EAST WATERWAY OPERABLE UNIT
SUPPLEMENTAL REMEDIAL INVESTIGATION/ FEASIBILITY STUDY
POREWATER DATA REPORT
FINAL

For submittal to:

The US Environmental Protection Agency
Region 10
Seattle, WA

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Acronyms

Acronym	Definition
ACG	analytical concentration goal
ARI	Analytical Resources, Inc.
DO	dissolved oxygen
EPA	US Environmental Protection Agency
ERA	ecological risk assessment
EW	East Waterway
FS	feasibility study
GC/MS	gas chromatography/mass spectrometry
ID	identification
MS	matrix spike
MSD	matrix spike duplicate
MLLW	mean lower low water
nd	not detected
QA	quality assurance
QA/QC	quality assurance/quality control
QAPP	quality assurance project plan
RL	reporting limit
SDG	sample delivery group
SRI	supplemental remedial investigation
VOC	volatile organic chemical
Windward	Windward Environmental LLC

1 Introduction

This data report presents the results of chemical analyses of porewater samples collected on June 10 and 11, 2009, as part of the supplemental remedial investigation (SRI) for the East Waterway (EW). Sampling and analyses were conducted in accordance with the *Quality Assurance Project Plan:Porewater Study* (Windward 2010). Thereafter referred to as the Porewater Quality Assurance Project Plan (QAPP). The results of the chemical analyses of porewater samples are provided in this report. Porewater samples were analyzed for volatile organic chemicals (VOCs) and salinity.

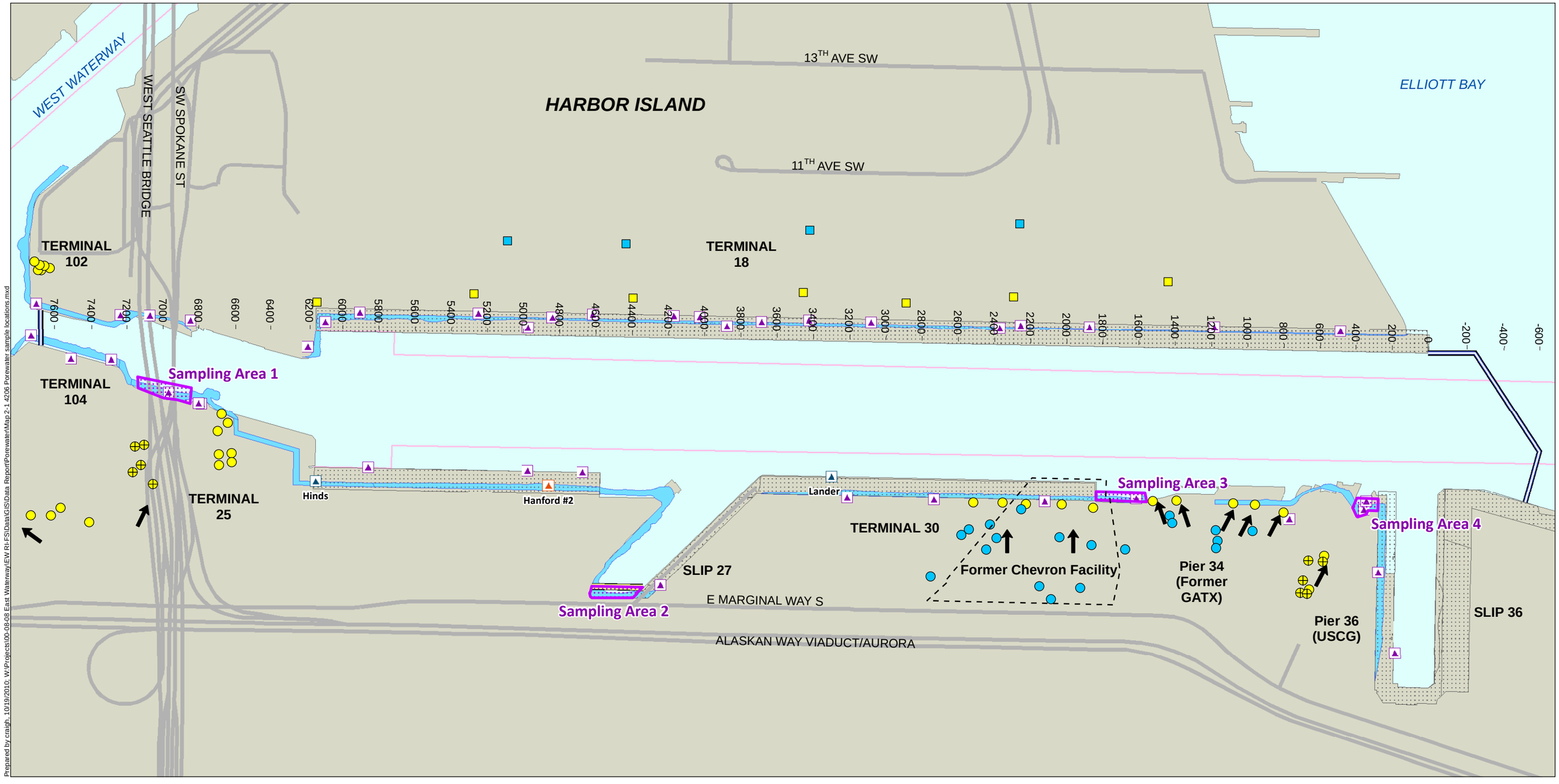
Porewater data from this study will be used to support the ecological risk assessment (ERA) conducted as part of the SRI and feasibility study (FS) for the EW. VOCs are the chemicals of interest for porewater because other chemicals of interest will be assessed based on concentrations measured in sediment and benthic invertebrate tissue to address risks to benthic invertebrates. VOCs are not strongly associated with either sediment or benthic tissues.

This report is organized into sections that present collection and processing methods, analytical methods, chemical analysis results, and references. The text is supported by the following appendices:

- Appendix A – Data Tables
- Appendix B – Data Management
- Appendix C – Data Validation Report
- Appendix D – Laboratory Report Forms
- Appendix E – FieldForms and Chain of Custody

2 Porewater Collection Methods

Sample locations were selected in order to collect porewater samples from intertidal sediments that are hosting or conveying the lowest salinity porewaters. Overall, this approach consisted of inserting a piezometer or mini-well into the sediments sequentially along a transect parallel to the tide line at a minus tide (0 ft mean lower low water [MLLW] or lower) at approximately regular intervals. The sampler was inserted by hand into the sediments to a depth of approximately one-foot. The porewater was extracted by suction provided by a peristaltic pump and the extracted water was evaluated for salinity using a refractometer. After the entire shoreline of each sampling area was tested for salinity, a predetermined number of samples were collected from locations with the lowest salinity. The locations with lowest salinity were selected so that samples were collected from areas most representative of potential groundwater inputs to the sediment porewater. (Map 2-1)



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Porewater Sampling Area

Historical Groundwater Sampling Locations

- Harbor Island groundwater operable unit (OU) compliance monitoring well[1]
- Harbor Island groundwater operable unit (OU) inland monitoring well[2]
- Monitoring Well Groundwater Sample Location
- Temporary Boring Groundwater Sample Location
- Upland Groundwater Sample Location
- Reported Groundwater Flow Direction

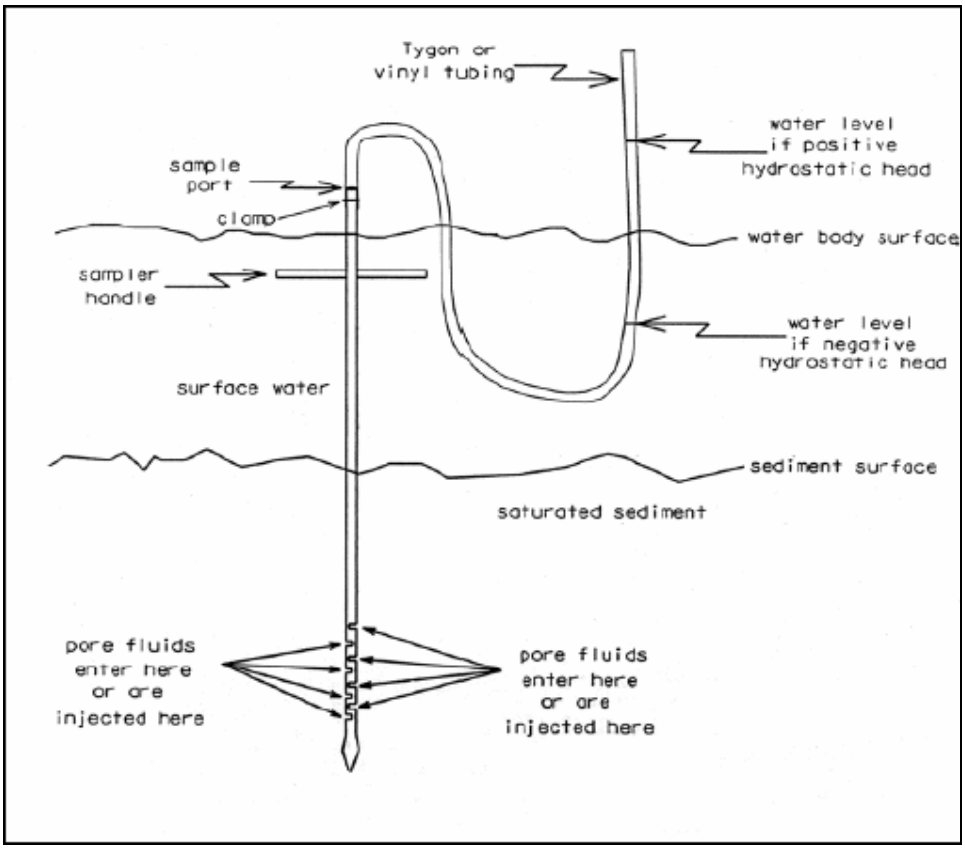
- CSO
- Storm Drain
- CSO/Storm Drain
- Intertidal Zone
- Dock/Pier
- Road
- Navigation Channel
- Slip 27 Bridge
- East Waterway Study Area Boundary

0 600
Scale in feet

[1] "Compliance" is defined for the purposes of this report as wells closest to the East Waterway and does not reflect any well designations based on the Harbor Island Soil and Groundwater OU or related reports and agreements.
[2] "Inland" is defined for the purposes of this report as wells farther away from the East Waterway shoreline.

Map 2-1
Porewater Sampling Locations and
Upland Groundwater Sampling Locations
Porewater Data Report
East Waterway Study Area

Piezometers are made of small-diameter stainless steel and have a screened zone that consists of a series of interlaced machined slots (Figure 2-1). They were installed so the top of the screen was about one foot below the mudline. Once the desired depth was reached, the internal guard rod was removed from the probe body. A peristaltic pump and flexible tubing compatible with the pump was attached to the top of the piezometer to draw porewater from the sediment.



Source: MHE (2001)

Figure 2-1. Piezometer sampling setup

In some cases, the sediment was too coarse to install the piezometers and an alternate sampling method was used. For this method, a 3-foot length of iron water pipe was driven into the sediment to the desired 1ft sediment depth and a mini-well screen attached to polyethylene tubing was inserted into the sediment through this pipe. This tubing was then attached to the peristaltic pump with its own flexible tubing to draw water from the mini-well. US Environmental Protection Agency (EPA) personnel were present during sampling to provide field oversight regarding the appropriate sampling methods and locations.

At the selected VOC sampling locations, a Horiba U22 multi-parameter probe capable of measuring pH, electrical conductivity, oxidation-reduction potential, turbidity and

dissolved oxygen (DO) with a flow-through cell was placed in line after the peristaltic pump. Measurements were recorded every 2 to 3 minutes, until reading were stable or for a maximum of four readings. The results for the field measurements are provided in Appendix E. Following stabilization, porewater samples were collected directly from the discharge tubing into three 40-mL vials with septa caps (pre-preserved with hydrochloric acid). Care was taken to avoid the entrapment of air bubbles in the sample. The sample vial was filled from the bottom to the top, leaving no headspace, and was checked to ensure that no air bubbles were trapped in the vial.

2.2 SAMPLE IDENTIFICATION

Each porewater sample was assigned a unique alphanumeric sample identification (ID) number. The first two characters of the sample ID are "EW" to identify the East Waterway project area. The next two characters are "PW" to identify the medium sampled (i.e., porewater), followed by "PZ" to signify the type of sample (i.e., piezometer). The next two characters identify the sampling area (e.g., "A1" for Area 1). The last two characters are consecutive numbers, beginning with 01, to identify the sample number. For example, the sample ID of the first porewater sample collected from Area 1 is EW-PW-PZ-A1-01. Field quality assurance/quality control (QA/QC) samples were assigned modified sample IDs as described below:

- Field replicates were identified using sample numbers starting with 201. For example, the first field replicate sample collected was identified as EW-PW-PZ-201.
- Identifiers for VOC trip and equipment blanks contain the prefix "EW-PW," followed by a unique numeric identifier and the letters "TB" or "EB" to designate trip blank or equipment blank, respectively. For example, the trip blank submitted to the laboratory was identified as EW-PW-01-TB.

2.3 FIELD DEVIATIONS FROM THE QAPP

Field methods were conducted in accordance with the QAPP (Windward 2010), except for the following modifications to collection methods and sampling locations. These field deviations did not affect the data quality. EPA was consulted on all deviations. The deviations were as follows:

- The QAPP stated that water quality readings would be collected every 3 to 5 minutes until each parameter stabilized to a specific degree. Instead, readings were collected every 2 to 3 minutes, and a maximum of four readings were collected even if the parameters had not stabilized. This was done for a variety of reasons, depending upon the sampling location, as follows: 1) sand was introduced into the sample after lengthy pumping, 2) there were time constraints for sampling during a minus tide, or 3) not enough water could be produced to obtain readings (e.g., EW-PW-PZ-A1-01).

- At some locations, it was noted that salinity increased as water was being extracted from the piezometer or mini-well. In such cases, the VOC sample was collected immediately to ensure that the freshest water would be analyzed.

3 Analytical Methods

The methods and procedures used to prepare and chemically analyze the porewater samples are described briefly in this section and in detail in the Porewater QAPP (Windward 2009). This section also summarizes any laboratory deviations from the QAPP.

3.1 Porewater Analytical Methods

The analytical methods followed by ARI adhered to the most recent EPA QA/QC guidelines and standard analysis protocols. All methods selected represent standard methods used for the analysis of VOCs in water. The analytical methods used are identified in Table 3-1.

Table 3-1. Laboratory analytical methods and sample handling requirements

Parameter	Analytical Method	Container	Filtration	Sample Preparation Method	Cleanup Method	Holding Time	Laboratory
VOCs	Purge and trap GC/MS	3 40-mL vials with septa cap, preserved with hydrochloric acid	none	EPA SW5030B	none	14 days	ARI
Salinity	electrometric (SM 2520B)	500-mL HDPE bottle	none	none	none	28 days	ARI

ARI – Analytical Resources, Inc.

EPA – US Environmental Protection Agency

GC/MS – gas chromatography/mass spectrometry

HDPE – high-density polyethylene

VOC – volatile organic compound

3.2 Laboratory Deviations from the QAPP

There were no laboratory deviations from the QAPP.

