc measured in the samples were significantly greater than the amount found in the blank, no corrective actions were taken.

A matrix spike (MS) and a matrix spike duplicate (MD) were prepared and analyzed for metals in conjunction with sample S-3. The percent recovery for chromium was high following the initial analysis of the MS. The RPD for copper was high following the initial analysis of the MD. Since the percent recoveries for all elements were within acceptable QC limits for the corresponding LCS, it was concluded that the sample matrix and a lack of sample homogeneity were the cause of the high percent recovery and RPD. No corrective actions were taken based on the MS or the MD results.

There were no further problems with these analyses.

A copy of these reports and all associated raw data will be kept on file with ARI. Should you have any questions please feel free to call me at any time.

Sincerely,
ANALYTICAL RESOURCES, INC.

Mark D. Harris
Project Manager
206/695-6210
mark@arilabs.com

Enclosures
cc: File IU50
MDH/mdh

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 1401	Turn-around Requested:	Page: 1 of 1	
ARI Client Company: Parametrix	Phone:	Date: 11/21/05	Ice Present?
Client Contact: David Gillingham		No. of Coolers:	Cooler Temps: 6.0 / 3.7
Client Project Name: Bremerton Sediments			
Client Project #:	Samplers: DG, LL		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: metals	SVOC	Pest PCB	TPH-DX	TOC Ammonia TVS	Sulfides	Total solids	Grain size	Notes/Comments
C-1	11/21/05	1146	Sed	6	X	X	X	X	X	X	X	X	Archive
C-2		1027		6				X					extra 16oz
C-3		1102		6				X					Glass Jar.
C-4		0950		6				X					Frozen
C-5		1102		6				X					
S-1		1225		6									HCB &
S-2		1258		6									HCBD
S-6		1345		6									with 8081

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: David Gillingham	Printed Name: Eric Branson	Printed Name:	Printed Name:
	Company: Parametrix	Company: ARI	Company:	Company:
	Date & Time: 11/21/05 1640	Date & Time: 11/21/05 - 1640	Date & Time:	Date & Time:

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Data Reporting Qualifiers

Effective 12/28/04

Inorganic Data

U Indicates that the target analyte was not detected at the reported concentration

* Duplicate RPD is not within established control limits

B Reported value is less than the CRDL but ≥ the Reporting Limit

N Matrix Spike recovery not within established control limits

NA Not Applicable, analyte not spiked

H The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible

L Analyte concentration is ≤5 times the Reporting Limit and the replicate control limit defaults to ±1 RL instead of the normal 20% RPD

Organic Data

U Indicates that the target analyte was not detected at the reported concentration

* Flagged value is not within established control limits

B Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.

J Estimated concentration when the value is less than ARI's established reporting limits

D The spiked compound was not detected due to sample extract dilution

NR Spiked compound recovery is not reported due to chromatographic interference

E Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

S Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte

NA The flagged analyte was not analyzed for

NS The flagged analyte was not spiked into the sample

M Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses

N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"

Y The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.

C The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column

P The analyte was detected on both chromatographic columns but the quantified values differ by ≥40% RPD with no obvious chromatographic interference

Geotechnical Data

A The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.

F Samples were frozen prior to particle size determination

SM Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations

SS Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis

W Weight of sample in some pipette aliquots was below the level required for accurate weighting

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270 GC/MS
Page 1 of 2

Sample ID: MB-112805
METHOD BLANK

Lab Sample ID: MB-112805
LIMS ID: 05-20013
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS
NA
Date Sampled: NA
Date Received: NA

Date Extracted: 11/28/05
Date Analyzed: 12/01/05 11:25
Instrument/Analyst: NT6/PK
GPC Cleanup: No

Sample Amount: 25.0 g
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: NA
pH: NA

CAS Number	Analyte	RL	Result
108-95-2	Phenol	20	< 20 U
541-73-1	1,3-Dichlorobenzene	20	< 20 U
106-46-7	1,4-Dichlorobenzene	20	< 20 U
100-51-6	Benzyl Alcohol	20	< 20 U
95-50-1	1,2-Dichlorobenzene	20	< 20 U
95-48-7	2-Methylphenol	20	< 20 U
106-44-5	4-Methylphenol	20	< 20 U
67-72-1	Hexachloroethane	20	< 20 U
105-67-9	2,4-Dimethylphenol	20	< 20 U
65-85-0	Benzoic Acid	200	< 200 U
120-82-1	1,2,4-Trichlorobenzene	20	< 20 U
91-20-3	Naphthalene	20	< 20 U
87-68-3	Hexachlorobutadiene	20	< 20 U
91-57-6	2-Methylnaphthalene	20	< 20 U
131-11-3	Dimethylphthalate	20	< 20 U
208-96-8	Acenaphthylene	20	< 20 U
83-32-9	Acenaphthene	20	< 20 U
132-64-9	Dibenzofuran	20	< 20 U
84-66-2	Diethylphthalate	20	< 20 U
86-73-7	Fluorene	20	< 20 U
86-30-6	N-Nitrosodiphenylamine	20	< 20 U
118-74-1	Hexachlorobenzene	20	< 20 U
87-86-5	Pentachlorophenol	100	< 100 U
85-01-8	Phenanthrene	20	< 20 U
120-12-7	Anthracene	20	< 20 U
84-74-2	Di-n-Butylphthalate	20	< 20 U
206-44-0	Fluoranthene	20	< 20 U
129-00-0	Pyrene	20	< 20 U
85-68-7	Butylbenzylphthalate	20	< 20 U
56-55-3	Benzo(a)anthracene	20	< 20 U
117-81-7	**bis(2-Ethylhexyl)phthalate**	**20**	**28**
218-01-9	Chrysene	20	< 20 U
117-84-0	Di-n-Octyl phthalate	20	< 20 U
205-99-2	Benzo(b)fluoranthene	20	< 20 U
207-08-9	Benzo(k)fluoranthene	20	< 20 U
50-32-8	Benzo(a)pyrene	20	< 20 U
193-39-5	Indeno(1,2,3-cd)pyrene	20	< 20 U
53-70-3	Dibenz(a,h)anthracene	20	< 20 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270 GC/MS

Sample ID: MB-112805
METHOD BLANK

Lab Sample ID: MB-112805
LIMS ID: 05-20013
Matrix: Sediment
Date Analyzed: 12/01/05 11:25

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS
NA

CAS Number	Analyte	RL	Result
191-24-2	Benzo(g,h,i)perylene	20	< 20 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	76.4%	2-Fluorobiphenyl	78.4%
d14-p-Terphenyl	88.0%	d4-1,2-Dichlorobenzene	74.0%
d5-Phenol	79.5%	2-Fluorophenol	82.7%
2,4,6-Tribromophenol	82.9%	d4-2-Chlorophenol	76.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270 GC/MS
Page 1 of 2

Sample ID: C-1
SAMPLE

Lab Sample ID: IU01A
LIMS ID: 05-20006
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS
NA
Date Sampled: 11/21/05
Date Received: 11/21/05

Date Extracted: 11/28/05
Date Analyzed: 12/01/05 12:29
Instrument/Analyst: NT6/PK
GPC Cleanup: No

Sample Amount: 25.3 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 16.1%
pH: 7.0

CAS Number	Analyte	RL	Result
108-95-2	**Phenol**	**20**	**72**
541-73-1	1,3-Dichlorobenzene	20	< 20 U
106-46-7	1,4-Dichlorobenzene	20	< 20 U
100-51-6	Benzyl Alcohol	20	< 20 U
95-50-1	1,2-Dichlorobenzene	20	< 20 U
95-48-7	2-Methylphenol	20	< 20 U
106-44-5	4-Methylphenol	20	< 20 U
67-72-1	Hexachloroethane	20	< 20 U
105-67-9	2,4-Dimethylphenol	20	< 20 U
65-85-0	Benzoic Acid	200	< 200 U
120-82-1	1,2,4-Trichlorobenzene	20	< 20 U
91-20-3	Naphthalene	20	< 20 U
87-68-3	Hexachlorobutadiene	20	< 20 U
91-57-6	2-Methylnaphthalene	20	< 20 U
131-11-3	Dimethylphthalate	20	< 20 U
208-96-8	Acenaphthylene	20	< 20 U
83-32-9	Acenaphthene	20	< 20 U
132-64-9	Dibenzofuran	20	< 20 U
84-66-2	Diethylphthalate	20	< 20 U
86-73-7	Fluorene	20	< 20 U
86-30-6	N-Nitrosodiphenylamine	20	< 20 U
118-74-1	Hexachlorobenzene	20	< 20 U
87-86-5	Pentachlorophenol	99	< 99 U
85-01-8	Phenanthrene	20	< 20 U
120-12-7	Anthracene	20	< 20 U
84-74-2	**Di-n-Butylphthalate**	**20**	**19 J**
206-44-0	**Fluoranthene**	**20**	**17 J**
129-00-0	**Pyrene**	**20**	**17 J**
85-68-7	Butylbenzylphthalate	20	< 20 U
56-55-3	Benzo(a)anthracene	20	< 20 U
117-81-7	**bis(2-Ethylhexyl)phthalate**	**20**	**16 J**
218-01-9	**Chrysene**	**20**	**15 J**
117-84-0	Di-n-Octyl phthalate	20	< 20 U
205-99-2	Benzo(b)fluoranthene	20	< 20 U
207-08-9	Benzo(k)fluoranthene	20	< 20 U
50-32-8	Benzo(a)pyrene	20	< 20 U
193-39-5	Indeno(1,2,3-cd)pyrene	20	< 20 U
53-70-3	Dibenz(a,h)anthracene	20	< 20 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270 GC/MS

Sample ID: C-1
SAMPLE

Lab Sample ID: IU01A
LIMS ID: 05-20006
Matrix: Sediment
Date Analyzed: 12/01/05 12:29

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS
NA

CAS Number	Analyte	RL	Result
191-24-2	Benzo(g,h,i)perylene	20	< 20 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	78.0%	2-Fluorobiphenyl	83.2%
d14-p-Terphenyl	87.2%	d4-1,2-Dichlorobenzene	70.8%
d5-Phenol	79.7%	2-Fluorophenol	86.7%
2,4,6-Tribromophenol	94.4%	d4-2-Chlorophenol	77.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270 GC/MS
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Sample ID: C-2
SAMPLE

Lab Sample ID: IU01B
LIMS ID: 05-20007
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS
NA
Date Sampled: 11/21/05
Date Received: 11/21/05

Date Extracted: 11/28/05
Date Analyzed: 12/01/05 13:01
Instrument/Analyst: NT6/PK
GPC Cleanup: No

Sample Amount: 25.2 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 21.8%
pH: 7.5

CAS Number	Analyte	RL	Result
108-95-2	**Phenol**	**20**	**340**
541-73-1	1,3-Dichlorobenzene	20	< 20 U
106-46-7	1,4-Dichlorobenzene	20	< 20 U
100-51-6	Benzyl Alcohol	20	< 20 U
95-50-1	1,2-Dichlorobenzene	20	< 20 U
95-48-7	2-Methylphenol	20	< 20 U
106-44-5	**4-Methylphenol**	**20**	**12 J**
67-72-1	Hexachloroethane	20	< 20 U
105-67-9	2,4-Dimethylphenol	20	< 20 U
65-85-0	Benzoic Acid	200	< 200 U
120-82-1	1,2,4-Trichlorobenzene	20	< 20 U
91-20-3	Naphthalene	20	< 20 U
87-68-3	Hexachlorobutadiene	20	< 20 U
91-57-6	2-Methylnaphthalene	20	< 20 U
131-11-3	Dimethylphthalate	20	< 20 U
208-96-8	**Acenaphthylene**	**20**	**15 J**
83-32-9	Acenaphthene	20	< 20 U
132-64-9	Dibenzofuran	20	< 20 U
84-66-2	**Diethylphthalate**	**20**	**19 J**
86-73-7	Fluorene	20	< 20 U
86-30-6	N-Nitrosodiphenylamine	20	< 20 U
118-74-1	Hexachlorobenzene	20	< 20 U
87-86-5	Pentachlorophenol	99	< 99 U
85-01-8	**Phenanthrene**	**20**	**60**
120-12-7	**Anthracene**	**20**	**19 J**
84-74-2	**Di-n-Butylphthalate**	**20**	**24**
206-44-0	**Fluoranthene**	**20**	**110**
129-00-0	**Pyrene**	**20**	**91**
85-68-7	Butylbenzylphthalate	20	< 20 U
56-55-3	**Benzo(a)anthracene**	**20**	**44**
117-81-7	**bis(2-Ethylhexyl)phthalate**	**20**	**23 B**
218-01-9	**Chrysene**	**20**	**70**
117-84-0	Di-n-Octyl phthalate	20	< 20 U
205-99-2	**Benzo(b)fluoranthene**	**20**	**60**
207-08-9	**Benzo(k)fluoranthene**	**20**	**52**
50-32-8	**Benzo(a)pyrene**	**20**	**51**
193-39-5	**Indeno(1,2,3-cd)pyrene**	**20**	**13 J**
53-70-3	Dibenz(a,h)anthracene	20	< 20 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270 GC/MS

Sample ID: C-2
SAMPLE

Lab Sample ID: IU01B
LIMS ID: 05-20007
Matrix: Sediment
Date Analyzed: 12/01/05 13:01

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS
NA

CAS Number	Analyte	RL	Result
191-24-2	Benzo(g,h,i)perylene	20	14 J

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	85.2%	2-Fluorobiphenyl	90.0%
d14-p-Terphenyl	86.4%	d4-1,2-Dichlorobenzene	79.2%
d5-Phenol	90.4%	2-Fluorophenol	98.9%
2,4,6-Tribromophenol	101%	d4-2-Chlorophenol	87.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270 GC/MS **Sample ID: C-3**
Page 1 of 2 **SAMPLE**

Lab Sample ID: IU01C
LIMS ID: 05-20008
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS
NA
Date Sampled: 11/21/05
Date Received: 11/21/05

Date Extracted: 11/28/05
Date Analyzed: 12/01/05 13:33
Instrument/Analyst: NT6/PK
GPC Cleanup: No

Sample Amount: 26.0 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 32.6%
pH: 7.5

CAS Number	Analyte	RL	Result
108-95-2	Phenol	19	< 19 U
541-73-1	1,3-Dichlorobenzene	19	< 19 U
106-46-7	1,4-Dichlorobenzene	19	< 19 U
100-51-6	Benzyl Alcohol	19	< 19 U
95-50-1	1,2-Dichlorobenzene	19	< 19 U
95-48-7	2-Methylphenol	19	< 19 U
106-44-5	4-Methylphenol	19	< 19 U
67-72-1	Hexachloroethane	19	< 19 U
105-67-9	2,4-Dimethylphenol	19	< 19 U
65-85-0	Benzoic Acid	190	< 190 U
120-82-1	1,2,4-Trichlorobenzene	19	< 19 U
91-20-3	Naphthalene	19	< 19 U
87-68-3	Hexachlorobutadiene	19	< 19 U
91-57-6	2-Methylnaphthalene	19	< 19 U
131-11-3	Dimethylphthalate	19	< 19 U
208-96-8	**Acenaphthylene**	**19**	**34**
83-32-9	Acenaphthene	19	< 19 U
132-64-9	Dibenzofuran	19	< 19 U
84-66-2	**Diethylphthalate**	**19**	**15 J**
86-73-7	Fluorene	19	< 19 U
86-30-6	N-Nitrosodiphenylamine	19	< 19 U
118-74-1	Hexachlorobenzene	19	< 19 U
87-86-5	Pentachlorophenol	96	< 96 U
85-01-8	**Phenanthrene**	**19**	**120**
120-12-7	**Anthracene**	**19**	**56**
84-74-2	**Di-n-Butylphthalate**	**19**	**35**
206-44-0	**Fluoranthene**	**19**	**490**
129-00-0	**Pyrene**	**19**	**380**
85-68-7	Butylbenzylphthalate	19	< 19 U
56-55-3	**Benzo(a)anthracene**	**19**	**180**
117-81-7	**bis(2-Ethylhexyl)phthalate**	**19**	**76 B**
218-01-9	**Chrysene**	**19**	**260**
117-84-0	Di-n-Octyl phthalate	19	< 19 U
205-99-2	**Benzo(b)fluoranthene**	**19**	**230**
207-08-9	**Benzo(k)fluoranthene**	**19**	**210**
50-32-8	**Benzo(a)pyrene**	**19**	**200**
193-39-5	**Indeno(1,2,3-cd)pyrene**	**19**	**42**
53-70-3	**Dibenz(a,h)anthracene**	**19**	**15 J**

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270 GC/MS **Sample ID: C-3**
 SAMPLE

Lab Sample ID: IU01C
LIMS ID: 05-20008
Matrix: Sediment
Date Analyzed: 12/01/05 13:33

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS
NA

CAS Number	Analyte	RL	Result
191-24-2	Benzo(g,h,i)perylene	19	43

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	82.0%	2-Fluorobiphenyl	87.6%
d14-p-Terphenyl	83.6%	d4-1,2-Dichlorobenzene	73.2%
d5-Phenol	85.6%	2-Fluorophenol	94.1%
2,4,6-Tribromophenol	104%	d4-2-Chlorophenol	83.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270 GC/MS **Sample ID: C-4**
Page 1 of 2 **SAMPLE**

Lab Sample ID: IU01D
LIMS ID: 05-20009
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS
NA
Date Sampled: 11/21/05
Date Received: 11/21/05

Date Extracted: 11/28/05
Date Analyzed: 12/01/05 14:06
Instrument/Analyst: NT6/PK
GPC Cleanup: No

Sample Amount: 25.7 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 18.0%
pH: 7.3

CAS Number	Analyte	RL	Result	
108-95-2	**Phenol**	**20**	**16**	**J**
541-73-1	1,3-Dichlorobenzene	20	< 20	U
106-46-7	1,4-Dichlorobenzene	20	< 20	U
100-51-6	Benzyl Alcohol	20	< 20	U
95-50-1	1,2-Dichlorobenzene	20	< 20	U
95-48-7	2-Methylphenol	20	< 20	U
106-44-5	4-Methylphenol	20	< 20	U
67-72-1	Hexachloroethane	20	< 20	U
105-67-9	2,4-Dimethylphenol	20	< 20	U
65-85-0	Benzoic Acid	200	< 200	U
120-82-1	1,2,4-Trichlorobenzene	20	< 20	U
91-20-3	Naphthalene	20	< 20	U
87-68-3	Hexachlorobutadiene	20	< 20	U
91-57-6	2-Methylnaphthalene	20	< 20	U
131-11-3	Dimethylphthalate	20	< 20	U
208-96-8	**Acenaphthylene**	**20**	**14**	**J**
83-32-9	Acenaphthene	20	< 20	U
132-64-9	Dibenzofuran	20	< 20	U
84-66-2	Diethylphthalate	20	< 20	U
86-73-7	Fluorene	20	< 20	U
86-30-6	N-Nitrosodiphenylamine	20	< 20	U
118-74-1	Hexachlorobenzene	20	< 20	U
87-86-5	Pentachlorophenol	97	< 97	U
85-01-8	**Phenanthrene**	**20**	**21**	
120-12-7	Anthracene	20	< 20	U
84-74-2	**Di-n-Butylphthalate**	**20**	**21**	
206-44-0	**Fluoranthene**	**20**	**70**	
129-00-0	**Pyrene**	**20**	**58**	
85-68-7	Butylbenzylphthalate	20	< 20	U
56-55-3	**Benzo(a)anthracene**	**20**	**50**	
117-81-7	**bis(2-Ethylhexyl)phthalate**	**20**	**20**	**B**
218-01-9	**Chrysene**	**20**	**58**	
117-84-0	Di-n-Octyl phthalate	20	< 20	U
205-99-2	**Benzo(b)fluoranthene**	**20**	**73**	
207-08-9	**Benzo(k)fluoranthene**	**20**	**58**	
50-32-8	**Benzo(a)pyrene**	**20**	**71**	
193-39-5	**Indeno(1,2,3-cd)pyrene**	**20**	**17**	**J**
53-70-3	Dibenz(a,h)anthracene	20	< 20	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270 GC/MS **Sample ID: C-4**
Page 2 of 2 **SAMPLE**

Lab Sample ID: IU01D QC Report No: IU01-Parametrix
LIMS ID: 05-20009 Project: BREMERTON SEDIMENTS
Matrix: Sediment NA
Date Analyzed: 12/01/05 14:06

CAS Number	Analyte	RL	Result
191-24-2	Benzo(g,h,i)perylene	20	18 J

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	82.4%	2-Fluorobiphenyl	85.2%
d14-p-Terphenyl	86.8%	d4-1,2-Dichlorobenzene	73.6%
d5-Phenol	83.7%	2-Fluorophenol	94.1%
2,4,6-Tribromophenol	100%	d4-2-Chlorophenol	82.9%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270 GC/MS **Sample ID: C-5**
Page 1 of 2 **SAMPLE**

Lab Sample ID: IU01E
LIMS ID: 05-20010
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS
NA
Date Sampled: 11/21/05
Date Received: 11/21/05

Date Extracted: 11/28/05
Date Analyzed: 12/01/05 14:38
Instrument/Analyst: NT6/PK
GPC Cleanup: No

Sample Amount: 25.5 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 32.1%
pH: 7.6

CAS Number	Analyte	RL	Result
108-95-2	Phenol	20	< 20 U
541-73-1	1,3-Dichlorobenzene	20	< 20 U
106-46-7	1,4-Dichlorobenzene	20	< 20 U
100-51-6	Benzyl Alcohol	20	< 20 U
95-50-1	1,2-Dichlorobenzene	20	< 20 U
95-48-7	2-Methylphenol	20	< 20 U
106-44-5	4-Methylphenol	20	< 20 U
67-72-1	Hexachloroethane	20	< 20 U
105-67-9	2,4-Dimethylphenol	20	< 20 U
65-85-0	Benzoic Acid	200	< 200 U
120-82-1	1,2,4-Trichlorobenzene	20	< 20 U
91-20-3	Naphthalene	20	< 20 U
87-68-3	Hexachlorobutadiene	20	< 20 U
91-57-6	2-Methylnaphthalene	20	< 20 U
131-11-3	Dimethylphthalate	20	< 20 U
208-96-8	**Acenaphthylene**	**20**	**41**
83-32-9	Acenaphthene	20	< 20 U
132-64-9	Dibenzofuran	20	< 20 U
84-66-2	**Diethylphthalate**	**20**	**10 J**
86-73-7	**Fluorene**	**20**	**21**
86-30-6	N-Nitrosodiphenylamine	20	< 20 U
118-74-1	Hexachlorobenzene	20	< 20 U
87-86-5	Pentachlorophenol	98	< 98 U
85-01-8	**Phenanthrene**	**20**	**200**
120-12-7	**Anthracene**	**20**	**130**
84-74-2	**Di-n-Butylphthalate**	**20**	**26**
206-44-0	**Fluoranthene**	**20**	**570**
129-00-0	**Pyrene**	**20**	**480**
85-68-7	Butylbenzylphthalate	20	< 20 U
56-55-3	**Benzo(a)anthracene**	**20**	**200**
117-81-7	**bis(2-Ethylhexyl)phthalate**	**20**	**76 B**
218-01-9	**Chrysene**	**20**	**270**
117-84-0	Di-n-Octyl phthalate	20	< 20 U
205-99-2	**Benzo(b)fluoranthene**	**20**	**240**
207-08-9	**Benzo(k)fluoranthene**	**20**	**280**
50-32-8	**Benzo(a)pyrene**	**20**	**240**
193-39-5	**Indeno(1,2,3-cd)pyrene**	**20**	**55**
53-70-3	**Dibenz(a,h)anthracene**	**20**	**16 J**

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270 GC/MS **Sample ID: C-5**
Page 2 of 2 **SAMPLE**

Lab Sample ID: IU01E QC Report No: IU01-Parametrix
LIMS ID: 05-20010 Project: BREMERTON SEDIMENTS
Matrix: Sediment NA
Date Analyzed: 12/01/05 14:38

CAS Number	Analyte	RL	Result
191-24-2	Benzo(g,h,i)perylene	20	55

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	85.6%	2-Fluorobiphenyl	89.6%
d14-p-Terphenyl	88.4%	d4-1,2-Dichlorobenzene	73.6%
d5-Phenol	87.7%	2-Fluorophenol	96.5%
2,4,6-Tribromophenol	107%	d4-2-Chlorophenol	85.9%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270 GC/MS
Page 1 of 2

Sample ID: S-1
SAMPLE

Lab Sample ID: IU01F
LIMS ID: 05-20011
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS
NA
Date Sampled: 11/21/05
Date Received: 11/21/05

Date Extracted: 11/28/05
Date Analyzed: 12/01/05 15:10
Instrument/Analyst: NT6/PK
GPC Cleanup: No

Sample Amount: 25.6 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 16.5%
pH: 7.8

CAS Number	Analyte	RL	Result
108-95-2	Phenol	20	< 20 U
541-73-1	1,3-Dichlorobenzene	20	< 20 U
106-46-7	1,4-Dichlorobenzene	20	< 20 U
100-51-6	Benzyl Alcohol	20	< 20 U
95-50-1	1,2-Dichlorobenzene	20	< 20 U
95-48-7	2-Methylphenol	20	< 20 U
106-44-5	4-Methylphenol	20	< 20 U
67-72-1	Hexachloroethane	20	< 20 U
105-67-9	2,4-Dimethylphenol	20	< 20 U
65-85-0	Benzoic Acid	200	< 200 U
120-82-1	1,2,4-Trichlorobenzene	20	< 20 U
91-20-3	Naphthalene	20	< 20 U
87-68-3	Hexachlorobutadiene	20	< 20 U
91-57-6	2-Methylnaphthalene	20	< 20 U
131-11-3	Dimethylphthalate	20	< 20 U
208-96-8	Acenaphthylene	20	< 20 U
83-32-9	Acenaphthene	20	< 20 U
132-64-9	Dibenzofuran	20	< 20 U
84-66-2	Diethylphthalate	20	< 20 U
86-73-7	Fluorene	20	< 20 U
86-30-6	N-Nitrosodiphenylamine	20	< 20 U
118-74-1	Hexachlorobenzene	20	< 20 U
87-86-5	Pentachlorophenol	98	< 98 U
85-01-8	**Phenanthrene**	**20**	**16 J**
120-12-7	Anthracene	20	< 20 U
84-74-2	**Di-n-Butylphthalate**	**20**	**24**
206-44-0	**Fluoranthene**	**20**	**40**
129-00-0	**Pyrene**	**20**	**26**
85-68-7	Butylbenzylphthalate	20	< 20 U
56-55-3	**Benzo(a)anthracene**	**20**	**13 J**
117-81-7	**bis(2-Ethylhexyl)phthalate**	**20**	**24 B**
218-01-9	**Chrysene**	**20**	**17 J**
117-84-0	Di-n-Octyl phthalate	20	< 20 U
205-99-2	**Benzo(b)fluoranthene**	**20**	**24**
207-08-9	**Benzo(k)fluoranthene**	**20**	**14 J**
50-32-8	**Benzo(a)pyrene**	**20**	**16 J**
193-39-5	Indeno(1,2,3-cd)pyrene	20	< 20 U
53-70-3	Dibenz(a,h)anthracene	20	< 20 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270 GC/MS **Sample ID: S-1**
 SAMPLE

Lab Sample ID: IU01F QC Report No: IU01-Parametrix
LIMS ID: 05-20011 Project: BREMERTON SEDIMENTS
Matrix: Sediment NA
Date Analyzed: 12/01/05 15:10

CAS Number	Analyte	RL	Result
191-24-2	Benzo(g,h,i)perylene	20	< 20 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	84.8%	2-Fluorobiphenyl	90.0%
d14-p-Terphenyl	93.2%	d4-1,2-Dichlorobenzene	75.2%
d5-Phenol	86.4%	2-Fluorophenol	95.2%
2,4,6-Tribromophenol	109%	d4-2-Chlorophenol	85.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270 GC/MS
Page 1 of 2

Sample ID: S-2
SAMPLE

Lab Sample ID: IU01G
LIMS ID: 05-20012
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS
NA
Date Sampled: 11/21/05
Date Received: 11/21/05

Date Extracted: 11/28/05
Date Analyzed: 12/01/05 15:42
Instrument/Analyst: NT6/PK
GPC Cleanup: No

Sample Amount: 25.5 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 15.7%
pH: 7.4

CAS Number	Analyte	RL	Result
108-95-2	**Phenol**	**20**	**14 J**
541-73-1	1,3-Dichlorobenzene	20	< 20 U
106-46-7	1,4-Dichlorobenzene	20	< 20 U
100-51-6	Benzyl Alcohol	20	< 20 U
95-50-1	1,2-Dichlorobenzene	20	< 20 U
95-48-7	2-Methylphenol	20	< 20 U
106-44-5	4-Methylphenol	20	< 20 U
67-72-1	Hexachloroethane	20	< 20 U
105-67-9	2,4-Dimethylphenol	20	< 20 U
65-85-0	Benzoic Acid	200	< 200 U
120-82-1	1,2,4-Trichlorobenzene	20	< 20 U
91-20-3	**Naphthalene**	**20**	**16 J**
87-68-3	Hexachlorobutadiene	20	< 20 U
91-57-6	2-Methylnaphthalene	20	< 20 U
131-11-3	Dimethylphthalate	20	< 20 U
208-96-8	**Acenaphthylene**	**20**	**19 J**
83-32-9	Acenaphthene	20	< 20 U
132-64-9	Dibenzofuran	20	< 20 U
84-66-2	**Diethylphthalate**	**20**	**16 J**
86-73-7	Fluorene	20	< 20 U
86-30-6	N-Nitrosodiphenylamine	20	< 20 U
118-74-1	Hexachlorobenzene	20	< 20 U
87-86-5	Pentachlorophenol	98	< 98 U
85-01-8	**Phenanthrene**	**20**	**64**
120-12-7	**Anthracene**	**20**	**12 J**
84-74-2	**Di-n-Butylphthalate**	**20**	**22**
206-44-0	**Fluoranthene**	**20**	**100**
129-00-0	**Pyrene**	**20**	**81**
85-68-7	Butylbenzylphthalate	20	< 20 U
56-55-3	**Benzo(a)anthracene**	**20**	**37**
117-81-7	**bis(2-Ethylhexyl)phthalate**	**20**	**35 B**
218-01-9	**Chrysene**	**20**	**45**
117-84-0	Di-n-Octyl phthalate	20	< 20 U
205-99-2	**Benzo(b)fluoranthene**	**20**	**78**
207-08-9	**Benzo(k)fluoranthene**	**20**	**53**
50-32-8	**Benzo(a)pyrene**	**20**	**61**
193-39-5	**Indeno(1,2,3-cd)pyrene**	**20**	**15 J**
53-70-3	Dibenz(a,h)anthracene	20	< 20 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270 GC/MS

Sample ID: S-2
SAMPLE

Lab Sample ID: IU01G
LIMS ID: 05-20012
Matrix: Sediment
Date Analyzed: 12/01/05 15:42

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS
NA

CAS Number	Analyte	RL	Result
191-24-2	Benzo(g,h,i)perylene	20	13 J

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	82.4%	2-Fluorobiphenyl	87.6%
d14-p-Terphenyl	89.6%	d4-1,2-Dichlorobenzene	75.6%
d5-Phenol	85.1%	2-Fluorophenol	93.6%
2,4,6-Tribromophenol	102%	d4-2-Chlorophenol	84.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270 GC/MS

Sample ID: S-6
SAMPLE

Lab Sample ID: IU01H
LIMS ID: 05-20013
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS
NA
Date Sampled: 11/21/05
Date Received: 11/21/05

Date Extracted: 11/28/05
Date Analyzed: 12/01/05 16:15
Instrument/Analyst: NT6/PK
GPC Cleanup: No

Sample Amount: 25.8 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 14.6%
pH: 7.9

CAS Number	Analyte	RL	Result
108-95-2	**Phenol**	**19**	**22**
541-73-1	1,3-Dichlorobenzene	19	< 19 U
106-46-7	1,4-Dichlorobenzene	19	< 19 U
100-51-6	Benzyl Alcohol	19	< 19 U
95-50-1	1,2-Dichlorobenzene	19	< 19 U
95-48-7	2-Methylphenol	19	< 19 U
106-44-5	4-Methylphenol	19	< 19 U
67-72-1	Hexachloroethane	19	< 19 U
105-67-9	2,4-Dimethylphenol	19	< 19 U
65-85-0	Benzoic Acid	190	< 190 U
120-82-1	1,2,4-Trichlorobenzene	19	< 19 U
91-20-3	Naphthalene	19	< 19 U
87-68-3	Hexachlorobutadiene	19	< 19 U
91-57-6	2-Methylnaphthalene	19	< 19 U
131-11-3	Dimethylphthalate	19	< 19 U
208-96-8	Acenaphthylene	19	< 19 U
83-32-9	Acenaphthene	19	< 19 U
132-64-9	Dibenzofuran	19	< 19 U
84-66-2	**Diethylphthalate**	**19**	**12 J**
86-73-7	Fluorene	19	< 19 U
86-30-6	N-Nitrosodiphenylamine	19	< 19 U
118-74-1	Hexachlorobenzene	19	< 19 U
87-86-5	Pentachlorophenol	97	< 97 U
85-01-8	Phenanthrene	19	< 19 U
120-12-7	Anthracene	19	< 19 U
84-74-2	**Di-n-Butylphthalate**	**19**	**24**
206-44-0	**Fluoranthene**	**19**	**17 J**
129-00-0	**Pyrene**	**19**	**11 J**
85-68-7	Butylbenzylphthalate	19	< 19 U
56-55-3	Benzo(a)anthracene	19	< 19 U
117-81-7	**bis(2-Ethylhexyl)phthalate**	**19**	**16 JB**
218-01-9	**Chrysene**	**19**	**13 J**
117-84-0	Di-n-Octyl phthalate	19	< 19 U
205-99-2	**Benzo(b)fluoranthene**	**19**	**10 J**
207-08-9	**Benzo(k)fluoranthene**	**19**	**15 J**
50-32-8	Benzo(a)pyrene	19	< 19 U
193-39-5	Indeno(1,2,3-cd)pyrene	19	< 19 U
53-70-3	Dibenz(a,h)anthracene	19	< 19 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270 GC/MS

Sample ID: S-6
SAMPLE

Lab Sample ID: IU01H
LIMS ID: 05-20013
Matrix: Sediment
Date Analyzed: 12/01/05 16:15

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS
NA

CAS Number	Analyte	RL	Result
191-24-2	Benzo(g,h,i)perylene	19	< 19 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	76.0%	2-Fluorobiphenyl	83.2%
d14-p-Terphenyl	86.8%	d4-1,2-Dichlorobenzene	67.2%
d5-Phenol	77.6%	2-Fluorophenol	83.2%
2,4,6-Tribromophenol	92.8%	d4-2-Chlorophenol	75.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270 GC/MS
Page 1 of 2

Sample ID: S-6
MATRIX SPIKE

Lab Sample ID: IU01H
LIMS ID: 05-20013
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS
NA
Date Sampled: 11/21/05
Date Received: 11/21/05

Date Extracted: 11/28/05
Date Analyzed: 12/01/05 16:47
Instrument/Analyst: NT6/PK
GPC Cleanup: No

Sample Amount: 26.0 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 14.6%
pH: 7.9

CAS Number	Analyte	RL	Result
108-95-2	Phenol	19	---
541-73-1	1,3-Dichlorobenzene	19	< 19 U
106-46-7	1,4-Dichlorobenzene	19	---
100-51-6	Benzyl Alcohol	19	< 19 U
95-50-1	1,2-Dichlorobenzene	19	< 19 U
95-48-7	2-Methylphenol	19	< 19 U
106-44-5	4-Methylphenol	19	< 19 U
67-72-1	Hexachloroethane	19	< 19 U
105-67-9	2,4-Dimethylphenol	19	< 19 U
65-85-0	Benzoic Acid	190	< 190 U
120-82-1	1,2,4-Trichlorobenzene	19	---
91-20-3	Naphthalene	19	< 19 U
87-68-3	Hexachlorobutadiene	19	< 19 U
91-57-6	2-Methylnaphthalene	19	< 19 U
131-11-3	Dimethylphthalate	19	< 19 U
208-96-8	Acenaphthylene	19	< 19 U
83-32-9	Acenaphthene	19	---
132-64-9	Dibenzofuran	19	< 19 U
84-66-2	**Diethylphthalate**	**19**	**12 J**
86-73-7	Fluorene	19	< 19 U
86-30-6	N-Nitrosodiphenylamine	19	< 19 U
118-74-1	Hexachlorobenzene	19	< 19 U
87-86-5	Pentachlorophenol	96	---
85-01-8	Phenanthrene	19	< 19 U
120-12-7	Anthracene	19	< 19 U
84-74-2	**Di-n-Butylphthalate**	**19**	**22**
206-44-0	Fluoranthene	19	< 19 U
129-00-0	Pyrene	19	---
85-68-7	Butylbenzylphthalate	19	< 19 U
56-55-3	Benzo(a)anthracene	19	< 19 U
117-81-7	**bis(2-Ethylhexyl)phthalate**	**19**	**16 JB**
218-01-9	Chrysene	19	< 19 U
117-84-0	Di-n-Octyl phthalate	19	< 19 U
205-99-2	Benzo(b)fluoranthene	19	< 19 U
207-08-9	Benzo(k)fluoranthene	19	< 19 U
50-32-8	Benzo(a)pyrene	19	< 19 U
193-39-5	Indeno(1,2,3-cd)pyrene	19	< 19 U
53-70-3	Dibenz(a,h)anthracene	19	< 19 U

ANALYTICAL RESOURCES INCORPORATED

Sample ID: S-6
MATRIX SPIKE

Lab Sample ID: IU01H
LIMS ID: 05-20013
Matrix: Sediment
Date Analyzed: 12/01/05 16:47

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS
NA

CAS Number	Analyte	RL	Result
191-24-2	Benzo(g,h,i)perylene	19	< 19 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	84.8%	2-Fluorobiphenyl	90.4%
d14-p-Terphenyl	94.8%	d4-1,2-Dichlorobenzene	76.4%
d5-Phenol	86.4%	2-Fluorophenol	98.1%
2,4,6-Tribromophenol	91.2%	d4-2-Chlorophenol	86.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270 GC/MS
Page 1 of 2

Sample ID: S-6
MATRIX SPIKE DUPLICATE

Lab Sample ID: IU01H
LIMS ID: 05-20013
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS
NA
Date Sampled: 11/21/05
Date Received: 11/21/05

Date Extracted: 11/28/05
Date Analyzed: 12/01/05 17:19
Instrument/Analyst: NT6/PK
GPC Cleanup: No

Sample Amount: 26.0 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 14.6%
pH: 7.9

CAS Number	Analyte	RL	Result
108-95-2	Phenol	19	---
541-73-1	1,3-Dichlorobenzene	19	< 19 U
106-46-7	1,4-Dichlorobenzene	19	---
100-51-6	Benzyl Alcohol	19	< 19 U
95-50-1	1,2-Dichlorobenzene	19	< 19 U
95-48-7	2-Methylphenol	19	< 19 U
106-44-5	4-Methylphenol	19	< 19 U
67-72-1	Hexachloroethane	19	< 19 U
105-67-9	2,4-Dimethylphenol	19	< 19 U
65-85-0	Benzoic Acid	190	< 190 U
120-82-1	1,2,4-Trichlorobenzene	19	---
91-20-3	Naphthalene	19	< 19 U
87-68-3	Hexachlorobutadiene	19	< 19 U
91-57-6	2-Methylnaphthalene	19	< 19 U
131-11-3	Dimethylphthalate	19	< 19 U
208-96-8	Acenaphthylene	19	< 19 U
83-32-9	Acenaphthene	19	---
132-64-9	Dibenzofuran	19	< 19 U
84-66-2	Diethylphthalate	19	< 19 U
86-73-7	Fluorene	19	< 19 U
86-30-6	N-Nitrosodiphenylamine	19	< 19 U
118-74-1	Hexachlorobenzene	19	< 19 U
87-86-5	Pentachlorophenol	96	---
85-01-8	Phenanthrene	19	< 19 U
120-12-7	Anthracene	19	< 19 U
84-74-2	**Di-n-Butylphthalate**	**19**	**18 J**
206-44-0	Fluoranthene	19	< 19 U
129-00-0	Pyrene	19	---
85-68-7	Butylbenzylphthalate	19	< 19 U
56-55-3	Benzo(a)anthracene	19	< 19 U
117-81-7	**bis(2-Ethylhexyl)phthalate**	**19**	**18 JB**
218-01-9	Chrysene	19	< 19 U
117-84-0	Di-n-Octyl phthalate	19	< 19 U
205-99-2	Benzo(b)fluoranthene	19	< 19 U
207-08-9	Benzo(k)fluoranthene	19	< 19 U
50-32-8	Benzo(a)pyrene	19	< 19 U
193-39-5	Indeno(1,2,3-cd)pyrene	19	< 19 U
53-70-3	Dibenz(a,h)anthracene	19	< 19 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270 GC/MS

Sample ID: S-6
MATRIX SPIKE DUPLICATE

Lab Sample ID: IU01H
LIMS ID: 05-20013
Matrix: Sediment
Date Analyzed: 12/01/05 17:19

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS
NA

CAS Number	Analyte	RL	Result
191-24-2	Benzo(g,h,i)perylene	19	< 19 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	78.4%	2-Fluorobiphenyl	84.8%
d14-p-Terphenyl	87.6%	d4-1,2-Dichlorobenzene	68.4%
d5-Phenol	81.1%	2-Fluorophenol	90.1%
2,4,6-Tribromophenol	92.5%	d4-2-Chlorophenol	79.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270 GC/MS
Page 1 of 1

Sample ID: S-6
MS/MSD

Lab Sample ID: IU01H
LIMS ID: 05-20013
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: 11/21/05
Date Received: 11/21/05

Date Extracted MS/MSD: 11/28/05

Date Analyzed MS: 12/01/05 16:47
MSD: 12/01/05 17:19
Instrument/Analyst MS: NT6/PK
MSD: NT6/PK

GPC Cleanup: NO

Sample Amount MS: 26.0 g-dry-wt
MSD: 26.0 g-dry-wt
Final Extract Volume MS: 0.5 mL
MSD: 0.5 mL
Dilution Factor MS: 1.00
MSD: 1.00
Percent Moisture: 14.6%
pH: 7.9

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Phenol	21.5	645	723	86.2%	590	723	78.6%	8.9%
1,4-Dichlorobenzene	< 19.4	395	482	82.0%	352	482	73.0%	11.5%
1,2,4-Trichlorobenzene	< 19.4	438	482	90.9%	400	482	83.0%	9.1%
Acenaphthene	< 19.4	486	482	101%	452	482	93.8%	7.2%
Pentachlorophenol	< 96.8	417	723	57.7%	388	723	53.7%	7.2%
Pyrene	11.4	476	482	96.4%	438	482	88.5%	8.3%

Results reported in µg/kg
RPD calculated using sample concentrations per SW846.

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270 GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: LCS-112805
LAB CONTROL

Lab Sample ID: LCS-112805
LIMS ID: 05-20013
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: 11/21/05
Date Received: 11/21/05

Date Extracted: 11/28/05
Date Analyzed: 12/01/05 11:57
Instrument/Analyst: NT6/PK
GPC Cleanup: NO

Sample Amount: 25.0 g
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: NA
pH: NA

Analyte	Lab Control	Spike Added	Recovery
Phenol	603	750	80.4%
1,4-Dichlorobenzene	387	500	77.4%
1,2,4-Trichlorobenzene	414	500	82.8%
Acenaphthene	428	500	85.6%
Pentachlorophenol	614	750	81.9%
Pyrene	442	500	88.4%

Semivolatile Surrogate Recovery	
d5-Nitrobenzene	76.0%
2-Fluorobiphenyl	81.2%
d14-p-Terphenyl	88.8%
d4-1,2-Dichlorobenzene	74.4%
d5-Phenol	80.3%
2-Fluorophenol	83.5%
2,4,6-Tribromophenol	82.1%
d4-2-Chlorophenol	77.3%

Results reported in µg/kg

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Pesticides/PCB by GC/ECD
Page 1 of 1

Sample ID: MB-112805
METHOD BLANK

Lab Sample ID: MB-112805
LIMS ID: 05-20012
Matrix: Sediment
Data Release Authorized:
Reported: 11/30/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: NA
Date Received: NA

Date Extracted: 11/28/05
Date Analyzed: 11/29/05 14:30
Instrument/Analyst: ECD3/YZ
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No
Acid Cleanup: No

Sample Amount: 25.0 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: Yes
pH: NA
Percent Moisture: NA

CAS Number	Analyte	RL	Result
58-89-9	gamma-BHC (Lindane)	1.0	< 1.0 U
76-44-8	Heptachlor	1.0	< 1.0 U
309-00-2	Aldrin	1.0	< 1.0 U
60-57-1	Dieldrin	2.0	< 2.0 U
72-55-9	4,4'-DDE	2.0	< 2.0 U
72-54-8	4,4'-DDD	2.0	< 2.0 U
50-29-3	4,4'-DDT	2.0	< 2.0 U
5103-74-2	gamma Chlordane	1.0	< 1.0 U
5103-71-9	alpha Chlordane	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-68-3	Hexachlorobutadiene	1.0	< 1.0 U

Reported in µg/kg (ppb)

Pest/PCB Surrogate Recovery	
Decachlorobiphenyl	122%
Tetrachlorometaxylene	96.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Pesticides/PCB by GC/ECD
Page 1 of 1

Sample ID: C-1
SAMPLE

Lab Sample ID: IU01A
LIMS ID: 05-20006
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: 11/21/05
Date Received: 11/21/05

Date Extracted: 11/28/05
Date Analyzed: 11/29/05 15:34
Instrument/Analyst: ECD3/YZ
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No
Acid Cleanup: No

Sample Amount: 25.3 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: Yes
pH: 7.0
Percent Moisture: 16.1%

CAS Number	Analyte	RL	Result
58-89-9	gamma-BHC (Lindane)	0.99	< 0.99 U
76-44-8	Heptachlor	0.99	< 0.99 U
309-00-2	Aldrin	0.99	< 0.99 U
60-57-1	Dieldrin	2.0	< 2.0 U
72-55-9	4,4'-DDE	2.0	< 2.0 U
72-54-8	4,4'-DDD	2.0	< 2.0 U
50-29-3	4,4'-DDT	2.0	< 2.0 U
5103-74-2	gamma Chlordane	0.99	< 0.99 U
5103-71-9	alpha Chlordane	0.99	< 0.99 U
118-74-1	Hexachlorobenzene	0.99	< 0.99 U
87-68-3	Hexachlorobutadiene	0.99	< 0.99 U

Reported in µg/kg (ppb)

Pest/PCB Surrogate Recovery

Decachlorobiphenyl	118%
Tetrachlorometaxylene	60.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Pesticides/PCB by GC/ECD
Page 1 of 1

Sample ID: C-2
SAMPLE

Lab Sample ID: IU01B
LIMS ID: 05-20007
Matrix: Sediment
Data Release Authorized:
Reported: 11/30/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: 11/21/05
Date Received: 11/21/05

Date Extracted: 11/28/05
Date Analyzed: 11/29/05 16:06
Instrument/Analyst: ECD3/YZ
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No
Acid Cleanup: No

Sample Amount: 25.2 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: Yes
pH: 7.5
Percent Moisture: 21.8%

CAS Number	Analyte	RL	Result
58-89-9	gamma-BHC (Lindane)	0.99	< 0.99 U
76-44-8	Heptachlor	0.99	< 0.99 U
309-00-2	Aldrin	0.99	< 0.99 U
60-57-1	Dieldrin	2.0	< 2.0 U
72-55-9	4,4'-DDE	2.0	< 2.0 U
72-54-8	4,4'-DDD	2.0	< 2.0 U
50-29-3	4,4'-DDT	2.0	< 2.0 U
5103-74-2	gamma Chlordane	0.99	< 0.99 U
5103-71-9	alpha Chlordane	0.99	< 0.99 U
118-74-1	Hexachlorobenzene	0.99	< 0.99 U
87-68-3	Hexachlorobutadiene	0.99	< 0.99 U

Reported in µg/kg (ppb)

Pest/PCB Surrogate Recovery

Decachlorobiphenyl	101%
Tetrachlorometaxylene	82.5%

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Sample ID: C-3
SAMPLE

Lab Sample ID: IU01C
LIMS ID: 05-20008
Matrix: Sediment
Data Release Authorized:
Reported: 11/30/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: 11/21/05
Date Received: 11/21/05

Date Extracted: 11/28/05
Date Analyzed: 11/29/05 16:38
Instrument/Analyst: ECD3/YZ
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No
Acid Cleanup: No

Sample Amount: 25.6 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: Yes
pH: 7.5
Percent Moisture: 32.6%

CAS Number	Analyte	RL	Result
58-89-9	gamma-BHC (Lindane)	0.98	< 0.98 U
76-44-8	Heptachlor	0.98	< 0.98 U
309-00-2	Aldrin	0.98	< 0.98 U
60-57-1	Dieldrin	2.0	< 2.0 U
72-55-9	4,4'-DDE	2.0	< 2.0 U
72-54-8	4,4'-DDD	2.0	< 2.0 U
50-29-3	4,4'-DDT	2.0	< 2.0 U
5103-74-2	gamma Chlordane	0.98	< 0.98 U
5103-71-9	alpha Chlordane	0.98	< 0.98 U
118-74-1	Hexachlorobenzene	0.98	< 0.98 U
87-68-3	Hexachlorobutadiene	0.98	< 0.98 U

Reported in µg/kg (ppb)

Pest/PCB Surrogate Recovery

Decachlorobiphenyl	108%
Tetrachlorometaxylene	84.2%

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Sample ID: C-4
SAMPLE

Lab Sample ID: IU01D
LIMS ID: 05-20009
Matrix: Sediment
Data Release Authorized:
Reported: 11/30/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: 11/21/05
Date Received: 11/21/05

Date Extracted: 11/28/05
Date Analyzed: 11/29/05 17:10
Instrument/Analyst: ECD3/YZ
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No
Acid Cleanup: No

Sample Amount: 25.7 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: Yes
pH: 7.3
Percent Moisture: 18.0%

CAS Number	Analyte	RL	Result
58-89-9	gamma-BHC (Lindane)	0.97	< 0.97 U
76-44-8	Heptachlor	0.97	< 0.97 U
309-00-2	Aldrin	0.97	< 0.97 U
60-57-1	Dieldrin	2.0	< 2.0 U
72-55-9	4,4'-DDE	2.0	< 2.0 U
72-54-8	4,4'-DDD	2.0	< 2.0 U
50-29-3	4,4'-DDT	2.0	< 2.0 U
5103-74-2	gamma Chlordane	0.97	< 0.97 U
5103-71-9	alpha Chlordane	0.97	< 0.97 U
118-74-1	Hexachlorobenzene	0.97	< 0.97 U
87-68-3	Hexachlorobutadiene	0.97	< 0.97 U

Reported in µg/kg (ppb)

Pest/PCB Surrogate Recovery

Decachlorobiphenyl	109%
Tetrachlorometaxylene	81.8%

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Sample ID: C-5
SAMPLE

Lab Sample ID: IU01E
LIMS ID: 05-20010
Matrix: Sediment
Data Release Authorized:
Reported: 11/30/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: 11/21/05
Date Received: 11/21/05

Date Extracted: 11/28/05
Date Analyzed: 11/29/05 17:42
Instrument/Analyst: ECD3/YZ
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No
Acid Cleanup: No

Sample Amount: 22.2 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: Yes
pH: 7.6
Percent Moisture: 32.1%

CAS Number	Analyte	RL	Result
58-89-9	gamma-BHC (Lindane)	1.1	< 1.1 U
76-44-8	Heptachlor	1.1	< 1.1 U
309-00-2	Aldrin	1.1	< 1.1 U
60-57-1	Dieldrin	2.2	< 2.2 U
72-55-9	4,4'-DDE	2.2	< 2.2 U
72-54-8	4,4'-DDD	2.2	< 2.2 U
50-29-3	4,4'-DDT	2.2	< 2.2 U
5103-74-2	gamma Chlordane	1.1	< 1.1 U
5103-71-9	alpha Chlordane	1.1	< 1.1 U
118-74-1	Hexachlorobenzene	1.1	< 1.1 U
87-68-3	Hexachlorobutadiene	1.1	< 1.1 U

Reported in µg/kg (ppb)

Pest/PCB Surrogate Recovery

Decachlorobiphenyl	100%
Tetrachlorometaxylene	90.2%

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Sample ID: S-1
SAMPLE

Lab Sample ID: IU01F
LIMS ID: 05-20011
Matrix: Sediment
Data Release Authorized:
Reported: 11/30/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: 11/21/05
Date Received: 11/21/05

Date Extracted: 11/28/05
Date Analyzed: 11/29/05 18:15
Instrument/Analyst: ECD3/YZ
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No
Acid Cleanup: No

Sample Amount: 25.1 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: Yes
pH: 7.8
Percent Moisture: 16.5%

CAS Number	Analyte	RL	Result
58-89-9	gamma-BHC (Lindane)	1.0	< 1.0 U
76-44-8	Heptachlor	1.0	< 1.0 U
309-00-2	Aldrin	1.0	< 1.0 U
60-57-1	Dieldrin	2.0	< 2.0 U
72-55-9	4,4'-DDE	2.0	< 2.0 U
72-54-8	4,4'-DDD	2.0	< 2.0 U
50-29-3	4,4'-DDT	2.0	< 2.0 U
5103-74-2	gamma Chlordane	1.0	< 1.0 U
5103-71-9	alpha Chlordane	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-68-3	Hexachlorobutadiene	1.0	< 1.0 U

Reported in µg/kg (ppb)

Pest/PCB Surrogate Recovery	
Decachlorobiphenyl	100%
Tetrachlorometaxylene	84.0%

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Sample ID: S-2
SAMPLE

Lab Sample ID: IU01G
LIMS ID: 05-20012
Matrix: Sediment
Data Release Authorized:
Reported: 11/30/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: 11/21/05
Date Received: 11/21/05

Date Extracted: 11/28/05
Date Analyzed: 11/29/05 18:47
Instrument/Analyst: ECD3/YZ
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No
Acid Cleanup: No

Sample Amount: 26.0 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: Yes
pH: 7.4
Percent Moisture: 15.7%

CAS Number	Analyte	RL	Result
58-89-9	gamma-BHC (Lindane)	0.96	< 0.96 U
76-44-8	Heptachlor	0.96	< 0.96 U
309-00-2	Aldrin	0.96	< 0.96 U
60-57-1	Dieldrin	1.9	< 1.9 U
72-55-9	4,4'-DDE	1.9	< 1.9 U
72-54-8	4,4'-DDD	1.9	< 1.9 U
50-29-3	4,4'-DDT	1.9	< 1.9 U
5103-74-2	gamma Chlordane	0.96	< 0.96 U
5103-71-9	alpha Chlordane	0.96	< 0.96 U
118-74-1	Hexachlorobenzene	0.96	< 0.96 U
87-68-3	Hexachlorobutadiene	0.96	< 0.96 U

Reported in µg/kg (ppb)

Pest/PCB Surrogate Recovery	
Decachlorobiphenyl	95.5%
Tetrachlorometaxylene	78.0%

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Sample ID: S-2
MATRIX SPIKE

Lab Sample ID: IU01G
LIMS ID: 05-20012
Matrix: Sediment
Data Release Authorized:
Reported: 11/30/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: 11/21/05
Date Received: 11/21/05

Date Extracted: 11/28/05
Date Analyzed: 11/29/05 19:19
Instrument/Analyst: ECD3/YZ
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No
Acid Cleanup: No

Sample Amount: 25.4 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: Yes
pH: 7.4
Percent Moisture: 15.7%

CAS Number	Analyte	RL	Result
58-89-9	gamma-BHC (Lindane)	0.98	---
76-44-8	Heptachlor	0.98	---
309-00-2	Aldrin	0.98	---
60-57-1	Dieldrin	2.0	---
72-55-9	4,4'-DDE	2.0	< 2.0 U
72-54-8	4,4'-DDD	2.0	< 2.0 U
50-29-3	4,4'-DDT	2.0	---
5103-74-2	gamma Chlordane	0.98	< 0.98 U
5103-71-9	alpha Chlordane	0.98	< 0.98 U
118-74-1	Hexachlorobenzene	0.98	---
87-68-3	Hexachlorobutadiene	0.98	---

Reported in µg/kg (ppb)

Pest/PCB Surrogate Recovery	
Decachlorobiphenyl	121%
Tetrachlorometaxylene	88.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Pesticides/PCB by GC/ECD

Sample ID: S-2
MATRIX SPIKE DUP

Lab Sample ID: IU01G
LIMS ID: 05-20012
Matrix: Sediment
Data Release Authorized:
Reported: 11/30/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: 11/21/05
Date Received: 11/21/05

Date Extracted: 11/28/05
Date Analyzed: 11/29/05 19:51
Instrument/Analyst: ECD3/YZ
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No
Acid Cleanup: No

Sample Amount: 25.9 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: Yes
pH: 7.4
Percent Moisture: 15.7%

CAS Number	Analyte	RL	Result
58-89-9	gamma-BHC (Lindane)	0.97	---
76-44-8	Heptachlor	0.97	---
309-00-2	Aldrin	0.97	---
60-57-1	Dieldrin	1.9	---
72-55-9	4,4'-DDE	1.9	< 1.9 U
72-54-8	4,4'-DDD	1.9	< 1.9 U
50-29-3	4,4'-DDT	1.9	---
5103-74-2	gamma Chlordane	0.97	< 0.97 U
5103-71-9	alpha Chlordane	0.97	< 0.97 U
118-74-1	Hexachlorobenzene	0.97	---
87-68-3	Hexachlorobutadiene	0.97	---

Reported in µg/kg (ppb)

Pest/PCB Surrogate Recovery	
Decachlorobiphenyl	92.0%
Tetrachlorometaxylene	81.8%

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Sample ID: S-2
MS/MSD

Lab Sample ID: IU01G
LIMS ID: 05-20012
Matrix: Sediment
Data Release Authorized:
Reported: 11/30/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: 11/21/05
Date Received: 11/21/05

Date Extracted MS/MSD: 11/28/05

Date Analyzed MS: 11/29/05 19:19
MSD: 11/29/05 19:51
Instrument/Analyst MS: ECD3/YZ
MSD: ECD3/YZ

GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No

Sample Amount MS: 25.4 g-dry-wt
MSD: 25.9 g-dry-wt
Final Extract Volume MS: 5.0 mL
MSD: 5.0 mL
Dilution Factor MS: 1.00
MSD: 1.00
Silica Gel: Yes
pH: 7.4
Percent Moisture: 15.7%

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
gamma-BHC (Lindane)	< 0.961	7.67	9.84	77.9%	6.55	9.66	67.8%	15.8%
Heptachlor	< 0.961	8.85	9.84	89.9%	7.57	9.66	78.4%	15.6%
Aldrin	< 0.961	8.50	9.84	86.4%	7.76	9.66	80.3%	9.1%
Dieldrin	< 1.92	15.9	19.7	80.7%	13.8	19.3	71.5%	14.1%
4,4'-DDT	< 1.92	19.1	19.7	97.0%	17.0	19.3	88.1%	11.6%
Hexachlorobenzene	< 0.961	8.68	9.84	88.2%	7.45	9.66	77.1%	15.3%
Hexachlorobutadiene	< 0.961	7.99	9.84	81.2%	7.40	9.66	76.6%	7.7%

Reported in µg/kg (ppb)
RPD calculated using sample concentrations per SW846.

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Sample ID: S-6
SAMPLE

Lab Sample ID: IU01H
LIMS ID: 05-20013
Matrix: Sediment
Data Release Authorized:
Reported: 11/30/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: 11/21/05
Date Received: 11/21/05

Date Extracted: 11/28/05
Date Analyzed: 11/29/05 20:23
Instrument/Analyst: ECD3/YZ
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No
Acid Cleanup: No

Sample Amount: 25.8 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: Yes
pH: 7.9
Percent Moisture: 14.6%

CAS Number	Analyte	RL	Result
58-89-9	gamma-BHC (Lindane)	0.97	< 0.97 U
76-44-8	Heptachlor	0.97	< 0.97 U
309-00-2	Aldrin	0.97	< 0.97 U
60-57-1	Dieldrin	1.9	< 1.9 U
72-55-9	4,4'-DDE	1.9	< 1.9 U
72-54-8	4,4'-DDD	1.9	< 1.9 U
50-29-3	4,4'-DDT	1.9	< 1.9 U
5103-74-2	gamma Chlordane	0.97	< 0.97 U
5103-71-9	alpha Chlordane	0.97	< 0.97 U
118-74-1	Hexachlorobenzene	0.97	< 0.97 U
87-68-3	Hexachlorobutadiene	0.97	< 0.97 U

Reported in µg/kg (ppb)

Pest/PCB Surrogate Recovery

Decachlorobiphenyl	91.2%
Tetrachlorometaxylene	79.5%

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Sample ID: LCS-112805
LAB CONTROL

Lab Sample ID: LCS-112805
LIMS ID: 05-20012
Matrix: Sediment
Data Release Authorized:
Reported: 11/30/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: 11/21/05
Date Received: 11/21/05

Date Extracted: 11/28/05
Date Analyzed: 11/29/05 15:02
Instrument/Analyst: ECD3/YZ
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.0 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: Yes
pH: NA
Percent Moisture: NA

Analyte	Lab Control	Spike Added	Recovery
gamma-BHC (Lindane)	3.52	4.00	88.0%
Heptachlor	3.32	4.00	83.0%
Aldrin	3.40	4.00	85.0%
Dieldrin	7.20	8.00	90.0%
4,4'-DDE	7.50	8.00	93.8%
4,4'-DDD	7.14	8.00	89.2%
4,4'-DDT	7.02	8.00	87.8%
gamma Chlordane	3.50	4.00	87.5%
alpha Chlordane	3.54	4.00	88.5%
Hexachlorobenzene	3.66	4.00	91.5%
Hexachlorobutadiene	2.94	4.00	73.5%

Pest/PCB Surrogate Recovery

Decachlorobiphenyl	91.8%
Tetrachlorometaxylene	88.5%

Reported in µg/kg (ppb)

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Sample ID: MB-112805
METHOD BLANK

Lab Sample ID: MB-112805
LIMS ID: 05-20006
Matrix: Sediment
Data Release Authorized:
Reported: 11/30/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: NA
Date Received: NA

Date Extracted: 11/28/05
Date Analyzed: 11/30/05 02:15
Instrument/Analyst: ECD5/LJR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.0 g
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: No
pH: NA
Percent Moisture: NA

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	20	< 20 U
53469-21-9	Aroclor 1242	20	< 20 U
12672-29-6	Aroclor 1248	20	< 20 U
11097-69-1	Aroclor 1254	20	< 20 U
11096-82-5	Aroclor 1260	20	< 20 U
11104-28-2	Aroclor 1221	20	< 20 U
11141-16-5	Aroclor 1232	20	< 20 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	91.5%
Tetrachlorometaxylene	91.0%

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Sample ID: C-1
SAMPLE

Lab Sample ID: IU01A
LIMS ID: 05-20006
Matrix: Sediment
Data Release Authorized:
Reported: 11/30/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: 11/21/05
Date Received: 11/21/05

Date Extracted: 11/28/05
Date Analyzed: 11/30/05 04:05
Instrument/Analyst: ECD5/LJR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.4 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: No
pH: 7.0
Percent Moisture: 16.1%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	20	< 20 U
53469-21-9	Aroclor 1242	20	< 20 U
12672-29-6	Aroclor 1248	20	< 20 U
11097-69-1	Aroclor 1254	20	< 20 U
11096-82-5	Aroclor 1260	20	< 20 U
11104-28-2	Aroclor 1221	20	< 20 U
11141-16-5	Aroclor 1232	20	< 20 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery	
Decachlorobiphenyl	90.2%
Tetrachlorometaxylene	92.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
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Sample ID: C-1
MATRIX SPIKE

Lab Sample ID: IU01A
LIMS ID: 05-20006
Matrix: Sediment
Data Release Authorized:
Reported: 11/30/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: 11/21/05
Date Received: 11/21/05

Date Extracted: 11/28/05
Date Analyzed: 11/30/05 04:23
Instrument/Analyst: ECD5/LJR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.5 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: No
pH: 7.0
Percent Moisture: 16.1%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	20	---
53469-21-9	Aroclor 1242	20	< 20 U
12672-29-6	Aroclor 1248	20	< 20 U
11097-69-1	Aroclor 1254	20	< 20 U
11096-82-5	Aroclor 1260	20	---
11104-28-2	Aroclor 1221	20	< 20 U
11141-16-5	Aroclor 1232	20	< 20 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	92.5%
Tetrachlorometaxylene	93.2%

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Sample ID: C-1
MATRIX SPIKE DUP

Lab Sample ID: IU01A
LIMS ID: 05-20006
Matrix: Sediment
Data Release Authorized:
Reported: 11/30/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: 11/21/05
Date Received: 11/21/05

Date Extracted: 11/28/05
Date Analyzed: 11/30/05 04:41
Instrument/Analyst: ECD5/LJR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.4 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: No
pH: 7.0
Percent Moisture: 16.1%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	20	---
53469-21-9	Aroclor 1242	20	< 20 U
12672-29-6	Aroclor 1248	20	< 20 U
11097-69-1	Aroclor 1254	20	< 20 U
11096-82-5	Aroclor 1260	20	---
11104-28-2	Aroclor 1221	20	< 20 U
11141-16-5	Aroclor 1232	20	< 20 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery	
Decachlorobiphenyl	84.2%
Tetrachlorometaxylene	84.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD
Page 1 of 1

Sample ID: C-1
MS/MSD

Lab Sample ID: IU01A
LIMS ID: 05-20006
Matrix: Sediment
Data Release Authorized:
Reported: 11/30/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: 11/21/05
Date Received: 11/21/05

Date Extracted MS/MSD: 11/28/05

Date Analyzed MS: 11/30/05 04:23
MSD: 11/30/05 04:41
Instrument/Analyst MS: ECD5/LJR
MSD: ECD5/LJR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount MS: 25.5 g-dry-wt
MSD: 25.4 g-dry-wt
Final Extract Volume MS: 5.0 mL
MSD: 5.0 mL
Dilution Factor MS: 1.00
MSD: 1.00
Silica Gel: No
pH: 7.0
Percent Moisture: 16.1%

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Aroclor 1016	< 19.7 U	104	100	104%	109	101	108%	4.7%
Aroclor 1260	< 19.7 U	87.4	100	87.4%	81.5	101	80.7%	7.0%

Results reported in µg/kg (ppb)
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD
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Sample ID: C-2
SAMPLE

Lab Sample ID: IU01B
LIMS ID: 05-20007
Matrix: Sediment
Data Release Authorized:
Reported: 11/30/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: 11/21/05
Date Received: 11/21/05

Date Extracted: 11/28/05
Date Analyzed: 11/30/05 04:59
Instrument/Analyst: ECD5/LJR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.2 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: No
pH: 7.5
Percent Moisture: 21.8%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	20	< 20 U
53469-21-9	Aroclor 1242	20	< 20 U
12672-29-6	Aroclor 1248	20	< 20 U
11097-69-1	Aroclor 1254	20	< 20 U
11096-82-5	Aroclor 1260	20	< 20 U
11104-28-2	Aroclor 1221	20	< 20 U
11141-16-5	Aroclor 1232	20	< 20 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	92.0%
Tetrachlorometaxylene	87.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD
Page 1 of 1

Sample ID: C-3
SAMPLE

Lab Sample ID: IU01C
LIMS ID: 05-20008
Matrix: Sediment
Data Release Authorized:
Reported: 11/30/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: 11/21/05
Date Received: 11/21/05

Date Extracted: 11/28/05
Date Analyzed: 11/30/05 05:17
Instrument/Analyst: ECD5/LJR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.8 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: No
pH: 7.5
Percent Moisture: 32.6%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	19	< 19 U
53469-21-9	Aroclor 1242	19	< 19 U
12672-29-6	Aroclor 1248	19	< 19 U
11097-69-1	Aroclor 1254	19	< 19 U
11096-82-5	**Aroclor 1260**	**19**	**70**
11104-28-2	Aroclor 1221	19	< 19 U
11141-16-5	Aroclor 1232	19	< 19 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery	
Decachlorobiphenyl	93.2%
Tetrachlorometaxylene	83.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD
Page 1 of 1

Sample ID: C-4
SAMPLE

Lab Sample ID: IU01D
LIMS ID: 05-20009
Matrix: Sediment
Data Release Authorized:
Reported: 11/30/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: 11/21/05
Date Received: 11/21/05

Date Extracted: 11/28/05
Date Analyzed: 11/30/05 05:35
Instrument/Analyst: ECD5/LJR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.8 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: No
pH: 7.3
Percent Moisture: 18.0%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	19	< 19 U
53469-21-9	Aroclor 1242	19	< 19 U
12672-29-6	Aroclor 1248	19	< 19 U
11097-69-1	Aroclor 1254	19	< 19 U
11096-82-5	Aroclor 1260	19	< 19 U
11104-28-2	Aroclor 1221	19	< 19 U
11141-16-5	Aroclor 1232	19	< 19 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	93.8%
Tetrachlorometaxylene	82.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD

Sample ID: C-5
SAMPLE

Lab Sample ID: IU01E
LIMS ID: 05-20010
Matrix: Sediment
Data Release Authorized:
Reported: 11/30/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: 11/21/05
Date Received: 11/21/05

Date Extracted: 11/28/05
Date Analyzed: 11/30/05 05:54
Instrument/Analyst: ECD5/LJR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.4 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: No
pH: 7.6
Percent Moisture: 32.1%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	20	< 20 U
53469-21-9	Aroclor 1242	20	< 20 U
12672-29-6	Aroclor 1248	20	< 20 U
11097-69-1	Aroclor 1254	20	< 20 U
11096-82-5	Aroclor 1260	20	< 20 U
11104-28-2	Aroclor 1221	20	< 20 U
11141-16-5	Aroclor 1232	20	< 20 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery	
Decachlorobiphenyl	89.0%
Tetrachlorometaxylene	84.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD
Page 1 of 1

Sample ID: S-1
SAMPLE

Lab Sample ID: IU01F
LIMS ID: 05-20011
Matrix: Sediment
Data Release Authorized:
Reported: 11/30/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: 11/21/05
Date Received: 11/21/05

Date Extracted: 11/28/05
Date Analyzed: 11/30/05 06:12
Instrument/Analyst: ECD5/LJR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.3 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: No
pH: 7.8
Percent Moisture: 16.5%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	20	< 20 U
53469-21-9	Aroclor 1242	20	< 20 U
12672-29-6	Aroclor 1248	20	< 20 U
11097-69-1	Aroclor 1254	20	< 20 U
11096-82-5	Aroclor 1260	20	< 20 U
11104-28-2	Aroclor 1221	20	< 20 U
11141-16-5	Aroclor 1232	20	< 20 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery	
Decachlorobiphenyl	96.5%
Tetrachlorometaxylene	83.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD
Page 1 of 1

Sample ID: S-2
SAMPLE

Lab Sample ID: IU01G
LIMS ID: 05-20012
Matrix: Sediment
Data Release Authorized:
Reported: 11/30/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: 11/21/05
Date Received: 11/21/05

Date Extracted: 11/28/05
Date Analyzed: 11/30/05 06:30
Instrument/Analyst: ECD5/LJR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.5 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: No
pH: 7.4
Percent Moisture: 15.7%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	20	< 20 U
53469-21-9	Aroclor 1242	20	< 20 U
12672-29-6	Aroclor 1248	20	< 20 U
11097-69-1	Aroclor 1254	20	< 20 U
11096-82-5	Aroclor 1260	20	< 20 U
11104-28-2	Aroclor 1221	20	< 20 U
11141-16-5	Aroclor 1232	20	< 20 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery	
Decachlorobiphenyl	99.2%
Tetrachlorometaxylene	93.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD
Page 1 of 1

Sample ID: S-6
SAMPLE

Lab Sample ID: IU01H
LIMS ID: 05-20013
Matrix: Sediment
Data Release Authorized:
Reported: 11/30/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: 11/21/05
Date Received: 11/21/05

Date Extracted: 11/28/05
Date Analyzed: 11/30/05 06:48
Instrument/Analyst: ECD5/LJR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.9 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: No
pH: 7.9
Percent Moisture: 14.6%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	19	< 19 U
53469-21-9	Aroclor 1242	19	< 19 U
12672-29-6	Aroclor 1248	19	< 19 U
11097-69-1	Aroclor 1254	19	< 19 U
11096-82-5	Aroclor 1260	19	< 19 U
11104-28-2	Aroclor 1221	19	< 19 U
11141-16-5	Aroclor 1232	19	< 19 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery	
Decachlorobiphenyl	87.2%
Tetrachlorometaxylene	88.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD
Page 1 of 1

Sample ID: LCS-112805
LAB CONTROL

Lab Sample ID: LCS-112805
LIMS ID: 05-20006
Matrix: Sediment
Data Release Authorized:
Reported: 11/30/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: NA
Date Received: NA

Date Extracted: 11/28/05
Date Analyzed: 11/30/05 02:33
Instrument/Analyst: ECD5/LJR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.0 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: No
pH: NA
Percent Moisture: NA

Analyte	Lab Control	Spike Added	Recovery
Aroclor 1016	89.3	102	87.5%
Aroclor 1260	88.9	102	87.2%

PCB Surrogate Recovery

Decachlorobiphenyl	93.8%
Tetrachlorometaxylene	88.8%

Results reported in µg/kg (ppb)

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD by GC/FID
Page 1 of 1
Matrix: Sediment

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Received: 11/21/05

Data Release Authorized:
Reported: 11/28/05

ARI ID	Sample ID	Extraction Date	Analysis Date	DL	Range	Result
MB-112205	Method Blank	11/22/05	11/23/05	1.0	Diesel	< 5.0 U
05-20006	HC ID: ---		FID3A		Motor Oil	< 10 U
					o-Terphenyl	92.0%
IU01A	C-1	11/22/05	11/23/05	1.0	Diesel	< 6.0 U
05-20006	HC ID: **MOTOR OIL**		FID3A		**Motor Oil**	**17**
					o-Terphenyl	94.0%
IU01B	C-2	11/22/05	11/25/05	1.0	**Diesel**	**25**
05-20007	HC ID: **DRO/MOTOR OIL**		FID3A		**Motor Oil**	**140**
					o-Terphenyl	83.6%
IU01C	C-3	11/22/05	11/25/05	1.0	**Diesel**	**27**
05-20008	HC ID: **DRO/MOTOR OIL**		FID3A		**Motor Oil**	**110**
					o-Terphenyl	75.6%
IU01D	C-4	11/22/05	11/23/05	1.0	**Diesel**	**20**
05-20009	HC ID: **DRO/RRO**		FID3A		**Motor Oil**	**50**
					o-Terphenyl	87.1%
IU01E	C-5	11/22/05	11/25/05	1.0	**Diesel**	**40**
05-20010	HC ID: **DRO/MOTOR OIL**		FID3A		**Motor Oil**	**160**
					o-Terphenyl	84.9%
IU01E DP	C-5	11/22/05	11/25/05	1.0	**Diesel**	**35**
05-20010	HC ID: **DRO/MOTOR OIL**		FID3A		RPD:	13.3%
					Motor Oil	**140**
					RPD:	13.3%
					o-Terphenyl	89.3%

Reported in mg/kg (ppm)

Diesel quantitation on total peaks in the range from C12 to C24.
Motor Oil quantitation on total peaks in the range from C24 to C38.
HC ID: DRO/RRO indicates results of organics or additional hydrocarbons in ranges are not identifiable.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID
Page 1 of 1

Sample ID: C-1
MS/MSD

Lab Sample ID: IU01A
LIMS ID: 05-20006
Matrix: Sediment
Data Release Authorized:
Reported: 11/28/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: 11/21/05
Date Received: 11/21/05

Date Extracted MS/MSD: 11/22/05

Date Analyzed MS: 11/23/05 17:59
MSD: 11/23/05 18:14
Instrument/Analyst MS: FID3A/JGR
MSD: FID3A/JGR

Sample Amount MS: 8.41 g-dry-wt
MSD: 8.40 g-dry-wt
Final Extract Volume MS: 1.0 mL
MSD: 1.0 mL
Dilution Factor MS: 1.00
MSD: 1.00
Percent Moisture: 16.1%

Range	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Diesel	< 6.0 U	179	178	101%	186	179	104%	3.8%

Results reported in mg/kg
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID
Page 1 of 1

Sample ID: LCS-112205
LAB CONTROL

Lab Sample ID: LCS-112205
LIMS ID: 05-20006
Matrix: Sediment
Data Release Authorized: GR
Reported: 11/28/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: NA
Date Received: NA

Date Extracted: 11/22/05
Date Analyzed: 11/23/05 17:30
Instrument/Analyst: FID3A/JGR

Sample Amount: 10.0 g
Final Extract Volume: 1.0 mL
Dilution Factor: 1.00

Range	Lab Control	Spike Added	Recovery
Diesel	142	150	94.7%

TPHD Surrogate Recovery

o-Terphenyl	93.6%

Results reported in mg/kg

METHOD BLANK RESULTS-CONVENTIONALS
IU01-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 11/30/05

Project: BREMERTON SEDIMENTS
Event: NA
Date Sampled: NA
Date Received: NA

Analyte	Date	Units	Blank
Total Solids	11/22/05	Percent	< 0.01 U
Preserved Total Solids	11/22/05	Percent	< 0.01 U
Total Volatile Solids	11/22/05	Percent	< 0.01 U
N-Ammonia	11/23/05	mg-N/kg	0.15
Sulfide	11/22/05	mg/kg	< 1.0 U
Total Organic Carbon	11/25/05	Percent	< 0.020 U
	11/28/05		< 0.020 U

SAMPLE RESULTS-CONVENTIONALS
IU01-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 11/30/05

Project: BREMERTON SEDIMENTS
Event: NA
Date Sampled: 11/21/05
Date Received: 11/21/05

Client ID: C-1
ARI ID: 05-20006 IU01A

Analyte	Date	Method	Units	RL	Sample
Total Solids	11/22/05 112205#1	EPA 160.3	Percent	0.01	77.00
Preserved Total Solids	11/22/05 112205#1	EPA 160.3	Percent	0.01	76.70
Total Volatile Solids	11/22/05 112205#1	EPA 160.4	Percent	0.01	1.23
N-Ammonia	11/23/05 112305#1	EPA 350.1M	mg-N/kg	0.12	6.97
Sulfide	11/22/05 112205#1	EPA 376.2	mg/kg	0.91	< 0.91 U
Total Organic Carbon	11/25/05 112505#1	Plumb,1981	Percent	0.020	0.593

RL Analytical reporting limit
U Undetected at reported detection limit

Ammonia determined on 2N KCl extracts.