4 Results of Chemical Analyses

This section presents the results of the chemical analyses and data validation of the porewater samples. The results for every sample are provided in Appendix A. The approach used to average laboratory replicates is presented in Appendix B. Laboratory report forms are presented in Appendix D.

The quality assurance review of the chemistry data was conducted in accordance with the QA/QC requirements and technical specifications of the methods and the national functional guidelines for organic data review (EPA 1999, 2002, 2004). EcoChem, Inc. conducted the data validation. The results of the data validation are summarized in Section 4.3 and presented in full in Appendix C.

4.1 Porewater Chemistry Results

This section presents the analytical chemistry results for VOCs and salinity. Three chemicals were detected in at least one sample, naphthalene, benzene and cis-1,2-dichloroethene. The salinity of the samples ranged from 2 to 22 parts per thousand (Table 4-1). The salinity data for all locations and the detected VOC results are provided in Map 4 -1.

Table 4-1. Summary of VOC and salinity results for porewater samples

Chemical	Detection Frequency	Concentration (µg/L)		
		Detected Results		Nondetected Results
	Ratio	Minimum	Maximum	RL or Range of RLs
Detected Results				
Naphthalene	2/12	3.4	48	0.50
Benzene	2/12	0.20	0.30	0.20
cis-1,2-Dichloroethene	1/12	0.30	0.30	0.20
Salinity[a]	12/12	2[b]	22[b]	na
Nondetected Results				
1,2-Dichlorobenzene	0/12	nd	nd	0.20
1,3-Dichlorobenzene	0/12	nd	nd	0.20
1,4-Dichlorobenzene	0/12	nd	nd	0.20
1,1,1,2-Tetrachloroethane	0/12	nd	nd	0.20
1,1,1-Trichloroethane	0/12	nd	nd	0.20
1,1,2,2-Tetrachloroethane	0/12	nd	nd	0.20
1,1,2-Trichloroethane	0/12	nd	nd	0.20

Chemical	Detection Frequency	Concentration (µg/L)		
		Detected Results		Nondetected Results
	Ratio	Minimum	Maximum	RL or Range of RLs
1,1,2-Trichlorotrifluoroethane	0/12	nd	nd	0.20
1,1-Dichloroethane	0/12	nd	nd	0.20
1,1-Dichloroethene	0/12	nd	nd	0.20
1,1-Dichloropropene	0/12	nd	nd	0.20
1,2,3-Trichlorobenzene	0/12	nd	nd	0.50
1,2,4-Trichlorobenzene	0/12	nd	nd	0.50
1,2,3-Trichloropropane	0/12	nd	nd	0.50
1,2,4-Trimethylbenzene	0/12	nd	nd	0.20
1,2-Dibromo-3-chloropropane	0/12	nd	nd	0.50
1,2-Dibromoethane (EDB)	0/12	nd	nd	0.20
1,2-Dichloroethane	0/12	nd	nd	0.20
1,2-Dichloropropane	0/12	nd	nd	0.20
1,3,5-Trimethylbenzene	0/12	nd	nd	0.20
1,3-Dichloropropane	0/12	nd	nd	0.20
2,2-Dichloropropane	0/12	nd	nd	0.20
2-Chloroethyl vinyl ether	0/11	nd	nd	1.0
2-Chlorotoluene	0/12	nd	nd	0.20
2-Hexanone	0/12	nd	nd	5.0
4-Chlorotoluene	0/12	nd	nd	0.20
Acetone	0/12	nd	nd	5.0
Acrolein	0/12	nd	nd	5.0
Acrylonitrile	0/12	nd	nd	1.0
Bromobenzene	0/12	nd	nd	0.20
Bromochloromethane	0/12	nd	nd	0.20
Bromodichloromethane	0/12	nd	nd	0.20
Bromoethane	0/12	nd	nd	0.20
Bromoform	0/12	nd	nd	0.20
Bromomethane	0/12	nd	nd	1.0
Carbon disulfide	0/12	nd	nd	0.20

Chemical	Detection Frequency	Concentration (µg/L)		
		Detected Results		Nondetected Results
	Ratio	Minimum	Maximum	RL or Range of RLs
Carbon tetrachloride	0/12	nd	nd	0.20
Chlorobenzene	0/12	nd	nd	0.20
Chloroethane	0/12	nd	nd	0.20
Chloroform	0/12	nd	nd	0.20
Chloromethane	0/12	nd	nd	0.50
cis-1,3-Dichloropropene	0/12	nd	nd	0.20
p-Cymene	0/12	nd	nd	0.20
Dibromochloromethane	0/12	nd	nd	0.20
Dibromomethane	0/12	nd	nd	0.20
Dichloromethane	0/12	nd	nd	0.50
Ethylbenzene	0/12	nd	nd	0.20
Hexachlorobutadiene	0/12	nd	nd	0.50
Iodomethane	0/12	nd	nd	1.0
Isopropylbenzene	0/12	nd	nd	0.20
Methyl ethyl ketone	0/12	nd	nd	5.0
Methyl isobutyl ketone	0/12	nd	nd	5.0
n-Butylbenzene	0/12	nd	nd	0.20
n-Propylbenzene	0/12	nd	nd	0.20
sec-Butylbenzene	0/12	nd	nd	0.20
Styrene	0/12	nd	nd	0.20
tert-Butylbenzene	0/12	nd	nd	0.20
Tetrachloroethene	0/12	nd	nd	0.20
Toluene	0/12	nd	nd	0.20
trans-1,2-Dichloroethene	0/12	nd	nd	0.20
trans-1,3-Dichloropropene	0/12	nd	nd	0.20
trans-1,4-Dichloro-2-butene	0/11	nd	nd	1.0
Trichloroethene	0/12	nd	nd	0.20
Trichlorofluoromethane	0/12	nd	nd	0.20
Vinyl acetate	0/12	nd	nd	1.0

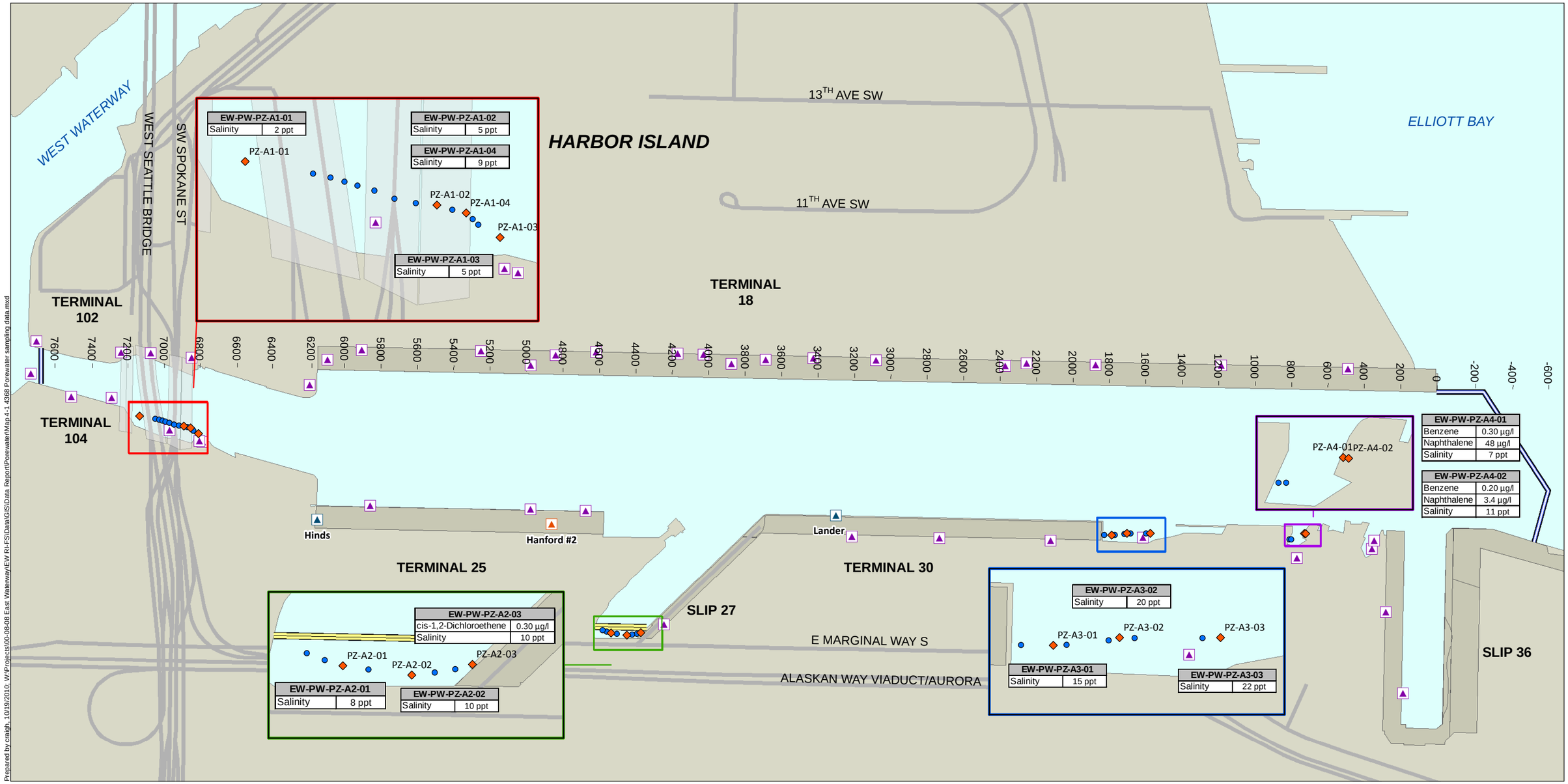
Chemical	Detection Frequency	Concentration (µg/L)		
		Detected Results		Nondetected Results
	Ratio	Minimum	Maximum	RL or Range of RLs
Vinyl chloride	0/12	nd	nd	0.20
o-Xylene	0/12	nd	nd	0.20
m,p-Xylene	0/12	nd	nd	0.40
Total xylenes	0/12	nd	nd	0.40

[a] Salinity as reported by the laboratory for the analytical samples. Field measured salinity provided in Appendix E.

[b] Salinity reported in units of parts per thousand (ppt)

nd – not detected

RL – reporting limit



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- Porewater Sampling Location
- Porewater Screening location
- CSO
- Storm Drain
- CSO/Storm Drain
- Dock/Pier
- Road
- West Seattle Bridge
- Slip 27 Bridge
- East Waterway Study Area Boundary

Map 4-1
Porewater Salinity and Detected VOCs
Porewater Data Report
East Waterway Study Area

4.2 COMPARISON OF NON-DETECTED RESULTS WITH ANALYTICAL CONCENTRATION GOALS

This section compares RLs for non-detected concentrations in porewater samples to site-specific analytical concentration goals (ACGs) for benthic invertebrate receptors (Table 4-2). None of the reporting limits (RLs) exceeded the corresponding ACG values.

Table 4-2. ACGs compared to RLs

Analyte	RL (µg/L)	ACG (µg/L)
1,1,1-Trichloroethane	0.2	1,300
1,1,2-Trichloroethane	0.2	1,000
1,1-Dichloroethane	0.2	202,000
1,1-Dichloroethene	0.2	< 2,400
1,2-Dichloroethane	0.2	6,927
Acetone (2-propanone)	2.0	10,000
Benzene	0.2	> 1,000
Carbon disulfide	0.2	2,100
Carbon tetrachloride (tetrachloromethane)	0.2	200
Chlorobenzene	0.2	1,400
Chloroethane	0.2	na
Chloroform (trichloromethane)	0.2	2,000
Chloromethane	0.2	270,000[a]
cis- or trans-1,2-dichloroethene	0.2	6,785
Ethylbenzene	0.2	30
m,p,-Xylene (xylene)	0.4	7,400[b]
Methylene chloride	0.3	68,000
Naphthalene	0.5	50
o-Xylene (xylene)	0.2	7,400[b]
Tetrachloroethene	0.2	331
Toluene (methylbenzene)	0.2	1000
Trichloroethene	0.2	1,700
Vinyl chloride (chloroethene)	0.2	128,000

[a] Value for fish species because no value was available for invertebrate species

[b] Risk-based concentration for xylene used because no toxicological data were available for these xylene isomers

4.3 DATA VALIDATION RESULTS

Independent data validation was performed on all results by EcoChem. The data were all provided in one sample delivery group (SDG; RF68) from ARI. A Level 4 or full validation review was conducted. Data for chloromethane, bromomethane and acrolein were qualified as estimated due to low recoveries of these compounds in the matrix spike/matrix spike duplicate (MS/MSD). In addition, data for trans-1,4-dichloro-2-butene and 2-chloroethylvinylether were rejected because these chemicals were not recovered in the MS or the MSD. None of the qualified compounds were detected in the samples. The complete validation report is provided in Appendix C.

5 References

EPA. 1999. USEPA contract laboratory program national functional guidelines for organic data review. EPA-540/R-99/008. Office of Emergency and Remedial Response, US Environmental Protection Agency, Washington, DC.

EPA. 2002. USEPA contract laboratory program national functional guidelines for inorganic data review. EPA 540-R-01-008. Office of Emergency and Remedial Response, US Environmental Protection Agency, Washington, DC.

EPA. 2004. USEPA contract laboratory program national functional guidelines for inorganic data review. EPA 540-R-04-004. Office of Emergency and Remedial Response, US Environmental Protection Agency, Washington, DC.

MHE. 2001. PushPoint Sampler operators manual and applications guide Ver 2.00 [online]. MHE Products, East Tawas, MI. [Cited April 2005.] Available from: http://www.alumni.engin.umich.edu/~markhen/downloads.html.

Windward. 2009. Quality assurance project plan: juvenile Chinook salmon collection and chemical analysis. East Waterway Operable Unit supplemental remedial investigation/feasibility study. Windward Environmental LLC, Seattle, WA.

Windward. 2010. Quality assurance project plan: porewater study. Final. East Waterway Operable Unit supplemental remedial investigation/feasibility study. Windward Environmental LLC, Seattle, WA.