SAMPLE RESULTS-CONVENTIONALS
IU01-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 11/30/05

Project: BREMERTON SEDIMENTS
Event: NA
Date Sampled: 11/21/05
Date Received: 11/21/05

Client ID: C-2
ARI ID: 05-20007 IU01B

Analyte	Date	Method	Units	RL	Sample
Total Solids	11/22/05 112205#1	EPA 160.3	Percent	0.01	74.90
Preserved Total Solids	11/22/05 112205#1	EPA 160.3	Percent	0.01	72.30
Total Volatile Solids	11/22/05 112205#1	EPA 160.4	Percent	0.01	2.15
N-Ammonia	11/23/05 112305#1	EPA 350.1M	mg-N/kg	0.13	13.0
Sulfide	11/22/05 112205#1	EPA 376.2	mg/kg	1.3	6.5
Total Organic Carbon	11/28/05 112805#1	Plumb,1981	Percent	0.020	0.810

RL Analytical reporting limit
U Undetected at reported detection limit

Ammonia determined on 2N KCl extracts.

SAMPLE RESULTS-CONVENTIONALS
IU01-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 11/30/05

Project: BREMERTON SEDIMENTS
Event: NA
Date Sampled: 11/21/05
Date Received: 11/21/05

Client ID: C-3
ARI ID: 05-20008 IU01C

Analyte	Date	Method	Units	RL	Sample
Total Solids	11/22/05 112205#1	EPA 160.3	Percent	0.01	63.20
Preserved Total Solids	11/22/05 112205#1	EPA 160.3	Percent	0.01	59.20
Total Volatile Solids	11/22/05 112205#1	EPA 160.4	Percent	0.01	2.86
N-Ammonia	11/23/05 112305#1	EPA 350.1M	mg-N/kg	0.16	9.92
Sulfide	11/22/05 112205#1	EPA 376.2	mg/kg	79	580
Total Organic Carbon	11/25/05 112505#1	Plumb,1981	Percent	0.020	1.65

RL Analytical reporting limit
U Undetected at reported detection limit

Ammonia determined on 2N KCl extracts.

SAMPLE RESULTS-CONVENTIONALS
IU01-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 11/30/05

Project: BREMERTON SEDIMENTS
Event: NA
Date Sampled: 11/21/05
Date Received: 11/21/05

Client ID: C-4
ARI ID: 05-20009 IU01D

Analyte	Date	Method	Units	RL	Sample
Total Solids	11/22/05 112205#1	EPA 160.3	Percent	0.01	74.10
Preserved Total Solids	11/22/05 112205#1	EPA 160.3	Percent	0.01	73.80
Total Volatile Solids	11/22/05 112205#1	EPA 160.4	Percent	0.01	1.59
N-Ammonia	11/23/05 112305#1	EPA 350.1M	mg-N/kg	0.13	6.51
Sulfide	11/22/05 112205#1	EPA 376.2	mg/kg	1.3	17
Total Organic Carbon	11/25/05 112505#1	Plumb,1981	Percent	0.020	0.468

RL Analytical reporting limit
U Undetected at reported detection limit

Ammonia determined on 2N KCl extracts.

SAMPLE RESULTS-CONVENTIONALS
IU01-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 11/30/05

Project: BREMERTON SEDIMENTS
Event: NA
Date Sampled: 11/21/05
Date Received: 11/21/05

Client ID: C-5
ARI ID: 05-20010 IU01E

Analyte	Date	Method	Units	RL	Sample
Total Solids	11/22/05 112205#1	EPA 160.3	Percent	0.01	62.70
Preserved Total Solids	11/22/05 112205#1	EPA 160.3	Percent	0.01	64.90
Total Volatile Solids	11/22/05 112205#1	EPA 160.4	Percent	0.01	3.13
N-Ammonia	11/23/05 112305#1	EPA 350.1M	mg-N/kg	0.16	10.5
Sulfide	11/22/05 112205#1	EPA 376.2	mg/kg	46	500
Total Organic Carbon	11/25/05 112505#1	Plumb,1981	Percent	0.020	2.24

RL Analytical reporting limit
U Undetected at reported detection limit

Ammonia determined on 2N KCl extracts.

SAMPLE RESULTS-CONVENTIONALS
IU01-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 11/30/05

Project: BREMERTON SEDIMENTS
Event: NA
Date Sampled: 11/21/05
Date Received: 11/21/05

Client ID: S-1
ARI ID: 05-20011 IU01F

Analyte	Date	Method	Units	RL	Sample
Total Solids	11/22/05 112205#1	EPA 160.3	Percent	0.01	78.50
Preserved Total Solids	11/22/05 112205#1	EPA 160.3	Percent	0.01	77.10
Total Volatile Solids	11/22/05 112205#1	EPA 160.4	Percent	0.01	1.60
N-Ammonia	11/23/05 112305#1	EPA 350.1M	mg-N/kg	0.13	7.28
Sulfide	11/22/05 112205#1	EPA 376.2	mg/kg	1.1	11
Total Organic Carbon	11/28/05 112805#1	Plumb,1981	Percent	0.020	0.461

RL Analytical reporting limit
U Undetected at reported detection limit

Ammonia determined on 2N KCl extracts.

SAMPLE RESULTS-CONVENTIONALS
IU01-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 11/30/05

Project: BREMERTON SEDIMENTS
Event: NA
Date Sampled: 11/21/05
Date Received: 11/21/05

Client ID: S-2
ARI ID: 05-20012 IU01G

Analyte	Date	Method	Units	RL	Sample
Total Solids	11/22/05 112205#1	EPA 160.3	Percent	0.01	80.60
Preserved Total Solids	11/22/05 112205#1	EPA 160.3	Percent	0.01	77.10
Total Volatile Solids	11/22/05 112205#1	EPA 160.4	Percent	0.01	1.75
N-Ammonia	11/23/05 112305#1	EPA 350.1M	mg-N/kg	0.12	4.95
Sulfide	11/22/05 112205#1	EPA 376.2	mg/kg	1.3	4.9
Total Organic Carbon	11/28/05 112805#1	Plumb,1981	Percent	0.020	0.409

RL Analytical reporting limit
U Undetected at reported detection limit

Ammonia determined on 2N KCl extracts.

SAMPLE RESULTS-CONVENTIONALS
IU01-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 11/30/05

Project: BREMERTON SEDIMENTS
Event: NA
Date Sampled: 11/21/05
Date Received: 11/21/05

Client ID: S-6
ARI ID: 05-20013 IU01H

Analyte	Date	Method	Units	RL	Sample
Total Solids	11/22/05 112205#1	EPA 160.3	Percent	0.01	76.60
Preserved Total Solids	11/22/05 112205#1	EPA 160.3	Percent	0.01	73.70
Total Volatile Solids	11/22/05 112205#1	EPA 160.4	Percent	0.01	1.26
N-Ammonia	11/23/05 112305#1	EPA 350.1M	mg-N/kg	0.13	4.28
Sulfide	11/22/05 112205#1	EPA 376.2	mg/kg	1.3	< 1.3 U
Total Organic Carbon	11/25/05 112505#1	Plumb,1981	Percent	0.020	0.426

RL Analytical reporting limit
U Undetected at reported detection limit

Ammonia determined on 2N KCl extracts.

REPLICATE RESULTS-CONVENTIONALS
IU01-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 11/30/05

Project: BREMERTON SEDIMENTS
Event: NA
Date Sampled: 11/21/05
Date Received: 11/21/05

Analyte	Date	Units	Sample	Replicate(s)	RPD/RSD
ARI ID: IU01A Client ID: C-1					
N-Ammonia	11/23/05	mg-N/kg	6.97	7.44	6.5%
ARI ID: IU01C Client ID: C-3					
Total Solids	11/22/05	Percent	63.20	63.40 63.90	0.6%
Preserved Total Solids	11/22/05	Percent	59.20	60.70 60.00	1.3%
Total Volatile Solids	11/22/05	Percent	2.86	3.20 2.99	5.7%
Total Organic Carbon	11/25/05	Percent	1.65	1.47 1.65	6.5%
ARI ID: IU01F Client ID: S-1					
Sulfide	11/22/05	mg/kg	11	16	37.0%

MS/MSD RESULTS-CONVENTIONALS
IU01-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 11/30/05

Project: BREMERTON SEDIMENTS
Event: NA
Date Sampled: 11/21/05
Date Received: 11/21/05

Analyte	Date	Units	Sample	Spike	Spike Added	Recovery
ARI ID: IU01A Client ID: C-1						
N-Ammonia	11/23/05	mg-N/kg	6.97	136	122	105.6%
ARI ID: IU01C Client ID: C-3						
Total Organic Carbon	11/25/05	Percent	1.65	3.07	1.68	84.6%
ARI ID: IU01F Client ID: S-1						
Sulfide	11/22/05	mg/kg	11	160	150	99.0%

LAB CONTROL RESULTS-CONVENTIONALS
IU01-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 11/30/05

Project: BREMERTON SEDIMENTS
Event: NA
Date Sampled: NA
Date Received: NA

Analyte	Date	Units	LCS	Spike Added	Recovery
Sulfide	11/22/05	mg/kg	110	120	90.8%
Total Organic Carbon	11/25/05	Percent	0.523	0.500	104.6%
	11/28/05		0.542	0.500	108.4%

STANDARD REFERENCE RESULTS-CONVENTIONALS
IU01-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 11/30/05

Project: BREMERTON SEDIMENTS
Event: NA
Date Sampled: NA
Date Received: NA

Analyte/SRM ID	Date	Units	SRM	True Value	Recovery
N-Ammonia	11/23/05	mg-N/kg	109	100	109.0%
SPEX 28-24AS					
Total Organic Carbon	11/25/05	Percent	3.21	3.35	95.8%
NIST #8704	11/28/05		3.05	3.35	91.0%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: METHOD BLANK

Lab Sample ID: IU01MB
LIMS ID: 05-20007
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: NA
Date Received: NA

Percent Total Solids: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	11/28/05	6010B	12/02/05	7440-36-0	Antimony	5	5	U
3050B	11/28/05	6010B	12/02/05	7440-38-2	Arsenic	5	5	U
3050B	11/28/05	6010B	12/02/05	7440-43-9	Cadmium	0.2	0.2	U
3050B	11/28/05	6010B	12/02/05	7440-47-3	Chromium	0.5	0.5	U
3050B	11/28/05	6010B	12/02/05	7440-50-8	Copper	0.2	0.2	U
3050B	11/28/05	6010B	12/02/05	7439-92-1	Lead	2	2	U
CLP	11/28/05	7471A	12/01/05	7439-97-6	Mercury	0.05	0.05	U
3050B	11/28/05	6010B	12/02/05	7440-02-0	Nickel	1	1	U
3050B	11/28/05	6010B	12/02/05	7440-22-4	Silver	0.3	0.3	U
3050B	11/28/05	6010B	12/02/05	7440-66-6	Zinc	0.6	0.6	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: C-1
SAMPLE

Lab Sample ID: IU01A
LIMS ID: 05-20006
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: 11/21/05
Date Received: 11/21/05

Percent Total Solids: 77.6%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	11/28/05	6010B	12/02/05	7440-36-0	Antimony	6	6	U
3050B	11/28/05	6010B	12/02/05	7440-38-2	Arsenic	6	6	U
3050B	11/28/05	6010B	12/02/05	7440-43-9	Cadmium	0.3	0.3	U
3050B	11/28/05	6010B	12/02/05	7440-47-3	Chromium	0.6	18.6	
3050B	11/28/05	6010B	12/02/05	7440-50-8	Copper	0.3	15.4	
3050B	11/28/05	6010B	12/02/05	7439-92-1	Lead	3	15	
CLP	11/28/05	7471A	12/01/05	7439-97-6	Mercury	0.06	0.06	U
3050B	11/28/05	6010B	12/02/05	7440-02-0	Nickel	1	18	
3050B	11/28/05	6010B	12/02/05	7440-22-4	Silver	0.4	0.4	U
3050B	11/28/05	6010B	12/02/05	7440-66-6	Zinc	0.8	45.7	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: C-1
DUPLICATE

Lab Sample ID: IU01A
LIMS ID: 05-20006
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: 11/21/05
Date Received: 11/21/05

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Antimony	6010B	6 U	6 U	0.0%	+/- 6	L
Arsenic	6010B	6 U	6 U	0.0%	+/- 6	L
Cadmium	6010B	0.3 U	0.3 U	0.0%	+/- 0.3	L
Chromium	6010B	18.6	20.9	11.6%	+/- 20%	
Copper	6010B	15.4	16.2	5.1%	+/- 20%	
Lead	6010B	15	16	6.5%	+/- 20%	
Mercury	7471A	0.06 U	0.06 U	0.0%	+/- 0.06	L
Nickel	6010B	18	20	10.5%	+/- 20%	
Silver	6010B	0.4 U	0.4 U	0.0%	+/- 0.4	L
Zinc	6010B	45.7	45.8	0.2%	+/- 20%	

Reported in mg/kg-dry

*-Control Limit Not Met
L-RPD Invalid, Limit = Detection Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: C-1
MATRIX SPIKE

Lab Sample ID: IU01A
LIMS ID: 05-20006
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: 11/21/05
Date Received: 11/21/05

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Antimony	6010B	6 U	84	256	32.8%	N
Arsenic	6010B	6 U	274	256	107%	
Cadmium	6010B	0.3 U	66.6	64.0	104%	
Chromium	6010B	18.6	79.5	64.0	95.2%	
Copper	6010B	15.4	81.2	64.0	103%	
Lead	6010B	15	255	256	93.8%	
Mercury	7471A	0.06 U	0.64	0.605	106%	
Nickel	6010B	18	77	64.0	92.2%	
Silver	6010B	0.4 U	64.5	64.0	101%	
Zinc	6010B	45.7	101	64.0	86.4%	

Reported in mg/kg-dry

N-Control Limit Not Met
H-% Recovery Not Applicable, Sample Concentration Too High
NA-Not Applicable, Analyte Not Spiked

Percent Recovery Limits: 75-125%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: C-2
SAMPLE

Lab Sample ID: IU01B
LIMS ID: 05-20007
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: 11/21/05
Date Received: 11/21/05

Percent Total Solids: 74.4%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	11/28/05	6010B	12/02/05	7440-36-0	Antimony	6	6	U
3050B	11/28/05	6010B	12/02/05	7440-38-2	Arsenic	6	6	U
3050B	11/28/05	6010B	12/02/05	7440-43-9	Cadmium	0.3	0.3	
3050B	11/28/05	6010B	12/02/05	7440-47-3	Chromium	0.6	14.1	
3050B	11/28/05	6010B	12/02/05	7440-50-8	Copper	0.3	15.0	
3050B	11/28/05	6010B	12/02/05	7439-92-1	Lead	3	13	
CLP	11/28/05	7471A	12/01/05	7439-97-6	Mercury	0.06	0.06	U
3050B	11/28/05	6010B	12/02/05	7440-02-0	Nickel	1	17	
3050B	11/28/05	6010B	12/02/05	7440-22-4	Silver	0.4	0.4	U
3050B	11/28/05	6010B	12/02/05	7440-66-6	Zinc	0.8	40.1	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: C-3
SAMPLE

Lab Sample ID: IU01C
LIMS ID: 05-20008
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: 11/21/05
Date Received: 11/21/05

Percent Total Solids: 63.6%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	11/28/05	6010B	12/02/05	7440-36-0	Antimony	7	7	U
3050B	11/28/05	6010B	12/02/05	7440-38-2	Arsenic	7	7	U
3050B	11/28/05	6010B	12/02/05	7440-43-9	Cadmium	0.3	0.5	
3050B	11/28/05	6010B	12/02/05	7440-47-3	Chromium	0.7	20.8	
3050B	11/28/05	6010B	12/02/05	7440-50-8	Copper	0.3	19.6	
3050B	11/28/05	6010B	12/02/05	7439-92-1	Lead	3	27	
CLP	11/28/05	7471A	12/01/05	7439-97-6	Mercury	0.07	0.09	
3050B	11/28/05	6010B	12/02/05	7440-02-0	Nickel	1	20	
3050B	11/28/05	6010B	12/02/05	7440-22-4	Silver	0.4	0.4	U
3050B	11/28/05	6010B	12/02/05	7440-66-6	Zinc	0.9	49.8	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: C-4
SAMPLE

Lab Sample ID: IU01D
LIMS ID: 05-20009
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: 11/21/05
Date Received: 11/21/05

Percent Total Solids: 74.9%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	11/28/05	6010B	12/02/05	7440-36-0	Antimony	7	7	U
3050B	11/28/05	6010B	12/02/05	7440-38-2	Arsenic	7	7	U
3050B	11/28/05	6010B	12/02/05	7440-43-9	Cadmium	0.3	0.3	
3050B	11/28/05	6010B	12/02/05	7440-47-3	Chromium	0.7	18.8	
3050B	11/28/05	6010B	12/02/05	7440-50-8	Copper	0.3	18.7	
3050B	11/28/05	6010B	12/02/05	7439-92-1	Lead	3	16	
CLP	11/28/05	7471A	12/01/05	7439-97-6	Mercury	0.06	0.06	U
3050B	11/28/05	6010B	12/02/05	7440-02-0	Nickel	1	20	
3050B	11/28/05	6010B	12/02/05	7440-22-4	Silver	0.4	0.4	U
3050B	11/28/05	6010B	12/02/05	7440-66-6	Zinc	0.8	47.4	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: C-5
SAMPLE

Lab Sample ID: IU01E
LIMS ID: 05-20010
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: 11/21/05
Date Received: 11/21/05

Percent Total Solids: 62.9%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	11/28/05	6010B	12/02/05	7440-36-0	Antimony	8	8	U
3050B	11/28/05	6010B	12/02/05	7440-38-2	Arsenic	8	8	U
3050B	11/28/05	6010B	12/02/05	7440-43-9	Cadmium	0.3	0.5	
3050B	11/28/05	6010B	12/02/05	7440-47-3	Chromium	0.8	21.9	
3050B	11/28/05	6010B	12/02/05	7440-50-8	Copper	0.3	19.8	
3050B	11/28/05	6010B	12/02/05	7439-92-1	Lead	3	21	
CLP	11/28/05	7471A	12/01/05	7439-97-6	Mercury	0.07	0.09	
3050B	11/28/05	6010B	12/02/05	7440-02-0	Nickel	2	22	
3050B	11/28/05	6010B	12/02/05	7440-22-4	Silver	0.5	0.5	U
3050B	11/28/05	6010B	12/02/05	7440-66-6	Zinc	0.9	48.3	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: S-1
SAMPLE

Lab Sample ID: IU01F
LIMS ID: 05-20011
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: 11/21/05
Date Received: 11/21/05

Percent Total Solids: 76.7%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	11/28/05	6010B	12/02/05	7440-36-0	Antimony	6	6	U
3050B	11/28/05	6010B	12/02/05	7440-38-2	Arsenic	6	6	U
3050B	11/28/05	6010B	12/02/05	7440-43-9	Cadmium	0.2	0.3	
3050B	11/28/05	6010B	12/02/05	7440-47-3	Chromium	0.6	17.5	
3050B	11/28/05	6010B	12/02/05	7440-50-8	Copper	0.2	16.3	
3050B	11/28/05	6010B	12/02/05	7439-92-1	Lead	2	14	
CLP	11/28/05	7471A	12/01/05	7439-97-6	Mercury	0.05	0.05	U
3050B	11/28/05	6010B	12/02/05	7440-02-0	Nickel	1	20	
3050B	11/28/05	6010B	12/02/05	7440-22-4	Silver	0.4	0.4	U
3050B	11/28/05	6010B	12/02/05	7440-66-6	Zinc	0.7	36.0	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: S-2
SAMPLE

Lab Sample ID: IU01G
LIMS ID: 05-20012
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: 11/21/05
Date Received: 11/21/05

Percent Total Solids: 81.7%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	11/28/05	6010B	12/02/05	7440-36-0	Antimony	6	6	U
3050B	11/28/05	6010B	12/02/05	7440-38-2	Arsenic	6	6	U
3050B	11/28/05	6010B	12/02/05	7440-43-9	Cadmium	0.2	0.2	U
3050B	11/28/05	6010B	12/02/05	**7440-47-3**	**Chromium**	0.6	**13.3**	
3050B	11/28/05	6010B	12/02/05	**7440-50-8**	**Copper**	0.2	**8.6**	
3050B	11/28/05	6010B	12/02/05	**7439-92-1**	**Lead**	2	**12**	
CLP	11/28/05	7471A	12/01/05	**7439-97-6**	**Mercury**	0.05	**0.06**	
3050B	11/28/05	6010B	12/02/05	**7440-02-0**	**Nickel**	1	**13**	
3050B	11/28/05	6010B	12/02/05	7440-22-4	Silver	0.3	0.3	U
3050B	11/28/05	6010B	12/02/05	**7440-66-6**	**Zinc**	0.7	27.1	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: S-6
SAMPLE

Lab Sample ID: IU01H
LIMS ID: 05-20013
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: 11/21/05
Date Received: 11/21/05

Percent Total Solids: 79.0%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	11/28/05	6010B	12/02/05	7440-36-0	Antimony	6	6	U
3050B	11/28/05	6010B	12/02/05	7440-38-2	Arsenic	6	6	U
3050B	11/28/05	6010B	12/02/05	7440-43-9	Cadmium	0.2	0.2	U
3050B	11/28/05	6010B	12/02/05	7440-47-3	Chromium	0.6	16.3	
3050B	11/28/05	6010B	12/02/05	7440-50-8	Copper	0.2	15.1	
3050B	11/28/05	6010B	12/02/05	7439-92-1	Lead	2	24	
CLP	11/28/05	7471A	12/01/05	7439-97-6	Mercury	0.05	0.05	U
3050B	11/28/05	6010B	12/02/05	7440-02-0	Nickel	1	16	
3050B	11/28/05	6010B	12/02/05	7440-22-4	Silver	0.4	0.4	U
3050B	11/28/05	6010B	12/02/05	7440-66-6	Zinc	0.7	46.4	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: LAB CONTROL

Lab Sample ID: IU01LCS
LIMS ID: 05-20007
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU01-Parametrix
Project: BREMERTON SEDIMENTS

Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Antimony	6010B	203	200	102%	
Arsenic	6010B	209	200	104%	
Cadmium	6010B	52.2	50.0	104%	
Chromium	6010B	51.3	50.0	103%	
Copper	6010B	50.2	50.0	100%	
Lead	6010B	197	200	98.5%	
Mercury	7471A	1.00	1.00	100%	
Nickel	6010B	49	50	98.0%	
Silver	6010B	49.7	50.0	99.4%	
Zinc	6010B	47.5	50.0	95.0%	

Reported in mg/kg-dry

N-Control limit not met
Control Limits: 80-120%

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Client: Parametrix	Project No.: IU01
Client Project: Bremerton Sediments	

Case Narrative

1. The samples were submitted for grain size analysis according to PSEP methodology.
2. The samples were run in a single batch, and one sample was chosen for triplicate analysis. The triplicate data is reported on the QA summary.
3. Some of the samples were mostly sand and contained fewer than the required 5 grams in the pipette portion of the analysis. When this occurs, we generally run the samples anyway, and flag the data. The principle problem with this is that because there is so little material, random weighing errors occur. This can either make the amount retained in a given phi size appear to be more than the amount in the next larger phi size, or give a negative value for the mass in a given phi size. In this condition, we generally adjust the value in the offending phi size to a value that is reasonable and/or eliminates the negative values. This was done on samples C-1, C-2, C-4, S-1, and S-2.
4. All of the samples listed in #3 above had less than the required 5 grams in the pipette portion. Our balance has a capacity of about 200 g (by 0.0001), and a sample size that would give 5 grams of fines could not be split and stay within the capacity of the balance.
5. The data is provided in summary tables and plots.
6. There were no other noted anomalies in the samples or methods on this project.

Approved by: Taylor McKenzie Date: 12/01/05
Title: Lead Technician

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

Physical Analyses

SM Indicates that the sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with moisture content, porosity and saturation calculation that assume only water is present.

SS Indicates that the sample was not appropriate for the method requested because it did not contain the proportion of "fines" required to perform the pipette portion of the analysis

W Indicates that the amount of sample in some pipette aliquots was below the level required for accurate weighting resulting in negative weights which were adjusted to zero.

F Indicates that the samples were frozen prior to particle size determination.

ANALYTICAL RESOURCES INCORPORATED

Parametrix
Bremerton Sediments

Apparent Grain Size Distribution Summary
Percent Finer Than Indicated Size

Sample No.	Gravel			Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt				Clay	
Phi Size	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
Sieve Size (microns)	3/8"	#4	#10 (2000)	#18 (1000)	#35 (500)	#60 (250)	#120 (125)	#230 (62)	31.00	15.60	7.80	3.90	2.00	1.00
C-3	100.0	78.9	74.8	71.0	64.1	46.7	24.9	12.3	8.6	6.7	5.6	4.5	3.4	2.5
C-3	100.0	81.7	78.5	74.1	66.7	48.7	25.9	12.7	8.8	7.0	5.7	4.6	3.6	2.5
C-3	100.0	74.2	70.7	66.9	60.1	43.2	23.0	11.3	7.9	6.4	5.3	4.3	3.2	2.1
C-1	100.0	85.8	74.8	72.1	68.5	6.4	3.6	3.3	1.7	1.6	1.5	1.3	1.1	0.9
C-2	100.0	83.4	73.3	67.3	58.7	12.9	4.9	3.9	2.8	2.6	2.3	1.8	1.3	1.0
C-4	100.0	96.1	91.1	86.4	80.3	10.7	3.6	2.9	2.8	2.5	2.2	1.8	1.3	1.1
C-5	100.0	96.0	90.4	85.4	76.9	56.4	30.0	14.3	9.9	7.9	6.7	5.2	3.7	2.5
S-1	100.0	76.0	68.3	65.1	60.9	38.4	6.3	2.9	2.4	2.1	1.8	1.6	1.2	0.9
S-2	100.0	83.4	56.9	44.5	39.0	23.0	3.9	2.7	2.2	2.0	1.7	1.5	1.1	0.8
S-6	100.0	73.8	66.3	63.0	59.1	10.6	5.5	4.7	1.2	1.1	1.1	1.0	0.8	0.7

Notes to the Testing:

1. Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution. See narrative for discussion of the testing.

IU01

ANALYTICAL RESOURCES INCORPORATED

Parametrix
Bremerton Sediments

Apparent Grain Size Distribution Summary
Percent Retained in Each Size Fraction

Sample No.	Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Coarse Silt	Medium Silt	Fine Silt	Very Fine Silt	Clay		
Phi Size	> -1	-1 to 0	0 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 6	6 to 7	7 to 8	8 to 9	9 to 10	< 10
Sieve Size (microns)	> #10 (2000)	10 to 18 (2000-1000)	18-35 (1000-500)	35-60 (500-250)	60-120 (250-125)	120-230 (125-62)	62.5-31.0	31.0-15.6	15.6-7.8	7.8-3.9	3.9-2.0	2.0-1.0	<1.0
C-3	25.2	3.8	6.9	17.4	21.8	12.5	3.7	1.9	1.1	1.1	1.1	0.9	2.5
C-3	21.5	4.4	7.4	18.0	22.8	13.3	3.9	1.8	1.2	1.1	1.0	1.1	2.5
C-3	29.3	3.8	6.7	17.0	20.1	11.8	3.4	1.5	1.1	1.0	1.1	1.1	2.1
C-1	25.2	2.8	3.6	62.1	2.8	0.3	1.6	0.1	0.1	0.2	0.2	0.2	0.9
C-2	26.7	6.0	8.7	45.7	8.0	1.0	1.1	0.3	0.3	0.5	0.5	0.3	1.0
C-4	8.9	4.6	6.1	69.7	7.1	0.7	0.1	0.2	0.3	0.4	0.5	0.2	1.1
C-5	9.6	5.0	8.6	20.5	26.4	15.7	4.4	2.1	1.2	1.5	1.4	1.2	2.5
S-1	31.7	3.2	4.2	22.5	32.1	3.4	0.5	0.3	0.3	0.2	0.4	0.4	0.9
S-2	43.1	12.4	5.5	16.0	19.1	1.2	0.6	0.2	0.2	0.3	0.4	0.3	0.8
S-6	33.7	3.2	3.9	48.5	5.1	0.8	3.5	0.1	0.1	0.0	0.2	0.0	0.7

Notes to the Testing:

1. Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution. See narrative for discussion of the testing.

IU01

ANALYTICAL RESOURCES INCORPORATED

Parametrix
Bremerton Sediments

PSEP Total Solids Analysis
Percent of Wet Weight

Sample No.	Total Solids (%)
C-3	69.5
C-3	69.0
C-3	70.9
C-1	82.1
C-2	78.8
C-4	77.8
C-5	65.5
S-1	81.9
S-2	84.2
S-6	86.3

Triplicate Average	69.8
Standard Deviation	0.98
%RSD	1.40

(Total Solids at 90 C)

IU01

QA SUMMARY

ANALYTICAL RESOURCES INCORPORATED

PROJECT:	Parametrix	Project No.:	Bremerton Sediments
ARI Triplicate Sample ID:	C	Batch No.:	IU01
Client Triplicate Sample ID:	C-3	Page:	1 of 1

Relative Standard Deviation, By Phi Size

Sample ID	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
C-3	100.0	78.9	74.8	71.0	64.1	46.7	24.9	12.3	8.6	6.7	5.6	4.5	3.4	2.5
C-3	100.0	81.7	78.5	74.1	66.7	48.7	25.9	12.7	8.8	7.0	5.7	4.6	3.6	2.5
C-3	100.0	74.2	70.7	66.9	60.1	43.2	23.0	11.3	7.9	6.4	5.3	4.3	3.2	2.1
AVE	NA	78.25	74.68	70.66	63.65	46.19	24.61	12.09	8.44	6.69	5.54	4.45	3.39	2.38
STDEV	NA	3.79	3.91	3.63	3.31	2.80	1.47	0.74	0.50	0.30	0.22	0.15	0.19	0.21
%RSD	NA	4.84	5.23	5.13	5.20	6.07	5.99	6.10	5.98	4.45	4.03	3.34	5.47	9.00

The Triplicate Applies To The Following Samples

Client ID	Date Sampled	Date Extracted	Date Complete	QA Ratio (95-105)	Data Qualifiers	Pipette Portion (5.0-25.0g)
C-3	11/21/05	11/23/05	12/1/05	100.5		6.9
C-3	11/21/05	11/23/05	12/1/05	100.1		6.9
C-3	11/21/05	11/23/05	12/1/05	99.9		5.9
C-1	11/21/05	11/22/05	12/1/05	101.5	SS	4.0
C-2	11/21/05	11/22/05	12/1/05	100.8	SS	4.6
C-4	11/21/05	11/22/05	12/1/05	99.5	SS, W	3.4
C-5	11/21/05	11/22/05	12/1/05	99.9		5.5
S-1	11/21/05	11/22/05	12/1/05	100.1	SS	3.6
S-2	11/21/05	11/22/05	12/1/05	100.3	SS	3.5
S-6	11/21/05	11/22/05	12/1/05	103.6		6.2

* ARI Internal QA limits = 95-105%

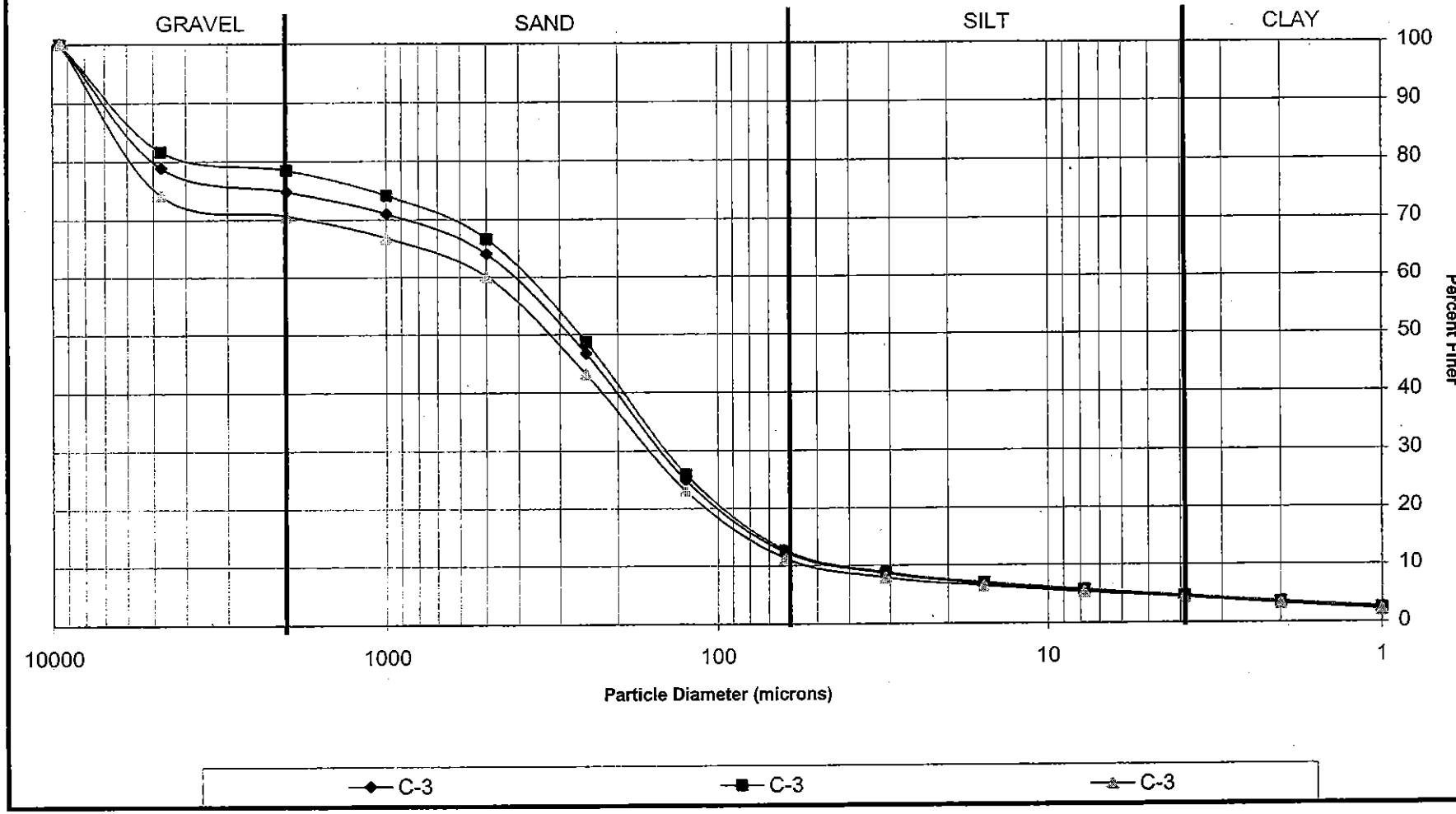
Notes to the Testing:

1. Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution. See narrative for discussion of the testing.

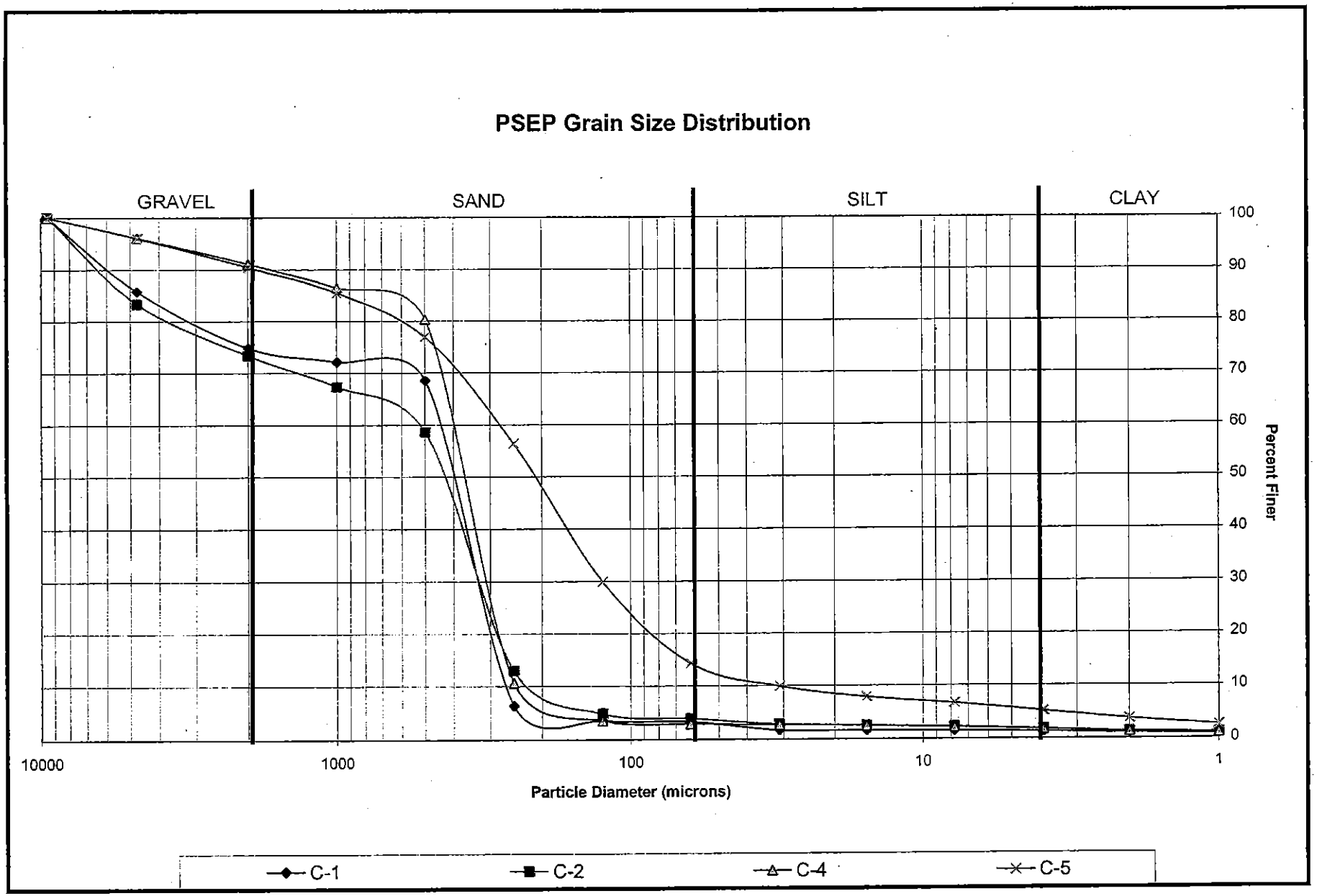
ANALYTICAL RESOURCES INCORPORATED

PSEP Grain Size Distribution

Triplicate Sample Plot

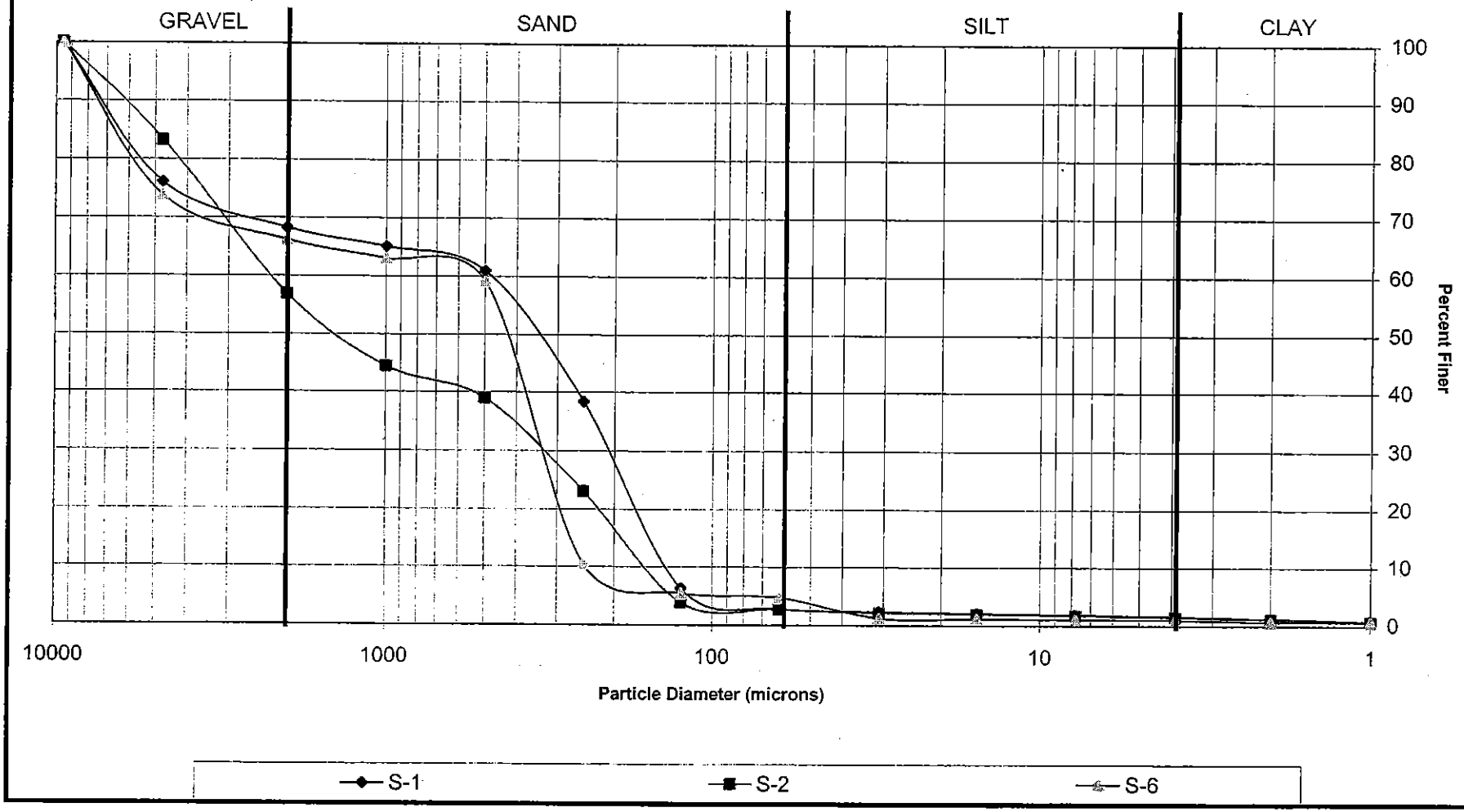


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PSEP Grain Size Distribution



CHEMISTRY DATA FOR SAMPLES

S-3
S-4
S-5
C-6
C-7
C-8
C-9
C-10
C-6-S
C-7-S
C-8-S
C-9-S
C-10-S

Analytical Resources, Incorporated
Analytical Chemists and Consultants

2006

7 December 2005

David Gillingham
Parametrix, Inc.
411 108th Avenue NE
Suite 1800
Bellevue, WA 98004-5571

RE: Client Project: Bremerton Sediments
ARI Job No. IU01

Dear David:

Please find enclosed the original chain of custody record (COC) and the final results for the samples from the project referenced above. Analytical Resources, Inc accepted eight sediment samples on November 21, 2005. The samples were received intact and there were no discrepancies in the paperwork. The samples were analyzed for SVOAs, pesticides, PCBs, NWTPH-Dx, grain size, total metals and conventional parameters as requested.

A matrix spike (MS) and a matrix spike duplicate (MSD) were extracted and analyzed for SVOAs in conjunction with sample S-6. The area for the internal standard (IS), d12-perylene, was slightly (3%) low following the initial analysis of the MS. It was also noted that the area for d12-perylene in the MSD was within control limits by a small margin (1.5%). Since the percent recoveries for all surrogates and the remaining ISs were within acceptable QC limits, it was concluded that the sample matrix was the cause of the low IS recovery in the MS. No corrective actions were taken.

The percent recovery for the surrogate, DCBP, was high following the initial pesticide analysis of the method blank (MB) associated with these samples. Since no target compounds were detected in the MB, the high bias does not compromise the RLs. No corrective actions were taken.

A small amount of ammonia was detected in the MB associated with these samples. Ammonia was detected in all samples associated with this blank. Since the concentrations of ammonia measured in the samples were significantly greater than the amount found in the blank, no corrective actions were taken.

A matrix duplicate (MD) was prepared and analyzed for total sulfides in conjunction with sample S-1. The RPD was high following the initial analysis of the MD. The MD was re-distilled and re-analyzed. Similar results were obtained for the re-analysis. Since the percent recoveries for sulfide were within acceptable QC limits for the corresponding MS and LCS, it was concluded that a lack of sample homogeneity was the cause of the high RPDs. No further corrective actions were taken. The results for the original analyses only have been submitted for the MD.

Gillingham, Parametrix
Bremerton Sediments
Sediment
IU01

7 December 2005

There were no further problems with these analyses.

A copy of these reports and all associated raw data will be kept on file with ARI. Should you have any questions please feel free to call me at any time.

Sincerely,

ANALYTICAL RESOURCES, INC.

Mark D. Harris
Project Manager
206/695-6210
mark@arilabs.com

Enclosures

cc: File IU01

MDH/mdh

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 1650	Turn-around Requested: By Dec 7 - 5 day	Date: Nov 29, 2005	
ARI Client Company: Parametrix	Phone: (360) 377-0014	Page: 1 of 2	
Client Contact: Phil Struck		No. of Coolers: 2	Cooler Temps: 3.4, 5.4
Client Project Name: City of Bremerton Sediment Study			
Client Project #: 255-1896-063	Samplers: Lindl, Elkind, Struck, ~~Knuckey~~		

Ice - yes

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: NWTPH-Dx w/ PAH	Metals by SMS	SVOCs by SMS	All SMS Parameters	Archive				Notes/Comments
S-3	11/29/05	2045	Sediment	6				X	X				Sulfides
S-4		2100		6				X	X				preserved in field
S-5		2115		6				X	X				w/ Zinc Acetate
C-6		2049		4	X	X	X		X				
C-7		2027		4	X	X	X		X				
C-8		2105		4	X	X	X		X				
C-9		2125		4	X	X	X		X				
C-10		2131		4	X	X	X		X				
C-6-S		2058		4	X	X	X		X				
C-7-S		2036		4	X	X	X		X				

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
C-6 and C-6-S: very strong petroleum odor	Printed Name: Lara Linde	Printed Name: Brian Keese	Printed Name:	Printed Name:
	Company: Parametrix	Company: ARI	Company:	Company:
	Date & Time: 11/30/05 0920	Date & Time: 11/30/05 0920	Date & Time:	Date & Time:

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: Unless specified by workorder or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: Id 50	Turn-around Requested: By Dec 7 – 5day	Date: NOV 29, 2005	
ARI Client Company: Parametrix	Phone: (360) 377-0014	Page: 2 of 2	
Client Contact: Phil Struck		No. of Coolers:	Cooler Temps:
Client Project Name: City of Bremerton Sediment Study			
Client Project #: 255-1896-063	Samplers: Linde, Eklund, Struck, ~~Knuckey~~		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: NWTPH-Dx w/ PAH	Metals by SMS	SVOCs by SMS	Archive					Notes/Comments
C-8-S	11/29/05	2110	Sediment	4	X	X	X	X					
C-9-S	"	2133	"	4	X	X	X	X					
C-10-S	↓	2147	↓	5	X	X	X	X					
Please email preliminary results to: pstruck@parametrix.com and dgillingham@parametrix.com													

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Lara Linde	Printed Name: BRIAN KEGEL	Printed Name:	Printed Name:
	Company: Parametrix	Company: ARI	Company:	Company:
	Date & Time: 11/30/05 0920	Date & Time: 11/30/05 0926	Date & Time:	Date & Time:

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: Unless specified by workorder or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.

Data Reporting Qualifiers

Effective 12/28/04

Inorganic Data

U Indicates that the target analyte was not detected at the reported concentration

* Duplicate RPD is not within established control limits

B Reported value is less than the CRDL but ≥ the Reporting Limit

N Matrix Spike recovery not within established control limits

NA Not Applicable, analyte not spiked

H The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible

L Analyte concentration is ≤5 times the Reporting Limit and the replicate control limit defaults to ±1 RL instead of the normal 20% RPD

Organic Data

U Indicates that the target analyte was not detected at the reported concentration

* Flagged value is not within established control limits

B Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.

J Estimated concentration when the value is less than ARI's established reporting limits

D The spiked compound was not detected due to sample extract dilution

NR Spiked compound recovery is not reported due to chromatographic interference

E Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

S Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte

NA The flagged analyte was not analyzed for

NS The flagged analyte was not spiked into the sample

M Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses

N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"

Y The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.

C The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column

P The analyte was detected on both chromatographic columns but the quantified values differ by ≥40% RPD with no obvious chromatographic interference

Geotechnical Data

A The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.

F Samples were frozen prior to particle size determination

SM Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations

SS Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis

W Weight of sample in some pipette aliquots was below the level required for accurate weighting

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS

Sample ID: MB-120105
METHOD BLANK

Lab Sample ID: MB-120105
LIMS ID: 05-20410
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: NA
Date Received: NA

Date Extracted: 12/01/05
Date Analyzed: 12/02/05 12:55
Instrument/Analyst: NT6/PK
GPC Cleanup: No

Sample Amount: 25.0 g
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: NA
pH: NA

CAS Number	Analyte	RL	Result
108-95-2	Phenol	20	< 20 U
541-73-1	1,3-Dichlorobenzene	20	< 20 U
106-46-7	1,4-Dichlorobenzene	20	< 20 U
100-51-6	Benzyl Alcohol	20	< 20 U
95-50-1	1,2-Dichlorobenzene	20	< 20 U
95-48-7	2-Methylphenol	20	< 20 U
106-44-5	4-Methylphenol	20	< 20 U
67-72-1	Hexachloroethane	20	< 20 U
105-67-9	2,4-Dimethylphenol	20	< 20 U
65-85-0	Benzoic Acid	200	< 200 U
120-82-1	1,2,4-Trichlorobenzene	20	< 20 U
91-20-3	Naphthalene	20	< 20 U
87-68-3	Hexachlorobutadiene	20	< 20 U
91-57-6	2-Methylnaphthalene	20	< 20 U
131-11-3	Dimethylphthalate	20	< 20 U
208-96-8	Acenaphthylene	20	< 20 U
83-32-9	Acenaphthene	20	< 20 U
132-64-9	Dibenzofuran	20	< 20 U
84-66-2	Diethylphthalate	20	< 20 U
86-73-7	Fluorene	20	< 20 U
86-30-6	N-Nitrosodiphenylamine	20	< 20 U
118-74-1	Hexachlorobenzene	20	< 20 U
87-86-5	Pentachlorophenol	100	< 100 U
85-01-8	Phenanthrene	20	< 20 U
120-12-7	Anthracene	20	< 20 U
84-74-2	Di-n-Butylphthalate	20	< 20 U
206-44-0	Fluoranthene	20	< 20 U
129-00-0	Pyrene	20	< 20 U
85-68-7	Butylbenzylphthalate	20	< 20 U
56-55-3	Benzo(a)anthracene	20	< 20 U
117-81-7	bis(2-Ethylhexyl)phthalate	20	< 20 U
218-01-9	Chrysene	20	< 20 U
117-84-0	Di-n-Octyl phthalate	20	< 20 U
205-99-2	Benzo(b)fluoranthene	20	< 20 U
207-08-9	Benzo(k)fluoranthene	20	< 20 U
50-32-8	Benzo(a)pyrene	20	< 20 U
193-39-5	Indeno(1,2,3-cd)pyrene	20	< 20 U
53-70-3	Dibenz(a,h)anthracene	20	< 20 U

Lab Sample ID: MB-120105 QC Report No: IU50-Parametrix
LIMS ID: 05-20410 Project: City of Bremerton Sediment Study
Matrix: Sediment 255-1896-063
Date Analyzed: 12/02/05 12:55

CAS Number	Analyte	RL	Result
191-24-2	Benzo(g,h,i)perylene	20	< 20 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	82.4%	2-Fluorobiphenyl	85.6%
d14-p-Terphenyl	105%	d4-1,2-Dichlorobenzene	79.6%
d5-Phenol	85.1%	2-Fluorophenol	94.7%
2,4,6-Tribromophenol	84.0%	d4-2-Chlorophenol	83.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS
Page 1 of 2

Sample ID: S-3
SAMPLE

Lab Sample ID: IU50A
LIMS ID: 05-20402
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Date Extracted: 12/01/05
Date Analyzed: 12/02/05 14:33
Instrument/Analyst: NT6/PK
GPC Cleanup: No

Sample Amount: 26.2 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 17.8%
pH: 7.7

CAS Number	Analyte	RL	Result
108-95-2	**Phenol**	**19**	**38**
541-73-1	1,3-Dichlorobenzene	19	< 19 U
106-46-7	1,4-Dichlorobenzene	19	< 19 U
100-51-6	Benzyl Alcohol	19	< 19 U
95-50-1	1,2-Dichlorobenzene	19	< 19 U
95-48-7	**2-Methylphenol**	**19**	**17 J**
106-44-5	4-Methylphenol	19	< 19 U
67-72-1	Hexachloroethane	19	< 19 U
105-67-9	2,4-Dimethylphenol	19	< 19 U
65-85-0	Benzoic Acid	190	< 190 U
120-82-1	1,2,4-Trichlorobenzene	19	< 19 U
91-20-3	Naphthalene	19	< 19 U
87-68-3	Hexachlorobutadiene	19	< 19 U
91-57-6	2-Methylnaphthalene	19	< 19 U
131-11-3	Dimethylphthalate	19	< 19 U
208-96-8	Acenaphthylene	19	< 19 U
83-32-9	Acenaphthene	19	< 19 U
132-64-9	Dibenzofuran	19	< 19 U
84-66-2	Diethylphthalate	19	< 19 U
86-73-7	Fluorene	19	< 19 U
86-30-6	N-Nitrosodiphenylamine	19	< 19 U
118-74-1	Hexachlorobenzene	19	< 19 U
87-86-5	Pentachlorophenol	95	< 95 U
85-01-8	**Phenanthrene**	**19**	**29**
120-12-7	Anthracene	19	< 19 U
84-74-2	Di-n-Butylphthalate	19	< 19 U
206-44-0	**Fluoranthene**	**19**	**59**
129-00-0	**Pyrene**	**19**	**42**
85-68-7	Butylbenzylphthalate	19	< 19 U
56-55-3	**Benzo(a)anthracene**	**19**	**24**
117-81-7	**bis(2-Ethylhexyl)phthalate**	**19**	**14 J**
218-01-9	**Chrysene**	**19**	**29**
117-84-0	Di-n-Octyl phthalate	19	< 19 U
205-99-2	**Benzo(b)fluoranthene**	**19**	**22**
207-08-9	**Benzo(k)fluoranthene**	**19**	**25**
50-32-8	**Benzo(a)pyrene**	**19**	**25**
193-39-5	**Indeno(1,2,3-cd)pyrene**	**19**	**14 J**
53-70-3	Dibenz(a,h)anthracene	19	< 19 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS

Sample ID: S-3
SAMPLE

Lab Sample ID: IU50A
LIMS ID: 05-20402
Matrix: Sediment
Date Analyzed: 12/02/05 14:33

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063

CAS Number	Analyte	RL	Result
191-24-2	Benzo(g,h,i)perylene	19	17 J

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	84.0%	2-Fluorobiphenyl	90.8%
d14-p-Terphenyl	75.2%	d4-1,2-Dichlorobenzene	73.6%
d5-Phenol	84.0%	2-Fluorophenol	95.2%
2,4,6-Tribromophenol	86.7%	d4-2-Chlorophenol	83.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS
Page 1 of 2

Sample ID: S-4
SAMPLE

Lab Sample ID: IU50B
LIMS ID: 05-20403
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Date Extracted: 12/01/05
Date Analyzed: 12/02/05 15:05
Instrument/Analyst: NT6/PK
GPC Cleanup: No

Sample Amount: 26.2 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 17.7%
pH: 7.6

CAS Number	Analyte	RL	Result
108-95-2	Phenol	19	< 19 U
541-73-1	1,3-Dichlorobenzene	19	< 19 U
106-46-7	1,4-Dichlorobenzene	19	< 19 U
100-51-6	Benzyl Alcohol	19	< 19 U
95-50-1	1,2-Dichlorobenzene	19	< 19 U
95-48-7	2-Methylphenol	19	< 19 U
106-44-5	4-Methylphenol	19	< 19 U
67-72-1	Hexachloroethane	19	< 19 U
105-67-9	2,4-Dimethylphenol	19	< 19 U
65-85-0	Benzoic Acid	190	< 190 U
120-82-1	1,2,4-Trichlorobenzene	19	< 19 U
91-20-3	Naphthalene	19	< 19 U
87-68-3	Hexachlorobutadiene	19	< 19 U
91-57-6	2-Methylnaphthalene	19	< 19 U
131-11-3	Dimethylphthalate	19	< 19 U
208-96-8	Acenaphthylene	19	< 19 U
83-32-9	Acenaphthene	19	< 19 U
132-64-9	Dibenzofuran	19	< 19 U
84-66-2	Diethylphthalate	19	< 19 U
86-73-7	Fluorene	19	< 19 U
86-30-6	N-Nitrosodiphenylamine	19	< 19 U
118-74-1	Hexachlorobenzene	19	< 19 U
87-86-5	Pentachlorophenol	96	< 96 U
85-01-8	**Phenanthrene**	**19**	**11 J**
120-12-7	Anthracene	19	< 19 U
84-74-2	Di-n-Butylphthalate	19	< 19 U
206-44-0	**Fluoranthene**	**19**	**16 J**
129-00-0	**Pyrene**	**19**	**12 J**
85-68-7	Butylbenzylphthalate	19	< 19 U
56-55-3	Benzo(a)anthracene	19	< 19 U
117-81-7	**bis(2-Ethylhexyl)phthalate**	**19**	**13 J**
218-01-9	**Chrysene**	**19**	**10 J**
117-84-0	Di-n-Octyl phthalate	19	< 19 U
205-99-2	Benzo(b)fluoranthene	19	< 19 U
207-08-9	Benzo(k)fluoranthene	19	< 19 U
50-32-8	Benzo(a)pyrene	19	< 19 U
193-39-5	Indeno(1,2,3-cd)pyrene	19	< 19 U
53-70-3	Dibenz(a,h)anthracene	19	< 19 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS

Sample ID: S-4
SAMPLE

Lab Sample ID: IU50B
LIMS ID: 05-20403
Matrix: Sediment
Date Analyzed: 12/02/05 15:05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063

CAS Number	Analyte	RL	Result
191-24-2	Benzo(g,h,i)perylene	19	< 19 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	86.4%	2-Fluorobiphenyl	92.4%
d14-p-Terphenyl	71.2%	d4-1,2-Dichlorobenzene	75.2%
d5-Phenol	83.5%	2-Fluorophenol	94.9%
2,4,6-Tribromophenol	87.2%	d4-2-Chlorophenol	82.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS
Page 1 of 2

Sample ID: S-5
SAMPLE

Lab Sample ID: IU50C
LIMS ID: 05-20404
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Date Extracted: 12/01/05
Date Analyzed: 12/02/05 15:37
Instrument/Analyst: NT6/PK
GPC Cleanup: No

Sample Amount: 25.2 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 16.2%
pH: 7.5

CAS Number	Analyte	RL	Result
108-95-2	Phenol	20	< 20 U
541-73-1	1,3-Dichlorobenzene	20	< 20 U
106-46-7	1,4-Dichlorobenzene	20	< 20 U
100-51-6	Benzyl Alcohol	20	< 20 U
95-50-1	1,2-Dichlorobenzene	20	< 20 U
95-48-7	2-Methylphenol	20	< 20 U
106-44-5	4-Methylphenol	20	< 20 U
67-72-1	Hexachloroethane	20	< 20 U
105-67-9	2,4-Dimethylphenol	20	< 20 U
65-85-0	Benzoic Acid	200	< 200 U
120-82-1	1,2,4-Trichlorobenzene	20	< 20 U
91-20-3	Naphthalene	20	< 20 U
87-68-3	Hexachlorobutadiene	20	< 20 U
91-57-6	2-Methylnaphthalene	20	< 20 U
131-11-3	Dimethylphthalate	20	< 20 U
208-96-8	Acenaphthylene	20	< 20 U
83-32-9	Acenaphthene	20	< 20 U
132-64-9	Dibenzofuran	20	< 20 U
84-66-2	Diethylphthalate	20	< 20 U
86-73-7	Fluorene	20	< 20 U
86-30-6	N-Nitrosodiphenylamine	20	< 20 U
118-74-1	Hexachlorobenzene	20	< 20 U
87-86-5	Pentachlorophenol	99	< 99 U
85-01-8	Phenanthrene	20	< 20 U
120-12-7	Anthracene	20	< 20 U
84-74-2	Di-n-Butylphthalate	20	< 20 U
206-44-0	Fluoranthene	20	< 20 U
129-00-0	Pyrene	20	< 20 U
85-68-7	Butylbenzylphthalate	20	< 20 U
56-55-3	Benzo(a)anthracene	20	< 20 U
117-81-7	bis(2-Ethylhexyl)phthalate	20	< 20 U
218-01-9	Chrysene	20	< 20 U
117-84-0	Di-n-Octyl phthalate	20	< 20 U
205-99-2	Benzo(b)fluoranthene	20	< 20 U
207-08-9	Benzo(k)fluoranthene	20	< 20 U
50-32-8	Benzo(a)pyrene	20	< 20 U
193-39-5	Indeno(1,2,3-cd)pyrene	20	< 20 U
53-70-3	Dibenz(a,h)anthracene	20	< 20 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: S-5**
Page 2 of 2 **SAMPLE**

Lab Sample ID: IU50C QC Report No: IU50-Parametrix
LIMS ID: 05-20404 Project: City of Bremerton Sediment Study
Matrix: Sediment 255-1896-063
Date Analyzed: 12/02/05 15:37

CAS Number	Analyte	RL	Result
191-24-2	Benzo(g,h,i)perylene	20	< 20 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	72.8%	2-Fluorobiphenyl	79.2%
d14-p-Terphenyl	68.8%	d4-1,2-Dichlorobenzene	61.6%
d5-Phenol	70.9%	2-Fluorophenol	81.9%
2,4,6-Tribromophenol	78.4%	d4-2-Chlorophenol	70.1%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: C-6**
Page 1 of 2 **SAMPLE**

Lab Sample ID: IU50D
LIMS ID: 05-20405
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Date Extracted: 12/01/05
Date Analyzed: 12/02/05 16:09
Instrument/Analyst: NT6/PK
GPC Cleanup: No

Sample Amount: 25.5 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 23.4%
pH: 7.5

CAS Number	Analyte	RL	Result
108-95-2	Phenol	20	< 20 U
541-73-1	1,3-Dichlorobenzene	20	< 20 U
106-46-7	1,4-Dichlorobenzene	20	< 20 U
100-51-6	Benzyl Alcohol	20	< 20 U
95-50-1	1,2-Dichlorobenzene	20	< 20 U
95-48-7	2-Methylphenol	20	< 20 U
106-44-5	4-Methylphenol	20	< 20 U
67-72-1	Hexachloroethane	20	< 20 U
105-67-9	2,4-Dimethylphenol	20	< 20 U
65-85-0	Benzoic Acid	200	< 200 U
120-82-1	1,2,4-Trichlorobenzene	20	< 20 U
91-20-3	Naphthalene	20	< 20 U
87-68-3	Hexachlorobutadiene	20	< 20 U
91-57-6	2-Methylnaphthalene	20	< 20 U
131-11-3	Dimethylphthalate	20	< 20 U
208-96-8	Acenaphthylene	20	< 20 U
83-32-9	Acenaphthene	20	< 20 U
132-64-9	Dibenzofuran	20	< 20 U
84-66-2	Diethylphthalate	20	< 20 U
86-73-7	Fluorene	20	< 20 U
86-30-6	N-Nitrosodiphenylamine	20	< 20 U
118-74-1	Hexachlorobenzene	20	< 20 U
87-86-5	Pentachlorophenol	98	< 98 U
85-01-8	**Phenanthrene**	**20**	**13 J**
120-12-7	Anthracene	20	< 20 U
84-74-2	Di-n-Butylphthalate	20	< 20 U
206-44-0	**Fluoranthene**	**20**	**110**
129-00-0	**Pyrene**	**20**	**50**
85-68-7	Butylbenzylphthalate	20	< 20 U
56-55-3	**Benzo(a)anthracene**	**20**	**19 J**
117-81-7	**bis(2-Ethylhexyl)phthalate**	**20**	**13 J**
218-01-9	**Chrysene**	**20**	**30**
117-84-0	Di-n-Octyl phthalate	20	< 20 U
205-99-2	**Benzo(b)fluoranthene**	**20**	**26**
207-08-9	**Benzo(k)fluoranthene**	**20**	**20**
50-32-8	**Benzo(a)pyrene**	**20**	**15 J**
193-39-5	Indeno(1,2,3-cd)pyrene	20	< 20 U
53-70-3	Dibenz(a,h)anthracene	20	< 20 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: C-6**
Page 2 of 2 **SAMPLE**

Lab Sample ID: IU50D QC Report No: IU50-Parametrix
LIMS ID: 05-20405 Project: City of Bremerton Sediment Study
Matrix: Sediment 255-1896-063
Date Analyzed: 12/02/05 16:09

CAS Number	Analyte	RL	Result
191-24-2	Benzo(g,h,i)perylene	20	< 20 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	74.8%	2-Fluorobiphenyl	80.4%
d14-p-Terphenyl	61.6%	d4-1,2-Dichlorobenzene	62.0%
d5-Phenol	70.9%	2-Fluorophenol	81.1%
2,4,6-Tribromophenol	80.8%	d4-2-Chlorophenol	70.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS
Page 1 of 2

Sample ID: C-7
SAMPLE

Lab Sample ID: IU50E
LIMS ID: 05-20406
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Date Extracted: 12/01/05
Date Analyzed: 12/02/05 16:42
Instrument/Analyst: NT6/PK
GPC Cleanup: No

Sample Amount: 25.5 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 21.4%
pH: 7.5

CAS Number	Analyte	RL	Result
108-95-2	Phenol	20	< 20 U
541-73-1	1,3-Dichlorobenzene	20	< 20 U
106-46-7	1,4-Dichlorobenzene	20	< 20 U
100-51-6	Benzyl Alcohol	20	< 20 U
95-50-1	1,2-Dichlorobenzene	20	< 20 U
95-48-7	2-Methylphenol	20	< 20 U
106-44-5	4-Methylphenol	20	< 20 U
67-72-1	Hexachloroethane	20	< 20 U
105-67-9	2,4-Dimethylphenol	20	< 20 U
65-85-0	Benzoic Acid	200	< 200 U
120-82-1	1,2,4-Trichlorobenzene	20	< 20 U
91-20-3	Naphthalene	20	< 20 U
87-68-3	Hexachlorobutadiene	20	< 20 U
91-57-6	2-Methylnaphthalene	20	< 20 U
131-11-3	Dimethylphthalate	20	< 20 U
208-96-8	Acenaphthylene	20	< 20 U
83-32-9	Acenaphthene	20	< 20 U
132-64-9	Dibenzofuran	20	< 20 U
84-66-2	Diethylphthalate	20	< 20 U
86-73-7	Fluorene	20	< 20 U
86-30-6	N-Nitrosodiphenylamine	20	< 20 U
118-74-1	Hexachlorobenzene	20	< 20 U
87-86-5	Pentachlorophenol	98	< 98 U
85-01-8	**Phenanthrene**	**20**	**19 J**
120-12-7	Anthracene	20	< 20 U
84-74-2	Di-n-Butylphthalate	20	< 20 U
206-44-0	**Fluoranthene**	**20**	**37**
129-00-0	**Pyrene**	**20**	**27**
85-68-7	Butylbenzylphthalate	20	< 20 U
56-55-3	**Benzo(a)anthracene**	**20**	**14 J**
117-81-7	**bis(2-Ethylhexyl)phthalate**	**20**	**18 J**
218-01-9	**Chrysene**	**20**	**20**
117-84-0	Di-n-Octyl phthalate	20	< 20 U
205-99-2	**Benzo(b)fluoranthene**	**20**	**20**
207-08-9	**Benzo(k)fluoranthene**	**20**	**11 J**
50-32-8	**Benzo(a)pyrene**	**20**	**17 J**
193-39-5	Indeno(1,2,3-cd)pyrene	20	< 20 U
53-70-3	Dibenz(a,h)anthracene	20	< 20 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: C-7**
 SAMPLE

Lab Sample ID: IU50E QC Report No: IU50-Parametrix
LIMS ID: 05-20406 Project: City of Bremerton Sediment Study
Matrix: Sediment 255-1896-063
Date Analyzed: 12/02/05 16:42

CAS Number	Analyte	RL	Result
191-24-2	Benzo(g,h,i)perylene	20	< 20 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	81.6%	2-Fluorobiphenyl	88.0%
d14-p-Terphenyl	65.6%	d4-1,2-Dichlorobenzene	69.6%
d5-Phenol	76.3%	2-Fluorophenol	87.7%
2,4,6-Tribromophenol	84.0%	d4-2-Chlorophenol	75.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS
Page 1 of 2

Sample ID: C-8
SAMPLE

Lab Sample ID: IU50F
LIMS ID: 05-20407
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Date Extracted: 12/01/05
Date Analyzed: 12/02/05 17:14
Instrument/Analyst: NT6/PK
GPC Cleanup: No

Sample Amount: 25.7 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 15.8%
pH: 7.8

CAS Number	Analyte	RL	Result
108-95-2	Phenol	20	< 20 U
541-73-1	1,3-Dichlorobenzene	20	< 20 U
106-46-7	1,4-Dichlorobenzene	20	< 20 U
100-51-6	Benzyl Alcohol	20	< 20 U
95-50-1	1,2-Dichlorobenzene	20	< 20 U
95-48-7	2-Methylphenol	20	< 20 U
106-44-5	4-Methylphenol	20	< 20 U
67-72-1	Hexachloroethane	20	< 20 U
105-67-9	2,4-Dimethylphenol	20	< 20 U
65-85-0	Benzoic Acid	200	< 200 U
120-82-1	1,2,4-Trichlorobenzene	20	< 20 U
91-20-3	Naphthalene	20	< 20 U
87-68-3	Hexachlorobutadiene	20	< 20 U
91-57-6	2-Methylnaphthalene	20	< 20 U
131-11-3	Dimethylphthalate	20	< 20 U
208-96-8	**Acenaphthylene**	**20**	**37**
83-32-9	Acenaphthene	20	< 20 U
132-64-9	Dibenzofuran	20	< 20 U
84-66-2	Diethylphthalate	20	< 20 U
86-73-7	Fluorene	20	< 20 U
86-30-6	N-Nitrosodiphenylamine	20	< 20 U
118-74-1	Hexachlorobenzene	20	< 20 U
87-86-5	Pentachlorophenol	97	< 97 U
85-01-8	**Phenanthrene**	**20**	**89**
120-12-7	**Anthracene**	**20**	**34**
84-74-2	Di-n-Butylphthalate	20	< 20 U
206-44-0	**Fluoranthene**	**20**	**3,100 E**
129-00-0	**Pyrene**	**20**	**1,100**
85-68-7	Butylbenzylphthalate	20	< 20 U
56-55-3	**Benzo(a)anthracene**	**20**	**290**
117-81-7	bis(2-Ethylhexyl)phthalate	20	< 20 U
218-01-9	**Chrysene**	**20**	**720**
117-84-0	Di-n-Octyl phthalate	20	< 20 U
205-99-2	**Benzo(b)fluoranthene**	**20**	**690**
207-08-9	**Benzo(k)fluoranthene**	**20**	**660**
50-32-8	**Benzo(a)pyrene**	**20**	**290**
193-39-5	**Indeno(1,2,3-cd)pyrene**	**20**	**86**
53-70-3	**Dibenz(a,h)anthracene**	**20**	**23**

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: C-8**
 SAMPLE

Lab Sample ID: IU50F
LIMS ID: 05-20407
Matrix: Sediment
Date Analyzed: 12/02/05 17:14

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063

CAS Number	Analyte	RL	Result
191-24-2	Benzo(g,h,i)perylene	20	70

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	63.6%	2-Fluorobiphenyl	67.2%
d14-p-Terphenyl	50.4%	d4-1,2-Dichlorobenzene	54.0%
d5-Phenol	58.7%	2-Fluorophenol	69.6%
2,4,6-Tribromophenol	70.1%	d4-2-Chlorophenol	58.9%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: C-8**
Page 1 of 2 **DILUTION**

Lab Sample ID: IU50F
LIMS ID: 05-20407
Matrix: Sediment
Data Release Authorized:
Reported: 12/06/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Date Extracted: 12/01/05
Date Analyzed: 12/05/05 12:46
Instrument/Analyst: NT6/PK
GPC Cleanup: No

Sample Amount: 25.7 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 10.0
Percent Moisture: 15.8%
pH: 7.8

CAS Number	Analyte	RL	Result
108-95-2	Phenol	200	< 200 U
541-73-1	1,3-Dichlorobenzene	200	< 200 U
106-46-7	1,4-Dichlorobenzene	200	< 200 U
100-51-6	Benzyl Alcohol	200	< 200 U
95-50-1	1,2-Dichlorobenzene	200	< 200 U
95-48-7	2-Methylphenol	200	< 200 U
106-44-5	4-Methylphenol	200	< 200 U
67-72-1	Hexachloroethane	200	< 200 U
105-67-9	2,4-Dimethylphenol	200	< 200 U
65-85-0	Benzoic Acid	2,000	< 2,000 U
120-82-1	1,2,4-Trichlorobenzene	200	< 200 U
91-20-3	Naphthalene	200	< 200 U
87-68-3	Hexachlorobutadiene	200	< 200 U
91-57-6	2-Methylnaphthalene	200	< 200 U
131-11-3	Dimethylphthalate	200	< 200 U
208-96-8	Acenaphthylene	200	< 200 U
83-32-9	Acenaphthene	200	< 200 U
132-64-9	Dibenzofuran	200	< 200 U
84-66-2	Diethylphthalate	200	< 200 U
86-73-7	Fluorene	200	< 200 U
86-30-6	N-Nitrosodiphenylamine	200	< 200 U
118-74-1	Hexachlorobenzene	200	< 200 U
87-86-5	Pentachlorophenol	970	< 970 U
85-01-8	Phenanthrene	200	< 200 U
120-12-7	Anthracene	200	< 200 U
84-74-2	Di-n-Butylphthalate	200	< 200 U
206-44-0	**Fluoranthene**	**200**	**2,700**
129-00-0	**Pyrene**	**200**	**1,400**
85-68-7	Butylbenzylphthalate	200	< 200 U
56-55-3	**Benzo(a)anthracene**	**200**	**310**
117-81-7	bis(2-Ethylhexyl)phthalate	200	< 200 U
218-01-9	**Chrysene**	**200**	**780**
117-84-0	Di-n-Octyl phthalate	200	< 200 U
205-99-2	**Benzo(b)fluoranthene**	**200**	**620**
207-08-9	**Benzo(k)fluoranthene**	**200**	**480**
50-32-8	**Benzo(a)pyrene**	**200**	**270**
193-39-5	**Indeno(1,2,3-cd)pyrene**	**200**	**170 J**
53-70-3	Dibenz(a,h)anthracene	200	< 200 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: C-8**
Page 2 of 2 **DILUTION**

Lab Sample ID: IU50F QC Report No: IU50-Parametrix
LIMS ID: 05-20407 Project: City of Bremerton Sediment Study
Matrix: Sediment 255-1896-063
Date Analyzed: 12/05/05 12:46

CAS Number	Analyte	RL	Result
191-24-2	Benzo(g,h,i)perylene	200	170 J

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	65.2%	2-Fluorobiphenyl	68.8%
d14-p-Terphenyl	64.4%	d4-1,2-Dichlorobenzene	56.4%
d5-Phenol	60.3%	2-Fluorophenol	60.8%
2,4,6-Tribromophenol	47.5%	d4-2-Chlorophenol	60.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: C-9**
Page 1 of 2 **SAMPLE**

Lab Sample ID: IU50G
LIMS ID: 05-20408
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Date Extracted: 12/01/05
Date Analyzed: 12/02/05 17:46
Instrument/Analyst: NT6/PK
GPC Cleanup: No

Sample Amount: 25.3 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 18.9%
pH: 7.7

CAS Number	Analyte	RL	Result
108-95-2	Phenol	20	< 20 U
541-73-1	1,3-Dichlorobenzene	20	< 20 U
106-46-7	1,4-Dichlorobenzene	20	< 20 U
100-51-6	Benzyl Alcohol	20	< 20 U
95-50-1	1,2-Dichlorobenzene	20	< 20 U
95-48-7	2-Methylphenol	20	< 20 U
106-44-5	4-Methylphenol	20	< 20 U
67-72-1	Hexachloroethane	20	< 20 U
105-67-9	2,4-Dimethylphenol	20	< 20 U
65-85-0	Benzoic Acid	200	< 200 U
120-82-1	1,2,4-Trichlorobenzene	20	< 20 U
91-20-3	Naphthalene	20	< 20 U
87-68-3	Hexachlorobutadiene	20	< 20 U
91-57-6	2-Methylnaphthalene	20	< 20 U
131-11-3	Dimethylphthalate	20	< 20 U
208-96-8	Acenaphthylene	20	< 20 U
83-32-9	Acenaphthene	20	< 20 U
132-64-9	Dibenzofuran	20	< 20 U
84-66-2	Diethylphthalate	20	< 20 U
86-73-7	Fluorene	20	< 20 U
86-30-6	N-Nitrosodiphenylamine	20	< 20 U
118-74-1	Hexachlorobenzene	20	< 20 U
87-86-5	Pentachlorophenol	99	< 99 U
85-01-8	**Phenanthrene**	**20**	**56**
120-12-7	Anthracene	20	< 20 U
84-74-2	Di-n-Butylphthalate	20	< 20 U
206-44-0	**Fluoranthene**	**20**	**45**
129-00-0	**Pyrene**	**20**	**36**
85-68-7	Butylbenzylphthalate	20	< 20 U
56-55-3	**Benzo(a)anthracene**	**20**	**19 J**
117-81-7	bis(2-Ethylhexyl)phthalate	20	< 20 U
218-01-9	**Chrysene**	**20**	**20**
117-84-0	Di-n-Octyl phthalate	20	< 20 U
205-99-2	**Benzo(b)fluoranthene**	**20**	**19 J**
207-08-9	**Benzo(k)fluoranthene**	**20**	**20**
50-32-8	**Benzo(a)pyrene**	**20**	**24**
193-39-5	Indeno(1,2,3-cd)pyrene	20	< 20 U
53-70-3	Dibenz(a,h)anthracene	20	< 20 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: C-9**
 SAMPLE

Lab Sample ID: IU50G QC Report No: IU50-Parametrix
LIMS ID: 05-20408 Project: City of Bremerton Sediment Study
Matrix: Sediment 255-1896-063
Date Analyzed: 12/02/05 17:46

CAS Number	Analyte	RL	Result
191-24-2	Benzo(g,h,i)perylene	20	< 20 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	75.6%	2-Fluorobiphenyl	81.2%
d14-p-Terphenyl	65.6%	d4-1,2-Dichlorobenzene	65.6%
d5-Phenol	73.3%	2-Fluorophenol	86.1%
2,4,6-Tribromophenol	87.7%	d4-2-Chlorophenol	72.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS
Page 1 of 2

Sample ID: C-10
SAMPLE

Lab Sample ID: IU50H
LIMS ID: 05-20409
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Date Extracted: 12/01/05
Date Analyzed: 12/02/05 18:18
Instrument/Analyst: NT6/PK
GPC Cleanup: No

Sample Amount: 26.4 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 16.8%
pH: 7.6

CAS Number	Analyte	RL	Result
108-95-2	Phenol	19	< 19 U
541-73-1	1,3-Dichlorobenzene	19	< 19 U
106-46-7	1,4-Dichlorobenzene	19	< 19 U
100-51-6	Benzyl Alcohol	19	< 19 U
95-50-1	1,2-Dichlorobenzene	19	< 19 U
95-48-7	2-Methylphenol	19	< 19 U
106-44-5	4-Methylphenol	19	< 19 U
67-72-1	Hexachloroethane	19	< 19 U
105-67-9	2,4-Dimethylphenol	19	< 19 U
65-85-0	Benzoic Acid	190	< 190 U
120-82-1	1,2,4-Trichlorobenzene	19	< 19 U
91-20-3	**Naphthalene**	**19**	**26**
87-68-3	Hexachlorobutadiene	19	< 19 U
91-57-6	2-Methylnaphthalene	19	< 19 U
131-11-3	Dimethylphthalate	19	< 19 U
208-96-8	Acenaphthylene	19	< 19 U
83-32-9	Acenaphthene	19	< 19 U
132-64-9	Dibenzofuran	19	< 19 U
84-66-2	Diethylphthalate	19	< 19 U
86-73-7	Fluorene	19	< 19 U
86-30-6	N-Nitrosodiphenylamine	19	< 19 U
118-74-1	Hexachlorobenzene	19	< 19 U
87-86-5	Pentachlorophenol	95	< 95 U
85-01-8	**Phenanthrene**	**19**	**37**
120-12-7	Anthracene	19	< 19 U
84-74-2	Di-n-Butylphthalate	19	< 19 U
206-44-0	**Fluoranthene**	**19**	**46**
129-00-0	**Pyrene**	**19**	**24**
85-68-7	Butylbenzylphthalate	19	< 19 U
56-55-3	**Benzo(a)anthracene**	**19**	**14 J**
117-81-7	**bis(2-Ethylhexyl)phthalate**	**19**	**52**
218-01-9	**Chrysene**	**19**	**16 J**
117-84-0	**Di-n-Octyl phthalate**	**19**	**180**
205-99-2	**Benzo(b)fluoranthene**	**19**	**19**
207-08-9	**Benzo(k)fluoranthene**	**19**	**12 J**
50-32-8	**Benzo(a)pyrene**	**19**	**15 J**
193-39-5	Indeno(1,2,3-cd)pyrene	19	< 19 U
53-70-3	Dibenz(a,h)anthracene	19	< 19 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS

Sample ID: C-10
SAMPLE

Lab Sample ID: IU50H
LIMS ID: 05-20409
Matrix: Sediment
Date Analyzed: 12/02/05 18:18

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063

CAS Number	Analyte	RL	Result
191-24-2	Benzo(g,h,i)perylene	19	< 19 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	82.8%	2-Fluorobiphenyl	89.2%
d14-p-Terphenyl	69.6%	d4-1,2-Dichlorobenzene	71.6%
d5-Phenol	79.2%	2-Fluorophenol	93.6%
2,4,6-Tribromophenol	90.7%	d4-2-Chlorophenol	78.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS
Page 1 of 2

Sample ID: C-6-S
SAMPLE

Lab Sample ID: IU50I
LIMS ID: 05-20410
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Date Extracted: 12/01/05
Date Analyzed: 12/02/05 18:50
Instrument/Analyst: NT6/PK
GPC Cleanup: No

Sample Amount: 25.7 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 9.4%
pH: 7.7

CAS Number	Analyte	RL	Result
108-95-2	Phenol	19	< 19 U
541-73-1	1,3-Dichlorobenzene	19	< 19 U
106-46-7	1,4-Dichlorobenzene	19	< 19 U
100-51-6	Benzyl Alcohol	19	< 19 U
95-50-1	1,2-Dichlorobenzene	19	< 19 U
95-48-7	2-Methylphenol	19	< 19 U
106-44-5	4-Methylphenol	19	< 19 U
67-72-1	Hexachloroethane	19	< 19 U
105-67-9	2,4-Dimethylphenol	19	< 19 U
65-85-0	Benzoic Acid	190	< 190 U
120-82-1	1,2,4-Trichlorobenzene	19	< 19 U
91-20-3	Naphthalene	19	< 19 U
87-68-3	Hexachlorobutadiene	19	< 19 U
91-57-6	2-Methylnaphthalene	19	< 19 U
131-11-3	Dimethylphthalate	19	< 19 U
208-96-8	Acenaphthylene	19	< 19 U
83-32-9	Acenaphthene	19	< 19 U
132-64-9	Dibenzofuran	19	< 19 U
84-66-2	Diethylphthalate	19	< 19 U
86-73-7	Fluorene	19	< 19 U
86-30-6	N-Nitrosodiphenylamine	19	< 19 U
118-74-1	Hexachlorobenzene	19	< 19 U
87-86-5	Pentachlorophenol	97	< 97 U
85-01-8	Phenanthrene	19	< 19 U
120-12-7	Anthracene	19	< 19 U
84-74-2	**Di-n-Butylphthalate**	**19**	**21**
206-44-0	**Fluoranthene**	**19**	**19 J**
129-00-0	**Pyrene**	**19**	**26**
85-68-7	Butylbenzylphthalate	19	< 19 U
56-55-3	**Benzo(a)anthracene**	**19**	**12 J**
117-81-7	**bis(2-Ethylhexyl)phthalate**	**19**	**25**
218-01-9	Chrysene	19	< 19 U
117-84-0	Di-n-Octyl phthalate	19	< 19 U
205-99-2	**Benzo(b)fluoranthene**	**19**	**14 J**
207-08-9	**Benzo(k)fluoranthene**	**19**	**10 J**
50-32-8	**Benzo(a)pyrene**	**19**	**16 J**
193-39-5	Indeno(1,2,3-cd)pyrene	19	< 19 U
53-70-3	Dibenz(a,h)anthracene	19	< 19 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: C-6-S**
Page 2 of 2 **SAMPLE**

Lab Sample ID: IU50I QC Report No: IU50-Parametrix
LIMS ID: 05-20410 Project: City of Bremerton Sediment Study
Matrix: Sediment 255-1896-063
Date Analyzed: 12/02/05 18:50

CAS Number	Analyte	RL	Result
191-24-2	Benzo(g,h,i)perylene	19	< 19 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	80.8%	2-Fluorobiphenyl	83.6%
d14-p-Terphenyl	66.0%	d4-1,2-Dichlorobenzene	69.6%
d5-Phenol	73.1%	2-Fluorophenol	84.8%
2,4,6-Tribromophenol	84.8%	d4-2-Chlorophenol	74.1%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS

Sample ID: C-7-S
SAMPLE

Lab Sample ID: IU50J
LIMS ID: 05-20411
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Date Extracted: 12/01/05
Date Analyzed: 12/02/05 20:26
Instrument/Analyst: NT6/PK
GPC Cleanup: No

Sample Amount: 25.5 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 18.3%
pH: 7.7

CAS Number	Analyte	RL	Result
108-95-2	Phenol	20	< 20 U
541-73-1	1,3-Dichlorobenzene	20	< 20 U
106-46-7	1,4-Dichlorobenzene	20	< 20 U
100-51-6	Benzyl Alcohol	20	< 20 U
95-50-1	1,2-Dichlorobenzene	20	< 20 U
95-48-7	2-Methylphenol	20	< 20 U
106-44-5	4-Methylphenol	20	< 20 U
67-72-1	Hexachloroethane	20	< 20 U
105-67-9	2,4-Dimethylphenol	200	< 200 U
65-85-0	Benzoic Acid	20	< 20 U
120-82-1	1,2,4-Trichlorobenzene	20	< 20 U
91-20-3	Naphthalene	20	< 20 U
87-68-3	Hexachlorobutadiene	20	< 20 U
91-57-6	2-Methylnaphthalene	20	< 20 U
131-11-3	Dimethylphthalate	20	14 J
208-96-8	**Acenaphthylene**	20	< 20 U
83-32-9	Acenaphthene	20	< 20 U
132-64-9	Dibenzofuran	20	< 20 U
84-66-2	Diethylphthalate	20	< 20 U
86-73-7	Fluorene	20	< 20 U
86-30-6	N-Nitrosodiphenylamine	20	< 20 U
118-74-1	Hexachlorobenzene	98	< 98 U
87-86-5	Pentachlorophenol	20	26
85-01-8	**Phenanthrene**	20	28
120-12-7	**Anthracene**	20	< 20 U
84-74-2	Di-n-Butylphthalate	20	150
206-44-0	**Fluoranthene**	20	130
129-00-0	**Pyrene**	20	< 20 U
85-68-7	Butylbenzylphthalate	20	62
56-55-3	**Benzo(a)anthracene**	20	16 J
117-81-7	**bis(2-Ethylhexyl)phthalate**	20	75
218-01-9	**Chrysene**	20	< 20 U
117-84-0	Di-n-Octyl phthalate	20	73
205-99-2	**Benzo(b)fluoranthene**	20	54
207-08-9	**Benzo(k)fluoranthene**	20	75
50-32-8	**Benzo(a)pyrene**	20	18 J
193-39-5	**Indeno(1,2,3-cd)pyrene**	20	< 20 U
53-70-3	Dibenz(a,h)anthracene		

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: C-7-S
SAMPLE

Lab Sample ID: IU50J
LIMS ID: 05-20411
Matrix: Sediment
Date Analyzed: 12/02/05 20:26

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063

CAS Number	Analyte	RL	Result
191-24-2	Benzo(g,h,i)perylene	20	19 J

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	76.8%	2-Fluorobiphenyl	80.0%
d14-p-Terphenyl	69.2%	d4-1,2-Dichlorobenzene	65.6%
d5-Phenol	70.7%	2-Fluorophenol	84.0%
2,4,6-Tribromophenol	86.7%	d4-2-Chlorophenol	70.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS

Sample ID: C-8-S
SAMPLE

Lab Sample ID: IU50K
LIMS ID: 05-20412
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Date Extracted: 12/01/05
Date Analyzed: 12/02/05 20:58
Instrument/Analyst: NT6/PK
GPC Cleanup: No

Sample Amount: 26.0 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 14.1%
pH: 7.8

CAS Number	Analyte	RL	Result
108-95-2	Phenol	19	< 19 U
541-73-1	1,3-Dichlorobenzene	19	< 19 U
106-46-7	1,4-Dichlorobenzene	19	< 19 U
100-51-6	Benzyl Alcohol	19	< 19 U
95-50-1	1,2-Dichlorobenzene	19	< 19 U
95-48-7	2-Methylphenol	19	< 19 U
106-44-5	4-Methylphenol	19	< 19 U
67-72-1	Hexachloroethane	19	< 19 U
105-67-9	2,4-Dimethylphenol	190	< 190 U
65-85-0	Benzoic Acid	19	< 19 U
120-82-1	1,2,4-Trichlorobenzene	19	13 J
91-20-3	**Naphthalene**	19	< 19 U
87-68-3	Hexachlorobutadiene	19	18 J
91-57-6	**2-Methylnaphthalene**	19	< 19 U
131-11-3	Dimethylphthalate	19	12 J
208-96-8	**Acenaphthylene**	19	< 19 U
83-32-9	Acenaphthene	19	< 19 U
132-64-9	Dibenzofuran	19	< 19 U
84-66-2	Diethylphthalate	19	< 19 U
86-73-7	Fluorene	19	< 19 U
86-30-6	N-Nitrosodiphenylamine	19	< 19 U
118-74-1	Hexachlorobenzene	96	< 96 U
87-86-5	Pentachlorophenol	19	18 J
85-01-8	**Phenanthrene**	19	22
120-12-7	**Anthracene**	19	< 19 U
84-74-2	Di-n-Butylphthalate	19	160
206-44-0	**Fluoranthene**	19	130
129-00-0	**Pyrene**	19	< 19 U
85-68-7	Butylbenzylphthalate	19	60
56-55-3	**Benzo(a)anthracene**	19	40
117-81-7	**bis(2-Ethylhexyl)phthalate**	19	66
218-01-9	**Chrysene**	19	< 19 U
117-84-0	Di-n-Octyl phthalate	19	72
205-99-2	**Benzo(b)fluoranthene**	19	44
207-08-9	**Benzo(k)fluoranthene**	19	71
50-32-8	**Benzo(a)pyrene**	19	16 J
193-39-5	**Indeno(1,2,3-cd)pyrene**	19	< 19 U
53-70-3	Dibenz(a,h)anthracene		

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: C-8-S
SAMPLE

Lab Sample ID: IU50K
LIMS ID: 05-20412
Matrix: Sediment
Date Analyzed: 12/02/05 20:58

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063

CAS Number	Analyte	RL	Result
191-24-2	Benzo(g,h,i)perylene	19	20

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	82.8%	2-Fluorobiphenyl	84.4%
d14-p-Terphenyl	70.8%	d4-1,2-Dichlorobenzene	70.8%
d5-Phenol	76.3%	2-Fluorophenol	93.6%
2,4,6-Tribromophenol	92.0%	d4-2-Chlorophenol	76.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS
Page 1 of 2

Sample ID: C-9-S
SAMPLE

Lab Sample ID: IU50L
LIMS ID: 05-20413
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Date Extracted: 12/01/05
Date Analyzed: 12/02/05 21:30
Instrument/Analyst: NT6/PK
GPC Cleanup: No

Sample Amount: 26.1 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 15.4%
pH: 7.9

CAS Number	Analyte	RL	Result
108-95-2	Phenol	19	< 19 U
541-73-1	1,3-Dichlorobenzene	19	< 19 U
106-46-7	1,4-Dichlorobenzene	19	< 19 U
100-51-6	Benzyl Alcohol	19	< 19 U
95-50-1	1,2-Dichlorobenzene	19	< 19 U
95-48-7	2-Methylphenol	19	< 19 U
106-44-5	4-Methylphenol	19	< 19 U
67-72-1	Hexachloroethane	19	< 19 U
105-67-9	2,4-Dimethylphenol	19	< 19 U
65-85-0	Benzoic Acid	190	< 190 U
120-82-1	1,2,4-Trichlorobenzene	19	< 19 U
91-20-3	Naphthalene	19	< 19 U
87-68-3	Hexachlorobutadiene	19	< 19 U
91-57-6	2-Methylnaphthalene	19	< 19 U
131-11-3	Dimethylphthalate	19	< 19 U
208-96-8	Acenaphthylene	19	< 19 U
83-32-9	Acenaphthene	19	< 19 U
132-64-9	Dibenzofuran	19	< 19 U
84-66-2	Diethylphthalate	19	< 19 U
86-73-7	Fluorene	19	< 19 U
86-30-6	N-Nitrosodiphenylamine	19	< 19 U
118-74-1	Hexachlorobenzene	19	< 19 U
87-86-5	Pentachlorophenol	96	< 96 U
85-01-8	**Phenanthrene**	**19**	**12 J**
120-12-7	**Anthracene**	**19**	**9.6 J**
84-74-2	Di-n-Butylphthalate	19	< 19 U
206-44-0	**Fluoranthene**	**19**	**44**
129-00-0	**Pyrene**	**19**	**32**
85-68-7	Butylbenzylphthalate	19	< 19 U
56-55-3	**Benzo(a)anthracene**	**19**	**18 J**
117-81-7	**bis(2-Ethylhexyl)phthalate**	**19**	**16 J**
218-01-9	**Chrysene**	**19**	**24**
117-84-0	Di-n-Octyl phthalate	19	< 19 U
205-99-2	**Benzo(b)fluoranthene**	**19**	**32**
207-08-9	**Benzo(k)fluoranthene**	**19**	**26**
50-32-8	**Benzo(a)pyrene**	**19**	**19**
193-39-5	Indeno(1,2,3-cd)pyrene	19	< 19 U
53-70-3	Dibenz(a,h)anthracene	19	< 19 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: C-9-S**
Page 2 of 2 **SAMPLE**

Lab Sample ID: IU50L QC Report No: IU50-Parametrix
LIMS ID: 05-20413 Project: City of Bremerton Sediment Study
Matrix: Sediment 255-1896-063
Date Analyzed: 12/02/05 21:30

CAS Number	Analyte	RL	Result
191-24-2	Benzo(g,h,i)perylene	19	< 19 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	74.8%	2-Fluorobiphenyl	77.6%
d14-p-Terphenyl	68.8%	d4-1,2-Dichlorobenzene	63.2%
d5-Phenol	69.1%	2-Fluorophenol	85.1%
2,4,6-Tribromophenol	86.9%	d4-2-Chlorophenol	68.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS
Page 1 of 2

Sample ID: C-10-S
SAMPLE

Lab Sample ID: IU50M
LIMS ID: 05-20414
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Date Extracted: 12/01/05
Date Analyzed: 12/02/05 22:02
Instrument/Analyst: NT6/PK
GPC Cleanup: No

Sample Amount: 26.0 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 15.1%
pH: 7.7

CAS Number	Analyte	RL	Result
108-95-2	**Phenol**	**19**	**130**
541-73-1	1,3-Dichlorobenzene	19	< 19 U
106-46-7	1,4-Dichlorobenzene	19	< 19 U
100-51-6	Benzyl Alcohol	19	< 19 U
95-50-1	1,2-Dichlorobenzene	19	< 19 U
95-48-7	2-Methylphenol	19	< 19 U
106-44-5	4-Methylphenol	19	< 19 U
67-72-1	Hexachloroethane	19	< 19 U
105-67-9	2,4-Dimethylphenol	19	< 19 U
65-85-0	Benzoic Acid	190	< 190 U
120-82-1	1,2,4-Trichlorobenzene	19	< 19 U
91-20-3	Naphthalene	19	< 19 U
87-68-3	Hexachlorobutadiene	19	< 19 U
91-57-6	2-Methylnaphthalene	19	< 19 U
131-11-3	Dimethylphthalate	19	< 19 U
208-96-8	Acenaphthylene	19	< 19 U
83-32-9	Acenaphthene	19	< 19 U
132-64-9	Dibenzofuran	19	< 19 U
84-66-2	Diethylphthalate	19	< 19 U
86-73-7	Fluorene	19	< 19 U
86-30-6	N-Nitrosodiphenylamine	19	< 19 U
118-74-1	Hexachlorobenzene	19	< 19 U
87-86-5	Pentachlorophenol	96	< 96 U
85-01-8	**Phenanthrene**	**19**	**16 J**
120-12-7	Anthracene	19	< 19 U
84-74-2	Di-n-Butylphthalate	19	< 19 U
206-44-0	**Fluoranthene**	**19**	**100**
129-00-0	**Pyrene**	**19**	**52**
85-68-7	Butylbenzylphthalate	19	< 19 U
56-55-3	**Benzo(a)anthracene**	**19**	**13 J**
117-81-7	**bis(2-Ethylhexyl)phthalate**	**19**	**16 J**
218-01-9	**Chrysene**	**19**	**28**
117-84-0	Di-n-Octyl phthalate	19	< 19 U
205-99-2	**Benzo(b)fluoranthene**	**19**	**25**
207-08-9	**Benzo(k)fluoranthene**	**19**	**12 J**
50-32-8	**Benzo(a)pyrene**	**19**	**12 J**
193-39-5	Indeno(1,2,3-cd)pyrene	19	< 19 U
53-70-3	Dibenz(a,h)anthracene	19	< 19 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: C-10-S**
Page 2 of 2 **SAMPLE**

Lab Sample ID: IU50M
LIMS ID: 05-20414
Matrix: Sediment
Date Analyzed: 12/02/05 22:02

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063

CAS Number	Analyte	RL	Result
191-24-2	Benzo(g,h,i)perylene	19	< 19 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	79.2%	2-Fluorobiphenyl	82.0%
d14-p-Terphenyl	73.2%	d4-1,2-Dichlorobenzene	66.8%
d5-Phenol	74.7%	2-Fluorophenol	90.1%
2,4,6-Tribromophenol	104%	d4-2-Chlorophenol	73.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: C-6-S**
Page 1 of 1 **MS/MSD**

Lab Sample ID: IU50I
LIMS ID: 05-20410
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Date Extracted MS/MSD: 12/01/05

Sample Amount MS: 25.5 g-dry-wt
MSD: 26.0 g-dry-wt

Date Analyzed MS: 12/02/05 19:22
MSD: 12/02/05 19:54

Final Extract Volume MS: 0.5 mL
MSD: 0.5 mL

Instrument/Analyst MS: NT6/PK
MSD: NT6/PK

Dilution Factor MS: 1.00
MSD: 1.00

GPC Cleanup: NO

Percent Moisture: 9.4%
pH: 7.7

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Phenol	< 19.4	433	734	59.0%	574	721	79.6%	28.0%
1,4-Dichlorobenzene	< 19.4	247	490	50.4%	355	481	73.8%	35.9%
1,2,4-Trichlorobenzene	< 19.4	307	490	62.7%	423	481	87.9%	31.8%
Acenaphthene	< 19.4	344	490	70.2%	442	481	91.9%	24.9%
Pentachlorophenol	< 97.2	398	734	54.2%	569	721	78.9%	35.4%
Pyrene	26.1	307	490	57.3%	398	481	77.3%	25.8%

Results reported in µg/kg
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS
Page 1 of 2

Sample ID: C-6-S
MATRIX SPIKE

Lab Sample ID: IU50I
LIMS ID: 05-20410
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Date Extracted: 12/01/05
Date Analyzed: 12/02/05 19:22
Instrument/Analyst: NT6/PK
GPC Cleanup: No

Sample Amount: 25.5 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 9.4%
pH: 7.7

CAS Number	Analyte	RL	Result
108-95-2	Phenol	20	---
541-73-1	1,3-Dichlorobenzene	20	< 20 U
106-46-7	1,4-Dichlorobenzene	20	---
100-51-6	Benzyl Alcohol	20	< 20 U
95-50-1	1,2-Dichlorobenzene	20	< 20 U
95-48-7	2-Methylphenol	20	< 20 U
106-44-5	4-Methylphenol	20	< 20 U
67-72-1	Hexachloroethane	20	< 20 U
105-67-9	2,4-Dimethylphenol	20	< 20 U
65-85-0	Benzoic Acid	200	< 200 U
120-82-1	1,2,4-Trichlorobenzene	20	---
91-20-3	Naphthalene	20	< 20 U
87-68-3	Hexachlorobutadiene	20	< 20 U
91-57-6	2-Methylnaphthalene	20	< 20 U
131-11-3	Dimethylphthalate	20	< 20 U
208-96-8	Acenaphthylene	20	< 20 U
83-32-9	Acenaphthene	20	---
132-64-9	Dibenzofuran	20	< 20 U
84-66-2	Diethylphthalate	20	< 20 U
86-73-7	Fluorene	20	< 20 U
86-30-6	N-Nitrosodiphenylamine	20	< 20 U
118-74-1	Hexachlorobenzene	20	< 20 U
87-86-5	Pentachlorophenol	98	---
85-01-8	Phenanthrene	20	< 20 U
120-12-7	Anthracene	20	< 20 U
84-74-2	Di-n-Butylphthalate	20	< 20 U
206-44-0	Fluoranthene	20	< 20 U
129-00-0	Pyrene	20	---
85-68-7	Butylbenzylphthalate	20	< 20 U
56-55-3	Benzo(a)anthracene	20	< 20 U
117-81-7	**bis(2-Ethylhexyl)phthalate**	**20**	**32**
218-01-9	Chrysene	20	< 20 U
117-84-0	Di-n-Octyl phthalate	20	< 20 U
205-99-2	Benzo(b)fluoranthene	20	< 20 U
207-08-9	Benzo(k)fluoranthene	20	< 20 U
50-32-8	Benzo(a)pyrene	20	< 20 U
193-39-5	Indeno(1,2,3-cd)pyrene	20	< 20 U
53-70-3	Dibenz(a,h)anthracene	20	< 20 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS

Sample ID: C-6-S
MATRIX SPIKE

Lab Sample ID: IU50I
LIMS ID: 05-20410
Matrix: Sediment
Date Analyzed: 12/02/05 19:22

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063

CAS Number	Analyte	RL	Result
191-24-2	Benzo(g,h,i)perylene	20	< 20 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	60.8%	2-Fluorobiphenyl	68.0%
d14-p-Terphenyl	55.6%	d4-1,2-Dichlorobenzene	50.0%
d5-Phenol	59.7%	2-Fluorophenol	68.0%
2,4,6-Tribromophenol	76.0%	d4-2-Chlorophenol	58.9%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS
Page 1 of 2

Sample ID: C-6-S
MATRIX SPIKE DUPLICATE

Lab Sample ID: IU50I
LIMS ID: 05-20410
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Date Extracted: 12/01/05
Date Analyzed: 12/02/05 19:54
Instrument/Analyst: NT6/PK
GPC Cleanup: No

Sample Amount: 26.0 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 9.4%
pH: 7.7

CAS Number	Analyte	RL	Result
108-95-2	Phenol	19	---
541-73-1	1,3-Dichlorobenzene	19	< 19 U
106-46-7	1,4-Dichlorobenzene	19	---
100-51-6	Benzyl Alcohol	19	< 19 U
95-50-1	1,2-Dichlorobenzene	19	< 19 U
95-48-7	2-Methylphenol	19	< 19 U
106-44-5	4-Methylphenol	19	< 19 U
67-72-1	Hexachloroethane	19	< 19 U
105-67-9	2,4-Dimethylphenol	19	< 19 U
65-85-0	Benzoic Acid	190	< 190 U
120-82-1	1,2,4-Trichlorobenzene	19	---
91-20-3	Naphthalene	19	< 19 U
87-68-3	Hexachlorobutadiene	19	< 19 U
91-57-6	2-Methylnaphthalene	19	< 19 U
131-11-3	Dimethylphthalate	19	< 19 U
208-96-8	Acenaphthylene	19	< 19 U
83-32-9	Acenaphthene	19	---
132-64-9	Dibenzofuran	19	< 19 U
84-66-2	Diethylphthalate	19	< 19 U
86-73-7	Fluorene	19	< 19 U
86-30-6	N-Nitrosodiphenylamine	19	< 19 U
118-74-1	Hexachlorobenzene	19	< 19 U
87-86-5	Pentachlorophenol	96	---
85-01-8	Phenanthrene	19	< 19 U
120-12-7	Anthracene	19	< 19 U
84-74-2	Di-n-Butylphthalate	19	< 19 U
206-44-0	Fluoranthene	19	< 19 U
129-00-0	Pyrene	19	---
85-68-7	Butylbenzylphthalate	19	< 19 U
56-55-3	Benzo(a)anthracene	19	< 19 U
117-81-7	**bis(2-Ethylhexyl)phthalate**	**19**	**39**
218-01-9	Chrysene	19	< 19 U
117-84-0	Di-n-Octyl phthalate	19	< 19 U
205-99-2	Benzo(b)fluoranthene	19	< 19 U
207-08-9	Benzo(k)fluoranthene	19	< 19 U
50-32-8	Benzo(a)pyrene	19	< 19 U
193-39-5	Indeno(1,2,3-cd)pyrene	19	< 19 U
53-70-3	Dibenz(a,h)anthracene	19	< 19 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: C-6-S**
 MATRIX SPIKE DUPLICATE

Lab Sample ID: IU50I
LIMS ID: 05-20410
Matrix: Sediment
Date Analyzed: 12/02/05 19:54

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063

CAS Number	Analyte	RL	Result
191-24-2	Benzo(g,h,i)perylene	19	< 19 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	87.6%	2-Fluorobiphenyl	90.0%
d14-p-Terphenyl	76.0%	d4-1,2-Dichlorobenzene	71.2%
d5-Phenol	82.9%	2-Fluorophenol	92.8%
2,4,6-Tribromophenol	103%	d4-2-Chlorophenol	82.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS
Page 1 of 2

Sample ID: LCS-120105
LAB CONTROL

Lab Sample ID: LCS-120105
LIMS ID: 05-20410
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Date Extracted: 12/01/05
Date Analyzed: 12/02/05 13:27
Instrument/Analyst: NT6/PK
GPC Cleanup: NO

Sample Amount: 25.0 g
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: NA
pH: NA

Analyte	Lab Control	Spike Added	Recovery
Phenol	411	500	82.2%
1,3-Dichlorobenzene	369	500	73.8%
1,4-Dichlorobenzene	372	500	74.4%
Benzyl Alcohol	296	500	59.2%
1,2-Dichlorobenzene	390	500	78.0%
2-Methylphenol	402	500	80.4%
4-Methylphenol	854	1000	85.4%
Hexachloroethane	406	500	81.2%
2,4-Dimethylphenol	381	500	76.2%
Benzoic Acid	400	500	80.0%
1,2,4-Trichlorobenzene	408	500	81.6%
Naphthalene	410	500	82.0%
Hexachlorobutadiene	409	500	81.8%
2-Methylnaphthalene	430	500	86.0%
Dimethylphthalate	472	500	94.4%
Acenaphthylene	462	500	92.4%
Acenaphthene	434	500	86.8%
Dibenzofuran	448	500	89.6%
Diethylphthalate	493	500	98.6%
Fluorene	469	500	93.8%
N-Nitrosodiphenylamine	634	500	127%
Hexachlorobenzene	487	500	97.4%
Pentachlorophenol	398	500	79.6%
Phenanthrene	490	500	98.0%
Anthracene	476	500	95.2%
Di-n-Butylphthalate	498	500	99.6%
Fluoranthene	450	500	90.0%
Pyrene	539	500	108%
Butylbenzylphthalate	494	500	98.8%
Benzo(a)anthracene	477	500	95.4%
bis(2-Ethylhexyl)phthalate	542	500	108%
Chrysene	480	500	96.0%
Di-n-Octyl phthalate	482	500	96.4%
Benzo(b)fluoranthene	558	500	112%
Benzo(k)fluoranthene	543	500	109%
Benzo(a)pyrene	500	500	100%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: LCS-120105**
 LAB CONTROL

Lab Sample ID: LCS-120105 QC Report No: IU50-Parametrix
LIMS ID: 05-20410 Project: City of Bremerton Sediment Study
Matrix: Sediment 255-1896-063
Date Analyzed: 12/02/05 13:27

Analyte	Lab Control	Spike Added	Recovery
Indeno(1,2,3-cd)pyrene	561	500	112%
Dibenz(a,h)anthracene	589	500	118%
Benzo(g,h,i)perylene	597	500	119%

Semivolatile Surrogate Recovery	
d5-Nitrobenzene	75.2%
2-Fluorobiphenyl	78.0%
d14-p-Terphenyl	96.8%
d4-1,2-Dichlorobenzene	68.8%
d5-Phenol	74.9%
2-Fluorophenol	80.5%
2,4,6-Tribromophenol	82.1%
d4-2-Chlorophenol	73.9%

Results reported in µg/kg

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Pesticides/PCB by GC/ECD

Sample ID: MB-120105
METHOD BLANK

Lab Sample ID: MB-120105
LIMS ID: 05-20403
Matrix: Sediment
Data Release Authorized:
Reported: 12/06/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: NA
Date Received: NA

Date Extracted: 12/01/05
Date Analyzed: 12/05/05 22:32
Instrument/Analyst: ECD3/YZ
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No
Acid Cleanup: No

Sample Amount: 25.0 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: Yes
pH: NA
Percent Moisture: NA

CAS Number	Analyte	RL	Result
58-89-9	gamma-BHC (Lindane)	1.0	< 1.0 U
76-44-8	Heptachlor	1.0	< 1.0 U
309-00-2	Aldrin	1.0	< 1.0 U
60-57-1	Dieldrin	2.0	< 2.0 U
72-55-9	4,4'-DDE	2.0	< 2.0 U
72-54-8	4,4'-DDD	2.0	< 2.0 U
50-29-3	4,4'-DDT	2.0	< 2.0 U
5103-74-2	gamma Chlordane	1.0	< 1.0 U
5103-71-9	alpha Chlordane	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-68-3	Hexachlorobutadiene	1.0	< 1.0 U

Reported in µg/kg (ppb)

Pest/PCB Surrogate Recovery

Decachlorobiphenyl	104%
Tetrachlorometaxylene	88.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Pesticides/PCB by GC/ECD
Page 1 of 1

Sample ID: S-3
SAMPLE

Lab Sample ID: IU50A
LIMS ID: 05-20402
Matrix: Sediment
Data Release Authorized:
Reported: 12/06/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Date Extracted: 12/01/05
Date Analyzed: 12/05/05 23:36
Instrument/Analyst: ECD3/YZ
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No
Acid Cleanup: No

Sample Amount: 26.2 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: Yes
pH: 7.7
Percent Moisture: 17.8%

CAS Number	Analyte	RL	Result
58-89-9	gamma-BHC (Lindane)	0.96	< 0.96 U
76-44-8	Heptachlor	0.96	< 0.96 U
309-00-2	Aldrin	0.96	< 0.96 U
60-57-1	Dieldrin	1.9	< 1.9 U
72-55-9	4,4'-DDE	1.9	< 1.9 U
50-29-3	4,4'-DDT	1.9	< 1.9 U
5103-74-2	gamma Chlordane	0.96	< 0.96 U
5103-71-9	alpha Chlordane	0.96	< 0.96 U
118-74-1	Hexachlorobenzene	0.96	< 0.96 U
87-68-3	Hexachlorobutadiene	0.96	< 0.96 U

Reported in µg/kg (ppb)

Pest/PCB Surrogate Recovery

Decachlorobiphenyl	101%
Tetrachlorometaxylene	85.2%

ANALYTICAL RESOURCES INCORPORATED

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PSDDA Pesticides/PCB by GC/ECD
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Sample ID: S-4
SAMPLE

Lab Sample ID: IU50B
LIMS ID: 05-20403
Matrix: Sediment
Data Release Authorized:
Reported: 12/06/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Date Extracted: 12/01/05
Date Analyzed: 12/06/05 00:08
Instrument/Analyst: ECD3/YZ
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No
Acid Cleanup: No

Sample Amount: 25.6 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: Yes
pH: 7.6
Percent Moisture: 17.7%

CAS Number	Analyte	RL	Result
58-89-9	gamma-BHC (Lindane)	0.98	< 0.98 U
76-44-8	Heptachlor	0.98	< 0.98 U
309-00-2	Aldrin	0.98	< 0.98 U
60-57-1	Dieldrin	2.0	< 2.0 U
72-55-9	4,4'-DDE	2.0	< 2.0 U
72-54-8	4,4'-DDD	2.0	< 2.0 U
50-29-3	4,4'-DDT	2.0	< 2.0 U
5103-74-2	gamma Chlordane	0.98	< 0.98 U
5103-71-9	alpha Chlordane	0.98	< 0.98 U
118-74-1	Hexachlorobenzene	0.98	< 0.98 U
87-68-3	Hexachlorobutadiene	0.98	< 0.98 U

Reported in µg/kg (ppb)

Pest/PCB Surrogate Recovery

Decachlorobiphenyl	95.8%
Tetrachlorometaxylene	93.0%

ANALYTICAL RESOURCES INCORPORATED

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PSDDA Pesticides/PCB by GC/ECD
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Sample ID: S-4
MATRIX SPIKE

Lab Sample ID: IU50B
LIMS ID: 05-20403
Matrix: Sediment
Data Release Authorized:
Reported: 12/06/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Date Extracted: 12/01/05
Date Analyzed: 12/06/05 00:40
Instrument/Analyst: ECD3/YZ
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No
Acid Cleanup: No

Sample Amount: 25.8 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: Yes
pH: 7.6
Percent Moisture: 17.7%

CAS Number	Analyte	RL	Result
58-89-9	gamma-BHC (Lindane)	0.97	---
76-44-8	Heptachlor	0.97	---
309-00-2	Aldrin	0.97	---
60-57-1	Dieldrin	1.9	---
72-55-9	4,4'-DDE	1.9	< 1.9 U
72-54-8	4,4'-DDD	1.9	< 1.9 U
50-29-3	4,4'-DDT	1.9	---
5103-74-2	gamma Chlordane	0.97	< 0.97 U
5103-71-9	alpha Chlordane	0.97	< 0.97 U
118-74-1	Hexachlorobenzene	0.97	---
87-68-3	Hexachlorobutadiene	0.97	---

Reported in µg/kg (ppb)

Pest/PCB Surrogate Recovery

Decachlorobiphenyl	98.2%
Tetrachlorometaxylene	96.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Pesticides/PCB by GC/ECD
Page 1 of 1

Sample ID: S-4
MATRIX SPIKE DUP

Lab Sample ID: IU50B
LIMS ID: 05-20403
Matrix: Sediment
Data Release Authorized:
Reported: 12/06/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Date Extracted: 12/01/05
Date Analyzed: 12/06/05 01:12
Instrument/Analyst: ECD3/YZ
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No
Acid Cleanup: No

Sample Amount: 25.8 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: Yes
pH: 7.6
Percent Moisture: 17.7%

CAS Number	Analyte	RL	Result
58-89-9	gamma-BHC (Lindane)	0.97	---
76-44-8	Heptachlor	0.97	---
309-00-2	Aldrin	0.97	---
60-57-1	Dieldrin	1.9	---
72-55-9	4,4'-DDE	1.9	< 1.9 U
72-54-8	4,4'-DDD	1.9	< 1.9 U
50-29-3	4,4'-DDT	1.9	---
5103-74-2	gamma Chlordane	0.97	< 0.97 U
5103-71-9	alpha Chlordane	0.97	< 0.97 U
118-74-1	Hexachlorobenzene	0.97	---
87-68-3	Hexachlorobutadiene	0.97	---

Reported in µg/kg (ppb)

Pest/PCB Surrogate Recovery

Decachlorobiphenyl	98.2%
Tetrachlorometaxylene	95.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Pesticides/PCB by GC/ECD
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Sample ID: S-4
MS/MSD

Lab Sample ID: IU50B
LIMS ID: 05-20403
Matrix: Sediment
Data Release Authorized:
Reported: 12/06/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Date Extracted MS/MSD: 12/01/05

Date Analyzed MS: 12/06/05 00:40
MSD: 12/06/05 01:12
Instrument/Analyst MS: ECD3/YZ
MSD: ECD3/YZ
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No

Sample Amount MS: 25.8 g-dry-wt
MSD: 25.8 g-dry-wt
Final Extract Volume MS: 5.0 mL
MSD: 5.0 mL
Dilution Factor MS: 1.00
MSD: 1.00
Silica Gel: Yes
pH: 7.6
Percent Moisture: 17.7%

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
gamma-BHC (Lindane)	< 0.975	7.45	9.70	76.8%	7.64	9.69	78.8%	2.5%
Heptachlor	< 0.975	8.70	9.70	89.7%	9.13	9.69	94.2%	4.8%
Aldrin	< 0.975	8.73	9.70	90.0%	9.27	9.69	95.7%	6.0%
Dieldrin	< 1.95	16.8	19.4	86.6%	17.3	19.4	89.2%	2.9%
4,4'-DDT	< 1.95	17.9	19.4	92.3%	18.3	19.4	94.3%	2.2%
Hexachlorobenzene	< 0.975	8.46	9.70	87.2%	8.63	9.69	89.1%	2.0%
Hexachlorobutadiene	< 0.975	8.02	9.70	82.7%	8.05	9.69	83.1%	0.4%

Reported in µg/kg (ppb)
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Pesticides/PCB by GC/ECD
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Sample ID: S-5
SAMPLE

Lab Sample ID: IU50C
LIMS ID: 05-20404
Matrix: Sediment
Data Release Authorized:
Reported: 12/06/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Date Extracted: 12/01/05
Date Analyzed: 12/06/05 01:44
Instrument/Analyst: ECD3/YZ
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No
Acid Cleanup: No

Sample Amount: 25.7 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: Yes
pH: 7.5
Percent Moisture: 16.2%

CAS Number	Analyte	RL	Result
58-89-9	gamma-BHC (Lindane)	0.97	< 0.97 U
76-44-8	Heptachlor	0.97	< 0.97 U
309-00-2	Aldrin	0.97	< 0.97 U
60-57-1	Dieldrin	2.0	< 2.0 U
72-54-8	4,4'-DDD	2.0	< 2.0 U
50-29-3	4,4'-DDT	2.0	< 2.0 U
5103-74-2	gamma Chlordane	0.97	< 0.97 U
5103-71-9	alpha Chlordane	0.97	< 0.97 U
118-74-1	Hexachlorobenzene	0.97	< 0.97 U
87-68-3	Hexachlorobutadiene	0.97	< 0.97 U

Reported in µg/kg (ppb)

Pest/PCB Surrogate Recovery

Decachlorobiphenyl	97.8%
Tetrachlorometaxylene	96.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Pesticides/PCB by GC/ECD
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Sample ID: LCS-120105
LAB CONTROL

Lab Sample ID: LCS-120105
LIMS ID: 05-20403
Matrix: Sediment
Data Release Authorized:
Reported: 12/06/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Date Extracted: 12/01/05
Date Analyzed: 12/05/05 23:04
Instrument/Analyst: ECD3/YZ
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.0 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: Yes
pH: NA
Percent Moisture: NA

Analyte	Lab Control	Spike Added	Recovery
gamma-BHC (Lindane)	3.34	4.00	83.5%
Heptachlor	3.28	4.00	82.0%
Aldrin	3.30	4.00	82.5%
Dieldrin	7.46	8.00	93.2%
4,4'-DDE	7.94	8.00	99.2%
4,4'-DDD	7.38	8.00	92.2%
4,4'-DDT	7.42	8.00	92.8%
gamma Chlordane	3.64	4.00	91.0%
alpha Chlordane	3.64	4.00	91.0%
Hexachlorobenzene	3.34	4.00	83.5%
Hexachlorobutadiene	2.92	4.00	73.0%

Pest/PCB Surrogate Recovery

Decachlorobiphenyl	94.8%
Tetrachlorometaxylene	86.2%

Reported in µg/kg (ppb)

ANALYTICAL RESOURCES INCORPORATED

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PSDDA PCB by GC/ECD
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Sample ID: MB-120105
METHOD BLANK

Lab Sample ID: MB-120105
LIMS ID: 05-20402
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: NA
Date Received: NA

Date Extracted: 12/01/05
Date Analyzed: 12/02/05 19:11
Instrument/Analyst: ECD5/LJR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.0 g
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: No
pH: NA
Percent Moisture: NA

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	20	< 20 U
53469-21-9	Aroclor 1242	20	< 20 U
12672-29-6	Aroclor 1248	20	< 20 U
11097-69-1	Aroclor 1254	20	< 20 U
11096-82-5	Aroclor 1260	20	< 20 U
11104-28-2	Aroclor 1221	20	< 20 U
11141-16-5	Aroclor 1232	20	< 20 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	100%
Tetrachlorometaxylene	92.8%

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PSDDA PCB by GC/ECD
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Sample ID: S-3
SAMPLE

Lab Sample ID: IU50A
LIMS ID: 05-20402
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Date Extracted: 12/01/05
Date Analyzed: 12/02/05 19:47
Instrument/Analyst: ECD5/LJR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.6 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: No
pH: 7.7
Percent Moisture: 17.8%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	20	< 20 U
53469-21-9	Aroclor 1242	20	< 20 U
12672-29-6	Aroclor 1248	20	< 20 U
11097-69-1	Aroclor 1254	20	< 20 U
11096-82-5	Aroclor 1260	20	< 20 U
11104-28-2	Aroclor 1221	20	< 20 U
11141-16-5	Aroclor 1232	20	< 20 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	93.2%
Tetrachlorometaxylene	85.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD
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Sample ID: S-3
MATRIX SPIKE

Lab Sample ID: IU50A
LIMS ID: 05-20402
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Date Extracted: 12/01/05
Date Analyzed: 12/02/05 20:06
Instrument/Analyst: ECD5/LJR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.7 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: No
pH: 7.7
Percent Moisture: 17.8%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	20	---
53469-21-9	Aroclor 1242	20	< 20 U
12672-29-6	Aroclor 1248	20	< 20 U
11097-69-1	Aroclor 1254	20	< 20 U
11096-82-5	Aroclor 1260	20	---
11104-28-2	Aroclor 1221	20	< 20 U
11141-16-5	Aroclor 1232	20	< 20 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	100%
Tetrachlorometaxylene	91.2%

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ORGANICS ANALYSIS DATA SHEET
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Sample ID: S-3
MATRIX SPIKE DUP

Lab Sample ID: IU50A
LIMS ID: 05-20402
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Date Extracted: 12/01/05
Date Analyzed: 12/02/05 20:24
Instrument/Analyst: ECD5/LJR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.6 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: No
pH: 7.7
Percent Moisture: 17.8%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	20	---
53469-21-9	Aroclor 1242	20	< 20 U
12672-29-6	Aroclor 1248	20	< 20 U
11097-69-1	Aroclor 1254	20	< 20 U
11096-82-5	Aroclor 1260	20	---
11104-28-2	Aroclor 1221	20	< 20 U
11141-16-5	Aroclor 1232	20	< 20 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	97.5%
Tetrachlorometaxylene	86.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD
Page 1 of 1

Sample ID: S-3
MS/MSD

Lab Sample ID: IU50A
LIMS ID: 05-20402
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Date Extracted MS/MSD: 12/01/05

Date Analyzed MS: 12/02/05 20:06
MSD: 12/02/05 20:24
Instrument/Analyst MS: ECD5/LJR
MSD: ECD5/LJR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount MS: 25.7 g-dry-wt
MSD: 25.6 g-dry-wt
Final Extract Volume MS: 5.0 mL
MSD: 5.0 mL
Dilution Factor MS: 1.00
MSD: 1.00
Silica Gel: No
pH: 7.7
Percent Moisture: 17.8%

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Aroclor 1016	< 19.5 U	98.9	99.8	99.1%	95.2	100	95.2%	3.8%
Aroclor 1260	< 19.5 U	103	99.8	103%	99.1	100	99.1%	3.9%

Results reported in µg/kg (ppb)
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD
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Sample ID: S-4
SAMPLE

Lab Sample ID: IU50B
LIMS ID: 05-20403
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Date Extracted: 12/01/05
Date Analyzed: 12/02/05 20:42
Instrument/Analyst: ECD5/LJR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.8 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: No
pH: 7.6
Percent Moisture: 17.7%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	19	< 19 U
53469-21-9	Aroclor 1242	19	< 19 U
12672-29-6	Aroclor 1248	19	< 19 U
11097-69-1	Aroclor 1254	19	< 19 U
11096-82-5	Aroclor 1260	19	< 19 U
11104-28-2	Aroclor 1221	19	< 19 U
11141-16-5	Aroclor 1232	19	< 19 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	101%
Tetrachlorometaxylene	90.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD
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Sample ID: S-5
SAMPLE

Lab Sample ID: IU50C
LIMS ID: 05-20404
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Date Extracted: 12/01/05
Date Analyzed: 12/02/05 21:00
Instrument/Analyst: ECD5/LJR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.4 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: No
pH: 7.5
Percent Moisture: 16.2%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	20	< 20 U
53469-21-9	Aroclor 1242	20	< 20 U
12672-29-6	Aroclor 1248	20	< 20 U
11097-69-1	Aroclor 1254	20	< 20 U
11096-82-5	Aroclor 1260	20	< 20 U
11104-28-2	Aroclor 1221	20	< 20 U
11141-16-5	Aroclor 1232	20	< 20 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery	
Decachlorobiphenyl	98.5%
Tetrachlorometaxylene	86.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD
Page 1 of 1

Sample ID: LCS-120105
LAB CONTROL

Lab Sample ID: LCS-120105
LIMS ID: 05-20402
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: NA
Date Received: NA

Date Extracted: 12/01/05
Date Analyzed: 12/02/05 19:29
Instrument/Analyst: ECD5/LJR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.0 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: No
pH: NA
Percent Moisture: NA

Analyte	Lab Control	Spike Added	Recovery
Aroclor 1016	90.9	102	89.1%
Aroclor 1260	93.5	102	91.7%

PCB Surrogate Recovery

Decachlorobiphenyl	101%
Tetrachlorometaxylene	88.5%

Results reported in µg/kg (ppb)

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD by GC/FID

Matrix: Sediment

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Received: 11/30/05

Data Release Authorized:
Reported: 12/05/05

ARI ID	Sample ID	Extraction Date	Analysis Date	DL	Range	Result
IU50A	S-3	11/30/05	12/01/05	1.0	**Diesel**	**7.5**
05-20402	HC ID: **DRO/MOTOR OIL**		FID3A		**Motor Oil**	**26**
					o-Terphenyl	80.2%
IU50B	S-4	11/30/05	12/01/05	1.0	Diesel	< 6.0 U
05-20403	HC ID: ---		FID3A		Motor Oil	< 12 U
					o-Terphenyl	82.4%
MB-113005	Method Blank	11/30/05	12/01/05	1.0	Diesel	< 5.0 U
05-20404	HC ID: ---		FID3A		Motor Oil	< 10 U
					o-Terphenyl	79.1%
IU50C	S-5	11/30/05	12/01/05	1.0	Diesel	< 6.0 U
05-20404	HC ID: ---		FID3A		Motor Oil	< 12 U
					o-Terphenyl	79.6%
IU50D	C-6	11/30/05	12/02/05	1.0	**Diesel**	**11**
05-20405	HC ID: **DRO/MOTOR OIL**		FID3A		**Motor Oil**	**55**
					o-Terphenyl	75.3%
IU50E	C-7	11/30/05	12/02/05	1.0	**Diesel**	**8.1**
05-20406	HC ID: **DRO/MOTOR OIL**		FID3A		**Motor Oil**	**29**
					o-Terphenyl	71.1%
IU50F	C-8	11/30/05	12/02/05	1.0	**Diesel**	**6.7**
05-20407	HC ID: **DRO/MOTOR OIL**		FID3A		**Motor Oil**	**47**
					o-Terphenyl	67.3%
IU50G	C-9	11/30/05	12/02/05	1.0	Diesel	< 6.2 U
05-20408	HC ID: **MOTOR OIL**		FID3A		**Motor Oil**	**30**
					o-Terphenyl	74.9%
IU50H	C-10	11/30/05	12/02/05	1.0	Diesel	< 6.0 U
05-20409	HC ID: **MOTOR OIL**		FID3A		**Motor Oil**	**16**
					o-Terphenyl	76.7%
IU50I	C-6-S	11/30/05	12/02/05	1.0	**Diesel**	**29**
05-20410	HC ID: **DRO/MOTOR OIL**		FID3A		**Motor Oil**	**78**
					o-Terphenyl	73.6%
IU50J	C-7-S	11/30/05	12/02/05	1.0	**Diesel**	**7.7**
05-20411	HC ID: **DRO/MOTOR OIL**		FID3A		**Motor Oil**	**27**
					o-Terphenyl	69.6%
IU50K	C-8-S	11/30/05	12/02/05	1.0	**Diesel**	**11**
05-20412	HC ID: **DRO/MOTOR OIL**		FID3A		**Motor Oil**	**68**
					o-Terphenyl	66.2%
IU50L	C-9-S	11/30/05	12/02/05	1.0	Diesel	< 5.9 U
05-20413	HC ID: ---		FID3A		Motor Oil	< 12 U
					o-Terphenyl	72.9%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD by GC/FID
Page 2 of 2
Matrix: Sediment

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Received: 11/30/05

Data Release Authorized:
Reported: 12/05/05

ARI ID	Sample ID	Extraction Date	Analysis Date	DL	Range	Result
IU50M	C-10-S	11/30/05	12/03/05	1.0	Diesel	< 5.9 U
05-20414	HC ID: ---		FID3A		Motor Oil	< 12 U
					o-Terphenyl	69.8%

Reported in mg/kg (ppm)

Diesel quantitation on total peaks in the range from C12 to C24.
Motor Oil quantitation on total peaks in the range from C24 to C38.
HC ID: DRO/RRO indicates results of organics or additional hydrocarbons in ranges are not identifiable.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID
Page 1 of 1

Sample ID: S-5
MS/MSD

Lab Sample ID: IU50C
LIMS ID: 05-20404
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Date Extracted MS/MSD: 11/30/05

Date Analyzed MS: 12/01/05 11:51
MSD: 12/01/05 12:06
Instrument/Analyst MS: FID3A/PKC
MSD: FID3A/PKC

Sample Amount MS: 8.40 g-dry-wt
MSD: 8.42 g-dry-wt
Final Extract Volume MS: 1.0 mL
MSD: 1.0 mL
Dilution Factor MS: 1.00
MSD: 1.00
Percent Moisture: 16.2%

Range	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Diesel	< 6.0 U	136	179	76.0%	155	178	87.1%	13.1%

TPHD Surrogate Recovery

	MS	MSD
o-Terphenyl	91.6%	88.0%

Results reported in mg/kg
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID
Page 1 of 1

Sample ID: LCS-113005
LAB CONTROL

Lab Sample ID: LCS-113005
LIMS ID: 05-20404
Matrix: Sediment
Data Release Authorized:
Reported: 12/05/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: NA
Date Received: NA

Date Extracted: 11/30/05
Date Analyzed: 12/01/05 10:51
Instrument/Analyst: FID3A/PKC

Sample Amount: 10.0 g
Final Extract Volume: 1.0 mL
Dilution Factor: 1.00

Range	Lab Control	Spike Added	Recovery
Diesel	130	150	86.7%

TPHD Surrogate Recovery

o-Terphenyl	90.2%

Results reported in mg/kg

METHOD BLANK RESULTS-CONVENTIONALS
IU50-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 12/07/05

Project: City of Bremerton Sediment S
Event: 255-1896-063
Date Sampled: NA
Date Received: NA

Analyte	Date	Units	Blank
Total Solids	11/30/05	Percent	< 0.01 U
Preserved Total Solids	11/30/05	Percent	< 0.01 U
Total Volatile Solids	11/30/05	Percent	< 0.01 U
N-Ammonia	12/02/05	mg-N/kg	< 0.10 U
Sulfide	12/01/05	mg/kg	< 1.0 U
Total Organic Carbon	12/06/05	Percent	< 0.020 U

SAMPLE RESULTS-CONVENTIONALS
IU50-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 12/07/05

Project: City of Bremerton Sediment S
Event: 255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Client ID: S-3
ARI ID: 05-20402 IU50A

Analyte	Date	Method	Units	RL	Sample
Total Solids	11/30/05 113005#1	EPA 160.3	Percent	0.01	80.90
Preserved Total Solids	11/30/05 113005#1	EPA 160.3	Percent	0.01	81.70
Total Volatile Solids	11/30/05 113005#1	EPA 160.4	Percent	0.01	1.81
N-Ammonia	12/02/05 120205#1	EPA 350.1M	mg-N/kg	0.12	6.03
Sulfide	12/01/05 120105#1	EPA 376.2	mg/kg	3.0	29
Total Organic Carbon	12/06/05 120605#1	Plumb,1981	Percent	0.020	0.421

RL Analytical reporting limit
U Undetected at reported detection limit

Ammonia determined on 2N KCl extracts.