APPENDIX A

Data Tables

Appendix A Data Tables

Table A-1. East Waterway porewater final results

Chemical	Location Name	EW-PW-PZ-A1-03		EW-PW-PZ-A1-01	EW-PW-PZ-A1-02	EW-PW-PZ-A1-04	EW-PW-PZ-A2-01	EW-PW-PZ-A2-02	EW-PW-PZ-A2-03	EW-PW-PZ-A3-01	EW-PW-PZ-A3-02	EW-PW-PZ-A3-03	EW-PW-PZ-A4-01	EW-PW-PZ-A4-02
	Sample Name	EW-PW-PZ-A1-03	EW-PW-PZ-201	EW-PW-PZ-A1-01	EW-PW-PZ-A1-02	EW-PW-PZ-A1-04	EW-PW-PZ-A2-01	EW-PW-PZ-A2-02	EW-PW-PZ-A2-03	EW-PW-PZ-A3-01	EW-PW-PZ-A3-02	EW-PW-PZ-A3-03	EW-PW-PZ-A4-01	EW-PW-PZ-A4-02
	Matrix	WX	WX	WX	WX	WX	WX	WX	WX	WX	WX	WX	WX	WX
	Sample Type	N	FD	N	N	N	N	N	N	N	N	N	N	N
	Sample Date/Unit	7/24/2010	7/24/2010	7/24/2010	7/24/2010	7/24/2010	7/21/2010	7/21/2010	7/21/2010	7/23/2010	7/23/2010	7/23/2010	7/25/2010	7/25/2010
PAHs														
Naphthalene	µg/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	48	3.4
Other SVOCs														
1,2,4-Trichlorobenzene	µg/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichlorobenzene	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
1,3-Dichlorobenzene	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
1,4-Dichlorobenzene	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Hexachlorobutadiene	µg/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
VOCs														
1,1,1,2-Tetrachloroethane	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
1,1,1-Trichloroethane	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
1,1,2,2-Tetrachloroethane	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
1,1,2-Trichloroethane	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
1,1,2-Trichlorotrifluoroethane	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U

Chemical	Location Name	EW-PW-PZ-A1-03		EW-PW-PZ-A1-01	EW-PW-PZ-A1-02	EW-PW-PZ-A1-04	EW-PW-PZ-A2-01	EW-PW-PZ-A2-02	EW-PW-PZ-A2-03	EW-PW-PZ-A3-01	EW-PW-PZ-A3-02	EW-PW-PZ-A3-03	EW-PW-PZ-A4-01	EW-PW-PZ-A4-02
	Sample Name	EW-PW-PZ-A1-03	EW-PW-PZ-201	EW-PW-PZ-A1-01	EW-PW-PZ-A1-02	EW-PW-PZ-A1-04	EW-PW-PZ-A2-01	EW-PW-PZ-A2-02	EW-PW-PZ-A2-03	EW-PW-PZ-A3-01	EW-PW-PZ-A3-02	EW-PW-PZ-A3-03	EW-PW-PZ-A4-01	EW-PW-PZ-A4-02
	Matrix	WX	WX	WX	WX	WX	WX	WX	WX	WX	WX	WX	WX	WX
	Sample Type	N	FD	N	N	N	N	N	N	N	N	N	N	N
	Sample Date/Unit	7/24/2010	7/24/2010	7/24/2010	7/24/2010	7/24/2010	7/21/2010	7/21/2010	7/21/2010	7/23/2010	7/23/2010	7/23/2010	7/25/2010	7/25/2010
1,1-Dichloroethane	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
1,1-Dichloroethene	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
1,1-Dichloropropene	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
1,2,3-Trichlorobenzene	µg/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2,3-Trichloropropane	µg/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2,4-Trimethylbenzene	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
1,2-Dibromo-3-chloropropane	µg/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dibromoethane (EDB)	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
1,2-Dichloroethane	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
1,2-Dichloropropane	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
1,3,5-Trimethylbenzene	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
1,3-Dichloropropane	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
2,2-Dichloropropane	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
2-Chloroethyl vinyl ether	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	R	1.0 U
2-Chlorotoluene	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
2-Hexanone	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
4-Chlorotoluene	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Acetone	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U

Chemical	Location Name	EW-PW-PZ-A1-03		EW-PW-PZ-A1-01	EW-PW-PZ-A1-02	EW-PW-PZ-A1-04	EW-PW-PZ-A2-01	EW-PW-PZ-A2-02	EW-PW-PZ-A2-03	EW-PW-PZ-A3-01	EW-PW-PZ-A3-02	EW-PW-PZ-A3-03	EW-PW-PZ-A4-01	EW-PW-PZ-A4-02
	Sample Name	EW-PW-PZ-A1-03	EW-PW-PZ-201	EW-PW-PZ-A1-01	EW-PW-PZ-A1-02	EW-PW-PZ-A1-04	EW-PW-PZ-A2-01	EW-PW-PZ-A2-02	EW-PW-PZ-A2-03	EW-PW-PZ-A3-01	EW-PW-PZ-A3-02	EW-PW-PZ-A3-03	EW-PW-PZ-A4-01	EW-PW-PZ-A4-02
	Matrix	WX	WX	WX	WX	WX	WX	WX	WX	WX	WX	WX	WX	WX
	Sample Type	N	FD	N	N	N	N	N	N	N	N	N	N	N
	Sample Date/Unit	7/24/2010	7/24/2010	7/24/2010	7/24/2010	7/24/2010	7/21/2010	7/21/2010	7/21/2010	7/23/2010	7/23/2010	7/23/2010	7/25/2010	7/25/2010
Acrolein	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 U
Acrylonitrile	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzene	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.30	0.20
Bromobenzene	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Bromochloromethane	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Bromodichloromethane	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Bromoethane	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Bromoform	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Bromomethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U
Carbon disulfide	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Carbon tetrachloride	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Chlorobenzene	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Chloroethane	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Chloroform	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Chloromethane	µg/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 UJ	0.50 U
cis-1,2-Dichloroethene	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.30	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
cis-1,3-Dichloropropene	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
p-Cymene	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U

Chemical	Location Name	EW-PW-PZ-A1-03		EW-PW-PZ-A1-01	EW-PW-PZ-A1-02	EW-PW-PZ-A1-04	EW-PW-PZ-A2-01	EW-PW-PZ-A2-02	EW-PW-PZ-A2-03	EW-PW-PZ-A3-01	EW-PW-PZ-A3-02	EW-PW-PZ-A3-03	EW-PW-PZ-A4-01	EW-PW-PZ-A4-02
	Sample Name	EW-PW-PZ-A1-03	EW-PW-PZ-201	EW-PW-PZ-A1-01	EW-PW-PZ-A1-02	EW-PW-PZ-A1-04	EW-PW-PZ-A2-01	EW-PW-PZ-A2-02	EW-PW-PZ-A2-03	EW-PW-PZ-A3-01	EW-PW-PZ-A3-02	EW-PW-PZ-A3-03	EW-PW-PZ-A4-01	EW-PW-PZ-A4-02
	Matrix	WX	WX	WX	WX	WX	WX	WX	WX	WX	WX	WX	WX	WX
	Sample Type	N	FD	N	N	N	N	N	N	N	N	N	N	N
	Sample Date/Unit	7/24/2010	7/24/2010	7/24/2010	7/24/2010	7/24/2010	7/21/2010	7/21/2010	7/21/2010	7/23/2010	7/23/2010	7/23/2010	7/25/2010	7/25/2010
Dibromochloromethane	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Dibromomethane	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Dichloromethane	µg/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Ethylbenzene	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Iodomethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Isopropylbenzene	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Methyl ethyl ketone	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methyl isobutyl ketone	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
n-Butylbenzene	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
n-Propylbenzene	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
sec-Butylbenzene	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Styrene	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
tert-Butylbenzene	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Tetrachloroethene	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Toluene	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
trans-1,2-Dichloroethene	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
trans-1,3-Dichloropropene	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
trans-1,4-Dichloro-2-butene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	R	1.0 U

Chemical	Location Name	EW-PW-PZ-A1-03		EW-PW-PZ-A1-01	EW-PW-PZ-A1-02	EW-PW-PZ-A1-04	EW-PW-PZ-A2-01	EW-PW-PZ-A2-02	EW-PW-PZ-A2-03	EW-PW-PZ-A3-01	EW-PW-PZ-A3-02	EW-PW-PZ-A3-03	EW-PW-PZ-A4-01	EW-PW-PZ-A4-02
	Sample Name	EW-PW-PZ-A1-03	EW-PW-PZ-201	EW-PW-PZ-A1-01	EW-PW-PZ-A1-02	EW-PW-PZ-A1-04	EW-PW-PZ-A2-01	EW-PW-PZ-A2-02	EW-PW-PZ-A2-03	EW-PW-PZ-A3-01	EW-PW-PZ-A3-02	EW-PW-PZ-A3-03	EW-PW-PZ-A4-01	EW-PW-PZ-A4-02
	Matrix	WX	WX	WX	WX	WX	WX	WX	WX	WX	WX	WX	WX	WX
	Sample Type	N	FD	N	N	N	N	N	N	N	N	N	N	N
	Sample Date/Unit	7/24/2010	7/24/2010	7/24/2010	7/24/2010	7/24/2010	7/21/2010	7/21/2010	7/21/2010	7/23/2010	7/23/2010	7/23/2010	7/25/2010	7/25/2010
Trichloroethene	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Trichlorofluoromethane	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Vinyl acetate	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
o-Xylene	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
m,p-Xylene	µg/L	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U
Total xylenes	µg/L	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U
Conventionals														
Salinity	ppt	5	5	2	5	9	8	10	10	15	20	22	7	11

FD – field duplicate
N – normal field sample
R – rejected value
WX – pore water

Data Qualifiers:
U – not detected at given concentration
UJ – not detected at given estimated concentration

APPENDIX B

Data Management

Appendix B Data Management

AVERAGING LABORATORY REPLICATE SAMPLES

Chemical concentrations obtained from the analysis of laboratory replicate samples (two or more analyses of the same sample) will be averaged for a closer representation of the "true" concentration as compared to the result of a single analysis. Averaging rules are dependent on whether the individual results are detected concentrations or reporting limits (RLs) for undetected chemicals. If all concentrations are detected for a single chemical, the values are simply averaged arithmetically for the sample and its associate laboratory replicate sample(s). If all concentrations are undetected for a given parameter, the minimum RL is selected. If the concentrations are a mixture of detected concentrations and RLs, any two or more detected concentrations are averaged arithmetically and RLs ignored. If there is a single detected concentration and one or more RLs, the detected concentration is reported. The latter two rules are applied regardless of whether the RLs are higher or lower than the detected concentration.

SIGNIFICANT FIGURES AND CALCULATIONS

Analytical laboratories report results with various numbers of significant figures depending on the laboratory's standard operating procedures, the instrument, the chemical, and the reported chemical concentration relative to the RL. The reported (or assessed) precision of each result is explicitly stored in the project database by recording the number of significant figures. Tracking of significant figures is used when calculating analyte sums and performing other data summaries. When a calculation involves addition, such as totaling PCBs, the calculation can only be as precise as the least precise number that went into the calculation. For example:

> 210 + 19 = 229 would be reported as 230 because although 19 is reported to 2 significant digits, the trailing zero in the number 210 is not significant.

When a calculation involves multiplication or division, the final result is rounded at the end of the calculation to reflect the value used in the calculation with the fewest significant figures. For example:

> 59.9 × 1.2 = 71.88 would be reported as 72 because there are two significant figures in the number 1.2.

When rounding, if the number following the last significant figure is less than 5, the digit is left unchanged. If the number following the last significant figure is equal to or greater than 5, the digit is increased by 1.

BEST RESULT SELECTION FOR MULTIPLE RESULTS

In some instances, the laboratory generates more than one result for a chemical for a given sample. Multiple results can occur for several reasons, including: 1) the original result did not meet the laboratory's internal quality control (QC) guidelines, and a reanalysis was performed; 2) the original result did not meet other project data quality objectives, such as a sufficiently low RL, and a reanalysis was performed; or 3) two different analytical methods were used for that chemical. In each case, a single best result is selected for use. The procedures for selecting the best result differ depending on whether a single or multiple analytical methods are used for that chemical.

For the same analytical method, if the results are:

- Detected and not qualified, then the result from the lowest dilution is selected, unless multiple results from the same dilution are available, in which case, the result with the highest concentration is selected.
- A combination of estimated and unqualified detected results, then the unqualified result is selected. This situation most commonly occurs when the original result is outside of calibration range, thus requiring a dilution.
- All estimated, then the "best result" is selected using best professional judgment in consideration of the rationale for qualification. For example, a result qualified based on laboratory replicate results outside of QC objectives for precision would be preferred to a qualified result that is outside the calibration range.
- A combination of detected and undetected results, then the detected result is selected. If there is more than one detected result, the applicable rules for multiple results (as discussed above) are followed.
- All undetected results, then the lowest RL is selected.

For detected concentrations analyzed by the SVOC full-scan and selective ion monitoring (SIM) methods (i.e., PAHs), the highest detected concentration is selected. If the result by one method is detected and the result by the other method is not detected, then the detected result is selected for reporting, regardless of the method. If results are reported as non-detected by both methods, the undetected result with the lowest RL is selected. The SIM method is more analytically sensitive than the full-scan SVOC method, and the undetected results are generally reported at a lower RL by the SIM method than by the full-scan method. Therefore, the SIM method is selected for non-detected results unless an analytical dilution or analytical interferences elevated the SIM RL above the SVOC full-scan RL.

APPENDIX C

Data Validation Report

EcoChem, INC.
Environmental Data Quality

DATA VALIDATION REPORT

Port of Seattle East Waterway Porewater Study

Prepared for:

Windward Environmental, LLC
200 West Mercer Street, Suite 401
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Prepared by:

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EcoChem Project: C22018-8

September 7, 2010

Approved for Release:

Chris Ransom
Project Manager
EcoChem, Inc.

PROJECT NARRATIVE

Basis for the Data Validation

This report summarizes the results of full (Stage 4) validation performed on porewater and quality control sample data for the Port of Seattle East Waterway Porewater Study. A complete list of samples is provided in the **SAMPLE INDEX**.

Samples were analyzed by Analytical Resources, Inc. (ARI), Tukwila, Washington. The analytical method and EcoChem project chemists are listed below.

Analysis	Method	Primary Review	Secondary Review
Volatile Organic Compounds (VOC)	EPA8260C	Dorothy Kerlin	Chris Ransom

The data were reviewed using guidance and quality control criteria documented in the analytical method; the quality assurance project plan (QAPP) *East Waterway Operable Unit Supplemental Remedial Investigation/Feasibility Study - Draft Quality Assurance Project Plan - Porewater Study* (Windward July, 2010); and *National Functional Guidelines for Organic Data Review* (USEPA 1999).

EcoChem's goal in assigning data assessment qualifiers is to assist in proper data interpretation. If values are estimated (J or UJ), data may be used for site evaluation and risk assessment purposes but reasons for data qualification should be taken into consideration when interpreting sample concentrations. If values are assigned an R, the data are to be rejected and should not be used for any site evaluation purposes. If values have no data qualifier assigned, then the data meet the data quality objectives as stated in the documents and methods referenced above.

Data qualifier definitions, reason codes, and validation criteria are included as **APPENDIX A**. A Qualified Data Summary Table is included in **APPENDIX B**. Data Validation Worksheets will be kept on file at EcoChem, Inc. A qualified laboratory electronic data deliverable (EDD) is also submitted with this report.