SAMPLE RESULTS-CONVENTIONALS
IU50-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 12/07/05

Project: City of Bremerton Sediment S
Event: 255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Client ID: S-4
ARI ID: 05-20403 IU50B

Analyte	Date	Method	Units	RL	Sample
Total Solids	11/30/05 113005#1	EPA 160.3	Percent	0.01	81.00
Preserved Total Solids	11/30/05 113005#1	EPA 160.3	Percent	0.01	81.30
Total Volatile Solids	11/30/05 113005#1	EPA 160.4	Percent	0.01	1.42
N-Ammonia	12/02/05 120205#1	EPA 350.1M	mg-N/kg	0.12	1.47
Sulfide	12/01/05 120105#1	EPA 376.2	mg/kg	1.5	< 1.5 U
Total Organic Carbon	12/06/05 120605#1	Plumb,1981	Percent	0.020	0.280

RL Analytical reporting limit
U Undetected at reported detection limit

Ammonia determined on 2N KCl extracts.

SAMPLE RESULTS-CONVENTIONALS
IU50-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 12/07/05

Project: City of Bremerton Sediment S
Event: 255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Client ID: S-5
ARI ID: 05-20404 IU50C

Analyte	Date	Method	Units	RL	Sample
Total Solids	11/30/05 113005#1	EPA 160.3	Percent	0.01	84.60
Preserved Total Solids	11/30/05 113005#1	EPA 160.3	Percent	0.01	85.20
Total Volatile Solids	11/30/05 113005#1	EPA 160.4	Percent	0.01	1.38
N-Ammonia	12/02/05 120205#1	EPA 350.1M	mg-N/kg	0.12	0.66
Sulfide	12/01/05 120105#1	EPA 376.2	mg/kg	1.5	< 1.5 U
Total Organic Carbon	12/06/05 120605#1	Plumb,1981	Percent	0.020	0.268

RL Analytical reporting limit
U Undetected at reported detection limit

Ammonia determined on 2N KCl extracts.

REPLICATE RESULTS-CONVENTIONALS
IU50-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 12/07/05

Project: City of Bremerton Sediment S
Event: 255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Analyte	Date	Units	Sample	Replicate(s)	RPD/RSD
ARI ID: IU50A Client ID: S-3					
Total Solids	11/30/05	Percent	80.90	80.70 78.90	1.4%
Preserved Total Solids	11/30/05	Percent	81.70	82.60	1.1%
Total Volatile Solids	11/30/05	Percent	1.81	1.58 1.65	7.0%
N-Ammonia	12/02/05	mg-N/kg	6.03	5.82	3.5%
Total Organic Carbon	12/06/05	Percent	0.421	0.390 0.539	17.5%
ARI ID: IU50C Client ID: S-5					
Sulfide	12/01/05	mg/kg	< 1.5	< 1.4	NA

MS/MSD RESULTS-CONVENTIONALS
IU50-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 12/07/05

Project: City of Bremerton Sediment S
Event: 255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Analyte	Date	Units	Sample	Spike	Spike Added	Recovery
ARI ID: IU50A Client ID: S-3						
N-Ammonia	12/02/05	mg-N/kg	6.03	133	122	103.7%
Total Organic Carbon	12/06/05	Percent	0.421	1.49	1.05	101.4%
ARI ID: IU50C Client ID: S-5						
Sulfide	12/01/05	mg/kg	< 1.5	160	210	75.1%
Sulfide	12/01/05	mg/kg	< 1.5	170	210	80.6%

LAB CONTROL RESULTS-CONVENTIONALS
IU50-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 12/07/05

Project: City of Bremerton Sediment S
Event: 255-1896-063
Date Sampled: NA
Date Received: NA

Analyte	Date	Units	LCS	Spike Added	Recovery
Sulfide	12/01/05	mg/kg	670	730	92.0%
Total Organic Carbon	12/06/05	Percent	0.538	0.500	107.6%

STANDARD REFERENCE RESULTS-CONVENTIONALS
IU50-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized
Reported: 12/07/05

Project: City of Bremerton Sediment S
Event: 255-1896-063
Date Sampled: NA
Date Received: NA

Analyte/SRM ID	Date	Units	SRM	True Value	Recovery
N-Ammonia SPEX 28-24AS	12/02/05	mg-N/kg	104	100	104.0%
Total Organic Carbon NIST #8704	12/06/05	Percent	3.90	3.35	116.4%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: METHOD BLANK

Lab Sample ID: IU50MB
LIMS ID: 05-20403
Matrix: Sediment
Data Release Authorized:
Reported: 12/06/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: NA
Date Received: NA

Percent Total Solids: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	11/30/05	6010B	12/05/05	7440-36-0	Antimony	5	5	U
3050B	11/30/05	6010B	12/05/05	7440-38-2	Arsenic	5	5	U
3050B	11/30/05	6010B	12/05/05	7440-43-9	Cadmium	0.2	0.2	U
3050B	11/30/05	6010B	12/05/05	7440-47-3	Chromium	0.5	0.5	U
3050B	11/30/05	6010B	12/05/05	7440-50-8	Copper	0.2	0.2	U
3050B	11/30/05	6010B	12/05/05	7439-92-1	Lead	2	2	U
CLP	11/30/05	7471A	12/01/05	7439-97-6	Mercury	0.05	0.05	U
3050B	11/30/05	6010B	12/05/05	7440-02-0	Nickel	1	1	U
3050B	11/30/05	6010B	12/05/05	7440-22-4	Silver	0.3	0.3	U
3050B	11/30/05	6010B	12/05/05	**7440-66-6**	**Zinc**	0.6	**0.8**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: S-3
SAMPLE

Lab Sample ID: IU50A
LIMS ID: 05-20402
Matrix: Sediment
Data Release Authorized:
Reported: 12/06/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Percent Total Solids: 80.9%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	11/30/05	6010B	12/05/05	7440-36-0	Antimony	10	10	U
3050B	11/30/05	6010B	12/05/05	7440-38-2	Arsenic	10	10	U
3050B	11/30/05	6010B	12/05/05	7440-43-9	Cadmium	0.6	0.6	U
3050B	11/30/05	6010B	12/05/05	**7440-47-3**	**Chromium**	1	**11**	
3050B	11/30/05	6010B	12/05/05	**7440-50-8**	**Copper**	0.6	**9.9**	
3050B	11/30/05	6010B	12/05/05	**7439-92-1**	**Lead**	6	**16**	
CLP	11/30/05	7471A	12/01/05	7439-97-6	Mercury	0.06	0.06	U
3050B	11/30/05	6010B	12/05/05	**7440-02-0**	**Nickel**	3	**13**	
3050B	11/30/05	6010B	12/05/05	7440-22-4	Silver	0.8	0.8	U
3050B	11/30/05	6010B	12/05/05	**7440-66-6**	**Zinc**	2	**38**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: S-3
DUPLICATE

Lab Sample ID: IU50A
LIMS ID: 05-20402
Matrix: Sediment
Data Release Authorized:
Reported: 12/06/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Antimony	6010B	10 U	10 U	0.0%	+/- 10	L
Arsenic	6010B	10 U	10 U	0.0%	+/- 10	L
Cadmium	6010B	0.6 U	0.6 U	0.0%	+/- 0.6	L
Chromium	6010B	11	12	8.7%	+/- 20%	
Copper	6010B	9.9	13.1	27.8%	+/- 20%	*
Lead	6010B	16	15	6.5%	+/- 6	L
Mercury	7471A	0.06 U	0.06 U	0.0%	+/- 0.06	L
Nickel	6010B	13	13	0.0%	+/- 3	L
Silver	6010B	0.8 U	0.8 U	0.0%	+/- 0.8	L
Zinc	6010B	38	39	2.6%	+/- 20%	

Reported in mg/kg-dry

*-Control Limit Not Met
L-RPD Invalid, Limit = Detection Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: S-3
MATRIX SPIKE

Lab Sample ID: IU50A
LIMS ID: 05-20402
Matrix: Sediment
Data Release Authorized:
Reported: 12/06/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Antimony	6010B	10 U	80	227	35.2%	N
Arsenic	6010B	10 U	240	227	106%	
Cadmium	6010B	0.6 U	60.5	56.8	107%	
Chromium	6010B	11	84	56.8	129%	N
Copper	6010B	9.9	75.1	56.8	115%	
Lead	6010B	16	251	227	104%	
Mercury	7471A	0.06 U	0.67	0.586	114%	
Nickel	6010B	13	77	56.8	113%	
Silver	6010B	0.8 U	61.2	56.8	108%	
Zinc	6010B	38	94	56.8	98.6%	

Reported in mg/kg-dry

N-Control Limit Not Met
H-% Recovery Not Applicable, Sample Concentration Too High
NA-Not Applicable, Analyte Not Spiked

Percent Recovery Limits: 75-125%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: S-4
SAMPLE

Lab Sample ID: IU50B
LIMS ID: 05-20403
Matrix: Sediment
Data Release Authorized:
Reported: 12/06/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Percent Total Solids: 79.8%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	11/30/05	6010B	12/05/05	7440-36-0	Antimony	6	6	U
3050B	11/30/05	6010B	12/05/05	7440-38-2	Arsenic	6	6	U
3050B	11/30/05	6010B	12/05/05	7440-43-9	Cadmium	0.2	0.3	
3050B	11/30/05	6010B	12/05/05	7440-47-3	Chromium	0.6	22.2	
3050B	11/30/05	6010B	12/05/05	7440-50-8	Copper	0.2	29.1	
3050B	11/30/05	6010B	12/05/05	7439-92-1	Lead	2	82	
CLP	11/30/05	7471A	12/01/05	7439-97-6	Mercury	0.04	0.04	
3050B	11/30/05	6010B	12/05/05	7440-02-0	Nickel	1	24	
3050B	11/30/05	6010B	12/05/05	7440-22-4	Silver	0.4	0.4	U
3050B	11/30/05	6010B	12/05/05	7440-66-6	Zinc	0.7	65.1	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: S-5
SAMPLE

Lab Sample ID: IU50C
LIMS ID: 05-20404
Matrix: Sediment
Data Release Authorized:
Reported: 12/06/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Percent Total Solids: 80.8%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	11/30/05	6010B	12/05/05	7440-36-0	Antimony	6	6	U
3050B	11/30/05	6010B	12/05/05	7440-38-2	Arsenic	6	6	U
3050B	11/30/05	6010B	12/05/05	7440-43-9	Cadmium	0.2	0.2	U
3050B	11/30/05	6010B	12/05/05	7440-47-3	Chromium	0.6	33.8	
3050B	11/30/05	6010B	12/05/05	7440-50-8	Copper	0.2	32.7	
3050B	11/30/05	6010B	12/05/05	7439-92-1	Lead	2	34	
CLP	11/30/05	7471A	12/01/05	7439-97-6	Mercury	0.04	0.04	U
3050B	11/30/05	6010B	12/05/05	7440-02-0	Nickel	1	26	
3050B	11/30/05	6010B	12/05/05	7440-22-4	Silver	0.4	0.4	
3050B	11/30/05	6010B	12/05/05	7440-66-6	Zinc	0.7	120	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: C-6
SAMPLE

Lab Sample ID: IU50D
LIMS ID: 05-20405
Matrix: Sediment
Data Release Authorized:
Reported: 12/06/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Percent Total Solids: 72.4%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	11/30/05	6010B	12/05/05	7440-36-0	Antimony	6	6	U
3050B	11/30/05	6010B	12/05/05	7440-38-2	Arsenic	6	6	U
3050B	11/30/05	6010B	12/05/05	7440-43-9	Cadmium	0.3	0.3	U
3050B	11/30/05	6010B	12/05/05	**7440-47-3**	**Chromium**	0.6	**16.5**	
3050B	11/30/05	6010B	12/05/05	**7440-50-8**	**Copper**	0.3	**15.3**	
3050B	11/30/05	6010B	12/05/05	**7439-92-1**	**Lead**	3	**26**	
CLP	11/30/05	7471A	12/01/05	7439-97-6	Mercury	0.07	0.07	U
3050B	11/30/05	6010B	12/05/05	**7440-02-0**	**Nickel**	1	**18**	
3050B	11/30/05	6010B	12/05/05	7440-22-4	Silver	0.4	0.4	U
3050B	11/30/05	6010B	12/05/05	**7440-66-6**	**Zinc**	0.8	57.6	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: C-7
SAMPLE

Lab Sample ID: IU50E
LIMS ID: 05-20406
Matrix: Sediment
Data Release Authorized:
Reported: 12/06/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Percent Total Solids: 77.7%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	11/30/05	6010B	12/05/05	7440-36-0	Antimony	6	6	U
3050B	11/30/05	6010B	12/05/05	7440-38-2	Arsenic	6	6	U
3050B	11/30/05	6010B	12/05/05	7440-43-9	Cadmium	0.2	0.2	U
3050B	11/30/05	6010B	12/05/05	**7440-47-3**	**Chromium**	0.6	**20.0**	
3050B	11/30/05	6010B	12/05/05	**7440-50-8**	**Copper**	0.2	**11.6**	
3050B	11/30/05	6010B	12/05/05	**7439-92-1**	**Lead**	2	**14**	
CLP	11/30/05	7471A	12/01/05	7439-97-6	Mercury	0.05	0.05	U
3050B	11/30/05	6010B	12/05/05	**7440-02-0**	**Nickel**	1	**25**	
3050B	11/30/05	6010B	12/05/05	7440-22-4	Silver	0.4	0.4	U
3050B	11/30/05	6010B	12/05/05	**7440-66-6**	**Zinc**	0.7	**51.2**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: C-8
SAMPLE

Lab Sample ID: IU50F
LIMS ID: 05-20407
Matrix: Sediment
Data Release Authorized:
Reported: 12/06/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Percent Total Solids: 82.0%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	11/30/05	6010B	12/05/05	7440-36-0	Antimony	10	10	U
3050B	11/30/05	6010B	12/05/05	7440-38-2	Arsenic	10	10	U
3050B	11/30/05	6010B	12/05/05	7440-43-9	Cadmium	0.6	0.6	U
3050B	11/30/05	6010B	12/05/05	7440-47-3	Chromium	1	15	
3050B	11/30/05	6010B	12/05/05	7440-50-8	Copper	0.6	15.8	
3050B	11/30/05	6010B	12/05/05	7439-92-1	Lead	6	18	
CLP	11/30/05	7471A	12/01/05	7439-97-6	Mercury	0.04	0.21	
3050B	11/30/05	6010B	12/05/05	7440-02-0	Nickel	3	16	
3050B	11/30/05	6010B	12/05/05	7440-22-4	Silver	0.9	0.9	U
3050B	11/30/05	6010B	12/05/05	7440-66-6	Zinc	2	44	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: C-9
SAMPLE

Lab Sample ID: IU50G
LIMS ID: 05-20408
Matrix: Sediment
Data Release Authorized:
Reported: 12/06/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Percent Total Solids: 82.8%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	11/30/05	6010B	12/05/05	7440-36-0	Antimony	6	6	U
3050B	11/30/05	6010B	12/05/05	7440-38-2	Arsenic	6	6	U
3050B	11/30/05	6010B	12/05/05	7440-43-9	Cadmium	0.2	0.2	U
3050B	11/30/05	6010B	12/05/05	**7440-47-3**	**Chromium**	0.6	20.1	
3050B	11/30/05	6010B	12/05/05	**7440-50-8**	**Copper**	0.2	19.0	
3050B	11/30/05	6010B	12/05/05	**7439-92-1**	**Lead**	2	18	
CLP	11/30/05	7471A	12/01/05	7439-97-6	Mercury	0.05	0.05	U
3050B	11/30/05	6010B	12/05/05	**7440-02-0**	**Nickel**	1	24	
3050B	11/30/05	6010B	12/05/05	7440-22-4	Silver	0.3	0.3	U
3050B	11/30/05	6010B	12/05/05	**7440-66-6**	**Zinc**	0.7	49.5	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: C-10
SAMPLE

Lab Sample ID: IU50H
LIMS ID: 05-20409
Matrix: Sediment
Data Release Authorized:
Reported: 12/06/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Percent Total Solids: 83.4%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	11/30/05	6010B	12/05/05	7440-36-0	Antimony	6	6	U
3050B	11/30/05	6010B	12/05/05	**7440-38-2**	**Arsenic**	6	**6**	
3050B	11/30/05	6010B	12/05/05	7440-43-9	Cadmium	0.2	0.2	U
3050B	11/30/05	6010B	12/05/05	**7440-47-3**	**Chromium**	0.6	**23.3**	
3050B	11/30/05	6010B	12/05/05	**7440-50-8**	**Copper**	0.2	**20.8**	
3050B	11/30/05	6010B	12/05/05	**7439-92-1**	**Lead**	2	**23**	
CLP	11/30/05	7471A	12/01/05	7439-97-6	Mercury	0.05	0.05	U
3050B	11/30/05	6010B	12/05/05	**7440-02-0**	**Nickel**	1	**24**	
3050B	11/30/05	6010B	12/05/05	7440-22-4	Silver	0.4	0.4	U
3050B	11/30/05	6010B	12/05/05	**7440-66-6**	**Zinc**	0.7	63.1	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: C-6-S
SAMPLE

Lab Sample ID: IU50I
LIMS ID: 05-20410
Matrix: Sediment
Data Release Authorized:
Reported: 12/06/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Percent Total Solids: 84.2%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	11/30/05	6010B	12/05/05	7440-36-0	Antimony	6	6	U
3050B	11/30/05	6010B	12/05/05	7440-38-2	Arsenic	6	6	U
3050B	11/30/05	6010B	12/05/05	**7440-43-9**	**Cadmium**	0.2	0.2	
3050B	11/30/05	6010B	12/05/05	**7440-47-3**	**Chromium**	0.6	19.8	
3050B	11/30/05	6010B	12/05/05	**7440-50-8**	**Copper**	0.2	17.2	
3050B	11/30/05	6010B	12/05/05	**7439-92-1**	**Lead**	2	31	
CLP	11/30/05	7471A	12/01/05	7439-97-6	Mercury	0.04	0.04	U
3050B	11/30/05	6010B	12/05/05	**7440-02-0**	**Nickel**	1	22	
3050B	11/30/05	6010B	12/05/05	7440-22-4	Silver	0.3	0.3	U
3050B	11/30/05	6010B	12/05/05	**7440-66-6**	**Zinc**	0.7	72.4	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: C-7-S
SAMPLE

Lab Sample ID: IU50J
LIMS ID: 05-20411
Matrix: Sediment
Data Release Authorized:
Reported: 12/06/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Percent Total Solids: 81.9%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	11/30/05	6010B	12/05/05	7440-36-0	Antimony	6	6	U
3050B	11/30/05	6010B	12/05/05	7440-38-2	Arsenic	6	6	U
3050B	11/30/05	6010B	12/05/05	7440-43-9	Cadmium	0.2	0.2	U
3050B	11/30/05	6010B	12/05/05	7440-47-3	Chromium	0.6	24.8	
3050B	11/30/05	6010B	12/05/05	7440-50-8	Copper	0.2	10.7	
3050B	11/30/05	6010B	12/05/05	7439-92-1	Lead	2	13	
CLP	11/30/05	7471A	12/01/05	7439-97-6	Mercury	0.05	0.21	
3050B	11/30/05	6010B	12/05/05	7440-02-0	Nickel	1	21	
3050B	11/30/05	6010B	12/05/05	7440-22-4	Silver	0.3	0.3	U
3050B	11/30/05	6010B	12/05/05	7440-66-6	Zinc	0.7	37.2	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: C-8-S
SAMPLE

Lab Sample ID: IU50K
LIMS ID: 05-20412
Matrix: Sediment
Data Release Authorized:
Reported: 12/06/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Percent Total Solids: 79.4%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	11/30/05	6010B	12/05/05	7440-36-0	Antimony	6	6	U
3050B	11/30/05	6010B	12/05/05	7440-38-2	Arsenic	6	6	U
3050B	11/30/05	6010B	12/05/05	7440-43-9	Cadmium	0.2	0.2	U
3050B	11/30/05	6010B	12/05/05	7440-47-3	Chromium	0.6	19.2	
3050B	11/30/05	6010B	12/05/05	7440-50-8	Copper	0.2	19.5	
3050B	11/30/05	6010B	12/05/05	7439-92-1	Lead	2	28	
CLP	11/30/05	7471A	12/01/05	7439-97-6	Mercury	0.05	0.06	
3050B	11/30/05	6010B	12/05/05	7440-02-0	Nickel	1	22	
3050B	11/30/05	6010B	12/05/05	7440-22-4	Silver	0.4	0.4	U
3050B	11/30/05	6010B	12/05/05	7440-66-6	Zinc	0.7	60.0	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: C-9-S
SAMPLE

Lab Sample ID: IU50L
LIMS ID: 05-20413
Matrix: Sediment
Data Release Authorized:
Reported: 12/06/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Percent Total Solids: 79.8%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	11/30/05	6010B	12/05/05	7440-36-0	Antimony	6	6	U
3050B	11/30/05	6010B	12/05/05	7440-38-2	Arsenic	6	6	U
3050B	11/30/05	6010B	12/05/05	7440-43-9	Cadmium	0.2	0.2	U
3050B	11/30/05	6010B	12/05/05	7440-47-3	Chromium	0.6	16.6	
3050B	11/30/05	6010B	12/05/05	7440-50-8	Copper	0.2	14.8	
3050B	11/30/05	6010B	12/05/05	7439-92-1	Lead	2	23	
CLP	11/30/05	7471A	12/01/05	7439-97-6	Mercury	0.05	0.05	U
3050B	11/30/05	6010B	12/05/05	7440-02-0	Nickel	1	17	
3050B	11/30/05	6010B	12/05/05	7440-22-4	Silver	0.4	0.4	U
3050B	11/30/05	6010B	12/05/05	7440-66-6	Zinc	0.7	45.7	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: C-10-S
SAMPLE

Lab Sample ID: IU50M
LIMS ID: 05-20414
Matrix: Sediment
Data Release Authorized:
Reported: 12/06/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Percent Total Solids: 82.2%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	11/30/05	6010B	12/05/05	7440-36-0	Antimony	6	6	U
3050B	11/30/05	6010B	12/05/05	7440-38-2	Arsenic	6	6	U
3050B	11/30/05	6010B	12/05/05	7440-43-9	Cadmium	0.2	0.2	U
3050B	11/30/05	6010B	12/05/05	7440-47-3	Chromium	0.6	18.8	
3050B	11/30/05	6010B	12/05/05	7440-50-8	Copper	0.2	16.1	
3050B	11/30/05	6010B	12/05/05	7439-92-1	Lead	2	147	
CLP	11/30/05	7471A	12/01/05	7439-97-6	Mercury	0.05	0.05	U
3050B	11/30/05	6010B	12/05/05	7440-02-0	Nickel	1	22	
3050B	11/30/05	6010B	12/05/05	7440-22-4	Silver	0.3	0.3	U
3050B	11/30/05	6010B	12/05/05	7440-66-6	Zinc	0.7	111	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: LAB CONTROL

Lab Sample ID: IU50LCS
LIMS ID: 05-20403
Matrix: Sediment
Data Release Authorized:
Reported: 12/06/05

QC Report No: IU50-Parametrix
Project: City of Bremerton Sediment Study
255-1896-063
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Antimony	6010B	221	200	110%	
Arsenic	6010B	214	200	107%	
Cadmium	6010B	53.9	50.0	108%	
Chromium	6010B	50.2	50.0	100%	
Copper	6010B	52.2	50.0	104%	
Lead	6010B	216	200	108%	
Mercury	7471A	1.03	1.00	103%	
Nickel	6010B	49	50	98.0%	
Silver	6010B	52.6	50.0	105%	
Zinc	6010B	50.3	50.0	101%	

Reported in mg/kg-dry

N-Control limit not met
Control Limits: 80-120%

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Client: Parametrix	Project No.: IU50
Client Project: City of Bremerton Sediment Study, 255-1896-063	

Case Narrative

1. The samples were submitted for grain size analysis according to PSEP methodology.
2. The samples were run with others, and one sample was chosen for triplicate analysis. The triplicate data is reported on the QA summary.
3. All three samples were mostly sand and contained fewer than the required 5 grams in the pipette portion of the analysis. When this occurs, we generally run the sieve portion of the analysis, and the first pipette reading which allows us to complete the QA ratio for the sample.
4. All of the samples had less than the required 5 grams in the pipette portion. Our balance has a capacity of about 200 g (by 0.0001), and a sample size that would give 5 grams of fines could not be split and stay within the capacity of the balance.
5. The data is provided in summary tables and plots.
6. There were no other noted anomalies in the samples or methods on this project.

Approved by: _____ Date: 12/1/05
Title: Geotechnical Division Manager

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

ANALYTICAL RESOURCES INCORPORATED

Parametrix
ity of Bremerton Sediment Study 255-1896-06

PSEP Total Solids Analysis
Percent of Wet Weight

Sample No.	Total Solids (%)
Trip 1	69.5
Trip 2	69.0
Trip 3	70.9
S-3	84.2
S-4	82.4
S-5	86.5

Triplicate Average	69.8
Standard Deviation	0.98
%RSD	1.40

(Total Solids at 90 C)

IU50

QA SUMMARY

ANALYTICAL RESOURCES INCORPORATED

PROJECT:	Parametrix	Project No.:	City of Bremerton Sediment Study 255-1896-063
ARI Triplicate Sample ID:	IU01 C	Batch No.:	IU50
Client Triplicate Sample ID:	Trip 1	Page:	1 of 1

Relative Standard Deviation, By Phi Size

Sample ID	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
Trip 1	100.0	78.9	74.8	71.0	64.1	46.7	24.9	12.3	8.6	6.7	5.6	4.5	3.4	2.5
Trip 2	100.0	81.7	78.5	74.1	66.7	48.7	25.9	12.7	8.8	7.0	5.7	4.6	3.6	2.5
Trip 3	100.0	74.2	70.7	66.9	60.1	43.2	23.0	11.3	7.9	6.4	5.3	4.3	3.2	2.1
AVE	NA	78.25	74.68	70.66	63.65	46.19	24.61	12.09	8.44	6.69	5.54	4.45	3.39	2.38
STDEV	NA	3.79	3.91	3.63	3.31	2.80	1.47	0.74	0.50	0.30	0.22	0.15	0.19	0.21
%RSD	NA	4.84	5.23	5.13	5.20	6.07	5.99	6.10	5.98	4.45	4.03	3.34	5.47	9.00

The Triplicate Applies To The Following Samples

Client ID	Date Sampled	Date Extracted	Date Complete	QA Ratio (95-105)	Data Qualifiers	Pipette Portion (5.0-25.0g)
Trip 1	11/21/05	11/23/05	12/1/05	100.5		6.9
Trip 2	11/21/05	11/23/05	12/1/05	100.1		6.9
Trip 3	11/21/05	11/23/05	12/1/05	99.9		5.9
S-3	11/29/05	11/30/05	12/1/05	100.9	SS	4.3
S-4	11/29/05	11/30/05	12/1/05	101.2	SS	3.9
S-5	11/29/05	11/30/05	12/1/05	100.5	SS	1.8

0	1/0/00	1/0/00	1/0/00	#DIV/0!		#DIV/0!
0	1/0/00	1/0/00	1/0/00	#DIV/0!		#DIV/0!
0	1/0/00	1/0/00	1/0/00	#DIV/0!		#DIV/0!
0	1/0/00	1/0/00	1/0/00	#DIV/0!		#DIV/0!
0	1/0/00	1/0/00	1/0/00	#DIV/0!		#DIV/0!

* ARI Internal QA limits = 95-105%

Notes to the Testing:

1. Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution. See narrative for discussion of the testing.

ANALYTICAL RESOURCES INCORPORATED

Parametrix
City of Bremerton Sediment Study 255-1896-063

Apparent Grain Size Distribution Summary
Percent Finer Than Indicated Size

Sample No.	Gravel			Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt				Clay	
Phi Size	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
Sieve Size (microns)	3/8"	#4	#10 (2000)	#18 (1000)	#35 (500)	#60 (250)	#120 (125)	#230 (62)	31.00	15.60	7.80	3.90	2.00	1.00
Trip 1	100.0	78.9	74.8	71.0	64.1	46.7	24.9	12.3	8.6	6.7	5.6	4.5	3.4	2.5
Trip 2	100.0	81.7	78.5	74.1	66.7	48.7	25.9	12.7	8.8	7.0	5.7	4.6	3.6	2.5
Trip 3	100.0	74.2	70.7	66.9	60.1	43.2	23.0	11.3	7.9	6.4	5.3	4.3	3.2	2.1
S-3	100.0	67.3	43.2	34.7	31.7	27.1	9.2	3.4	NA	NA	NA	NA	NA	NA
S-4	100.0	80.8	63.7	54.4	28.5	10.7	4.2	3.1	NA	NA	NA	NA	NA	NA
S-5	100.0	73.9	57.2	50.1	41.5	7.5	1.8	1.4	NA	NA	NA	NA	NA	NA

Notes to the Testing:

1. Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution. See narrative for discussion of the testing.

ANALYTICAL RESOURCES INCORPORATED

Parametrix
City of Bremerton Sediment Study 255-1896-063

Apparent Grain Size Distribution Summary
Percent Retained in Each Size Fraction

Sample No.	Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Coarse Silt	Medium Silt	Fine Silt	Very Fine Silt	Clay		
Phi Size	> -1	-1 to 0	0 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 6	6 to 7	7 to 8	8 to 9	9 to 10	< 10
Sieve Size (microns)	> #10 (2000)	10 to 18 (2000-1000)	18-35 (1000-500)	35-60 (500-250)	60-120 (250-125)	120-230 (125-62)	62.5-31.0	31.0-15.6	15.6-7.8	7.8-3.9	3.9-2.0	2.0-1.0	<1.0
Trip 1	25.2	3.8	6.9	17.4	21.8	12.5	3.7	1.9	1.1	1.1	1.1	0.9	2.5
Trip 2	21.5	4.4	7.4	18.0	22.8	13.3	3.9	1.8	1.2	1.1	1.0	1.1	2.5
Trip 3	29.3	3.8	6.7	17.0	20.1	11.8	3.4	1.5	1.1	1.0	1.1	1.1	2.1
S-3	56.8	8.5	3.0	4.5	18.0	5.8	NA	NA	NA	NA	NA	NA	NA
S-4	36.3	9.3	25.9	17.8	6.5	1.1	NA	NA	NA	NA	NA	NA	NA
S-5	42.8	7.1	8.6	34.0	5.7	0.5	NA	NA	NA	NA	NA	NA	NA

Notes to the Testing:

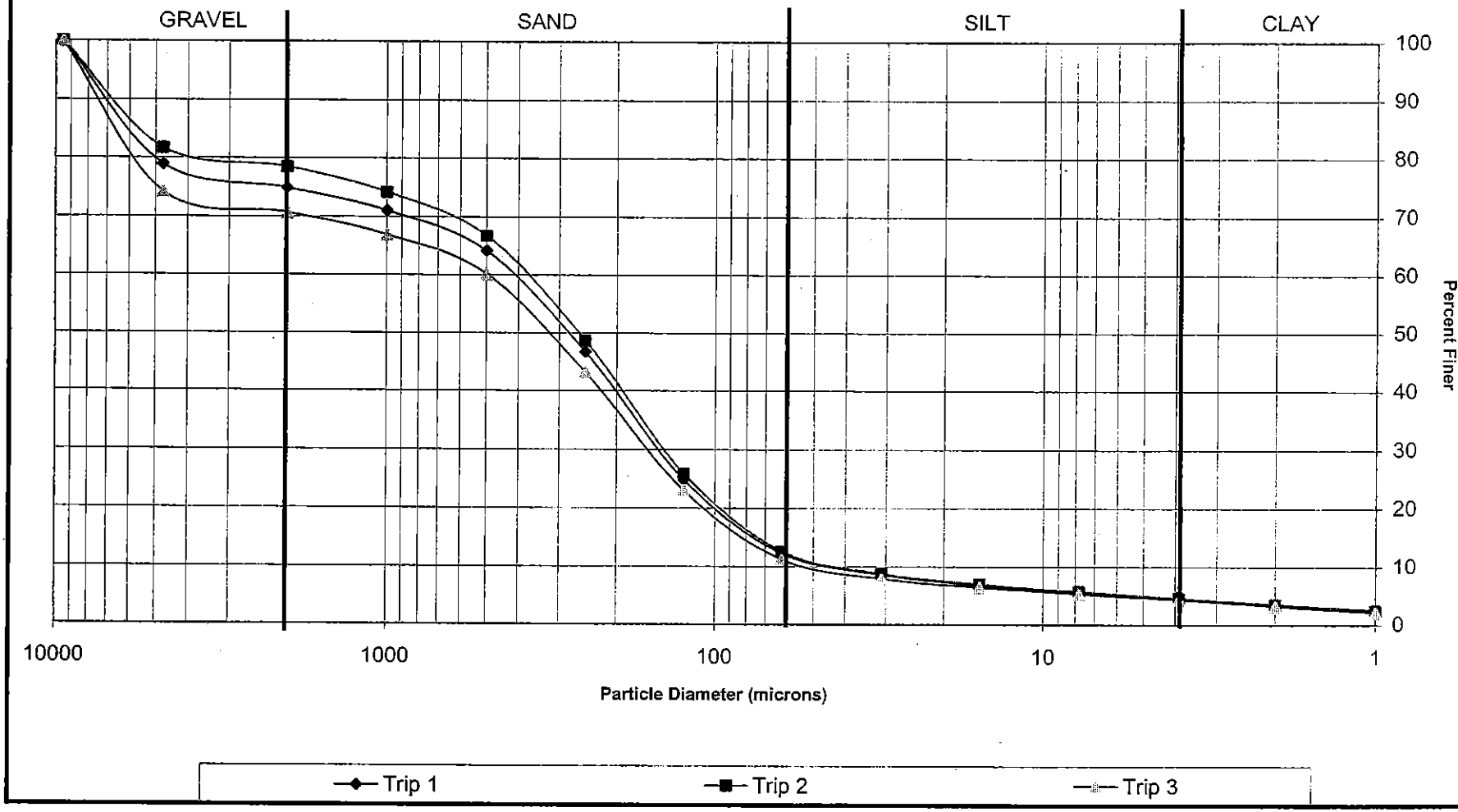
1. Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution. See narrative for discussion of the testing.

IU50

ANALYTICAL RESOURCES INCORPORATED

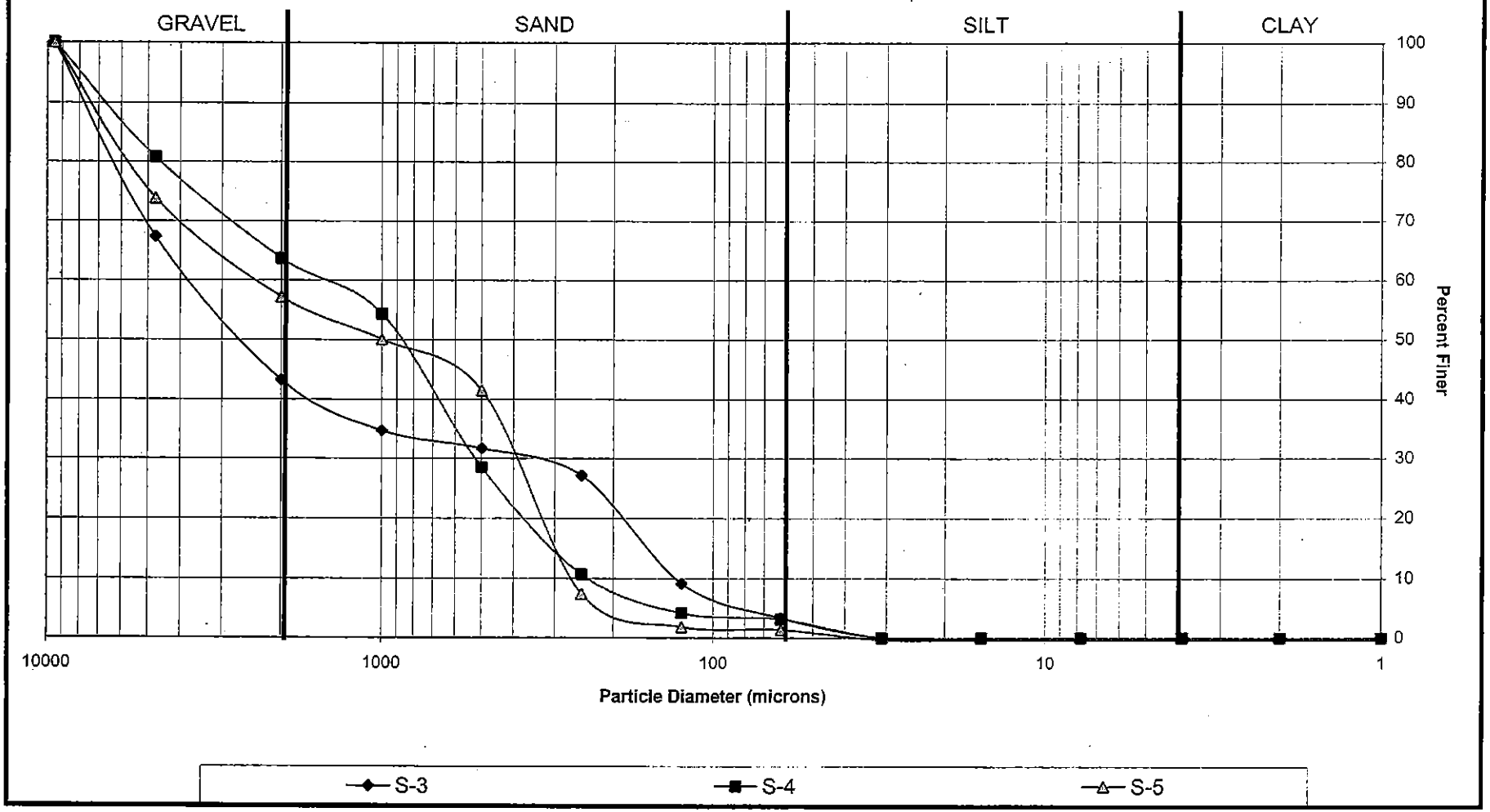
PSEP Grain Size Distribution

Triplicate Sample Plot



ANALYTICAL RESOURCES INCORPORATED

PSEP Grain Size Distribution



Analytical Resources, Incorporated
Analytical Chemists and Consultants

16 December 2005

David Gillingham
Parametrix, Inc.
411 108th Avenue NE
Suite 1800
Bellevue, WA 98004-5571

RE: Client Project: Bremerton Sediments
ARI Job No. IV18

Dear David:

Please find enclosed the final results for the samples from the project referenced above. These samples were originally received on November 30, 2005. Selected samples were analyzed for TOC per Stuart Currie on 12/07/05.

There were no problems with these analyses.

A copy of these reports and all associated raw data will be kept on file with ARI. Should you have any questions please feel free to call me at any time.

Sincerely,

ANALYTICAL RESOURCES, INC.

Mark D. Harris
Project Manager
206/695-6210
mark@arilabs.com

Enclosures

cc: File IV18

MDH/mdh

METHOD BLANK RESULTS-CONVENTIONALS
IV18-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized:
Reported: 12/15/05

Project: City of Bremerton Sediment S
Event: 255-1896-063
Date Sampled: NA
Date Received: NA

Analyte	Date	Units	Blank
Total Solids	12/07/05	Percent	< 0.01 U
Total Organic Carbon	12/12/05	Percent	< 0.020 U
	12/13/05		< 0.020 U
	12/14/05		< 0.020 U

SAMPLE RESULTS-CONVENTIONALS
IV18-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized:
Reported: 12/15/05

Project: City of Bremerton Sediment S
Event: 255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Client ID: C-6
ARI ID: 05-20818 IV18A

Analyte	Date	Method	Units	RL	Sample
Total Solids	12/07/05 120705#1	EPA 160.3	Percent	0.01	79.90
Total Organic Carbon	12/14/05 121405#1	Plumb,1981	Percent	0.020	0.381

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
IV18-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized:
Reported: 12/15/05

Project: City of Bremerton Sediment S
Event: 255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Client ID: C-7
ARI ID: 05-20819 IV18B

Analyte	Date	Method	Units	RL	Sample
Total Solids	12/07/05 120705#1	EPA 160.3	Percent	0.01	77.30
Total Organic Carbon	12/12/05 121205#1	Plumb,1981	Percent	0.020	0.526

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
IV18-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized:
Reported: 12/15/05

Project: City of Bremerton Sediment S
Event: 255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Client ID: C-8
ARI ID: 05-20820 IV18C

Analyte	Date	Method	Units	RL	Sample
Total Solids	12/07/05 120705#1	EPA 160.3	Percent	0.01	82.80
Total Organic Carbon	12/12/05 121205#1	Plumb,1981	Percent	0.020	0.528

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
IV18-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized:
Reported: 12/15/05

Project: City of Bremerton Sediment S
Event: 255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Client ID: C-9
ARI ID: 05-20821 IV18D

Analyte	Date	Method	Units	RL	Sample
Total Solids	12/07/05 120705#1	EPA 160.3	Percent	0.01	80.40
Total Organic Carbon	12/12/05 121205#1	Plumb,1981	Percent	0.020	0.492

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
IV18-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized:
Reported: 12/15/05

Project: City of Bremerton Sediment S
Event: 255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Client ID: C-10
ARI ID: 05-20822 IV18E

Analyte	Date	Method	Units	RL	Sample
Total Solids	12/07/05 120705#1	EPA 160.3	Percent	0.01	83.30
Total Organic Carbon	12/12/05 121205#1	Plumb,1981	Percent	0.020	0.503

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
IV18-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized
Reported: 12/15/05

Project: City of Bremerton Sediment S
Event: 255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Client ID: C-6-S
ARI ID: 05-20823 IV18F

Analyte	Date	Method	Units	RL	Sample
Total Solids	12/07/05 120705#1	EPA 160.3	Percent	0.01	84.50
Total Organic Carbon	12/13/05 121305#1	Plumb,1981	Percent	0.020	0.269

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
IV18-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized:
Reported: 12/15/05

Project: City of Bremerton Sediment S
Event: 255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Client ID: C-7-S
ARI ID: 05-20824 IV18G

Analyte	Date	Method	Units	RL	Sample
Total Solids	12/07/05 120705#1	EPA 160.3	Percent	0.01	81.70
Total Organic Carbon	12/13/05 121305#1	Plumb,1981	Percent	0.020	1.14

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
IV18-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized:
Reported: 12/15/05

Project: City of Bremerton Sediment S
Event: 255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Client ID: C-8-S
ARI ID: 05-20825 IV18H

Analyte	Date	Method	Units	RL	Sample
Total Solids	12/07/05 120705#1	EPA 160.3	Percent	0.01	85.20
Total Organic Carbon	12/13/05 121305#1	Plumb,1981	Percent	0.020	0.305

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
IV18-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized:
Reported: 12/15/05

Project: City of Bremerton Sediment S
Event: 255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Client ID: C-9-S
ARI ID: 05-20826 IV18I

Analyte	Date	Method	Units	RL	Sample
Total Solids	12/07/05 120705#1	EPA 160.3	Percent	0.01	83.80
Total Organic Carbon	12/13/05 121305#1	Plumb,1981	Percent	0.020	0.205

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
IV18-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized:
Reported: 12/15/05

Project: City of Bremerton Sediment S
Event: 255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Client ID: C-10-S
ARI ID: 05-20827 IV18J

Analyte	Date	Method	Units	RL	Sample
Total Solids	12/07/05 120705#1	EPA 160.3	Percent	0.01	86.40
Total Organic Carbon	12/13/05 121305#1	Plumb,1981	Percent	0.020	0.167

RL Analytical reporting limit
U Undetected at reported detection limit

REPLICATE RESULTS-CONVENTIONALS
IV18-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized:
Reported: 12/15/05

Project: City of Bremerton Sediment S
Event: 255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Analyte	Date	Units	Sample	Replicate(s)	RPD/RSD
ARI ID: IV18A Client ID: C-6					
Total Solids	12/07/05	Percent	79.90	78.60 79.40	0.8%
Total Organic Carbon	12/14/05	Percent	0.381	0.359 0.431	9.5%

MS/MSD RESULTS-CONVENTIONALS
IV18-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized:
Reported: 12/15/05

Project: City of Bremerton Sediment S
Event: 255-1896-063
Date Sampled: 11/29/05
Date Received: 11/30/05

Analyte	Date	Units	Sample	Spike	Spike Added	Recovery
ARI ID: IV18A Client ID: C-6						
Total Organic Carbon	12/14/05	Percent	0.381	1.18	0.772	103.4%

LAB CONTROL RESULTS-CONVENTIONALS
IV18-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized:
Reported: 12/15/05

Project: City of Bremerton Sediment S
Event: 255-1896-063
Date Sampled: NA
Date Received: NA

Analyte	Date	Units	LCS	Spike Added	Recovery
Total Organic Carbon	12/12/05	Percent	0.538	0.500	107.6%
	12/13/05		0.532	0.500	106.4%
	12/14/05		0.481	0.500	96.2%

STANDARD REFERENCE RESULTS-CONVENTIONALS
IV18-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Soil
Data Release Authorized:
Reported: 12/15/05

Project: City of Bremerton Sediment S
Event: 255-1896-063
Date Sampled: NA
Date Received: NA

Analyte/SRM ID	Date	Units	SRM	True Value	Recovery
Total Organic Carbon	12/12/05	Percent	3.58	3.35	106.9%
NIST #8704	12/13/05		3.54	3.35	105.7%
	12/14/05		3.07	3.35	91.6%

Analytical Resources, Incorporated
Analytical Chemists and Consultants

DEC 2 2 2005
Brem

19 December 2005

David Gillingham
Parametrix, Inc.
411 108th Avenue NE
Suite 1800
Bellevue, WA 98004-5571

RE: Client Project: Bremerton Sediments
ARI Job No. IV58

Dear David:

Please find enclosed the final results for the sample from the project referenced above. This sample was originally received on November 30, 2005. Sample C-8 was analyzed for grain size per Stuart Currie on 12/13/05.

There were no problems with this analysis.

A copy of these reports and all associated raw data will be kept on file with ARI. Should you have any questions please feel free to call me at any time.

Sincerely,

ANALYTICAL RESOURCES, INC.

Mark D. Harris
Project Manager
206/695-6210
mark@arilabs.com

Enclosures

cc: File IV58

MDH/mdh

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Client: Parametrix Project No.: IV58

Client Project: City of Bremerton Sediment Study, 255-1896-063

Case Narrative

1. The sample was submitted for grain size analysis according to PSEP methodology.
2. The sample was run with others, and one sample was chosen for triplicate analysis. The triplicate data is reported on the QA summary.
3. The sample was mostly sand and contained fewer than the required 5 grams in the pipette portion of the analysis. When this occurs, we generally run the sieve portion of the analysis, and the first pipette reading which allows us to complete the QA ratio for the sample.
4. The sample had 2.47 grams of fines, which is less than the required 5 grams. Our balance has a capacity of about 200 g (by 0.0001), and a sample size that would give 5 grams of fines could not be split and stay within the capacity of the balance.
5. The data is provided in summary tables and plots.
6. There were no other noted anomalies in the samples or methods on this project.

Approved by: Hadel Beyers Date: 12/16/05
Title: Geotechnical Division Manager

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

ANALYTICAL RESOURCES INCORPORATED

Parametrix
City of Bremerton Sediment Study 255-1896-063

PSEP Total Solids Analysis
Percent of Wet Weight

Sample No.	Total Solids (%)
CB85-120505	59.9
CB85-120505	60.6
CB85-120505	59.9
C-8	82.8

Triplicate Average	60.2
Standard Deviation	0.42
%RSD	0.70

(Total Solids at 90 C)

QA SUMMARY

ANALYTICAL RESOURCES INCORPORATED

PROJECT:	Parametrix	Project No.:	City of Bremerton Sediment Study 255-1896-063
ARI Triplicate Sample ID:	IV03 C	Batch No.:	IV58
Client Triplicate Sample ID:	CB85-120505	Page:	1 of 1

Relative Standard Deviation, By Phi Size

Sample ID	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
CB85-120505	100.0	99.1	96.0	89.6	78.1	60.7	42.5	24.7	11.6	5.9	3.5	1.9	1.0	0.5
CB85-120505	100.0	99.6	96.6	89.1	77.8	60.7	42.4	25.0	10.3	5.6	3.3	1.8	0.9	0.4
CB85-120505	100.0	96.4	92.2	84.9	73.7	56.7	39.0	21.3	8.7	6.5	3.4	1.9	1.0	0.4
AVE	NA	98.34	94.90	87.84	76.54	59.37	41.30	23.65	10.17	6.01	3.37	1.87	0.97	0.42
STDEV	NA	1.73	2.39	2.58	2.47	2.32	1.98	2.07	1.47	0.47	0.09	0.08	0.07	0.03
%RSD	NA	1.76	2.52	2.94	3.22	3.91	4.81	8.76	14.47	7.85	2.81	4.48	6.85	7.95

The Triplicate Applies To The Following Samples

Client ID	Date Sampled	Date Extracted	Date Complete	QA Ratio (95-105)	Data Qualifiers	Pipette Portion (5.0-25.0g)
CB85-120505	12/5/05	12/13/05	12/15/05	102.0		21.0
CB85-120505	12/5/05	12/13/05	12/15/05	101.8		22.0
CB85-120505	12/5/05	12/13/05	12/15/05	99.7		17.8
C-8	11/29/05	12/13/05	12/15/05	257.3		2.5

* ARI Internal QA limits = 95-105%

Notes to the Testing:

1. Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution. See narrative for discussion of the testing.

ANALYTICAL RESOURCES INCORPORATED

Parametrix
City of Bremerton Sediment Study 255-1896-063

Apparent Grain Size Distribution Summary
Percent Finer Than Indicated Size

Sample No.	Gravel			Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt				Clay	
Phi Size	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
Sieve Size (microns)	3/8"	#4	#10 (2000)	#18 (1000)	#35 (500)	#60 (250)	#120 (125)	#230 (62)	31.00	15.60	7.80	3.90	2.00	1.00
CB85-120505	100.0	99.1	96.0	89.6	78.1	60.7	42.5	24.7	11.6	5.9	3.5	1.9	1.0	0.5
CB85-120505	100.0	99.6	96.6	89.1	77.8	60.7	42.4	25.0	10.3	5.6	3.3	1.8	0.9	0.4
CB85-120505	100.0	96.4	92.2	84.9	73.7	56.7	39.0	21.3	8.7	6.5	3.4	1.9	1.0	0.4
C-8	100.0	85.3	68.4	60.1	40.7	17.9	3.4	2.0	NA	NA	NA	NA	NA	NA

Notes to the Testing:

1. Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution. See narrative for discussion of the testing.

ANALYTICAL RESOURCES INCORPORATED

Parametrix
City of Bremerton Sediment Study 255-1896-063

Apparent Grain Size Distribution Summary
Percent Retained in Each Size Fraction

Sample No.	Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Coarse Silt	Medium Silt	Fine Silt	Very Fine Silt	Clay		
Phi Size	> -1	-1 to 0	0 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 6	6 to 7	7 to 8	8 to 9	9 to 10	< 10
Sieve Size (microns)	> #10 (2000)	10 to 18 (2000-1000)	18-35 (1000-500)	35-60 (500-250)	60-120 (250-125)	120-230 (125-62)	62.5-31.0	31.0-15.6	15.6-7.8	7.8-3.9	3.9-2.0	2.0-1.0	<1.0
CB85-120505	4.0	6.4	11.4	17.4	18.2	17.9	13.1	5.7	2.4	1.5	0.9	0.6	0.5
CB85-120505	3.4	7.5	11.3	17.1	18.3	17.3	14.8	4.6	2.3	1.5	0.9	0.5	0.4
CB85-120505	7.8	7.3	11.2	17.0	17.7	17.7	12.6	2.1	3.2	1.5	0.9	0.6	0.4
C-8	31.6	8.2	19.4	22.8	14.6	1.3	NA	NA	NA	NA	NA	NA	NA

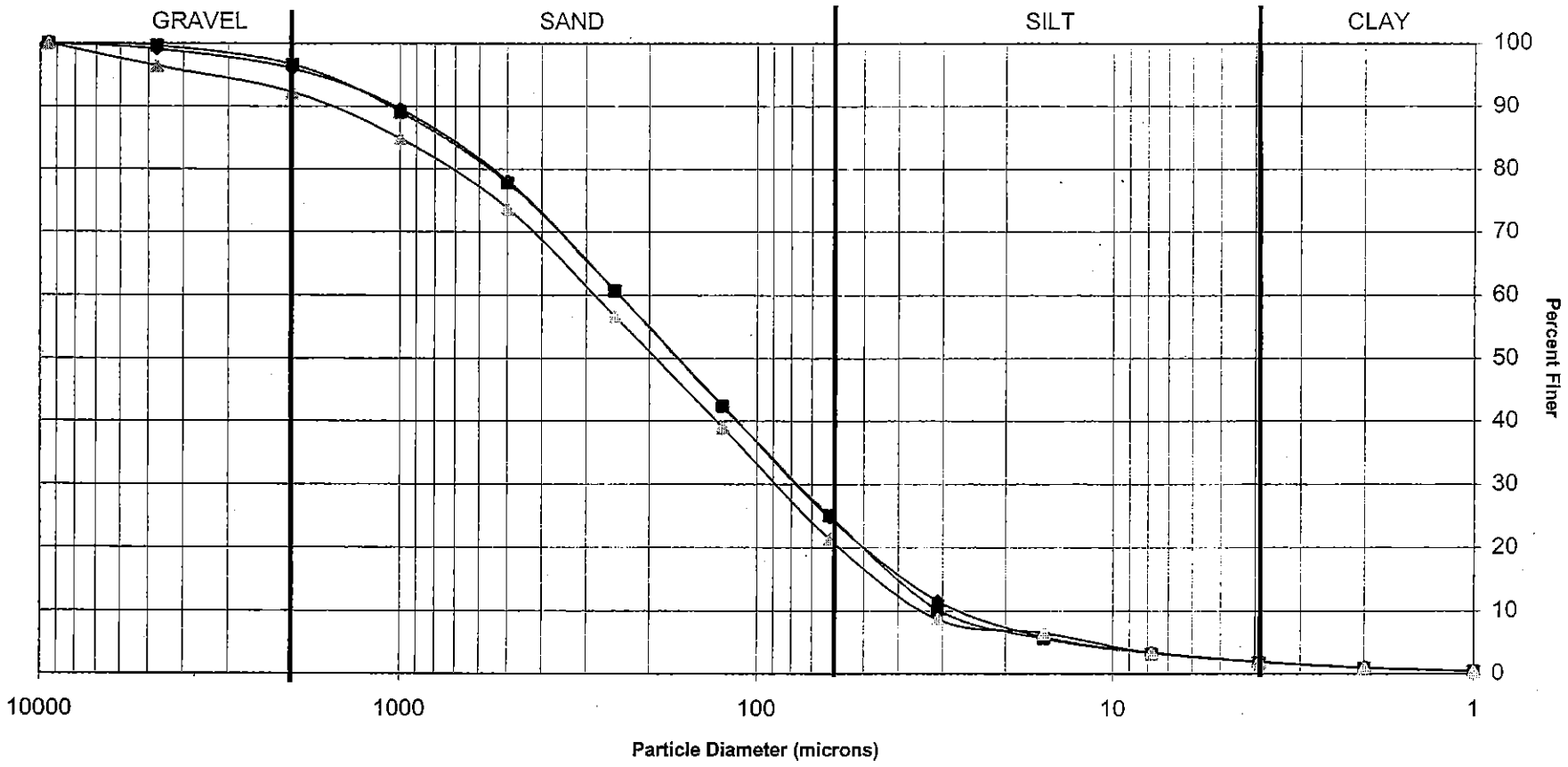
Notes to the Testing:

1. Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution. See narrative for discussion of the testing.

ANALYTICAL RESOURCES INCORPORATED

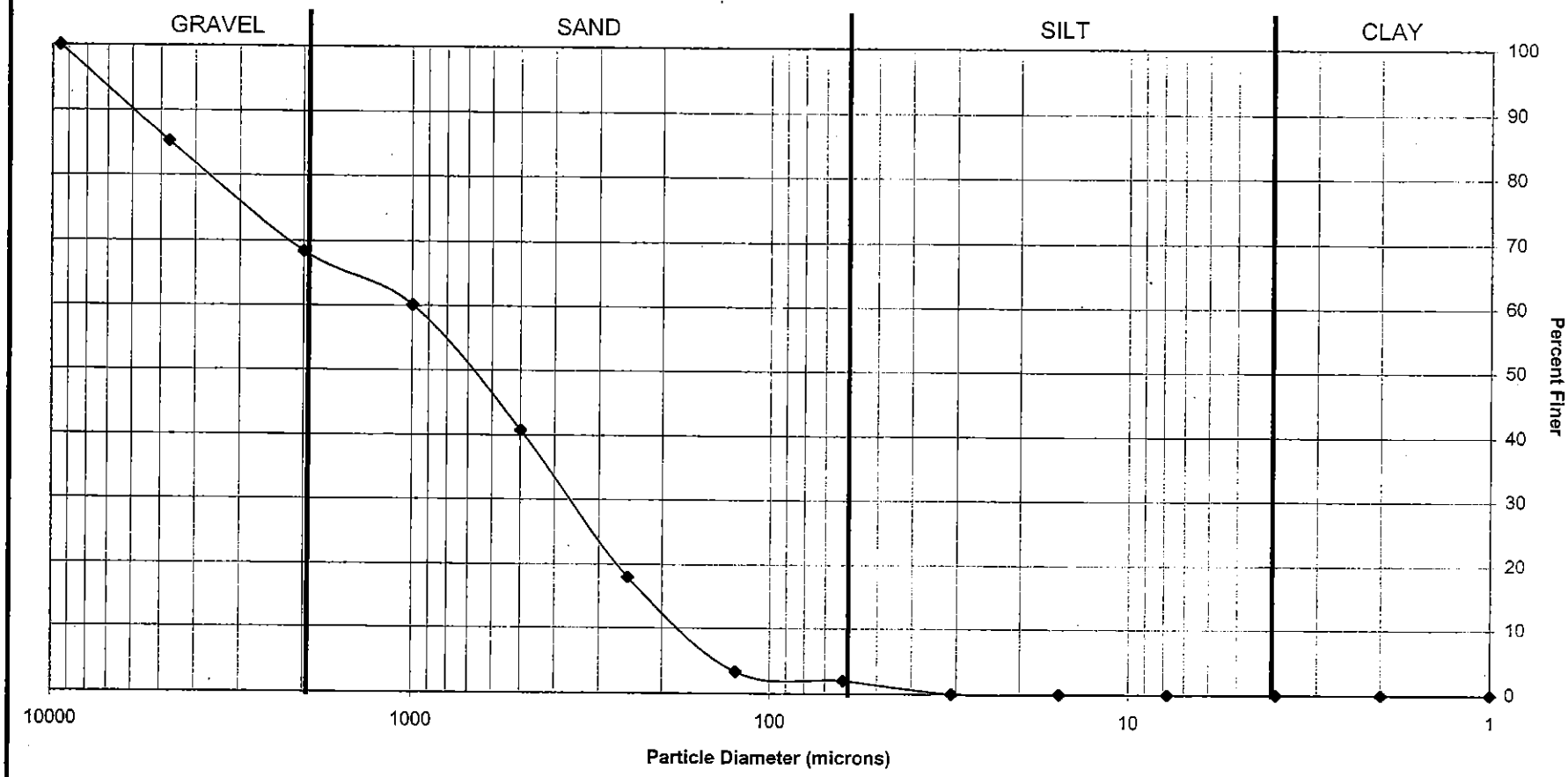
PSEP Grain Size Distribution

Triplicate Sample Plot



ANALYTICAL RESOURCES INCORPORATED

PSEP Grain Size Distribution



Analytical Resources, Incorporated
Analytical Chemists and Consultants

3 January 2006

David Gillingham
Parametrix, Inc.
411 108th Avenue NE
Suite 1800
Bellevue, WA 98004-5571

RE: Client Project: Bremerton Parametrix
ARI Job No. IW53

Dear David:

Please find enclosed the original chain of custody record and the final results for the sample from the project referenced above. One sediment sample was received on December 21, 2005. The sample was analyzed for grain size as requested.

A copy of these reports and all associated raw data will be kept on file with ARI. Should you have any questions please feel free to call me at any time.

Sincerely,

ANALYTICAL RESOURCES, INC.

Mark D. Harris
Project Manager
206/695-6210
mark@arilabs.com

Enclosures

cc: File IW53

MDH/mdh

4.18c IWSD

☒ 2433 Impala Drive • Carlsbad, CA 92008 • (760) 931-8081, FAX 931-1580
☐ 98 Main St., Ste. #428 • Tiburon, CA 94920 • (415) 435-1847, FAX 435-0479
☐ 1440 Broadway, Ste. 908 • Oakland, CA 94612 • (510) 808-0302, FAX 891-9710
☐ 152 Sunset View Lane • Sequim, WA 98382 • (360) 582-1758, FAX 582-1679
☐ 4729 NE View Drive • Port Gamble, WA 98364 • (360) 297-6903, FAX 297-6905

CHAIN OF CUSTODY
12028

DATE 12/20/05 PAGE 1 OF 1

PROJECT NAME / SURVEY / PROJECT NUMBER: Bremerton Parametrix
PROJECT MANAGER: Bill Gardiner
COMPANY: Weston
ADDRESS: 4729 NE View Dr. Port Gamble WA 98364
PHONE/FAX: 360-297-6903 / 297-6905

SAMPLE I.D.	DATE	TIME	MATRIX	INITIALS	NUMBER & TYPE OF CONTAINERS	ANALYSIS/TEST REQUESTED: Grain Size					PRESERVED HOW/ COMMENTS	FOR WESTON USE ONLY: SAMPLE TEMP. UPON RECEIPT	FOR WESTON USE ONLY: WESTON LAB ID
Ref-6	12/20/05	1437	sed	YS	1 bag	X					ice		

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPPING:
Shipping VIA: Airbill No:

SAMPLE CONDITION UPON RECEIPT (FOR WESTON USE ONLY):

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Kasey Skrivseth					
Signature	Signature	Signature	Signature	Signature	Signature
Weston					
Firm	Firm	Firm	Firm	Firm	Firm
12/20/05 1439					
Date/Time	Date/Time 12/21/05 1045	Date/Time	Date/Time	Date/Time	Date/Time

WHITE – return to originator • YELLOW – lab • PINK – retained by originator

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Client: Weston Solutions	Project No.: IW53
Client Project: Bremerton Parametrix	

Case Narrative

1. Sample REF-6 was submitted for grain size analysis according to PSEP methodology.
2. The sample was run in a single batch with other PSEP samples, and one sample was chosen for triplicate analysis. The triplicate data is reported on the QA summary.
3. Sample REF-6 was mostly sand and contained fewer than the required 5 grams in the pipette portion of the analysis. Our balance has a capacity of about 205 g (by 0.0001), and a sample size that would give 5 grams of fines could not be split and stay within the capacity of the balance. When this occurs, we generally run the samples anyway, and flag the data.
4. The data is provided in summary tables and plots.
5. There were no other noted anomalies in the sample or methods on this project.

Approved by: Taylor McKenzie Date: 12/29/05
Title: Lead Technician

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

ANALYTICAL RESOURCES INCORPORATED

DATA QUALIFIERS FOR PHYSICAL ANALYSES

SM Indicates that the sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with moisture content, porosity, and saturation calculations that assume only water is present. It can also cause particles to adhere to one another, causing errors in grain size distribution analyses.

SS Indicates that the sample was not appropriate for the method requested because it did not contain the proportion of "fines'" required to perform the pipette portion of the analysis.

W Indicates that the amount of sample in some pipette readings was below the level required for accurate weighing, resulting in negative weights, which were adjusted to eliminate the negative value.

F Indicates that the samples were frozen prior to particle size determination.

ANALYTICAL RESOURCES INCORPORATED

Weston Solutions
Bremerton Parametrix

Apparent Grain Size Distribution Summary
Percent Finer Than Indicated Size

Sample No.	Gravel			Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt				Clay	
Phi Size	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
Sieve Size (microns)	3/8"	#4	#10 (2000)	#18 (1000)	#35 (500)	#60 (250)	#120 (125)	#230 (62)	31.00	15.60	7.80	3.90	2.00	1.00
CR23/CR24	100.0	100.0	100.0	99.9	99.3	97.0	87.2	48.9	22.3	11.1	7.4	6.0	5.0	3.8
CR23/CR24	100.0	100.0	100.0	99.9	99.2	97.0	86.9	45.9	20.7	11.0	7.6	6.0	5.0	3.8
CR23/CR24	100.0	100.0	99.9	99.7	99.0	96.7	86.7	47.9	20.1	11.2	7.6	6.2	5.1	3.8
REF-6	100.0	100.0	99.8	96.9	96.4	74.6	23.7	4.0	2.1	1.7	1.5	1.2	1.0	0.8

Notes to the Testing:

1. Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution. See narrative for discussion of the testing.

ANALYTICAL RESOURCES INCORPORATED

Weston Solutions
Bremerton Parametrix

Apparent Grain Size Distribution Summary
Percent Retained in Each Size Fraction

Sample No.	Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Coarse Silt	Medium Silt	Fine Silt	Very Fine Silt	Clay		
Phi Size	> -1	-1 to 0	0 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 6	6 to 7	7 to 8	8 to 9	9 to 10	< 10
Sieve Size (microns)	> #10 (2000)	10 to 18 (2000-1000)	18-35 (1000-500)	35-60 (500-250)	60-120 (250-125)	120-230 (125-62)	62.5-31.0	31.0-15.6	15.6-7.8	7.8-3.9	3.9-2.0	2.0-1.0	<1.0
CR23/CR24	0.0	0.1	0.6	2.3	9.8	38.3	26.7	11.2	3.7	1.3	1.0	1.3	3.8
CR23/CR24	0.0	0.1	0.7	2.2	10.2	41.0	25.1	9.7	3.5	1.6	1.0	1.2	3.8
CR23/CR24	0.1	0.2	0.7	2.3	10.0	38.8	27.8	8.8	3.6	1.5	1.1	1.2	3.8
REF-6	0.2	2.9	0.5	21.7	50.9	19.7	1.9	0.4	0.2	0.3	0.3	0.2	0.8

Notes to the Testing:

1. Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution. See narrative for discussion of the testing.

IW53

ANALYTICAL RESOURCES INCORPORATED

Weston Solutions
Bremerton Parametrix

PSEP Total Solids Analysis
Percent of Wet Weight

Sample No.	Total Solids (%)
CR23/CR24	68.0
CR23/CR24	67.9
CR23/CR24	67.9
REF-6	80.9

Triplicate Average	67.9
Standard Deviation	0.02
%RSD	0.04

(Total Solids at 90 C)

IW53

QA SUMMARY

ANALYTICAL RESOURCES INCORPORATED

PROJECT:	Weston Solutions	Project No.:	Bremerton Parametrix
ARI Triplicate Sample ID:	IW60 A	Batch No.:	IW53
Client Triplicate Sample ID:	CR23/CR24	Page:	1 of 1

Relative Standard Deviation, By Phi Size

Sample ID	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
CR23/CR24	100.0	100.0	100.0	99.9	99.3	97.0	87.2	48.9	22.3	11.1	7.4	6.0	5.0	3.8
CR23/CR24	100.0	100.0	100.0	99.9	99.2	97.0	86.9	45.9	20.7	11.0	7.6	6.0	5.0	3.8
CR23/CR24	100.0	100.0	99.9	99.7	99.0	96.7	86.7	47.9	20.1	11.2	7.6	6.2	5.1	3.8
AVE	NA	100.00	99.97	99.81	99.14	96.91	86.92	47.54	21.03	11.12	7.52	6.06	5.04	3.81
STDEV	NA	0.00	0.04	0.10	0.16	0.19	0.28	1.55	1.11	0.11	0.13	0.10	0.05	0.05
%RSD	NA	0.00	0.04	0.10	0.16	0.19	0.32	3.26	5.27	0.99	1.75	1.62	1.01	1.25

The Triplicate Applies To The Following Samples

Client ID	Date Sampled	Date Extracted	Date Complete	QA Ratio (95-105)	Data Qualifiers	Pipette Portion (5.0-25.0g)
CR23/CR24	12/20/05	12/22/05	12/29/05	102.0		18.6
CR23/CR24	12/20/05	12/22/05	12/29/05	102.5		18.2
CR23/CR24	12/20/05	12/22/05	12/29/05	102.0		18.8
REF-6	12/20/05	12/21/05	12/29/05	100.7	SS	4.9

* ARI Internal QA limits = 95-105%

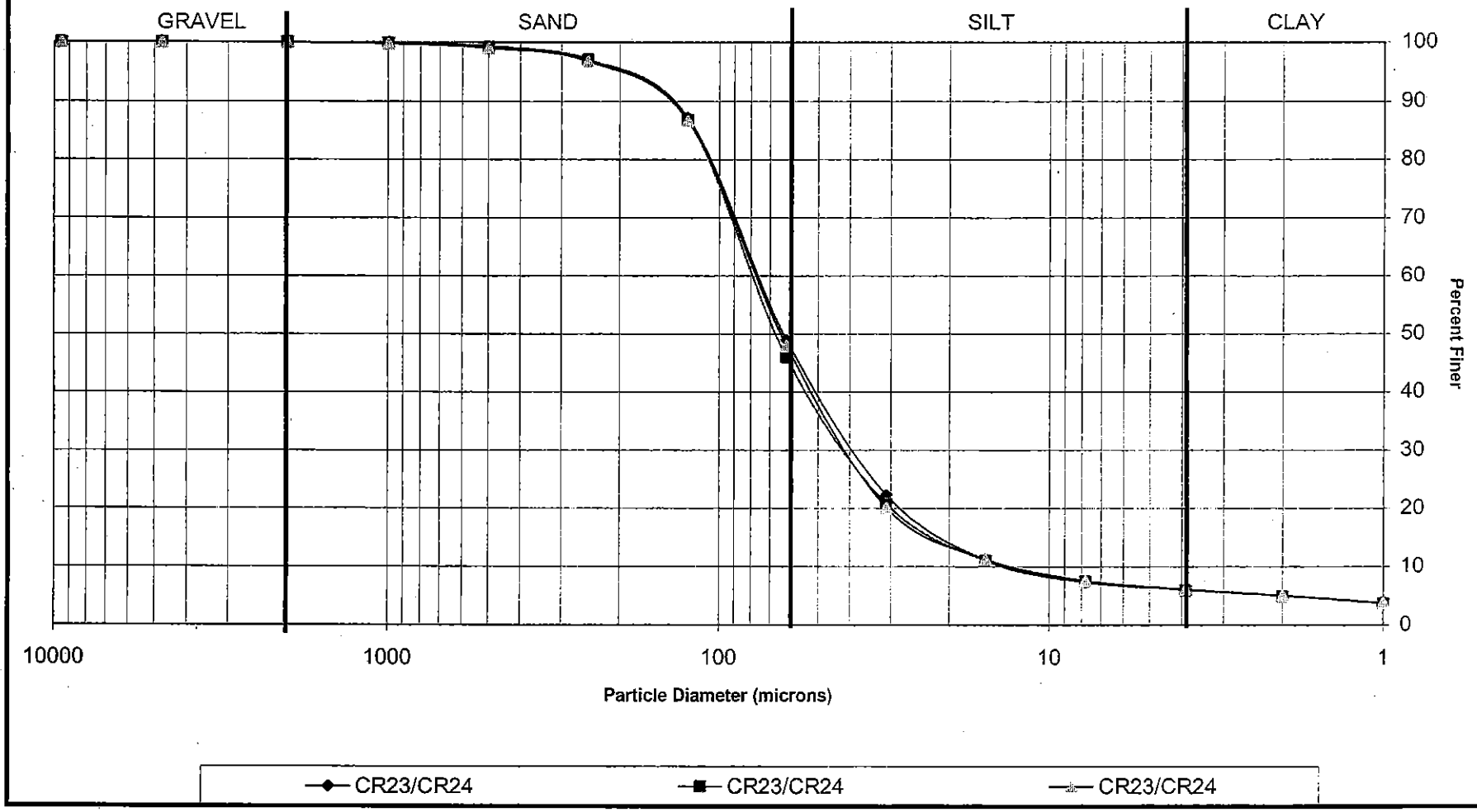
Notes to the Testing:

1. Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution. See narrative for discussion of the testing.

ANALYTICAL RESOURCES INCORPORATED

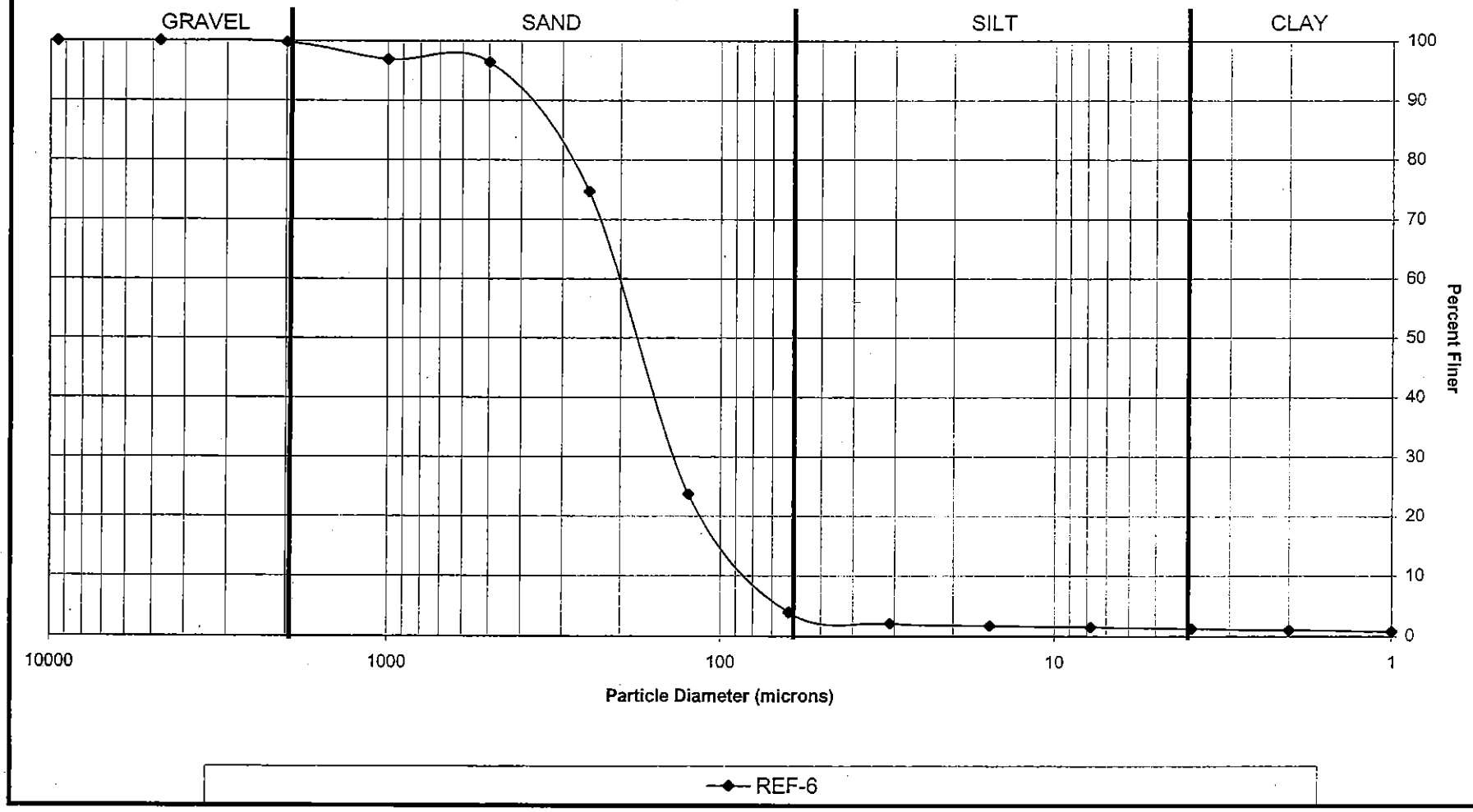
PSEP Grain Size Distribution

Triplicate Sample Plot



ANALYTICAL RESOURCES INCORPORATED

PSEP Grain Size Distribution



Analytical Resources, Incorporated
Analytical Chemists and Consultants

25 January 2006

JAN 2 6 2006
By Brem

Phil Struck
Parametrix, Inc.
5700 Kitsap Way
Suite 202
Bremerton, WA 98312-2234

RE: Client Project – 255-1896-063, Bremerton Seds
ARI Job IX82

Dear Phil:

Please find enclosed the original chain of custody record (COC) and the final results for the samples from the project referenced above. Three sediment samples were received in good condition on January 11, 2006. There were no discrepancies between the chain of custody and the sample container's labels. The samples were analyzed for PAHs, TOC and grain size as requested.

There were no analytical complications noted.

A copy of these reports and all supporting data will be kept on file with ARI. Should you have any questions please feel free to call me at any time.

Sincerely,

ANALYTICAL RESOURCES, INC.

Mark D. Harris
Project Manager
206/695-6210
mark@arilabs.com

Enclosures

cc: File IX82

MDH/mdh

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: IX82	Turn-around Requested: 14 Day	Page: 1 of 1	
ARI Client Company: Parametrix	Phone: (360) 377-0014	Date: 1/9/06	Ice Present? Y
Client Contact: Phil Strack		No. of Coolers: 1	Cooler Temps: 3.0
Client Project Name: Bremerton Seds			
Client Project #: 255-1896-063	Samplers: L. Linde, P. Strack		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: Gamin Size	TOC	PAHs						Notes/Comments
C-11	1/9/06	1745	Sediment	3	X	X	X						
C-12	"	1740	"	3	X	X	X						
C-13	"	1735	"	3	X	X	X						

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
Please email results to pstruck@parametrix.com	Printed Name: Lara Linde	Printed Name: BRIAN KEIL	Printed Name:	Printed Name:
	Company: Parametrix	Company: ARI	Company:	Company:
	Date & Time: 1/10/05 1235	Date & Time: 1/11/06 1000	Date & Time:	Date & Time:

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Data Reporting Qualifiers

Effective 12/28/04

Inorganic Data

U Indicates that the target analyte was not detected at the reported concentration

* Duplicate RPD is not within established control limits

B Reported value is less than the CRDL but ≥ the Reporting Limit

N Matrix Spike recovery not within established control limits

NA Not Applicable, analyte not spiked

H The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible

L Analyte concentration is ≤5 times the Reporting Limit and the replicate control limit defaults to ±1 RL instead of the normal 20% RPD

Organic Data

U Indicates that the target analyte was not detected at the reported concentration

* Flagged value is not within established control limits

B Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.

J Estimated concentration when the value is less than ARI's established reporting limits

D The spiked compound was not detected due to sample extract dilution

NR Spiked compound recovery is not reported due to chromatographic interference

E Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

S Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte

NA The flagged analyte was not analyzed for

NS The flagged analyte was not spiked into the sample

M Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses

N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"

Y The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.

C The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column

P The analyte was detected on both chromatographic columns but the quantified values differ by ≥40% RPD with no obvious chromatographic interference

Geotechnical Data

A The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.

F Samples were frozen prior to particle size determination

SM Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations

SS Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis

W Weight of sample in some pipette aliquots was below the level required for accurate weighting

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS
Page 1 of 1

Sample ID: MB-011606
METHOD BLANK

Lab Sample ID: MB-011606
LIMS ID: 06-236
Matrix: Sediment
Data Release Authorized:
Reported: 01/19/06

QC Report No: IX82-Parametrix
Project: Bremerton Seds
255-1896-063
Date Sampled: NA
Date Received: NA

Date Extracted: 01/16/06
Date Analyzed: 01/18/06 21:30
Instrument/Analyst: NT4/VTS
GPC Cleanup: No
Alumina: Yes

Sample Amount: 25.0 g
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: NA
pH: NA

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	20	< 20 U
91-57-6	2-Methylnaphthalene	20	< 20 U
208-96-8	Acenaphthylene	20	< 20 U
83-32-9	Acenaphthene	20	< 20 U
86-73-7	Fluorene	20	< 20 U
85-01-8	Phenanthrene	20	< 20 U
120-12-7	Anthracene	20	< 20 U
206-44-0	Fluoranthene	20	< 20 U
129-00-0	Pyrene	20	< 20 U
56-55-3	Benzo(a)anthracene	20	< 20 U
218-01-9	Chrysene	20	< 20 U
205-99-2	Benzo(b)fluoranthene	20	< 20 U
207-08-9	Benzo(k)fluoranthene	20	< 20 U
50-32-8	Benzo(a)pyrene	20	< 20 U
193-39-5	Indeno(1,2,3-cd)pyrene	20	< 20 U
53-70-3	Dibenz(a,h)anthracene	20	< 20 U
191-24-2	Benzo(g,h,i)perylene	20	< 20 U
132-64-9	Dibenzofuran	20	< 20 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
d14-p-Terphenyl	66.8%
2-Fluorobiphenyl	62.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS
Page 1 of 1

Sample ID: C-11
SAMPLE

Lab Sample ID: IX82A
LIMS ID: 06-236
Matrix: Sediment
Data Release Authorized:
Reported: 01/19/06

QC Report No: IX82-Parametrix
Project: Bremerton Seds
255-1896-063
Date Sampled: 01/09/06
Date Received: 01/11/06

Date Extracted: 01/16/06
Date Analyzed: 01/18/06 22:37
Instrument/Analyst: NT4/VTS
GPC Cleanup: No
Alumina: Yes

Sample Amount: 25.8 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 18.3%
pH: 7.5

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	19	< 19 U
91-57-6	2-Methylnaphthalene	19	< 19 U
208-96-8	Acenaphthylene	19	< 19 U
83-32-9	Acenaphthene	19	< 19 U
86-73-7	Fluorene	19	< 19 U
85-01-8	Phenanthrene	19	< 19 U
120-12-7	Anthracene	19	< 19 U
206-44-0	**Fluoranthene**	**19**	**20**
129-00-0	Pyrene	19	< 19 U
56-55-3	Benzo(a)anthracene	19	< 19 U
218-01-9	**Chrysene**	**19**	**25**
205-99-2	Benzo(b)fluoranthene	19	< 19 U
207-08-9	Benzo(k)fluoranthene	19	< 19 U
50-32-8	Benzo(a)pyrene	19	< 19 U
193-39-5	Indeno(1,2,3-cd)pyrene	19	< 19 U
53-70-3	Dibenz(a,h)anthracene	19	< 19 U
191-24-2	Benzo(g,h,i)perylene	19	< 19 U
132-64-9	Dibenzofuran	19	< 19 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
d14-p-Terphenyl	68.4%
2-Fluorobiphenyl	65.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS
Page 1 of 1

Sample ID: C-11
MATRIX SPIKE

Lab Sample ID: IX82A
LIMS ID: 06-236
Matrix: Sediment
Data Release Authorized:
Reported: 01/19/06

QC Report No: IX82-Parametrix
Project: Bremerton Seds
255-1896-063
Date Sampled: 01/09/06
Date Received: 01/11/06

Date Extracted: 01/16/06
Date Analyzed: 01/18/06 23:10
Instrument/Analyst: NT4/VTS
GPC Cleanup: No
Alumina: Yes

Sample Amount: 26.1 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 18.3%
pH: 7.5

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	19	---
91-57-6	2-Methylnaphthalene	19	< 19 U
208-96-8	Acenaphthylene	19	< 19 U
83-32-9	Acenaphthene	19	---
86-73-7	Fluorene	19	< 19 U
85-01-8	Phenanthrene	19	< 19 U
120-12-7	Anthracene	19	< 19 U
206-44-0	Fluoranthene	19	---
129-00-0	**Pyrene**	**19**	**28**
56-55-3	Benzo(a)anthracene	19	---
218-01-9	**Chrysene**	**19**	**20**
205-99-2	Benzo(b)fluoranthene	19	< 19 U
207-08-9	Benzo(k)fluoranthene	19	< 19 U
50-32-8	Benzo(a)pyrene	19	< 19 U
193-39-5	Indeno(1,2,3-cd)pyrene	19	< 19 U
53-70-3	Dibenz(a,h)anthracene	19	< 19 U
191-24-2	Benzo(g,h,i)perylene	19	< 19 U
132-64-9	Dibenzofuran	19	< 19 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	68.8%
2-Fluorobiphenyl	65.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS
Page 1 of 1

Sample ID: C-11
MATRIX SPIKE DUPLICATE

Lab Sample ID: IX82A
LIMS ID: 06-236
Matrix: Sediment
Data Release Authorized:
Reported: 01/19/06

QC Report No: IX82-Parametrix
Project: Bremerton Seds
255-1896-063
Date Sampled: 01/09/06
Date Received: 01/11/06

Date Extracted: 01/16/06
Date Analyzed: 01/18/06 23:43
Instrument/Analyst: NT4/VTS
GPC Cleanup: No
Alumina: Yes

Sample Amount: 25.5 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 18.3%
pH: 7.5

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	20	---
91-57-6	2-Methylnaphthalene	20	< 20 U
208-96-8	Acenaphthylene	20	< 20 U
83-32-9	Acenaphthene	20	---
86-73-7	Fluorene	20	< 20 U
85-01-8	Phenanthrene	20	< 20 U
120-12-7	Anthracene	20	< 20 U
206-44-0	Fluoranthene	20	---
129-00-0	Pyrene	20	< 20 U
56-55-3	Benzo(a)anthracene	20	---
218-01-9	Chrysene	20	< 20 U
205-99-2	Benzo(b)fluoranthene	20	< 20 U
207-08-9	Benzo(k)fluoranthene	20	< 20 U
50-32-8	Benzo(a)pyrene	20	< 20 U
193-39-5	Indeno(1,2,3-cd)pyrene	20	< 20 U
53-70-3	Dibenz(a,h)anthracene	20	< 20 U
191-24-2	Benzo(g,h,i)perylene	20	< 20 U
132-64-9	Dibenzofuran	20	< 20 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	62.0%
2-Fluorobiphenyl	60.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS
Page 1 of 1

Sample ID: C-11
MS/MSD

Lab Sample ID: IX82A
LIMS ID: 06-236
Matrix: Sediment
Data Release Authorized:
Reported: 01/19/06

QC Report No: IX82-Parametrix
Project: Bremerton Seds
255-1896-063
Date Sampled: 01/09/06
Date Received: 01/11/06

Date Extracted MS/MSD: 01/16/06

Sample Amount MS: 26.1 g-dry-wt
MSD: 25.5 g-dry-wt

Date Analyzed MS: 01/18/06 23:10
MSD: 01/18/06 23:43

Final Extract Volume MS: 0.5 mL
MSD: 0.5 mL

Instrument/Analyst MS: NT4/VTS
MSD: NT4/VTS

Dilution Factor MS: 1.00
MSD: 1.00

GPC Cleanup: NO

Alumina Cleanup: YES

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Naphthalene	< 19.4	347	479	72.4%	326	490	66.5%	6.2%
Acenaphthene	< 19.4	339	479	70.8%	323	490	65.9%	4.8%
Fluoranthene	20.3	420	479	83.4%	397	490	76.9%	5.6%
Benzo(a)anthracene	< 19.4	389	479	81.2%	355	490	72.4%	9.1%

Results reported in µg/kg
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS
Page 1 of 1

Sample ID: C-12
SAMPLE

Lab Sample ID: IX82B
LIMS ID: 06-237
Matrix: Sediment
Data Release Authorized:
Reported: 01/19/06

QC Report No: IX82-Parametrix
Project: Bremerton Seds
255-1896-063
Date Sampled: 01/09/06
Date Received: 01/11/06

Date Extracted: 01/16/06
Date Analyzed: 01/19/06 00:16
Instrument/Analyst: NT4/VTS
GPC Cleanup: No
Alumina: Yes

Sample Amount: 26.1 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 26.5%
pH: 7.4

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	19	< 19 U
91-57-6	2-Methylnaphthalene	19	< 19 U
208-96-8	Acenaphthylene	19	< 19 U
83-32-9	Acenaphthene	19	< 19 U
86-73-7	Fluorene	19	< 19 U
85-01-8	**Phenanthrene**	**19**	**27**
120-12-7	Anthracene	19	< 19 U
206-44-0	**Fluoranthene**	**19**	**93**
129-00-0	**Pyrene**	**19**	**79**
56-55-3	**Benzo(a)anthracene**	**19**	**42**
218-01-9	**Chrysene**	**19**	**51**
205-99-2	**Benzo(b)fluoranthene**	**19**	**58**
207-08-9	**Benzo(k)fluoranthene**	**19**	**40**
50-32-8	**Benzo(a)pyrene**	**19**	**48**
193-39-5	**Indeno(1,2,3-cd)pyrene**	**19**	**24**
53-70-3	Dibenz(a,h)anthracene	19	< 19 U
191-24-2	**Benzo(g,h,i)perylene**	**19**	**27**
132-64-9	Dibenzofuran	19	< 19 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
d14-p-Terphenyl	70.0%
2-Fluorobiphenyl	67.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS
Page 1 of 1

Sample ID: C-13
SAMPLE

Lab Sample ID: IX82C
LIMS ID: 06-238
Matrix: Sediment
Data Release Authorized:
Reported: 01/19/06

QC Report No: IX82-Parametrix
Project: Bremerton Seds
255-1896-063
Date Sampled: 01/09/06
Date Received: 01/11/06

Date Extracted: 01/16/06
Date Analyzed: 01/19/06 00:49
Instrument/Analyst: NT4/VTS
GPC Cleanup: No
Alumina: Yes

Sample Amount: 25.5 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 20.7%
pH: 7.5

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	20	< 20 U
91-57-6	2-Methylnaphthalene	20	< 20 U
208-96-8	Acenaphthylene	20	< 20 U
83-32-9	Acenaphthene	20	< 20 U
86-73-7	Fluorene	20	< 20 U
85-01-8	**Phenanthrene**	**20**	**20**
120-12-7	Anthracene	20	< 20 U
206-44-0	**Fluoranthene**	**20**	**64**
129-00-0	**Pyrene**	**20**	**60**
56-55-3	**Benzo(a)anthracene**	**20**	**28**
218-01-9	**Chrysene**	**20**	**39**
205-99-2	**Benzo(b)fluoranthene**	**20**	**37**
207-08-9	**Benzo(k)fluoranthene**	**20**	**28**
50-32-8	**Benzo(a)pyrene**	**20**	**33**
193-39-5	Indeno(1,2,3-cd)pyrene	20	< 20 U
53-70-3	Dibenz(a,h)anthracene	20	< 20 U
191-24-2	**Benzo(g,h,i)perylene**	**20**	**21**
132-64-9	Dibenzofuran	20	< 20 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
d14-p-Terphenyl	66.4%
2-Fluorobiphenyl	64.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS

Sample ID: LCS-011606
LAB CONTROL

Lab Sample ID: LCS-011606
LIMS ID: 06-236
Matrix: Sediment
Data Release Authorized:
Reported: 01/19/06

QC Report No: IX82-Parametrix
Project: Bremerton Seds
255-1896-063
Date Sampled: NA
Date Received: 01/11/06

Date Extracted: 01/16/06
Date Analyzed: 01/18/06 22:03
Instrument/Analyst: NT4/VTS
GPC Cleanup: NO

Sample Amount: 25.0 g
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Alumina Cleanup: YES

Analyte	Lab Control	Spike Added	Recovery
Naphthalene	335	500	67.0%
Acenaphthene	319	500	63.8%
Fluoranthene	415	500	83.0%
Benzo(a)anthracene	382	500	76.4%

Semivolatile Surrogate Recovery	
d14-p-Terphenyl	68.0%
2-Fluorobiphenyl	62.0%

Results reported in µg/kg

METHOD BLANK RESULTS-CONVENTIONALS
IX82-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 01/25/06

Project: Bremerton Seds
Event: 255-1896-063
Date Sampled: NA
Date Received: NA

Analyte	Date	Units	Blank
Total Solids	01/11/06	Percent	< 0.01 U
Total Organic Carbon	01/18/06	Percent	< 0.020 U
	01/18/06		< 0.020 U
	01/18/06		< 0.020 U
	01/23/06		< 0.020 U

SAMPLE RESULTS-CONVENTIONALS
IX82-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 01/25/06

Project: Bremerton Seds
Event: 255-1896-063
Date Sampled: 01/09/06
Date Received: 01/11/06

Client ID: C-11
ARI ID: 06-236 IX82A

Analyte	Date	Method	Units	RL	Sample
Total Solids	01/11/06 011106#1	EPA 160.3	Percent	0.01	82.60
Total Organic Carbon	01/23/06 012306#1	Plumb,1981	Percent	0.020	0.392

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
IX82-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 01/25/06

Project: Bremerton Seds
Event: 255-1896-063
Date Sampled: 01/09/06
Date Received: 01/11/06

Client ID: C-12
ARI ID: 06-237 IX82B

Analyte	Date	Method	Units	RL	Sample
Total Solids	01/11/06 011106#1	EPA 160.3	Percent	0.01	71.90
Total Organic Carbon	01/18/06 011806#3	Plumb,1981	Percent	0.020	0.631

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
IX82-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 01/25/06

Project: Bremerton Seds
Event: 255-1896-063
Date Sampled: 01/09/06
Date Received: 01/11/06

Client ID: C-13
ARI ID: 06-238 IX82C

Analyte	Date	Method	Units	RL	Sample
Total Solids	01/11/06 011106#1	EPA 160.3	Percent	0.01	73.50
Total Organic Carbon	01/18/06 011806#3	Plumb,1981	Percent	0.020	1.04

RL Analytical reporting limit
U Undetected at reported detection limit

REPLICATE RESULTS-CONVENTIONALS
IX82-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 01/25/06

Project: Bremerton Seds
Event: 255-1896-063
Date Sampled: 01/09/06
Date Received: 01/11/06

Analyte	Date	Units	Sample	Replicate(s)	RPD/RSD
ARI ID: IX82B Client ID: C-12					
Total Solids	01/11/06	Percent	71.90	72.50 72.10	0.4%
Total Organic Carbon	01/18/06	Percent	0.631	0.670 0.672	3.5%

MS/MSD RESULTS-CONVENTIONALS
IX82-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 01/25/06

Project: Bremerton Seds
Event: 255-1896-063
Date Sampled: 01/09/06
Date Received: 01/11/06

Analyte	Date	Units	Sample	Spike	Spike Added	Recovery
ARI ID: IX82B Client ID: C-12						
Total Organic Carbon	01/18/06	Percent	0.631	1.43	0.772	103.5%

LAB CONTROL RESULTS-CONVENTIONALS
IX82-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 01/25/06

Project: Bremerton Seds
Event: 255-1896-063
Date Sampled: NA
Date Received: NA

Analyte	Date	Units	LCS	Spike Added	Recovery
Total Organic Carbon	01/18/06	Percent	0.547	0.500	109.4%
	01/18/06		0.529	0.500	105.8%
	01/23/06		0.514	0.500	102.8%

STANDARD REFERENCE RESULTS-CONVENTIONALS
IX82-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 01/25/06

Project: Bremerton Seds
Event: 255-1896-063
Date Sampled: NA
Date Received: NA

Analyte/SRM ID	Date	Units	SRM	True Value	Recovery
Total Organic Carbon	01/18/06	Percent	3.73	3.35	111.3%
NIST #8704	01/23/06		3.07	3.35	91.6%

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Client: Parametrix	Project No.: IX82
Client Project: Bremerton Seds 255-1896-063	

Case Narrative

1. The samples were submitted for grain size analysis according to PSEP methodology.
2. The samples were run in a single batch, and one sample was chosen for triplicate analysis. The triplicate data is reported on the QA summary.
3. The samples contained mostly sand and shell fragments. Sample C-12 was chosen for triplicate analysis. The second sample within the triplicate was calculated using the after moisture content to eliminate a negative value in the 4 phi size range.
4. All of the samples submitted for analysis contained a high percentage of shell fragments and/or organics, which may have broken down during the sieving process and affected grain size results.
5. The data is provided in summary tables and plots.
6. There were no other noted anomalies in the samples or methods on this project.

Approved by: P McKenzie Date: 1/18/06
Title: Lead Technician

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

ANALYTICAL RESOURCES INCORPORATED

QA SUMMARY

PROJECT:	Parametrix	Project No.:	Bremerton Seds 255-1896-063
ARI Triplicate Sample ID:	IX82 C	Batch No.:	IX82
Client Triplicate Sample ID:	C-12	Page:	1 of 1

Relative Standard Deviation, By Phi Size

Sample ID	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
C-12	100.0	88.8	83.6	79.9	73.0	43.2	11.0	4.5	3.5	2.8	2.3	1.8	1.3	0.9
C-12	100.0	86.9	81.6	78.0	71.3	43.3	11.1	5.0	4.0	3.2	2.8	2.2	1.5	1.0
C-12	100.0	88.8	84.0	80.6	73.9	45.2	11.9	5.6	4.1	3.5	2.9	2.3	1.6	1.1
AVE	NA	88.19	83.09	79.49	72.73	43.89	11.33	5.03	3.87	3.17	2.65	2.10	1.45	1.01
STDEV	NA	1.11	1.30	1.34	1.34	1.11	0.50	0.52	0.30	0.37	0.30	0.27	0.14	0.11
%RSD	NA	1.26	1.57	1.69	1.84	2.54	4.44	10.42	7.78	11.68	11.17	12.93	9.66	11.05

The Triplicate Applies To The Following Samples

Client ID	Date Sampled	Date Extracted	Date Complete	QA Ratio (95-105)	Data Qualifiers	Pipette Portion (5.0-25.0g)
C-12	1/9/06	1/11/06	1/18/06	99.8		5.1
C-12	1/9/06	1/11/06	1/18/06	98.7		5.8
C-12	1/9/06	1/11/06	1/18/06	100.2		6.8
C-11	1/9/06	1/11/06	1/18/06	101.8		6.8
C-13	1/9/06	1/11/06	1/18/06	100.8		7.7

* ARI Internal QA limits = 95-105%

Notes to the Testing:

1. Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution. See narrative for discussion of the testing.

ANALYTICAL RESOURCES INCORPORATED

Parametrix
Bremerton Seds 255-1896-063

Apparent Grain Size Distribution Summary
Percent Finer Than Indicated Size

Sample No.	Gravel			Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt				Clay	
Phi Size	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
Sieve Size (microns)	3/8"	#4	#10 (2000)	#18 (1000)	#35 (500)	#60 (250)	#120 (125)	#230 (62)	31.00	15.60	7.80	3.90	2.00	1.00
C-12	100.0	88.8	83.6	79.9	73.0	43.2	11.0	4.5	3.5	2.8	2.3	1.8	1.3	0.9
C-12	100.0	86.9	81.6	78.0	71.3	43.3	11.1	5.0	4.0	3.2	2.8	2.2	1.5	1.0
C-12	100.0	88.8	84.0	80.6	73.9	45.2	11.9	5.6	4.1	3.5	2.9	2.3	1.6	1.1
C-11	100.0	80.4	54.0	38.0	24.5	9.9	6.3	5.4	3.3	2.7	2.2	1.7	1.1	0.8
C-13	100.0	93.7	88.6	86.1	81.8	56.0	16.0	6.6	4.3	3.3	2.7	2.1	1.5	1.0

Notes to the Testing:

1. Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution. See narrative for discussion of the testing.

IX82

ANALYTICAL RESOURCES INCORPORATED

Parametrix
Bremerton Seds 255-1896-063

Apparent Grain Size Distribution Summary
Percent Retained in Each Size Fraction

Sample No.	Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Coarse Silt	Medium Silt	Fine Silt	Very Fine Silt	Clay		
Phi Size	> -1	-1 to 0	0 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 6	6 to 7	7 to 8	8 to 9	9 to 10	< 10
Sieve Size (microns)	> #10 (2000)	10 to 18 (2000-1000)	18-35 (1000-500)	35-60 (500-250)	60-120 (250-125)	120-230 (125-62)	62.5-31.0	31.0-15.6	15.6-7.8	7.8-3.9	3.9-2.0	2.0-1.0	<1.0
C-12	16.4	3.7	6.9	29.7	32.2	6.5	1.0	0.8	0.5	0.5	0.5	0.4	0.9
C-12	18.4	3.6	6.7	28.0	32.2	6.1	1.0	0.8	0.5	0.5	0.8	0.4	1.0
C-12	16.0	3.4	6.7	28.7	33.3	6.3	1.5	0.6	0.6	0.6	0.7	0.5	1.1
C-11	46.0	16.0	13.5	14.6	3.6	0.9	2.1	0.5	0.5	0.6	0.5	0.3	0.8
C-13	11.4	2.5	4.3	25.8	39.9	9.4	2.4	1.0	0.6	0.6	0.6	0.4	1.0

Notes to the Testing:

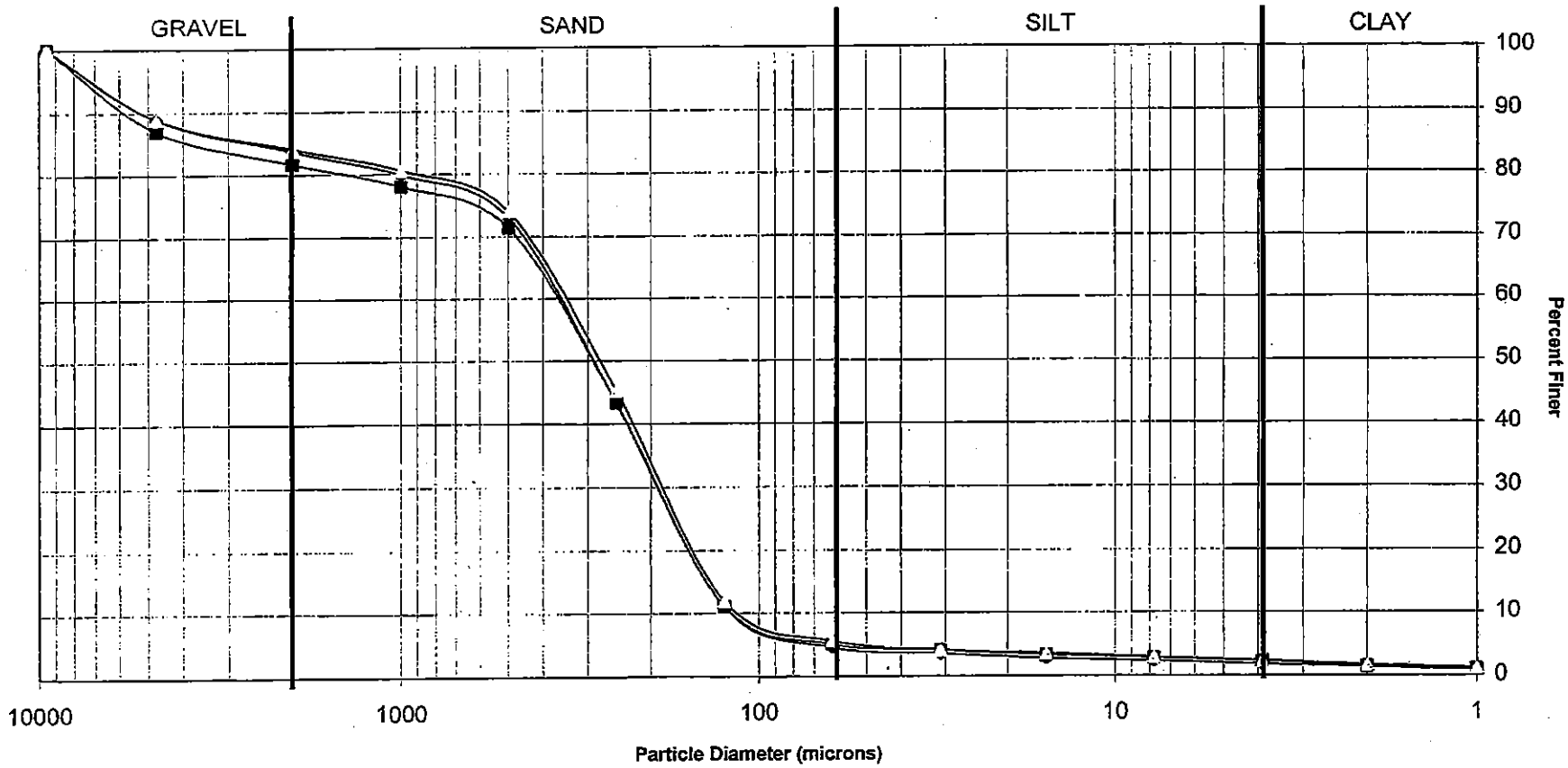
1. Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution. See narrative for discussion of the testing.

IX82

ANALYTICAL RESOURCES INCORPORATED

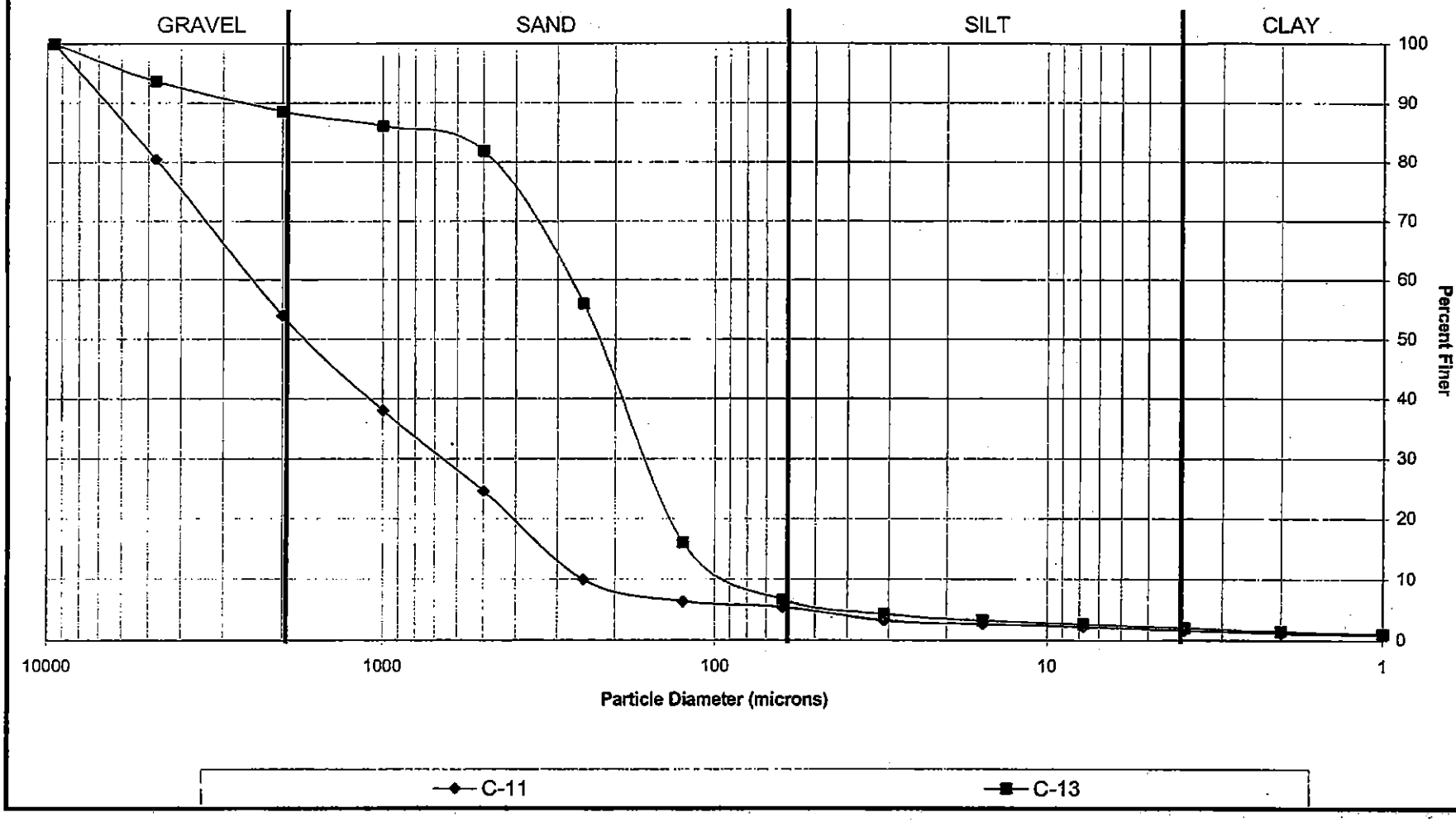
PSEP Grain Size Distribution

Triplicate Sample Plot



ANALYTICAL RESOURCES INCORPORATED

PSEP Grain Size Distribution



ANALYTICAL RESOURCES INCORPORATED

Parametrix
Bremerton Seds 255-1896-063

PSEP Total Solids Analysis
Percent of Wet Weight

Sample No.	Total Solids (%)
C-12	81.5
C-12	81.1
C-12	81.9
C-11	82.0
C-13	77.0

Triplicate Average	81.5
Standard Deviation	0.41
%RSD	0.51

(Total Solids at 90 C)

IX82

CHEMISTRY DATA FOR SAMPLES

C-11
C-12
C-13

Analytical Resources, Incorporated
Analytical Chemists and Consultants

25 January 2006

JAN 26 2006
by Brem

Phil Struck
Parametrix, Inc.
5700 Kitsap Way
Suite 202
Bremerton, WA 98312-2234

RE: Client Project – 255-1896-063, Bremerton Seds
ARI Job IX82

Dear Phil:

Please find enclosed the original chain of custody record (COC) and the final results for the samples from the project referenced above. Three sediment samples were received in good condition on January 11, 2006. There were no discrepancies between the chain of custody and the sample container's labels. The samples were analyzed for PAHs, TOC and grain size as requested.

There were no analytical complications noted.

A copy of these reports and all supporting data will be kept on file with ARI. Should you have any questions please feel free to call me at any time.

Sincerely,

ANALYTICAL RESOURCES, INC.

Mark D. Harris
Project Manager
206/695-6210
mark@arilabs.com

Enclosures

cc: File IX82

MDH/mdh

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: IX82	Turn-around Requested: 14 Day	Page: 1 of 1	
ARI Client Company: Parametrix	Phone: (360) 377-0014	Date: 1/9/06	Ice Present? Y
Client Contact: Phil Struck		No. of Coolers: 1	Cooler Temps: 3.0
Client Project Name: Bremerton Seds			
Client Project #: 255-1896-063	Samplers: L. Linde, P. Struck		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: Grain Size	TOC	PAHs						Notes/Comments
C-11	1/9/06	1745	Sediment	3	X	X	X						
C-12	↓	1740	↓	3	X	X	X						
C-13	↓	1735	↓	3	X	X	X						

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
Please email results to: pstruck@parametrix.com	Printed Name: Lara Linde	Printed Name: Brian Keller	Printed Name:	Printed Name:
	Company: Parametrix	Company: ARI	Company:	Company:
	Date & Time: 1/10/05 1235	Date & Time: 1/11/06 1000	Date & Time:	Date & Time:

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Data Reporting Qualifiers

Effective 12/28/04

Inorganic Data

U Indicates that the target analyte was not detected at the reported concentration

* Duplicate RPD is not within established control limits

B Reported value is less than the CRDL but ≥ the Reporting Limit

N Matrix Spike recovery not within established control limits

NA Not Applicable, analyte not spiked

H The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible

L Analyte concentration is ≤5 times the Reporting Limit and the replicate control limit defaults to ±1 RL instead of the normal 20% RPD

Organic Data

U Indicates that the target analyte was not detected at the reported concentration

* Flagged value is not within established control limits

B Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.

J Estimated concentration when the value is less than ARI's established reporting limits

D The spiked compound was not detected due to sample extract dilution

NR Spiked compound recovery is not reported due to chromatographic interference

E Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

S Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte

NA The flagged analyte was not analyzed for

NS The flagged analyte was not spiked into the sample

M Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses

N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"

Y The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.

C The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column

P The analyte was detected on both chromatographic columns but the quantified values differ by ≥40% RPD with no obvious chromatographic interference

Geotechnical Data

A The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.

F Samples were frozen prior to particle size determination

SM Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations

SS Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis

W Weight of sample in some pipette aliquots was below the level required for accurate weighting

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS
Page 1 of 1

Sample ID: MB-011606
METHOD BLANK

Lab Sample ID: MB-011606
LIMS ID: 06-236
Matrix: Sediment
Data Release Authorized:
Reported: 01/19/06

QC Report No: IX82-Parametrix
Project: Bremerton Seds
255-1896-063
Date Sampled: NA
Date Received: NA

Date Extracted: 01/16/06
Date Analyzed: 01/18/06 21:30
Instrument/Analyst: NT4/VTS
GPC Cleanup: No
Alumina: Yes

Sample Amount: 25.0 g
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: NA
pH: NA

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	20	< 20 U
91-57-6	2-Methylnaphthalene	20	< 20 U
208-96-8	Acenaphthylene	20	< 20 U
83-32-9	Acenaphthene	20	< 20 U
86-73-7	Fluorene	20	< 20 U
85-01-8	Phenanthrene	20	< 20 U
120-12-7	Anthracene	20	< 20 U
206-44-0	Fluoranthene	20	< 20 U
129-00-0	Pyrene	20	< 20 U
56-55-3	Benzo(a)anthracene	20	< 20 U
218-01-9	Chrysene	20	< 20 U
205-99-2	Benzo(b)fluoranthene	20	< 20 U
207-08-9	Benzo(k)fluoranthene	20	< 20 U
50-32-8	Benzo(a)pyrene	20	< 20 U
193-39-5	Indeno(1,2,3-cd)pyrene	20	< 20 U
53-70-3	Dibenz(a,h)anthracene	20	< 20 U
191-24-2	Benzo(g,h,i)perylene	20	< 20 U
132-64-9	Dibenzofuran	20	< 20 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	66.8%
2-Fluorobiphenyl	62.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS **Sample ID: C-11**
Page 1 of 1 **SAMPLE**

Lab Sample ID: IX82A
LIMS ID: 06-236
Matrix: Sediment
Data Release Authorized:
Reported: 01/19/06

QC Report No: IX82-Parametrix
Project: Bremerton Seds
255-1896-063
Date Sampled: 01/09/06
Date Received: 01/11/06

Date Extracted: 01/16/06
Date Analyzed: 01/18/06 22:37
Instrument/Analyst: NT4/VTS
GPC Cleanup: No
Alumina: Yes

Sample Amount: 25.8 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 18.3%
pH: 7.5

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	19	< 19 U
91-57-6	2-Methylnaphthalene	19	< 19 U
208-96-8	Acenaphthylene	19	< 19 U
83-32-9	Acenaphthene	19	< 19 U
86-73-7	Fluorene	19	< 19 U
85-01-8	Phenanthrene	19	< 19 U
120-12-7	Anthracene	19	< 19 U
206-44-0	**Fluoranthene**	**19**	**20**
129-00-0	Pyrene	19	< 19 U
56-55-3	Benzo(a)anthracene	19	< 19 U
218-01-9	**Chrysene**	**19**	**25**
205-99-2	Benzo(b)fluoranthene	19	< 19 U
207-08-9	Benzo(k)fluoranthene	19	< 19 U
50-32-8	Benzo(a)pyrene	19	< 19 U
193-39-5	Indeno(1,2,3-cd)pyrene	19	< 19 U
53-70-3	Dibenz(a,h)anthracene	19	< 19 U
191-24-2	Benzo(g,h,i)perylene	19	< 19 U
132-64-9	Dibenzofuran	19	< 19 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
d14-p-Terphenyl	68.4%
2-Fluorobiphenyl	65.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS
Page 1 of 1

Sample ID: C-11
MATRIX SPIKE

Lab Sample ID: IX82A
LIMS ID: 06-236
Matrix: Sediment
Data Release Authorized:
Reported: 01/19/06

QC Report No: IX82-Parametrix
Project: Bremerton Seds
255-1896-063
Date Sampled: 01/09/06
Date Received: 01/11/06

Date Extracted: 01/16/06
Date Analyzed: 01/18/06 23:10
Instrument/Analyst: NT4/VTS
GPC Cleanup: No
Alumina: Yes

Sample Amount: 26.1 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 18.3%
pH: 7.5

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	19	---
91-57-6	2-Methylnaphthalene	19	< 19 U
208-96-8	Acenaphthylene	19	< 19 U
83-32-9	Acenaphthene	19	---
86-73-7	Fluorene	19	< 19 U
85-01-8	Phenanthrene	19	< 19 U
120-12-7	Anthracene	19	< 19 U
206-44-0	Fluoranthene	19	---
129-00-0	**Pyrene**	**19**	**28**
56-55-3	Benzo(a)anthracene	19	---
218-01-9	**Chrysene**	**19**	**20**
205-99-2	Benzo(b)fluoranthene	19	< 19 U
207-08-9	Benzo(k)fluoranthene	19	< 19 U
50-32-8	Benzo(a)pyrene	19	< 19 U
193-39-5	Indeno(1,2,3-cd)pyrene	19	< 19 U
53-70-3	Dibenz(a,h)anthracene	19	< 19 U
191-24-2	Benzo(g,h,i)perylene	19	< 19 U
132-64-9	Dibenzofuran	19	< 19 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	68.8%
2-Fluorobiphenyl	65.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS
Page 1 of 1

Sample ID: C-11
MATRIX SPIKE DUPLICATE

Lab Sample ID: IX82A
LIMS ID: 06-236
Matrix: Sediment
Data Release Authorized:
Reported: 01/19/06

QC Report No: IX82-Parametrix
Project: Bremerton Seds
255-1896-063
Date Sampled: 01/09/06
Date Received: 01/11/06

Date Extracted: 01/16/06
Date Analyzed: 01/18/06 23:43
Instrument/Analyst: NT4/VTS
GPC Cleanup: No
Alumina: Yes

Sample Amount: 25.5 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 18.3%
pH: 7.5

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	20	---
91-57-6	2-Methylnaphthalene	20	< 20 U
208-96-8	Acenaphthylene	20	< 20 U
83-32-9	Acenaphthene	20	---
86-73-7	Fluorene	20	< 20 U
85-01-8	Phenanthrene	20	< 20 U
120-12-7	Anthracene	20	< 20 U
206-44-0	Fluoranthene	20	---
129-00-0	Pyrene	20	< 20 U
56-55-3	Benzo(a)anthracene	20	---
218-01-9	Chrysene	20	< 20 U
205-99-2	Benzo(b)fluoranthene	20	< 20 U
207-08-9	Benzo(k)fluoranthene	20	< 20 U
50-32-8	Benzo(a)pyrene	20	< 20 U
193-39-5	Indeno(1,2,3-cd)pyrene	20	< 20 U
53-70-3	Dibenz(a,h)anthracene	20	< 20 U
191-24-2	Benzo(g,h,i)perylene	20	< 20 U
132-64-9	Dibenzofuran	20	< 20 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	62.0%
2-Fluorobiphenyl	60.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS
Page 1 of 1

Sample ID: C-11
MS/MSD

Lab Sample ID: IX82A
LIMS ID: 06-236
Matrix: Sediment
Data Release Authorized:
Reported: 01/19/06

QC Report No: IX82-Parametrix
Project: Bremerton Seds
255-1896-063
Date Sampled: 01/09/06
Date Received: 01/11/06

Date Extracted MS/MSD: 01/16/06

Sample Amount MS: 26.1 g-dry-wt
MSD: 25.5 g-dry-wt

Date Analyzed MS: 01/18/06 23:10
MSD: 01/18/06 23:43

Final Extract Volume MS: 0.5 mL
MSD: 0.5 mL

Instrument/Analyst MS: NT4/VTS
MSD: NT4/VTS

Dilution Factor MS: 1.00
MSD: 1.00

GPC Cleanup: NO

Alumina Cleanup: YES

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Naphthalene	< 19.4	347	479	72.4%	326	490	66.5%	6.2%
Acenaphthene	< 19.4	339	479	70.8%	323	490	65.9%	4.8%
Fluoranthene	20.3	420	479	83.4%	397	490	76.9%	5.6%
Benzo(a)anthracene	< 19.4	389	479	81.2%	355	490	72.4%	9.1%

Results reported in µg/kg
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS **Sample ID: C-12**
Page 1 of 1 **SAMPLE**

Lab Sample ID: IX82B
LIMS ID: 06-237
Matrix: Sediment
Data Release Authorized:
Reported: 01/19/06

QC Report No: IX82-Parametrix
Project: Bremerton Seds
255-1896-063
Date Sampled: 01/09/06
Date Received: 01/11/06

Date Extracted: 01/16/06
Date Analyzed: 01/19/06 00:16
Instrument/Analyst: NT4/VTS
GPC Cleanup: No
Alumina: Yes

Sample Amount: 26.1 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 26.5%
pH: 7.4

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	19	< 19 U
91-57-6	2-Methylnaphthalene	19	< 19 U
208-96-8	Acenaphthylene	19	< 19 U
83-32-9	Acenaphthene	19	< 19 U
86-73-7	Fluorene	19	< 19 U
85-01-8	**Phenanthrene**	**19**	**27**
120-12-7	Anthracene	19	< 19 U
206-44-0	**Fluoranthene**	**19**	**93**
129-00-0	**Pyrene**	**19**	**79**
56-55-3	**Benzo(a)anthracene**	**19**	**42**
218-01-9	**Chrysene**	**19**	**51**
205-99-2	**Benzo(b)fluoranthene**	**19**	**58**
207-08-9	**Benzo(k)fluoranthene**	**19**	**40**
50-32-8	**Benzo(a)pyrene**	**19**	**48**
193-39-5	**Indeno(1,2,3-cd)pyrene**	**19**	**24**
53-70-3	Dibenz(a,h)anthracene	19	< 19 U
191-24-2	**Benzo(g,h,i)perylene**	**19**	**27**
132-64-9	Dibenzofuran	19	< 19 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
d14-p-Terphenyl	70.0%
2-Fluorobiphenyl	67.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS
Page 1 of 1

Sample ID: C-13
SAMPLE

Lab Sample ID: IX82C
LIMS ID: 06-238
Matrix: Sediment
Data Release Authorized:
Reported: 01/19/06

QC Report No: IX82-Parametrix
Project: Bremerton Seds
255-1896-063
Date Sampled: 01/09/06
Date Received: 01/11/06

Date Extracted: 01/16/06
Date Analyzed: 01/19/06 00:49
Instrument/Analyst: NT4/VTS
GPC Cleanup: No
Alumina: Yes

Sample Amount: 25.5 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 20.7%
pH: 7.5

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	20	< 20 U
91-57-6	2-Methylnaphthalene	20	< 20 U
208-96-8	Acenaphthylene	20	< 20 U
83-32-9	Acenaphthene	20	< 20 U
86-73-7	Fluorene	20	< 20 U
85-01-8	**Phenanthrene**	**20**	**20**
120-12-7	Anthracene	20	< 20 U
206-44-0	**Fluoranthene**	**20**	**64**
129-00-0	**Pyrene**	**20**	**60**
56-55-3	**Benzo(a)anthracene**	**20**	**28**
218-01-9	**Chrysene**	**20**	**39**
205-99-2	**Benzo(b)fluoranthene**	**20**	**37**
207-08-9	**Benzo(k)fluoranthene**	**20**	**28**
50-32-8	**Benzo(a)pyrene**	**20**	**33**
193-39-5	Indeno(1,2,3-cd)pyrene	20	< 20 U
53-70-3	Dibenz(a,h)anthracene	20	< 20 U
191-24-2	**Benzo(g,h,i)perylene**	**20**	**21**
132-64-9	Dibenzofuran	20	< 20 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
d14-p-Terphenyl	66.4%
2-Fluorobiphenyl	64.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D GC/MS
Page 1 of 1

Sample ID: LCS-011606
LAB CONTROL

Lab Sample ID: LCS-011606
LIMS ID: 06-236
Matrix: Sediment
Data Release Authorized:
Reported: 01/19/06

QC Report No: IX82-Parametrix
Project: Bremerton Seds
255-1896-063
Date Sampled: NA
Date Received: 01/11/06

Date Extracted: 01/16/06
Date Analyzed: 01/18/06 22:03
Instrument/Analyst: NT4/VTS
GPC Cleanup: NO

Sample Amount: 25.0 g
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Alumina Cleanup: YES

Analyte	Lab Control	Spike Added	Recovery
Naphthalene	335	500	67.0%
Acenaphthene	319	500	63.8%
Fluoranthene	415	500	83.0%
Benzo(a)anthracene	382	500	76.4%

Semivolatile Surrogate Recovery	
d14-p-Terphenyl	68.0%
2-Fluorobiphenyl	62.0%

Results reported in µg/kg

METHOD BLANK RESULTS-CONVENTIONALS
IX82-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 01/25/06

Project: Bremerton Seds
Event: 255-1896-063
Date Sampled: NA
Date Received: NA

Analyte	Date	Units	Blank
Total Solids	01/11/06	Percent	< 0.01 U
Total Organic Carbon	01/18/06	Percent	< 0.020 U
	01/18/06		< 0.020 U
	01/18/06		< 0.020 U
	01/23/06		< 0.020 U

SAMPLE RESULTS-CONVENTIONALS
IX82-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 01/25/06

Project: Bremerton Seds
Event: 255-1896-063
Date Sampled: 01/09/06
Date Received: 01/11/06

Client ID: C-11
ARI ID: 06-236 IX82A

Analyte	Date	Method	Units	RL	Sample
Total Solids	01/11/06 011106#1	EPA 160.3	Percent	0.01	82.60
Total Organic Carbon	01/23/06 012306#1	Plumb,1981	Percent	0.020	0.392

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
IX82-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 01/25/06

Project: Bremerton Seds
Event: 255-1896-063
Date Sampled: 01/09/06
Date Received: 01/11/06

Client ID: C-12
ARI ID: 06-237 IX82B

Analyte	Date	Method	Units	RL	Sample
Total Solids	01/11/06 011106#1	EPA 160.3	Percent	0.01	71.90
Total Organic Carbon	01/18/06 011806#3	Plumb,1981	Percent	0.020	0.631

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
IX82-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 01/25/06

Project: Bremerton Seds
Event: 255-1896-063
Date Sampled: 01/09/06
Date Received: 01/11/06

Client ID: C-13
ARI ID: 06-238 IX82C

Analyte	Date	Method	Units	RL	Sample
Total Solids	01/11/06 011106#1	EPA 160.3	Percent	0.01	73.50
Total Organic Carbon	01/18/06 011806#3	Plumb,1981	Percent	0.020	1.04

RL Analytical reporting limit
U Undetected at reported detection limit

REPLICATE RESULTS-CONVENTIONALS
IX82-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 01/25/06

Project: Bremerton Seds
Event: 255-1896-063
Date Sampled: 01/09/06
Date Received: 01/11/06

Analyte	Date	Units	Sample	Replicate(s)	RPD/RSD
ARI ID: IX82B Client ID: C-12					
Total Solids	01/11/06	Percent	71.90	72.50 72.10	0.4%
Total Organic Carbon	01/18/06	Percent	0.631	0.670 0.672	3.5%

MS/MSD RESULTS-CONVENTIONALS
IX82-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 01/25/06

Project: Bremerton Seds
Event: 255-1896-063
Date Sampled: 01/09/06
Date Received: 01/11/06

Analyte	Date	Units	Sample	Spike	Spike Added	Recovery
ARI ID: IX82B Client ID: C-12						
Total Organic Carbon	01/18/06	Percent	0.631	1.43	0.772	103.5%

LAB CONTROL RESULTS-CONVENTIONALS
IX82-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 01/25/06

Project: Bremerton Seds
Event: 255-1896-063
Date Sampled: NA
Date Received: NA

Analyte	Date	Units	LCS	Spike Added	Recovery
Total Organic Carbon	01/18/06	Percent	0.547	0.500	109.4%
	01/18/06		0.529	0.500	105.8%
	01/23/06		0.514	0.500	102.8%

STANDARD REFERENCE RESULTS-CONVENTIONALS
IX82-Parametrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 01/25/06

Project: Bremerton Seds
Event: 255-1896-063
Date Sampled: NA
Date Received: NA

Analyte/SRM ID	Date	Units	SRM	True Value	Recovery
Total Organic Carbon	01/18/06	Percent	3.73	3.35	111.3%
NIST #8704	01/23/06		3.07	3.35	91.6%

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Client: Parametrix	Project No.: IX82
Client Project: Bremerton Seds 255-1896-063	

Case Narrative

1. The samples were submitted for grain size analysis according to PSEP methodology.
2. The samples were run in a single batch, and one sample was chosen for triplicate analysis. The triplicate data is reported on the QA summary.
3. The samples contained mostly sand and shell fragments. Sample C-12 was chosen for triplicate analysis.. The second sample within the triplicate was calculated using the after moisture content to eliminate a negative value in the 4 phi size range.
4. All of the samples submitted for analysis contained a high percentage of shell fragments and/or organics, which may have broken down during the sieving process and affected grain size results.
5. The data is provided in summary tables and plots.
6. There were no other noted anomalies in the samples or methods on this project.

Approved by: P McKenzie Date: 1/18/06
Title: Lead Technician

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

ANALYTICAL RESOURCES INCORPORATED

QA SUMMARY

PROJECT:	Parametrix	Project No.:	Bremerton Seds 255-1896-063
ARI Triplicate Sample ID:	IX82 C	Batch No.:	IX82
Client Triplicate Sample ID:	C-12	Page:	1 of 1

Relative Standard Deviation, By Phi Size

Sample ID	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
C-12	100.0	88.8	83.6	79.9	73.0	43.2	11.0	4.5	3.5	2.8	2.3	1.8	1.3	0.9
C-12	100.0	86.9	81.6	78.0	71.3	43.3	11.1	5.0	4.0	3.2	2.8	2.2	1.5	1.0
C-12	100.0	88.8	84.0	80.6	73.9	45.2	11.9	5.6	4.1	3.5	2.9	2.3	1.6	1.1
AVE	NA	88.19	83.09	79.49	72.73	43.89	11.33	5.03	3.87	3.17	2.65	2.10	1.45	1.01
STDEV	NA	1.11	1.30	1.34	1.34	1.11	0.50	0.52	0.30	0.37	0.30	0.27	0.14	0.11
%RSD	NA	1.26	1.57	1.69	1.84	2.54	4.44	10.42	7.78	11.68	11.17	12.93	9.66	11.05

The Triplicate Applies To The Following Samples

Client ID	Date Sampled	Date Extracted	Date Complete	QA Ratio (95-105)	Data Qualifiers	Pipette Portion (5.0-25.0g)
C-12	1/9/06	1/11/06	1/18/06	99.8		5.1
C-12	1/9/06	1/11/06	1/18/06	98.7		5.8
C-12	1/9/06	1/11/06	1/18/06	100.2		6.8
C-11	1/9/06	1/11/06	1/18/06	101.8		6.8
C-13	1/9/06	1/11/06	1/18/06	100.8		7.7

* ARI Internal QA limits = 95-105%

Notes to the Testing:

1. Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution. See narrative for discussion of the testing.

ANALYTICAL RESOURCES INCORPORATED

Parametrix
Bremerton Seds 255-1896-063

Apparent Grain Size Distribution Summary
Percent Finer Than Indicated Size

Sample No.	Gravel			Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt				Clay	
Phi Size	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
Sieve Size (microns)	3/8"	#4	#10 (2000)	#18 (1000)	#35 (500)	#60 (250)	#120 (125)	#230 (62)	31.00	15.60	7.80	3.90	2.00	1.00
C-12	100.0	88.8	83.6	79.9	73.0	43.2	11.0	4.5	3.5	2.8	2.3	1.8	1.3	0.9
C-12	100.0	86.9	81.6	78.0	71.3	43.3	11.1	5.0	4.0	3.2	2.8	2.2	1.5	1.0
C-12	100.0	88.8	84.0	80.6	73.9	45.2	11.9	5.6	4.1	3.5	2.9	2.3	1.6	1.1
C-11	100.0	80.4	54.0	38.0	24.5	9.9	6.3	5.4	3.3	2.7	2.2	1.7	1.1	0.8
C-13	100.0	93.7	88.6	86.1	81.8	56.0	16.0	6.6	4.3	3.3	2.7	2.1	1.5	1.0

Notes to the Testing:

1. Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution. See narrative for discussion of the testing.

IX82

ANALYTICAL RESOURCES INCORPORATED

Parametrix
Bremerton Seds 255-1896-063

Apparent Grain Size Distribution Summary
Percent Retained in Each Size Fraction

Sample No.	Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Coarse Silt	Medium Silt	Fine Silt	Very Fine Silt	Clay		
Phi Size	> -1	-1 to 0	0 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 6	6 to 7	7 to 8	8 to 9	9 to 10	< 10
Sieve Size (microns)	> #10 (2000)	10 to 18 (2000-1000)	18-35 (1000-500)	35-60 (500-250)	60-120 (250-125)	120-230 (125-62)	62.5-31.0	31.0-15.6	15.6-7.8	7.8-3.9	3.9-2.0	2.0-1.0	<1.0
C-12	16.4	3.7	6.9	29.7	32.2	6.5	1.0	0.8	0.5	0.5	0.5	0.4	0.9
C-12	18.4	3.6	6.7	28.0	32.2	6.1	1.0	0.8	0.5	0.5	0.8	0.4	1.0
C-12	16.0	3.4	6.7	28.7	33.3	6.3	1.5	0.6	0.6	0.6	0.7	0.5	1.1
C-11	46.0	16.0	13.5	14.6	3.6	0.9	2.1	0.5	0.5	0.6	0.5	0.3	0.8
C-13	11.4	2.5	4.3	25.8	39.9	9.4	2.4	1.0	0.6	0.6	0.6	0.4	1.0

Notes to the Testing:

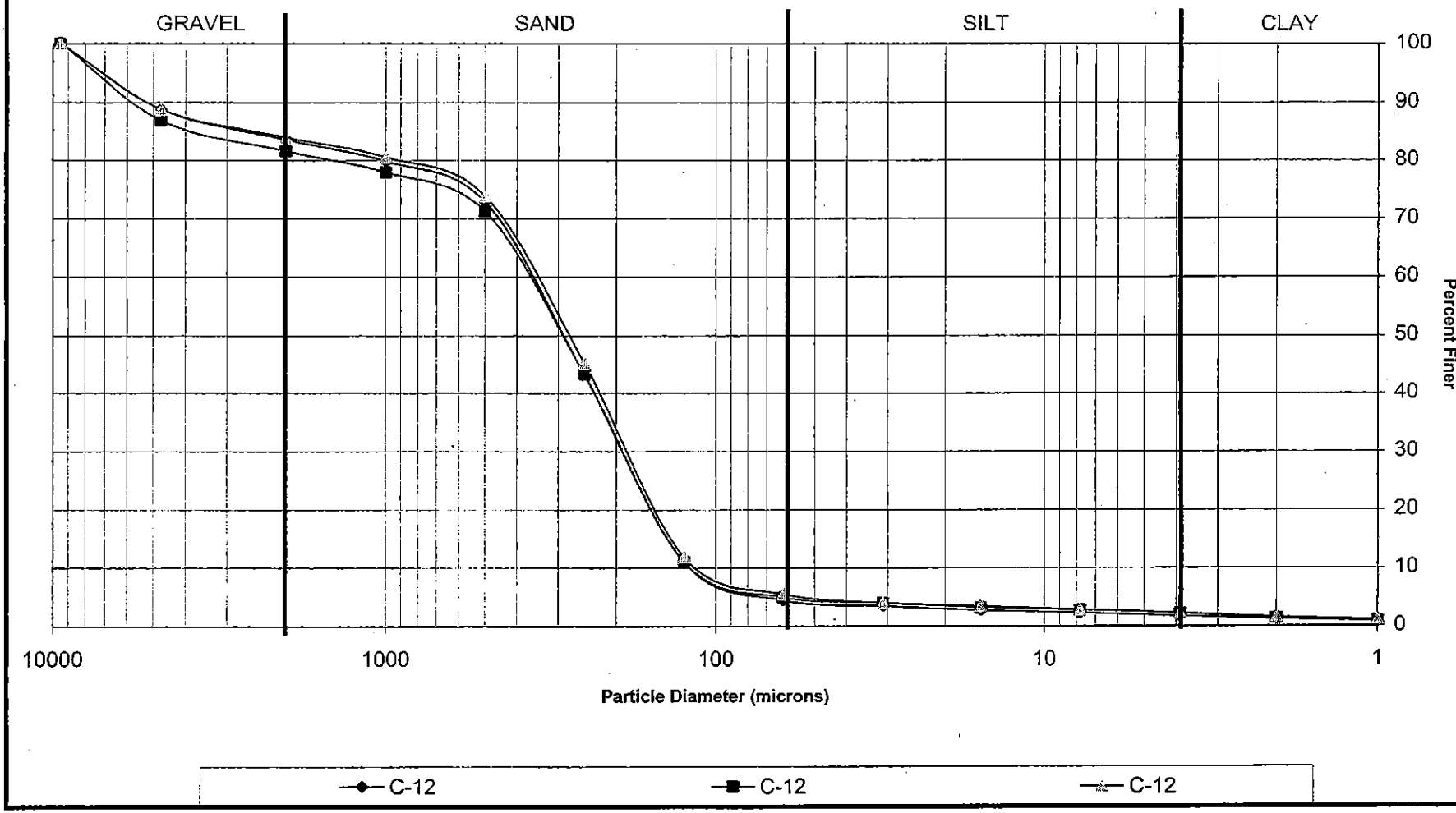
1. Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution. See narrative for discussion of the testing.

IX82

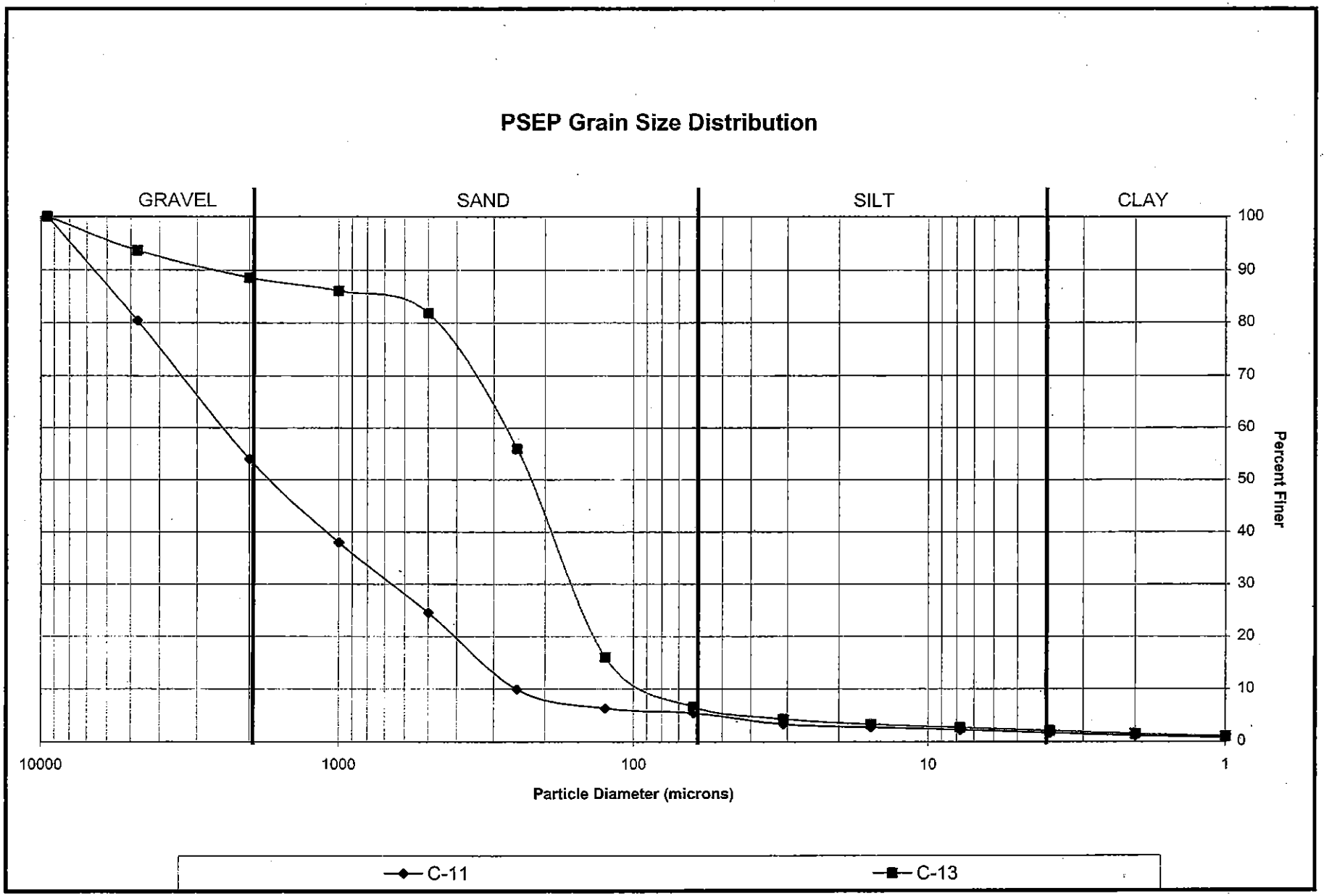
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PSEP Grain Size Distribution

Triplicate Sample Plot



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Parametrix
Bremerton Seds 255-1896-063

PSEP Total Solids Analysis
Percent of Wet Weight

Sample No.	Total Solids (%)
C-12	81.5
C-12	81.1
C-12	81.9
C-11	82.0
C-13	77.0

Triplicate Average	81.5
Standard Deviation	0.41
%RSD	0.51

(Total Solids at 90 C)

IX82

BIOASSAY REPORT

Biological Assessment of Sediment from Port Washington Narrows, Bremerton

February 2006

Prepared for:
Parametrix Inc.
5700 Kitsap Way
Bremerton, Washington 98312

Prepared by:

P.O. Box 216,
4729 NE View Drive,
Port Gamble, Washington 98364

survival and mean individual growth (MIG) of 0.95 mg/ind/day in the control. The LC50 for the cadmium chloride reference-toxicant test was 15.0 mg Cd/L, which is within the control chart limits (4.53 to 15.6 mg CuCl/L), indicating that the test organisms used in this study were of similar sensitivity of those previously tested at the Carlsbad laboratory. Dissolved oxygen, temperature, salinity and pH remained within acceptable limits throughout the test. Porewater and overlying water ammonia concentrations were below the NOEC for *N arenaceodentata* (approximately 60 mg/L). Sulfides were not detected in any of the sediments evaluated.