Sample Index
Port of Seattle East Waterway
Porewater Study

SDG	Sample ID	Laboratory ID	VOC
RF68	EW-PW-PZ-A2-01	10-17550-RF68A	✓
RF68	EW-PW-PZ-A2-02	10-17551-RF68B	✓
RF68	EW-PW-PZ-A2-03	10-17552-RF68C	✓
RF68	EW-PW-PZ-A3-01	10-17553-RF68D	✓
RF68	EW-PW-PZ-A3-02	10-17554-RF68E	✓
RF68	EW-PW-PZ-A3-03	10-17555-RF68F	✓
RF68	EW-PW-PZ-A1-01	10-17556-RF68G	✓
RF68	EW-PW-PZ-A1-02	10-17557-RF68H	✓
RF68	EW-PW-PZ-A1-03	10-17558-RF68I	✓
RF68	EW-PW-PZ-201	10-17559-RF68J	✓
RF68	EW-PW-PZ-A1-04	10-17560-RF68K	✓
RF68	EW-PW-PZ-A4-01	10-17561-RF68L	✓
RF68	EW-PW-PZ-A4-02	10-17562-RF68M	✓
RF68	EW-PW-01-TB	10-17563-RF68N	✓

DATA VALIDATION REPORT
Port of Seattle - East Waterway Porewater Study
Volatile Organic Compounds by SW846 Method 8260C

This report documents the review of analytical data from the analyses of porewater samples and the associated laboratory and field quality control (QC) samples. Analytical Resources, Inc., Tukwila, Washington, analyzed the samples. Refer to the **Sample Index** for a complete list of samples.

SDG	Number of Samples	Validation Level
RF68	13 Porewater, 1 Trip Blank	Stage 4

I. DATA PACKAGE COMPLETENESS

The laboratory submitted all required deliverables. The laboratory followed adequate corrective action processes and all anomalies were discussed in the case narrative.

II. EDD TO HARDCOPY VERIFICATION

A complete (100%) verification of the electronic data deliverable (EDD) results was performed by comparison to the hardcopy laboratory data package. Laboratory QC results were also verified (10%). No errors were found.

III. TECHNICAL DATA VALIDATION

The QC requirements that were reviewed are listed below.

1	Sample Receipt, Preservation, and Holding Times	1	Field Duplicates
1	Initial Calibration (ICAL)		Internal Standards
1	Continuing Calibration (CCAL)		Target Analyte List
	Laboratory Blanks		Reporting Limits
1	Trip Blanks		Compound Identification
	Surrogate Compounds		Reported Results
	Laboratory Control Samples (LCS/LCSD)	1	Calculation Verification
2	Matrix Spike/Matrix Spike Duplicate (MS/MSD)		

[1] ***Quality control results are discussed below, but no data were qualified.***
[2] ***Quality control outliers that impact the reported data were noted. Data qualifiers were issued as discussed below.***

Sample Receipt, Preservation, and Holding Times

The laboratory noted the presence of small air bubbles in the VOA vials for samples EW-PW-01-TB and EW-PW-P2-A1-02. It was determined that there was no impact on the data and no action was taken.

Initial Calibration

The initial calibration (ICAL) percent relative standard deviations (%RSD) were within the control limit of ±30%. The relative response factor (RRF) values were greater than the minimum of 0.05, with the exception of 2-butanone. The RRF value for this compound is historically low. The responses were stable as indicated by the ICAL %RSD value; therefore no action was taken based on the low RF value.

A second source calibration verification standard was analyzed. The recovery of 2-butanone was greater than the QAPP-specified upper control of 125%. This analyte was not detected in any of the field samples. Reporting limits were unaffected by the potential high bias and no qualification of data was necessary.

Continuing Calibration

The values for the RRF values were greater than the 0.05 minimum control limits, with the exception of 2-butanone. The response for this compound was stable as indicated by the acceptable CCAL %D value; therefore no action was taken. All percent difference (%D) values were within the ±25% control limits.

Trip Blanks

One trip blank, Sample EW-PW-01-TB, was submitted with this SDG. No target analytes were detected in this sample.

Matrix Spike/Matrix Spike Duplicates

The matrix spike/matrix spike duplicate (MS/MSD) analyses were performed using Sample EW-PW-PZ-A4-01. The percent (%R) values for chloromethane, bromomethane, and acrolein were less than the lower control limit of 75% specified in the QAPP. These analytes were not detected in the parent sample; reporting limits were estimated (UJ-8) to indicate a potential low bias.

Trans-1,4-dichloro-2-butene and 2-chloroethylvinylether were not recovered in the MS or MSD samples. These analytes were not detected in the parent sample; and these non-detected results were rejected (R-8).

Field Duplicates

One set of field duplicates was submitted: EW-PW-PZ-A01-03 and EW-PW-PZ-201. There were no positive results for either sample; field precision was acceptable.

Calculation Verification

Several results were verified by recalculation from the raw data. No calculation or transcription errors were noted.

IV. OVERALL ASSESSMENT

As determined by this evaluation, the laboratory followed the specified analytical method. With the exceptions noted above, accuracy was acceptable as demonstrated by the surrogate LCS/LCSD recovery values; precision was acceptable as demonstrated by the MS/MSD, LCS/LCSD, and field duplicate RPD values.

Results were estimated (in the parent sample) based on several compounds in the MS/MSD with recovery outliers. Non-detected results were rejected due to MS/MSD recoveries that were less than 10%.

Data that have been rejected should not be used for any purpose. All other data, as qualified, are acceptable for use.

EcoChem, INC.
Environmental Data Quality

APPENDIX A

DATA QUALIFIER DEFINITIONS
REASON CODES
AND CRITERIA TABLES

DATA VALIDATION QUALIFIER CODES
Based on National Functional Guidelines

The following definitions provide brief explanations of the qualifiers assigned to results in the data review process.

U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents the approximate concentration.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

The following is an EcoChem qualifier that may also be assigned during the data review process:

DNR	Do not report; a more appropriate result is reported from another analysis or dilution.

DATA QUALIFIER REASON CODES

1	Holding Time/Sample Preservation
2	Chromatographic pattern in sample does not match pattern of calibration standard.
3	Compound Confirmation
4	Tentatively Identified Compound (TIC) (associated with NJ only)
5A	Calibration (initial)
5B	Calibration (continuing)
6	Field Blank Contamination
7	Lab Blank Contamination (e.g., method blank, instrument, etc.)
8	Matrix Spike(MS & MSD) Recoveries
9	Precision (all replicates)
10	Laboratory Control Sample Recoveries
11	A more appropriate result is reported (associated with “R” and “DNR” only)
12	Reference Material
13	Surrogate Spike Recoveries (a.k.a., labeled compounds & recovery standards)
14	Other (define in validation report)
15	GFAA Post Digestion Spike Recoveries
16	ICP Serial Dilution % Difference
17	ICP Interference Check Standard Recovery
18	Trip Blank Contamination
19	Internal Standard Performance (e.g., area, retention time, recovery)
20	Linear Range Exceeded
21	Potential False Positives
22	Elevated Detection Limit Due to Interference (i.e., laboratory, chemical and/or matrix)

EcoChem Validation Guidelines for Volatile Analysis by GC/MS
(Based on Organic NFG 1999)

VALIDATION QC ELEMENT	ACCEPTANCE CRITERIA	ACTION	REASON CODE
Cooler Temperature	4°C±2°C Water: HCl to pH < 2	J(+)/UJ(-) if greater than 6 deg. C (EcoChem PJ)	1
Hold Time	Waters: 14 days preserved 7 Days: unpreserved (for aromatics) Solids: 14 Days	J(+)/UJ(-) if hold times exceeded If exceeded by > 3X HT: J(+)/R(-) (EcoChem PJ)	1
Tuning	BFB Beginning of each 12 hour period Method acceptance criteria	R(+/-) all analytes in all samples associated with the tune	5A
Initial Calibration (Minimum 5 stds.)	RRF > 0.05	(EcoChem PJ, see TM-06) If MDL= reporting limit: J(+)/R(-) if RRF < 0.05 If reporting limit > MDL: note in worksheet if RRF <0.05	5A
	%RSD < 30%	(EcoChem PJ, see TM-06) J(+) if %RSD > 30%	5A
Continuing Calibration (Prior to each 12 hr. shift)	RRF > 0.05	(EcoChem PJ, see TM-06) If MDL= reporting limit: J(+)/R(-) if RRF < 0.05 If reporting limit > MDL: note in worksheet if RRF <0.05	5B
	%D <25%	(EcoChem PJ, see TM-06) If > +/-90%: J+/R- If -90% to -26%: J+ (high bias) If 26% to 90%: J+/UJ- (low bias)	5B
Method Blank	One per matrix per batch No results > CRQL	U(+) if sample (+) result is less than CRQL and less than appropriate 5X or 10X rule (raise sample value to CRQL)	7
		U(+) if sample (+) result is greater than or equal to CRQL and less than appropriate 5X and 10X rule (at reported sample value)	7
	No TICs present	R(+) TICs using 10X rule	7
Storage Blank	One per SDG <CRQL	U(+) the specific analyte(s) results in all assoc.samples using the 5x or 10x rule	7
Trip Blank	Frequency as per project QAPP	Same as method blank for positive results remaining in trip blank after method blank qualifiers are assigned	18
Field Blanks (if required in QAPP)	No results > CRQL	Apply 5X/10X rule; U(+) < action level	6

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EcoChem Validation Guidelines for Volatile Analysis by GC/MS
(Based on Organic NFG 1999)

VALIDATION QC ELEMENT	ACCEPTANCE CRITERIA	ACTION	REASON CODE
MS/MSD (recovery)	One per matrix per batch Use method acceptance criteria	Qualify parent only unless other QC indicates systematic problems: J(+) if both %R > UCL J(+)/UJ(-) if both %R < LCL J(+)/R(-) if both %R < 10% PJ if only one %R outlier	8
MS/MSD (RPD)	One per matrix per batch Use method acceptance criteria	J(+) in parent sample if RPD > CL	9
LCS *low conc. H2O VOA*	One per lab batch Within method control limits	J(+) assoc. cmpd if > UCL J(+)/R(-) assoc. cmpd if < LCL J(+)/R(-) all cmpds if half are < LCL	10
LCS *regular VOA (H2O & solid)*	One per lab batch Lab or method control limits	J(+) if %R > UCL J(+)/UJ(-) if %R <LCL J(+)/R(-) if %R < 10% (EcoChem PJ)	10
LCS/LCSD *(if required)*	One set per matrix and batch of 20 samples RPD < 35%	J(+)/UJ(-) assoc. cmpd. in all samples	9
Surrogates	Added to all samples Within method control limits	J(+) if %R >UCL J(+)/UJ(-) if %R <LCL but >10% (see PJ[1]) J(+)/R(-) if <10%	13
Internal Standard (IS)	Added to all samples Acceptable Range: IS area 50% to 200% of CCAL area RT within 30 seconds of CC RT	J(+) if > 200% J(+)/UJ(-) if < 50% J(+)/R(-) if < 25% RT>30 seconds, narrate and Notify PM	19
Field Duplicates	Use QAPP limits. If no QAPP: Solids: RPD <50% OR absolute diff. < 2X RL (for results < 5X RL) Aqueous: RPD <35% OR absolute diff. < 1X RL (for results < 5X RL)	Narrate and qualify if required by project (EcoChem PJ)	9
TICs	Major ions (>10%) in reference must be present in sample; intensities agree within 20%; check identification	NJ the TIC unless: R(+) common laboratory contaminants See Technical Director for ID issues	4
Quantitation/ Identification	RRT within 0.06 of standard RRT Ion relative intensity within 20% of standard All ions in std. at > 10% intensity must be present in sample	See Technical Director if outliers	14 21 (false +)

PJ[1] No action if there are 4+ surrogates and only 1 outlier.

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Environmental Data Quality

APPENDIX B
QUALIFIED DATA SUMMARY TABLE

Qualified Data Summary Table
Port of Seattle East Waterway
Porewater Study

SDG	Sample ID	Laboratory ID	Method	Analyte	Result	Units	Laboratory Qualifiers	Validation Qualifiers	Validation Reason
RF68	EW-PW-PZ-A4-01	10-17561-RF68L	EPA 8260C	trans-1,4-Dichloro-2-butene		ug/l	U	R	8
RF68	EW-PW-PZ-A4-01	10-17561-RF68L	EPA 8260C	Acrolein		ug/l	U	UJ	8
RF68	EW-PW-PZ-A4-01	10-17561-RF68L	EPA 8260C	2-Chloroethylvinylether		ug/l	U	R	8
RF68	EW-PW-PZ-A4-01	10-17561-RF68L	EPA 8260C	Bromomethane		ug/l	U	UJ	8
RF68	EW-PW-PZ-A4-01	10-17561-RF68L	EPA 8260C	Chloromethane		ug/l	U	UJ	8

APPENDIX D

Laboratory Report Forms

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: EW-PW-PZ-A2-01**
 SAMPLE

Lab Sample ID: RF68A
LIMS ID: 10-17550
Matrix: Water
Data Release Authorized:
Reported: 08/02/10

QC Report No: RF68-Windward Environmental
Project: Windward EW Porewater Sampling
08-08-09-43
Date Sampled: 07/21/10
Date Received: 07/26/10

Instrument/Analyst: NT10/PKC
Date Analyzed: 07/29/10 15:51

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.5	< 0.5	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
179601-23-1	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: EW-PW-PZ-A2-01**
 SAMPLE

Lab Sample ID: RF68A
LIMS ID: 10-17550
Matrix: Water
Date Analyzed: 07/29/10 15:51

QC Report No: RF68-Windward Environmental
Project: Windward EW Porewater Sampling
08-08-09-43

CAS Number	Analyte	RL	Result	Q
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	105%
d8-Toluene	100%
Bromofluorobenzene	104%
d4-1,2-Dichlorobenzene	103%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: EW-PW-PZ-A2-02**
 SAMPLE

Lab Sample ID: RF68B
LIMS ID: 10-17551
Matrix: Water
Data Release Authorized:
Reported: 08/02/10

QC Report No: RF68-Windward Environmental
Project: Windward EW Porewater Sampling
08-08-09-43
Date Sampled: 07/21/10
Date Received: 07/26/10

Instrument/Analyst: NT10/PKC
Date Analyzed: 07/29/10 16:17

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.5	< 0.5	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
179601-23-1	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: EW-PW-PZ-A2-02**
 SAMPLE

Lab Sample ID: RF68B
LIMS ID: 10-17551
Matrix: Water
Date Analyzed: 07/29/10 16:17

QC Report No: RF68-Windward Environmental
Project: Windward EW Porewater Sampling
08-08-09-43

CAS Number	Analyte	RL	Result	Q
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	104%
d8-Toluene	99.7%
Bromofluorobenzene	104%
d4-1,2-Dichlorobenzene	102%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: EW-PW-PZ-A2-03**
 SAMPLE

Lab Sample ID: RF68C
LIMS ID: 10-17552
Matrix: Water
Data Release Authorized:
Reported: 08/02/10

QC Report No: RF68-Windward Environmental
Project: Windward EW Porewater Sampling
08-08-09-43
Date Sampled: 07/21/10
Date Received: 07/26/10

Instrument/Analyst: NT10/PKC
Date Analyzed: 07/29/10 16:42

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.5	< 0.5	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	**cis-1,2-Dichloroethene**	**0.2**	**0.3**	
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
179601-23-1	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: EW-PW-PZ-A2-03**
 SAMPLE

Lab Sample ID: RF68C
LIMS ID: 10-17552
Matrix: Water
Date Analyzed: 07/29/10 16:42

QC Report No: RF68-Windward Environmental
Project: Windward EW Porewater Sampling
08-08-09-43