Mean percentage survival in the reference treatment, Ref-6, was 100%, and MIG rate was 0.81 mg/ind./day. Ref-6 MIG rate was 85%, relative to the control. Survival in the test treatment was 100%. MIG in the test treatment was 0.75 mg/ind./day and was not statistically significantly different that of Ref-6.

3.3 48-hour PSEP Larval Bioassay

A summary of *M. galloprovincialis* results is presented in Table 3.5 and a summary of water quality observations is presented in Tables 3.6. Data for each replicate and raw data sheets are presented in Appendix C. The *M. galloprovincialis* test was validated by greater than 70% normal development in the controls. The LC50 for the copper reference-toxicant test was 15.7 µg Cu/L, which is within the control chart limits (9.70 to 28.86 µg Cu/L) and the EC50 was 8.2 ug/L, which is also within the control chart limits (3.78 to 13.93 µg Cu/L). The results of the reference-toxicant test indicate that the test organisms used in this study were of similar sensitivity of those previously tested at the Carlsbad laboratory. Dissolved oxygen, temperature, pH and salinity remained within acceptable limits throughout the test. Ammonia and sulfides were undetected in the overlying water.

Mean combined mortality in Ref-6 was 12.5%. The reference treatment met the reference criteria for normal development, relative to the controls. In the test treatment, mean combined mortality (based on stocking density) was 17.7%. When compared to Ref-6, mean combined mortality was not statistically different

4.0 Discussion

Sediment C-8 was evaluated using criteria establish under the Sediment Management Standards, including both the Sediment Quality Standards and Cleanup Screening Levels (WAC Chapter 173-204). Comparisons to both SQS and CSL standards are summarized on Tables 4.1.

The treatment results from each of the bioassays were evaluated in comparison with Ref-6 performance. Reference performance met the SMS reference criteria for all testing.

1.0 Introduction

The City of Bremerton is evaluating sediment at the former bulk fuel facility located along the Port Washington Narrows in Bremerton, Washington. Weston Solutions, Inc (Weston) was requested to determine the suitability of one sediment treatment from the site following the methods prescribed by the Sediment Management Standards. This report presents the results of the biological evaluation of the sediment collected.

2.0 Methods

This section summarizes the test methods that were followed for this biological characterization. Test methods followed guidance provided by the Puget Sound Estuary Program (PSEP 1995), Sediment Management Standards (SMS; Washington Administrative Code Chapter 173-204), and the various updates presented during the Annual Sediment Management Review meetings (SMARM).

2.1 Sample and Animal Receipt

Sediment was collected by Parametrix, Inc and delivered directly to the Weston Port Gamble Environmental Laboratory on December 15, 2005. Sediment was then shipped via overnight delivery to the Weston - Carlsbad laboratory and was received in good condition on December 16, 2005. Reference sediment was collected from Carr Inlet and was shipped to Weston - Carlsbad for testing. Control and reference sediment was sieved through a 2.0 mm screen prior to testing to remove any native animals. Test sediment was not sieved prior to testing.

Amphipods (*Eohaustorius estuarius*) were supplied by Northwest Aquatic Sciences, Newport, Oregon. Animals were held in native sediment at 15°C for approximately five days to ensure that the amphipods, which were collected at low salinities, had acclimated to the test salinity of 28±1‰. Juvenile polychaete worms (*Neanthes arenaceodentata*) were supplied by Donald Reish Ph.D., Long Beach, California. The juvenile polycheates were received at weights very near the minimum weight requirement for this test. Neanthes were held five days prior to testing to allow the test organisms to grow and to ensure test acceptability. *Mytilus galloprovincialis* broodstock were supplied by Carlsbad Aquafarms, Carlsbad CA, and were received dry on the day of testing. Broodstock were kept dry until they were needed for spawning. Native *Eohaustorius* sediment from Yaquina Bay, Oregon was also provided by NAS for control sediment treatments for both the amphipod and juvenile polychaete test.

2.2 10-day Amphipod Bioassay

The 10-d acute toxicity test with *E. estuarius* was initiated on December 20, 2005. To prepare the test exposures, approximately 175 mL of sediment were placed in clean, acid and solvent-rinsed 1-L glass jars, which were then filled to

750 mL with UV-treated, 0.3-µm filtered seawater. Six replicate chambers were prepared for each test treatment and the native sediment control treatment. Five of the replicates were used to evaluate the test; the sixth replicate was used as a water quality surrogate. Test chambers were then placed in randomly assigned positions in a temperature-controlled room at 15°C and allowed to equilibrate overnight. Trickle-flow aeration was provided to prevent dissolved oxygen concentrations from dropping below acceptable levels.

Immediately prior to test initiation, water quality parameters were measured in each water quality surrogate. Dissolved oxygen (DO), temperature, pH, and salinity were monitored in water quality replicates at initiation, test days 1 through 9 and at test termination. Target test parameters were as follows:

Dissolved Oxygen:	≥4.5 mg/L
pH:	8.00 ± 0.5 units
Temperature:	15°C ± 1°C
Salinity:	28‰ ± 1‰

In addition, porewater and overlying water ammonia and sulfide concentrations were measured at test initiation and test termination.

The tests were initiated by randomly allocating 20 *E. estuarius* into each test chamber, ensuring that each of the amphipods successfully buried into the sediment. Amphipods that did not bury within approximately one hour were replaced with healthy amphipods. The 10-day amphipod bioassay was conducted as a static test. At test termination, sediment from each test chamber was sieved through a 0.5-mm screen and all recovered amphipods transferred into a Petri dish. The number of surviving and dead amphipods was then determined under a dissecting microscope. A water-only, 4-day reference-toxicant test with cadmium chloride was conducted concurrently with the sediment tests.

2.3 20-day Juvenile Polychaete Bioassay

The 20-day chronic toxicity test with *N. arenaceodentata* was initiated on January 10, 2006. To prepare the test exposures, approximately 175 mL of sediment were placed in clean, acid and solvent-rinsed 1-L glass jars, which were then filled to 950 mL with UV-treated, 0.3-µm filtered seawater. Six replicate chambers were prepared for each test treatment and the native sediment control treatment. Five of the replicates were used to evaluate the test; the sixth replicate was used as a water quality surrogate. Test chambers were then placed in randomly assigned positions in a temperature-controlled room at 20°C and allowed to equilibrate overnight. Trickle-flow aeration was provided to prevent dissolved oxygen concentrations dropped below acceptable levels.

Immediately prior to test initiation, water quality parameters were measured in each water quality surrogate. Dissolved oxygen, temperature, pH, and salinity

were monitored in water quality replicates at initiation, test days 1 through 19, and at test termination. Target test parameters were as follows:

Dissolved Oxygen:	≥5.0 mg/L
pH:	8.00 ± 0.5 units
Temperature:	20°C ± 1°C
Salinity:	28‰ ± 1‰

In addition, porewater and overlying water ammonia and sulfide concentrations were measured at test initiation and test termination.

The test was initiated by randomly allocating five *N. arenaceodentata* into each test chamber, and observing whether each of the worms successfully buried into the sediment. Worms that did not bury within approximately one hour were replaced with healthy worms. The 20-day test was conducted as a static-renewal test, with exchanges of 300 mL of water occurring every third day. *N. arenaceodentata* were fed every other day with 40 mg of TetraMarin® (approximately 8 mg dry weight per worm). At test termination, sediment from each test chamber was sieved through a 0.5-mm screen and all recovered worms transferred into a Petri dish. The number of surviving and dead worms was then determined under a dissecting microscope. All surviving worms were then transferred to pre-weighed, aluminum foil weigh boats, and then dried in a drying oven at 50°C for approximately 24 hours. Each weigh boat was removed, cooled in a dessication jar, and then weighed on a microbalance to 0.01 mg. A water-only, 4-day reference-toxicant test with cadmium chloride was conducted concurrently with the sediment tests.

2.4 48-hour Larval Bioassay

Test sediment was evaluated using the 48-h acute toxicity tests with larval Bay mussel, *M. galloprovincialis*. The 48-h larval test was initiated on December 20, 2005. To prepare the test exposures, 18 g (±1 g) of test sediment was placed in clean, acid and solvent-rinsed 1-L glass jars, which were then filled to 950 mL with UV-sterilized, 0.3-µm filtered seawater collected from Scripp's Institute of Oceanography in La Jolla, California. Six replicate chambers were prepared for each test treatment, reference sediment, and the native sediment control treatment. Five of the replicates were used to evaluate the test; the sixth replicate was used as a water quality surrogate. Each chamber was shaken for 10 seconds and then placed in predetermined randomly-assigned positions in a temperature-controlled room at 16°C.

To collect gametes for each test, mussels were placed in clean seawater and acclimated at 12°C for approximately 20 minutes. The water bath temperature was then increased over the period of 15 minutes to 20°C. Mussels were held at 20°C and monitored for spawning individuals. Spawning females were removed from the water bath and placed in individual containers with seawater. Spawning males were removed and placed in a separate water bath with other males. Gametes from at least two males and two females were used to initiate the test.

Once sufficient eggs and sperm had been collected, the eggs were screened though 60-µm mesh to remove any detritus or feces and a homogenized sperm solution added to the egg solutions. Egg-sperm solutions were periodically homogenized with a perforated plunger during the fertilization process. Approximately one hour after fertilization, embryo solutions were checked for fertilization rate. Only those embryo stocks with >90% fertilization were used to initiate the tests. Embryo solutions were rinsed free of excess sperm on 20-µm mesh and then combined to create one embryo stock solution. Density of the embryo stock solution was determined by counting the number of embryos in a subsample of stock solution. This was used to determine the volume of embryo stock solution to deliver approximately 27,000 embryos to each test chamber.

The test was initiated by randomly allocating an aliquot of the embryo stock solution into each test chamber four hours after sediments were shaken and within two hours of egg fertilization. Embryos were held in suspension during initiation using a perforated plunger. The actual stocking density was 39.2 embryos/mL, which was within the target stocking density of 20–40 embryos/mL.

Dissolved oxygen, temperature, pH, and salinity were monitored in the water quality replicate at initiation, Day 1, and test termination. Overlying water ammonia and sulfides were measured on Day 0 and Day 2. Total ammonia as nitrogen (TAN) was monitored using an Orion meter fitted with an ammonia ion-specific probe. Total sulfides as S^{-2} were monitored using a CHEMetrics sulfide test kit which measures total acid soluble sulfides and employs methylene blue methodology. Target test parameters were as follows:

Dissolved Oxygen:	60% saturation (≥4.3 mg/L)
pH:	8.00 ± 1.00 units
Temperature:	16°C ± 1°C
Salinity:	28.0‰ ± 1.0‰

The 48-h test was conducted as a static test without aeration. The test was terminated approximately 48 hours after initiation, when 90% of the control larvae had achieved the prodissoconch I stage. At termination, the overlying seawater was decanted into a clean 1-L jar and mixed with a perforated plunger. From this container, a 10 mL subsample was transferred to a scintillation vial and preserved in 5% buffered formalin. Larvae were subsequently stained with a mild solution of Rose Bengal in 70% alcohol to help visualization of larvae. The number of normal and abnormal larvae was enumerated on an inverted microscope. Normal larvae included all D-shaped prodissoconch I stage larvae. Abnormal larvae included abnormally shaped prodissoconch I larvae and all early stage larvae. A 48-h water-only reference-toxicant test with copper sulfate and ammonia (as ammonia chloride) was conducted concurrently with the sediment tests.

2.5 Data Analysis and QA/QC

All water quality and endpoint data were entered into excel spreadsheets. Water quality parameters were summarized by calculating the mean, minimum, and maximum values for each test treatment. Endpoint data was calculated for each replicate and then mean values and standard deviations were calculated for each test treatment.

All hand-entered data was reviewed for data entry errors, which were corrected prior to summary calculations. A minimum of 10% of all calculations and data sorting were reviewed for errors. Review counts were conducted on any apparent outliers.

For suitability determinations, comparisons to controls and references were based on statistical analysis as identified in the Sediment Quality Standards (SQS) and Cleanup Screening Levels (CSL) (WAC Chapter 173-205) as clarified by Ecology (2005).

3.0 Results

This section presents the results of the sediment testing, including a summary of test results and water quality observations. Data for each of the replicates, as well as raw data forms are provided in the appendices.

3.1 10-day Amphipod Bioassay

A summary of *E. estuarius* survival is presented in Table 3.1 and a summary of water quality observations is presented in Table 3.2. Termination and all water quality data for each of the replicates, as well as raw data sheets are presented in Appendix A. The amphipod test was validated by 95% survival in the controls. The LC50 for the cadmium reference-toxicant test was 7.7 mg Cd/L, which is within the control chart limits (1.45 to 11.2 mg Cd/L), indicating that the test organisms used in this study were of similar sensitivity of those previously tested at the Carlsbad laboratory. Dissolved oxygen, temperature, pH and salinity remained within acceptable limits throughout the test. Porewater and overlying water ammonia concentrations were below the NOEC for *E. estuarius* (approximately 20 mg/L). Sulfides were not detected in any of the sediments evaluated.

Mean percentage survival in Ref-6 was 95%. This was within reference criteria of 25%, indicating that this reference was acceptable for suitability determination. Mean percentage survival in C-8 test treatment was 89% and was not statistically significantly different than the reference sediment.

3.2 20-day Juvenile Polychaete Bioassay

A summary of *N. arenaceodentata* survival and biomass is presented in Table 3.3, and a summary of water quality observations is presented in Table 3.4. Endpoint and water quality data for each replicates, as well as raw data sheets are presented in Appendix B. The juvenile polychaete test was validated by 96%

4.1 Amphipod Test Suitability Determination
Based on amphipod mortality, treatment C-8 passed the evaluation criteria for both SQS and CSL guidance. There were no statistically significant differences between the test treatment and Ref-6. Mean percentage mortality in the test treatments was within 25% of the mean percentage mortality observed in the reference, meeting both SQS and CSL criteria.

4.2 Juvenile Polychaete Test Suitability Determination
Based on the *Neanthes* mean individual growth (MIG) endpoint, treaqtment C-8 passed the SQS and CSL evaluation criteria when compared to Ref-6. Mean individual growth was within 70% of the reference and there was no statistically significant difference in growth, relative to the reference.

4.3 Bivalve Larval Test Suitability Determination
Relative to Ref-6, the test treatment C-8 passed both SQS criteria (within 15% of control-corrected number of normal larvae in Ref-6) and CSL criteria (within 30% of control-corrected number of normal larvae in Ref-6). There was also no statistically significant differences between normal survivorship in C-8 and that of Ref-6.

5.0 References

Ecology 2005. DMMP/SMS Clarification Paper: Interpreting Sediment Toxicity Tests: Consistency Between Regulatory Programs. Presented at the 18th Annual Sediment Management Annual Review Meeting by Tom Gries, Toxics Cleanup Program/Sediment Management Unit, Washington Department of Ecology, Olympia, Washington.

PSEP. 1995. Puget Sound Protocols and Guidelines. Puget Sound Estuary Program. Puget Sound Water Quality Action Team, Olympia, Washington.

Table 3.1. Test Results for the 10-day Acute Toxicity Test with *E. estuarius*, Bremerton Sediment

Treatment	Replicate	Number Initiated	Number Surviving	Number Missing or Dead	Percentage Survival	Mean Percentage Survival	SD
Control	1	20	19	1	95		
	2	20	20	0	100		
	3	20	20	0	100		
	4	20	16	4	80		
	5	20	20	0	100	95	1.7
Ref 6	1	20	20	0	100		
	2	20	18	2	90		
	3	20	18	2	90		
	4	20	19	1	95		
	5	20	20	0	100	95	1.0
C-8	1	20	18	2	90		
	2	20	19	1	95		
	3	20	16	4	80		
	4	20	17	3	85		
	5	20	19	1	95	89	1.3

Table 3.2. Water Quality Summary for the 10-day Acute Test with *E. estuarius*, Bremerton Sediment

Treatment	Dissolved Oxygen (mg/L)			Temperature (°C)			pH (units)			Salinity (ppt)		
	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max
Control	8.2	7.5	8.8	15.7	15.0	16.2	8.0	8.0	8.1	28.2	27.8	28.7
Ref 6	8.3	7.8	8.7	15.3	14.6	15.9	8.0	7.9	8.1	28.4	28.0	28.7
C-8	8.1	7.7	8.6	15.7	15.1	16.4	8.2	8.0	8.3	28.3	28.0	28.6

Table 3.3. Test Results for the 20-day Acute Toxicity Test with *N. arenaceodentata*, Bremerton Sediment

Treatment	Mean Percent Survival	SD	Mean Total Biomass (mg)	SD	Mean Individual Biomass (mg)	SD	Mean Individual Growth Rate (mg/ind/d)	SD
Control	96	8.9	95.0	22.7	19.66	3.67	0.954	0.18
Ref-6	100	0.0	83.6	6.0	16.73	1.19	0.807	0.06
C-8	100	0.0	77.5	10.9	15.49	2.18	0.746	0.11

Table 3.4. Water Quality Summary for the 20-day Acute Test with *Neanthes arenaceodentata*, Bremerton Sediment

Treatment	Dissolved Oxygen (mg/L)			Temperature (°C)			pH (units)			Salinity (ppt)		
	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max
Control	6.9	6.7	7.1	19.6	19.4	19.9	8.0	8.0	8.0	29.0	28.6	29.2
Ref 6	7.0	6.5	7.2	19.6	19.5	19.8	7.9	7.9	8.0	29.3	29.2	29.4
C-8	6.5	6.0	6.8	19.7	19.5	19.9	8.0	7.9	8.1	29.4	29.3	29.4

Table 3.5. Test Results for the Larval Test with *M. galloprovincialis*, Bremerton Sediment

Treatment	Rep	Normal	Abnormal	Total	Percent Combined Mortality	Percent Mortality	Percent Abnormal	Mean Percentage Combined Mortality	SD	Mean Percentage Mortality	SD	Mean Percentage Abnormal	SD
Control	1	344	13	357	12.4	9.1	3.6						
	2	355	0	355	9.6	9.6	0.0						
	3	375	4	379	4.5	3.5	1.1						
	4	359	5	364	8.6	7.3	1.4						
	5	328	6	334	16.5	15	1.8	10.3	4.5	8.9	4.1	1.6	1.3
	Mean	**352.2**											
Ref-6	1	360	1	361	4	3.7	0.3						
	2	330	1	331	12	11.7	0.3						
	3	295	0	295	21.3	21.3	0.0						
	4	336	0	336	10.4	10.4	0.0						
	5	319	0	319	14.9	14.9	0.0	12.5	6.3	12.4	6.4	0.1	0.2
	Mean	**328**											
C-8	1	314	3	317	16.3	15.5	0.9						
	2	315*	1	316	16.0	15.7	0.3						
	3	338	1	339	9.9	9.6	0.3						
	4	285	2	287	24.0	23.5	0.7						
	5	291*	0	293	22.4	21.9	0.0	17.7	5.7	17.2	5.6	0.5	0.4
	Mean	**312.3**											

	Rep	Embryos	Average
Stocking Density	1	376	
	2	373	
	3	477	
	4	376	
	5	328	
	6	427	392.8

*** Test chamber was double-inoculated. Value equals half of actual larval count.**

Table 3.6. Water Quality Summary for the 48-hour Larval Test with *Mytilus spp.*, Bremerton Sediment

Treatment	Dissolved Oxygen (mg/L)			Temperature (°C)			pH (units)			Salinity (ppt)		
	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max
Control	7.8	7.8	7.9	16.2	15.8	16.4	7.9	7.7	8.0	28.1	28.0	28.3
Ref 6	7.6	7.4	7.9	16.2	15.9	16.4	7.9	7.8	8.0	28.2	28.1	28.3
C-8	6.9	6.4	7.4	16.0	15.9	16.2	7.9	7.7	8.0	28.1	28.0	28.1

Table 4.1. Suitability Determination for Bremerton Sediment based on comparisons with Ref-6

	Amphipod				Polychaete Growth				Larval Bivalve			
Station	Survival (%)	SD	Stat. Diff.	M_T-M_R	Growth Rate (mg/ind/d)	SD	Stat. Diff.	MIG_T/MIG_R	Combined Mortality (%)	SD	Stat. Diff.	N_T/N_R
Control	95	1.7	NA	NA	0.954	0.18	NA	NA	10.3	4.5	NA	NA
Ref-6	95	1	No	0.0[a]	0.807	0.06	No	0.85[a]	12.5	6.3	No	0.93*
C-8	89	1.3	No	6	0.746	0.11	No	0.92	17.7	5.7	No	0.95

Green: passed SQS and CSL criteria

Orange: failed SQS but passed CSL criteria

Red: failed both SQS and CSL criteria

SD: Standard Deviation

[a] Reference Criteria of 25% (amphipod) and 0.80 (polychaete)

* Reference criteria ($N_R/N_C \geq 0.65$)

Appendix A

Results for the 10-Day Acute Test with *Eohaustorius estuarius*

Table A1. Water Quality Data for the 10-day Acute Test with E. estuarius, Bremerton Sediment

Dissolved Oxygen (mg/L)														
	Day													
Treatment	0	1	2	3	4	5	6	7	8	9	10	Mean	Min	Max
Control	8.8	8.1	7.9	8.0	7.9	8.1	8.8	8.6	8.3	7.7	7.5	8.2	7.5	8.8
Ref 6	8.7	8.1	8.0	7.9	7.8	8.1	8.7	8.7	8.6	8.6	8.2	8.3	7.8	8.7
C-8	8.4	8.0	7.9	7.7	8.0	7.8	8.6	8.5	8.5	7.8	7.9	8.1	7.7	8.6

Temperature (°C)														
	Day													
Treatment	0	1	2	3	4	5	6	7	8	9	10	Mean	Min	Max
Control	15.0	16.0	15.5	15.6	15.6	15.8	15.6	15.9	15.7	16.2	16.1	15.7	15.0	16.2
Ref 6	14.6	15.4	15.3	15.2	15.2	15.4	15.3	15.4	15.4	15.7	15.9	15.3	14.6	15.9
C-8	15.1	15.8	15.7	15.8	15.4	15.7	15.5	15.7	15.6	16.0	16.4	15.7	15.1	16.4

pH units														
	Day													
Treatment	0	1	2	3	4	5	6	7	8	9	10	Mean	Min	Max
Control	8.1	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.01	8.00	8.10
Ref 6	8.1	7.9	8.0	8.1	8.0	8.0	8.1	8.1	8.0	8.1	8.1	8.05	7.90	8.10
C-8	8.1	8.0	8.1	8.1	8.1	8.0	8.2	8.2	8.3	8.3	8.3	8.15	8.00	8.30

Salinity (ppt)														
	Day													
Treatment	0	1	2	3	4	5	6	7	8	9	10	Mean	Min	Max
Control	27.9	27.8	28.1	27.9	28.0	28.1	28.6	28.3	28.6	28.5	28.7	28.2	27.8	28.7
Ref 6	28.0	28.1	28.3	28.3	28.3	28.3	28.5	28.5	28.6	28.6	28.7	28.4	28.0	28.7
C-8	28.1	28.0	28.1	28.1	28.3	28.4	28.5	28.4	28.5	28.6	28.6	28.3	28.0	28.6

Table A2. Ammonia and Sulfide Concentrations for the 10-Day Acute Test with *E. estuarius*, Bremerton Sediment

Treatment	Overlying Ammonia (mg/L Total)		Interstitial Ammonia (mg/L Total)		Sulfides (mg/L)	
	Day 0	Day 10	Day 0	Day 10	Day 0	Day 2
Control	<0.5	<0.5	<0.5	<0.5	0	0
Ref 6	<0.5	<0.5	0.612	1.67	0	0
C-8	2.01	5.61	15.2	8.65	0	0

10 DAY SOLID PHASE TEST DATA SHEET 3

CLIENT	PROJECT	WESTON JOB NO.	PROJECT MAN.	WESTON LABORATORY	PROTOCOL	SPECIES	ACCLM.MOR
Parametrix	Bremerton Sediment	0	Bill Gardiner	Carlsbad Room 2	USACE/USEPA (1998) / WESTON BIO066	Eohaustorius estuarius	< 5%

OBSERVATIONS KEY
N = normal; L = anoxic surface; B= no burrows; F= fungal patches; M= dead on surface; D= no air flow (D02); A= avoidance; U= excess food

ENDPOINT DATA & OBSERVATIONS

CLIENT/ WESTON ID	REP	JAR #	INITIAL #	DAY 0 DATE 12/20/05 TECHNICIAN VS OBSERVNS.	DAY 1 DATE 12/21/05 TECHNICIAN VS OBSERVNS.	DAY 2 DATE 12/22/05 TECHNICIAN CS OBSERVNS.	DAY 3 DATE 12/23/05 TECHNICIAN VK OBSERVNS.	DAY 4 DATE 12/24/05 TECHNICIAN am OBSERVNS.	DAY 5 DATE 12/25/05 TECHNICIAN am OBSERVNS.	DAY 6 DATE 12/26/05 TECHNICIAN am OBSERVNS.	DAY 7 DATE 12/27/05 TECHNICIAN JH OBSERVNS.	DAY 8 DATE 12/28/05 TECHNICIAN CS OBSERVNS.	DAY 9 DATE 12/29/05 TECHNICIAN JH OBSERVNS.	DAY 10 DATE 12/30/05 TECHNICIAN CS OBSERVNS.	NUMBER REMAINING
Control 1 /	1			N	N	N	N	N	N	IM	IM	IM	IM	IM	19
	2			N	N	N	N	N	N	N	N	N	N	N	20
	3			N	N	N	N	N	N	N	N	N	N	N	20
	4			N	IM	2M	N	IM	2M	2M	2M	2M	2M	2M	16
	5			N	N	N	N	N	N	N	N	N	N	N	20
Ref 6 /	1			N	N	IM	IM	N	N	N	N	N	N	N	20
	2			N	N	N	IM	IM	IM	IM	IM	IM	IM	IM	18
	3			N	N	N	N	IM	IM	IM	IM	IM	IM	IM	18
	4			N	N	N	N	N	N	N	N	N	N	N	19
	5			N	N	N	N	N	N	N	N	N	N	N	20
C-8 /	1			N	IM	IM	N	N	N	N	N	N	N	N	18
	2			N	N	N	N	N	N	N	N	N	N	N	19
	3			N	N	N	N	N	N	N	N	N	N	N	16
	4			N	N	IM	N	N	N	N	N	N	N	N	17
	5			N	N	N	N	N	N	N	N	N	N	N	19
/	1														
	2														
	3														
	4														
	5														
/	1														
	2														
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	4														
	5														
/	1														
	2														
	3														
	4														
	5														
	1														
	2														

12/20/2005 Eoh 12-20-05 Endpoint
Olw 12/22/05

10 DAY SOLID PHASE TEST DATA SHEET 2

CLIENT	PROJECT	SPECIES	WESTON LABORATORY	PROTOCOL
Parametrix	Bremerton Sediment	*Eohaustorius estuarius*	Carlsbad Room 2	USACE/USEPA (1998) / WESTON BIO066

WESTON JOB NUMBER	PROJECT MANAGER	TEST START DATE	TIME	TEST END DATE	TIME
0	Bill Gardiner	20Dec05	1630 KS/LS	30Dec05	1445 KS/LS JH

WATER QUALITY DATA

TEST	DO (mg/L)	TEMP (C)	SALINITY (ppt)	pH	NH3 (mg/L)		DILUTION WATER BATCH	TEMP.RECDR./HOBO#
	> 6.0	15 ± 2	28 ± 2	7.8 ± 0.5	< 4.0		SIO 121405	3259

CLIENT/WESTON ID	DAY	REP	JAR #	D.O.		TEMP		SALINITY		pH		OVERLY. NH3		INTER. NH3		INTER. SULFIDE		TECHNICIAN		WATER RENEWAL
				meter	mg/L	meter	°C	meter	ppt	meter	unit	Techn.	mg/L	Techn.	mg/L	Techn.	mg/L			
Control 1 /	0	surr		6	8.8	6	15.0	5	27.9	11	8.1	JH	<0.5	JH	<0.5	KS	0	JH		
		0																		
		0																		
		0																		
		0																		
Control 1 /	1	surr		6	8.1	6	16.0	5	27.8	12	8.0							KS		
Control 1 /	2	surr	13	7	7.9	7	15.5	6	28.1	11	8.0							CS		
Control 1 /	3	surr		6	8.0	6	15.6	5	27.9	11	8.0							KS		
Control 1 /	4	surr		6	7.9	6	15.6	5	28.0	11	8.0							am		
Control 1 /	5	surr		6	8.1	6	15.8	5	28.1	11	8.0							am		
Control 1 /	6	surr		6	8.8	6	15.6	5	28.6	11	8.0							am		
Control 1 /	7	surr		6	8.6	6	15.9	5	28.3	11	8.0							JH		
Control 1 /	8	surr		7	8.3	7	15.7	6	28.6	12	8.0							CS		
Control 1 /	9	surr		7	7.7	7	16.2	6	28.5	12	8.0							JH		
Control 1 /	10	surr		7	7.5	7	16.1	6	28.7	11	8.0	JH	<0.5	JH	<0.5	RF	0	CS		
		0																		
		0																		
		0																		
		0																		

10 DAY SOLID PHASE TEST DATA SHEET 2

CLIENT	PROJECT	SPECIES	WESTON LABORATORY	PROTOCOL
Parametrix	Bremerton Sediment	*Eohaustorius estuarius*	Carlsbad Room 2	USACE/USEPA (1998) / WESTON BIO066
WESTON JOB NUMBER	**PROJECT MANAGER**	**TEST START DATE** / **TIME**	**TEST END DATE**	**TIME**
0	Bill Gardiner	20Dec05 / 1630 KS/LS	30Dec05	1500 BJH KS/LS 1445 JH

WATER QUALITY DATA

TEST	DO (mg/L)	TEMP (C)	SALINITY (ppt)	pH	NH3 (mg/L)		DILUTION WATER BATCH	TEMP.RECDR./HOBO#
	> 6.0	15 ± 2	28 ± 2	7.8 ± 0.5	< 4.0		SIO 121405	3259

CLIENT/WESTON ID	DAY	REP	JAR #	D.O.		TEMP		SALINITY		pH		OVERLY. NH3		INTER. NH3		INTER. SULFIDE		TECHNICIAN		WATER RENEWAL
				meter	mg/L	meter	°C	meter	ppt	meter	unit	Techn.	mg/L	Techn.	mg/L	Techn.	mg/L			
Ref 6 /	0	surr		6	8.7	6	14.6	5	28.0	11	8.1	JH	<0.5	JH	0.612	RS	0	JH		
		0																		
		0																		
		0																		
		0																		
Ref 6 /	1	surr		6	8.1	6	15.4	5	28.1	12	7.9							KS		
Ref 6 /	2	surr	16	~~6~~ 7	8.0	7	15.3	6	28.3	11	8.0							CS		
Ref 6 /	3	surr		6	7.9	6	15.2	5	28.3	11	8.1							KS		
Ref 6 /	4	surr		6	7.8	6	15.2	5	28.3	11	8.0							dm		
Ref 6 /	5	surr		6	8.1	6	15.4	~~5~~ 6	28.3	11	8.0							dm		
Ref 6 /	6	surr		6	8.7	6	15.3	5	28.5	11	8.1							dm		
Ref 6 /	7	surr		6	8.7	6	15.4	5	28.5	11	8.1							JH		
Ref 6 /	8	surr		~~7~~ 8	8.6	~~7~~ 8	15.4	6	28.6	12	8.0							CS		
Ref 6 /	9	surr		7	8.6	7	15.7	6	28.6	12	8.1							JH		
Ref 6 /	10	surr		~~7~~ 8	8.2	7	15.9	6	28.7	11	8.1	JH	<0.5	JH	1.67	RF	0	CS		
		0																		
		0																		
		0																		
		0																		

① 1612/22/05 CS ② IE 12/25/05 dm ③ WT 12/30/05 JH

10 DAY SOLID PHASE TEST DATA SHEET 2

CLIENT	PROJECT	SPECIES	WESTON LABORATORY	PROTOCOL
Parametrix	Bremerton Sediment	*Eohaustorius estuarius*	Carlsbad Room 2	USACE/USEPA (1998) / WESTON BIO066
WESTON JOB NUMBER	**PROJECT MANAGER**	**TEST START DATE** / **TIME**	**TEST END DATE**	**TIME**
0	Bill Gardiner	20Dec05 / 1630 KS/LS	30Dec05	1515 KS/LS ~~1445~~ JH

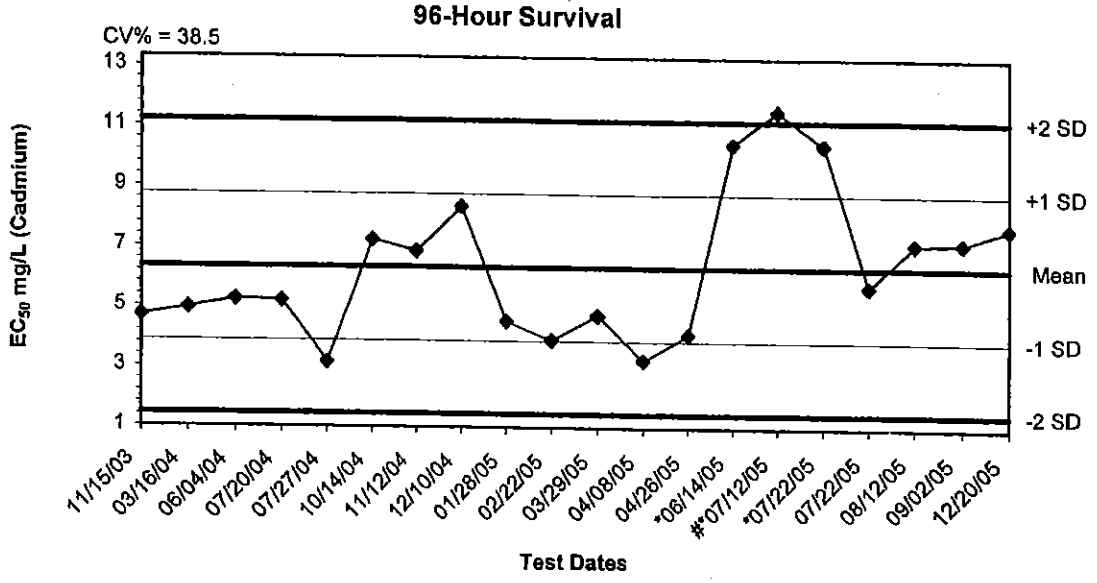
WATER QUALITY DATA

TEST	DO (mg/L)	TEMP (C)	SALINITY (ppt)	pH	NH3 (mg/L)		DILUTION WATER BATCH	TEMP.RECDR./HOBO#
	> 6.0	15 ± 2	28 ± 2	7.8 ± 0.5	< 4.0		SIO 121405	3259

CLIENT/WESTON ID	DAY	REP	JAR #	D.O.		TEMP		SALINITY		pH		OVERLY. NH3		INTER. NH3		INTER. SULFIDE		TECHNICIAN		WATER RENEWAL
				meter	mg/L	meter	°C	meter	ppt	meter	unit	Techn.	mg/L	Techn.	mg/L	Techn.	mg/L			
C-8 /	0	surr		6	8.4	6	15.1	5	28.1	11	8.1	JH	2.01	JH	15.2	VS	0	JH		
		0																		
		0																		
		0																		
		0																		
C-8 /	1	surr		6	8.0	6	15.8	5	28.0	12	8.0							VS		
C-8 /	2	surr	18	7	7.9	7	15.7	6	28.1	11	8.1							LS		
C-8 /	3	surr		6	7.7	6	15.8	5	28.1	11	8.1							VS		
C-8 /	4	surr		6	8.0	6	15.4	5	28.3	11	8.1							AM		
C-8 /	5	surr		6	7.8	6	15.7	5	28.4	11	8.0							AM		
C-8 /	6	surr		6	8.6	6	15.5	5	28.5	11	8.2							AM		
C-8 /	7	surr		6	8.5	6	15.7	5	28.4	11	8.2							JH		
C-8 /	8	surr		7	8.5	7	15.6	6	28.5	12	8.3							LS		
C-8 /	9	surr		7	7.8	7	16.0	6	28.6	12	8.3							JH		
C-8 /	10	surr		7	7.9	7	16.4	6	28.6	11	8.3	JH	5.61	JH	8.65	RF	0	LS		
		0																		
		0																		
		0																		
		0																		

① WT 12/30/05 JH

Eohaustorius estuarius Reference Toxicant Control Chart: 96-Hour Survival



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
11/15/03	4.6999	6.3246	3.8887	1.4528	8.7605	11.1964
03/16/04	4.9541	6.3246	3.8887	1.4528	8.7605	11.1964
06/04/04	5.2452	6.3246	3.8887	1.4528	8.7605	11.1964
07/20/04	5.2083	6.3246	3.8887	1.4528	8.7605	11.1964
07/27/04	3.1529	6.3246	3.8887	1.4528	8.7605	11.1964
10/14/04	7.2406	6.3246	3.8887	1.4528	8.7605	11.1964
11/12/04	6.8641	6.3246	3.8887	1.4528	8.7605	11.1964
12/10/04	8.3530	6.3246	3.8887	1.4528	8.7605	11.1964
01/28/05	4.5455	6.3246	3.8887	1.4528	8.7605	11.1964
02/22/05	3.9152	6.3246	3.8887	1.4528	8.7605	11.1964
03/29/05	4.7420	6.3246	3.8887	1.4528	8.7605	11.1964
04/08/05	3.2642	6.3246	3.8887	1.4528	8.7605	11.1964
04/26/05	4.1257	6.3246	3.8887	1.4528	8.7605	11.1964
*06/14/05	10.4483	6.3246	3.8887	1.4528	8.7605	11.1964
#*07/12/05	11.5534	6.3246	3.8887	1.4528	8.7605	11.1964
*07/22/05	10.4255	6.3246	3.8887	1.4528	8.7605	11.1964
07/22/05	5.7213	6.3246	3.8887	1.4528	8.7605	11.1964
08/12/05	7.1510	6.3246	3.8887	1.4528	8.7605	11.1964
09/02/05	7.1895	6.3246	3.8887	1.4528	8.7605	11.1964
12/20/05	7.6923	6.3246	3.8887	1.4528	8.7605	11.1964

* Tests were run at 30 ppt salinity.
Value was out of 95% CI range at time of testing.
Updated 12/28/05 KS

Acute Sediment Test-96 Hr Survival

Start Date:	12/20/2005 16:10	Test ID:	C040405.42	Sample ID:	REF-Ref Toxicant
End Date:	12/24/2005 14:40	Lab ID:	CCA-Weston, Carlsbad	Sample Type:	CDCL-Cadmium chloride
Sample Date:		Protocol:	EPA USACE-1998	Test Species:	EE-Eohaustorius estuarius
Comments:					

Conc-mg/L	1	2	3
Control	1.0000	1.0000	1.0000
2.5	0.8000	1.0000	1.0000
5	0.5000	0.8000	0.9000
10	0.4000	0.2000	0.3000
20	0.0000	0.0000	0.0000
40	0.0000	0.0000	0.0000

			Transform: Untransformed					1-Tailed			Isotonic	
Conc-mg/L	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Mean	N-Mean
Control	1.0000	1.0000	1.0000	1.0000	1.0000	0.000	3				1.0000	1.0000
2.5	0.9333	0.9333	0.9333	0.8000	1.0000	12.372	3	0.632	2.420	0.2551	0.9333	0.9333
*5	0.7333	0.7333	0.7333	0.5000	0.9000	28.386	3	2.530	2.420	0.2551	0.7333	0.7333
*10	0.3000	0.3000	0.3000	0.2000	0.4000	33.333	3	6.641	2.420	0.2551	0.3000	0.3000
20	0.0000	0.0000	0.0000	0.0000	0.0000	0.000	3				0.0000	0.0000
40	0.0000	0.0000	0.0000	0.0000	0.0000	0.000	3				0.0000	0.0000

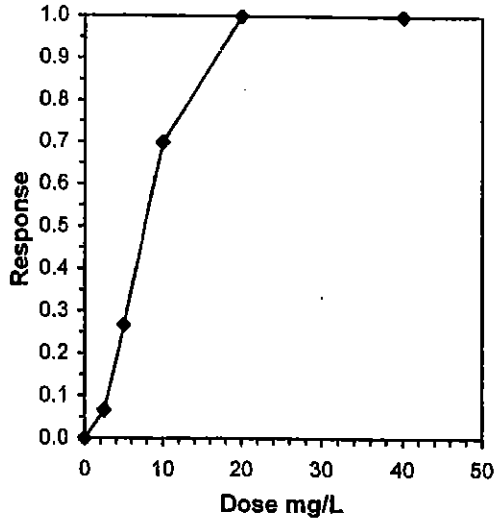
Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test Indicates normal distribution (p > 0.01)	0.9315	0.805	-0.7811	0.59033
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	2.5	5	3.53553		0.25509	0.25509	0.29861	0.01667	6.6E-04	3, 8

Linear Interpolation (200 Resamples)

Point	mg/L	SD	95% CL(Exp)		Skew
IC05*	1.8750	0.7757	0.0000	5.1562	0.2474
IC10	2.9167	0.7657	0.0000	5.9792	0.0587
IC15	3.5417	0.7946	0.3907	6.9857	0.3919
IC20	4.1667	0.8019	1.5973	7.4189	0.1802
IC25	4.7917	0.7881	2.2003	7.7175	0.0621
IC40	6.5385	0.8601	2.2577	8.7205	-0.5852
IC50	7.6923	0.7435	2.0385	9.4502	-1.3930

* indicates IC estimate less than the lowest concentration



Reviewed by:_____

Test: SED-Acute Sediment Test
Species: EE-Eohaustorius estuarius
Sample ID: REF-Ref Toxicant
Start Date: 12/20/2005 16:10
End Date: 12/24/2005 14

Test ID: C040405.42
Protocol: EPA USACE-1998
Sample Type: CDCL-Cadmium chloride
Lab ID: CCA-Weston, Carlsbad

Pos	ID	Rep	Group	Start	24 Hr	48 Hr	72 Hr	96 Hr	Notes
	1	1	Control	10				10	
	2	2	Control	10				10	
	3	3	Control	10				10	
	4	1	2.500	10				8	
	5	2	2.500	10				10	
	6	3	2.500	10				10	
	7	1	5.000	10				5	
	8	2	5.000	10				8	
	9	3	5.000	10				9	
	10	1	10.000	10				4	
	11	2	10.000	10				2	
	12	3	10.000	10				3	
	13	1	20.000	10				0	
	14	2	20.000	10				0	
	15	3	20.000	10				0	
	16	1	40.000	10				0	
	17	2	40.000	10				0	
	18	3	40.000	10				0	

Comments:

10 DAY SOLID PHASE TEST DATA SHEET 3 - REF TOX

CLIENT	PROJECT	WESTON JOB NO.	SPECIES	ACCLM.MORT.
Parametrix	Bremerton Sediment	0	*Eohaustorius estuarius*	< 5%

PROJECT MANAGER	WESTON LABORATORY	PROTOCOL
Bill Gardiner	Carlsbad Room 2	USACE/USEPA (1998) / WESTON BIO066

SURVIVAL & BEHAVIOR DATA

OBSERVATIONS KEY
N = normal; LOE = loss of equilibrium; Q = quiescent; SUR = surfacing
FOS = Floating on Surface; DC = discoloration; OB = on bottom; J = jumper; NB = no body

CLIENT/ WESTON ID	CONC. value	CONC. units	REP	INITIAL NUMBER	DAY 1 DATE 12/21/05 TECHNICIAN CS #ALIVE	DAY 1 #DEAD	DAY 1 OBS	DAY 2 DATE 12/22/05 TECHNICIAN CS #ALIVE	DAY 2 #DEAD	DAY 2 OBS	DAY 3 DATE 12/23/05 TECHNICIAN VS #ALIVE	DAY 3 #DEAD	DAY 3 OBS	DAY 4 DATE 12/24/05 TECHNICIAN am #ALIVE	DAY 4 #DEAD	DAY 4 OBS
Ref.Tox.-cadmium	0	mg/L	1	10	10	0	N	10	0	N	10	0	N	10	0	N
			2	10	10	0	N	10	0	N	10	0	N	10	0	N
			3	10	10	0	N	10	0	N	10	0	N	10	0	N
Ref.Tox.-cadmium	2.5	mg/L	1	10	10	0	3Sur	10	0	1Sur	10	0	N	8	2	N
			2	10	10	0	3Sur	10	0	N	10	0	1Sur	10	0	N
			3	10	10	0	5Sur	10	0	N	10	0	1Sur	10	0	2Q
Ref.Tox.-cadmium	5	mg/L	1	10	10	0	2DC	10	0	N	8	2	DC Q	5	3	N
			2	10	10	0	1DC	10	0	2Sur	9	1	Q DC	8	1	N
			3	10	10	0	1DC	10	0	N	10	0	Q DC	9	1	N
Ref.Tox.-cadmium	10	mg/L	1	10	10	0	1Sur DC	9	1	N	8	1	Q DC	4	4	Q/DC
			2	10	9	1	3Sur 1Dc	7	2	N	4	3	Q DC	2	2	Q/DC
			3	10	10	0	3Sur 1Dc	7	3	DC	6	1	Q DC	3	3	Q/DC
Ref.Tox.-cadmium	20	mg/L	1	10	10	0	5Sur Q	7	3	Q	4	3	Q LOE	0	4	—
			2	10	10	0	Q	5	5	1Sur Q	2	3	Q LOE	0	2	—
			3	10	10	0	3Sur Q	4	6	DC	4	0	Q LOE	0	4	—
Ref.Tox.-cadmium	40	mg/L	1	10	10	0	3Sur Q	4	6	DC Q	0	4	—	—	—	—
			2	10	9	1	2Sur Q	1	8	DC Q	0	1	—	—	—	—
			3	10	9	1	3Sur	2	7	DC Q	0	2	—	—	—	—

@WC 12/22/05 CS @WC 12/24/05 am

10 DAY SOLID PHASE TEST DATA SHEET 2 - REF TOX WQ

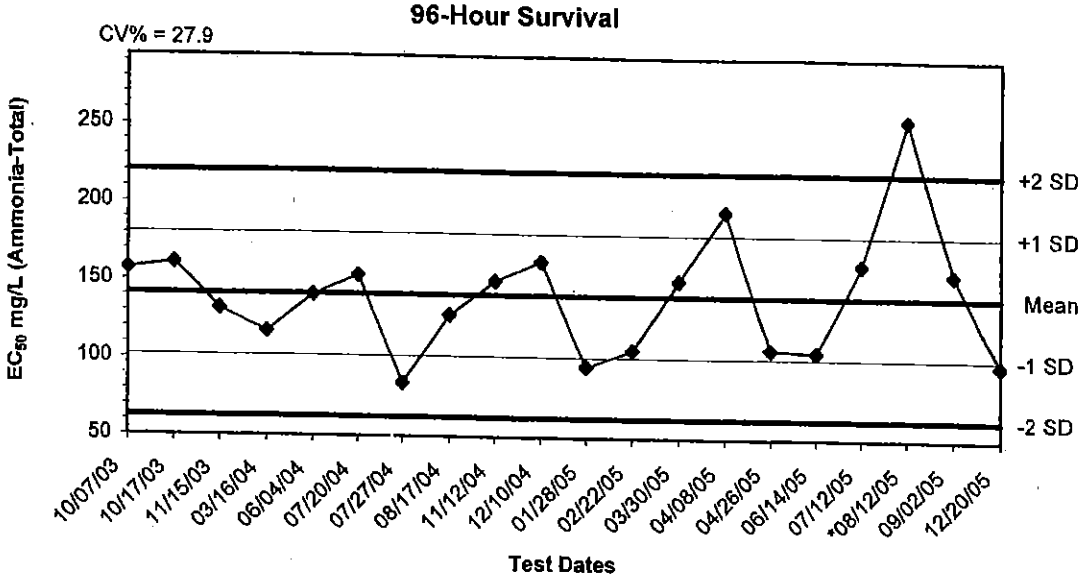
CLIENT	PROJECT	SPECIES	WESTON LABORATORY	PROTOCOL
Parametrix	Bremerton Sediment	*Eohaustorius estuarius*	Carlsbad Room 2	USACE/USEPA (1998) / WESTON
WESTON JOB NUMBER	**PROJECT MANAGER**	**TEST START DATE** / **TIME**	**TEST END DATE**	**TIME**
0	Bill Gardiner	20Dec05 / 1610 LS	24Dec05	1440 am

WATER QUALITY DATA

TEST	TEMP (C)	SAL (ppt)	DO (mg/L)	pH	DILTN.WAT.BATCH	REFERENCE TOXICANT MATERIAL	TOXICANT AMOUNT	DILUENT AMOUNT	REF. TOX. TEST I.D.
	15 ± 2	28 ± 2	> 6.0	7.8 ± 0.5	SIO 121405	cadmium chloride	6.0 mL Cd	1500 mL	c040405.42

CLIENT/ WESTON ID	CONCENTRATION value	CONCENTRATION units	DAY	REP	Dissolved Oxygen METER	Dissolved Oxygen mg/L	Temperature METER	Temperature °C	Salinity METER	Salinity ppt	pH METER	pH units	TECHNICIAN
Ref.Tox.-cadmium	0	mg/L	0	All	7	8.0	7	15.2	6	28.1	12	8.0	CS
			4	1	6	7.6	6	16.4	5	27.8	11	8.0	am
Ref.Tox.-cadmium	2.5	mg/L	0	All	7	8.1	7	15.1	6	28.1	12	8.1	CS
			4	1	6	7.5	6	16.3	5	27.9	11	8.0	am
Ref.Tox.-cadmium	5	mg/L	0	All	7	8.4	7	15.3	6	28.1	12	8.1	CS
			4	1	6	7.5	6	16.2	5	28.0	11	8.0	am
Ref.Tox.-cadmium	10	mg/L	0	All	7	8.3	7	15.3	6	28.1	12	8.1	CS
			4	1	6	7.7	6	16.2	5	28.2	11	8.0	am
Ref.Tox.-cadmium	20	mg/L	0	All	7	8.2	7	15.1	6	28.1	12	8.1	CS
			4	1	6	7.7	6	16.1	5	28.3	11	8.0	am
Ref.Tox.-cadmium	40	mg/L	0	All	7	8.4	7	15.6	6	28.0	12	8.1	CS
			4										

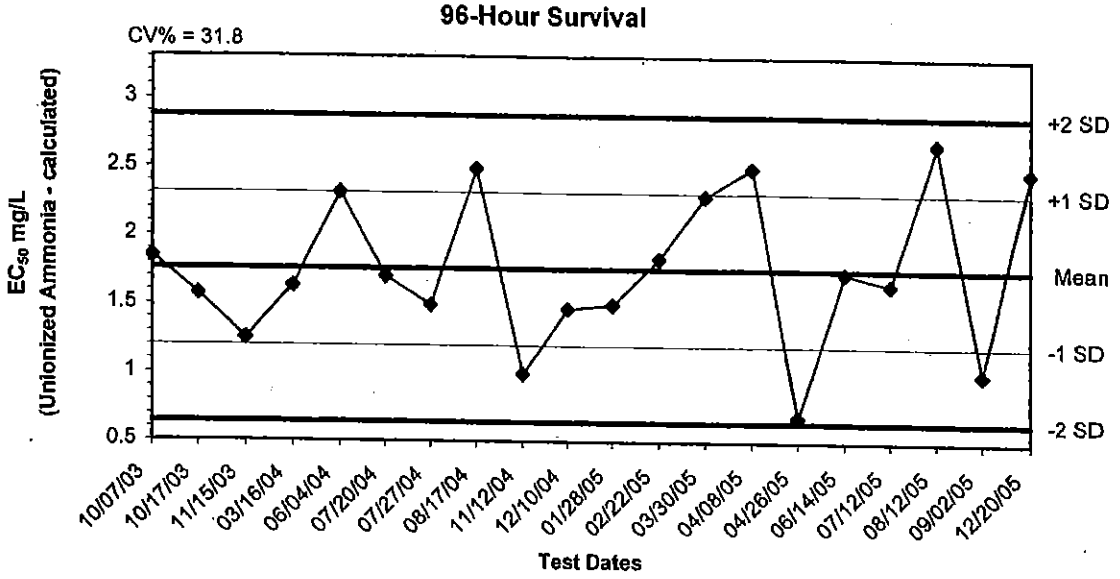
Eohaustorius estuarius Reference Toxicant Control Chart: 96-Hour Survival



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
10/07/03	157.3300	141.3243	101.8699	62.4156	180.7787	220.2330
10/17/03	161.0350	141.3243	101.8699	62.4156	180.7787	220.2330
11/15/03	131.9750	141.3243	101.8699	62.4156	180.7787	220.2330
03/16/04	117.0890	141.3243	101.8699	62.4156	180.7787	220.2330
06/04/04	140.9270	141.3243	101.8699	62.4156	180.7787	220.2330
07/20/04	153.5100	141.3243	101.8699	62.4156	180.7787	220.2330
07/27/04	84.5560	141.3243	101.8699	62.4156	180.7787	220.2330
08/17/04	128.3230	141.3243	101.8699	62.4156	180.7787	220.2330
11/12/04	150.3800	141.3243	101.8699	62.4156	180.7787	220.2330
12/10/04	162.9630	141.3243	101.8699	62.4156	180.7787	220.2330
01/28/05	96.0760	141.3243	101.8699	62.4156	180.7787	220.2330
02/22/05	106.9330	141.3243	101.8699	62.4156	180.7787	220.2330
03/30/05	151.5170	141.3243	101.8699	62.4156	180.7787	220.2330
04/08/05	196.0000	141.3243	101.8699	62.4156	180.7787	220.2330
04/26/05	108.0300	141.3243	101.8699	62.4156	180.7787	220.2330
06/14/05	106.4540	141.3243	101.8699	62.4156	180.7787	220.2330
07/12/05	162.7000	141.3243	101.8699	62.4156	180.7787	220.2330
*08/12/05	255.3940	141.3243	101.8699	62.4156	180.7787	220.2330
09/02/05	156.5900	141.3243	101.8699	62.4156	180.7787	220.2330
12/20/05	98.7040	141.3243	101.8699	62.4156	180.7787	220.2330

* Value was out of 95% CI range. Test was re-run on 09/02/05 and was within 95% CI.
Updated 12/28/05 KS

Eohaustorius estuarius Reference Toxicant Control Chart: 96-Hour Survival



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
10/07/03	1.8470	1.7579	1.1993	0.6407	2.3165	2.8751
10/17/03	1.5744	1.7579	1.1993	0.6407	2.3165	2.8751
11/15/03	1.2522	1.7579	1.1993	0.6407	2.3165	2.8751
03/16/04	1.6330	1.7579	1.1993	0.6407	2.3165	2.8751
06/04/04	2.3177	1.7579	1.1993	0.6407	2.3165	2.8751
07/20/04	1.7049	1.7579	1.1993	0.6407	2.3165	2.8751
07/27/04	1.4952	1.7579	1.1993	0.6407	2.3165	2.8751
08/17/04	2.4902	1.7579	1.1993	0.6407	2.3165	2.8751
11/12/04	0.9939	1.7579	1.1993	0.6407	2.3165	2.8751
12/10/04	1.4701	1.7579	1.1993	0.6407	2.3165	2.8751
01/28/05	1.5020	1.7579	1.1993	0.6407	2.3165	2.8751
02/22/05	1.8369	1.7579	1.1993	0.6407	2.3165	2.8751
03/30/05	2.2985	1.7579	1.1993	0.6407	2.3165	2.8751
04/08/05	2.5010	1.7579	1.1993	0.6407	2.3165	2.8751
04/26/05	0.6844	1.7579	1.1993	0.6407	2.3165	2.8751
06/14/05	1.7368	1.7579	1.1993	0.6407	2.3165	2.8751
07/12/05	1.6562	1.7579	1.1993	0.6407	2.3165	2.8751
08/12/05	2.6828	1.7579	1.1993	0.6407	2.3165	2.8751
09/02/05	1.0016	1.7579	1.1993	0.6407	2.3165	2.8751
12/20/05	2.4797	1.7579	1.1993	0.6407	2.3165	2.8751

Updated 12/20/05 KS

Acute Sediment Test-96 Hr Survival

Start Date:	12/20/2005 15:30	Test ID:	C040719.72	Sample ID:	REF-Ref Toxicant
End Date:	12/24/2005 15:00	Lab ID:	CCA-Weston, Carlsbad	Sample Type:	TNH3-Ammonia-total (measured)
Sample Date:		Protocol:	EPA USACE-1998	Test Species:	EE-Eohaustorius estuarius
Comments:					

Conc-mg/L	1	2	3
Control	1.0000	1.0000	1.0000
17.2	1.0000	1.0000	1.0000
33.6	1.0000	0.9000	0.9000
69.4	0.9000	0.8000	0.9000
136	0.0000	0.0000	0.1000
215	0.0000	0.0000	0.0000

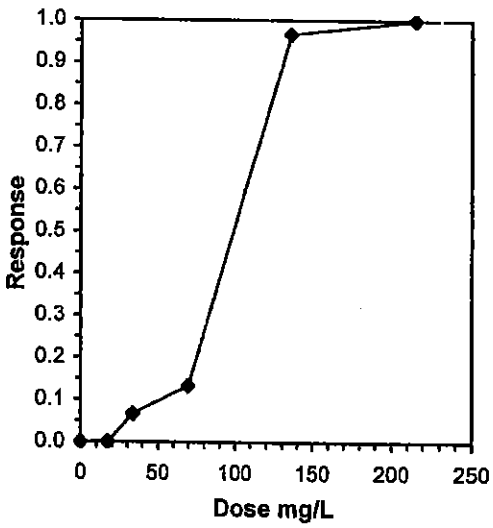
			Transform: Untransformed					1-Tailed			Isotonic	
Conc-mg/L	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Mean	N-Mean
Control	1.0000	1.0000	1.0000	1.0000	1.0000	0.000	3				1.0000	1.0000
17.2	1.0000	1.0000	1.0000	1.0000	1.0000	0.000	3	0.000	2.470	0.0902	1.0000	1.0000
33.6	0.9333	0.9333	0.9333	0.9000	1.0000	6.186	3	1.826	2.470	0.0902	0.9333	0.9333
*69.4	0.8667	0.8667	0.8667	0.8000	0.9000	6.662	3	3.651	2.470	0.0902	0.8667	0.8667
*136	0.0333	0.0333	0.0333	0.0000	0.1000	173.205	3	26.473	2.470	0.0902	0.0333	0.0333
215	0.0000	0.0000	0.0000	0.0000	0.0000	0.000	3				0.0000	0.0000

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.91652	0.835	0.3392	-0.1795
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	33.6	69.4	48.2891		0.09019	0.09019	0.51333	0.002	5.0E-10	4, 10

Linear Interpolation (200 Resamples)

Point	mg/L	SD	95% CL(Exp)		Skew
IC05	29.500	6.182	20.890	60.805	1.0344
IC10	51.500	12.235	13.910	89.090	0.0165
IC15	70.732	5.439	39.507	76.326	-1.1941
IC20	74.728	2.190	63.539	80.322	-0.4030
IC25	78.724	2.049	68.265	84.318	-0.3651
IC40	90.712	1.727	82.442	96.306	-0.1754
IC50	98.704	1.625	91.893	104.298	0.0268



Test: SED-Acute Sediment Test
Species: EE-Eohaustorius estuarius
Sample ID: REF-Ref Toxicant
Start Date: 12/20/2005 15:30 End Date: 12/24/2005 1

Test ID: C040719.72
Protocol: EPA USACE-1998
Sample Type: TNH3-Ammonia-total (measured)
Lab ID: CCA-Weston, Carlsbad

Pos	ID	Rep	Group	Start	24 Hr	48 Hr	72 Hr	96 Hr	Notes
	1	1	Control	10				10	
	2	2	Control	10				10	
	3	3	Control	10				10	
	4	1	17.200	10				10	
	5	2	17.200	10				10	
	6	3	17.200	10				10	
	7	1	33.600	10				10	
	8	2	33.600	10				9	
	9	3	33.600	10				9	
	10	1	69.400	10				9	
	11	2	69.400	10				8	
	12	3	69.400	10				9	
	13	1	136.000	10				0	
	14	2	136.000	10				0	
	15	3	136.000	10				1	
	16	1	215.000	10				0	
	17	2	215.000	10				0	
	18	3	215.000	10				0	

Comments:

Acute Sediment Test-96 Hr Survival

Start Date:	12/20/2005 15:30	Test ID:	C040719.72	Sample ID:	REF-Ref Toxicant
End Date:	12/24/2005 15:00	Lab ID:	CCA-Weston, Carlsbad	Sample Type:	UNH3-Ammonia-unionized (calculated)
Sample Date:		Protocol:	EPA USACE-1998	Test Species:	EE-Eohaustorius estuarius
Comments:					

Conc-mg/L	1	2	3
Control	1.0000	1.0000	1.0000
0.859	1.0000	1.0000	1.0000
1.357	1.0000	0.9000	0.9000
2.243	0.9000	0.8000	0.9000
2.781	0.0000	0.0000	0.1000
3.552	0.0000	0.0000	0.0000

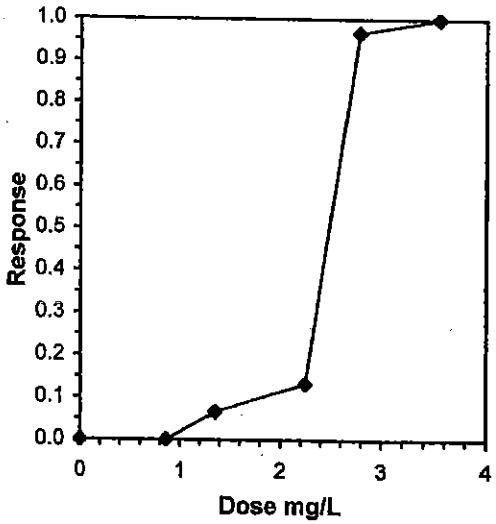
			Transform: Untransformed					1-Tailed			Isotonic	
Conc-mg/L	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Mean	N-Mean
Control	1.0000	1.0000	1.0000	1.0000	1.0000	0.000	3				1.0000	1.0000
0.859	1.0000	1.0000	1.0000	1.0000	1.0000	0.000	3	0.000	2.470	0.0902	1.0000	1.0000
1.357	0.9333	0.9333	0.9333	0.9000	1.0000	6.186	3	1.826	2.470	0.0902	0.9333	0.9333
*2.243	0.8667	0.8667	0.8667	0.8000	0.9000	6.662	3	3.651	2.470	0.0902	0.8667	0.8667
*2.781	0.0333	0.0333	0.0333	0.0000	0.1000	173.205	3	26.473	2.470	0.0902	0.0333	0.0333
3.552	0.0000	0.0000	0.0000	0.0000	0.0000	0.000	3				0.0000	0.0000

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.91652	0.835	0.3392	-0.1795
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	1.357	2.243	1.74463		0.09019	0.09019	0.51333	0.002	5.0E-10	4, 10

Linear Interpolation (200 Resamples)

Point	mg/L	SD	95% CL(Exp)		Skew
IC05	1.2325	0.1803	0.9711	2.1917	1.0567
IC10	1.8000	0.3489	0.8697	2.7303	-0.2475
IC15	2.2538	0.1018	1.5334	2.2990	-1.9366
IC20	2.2860	0.0176	2.1957	2.3312	-0.6374
IC25	2.3183	0.0168	2.2338	2.3635	-0.5958
IC40	2.4152	0.0149	2.3484	2.4604	-0.3700
IC50	2.4797	0.0142	2.4247	2.5249	-0.1354



Test: SED-Acute Sediment Test
Species: EE-Eohaustorius estuarius
Sample ID: REF-Ref Toxicant
Start Date: 12/20/2005 15:30 End Date: 12/24/2005 1

Test ID: C040719.72
Protocol: EPA USACE-1998
Sample Type: UNH3-Ammonia-unionized (calculated)
Lab ID: CCA-Weston, Carlsbad

Pos	ID	Rep	Group	Start	24 Hr	48 Hr	72 Hr	96 Hr	Notes
	1	1	Control	10				10	
	2	2	Control	10				10	
	3	3	Control	10				10	
	4	1	0.859	10				10	
	5	2	0.859	10				10	
	6	3	0.859	10				10	
	7	1	1.357	10				10	
	8	2	1.357	10				9	
	9	3	1.357	10				9	
	10	1	2.243	10				9	
	11	2	2.243	10				8	
	12	3	2.243	10				9	
	13	1	2.781	10				0	
	14	2	2.781	10				0	
	15	3	2.781	10				1	
	16	1	3.552	10				0	
	17	2	3.552	10				0	
	18	3	3.552	10				0	

Comments:

DATA SOLID PHASE TEST DATA SHEET - REF. TOX. WQ

CLIENT	PROJECT	SPECIES	WESTON LABORATORY	PROTOCOL
Parametrix	Bremerton Sediment	*Eohaustorius estuarius*	Carlsbad Room 2	USACE/USEPA (1998) / WESTON
WESTON JOB NUMBER	**PROJECT MANAGER**	**TEST START DATE** / **TIME**	**TEST END DATE**	**TIME@IH**
0	Bill Gardiner	20Dec05 / 1530 LS	24Dec05	~~1530~~ 1500 am

WATER QUALITY DATA

TEST	TEMP (C)	SAL (ppt)	DO (mg/L)	pH	DILTN.WAT.BATCH	REFERENCE TOXICANT MATERIAL	TOXICANT AMOUNT	DILUENT AMOUNT	REF. TOX. TEST I.D.
	15 ± 2	28 ± 2	> 6.0	7.8 ± 0.5	SIO 121405	ammonium chloride	79.3374	1500 mL	C040719.72

CLIENT/ WESTON ID	CONCENTRATION value	CONCENTRATION units	DAY	REP	Dissolved Oxygen METER	Dissolved Oxygen mg/L	Temperature METER	Temperature °C	Salinity METER	Salinity ppt	pH METER	pH units	TECHNICIAN
Ref.Tox.-ammonia	0	mg/L	0	All	6	8.6	6	16.0	5	28.1	11	8.1	JH
			4	1	6	7.7	6	16.3	5	27.8	11	8.0	am
Ref.Tox.-ammonia	15.625	mg/L	0	All	6	8.5	6	16.2	5	28.3	11	8.1	JH
			4	1	6	7.5	6	16.3	5	27.9	11	8.0	am
Ref.Tox.-ammonia	31.25	mg/L	0	All	6	8.5	6	16.2	5	28.3	11	8.0	JH
			4	1	6	7.5	6	16.3	5	28.2	11	8.0	am
Ref.Tox.-ammonia	62.5	mg/L	0	All	6	8.5	6	16.1	5	28.4	11	7.9	JH
			4	1	6	7.6	6	16.2	5	28.2	11	8.0	am
Ref.Tox.-ammonia	125	mg/L	0	All	6	8.4	6	16.5	5	28.7	11	7.7	JH
			4	1	6	7.6	6	16.2	5	28.4	11	8.0	am
Ref.Tox.-ammonia	250	mg/L	0	All	6	8.4	6	16.7	5	29.0	11	7.6	JH
			4										

① WC 12/20/05 JH

10 DAY SOLID PHASE TEST DATA SHEET 3 - REF TOX

CLIENT	PROJECT	WESTON JOB NO.	SPECIES	ACCLM.MORT.
Parametrix	Bremerton Sediment	0	*Eohaustorius estuarius*	< 5%

PROJECT MANAGER	WESTON LABORATORY	PROTOCOL
Bill Gardiner	Carlsbad Room 2	USACE/USEPA (1998) / WESTON BIO066

SURVIVAL & BEHAVIOR DATA

OBSERVATIONS KEY
N = normal; LOE = loss of equilibrium; Q = quiescent; SUR = surfacing
FOS = Floating on Surface; DC = discoloration; OB = on bottom; J = jumper; NB = no body

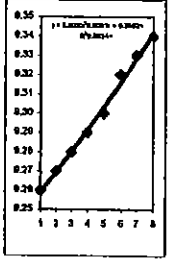
CLIENT/ WESTON ID	CONC. value	CONC. units	REP	INITIAL NUMBER	DAY 1 DATE 12/21/05 TECHNICIAN LS #ALIVE	DAY 1 #DEAD	DAY 1 OBS	DAY 2 DATE 12/22/05 TECHNICIAN LS #ALIVE	DAY 2 #DEAD	DAY 2 OBS	DAY 3 DATE 12/23/05 TECHNICIAN KS #ALIVE	DAY 3 #DEAD	DAY 3 OBS	DAY 4 DATE 12/24/05 TECHNICIAN dm #ALIVE	DAY 4 #DEAD	DAY 4 OBS
Ref.Tox.- ammonia	0	mg/L	1	10	10	0	N	10	0	N	10	0	N	10	0	N
			2	10	10	0	N	10	0	N	10	0	N	10	0	N
			3	10	10	0	N	10	0	N	10	0	N	10	0	N
Ref.Tox.- ammonia	15.625	mg/L	1	10	10	0	N	10	0	N	10	0	N	10	0	N
			2	10	10	0	2SUR	10	0	N	10	0	N	10	0	N
			3	10	10	0	3SUR	10	0	N	10	0	N	10	0	N
Ref.Tox.- ammonia	31.25	mg/L	1	10	10	0	2SUR	10	0	N	10	0	N	10	0	N
			2	10	10	0	4SUR	10	0	N	9	1	N	9	0	N
			3	10	10	0	2SUR	10	0	N	9	1	N	9	0	N
Ref.Tox.- ammonia	62.5	mg/L	1	10	10	0	4SUR	10	0	2SUR	10	0	N	9	1	N
			2	10	9	1	2SUR	9	0	N	9	0	N	8	1	N
			3	10	10	0	4SUR	10	0	1SUR	10	0	N	9	1	N
Ref.Tox.- ammonia	125	mg/L	1	10	10	0	6SUR DC,Q	10	0	DC,Q	5	5	Q	0	5	—
			2	10	7	3	3SUR DC,Q	6	1	DC,Q	4	2	Q	0	4	—
			3	10	10	0	3SUR DC,Q	6	4	Q,DC	6	0	Q	1	5	Q,DC
Ref.Tox.- ammonia	250	mg/L	1	10	0	10	—	—	—	—	—	—	—	—	—	—
			2	10	2	8	Q,OB	0	2	—	—	—	—	—	—	—
			3	10	1	9	Q,OB	0	1	—	—	—	—	—	—	—

Un-ionized Ammonia Calculator

Client:	Parametrix	Date of Test:	20-Dec-05
Project ID:	Bremerton Sediment	Test Type:	Eoh Reference Toxicant

To convert Total Ammonia (mg/L) to Free (un-ionized) Ammonia (mg/L) enter the corresponding total ammonia, salinity, temperature and pH.

Integer:	I-factor
1	9.26
2	9.27
3	9.28
4	9.29
5	9.30
6	9.32
7	9.33
8	9.34



	TEST	NH3T (mg/L)	salinity (ppt)	pH	temp (C)	temp (K)	I-factor	NH3U (mg/L)
1	Control	0.000	28.1	8.1	23.3	296.46	9.3190	
2	15.625	17.200	28.3	8.1	23.0	296.16	9.3195	**0.859**
3	31.250	33.600	28.3	8.0	23.1	296.26	9.3195	**1.357**
4	62.500	69.400	28.4	7.9	23.1	296.26	9.3198	**2.243**
5	125.000	136.000	28.7	7.7	23.0	296.16	9.3206	**2.781**
6	250.000	215.000	29.0	7.6	23.2	296.36	9.3214	**3.552**
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Ammonia Analysis
Total Ammonia (mg/L)

Project:	Organism:	Test:	Day:
Parametrix	Eoh	NH RT	0

PRETEST / INITIAL / FINAL / OTHER (circle one)
OVERLYING (OV) / POREWATER (PW) (circle one)

Standards Temperature	
Date:	**Temperature:**
12/23/05	24.0°C

Sample temperature should be within ±1°C of standards temperature at time and date of analysis.

Sample ID or Description	Conc or Rep	Date of Sampling and Initials	Ammonia Value (mg/L)	Temp °C	Date of Reading and Initials	Sample Frozen (Y/N)	pH	Sal (ppt)
control		12/21/05	<0.5	23.3	12/23/05 MS	Y		
15.625			17.2	23.0				
31.25			33.6	23.1				
62.5			69.4	23.1				
125			136	23.0				
250		↓	215	23.2	↓	↓		

WESTON SOLUTIONS

Reference Toxicant
Ammmonia Spiking Worksheet

Eoh NH_3 RT

12/20/05

Assumptions in Model
Stock ammonia concentration is 8,000 mg/L = 8 mg/mL

Actual Reading
[redacted] 7990

Test Solutions			Volume of stock to reach desired concentration	
Measured Concentration mg/L	Desired Concentration mg/L	Volume mL	mL stock to increase	
			FRESH WATER	SALT WATER
0	250	1500	52.891	79.3370945
			0.000	0
			0.000	0
			0.000	0
			0.000	0
			0.000	0

Sulfide results for Parametrix Eoh sediment test				
12/30/2005				
	OV Sulfide		PW Sulfide	
Control	0	RF	0	RF
Ref-6	0	RF	0	RF
C-8	0	RF	0	RF

Ammonia Analysis
Total Ammonia (mg/L)

Project:	Organism:	Test:	Day:
Parametrix	Eoh	10-Day Sed.	0

PRETEST / (INITIAL) / FINAL / OTHER (circle one)
OVERLYING (OV) / (POREWATER (PW)) (circle one)

Standards Temperature		Sample temperature should be within ±1°C of standards temperature at time and date of analysis.
Date:	Temperature:	
12/20/05	23°	

Sample ID or Description	Conc or Rep	Date of Sampling and Initials	Ammonia Value (mg/L)	Temp °C	Date of Reading and Initials	Sample Frozen (Y/N)	pH	Sal (ppt)
Control ø		12/20/05 YS	<0.5	23.5°	12/20/05 JH	N	7.4	30
Ref 6		↓	0.612	23°	↓	↓	7.5	30
C-8		↓	15.2	23.3°	↓	↓	7.5	30

Ammonia Analysis
Total Ammonia (mg/L)

Project:	Organism:	Test:	Day:
Parametrix	Eohs	10-day sed.	10

PRETEST / INITIAL / FINAL / OTHER (circle one)
OVERLYING (OV) / POREWATER (PW) (circle one)

Standards Temperature		Sample temperature should be within ±1°C of standards temperature at time and date of analysis.
Date:	Temperature:	
12/30/05	24°	

Sample ID or Description	Conc or Rep	Date of Sampling and Initials	Ammonia Value (mg/L)	Temp °C	Date of Reading and Initials	Sample Frozen (Y/N)	pH	Sal (ppt)
Ø		12/30/05 LS	<0.5	23.5°	12/30/05 JH	N	①JH	①JH
Ref-6		↓	1.67	23.7°	↓	↓	↓	↓
C-8		↓	8.65	23.7°	↓	↓	↓	↓

① acid added before pH & Sal could be taken 12/30/05 JH

Appendix B

Results for the 20-Day Chronic Test with *Neanthes arenaceodentata*

Table B1. Test Results for the 20-day Chronic Toxicity Test with *N. arenaceodentata*, Bremerton Sediment

Treatment	Rep	Number Alive	Number Dead or Missing	Percent Survival	Mean Percent Survival	SD	Tare Wt. (mg)	End Wt. (mg)	Total Biomass (mg)	Biomass per Individual (mg)	Individual Growth Rate (mg/ind/d)	Mean Total Biomass (mg)	SD	Mean Individual Biomass (mg)	SD	Mean Individial Growth Rate (mg/ind/d)	SD
Control	1	5	0	100			124.9	234.3	109.4	21.88	1.065						
	2	5	0	100			127.57	222.58	95.01	19.002	0.921						
	3	4	1	80			118.28	184.8	66.52	16.63	0.803						
	4	5	0	100			128.24	208.34	80.1	16.02	0.772						
	5	5	0	100	96	8.9	154.51	278.3	123.79	24.758	1.209	94.96	23	19.66	3.67	0.954	0.2
Ref 6	1	5	0	100			93.4	183.02	89.62	17.924	0.867						
	2	5	0	100			130.43	220.88	90.45	18.09	0.876						
	3	5	0	100			101.94	179.55	77.61	15.522	0.747						
	4	5	0	100			102.62	183.04	80.42	16.084	0.775						
	5	5	0	100	100	0	111.46	191.52	80.06	16.012	0.772	83.63	6	16.73	1.19	0.807	0.1
Ref 78	1	5	0	100			137.53	216.73	79.2	15.84	0.763						
	2	5	0	100			120.84	196.17	75.33	15.066	0.724						
	3	5	0	100			111.01	176.21	65.2	13.04	0.623						
	4	5	0	100			98.77	171.63	72.86	14.572	0.7						
	5	5	0	100	100	0	101.38	196.1	94.72	18.944	0.918	77.46	11	15.49	2.18	0.746	0.1

	Rep	Number weighed	Tare Wt. (mg)	End Wt. (mg)	Total Biomass (mg)	Biomass per Individual (mg)	Mean Individual Biomass (mg)	SD
Initial biomass	1	5	59.39	60.75	1.36	0.272		
	2	5	68.13	69.4	1.27	0.254		
	3	5	61.18	62.4	1.22	0.244		
	4	5	69.34	72.43	3.09	0.618		
	5	5	71.29	74.24	2.95	0.590		
	6	5	75.57	78.56	2.99	0.598	0.43	0.19

Table B2. Water Quality Observations for 20-d Test with *N. arenaceodentata,* Bremerton Sediment

Test Day	Rep	Control DO mg/L	Temp °C	pH pH units	Salinity ‰
0	6	8.1	20.3	8.0	28.0
1	6	6.9	20.3	7.9	28.3
2	6	6.8	20.0	7.5	28.4
3	6	6.4	20.0	7.5	28.4
4	6	7.0	20.3	8.3	28.4
5	6	7.2	20.1	7.9	28.3
6	6	7.0	20.7	8.1	28.4
7	6	6.7	20.3	7.8	28.3
8	6	7.1	20.5	7.4	28.5
9	6	6.6	20.3	7.8	28.4
10	6	7.0	20.6	7.9	28.5
11	6	7.1	20.1	7.9	28.7
12	6	6.9	19.8	7.8	28.5
13	6	6.6	20.3	7.4	28.7
14	6	6.8	20.2	7.7	28.7
15	6	6.6	19.8	7.7	28.7
16	6	7.5	20.2	7.8	28.7
17	6	6.9	20.2	7.7	28.9
18	6	6.7	20.3	7.9	28.7
19	6	6.6	19.6	7.4	29.2
20	1	6.2	20.2	7.9	29.4
20	2	6.5	19.8	7.9	29.3
20	3	7.1	19.5	8.0	28.6
20	4	6.8	19.9	8.0	29.2
20	5	6.7	19.4	8.0	29.1
Mean		6.9	19.6	8.0	29.0
Min		6.7	19.4	8.0	28.6
Max		7.1	19.9	8.0	29.2

Table B2. Continued.

Test Day	Rep	Ref-6 DO mg/L	Temp °C	pH pH units	Salinity ‰
0	6	8.3	19.6	8.1	27.9
1	6	6.3	19.6	7.7	28.0
2	6	6.4	19.3	7.4	28.0
3	6	5.9	19.7	7.5	28.0
4	6	6.8	19.9	8.1	27.9
5	6	6.0	19.5	7.7	28.0
6	6	6.5	19.8	7.9	28.1
7	6	6.1	19.6	7.7	28.3
8	6	6.5	19.6	7.5	28.3
9	6	6.0	19.4	7.7	28.3
10	6	6.7	19.9	7.9	28.4
11	6	6.2	19.3	7.9	28.3
12	6	6.9	19.2	7.8	28.5
13	6	6.8	19.8	7.5	28.6
14	6	6.9	19.5	7.8	28.7
15	6	6.5	19.5	7.7	28.7
16	6	7.5	19.5	7.9	28.9
17	6	7.0	19.5	7.8	28.9
18	6	7.0	19.4	7.9	29.0
19	6	7.4	20.7	7.6	29.0
20	1	7.0	19.8	8.0	29.4
20	2	7.3	19.3	8.0	29.5
20	3	7.2	19.5	8.0	29.2
20	4	6.5	19.5	7.9	29.4
20	5	7.2	19.8	7.9	29.3
Mean		7.0	19.6	7.9	29.3
Min		6.5	19.5	7.9	29.2
Max		7.2	19.8	8.0	29.4

Table B2. Continued.

Test Day	Rep	C-8 DO mg/L	Temp °C	pH pH units	Salinity ‰
0	6	8.0	19.4	8.0	27.9
1	6	6.5	19.3	7.8	28.0
2	6	6.8	19.2	7.6	28.0
3	6	6.3	19.4	7.5	28.1
4	6	6.3	19.5	8.1	28.0
5	6	5.8	19.2	7.8	28.0
6	6	6.5	19.6	8.1	28.0
7	6	5.9	19.3	7.8	28.3
8	6	6.8	19.3	7.7	28.2
9	6	5.9	19.2	8.0	28.2
10	6	7.3	19.5	8.1	28.3
11	6	6.8	19.1	8.1	28.3
12	6	6.6	19.1	8.1	28.4
13	6	6.5	19.4	7.7	28.5
14	6	6.6	19.2	7.9	28.7
15	6	6.2	19.3	7.8	28.7
16	6	6.8	19.4	7.9	28.7
17	6	2.2	19.2	7.8	29.0
18	6	7.9	19.2	8.1	29.0
19	6	6.4	19.3	7.6	29.2
20	1	6.5	19.4	8.0	29.3
20	2	6.7	19.4	8.0	29.3
20	3	6.8	19.5	8.1	29.4
20	4	6.6	19.9	8.0	29.4
20	5	6.0	19.7	7.9	29.3
Mean		6.5	19.7	8.0	29.4
Min		6.0	19.5	7.9	29.3
Max		6.8	19.9	8.1	29.4

Table B3. Ammonia and Sulfide Concentrations for the 20-Day Chronic Test with *Neanthes arenaceodentata*, Bremerton Sediment

Treatment	Overlying Water Ammonia (mg/L Total)		Porewater Ammonia (mg/L Total)		Overlying Water Sulfides (mg/L)		Porewater Sulfides (mg/L)	
	Day 0	Day 20	Day 0	Day 20	Day 0	Day 20	Day 0	Day 20
Control	<0.5	5.52	1.52	0.497	0	0	0	0
Ref 6	<0.5	1.33	2.65	0.529	0	0	0	0
C-8	2.73	2.8	20.4	3.67	0	0	0	ND

ND: No data - Interference due to high turbidity.

20-DAY CHRONIC TEST DATA SHEET 3

CLIENT	PROJECT	MEC JOB NO.	PROJECT MANAGER	MEC LABORATORY	PROTOCOL	SPECIES
Parametrix	Bremerton Sediment	13728.001.001.0001	Bill Gardiner	Carlsbad Room 3	BIO072	*Neanthes arenaceodentata*

ENDPOINT DATA & OBSERVATIONS

OBSERVATIONS KEY
N = normal; L = anoxic surface; B= no burrows; F= fungal patches; M= dead on surface; D= no air flow (DO); A= avoidance; U= excess food

CLIENT/ MEC ID	REP	JAR	INITIAL	DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	NUMBER REMAINING	TARE WEIGHT (mg) LS	TOTAL WEIGHT (mg) JH	Boat #
				TECH	1/11/06 HB	1/12/06 HB	1/13/06 KS	1/14/06 KS	1/15/06 CMM	1/16/06 KS	1/17/06 TLF	1/18/06 HB	1/19/06 CC	1/20/06 KS	1/21/06 JH	1/22/06 JH	1/23/06 KS	1/24/06 KS	1/25/06 KS	1/26/06 JH	1/27/06 LS	1/28/06 ED	1/29/06 ED	1/30/06 LS				
Control / .	1				N	N	N	N	N	N	N	N	N	N	N	N	F	F	F D	F	F D	F	F	F	5	124.90	234.30	1
	2				2A	1A	N	N	N	N	N	N	N	N	N	N	N	N	F	F	F	F	F	F	5	127.57	222.58	2
	3				N	N	N	N	N	N	N	N	N	N	N	N	N	N	D	F	F	F	F	F	4	118.28	184.80	3
	4				N	N	N	N	N	N	N	N	N	N	N	N	N	N	D	F	F D	F	F	F	5	128.24	208.34	4
	5				N	N	N	N	N	N	N	N	N	N	N	N	N	N	D	F	F D	F	F	F	5	154.51	278.30	5
Ref 6 / .	1				N	N	N	N	N	N	N	N	N	N	N	N	N	N	D	N	D	N	N	N	5	93.40	183.02	6
	2				N	N	N	N	N	N	N	N	N	N	N	N	F	F	D	F	F D	F	F	F	5	130.43	220.88	7
	3				N	N	N	N	N	N	N	N	N	N	N	N	N	N	D	N	D	N	N	N	5	101.94	179.55	8
	4				N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	5	102.62	183.04	9
	5				N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	5	111.46	191.52	10
C 8 / .	1				N	N	N	N	N	F	N	N	N	N	N	N	N	N	F	F	F	F	F	F	5	137.53	216.73	11
	2				N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	D	N	N	N	5	120.84	196.17	12
	3				N	N	2A	N	N	F	N	N	N	N	N	N	F	F	F D	F	F D	F	F	F	5	111.01	176.21	13
	4				N	N	N	N	U	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	5	98.77	171.63	14
	5				N	N	N	N	N	F	N	N	N	N	N	N	N	N	D F	F	F D	F	F	F	5	101.38	196.10	15

B Small animals swimming in sample. 1/25/06 LS

Parametrix neanthes Pre-Test Weights

Date: 1/6/06

Weigh Boat	Tare Weight (mg)	Weight with Animals (mg)
A	59.39	60.75
B	68.13	69.40
C	61.18	62.40

Date: 1/9/06

Weigh Boat	Tare Weight (mg)	Weight with Animals (mg)
A	~~69.40~~ 69.34 (am)	72.43
B	71.29	74.24
C	75.57	78.56

Date: _____

Weigh Boat	Tare Weight (mg)	Weight with Animals (mg)
A		
B		
C		

20 DAY CHRONIC TEST DATA SHEET 2

CLIENT	PROJECT	SPECIES	MEC LABORATORY	PROTOCOL
Parametrix	Bremerton Sediment	*Neanthes arenaceodentata*	Carlsbad Room 3	BIO072
MEC JOB NUMBER	**PROJECT MANAGER**	**TEST START DATE / TIME**	**TEST END DATE**	**TIME**
13728.001.001.0001	Bill Gardiner	10Jan06 / 1420 JH/EB	30Jan06	1145

WATER QUALITY DATA

TEST | DO (mg/L): > 6.0 | TEMP (C): 20 ± 2 | SALINITY (ppt): 28 ± 2 | pH: 8.0±1.0 | NH3 (mg/L): < 10.0 | DILUTION WATER BATCH: SIO121405 | TEMP.RECDR./HOBO#: 1967

CLIENT/MEC ID	DAY	REP	JAR #	D.O. meter	D.O. mg/L	TEMP meter	TEMP °C	SALINITY meter	SALINITY ppt	pH meter	pH unit	OVERLY. NH3 Techn.	OVERLY. NH3 mg/L	INTER. NH3 Techn.	INTER. NH3 mg/L	TECHNICIAN	Feeding	WATER RENEWAL
Control	0	① WQ surr	17	7	8.1	7	20.3	6	28.0	12	8.0	JH	<0.5	JH	1.52	RF	EB	
		②															↓	
		③																
		④																
		⑤																
Control	1	WQ	17	7	6.9	7	20.3	6	28.3	12	7.9					RF		
Control	2	WQ	surr	6	6.8	6	20.0	5	28.4	10	7.5					HB	HB	
Control	3	WQ	surr	6	6.4	6	20.0	5	28.4	10	7.5					KS	KS	②KS
Control	4	WQ	surr	7	7.0	7	20.3	6	28.4	11	8.3					KS	am	am
Control	5	WQ	surr	6	7.2	6	20.1	5	28.3	12	7.9					am		
Control	6	WQ	surr	7	7.0	7	20.7	6	28.4	11	8.1					KS	EB	KS
Control	7	WQ	surr	6	6.7	6	20.3	5	28.3	12	7.8					TVT		
Control	8	WQ	surr	6	7.1	6	20.5	5	28.5	11	7.4					HB	HB	
Control	9	WQ	surr	6	6.6	6	20.3	6	28.4	12	7.8					CC		EB/HB
Control	10	WQ	surr	7	7.0	7	20.6	5	28.5	11	7.9					KS	KS	

① used wq. surr instead of 5 reps 1/10/06 RF
② due to technician error, water was not renewed 1/13/06 KS
③ IE 1115106 am

20 DAY CHRONIC TEST DATA SHEET 2

CLIENT	PROJECT	SPECIES	MEC LABORATORY	PROTOCOL
Parametrix	Bremerton Sediment	*Neanthes arenaceodentata*	Carlsbad Room 3	BIO072

MEC JOB NUMBER	PROJECT MANAGER	TEST START DATE	TIME	TEST END DATE	TIME
13728.001.001.0001	Bill Gardiner	10Jan06	1420 JH/EB	30Jan06	1145

WATER QUALITY DATA

TEST	DO (mg/L)	TEMP (C)	SALINITY (ppt)	pH	NH3 (mg/L)		DILUTION WATER BATCH	TEMP.RECDR./HOBO#
	> 6.0	20 ± 2	28 ± 2	8.0±1.0	< 10.0		SIO121405	1967

CLIENT/MEC ID	DAY	REP	JAR #	D.O.		TEMP		SALINITY		pH		OVERLY. NH3		INTER. NH3				TECHNICIAN	Feeding	WATER RENEWAL
				meter	mg/L	meter	°C	meter	ppt	meter	unit	Techn.	mg/L	Techn.	mg/L					
Control	11	WQ		6	7.1	6	20.1	6	28.7	12	7.9							LS		
Control	12	WQ		6	6.9	6	19.8	5	28.5	12	7.8							DA	DA	DA
Control	13	WQ		7	6.6	7	20.3	6	28.7	10	7.4							VS		
Control	14	WQ		6	6.8	6	20.2	5	28.7	11	7.7							KS	KS	
Control	15	WQ		6	6.6	6	19.8	5	28.7	10	7.7							LS		EB/LS
Control	16	WQ		6	7.5	6	20.2	5	28.7	11	7.8							JH	JH	
Control	17	WQ		6	6.9	6	20.2	5	28.9	10	7.7							LS		
Control	18	WQ		6	6.7	6	20.3	5	28.7	11	7.9							EB	EB	EB
Control	19	WQ		7	6.6	7	19.6	6	29.2	11	7.4							EB		
Control	20	1		6	6.2	6	20.2	5	29.4	11	7.9	JH	①JH 5.52	EB	0.497			LS		
		2		6	6.5	6	19.8	5	29.3	11	7.9							LS		
		3		6	7.1	6	19.5	5	28.6	11	8.0							LS		
		4		6	6.8	6	19.9	5	29.2	11	8.0							LS		
		5		6	6.7	6	19.4	5	29.1	11	8.0							LS		

① composite of all reps 1/30/06 JH

20 DAY CHRONIC TEST DATA SHEET 2

CLIENT	PROJECT	SPECIES	MEC LABORATORY	PROTOCOL
Parametrix	Bremerton Sediment	*Neanthes arenaceodentata*	Carlsbad Room 3	BIO072

MEC JOB NUMBER	PROJECT MANAGER	TEST START DATE	TIME	TEST END DATE	TIME
13728.001.001.0001	Bill Gardiner	10Jan06	1420 EB/NH	30Jan06	1145

WATER QUALITY DATA

TEST | DO (mg/L): > 6.0 | TEMP (C): 20 ± 2 | SALINITY (ppt): 28 ± 2 | pH: 8.0±1.0 | NH3 (mg/L): < 10.0 | DILUTION WATER BATCH: SIO121405 | TEMP.RECDR/HOBO#: 1967

CLIENT/MEC ID	DAY	REP	JAR #	D.O. meter	D.O. mg/L	TEMP meter	TEMP °C	SALINITY meter	SALINITY ppt	pH meter	pH unit	OVERLY. NH3 Techn.	OVERLY. NH3 mg/L	INTER. NH3 Techn.	INTER. NH3 mg/L	TECHNICIAN	Feeding	WATER RENEWAL
Ref 6	0	WQ Surr	7	7	8.3	7	19.6	6	27.9	12	8.1	JH	<0.5	JH	2.65	RF	EB	
		0 RF																
		2																
		3																
		4																
		5															↓	
Ref 6	1	WQ	7	7	6.3	7	19.6	6	28.0	12	7.7					RF		
Ref 6	2	WQ	Surr	6	6.4	6	19.3	5	28.0	10	7.4					HB	HB	
Ref 6	3	WQ	Surr	6	5.9	6	19.7	5	28.0	10	7.5					VS	VS	@VS
Ref 6	4	WQ	Surr	7	6.8	7	19.9	6	27.9	11	8.1					VS	am	am
Ref 6	5	WQ	Surr	6	6.0	6	19.5	5	28.0	12	7.7					am		
Ref 6	6	WQ	Surr	7	6.5	7	19.8	6	28.1	11	7.9					VS	EB	KS
Ref 6	7	WQ	Surr	6	6.1	6	19.6	5	28.3	12	7.7					TG		
Ref 6	8	WQ	Surr	6	6.5	6	19.6	5	28.3	11	7.5					HB	HB	
Ref 6	9	WQ	Surr	6	5.9 ⑤cc	6	19.3 ⑤cc	6	28.4 ⑤cc	12	7.8 ②cc 7.7					cc		EB/HB
Ref 6	10	WQ	Surr	7	6.7	7	19.9	5	28.4	11	7.9					VS	VS	

① used WQ. Surr instead of reps. 1/10/06 RF
② due to technician error, water was not renewed 1/13/06 VS
③ ~~TF~~ 1/19/06 cc

20 DAY CHRONIC TEST DATA SHEET 2

CLIENT	PROJECT	SPECIES	MEC LABORATORY	PROTOCOL
Parametrix	Bremerton Sediment	*Neanthes arenaceodentata*	Carlsbad Room 3	BIO072

MEC JOB NUMBER	PROJECT MANAGER	TEST START DATE	TIME	TEST END DATE	TIME
13728.001.001.0001	Bill Gardiner	10Jan06	1420 JH/KB	30Jan06	1145

WATER QUALITY DATA

TEST: DO (mg/L) > 6.0 | TEMP (C) 20 ± 2 | SALINITY (ppt) 28 ± 2 | pH 8.0±1.0 | NH3 (mg/L) < 10.0 | DILUTION WATER BATCH SIO121405 | TEMP.RECDR./HOBO# 1967

CLIENT/MEC ID	DAY	REP	JAR #	D.O. meter	D.O. mg/L	TEMP meter	TEMP °C	SALINITY meter	SALINITY ppt	pH meter	pH unit	OVERLY. NH3 Techn.	OVERLY. NH3 mg/L	INTER. NH3 Techn.	INTER. NH3 mg/L			TECHNICIAN	Feeding	WATER RENEWAL
Ref 6	11	WQ		6	7.0	6	20.3	6	28.7	12	7.9							LS		
Ref 6	12	WQ		6	6.9	6	19.2	5	28.5	12	7.8								EA	EA
Ref 6	13	WQ		7	6.8	7	19.8	6	28.6	10	7.5							KS		
Ref 6	14	WQ		6	6.9	6	19.5	5	28.7	11	7.8							KS	KS	
Ref 6	15	WQ		6	6.5	6	19.5	5	28.7	10	7.7							LS		HB/CS
Ref 6	16	WQ		6	7.5	6	19.5	5	28.9	11	7.9							JH	JH	
Ref 6	17	WQ		6	7.0	6	19.5	5	28.9	10	7.8							LS		
Ref 6	18	WQ		6	7.0	6	19.4	5	29.0	11	7.9							QD	QD	QD
Ref 6	19	WQ		7	7.4	7	20.7	6	29.0	11	7.6							EM		
Ref 6	20	1		6	7.0	6	19.8	5	29.4	11	8.0	JH	②JH 1.33	JH	0.529			LS		
		2		6	7.3	6	19.3	5	29.5	11	8.0							LS		
		3		6	7.2	6	19.5	5	29.2	11	8.0							LS		
		4		6	6.5	6	19.5	5	29.4	11	7.9							LS		
		5		6	7.2	6	19.8	5	29.3	11	7.9							LS		

① WP 1/24/06 JS

② Composite of all reps 1/30/06 JH

20 DAY CHRONIC TEST DATA SHEET 2

CLIENT	PROJECT	SPECIES	MEC LABORATORY	PROTOCOL
Parametrix	Bremerton Sediment	*Neanthes arenaceodentata*	Carlsbad Room 3	BIO072

MEC JOB NUMBER	PROJECT MANAGER	TEST START DATE	TIME	TEST END DATE	TIME
13728.001.001.0001	Bill Gardiner	10Jan06	1420 EB/JH	30Jan06	1145

WATER QUALITY DATA

TEST | DO (mg/L) > 6.0 | TEMP (C) 20 ± 2 | SALINITY (ppt) 28 ± 2 | pH 8.0±1.0 | NH3 (mg/L) < 10.0 | DILUTION WATER BATCH SIO121405 | TEMP.RECDR./HOBO# 1967

CLIENT/MEC ID	DAY	REP	JAR #	D.O. meter	D.O. mg/L	TEMP meter	TEMP °C	SALINITY meter	SALINITY ppt	pH meter	pH unit	OVERLY. NH3 Techn.	OVERLY. NH3 mg/L	INTER. NH3 Techn.	INTER. NH3 mg/L	TECHNICIAN	Feeding	WATER RENEWAL
C 8	0	WQ Surr	6	7	8.0	7	19.4	6	27.9	12	8.0	JH	2.73	JH	20.4	RF		EB
		2																
		3																
		4																
		5																
C 8	1	WQ	6	7	6.5	7	19.3	6	28.0	12	7.8					RF		
C 8	2	WQ	Surr	6	6.8	5 EB	19.2	5 EB	28.0	10	7.6					HB		HB
C 8	3	WQ	surr	6	6.3	6	19.4	5	28.1	10	7.5					VS		VS ③VS
C 8	4	WQ	surr	7	6.3	7	19.5	6	28.0	11	8.1					VS		am am
C 8	5	WQ	Surr	6	5.8 @am	6	19.2	5	28.0	12	7.8					am		
C 8	6	WQ	surr	7	6.5	7	19.6	6	28.0	11	8.1					VS		EB KS
C 8	7	WQ	Surr	6	5.9	6	19.3	5	28.3	12	7.8					DVT		
C 8	8	WQ	surr	6	6.3	6	19.3	5	28.2	11	7.7					HB		HB
C 8	9	WQ	Surr	6	5.9	6	19.2	6	28.2	12	8.0					CC		HB/EB
C 8	10	WQ	surr	7	7.3	7	19.5	5	28.3	11	8.1					VS		VS
C 8	11	WQ		6	6.8	6	19.1	6	28.3	12	~~7.8~~ 7.9 ⑧					LS		

① used WQ Surr. instead of reps. 1/10/06 RF

⑧ turned airflow up 1/15/06 am

1/9/2006 20 Neanthes chronicTEMPLATE WQ

Surr. 1/12/2006 HB

③ due to technician error water was not renewed 1/13/06 KS

FMA 1/24/06 VS

20 DAY CHRONIC TEST DATA SHEET 2

CLIENT	PROJECT	SPECIES	MEC LABORATORY	PROTOCOL
Parametrix	Bremerton Sediment	*Neanthes arenaceodentata*	Carlsbad Room 3	BIO072

MEC JOB NUMBER	PROJECT MANAGER	TEST START DATE	TIME	TEST END DATE	TIME
13728.001.001.0001	Bill Gardiner	10Jan06	1420 EB/JH	30Jan06	1145

WATER QUALITY DATA

TEST: DO (mg/L) > 6.0 | TEMP (C) 20 ± 2 | SALINITY (ppt) 28 ± 2 | pH 8.0±1.0 | NH3 (mg/L) < 10.0 | DILUTION WATER BATCH SIO121405 | TEMP.RECDR/HOBO# 1967

CLIENT/MEC ID	DAY	REP	JAR #	D.O. meter	D.O. mg/L	TEMP meter	TEMP °C	SALINITY meter	SALINITY ppt	pH meter	pH unit	OVERLY. NH3 Techn.	OVERLY. NH3 mg/L	INTER. NH3 Techn.	INTER. NH3 mg/L	TECHNICIAN	Feeding	WATER RENEWAL
C 8	12	WQ		6	6.6	6	19.1	5	28.4	12	8.1					EA	EA	EA
C 8	13	WQ		7 ②	6.5	7 ②	19.4	6	28.5	10	7.7					VS		
C 8	14	WQ		6 ②	6.6	6 ②	19.2	5	28.7	11	7.9					VS	KS	
C 8	15	WQ		6	6.2	6	19.3	5	28.7	10	7.8					LS		HB/LS
C 8	16	WQ		6	6.8	6	19.4	5	28.7	11	7.9					JH	JH	
C 8	17	WQ		6	2.2 ②	6	19.2	5	29.0	10	7.8					LS		
C 8	18	WQ		6	7.9	6	19.2	5	29.0	11	8.1					QB	QB	QB
C 8	19	WQ		7	6.4	7	19.3	6	29.2	11	7.6					EB		
C 8	20	1		6	6.5	6	19.4	5	29.3	11	8.0	JH ③	2.80	JH	3.67	LS		
		2		6	6.7	6	19.4	5	29.3	11	8.0					LS		
		3		6	6.8	6	19.5	5	29.4	11	8.1					LS		
		4		6	6.6	6	19.9	5	29.4	11	8.0					LS		
		5		6	6.8	6	19.7	5	29.3	11	7.9					LS		

① WC 1/22/06 EA

② DO out of range: Increased aeration 1/27/06 LS

③ Composite of all reps 1/30/06 JH

Ammonia Analysis
Total Ammonia (mg/L)

Client/Project:	Organism:	Weston Test ID:	Test Duration (days):
Parametrix	Neanthes	C040719.74	20

PRETEST / INITIAL / FINAL / OTHER (circle one) **DAY of TEST:** 20
OVERLYING (OV) / POREWATER (PW) (circle one)

Calibration Standards Temperature		Sample temperature should be within ±1°C of standards temperature at time and date of analysis.
Date:	**Temperature:**	
1/30/06	24°	

Sample ID or Description	Client ID Rep	Date of Sampling and Analysis	Ammonia Conc. (mg/L)	Temp °C	Date of Reading and Initials	Sample Frozen (Y/N)	pH	Sal ppt
Ø		1/30/06 JH/CB/HB	<0.5	24.6°	1/30/06 JH	N	7.5	39
C8		↓ ↓	3.67	24.5°	↓	↓	7.3	31
Ref 6		↓ ↓	0.529	24.8°	↓	↓	7.7	33

Neanthes Parametrix

Sulfides

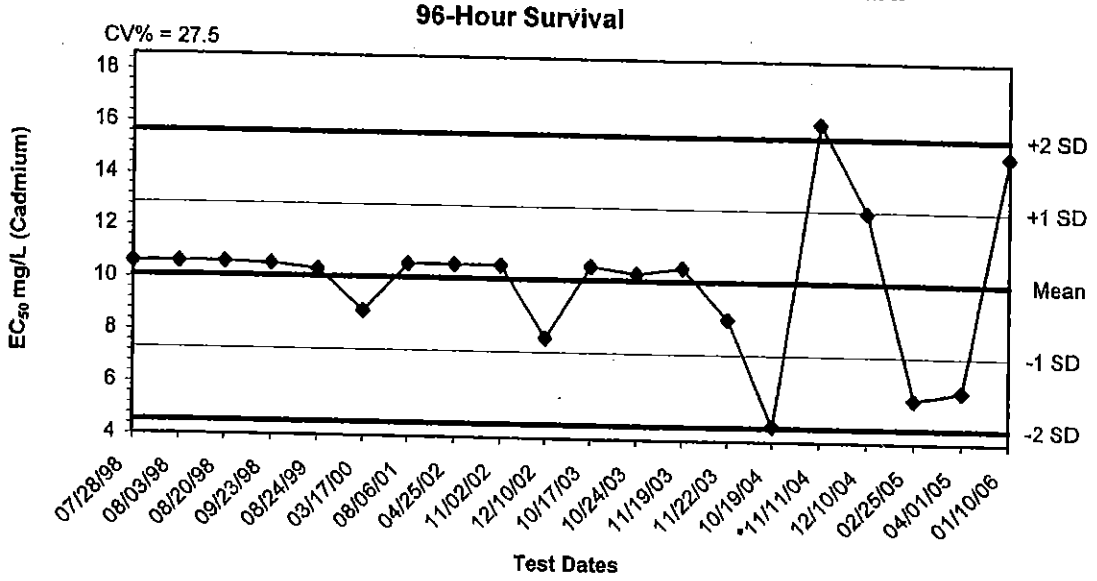
	OV	PW
Initial 1/10/06		
Control	0	0
Ref-6	0	0
C-8	0	6

	OV	PW
Final		
Control	0	0
Ref-6	0	0
C-8	0	~~1~~ Ø

JH/HB/CB

Too turbid to get readable reading

Neanthes arenaceodentata Reference Toxicant Control Chart: 96-Hour Survival



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
07/28/98	10.6070	10.0862	7.3104	4.5347	12.8619	15.6377
08/03/98	10.6070	10.0862	7.3104	4.5347	12.8619	15.6377
08/20/98	10.6070	10.0862	7.3104	4.5347	12.8619	15.6377
09/23/98	10.5540	10.0862	7.3104	4.5347	12.8619	15.6377
08/24/99	10.3670	10.0862	7.3104	4.5347	12.8619	15.6377
03/17/00	8.7893	10.0862	7.3104	4.5347	12.8619	15.6377
08/06/01	10.6070	10.0862	7.3104	4.5347	12.8619	15.6377
04/25/02	10.6070	10.0862	7.3104	4.5347	12.8619	15.6377
11/02/02	10.6070	10.0862	7.3104	4.5347	12.8619	15.6377
12/10/02	7.8547	10.0862	7.3104	4.5347	12.8619	15.6377
10/17/03	10.6070	10.0862	7.3104	4.5347	12.8619	15.6377
10/24/03	10.3560	10.0862	7.3104	4.5347	12.8619	15.6377
11/19/03	10.6070	10.0862	7.3104	4.5347	12.8619	15.6377
11/22/03	8.6466	10.0862	7.3104	4.5347	12.8619	15.6377
10/19/04	4.6063	10.0862	7.3104	4.5347	12.8619	15.6377
*11/11/04	16.2100	10.0862	7.3104	4.5347	12.8619	15.6377
12/10/04	12.8000	10.0862	7.3104	4.5347	12.8619	15.6377
02/25/05	5.6839	10.0862	7.3104	4.5347	12.8619	15.6377
04/01/05	6.0000	10.0862	7.3104	4.5347	12.8619	15.6377
01/10/06	15.0000	10.0862	7.3104	4.5347	12.8619	15.6377

* Value out of 95% CI range. Test was rerun on 12/10/04 and was within 95% CI.
Updated 01/25/06 KS

Acute Sediment Test-96 Hr Survival

Start Date:	1/10/2006 16:00	Test ID:	C040405.43	Sample ID:	REF-Ref Toxicant
End Date:	1/14/2006 14:25	Lab ID:	CCA-Weston, Carlsbad	Sample Type:	CDCL-Cadmium chloride
Sample Date:		Protocol:	EPA USACE-1998	Test Species:	NA-Neanthes arenaceodentata
Comments:					

Conc-mg/L	1	2	3
Control	1.0000	1.0000	1.0000
3.75	1.0000	1.0000	1.0000
7.5	1.0000	1.0000	0.9000
15	0.0000	0.6000	0.9000
30	0.0000	0.0000	0.0000
60	0.0000	0.0000	0.0000

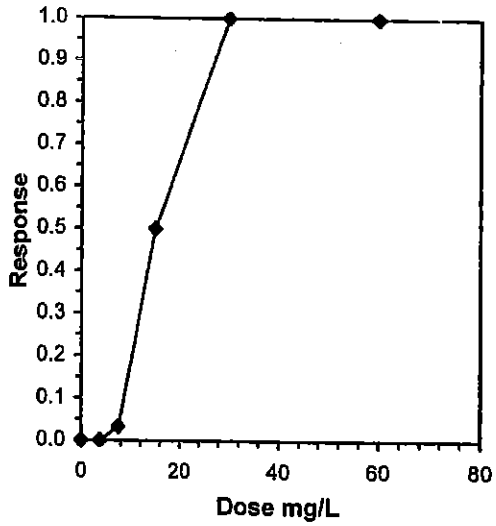
			Transform: Untransformed					1-Tailed			Isotonic	
Conc-mg/L	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Mean	N-Mean
Control	1.0000	1.0000	1.0000	1.0000	1.0000	0.000	3				1.0000	1.0000
3.75	1.0000	1.0000	1.0000	1.0000	1.0000	0.000	3	0.000	2.420	0.4563	1.0000	1.0000
7.5	0.9667	0.9667	0.9667	0.9000	1.0000	5.973	3	0.177	2.420	0.4563	0.9667	0.9667
*15	0.5000	0.5000	0.5000	0.0000	0.9000	91.652	3	2.652	2.420	0.4563	0.5000	0.5000
30	0.0000	0.0000	0.0000	0.0000	0.0000	0.000	3				0.0000	0.0000
60	0.0000	0.0000	0.0000	0.0000	0.0000	0.000	3				0.0000	0.0000

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.73836	0.805	-0.86	5.20674
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	7.5	15	10.6066		0.45632	0.45632	0.18	0.05333	0.07501	3, 8

Linear Interpolation (200 Resamples)

Point	mg/L	SD	95% CL(Exp)		Skew
IC05	7.768	0.967	3.268	11.143	0.5571
IC10	8.571	1.487	6.321	22.071	2.7268
IC15	9.375	1.776	7.008	22.937	1.7679
IC20	10.179	2.178	7.267	23.804	1.3302
IC25	10.982	2.339	7.200	24.670	1.0996
IC40	13.393	2.852	6.992	27.268	0.6639
IC50	15.000	3.228	6.853	29.000	0.4454



Test: AS-Acute Sediment Test
Species: NA-Neanthes arenaceodentata
Sample ID: REF-Ref Toxicant
Start Date: 1/10/2006 16:00 End Date: 1/14/2006 14:2

Test ID: C040405.43
Protocol: EPA USACE-1998
Sample Type: CDCL-Cadmium chloride
Lab ID: CCA-Weston, Carlsbad

Pos	ID	Rep	Group	Start	24 Hr	48 Hr	72 Hr	96 Hr	Notes
	1	1	Control	10				10	
	2	2	Control	10				10	
	3	3	Control	10				10	
	4	1	3.750	10				10	
	5	2	3.750	10				10	
	6	3	3.750	10				10	
	7	1	7.500	10				10	
	8	2	7.500	10				10	
	9	3	7.500	10				10	
	10	1	15.000	10				9	
	11	2	15.000	10				0	
	12	3	15.000	10				6	
	13	1	30.000	10				9	
	14	2	30.000	10				0	
	15	3	30.000	10				0	
	16	1	60.000	10				0	
	17	2	60.000	10				0	
	18	3	60.000	10				0	

Comments:

20-DAY CHRONIC TEST DATA SHEET 3 - REF TOX

CLIENT	PROJECT	MEC JOB NO.	SPECIES	ACCLM.MORT.
Parametrix	Bremerton Sediment	13728.001.001.0001	*Neanthes arenaceodentata*	< 5%

PROJECT MANAGER	MEC LABORATORY	PROTOCOL
Bill Gardiner	Carlsbad Room 3	BIO072

SURVIVAL & BEHAVIOR DATA

OBSERVATIONS KEY
N = normal; L = anoxic surface; B= no burrows; F= fungal patches; M= dead on surface; D= no air flow (DO?); A= avoidance; U= excess food; Q=quiescent

CLIENT/ MEC ID	CONC. value	CONC. units	REP	INITIAL NUMBER	DAY 1 DATE 11/1/06 TECHNICIAN dm #ALIVE	DAY 1 #DEAD	DAY 1 OBS	DAY 2 DATE 11/2/06 TECHNICIAN YS #ALIVE	DAY 2 #DEAD	DAY 2 OBS	DAY 3 DATE 11/3/06 TECHNICIAN YS #ALIVE	DAY 3 #DEAD	DAY 3 OBS	DAY 4 DATE 11/4/06 TECHNICIAN dm #ALIVE	DAY 4 #DEAD	DAY 4 OBS
Ref.Tox.- cadmium	0	mg/L	1	10	10	0	N	10	0	N	10	0	N	10	0	N
			2	↓	10	0	N	10	0	N	10	0	N	10	0	N
			3	↓	10	0	N	10	0	N	10	0	N	10	0	N
Ref.Tox.- cadmium	3.75 ~~1.875~~	mg/L	1	10	10	0	N	10	0	N	10	0	N	10	0	3Q
			2	↓	10	0	N	10	0	N	10	0	N	10	0	N
			3	↓	10	0	N	10	0	N	10	0	N	10	0	N
Ref.Tox.- cadmium	7.5 ~~3.75~~	mg/L	1	10	10	0	N	10	0	6DC	10	0	DC	10	0	1Q
			2	↓	10	0	N	10	0	6DC	10	0	DC	10	0	N
			3	↓	10	0	2Q	10	0	DC,4Q	10	0	DC,9Q	9	1	DC/Q
Ref.Tox.- cadmium	15 ~~7.5~~	mg/L	1	10	10	0	DC/Q	10	0	DC/Q	8	2	DC,Q	0	8	—
			2	↓	10	0	DC/Q	10	0	DC/Q	10	0	DC,Q	6	4	DC/Q
			3	↓	10	0	9DC/Q	10	0	DC/Q	10	0	DC,Q	9	1	DC/Q
Ref.Tox.- cadmium	30 ~~15~~	mg/L	1	10	1	9	Q/DC	0	1	—	—	—	—	—	—	—
			2	↓	5	5	Q/DC	0	5	—	—	—	—	—	—	—
			3	↓	3	7	Q/DC	1	2	DC/Q	0	1	—	—	—	—
Ref.Tox.- cadmium	60 ~~30~~	mg/L	1	10	0	10	— Q/DC	—	—	—	—	—	—	—	—	—
			2	↓	1	8	NB	0	1	—	—	—	—	—	—	—
			3	↓	3	7	Q/DC	0	3	—	—	—	—	—	—	—

20 DAY CHRONIC TEST DATA SHEET 2 - REF TOX WQ

target: 9.00mL $CdCl_2$ in 1500mL actual: 9.0002 C040405.43

CLIENT	PROJECT	SPECIES	MEC LABORATORY	PROTOCOL
Parametrix	Bremerton Sediment	Neanthes arenaceodentata	Carlsbad Room 3	BIO072
MEC JOB NUMBER	**PROJECT MANAGER**	**TEST START DATE**	**TIME**	**TEST END DATE** / **TIME**
13728.001.001.0001	Bill Gardiner	10Jan06	1600 EB/NH/TG	14Jan06 / 1425 am

WATER QUALITY DATA

TEST	TEMP (C)	SAL (ppt)	DO (mg/L)	NH3 (mg/L)	DILN WAT BATCH	TEMP REC	REFERENCE TOX MATERIAL	REFERENCE TOXICANT	LOT NO.	96-HR LC50
	20+2	28+2	> 6.0	< 10	SIO124405	1967	cadmium chloride	cadmium		

CLIENT/ MEC ID	CONCENTRATION value	CONCENTRATION units	DAY	REP	D.O. meter	D.O. mg/L	TEMP. meter	TEMP. °C	SALINITY meter	SALINITY ppt	pH meter	pH unit	TECHNICIAN	FEEDING am	FEEDING pm
Ref.Tox.-cadmium	0	mg/L	0	stock	7	8.1	7	20.3	6	27.9	12	8.2	RF		
			1	1											
			2	2											
			3	3											
			4	1	7	7.6	7	19.3	6	29.0	11	8.4	am		
Ref.Tox.-cadmium	3.75 ~~1.875~~	mg/L	0	stock	7	7.3	7	20.3	6	28.0	12	8.2	RF		
			1	1											
			2	2											
			3	3											
			4	1	7	7.4	7	19.5	6	28.6	11	8.4	am		
Ref.Tox.-cadmium	7.5 ~~3.75~~	mg/L	0	stock	7	7.3	7	20.3	6	27.9	12	8.2	RF		
			1	1											
			2	2											
			3	3											
			4	1	7	7.4	7	19.6	6	28.3	11	8.4	am		
Ref.Tox.-cadmium	15 ~~7.5~~	mg/L	0	stock	7	7.2	7	20.2	6	27.9	12	8.2	RF		
			1	1											
			2	2											
			3	3											
			4	1	7	7.4	7	19.6	6	28.2	11	8.3	am		

20 DAY CHRONIC TEST DATA SHEET 2 - REF TOX WQ

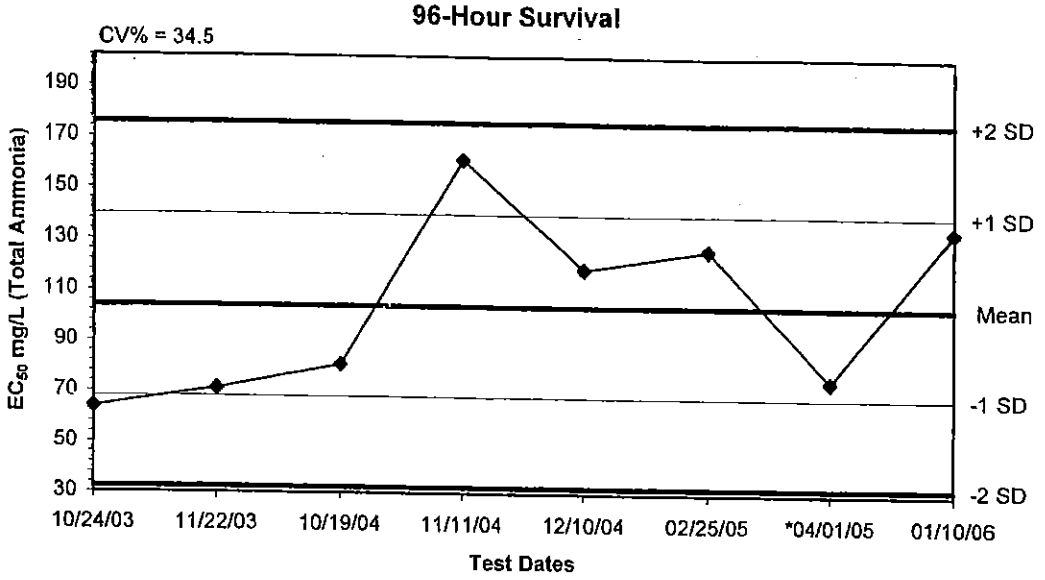
CLIENT	PROJECT	SPECIES	MEC LABORATORY	PROTOCOL
Parametrix	Bremerton Sediment	*Neanthes arenaceodentata*	Carlsbad Room 3	BIO072
MEC JOB NUMBER	**PROJECT MANAGER**	**TEST START DATE**	**TIME**	**TEST END DATE**	**TIME**
13728.001.001.0001	Bill Gardiner	10Jan06	1600 JH/TG/KB	14Jan06	1425 AM

WATER QUALITY DATA

TEST	TEMP (C)	SAL (ppt)	DO (mg/L)	NH3 (mg/L)	DIL.TN.WAT.BATCH	TEMP.REC	REFERENCE TOX. MATERIAL	REFERENCE TOXICANT	LOT NO.	96-HR LC50
	20±2	28±2	> 6.0	< 10	SIO121405	1967	cadmium chloride	cadmium		

CLIENT/ MEC ID	CONCENTRATION value	CONCENTRATION units	DAY	REP	D.O. meter	D.O. mg/L	TEMP. meter	TEMP. °C	SALINITY meter	SALINITY ppt	pH meter	pH unit			TECHNICIAN	FEEDING am	FEEDING pm
Ref.Tox.-cadmium	30 ~~15~~	mg/L	0	stock	7	7.2	7	20.2	6	27.9	12	8.2			RF		
			1	1													
			2	2													
			3	3													
			4														
Ref.Tox.-cadmium	60 ~~30~~	mg/L	0	stock	7	7.3	7	20.2	6	27.9	12	8.2			RF		
			1	1													
			2	2													
			3	3													
			4														

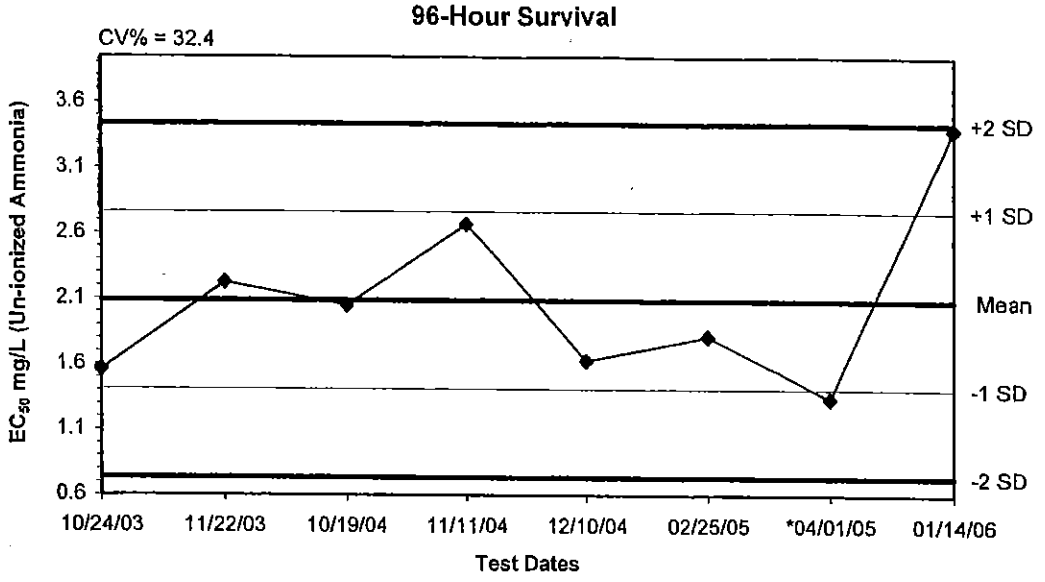
Neanthes arenaceodentata Reference Toxicant Control Chart: 96-Hour Survival



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
10/24/03	63.9210	103.9809	68.1163	32.2516	139.8456	175.7102
11/22/03	71.2005	103.9809	68.1163	32.2516	139.8456	175.7102
10/19/04	80.7559	103.9809	68.1163	32.2516	139.8456	175.7102
11/11/04	161.5100	103.9809	68.1163	32.2516	139.8456	175.7102
12/10/04	118.9100	103.9809	68.1163	32.2516	139.8456	175.7102
02/25/05	126.4000	103.9809	68.1163	32.2516	139.8456	175.7102
*04/01/05	75.0000	103.9809	68.1163	32.2516	139.8456	175.7102
01/10/06	134.1500	103.9809	68.1163	32.2516	139.8456	175.7102

* Nominal not measured concentrations were used in statistical analysis.
Updated 01/20/06 KS

Neanthes arenaceodentata Reference Toxicant Control Chart: 96-Hour Survival



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
10/24/03	1.5600	2.0856	1.4101	0.7345	2.7612	3.4368
11/22/03	2.2242	2.0856	1.4101	0.7345	2.7612	3.4368
10/19/04	2.0488	2.0856	1.4101	0.7345	2.7612	3.4368
11/11/04	2.6673	2.0856	1.4101	0.7345	2.7612	3.4368
12/10/04	1.6301	2.0856	1.4101	0.7345	2.7612	3.4368
02/25/05	1.8157	2.0856	1.4101	0.7345	2.7612	3.4368
*04/01/05	1.3405	2.0856	1.4101	0.7345	2.7612	3.4368
01/14/06	3.3986	2.0856	1.4101	0.7345	2.7612	3.4368

* Nominal not measured concentrations were used in statistical analysis.
Updated 01/20/06 KS

Acute Sediment Test-96 Hr Survival

Start Date:	1/10/2006 16:30	Test ID:	C040719.74	Sample ID:	REF-Ref Toxicant
End Date:	1/14/2006 14:30	Lab ID:	CCA-Weston, Carlsbad	Sample Type:	TNH3-Ammonia-total (measured)
Sample Date:		Protocol:	EPA USACE-1998	Test Species:	NA-Neanthes arenaceodentata
Comments:					

Conc-mg/L	1	2	3
Control	0.9000	1.0000	1.0000
18	1.0000	1.0000	1.0000
35.2	1.0000	1.0000	1.0000
67.1	1.0000	1.0000	1.0000
133	0.4000	0.5000	0.6000
271	0.0000	0.0000	0.0000

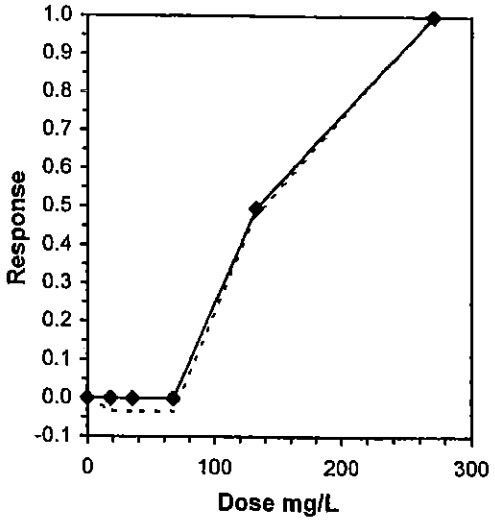
			Transform: Untransformed					1-Tailed			Isotonic	
Conc-mg/L	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Mean	N-Mean
Control	0.9667	1.0000	0.9667	0.9000	1.0000	5.973	3				0.9917	1.0000
18	1.0000	1.0345	1.0000	1.0000	1.0000	0.000	3	-0.791	2.470	0.1041	0.9917	1.0000
35.2	1.0000	1.0345	1.0000	1.0000	1.0000	0.000	3	-0.791	2.470	0.1041	0.9917	1.0000
67.1	1.0000	1.0345	1.0000	1.0000	1.0000	0.000	3	-0.791	2.470	0.1041	0.9917	1.0000
*133	0.5000	0.5172	0.5000	0.4000	0.6000	20.000	3	11.068	2.470	0.1041	0.5000	0.5042
271	0.0000	0.0000	0.0000	0.0000	0.0000	0.000	3				0.0000	0.0000

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.78167	0.835	-0.2203	2.96154
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	67.1	133	94.4685		0.10414	0.10774	0.14567	0.00267	9.3E-07	4, 10

Linear Interpolation (200 Resamples)

Point	mg/L	SD	95% CL(Exp)		Skew
IC05	73.75	0.64	71.39	77.31	0.4899
IC10	80.39	1.28	75.67	87.52	0.4899
IC15	87.04	1.92	79.96	97.73	0.4899
IC20	93.68	2.56	84.25	107.94	0.4899
IC25	100.33	3.20	88.54	118.15	0.4899
IC40	120.27	5.16	101.40	149.42	0.5228
IC50	134.15	8.62	109.32	182.05	0.6219



ToxCalc v5.0.23

Reviewed by:_____

Test: AS-Acute Sediment Test
Species: NA-Neanthes arenaceodentata
Sample ID: REF-Ref Toxicant
Start Date: 1/10/2006 16:30

Test ID: C040719.74
Protocol: EPA USACE-1998
Sample Type: TNH3-Ammonia-total (measured)
End Date: 1/14/2006 14:3 Lab ID: CCA-Weston, Carlsbad

Pos	ID	Rep	Group	Start	24 Hr	48 Hr	72 Hr	96 Hr	Notes
	1	1	Control	10				9	
	2	2	Control	10				10	
	3	3	Control	10				10	
	4	1	18.000	10				10	
	5	2	18.000	10				10	
	6	3	18.000	10				10	
	7	1	35.200	10				10	
	8	2	35.200	10				10	
	9	3	35.200	10				10	
	10	1	67.100	10				10	
	11	2	67.100	10				10	
	12	3	67.100	10				10	
	13	1	133.000	10				4	
	14	2	133.000	10				5	
	15	3	133.000	10				6	
	16	1	271.000	10				0	
	17	2	271.000	10				0	
	18	3	271.000	10				0	

Comments:

Acute Sediment Test-96 Hr Survival

Start Date:	1/10/2006 16:30	Test ID:	C040719.74	Sample ID:	REF-Ref Toxicant
End Date:	1/14/2006 14:30	Lab ID:	CCA-Weston, Carlsbad	Sample Type:	UNH3-Ammonia-unionized (calculated)
Sample Date:		Protocol:	EPA USACE-1998	Test Species:	NA-Neanthes arenaceodentata
Comments:					

Conc-mg/L	1	2	3
Control	0.9000	1.0000	1.0000
0.92	1.0000	1.0000	1.0000
1.444	1.0000	1.0000	1.0000
2.236	1.0000	1.0000	1.0000
3.39	0.4000	0.5000	0.6000
4.423	0.0000	0.0000	0.0000

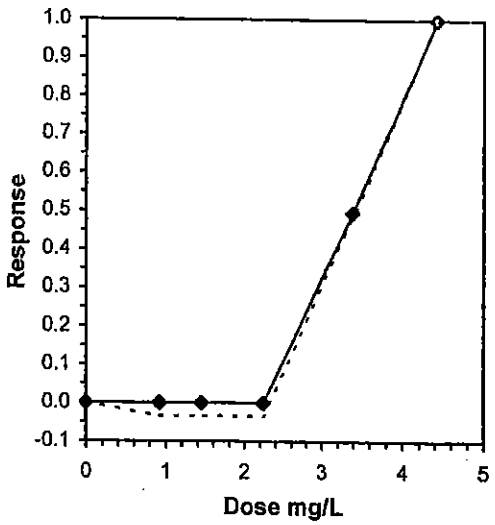
			Transform: Untransformed						1-Tailed		Isotonic	
Conc-mg/L	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Mean	N-Mean
Control	0.9667	1.0000	0.9667	0.9000	1.0000	5.973	3				0.9917	1.0000
0.92	1.0000	1.0345	1.0000	1.0000	1.0000	0.000	3	-0.791	2.470	0.1041	0.9917	1.0000
1.444	1.0000	1.0345	1.0000	1.0000	1.0000	0.000	3	-0.791	2.470	0.1041	0.9917	1.0000
2.236	1.0000	1.0345	1.0000	1.0000	1.0000	0.000	3	-0.791	2.470	0.1041	0.9917	1.0000
*3.39	0.5000	0.5172	0.5000	0.4000	0.6000	20.000	3	11.068	2.470	0.1041	0.5000	0.5042
4.423	0.0000	0.0000	0.0000	0.0000	0.0000	0.000	3				0.0000	0.0000

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.78167	0.835	-0.2203	2.96154
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	2.236	3.39	2.75319		0.10414	0.10774	0.14567	0.00267	9.3E-07	4, 10

Linear Interpolation (200 Resamples)

Point	mg/L	SD	95% CL(Exp)		Skew
IC05	2.3524	0.0129	2.3111	2.4109	0.3211
IC10	2.4688	0.0258	2.3861	2.5858	0.3211
IC15	2.5851	0.0387	2.4612	2.7607	0.3211
IC20	2.7015	0.0516	2.5363	2.9356	0.3211
IC25	2.8179	0.0645	2.6114	3.1105	0.3211
IC40	3.1670	0.1030	2.8366	3.6353	0.3131
IC50	3.3986	0.1013	2.9880	3.7421	-0.1576



Reviewed by:_____

Test: AS-Acute Sediment Test
Species: NA-Neanthes arenaceodentata
Sample ID: REF-Ref Toxicant
Start Date: 1/10/2006 16:30

Test ID: C040719.74
Protocol: EPA USACE-1998
Sample Type: UNH3-Ammonia-unionized (calculated)
End Date: 1/14/2006 14:3 Lab ID: CCA-Weston, Carlsbad

Pos	ID	Rep	Group	Start	24 Hr	48 Hr	72 Hr	96 Hr	Notes
	1	1	Control	10				9	
	2	2	Control	10				10	
	3	3	Control	10				10	
	4	1	0.920	10				10	
	5	2	0.920	10				10	
	6	3	0.920	10				10	
	7	1	1.444	10				10	
	8	2	1.444	10				10	
	9	3	1.444	10				10	
	10	1	2.236	10				10	
	11	2	2.236	10				10	
	12	3	2.236	10				10	
	13	1	3.390	10				4	
	14	2	3.390	10				5	
	15	3	3.390	10				6	
	16	1	4.423	10				0	
	17	2	4.423	10				0	
	18	3	4.423	10				0	

Comments:

20 DAY CHRONIC TEST DATA SHEET 2 - REF TOX WQ

target: 63.47 in 1500mL actual 63.4698 C040719.74

CLIENT	PROJECT	SPECIES	MEC LABORATORY	PROTOCOL
Parametrix	Bremerton Sediment	*Neanthes arenaceodentata*	Carlsbad Room 3	BIO072

MEC JOB NUMBER	PROJECT MANAGER	TEST START DATE	TIME	TEST END DATE	TIME
13728.001.001.0001	Bill Gardiner	10Jan06	1630 AM/JH	14Jan06	1430 am

WATER QUALITY DATA

TEST	TEMP (C)	SAL (ppt)	DO (mg/L)	NH3 (mg/L)	DILTN.WAT.BATCH	TEMP REC#	REFERENCE TOX. MATERIAL	REFERENCE TOXICANT	LOT NO.	96-HR LC50
	20±2	28±2	> 6.0	< 10	SIO121405	1967	ammonium chloride	ammonia	013k042	

CLIENT/ MEC ID	CONCENTRATION value	CONCENTRATION units	DAY	REP	D.O. meter	D.O. mg/L	TEMP. meter	TEMP. °C	SALINITY meter	SALINITY ppt	pH meter	pH unit			TECHNICIAN	FEEDING am	FEEDING pm
Ref.Tox.-ammonia	0	mg/L	0	stock	7	7.2	7	20.2	6	28.0	12	8.2			RF		
			1	1													
			2	2													
			3	3													
			4	1	7	7.5	7	19.2	6	28.5	11	8.3			am		
Ref.Tox.-ammonia	12.5	mg/L	0	stock	7	7.3	7	20.2	6	28.0	12	8.1			RF		
			1	1													
			2	2													
			3	3													
			4	1	7	7.2	7	19.5	6	28.4	11	8.3			am		
Ref.Tox.-ammonia	25	mg/L	0	stock	7	7.2	7	20.2	6	28.0	12	8.0			RF		
			1	1													
			2	2													
			3	3													
			4	1	7	7.1	7	19.6	6	28.4	11	8.3			am		
Ref.Tox.-ammonia	50	mg/L	0	stock	7	7.1	7	20.1	6	28.1	12	7.9			RF		
			1	1													
			2	2													
			3	3													
			4	1	7	7.4	7	19.6	6	28.4	11	8.3			am		

20 DAY CHRONIC TEST DATA SHEET 2 - REF TOX WQ

CLIENT	PROJECT	SPECIES	MEC LABORATORY	PROTOCOL
Parametrix	Bremerton Sediment	*Neanthes arenaceodentata*	Carlsbad Room 3	BIO072

MEC JOB NUMBER	PROJECT MANAGER	TEST START DATE	TIME	TEST END DATE	TIME
13728.001.001.0001	Bill Gardiner	10Jan06	1630 JH/AM	14Jan06	1430 AM

WATER QUALITY DATA

TEST	TEMP (C)	SAL (ppt)	DO (mg/L)	NH3 (mg/L)	DILTN.WAT.BATCH	TEMP REC#	REFERENCE TOX. MATERIAL	REFERENCE TOXICANT	LOT NO.	96-HR LC50
	20±2	28±2	> 6.0	< 10	SIO121405	1967	ammonium chloride	ammonia		

CLIENT/ MEC ID	CONCENTRATION value	CONCENTRATION units	DAY	REP	D.O. meter	D.O. mg/L	TEMP. meter	TEMP. °C	SALINITY meter	SALINITY ppt	pH meter	pH unit					TECHNICIAN	FEEDING am	FEEDING pm
Ref.Tox.-ammonia	100	mg/L	0	stock	7	7.3	7	20.3	6	28.3	12	7.8					RF		
			1	1															
			2	2															
			3	3															
			4	1	7	6.9	7	19.6	6	28.6	11	8.2					am		
Ref.Tox.-ammonia	200	mg/L	0	stock	7	7.2	7	20.3	6	28.6	12	7.6					RF		
			1	1															
			2	2															
			3	3															
			4																

20-DAY CHRONIC TEST DATA SHEET 3 - REF TOX

CLIENT	PROJECT	MEC JOB NO.	SPECIES	ACCLM.MORT.
Parametrix	Bremerton Sediment	13728.001.001.0001	*Neanthes arenaceodentata*	< 5%

PROJECT MANAGER	MEC LABORATORY	PROTOCOL
Bill Gardiner	Carlsbad Room 3	BIO072

SURVIVAL & BEHAVIOR DATA

OBSERVATIONS KEY: N = normal; B= no burrows; M= dead on surface; A= avoidance; Q = quiescent; L = anoxic surface; F= fungal patches; D= no air flow (DO?); U= excess food; DC = discolored (gill)

CLIENT/ MEC ID	CONC. value	CONC. units	REP	INITIAL NUMBER	DAY 1 DATE: 1/11/06 TECHNICIAN: EB			DAY 2 DATE: 1/12/06 TECHNICIAN: VS			DAY 3 DATE: 1/13/06 TECHNICIAN: VS			DAY 4 DATE: 1/14/06 TECHNICIAN: am		
					#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS
Ref.Tox.-ammonia	0	mg/L	1		10	Ø	N	9	1 NB	N	9	Ø	N	9	Ø	N
			2		10	Ø	N	10	Ø	N	10	Ø	N	10	Ø	N
			3		10	Ø	N	10	Ø	N	10	Ø	N	10	Ø	N
Ref.Tox.-ammonia	12.5	mg/L	1		10	Ø	N	10	Ø	N	10	Ø	N	10	Ø	N
			2		10	Ø	N	10	Ø	N	10	Ø	N	10	Ø	N
			3		10	Ø	N	10	Ø	N	10	Ø	N	10	Ø	N
Ref.Tox.-ammonia	25	mg/L	1		10	Ø	N	10	Ø	N	10	Ø	N	10	Ø	N
			2		10	Ø	N	10	Ø	N	10	Ø	N	10	Ø	N
			3		10	Ø	N	10	Ø	N	10	Ø	N	10	Ø	N
Ref.Tox.-ammonia	50	mg/L	1		10	Ø	N	10	Ø	Q	10	Ø	Q	10	Ø	Q
			2		10	Ø	N	10	Ø	Q	10	Ø	Q	10	Ø	Q
			3		10	Ø	N	10	Ø	Q	10	Ø	Q	10	Ø	Q
Ref.Tox.-ammonia	100	mg/L	1		10	Ø	N	10	Ø	Q	10	Ø	Q,DC	4	6	Q,DC
			2		10	Ø	N	10	Ø	Q	10	Ø	Q,DC	5	3	Q,DC 2 NB
			3		10	Ø	N	10	Ø	Q	10	Ø	Q,DC	6	4	Q,DC
Ref.Tox.-ammonia	200	mg/L	1		10	Ø	Q	10	Ø	Q,DC	Ø	10	—	—	—	—
			2		10	Ø	Q	10	Ø	Q,DC	Ø	10	—	—	—	—
			3		10	Ø	Q,DC	10	Ø	Q,DC	Ø	10	—	—	—	—

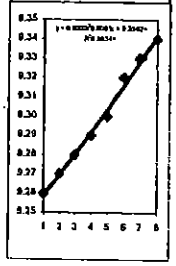
① IE 1/11/06 EB

Un-ionized Ammonia Calculator

Client:	Parametrix	Date of Test:	10-Jan-06
Project ID:	Bremerton Sediment	Test Type:	Neanthes NH RT

To convert Total Ammonia (mg/L) to Free (un-ionized) Ammonia (mg/L) enter the corresponding total ammonia, salinity, temperature and pH.