CAS Number	Analyte	RL	Result	Q
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	106%
d8-Toluene	97.6%
Bromofluorobenzene	104%
d4-1,2-Dichlorobenzene	103%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: EW-PW-PZ-A3-01**
 SAMPLE

Lab Sample ID: RF68D
LIMS ID: 10-17553
Matrix: Water
Data Release Authorized:
Reported: 08/02/10

QC Report No: RF68-Windward Environmental
Project: Windward EW Porewater Sampling
08-08-09-43
Date Sampled: 07/23/10
Date Received: 07/26/10

Instrument/Analyst: NT10/PKC
Date Analyzed: 07/29/10 17:08

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.5	< 0.5	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
179601-23-1	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: EW-PW-PZ-A3-01**
 SAMPLE

Lab Sample ID: RF68D
LIMS ID: 10-17553
Matrix: Water
Date Analyzed: 07/29/10 17:08

QC Report No: RF68-Windward Environmental
Project: Windward EW Porewater Sampling
08-08-09-43

CAS Number	Analyte	RL	Result	Q
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	107%
d8-Toluene	97.5%
Bromofluorobenzene	104%
d4-1,2-Dichlorobenzene	104%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: EW-PW-PZ-A3-02**
 SAMPLE

Lab Sample ID: RF68E
LIMS ID: 10-17554
Matrix: Water
Data Release Authorized:
Reported: 08/02/10

QC Report No: RF68-Windward Environmental
Project: Windward EW Porewater Sampling 08-08-09-43
Date Sampled: 07/23/10
Date Received: 07/26/10

Instrument/Analyst: NT10/PKC
Date Analyzed: 07/29/10 17:33

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.5	< 0.5	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
179601-23-1	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: EW-PW-PZ-A3-02**
 SAMPLE

Lab Sample ID: RF68E
LIMS ID: 10-17554
Matrix: Water
Date Analyzed: 07/29/10 17:33

QC Report No: RF68-Windward Environmental
Project: Windward EW Porewater Sampling
08-08-09-43

CAS Number	Analyte	RL	Result	Q
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	111%
d8-Toluene	99.3%
Bromofluorobenzene	103%
d4-1,2-Dichlorobenzene	104%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: EW-PW-PZ-A3-03**
 SAMPLE

Lab Sample ID: RF68F
LIMS ID: 10-17555
Matrix: Water
Data Release Authorized:
Reported: 08/02/10

QC Report No: RF68-Windward Environmental
Project: Windward EW Porewater Sampling
08-08-09-43
Date Sampled: 07/23/10
Date Received: 07/26/10

Instrument/Analyst: NT10/PKC
Date Analyzed: 07/29/10 17:58

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.5	< 0.5	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
179601-23-1	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: EW-PW-PZ-A3-03**
 SAMPLE

Lab Sample ID: RF68F
LIMS ID: 10-17555
Matrix: Water
Date Analyzed: 07/29/10 17:58

QC Report No: RF68-Windward Environmental
Project: Windward EW Porewater Sampling
08-08-09-43

CAS Number	Analyte	RL	Result	Q
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	113%
d8-Toluene	99.5%
Bromofluorobenzene	105%
d4-1,2-Dichlorobenzene	106%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: EW-PW-PZ-A1-01**
 SAMPLE

Lab Sample ID: RF68G
LIMS ID: 10-17556
Matrix: Water
Data Release Authorized:
Reported: 08/02/10

QC Report No: RF68-Windward Environmental
Project: Windward EW Porewater Sampling 08-08-09-43
Date Sampled: 07/24/10
Date Received: 07/26/10

Instrument/Analyst: NT10/PKC
Date Analyzed: 07/29/10 18:23

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.5	< 0.5	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
179601-23-1	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: EW-PW-PZ-A1-01**
 SAMPLE

Lab Sample ID: RF68G
LIMS ID: 10-17556
Matrix: Water
Date Analyzed: 07/29/10 18:23

QC Report No: RF68-Windward Environmental
Project: Windward EW Porewater Sampling
08-08-09-43

CAS Number	Analyte	RL	Result	Q
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	105%
d8-Toluene	101%
Bromofluorobenzene	105%
d4-1,2-Dichlorobenzene	104%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: EW-PW-PZ-A1-02**
 SAMPLE

Lab Sample ID: RF68H
LIMS ID: 10-17557
Matrix: Water
Data Release Authorized:
Reported: 08/02/10

QC Report No: RF68-Windward Environmental
Project: Windward EW Porewater Sampling
08-08-09-43
Date Sampled: 07/24/10
Date Received: 07/26/10

Instrument/Analyst: NT10/PKC
Date Analyzed: 07/29/10 18:49

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.5	< 0.5	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
179601-23-1	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: EW-PW-PZ-A1-02**
 SAMPLE

Lab Sample ID: RF68H
LIMS ID: 10-17557
Matrix: Water
Date Analyzed: 07/29/10 18:49

QC Report No: RF68-Windward Environmental
Project: Windward EW Porewater Sampling
08-08-09-43

CAS Number	Analyte	RL	Result	Q
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	107%
d8-Toluene	100%
Bromofluorobenzene	105%
d4-1,2-Dichlorobenzene	105%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: EW-PW-PZ-A1-03**
 SAMPLE

Lab Sample ID: RF68I
LIMS ID: 10-17558
Matrix: Water
Data Release Authorized:
Reported: 08/02/10

QC Report No: RF68-Windward Environmental
Project: Windward EW Porewater Sampling 08-08-09-43
Date Sampled: 07/24/10
Date Received: 07/26/10

Instrument/Analyst: NT10/PKC
Date Analyzed: 07/29/10 19:14

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.5	< 0.5	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
179601-23-1	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: EW-PW-PZ-A1-03**
 SAMPLE

Lab Sample ID: RF68I
LIMS ID: 10-17558
Matrix: Water
Date Analyzed: 07/29/10 19:14

QC Report No: RF68-Windward Environmental
Project: Windward EW Porewater Sampling
08-08-09-43

CAS Number	Analyte	RL	Result	Q
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	106%
d8-Toluene	98.0%
Bromofluorobenzene	104%
d4-1,2-Dichlorobenzene	104%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: EW-PW-PZ-201**
 SAMPLE

Lab Sample ID: RF68J
LIMS ID: 10-17559
Matrix: Water
Data Release Authorized:
Reported: 08/02/10

QC Report No: RF68-Windward Environmental
Project: Windward EW Porewater Sampling
08-08-09-43
Date Sampled: 07/24/10
Date Received: 07/26/10

Instrument/Analyst: NT10/PKC
Date Analyzed: 07/29/10 19:40

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.5	< 0.5	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
179601-23-1	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: EW-PW-PZ-201**
 SAMPLE

Lab Sample ID: RF68J
LIMS ID: 10-17559
Matrix: Water
Date Analyzed: 07/29/10 19:40

QC Report No: RF68-Windward Environmental
Project: Windward EW Porewater Sampling
08-08-09-43

CAS Number	Analyte	RL	Result	Q
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	105%
d8-Toluene	98.7%
Bromofluorobenzene	106%
d4-1,2-Dichlorobenzene	103%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: EW-PW-PZ-A1-04**
 SAMPLE

Lab Sample ID: RF68K
LIMS ID: 10-17560
Matrix: Water
Data Release Authorized:
Reported: 08/02/10

QC Report No: RF68-Windward Environmental
Project: Windward EW Porewater Sampling
08-08-09-43
Date Sampled: 07/24/10
Date Received: 07/26/10

Instrument/Analyst: NT10/PKC
Date Analyzed: 07/29/10 20:05

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.5	< 0.5	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
179601-23-1	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: EW-PW-PZ-A1-04**
 SAMPLE

Lab Sample ID: RF68K
LIMS ID: 10-17560
Matrix: Water
Date Analyzed: 07/29/10 20:05

QC Report No: RF68-Windward Environmental
Project: Windward EW Porewater Sampling
08-08-09-43

CAS Number	Analyte	RL	Result	Q
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	107%
d8-Toluene	100%
Bromofluorobenzene	105%
d4-1,2-Dichlorobenzene	103%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: EW-PW-PZ-A4-01**
 SAMPLE

Lab Sample ID: RF68L
LIMS ID: 10-17561
Matrix: Water
Data Release Authorized:
Reported: 08/02/10

QC Report No: RF68-Windward Environmental
Project: Windward EW Porewater Sampling
08-08-09-43
Date Sampled: 07/25/10
Date Received: 07/26/10

Instrument/Analyst: NT10/PKC
Date Analyzed: 07/29/10 20:31

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.5	< 0.5	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	**Benzene**	**0.2**	**0.3**	
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
179601-23-1	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: EW-PW-PZ-A4-01**
 SAMPLE

Lab Sample ID: RF68L
LIMS ID: 10-17561
Matrix: Water
Date Analyzed: 07/29/10 20:31

QC Report No: RF68-Windward Environmental
Project: Windward EW Porewater Sampling
08-08-09-43

CAS Number	Analyte	RL	Result	Q
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	**Naphthalene**	**0.5**	**48**	
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	108%
d8-Toluene	99.7%
Bromofluorobenzene	104%
d4-1,2-Dichlorobenzene	106%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: EW-PW-PZ-A4-02**
 SAMPLE

Lab Sample ID: RF68M
LIMS ID: 10-17562
Matrix: Water
Data Release Authorized:
Reported: 08/02/10

QC Report No: RF68-Windward Environmental
Project: Windward EW Porewater Sampling
08-08-09-43
Date Sampled: 07/25/10
Date Received: 07/26/10

Instrument/Analyst: NT10/PKC
Date Analyzed: 07/29/10 20:56

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.5	< 0.5	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	**Benzene**	**0.2**	**0.2**	
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
179601-23-1	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: EW-PW-PZ-A4-02**
 SAMPLE

Lab Sample ID: RF68M
LIMS ID: 10-17562
Matrix: Water
Date Analyzed: 07/29/10 20:56

QC Report No: RF68-Windward Environmental
Project: Windward EW Porewater Sampling
08-08-09-43

CAS Number	Analyte	RL	Result	Q
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	**Naphthalene**	**0.5**	**3.4**	
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	108%
d8-Toluene	99.7%
Bromofluorobenzene	106%
d4-1,2-Dichlorobenzene	106%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: EW-PW-01-TB**
 SAMPLE

Lab Sample ID: RF68N
LIMS ID: 10-17563
Matrix: Water
Data Release Authorized:
Reported: 08/02/10

QC Report No: RF68-Windward Environmental
Project: Windward EW Porewater Sampling 08-08-09-43
Date Sampled: 07/21/10
Date Received: 07/26/10

Instrument/Analyst: NT10/PKC
Date Analyzed: 07/29/10 12:51

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.5	< 0.5	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
179601-23-1	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: EW-PW-01-TB**
 SAMPLE

Lab Sample ID: RF68N
LIMS ID: 10-17563
Matrix: Water
Date Analyzed: 07/29/10 12:51

QC Report No: RF68-Windward Environmental
Project: Windward EW Porewater Sampling
08-08-09-43

CAS Number	Analyte	RL	Result	Q
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	101%
d8-Toluene	97.3%
Bromofluorobenzene	103%
d4-1,2-Dichlorobenzene	101%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: EW-PW-PZ-A4-01**
 MATRIX SPIKE

Lab Sample ID: RF68L
LIMS ID: 10-17561
Matrix: Water
Data Release Authorized:
Reported: 08/02/10

QC Report No: RF68-Windward Environmental
Project: Windward EW Porewater Sampling 08-08-09-43
Date Sampled: 07/25/10
Date Received: 07/26/10

Instrument/Analyst: NT10/PKC
Date Analyzed: 07/29/10 21:21

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.5	---	
74-83-9	Bromomethane	1.0	---	
75-01-4	Vinyl Chloride	0.2	---	
75-00-3	Chloroethane	0.2	---	
75-09-2	Methylene Chloride	0.5	---	
67-64-1	Acetone	5.0	---	
75-15-0	Carbon Disulfide	0.2	---	
75-35-4	1,1-Dichloroethene	0.2	---	
75-34-3	1,1-Dichloroethane	0.2	---	
156-60-5	trans-1,2-Dichloroethene	0.2	---	
156-59-2	cis-1,2-Dichloroethene	0.2	---	
67-66-3	Chloroform	0.2	---	
107-06-2	1,2-Dichloroethane	0.2	---	
78-93-3	2-Butanone	5.0	---	
71-55-6	1,1,1-Trichloroethane	0.2	---	
56-23-5	Carbon Tetrachloride	0.2	---	
108-05-4	Vinyl Acetate	1.0	---	
75-27-4	Bromodichloromethane	0.2	---	
78-87-5	1,2-Dichloropropane	0.2	---	
10061-01-5	cis-1,3-Dichloropropene	0.2	---	
79-01-6	Trichloroethene	0.2	---	
124-48-1	Dibromochloromethane	0.2	---	
79-00-5	1,1,2-Trichloroethane	0.2	---	
71-43-2	Benzene	0.2	---	
10061-02-6	trans-1,3-Dichloropropene	0.2	---	
110-75-8	2-Chloroethylvinylether	1.0	---	
75-25-2	Bromoform	0.2	---	
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	---	
591-78-6	2-Hexanone	5.0	---	
127-18-4	Tetrachloroethene	0.2	---	
79-34-5	1,1,2,2-Tetrachloroethane	0.2	---	
108-88-3	Toluene	0.2	---	
108-90-7	Chlorobenzene	0.2	---	
100-41-4	Ethylbenzene	0.2	---	
100-42-5	Styrene	0.2	---	
75-69-4	Trichlorofluoromethane	0.2	---	
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	---	
179601-23-1	m,p-Xylene	0.4	---	
95-47-6	o-Xylene	0.2	---	
95-50-1	1,2-Dichlorobenzene	0.2	---	
541-73-1	1,3-Dichlorobenzene	0.2	---	
106-46-7	1,4-Dichlorobenzene	0.2	---	
107-02-8	Acrolein	5.0	---	

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: EW-PW-PZ-A4-01**
 MATRIX SPIKE

Lab Sample ID: RF68L
LIMS ID: 10-17561
Matrix: Water
Date Analyzed: 07/29/10 21:21

QC Report No: RF68-Windward Environmental
Project: Windward EW Porewater Sampling
08-08-09-43

CAS Number	Analyte	RL	Result	Q
74-88-4	Methyl Iodide	1.0	---	
74-96-4	Bromoethane	0.2	---	
107-13-1	Acrylonitrile	1.0	---	
563-58-6	1,1-Dichloropropene	0.2	---	
74-95-3	Dibromomethane	0.2	---	
630-20-6	1,1,1,2-Tetrachloroethane	0.2	---	
96-12-8	1,2-Dibromo-3-chloropropane	0.5	---	
96-18-4	1,2,3-Trichloropropane	0.5	---	
110-57-6	trans-1,4-Dichloro-2-butene	1.0	---	
108-67-8	1,3,5-Trimethylbenzene	0.2	---	
95-63-6	1,2,4-Trimethylbenzene	0.2	---	
87-68-3	Hexachlorobutadiene	0.5	---	
106-93-4	Ethylene Dibromide	0.2	---	
74-97-5	Bromochloromethane	0.2	---	
594-20-7	2,2-Dichloropropane	0.2	---	
142-28-9	1,3-Dichloropropane	0.2	---	
98-82-8	Isopropylbenzene	0.2	---	
103-65-1	n-Propylbenzene	0.2	---	
108-86-1	Bromobenzene	0.2	---	
95-49-8	2-Chlorotoluene	0.2	---	
106-43-4	4-Chlorotoluene	0.2	---	
98-06-6	tert-Butylbenzene	0.2	---	
135-98-8	sec-Butylbenzene	0.2	---	
99-87-6	4-Isopropyltoluene	0.2	---	
104-51-8	n-Butylbenzene	0.2	---	
120-82-1	1,2,4-Trichlorobenzene	0.5	---	
91-20-3	Naphthalene	0.5	---	
87-61-6	1,2,3-Trichlorobenzene	0.5	---	