Integer:	I-factor
1	9.26
2	9.27
3	9.28
4	9.29
5	9.30
6	9.32
7	9.33
8	9.34



	TEST	NH3T (mg/L)	salinity (ppt)	pH	temp (C)	temp (K)	I-factor	NH3U (mg/L)
	Example1	0.410	22.9	8.0	24.1	297.26	9.3058	0.027
	Example2	2000	10.0	7.8	5.0	278.16	9.2750	0.908
1	Control	0.000	28.0	8.2	23.5	296.66	9.3187	
2	12.500	18.000	28.0	8.1	23.3	296.46	9.3187	0.920
3	25.000	35.200	28.0	8.0	23.3	296.46	9.3187	1.444
4	50.000	67.100	28.1	7.9	23.5	296.66	9.3190	2.236
5	100.000	133.000	28.3	7.8	22.9	296.06	9.3195	3.390
6	200.000	271.000	28.6	7.6	23.0	296.16	9.3203	4.423
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
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41								
42								
43								
44								
45								
46								

Ammonia Analysis
Total Ammonia (mg/L)

Client/Project:	Organism:	Weston Test ID:	Test Duration (days):
Parametrix / Bremerton Sediment	Neanthes	C040719.74	4 days

PRETEST / INITIAL / FINAL / OTHER (circle one) **DAY of TEST:** Ø
OVERLYING (OV) / POREWATER (PW) (circle one)

Calibration Standards Temperature		Sample temperature should be within ±1°C of standards temperature at time and date of analysis.
Date:	**Temperature:**	
1/18/06	22.5°	

Sample ID or Description	Stock Sol'n Used	Date Sample Analyzed	Ammonia Conc. (mg/L)	Temp °C	Date of Reading and Initials	Sample Frozen (Y/N)	pH	Conc.
RT Ø		1/10/06	<0.5	23.5°	1/18/06 JH	Y		
RT 12.5			18.0	23.3°				
RT 25			35.2	23.3°				
RT 50			67.1	23.5°				
RT 100			133	22.9°				
RT 200		↓	271	23.0°	↓	↓		

Reference Toxicant
Ammmonia Spiking Worksheet

Neanthes NH_3 RT 01/10/06

Assumptions in Model
Stock ammonia concentration is 8,000 mg/L = 8 mg/mL

Actual Reading
7090

Test Solutions			Volume of stock to reach desired concentration	
Measured Concentration mg/L	Desired Concentration mg/L	Volume mL	mL stock to increase	
			FRESH WATER	SALT WATER
0	200	1500	42.313	63.4696756
			0.000	0
			0.000	0
			0.000	0
			0.000	0
			0.000	0

Appendix C

Results for the 48-hour Larval Test with *Mytilus* spp.

Table C1. Test Results for the PSEP Larval Test with *M. galloprovincialis*, Bremerton Sediment

Treatment	Rep	Normal	Abnormal	Total	Percent Combined Mortality	Percent Mortality	Percent Abnormal	Mean Percentage Combined Mortality	SD	Mean Percentage Mortality	SD	Mean Percentage Abnormal	SD
Control	1	344	13	357	12.4	9.1	3.6						
	2	355	0	355	9.6	9.6	0						
	3	375	4	379	4.5	3.5	1.1						
	4	359	5	364	8.6	7.3	1.4						
	5	328	6	334	16.5	15	1.8	10.3	4.5	8.9	4.1	1.6	1.3
	Mean	**352.2**											
Ref-6	1	360	1	361	4	3.7	0.3						
	2	330	1	331	12	11.7	0.3						
	3	295	0	295	21.3	21.3	0						
	4	336	0	336	10.4	10.4	0						
	5	319	0	319	14.9	14.9	0	12.5	6.3	12.4	6.4	0.1	0.2
	Mean	**328**											
C-8	1	314	3	317	16.3	15.5	0.9						
	2	315*	1	316	16	15.7	0.3						
	3	338	1	339	9.9	9.6	0.3						
	4	285	2	287	24	23.5	0.7						
	5	291*	0	293	22.4	21.9	0	17.7	5.7	17.2	5.6	0.5	0.4
	Mean	**312.3**											
	Rep	**Embryos**	**Average**										
Stocking Density	1	376											
	2	373											
	3	477											
	4	376											
	5	328											
	6	427	392.8										

*** Test chamber was double-inoculated. Value equals half of actual larval count.**

Table C2. Water Quality Data for the Larval Test with *Mytilus* spp., Bremerton Sediment

Dissolved Oxygen (mg/L)						
	Day					
Treatment	0	1	2	Mean	Min	Max
Control 1	7.8	7.9	7.8	7.8	7.8	7.9
Ref-6	7.9	7.4	7.5	7.6	7.4	7.9
C-8	7.4	6.4	7.0	6.9	6.4	7.4

Temperature (°C)						
	Day					
Treatment	0	1	2	Mean	Min	Max
Control 1	16.3	15.8	16.4	16.2	15.8	16.4
Ref-6	16.2	15.9	16.4	16.2	15.9	16.4
C-8	16.0	15.9	16.2	16.0	15.9	16.2

pH units						
	Day					
Treatment	0	1	2	Mean	Min	Max
Control 1	8.0	7.7	8.0	7.90	7.70	8.00
Ref-6	8.0	7.8	8.0	7.93	7.80	8.00
C-8	7.9	7.7	8.0	7.87	7.70	8.00

Salinity (ppt)						
	Day					
Treatment	0	1	2	Mean	Min	Max
Control 1	28.0	28.3	28.1	28.1	28.0	28.3
Ref-6	28.3	28.3	28.1	28.2	28.1	28.3
C-8	28.1	28.1	28.0	28.1	28.0	28.1

Table C3. Ammonia and Sulfide Concentrations for the Larval Test with *Mytilus spp.*, Bremerton Sediment

Treatment	Ammonia (mg/L Total)		Sulfides (mg/L)	
	Day 0	Day 10	Day 0	Day 2
Control	<0.5	<0.5	0	0
Ref 6	<0.5	<0.5	0	0
C-8	<0.5	<0.5	0	0

BIVALVE LARVAE SUSPENDED PARTICULATE PHASE TEST
DATA SHEET 3

SPECIES
Mytilus spp. (mussel)

CLIENT	PROJECT	WESTON JOB NUMBER	PROJECT MANAGER	WESTON LABORATORY	PROTOCOL
Parametrix	Bremerton Sediment		Bill Gardiner	Carlsbad Room 2	/ WESTON BIO073

LARVAL OBSERVATION DATA

CLIENT/ WESTON ID		VIAL NUMBER	REP	NUMBER NORMAL	NUMBER ABNORMAL	DATE	TECHNICIAN	COMMENTS
ZERO-TIME (PRE)			1	376		12/22/05	am	
			2	373		12/27/05	am	
			3	477		↓	↓	
			4	376				
			5	328				
			6	427		↓	↓	
Control /			1	344	13	12/26/05	am	rep 6 375/4 12/27/05 am
			2	355	0	↓	↓	
			3	487	10			
			4	359	5			
			5	328	6	↓	↓	
REF-6 /			1	360	1	12/26/05	am	
			2	330	1	↓	↓	
			3	295	0			
			4	336	0			
			5	319	0	↓	↓	
C-8 /			1	314	3	12/26/05	am	rep 6 279/2 12/27/05 am
			2	630	1	↓	↓	
			3	338	1			
			4	285	2			
			5	583	0	↓	↓	

BIVALVE LARVAE SUSPENDED PARTICULATE PHASE TEST
DATA SHEET 2

CLIENT	PROJECT	SPECIES	WESTON LABORATORY	PROTOCOL
Parametrix	Bremerton Sediment	Mytilus spp. (mussel)	Carlsbad Room 2	/ WESTON BIO073
MEC JOB NUMBER	**PROJECT MANAGER**	**TEST START DATE** / **TIME**	**TEST END DATE**	**TIME**
	Bill Gardiner	20Dec05 / 1730 am	22Dec05	1745 am

WATER QUALITY DATA

TEST	DO (mg/L)	TEMP (C)	SALINITY (ppt)	pH	NH3 (mg/L)		DILUTION WATER BATCH	TEMP. RECORDER (HOBO)*
	> 6.0	16±1	28±2	7.8±0.5			SIO 121905	1967

CLIENT/ MEC ID	REPLICATE	DAY	DISS. OXYGEN		TEMPERATURE		SALINITY		pH		AMMONIA		TECHNICIAN
			meter	mg/L	meter	°C	meter	ppt	meter	unit	Techn.	mg/L	
Control /	WQ surr	0	7	7.8	7	16.3	6	28.0	12	8.0	JH	<0.5	am
		1	6	7.9	6	15.8	5	28.3	12	7.7			KS
		2	7	7.8	7	16.4	6	28.1	11	8.0	KS	<0.5	CS
REF-6 /	WQ surr	0	7	7.9	7	16.2	6	28.3	12	8.0	JH	<0.5	am
		1	6	7.4	6	15.9	5	28.3	12	7.8			KS
		2	7	7.5	7	16.4	6	28.1	11	8.0	KS	<0.5	CS
C-8 /	WQ surr	0	7	7.4	7	16.0	6	28.1	12	7.9	JH	<0.5	am
		1	6	6.4	6	15.9	5	28.1	12	7.7			KS
		2	7	7.0	7	16.2	6	28.0	11	8.0	KS	<0.5	CS

TEST COMMENTS

CLIENT	PROJECT	WESTON JOB NUMBER	TEST	WESTON LABORATORY
Parametrix	Bremerton		bivalve dev.	Carlsbad

NUMBER/CODE	DATE	COMMENT BY	COMMENT
1	12/20/05	arm	bivalves spawned @ 1330
2	↓	↓	jar shake @ 1345
3			fertilization @ 1530
4			used 2 males + 5 females
5			test: 1.64 mL of stock/chamber
6	↓	↓	ref tox tests: 100uL of stock/chamber
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Parametrix Bivalve - Sulfide Results		
	Initial Sulfide	Final Sulfide
Control	0	0
Ref-6	0	0
C-8	0	0
Date	12/20/05	12/22/05
Initials	KS	RF

Ammonia Analysis
Total Ammonia (mg/L)

Project:	Organism:	Test:	Day:
Parametrix	Bivalves	050216.0273	2

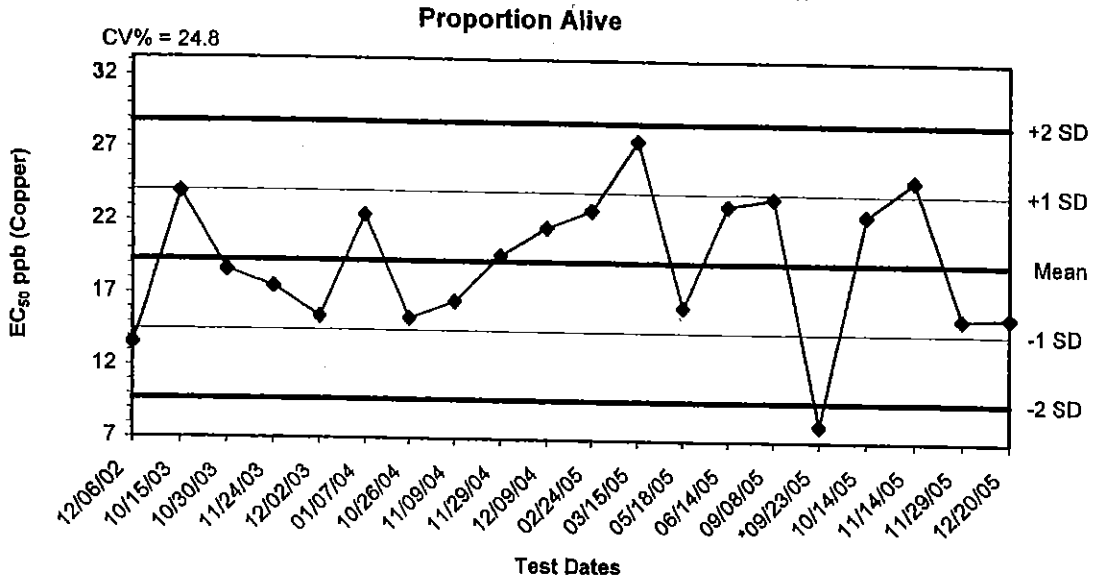
PRETEST / INITIAL / (FINAL) / OTHER (circle one)
(OVERLYING (OV)) / POREWATER (PW) (circle one)

Standards Temperature	
Date:	**Temperature:**
12/23/05	24.0 °C

Sample temperature should be within ±1°C of standards temperature at time and date of analysis.

Sample ID or Description	Conc or Rep	Date of Sampling and Initials	Ammonia Value (mg/L)	Temp °C	Date of Reading and Initials	Sample Frozen (Y/N)	pH	Sal (ppt)
Control		12/22/05 JH	<0.5	23.5	12/23/05 KS	Y		
Ref-6		↓	<0.5	23.5	↓	↓		
C-8		↓	<0.5	23.7	↓	↓		

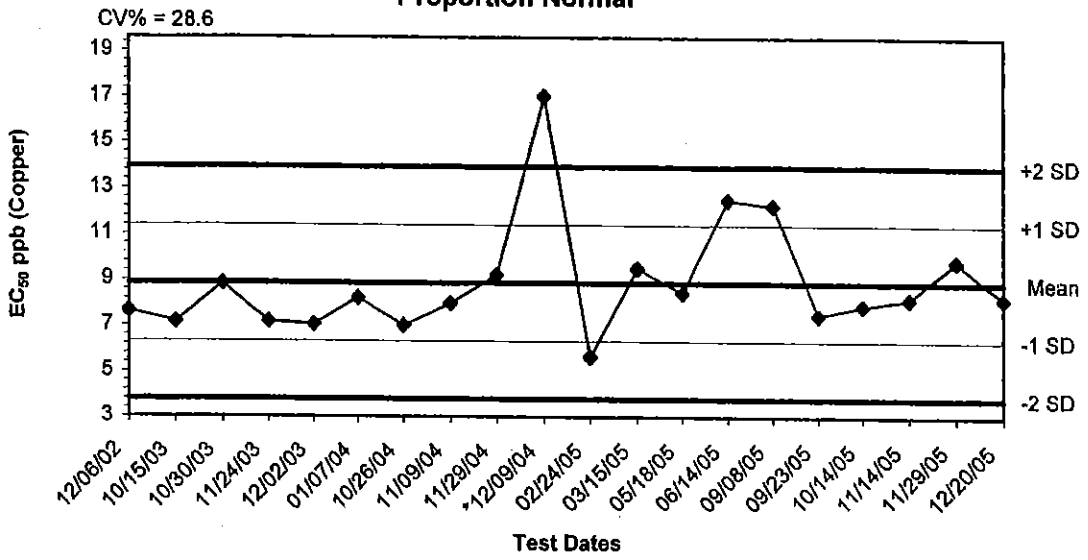
Mytilus spp. Reference Toxicant Control Chart: Proportion Alive



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
12/06/02	13.5648	19.2770	14.4882	9.6994	24.0659	28.8547
10/15/03	23.9550	19.2770	14.4882	9.6994	24.0659	28.8547
10/30/03	18.6070	19.2770	14.4882	9.6994	24.0659	28.8547
11/24/03	17.4840	19.2770	14.4882	9.6994	24.0659	28.8547
12/02/03	15.4180	19.2770	14.4882	9.6994	24.0659	28.8547
01/07/04	22.4400	19.2770	14.4882	9.6994	24.0659	28.8547
10/26/04	15.3400	19.2770	14.4882	9.6994	24.0659	28.8547
11/09/04	16.5050	19.2770	14.4882	9.6994	24.0659	28.8547
11/29/04	19.7090	19.2770	14.4882	9.6994	24.0659	28.8547
12/09/04	21.6410	19.2770	14.4882	9.6994	24.0659	28.8547
02/24/05	22.8770	19.2770	14.4882	9.6994	24.0659	28.8547
03/15/05	27.6650	19.2770	14.4882	9.6994	24.0659	28.8547
05/18/05	16.2500	19.2770	14.4882	9.6994	24.0659	28.8547
06/14/05	23.2518	19.2770	14.4882	9.6994	24.0659	28.8547
09/08/05	23.7703	19.2770	14.4882	9.6994	24.0659	28.8547
*09/23/05	8.1378	19.2770	14.4882	9.6994	24.0659	28.8547
10/14/05	22.6460	19.2770	14.4882	9.6994	24.0659	28.8547
11/14/05	25.0300	19.2770	14.4882	9.6994	24.0659	28.8547
11/29/05	15.5530	19.2770	14.4882	9.6994	24.0659	28.8547
12/20/05	15.6960	19.2770	14.4882	9.6994	24.0659	28.8547

* Value out of 95% CI range.
Updated 12/28/05 KS

Mytilus spp. Reference Toxicant Control Chart: Proportion Normal



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
12/06/02	7.6427	8.8560	6.3197	3.7833	11.3924	13.9288
10/15/03	7.1556	8.8560	6.3197	3.7833	11.3924	13.9288
10/30/03	8.8205	8.8560	6.3197	3.7833	11.3924	13.9288
11/24/03	7.1709	8.8560	6.3197	3.7833	11.3924	13.9288
12/02/03	7.0620	8.8560	6.3197	3.7833	11.3924	13.9288
01/07/04	8.2139	8.8560	6.3197	3.7833	11.3924	13.9288
10/26/04	7.0185	8.8560	6.3197	3.7833	11.3924	13.9288
11/09/04	7.9725	8.8560	6.3197	3.7833	11.3924	13.9288
11/29/04	9.2071	8.8560	6.3197	3.7833	11.3924	13.9288
*12/09/04	17.0210	8.8560	6.3197	3.7833	11.3924	13.9288
02/24/05	5.6444	8.8560	6.3197	3.7833	11.3924	13.9288
03/15/05	9.5102	8.8560	6.3197	3.7833	11.3924	13.9288
05/18/05	8.4247	8.8560	6.3197	3.7833	11.3924	13.9288
06/14/05	12.5000	8.8560	6.3197	3.7833	11.3924	13.9288
09/08/05	12.2497	8.8560	6.3197	3.7833	11.3924	13.9288
09/23/05	7.4619	8.8560	6.3197	3.7833	11.3924	13.9288
10/14/05	7.8832	8.8560	6.3197	3.7833	11.3924	13.9288
11/14/05	8.1626	8.8560	6.3197	3.7833	11.3924	13.9288
11/29/05	9.8092	8.8560	6.3197	3.7833	11.3924	13.9288
12/20/05	8.1899	8.8560	6.3197	3.7833	11.3924	13.9288

* Incorrect amount of copper sulfate added. Concentrations were too high to obtain an accurate EC_{50}.
Updated 12/28/05 KS

Bivalve Larval Survival and Development Test-Proportion Alive

Start Date:	12/20/2005 17:45	Test ID:	C041130.182	Sample ID:	REF-Ref Toxicant
End Date:	12/22/2005 17:50	Lab ID:	CCA-Weston, Carlsbad	Sample Type:	CUSO-Copper sulfate
Sample Date:		Protocol:	EPAW 95-EPA West Coast	Test Species:	ME-Mytilis edulis
Comments:					

Conc-ppb	1	2	3
Control	0.8738	0.7832	0.8317
2.5	0.9159	0.7573	0.8673
5	0.8738	0.6699	0.7702
10	0.4693	0.7540	0.4725
20	0.4304	0.5243	0.3819
40	0.0032	0.0194	0.0129

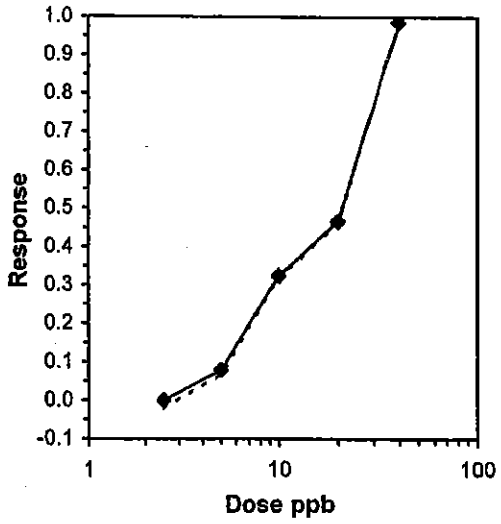
			Transform: Arcsin Square Root						1-Tailed		Number	Total
Conc-ppb	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Resp	Number
Control	0.8296	1.0000	1.1474	1.0864	1.2076	5.281	3				158	927
2.5	0.8468	1.0208	1.1767	1.0556	1.2765	9.514	3	-0.337	2.500	0.2173	142	927
5	0.7713	0.9298	1.0791	0.9588	1.2076	11.549	3	0.786	2.500	0.2173	212	927
*10	0.5653	0.6814	0.8548	0.7546	1.0519	19.968	3	3.366	2.500	0.2173	403	927
*20	0.4455	0.5371	0.7305	0.6661	0.8097	9.982	3	4.797	2.500	0.2173	514	927
*40	0.0119	0.0143	0.1036	0.0569	0.1398	40.950	3	12.010	2.500	0.2173	916	927

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.96178	0.858	0.51033	-0.2264
Bartlett's Test indicates equal variances (p = 0.56)	3.95743	15.0863		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	5	10	7.07107		0.18849	0.22678	0.49145	0.01133	2.8E-07	5, 12

Trimmed Spearman-Karber

Trim Level	EC50	95% CL	
0.0%			
5.0%	16.105	15.530	16.702
10.0%	16.520	15.885	17.181
20.0%	17.353	16.549	18.195
Auto-1.4%	15.696	15.163	16.247



Reviewed by:_____

Bivalve Larval Survival and Development Test-Proportion Normal

Start Date:	12/20/2005 17:45	Test ID:	C041130.182	Sample ID:	REF-Ref Toxicant
End Date:	12/22/2005 17:50	Lab ID:	CCA-Weston, Carlsbad	Sample Type:	CUSO-Copper sulfate
Sample Date:		Protocol:	EPAW 95-EPA West Coast	Test Species:	ME-Mytilis edulis
Comments:					

Conc-ppb	1	2	3
Control	0.9852	0.9959	0.9922
2.5	0.9894	0.9957	0.9925
5	0.9481	0.9517	0.9706
10	0.1862	0.2790	0.1986
20	0.0000	0.0000	0.0000
40	0.0000	0.0000	0.0000

			Transform: Arcsin Square Root						1-Tailed		Number	Total
Conc-ppb	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Resp	Number
Control	0.9911	1.0000	1.4792	1.4488	1.5065	1.959	3				7	769
2.5	0.9926	1.0015	1.4858	1.4677	1.5054	1.272	3	-0.212	2.420	0.0747	6	785
*5	0.9568	0.9654	1.3629	1.3411	1.3984	2.278	3	3.768	2.420	0.0747	31	715
*10	0.2213	0.2233	0.4882	0.4462	0.5565	12.217	3	32.102	2.420	0.0747	403	524
20	0.0000	0.0000	0.0429	0.0393	0.0460	7.924	3				413	413
40	0.0000	0.0000	0.3273	0.2056	0.5236	52.444	3				11	11

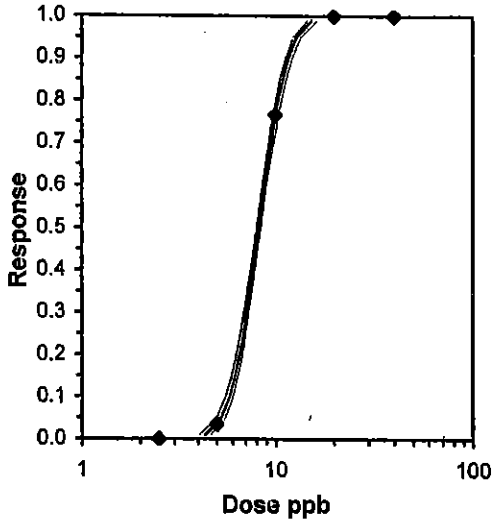
Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.94183	0.805	0.81784	0.16942
Bartlett's Test indicates equal variances (p = 0.51)	2.31843	11.3449		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	2.5	5	3.53553		0.01903	0.01919	0.69279	0.00143	2.2E-09	3, 8

Maximum Likelihood-Probit

Parameter	Value	SE	95% Fiducial Limits		Control	Chi-Sq	Critical	P-value	Mu	Sigma	Iter
Slope	8.47408	0.38707	7.71543	9.23273	0.0091	0.27782	7.81473	0.96	0.91328	0.11801	3
Intercept	-2.7392	0.36029	-3.4454	-2.033							
TSCR	0.00841	0.00232	0.00387	0.01295							

Point	Probits	ppb	95% Fiducial Limits	
EC01	2.674	4.35265	4.05282	4.62491
EC05	3.355	5.23811	4.9566	5.49311
EC10	3.718	5.78159	5.51476	6.02439
EC15	3.964	6.17978	5.92411	6.41409
EC20	4.158	6.51571	6.26901	6.74387
EC25	4.326	6.81843	6.57894	7.04233
EC40	4.747	7.64509	7.41729	7.86729
EC50	5.000	8.18991	7.96028	8.42207
EC60	5.253	8.77356	8.53156	9.02808
EC75	5.674	9.83725	9.54603	10.1625
EC80	5.842	10.2943	9.97309	10.66
EC85	6.036	10.8539	10.4904	11.2758
EC90	6.282	11.6014	11.1735	12.1078
EC95	6.645	12.8051	12.2591	13.4658
EC99	7.326	15.4101	14.5665	16.4618



Test: BV-Bivalve Larval Survival and Development Test Test ID: C041130.182
Species: ME-Mytilis edulis Protocol: EPAW 95-EPA West Coast
Sample ID: REF-Ref Toxicant Sample Type: CUSO-Copper sulfate
Start Date: 12/20/2005 17:45 End Date: 12/22/2005 Lab ID: CCA-Weston, Carlsbad

Pos	ID	Rep	Group	Initial Density	Final Density	Total Counted	Number Normal	Notes
	1	1	Control	309	270	270	266	
	2	2	Control	309	242	242	241	
	3	3	Control	309	257	257	255	
	4	1	2.500	309	283	283	280	
	5	2	2.500	309	234	234	233	
	6	3	2.500	309	268	268	266	
	7	1	5.000	309	270	270	256	
	8	2	5.000	309	207	207	197	
	9	3	5.000	309	238	238	231	
	10	1	10.000	309	145	145	27	
	11	2	10.000	309	233	233	65	
	12	3	10.000	309	146	146	29	
	13	1	20.000	309	133	133	0	
	14	2	20.000	309	162	162	0	
	15	3	20.000	309	118	118	0	
	16	1	40.000	309	1	1	0	
	17	2	40.000	309	6	6	0	
	18	3	40.000	309	4	4	0	

Comments:

BIVALVE LARVAE SUSPENDED PARTICULATE PHASE TEST
DATA SHEET 3 - REF TOX

WESTON SOLUTIONS

SPECIES					
Mytilus spp. (mussel)					
CLIENT	**PROJECT**	**WESTON JOB NUMBER**	**PROJECT MANAGER**	**WESTON LABORATORY**	**PROTOCOL**
Parametrix	Bremerton Sediment	0	Bill Gardiner	Carlsbad Room 2	/ WESTON BIO07)

LARVAL OBSERVATION DATA

CLIENT/ WESTON ID	CONCENTRATION value	CONCENTRATION units	VIAL NUMBER	REP	NUMBER NORMAL	NUMBER ABNORMAL	DATE	TECHNICIAN	COMMENTS
Ref.Tox. - copper	0	~~mg/L~~ µg		1	266	4	12/27/05	am	
				2	241	1	↓	↓	
				3	255	2	↓	↓	
				4					
Ref.Tox. - copper	2.5	~~mg/L~~ µg		1	280	3	12/27/05	am	QA: 286/2 12/27 KS
				2	233	1	12/27/05	am	
				3	266	2	↓	↓	
				4					
Ref.Tox. - copper	5	~~mg/L~~ µg		1	256	14	12/27/05	am	
				2	197	10	↓	↓	
				3	231	7	↓	↓	
				4					
Ref.Tox. - copper	10	~~mg/L~~ µg		1	27	118	12/27/05	am	
				2	65	168	12/27/05	am	QA: 56/176 12/27 KS
				3	29	117	↓	↓	
				4					
Ref.Tox. - copper	20	~~mg/L~~ µg		1	0	133	12/27/05	am	
				2	0	162	↓	↓	
				3	0	118	↓	↓	
				4					
Ref.Tox. - copper	40	~~mg/L~~ µg		1	0	1	12/27/05	am	QA: 1/0 12/27 KS
				2	0	6	↓	↓	
				3	0	4	↓	↓	
				4					

① IE 12/29/05 KS

Ref Tox Zero-Times:

1. 381
2. 353
3. 309
4. 296
5. 309
6. 210

12/27/05 am ↓ ↓

BIVALVE LARVAE SUSPENDED PARTICULATE PHASE TEST
DATA SHEET 2 - REFTOX WQ

C04 1130.182

CLIENT	PROJECT	SPECIES	WESTON LABORATORY	PROTOCOL
Parametrix	Bremerton Sediment	Mytilus spp. (mussel)	Carlsbad Room 2	/ WESTON BIO073

WESTON JOB NUMBER	PROJECT MANAGER	TEST START DATE	TIME	TEST END DATE	TIME
0	Bill Gardiner	20Dec05	1745 am	22Dec05	1750 am

WATER QUALITY DATA

0.039 mL CuSO4 5000 mL H2O CS

TEST CONDITIONS	TEMP (C)	SAL (ppt)	DO (mg/L)	NH3 (mg/L)	DILTN.WAT.BATCH	TEMP REC#	REFERENCE TOX. MATERIAL	REFERENCE TOXICANT	LOT NO.	48-HR LC50	48-HR IC50
	16±1	28±2	> 6.0	0	SIO 121905		Copper Sulfate	copper			

CLIENT/ WESTON ID	CONCENTRATION value	CONCENTRATION units	DAY	DISS. OXYGEN meter	DISS. OXYGEN mg/L	TEMPERATURE meter	TEMPERATURE °C	SALINITY meter	SALINITY ppt	pH meter	pH unit	TECHNICIAN
Ref.Tox. - copper	0	µg/L	0	7	7.9	7	16.1	6	27.9	12	8.2	RF
			1	6	8.2	6	15.8	5	27.9	12	7.9	JH
			2	7	7.8	7	15.7	6	27.8 ⑨	11	8.0	CS
Ref.Tox. - copper	2.5	µg/L	0	7	7.9	7	16.0	6	27.9	12	8.2	RF
			1	6	8.2	6	15.7	5	28.0	12	7.9	JH
			2	7	8.2	7	15.8	6	27.9	11	8.0	CS
Ref.Tox. - copper	5	µg/L	0	7	8.2	7	15.8	6	27.9	12	8.2	RF
			1	6	8.2	6	15.5	5	28.0	12	7.9	JH
			2	7	8.0	7	15.8	6	28.0	11	8.1	③~~RF~~ CS
Ref.Tox. - copper	10	µg/L	0	7	7.9	7	15.8	6	①~~RF 27.8~~ 27.9	12	8.2	RF
			1	6	8.2	6	15.5	5	28.0	12	7.9	JH
			2	7	7.9	7	15.8	6	27.9	11	8.1	CS
Ref.Tox. - copper	20	µg/L	0	7	7.8	7	15.7	6	27.9	12	8.2	RF
			1	6	8.3	6	15.5	5	28.0	12	8.0	JH
			2	7	7.8	7	15.9	6	27.9	11	8.1	CS
Ref.Tox. - copper	40	µg/L	0	7	7.8	7	15.8	6	27.9	12	8.2	RF
			1	6	8.2	6	15.5	5	28.0	12	8.0	JH
			2	7	7.9	7	15.9	6	27.9	11	8.1	CS

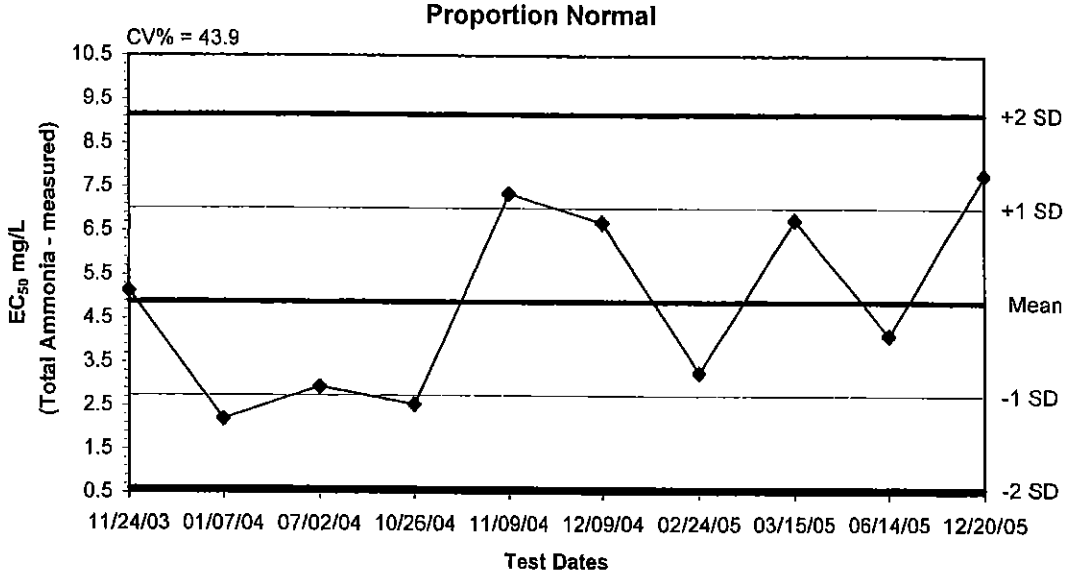
① 27.9 RF IE 12/20/05 ④ 12/19/05

② WC RF 12/20/05 ⑤

④ IE 12/22/05 RF

⑤ T.F. 12/22/05 RF

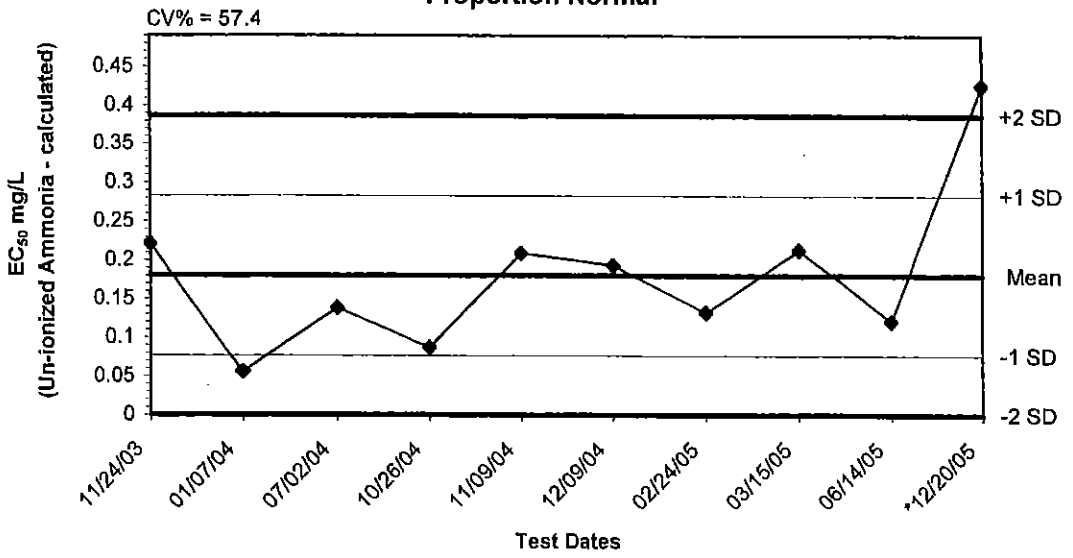
Mytilus spp. Reference Toxicant Control Chart: Proportion Normal



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
11/24/03	5.1279	4.8740	2.7363	0.5987	7.0116	9.1492
01/07/04	2.1937	4.8740	2.7363	0.5987	7.0116	9.1492
07/02/04	2.9353	4.8740	2.7363	0.5987	7.0116	9.1492
10/26/04	2.5261	4.8740	2.7363	0.5987	7.0116	9.1492
11/09/04	7.3458	4.8740	2.7363	0.5987	7.0116	9.1492
12/09/04	6.6909	4.8740	2.7363	0.5987	7.0116	9.1492
02/24/05	3.2591	4.8740	2.7363	0.5987	7.0116	9.1492
03/15/05	6.7538	4.8740	2.7363	0.5987	7.0116	9.1492
06/14/05	4.1202	4.8740	2.7363	0.5987	7.0116	9.1492
12/20/05	7.7868	4.8740	2.7363	0.5987	7.0116	9.1492

Updated 12/28/05 KS

Mytilus spp. Reference Toxicant Control Chart: Proportion Normal



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
11/24/03	0.2214	0.1798	0.0766	0.0000	0.2831	0.3863
01/07/04	0.0564	0.1798	0.0766	0.0000	0.2831	0.3863
07/02/04	0.1381	0.1798	0.0766	0.0000	0.2831	0.3863
10/26/04	0.0873	0.1798	0.0766	0.0000	0.2831	0.3863
11/09/04	0.2092	0.1798	0.0766	0.0000	0.2831	0.3863
12/09/04	0.1934	0.1798	0.0766	0.0000	0.2831	0.3863
02/24/05	0.1323	0.1798	0.0766	0.0000	0.2831	0.3863
03/15/05	0.2131	0.1798	0.0766	0.0000	0.2831	0.3863
06/14/05	0.1208	0.1798	0.0766	0.0000	0.2831	0.3863
*12/20/05	0.4263	0.1798	0.0766	0.0000	0.2831	0.3863

* Value out of 95% CI range.

Updated 12/28/05 KS

Bivalve Larval Survival and Development Test-Proportion Alive

Start Date:	12/20/2005 17:45	Test ID:	C040719.73	Sample ID:	REF-Ref Toxicant
End Date:	12/22/2005 17:50	Lab ID:	CCA-Weston, Carlsbad	Sample Type:	TNH3-Ammonia-total (measured)
Sample Date:		Protocol:	EPA USACE-1998	Test Species:	ME-Mytilis edulis
Comments:					

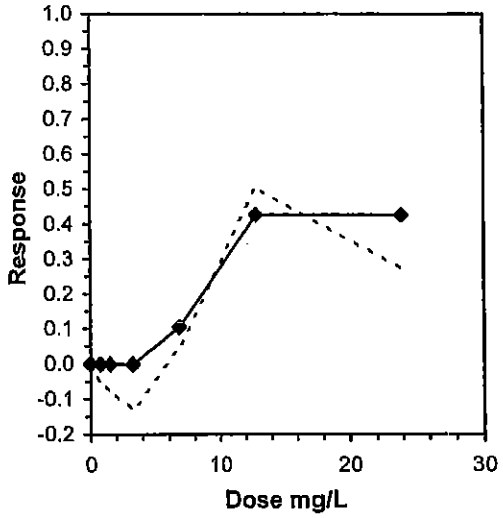
Conc-mg/L	1	2	3
Control	0.8220	0.8867	0.7735
0.727	1.0000	0.7379	0.8803
1.53	0.7152	0.9741	0.9806
3.27	0.8026	1.0000	1.0000
6.81	0.6731	1.0000	0.6926
12.8	0.4401	0.4207	0.3625
23.9	0.4401	0.5566	0.8058

			Transform: Arcsin Square Root					1-Tailed			Isotonic	
Conc-mg/L	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Mean	N-Mean
Control	0.8274	1.0000	1.1458	1.0747	1.2275	6.715	3				0.8811	1.0000
0.727	0.8727	1.0548	1.2644	1.0333	1.5423	20.386	3	-0.657	2.530	0.4561	0.8811	1.0000
1.53	0.8900	1.0756	1.2827	1.0079	1.4310	18.574	3	-0.759	2.530	0.4561	0.8811	1.0000
3.27	0.9342	1.1291	1.3984	1.1104	1.5423	17.834	3	-1.401	2.530	0.4561	0.8811	1.0000
6.81	0.7886	0.9531	1.1625	0.9622	1.5423	28.308	3	-0.093	2.530	0.4561	0.7886	0.8950
12.8	0.4078	0.4928	0.6924	0.6461	0.7254	5.967	3	2.515	2.530	0.4561	0.5043	0.5724
23.9	0.6009	0.7262	0.8940	0.7254	1.1145	22.333	3	1.397	2.530	0.4561	0.5043	0.5724

Auxiliary Tests					Statistic		Critical		Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)					0.972		0.873		0.19763	-0.6238
Bartlett's Test indicates equal variances (p = 0.32)					6.98308		16.8119			
Hypothesis Test (1-tail, 0.05)	**NOEC**	**LOEC**	**ChV**	**TU**	**MSDu**	**MSDp**	**MSB**	**MSE**	**F-Prob**	**df**
Dunnett's Test	23.9	>23.9			0.42506	0.5121	0.18059	0.04874	0.02037	6, 14

Linear Interpolation (200 Resamples)

Point	mg/L	SD	95% CL(Exp)		Skew
IC05	4.956	1.454	0.608	10.529	0.3901
IC10	6.642	1.342	1.898	10.353	0.0866
IC15	7.646	1.292	2.619	10.928	-0.1623
IC20	8.574	1.299	3.177	11.676	-0.2842
IC25	9.502	1.249	3.603	12.799	-0.4020
IC40	12.287				
IC50	>23.9				



Bivalve Larval Survival and Development Test-Proportion Normal

Start Date:	12/20/2005 17:45	Test ID:	C040719.73	Sample ID:	REF-Ref Toxicant
End Date:	12/22/2005 17:50	Lab ID:	CCA-Weston, Carlsbad	Sample Type:	TNH3-Ammonia-total (measured)
Sample Date:		Protocol:	EPA USACE-1998	Test Species:	ME-Mytilis edulis
Comments:					

Conc-mg/L	1	2	3
Control	0.9764	0.9927	0.9958
0.727	0.9975	0.9912	0.9963
1.53	0.9864	1.0000	0.9967
3.27	0.9839	0.9905	0.9942
6.81	0.7452	0.7573	0.7383
12.8	0.0000	0.0154	0.0000
23.9	0.0000	0.0000	0.0000

			Transform: Arcsin Square Root						1-Tailed		Number	Total
Conc-mg/L	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Resp	Number
Control	0.9883	1.0000	1.4693	1.4165	1.5061	3.191	3				9	767
0.727	0.9950	1.0068	1.5027	1.4770	1.5208	1.521	3	-1.148	2.500	0.0727	4	901
1.53	0.9944	1.0061	1.5031	1.4540	1.5420	2.984	3	-1.163	2.500	0.0727	4	825
3.27	0.9895	1.0013	1.4705	1.4435	1.4946	1.747	3	-0.041	2.500	0.0727	9	910
*6.81	0.7469	0.7558	1.0437	1.0338	1.0557	1.061	3	14.630	2.500	0.0727	192	764
*12.8	0.0051	0.0052	0.0715	0.0429	0.1244	64.088	3	48.055	2.500	0.0727	376	378
23.9	0.0000	0.0000	0.0376	0.0317	0.0429	14.957	3				557	557

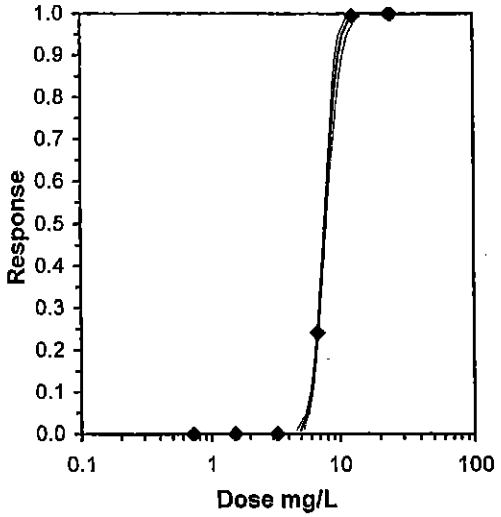
Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.9705	0.858	-0.1407	-0.6856
Bartlett's Test indicates equal variances (p = 0.56)	3.9587	15.0863		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	3.27	6.81	4.71897		0.01978	0.01999	0.9743	0.00127	1.3E-14	5, 12

Maximum Likelihood-Probit

Parameter	Value	SE	95% Fiducial Limits		Control	Chi-Sq	Critical	P-value	Mu	Sigma	Iter
Slope	11.8284	0.91439	10.0362	13.6206	0.01173	2.66983	9.48773	0.61	0.89136	0.08454	3
Intercept	-5.5433	0.77347	-7.0593	-4.0273							
TSCR	0.00764	0.00149	0.00471	0.01056							

Point	Probits	mg/L	95% Fiducial Limits	
EC01	2.674	4.95089	4.64034	5.19745
EC05	3.355	5.65325	5.41574	5.84278
EC10	3.718	6.06754	5.87468	6.22537
EC15	3.964	6.36408	6.20012	6.50383
EC20	4.158	6.61006	6.46502	6.74083
EC25	4.326	6.82866	6.69407	6.95851
EC40	4.747	7.41207	7.26708	7.58103
EC50	5.000	7.78679	7.61073	8.00766
EC60	5.253	8.18044	7.96006	8.46953
EC75	5.674	8.87935	8.56407	9.31059
EC80	5.842	9.17299	8.81387	9.66973
EC85	6.036	9.52754	9.1132	10.107
EC90	6.282	9.99318	9.50309	10.6868
EC95	6.645	10.7255	10.1101	11.61
EC99	7.326	12.2471	11.3516	13.5665



Test: BV-Bivalve Larval Survival and Development Test					Test ID: C040719.73			
Species: ME-Mytilis edulis					Protocol: EPA USACE-1998			
Sample ID: REF-Ref Toxicant					Sample Type: TNH3-Ammonia-total (measured)			
Start Date: 12/20/2005 17:45				End Date: 12/22/2005	Lab ID: CCA-Weston, Carlsbad			
Pos	ID	Rep	Group	Initial Density	Final Density	Total Counted	Number Normal	Notes
	1	1	Control	309	254	254	248	
	2	2	Control	309	274	274	272	
	3	3	Control	309	239	239	238	
	4	1	0.727	309	401	401	400	
	5	2	0.727	309	228	228	226	
	6	3	0.727	309	272	272	271	
	7	1	1.530	309	221	221	218	
	8	2	1.530	309	301	301	301	
	9	3	1.530	309	303	303	302	
	10	1	3.270	309	248	248	244	
	11	2	3.270	309	317	317	314	
	12	3	3.270	309	345	345	343	
	13	1	6.810	309	208	208	155	
	14	2	6.810	309	342	342	259	
	15	3	6.810	309	214	214	158	
	16	1	12.800	309	136	136	0	
	17	2	12.800	309	130	130	2	
	18	3	12.800	309	112	112	0	
	19	1	23.900	309	136	136	0	
	20	2	23.900	309	172	172	0	
	21	3	23.900	309	249	249	0	

Comments:

Bivalve Larval Survival and Development Test-Proportion Alive

Start Date:	12/20/2005 17:45	Test ID:	C040719.73	Sample ID:	REF-Ref Toxicant
End Date:	12/22/2005 17:50	Lab ID:	CCA-Weston, Carlsbad	Sample Type:	UNH3-Ammonia-unionized (calculated)
Sample Date:		Protocol:	EPA USACE-1998	Test Species:	ME-Mytilis edulis
Comments:					

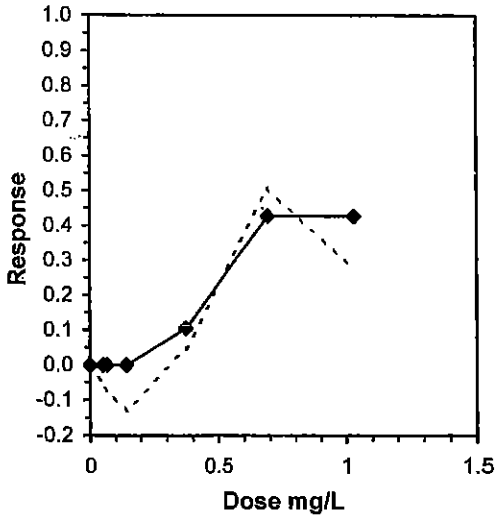
Conc-mg/L	1	2	3
Control	0.8220	0.8867	0.7735
0.05	1.0000	0.7379	0.8803
0.067	0.7152	0.9741	0.9806
0.144	0.8026	1.0000	1.0000
0.374	0.6731	1.0000	0.6926
0.693	0.4401	0.4207	0.3625
1.032	0.4401	0.5566	0.8058

			Transform: Arcsin Square Root					1-Tailed			Isotonic	
Conc-mg/L	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Mean	N-Mean
Control	0.8274	1.0000	1.1458	1.0747	1.2275	6.715	3				0.8811	1.0000
0.05	0.8727	1.0548	1.2644	1.0333	1.5423	20.386	3	-0.657	2.530	0.4561	0.8811	1.0000
0.067	0.8900	1.0756	1.2827	1.0079	1.4310	18.574	3	-0.759	2.530	0.4561	0.8811	1.0000
0.144	0.9342	1.1291	1.3984	1.1104	1.5423	17.834	3	-1.401	2.530	0.4561	0.8811	1.0000
0.374	0.7886	0.9531	1.1625	0.9622	1.5423	28.308	3	-0.093	2.530	0.4561	0.7886	0.8950
0.693	0.4078	0.4928	0.6924	0.6461	0.7254	5.967	3	2.515	2.530	0.4561	0.5043	0.5724
1.032	0.6009	0.7262	0.8940	0.7254	1.1145	22.333	3	1.397	2.530	0.4561	0.5043	0.5724

Auxiliary Tests					Statistic		Critical		Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)					0.972		0.873		0.19763	-0.6238
Bartlett's Test indicates equal variances (p = 0.32)					6.98308		16.8119			
Hypothesis Test (1-tail, 0.05)	**NOEC**	**LOEC**	**ChV**	**TU**	**MSDu**	**MSDp**	**MSB**	**MSE**	**F-Prob**	**df**
Dunnett's Test	1.032	>1.032			0.42506	0.5121	0.18059	0.04874	0.02037	6, 14

Linear Interpolation (200 Resamples)

Point	mg/L	SD	95% CL(Exp)		Skew
IC05	0.2535	0.0896	0.0000	0.5959	0.5160
IC10	0.3631	0.0817	0.0549	0.5649	-0.0155
IC15	0.4185	0.0749	0.1125	0.5933	-0.2740
IC20	0.4679	0.0716	0.1607	0.6332	-0.3414
IC25	0.5174	0.0667	0.2003	0.6929	-0.4136
IC40	0.6657				
IC50	>1.032				



Bivalve Larval Survival and Development Test-Proportion Normal

Start Date:	12/20/2005 17:45	Test ID:	C040719.73	Sample ID:	REF-Ref Toxicant
End Date:	12/22/2005 17:50	Lab ID:	CCA-Weston, Carlsbad	Sample Type:	UNH3-Ammonia-unionized (calculated)
Sample Date:		Protocol:	EPA USACE-1998	Test Species:	ME-Mytilis edulis
Comments:					

Conc-mg/L	1	2	3
Control	0.9764	0.9927	0.9958
0.05	0.9975	0.9912	0.9963
0.067	0.9864	1.0000	0.9967
0.144	0.9839	0.9905	0.9942
0.374	0.7452	0.7573	0.7383
0.693	0.0000	0.0154	0.0000
1.032	0.0000	0.0000	0.0000

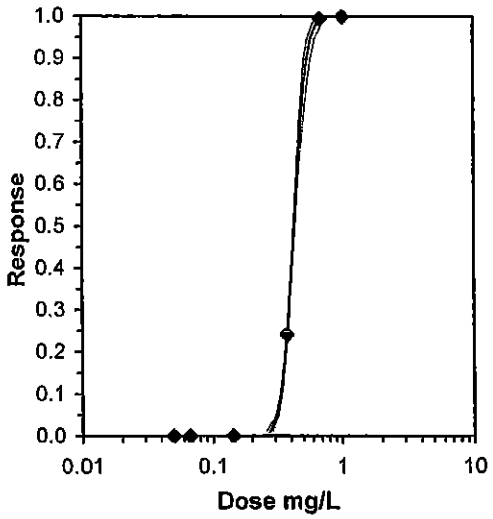
			Transform: Arcsin Square Root						1-Tailed		Number	Total
Conc-mg/L	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Resp	Number
Control	0.9883	1.0000	1.4693	1.4165	1.5061	3.191	3				9	767
0.05	0.9950	1.0068	1.5027	1.4770	1.5208	1.521	3	-1.148	2.500	0.0727	4	901
0.067	0.9944	1.0061	1.5031	1.4540	1.5420	2.984	3	-1.163	2.500	0.0727	4	825
0.144	0.9895	1.0013	1.4705	1.4435	1.4946	1.747	3	-0.041	2.500	0.0727	9	910
*0.374	0.7469	0.7558	1.0437	1.0338	1.0557	1.061	3	14.630	2.500	0.0727	192	764
*0.693	0.0051	0.0052	0.0715	0.0429	0.1244	64.088	3	48.055	2.500	0.0727	376	378
1.032	0.0000	0.0000	0.0376	0.0317	0.0429	14.957	3				557	557

Auxillary Tests					Statistic		Critical		Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)					0.9705		0.858		-0.1407	-0.6856
Bartlett's Test indicates equal variances (p = 0.56)					3.9587		15.0863			
Hypothesis Test (1-tail, 0.05)	**NOEC**	**LOEC**	**ChV**	**TU**	**MSDu**	**MSDp**	**MSB**	**MSE**	**F-Prob**	**df**
Dunnett's Test	0.144	0.374	0.23207		0.01978	0.01999	0.9743	0.00127	1.3E-14	5, 12

Maximum Likelihood-Probit

Parameter	Value	SE	95% Fiducial Limits		Control	Chi-Sq	Critical	P-value	Mu	Sigma	Iter
Slope	12.1054	0.93472	10.2733	13.9375	0.01173	2.67403	9.48773	0.61	-0.3702	0.08261	3
Intercept	9.48197	0.39229	8.71308	10.2509							
TSCR	0.00764	0.00149	0.00471	0.01057							

Point	Probits	mg/L	95% Fiducial Limits	
EC01	2.674	0.27389	0.25711	0.2872
EC05	3.355	0.3118	0.29901	0.322
EC10	3.718	0.33411	0.32374	0.34259
EC15	3.964	0.35006	0.34125	0.35756
EC20	4.158	0.36327	0.35548	0.37029
EC25	4.326	0.375	0.36778	0.38197
EC40	4.747	0.40628	0.39851	0.41532
EC50	5.000	0.42634	0.41692	0.43814
EC60	5.253	0.44739	0.43561	0.46281
EC75	5.674	0.4847	0.46789	0.50766
EC80	5.842	0.50036	0.48122	0.52678
EC85	6.036	0.51924	0.49719	0.55004
EC90	6.282	0.54403	0.51796	0.58085
EC95	6.645	0.58295	0.55027	0.62982
EC99	7.326	0.66363	0.61622	0.73331



Test: BV-Bivalve Larval Survival and Development Test Test ID: C040719.73
Species: ME-Mytilis edulis Protocol: EPA USACE-1998
Sample ID: REF-Ref Toxicant Sample Type: UNH3-Ammonia-unionized (calculated)
Start Date: 12/20/2005 17:45 End Date: 12/22/2005 Lab ID: CCA-Weston, Carlsbad

Pos	ID	Rep	Group	Initial Density	Final Density	Total Counted	Number Normal	Notes
	1	1	Control	309	254	254	248	
	2	2	Control	309	274	274	272	
	3	3	Control	309	239	239	238	
	4	1	0.050	309	401	401	400	
	5	2	0.050	309	228	228	226	
	6	3	0.050	309	272	272	271	
	7	1	0.067	309	221	221	218	
	8	2	0.067	309	301	301	301	
	9	3	0.067	309	303	303	302	
	10	1	0.144	309	248	248	244	
	11	2	0.144	309	317	317	314	
	12	3	0.144	309	345	345	343	
	13	1	0.374	309	208	208	155	
	14	2	0.374	309	342	342	259	
	15	3	0.374	309	214	214	158	
	16	1	0.693	309	136	136	0	
	17	2	0.693	309	130	130	2	
	18	3	0.693	309	112	112	0	
	19	1	1.032	309	136	136	0	
	20	2	1.032	309	172	172	0	
	21	3	1.032	309	249	249	0	

Comments:

BIVALVE LARVAE SUSPENDED PARTICULATE PHASE TEST
DATA SHEET 2 - REFTOX WQ

Coy 0719.73

CLIENT	PROJECT	SPECIES	WESTON LABORATORY	PROTOCOL
Parametrix	Bremerton Sediment	Mytilus spp. (mussel)	Carlsbad Room 2	/ WESTON BIO073

MEC JOB NUMBER	PROJECT MANAGER	TEST START DATE	TIME	TEST END DATE	TIME
0	Bill Gardiner	20Dec05	1745 am	22Dec05	1750 am

WATER QUALITY DATA

2.1155 mL NH 5000 mL H2O LS

TEST CONDITIONS	TEMP (C)	SAL (ppt)	DO (mg/L)	NH3 (mg/L)	DILTN.WAT.BATCH	TEMP REC#	REFERENCE TOX. MATERIAL	REFERENCE TOXICANT	LOT NO.	48-HR LC5	48-HR IC50
	16±1	28±2	> 6.0	0	SIO 121905		ammonium chloride	ammonia			

CLIENT/ WESTON ID	CONCENTRATION value	CONCENTRATION units	DAY	DISS. OXYGEN meter	DISS. OXYGEN mg/L	TEMPERATURE meter	TEMPERATURE °C	SALINITY meter	SALINITY ppt	pH meter	pH unit			TECHNICIAN
Ref.Tox. - ammonia	0	mg/L	0	7	7.5	7	16.8	6	27.9	12	8.12			RF
			1	6	①7.98 3	6	15.8	5	27.9	②12	③8.16 8.0			JH
			2	7	7.4	7	16.4	6	27.7	11	7.9			LS
Ref.Tox. - ammonia	0.625	mg/L	0	7	7.9	7	16.0	6	27.9	12	8.16			RF
			1	6	8.2	6	15.5	5	28.0	12	8.0			JH
			2	7	7.7	7	16.0	6	27.9	11	8.0			LS
Ref.Tox. - ammonia	1.25	mg/L	0	7	7.9	7	15.8	6	27.9	12	8.0			RF
			1	6	8.3	6	15.3	5	28.0	12	8.0			JH
			2	7	7.9	7	15.9	6	27.9	11	8.0			LS
Ref.Tox. - ammonia	2.5	mg/L	0	7	8.0	7	15.7	6	27.9	12	8.0			RF
			1	6	8.3	6	15.4	5	28.0	12	8.0			JH
			2	7	8.0	7	15.8	6	27.9	11	8.0			LS
Ref.Tox. - ammonia	5	mg/L	0	7	7.7	7	15.9	6	27.9	12	8.1			RF
			1	6	8.2	6	15.4	5	28.0	12	8.0			JH
			2	7	7.7	7	15.9	6	27.9	11	8.0			LS
Ref.Tox. - ammonia	10	mg/L	0	7	7.8	7	15.9	6	27.9	12	8.1			RF
			1	6	8.1	6	15.4	5	28.0	12	8.0			JH
			2	7	7.8	7	15.9	6	27.9	11	8.0			LS

① WC RF
② WC RF 12/19/05
③ WC RF

BIVALVE LARVAE SUSPENDED PARTICULATE PHASE TEST
DATA SHEET 2 - REFTOX WQ

CLIENT	PROJECT	SPECIES	WESTON LABORATORY	PROTOCOL
Parametrix	Bremerton Sediment	Mytilus spp. (mussel)	Carlsbad Room 2	/ WESTON BIO073

MEC JOB NUMBER	PROJECT MANAGER	TEST START DATE	TIME	TEST END DATE	TIME
0	Bill Gardiner	20Dec05	745 am	22Dec05	1750 am

WATER QUALITY DATA

TEST CONDITIONS	TEMP (C)	SAL (ppt)	DO (mg/L)	NH3 (mg/L)	DILTN.WAT.BATCH	TEMP REC#	REFERENCE TOX. MATERIAL	REFERENCE TOXICANT	LOT NO.	48-HR LC5	48-HR IC50
	16±1	28±2	> 6.0	0	SIO 121905		ammonium chloride	ammonia			

CLIENT/ WESTON ID	CONCENTRATION value	CONCENTRATION units	DAY	DISS. OXYGEN meter	DISS. OXYGEN mg/L	TEMPERATURE meter	TEMPERATURE °C	SALINITY meter	SALINITY ppt	pH meter	pH unit			TECHNICIAN
Ref.Tox. - ammonia	20	mg/L	0	7	7.8	7	15.8	6	27.9	12	8.0			RF
			1	6	8.2	6	15.4	5	28.1	12	7.9			JH
			2	7	8.0	7	15.9	6	28.0	11	8.0			LS

BIVALVE LARVAE SUSPENDED PARTICULATE PHASE TEST
DATA SHEET 3 - REF TOX

SPECIES					
Mytilus spp. (mussel)					
CLIENT	**PROJECT**	**WESTON JOB NUMBER**	**PROJECT MANAGER**	**WESTON LABORATORY**	**PROTOCOL**
Parametrix	Bremerton Sediment	0	Bill Gardiner	Carlsbad Room 2	/ WESTON BIO071

LARVAL OBSERVATION DATA

CLIENT/ WESTON ID	CONCENTRATION value	CONCENTRATION units	VIAL NUMBER	REP	NUMBER NORMAL	NUMBER ABNORMAL	DATE	TECHNICIAN	COMMENTS
Ref.Tox. - ammonia	0	mg/L		1	248	6	12/28/05	am	
				2	272	2	12/27/05	am	QA:26913 12/27 KS
				3	238	1	12/28/05	am	
				4					
Ref.Tox. - ammonia	0.625	mg/L		1	400	1	12/28/05	am	
				2	226	2	↓	↓	
				3	271	1	12/27/05	am	QA:270/0 12/27 KS
				4					
Ref.Tox. - ammonia	1.25	mg/L		1	218	3	12/28/05	am	
				2	301	0	↓	↓	
				3	302	1	↓	↓	
				4					
Ref.Tox. - ammonia	2.5	mg/L		1	244	4	12/28/05	am	
				2	314	3	↓	↓	
				3	343	2	↓	↓	
				4					
Ref.Tox. - ammonia	5	mg/L		1	155	53	12/28/05	am	
				2	259	83	↓	↓	
				3	158	56	↓	↓	
				4					
Ref.Tox. - ammonia	10	mg/L		1	0	136	12/28/05	am	
				2	2	128	12/27/05	am	
				3	0	112	↓	↓	QA:0/109 12/27 KS
				4					
Ref.Tox. - ammonia	20	mg/L		1	0	136	12/28/05	am	
				2	0	172	↓	↑	
				3	0	249	↓	↓	
				4					

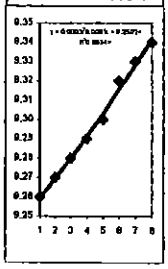
Zero-Times: 1. 381 12/27/05 am
2. 353 ↓ ↓
3. 309
4. 291
5. 309
6. 210

Un-ionized Ammonia Calculator

Client:	Parametrix	Date of Test:	20-Dec-05
Project ID:	Bremerton Sediment	Test Type:	Bivalve NH RT

To convert Total Ammonia (mg/L) to Free (un-ionized) Ammonia (mg/L) enter the corresponding total ammonia, salinity, temperature and pH.

Integer:	I-factor
1	9.26
2	9.27
3	9.28
4	9.29
5	9.30
6	9.32
7	9.33
8	9.34



	TEST	*NH3T (mg/L)*	*salinity (ppt)*	*pH*	*temp (C)*	temp (K)	i-factor	NH3U (mg/L)
	Example1	0.610	22.9	8.0	24.1	297.26	9.30531	0.027
	Example2	2.000	10.0	7.85	15.0	278.16	9.27501	0.008
1	Control	0.000	27.9	8.1	24.4	297.56	9.3184	
2	0.625	0.727	27.9	8.2	24.4	297.56	9.3184	**0.050**
3	1.250	1.530	27.9	8.0	24.3	297.46	9.3184	**0.067**
4	2.500	3.270	27.9	8.0	24.3	297.46	9.3184	**0.144**
5	5.000	6.810	27.9	8.1	24.3	297.46	9.3184	**0.374**
6	10.000	12.800	27.9	8.1	24.1	297.26	9.3184	**0.693**
7	20.000	23.900	27.9	8.0	24.0	297.16	9.3184	**1.032**
8								
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Ammonia Analysis
Total Ammonia (mg/L)

Project:	Organism:	Test:	Day:
Parametrix	Bivalves	NH_3 RT	0

PRETEST / INITIAL / FINAL / OTHER (circle one)
OVERLYING (OV) / POREWATER (PW) (circle one)

Standards Temperature		Sample temperature should be within ±1°C of standards temperature at time and date of analysis.
Date:	**Temperature:**	
12/21/05	23°	

Sample ID or Description	Conc or Rep	Date of Sampling and Initials	Ammonia Value (mg/L)	Temp °C	Date of Reading and Initials	Sample Frozen (Y/N)	pH	Sal (ppt)
Ø		12/20/05 AM	<0.5	24.4°	12/21/05 JH	Y		
1.25			1.53	24.4°				
2.5			3.27	24.3°				
0.625			0.727	24.3°				
5			6.81	24.3°				
10			12.8	24.1°				
20		↓	23.9	24.0°	↓	↓		

WESTON SOLUTIONS

Reference Toxicant
Ammmonia Spiking Worksheet

Bivalve NH_3 RT 12/20/05

Assumptions in Model
Stock ammonia concentration is 8,000 mg/L = 8 mg/mL

Actual Reading
7090

Test Solutions			Volume of stock to reach desired concentration	
Measured Concentration mg/L	Desired Concentration mg/L	Volume mL	mL stock to increase	
			FRESH WATER	SALT WATER
0	20	500	1.410	2.115655853
			0.000	0
			0.000	0
			0.000	0
			0.000	0
			0.000	0

Parametrix bivalve random numbers 12/20/05

Ammonia RT

Control	1	19
	2	12
	3	11
0.625 ~~1~~	4	16
	5	13
	6	7
1.25 ~~2~~	7	2
	8	9
	9	10
2.5 ~~5~~	10	1
	11	8
	12	15
5 ~~7~~	13	21
	14	6
	15	18
10	16	14
	17	5
	18	4
20	19	20
	20	17
	21	3

Copper RT

Control	1	13
	2	11
	3	15
2.5	4	1
	5	14
	6	17
5	7	5
	8	3
	9	4
10	10	10
	11	7
	12	2
20	13	6
	14	9
	15	12
40	16	16
	17	8
	18	18

Appendix D

Chain-of-Custody Forms

WESTON SOLUTIONS

☐ 2433 Impala Drive • Carlsbad, CA 92008 • (760) 931-8081, FAX 931-1580
☐ 98 Main St., Ste. #428 • Tiburon, CA 94920 • (415) 435-1847, FAX 435-0479
☐ 1440 Broadway, Ste. 908 • Oakland, CA 94612 • (510) 808-0302, FAX 891-9710
☐ 152 Sunset View Lane • Sequim, WA 98382 • (360) 582-1758, FAX 582-1679
☐ 4729 NE View Drive • Port Gamble, WA 98364 • (360) 297-6903, FAX 297-6905

CHAIN OF CUSTOD
№ 11880

DATE_____ PAGE_____ OF___

PROJECT NAME / SURVEY / PROJECT NUMBER: Bremerton Sediment
PROJECT MANAGER: Phil Strick
COMPANY: Parametrix
ADDRESS: 5700 Kitsap Way Ste 202 Bremerton
PHONE/FAX: (360) 377-0014 / (360) 479-5961

SAMPLE I.D.	DATE	TIME	MATRIX	INITIALS	NUMBER & TYPE OF CONTAINERS	ANALYSIS/TEST REQUESTED: PSEP Biassay					PRESERVED HOW/ COMMENTS	SAMPLE TEMP. UPON RECEIPT	FOR WESTON USE ONLY: WESTON LAB ID
C-8	12/12/05	20:00	Sed	RD	2	X					Ice		C051216.02 A+B

SPECIAL INSTRUCTIONS/COMMENTS:
Please email results to pstrick@parametrix.com

SHIPPING:
Shipping VIA: Airbill No:

SAMPLE CONDITION UPON RECEIPT (FOR WESTON USE ONLY):

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Signature: Lara Linde	Signature: William Johnston	Signature: Tracy Hall	Signature: Nathaniel Johnston	Signature	Signature
Firm: Parametrix	Firm: WESTON	Firm: Weston	Firm: Weston	Firm	Firm
Date/Time: 12/13/05 13:15	Date/Time: 12/15/05 15:5	Date/Time: 12/15/05 1035	Date/Time: 12/16/05 1035	Date/Time	Date/Time

WHITE – return to originator • YELLOW – lab • PINK – retained by originator

WESTON SOLUTIONS

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☐ 98 Main St., Ste. #428 • Tiburon, CA 94920 • (415) 435-1847, FAX 435-0479
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CHAIN OF CUSTODY

№ 11881

DATE 12/16/05 PAGE 1 OF 1

PROJECT NAME / SURVEY / PROJECT NUMBER: Bremerton Parametrix
PROJECT MANAGER: Bill Gardiner
COMPANY: Weston
ADDRESS:
PHONE/FAX:

SAMPLE I.D.	DATE	TIME	MATRIX	INITIALS	NUMBER & TYPE OF CONTAINERS	ANALYSIS/TEST REQUESTED: PSEP Bioassay	PRESERVED HOW/ COMMENTS	FOR WESTON USE ONLY: SAMPLE TEMP. UPON RECEIPT	FOR WESTON USE ONLY: WESTON LAB ID
REF 6	12.15.05	1430	Sediment	FP	1-5GAL	X	ice	3°C	C051217.01

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPPING:
Shipping VIA:
Airbill No:

SAMPLE CONDITION UPON RECEIPT (FOR WESTON USE ONLY):

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Signature: Mary Gardiner	Signature: Daniel E. Sweetsby	Signature	Signature	Signature	Signature
Firm: Weston	Firm: Weston	Firm	Firm	Firm	Firm
Date/Time: 12/16/05 1100	Date/Time: 12/17/05 1030	Date/Time	Date/Time	Date/Time	Date/Time

WHITE – return to originator • YELLOW – lab • PINK – retained by originator

① temp checked with laser thermometer. 12/17/05 BA