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	104%
d8-Toluene	99.9%
Bromofluorobenzene	104%
d4-1,2-Dichlorobenzene	98.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: EW-PW-PZ-A4-01**
 MATRIX SPIKE DUP

Lab Sample ID: RF68L
LIMS ID: 10-17561
Matrix: Water
Data Release Authorized:
Reported: 08/02/10

QC Report No: RF68-Windward Environmental
Project: Windward EW Porewater Sampling
08-08-09-43
Date Sampled: 07/25/10
Date Received: 07/26/10

Instrument/Analyst: NT10/PKC
Date Analyzed: 07/29/10 21:46

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.5	---	
74-83-9	Bromomethane	1.0	---	
75-01-4	Vinyl Chloride	0.2	---	
75-00-3	Chloroethane	0.2	---	
75-09-2	Methylene Chloride	0.5	---	
67-64-1	Acetone	5.0	---	
75-15-0	Carbon Disulfide	0.2	---	
75-35-4	1,1-Dichloroethene	0.2	---	
75-34-3	1,1-Dichloroethane	0.2	---	
156-60-5	trans-1,2-Dichloroethene	0.2	---	
156-59-2	cis-1,2-Dichloroethene	0.2	---	
67-66-3	Chloroform	0.2	---	
107-06-2	1,2-Dichloroethane	0.2	---	
78-93-3	2-Butanone	5.0	---	
71-55-6	1,1,1-Trichloroethane	0.2	---	
56-23-5	Carbon Tetrachloride	0.2	---	
108-05-4	Vinyl Acetate	1.0	---	
75-27-4	Bromodichloromethane	0.2	---	
78-87-5	1,2-Dichloropropane	0.2	---	
10061-01-5	cis-1,3-Dichloropropene	0.2	---	
79-01-6	Trichloroethene	0.2	---	
124-48-1	Dibromochloromethane	0.2	---	
79-00-5	1,1,2-Trichloroethane	0.2	---	
71-43-2	Benzene	0.2	---	
10061-02-6	trans-1,3-Dichloropropene	0.2	---	
110-75-8	2-Chloroethylvinylether	1.0	---	
75-25-2	Bromoform	0.2	---	
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	---	
591-78-6	2-Hexanone	5.0	---	
127-18-4	Tetrachloroethene	0.2	---	
79-34-5	1,1,2,2-Tetrachloroethane	0.2	---	
108-88-3	Toluene	0.2	---	
108-90-7	Chlorobenzene	0.2	---	
100-41-4	Ethylbenzene	0.2	---	
100-42-5	Styrene	0.2	---	
75-69-4	Trichlorofluoromethane	0.2	---	
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	---	
179601-23-1	m,p-Xylene	0.4	---	
95-47-6	o-Xylene	0.2	---	
95-50-1	1,2-Dichlorobenzene	0.2	---	
541-73-1	1,3-Dichlorobenzene	0.2	---	
106-46-7	1,4-Dichlorobenzene	0.2	---	
107-02-8	Acrolein	5.0	---	

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: EW-PW-PZ-A4-01**
 MATRIX SPIKE DUP

Lab Sample ID: RF68L
LIMS ID: 10-17561
Matrix: Water
Date Analyzed: 07/29/10 21:46

QC Report No: RF68-Windward Environmental
Project: Windward EW Porewater Sampling
08-08-09-43

CAS Number	Analyte	RL	Result	Q
74-88-4	Methyl Iodide	1.0	---	
74-96-4	Bromoethane	0.2	---	
107-13-1	Acrylonitrile	1.0	---	
563-58-6	1,1-Dichloropropene	0.2	---	
74-95-3	Dibromomethane	0.2	---	
630-20-6	1,1,1,2-Tetrachloroethane	0.2	---	
96-12-8	1,2-Dibromo-3-chloropropane	0.5	---	
96-18-4	1,2,3-Trichloropropane	0.5	---	
110-57-6	trans-1,4-Dichloro-2-butene	1.0	---	
108-67-8	1,3,5-Trimethylbenzene	0.2	---	
95-63-6	1,2,4-Trimethylbenzene	0.2	---	
87-68-3	Hexachlorobutadiene	0.5	---	
106-93-4	Ethylene Dibromide	0.2	---	
74-97-5	Bromochloromethane	0.2	---	
594-20-7	2,2-Dichloropropane	0.2	---	
142-28-9	1,3-Dichloropropane	0.2	---	
98-82-8	Isopropylbenzene	0.2	---	
103-65-1	n-Propylbenzene	0.2	---	
108-86-1	Bromobenzene	0.2	---	
95-49-8	2-Chlorotoluene	0.2	---	
106-43-4	4-Chlorotoluene	0.2	---	
98-06-6	tert-Butylbenzene	0.2	---	
135-98-8	sec-Butylbenzene	0.2	---	
99-87-6	4-Isopropyltoluene	0.2	---	
104-51-8	n-Butylbenzene	0.2	---	
120-82-1	1,2,4-Trichlorobenzene	0.5	---	
91-20-3	Naphthalene	0.5	---	
87-61-6	1,2,3-Trichlorobenzene	0.5	---	

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	103%
d8-Toluene	101%
Bromofluorobenzene	105%
d4-1,2-Dichlorobenzene	98.9%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MB-072910**
 METHOD BLANK

Lab Sample ID: MB-072910
LIMS ID: 10-17550
Matrix: Water
Data Release Authorized:
Reported: 08/02/10

QC Report No: RF68-Windward Environmental
Project: Windward EW Porewater Sampling
08-08-09-43
Date Sampled: NA
Date Received: NA

Instrument/Analyst: NT10/PKC
Date Analyzed: 07/29/10 12:19

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.5	< 0.5	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
179601-23-1	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MB-072910**
 METHOD BLANK

Lab Sample ID: MB-072910
LIMS ID: 10-17550
Matrix: Water
Date Analyzed: 07/29/10 12:19

QC Report No: RF68-Windward Environmental
Project: Windward EW Porewater Sampling
08-08-09-43

CAS Number	Analyte	RL	Result	Q
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	103%
d8-Toluene	97.4%
Bromofluorobenzene	103%
d4-1,2-Dichlorobenzene	103%

APPENDIX E

Field Logbook, Field Forms, and Chain of Custody Forms

7/21/10

5:50 Meet at Jack Perry Access
Crew: Bert Bergquist
Joanna Flover
Rick Berg
Sharon Velinas: USACE
Curt Black
(Windward)

6:10 Arrive at Sampling Area 2 and start putting flags on beach at ≈ 0 ft tide

6:25 Collect first salinity screening sample at S. end of beach. #1

6:40 Try to place EPA piezometer at center of beach but coarse substrate so we used the pipe method.
RB and JB are scoping the beach to see if EPA piezometers will work

6:51 Collect salinity reading from pipe at center of beach. #2

6:55 Piezometer was inserted at N. end of beach so we took a salinity reading there. #3

7:05 Two more piezometers were

7/21/10

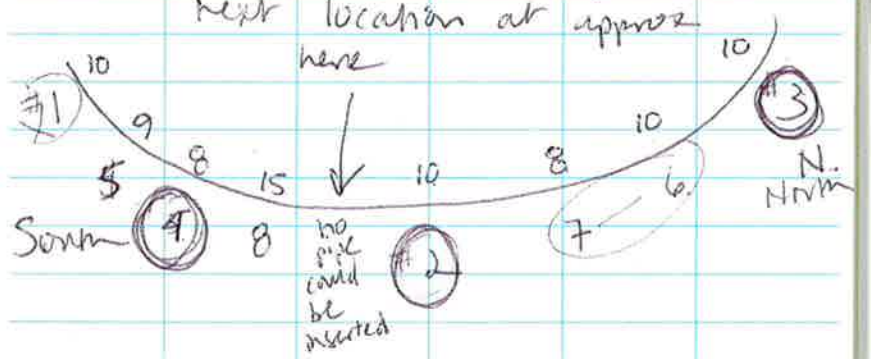
inserted (A and S) at the S. end of the beach. The rest will need to be collected by pipes. We will insert about 4 more pipes so we can start sampling at 8:00.

7:06 Collect salinity readings at each of the S. end piezometers.

7:17 Collect salinity reading at one of the piezometers at the northern end. #6 (#4, #5)

7:27 Collect salinity reading at the iron pipe at #7. Slow producer of water

7:40 Unsuccessful at getting a screen in with the pipe at next location at approx



7/21/10

748 Salinity reading at # 8 is 16 ppt, so we are trying to reinsert the pipe for another reading.

7:55 Repeat reading was 15 ppt.

8:05 Decided to sample at screening locations 1, 2, and 3 (at 1 because the lowest salinity and 2 and 3 for spatial

8:10 collected VOC sample at 1 labeled as EW-PW-P2-A2-01. Conventionals did not quite stabilize but we needed to collect sample because we were getting sand in the sample.

818 Move to screening location 2 to collect sample EW-PW-P2-A2-02.

830 collect VOC sample at this location.

838 Move to screening location 3 to collect sample EW-PW-P2-A2-03

0850 collect VOC sample at this location

0904 leave sampling area

0915 Arrive back at Jack Perry Access Park.
Done for the day.

Brent Bryant
7/21/10

7/23/10

0645 Meet at 1st Ave S. boat launch w/ Dave Mullins and motor to Jack Perry Access to pick up Curt and Sharon

Crew: Benit Bergquist
Mara Irby
Curt Black EPA
Sharon Celinas USACE

0800 Pick up Sharon's Curt.

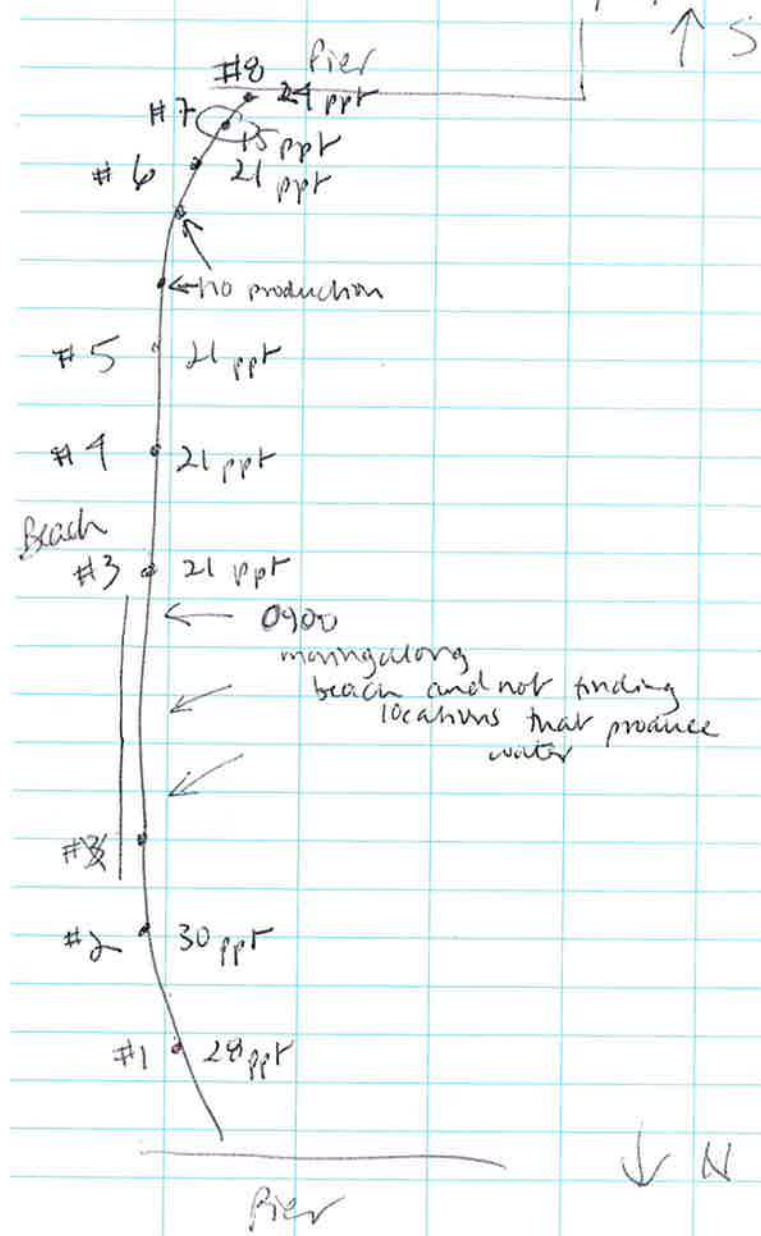
0815 Arrive at T-30 beacon and start flagging areas for potential sampling. Very rocky, gravelly beach so we won't be able to use piezometers. We only flagged where we thought we can get a pipe in, rather than every 10 ft.

0825 Drove in first pipe at location near N. pier (#1) Salinity = 28

0830 Drove pipe at #2
Salinity = 30

0836 Drove pipe ~~at #3~~ S. of #2
Salinity =

7/23/10



~~at #3~~ 7/23/10

Pipe^ didn't produce any water so no salinity reading. Drove another pipe.

0843 Again no water produced. Tried another spot and no water.

0850 Tried again - no water

0854 Continued moving down the beach to find a location that will produce water. Looks like clay material clogging up the screen.

0910 Produced water at #3
salinity = 21 ppt

0915 Location #4
salinity = 21 ppt

0920 Location #5
salinity = 21 ppt

0930 Tried a location right near #5 but deeper (~2 ft) to see if salinity is lower but it is still high (26 ppt).

0936 No water production at next location

7/23/10

0941 Again no production at this next location.

0945 Location #6
salinity = 21 ppt

0952 Location #7
salinity = 15 ppt

0956 Location #8
salinity = 24 ppt

1020 Proceed to collect sample at Location #7
EW-PW-P2-A3-01

1029 Move to location #4 to collect next sample
EW-PW-P2-A3-02

1038 salinity was 15 ppt when we first started pumping and went up to 20 as we took water quality readings. Maybe pumping so much we are pulling up saline water. Salinity reading on Horiba is not accurate, so we are using the refractometer.

1045 Collected sample at A3-02

1050 Move to Location #1 to collect EW-PW-P2-A3-03

1105 Collect VOC sample at A3-03

11:15 Drop off Curt and Sharon at Jack Perry and head back to 1st Ave South.

12:00 Arrive at 1st Ave South End of day

Bert Berg

7/23/10

7/24/10

0830 Meet at sampling Area 1.
Crew: Curt Black EPA
Sharon Gelinas USACE
Jenny Buenning
Bert Bergquist

0840 Jenny & Sharon started marking the 0 ft tide level with flags. Starting at S. end of beach.

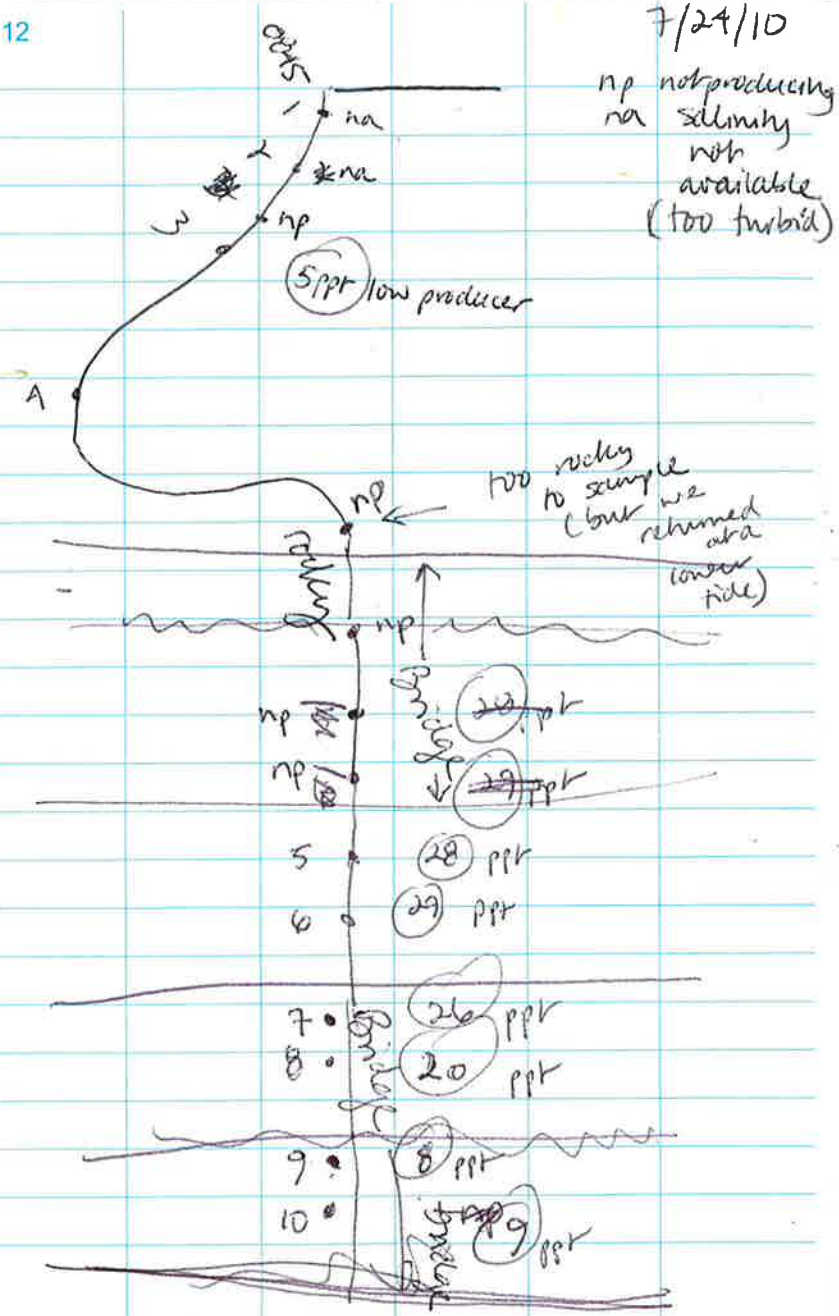
0845 Try piezometer at first screening location. Too turbid to read salinity. Surface salinity = 24 Deeper (~2-3 ft) even more turbid.

0859 Second location also too turbid.

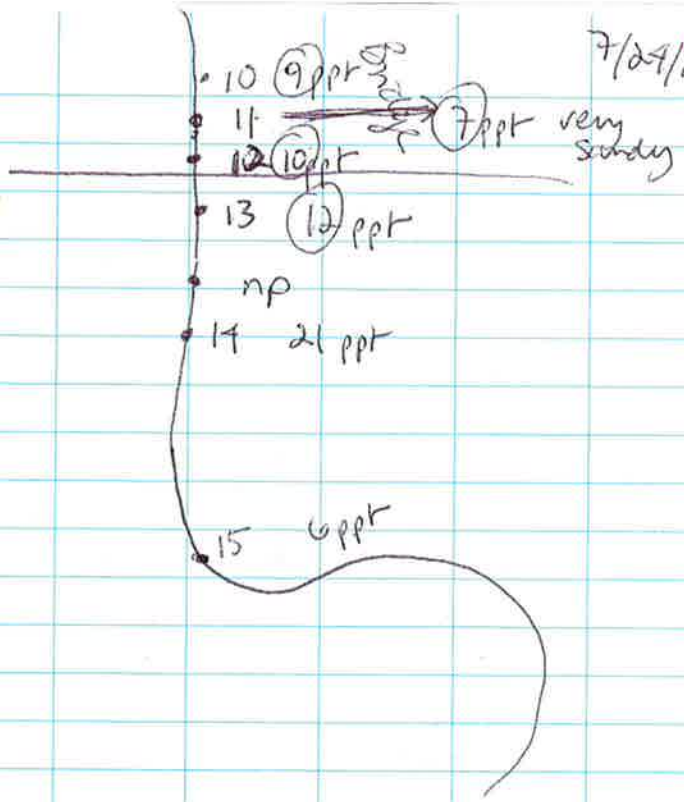
0905 Continue along beach see map

0930 Skipped an area of beach because of time considerations and rocky area.
Sampled salinity at #5

7/24/10


np not producing
na sediment not available (too turbid)
1 na
2 na
3 np
5 ppt low producer
4
too rocky to sample (but we returned at a lower tide)
np
np
np
5 28 ppt
6 29 ppt
7 26 ppt
8 20 ppt
9 8 ppt
10 19 ppt

7/24/10


10 9 ppt
11 7 ppt very sandy
12 10 ppt
13 12 ppt
np
14 21 ppt
15 6 ppt

7/24/10

0945 Sampled at 6, 7 & 8
0956 sampled 9, 10, 11 & 12
1005 sampled 13 and 14 and 15
1015 Head back to rocky area that we skipped earlier
1025 Inserted 5 ft iron pipe (mini-well) at location just S. of bridges because not producing at shallower depth using 3 ft pipe.
1045 collected sample at screening location # 3. Very low producer, but the only location in this area where we could get water production and a salinity reading. Weren't able to get water quality measurements (EW-PW-P2-A1-01)
1100 collected VOC sample at screening location 10. (EW-PW-P2-A1-02) collected before WQ parameters because salinity may change. Had problems with vials - there are bubbles in the vials no matter how we try to fill them. It doesn't appear to be air in the sample.

1123 Move to screening location 15 (EW-PW-P2-A1-03) start taking WQ readings
1135 collect VOC sample
1138 Check salinity again at locations 12 and 13
12 = 5 ppt
13 = 10 ppt
Decide to sample at 12 (EW-PW-P2-~~A1-03~~) A1-04
1145 collect VOC sample Bottles filling OK now (no air bubbles)
1200 Finished sampling for the day

Bart Brit
7/24/10

7/25/10

1000 Arrive at Jack Perry Access (Area 4) and carry equipment down to beach.
Crew: Benit Bergquist
Curt Black EPA
Sharon Celinas USACE

1015 Start screening for salinity at location 1 with miniwell.

10:19 Location 2 - high salinity

10:20 Try longer 5 ft iron pipe to see if there is fresher water deeper.

10:27 Move to middle of the beach. No water at location 3, with shallow or deeper pipe.

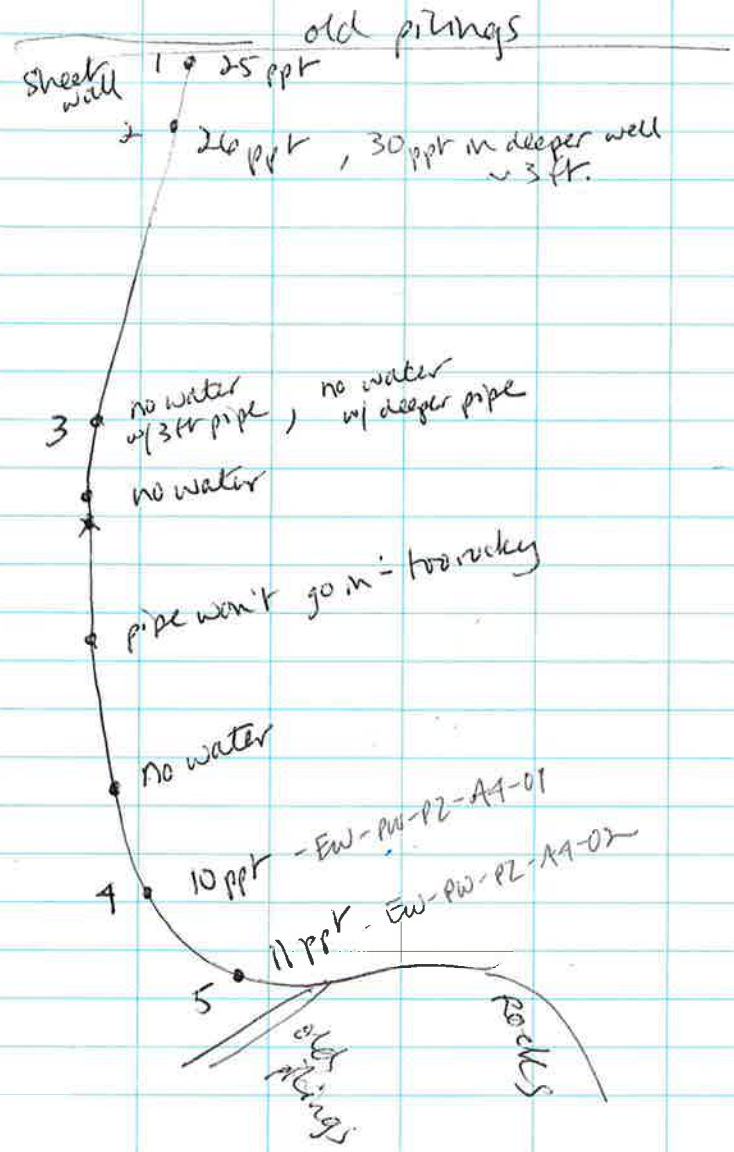
10:35 No pipe will go into sediment - too rocky.

~~10:43~~ 1052 Sampled salinity at location 4 and 5

1103 Move back to Location 1, now that tide is lower, to see if salinity is lower. Still 26 ppt.

1110 Try again at location 2. 30 ppt

7/25/10



7/25/10

1116 Try the middle of the beach one more time. No water. Will collect samples at locations 4 and 5.

11:24 Start collecting WQ readings at 4.
(EW-PW-P2-A4-01)

1130 collect VOC samples, QA/QC volume collected here (5 vials)

1145 collect VOC samples at location 5 (EW-PW-P2-A4-02)

1200 Finish sampling and leave Jack Perry Park

Brent [illegible]

End of sampling event

FORM 1. POREWATER PIEZOMETER COLLECTION FORM

Project Name: EW porewater sampling **Project Task:**

Date: 7/24/10 **Crew:** JB, BB, CB, SG

Weather: Sunny **Collection Method:** Piezometer

Location ID: EW-PW-P2-A1-C	Easting (x): 122.34490	Northing (y): 47.57097	Time: 1045			
Temp	**SpC**	**DO**	**pH**	**ORP**	**Salinity**	
1 —	1 —	1 —	1 —	1 —	1 ~~2~~ 2	
2	2	2	2	2	2	
3	3	3	3	3	3	
4	4	4	4	4	4	
5	5	5	5	5	5	
6	6	6	6	6	6	

Comments: not enough water produced to obtain water quality readings

Screening location 5, piezometer method

Turb.
29.4
33

Location ID: EW-PW-P2-A1-C	Easting (x): 122.34470	Northing (y): 47.57164	Time: 1100			
Temp °C	**SpC**	**DO**	**pH**	**ORP**	**Salinity**	
1 14	1 0.649	1 5.9	1 7.57	1 -207	1 5	
2 13.7	2 0.677	2 5.39	2 7.56	2 -216	2 5	
3	3	3	3	3	3	
4	4	4	4	4	4	
5	5	5	5	5	5	
6	6	6	6	6	6	

Comments: Salinity = 2 ppt at start of sample collected and 5 ppt at end.

Collected sample @ salinity 2 ppt. Sample collected prior to collecting other water quality parameters to ensure ample volume of water to collect full sample.

Screening location 10, mini-well method

FORM 1. POREWATER PIEZOMETER COLLECTION FORM

Project Name: EW Porewater sampling **Project Task:**

Date: 7/24/10 **Crew:** BB, JB, CB, SG

Weather: sunny **Collection Method:** Piezometer

Turb.

68.5
75.8
30.5

Location ID: EW-PW-PZ-A1-03	Long ~~Easting (x)~~: W 122°.34454	Lat ~~Northing (y)~~: N 47°.57186	Time: 1135			
Temp	SpC	DO	pH	ORP	Salinity	
1 14.2	1 0.521	1 5.573	1 8.01	1 -189	1 5	11:25
2 13.9	2 0.572	2 4.91	2 8.07	2 -193	2 5	11:28
3 13.8	3 0.591	3 4.69	3 8.1	3 -196	3 5	11:30
4	4	4	4	4	4	
5	5	5	5	5	5	
6	6	6	6	6	6	

Comments:

Field duplicate at this location
Salinity = 5 ppt at end of sampling

Piezometer sampling method.
Screening location 15

Turb.

94.8
245

Location ID: EW-PW-PZ-A1-04	Long ~~Easting (x)~~: 122°.34466	Lat ~~Northing (y)~~: 47°.57174	Time: 11:50			
Temp	SpC	DO	pH	ORP	Salinity	
1 13.4	1 0.764	1 5.616	1 7.46	1 -85	1 8	11:43
2 13.7	2 0.77	2 4.98	2 7.27	2 -88	2 9	11:45
3	3	3	3	3	3	
4	4	4	4	4	4	
5	5	5	5	5	5	
6	6	6	6	6	6	

Comments:

Mini well location. Salinity reading after sample collection 9 ppt. Coords. in decimal degrees.
Screening location 12

FORM 1. POREWATER PIEZOMETER COLLECTION FORM

Project Name: EW Porewater Sampling **Project Task:**

Date: 7/21/10 **Crew:** RB, JF, BB, SG, CB

Weather: foggy/overcast **Collection Method:** Piezometer

Location ID: EW-PW-PZ-A2-01	Easting (x): 122.34029	Northing (y): 47.57813	Time: 08:10

Turb	Temp °C	SpC S/m	DO mg/L	pH	ORP	Salinity %	Time
27.9	1 14.0	1 0.192	1 5.71	1 6.36	1 147	1 0.1	8:03
25.2	2 13.8	2 0.211	2 4.39	2 6.67	2 92	2 0.1	8:05
40.4	3 13.8	3 0.220	3 4.17	3 6.74	3 43	3 0.1	8:08
37.1	4 13.8	4 0.235	4 4.06	4 6.74	4 14	4 0.1	8:10
	5	5	5	5	5	5	
	6	6	6	6	6	6	

Comments:

Needed to collect sample after 4th reading because of sand coming up through the piezometer

Range finder readings to ~~telephone poles on either side of bridge~~ walls at right angles = 9 yds and 33 yds

GPS reading with alternate GPS = ~~47° 34.704~~ ~~122° 20.419~~ 8 ft accuracy

47 34.684

122 20.416

Location ID: EW-PW-PZ-A2-02	Easting (x): 122.34025	Northing (y): 47.53837	Time: 0830

Turb	Temp	SpC	DO	pH	ORP	Salinity	Time
29.3	1 13.8	1 0.407	1 5.95	1 7.11	1 -118	1 0.2	8:20
29.5	2 13.7	2 0.363	2 4.28	2 7.20	2 -165	2 0.2	8:24
46.7	3 13.7	3 0.361	3 4.10	3 7.21	3 -188	3 0.2	8:26
31.5	4 13.8	4 0.361	4 4.02	4 7.26	4 -218	4 0.2	8:29
	5	5	5	5	5	5	
	6	6	6	6	6	6	

Comments:

Refractometer sample was collected to check salinity and it was 10 ppt, so Horiba meter is off.

Alternate GPS reading: 47° 34.704 122. 20.419 8 ft accuracy

FORM 1. POREWATER PIEZOMETER COLLECTION FORM

Project Name: EW Porewater sampling **Project Task:**

Date: 7/21/10 **Crew:** JF, RB, BB, SG, CB

Weather: Overcast / foggy **Collection Method:** Piezometer

Location ID: EW-PW-P2-A-03	Easting (x): 122.34031	Northing (y): 47.57863	Time: 0850

Turb
35.1
41.6
~~6.77~~
77.3

Temp	SpC	DO	pH	ORP	Salinity	Time
1 13.4	1 1.31	1 5.65	1 7.04	1 -177	1 0.7	0838
2 13.5	2 1.21	2 3.87	2 7.24	2 -194	2 0.7	0843
3 13.6	3 1.24	3 3.77	3 7.25	3 -197	3 0.7	0845
4 13.6	4 1.22	4 3.74	4 7.27	4 -200	4 0.7	0847
5	5	5	5	5	5	
6	6	6	6	6	6	

Comments:

Alternate GPS reading
47 34.712
122 20.419
Refractometer salinity = 15 ppt

Range finder - to corner of road 14 yds. to street light

Battery low so disregard these readings

Location ID:	Easting (x):	Northing (y):	Time:

Temp	SpC	DO	pH	ORP	Salinity	
1	1	1	1	1	1	
2	2	2	2	2	2	
3	3	3	3	3	3	
4	4	4	4	4	4	
5	5	5	5	5	5	
6	6	6	6	6	6	

Comments:

FORM 1. POREWATER PIEZOMETER COLLECTION FORM

Project Name: EW Porewater Sampling **Project Task:**

Date: 7/23/10 **Crew:** BB, MI, S, K

Weather: 60s, mostly sunny **Collection Method:** ~~Piezometer~~ Iron pipe

122.34268 (MI) 47.55564

Location ID: EW-PW-PZ-A3-C1	Easting (x): ~~47.35134~~	Northing (y): ~~122~~	Time: ~~1004~~ (MI) 1020

Turbidity
2C
15.7
12.4
6.3

Temp	SpC	DO	pH	ORP	Salinity	Time
1 13.8	1 1.52 ~~3m~~	1 5.11	1 7.31	1 -160	1 ~~6.9~~	1013
2 13.7	2 1.5	2 4.62	2 7.39	2 -191	2	1015
3 13.7	3 1.48	3 4.41	3 7.41	3 -209	3	1017
4 13.7	4 1.47	4 4.22	4 7.43	4 -231	4	
5	5	5	5	5	5	
6	6	6	6	6	6	

Comments:
Screening location 7
checked salinity w/ refractometer = 15

Location ID: EW-PW-PZ-A3-C2	Easting (x): 122.34273	Northing (y): 47.55587	Time: 1045

Turbidity
8.5
9.9
5.1
17.4

Temp	SpC	DO	pH	ORP	Salinity	Time
1 13.8	1 2.18	1 4.15	1 7.47	1 -270	1 -	1033
2 13.9	2 2.2	2 3.9	2 7.5	2 -282	2 -	1035
3 14	3 2.22	3 3.81	3 7.52	3 -298	3 -	1038
4 14.1	4 2.26	4 4.53	4 7.52	4 -300	4 -	1042
5	5	5	5	5	5	
6	6	6	6	6	6	

Comments:
Screening location 4
checked salinity w/ refractometer = ~~15~~ ~~17~~ (MI) took several reading which ranged from 15 - 20

FORM 1. POREWATER PIEZOMETER COLLECTION FORM

Project Name: FW Porewater Sampling **Project Task:**

Date: 7/23/10 **Crew:** BB, MI, S, K

Weather: 60s, mostly sunny **Collection Method:** ~~Piezometer~~ Iron pipe

Turbidity
184
13.4
14.3

Location ID: EW-PW-PZ-A3-05	Easting (x): 122.34274	Northing (y): 47.58622	Time: 1105			
Temp	**SpC**	**DO**	**pH**	**ORP**	**Salinity**	
1 13.8	1 2.79	1 4.69	1 7.59	1 -301	1	1058
2 13.6	2 2.87	2 4.17	2 7.59	2 -315	2	1100
3 13.6	3 2.9	3 4.05	3 7.59	3 -320	3	1103
4	4	4	4	4	4	
5	5	5	5	5	5	
6	6	6	6	6	6	

Comments:
Sampling location 1
Checked Salinity with refractometer = 22
~~22~~

Location ID:	Easting (x):	Northing (y):	Time:			
Temp	**SpC**	**DO**	**pH**	**ORP**	**Salinity**	
1	1	1	1	1	1	
2	2	2	2	2	2	
3	3	3	3	3	3	
4	4	4	4	4	4	
5	5	5	5	5	5	
6	6	6	6	6	6	

Comments:

FORM 1. POREWATER PIEZOMETER COLLECTION FORM

Project Name: EW Porewater Sampling **Project Task:**

Date: 7/25/10 **Crew:** BB, CB, SG

Weather: Sunny **Collection Method:** Piezometer

Turb
97.1
45.9

Location ID: EW-PW-P2-A4-01	Easting (x): 122.34280	Northing (y): 47.58854	Time: 1130

Temp	SpC S/m	DO	pH	ORP	Salinity ‰	Time
1 14.5	1 .972	1 9.80	1 8.03	1 -130	1 7	1125
2 14.7	2 .960	2 8.11	2 8.~~05~~	2 -151	2 7	1127
3 14.1	3 .965	3 7.86	3 8.13	3 -159	3 7	1129
4	4	4	4	4	4	
5	5	5	5	5	5	
6	6	6	6	6	6	

Comments:
- Salinity measured with refractometer
- DO probe on meter not reading correctly

Turb
51.4
30.4
24.6

Location ID: EW-PW-P2-A4-02	Easting (x): 122.34280	Northing (y): 47.58856	Time: 1145

Temp	SpC S/m	DO	pH	ORP	Salinity ‰	Time
1 14.8	1 1.37	1 8.09	1 8.04	1 -183	1 11	1136
2 14.7	2 1.44	2 6.68	2 8.07	2 -195	2 11	1138
3 14.7	3 1.46	3 6.18	3 8.08	3 -206	3 11	1139
4	4	4	4	4	4	
5	5	5	5	5	5	
6	6	6	6	6	6	

Comments:
- Salinity measured with refractometer
- DO probe not working

FORM 2. POREWATER SALINITY COLLECTION FORM

Project Name: EW Porewater Sampling **Project Task:**

Date: 7/21/10 **Crew:** BB, JB, CB, SG

Weather: Sunny, warm **Sampling Area:** Area 1

Flag Number	Time	Porewater salinity (ppt)	Surface water salinity (ppt)	Collection Method
1	0845	na	22	piezometer
2	0849	na	–	piezometer
3	0913	5	–	piezometer
4	09 19	19	24	piezometer
5	09:26	28	—	mini well
6	09:29	29	23	piezometer
7	09:39	24	25	piezometer
8	09:42	20	24	piezometer
9	09:49	8	23	piezometer
10	09:51	9	23	mini well
11	09:53	7	24	piezometer, Note: lots of sand in porewater
12	09:55	10	24	mini well
13	09:58	12	—	mini well
14	10:00	21	22	mini well
15	10:08	6	21	piezometer

Notes:

Mini-well is another term for iron pipe method as indicated on previous field forms.

FORM 2. POREWATER SALINITY COLLECTION FORM

Project Name: FW porewater sampling **Project Task:**

Date: 7/23/10 **Crew:** MI, BB, SG, CB

Weather: clear **Sampling Area:** Area 3

Flag Number	Time	Porewater salinity (ppt)	Surface water salinity (ppt)	Collection Method
1	0825	28	30	iron pipe
2	0833	30	30	iron pipe
3	0906	21	MI ~~30~~ 28	iron pipe
4	0915	21	30	iron pipe
5	0920	21	30	iron pipe
6	0945	21	30	iron pipe
7	0952	15	30	iron pipe
8	0956	24	MI ~~30~~ 31	iron pipe

Notes:

FORM 2. POREWATER SALINITY COLLECTION FORM

Project Name: EW Surface water sampling **Project Task:** Porewater sampling

Date: 7/21/10 **Crew:** RB, JF, BB, SG, CB

Weather: clear **Sampling Area:** Area 2

Flag Number	Time	Porewater salinity (ppt)	Surface water salinity (ppt)	Collection Method	Coordinates
1	6:32	10	22	EPA piezometer	47.57822 122.34129
2	6:51	10	21	iron pipe	47.57837 122.34025
3	6:55	10	21	EPA piezometer	~~47.803~~ 47.57863 122.34031
4	7:06	9	21	EPA piezometer	47.57813 122.34029
5	7:09	8	21	EPA piezometer	47.57814 122.34032
6	7:17	10	–	iron pipe	47.57854 122.34021
7	7:30	8	–	iron pipe	47.57845 122.34026
8	7:52	15	26 (bottom)	iron pipe	47 34.690 122 20.413

Notes: GPS: poor accuracy due to bridge ~100ft.
- 60ft accuracy on station 2, 4
- 150ft accuracy on station 1, directly under bridge in the middle at southern most point

#1 – EW-PW-P2-A2-01

#2 – EW-PW-P2-A2-02

#3 – EW-PW-P2-A2-03

FORM 2. POREWATER SALINITY COLLECTION FORM

Project Name: EW Porewater sampling **Project Task:**

Date: 7/25/10 **Crew:** BB, CB, SG

Weather: Sunny **Sampling Area:** Area 4

Flag Number	Time	Porewater salinity (ppt)	Surface water salinity (ppt)	Collection Method
1	10:17	25	26	mini well
2	10:19	26	27	mini well
2	10:23	30	"	mini well
3	10:27	na	na	mini well
4	10:52	10	too turbid (wave)	mini well
5	10:59	11	26	mini well
1	1107	26		mini well
2	1110	30		mini well

deeper well ~3ft

Notes: Beach is too rocky for inserting piezometers.

CHAIN-OF-CUSTODY/TEST REQUEST FORM

2794

Project/Client Name: Windward EW Porewater Sampling
Project Number: 08-08-09-43
Contact Name: Berit Bergquist
Sampled By: BB, RB, JF, MI

Ship to: ARI
Attn: Sue Dunihoo
Shipper:
Form filled out by: Berit Bergquist

Shipping Date:
Airbill Number:
Turnaround requested: 15-day

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required): VOCs							Comments / Instructions [Jar tag number(s)]
7/21/10	0810	EW-PW-P2-A2-01	3	water	X							
7/21/10	0830	EW-PW-P2-A2-02	3	water	X							
7/21/10	0850	EW-PW-P2-A2-03	3	water	X							
7/23/10	1020	EW-PW-P2-A3-01	3	water	X							
7/23/10	1045	EW-PW-P2-A3-02	3	water	X							
7/23/10	1105	EW-PW-P2-A3-03	3	water	X							
7/24/10	1045	EW-PW-P2-A1-01	3	water	X							
7/24/10	1100	EW-PW-P2-A1-02	3		X							
7/24/10	1135	EW-PW-P2-A1-03	3		X							
7/24/10	1135	EW-PW-P2-201	3		X							
7/24/10	1150	EW-PW-P2-A1-04	3		X							
7/25/10	1130	EW-PW-P2-A4-01	5		X							extra sample for QC
		Total Number of Containers	38	Purchase Order / Statement of Work # 2010-0089								

1) Released by:	1) Rec'd by:	2) Released by:	2) Rec'd by:
Print name: Berit Bergquist	Mikka Mulumba	Print name:	
Signature: Berit Bergquist	Company: ARI	Signature:	Company:
Company: Windward		Company:	
Date/Time: 7/26/10 0810	Date/Time: 7/26/10 0910	Date/Time:	Date/Time:

* Distribution: White copies accompany shipment; yellow retained by consignor.

Windward environmental LLC
200 West Mercer Street
Suite 401
Seattle, WA 98119
Tel: (206) 378-1364
Fax: (206) 217-9343

To be completed by Laboratory upon sample receipt:

Date of receipt::	Laboratory W.O. #:
Condition upon receipt:	Time of receipt:
Cooler temperature:	Received by:

CHAIN-OF-CUSTODY/TEST REQUEST FORM

2798

Project/Client Name: Windward EW porewater sampling
Project Number: 08-08-09-43
Contact Name: Bent Bergquist
Sampled By: BB, RB, JF, JMI

Ship to: ARI
Attn: Sue Ourmbo
Shipping Date:
Shipper:
Airbill Number:
Form filled out by: Bent Bergquist
Turnaround requested: 15-day

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required) VOCs							Comments / Instructions [Jar tag number(s)]
7/25/10	1145	EW-PW-P2-A4-02	3	water	X							
7/19/10	—	EW-PW-01-TB	2	water	X							trip blank
7												
		Total Number of Containers	35	Purchase Order / Statement of Work # 2010-0089								

1) Released by: Bent Bergquist	1) Rec'd by: Mikko Huhumba	2) Released by:	2) Rec'd by:
Print name: Bent Bergquist		Print name:	
Signature: Bent Bergquist	Company: ARI	Signature:	Company:
Company: Windward		Company:	
Date/Time: 7/26/10 0810	Date/Time: 7/26/10 0810	Date/Time:	Date/Time:

* Distribution: White copies accompany shipment; yellow retained by consignor.

Windward environmental LLC
200 West Mercer Street
Suite 401
Seattle, WA 98119
Tel: (206) 378-1364
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To be completed by Laboratory upon sample receipt:

Date of receipt::	Laboratory W.O. #:
Condition upon receipt:	Time of receipt:
Cooler temperature:	Received by: