Groundwater Monitoring Report
April 2013 through March 2014
Cascade Pole Site
Olympia, Washington

June 6, 2014

Prepared for

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1.0 INTRODUCTION

This report summarizes groundwater monitoring activities conducted between April 1, 2013 and March 31, 2014 at the Cascade Pole Site (Site), in Olympia, Washington. This report is the seventh annual report summarizing the groundwater monitoring that has been conducted as part of the Long-Term Groundwater Compliance Monitoring (LTGCM) program outlined in the amendment to Consent Decree No. DE 00TCPSR-753 [Washington State Department of Ecology (Ecology) 2007]. The groundwater compliance monitoring plan (CMP; Landau Associates 2007) identifies the processes for the collection of groundwater samples and the measurement of groundwater elevations. The LTGCM program consists of the following elements:

- **Hydraulic Control Monitoring:** Monthly monitoring of groundwater elevations at perimeter and interior monitoring wells. The groundwater elevation data are utilized to monitor the effectiveness of the groundwater extraction and treatment systems in achieving hydraulic control. The locations of monitoring wells are shown on Figures 1 and 2.
- **Perimeter Well Monitoring:** Collection of semiannual water quality samples from paired monitoring wells located along the perimeter (inside and outside) of the slurry wall. Groundwater samples are collected from the following paired wells: PZ-12 and PZ-13, LW-3 and PZ-17, LW-4R and PZ-18, and MW-02S and PZ-19. The analytical results of the water quality samples are utilized in the evaluation of the effectiveness of the extraction and treatment systems in controlling horizontal migration of contaminants. Paired groundwater monitoring well locations for the perimeter monitoring are shown on Figure 1.
- **Interior Well Monitoring:** Collection of semiannual water quality samples from paired upper and lower aquifer wells located within the interior of the containment area. Groundwater samples are collected from the following paired interior wells: MW-01S and MW-01D, MW-02S and MW-02D, and MW-05S and MW-05D. In addition to the paired upper and lower aquifer wells, semiannual water quality samples are collected from well CW-13. The analytical results for the paired upper and lower aquifer wells are utilized in the evaluation of vertical containment. Paired groundwater monitoring wells for the interior monitoring program are shown on Figure 2.
- **Reporting:** Annual Reporting of the LTGCM activities are submitted to Ecology.

1.1 BACKGROUND

The former Cascade Pole Company (CPC) wood-treatment Site is located approximately 1 mile north of downtown Olympia, at the northern end of the peninsula that extends into Budd Inlet. The Port of Olympia (Port) owns the property, adjacent parcels, and adjacent in-waterway sediments. A detailed history of the Site can be found in the CPC remedial investigation (RI) and feasibility study (FS) reports for the Sediments Operable Unit (SOU; Landau Associates 1993a,b). Environmental cleanup of the Site is proceeding under the Washington State Model Toxics Control Act (MTCA).

The Port implemented several interim remedial actions in the upland area of the Site to address contamination from the former wood treatment activities. These interim actions prevented further

migration of hazardous substances from contaminated soil and groundwater into the adjacent groundwater, surface water, and sediment. A groundwater extraction and non-aqueous phase liquid (NAPL) recovery and treatment system was installed in 1991 and 1992. This system was expanded in 1999 and modified in conjunction with the construction of the upland sediment containment cell. In early 1993, a dense NAPL (DNAPL) recovery trench and an associated sheetpile cutoff wall were installed along a portion of the shoreline to eliminate the migration of DNAPL into Budd Inlet. The cutoff wall was extended to encircle the Site through installation of a soil-bentonite slurry wall in 1996 and 1997. The cutoff wall was keyed into the aquitard and encompasses the former wood treating facility and treated pole storage yards; areas where NAPL has been observed and impacted groundwater. The trench was abandoned in 2001 due to DNAPL recovery deficiencies.

Excavated and dredged sediments generated from cleanup of the SOU were placed in an upland containment cell within the cutoff wall, which was constructed within the northeast portion of the SOU. In addition, contaminated sediment and soil near the original sheetpile cutoff wall were contained during cleanup of the SOU by a second sheetpile cutoff wall. The second cutoff wall was keyed into the existing slurry wall on each end and the underlying aquitard forming a shoreline containment cell.

A major portion of the Site was paved between the fall of 1997 and the summer of 1998 to assist with stormwater runoff control and to reduce surface water infiltration. In 2004, a portion of the Site adjacent to the sediment containment cell was capped as part of the Phase I capping project. The Phase II paving and capping project of the sediment containment cell was completed in 2009. In December 2010, the Phase III capping project was conducted along the northern portion of the Site and has resulted in the completion of the planned capping projects. Upon the completion of the capping activities, a new groundwater treatment system was installed to replace the 1993 system and to increase the Site treatment capacity by threefold. The new system began operation after the completion of the functional testing in January 2012.

1.2 HYDRAULIC CONTROL GOALS

Both short-term and long-term goals for hydraulic containment have been identified for the Site. The short-term goals are applicable until the Site has been fully capped with a low-permeability cover and the treatment system has been designed to achieve the long-term hydraulic controls, at which time the long-term goals will be implemented. Data for this report will be evaluated for short-term goals.

The short-term goal of the hydraulic control system at the Site is to prevent overtopping of the cutoff wall throughout the containment area. The short-term performance criterion consists of maximum groundwater elevations within the cutoff wall, depending on adjacent cutoff wall top elevations (Landau Associates 2000). The groundwater elevation performance criteria are 15.5 ft along the majority of the

cutoff wall alignment, and 16.5 ft along wall alignment sections adjacent to Budd Inlet. The long-term Site hydraulic control goal is the establishment and maintenance of inward and upward hydraulic gradients throughout the containment area.

1.3 GROUNDWATER QUALITY COMPLIANCE MONITORING GOALS

The goal of the groundwater quality compliance monitoring is to assess the effectiveness of the groundwater extraction and treatment system. The CMP identifies four pairs of shallow monitoring wells located along the perimeter (inside and outside) of the bentonite cutoff wall and three shallow and deep well pairs within the containment area to monitor the effectiveness of the containment system. One additional shallow extraction well not currently being operated, CW-13, is also being sampled at Ecology's request.

Groundwater quality results are compared to MTCA Method B values for the protection of marine surface water with the exception of petroleum hydrocarbons, which have been compared to MTCA Method A cleanup levels. To evaluate the analytical data for carcinogenic polycyclic aromatic hydrocarbons (cPAHs), the toxicity equivalency quotients (TEQ) of individual cPAHs were calculated and summed for comparison to the benzo(a)pyrene cleanup level using the methodology established in WAC 173-340-708. To calculate the TEQ, the toxicity equivalency factor (TEF) for a given cPAH compound was multiplied by the compound concentration, or half the reporting limit for compounds that were not detected above the laboratory reporting limit, and the resulting values were summed. The resulting TEQ was compared to the MTCA Method B cleanup level for benzo(a)pyrene of 0.1 micrograms per liter (µg/L). Pentachlorophenol (PCP) is initially analyzed using U.S. Environmental Protection Agency (EPA) Method 8270 with a reporting limit of 5.0 µg/L. If the initial PCP results are not detected at the reporting limits, then samples are selected for follow-up analysis using EPA Method 8041 with a lower reporting limit of 0.25 µg/L. The PCP analysis sequence is conducted to allow for initial screening for elevated detections of the compound without damage to laboratory equipment, and the follow-up analysis allows for comparison of results to MTCA Method B cleanup levels.

2.0 COMPLIANCE MONITORING PROCEDURES

Two planned groundwater quality monitoring events were conducted at the Site during this reporting period (August 2013 and February 2014). In addition, one verification sampling event was conducted in October 2013 at well LW-3. Monthly groundwater elevation data have been collected to evaluate system hydraulic control measures in accordance with the CMP (Landau Associates 2007). The following sections describe the collection of water level measurements and groundwater sampling methods.

2.1 HYDRAULIC CONTROL MEASUREMENTS

Monthly groundwater level measurements from the selected compliance perimeter well pairs (PZ-12 and PZ-13, LW-3 and PZ-17, LW-4R and PZ-18, and MW-02S and PZ-19) and from interior monitoring well shallow and deep aquifer pairs (MW-01S,D; MW-02S,D; and MW-05S,D) have been collected throughout the reporting period (April 2013 through March 2014). The groundwater level was not able to be measured at the following wells due to ongoing log and bark storage activities and railcar obstruction: PZ-12 (April 2013), PZ-17 (May 2013), PZ-18 (April, May, and July 2013, and February 2014), and LW-4R (June, July, and October 2013).

The depths to groundwater measurements were collected using an electronic water level meter and measurements were recorded to the nearest 0.01 ft. Measurements were made from surveyed reference points on the top of the well casing. Depth to groundwater was converted to groundwater elevation for each well using a surveyed reference elevation at the top of the casing. Table 1 shows the depth to water measurements, top of casing elevations, and groundwater elevations measured during this reporting period. Historical groundwater elevation data are presented in Appendix A.

2.2 GROUNDWATER SAMPLING

Groundwater quality monitoring events were conducted in August 2013 during a time of low groundwater elevations, which corresponded to a typical "dry season", and in February 2014 at a time when high groundwater elevations corresponded to a typical "wet season." A specific verification event also occurred in October 2013 at well PZ-13. Groundwater samples were collected using low-flow sampling techniques as described in the CMP (Landau Associates 2007). Groundwater was purged from the selected wells using a non-dedicated peristaltic pump. Field parameters (pH, conductivity, redox, and temperature), along with groundwater levels, were monitored every 3 to 5 minutes during the purge process to verify the flow rate and to minimize groundwater level drawdown. Groundwater samples were collected directly into laboratory-prepared containers, labeled, stored in a cooler with a maintained

temperature of 4° to 6° C, and transported to the laboratory in accordance with proper chain-of-custody procedures.

A total of 14 wells were sampled as part of the LTGCM plan. The selected wells included perimeter well pairs (PZ-12 and PZ-13, LW-3 and PZ-17, LW-4R and PZ-18, and MW-02S and PZ-19) and interior wells MW-01S,D; MW-02S,D; and MW-05S,D; and CW-13).

Groundwater samples were submitted to Analytical Resources Inc. (ARI) located in Tukwila, Washington. Samples were analyzed for PAHs using EPA Method 8270 with selected ion monitoring (SIM); gasoline-range petroleum hydrocarbons (TPH-G) using Method NWTPH-G; diesel- and oil-range petroleum hydrocarbons (TPH-D and TPH-O, respectively), and creosote using Method NWTPH-Dx. Follow-up PCP analysis was conducted using low reporting limit testing, EPA Method 8041, if results from the PAH testing using EPA Method 8270 indicated results were below the associated method reporting limit.

3.0 COMPLIANCE MONITORING RESULTS

The following sections discuss the performance of the system in regards to the hydraulic control and groundwater quality criteria. Groundwater elevation data collected during this reporting period is summarized in Table 1. Groundwater quality compliance monitoring data collected during this reporting period is summarized in Table 2. Historical groundwater elevation data and historical groundwater quality data are presented in Appendix A. Laboratory reports for the August and October 2013 and February 2014 sampling events are presented in Appendix B.

3.1 HYDRAULIC CONTROL

The LTGCM plan indicates that hydraulic control for the Site will be maintained by a series of shallow extraction wells directing water to the onsite treatment system. The short-term groundwater elevation performance criteria are maintaining groundwater levels below the perimeter cutoff wall, which requires maintaining groundwater elevations below 15.5 ft along the majority of the cutoff wall alignment, and below 16.5 ft along wall alignment sections adjacent to Budd Inlet. Available groundwater elevation data collected during this reporting period indicate that the short-term elevation criteria was consistently met at well pair PZ-12 and PZ-13 (northwest portion of the Site), at well pair PZ-17 and LW-3 (southwestern portion of the site), LW-4R and PZ-18 (southern portion of the site), and at well pair MW-05S and MW-05D (eastern portion of the site). However, the short-term groundwater elevation criteria were exceeded during the reporting period at the following times and location:

- Groundwater elevations observed at perimeter well MW-02S exceeded the short-term goal two out of the twelve measurements collected between April 2013 and March 2014. The goal exceedances occurred October 2013 and March 2014. Local precipitation data indicates October 2013 was extremely wet, which is reflected in the raised groundwater elevations throughout the site (interior and exterior of the slurry wall). Based on the groundwater data, October 2013 and March 2014 are interpreted to represent the "wet" season.

3.2 ANALYTICAL RESULTS

The groundwater analytical results for the two semiannual sampling events (August 2013 and February 2014) and the October 2013 verification event are summarized in Table 2. Analytical results for constituents detected above the cleanup screening levels during this reporting period are shown on Figure 3. Historical groundwater analytical data for compliance monitoring wells are presented in Appendix A. Laboratory reports for samples collected during this reporting period are provided in Appendix B. The following paragraphs summarize the analytical results for this reporting period.

3.2.1 SHALLOW WELLS

All analytical results for the shallow wells located outside of the slurry wall were below the respective laboratory reporting limits during this reporting period with the exception of the August 2013

results for PZ-13 where TPH-O was reported at 540 µg/L, which is above the cleanup screening level (500 µg/L). Based on elevated TPH-O concentration, a verification sample was collected at PZ-13 (October 2013) and analytzed for TPH-Dx. The results of the verification sample and the subsequent February 2014 results indicate TPH-O concentrations were below the laboratory reporting limit. The August 2013 event was the first time TPH-O has been detected above the laborary reporting limit at PZ-13 since the initiation of the LTGCM in June 2005.

Groundwater quality data from shallow perimeter wells located on the interior of the slurry wall indicate low-level naphthalene concentrations were reported at PZ-12 (1.8 µg/L), LW-3 (2.0 µg/L), and LW-4R (2.1 µg/L); however, these concentrations are well below the cleanup level (4,900 µg/L).

A number of analytes were detected above the cleanup levels in the groundwater samples collected from shallow interior wells MW-01S, PZ-12 and LW-3 as shown on Figure 3.

- Samples from MW-01S indicate naphthalene concentrations were 6,800 µg/L during the August 2013 and February 2014 events, which is above the cleanup screening level (4,900 µg/L). PCP concentrations ranged from 4,000 to 6,600 µg/L during the reporting period, compared to the cleanup screening level of 3 µg/L. The TEQ calculated values for cPAHs were reported from 1.1 to 2.2 µg/L for the August 2013 and February 2014 events, compared to the screening level of 0.1 µg/L. TPH-G concentrations at MW-01S were above the cleanup screening level (1,000 µg/L) with concentrations ranging from 47,000 to 48,000 µg/L. During the August 2013 and February 2014 TPH-D concentrations ranged from 9,400 and 7,300 µg/L and creosote concentrations ranged from 34,000 and 39,000 µg/L, compared to the cleanup screening level (500 µg/L)..
- Samples collected from well LW-3 indicate TPH-D concentrations ranging from 150 to 2,100 µg/L and TPH-O concentrations ranging from below the reporting limit to 1,200 µg/L were above the cleanup screening level (500 µg/L) during the February 2014 event. Creosote concentrations ranged from 580 to 9,200 µg/L during this reporting period, which were above the cleanup screening level (500 µg/L).
- The August 2013 sample results from well PZ-12 indicate a PCP concentration of 5.8 µg/L, which is above the cleanup screening level (3 µg/L).

Exceedance of the cleanup screening levels at wells MW-01S, PZ-12 and LW-3 are not a compliance issue because the wells are located within the groundwater containment area and represents shallow groundwater conditions.

The analytical results for other shallow wells (LW4R, MW-02S, MW-05S, and CW-13) located inside the slurry wall indicate compounds were below the laboratory reporting limits.

3.2.2 DEEP WELLS

The analytical results from the sampling events indicate that concentrations of creosote at MW-02D (530 µg/L during August 2013) exceed the cleanup screening level (500 µg/L). Historical creosote concentrations at MW-02D have ranged from non-detect at a raised reporting limit (500 µg/L) to 4,200 µ/L in March 2008. No other analytical results exceed the cleanup screening levels for the three deep interior wells during this reporting period. Low-level naphthalene concentrations were detected at

well MW-01D ranging between 1.1 and 1.2 µg/L, which are well below the cleanup screening level (4,900 µg/L). A low-level PCP concentration was detected at MW-02D (0.37 µg/L) during the August 2013 event; however, the concentration is below the cleanup screening level (3.0 µg/L). A low-level TPH-G concentration (620 µg/L; August 2013) was reported at MW-02D, which is below the cleanup screening level of 1,000 µg/L. Low level TPH-D and TPH-O concentrations were reported at MW-02D during the August 2013 event (160 and 470 µg/L, respectively) which are below the cleanup screening levels of 500 µg/L. Both TPH-D and TPH-O concentrations were below the respective laboratory reporting limits at MW-02D during the subsequent February 2014 event.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Evaluations of groundwater elevations for shallow monitoring wells located along the perimeter of the bentonite slurry wall indicate that the hydraulic control system is generally preventing groundwater inside of the containment area from exceeding the short-term hydraulic containment goals, with the exceptions of well pair MW-02S/PZ-19 which exceeded the goal in October 2013 and March 2014, which corresponds to the typical wet season.

Analytical results indicate no exceedances of the groundwater cleanup screening levels in shallow wells located outside of the slurry wall, with the exception of a TPH-O concentration at PZ-13 of 540 µg/L during the August 2013. Verification sampling conducted in October 2013 and the subsequent February 2014 event indicated motor oil concentrations at PZ-13 were below the laboratory reporting limit. Groundwater cleanup screening levels were exceeded for a number of constituents in samples collected from interior shallow wells MW-01S and LW-3; however, these exceedances are not of concern because the wells are located inside the containment system perimeter. Creosote results for the August 2013 sampling event for deep well MW-02D were above the cleanup screening level; however, the concentration (530 µg/L) was below the historical maximum concentration (4,200 µg/L) and the subsequent February 2014 results were below the laboratory reporting limit.

The next semiannual sampling event is currently scheduled forlate August to early October 2014, to coincide with typical low groundwater elevations representative of a "dry season" event. The "wet season" event will be conducted in February or March 2015, depending on precipitation rates. Results of these sampling events will be reported following completion of the 2015 monitoring event.

5.0 LIMITATIONS

This report has been prepared for the exclusive use of the Port of Olympia for specific application to the Cascade Pole Site in Olympia, Washington. No other party is entitled to rely on the information, conclusions, and recommendations included in this document without the express written consent of Landau Associates. Further, the reuse of information, conclusions, and recommendations provided herein for extensions of the project or for any other project, without review and authorization by Landau Associates, shall be at the user's sole risk. Landau Associates warrants that within the limitations of scope, schedule, and budget, our services have been provided in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions as this project. We make no other warranty, either express or implied.

This document has been prepared under the supervision and direction of the following key staff.

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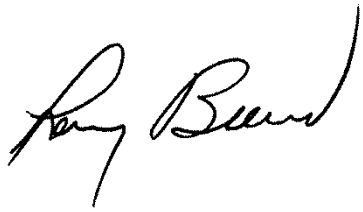
Senior Geologist



Lawrence D. Beard, P.E.
Principal

6.0 REFERENCES

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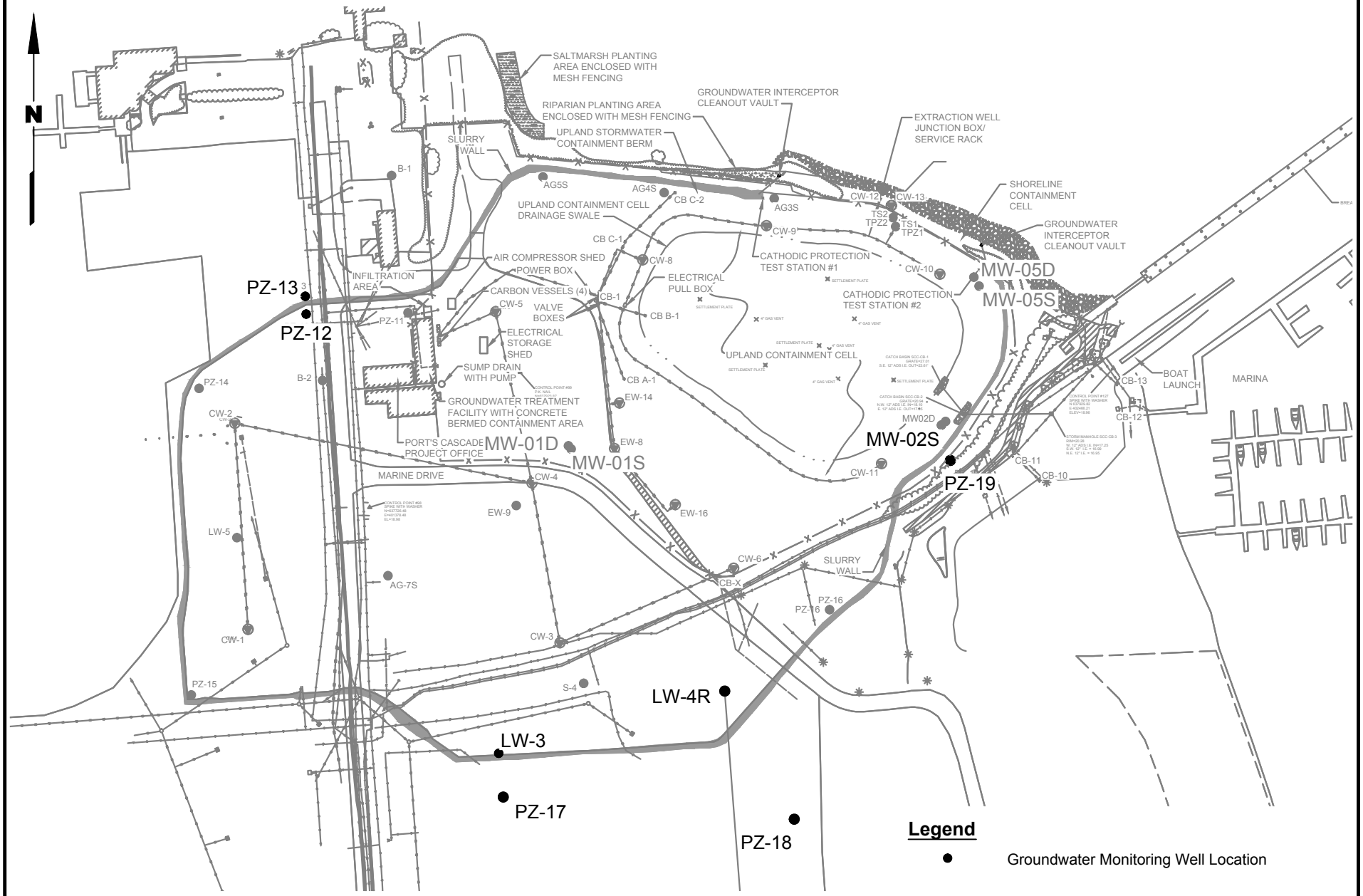
Landau Associates. 2000. Technical Memorandum, Re: *Development of Groundwater Hydraulic Controls, Extraction Well Locations and Flow Rates, Cascade Pole Site, Olympia, Washington,* from Lawrence D. Beard and Li Ma to Mr. Richard Reis, The IT Group.

Landau Associates. 1993a. *Feasibility Study, Sediments Operable Unit, Cascade Pole Company Site, Port of Olympia, Washington.* October 18.

Landau Associates. 1993b. *Remedial Investigation Report, Sediments Operable Unit, Cascade Pole Company Site, Port of Olympia, Washington.* January 22.



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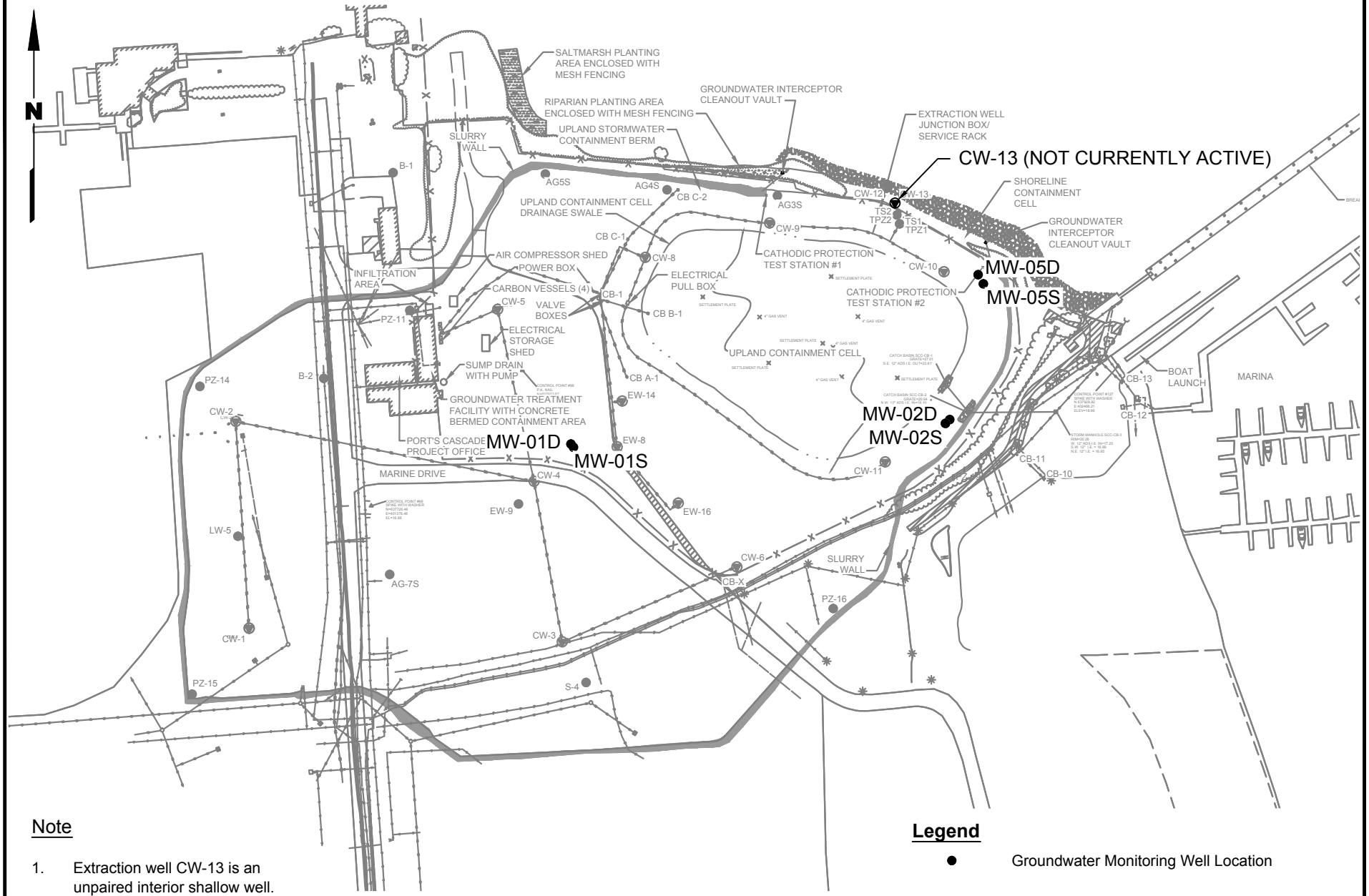
Port of Olympia Olympia, Washington	**Perimeter Paired Groundwater Monitoring Network Well Locations**	Figure 1



Note

1. Extraction well CW-13 is an unpaired interior shallow well.

Legend

● Groundwater Monitoring Well Location

0 200 400

Scale in Feet

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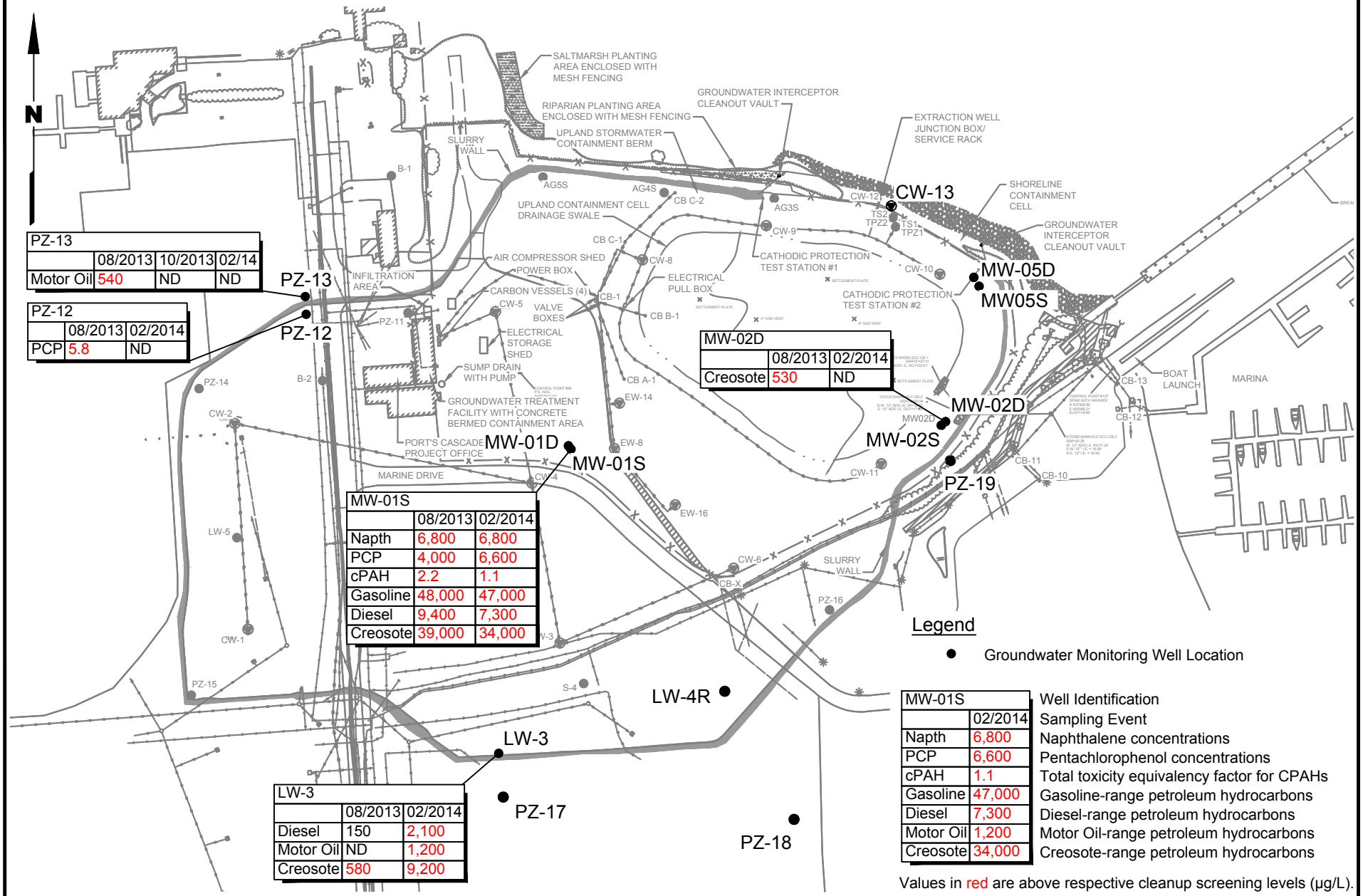
Olympia, Washington

Deep and Shallow Interior Groundwater Monitoring Well Pairs

Figure 2



PZ-13			
	08/2013	10/2013	02/14
Motor Oil	540	ND	ND

PZ-12		
	08/2013	02/2014
PCP	5.8	ND

MW-02D		
	08/2013	02/2014
Creosote	530	ND

MW-01S		
	08/2013	02/2014
Napth	6,800	6,800
PCP	4,000	6,600
cPAH	2.2	1.1
Gasoline	48,000	47,000
Diesel	9,400	7,300
Creosote	39,000	34,000

LW-3		
	08/2013	02/2014
Diesel	150	2,100
Motor Oil	ND	1,200
Creosote	580	9,200

Legend

● Groundwater Monitoring Well Location

MW-01S	02/2014	
Well Identification		
Sampling Event		
Napth	6,800	Naphthalene concentrations
PCP	6,600	Pentachlorophenol concentrations
cPAH	1.1	Total toxicity equivalency factor for CPAHs
Gasoline	47,000	Gasoline-range petroleum hydrocarbons
Diesel	7,300	Diesel-range petroleum hydrocarbons
Motor Oil	1,200	Motor Oil-range petroleum hydrocarbons
Creosote	34,000	Creosote-range petroleum hydrocarbons

Values in red are above respective cleanup screening levels (µg/L).

0 200 400

Scale in Feet

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Port of Olympia
Olympia, Washington

Groundwater Quality Exceedances

Figure 3

TABLE 1
GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
4/29/2013	PZ-13	6.90	19.50	12.60	--	
4/29/2013	PZ-12	NA	19.00	NA	15.50	NA
5/31/2013	PZ-13	6.96	19.50	12.54	--	
5/31/2013	PZ-12	5.09	19.00	13.91	15.50	No
6/9/2013	PZ-13	7.17	19.50	12.33	--	
6/9/2013	PZ-12	5.16	19.00	13.84	15.50	No
7/21/2013	PZ-13	7.07	19.50	12.43	--	
7/21/2013	PZ-12	5.47	19.00	13.53	15.50	No
8/29/2013	PZ-13	7.37	19.50	12.13	--	
8/29/2013	PZ-12	5.76	19.00	13.24	15.50	No
9/21/2013	PZ-13	7.00	19.50	12.50	--	
9/21/2013	PZ-12	5.71	19.00	13.29	15.50	No
10/6/2013	PZ-13	5.69	19.50	13.81	--	
10/6/2013	PZ-12	4.85	19.00	14.15	15.50	No
11/10/2013	PZ-13	6.67	19.50	12.83	--	
11/10/2013	PZ-12	5.69	19.00	13.31	15.50	No
12/15/2013	PZ-13	7.05	19.50	12.45	--	
12/15/2013	PZ-12	5.90	19.00	13.10	15.50	No
1/5/2014	PZ-13	7.03	19.50	12.47	--	
1/5/2014	PZ-12	6.05	19.00	12.95	15.50	No
2/1/2014	PZ-13	6.53	19.50	12.97	--	
2/1/2014	PZ-12	5.69	19.00	13.31	15.50	No
3/1/2014	PZ-13	5.59	19.50	13.91	--	
3/1/2014	PZ-12	5.03	19.00	13.97	15.50	No
4/29/2013	PZ-17	7.13	20.48	13.35	--	
4/29/2013	LW-3	6.01	19.83	13.82	15.50	No
5/31/2013	PZ-17	NA	20.48	NA	--	
5/31/2013	LW-3	6.24	19.83	13.59	15.50	No
6/9/2013	PZ-17	7.23	20.48	13.25	--	
6/9/2013	LW-3	6.18	19.83	13.65	15.50	No
7/21/2013	PZ-17	7.31	20.48	13.17	--	
7/21/2013	LW-3	6.26	19.83	13.57	15.50	No

TABLE 1
GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
8/29/2013	PZ-17	7.52	20.48	12.96	--	
8/29/2013	LW-3	6.35	19.83	13.48	15.50	No
9/21/2013	PZ-17	7.52	20.48	12.96	--	
9/21/2013	LW-3	6.44	19.83	13.39	15.50	No
10/6/2013	PZ-17	7.17	20.48	13.31	--	
10/6/2013	LW-3	6.37	19.83	13.46	15.50	No
11/10/2013	PZ-17	7.49	20.48	12.99	--	
11/10/2013	LW-3	6.30	19.83	13.53	15.50	No
12/15/2013	PZ-17	7.71	20.48	12.77	--	
12/15/2013	LW-3	6.54	19.83	13.29	15.50	No
1/5/2014	PZ-17	7.76	20.48	12.72	--	
1/5/2014	LW-3	6.54	19.83	13.29	15.50	No
2/1/2014	PZ-17	7.62	20.48	12.86	--	
2/1/2014	LW-3	6.42	19.83	13.41	15.50	No
3/1/2014	PZ-17	7.20	20.48	13.28	--	
3/1/2014	LW-3	6.18	19.83	13.65	15.50	No
4/29/2013	PZ-18	NA	21.2	NA	--	
4/29/2013	LW-4R	8.37	22.02	13.65	15.50	No
5/31/2013	PZ-18	NA	21.2	NA	--	
5/31/2013	LW-4R	8.53	22.02	13.49	15.50	No
6/9/2013	PZ-18	10.11	21.2	11.09	--	
6/9/2013	LW-4R	NA	22.02	NA	15.50	NA
7/21/2013	PZ-18	NA	21.2	NA	--	
7/21/2013	LW-4R	NA	22.02	NA	15.50	NA
8/29/2013	PZ-18	8.91	21.2	12.29	--	
8/29/2013	LW-4R	6.57	22.02	15.45	15.50	No
9/21/2013	PZ-18	9.30	21.2	11.90	--	
9/21/2013	LW-4R	6.97	22.02	15.05	15.50	No
10/6/2013	PZ-18	8.04	21.2	13.16	--	
10/6/2013	LW-4R	NA	22.02	NA	15.50	NA
11/10/2013	PZ-18	8.40	21.2	12.80	--	

TABLE 1
GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
11/10/2013	LW-4R	7.28	22.02	14.74	15.50	No
12/15/2013	PZ-18	8.26	21.2	12.94	--	
12/15/2013	LW-4R	7.72	22.02	14.30	15.50	No
1/5/2014	PZ-18	10.28	21.2	10.92	--	
1/5/2014	LW-4R	7.87	22.02	14.15	15.50	No
2/1/2014	PZ-18	NA	21.2	NA	--	
2/1/2014	LW-4R	7.81	22.02	14.21	15.50	No
3/1/2014	PZ-18	9.80	21.2	11.40	--	
3/1/2014	LW-4R	7.21	22.02	14.81	15.50	No
4/29/2013	PZ-19	16.38	23.67	7.29	--	
4/29/2013	MW-02S	16.71	31.96	15.25	15.50	No
5/31/2013	PZ-19	16.38	23.67	7.29	--	
5/31/2013	MW-02S	17.48	31.96	14.48	15.50	No
6/9/2013	PZ-19	16.24	23.67	7.43	--	
6/9/2013	MW-02S	17.48	31.96	14.48	15.50	No
7/21/2013	PZ-19	15.27	23.67	8.40	--	
7/21/2013	MW-02S	18.11	31.96	13.85	15.50	No
8/29/2013	PZ-19	15.83	23.67	7.84	--	
8/29/2013	MW-02S	17.89	31.96	14.07	15.50	No
9/21/2013	PZ-19	14.94	23.67	8.73	--	
9/21/2013	MW-02S	17.63	31.96	14.33	15.50	No
10/6/2013	PZ-19	14.58	23.67	9.09	--	
10/6/2013	MW-02S	16.03	31.96	15.93	15.50	Yes
11/10/2013	PZ-19	12.74	23.67	10.93	--	
11/10/2013	MW-02S	17.11	31.96	14.85	15.50	No
12/15/2013	PZ-19	13.08	23.67	10.59	--	
12/15/2013	MW-02S	17.50	31.96	14.46	15.50	No
1/5/2014	PZ-19	14.24	23.67	9.43	--	
1/5/2014	MW-02S	17.67	31.96	14.29	15.50	No
2/1/2014	PZ-19	14.13	23.67	9.54	--	
2/1/2014	MW-02S	17.21	31.96	14.75	15.50	No

TABLE 1
GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
3/1/2014	PZ-19	13.53	23.67	10.14	--	
3/1/2014	MW-02S	15.96	31.96	16.00	15.50	Yes
4/29/2013	MW-02S	16.71	31.96	15.25	--	
4/29/2013	MW-02D	20.14	31.81	11.67	--	
5/31/2013	MW-02S	17.48	31.96	14.48	--	
5/31/2013	MW-02D	20.56	31.81	11.25	--	
6/9/2013	MW-02S	17.48	31.96	14.48	--	
6/9/2013	MW-02D	21.93	31.81	9.88	--	
7/21/2013	MW-02S	18.11	31.96	13.85	--	
7/21/2013	MW-02D	17.62	31.81	14.19	--	
8/29/2013	MW-02S	17.89	31.96	14.07	--	
8/29/2013	MW-02D	20.27	31.81	11.54	--	
9/21/2013	MW-02S	17.63	31.96	14.33	--	
9/21/2013	MW-02D	19.31	31.81	12.50	--	
10/6/2013	MW-02S	16.03	31.96	15.93	--	
10/6/2013	MW-02D	18.53	31.81	13.28	--	
11/10/2013	MW-02S	17.11	31.96	14.85	--	
11/10/2013	MW-02D	17.69	31.81	14.12	--	
12/15/2013	MW-02S	17.50	31.96	14.46	--	
12/15/2013	MW-02D	17.11	31.81	14.70	--	
1/5/2014	MW-02S	17.67	31.96	14.29	--	
1/5/2014	MW-02D	20.33	31.81	11.48	--	
2/1/2014	MW-02S	17.21	31.96	14.75	--	
2/1/2014	MW-02D	18.08	31.81	13.73	--	
3/1/2014	MW-02S	15.96	31.96	16.00	--	
3/1/2014	MW-02D	17.19	31.81	14.62	--	
4/29/2013	MW-01S	7.15	21.64	14.49	--	
4/29/2013	MW-01D	10.88	21.72	10.84	--	
5/31/2013	MW-01S	7.42	21.64	14.22	--	
5/31/2013	MW-01D	10.17	21.72	11.55	--	
6/9/2013	MW-01S	7.47	21.64	14.17	--	
6/9/2013	MW-01D	10.86	21.72	10.86	--	

TABLE 1
GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
7/21/2013	MW-01S	7.68	21.64	13.96	--	
7/21/2013	MW-01D	8.57	21.72	13.15	--	
8/29/2013	MW-01S	7.99	21.64	13.65	--	
8/29/2013	MW-01D	10.11	21.72	11.61	--	
9/21/2013	MW-01S	7.89	21.64	13.75	--	
9/21/2013	MW-01D	7.99	21.72	13.73	--	
10/6/2013	MW-01S	7.42	21.64	14.22	--	
10/6/2013	MW-01D	8.36	21.72	13.36	--	
11/10/2013	MW-01S	7.77	21.64	13.87	--	
11/10/2013	MW-01D	7.70	21.72	14.02	--	
12/15/2013	MW-01S	7.93	21.64	13.71	--	
12/15/2013	MW-01D	7.38	21.72	14.34	--	
1/5/2014	MW-01S	9.42	21.64	12.22	--	
1/5/2014	MW-01D	8.13	21.72	13.59	--	
2/1/2014	MW-01S	7.93	21.64	13.71	--	
2/1/2014	MW-01D	7.79	21.72	13.93	--	
3/1/2014	MW-01S	7.37	21.64	14.27	--	
3/1/2014	MW-01D	7.36	21.72	14.36	--	
4/29/2013	MW-05S	13.84	29.45	15.61	16.50	No
4/29/2013	MW-05D	14.19	26.50	12.31	--	--
5/31/2013	MW-05S	14.42	29.45	15.03	16.50	No
5/31/2013	MW-05D	14.81	26.50	11.69	--	--
6/9/2013	MW-05S	14.43	29.45	15.02	16.50	No
6/9/2013	MW-05D	16.60	26.50	9.90	--	--
7/21/2013	MW-05S	14.63	29.45	14.82	16.50	No
7/21/2013	MW-05D	11.63	26.50	14.87	--	--
8/29/2013	MW-05S	14.92	29.45	14.53	16.50	No
8/29/2013	MW-05D	14.51	26.50	11.99	--	--
9/21/2013	MW-05S	14.56	29.45	14.89	16.50	No
9/21/2013	MW-05D	13.68	26.50	12.82	--	--
10/6/2013	MW-05S	13.06	29.45	16.39	16.50	No

TABLE 1
GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
10/6/2013	MW-05D	12.61	26.50	13.89	--	--
11/10/2013	MW-05S	14.15	29.45	15.30	16.50	No
11/10/2013	MW-05D	11.59	26.50	14.91	--	--
12/15/2013	MW-05S	14.61	29.45	14.84	16.50	No
12/15/2013	MW-05D	10.91	26.50	15.59	--	--
1/5/2014	MW-05S	14.91	29.45	14.54	16.50	No
1/5/2014	MW-05D	14.88	26.50	11.62	--	--
2/1/2014	MW-05S	14.37	29.45	15.08	16.50	No
2/1/2014	MW-05D	12.02	26.50	14.48	--	--
3/1/2014	MW-05S	13.03	29.45	16.42	16.50	No
3/1/2014	MW-05D	10.92	26.50	15.58	--	--

MLLW = Mean low low water.
Groundwater elevations determined by subtracting depth to groundwater below top of casing (ft) from top of well casing elevation (MLLW, ft).
(a) Below top of PVC well casing.
(b) Hydraulic gradient direction of groundwater. Long term goal is inward for well pairs 1, 2, 3, and 4, and upwards for well pairs 5, 6, and 7. Long term goals initiated in 2012.
(b) Short term hydraulic control goal is 15.5 ft along the majority of the cutoff wall alignment and 16.5 ft adjacent to Budd Inlet.
(c) Well LW-3 casing modified and re-surveyed January 2009. On 7/28/10 the well casing at LW-3 cut down 0.2 ft to make room for new well monument lid. Elevation was adjusted from 20.03 to 19.83.
(d) Wells MW-02s, MW-02d, MW-05s, and MW-05d were modified during construction activities and re-surveyed February 2009.
(e) MW-02D and MW-02S inner north rim elevations modified in September 2011.
(f) On 12/8/11 the inner well casing was cut down at MW-01D by 0.15'. Outer casing cut down corresponding amount. New MW-01D measuring point elevation is 21.72' MLLW.

NM = Not measured due to blocked access to well.
NA = Not available.

TABLE 2
SUMMARY OF CURRENT ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels (a)	PZ-12 XC89D 8/29/2013	PZ-12 YA02K 2/19/2014	PZ-13 XC89B 8/29/2013	PZ-13 XH58A 10/1/2013	PZ-13 YA02H 2/19/2014	PZ-17 XC81H 8/28/2013	PZ-17 YA02O 2/19/2014	PZ-18 XC81I 8/28/2013	PZ-18 YA02F 2/18/2014	PZ-19 XC81E 8/28/2013	PZ-19 YA02E 2/18/2014	LW-3 XC81J 8/28/2013	LW-3 YA02N 2/19/2014
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)														
EPA Method 8270D / 8270D-SIM														
Naphthalene	4900	**1.8**	1.0 U	1.0 U	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**2.0**
2-Methylnaphthalene		1.0 U	1.0 U	1.0 U	NA	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
Acenaphthylene		1.0 U	1.0 U	1.0 U	NA	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
Acenaphthene		1.0 U	1.0 U	1.0 U	NA	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
Dibenzofuran		1.0 U	1.0 U	1.0 U	NA	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
Fluorene		1.0 U	1.0 U	1.0 U	NA	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
Pentachlorophenol	3	10 U	10 U	10 U	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Phenanthrene		1.0 U	1.0 U	1.0 U	NA	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
Anthracene		1.0 U	1.0 U	1.0 U	NA	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
Fluoranthene		1.0 U	1.0 U	1.0 U	NA	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
Pyrene	2600	1.0 U	1.0 U	1.0 U	NA	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
Benzo(a)Anthracene		0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U
Chrysene		0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U
Benzo(a)Pyrene		0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U
Indeno(1,2,3-cd)Pyrene		0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U
Dibenz(a,h)Anthracene		0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U
Benzo(g,h,i)Perylene		1.0 U	1.0 U	1.0 U	NA	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-Methylnaphthalene		1.0 U	1.0 U	1.0 U	NA	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
Total Benzofluoranthenes		0.20 U	0.10 U	0.20 U	NA	0.10 U	0.20 U	0.10 U	0.20 U	0.10 U	0.20 U	0.10 U	0.22 U	0.10 U
cPAH TEQ (b)	0.1 (c)	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.076	0.071	0.076	NA	0.071	0.076	0.071	0.076	0.071	0.076	0.071	0.083	0.071
PENTACHLOROPHENOL (µg/L)														
EPA Method 8041														
Pentachlorophenol	3	**5.8**	0.25 U	0.25 U	NA	0.25 U	0.25 U	1.8 U	0.26 U	0.25 U	0.25 U	0.25 U	0.31 U	3.7 U
PETROLEUM HYDROCARBONS														
Method NWTPH-G (µg/L)														
Gasoline	1,000	250 U	250 U	250 U	NA	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U
Method NWTPH-Dx (µg/L)														
Diesel	500	100 U	100 U	100 U	100 U	100 U	100 U	100 U	110 U	100 U	100 U	100 U	**150**	**2,100**
Motor Oil	500	200 U	200 U	**540**	200 U	200 U	200 U	200 U	210 U	200 U	200 U	200 U	230 U	**1,200**
Creosote Oil	500	100 U	100 U	**160**	100 U	100 U	100 U	100 U	110 U	100 U	100 U	100 U	**580**	**9,200**

TABLE 2
SUMMARY OF CURRENT ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels (a)	LW-4R XC81K 8/28/2013	LW-4R YA02L 2/19/2014	MW-01S XC89C 8/29/2013	MW-01S YA02M 2/19/2014	MW-02S XC81F 8/28/2013	MW-02S YA02J 2/19/2014	MW-05S XC81D 8/28/2013	Dup of MW-05S PZ-30 XC81G 8/28/2013	MW-05S YA02B 2/18/2014	Dup of MW-05S PZ-30 YA02A 2/18/2014	MW-01D XC89A 8/29/2013
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)												
EPA Method 8270D / 8270D-SIM												
Naphthalene	4900	1.0 U	**2.1**	**6,800**	**6,800**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1.1**
2-Methylnaphthalene		1.0 U	1.0 U	**780**	**1,200**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acenaphthylene		1.0 U	1.0 U	10 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acenaphthene		1.0 U	1.0 U	**270**	**330**	**1.2**	**1.2**	**8.7**	**9.4**	**9.0**	**10**	1.0 U
Dibenzofuran		1.0 U	1.0 U	**140**	**160**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Fluorene		1.0 U	1.0 U	**110**	**120**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Pentachlorophenol	3	10 U	10 U	**4,000**	**6,600**	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Phenanthrene		1.0 U	1.0 U	**130**	**120**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Anthracene		1.0 U	1.0 U	**39**	**27**	1.0 U	**1.1**	1.0 U	1.0 U	1.0 U	**1.0**	1.0 U
Fluoranthene		1.0 U	1.0 U	**56**	**44**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Pyrene	2600	1.0 U	1.0 U	**34**	**22**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzo(a)Anthracene		0.10 U	0.10 U	**4.1**	**2.1**	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Chrysene		0.10 U	0.10 U	**3.4**	**2.2**	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(a)Pyrene		0.10 U	0.10 U	**1.4**	**0.69**	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Indeno(1,2,3-cd)Pyrene		0.10 U	0.10 U	**0.58**	**0.15**	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Dibenz(a,h)Anthracene		0.10 U	0.10 U	**0.53**	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(g,h,i)Perylene		1.0 U	1.0 U	10 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1-Methylnaphthalene		1.0 U	1.0 U	**580**	**580**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Total Benzofluoranthenes		0.20 U	0.10 U	**2.7**	**1.4**	0.22 U	0.10 U	0.20 U	0.20 U	0.10 U	0.10 U	0.20 U
cPAH TEQ (b)	0.1 (c)	ND	ND	**2.2**	**1.1**	ND	ND	ND	ND	ND	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.076	0.071	**2.2**	**1.1**	0.083	0.071	0.076	0.076	0.071	0.071	0.076
PENTACHLOROPHENOL (µg/L)												
EPA Method 8041												
Pentachlorophenol	3	0.28 U	0.25 U	NA	NA	0.28 U	0.25 U	0.25 U	0.25 U	0.25 U	0.52 U	0.28 U
PETROLEUM HYDROCARBONS												
Method NWTPH-G (µg/L)												
Gasoline	1,000	250 U	250 U	**48,000**	**47,000**	250 U	250 U	250 U	250 U	250 U	250 U	250 U
Method NWTPH-Dx (µg/L)												
Diesel	500	100 U	100 U	**9,400**	**7,300**	130 U	100 U	100 U	100 U	100 U	100 U	100 U
Motor Oil	500	200 U	200 U	**280**	**390**	260 U	**240**	200 U	200 U	200 U	200 U	200 U
Creosote Oil	500	100 U	100 U	**39,000**	**34,000**	130 U	100 U	100 U	100 U	100 U	100 U	100 U

TABLE 2
SUMMARY OF CURRENT ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels (a)	MW-01D YA02I 2/19/2014	MW-02D XC81B 8/28/2013	MW-02D YA02D 2/18/2014	MW-05D XC81A 8/28/2013	MW-05D YA02G 2/19/2014	CW-13 XC81C 8/28/2013	CW-13 YA02C 2/18/2014
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)								
EPA Method 8270D / 8270D-SIM								
Naphthalene	4900	**1.2**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Methylnaphthalene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acenaphthylene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acenaphthene		1.0 U	**4.7**	**6.6**	**5.5**	1.0 U	**1.5**	1.0 U
Dibenzofuran		1.0 U	**1.0**	**2.3**	1.0 U	1.0 U	1.0 U	1.0 U
Fluorene		1.0 U	**3.3**	**3.2**	1.0 U	1.0 U	1.0 U	1.0 U
Pentachlorophenol	3	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Phenanthrene		1.0 U	1.0 U	**2.0**	1.0 U	1.0 U	1.0 U	1.0 U
Anthracene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Fluoranthene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Pyrene	2600	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzo(a)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U
Chrysene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U
Benzo(a)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U
Indeno(1,2,3-cd)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U
Dibenz(a,h)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U
Benzo(g,h,i)Perylene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1-Methylnaphthalene		1.0 U	1.0 U	**2.1**	1.0 U	1.0 U	1.0 U	1.0 U
Total Benzofluoranthenes		0.10 U	0.20 U	0.10 U	0.20 U	0.10 U	0.22 U	0.10 U
cPAH TEQ (b)	0.1 (c)	ND	ND	ND	ND	ND	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.071	0.076	0.071	0.076	0.071	0.083	0.071
PENTACHLOROPHENOL (µg/L)								
EPA Method 8041								
Pentachlorophenol	3	0.25 U	**0.37**	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
PETROLEUM HYDROCARBONS								
Method NWTPH-G (µg/L)								
Gasoline	1,000	250 U	**620**	250 U	250 U	250 U	250 U	250 U
Method NWTPH-Dx (µg/L)								
Diesel	500	100 U	**160**	100 U	100 U	100 U	100 U	100 U
Motor Oil	500	200 U	**470**	200 U	200 U	200 U	200 U	200 U
Creosote Oil	500	100 U	**530**	100 U	100 U	100 U	100 U	100 U

µg/L = micrograms per liter
TEQ = Toxicity Equivalency Quotient
cPAH = carcinogenic polycyclic aromatic hydrocarbon
EPA = U.S. Environmental Protection Agency
SIM = Select Ion Monitoring
TPH-Dx = Diesel-range total petroleum hydrocarbon
TPH-G = Gasoline-range total petroleum hydrocarbon
U = Indicates the compound was undetected at the given reporting limit.
NA = Not analyzed.
ND = Not Detected.
Bold indicates detected compound. Box indicates exceedance of screening levels.
Box indicates exceedance of screening level.

(a) Groundwater screening levels are MTCA Method B for marine surface water for cPAHs and PCP; MTCA Method A for TPH-G/TPH-Dx.
(b) TEQ = toxicity equivalency factor as described in WAC 173-340-708 (8).

APPENDIX A

Historical Analytical Results and Groundwater Elevations

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	PZ-12 2005060439-08 6/27/2005	PZ-12 2006030253-01 3/20/2006	PZ-12 2006110182-02 11/11/2006	PZ-12 LS10B 10/1/2007	PZ-12 MO26G 3/20/208	PZ-12 NH92A 7/29/208	PZ-12 OH11B 1/8/2009	PZ-12 PK28A 8/11/2009	PZ-12 QF84J 1/15/2010	PZ-12 RS33A 10/18/2010	PZ-12 SO90O 3/24/2011	PZ-12 TH68B 8/8/2011	PZ-12 UL19B 3/7/2012	PZ-12 VP53F 10/25/2012	PZ-12 WF57A 2/27/2013	PZ-12 XC89D 8/29/2013	PZ-12 YA02K 2/19/2014
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																		
EPA Method 8270D / 8270D-SIM																		
Naphthalene	4900	0.10 U	NA	**0.30**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**3.0**	1.0 U	1.0 U	1.0 U	1.0 U	**1.8**	1.0 U
2-Methylnaphthalene		NA	NA	NA	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	1.0 U
Acenaphthylene		0.10 U	NA	0.10 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	1.0 U	1.0 U
Acenaphthene		0.10 U	NA	0.10 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	1.0 U	1.0 U
Dibenzofuran		NA	NA	NA	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	1.0 U
Fluorene		0.10 U	NA	0.10 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	1.0 U	1.0 U
Pentachlorophenol	3	NA	NA	NA	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	10 U	10 U	10 U	10 U
Phenanthrene		0.10 U	NA	0.10 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	1.0 U	1.0 U
Carbazole		NA	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA	NA
Anthracene		**0.20**	NA	0.10 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	1.0 U	1.0 U
Fluoranthene		0.10 U	NA	0.10 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	1.0 U	1.0 U
Pyrene	2600	0.10 U	NA	0.10 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	1.0 U	1.0 U
Benzo(a)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Chrysene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(b)Fluoranthene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)Fluoranthene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 UJ	0.10 U	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Indeno(1,2,3-cd)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Dibenz(a,h)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(g,h,i)Perylene		0.10 U	NA	0.10 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	1.0 U	1.0 U
1-Methylnaphthalene		NA	NA	NA	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	1.0 U
Total Benzofluoranthenes											0.10 U	0.10 U	0.10 U	0.10 U	0.20 U	0.20 U	0.20 U	0.10 U
cPAH TEQ (b)	0.1 (c)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.071	0.071	0.071	0.071	0.076	0.076	0.076	0.071
PENTACHLOROPHENOL (µg/L)																		
EPA Method 8041/8270C,D																		
Pentachlorophenol	3	10 U	0.10 U	0.1 U	0.25 U	0.25 U	0.25 UJ	0.25 U	0.26 U	0.25 U	0.25 U	**1.8**	0.25 U	0.25 U	**0.31**	0.25 U	**5.8**	0.25 U
PETROLEUM HYDROCARBONS																		
Method NWTPH-G (µg/L)																		
Gasoline	1,000	50 U	50 U	50 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U
Method NWTPH-Dx (µg/L)																		
Diesel	500	100 U	100 U	100 U	250 U	250 U	250 U	250 U	250 U	250 U	100 U	110 U	100 U	100 U	100 U	100 U	100 U	100 U
Motor Oil	500	500 U	500 U	500 U	500 U	500 U	500 U	500 U	250 U	500 U	200 U	220 U	200 U	200 U	200 U	200 U	200 U	200 U
Creosote Oil	500	NA	NA	NA	NA	250 U	500 U	250 U	500 U	250 U	100 U	220 U	200 U	200 U	100 U	**100**	100 U	100 U

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	PZ-12 2005060439-08 6/27/2005	PZ-12 2006030253-01 3/20/2006	PZ-12 2006110182-02 11/11/2006	PZ-12 LS10B 10/1/2007	PZ-12 MO26G 3/20/208	PZ-12 NH92A 7/29/208	PZ-12 OH11B 1/8/2009	PZ-12 PK28A 8/11/2009	PZ-12 QF84J 1/15/2010	PZ-12 RS33A 10/18/2010	PZ-12 SO90O 3/24/2011	PZ-12 TH68B 8/8/2011	PZ-12 UL19B 3/7/2012	PZ-12 VP53F 10/25/2012	PZ-12 WF57A 2/27/2013	PZ-12 XC89D 8/29/2013	PZ-12 YA02K 2/19/2014
BTEX (µg/L)																		
Method SW8021B/SW021B MOD																		
Benzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m, p-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	PZ-13 2005060392-01 6/27/2005	PZ-13 2006030241-01 3/19/2006	PZ-13 2006110182-01 11/11/2006	PZ-13 LS10A 9/30/2007	PZ-13 MO26H 3/19/208	PZ-13 NH92B 7/29/208	PZ-13 OH11A 1/8/2009	PZ-13 PK28B 8/11/2009	PZ-13 PP40A 9/21/2009	PZ-13 QF84F 1/14/2010	PZ-13 RS33B 10/18/2010	PZ-13 SO90E 3/24/2011	PZ-13 TH68A 8/8/2011	PZ-13 UL19F 3/7/2012	PZ-13 VP53A 10/25/2012	PZ-13 WF57B 2/27/2013	PZ-13 XC89B 8/29/2013
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																			
EPA Method 8270D / 8270D-SIM																			
Naphthalene	4900	0.10 U	NA	**10.2**	1.0 U	1.0 U	1.0 U	1.0 U	**9.1**	**4.0**	**2.2**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Methylnaphthalene		NA	NA	NA	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	1.0 U	1.0 U
Acenaphthylene		0.10 U	NA	0.10 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	1.0 U	1.0 U	1.0 U
Acenaphthene		0.10 U	NA	0.75	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	1.0 U	1.0 U
Dibenzofuran		NA	NA	NA	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	1.0 U	1.0 U
Fluorene		0.10 U	NA	0.10 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	1.0 U	1.0 U	1.0 U
Pentachlorophenol	3	NA	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	5 U	NA	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 U	10 U	10 U	
Phenanthrene		0.10 U	NA	0.10 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	1.0 U	1.0 U	1.0 U
Carbazole		NA	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA
Anthracene		0.10 U	NA	0.10 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	1.0 U	1.0 U	1.0 U
Fluoranthene		0.10 U	NA	0.10 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	1.0 U	1.0 U	1.0 U
Pyrene	2600	0.10 U	NA	0.10 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	1.0 U	1.0 U	1.0 U
Benzo(a)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	1.0 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Chrysene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	1.0 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(b)Fluoranthene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	1.0 U	0.10 U	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)Fluoranthene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 UJ	1.0 U	0.10 U	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	1.0 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Indeno(1,2,3-cd)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	1.0 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Dibenz(a,h)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	1.0 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(g,h,i)Perylene		0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0	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-Methylnaphthalene		NA	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U	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
Total Benzofluoranthenes												0.10 U	0.10 U	0.10 U	0.10 U	0.20 U	0.20 U	0.20 U	
cPAH TEQ (b)	0.1 (c)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.76	0.076	0.071	0.071	0.071	0.071	0.076	0.076	0.076	
PENTACHLOROPHENOL (µg/L)																			
EPA Method 8041/8270C,D																			
Pentachlorophenol	3	10 U	0.10 U	0.10 U	0.25 U	0.25 U	0.25 UJ	0.25 U	0.26 U		0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	
PETROLEUM HYDROCARBONS																			
Method NWTPH-G (µg/L)																			
Gasoline	1,000	50 U	50 U	**112**	250 U	250 U	250 U	250 U	**1,900**	**310**	250 U	250 U	250 U	250 U	**250**	250 U	250 U	250 U	
Method NWTPH-Dx (µg/L)																			
Diesel	500	100 U	100 U	100 U	250 U	250 U	250 U	250 U	250 U		250 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	
Motor Oil	500	500 U	500 U	500 U	500 U	500 U	500 U	500 U	250 U		500 U	200 U	200 U	200 U	200 U	200 U	200 U	**540**	
Creosote Oil	500	NA	NA	NA	NA	250 U	500 U	250 U	500 U		250 U	100 U	200 U	200 U	200 U	100 U	**170**	**160**	

Source: \\edmdata01\projects\021\039\WIP\T\Cumulative GW Compliance Data.xlsx

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	PZ-13 2005060392-01 6/27/2005	PZ-13 2006030241-01 3/19/2006	PZ-13 2006110182-01 11/11/2006	PZ-13 LS10A 9/30/2007	PZ-13 MO26H 3/19/208	PZ-13 NH92B 7/29/208	PZ-13 OH11A 1/8/2009	PZ-13 PK28B 8/11/2009	PZ-13 PP40A 9/21/2009	PZ-13 QF84F 1/14/2010	PZ-13 RS33B 10/18/2010	PZ-13 SO90E 3/24/2011	PZ-13 TH68A 8/8/2011	PZ-13 UL19F 3/7/2012	PZ-13 VP53A 10/25/2012	PZ-13 WF57B 2/27/2013	PZ-13 XC89B 8/29/2013
BTEX (µg/L)																		
Method SW8021B/SW021B MOD																		
Benzene	5	NA	NA	NA	NA	NA	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	**56**	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	700	NA	NA	NA	NA	NA	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA
m, p-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	PZ-13 XH58A 10/1/2013	PZ-13 YA02H 2/19/2014	PZ-17 2005060439-04 6/28/2005	PZ-17 2006030253-02 3/20/2006	PZ-17 2006110200-01 11/13/2006	PZ-17 LS10E 10/1/2007	PZ-17 MO07B 3/19/208	PZ-17 NH70B 7/28/208	PZ-17 OH11C 1/8/2009	PZ-17 PJ99B 8/10/2009	PZ-17 QF84C 1/14/2010	PZ-17 RS33D 10/18/2010	PZ-17 SO90L 3/24/2011	PZ-17 TH68C 8/8/2011	PZ-17 UL19C 3/7/2012	PZ-17 VP53G 10/26/2012
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																	
EPA Method 8270D / 8270D-SIM																	
Naphthalene	4900	NA	1.0 U	0.10 U	NA	**0.11**	1.0 U	1.0 U	1.0 U	1.0 U	1.2 U	1.0 U	1.0 U	**3.2**	1.0 U	1.0 U	1.0 U
2-Methylnaphthalene		NA	1.0 U	NA	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.2 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acenaphthylene		NA	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.2 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acenaphthene		NA	1.0 U	0.10 U	NA	**0.23**	1.0 U	1.0 U	1.0 U	1.0 U	1.2 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibenzofuran		NA	1.0 U	NA	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.2 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Fluorene		NA	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.2 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Pentachlorophenol	3	NA	10 U	NA	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	5.9 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 U
Phenanthrene		NA	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.2 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbazole		NA	NA	NA	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.2 U	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U
Anthracene		NA	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.2 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Fluoranthene		NA	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.2 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Pyrene	2600	NA	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.2 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzo(a)Anthracene		NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U
Chrysene		NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U
Benzo(b)Fluoranthene		NA	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	NA	NA	NA	NA
Benzo(k)Fluoranthene		NA	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	NA	NA	NA	NA
Benzo(a)Pyrene		NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U
Indeno(1,2,3-cd)Pyrene		NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U
Dibenz(a,h)Anthracene		NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U
Benzo(g,h,i)Perylene		NA	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.2 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1-Methylnaphthalene		NA	1.0 U	NA	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.2 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Total Benzofluoranthenes		NA	0.10 U										0.10 U	0.11 U	0.10 U	0.10 U	0.20 U
cPAH TEQ (b)	0.1 (c)	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	NA	0.071	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.071	0.078	0.071	0.071	0.076
PENTACHLOROPHENOL (µg/L)																	
EPA Method 8041/8270C,D																	
Pentachlorophenol	3	NA	0.25 U	10 U	0.10 U	0.10 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
PETROLEUM HYDROCARBONS																	
Method NWTPH-G (µg/L)																	
Gasoline	1,000	NA	250 U	50 U	50 U	50 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U
Method NWTPH-Dx (µg/L)																	
Diesel	500	100 U	100 U	100 U	100 U	100 U	250 U	250 U	250 U	250 U	250 U	250 U	100 U	100 U	110 U	100 U	100 U
Motor Oil	500	200 U	200 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U	200 U	200 U	220 U	200 U	200 U
Creosote Oil	500	100 U	100 U	NA	NA	NA	NA	250 U	500 U	250 U	250 U	250 U	100 U	200 U	220 U	200 U	100 U

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	PZ-13 XH58A 10/1/2013	PZ-13 YA02H 2/19/2014	PZ-17 2005060439-04 6/28/2005	PZ-17 2006030253-02 3/20/2006	PZ-17 2006110200-01 11/13/2006	PZ-17 LS10E 10/1/2007	PZ-17 MO07B 3/19/208	PZ-17 NH70B 7/28/208	PZ-17 OH11C 1/8/2009	PZ-17 PJ99B 8/10/2009	PZ-17 QF84C 1/14/2010	PZ-17 RS33D 10/18/2010	PZ-17 SO90L 3/24/2011	PZ-17 TH68C 8/8/2011	PZ-17 UL19C 3/7/2012	PZ-17 VP53G 10/26/2012
BTEX (µg/L)																	
Method SW8021B/SW021B MOD																	
Benzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m, p-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	PZ-17 WF57G 2/27/2013	PZ-17 XC81H 8/28/2013	PZ-17 YA02O 2/19/2014	PZ-18 2005060439-01 6/29/2005	PZ-18 2006030261-01 3/21/2006	PZ-18 2006110239-01 11/14/2006	PZ-18 LS10C 10/1/2007	PZ-18 MO07C 3/19/208	PZ-18 NH70C 7/28/208	PZ-18 NM64A 8/28/208	PZ-18 OH11E 1/8/2009	PZ-18 PJ99C 8/10/2009	PZ-18 PP40B 9/21/2009	PZ-18 QF84K 1/15/2010	PZ-18 RS33L 10/19/2010	PZ-18 SO90F 3/24/2011
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																	
EPA Method 8270D / 8270D-SIM																	
Naphthalene	4900	1.0 U	1.0 U	1.0 U	0.10 U	NA	**0.13**	1.0 U	1.0 U	1.0 U	NA	1.0 U	**3.2**	1.0 U	**2.8**	1.0 U	1.0 U
2-Methylnaphthalene		1.0 U	1.0 U	1.0 U	NA	NA	NA	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U
Acenaphthylene		1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U
Acenaphthene		1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibenzofuran		1.0 U	1.0 U	1.0 U	NA	NA	NA	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U
Fluorene		1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U
Pentachlorophenol	3	10 U	10 U	10 U	NA	NA	NA	5.0 U	5.0 U	5.0 U	NA	5.0 U	5.6 U	NA	5.0 U	5.0 U	5.0 U
Phenanthrene		1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbazole		NA	NA	NA	NA	NA	NA	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.1 U	NA	1.0 U	1.0 UJ	1.0 U
Anthracene		1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U
Fluoranthene		1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U
Pyrene	2600	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzo(a)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U	1.0 U	0.11 U	0.10 U	0.10 U
Chrysene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U	1.0 U	0.11 U	0.10 U	0.10 U
Benzo(b)Fluoranthene		NA	NA	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U	1.0 U	0.11 U	NA	NA
Benzo(k)Fluoranthene		NA	NA	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U	1.0 U	0.11 U	NA	NA
Benzo(a)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U	1.0 U	0.11 U	0.10 U	0.10 U
Indeno(1,2,3-cd)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U	1.0 U	0.11 U	0.10 U	0.10 U
Dibenz(a,h)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U	1.0 U	0.11 U	0.10 U	0.10 U
Benzo(g,h,i)Perylene		1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U
1-Methylnaphthalene		1.0 U	1.0 U	1.0 U	NA	NA	NA	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U
Total Benzofluoranthenes		0.20 U	0.20 U	0.10 U												0.10 U	0.10 U
cPAH TEQ (b)	0.1 (c)	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.076	0.076	0.071	0.076	0.076	0.076	0.076	0.076	0.076	NA	0.076	0.076	0.76	0.083	0.071	0.071
PENTACHLOROPHENOL (µg/L)																	
EPA Method 8041/8270C,D																	
Pentachlorophenol	3	0.25 U	0.25 U	1.8 U	10 U	0.10 U	0.10 U	0.25 U	0.25 U	**1.8** (d)	0.25 U	0.25 U	0.25 U	NA	**0.41**	**0.91**	0.25 U
PETROLEUM HYDROCARBONS																	
Method NWTPH-G (µg/L)																	
Gasoline	1,000	250 U	250 U	250 U	50 U	50 U	50 U	250 U	250 U	250 U	NA	250 U	250 U	NA	250 U	250 U	250 U
Method NWTPH-Dx (µg/L)																	
Diesel	500	100 U	100 U	100 U	100 UJ	100 U	100 U	250 U	250 U	250 U	NA	250 U	250 U	NA	250 U	100 U	110 U
Motor Oil	500	200 U	200 U	200 U	500 UJ	500 U	500 U	500 U	500 U	500 U	NA	500 U	500 U	NA	500 U	200 U	220 U
Creosote Oil	500	**150**	100 U	100 U	NA	**140**	NA	NA	250 U	500 U	NA	250 U	250 U	NA	250 U	100 U	220 U

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	PZ-17 WF57G 2/27/2013	PZ-17 XC81H 8/28/2013	PZ-17 YA02O 2/19/2014	PZ-18 2005060439-01 6/29/2005	PZ-18 2006030261-01 3/21/2006	PZ-18 2006110239-01 11/14/2006	PZ-18 LS10C 10/1/2007	PZ-18 MO07C 3/19/208	PZ-18 NH70C 7/28/208	PZ-18 NM64A 8/28/208	PZ-18 OH11E 1/8/2009	PZ-18 PJ99C 8/10/2009	PZ-18 PP40B 9/21/2009	PZ-18 QF84K 1/15/2010	PZ-18 RS33L 10/19/2010	PZ-18 SO90F 3/24/2011
BTEX (µg/L)																	
Method SW8021B/SW021B MOD																	
Benzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m, p-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	PZ-18 TH68F 8/8/2011	PZ-18 UL19E 3/7/2012	PZ-18 UO79A 3/30/2012	PZ-18 VP10B 10/24/2012	PZ-18 WF72G 2/28/2013	PZ-18 XC81I 8/28/2013	PZ-18 YA02F 2/18/2014	PZ-19 2005060439-03 6/29/2005	PZ-19 2006030294-04 3/22/2006	PZ-19 2006110239-04 11/14/2006	PZ-19 LS21E 10/2/2007	PZ-19 MO26B 3/20/208	PZ-19 NH70E 7/28/208	PZ-19 NM64B 8/28/208	PZ-19 OH25C 1/9/2009	PZ-19 PK28E 8/11/2009
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																	
EPA Method 8270D / 8270D-SIM																	
Naphthalene	4900	1.0 U	3.0 U	NA	1.0 U	1.0 U	1.0 U	1.0 U	**0.13**	NA	0.10 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U
2-Methylnaphthalene		1.0 U	3.0 U	NA	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U
Acenaphthylene		1.0 U	3.0 U	NA	1.0 U	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U
Acenaphthene		1.0 U	3.0 U	NA	1.0 U	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U
Dibenzofuran		1.0 U	3.0 U	NA	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U
Fluorene		1.0 U	3.0 U	NA	1.0 U	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U
Pentachlorophenol	3	5.0 U	15 U	NA	10 U	10 U	10 U	10 U	NA	NA	NA	5.0 U	5.0 U	5.0 U	NA	5.0 U	5.0 U
Phenanthrene		1.0 U	3.0 U	NA	1.0 U	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U
Carbazole		1.0 U	3.0 U	NA	1.0 U	NA	NA	NA	NA	NA	NA	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U
Anthracene		1.0 U	3.0 U	NA	1.0 U	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U
Fluoranthene		1.0 U	3.0 U	NA	1.0 U	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U
Pyrene	2600	1.0 U	3.0 U	NA	1.0 U	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U
Benzo(a)Anthracene		0.10 U	0.10 U	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U
Chrysene		0.10 U	0.10 U	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U
Benzo(b)Fluoranthene		NA	NA	NA	NA	NA	NA	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U
Benzo(k)Fluoranthene		NA	NA	NA	NA	NA	NA	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 UJ
Benzo(a)Pyrene		0.10 U	0.10 U	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U
Indeno(1,2,3-cd)Pyrene		0.10 U	0.10 U	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U
Dibenz(a,h)Anthracene		0.10 U	0.10 U	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U
Benzo(g,h,i)Perylene		1.0 U	3.0 U	NA	1.0 U	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U
1-Methylnaphthalene		1.0 U	3.0 U	NA	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U
Total Benzofluoranthenes		0.10 U	0.10 U	NA	0.20 U	0.20 U	0.20 U	0.10 U									
cPAH TEQ (b)	0.1 (c)	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.071	0.071	NA	0.076	0.076	0.076	0.071	0.076	0.076	0.076	0.076	0.076	0.076	NA	0.076	0.076
PENTACHLOROPHENOL (µg/L)																	
EPA Method 8041/8270C,D																	
Pentachlorophenol	3	0.31 U	0.25 U	NA	0.25 U	**0.48**	0.26 U	0.25 U	10 U	0.10 U	0.10 U	0.21 U	0.25 U	**0.70** J (f)	0.25 U	0.25 U	0.26 U
PETROLEUM HYDROCARBONS																	
Method NWTPH-G (µg/L)																	
Gasoline	1,000	250 U	**270**	250 U	250 U	250 U	250 U	250 U	50 U	50 U	50 U	250 U	250 U	250 U	NA	250 U	250 U
Method NWTPH-Dx (µg/L)																	
Diesel	500	120 U	**130**	100 U	100 U	100 U	110 U	100 U	**106**	100 U	100 U	250 U	250 U	250 U	NA	250 U	250 U
Motor Oil	500	240 U	200 U	200 U	200 U	200 U	210 U	200 U	500 U	500 U	500 U	500 U	500 U	500 U	NA	500 U	250 U
Creosote Oil	500	240 U	**470**	200 U	100 U	**140**	110 U	100 U	NA	NA	NA	NA	250 U	500 U	NA	250 U	500 U

Source: \\edmdata01\projects\021\039\WIP\T\Cumulative GW Compliance Data.xlsx

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	PZ-18 TH68F 8/8/2011	PZ-18 UL19E 3/7/2012	PZ-18 UO79A 3/30/2012	PZ-18 VP10B 10/24/2012	PZ-18 WF72G 2/28/2013	PZ-18 XC81I 8/28/2013	PZ-18 YA02F 2/18/2014	PZ-19 2005060439-03 6/29/2005	PZ-19 2006030294-04 3/22/2006	PZ-19 2006110239-04 11/14/2006	PZ-19 LS21E 10/2/2007	PZ-19 MO26B 3/20/208	PZ-19 NH70E 7/28/208	PZ-19 NM64B 8/28/208	PZ-19 OH25C 1/9/2009	PZ-19 PK28E 8/11/2009
BTEX (µg/L)																	
Method SW8021B/SW021B MOD																	
Benzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m, p-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	PZ-19 QG15C 1/18/2010	PZ-19 RS33H 10/19/2010	PZ-19 SO90H 3/25/2011	PZ-19 TI17B 8/9/2011	PZ-19 UL56G 3/8/2012	PZ-19 VP10C 10/24/2012	PZ-19 WF72C 2/28/2013	PZ-19 XC81E 8/28/2013	PZ-19 YA02E 2/18/2014	LW-3 2005060439-05 6/28/2005	LW-3 2006030316-02 3/23/2006	LW-3 2006110200-02 11/13/2006	Dup of LW-3 PZ30 2006110200-04 11/13/2006	LW-3 LS10G 10/1/2007	LW-3 MO07A 3/19/208	LW-3 NH70A 7/28/208
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																	
EPA Method 8270D / 8270D-SIM																	
Naphthalene	4900	1.0 U	1.0 U	1.0 U	1.0 U	**2.8**	1.0 U	**3.8**	1.0 U	1.0 U	**0.21**	NA	**0.12**	**0.13**	1.0 U	1.0 U	1.0 U
2-Methylnaphthalene		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	NA	NA	NA	NA	1.0 U	1.0 U	1.0 U
Acenaphthylene		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	0.10 U	NA	0.10 U	0.10 U	1.0 U	1.0 U	1.0 U
Acenaphthene		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	0.10 U	NA	0.10 U	0.10 U	1.0 U	1.0 U	1.0 U
Dibenzofuran		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	NA	NA	NA	NA	1.0 U	1.0 U	1.0 U
Fluorene		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	0.10 U	NA	0.10 U	0.10 U	1.0 U	1.0 U	1.0 U
Pentachlorophenol	3	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 U	10 U	10 U	10 U	NA	NA	NA	NA	5.0 U	5.0 U	5.0 U
Phenanthrene		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	0.10 U	NA	0.10 U	0.10 U	1.0 U	1.0 U	1.0 U
Carbazole		1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA	NA	NA	NA	1.0 U	1.0 U	1.0 U
Anthracene		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	0.10 U	NA	0.10 U	0.10 U	1.0 U	1.0 U	1.0 U
Fluoranthene		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	0.10 U	NA	0.10 U	0.10 U	1.0 U	1.0 U	1.0 U
Pyrene	2600	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	0.10 U	NA	0.10 U	0.10 U	1.0 U	1.0 U	1.0 U
Benzo(a)Anthracene		0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Chrysene		0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(b)Fluoranthene		0.10 U	NA	NA	NA	NA	NA	NA	NA	NA	0.10 U	0.10 UJ	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(k)Fluoranthene		0.10 U	NA	NA	NA	NA	NA	NA	NA	NA	0.10 U	0.10 UJ	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(a)Pyrene		0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Indeno(1,2,3-cd)Pyrene		0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Dibenz(a,h)Anthracene		0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(g,h,i)Perylene		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	0.10 U	NA	0.10 U	0.10 U	1.0 U	1.0 U	1.0 U
1-Methylnaphthalene		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	NA	NA	NA	NA	1.0 U	1.0 U	1.0 U
Total Benzofluoranthenes			0.10 U	0.10 U	0.11 U	0.10 U	0.20 U	0.20 U	0.20 U	0.10 U							
cPAH TEQ (b)	0.1 (c)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.076	0.071	0.071	0.078	0.071	0.076	0.076	0.076	0.071	0.076	0.076	0.076	0.076	0.076	0.076	0.076
PENTACHLOROPHENOL (µg/L)																	
EPA Method 8041/8270C,D																	
Pentachlorophenol	3	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	10 U	0.10 U	0.10 U	0.10 U	**3.6** J	0.25 U	**0.57**
PETROLEUM HYDROCARBONS																	
Method NWTPH-G (µg/L)																	
Gasoline	1,000	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	**1,750** (e)	**53**	50 U	50 U	250 U	250 U	250 U
Method NWTPH-Dx (µg/L)																	
Diesel	500	250 U	100 U	110 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	250 U	250 U	250 U
Motor Oil	500	500 U	200 U	230 U	200 U	200 U	100 U	200 U	200 U	200 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U
Creosote Oil	500	250 U	100 U	230 U	200 U	200 U	200 U	**140**	100 U	100 U	NA	NA	NA	NA	NA	250 U	500 U

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	PZ-19 QG15C 1/18/2010	PZ-19 RS33H 10/19/2010	PZ-19 SO90H 3/25/2011	PZ-19 TI17B 8/9/2011	PZ-19 UL56G 3/8/2012	PZ-19 VP10C 10/24/2012	PZ-19 WF72C 2/28/2013	PZ-19 XC81E 8/28/2013	PZ-19 YA02E 2/18/2014	LW-3 2005060439-05 6/28/2005	LW-3 2006030316-02 3/23/2006	LW-3 2006110200-02 11/13/2006	Dup of LW-3 PZ30 2006110200-04 11/13/2006	LW-3 LS10G 10/1/2007	LW-3 MO07A 3/19/208	LW-3 NH70A 7/28/208
BTEX (µg/L)																	
Method SW8021B/SW021B MOD																	
Benzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m, p-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	LW-3 OH11D 1/8/2009	LW-3 PJ99A 8/10/2009	LW-3 QF84E 1/14/2010	LW-3 RS33C 10/18/2010	LW-3 SO90M 3/24/2011	LW-3 TH68D 8/8/2011	LW-3 UL19D 3/7/2012	LW-3 VP53H 10/26/2012	LW-3 WF57H 2/27/2013	LW-3 XC81J 8/28/2013	LW-3 YA02N 2/19/2014	LW-4R 2005060439-02 6/29/2005	LW-4R 2006030316-01 3/23/2006	LW-4R 2006110239-02 11/14/2006	LW-4R LS10D 10/1/2007	LW-4R MO07D 3/19/208
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																	
EPA Method 8270D / 8270D-SIM																	
Naphthalene	4900	1.0 U	2.0 UJ	1.0 U	3.0 U	**7.9**	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	**2.0**	0.10 U	NA	0.10 U	1.0 U	1.0 U
2-Methylnaphthalene		1.0 U	2.0 UJ	1.0 U	3.0 U	1.0 U	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	1.0 U	1.0 U
Acenaphthylene		1.0 U	2.0 UJ	1.0 U	3.0 U	1.0 U	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U
Acenaphthene		1.0 U	2.0 UJ	1.0 U	3.0 U	1.0 U	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U
Dibenzofuran		1.0 U	2.0 UJ	1.0 U	3.0 U	1.0 U	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	1.0 U	1.0 U
Fluorene		1.0 U	2.0 UJ	1.0 U	3.0 U	1.0 U	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U
Pentachlorophenol	3	5.0 U	10 UJ	5.0 U	15 U	5.0 U	5.0 U	15 U	10 U	10 U	10 U	10 U	NA	NA	NA	5.0 U	5.0 U
Phenanthrene		1.0 U	2.0 UJ	1.0 U	3.0 U	1.0 U	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U
Carbazole		1.0 U	2.0 UJ	1.0 U	3.0 UJ	1.0 U	1.0 U	3.0 U	1.0 U	NA	NA	NA	NA	NA	NA	1.0 U	1.0 U
Anthracene		1.0 U	2.0 UJ	1.0 U	3.0 U	1.0 U	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U
Fluoranthene		1.0 U	2.0 UJ	1.0 U	3.0 U	1.0 U	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U
Pyrene	2600	1.0 U	2.0 UJ	1.0 U	3.0 U	1.0 U	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U
Benzo(a)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	1.0 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Chrysene		0.10 U	0.10 U	0.10 U	0.10 U	1.0 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(b)Fluoranthene		0.10 U	0.10 U	0.10 U	NA	NA	NA	NA	NA	NA	NA	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(k)Fluoranthene		0.10 U	0.10 U	0.10 U	NA	NA	NA	NA	NA	NA	NA	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(a)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	1.0 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Indeno(1,2,3-cd)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	1.0 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Dibenz(a,h)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	1.0 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(g,h,i)Perylene		1.0 U	2.0 UJ	1.0 U	3.0 U	1.0 U	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U
1-Methylnaphthalene		1.0 U	2.0 UJ	1.0 U	3.0 U	1.0 U	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	1.0 U	1.0 U
Total Benzofluoranthenes					0.10 U	1.0 U	0.10 U	0.10 U	0.20 U	0.20 U	0.22 U	0.10 U					
cPAH TEQ (b)	0.1 (c)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.076	0.076	0.076	0.071	0.71 U	0.071	0.071	0.076	0.076	0.083	0.071	0.076	0.076	0.076	0.076	0.076
PENTACHLOROPHENOL (µg/L)																	
EPA Method 8041/8270C,D																	
Pentachlorophenol	3	0.25 U	0.28 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.31 U	3.7 U	10 U	0.10 U	0.10 U	0.25 U	0.25 U
PETROLEUM HYDROCARBONS																	
Method NWTPH-G (µg/L)																	
Gasoline	1,000	250 U	**20,000**	**1,800**	250 U	250 U	**1,400**	**1,300**	**4,100**	**270**	250 U	250 U	50 U	50 U	50 U	250 U	250 U
Method NWTPH-Dx (µg/L)																	
Diesel	500	250 U	**770**	**1,200**	100 U	120 U	**170**	**620**	**410**	**1,600**	**150**	**2,100**	100 U	100 U	100 U	250 U	250 U
Motor Oil	500	500 U	**1,300**	**1,200**	200 U	250 U	220 U	**1,200**	**310**	**860**	230 U	**1,200**	500 U	500 U	500 U	500 U	500 U
Creosote Oil	500	250 U	**2,000**	**4,400**	**170**	250 U	**390**	**2,100**	**2,800**	**12,000**	**580**	**9,200**	NA	NA	NA	NA	250 U

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	LW-3 OH11D 1/8/2009	LW-3 PJ99A 8/10/2009	LW-3 QF84E 1/14/2010	LW-3 RS33C 10/18/2010	LW-3 SO90M 3/24/2011	LW-3 TH68D 8/8/2011	LW-3 UL19D 3/7/2012	LW-3 VP53H 10/26/2012	LW-3 WF57H 2/27/2013	LW-3 XC81J 8/28/2013	LW-3 YA02N 2/19/2014	LW-4R 2005060439-02 6/29/2005	LW-4R 2006030316-01 3/23/2006	LW-4R 2006110239-02 11/14/2006	LW-4R LS10D 10/1/2007	LW-4R MO07D 3/19/208
BTEX (µg/L)																	
Method SW8021B/SW021B MOD																	
Benzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m, p-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	LW-4R NH70D 7/28/208	LW-4R OH11F 1/8/2009	LW-4R PJ99D 8/10/2009	LW-4R QF84L 1/15/2010	LW-4R RS33N 10/19/2010	LW-4R SO90A 3/24/2011	LW-4R TH68E 8/8/2011	LW-4R UL19A 3/7/2012	LW-4R VP10F 10/24/2012	LW-4R WF72F 2/28/2013	LW-4R XC81K 8/28/2013	LW-4R YA02L 2/19/2014	MW-01S 2005070010-01 6/30/2005	MW-01S 2006030261-04 3/21/2006	Dup of MW-01S PZ30 2006030261-05 3/21/2006	MW-01S 2006110251-01 11/15/2006
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																	
EPA Method 8270D / 8270D-SIM																	
Naphthalene	4900	1.0 U	1.0 U	**1.9**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**2.1**	**5,130**	NA	NA	**3,120**
2-Methylnaphthalene		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	NA	NA	NA	NA
Acenaphthylene		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	**860**	NA	NA	**33**
Acenaphthene		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	10 U	NA	NA	**398**
Dibenzofuran		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	NA	NA	NA	NA
Fluorene		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	**380**	NA	NA	**112**
Pentachlorophenol	3	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 U	10 U	10 U	10 U	NA	NA	NA	NA
Phenanthrene		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	**23**	NA	NA	**132**
Carbazole		1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA	NA	NA	NA
Anthracene		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	**17**	NA	NA	**96**
Fluoranthene		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	10 U	NA	NA	**172**
Pyrene	2600	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	**12**	NA	NA	**24**
Benzo(a)Anthracene		0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	10 U	**0.84**	**0.86**	10 U
Chrysene		0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	10 U	**0.55**	**0.57**	10 U
Benzo(b)Fluoranthene		0.10 U	0.10 U	0.10 U	0.11 U	NA	NA	NA	NA	NA	NA	NA	NA	10 U	**0.98**	**1.05**	10 U
Benzo(k)Fluoranthene		0.10 U	0.10 U	0.10 U	0.11 U	NA	NA	NA	NA	NA	NA	NA	NA	10 U	**0.55**	**0.59**	10 U
Benzo(a)Pyrene		0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	10 U	**0.74**	**0.80**	10 U
Indeno(1,2,3-cd)Pyrene		0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	10 U	**0.22**	**0.24**	10 U
Dibenz(a,h)Anthracene		0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	10 U	0.10 U	0.10 U	10 U
Benzo(g,h,i)Perylene		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	10 U	NA	NA	10 U
1-Methylnaphthalene		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	NA	NA	NA	NA
Total Benzofluoranthenes						0.10 U	0.10 U	0.10 U	0.10 U	0.20 U	0.20 U	0.20 U	0.10 U				
cPAH TEQ (b)	0.1 (c)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**1.00**	**1.08**	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.076	0.076	0.076	0.083	0.071	0.071	0.071	0.071	0.076	0.076	0.076	0.071	0.076	**1.01**	**1.08**	0.076
PENTACHLOROPHENOL (µg/L)																	
EPA Method 8041/8270C,D																	
Pentachlorophenol	3	0.25 U	0.25 U	0.25 U	0.25 U	**0.42**	0.25 U	0.25 U	0.25 U	0.25 U	**0.85**	0.28 U	0.25 U	**7,470**	**3,440**	**3,330**	**9,120**
PETROLEUM HYDROCARBONS																	
Method NWTPH-G (µg/L)																	
Gasoline	1,000	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	**5,830** (f)	**9,620**	**9,580**	**28,000**
Method NWTPH-Dx (µg/L)																	
Diesel	500	250 U	250 U	250 U	250 U	100 U	130 U	110 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U
Motor Oil	500	500 U	500 U	500 U	500 U	200 U	260 U	220 U	200 U	100 U	**400**	200 U	200 U	500 U	500 U	500 U	500 U
Creosote Oil	500	500 U	250 U	250 U	250 U	100 U	260 U	220 U	200 U	200 U	**200**	100 U	100 U	**13,000**	**6530** J	**5,090** J	**8,370**

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	LW-4R NH70D 7/28/208	LW-4R OH11F 1/8/2009	LW-4R PJ99D 8/10/2009	LW-4R QF84L 1/15/2010	LW-4R RS33N 10/19/2010	LW-4R SO90A 3/24/2011	LW-4R TH68E 8/8/2011	LW-4R UL19A 3/7/2012	LW-4R VP10F 10/24/2012	LW-4R WF72F 2/28/2013	LW-4R XC81K 8/28/2013	LW-4R YA02L 2/19/2014	MW-01S 2005070010-01 6/30/2005	MW-01S 2006030261-04 3/21/2006	Dup of MW-01S PZ30 2006030261-05 3/21/2006	MW-01S 2006110251-01 11/15/2006
BTEX (µg/L)																	
Method SW8021B/SW021B MOD																	
Benzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m, p-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	MW-01S LS10F 10/1/2007	MW-01S MO07F 3/19/208	MW-01S NH92C 7/29/208	MW-01S OH25E 1/9/2009	MW-01S PJ99F 8/10/2009	MW-01S QF84H 1/15/2010	MW-01S RS33M 10/19/2010	MW-01S SO90N 3/25/2011	MW-01S TI17G 8/9/2011	MW-01S UL56H 3/8/2012	MW-01S VP53D 10/25/2012	MW-01S WF72D 2/28/2013	MW-01S XC89C 8/29/2013	MW-01S YA02M 2/19/2014	MW-02S 2005070010-05 7/1/2005	MW-02S 2006030294-01 3/22/2006
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																	
EPA Method 8270D / 8270D-SIM																	
Naphthalene	4900	**11,000**	**7,100**	**11,000**	**9,000**	**9,100**	**5,000**	**9,100**	**5,400**	**6,900**	**5,000**	**4600**	**7,100**	**6,800**	**6,800**	**0.29**	NA
2-Methylnaphthalene		**920**	**1,000**	**810**	**1,000**	**890**	**900**	**750**	**740**	**680**	**1100**	**710**	**1000**	**780**	**1,200**	NA	NA
Acenaphthylene		**8.9**	**10**	**6.6**	**9.7** J	2.0 U	100 U	100 U	1.0 U	1.0 U	**6.8**	**10**	100 U	10 U	10 U	**0.10**	NA
Acenaphthene		**210**	**290**	**200**	**290**	**250**	**270**	**190**	**200**	**190**	**340**	**220**	**320**	**270**	**330**	**0.92**	NA
Dibenzofuran		**73**	**130**	**98**	**110**	**99**	**120**	100 U	**64**	**79**	**79**	**110**	**140**	**140**	**160**	NA	NA
Fluorene		**59**	**100**	**63**	**86**	**72**	100 U	100 U	**47**	**47**	**69**	**90**	**110**	**110**	**120**	0.10 U	NA
Pentachlorophenol	3	**8,300**	**4,100**	**2,000**	**1,600**	**3,900**	**4,400**	**3,500**	**4,200**	**4,200**	**3,200**	**4,300**	**4,700**	**4,000**	**6,600**	NA	NA
Phenanthrene		**46**	**98**	**53**	**76**	**44**	100 U	100 U	**44**	**34**	**65**	**82**	**94** J	**130**	**120**	0.10 U	NA
Carbazole		**120**	**120**	**69**	**80**	**86**	100 U	100 UJ	**57**	**24**	**53**	**52**	NA	NA	NA	NA	NA
Anthracene		**14**	**26**	**14**	**17**	**40**	100 U	100 U	**12**	**10**	**18**	**21**	100 U	**39**	**27**	**1.19** E	NA
Fluoranthene		**6.3**	**30**	**11**	**13**	**14**	100 U	100 U	**7.8**	**2.0**	**19**	**18**	100 U	**56**	**44**	**0.28**	NA
Pyrene	2600	**7.8**	**15**	**5.2**	**11**	**7.4**	100 U	100 U	**3.9**	**1.7**	**14**	**8.9**	100 U	**34**	**22**	**0.18**	NA
Benzo(a)Anthracene		**1.6**	**2.1**	5.0 U	**1.5** J	**3.6** J	**4.2**	**0.58**	1.0 U	**1.0**	**1.8**	**2.5**	**1.7**	**4.1**	**2.1**	0.10 U	0.10 U
Chrysene		**1.7**	**2.2**	5.0 U	**1.6** J	**3.8** J	**4.4**	**0.51**	1.0 U	**1.1**	**1.8**	**2.4**	**1.6**	**3.4**	**2.2**	0.10 U	0.10 U
Benzo(b)Fluoranthene		**0.88**	**1.1**	5.0 U	1.0 U	**1.0**	**1.3**	NA	NA	NA	NA	NA	NA	NA	NA	0.10 U	0.10 U
Benzo(k)Fluoranthene		**0.32**	1.0 U	5.0 U	1.0 U	**1.0**	**1.3**	NA	NA	NA	NA	NA	NA	NA	NA	0.10 U	0.10 U
Benzo(a)Pyrene		**0.53**	1.0 U	5.0 U	1.0 U	**1.3**	**1.6**	**0.18**	1.0 U	**0.33**	**0.65**	**0.76**	1.0 U	**1.4**	**0.69**	0.10 U	0.10 U
Indeno(1,2,3-cd)Pyrene		**0.12**	1.0 U	5.0 U	1.0 U	**0.34**	**0.35**	0.10 U	1.0 U	0.12 U	**0.14**	**0.11**	1.0 U	**0.58**	**0.15**	0.10 U	0.10 U
Dibenz(a,h)Anthracene		0.10 U	1.0 U	5.0 U	1.0 U	**0.20**	**0.17**	0.10 U	1.0 U	0.12 U	0.10 U	0.10 U	1.0 U	**0.53**	0.10 U	0.10 U	0.10 U
Benzo(g,h,i)Perylene		1.0 U	10 U	5.0 U	10 U	2.0 U	100 U	100 U	1.0 U	1.0 U	1.0 U	3.0 U	100 U	10 U	10 U	0.10 U	NA
1-Methylnaphthalene		**470**	**640**	**570**	**610**	**520**	**520**	**400**	**380**	**390**	**770**	**560**	**580**	**580**	**580**	NA	NA
Total Benzofluoranthenes								**0.35**	1.0 U	**0.76**	**1.4**	**1.5**	2.0 U	**2.7**	**1.4**		
cPAH TEQ (b)	0.1 (c)	**0.839**	**0.342**	ND	**0.166**	**1.95**	**2.38**	**0.278**	ND	**0.517**	**1.0**	**1.2**	**0.186**	**2.2**	**1.1**	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	**0.84**	**0.992**	**3.78**	**0.866**	**1.95**	**2.38**	**0.288**	0.71 U	**0.529**	**1.0**	**1.2**	**0.886**	**2.2**	**1.1**	0.076	0.076
PENTACHLOROPHENOL (µg/L)																	
EPA Method 8041/8270C,D																	
Pentachlorophenol	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.50 U	0.10 U
PETROLEUM HYDROCARBONS																	
Method NWTPH-G (µg/L)																	
Gasoline	1,000	**52,000**	**16,000**	**40,000**	**41,000**	**14,000**	**23,000**	**36,000**	**57,000**	**55,000**	**26,000**	**34,000**	**38,000**	**48,000**	**47,000**	50 U	50 U
Method NWTPH-Dx (µg/L)																	
Diesel	500	**9,100**	**9,300**	**7,800**	**5,600**	**7,600**	**6,000**	**4,800**	**5,100**	**9,800**	**4,400**	**6,200**	**5,500**	**9,400**	**7,300**	100 U	100 U
Motor Oil	500	2500 U	5000 U	5,000 U	5,000 U	2500 U	5000 U	2000 U	**500**	1000 U	200 U	5000 U	**890**	**280**	**390**	500 U	500 U
Creosote Oil	500	NA	**48,000**	**46,000**	**48,000**	**22,000**	**24,000**	**35,000**	**24,000**	**31,000**	**18,000**	**44,000**	**40,000**	**39,000**	**34,000**	NA	NA

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	MW-01S LS10F 10/1/2007	MW-01S MO07F 3/19/208	MW-01S NH92C 7/29/208	MW-01S OH25E 1/9/2009	MW-01S PJ99F 8/10/2009	MW-01S QF84H 1/15/2010	MW-01S RS33M 10/19/2010	MW-01S SO90N 3/25/2011	MW-01S TI17G 8/9/2011	MW-01S UL56H 3/8/2012	MW-01S VP53D 10/25/2012	MW-01S WF72D 2/28/2013	MW-01S XC89C 8/29/2013	MW-01S YA02M 2/19/2014	MW-02S 2005070010-05 7/1/2005	MW-02S 2006030294-01 3/22/2006
BTEX (µg/L)																	
Method SW8021B/SW021B MOD																	
Benzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m, p-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	MW-02S 2006110251-04 11/15/2006	MW-02S LS21A 10/2/2007	MW-02S MO26E 3/20/208	MW-02S NH70G 7/28/208	MW-02S OG76B 1/7/2009	Dup of MW-02S MW30 OG76A 1/7/2009	MW-02S PK28C 8/11/2009	MW-02S QG15B 1/18/2010	MW-02S RS33E 10/18/2010	MW-02S SO90I 3/25/2011	MW-02S TI17E 8/9/2011	MW-02S UL56D 3/8/2012	MW-02S VP10H 10/24/2012	MW-02S WF72B 2/28/2013	MW-02S XC81F 8/28/2013	MW-02S YA02J 2/19/2014
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																	
EPA Method 8270D / 8270D-SIM																	
Naphthalene	4900	**44.1**	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	**1.9**	1.0 U	1.0 U
2-Methylnaphthalene		NA	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	1.0 U	1.0 U
Acenaphthylene		0.10 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	1.0 U	1.0 U	1.0 U
Acenaphthene		**0.36**	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	**1.1**	**1.2**	**1.2**
Dibenzofuran		NA	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	1.0 U	1.0 U
Fluorene		0.10 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	1.0 U	1.0 U	1.0 U
Pentachlorophenol	3	NA	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	10 U	10 U	10 U	10 U
Phenanthrene		0.10 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	1.0 U	1.0 U	1.0 U
Carbazole		NA	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	1.0 U	1.0 U	1.0 U	NA	NA	NA
Anthracene		**1.65**	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	**1.1**	1.0 U	1.0 U	**1.0**	1.0 U	**1.1**
Fluoranthene		0.10 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	1.0 U	1.0 U	1.0 U
Pyrene	2600	0.10 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	1.0 U	1.0 U	1.0 U
Benzo(a)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.12 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U
Chrysene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.12 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U
Benzo(b)Fluoranthene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)Fluoranthene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 UJ	0.10 U	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.12 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U
Indeno(1,2,3-cd)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.12 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U
Dibenz(a,h)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.12 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U
Benzo(g,h,i)Perylene		0.10 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	1.0 U	1.0 U	1.0 U
1-Methylnaphthalene		NA	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	1.0 U	1.0 U
Total Benzofluoranthenes										0.10 U	0.12 U	0.10 U	0.10 U	0.20 U	0.20 U	0.22 U	0.10 U
cPAH TEQ (b)	0.1 (c)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.071	0.085	0.071	0.071	0.076	0.076	0.083	0.071
PENTACHLOROPHENOL (µg/L)																	
EPA Method 8041/8270C,D																	
Pentachlorophenol	3	**0.63**	0.21 U	0.25 U	**1.0**	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.28 U	0.25 U
PETROLEUM HYDROCARBONS																	
Method NWTPH-G (µg/L)																	
Gasoline	1,000	**99**	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	**480**	250 U	250 U	250 U	250 U	250 U
Method NWTPH-Dx (µg/L)																	
Diesel	500	100 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	100 U	120 U	**130**	100 U	100 U	100 U	130 U	100 U
Motor Oil	500	500 U	500 U	500 U	500 U	500 U	500 U	250 U	500 U	200 U	240 U	**990**	200 U	200 U	210 U	260 U	**240**
Creosote Oil	500	NA	NA	250 U	500 U	250 U	250 U	500 U	250 U	100 U	240 U	200 U	200 U	**110**	**210**	130 U	100 U

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	MW-02S 2006110251-04 11/15/2006	MW-02S LS21A 10/2/2007	MW-02S MO26E 3/20/208	MW-02S NH70G 7/28/208	MW-02S OG76B 1/7/2009	Dup of MW-02S MW30 OG76A 1/7/2009	MW-02S PK28C 8/11/2009	MW-02S QG15B 1/18/2010	MW-02S RS33E 10/18/2010	MW-02S SO90I 3/25/2011	MW-02S TI17E 8/9/2011	MW-02S UL56D 3/8/2012	MW-02S VP10H 10/24/2012	MW-02S WF72B 2/28/2013	MW-02S XC81F 8/28/2013	MW-02S YA02J 2/19/2014
BTEX (µg/L)																	
Method SW8021B/SW021B MOD																	
Benzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m, p-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	MW-05S 2005070010-03 6/30/2005	Dup of MW-05S PZ30 2005070010-04 6/30/2005	MW-05S 2006030294-07 3/22/2006	MW-05S 2006110275-01 11/16/2006	MW-05S LS21C 10/2/2007	MW-05S MO26C 3/20/208	Dup of MW-05S PZ30 MO26A 3/20/208	MW-05S NH92E 7/29/208	Dup of MW-05S PZ30 NH92F 7/29/208	MW-05S OG76C 1/7/2009	MW-05S PK28H 8/11/2009	Dup of MW-05S PZ30 PK28I 8/11/2009	MW-05S QF84B 1/14/2010	Dup of MW-05S PZ30 QF84G 1/14/2010	MW-05S RS33I 10/19/2010	Dup of MW-05S Duplicate RS33J 10/19/2010
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																	
EPA Method 8270D / 8270D-SIM																	
Naphthalene	4900	**10.8** E	**11.8** E	NA	**29.1**	**92**	**48**	**43**	**46**	**39**	**17**	1.0 U	1.0 U	**5.3**	**5.3**	**1.8** J	**4.8** J
2-Methylnaphthalene		NA	NA	NA	NA	**2.5**	**2.0**	**1.8**	**2.0**	**2.1**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acenaphthylene		**0.29**	**0.27**	NA	**0.14**	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
Acenaphthene		**5.25** E	**5.13** E	NA	**5.91**	**9.2**	**8.8**	**7.6**	**8.3**	**7.3**	**6.6**	**4.3**	**4.4**	**13**	**11**	**9.0**	**8.3**
Dibenzofuran		NA	NA	NA	NA	**3.2**	**2.9**	**2.5**	**2.6**	**2.3**	**1.6**	1.0 U	1.0 U	**3.1**	**2.2**	**2.0**	**2.0**
Fluorene		**2.26** E	**2.26** E	NA	**1.00**	**2.8**	**2.6**	**2.2**	**2.0**	**1.7**	1.0 U	1.0 U	1.0 U	**1.0**	1.0 U	1.0 U	1.0 U
Pentachlorophenol	3	NA	NA	NA	NA	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
Phenanthrene		**1.45** E	**1.76** E	NA	**1.18**	**1.9**	**1.8**	**1.6**	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
Carbazole		NA	NA	NA	NA	**1.9**	**1.1**	1.0 U	**1.0**	1.0 U	**1.2**	1.0 U	1.0 U	**1.9**	**1.3**	1.0 UJ	1.0 UJ
Anthracene		**1.23** E	**1.25** E	NA	**1.02**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1.0**	**1.2**	**1.3**	**1.4**	**1.5**	1.0 U	1.0 U
Fluoranthene		**1.71** E	**1.75** E	NA	**0.90**	1.0 U	**1.1**	**1.0**	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
Pyrene	2600	**1.64** E	**1.71** E	NA	**0.41**	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
Benzo(a)Anthracene		**0.28**	**0.33**	0.10 U	**0.18**	0.10 U	**0.10**	**0.10**	**0.11**	0.10 U	**0.13**	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Chrysene		**0.20**	**0.22**	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	**0.13**	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(b)Fluoranthene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	NA
Benzo(k)Fluoranthene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 UJ	0.10 UJ	0.10 U	0.10 U	NA	NA
Benzo(a)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	**0.12**	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Indeno(1,2,3-cd)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Dibenz(a,h)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(g,h,i)Perylene		0.10 U	0.10 U	NA	0.10 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
1-Methylnaphthalene		NA	NA	NA	NA	**5.2**	**3.9**	**3.4**	**4.0**	**3.6**	**1.7**	1.0 U	1.0 U	**2.6** J	**1.5** J	1.0 U	1.0 U
Total Benzofluoranthenes																0.10 U	0.10 U
cPAH TEQ (b)	0.1 (c)	**0.030**	**0.035**	ND	**0.018**	ND	0.010	0.010	0.011	ND	**0.134**	ND	ND	ND	ND	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	**0.039**	**0.044**	0.076	**0.089**	0.076	0.081	0.081	0.082	0.076	**0.154**	0.076	0.076	0.076	0.076	0.071	0.071
PENTACHLOROPHENOL (µg/L)																	
EPA Method 8041/8270C,D																	
Pentachlorophenol	3	0.10 U	0.50 U	0.10 U	0.10 U	0.25 U	0.25 U	0.25 U	0.25 UJ	0.25 UJ	0.25 U	0.25 U	0.27 U	0.25 U	0.25 U	0.25 U	0.27 U
PETROLEUM HYDROCARBONS																	
Method NWTPH-G (µg/L)																	
Gasoline	1,000	50 U	50 U	50 U	50 U	**530**	**320**	250 U	**270**	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U
Method NWTPH-Dx (µg/L)																	
Diesel	500	100 U	100 U	**430**	100 U	250 U	250 U	250 U	250 U	NA	250 U	250 U	250 U	250 U	250 U	100 U	100 U
Motor Oil	500	500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U	NA	500 U	250 U	250 U	500 U	500 U	200 U	200 U
Creosote Oil	500	NA	NA	NA	NA	NA	**410**	**390**	500 U	NA	250 U	500 U	500 U	250 U	250 U	100 U	100 U

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	MW-05S 2005070010-03 6/30/2005	Dup of MW-05S PZ30 2005070010-04 6/30/2005	MW-05S 2006030294-07 3/22/2006	MW-05S 2006110275-01 11/16/2006	MW-05S LS21C 10/2/2007	MW-05S MO26C 3/20/208	Dup of MW-05S PZ30 MO26A 3/20/208	MW-05S NH92E 7/29/208	Dup of MW-05S PZ30 NH92F 7/29/208	MW-05S OG76C 1/7/2009	MW-05S PK28H 8/11/2009	Dup of MW-05S PZ30 PK28I 8/11/2009	MW-05S QF84B 1/14/2010	Dup of MW-05S PZ30 QF84G 1/14/2010	MW-05S RS33I 10/19/2010	Dup of MW-05S Duplicate RS33J 10/19/2010
BTEX (µg/L)																	
Method SW8021B/SW021B MOD																	
Benzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m, p-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	MW-05S SO90C 3/25/2011	Dup of MW-05S Duplicate SO90B 3/25/2011	MW-05S TI17C 8/9/2011	Dup of MW-05S Duplicate TI17A 8/9/2011	MW-05S UL56E 3/8/2012	Dup of MW-05S PZ-30 UL56F 3/8/2012	MW-05S VP10E 10/24/2012	Dup of MW-05S PZ-30 VP10D 10/24/2012	MW-05S WF57E 2/27/2013	Dup of MW-05S PZ-30 WF57F 2/27/2013	MW-05S XC81D 8/28/2013	Dup of MW-05S PZ-30 XC81G 8/28/2013	MW-05S YA02B 2/18/2014	Dup of MW-05S PZ-30 YA02A 2/18/2014	MW-01D 10/7/1998
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																
EPA Method 8270D / 8270D-SIM																
Naphthalene	4900	1.0 U	1.0 U	1.0 U	1.0 U	**1.1**	**2.0**	1.0 U	1.0 U	**1.6**	**1.6**	1.0 U	1.0 U	1.0 U	1.0 U	**91**
2-Methylnaphthalene		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	1.0 U	NA
Acenaphthylene		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	1.0 U	0.2 U
Acenaphthene		**6.0**	**6.1**	**7.6**	**8.1**	**7.5**	**8.2**	**8.2**	**10**	**10**	**11**	**8.7**	**9.4**	**9.0**	**10**	**58**
Dibenzofuran		1.0 U	1.0 U	1.0 U	**1.0**	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	NA
Fluorene		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	1.0 U	**30**
Pentachlorophenol	3	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Phenanthrene		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	1.0 U	**56**
Carbazole		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA	NA	NA	NA
Anthracene		**1.2**	**1.2**	**1.1**	**1.3**	1.0 U	1.0 U	**1.0**	**1.2**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1.0**	**8.7**
Fluoranthene		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	1.0 U	**9.4**
Pyrene	2600	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	1.0 U	**7.6**
Benzo(a)Anthracene		0.12 U	0.12 U	0.12 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	**1.0**
Chrysene		0.12 U	0.12 U	0.12 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	**1.2**
Benzo(b)Fluoranthene		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.3**
Benzo(k)Fluoranthene		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.3**
Benzo(a)Pyrene		0.12 U	0.12 U	0.12 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.2 U
Indeno(1,2,3-cd)Pyrene		0.12 U	0.12 U	0.12 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.2 U
Dibenz(a,h)Anthracene		0.12 U	0.12 U	0.12 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.2 U
Benzo(g,h,i)Perylene		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	1.0 U	0.2 U
1-Methylnaphthalene		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	1.0 U	NA
Total Benzofluoranthenes		0.12 U	0.12 U	0.12 U	0.11 U	0.10 U	0.10 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.10 U	0.10 U	
cPAH TEQ (b)	0.1 (c)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.172**
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.085	0.085	0.085	0.078	0.071	0.071	0.076	0.076	0.076	0.076	0.076	0.076	0.071	0.071	**0.292**
PENTACHLOROPHENOL (µg/L)																
EPA Method 8041/8270C,D																
Pentachlorophenol	3	0.25 U	0.25 U	0.28 U	0.28 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.52 U	**18**
PETROLEUM HYDROCARBONS																
Method NWTPH-G (µg/L)																
Gasoline	1,000	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	NA
Method NWTPH-Dx (µg/L)																
Diesel	500	120 U	120 U	100 U	**110**	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	**2,500**
Motor Oil	500	250 U	230 U	200 UJ	**500** J	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U	**2,800**
Creosote Oil	500	250 U	230 U	200 U	200 U	200 U	200 U	**170**	**170**	**230**	**210**	100 U	100 U	100 U	100 U	NA

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	MW-05S SO90C 3/25/2011	Dup of MW-05S Duplicate SO90B 3/25/2011	MW-05S TI17C 8/9/2011	Dup of MW-05S Duplicate TI17A 8/9/2011	MW-05S UL56E 3/8/2012	Dup of MW-05S PZ-30 UL56F 3/8/2012	MW-05S VP10E 10/24/2012	Dup of MW-05S PZ-30 VP10D 10/24/2012	MW-05S WF57E 2/27/2013	Dup of MW-05S PZ-30 WF57F 2/27/2013	MW-05S XC81D 8/28/2013	Dup of MW-05S PZ-30 XC81G 8/28/2013	MW-05S YA02B 2/18/2014	Dup of MW-05S PZ-30 YA02A 2/18/2014	MW-01D 10/7/1998
BTEX (µg/L)																
Method SW8021B/SW021B MOD																
Benzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m, p-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	MW-01D 2006030261-02 3/21/2006	MW-01D 2006110251-02 11/15/2006	MW-01D LS10H 10/1/2007	MW-01D MO07E 3/19/208	MW-01D NH92D 7/29/208	MW-01D OH25D 1/9/2009	MW-01D PJ99E 8/10/2009	MW-01D QF84I 1/15/2010	MW-01D RS33O 10/19/2010	MW-01D SO90J 3/25/2011	MW-01D TI17F 8/9/2011	MW-01D UL56I 3/8/2012	MW-01D VP53C 10/25/2012	MW-01D WF72E 2/28/2013	MW-01D XC89A 8/29/2013	MW-01D YA02I 2/19/2014	MW-02D 10/7/1998
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																		
EPA Method 8270D / 8270D-SIM																		
Naphthalene	4900	NA	**1.24**	1.0 U	1.0 U	**2.2**	**0.7** J	**1.8**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1.8**	**1.1**	**1.2**	**600**
2-Methylnaphthalene		NA	NA	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	1.0 U	NA
Acenaphthylene		NA	0.10 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	1.0 U	1.0 U	**1.0**
Acenaphthene		NA	**0.48**	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	1.0 U	**54**
Dibenzofuran		NA	NA	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	1.0 U	NA
Fluorene		NA	**0.31**	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	1.0 U	**18**
Pentachlorophenol	3	NA	NA	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	10 U	10 U	10 U	10 U	NA
Phenanthrene		NA	**1.42**	1.0 U	1.0 U	1.0 U	**0.6** J	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	**7.1**
Carbazole		NA	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA
Anthracene		NA	**0.39**	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	1.0 U	1.0 U
Fluoranthene		NA	**0.89**	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	1.0 U	**2.0**
Pyrene	2600	NA	**0.39**	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	1.0 U	**1.7**
Benzo(a)Anthracene		0.10 U	0.10 U	**0.11**	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.12 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	1.0 U
Chrysene		0.10 U	0.10 U	**0.11**	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.12 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	1.0 U
Benzo(b)Fluoranthene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	NA	NA	NA	NA	NA	NA	NA	NA	1.0 U
Benzo(k)Fluoranthene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	NA	NA	NA	NA	NA	NA	NA	NA	1.0 U
Benzo(a)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.12 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	1.0 U
Indeno(1,2,3-cd)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.12 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	1.0 U
Dibenz(a,h)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	0.12 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	1.0 U
Benzo(g,h,i)Perylene		NA	0.10 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	1.0 U	1.0 U	1.0 U
1-Methylnaphthalene		NA	NA	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	1.0 U	NA
Total Benzofluoranthenes										0.10 U	0.10 U	0.12 U	0.10 U	0.20 U	0.20 U	0.20 U	0.10 U	
cPAH TEQ (b)	0.1 (c)	ND	ND	**0.0121**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**15**
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.076	0.076	**0.082**	0.076	0.076	0.076	0.076	0.083	0.071	0.071	0.085	0.071	0.076	0.076	0.076	0.071	ND
PENTACHLOROPHENOL (µg/L)																		
EPA Method 8041/8270C,D																		
Pentachlorophenol	3	0.10 U	0.10 U	**0.2** UJ	0.25 U	0.25 UJ	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.29 U	**0.85**	0.25 U	**2.0**	0.28 U	0.25 U	5.0 U
PETROLEUM HYDROCARBONS																		
Method NWTPH-G (µg/L)																		
Gasoline	1,000	50 U	50 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	NA
Method NWTPH-Dx (µg/L)																		
Diesel	500	100 U	100 U	250 U	250 U	250 U	250 U	250 U	250 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	**1,800**
Motor Oil	500	500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U	**5,200**
Creosote Oil	500	**106**	NA	NA	250 U	500 U	250 U	250 U	250 U	100 U	200 U	200 U	200 U	100 U	**160**	100 U	100 U	NA

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	MW-01D 2006030261-02 3/21/2006	MW-01D 2006110251-02 11/15/2006	MW-01D LS10H 10/1/2007	MW-01D MO07E 3/19/208	MW-01D NH92D 7/29/208	MW-01D OH25D 1/9/2009	MW-01D PJ99E 8/10/2009	MW-01D QF84I 1/15/2010	MW-01D RS33O 10/19/2010	MW-01D SO90J 3/25/2011	MW-01D TI17F 8/9/2011	MW-01D UL56I 3/8/2012	MW-01D VP53C 10/25/2012	MW-01D WF72E 2/28/2013	MW-01D XC89A 8/29/2013	MW-01D YA02I 2/19/2014	MW-02D 10/7/1998
BTEX (µg/L)																		
Method SW8021B/SW021B MOD																		
Benzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m, p-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	MW-02D 2006030294-02 3/22/2006	MW-02D 2006110251-05 11/15/2006	MW-02D LS21B 10/2/2007	Dup of MW-02D PZ30 LS21F 10/2/2007	MW-02D MO26I 3/19/208	MW-02D NH92H 7/29/208	MW-02D OH25A 1/9/2009	MW-02D PK28D 8/11/2009	MW-02D QG15A 1/18/2010	MW-02D RS33F 10/18/2010	MW-02D SO90G 3/25/2011	MW-02D TI17D 8/9/2011	MW-02D UL56A 3/8/2012	MW-02D VP10A 10/24/2012	MW-02D WF72A 2/28/2013	MW-02D XC81B 8/28/2013	MW-02D YA02D 2/18/2014
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																		
EPA Method 8270D / 8270D-SIM																		
Naphthalene	4900	NA	**143**	**680** J	**500** J	**380**	1.1 U	**210**	**230**	**180**	1.0 U	**76**	**110**	**19**	**43**	**1.0**	1.0 U	1.0 U
2-Methylnaphthalene		NA	NA	**120**	**85**	**94**	1.1 U	**26**	**38**	**36**	1.0 U	**13**	**9.4**	**1.5**	**11**	1.0 U	1.0 U	1.0 U
Acenaphthylene		NA	**0.95**	**1.6**	**1.3**	**1.2**	1.1 U	1.0 U	1.0 U	1.0 U	**1.9**	1.0 U	1.0 U	1.0 U	**1.1**	1.0 U	1.0 U	1.0 U
Acenaphthene		NA	**96**	**86** J	**67** J	**70**	1.1 U	**26**	**35**	**34**	**8.8**	**21**	**18**	**9.3**	**26**	**7.2**	**4.7**	**6.6**
Dibenzofuran		NA	NA	**35**	**26**	**30**	1.1 U	**8.1**	**12**	**14**	**3.0**	**7.9**	**6.1**	**3.2**	**11**	**2.8**	**1.0**	**2.3**
Fluorene		NA	**40**	**37** J	**28** J	**30**	1.1 U	**9.3**	**12**	**15**	**11**	**8.4**	**5.8**	**3.8**	**13**	**4.7**	**3.3**	**3.2**
Pentachlorophenol	3	NA	NA	5.0 U	5.0 U	5.0 U	5.5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 U	10 U	10 U	10 U
Phenanthrene		NA	**27**	**23** J	**18** J	**22**	1.1 U	**6.0**	**7.2**	**9.1**	**5.0**	**5.1**	**3.9**	**2.3**	**8.3**	**2.2**	1.0 U	**2.0**
Carbazole		NA	NA	**23**	**16**	**21**	**1.5**	**8.0**	**9.0**	**9.1**	**8.3** J	**5.7**	**4.9**	**1.4**	**9.0**	NA	NA	NA
Anthracene		NA	**0.50**	1.0 U	1.0 U	**1.0**	1.1 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
Fluoranthene		NA	0.10 U	1.0 U	1.0 U	1.0 U	1.1 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
Pyrene	2600	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.1 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
Benzo(a)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Chrysene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(b)Fluoranthene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)Fluoranthene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 UJ	0.10 U	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Indeno(1,2,3-cd)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Dibenz(a,h)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(g,h,i)Perylene		NA	0.10 U	1.0 U	1.0 U	1.0 U	1.1 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-Methylnaphthalene		NA	NA	**77**	**68**	**66**	1.1 U	**22**	**32**	**30**	1.0 U	**15**	**13**	**5.1**	**19**	**1.9**	1.0 U	**2.1**
Total Benzofluoranthenes											0.10 U	0.10 U	0.10 U	0.10 U	0.20 U	0.20 U	0.20 U	0.10 U
cPAH TEQ (b)	0.1 (c)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.071	0.071	0.071	0.071	0.076	0.076	0.076	0.071
PENTACHLOROPHENOL (µg/L)																		
EPA Method 8041/8270C,D																		
Pentachlorophenol	3	0.10 U	10 U	0.23 U	0.25 U	0.25 U	0.25 UJ	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	**0.37**	0.25 U
PETROLEUM HYDROCARBONS																		
Method NWTPH-G (µg/L)																		
Gasoline	1,000	**495**	**830**	**3,100**	**2,900**	**1,700**	**980**	**760**	**790**	**600**	**420**	**620**	250 U	250 U	**510**	250 U	**620**	250 U
Method NWTPH-Dx (µg/L)																		
Diesel	500	100 U	100 U	**290**	**280**	**540**	250 U	250 U	250 U	250 U	100 U	120 U	**140**	100 U	**130**	100 U	**160**	100 U
Motor Oil	500	500 U	500 U	500 U	500 U	500 U	500 U	500 U	250 U	500 U	200 U	230 U	200 U	**210**	200 U	200 U	**470**	200 U
Creosote Oil	500	**790**	**1,710**	NA	NA	**4,200**	500 U	**990**	**600**	**700**	**270**	**280**	**440**	200 U	**910**	**270**	**530**	100 U

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	MW-02D 2006030294-02 3/22/2006	MW-02D 2006110251-05 11/15/2006	MW-02D LS21B 10/2/2007	Dup of MW-02D PZ30 LS21F 10/2/2007	MW-02D MO26I 3/19/208	MW-02D NH92H 7/29/208	MW-02D OH25A 1/9/2009	MW-02D PK28D 8/11/2009	MW-02D QG15A 1/18/2010	MW-02D RS33F 10/18/2010	MW-02D SO90G 3/25/2011	MW-02D TI17D 8/9/2011	MW-02D UL56A 3/8/2012	MW-02D VP10A 10/24/2012	MW-02D WF72A 2/28/2013	MW-02D XC81B 8/28/2013	MW-02D YA02D 2/18/2014
BTEX (µg/L)																		
Method SW8021B/SW021B MOD																		
Benzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m, p-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	MW-05D 10/7/1998	MW-05D 2006030294-06 3/22/2006	MW-05D 2006110275-02 11/16/2006	MW-05D LS21D 10/2/2007	MW-05D MO26F 3/20/208	MW-05D NH92G 7/29/208	MW-05D OH25B 1/9/2009	MW-05D PK28G 8/11/2009	MW-05D QF84A 1/14/2010	MW-05D RS33K 10/19/2010	MW-05D SO90D 3/25/2011	MW05D TI17I 8/9/2011	MW-05D UL56C 3/8/2012	MW-05D VP53E 10/25/2012	MW-05D WF57D 2/27/2013	MW-05D XC81A 8/28/2013	MW-05D YA02G 2/19/2014
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																		
EPA Method 8270D / 8270D-SIM																		
Naphthalene	4900	**4.0**	NA	**21.0**	**28**	**27**	**2.2**	**1.2**	**3.4**	1.0 U	1.0 U	1.0 U	**2.1**	1.0 U	**1.3**	**2.9**	1.0 U	1.0 U
2-Methylnaphthalene		NA	NA	NA	**3.0**	**3.0**	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
Acenaphthylene		**4.1**	NA	**0.10**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1.1**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acenaphthene		**15**	NA	**6.39**	**5.8**	**6.7**	**3.9**	**0.6** J	**3.7**	1.0 U	**4.2**	**1.3**	**2.6**	**3.3**	**5.6**	**4.0**	**5.5**	1.0 U
Dibenzofuran		NA	NA	NA	**2.2**	**2.5**	**1.4**	1.0 U	**1.1**	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
Fluorene		**5.0**	NA	**2.60**	**1.8**	**2.3**	**1.0**	1.0 U	**1.2**	1.0 U	1.0 U	1.0 U	**1.2**	1.0 U	**1.3**	**1.6**	1.0 U	1.0 U
Pentachlorophenol	3	NA	NA	NA	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	10 U	10 U	10 U	10 U
Phenanthrene		**8.5**	NA	**0.89**	**1.1**	**1.2**	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
Carbazole		NA	NA	NA	**1.5**	**1.6**	**1.4**	1.0 U	**1.5**	1.0 U	**1.6** J	1.0 U	1.0 U	**1.1**	**2.2**	NA	NA	NA
Anthracene		1.0 U	NA	**0.25**	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	1.0 U
Fluoranthene		**8.5**	NA	**0.60**	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	1.0 U
Pyrene	2600	**7.0**	NA	**0.27**	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	1.0 U
Benzo(a)Anthracene		1.0 U	0.10 U	0.10 U	1.0 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.12 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Chrysene		1.0 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.12 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(b)Fluoranthene		1.0 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)Fluoranthene		1.0 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 UJ	0.10 U	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)Pyrene		1.0 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.12 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Indeno(1,2,3-cd)Pyrene		1.0 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.12 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Dibenz(a,h)Anthracene		1.0 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.12 U	0.11 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(g,h,i)Perylene		1.0 U	NA	0.10 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	1.0 U	1.0 U
1-Methylnaphthalene		NA	NA	NA	**2.8**	**3.1**	1.0 U	1.0 U	**1.0**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1.4**	1.0 U	1.0 U
Total Benzofluoranthenes											0.10 U	0.12 U	0.11 U	0.10 U	0.20 U	0.20 U	0.20 U	0.10 U
cPAH TEQ (b)	0.1 (c)	**4.0**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	ND	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.071	0.085	0.078	0.071	0.076	0.076	0.076	0.071
PENTACHLOROPHENOL (µg/L)																		
EPA Method 8041/8270C,D																		
Pentachlorophenol	3	5.0 U	0.10 U	0.10 U	0.22 U	0.25 U	0.25 UJ	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	**2.2**	0.25 U	0.25 U	0.25 U
PETROLEUM HYDROCARBONS																		
Method NWTPH-G (µg/L)																		
Gasoline	1,000	NA	50 U	50 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U
Method NWTPH-Dx (µg/L)																		
Diesel	500	**440**	100 U	100 U	250 U	250 U	250 U	250 U	250 U	250 U	100 U	110 U	100 U	100 U	100 U	100 U	100 U	100 U
Motor Oil	500	**520**	500 U	500 U	500 U	500 U	500 U	500 U	250 U	500 U	200 U	220 U	200 U	200 U	200 U	200 U	200 U	200 U
Creosote Oil	500	NA	NA	NA	NA	**370**	500 U	250 U	500 U	250 U	100 U	220 U	200 U	200 U	100 U	**210**	100 U	100 U

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	MW-05D 10/7/1998	MW-05D 2006030294-06 3/22/2006	MW-05D 2006110275-02 11/16/2006	MW-05D LS21D 10/2/2007	MW-05D MO26F 3/20/208	MW-05D NH92G 7/29/208	MW-05D OH25B 1/9/2009	MW-05D PK28G 8/11/2009	MW-05D QF84A 1/14/2010	MW-05D RS33K 10/19/2010	MW-05D SO90D 3/25/2011	MW05D TI17I 8/9/2011	MW-05D UL56C 3/8/2012	MW-05D VP53E 10/25/2012	MW-05D WF57D 2/27/2013	MW-05D XC81A 8/28/2013	MW-05D YA02G 2/19/2014
BTEX (µg/L)																		
Method SW8021B/SW021B MOD																		
Benzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m, p-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	CW-13 2006110275-04 11/16/2006	CW-13 LS22A 10/2/2007	CW-13 MO26D 3/20/208	CW-13 NH70F 7/28/208	CW-13 PK28F 8/11/2009	CW-13 QF84D 1/14/2010	CW-13 RS33G 10/19/2010	CW-13 SO90K 3/25/2011	CW-13 TI17H 8/9/2011	CW-13 UL56B 3/8/2012	CW-13 VP53B 10/25/2012	CW-13 WF57C 2/27/2013	CW-13 XC81C 8/28/2013	CW-13 YA02C 2/18/2014
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)															
EPA Method 8270D / 8270D-SIM															
Naphthalene	4900	**1.54**	**8.7**	**11**	**30**	**4.8**	1.0 U	1.0 U	1.0 U	**5.2**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Methylnaphthalene		NA	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
Acenaphthylene		**0.48**	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
Acenaphthene		**50.0**	**64**	**44**	**51**	**25**	1.0 U	**5.4**	1.0 U	**4.3**	1.0 U	**5.2**	1.0 U	**1.5**	1.0 U
Dibenzofuran		NA	**19**	**15**	**18**	**7.6**	1.0 U	**1.5**	1.0 U	1.0 U	1.0 U	**2.5**	1.0 U	1.0 U	1.0 U
Fluorene		**20.7**	**25**	**16**	**21**	**8.7**	1.0 U	**2.4**	1.0 U	1.0 U	1.0 U	**2.0**	1.0 U	1.0 U	1.0 U
Pentachlorophenol	3	NA	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	10 U	10 U	10 U	10 U
Phenanthrene		**34.5**	**31**	**14**	**21**	**8.2**	1.0 U	**1.2**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbazole		NA	**14**	**11**	**13**	**3.0**	1.0 U	1.0 UJ	1.0 U	**1.4**	1.0 U	1.0 U	NA	NA	NA
Anthracene		**4.38**	**3.3**	**1.8**	**2.8**	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
Fluoranthene		**5.47**	**5.9**	**1.8**	**3.2**	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
Pyrene	2600	**2.44**	**2.2**	1.0 U	**1.4**	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
Benzo(a)Anthracene		**0.37**	**0.24**	**0.14**	**0.13**	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U
Chrysene		**0.25**	**0.24**	**0.10**	**0.12**	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U
Benzo(b)Fluoranthene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)Fluoranthene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 UJ	0.10 U	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U
Indeno(1,2,3-cd)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U
Dibenz(a,h)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U
Benzo(g,h,i)Perylene		0.10 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	1.0 U
1-Methylnaphthalene		NA	**34**	**27**	**34**	**12**	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
Total Benzofluoranthenes								0.10 U	0.10 U	0.10 U	0.10 U	0.20 U	0.20 U	0.22 U	0.10 U
cPAH TEQ (b)	0.1 (c)	**0.040**	**0.0264**	**0.015**	**0.014**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	**0.110**	**0.096**	**0.085**	**0.084**	0.076	0.076	0.071	0.071	0.071	0.071	0.076	0.076	0.083	0.071
PENTACHLOROPHENOL (µg/L)															
EPA Method 8041/8270C,D															
Pentachlorophenol	3	0.10 U	0.22 U	0.25 U	**2.9**	0.26 U	0.25 U	0.25 U	0.25 U	**1.0**	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
PETROLEUM HYDROCARBONS															
Method NWTPH-G (µg/L)															
Gasoline	1,000	**83**	**750**	**630**	**1,000**	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U
Method NWTPH-Dx (µg/L)															
Diesel	500	100 U	250 U	**290**	**270**	250 U	250 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U
Motor Oil	500	500 U	500 U	500 U	500 U	250 U	500 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U
Creosote Oil	500	**471**	NA	**1,100**	**960**	500 U	250 U	100 U	200 U	200 U	200 U	100 U	**110**	100 U	100 U

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

	Cleanup Screening Levels for Groundwater (a)	CW-13 2006110275-04 11/16/2006	CW-13 LS22A 10/2/2007	CW-13 MO26D 3/20/208	CW-13 NH70F 7/28/208	CW-13 PK28F 8/11/2009	CW-13 QF84D 1/14/2010	CW-13 RS33G 10/19/2010	CW-13 SO90K 3/25/2011	CW-13 TI17H 8/9/2011	CW-13 UL56B 3/8/2012	CW-13 VP53B 10/25/2012	CW-13 WF57C 2/27/2013	CW-13 XC81C 8/28/2013	CW-13 YA02C 2/18/2014
BTEX (µg/L)															
Method SW8021B/SW021B MOD															
Benzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m, p-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

U = Indicates the compound was undetected at the given reporting limit.
UJ = The analyte was not detected in the sample; the reported sample detection limit is an estimate.
J = Indicates the analyte was positively identified; the associated value is approximate.
E = The reported concentration is an estimate; the result exceeded the instrument calibration range.
NA = Not analyzed.
ND = Not Detected.
Bold indicates detected compound. Box indicates exceedance of screening levels.
Box indicates exceedance of screening level.

(a) Groundwater screening levels are MTCA Method B for marine surface water for cPAHs and PCP; MTCA Method A for TPH-G/TPH-Dx.
(b) TEQ = toxicity equivalency factor as described in WAC 173-340-708 (8).
(c) cPAH cleanup screening levels based on practical quantitation limit (PQL) for individual cPAHs.
(d) PCP results on 7/28/08 for PZ-18 and PZ-19 were not consistent with historical results. Confirmation verification samples were collected on 8/28/08. Both sets of data are presented in this table.
(e) The gasoline-range hydrocarbon result for this sample consisted of a solitary peak, identified by GCMS as toluene.
(f) The sample contains gasoline-range hydrocarbons which C not appear to be automotive gasoline.

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Gradient Direction (b)	Maximum Elevation Goal (b)	Goal Exceeded?
1	11/8/2006	PZ-13	4.67	19.50	14.83	--	--	
	11/8/2006	PZ-12	4.02	19.00	14.98	--	15.50	No
	12/31/2006	PZ-13	5.56	19.50	13.94	--	--	
	12/31/2006	PZ-12	3.91	19.00	15.09	--	15.50	No
	3/2/2007	PZ-13	6.06	19.50	13.44	--	--	
	3/2/2007	PZ-12	4.04	19.00	14.96	--	15.50	No
	3/31/2007	PZ-13	6.39	19.50	13.11	--	--	
	3/31/2007	PZ-12	4.03	19.00	14.97	--	15.50	No
	4/23/2007	PZ-13	6.58	19.50	12.92	--	--	
	4/23/2007	PZ-12	4.42	19.00	14.58	--	15.50	No
	5/28/2007	PZ-13	7.36	19.50	12.14	--	--	
	5/28/2007	PZ-12	4.88	19.00	14.12	--	15.50	No
	6/30/2007	PZ-13	7.33	19.50	12.17	--	--	
	6/30/2007	PZ-12	5.11	19.00	13.89	--	15.50	No
	8/1/2007	PZ-13	7.19	19.50	12.31	--	--	
	8/1/2007	PZ-12	5.10	19.00	13.90	--	15.50	No
	9/29/2007	PZ-13	7.32	19.50	12.18	--	--	
	9/29/2007	PZ-12	5.63	19.00	13.37	--	15.50	No
	11/22/2007	PZ-13	6.91	19.50	12.59	--	--	
	11/22/2007	PZ-12	5.27	19.00	13.73	--	15.50	No
	1/26/2008	PZ-13	5.99	19.50	13.51	--	--	
	1/26/2008	PZ-12	3.93	19.00	15.07	--	15.50	No
	2/28/2008	PZ-13	6.44	19.50	13.06	--	--	
	2/28/2008	PZ-12	3.69	19.00	15.31	--	15.50	No
	3/19/2008	PZ-13	6.71	19.50	12.79	--	--	
	3/19/2008	PZ-12	3.84	19.00	15.16	--	15.50	No
	4/28/2008	PZ-13	7.19	19.50	12.31	--	--	
	4/28/2008	PZ-12	4.00	19.00	15.00	--	15.50	No
	5/31/2008	PZ-13	7.39	19.50	12.11	--	--	
	5/31/2008	PZ-12	4.43	19.00	14.57	--	15.50	No
	6/30/2008	PZ-13	7.26	19.50	12.24	--	--	
	6/30/2008	PZ-12	4.58	19.00	14.42	--	15.50	No
	7/12/2008	PZ-13	7.36	19.50	12.14	--	--	
	7/12/2008	PZ-12	4.72	19.00	14.28	--	15.50	No
	8/28/2008	PZ-13	7.34	19.50	12.16	--	--	
	8/28/2008	PZ-12	5.23	19.00	13.77	--	15.50	No
	9/20/2008	PZ-13	7.32	19.50	12.18	--	--	
	9/20/2008	PZ-12	5.39	19.00	13.61	--	15.50	No

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Gradient Direction (b)	Maximum Elevation Goal (b)	Goal Exceeded?
	10/12/2008	PZ-13	8.36	19.50	11.14	--	--	
	10/12/2008	PZ-12	5.51	19.00	13.49	--	15.50	No
	11/30/2008	PZ-13	6.42	19.50	13.08	--	--	
	11/30/2008	PZ-12	4.83	19.00	14.17	--	15.50	No
	12/31/2008	PZ-13	6.42	19.50	13.08	--	--	
	12/31/2008	PZ-12	4.83	19.00	14.17	--	15.50	No
	1/31/2009	PZ-13	6.57	19.50	12.93	--	--	
	1/31/2009	PZ-12	4.39	19.00	14.61	--	15.50	No
	2/23/2009	PZ-13	6.95	19.50	12.55	--	--	
	2/23/2009	PZ-12	4.59	19.00	14.41	--	15.50	No
	3/29/2009	PZ-13	6.68	19.50	12.82	--	--	
	3/29/2009	PZ-12	4.28	19.00	14.72	--	15.50	No
	4/18/2009	PZ-13	7.61	19.50	11.89	--	--	
	4/18/2009	PZ-12	4.31	19.00	14.69	--	15.50	No
	5/16/2009	PZ-13	6.62	19.50	12.88	--	--	
	5/16/2009	PZ-12	4.10	19.00	14.90	--	15.50	No
	6/21/2009	PZ-13	7.03	19.50	12.47	--	--	
	6/21/2009	PZ-12	4.58	19.00	14.42	--	15.50	No
	7/20/2009	PZ-13	7.09	19.50	12.41	--	--	
	7/20/2009	PZ-12	4.94	19.00	14.06	--	15.50	No
						--		
	8/10/2009	PZ-13	7.31	19.50	12.19	--	--	
	8/10/2009	PZ-12	5.18	19.00	13.82	--	15.50	No
	9/7/2009	PZ-13	7.91	19.50	11.59	--	--	
	9/7/2009	PZ-12	5.33	19.00	13.67	--	15.50	No
	10/10/2009	PZ-13	7.45	19.50	12.05	--	--	
	10/10/2009	PZ-12	5.85	19.00	13.15	--	15.50	No
	11/28/2009	PZ-13	5.99	19.50	13.51	--	--	
	11/28/2009	PZ-12	4.74	19.00	14.26	--	15.50	No
	12/31/2009	PZ-13	6.06	19.50	13.44	--	--	
	12/31/2009	PZ-12	4.70	19.00	14.30	--	15.50	No
	1/14/2010	PZ-13	5.20	19.50	14.30	--	--	
	1/14/2010	PZ-12	4.16	19.00	14.84	--	15.50	No
	2/21/2010	PZ-13	6.04	19.50	13.46	--	--	
	2/21/2010	PZ-12	4.01	19.00	14.99	--	15.50	No
	3/17/2010	PZ-13	6.40	19.50	13.10	--	--	
	3/17/2010	PZ-12	3.98	19.00	15.02	--	15.50	No
	4/25/2010	PZ-13	6.65	19.50	12.85	--	--	

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Gradient Direction (b)	Maximum Elevation Goal (b)	Goal Exceeded?
	4/25/2010	PZ-12	4.06	19.00	14.94	--	15.50	No
	5/16/2010	PZ-13	6.99	19.50	12.51	--	--	
	5/16/2010	PZ-12	4.15	19.00	14.85	--	15.50	No
	6/26/2010	PZ-13	6.83	19.50	12.67	--	--	
	6/26/2010	PZ-12	4.47	19.00	14.53	--	15.50	No
	7/23/2010	PZ-13	7.33	19.50	12.17	--	--	
	7/23/2010	PZ-12	4.91	19.00	14.09	--	15.50	No
	8/30/2010	PZ-13	7.49	19.50	12.01	--	--	
	8/30/2010	PZ-12	5.17	19.00	13.83	--	15.50	No
	9/30/2010	PZ-13	6.98	19.50	12.52	--	--	
	9/30/2010	PZ-12	5.17	19.00	13.83	--	15.50	No
	10/18/2010	PZ-13	7.11	19.50	12.39	--	--	
	10/18/2010	PZ-12	4.91	19.00	14.09	--	15.50	No
	11/29/2010	PZ-13	6.23	19.50	13.27	--	--	
	11/29/2010	PZ-12	4.40	19.00	14.60	--	15.50	No
	12/25/2010	PZ-13	5.21	19.50	14.29	--	--	
	12/25/2010	PZ-12	4.08	19.00	14.92	--	15.50	No
	1/29/2011	PZ-13	6.01	19.50	13.49	--	--	
	1/29/2011	PZ-12	4.18	19.00	14.82	--	15.50	No
	2/20/2011	PZ-13	6.13	19.50	13.37	--	--	
	2/20/2011	PZ-12	4.28	19.00	14.72	--	15.50	No
	3/24/2011	PZ-13	5.23	19.50	14.27	--	--	
	3/24/2011	PZ-12	3.72	19.00	15.28	--	15.50	No
	4/23/2011	PZ-13	6.18	19.50	13.32	--	--	
	4/23/2011	PZ-12	3.84	19.00	15.16	--	15.50	No
	5/30/2011	PZ-13	6.75	19.50	12.75	--	--	
	5/30/2011	PZ-12	4.25	19.00	14.75	--	15.50	No
	6/26/2011	PZ-13	7.21	19.50	12.29	--	--	
	6/26/2011	PZ-12	4.78	19.00	14.22	--	15.50	No
	7/30/2011	PZ-13	7.26	19.50	12.24	--	--	
	7/30/2011	PZ-12	5.00	19.00	14.00	--	15.50	No
	8/8/2011	PZ-13	7.17	19.50	12.33	--	--	
	8/8/2011	PZ-12	4.96	19.00	14.04	--	15.50	No
	9/24/2011	PZ-13	7.61	19.50	11.89	--	--	
	9/24/2011	PZ-12	5.31	19.00	13.69	--	15.50	No
	10/29/2011	PZ-13	6.85	19.50	12.65	--	--	
	10/29/2011	PZ-12	5.45	19.00	13.55	--	15.50	No

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Gradient Direction (b)	Maximum Elevation Goal (b)	Goal Exceeded?
	11/26/2011	PZ-13	4.98	19.50	14.52	--	--	
	11/26/2011	PZ-12	4.05	19.00	14.95	--	15.50	No
	12/26/2011	PZ-13	6.87	19.50	12.63	--	--	
	12/26/2011	PZ-12	5.27	19.00	13.73	--	15.50	No
	1/28/2012	PZ-13	4.60	19.50	14.90	--	--	
	1/28/2012	PZ-12	3.55	19.00	15.45	--	15.50	No
	2/26/2012	PZ-13	5.77	19.50	13.73	--	--	
	2/26/2012	PZ-12	3.95	19.00	15.05	--	15.50	No
	3/7/2012	PZ-13	6.64	19.50	12.86	--	--	
	3/7/2012	PZ-12	4.20	19.00	14.80	--	15.50	No
	4/21/2012	PZ-13	6.15	19.50	13.35	--	--	
	4/21/2012	PZ-12	4.09	19.00	14.91	--	15.50	No
	5/19/2012	PZ-13	6.83	19.50	12.67	--	--	
	5/19/2012	PZ-12	4.32	19.00	14.68	--	15.50	No
	6/30/2012	PZ-13	6.89	19.50	12.61	--	--	
	6/30/2012	PZ-12	4.12	19.00	14.88	--	15.50	No
	7/27/2012	PZ-13	7.15	19.50	12.35	--	--	
	7/27/2012	PZ-12	4.05	19.00	14.95	--	15.50	No
	8/12/2012	PZ-13	7.29	19.50	12.21	--	--	
	8/12/2012	PZ-12	3.93	19.00	15.07	--	15.50	No
	9/30/2012	PZ-13	7.22	19.50	12.28	--	--	
	9/30/2012	PZ-12	3.97	19.00	15.03	--	15.50	No
	10/24/2012	PZ-13	6.81	19.50	12.69	--	--	
	10/24/2012	PZ-12	4.13	19.00	14.87	--	15.50	No
	11/24/2012	PZ-13	5.04	19.50	14.46	--	--	
	11/24/2012	PZ-12	3.52	19.00	15.48	--	15.50	No
	12/30/2012	PZ-13	5.15	19.50	14.35	--	--	
	12/30/2012	PZ-12	3.56	19.00	15.44	--	15.50	No
	1/25/2013	PZ-13	6.57	19.50	12.93	--	--	
	1/25/2013	PZ-12	4.11	19.00	14.89	--	15.50	No
	2/9/2013	PZ-13	6.68	19.50	12.82	--	--	
	2/9/2013	PZ-12	4.38	19.00	14.62	--	15.50	No
	3/31/2013	PZ-13	6.85	19.50	12.65	--	--	
	3/31/2013	PZ-12	NA	19.00	NA	--	15.50	--
	4/29/2013	PZ-13	6.90	19.50	12.60	--	--	
	4/29/2013	PZ-12	NA	19.00	NA	--	15.50	No
	5/31/2013	PZ-13	6.96	19.50	12.54	--	--	

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Gradient Direction (b)	Maximum Elevation Goal (b)	Goal Exceeded?
	5/31/2013	PZ-12	5.09	19.00	13.91	--	15.50	No
	6/9/2013	PZ-13	7.17	19.50	12.33	--	--	
	6/9/2013	PZ-12	5.16	19.00	13.84	--	15.50	No
	7/21/2013	PZ-13	7.07	19.50	12.43	--	--	
	7/21/2013	PZ-12	5.47	19.00	13.53	--	15.50	No
	8/29/2013	PZ-13	7.37	19.50	12.13	--	--	
	8/29/2013	PZ-12	5.76	19.00	13.24	--	15.50	No
	9/21/2013	PZ-13	7.00	19.50	12.50	--	--	
	9/21/2013	PZ-12	5.71	19.00	13.29	--	15.50	No
	10/6/2013	PZ-13	5.69	19.50	13.81	--	--	
	10/6/2013	PZ-12	4.85	19.00	14.15	--	15.50	No
	11/10/2013	PZ-13	6.67	19.50	12.83	--	--	
	11/10/2013	PZ-12	5.69	19.00	13.31	--	15.50	No
	12/15/2013	PZ-13	7.05	19.50	12.45	--	--	
	12/15/2013	PZ-12	5.90	19.00	13.10	--	15.50	No
	1/5/2014	PZ-13	7.03	19.50	12.47	--	--	
	1/5/2014	PZ-12	6.05	19.00	12.95	--	15.50	No
	2/1/2014	PZ-13	6.53	19.50	12.97	--	--	
	2/1/2014	PZ-12	5.69	19.00	13.31	--	15.50	No
	3/1/2014	PZ-13	5.59	19.50	13.91	--	--	
	3/1/2014	PZ-12	5.03	19.00	13.97	--	15.50	No
2	11/8/2006	PZ-17	7.58	20.48	12.90	--	--	
	11/8/2006	LW-3	5.62	20.36	14.74	--	15.50	No
	12/31/2006	PZ-17	6.98	20.48	13.50	--	--	
	12/31/2006	LW-3	4.97	20.36	15.39	--	15.50	No
	3/2/2007	PZ-17	6.94	20.48	13.54	--	--	
	3/2/2007	LW-3	4.97	20.36	15.39	--	15.50	No
	3/31/2007	PZ-17	6.87	20.48	13.61	--	--	
	3/31/2007	LW-3	4.79	20.36	15.57	--	15.50	Yes

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Gradient Direction (b)	Maximum Elevation Goal (b)	Goal Exceeded?
	4/23/2007	PZ-17	7.05	20.48	13.43	--	--	
	4/23/2007	LW-3	4.84	20.36	15.52	--	15.50	Yes
	5/28/2007	PZ-17	7.31	20.48	13.17	--	--	
	5/28/2007	LW-3	5.43	20.36	14.93	--	15.50	No
	6/30/2007	PZ-17	7.48	20.48	13.00	--	--	
	6/30/2007	LW-3	5.35	20.36	15.01	--	15.50	No
	8/1/2007	PZ-17	7.73	20.48	12.75	--	--	
	8/1/2007	LW-3	5.78	20.36	14.58	--	15.50	No
	9/29/2007	PZ-17	7.83	20.48	12.65	--	--	
	9/29/2007	LW-3	6.38	20.36	13.98	--	15.50	No
	11/22/2007	PZ-17	7.89	20.48	12.59	--	--	
	11/22/2007	LW-3	6.18	20.36	14.18	--	15.50	No
	1/26/2008	PZ-17	6.87	20.48	13.61	--	--	
	1/26/2008	LW-3	4.70	20.36	15.66	--	15.50	Yes
	2/28/2008	PZ-17	6.69	20.48	13.79	--	--	
	2/28/2008	LW-3	4.47	20.36	15.89	--	15.50	Yes
	3/19/2008	PZ-17	6.84	20.48	13.64	--	--	
	3/19/2008	LW-3	4.58	20.36	15.78	--	15.50	Yes
	4/28/2008	PZ-17	7.13	20.48	13.35	--	--	
	4/28/2008	LW-3	4.63	20.36	15.73	--	15.50	Yes
	5/31/2008	PZ-17	7.68	20.48	12.80	--	--	
	5/31/2008	LW-3	5.34	20.36	15.02	--	15.50	No
	6/30/2008	PZ-17	7.57	20.48	12.91	--	--	
	6/30/2008	LW-3	5.54	20.36	14.82	--	15.50	No
	7/12/2008	PZ-17	7.63	20.48	12.85	--	--	
	7/12/2008	LW-3	5.70	20.36	14.66	--	15.50	No
	8/28/2008	PZ-17	7.91	20.48	12.57	--	--	
	8/28/2008	LW-3	5.31	20.36	15.05	--	15.50	No
	9/20/2008	PZ-17	7.99	20.48	12.49	--	--	
	9/20/2008	LW-3	6.37	20.36	13.99	--	15.50	No
	10/12/2008	PZ-17	8.21	20.48	12.27	--	--	
	10/12/2008	LW-3	6.59	20.36	13.77	--	15.50	No
	11/30/2008	PZ-17	8.01	20.48	12.47	--	--	
	11/30/2008	LW-3	5.73	20.36	14.63	--	15.50	No
	12/31/2008	PZ-17	7.95	20.48	12.53	--	--	
	12/31/2008	LW-3	NM	20.36	--	--	15.50	--

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)		Groundwater Elevation (MLLW) (a)	Gradient Direction (b)	Maximum Elevation Goal (b)	Goal Exceeded?
	1/31/2009	PZ-17	7.77	20.48		12.71	--	--	
	1/31/2009	LW-3	5.07	20.03	(c)	14.96	--	15.50	No
	2/23/2009	PZ-17	7.71	20.48		12.77	--	--	
	2/23/2009	LW-3	5.58	20.03	(c)	14.45	--	15.50	No
	3/29/2009	PZ-17	NM	20.48		--	--	--	
	3/29/2009	LW-3	6.62	20.03	(c)	13.41	--	15.50	--
	4/18/2009	PZ-17	7.73	20.48		12.75	--	--	
	4/18/2009	LW-3	6.63	20.03	(c)	13.40	--	15.50	No
	5/16/2009	PZ-17	7.60	20.48		12.88	--	--	
	5/16/2009	LW-3	5.05	20.03	(c)	14.98	--	15.50	No
	6/21/2009	PZ-17	7.61	20.48		12.87	--	--	
	6/21/2009	LW-3	7.28	20.03	(c)	12.75	--	15.50	No
	7/20/2009	PZ-17	7.79	20.48		12.69	--	--	
	7/20/2009	LW-3	6.07	20.03	(c)	13.96	--	15.50	No
	8/10/2009	PZ-17	7.86	20.48		12.62	--	--	
	8/10/2009	LW-3	6.55	20.03	(c)	13.48	--	15.50	No
	9/7/2009	PZ-17	8.04	20.48		12.44	--	--	
	9/7/2009	LW-3	6.69	20.03	(c)	13.34	--	15.50	No
	10/10/2009	PZ-17	8.13	20.48		12.35	--	--	
	10/10/2009	LW-3	7.01	20.03	(c)	13.02	--	15.50	No
	11/28/2009	PZ-17	7.77	20.48		12.71	--	--	
	11/28/2009	LW-3	7.26	20.03	(c)	12.77	--	15.50	No
	12/31/2009	PZ-17	7.61	20.48		12.87	--	--	
	12/31/2009	LW-3	7.06	20.03	(c)	12.97	--	15.50	No
	1/14/2010	PZ-17	7.46	20.48		13.02	--	--	
	1/14/2010	LW-3	6.81	20.03	(c)	13.22	--	15.50	No
	2/21/2010	PZ-17	7.17	20.48		13.31	--	--	
	2/21/2010	LW-3	6.94	20.03	(c)	13.09	--	15.50	No
	3/17/2010	PZ-17	7.22	20.48		13.26	--	--	
	3/17/2010	LW-3	6.37	20.03	(c)	13.66	--	15.50	--
	4/25/2010	PZ-17	7.04	20.48		13.44	--	--	
	4/25/2010	LW-3	6.18	20.03	(c)	13.85	--	15.50	No
	5/16/2010	PZ-17	7.14	20.48		13.34	--	--	
	5/16/2010	LW-3	6.22	20.03	(c)	13.81	--	15.50	No
	6/26/2010	PZ-17	7.21	20.48		13.27	--	--	
	6/26/2010	LW-3	6.87	20.03	(c)	13.16	--	15.50	No
	7/23/2010	PZ-17	7.35	20.48		13.13	--	--	

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)		Groundwater Elevation (MLLW) (a)	Gradient Direction (b)	Maximum Elevation Goal (b)	Goal Exceeded?
	7/23/2010	LW-3	6.26	20.03	(c)	13.77	--	15.50	No
	8/30/2010	PZ-17	7.61	20.48		12.87	--	--	
	8/30/2010	LW-3	NA	19.83	(c)	NA	--	15.50	NA
	9/30/2010	PZ-17	7.64	20.48		12.84	--	--	
	9/30/2010	LW-3	6.63	19.83	(c)	13.20	--	15.50	No
	10/18/2010	PZ-17	7.76	20.48		12.72	--	--	
	10/18/2010	LW-3	5.90	19.83	(c)	13.93	--	15.50	No
	11/29/2010	PZ-17	7.50	20.48		12.98	--	--	
	11/29/2010	LW-3	NA	19.83	(c)	NA	--	15.50	NA
	12/25/2010	PZ-17	7.00	20.48		13.48	--	--	
	12/25/2010	LW-3	6.63	19.83	(c)	13.20	--	15.50	No
	1/29/2011	PZ-17	7.00	20.48		13.48	--	--	
	1/29/2011	LW-3	6.13	19.83	(c)	13.70	--	15.50	No
	2/20/2011	PZ-17	7.02	20.48		13.46	--	--	
	2/20/2011	LW-3	5.96	19.83	(c)	13.87	--	15.50	No
	3/24/2011	PZ-17	6.55	20.48		13.93	--	--	
	3/24/2011	LW-3	5.72	19.83	(c)	14.11	--	15.50	No
	4/23/2011	PZ-17	6.54	20.48		13.94	--	--	
	4/23/2011	LW-3	6.04	19.83	(c)	13.79	--	15.50	No
	5/30/2011	PZ-17	6.70	20.48		13.78	--	--	
	5/30/2011	LW-3	5.79	19.83	(c)	14.04	--	15.50	No
	6/26/2011	PZ-17	6.95	20.48		13.53	--	--	
	6/26/2011	LW-3	6.16	19.83	(c)	13.67	--	15.50	No
	7/30/2011	PZ-17	7.16	20.48		13.32	--	--	
	7/30/2011	LW-3	5.30	19.83	(c)	14.53	--	15.50	No
	8/8/2011	PZ-17	7.24	20.48		13.24	--	--	
	8/8/2011	LW-3	5.51	19.83	(c)	14.32	--	15.50	No
	9/24/2011	PZ-17	7.45	20.48		13.03	--	--	
	9/24/2011	LW-3	5.85	19.83	(c)	13.98	--	15.50	No
	10/29/2011	PZ-17	7.63	20.48		12.85	--	--	
	10/29/2011	LW-3	5.98	19.83	(c)	13.85	--	15.50	No
	11/26/2011	PZ-17	7.04	20.48		13.44	--	--	
	11/26/2011	LW-3	6.83	19.83	(c)	13.00	--	15.50	No
	12/26/2011	PZ-17	7.63	20.48		12.85	--	--	
	12/26/2011	LW-3	6.10	19.83	(c)	13.73	--	15.50	No

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)		Groundwater Elevation (MLLW) (a)	Gradient Direction (b)	Maximum Elevation Goal (b)	Goal Exceeded?
	1/28/2012	PZ-17	7.14	20.48		13.34	--	--	
	1/28/2012	LW-3	5.18	19.83	(c)	14.65	--	15.50	No
	2/26/2012	PZ-17	7.09	20.48		13.39	--	--	
	2/26/2012	LW-3	4.70	19.83	(c)	15.13	--	15.50	No
	3/7/2012	PZ-17	7.22	20.48		13.26	--	--	
	3/7/2012	LW-3	5.17	19.83	(c)	14.66	--	15.50	No
	4/21/2012	PZ-17	6.72	20.48		13.76	--	--	
	4/21/2012	LW-3	5.63	19.83	(c)	14.20	--	15.50	No
	5/19/2012	PZ-17	6.88	20.48		13.60	--	--	
	5/19/2012	LW-3	5.12	19.83	(c)	14.71	--	15.50	No
	6/30/2012	PZ-17	7.08	20.48		13.40	--	--	
	6/30/2012	LW-3	NA	19.83	(c)	NA	--	15.50	NA
	7/27/2012	PZ-17	7.20	20.48		13.28	--	--	
	7/27/2012	LW-3	NA	19.83	(c)	NA	--	15.50	NA
	8/12/2012	PZ-17	7.21	20.48		13.27	--	--	
	8/12/2012	LW-3	5.22	19.83	(c)	14.61	--	15.50	No
	9/30/2012	PZ-17	7.57	20.48		12.91	--	--	
	9/30/2012	LW-3	NA	19.83	(c)	NA	--	15.50	NA
	10/24/2012	PZ-17	7.62	20.48		12.86	--	--	
	10/24/2012	LW-3	4.06	19.83	(c)	15.77	--	15.50	Yes
	11/24/2012	PZ-17	7.21	20.48		13.27	--	--	
	11/24/2012	LW-3	5.88	19.83	(c)	13.95	--	15.50	No
	12/30/2012	PZ-17	6.64	20.48		13.84	--	--	
	12/30/2012	LW-3	5.51	19.83	(c)	14.32	--	15.50	No
	1/25/2013	PZ-17	6.79	20.48		13.69	--	--	
	1/25/2013	LW-3	5.61	19.83	(c)	14.22	--	15.50	No
	2/9/2013	PZ-17	7.02	20.48		13.46	--	--	
	2/9/2013	LW-3	5.80	19.83	(c)	14.03	--	15.50	No
	3/31/2013	PZ-17	7.07	20.48		13.41	--	--	
	3/31/2013	LW-3	5.81	19.83	(c)	14.02	--	15.50	No
	4/29/2013	PZ-17	7.13	20.48		13.35	--	--	
	4/29/2013	LW-3	6.01	19.83		13.82	--	15.50	No
	5/31/2013	PZ-17	NA	20.48		NA	--	--	
	5/31/2013	LW-3	6.24	19.83		13.59	--	15.50	No

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Gradient Direction (b)	Maximum Elevation Goal (b)	Goal Exceeded?
	6/9/2013	PZ-17	7.23	20.48	13.25	--	--	
	6/9/2013	LW-3	6.18	19.83	13.65	--	15.50	No
	7/21/2013	PZ-17	7.31	20.48	13.17	--	--	
	7/21/2013	LW-3	6.26	19.83	13.57	--	15.50	No
	8/29/2013	PZ-17	7.52	20.48	12.96	--	--	
	8/29/2013	LW-3	6.35	19.83	13.48	--	15.50	No
	9/21/2013	PZ-17	7.52	20.48	12.96	--	--	
	9/21/2013	LW-3	6.44	19.83	13.39	--	15.50	No
	10/6/2013	PZ-17	7.17	20.48	13.31	--	--	
	10/6/2013	LW-3	6.37	19.83	13.46	--	15.50	No
	11/10/2013	PZ-17	7.49	20.48	12.99	--	--	
	11/10/2013	LW-3	6.30	19.83	13.53	--	15.50	No
	12/15/2013	PZ-17	7.71	20.48	12.77	--	--	
	12/15/2013	LW-3	6.54	19.83	13.29	--	15.50	No
	1/5/2014	PZ-17	7.76	20.48	12.72	--	--	
	1/5/2014	LW-3	6.54	19.83	13.29	--	15.50	No
	2/1/2014	PZ-17	7.62	20.48	12.86	--	--	
	2/1/2014	LW-3	6.42	19.83	13.41	--	15.50	No
	3/1/2014	PZ-17	7.20	20.48	13.28	--	--	
	3/1/2014	LW-3	6.18	19.83	13.65	--	15.50	No
3	11/8/2006	PZ-18	6.31	21.20	14.89	--	--	
	11/8/2006	LW-4R	7.73	22.02	14.29	--	15.50	No
	12/31/2006	PZ-18	7.95	21.20	13.25	--	--	
	12/31/2006	LW-4R	6.77	22.02	15.25	--	15.50	No
	3/2/2007	PZ-18	7.28	21.20	13.92	--	--	
	3/2/2007	LW-4R	4.91	22.02	17.11	--	15.50	Yes
	3/31/2007	PZ-18	9.47	21.20	11.73	--	--	
	3/31/2007	LW-4R	6.07	22.02	15.95	--	15.50	Yes
	4/23/2007	PZ-18	4.31	21.20	16.89	--	--	
	4/23/2007	LW-4R	5.32	22.02	16.70	--	15.50	Yes
	5/28/2007	PZ-18	9.82	21.20	11.38	--	--	
	5/28/2007	LW-4R	8.12	22.02	13.90	--	15.50	No

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Gradient Direction (b)	Maximum Elevation Goal (b)	Goal Exceeded?
	6/30/2007	PZ-18	8.85	21.20	12.35	--	--	
	6/30/2007	LW-4R	6.07	22.02	15.95	--	15.50	Yes
	8/1/2007	PZ-18	5.16	21.20	16.04	--	--	
	8/1/2007	LW-4R	5.21	22.02	16.81	--	15.50	Yes
	9/29/2007	PZ-18	4.84	21.20	16.36	--	--	
	9/29/2007	LW-4R	5.66	22.02	16.36	--	15.50	Yes
	11/22/2007	PZ-18	5.87	21.20	15.33	--	--	
	11/22/2007	LW-4R	6.25	22.02	15.77	--	15.50	Yes
	1/26/2008	PZ-18	6.42	21.20	14.78	--	--	
	1/26/2008	LW-4R	4.74	22.02	17.28	--	15.50	Yes
	2/28/2008	PZ-18	6.86	21.20	14.34	--	--	
	2/28/2008	LW-4R	4.92	22.02	17.10	--	15.50	Yes
	3/19/2008	PZ-18	7.58	21.20	13.62	--	--	
	3/19/2008	LW-4R	7.70	22.02	14.32	--	15.50	No
	4/28/2008	PZ-18	6.72	21.20	14.48	--	--	
	4/28/2008	LW-4R	4.85	22.02	17.17	--	15.50	Yes
	5/31/2008	PZ-18	7.46	21.20	13.74	--	--	
	5/31/2008	LW-4R	5.26	22.02	16.76	--	15.50	Yes
	6/30/2008	PZ-18	7.44	21.20	16.36	--	--	
	6/30/2008	LW-4R	5.24	22.02	16.36	--	15.50	Yes
	7/12/2008	PZ-18	6.52	21.20	14.68	--	--	
	7/12/2008	LW-4R	5.33	22.02	16.69	--	15.50	Yes
	8/28/2008	PZ-18	6.55	21.20	14.65	--	--	
	8/28/2008	LW-4R	5.67	22.02	16.35	--	15.50	Yes
	9/20/2008	PZ-18	6.53	21.20	14.67	--	--	
	9/20/2008	LW-4R	5.63	22.02	16.39	--	15.50	Yes
	10/12/2008	PZ-18	7.83	21.20	13.37	--	--	
	10/12/2008	LW-4R	6.11	22.02	15.91	--	15.50	Yes
	11/30/2008	PZ-18	6.52	21.20	14.68	--	--	
	11/30/2008	LW-4R	6.18	22.02	15.84	--	15.50	Yes
	12/31/2008	PZ-18	7.01	21.20	14.19	--	--	
	12/31/2008	LW-4R	6.44	22.02	15.58	--	15.50	Yes

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CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Gradient Direction (b)	Maximum Elevation Goal (b)	Goal Exceeded?
	1/31/2009	PZ-18	6.46	21.20	14.74	--	--	
	1/31/2009	LW-4R	6.17	22.02	15.85	--	15.50	Yes
	2/23/2009	PZ-18	6.26	21.20	14.94	--	--	
	2/23/2009	LW-4R	6.35	22.02	15.67	--	15.50	Yes
	3/29/2009	PZ-18	6.29	21.20	14.91	--	--	
	3/29/2009	LW-4R	6.42	22.02	15.60	--	15.50	Yes
	4/18/2009	PZ-18	6.28	21.20	14.92	--	--	
	4/18/2009	LW-4R	6.35	22.02	15.67	--	15.50	Yes
	5/16/2009	PZ-18	6.21	21.20	14.99	--	--	
	5/16/2009	LW-4R	6.18	22.02	15.84	--	15.50	Yes
	6/21/2009	PZ-18	6.66	21.20	14.54	--	--	
	6/21/2009	LW-4R	6.23	22.02	15.79	--	15.50	Yes
	7/20/2009	PZ-18	9.93	21.20	11.27	--	--	
	7/20/2009	LW-4R	5.81	22.02	16.21	--	15.50	Yes
	8/10/2009	PZ-18	6.55	21.20	14.65	--	--	
	8/10/2009	LW-4R	7.47	22.02	14.55	--	15.50	No
	9/7/2009	PZ-18	8.77	21.20	12.43	--	--	
	9/7/2009	LW-4R	6.10	22.02	15.92	--	15.50	Yes
	10/10/2009	PZ-18	6.88	21.20	14.32	--	--	
	10/10/2009	LW-4R	6.09	22.02	15.93	--	15.50	Yes
	11/28/2009	PZ-18	9.25	21.20	11.95	--	--	
	11/28/2009	LW-4R	7.31	22.02	14.71	--	15.50	No
	12/31/2009	PZ-18	7.61	21.20	13.59	--	--	
	12/31/2009	LW-4R	NM	22.02	--	--	15.50	--
						--		
	1/14/2010	PZ-18	9.21	21.20	11.99	--	--	
	1/14/2010	LW-4R	7.46	22.02	14.56	--	15.50	No
	2/21/2010	PZ-18	6.50	21.20	14.70	--	--	
	2/21/2010	LW-4R	6.66	22.02	15.36	--	15.50	No
	3/17/2010	PZ-18	6.40	21.20	14.80	--	--	
	3/17/2010	LW-4R	7.07	22.02	14.95	--	15.50	No
	4/25/2010	PZ-18	9.57	21.20	11.63	--	--	
	4/25/2010	LW-4R	NA	22.02	NA	--	15.50	NA
	5/16/2010	PZ-18	NA	21.20	NA	--	--	
	5/16/2010	LW-4R	6.30	22.02	15.72	--	15.50	NA
	6/26/2010	PZ-18	9.35	21.20	11.85	--	--	
	6/26/2010	LW-4R	6.68	22.02	15.34	--	15.50	No
	7/23/2010	PZ-18	9.62	21.20	11.58	--	--	

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CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Gradient Direction (b)	Maximum Elevation Goal (b)	Goal Exceeded?
	7/23/2010	LW-4R	6.73	22.02	15.29	--	15.50	No
	8/30/2010	PZ-18	9.43	21.20	11.77	--	--	
	8/30/2010	LW-4R	6.57	22.02	15.45	--	15.50	No
	9/30/2010	PZ-18	8.62	21.20	12.58	--	--	
	9/30/2010	LW-4R	6.24	22.02	15.78	--	15.50	Yes
	10/18/2010	PZ-18	7.37	21.20	13.83	--	--	
	10/18/2010	LW-4R	6.36	22.02	15.66	--	15.50	Yes
	11/29/2010	PZ-18	9.77	21.20	11.43	--	--	
	11/29/2010	LW-4R	7.06	22.02	14.96	--	15.50	No
	12/25/2010	PZ-18	NA	21.20	NA	--	--	
	12/25/2010	LW-4R	7.11	22.02	14.91	--	15.50	NA
	1/29/2011	PZ-18	10.14	21.20	11.06	--	--	
	1/29/2011	LW-4R	NA	22.02	NA	--	15.50	NA
						--		
	2/20/2011	PZ-18	9.44	21.20	11.76	--	--	
	2/20/2011	LW-4R	NA	22.02	NA	--	15.50	NA
	3/24/2011	PZ-18	10.24	21.20	10.96	--	--	
	3/24/2011	LW-4R	6.45	22.02	15.57	--	15.50	Yes
	4/23/2011	PZ-18	9.44	21.20	11.76	--	--	
	4/23/2011	LW-4R	6.62	22.02	15.40	--	15.50	No
	5/30/2011	PZ-18	6.86	21.20	14.34	--	--	
	5/30/2011	LW-4R	6.37	22.02	15.65	--	15.50	Yes
	6/26/2011	PZ-18	6.01	21.20	15.19	--	--	
	6/26/2011	LW-4R	NA	22.02	NA	--	15.50	NA
	7/30/2011	PZ-18	6.43	21.20	14.77	--	--	
	7/30/2011	LW-4R	6.91	22.02	15.11	--	15.50	No
	8/8/2011	PZ-18	6.11	21.20	15.09	--	--	
	8/8/2011	LW-4R	6.56	22.02	15.46	--	15.50	No
	9/24/2011	PZ-18	NA	21.20	NA	--	--	
	9/24/2011	LW-4R	6.75	22.02	15.27	--	15.50	NA
	10/29/2011	PZ-18	NA	21.20	NA	--	--	
	10/29/2011	LW-4R	NA	22.02	NA	--	15.50	NA
	11/26/2011	PZ-18	NA	21.20	NA	--	--	
	11/26/2011	LW-4R	NA	22.02	NA	--	15.50	NA
	12/26/2011	PZ-18	7.21	21.20	13.99	--	--	
	12/26/2011	LW-4R	NA	22.02	NA	--	15.50	NA
	1/28/2012	PZ-18	5.91	21.20	15.29	--	--	
	1/28/2012	LW-4R	8.35	22.02	13.67	--	15.50	No

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CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Gradient Direction (b)	Maximum Elevation Goal (b)	Goal Exceeded?
	2/26/2012	PZ-18	NA	21.20	NA	--	--	
	2/26/2012	LW-4R	NA	22.02	NA	--	15.50	NA
	3/7/2012	PZ-18	6.34	21.20	14.86	--	--	
	3/7/2012	LW-4R	8.40	22.02	13.62	--	15.50	No
	4/21/2012	PZ-18	NA	21.20	NA	--	--	
	4/21/2012	LW-4R	8.16	22.02	13.86	--	15.50	NA
	5/19/2012	PZ-18	NA	21.20	NA	--	--	
	5/19/2012	LW-4R	8.02	22.02	14.00	--	15.50	NA
	6/30/2012	PZ-18	9.62	21.2	11.58	--	--	
	6/30/2012	LW-4R	NA	22.02	NA	--	15.50	NA
	7/27/2012	PZ-18	9.62	21.2	11.58	--	--	
	7/27/2012	LW-4R	6.95	22.02	15.07	--	15.50	No
	8/12/2012	PZ-18	9.78	21.20	11.42	--	--	
	8/12/2012	LW-4R	NA	22.02	NA	--	15.50	NA
	9/30/2012	PZ-18	NA	21.20	NA	--	--	
	9/30/2012	LW-4R	NA	22.02	NA	--	15.50	NA
	10/24/2012	PZ-18	6.90	21.20	14.30	--	--	
	10/24/2012	LW-4R	6.99	22.02	15.03	--	15.50	No
	11/24/2012	PZ-18	NA	21.20	NA	--	--	
	11/24/2012	LW-4R	NA	22.02	NA	--	15.50	NA
	12/30/2012	PZ-18	8.03	21.2	13.17	--	--	
	12/30/2012	LW-4R	NA	22.02	NA	--	15.50	NA
	1/25/2013	PZ-18	7.25	21.2	13.95	--	--	
	1/25/2013	LW-4R	7.82	22.02	14.20	--	15.50	No
	2/9/2013	PZ-18	8.34	21.2	12.86	--	--	
	2/9/2013	LW-4R	8.26	22.02	13.76	--	15.50	No
	3/31/2013	PZ-18	NA	21.2	NA	--	--	
	3/31/2013	LW-4R	8.26	22.02	13.76	--	15.50	No
	4/29/2013	PZ-18	NA	21.2	NA	--	--	
	4/29/2013	LW-4R	8.37	22.02	13.65	--	15.50	No
	5/31/2013	PZ-18	NA	21.2	NA	--	--	
	5/31/2013	LW-4R	8.53	22.02	13.49	--	15.50	No
	6/9/2013	PZ-18	10.11	21.2	11.09	--	--	
	6/9/2013	LW-4R	NA	22.02	NA	--	15.50	No
	7/21/2013	PZ-18	NA	21.2	NA	--	--	
	7/21/2013	LW-4R	NA	22.02	NA	--	15.50	No
	8/29/2013	PZ-18	8.91	21.2	12.29	--	--	

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CASCADE POLE SITE
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Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Gradient Direction (b)	Maximum Elevation Goal (b)	Goal Exceeded?
	8/29/2013	LW-4R	6.57	22.02	15.45	--	15.50	No
	9/21/2013	PZ-18	9.30	21.2	11.90	--	--	
	9/21/2013	LW-4R	6.97	22.02	15.05	--	15.50	No
	10/6/2013	PZ-18	8.04	21.2	13.16	--	--	
	10/6/2013	LW-4R	NA	22.02	NA	--	15.50	NA
	11/10/2013	PZ-18	8.40	21.2	12.80	--	--	
	11/10/2013	LW-4R	7.28	22.02	14.74	--	15.50	No
	12/15/2013	PZ-18	8.26	21.2	12.94	--	--	
	12/15/2013	LW-4R	7.72	22.02	14.30	--	15.50	No
	1/5/2014	PZ-18	10.28	21.2	10.92	--	--	
	1/5/2014	LW-4R	7.87	22.02	14.15	--	15.50	No
	2/1/2014	PZ-18	NA	21.2	NA	--	--	NA
	2/1/2014	LW-4R	7.81	22.02	14.21	--	15.50	No
	3/1/2014	PZ-18	9.80	21.2	11.40	--	--	NA
	3/1/2014	LW-4R	7.21	22.02	14.81	--	15.50	No
4	11/8/2006	PZ-19	12.64	23.67	11.03	--	--	
	11/8/2006	MW-02S	12.71	30.47	17.76	--	15.50	Yes
	12/31/2006	PZ-19	11.22	23.67	12.45	--	--	
	12/31/2006	MW-02S	11.96	30.47	18.51	--	15.50	Yes
	3/2/2007	PZ-19	13.81	23.67	9.86	--	--	
	3/2/2007	MW-02S	13.04	30.47	17.43	--	15.50	Yes
	3/31/2007	PZ-19	14.79	23.67	8.88	--	--	
	3/31/2007	MW-02S	12.93	30.47	17.54	--	15.50	Yes
	4/23/2007	PZ-19	12.72	23.67	10.95	--	--	
	4/23/2007	MW-02S	14.42	30.47	16.05	--	15.50	Yes
	5/28/2007	PZ-19	16.43	23.67	7.24	--	--	
	5/28/2007	MW-02S	15.51	30.47	14.96	--	15.50	No
	6/30/2007	PZ-19	16.80	23.67	6.87	--	--	
	6/30/2007	MW-02S	15.92	30.47	14.55	--	15.50	No
	8/1/2007	PZ-19	14.85	23.67	8.82	--	--	
	8/1/2007	MW-02S	16.02	30.47	14.45	--	15.50	No
	9/29/2007	PZ-19	14.17	23.67	9.50	--	--	
	9/29/2007	MW-02S	16.89	30.47	13.58	--	15.50	No
	11/22/2007	PZ-19	13.95	23.67	9.72	--	--	
	11/22/2007	MW-02S	15.13	30.47	15.34	--	15.50	No
	1/26/2008	PZ-19	12.86	23.67	10.81	--	--	

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CASCADE POLE SITE
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Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Gradient Direction (b)	Maximum Elevation Goal (b)	Goal Exceeded?
	1/26/2008	MW-02S	13.68	30.47	16.79	--	15.50	Yes
	2/28/2008	PZ-19	14.95	23.67	8.72	--	--	
	2/28/2008	MW-02S	13.56	30.47	16.91	--	15.50	Yes
	3/19/2008	PZ-19	13.33	23.67	10.34	--	--	
	3/19/2008	MW-02S	13.92	30.47	16.55	--	15.50	Yes
	4/28/2008	PZ-19	14.03	23.67	9.64	--	--	
	4/28/2008	MW-02S	14.54	30.47	15.93	--	15.50	Yes
	5/31/2008	PZ-19	14.13	23.67	9.54	--	--	
	5/31/2008	MW-02S	15.12	30.47	15.35	--	15.50	No
	6/30/2008	PZ-19	13.22	23.67	9.50	--	--	
	6/30/2008	MW-02S	15.60	30.47	13.58	--	15.50	No
	7/12/2008	PZ-19	16.34	23.67	7.33	--	--	
	7/12/2008	MW-02S	15.73	30.47	14.74	--	15.50	No
	8/28/2008	PZ-19	15.77	23.67	7.90	--	--	
	8/28/2008	MW-02S	16.43	30.47	14.04	--	15.50	No
	9/20/2008	PZ-19	13.78	23.67	9.89	--	--	
	9/20/2008	MW-02S	NM	30.47	--	--	15.50	--
	10/12/2008	PZ-19	14.42	23.67	9.25	--	--	
	10/12/2008	MW-02S	NM	30.47	--	--	15.50	--
	11/30/2008	PZ-19	13.42	23.67	10.25	--	--	
	11/30/2008	MW-02S	NM	30.47	--	--	15.50	--
	12/31/2008	PZ-19	12.70	23.67	10.97	--	--	
	12/31/2008	MW-02S	NM	30.47	--	--	15.50	--
	1/31/2009	PZ-19	15.00	23.67	8.67	--	--	
	1/31/2009	MW-02S	16.81	32.46	15.65	--	15.50	Yes
	2/23/2009	PZ-19	13.63	23.67	10.04	--	--	
	2/23/2009	MW-02S	17.22	32.46	15.24	--	15.50	No
	3/29/2009	PZ-19	16.13	23.67	7.54	--	--	
	3/29/2009	MW-02S	17.20	32.46	15.26	--	15.50	No
	4/18/2009	PZ-19	14.78	23.67	8.89	--	--	
	4/18/2009	MW-02S	17.13	32.46	15.33	--	15.50	No
	5/16/2009	PZ-19	14.16	23.67	9.51	--	--	
	5/16/2009	MW-02S	16.79	32.46	15.67	--	15.50	Yes
	6/21/2009	PZ-19	14.53	23.67	9.14	--	--	
	6/21/2009	MW-02S	17.65	32.46	14.81	--	15.50	No
	7/20/2009	PZ-19	12.42	23.67	11.25	--	--	
	7/20/2009	MW-02S	18.00	32.46	14.46	--	15.50	No

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Gradient Direction (b)	Maximum Elevation Goal (b)	Goal Exceeded?
	8/10/2009	PZ-19	13.47	23.67	10.20	--	--	
	8/10/2009	MW-02S	18.37	32.46	14.09	--	15.50	No
	9/7/2009	PZ-19	13.74	23.67	9.93	--	--	
	9/7/2009	MW-02S	18.85	32.46	13.61	--	15.50	No
	10/10/2009	PZ-19	13.67	23.67	10.00	--	--	
	10/10/2009	MW-02S	19.26	32.46	13.20	--	15.50	No
	11/28/2009	PZ-19	14.26	23.67	9.41	--	--	
	11/28/2009	MW-02S	18.17	32.46	14.29	--	15.50	No
	12/31/2009	PZ-19	11.39	23.67	12.28	--	--	
	12/31/2009	MW-02S	18.02	32.46	14.44	--	15.50	No
	1/14/2010	PZ-19	11.61	23.67	12.06	--	--	
	1/14/2010	MW-02S	17.27	32.46	15.19	--	15.50	No
	2/21/2010	PZ-19	11.51	23.67	12.16	--	--	
	2/21/2010	MW-02S	16.79	32.46	15.67	--	15.50	Yes
	3/17/2010	PZ-19	14.65	23.67	9.02	--	--	
	3/17/2010	MW-02S	16.39	32.46	16.07	--	15.50	Yes
	4/25/2010	PZ-19	13.67	23.67	10.00	--	--	
	4/25/2010	MW-02S	17.23	32.46	15.23	--	15.50	No
	5/16/2010	PZ-19	16.69	23.67	6.98	--	--	
	5/16/2010	MW-02S	17.59	32.46	14.87	--	15.50	No
	6/26/2010	PZ-19	13.67	23.67	10.00	--	--	
	6/26/2010	MW-02S	18.16	32.46	14.30	--	15.50	No
	7/23/2010	PZ-19	16.86	23.67	6.81	--	--	
	7/23/2010	MW-02S	18.51	32.46	13.95	--	15.50	No
	8/30/2010	PZ-19	14.23	23.67	9.44	--	--	
	8/30/2010	MW-02S	18.04	32.46	14.42	--	15.50	No
	9/30/2010	PZ-19	13.67	23.67	10.00	--	--	
	9/30/2010	MW-02S	17.27	32.46	15.19	--	15.50	No
	10/18/2010	PZ-19	15.84	23.67	7.83	--	--	
	10/18/2010	MW-02S	17.72	32.46	14.74	--	15.50	No
	11/29/2010	PZ-19	12.89	23.67	10.78	--	--	
	11/29/2010	MW-02S	17.13	32.46	15.33	--	15.50	No
	12/25/2010	PZ-19	10.81	23.67	12.86	--	--	
	12/25/2010	MW-02S	15.90	32.46	16.56	--	15.50	Yes
	1/29/2011	PZ-19	11.97	23.67	11.70	--	--	
	1/29/2011	MW-02S	16.18	32.46	16.28	--	15.50	Yes
	2/20/2011	PZ-19	15.01	23.67	8.66	--	--	
	2/20/2011	MW-02S	16.99	32.46	15.47	--	15.50	No

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)		Groundwater Elevation (MLLW) (a)	Gradient Direction (b)	Maximum Elevation Goal (b)	Goal Exceeded?
	3/24/2011	PZ-19	10.93	23.67		12.74	--	--	
	3/24/2011	MW-02S	15.15	32.46		17.31	--	15.50	Yes
	4/23/2011	PZ-19	15.81	23.67		7.86	--	--	
	4/23/2011	MW-02S	15.62	32.46		16.84	--	15.50	Yes
	5/30/2011	PZ-19	15.07	23.67		8.60	--	--	
	5/30/2011	MW-02S	16.23	32.46		16.23	--	15.50	Yes
	6/26/2011	PZ-19	13.87	23.67		9.80	--	--	
	6/26/2011	MW-02S	16.88	32.46		15.58	--	15.50	Yes
	7/30/2011	PZ-19	15.93	23.67		7.74	--	--	
	7/30/2011	MW-02S	17.08	32.46		15.38	--	15.50	No
	8/8/2011	PZ-19	16.19	23.67		7.48	--	--	
	8/8/2011	MW-02S	17.26	32.46		15.20	--	15.50	No
	9/24/2011	PZ-19	15.34	23.67		8.33	--	--	
	9/24/2011	MW-02S	17.52	31.96	(e)	14.44	--	15.50	No
	10/29/2011	PZ-19	13.66	23.67		10.01	--	--	
	10/29/2011	MW-02S	17.77	31.96	(e)	14.19	--	15.50	No
	11/26/2011	PZ-19	11.91	23.67		11.76	--	--	
	11/26/2011	MW-02S	16.08	31.96	(e)	15.88	--	15.50	Yes
	12/26/2011	PZ-19	13.50	23.67		10.17	--	--	
	12/26/2011	MW-02S	17.45	31.96	(e)	14.51	--	15.50	No
	1/28/2012	PZ-19	12.50	23.67		11.17	--	--	
	1/28/2012	MW-02S	15.33	31.96	(e)	16.63	--	15.50	Yes
	2/26/2012	PZ-19	15.09	23.67		8.58	--	--	
	2/26/2012	MW-02S	15.75	31.96	(e)	16.21	--	15.50	Yes
	3/7/2012	PZ-19	14.88	23.67		8.79	--	--	
	3/7/2012	MW-02S	16.28	31.96	(e)	15.68	--	15.50	Yes
	4/21/2012	PZ-19	15.35	23.67		8.32	--	--	
	4/21/2012	MW-02S	15.85	31.96	(e)	16.11	--	15.50	Yes
	5/19/2012	PZ-19	13.37	23.67		10.30	--	--	
	5/19/2012	MW-02S	16.37	31.96	(e)	15.59	--	15.50	Yes
	6/30/2012	PZ-19	14.11	23.67		9.56	--	--	
	6/30/2012	MW-02S	16.13	31.96	(e)	15.83	--	15.50	Yes
	7/27/2012	PZ-19	14.18	23.67		9.49	--	--	
	7/27/2012	MW-02S	16.02	31.96	(e)	15.94	--	15.50	Yes
	8/12/2012	PZ-19	14.71	23.67		8.96	--	--	
	8/12/2012	MW-02S	15.80	31.96	(e)	16.16	--	15.50	Yes
	9/30/2012	PZ-19	14.64	23.67		9.03	--	--	

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)		Groundwater Elevation (MLLW) (a)	Gradient Direction (b)	Maximum Elevation Goal (b)	Goal Exceeded?
	9/30/2012	MW-02S	16.09	31.96	(e)	15.87	--	15.50	Yes
	10/24/2012	PZ-19	15.59	23.67		8.08	--	--	
	10/24/2012	MW-02S	16.50	31.96	(e)	15.46	--	15.50	No
	11/24/2012	PZ-19	12.3	23.67		11.37	--	--	
	11/24/2012	MW-02S	14.72	31.96	(e)	17.24	--	15.50	Yes
	12/30/2012	PZ-19	13.21	23.67		10.46	--	--	
	12/30/2012	MW-02S	15.19	31.96	(e)	16.77	--	15.50	Yes
	1/25/2013	PZ-19	12.46	23.67		11.21	--	--	
	1/25/2013	MW-02S	16.61	31.96	(e)	15.35	--	15.50	No
	2/9/2013	PZ-19	12.81	23.67		10.86	--	--	
	2/9/2013	MW-02S	16.57	31.96	(e)	15.39	--	15.50	No
	3/31/2013	PZ-19	15.91	23.67		7.76	--	--	
	3/31/2013	MW-02S	16.57	31.96	(e)	15.39	--	15.50	No
	4/29/2013	PZ-19	16.38	23.67		7.29	--	--	
	4/29/2013	MW-02S	16.71	31.96		15.25	--	15.50	No
	5/31/2013	PZ-19	16.38	23.67		7.29	--	--	
	5/31/2013	MW-02S	17.48	31.96		14.48	--	15.50	No
	6/9/2013	PZ-19	16.24	23.67		7.43	--	--	
	6/9/2013	MW-02S	17.48	31.96		14.48	--	15.50	No
	7/21/2013	PZ-19	15.27	23.67		8.40	--	--	
	7/21/2013	MW-02S	18.11	31.96		13.85	--	15.50	No
	8/29/2013	PZ-19	15.83	23.67		7.84	--	--	
	8/29/2013	MW-02S	17.89	31.96		14.07	--	15.50	No
	9/21/2013	PZ-19	14.94	23.67		8.73	--	--	
	9/21/2013	MW-02S	17.63	31.96		14.33	--	15.50	No
	10/6/2013	PZ-19	14.58	23.67		9.09	--	--	
	10/6/2013	MW-02S	16.03	31.96		15.93	--	15.50	Yes
	11/10/2013	PZ-19	12.74	23.67		10.93	--	--	
	11/10/2013	MW-02S	17.11	31.96		14.85	--	15.50	No
	12/15/2013	PZ-19	13.08	23.67		10.59	--	--	
	12/15/2013	MW-02S	17.50	31.96		14.46	--	15.50	No
	1/5/2014	PZ-19	14.24	23.67		9.43	--	--	
	1/5/2014	MW-02S	17.67	31.96		14.29	--	15.50	No
	2/1/2014	PZ-19	14.13	23.67		9.54	--	--	
	2/1/2014	MW-02S	17.21	31.96		14.75	--	15.50	No
	3/1/2014	PZ-19	13.53	23.67		10.14	--	--	

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Gradient Direction (b)	Maximum Elevation Goal (b)	Goal Exceeded?
	3/1/2014	MW-02S	15.96	31.96	16.00	--	15.50	Yes
5	11/8/2006	MW-02S	12.74	30.47	17.76	--	--	
	11/8/2006	MW-02D	18.24	31.79	13.55	--	--	
	12/31/2006	MW-02S	11.96	30.47	18.51	--	--	
	12/31/2006	MW-02D	16.29	31.79	15.50	--	--	
	3/2/2007	MW-02S	13.04	30.47	17.43	--	--	
	3/2/2007	MW-02D	19.51	31.79	12.28	--	--	
						--		
	3/31/2007	MW-02S	12.93	30.47	17.54	--	--	
	3/31/2007	MW-02D	20.11	31.79	11.68	--	--	
	4/23/2007	MW-02S	14.42	30.47	16.05	--	--	
	4/23/2007	MW-02D	17.72	31.79	14.07	--	--	
	5/28/2007	MW-02S	15.51	30.47	14.96	--	--	
	5/28/2007	MW-02D	20.60	31.79	11.19	--	--	
	6/30/2007	MW-02S	15.92	30.47	14.55	--	--	
	6/30/2007	MW-02D	22.15	31.79	9.64	--	--	
	8/1/2007	MW-02S	16.02	30.47	14.45	--	--	
	8/1/2007	MW-02D	21.70	31.79	10.09	--	--	
	9/29/2007	MW-02S	16.89	30.47	13.58	--	--	
	9/29/2007	MW-02D	19.82	31.79	11.97	--	--	
							--	
	11/22/2007	MW-02S	15.13	30.47	15.34	--	--	
	11/22/2007	MW-02D	17.61	31.79	14.18	--	--	
	1/26/2008	MW-02S	13.68	30.47	16.79	--	--	
	1/26/2008	MW-02D	18.57	31.79	13.22	--	--	
	2/28/2008	MW-02S	13.56	30.47	16.91	--	--	
	2/28/2008	MW-02D	21.25	31.79	10.54	--	--	
	3/19/2008	MW-02S	13.92	30.47	16.55	--	--	
	3/19/2008	MW-02D	17.87	31.79	13.92	--	--	
	4/28/2008	MW-02S	14.54	30.47	15.93	--	--	
	4/28/2008	MW-02D	19.45	31.79	12.34	--	--	
	5/31/2008	MW-02S	15.12	30.47	15.35	--	--	
	5/31/2008	MW-02D	19.16	31.79	12.63	--	--	
	6/30/2008	MW-02S	15.60	30.47	13.58	--	--	
	6/30/2008	MW-02D	17.79	31.79	11.97	--	--	
							--	
	7/12/2008	MW-02S	15.73	30.47	14.74	--	--	
	7/12/2008	MW-02D	20.75	31.79	11.04	--	--	
	8/28/2008	MW-02S	16.43	30.47	14.04	--	--	
	8/28/2008	MW-02D	22.24	31.79	9.55	--	--	

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)		Groundwater Elevation (MLLW) (a)	Gradient Direction (b)	Maximum Elevation Goal (b)	Goal Exceeded?
	9/20/2008	MW-02S	NM	30.47		--	--	--	
	9/20/2008	MW-02D	NM	31.79		--	--	--	
							--		
	10/12/2008	MW-02S	NM	30.47		--	--	--	
	10/12/2008	MW-02D	NM	31.79		--	--	--	
	11/30/2008	MW-02S	NM	30.47		--	--	--	
	11/30/2008	MW-02D	NM	31.79		--	--	--	
	12/31/2008	MW-02S	NM	30.47		--	--	--	
	12/31/2008	MW-02D	NM	31.79		--	--	--	
	1/31/2009	MW-02S	16.81	32.46	(d)	15.65	--	--	
	1/31/2009	MW-02D	21.38	31.90	(d)	10.52	--	--	
	2/23/2009	MW-02S	17.22	32.46		15.24	--	--	
	2/23/2009	MW-02D	18.30	31.90		13.60	--	--	
	3/29/2009	MW-02S	17.20	32.46		15.26	--	--	
	3/29/2009	MW-02D	20.02	31.90		11.88	--	--	
	4/18/2009	MW-02S	17.13	32.46		15.33	--	--	
	4/18/2009	MW-02D	19.96	31.90		11.94	--	--	
	5/16/2009	MW-02S	16.79	32.46		15.67	--	--	
	5/16/2009	MW-02D	19.43	31.90		12.47	--	--	
	6/21/2009	MW-02S	17.65	32.46		14.81	--	--	
	6/21/2009	MW-02D	17.62	31.90		14.28	--	--	
	7/20/2009	MW-02S	18.00	32.46		14.46	--	--	
	7/20/2009	MW-02D	18.25	31.90		13.65	--	--	
	8/10/2009	MW-02S	18.37	32.46		14.09	--	--	
	8/10/2009	MW-02D	17.91	31.90		13.99	--	--	
	9/7/2009	MW-02S	18.85	32.46		13.61	--	--	
	9/7/2009	MW-02D	19.53	31.90		12.37	--	--	
	10/10/2009	MW-02S	19.26	32.46		13.20	--	--	
	10/10/2009	MW-02D	18.87	31.90		13.03	--	--	
	11/28/2009	MW-02S	18.17	32.46		14.29	--	--	
	11/28/2009	MW-02D	18.98	31.90		12.92	--	--	
	12/31/2009	MW-02S	18.02	32.46		14.44	--	--	
	12/31/2009	MW-02D	15.98	31.90		15.92	--	--	
	1/14/2010	MW-02S	17.27	32.46		15.19	--	--	
	1/14/2010	MW-02D	17.30	31.90		14.60	--	--	
							--		
	2/21/2010	MW-02S	16.79	32.46		15.67	--	--	
	2/21/2010	MW-02D	16.63	31.90		15.27	--	--	
	3/17/2010	MW-02S	16.39	32.46		16.07	--	--	

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)		Groundwater Elevation (MLLW) (a)	Gradient Direction (b)	Maximum Elevation Goal (b)	Goal Exceeded?
	3/17/2010	MW-02D	18.12	31.90		13.78	--	--	
	4/25/2010	MW-02S	17.23	32.46		15.23	--	--	
	4/25/2010	MW-02D	18.31	31.90		13.59	--	--	
	5/16/2010	MW-02S	17.59	32.46		14.87	--	--	
	5/16/2010	MW-02D	20.96	31.90		10.94	--	--	
	6/26/2010	MW-02S	18.16	32.46		14.30	--	--	
	6/26/2010	MW-02D	20.48	31.90		11.42	--	--	
	7/23/2010	MW-02S	18.51	32.46		13.95	--	--	
	7/23/2010	MW-02D	21.13	31.90		10.77	--	--	
	8/30/2010	MW-02S	18.04	32.46		14.42	--	--	
	8/30/2010	MW-02D	18.14	31.90		13.76	--	--	
	9/30/2010	MW-02S	17.27	32.46		15.19	--	--	
	9/30/2010	MW-02D	18.48	31.90		13.42	--	--	
	10/18/2010	MW-02S	17.72	32.46		14.74	--	--	
	10/18/2010	MW-02D	21.20	31.90		10.70	--	--	
	11/29/2010	MW-02S	17.13	32.46		15.33	--	--	
	11/29/2010	MW-02D	16.71	31.90		15.19	--	--	
	12/25/2010	MW-02S	15.90	32.46		16.56	--	--	
	12/25/2010	MW-02D	15.44	31.90		16.46	--	--	
	1/29/2011	MW-02S	16.18	32.46		16.28	--	--	
	1/29/2011	MW-02D	17.61	31.90		14.29	--	--	
	2/20/2011	MW-02S	16.99	32.46		15.47	--	--	
	2/20/2011	MW-02D	19.95	31.90		11.95	--	--	
	3/24/2011	MW-02S	15.15	32.46		17.31	--	--	
	3/24/2011	MW-02D	15.34	31.90		16.56	--	--	
	4/23/2011	MW-02S	15.62	32.46		16.84	--	--	
	4/23/2011	MW-02D	21.73	31.90		10.17	--	--	
	5/30/2011	MW-02S	16.23	32.46		16.23	--	--	
	5/30/2011	MW-02D	21.58	31.90		10.32	--	--	
	6/26/2011	MW-02S	16.88	32.46		15.58	--	--	
	6/26/2011	MW-02D	18.31	31.90		13.59	--	--	
	7/30/2011	MW-02S	17.08	32.46		15.38	--	--	
	7/30/2011	MW-02D	22.39	31.90		9.51	--	--	
	8/8/2011	MW-02S	17.26	32.46		15.20	--	--	
	8/8/2011	MW-02D	21.40	31.90		10.50	--	--	
	9/24/2011	MW-02S	17.52	31.96	(e)	14.44	--	--	
	9/24/2011	MW-02D	21.44	31.81	(e)	10.37	--	--	

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)		Groundwater Elevation (MLLW) (a)	Gradient Direction (b)	Maximum Elevation Goal (b)	Goal Exceeded?
	10/29/2011	MW-02S	17.77	31.96	(e)	14.19	--	--	
	10/29/2011	MW-02D	17.73	31.81	(e)	14.08	--	--	
	11/26/2011	MW-02S	16.08	31.96	(e)	15.88	--	--	
	11/26/2011	MW-02D	16.43	31.81	(e)	15.38	--	--	
	12/26/2011	MW-02S	17.45	31.96	(e)	14.51	--	--	
	12/26/2011	MW-02D	19.26	31.81	(e)	12.55	--	--	
	1/28/2012	MW-02S	15.33	31.96	(e)	16.63	--	--	
	1/28/2012	MW-02D	16.61	31.81	(e)	15.20	--	--	
	2/26/2012	MW-02S	15.75	31.96	(e)	16.21	--	--	
	2/26/2012	MW-02D	21.30	31.81	(e)	10.51	--	--	
	3/7/2012	MW-02S	16.28	31.96	(e)	15.68	--	--	
	3/7/2012	MW-02D	20.75	31.81	(e)	11.06	--	--	
	4/21/2012	MW-02S	15.85	31.96	(e)	16.11	--	--	
	4/21/2012	MW-02D	19.86	31.81	(e)	11.95	--	--	
	5/19/2012	MW-02S	16.37	31.96	(e)	15.59	--	--	
	5/19/2012	MW-02D	20.17	31.81	(e)	11.64	--	--	
	6/30/2012	MW-02S	16.13	31.96	(e)	15.83	--	--	
	6/30/2012	MW-02D	17.29	31.81	(e)	14.52	--	--	
	7/27/2012	MW-02S	16.02	31.96	(e)	15.94	--	--	
	7/27/2012	MW-02D	18.81	31.81	(e)	13.00	--	--	
	8/12/2012	MW-02S	15.80	31.96	(e)	16.16	--	--	
	8/12/2012	MW-02D	17.99	31.81	(e)	13.82	--	--	
	9/30/2012	MW-02S	16.09	31.96	(e)	15.87	--	--	
	9/30/2012	MW-02D	17.80	31.81	(e)	14.01	--	--	
	10/24/2012	MW-02S	16.50	31.96	(e)	15.46	--	--	
	10/24/2012	MW-02D	20.12	31.81	(e)	11.69	--	--	
	11/24/2012	MW-02S	14.72	31.96	(e)	17.24	--	--	
	11/24/2012	MW-02D	16.49	31.81	(e)	15.32	--	--	
	12/30/2012	MW-02S	15.19	31.96	(e)	16.77	--	--	
	12/30/2012	MW-02D	17.87	31.81	(e)	13.94	--	--	
	1/25/2013	MW-02S	16.61	31.96	(e)	15.35	--	--	
	1/25/2013	MW-02D	16.00	31.81	(e)	15.81	--	--	
	2/9/2013	MW-02S	16.57	31.96	(e)	15.39	--	--	
	2/9/2013	MW-02D	16.54	31.81	(e)	15.27	--	--	
	3/31/2013	MW-02S	16.57	31.96	(e)	15.39	--	--	
	3/31/2013	MW-02D	21.87	31.81	(e)	9.94	--	--	
	4/29/2013	MW-02S	16.71	31.96		15.25	--	--	

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Gradient Direction (b)	Maximum Elevation Goal (b)	Goal Exceeded?
	4/29/2013	MW-02D	20.14	31.81	11.67	--	--	
	5/31/2013	MW-02S	17.48	31.96	14.48	--	--	
	5/31/2013	MW-02D	20.56	31.81	11.25	--	--	
	6/9/2013	MW-02S	17.48	31.96	14.48	--	--	
	6/9/2013	MW-02D	21.93	31.81	9.88	--	--	
	7/21/2013	MW-02S	18.11	31.96	13.85	--	--	
	7/21/2013	MW-02D	17.62	31.81	14.19	--	--	
	8/29/2013	MW-02S	17.89	31.96	14.07	--	--	
	8/29/2013	MW-02D	20.27	31.81	11.54	--	--	
	9/21/2013	MW-02S	17.63	31.96	14.33	--	--	
	9/21/2013	MW-02D	19.31	31.81	12.50	--	--	
	10/6/2013	MW-02S	16.03	31.96	15.93	--	--	
	10/6/2013	MW-02D	18.53	31.81	13.28	--	--	
	11/10/2013	MW-02S	17.11	31.96	14.85	--	--	
	11/10/2013	MW-02D	17.69	31.81	14.12	--	--	
	12/15/2013	MW-02S	17.50	31.96	14.46	--	--	
	12/15/2013	MW-02D	17.11	31.81	14.70	--	--	
	1/5/2014	MW-02S	17.67	31.96	14.29	--	--	
	1/5/2014	MW-02D	20.33	31.81	11.48	--	--	
	2/1/2014	MW-02S	17.21	31.96	14.75	--	--	
	2/1/2014	MW-02D	18.08	31.81	13.73	--	--	
	3/1/2014	MW-02S	15.96	31.96	16.00	--	--	
	3/1/2014	MW-02D	17.19	31.81	14.62	--	--	
6	11/8/2006	MW-01S	7.51	21.64	14.13	--	--	
	11/8/2006	MW-01D	7.94	21.87	13.93	--	--	
	12/31/2006	MW-01S	5.59	21.64	16.05	--	--	
	12/31/2006	MW-01D	6.78	21.87	15.09	--	--	
	3/2/2007	MW-01S	5.81	21.64	15.83	--	--	
	3/2/2007	MW-01D	8.92	21.87	12.95	--	--	
	3/31/2007	MW-01S	5.71	21.64	15.93	--	--	
	3/31/2007	MW-01D	9.51	21.87	12.36	--	--	
	4/23/2007	MW-01S	6.17	21.64	15.47	--	--	
	4/23/2007	MW-01D	7.89	21.87	13.98	--	--	
	5/28/2007	MW-01S	6.78	21.64	14.86	--	--	
	5/28/2007	MW-01D	11.02	21.87	10.85	--	--	
	6/30/2007	MW-01S	7.12	21.64	14.52	--	--	

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Gradient Direction (b)	Maximum Elevation Goal (b)	Goal Exceeded?
	6/30/2007	MW-01D	11.74	21.87	10.13	--	--	
	8/1/2007	MW-01S	7.29	21.64	14.35	--	--	
	8/1/2007	MW-01D	9.57	21.87	12.30	--	--	
	9/29/2007	MW-01S	8.03	21.64	13.61	--	--	
	9/29/2007	MW-01D	8.83	21.87	13.04	--	--	
	11/22/2007	MW-01S	7.79	21.64	13.85	--	--	
	11/22/2007	MW-01D	8.89	21.87	12.98	--	--	
	1/26/2008	MW-01S	7.69	21.64	13.95	--	--	
	1/26/2008	MW-01D	5.63	21.87	16.24	--	--	
	2/28/2008	MW-01S	5.41	21.64	16.23	--	--	
	2/28/2008	MW-01D	9.87	21.87	12.00	--	--	
	3/19/2008	MW-01S	5.76	21.64	15.88	--	--	
	3/19/2008	MW-01D	9.62	21.87	12.25	--	--	
	4/28/2008	MW-01S	6.06	21.64	15.58	--	--	
	4/28/2008	MW-01D	8.65	21.87	13.22	--	--	
	5/31/2008	MW-01S	6.53	21.64	15.11	--	--	
	5/31/2008	MW-01D	8.72	21.87	13.15	--	--	
	6/30/2008	MW-01S	6.74	21.64	13.61	--	--	
	6/30/2008	MW-01D	7.94	21.87	13.04	--	--	
	7/12/2008	MW-01S	6.92	21.64	14.72	--	--	
	7/12/2008	MW-01D	10.94	21.87	10.93	--	--	
	8/28/2008	MW-01S	7.62	21.64	14.02	--	--	
	8/28/2008	MW-01D	11.03	21.87	10.84	--	--	
	9/20/2008	MW-01S	7.75	21.64	13.89	--	--	
	9/20/2008	MW-01D	8.58	21.87	13.29	--	--	
	10/12/2008	MW-01S	7.76	21.64	13.88	--	--	
	10/12/2008	MW-01D	8.59	21.87	13.28	--	--	
	11/30/2008	MW-01S	6.93	21.64	14.71	--	--	
	11/30/2008	MW-01D	8.44	21.87	13.43	--	--	
	12/31/2008	MW-01S	6.86	21.64	14.78	--	--	
	12/31/2008	MW-01D	7.81	21.87	14.06	--	--	
	1/31/2009	MW-01S	6.54	21.64	15.10	--	--	
	1/31/2009	MW-01D	9.94	21.87	11.93	--	--	
	2/23/2009	MW-01S	6.73	21.64	14.91	--	--	
	2/23/2009	MW-01D	9.27	21.87	12.60	--	--	
	3/29/2009	MW-01S	6.67	21.64	14.97	--	--	
	3/29/2009	MW-01D	11.20	21.87	10.67	--	--	

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Gradient Direction (b)	Maximum Elevation Goal (b)	Goal Exceeded?
	4/18/2009	MW-01S	6.61	21.64	15.03	--	--	
	4/18/2009	MW-01D	10.30	21.87	11.57	--	--	
	5/16/2009	MW-01S	6.34	21.64	15.30	--	--	
	5/16/2009	MW-01D	9.21	21.87	12.66	--	--	
	6/21/2009	MW-01S	6.81	21.64	14.83	--	--	
	6/21/2009	MW-01D	8.52	21.87	13.35	--	--	
	7/20/2009	MW-01S	7.21	21.64	14.43	--	--	
	7/20/2009	MW-01D	7.12	21.87	14.75	--	--	
	8/10/2009	MW-01S	7.40	21.64	14.24	--	--	
	8/10/2009	MW-01D	8.36	21.87	13.51	--	--	
	9/7/2009	MW-01S	7.79	21.64	13.85	--	--	
	9/7/2009	MW-01D	9.28	21.87	12.59	--	--	
	10/10/2009	MW-01S	8.19	21.64	13.45	--	--	
	10/10/2009	MW-01D	8.67	21.87	13.20	--	--	
	11/28/2009	MW-01S	7.48	21.64	14.16	--	--	
	11/28/2009	MW-01D	8.76	21.87	13.11	--	--	
	12/31/2009	MW-01S	7.22	21.64	14.42	--	--	
	12/31/2009	MW-01D	6.35	21.87	15.52	--	--	
	1/14/2010	MW-01S	6.96	21.64	14.68	--	--	
	1/14/2010	MW-01D	6.94	21.87	14.93	--	--	
	2/21/2010	MW-01S	6.41	21.64	15.23	--	--	
	2/21/2010	MW-01D	7.15	21.87	14.72	--	--	
	3/17/2010	MW-01S	6.28	21.64	15.36	--	--	
	3/17/2010	MW-01D	8.24	21.87	13.63	--	--	
	4/25/2010	MW-01S	6.31	21.64	15.33	--	--	
	4/25/2010	MW-01D	8.61	21.87	13.26	--	--	
	5/16/2010	MW-01S	6.52	21.64	15.12	--	--	
	5/16/2010	MW-01D	10.69	21.87	11.18	--	--	
	6/26/2010	MW-01S	6.84	21.64	14.80	--	--	
	6/26/2010	MW-01D	10.04	21.87	11.83	--	--	
	7/23/2010	MW-01S	7.03	21.64	14.61	--	--	
	7/23/2010	MW-01D	10.75	21.87	11.12	--	--	
	8/30/2010	MW-01S	7.48	21.64	14.16	--	--	
	8/30/2010	MW-01D	8.82	21.87	13.05	--	--	
	9/30/2010	MW-01S	7.26	21.64	14.38	--	--	
	9/30/2010	MW-01D	8.00	21.87	13.87	--	--	
	10/18/2010	MW-01S	7.24	21.64	14.40	--	--	
	10/18/2010	MW-01D	12.53	21.87	9.34	--	--	

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)		Groundwater Elevation (MLLW) (a)	Gradient Direction (b)	Maximum Elevation Goal (b)	Goal Exceeded?
	11/29/2010	MW-01S	6.84	21.64		14.80	--	--	
	11/29/2010	MW-01D	9.66	21.87		12.21	--	--	
	12/25/2010	MW-01S	6.54	21.64		15.10	--	--	
	12/25/2010	MW-01D	6.41	21.87		15.46	--	--	
	1/29/2011	MW-01S	6.49	21.64		15.15	--	--	
	1/29/2011	MW-01D	7.72	21.87		14.15	--	--	
	2/20/2011	MW-01S	6.48	21.64		15.16	--	--	
	2/20/2011	MW-01D	9.40	21.87		12.47	--	--	
	3/24/2011	MW-01S	5.86	21.64		15.78	--	--	
	3/24/2011	MW-01D	5.93	21.87		15.94	--	--	
	4/23/2011	MW-01S	5.98	21.64		15.66	--	--	
	4/23/2011	MW-01D	10.67	21.87		11.20	--	--	
	5/30/2011	MW-01S	6.53	21.64		15.11	--	--	
	5/30/2011	MW-01D	10.63	21.87		11.24	--	--	
	6/26/2011	MW-01S	7.01	21.64		14.63	--	--	
	6/26/2011	MW-01D	8.44	21.87		13.43	--	--	
	7/30/2011	MW-01S	7.13	21.64		14.51	--	--	
	7/30/2011	MW-01D	10.85	21.87		11.02	--	--	
	8/8/2011	MW-01S	7.20	21.64		14.44	--	--	
	8/8/2011	MW-01D	10.94	21.87		10.93	--	--	
	9/24/2011	MW-01S	7.51	21.64		14.13	--	--	
	9/24/2011	MW-01D	10.65	21.87		11.22	--	--	
	10/29/2011	MW-01S	7.74	21.64		13.90	--	--	
	10/29/2011	MW-01D	7.90	21.87		13.97	--	--	
	11/26/2011	MW-01S	7.30	21.64		14.34	--	--	
	11/26/2011	MW-01D	6.53	21.87		15.34	--	--	
	12/26/2011	MW-01S	7.62	21.64		14.02	--	--	
	12/26/2011	MW-01D	8.70	21.72	(f)	13.02	--	--	
	1/28/2012	MW-01S	6.41	21.64		15.23	--	--	
	1/28/2012	MW-01D	7.24	21.72	(f)	14.48	--	--	
	2/26/2012	MW-01S	6.41	21.64		15.23	--	--	
	2/26/2012	MW-01D	10.20	21.72	(f)	11.52	--	--	
	3/7/2012	MW-01S	6.66	21.64		14.98	--	--	
	3/7/2012	MW-01D	9.18	21.72	(f)	12.54	--	--	
	4/21/2012	MW-01S	6.67	21.64		14.97	--	--	
	4/21/2012	MW-01D	8.87	21.72	(f)	12.85	--	--	
	5/19/2012	MW-01S	6.63	21.64		15.01	--	--	

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)		Groundwater Elevation (MLLW) (a)	Gradient Direction (b)	Maximum Elevation Goal (b)	Goal Exceeded?
	5/19/2012	MW-01D	9.50	21.72	(f)	12.22	--	--	
	6/30/2012	MW-01S	6.33	21.64		15.31	--	--	
	6/30/2012	MW-01D	7.94	21.72	(f)	13.78	--	--	
	7/27/2012	MW-01S	6.20	21.64		15.44	--	--	
	7/27/2012	MW-01D	8.26	21.72	(f)	13.46	--	--	
	8/12/2012	MW-01S	6.04	21.64		15.60	--	--	
	8/12/2012	MW-01D	8.32	21.72	(f)	13.40	--	--	
	9/30/2012	MW-01S	6.11	21.64		15.53	--	--	
	9/30/2012	MW-01D	8.21	21.72	(f)	13.51	--	--	
	10/24/2012	MW-01S	6.49	21.64		15.15	--	--	
	10/24/2012	MW-01D	9.30	21.72	(f)	12.42	--	--	
	11/24/2012	MW-01S	5.81	21.64		15.83	--	--	
	11/24/2012	MW-01D	7.09	21.72	(f)	14.63	--	--	
	12/30/2012	MW-01S	5.85	21.64		15.79	--	--	
	12/30/2012	MW-01D	7.58	21.72	(f)	14.14	--	--	
	1/25/2013	MW-01S	6.37	21.64		15.27	--	--	
	1/25/2013	MW-01D	7.00	21.72	(f)	14.72	--	--	
	2/9/2013	MW-01S	6.71	21.64		14.93	--	--	
	2/9/2013	MW-01D	7.17	21.72	(f)	14.55	--	--	
	3/31/2013	MW-01S	6.96	21.64		14.68	--	--	
	3/31/2013	MW-01D	10.61	21.72	(f)	11.11	--	--	
	4/29/2013	MW-01S	7.15	21.64		14.49	--	--	
	4/29/2013	MW-01D	10.88	21.72		10.84	--	--	
	5/31/2013	MW-01S	7.42	21.64		14.22	--	--	
	5/31/2013	MW-01D	10.17	21.72		11.55	--	--	
	6/9/2013	MW-01S	7.47	21.64		14.17	--	--	
	6/9/2013	MW-01D	10.86	21.72		10.86	--	--	
	7/21/2013	MW-01S	7.68	21.64		13.96	--	--	
	7/21/2013	MW-01D	8.57	21.72		13.15	--	--	
	8/29/2013	MW-01S	7.99	21.64		13.65	--	--	
	8/29/2013	MW-01D	10.11	21.72		11.61	--	--	
	9/21/2013	MW-01S	7.89	21.64		13.75	--	--	
	9/21/2013	MW-01D	7.99	21.72		13.73	--	--	
	10/6/2013	MW-01S	7.42	21.64		14.22	--	--	
	10/6/2013	MW-01D	8.36	21.72		13.36	--	--	
	11/10/2013	MW-01S	7.77	21.64		13.87	--	--	
	11/10/2013	MW-01D	7.70	21.72		14.02	--	--	

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Gradient Direction (b)	Maximum Elevation Goal (b)	Goal Exceeded?
	12/15/2013	MW-01S	7.93	21.64	13.71	--	--	
	12/15/2013	MW-01D	7.38	21.72	14.34	--	--	
	1/5/2014	MW-01S	9.42	21.64	12.22	--	--	
	1/5/2014	MW-01D	8.13	21.72	13.59	--	--	
	2/1/2014	MW-01S	7.93	21.64	13.71	--	--	
	2/1/2014	MW-01D	7.79	21.72	13.93	--	--	
	3/1/2014	MW-01S	7.37	21.64	14.27	--	--	
	3/1/2014	MW-01D	7.36	21.72	14.36	--	--	
7	11/8/2006	MW-05S	12.29	29.25	16.96	--	16.50	Yes
	11/8/2006	MW-05D	14.36	28.10	13.74	--	--	--
	12/31/2006	MW-05S	11.07	29.25	18.18	--	16.50	Yes
	12/31/2006	MW-05D	11.96	28.10	16.14	--	--	--
	3/2/2007	MW-05S	12.53	29.25	16.72	--	16.50	Yes
	3/2/2007	MW-05D	16.18	28.10	11.92	--	--	--
	3/31/2007	MW-05S	12.19	29.25	17.06	--	16.50	Yes
	3/31/2007	MW-05D	16.22	28.10	11.88	--	--	--
	4/23/2007	MW-05S	13.63	29.25	15.62	--	16.50	No
	4/23/2007	MW-05D	13.93	28.10	14.17	--	--	--
	5/28/2007	MW-05S	15.03	29.25	14.22	--	16.50	No
	5/28/2007	MW-05D	16.01	28.10	12.09	--	--	--
	6/30/2007	MW-05S	15.12	29.25	14.13	--	16.50	No
	6/30/2007	MW-05D	17.80	28.10	10.30	--	--	--
	8/1/2007	MW-05S	15.15	29.25	14.10	--	16.50	No
	8/1/2007	MW-05D	18.67	28.10	9.43	--	--	--
	9/29/2007	MW-05S	16.55	29.25	12.70	--	16.50	No
	9/29/2007	MW-05D	16.50	28.10	11.60	--	--	--
	11/22/2007	MW-05S	15.04	29.25	14.21	--	16.50	No
	11/22/2007	MW-05D	12.63	28.10	15.47	--	--	--
	1/26/2008	MW-05S	13.25	29.25	16.00	--	16.50	No
	1/26/2008	MW-05D	15.45	28.10	12.65	--	--	
	2/28/2008	MW-05S	12.56	29.25	16.69	--	16.50	Yes
	2/28/2008	MW-05D	17.81	28.10	10.29	--	--	--
	3/19/2008	MW-05S	13.44	29.25	15.81	--	16.50	No
	3/19/2008	MW-05D	17.97	28.10	10.13	--	--	--
	4/28/2008	MW-05S	13.79	29.25	15.46	--	16.50	No
	4/28/2008	MW-05D	16.16	28.10	11.94	--	--	--

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)		Groundwater Elevation (MLLW) (a)	Gradient Direction (b)	Maximum Elevation Goal (b)	Goal Exceeded?
	5/31/2008	MW-05S	14.08	29.25		15.17	--	16.50	No
	5/31/2008	MW-05D	15.63	28.10		12.47	--	--	--
	6/30/2008	MW-05S	15.02	29.25		12.70	--	16.50	No
	6/30/2008	MW-05D	14.00	28.10		11.60	--	--	--
	7/12/2008	MW-05S	15.22	29.25		14.03	--	16.50	No
	7/12/2008	MW-05D	16.33	28.10		11.77	--	--	--
	8/28/2008	MW-05S	16.03	29.25		13.22	--	16.50	No
	8/28/2008	MW-05D	18.98	28.10		9.12	--	--	--
	9/20/2008	MW-05S	NM	29.25		--	--	16.50	--
	9/20/2008	MW-05D	NM	28.10		--	--	--	--
	10/12/2008	MW-05S	NM	29.25		--	--	16.50	--
	10/12/2008	MW-05D	NM	28.10		--	--	--	--
	11/30/2008	MW-05S	NM	29.25		--	--	16.50	--
	11/30/2008	MW-05D	NM	28.10		--	--	--	--
	12/31/2008	MW-05S	NM	29.25		--	--	16.50	--
	12/31/2008	MW-05D	NM	28.10		--	--	--	--
	1/31/2009	MW-05S	15.38	29.45	(d)	14.07	--	16.50	No
	1/31/2009	MW-05D	16.77	26.50	(d)	9.73	--	--	--
	2/23/2009	MW-05S	15.85	29.45	(d)	13.60	--	16.50	No
	2/23/2009	MW-05D	12.01	26.50	(d)	14.49	--	--	--
	3/29/2009	MW-05S	15.17	29.45	(d)	14.28	--	16.50	No
	3/29/2009	MW-05D	13.86	26.50	(d)	12.64	--	--	--
	4/18/2009	MW-05S	15.63	29.45	(d)	13.82	--	16.50	No
	4/18/2009	MW-05D	14.41	26.50	(d)	12.09	--	--	--
	5/16/2009	MW-05S	15.09	29.45	(d)	14.36	--	16.50	No
	5/16/2009	MW-05D	13.88	26.50	(d)	12.62	--	--	--
	6/21/2009	MW-05S	16.38	29.45	(d)	13.07	--	16.50	No
	6/21/2009	MW-05D	11.01	26.50	(d)	15.49	--	--	--
	7/20/2009	MW-05S	16.95	29.45	(d)	12.50	--	16.50	No
	7/20/2009	MW-05D	12.71	26.50	(d)	13.79	--	--	--
	8/10/2009	MW-05S	16.82	29.45	(d)	12.63	--	16.50	No
	8/10/2009	MW-05D	12.10	26.50	(d)	14.40	--	--	--
	9/7/2009	MW-05S	18.33	29.45	(d)	11.12	--	16.50	No
	9/7/2009	MW-05D	14.02	26.50	(d)	12.48	--	--	--
	10/10/2009	MW-05S	19.16	29.45	(d)	10.29	--	16.50	No
	10/10/2009	MW-05D	13.31	26.50	(d)	13.19	--	--	--
	11/28/2009	MW-05S	17.31	29.45	(d)	12.14	--	16.50	No

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)		Groundwater Elevation (MLLW) (a)	Gradient Direction (b)	Maximum Elevation Goal (b)	Goal Exceeded?
	11/28/2009	MW-05D	13.14	26.50	(d)	13.36	--	--	--
	12/31/2009	MW-05S	16.66	29.45	(d)	12.79	--	16.50	No
	12/31/2009	MW-05D	9.69	26.50	(d)	16.81	--	--	--
	1/14/2010	MW-05S	14.89	29.45	(d)	14.56	--	16.50	No
	1/14/2010	MW-05D	11.81	26.50	(d)	14.69	--	--	--
	2/21/2010	MW-05S	14.71	29.45	(d)	14.74	--	16.50	No
	2/21/2010	MW-05D	10.63	26.50	(d)	15.87	--	--	--
	3/17/2010	MW-05S	13.53	29.45	(d)	15.92	--	16.50	No
	3/17/2010	MW-05D	11.63	26.50	(d)	14.87	--	--	--
	4/25/2010	MW-05S	16.11	29.45	(d)	13.34	--	16.50	No
	4/25/2010	MW-05D	12.26	26.50	(d)	14.24	--	--	--
	5/16/2010	MW-05S	16.14	29.45	(d)	13.31	--	16.50	No
	5/16/2010	MW-05D	14.97	26.50	(d)	11.53	--	--	--
	6/26/2010	MW-05S	17.07	29.45	(d)	12.38	--	16.50	No
	6/26/2010	MW-05D	15.20	26.50	(d)	11.30	--	--	--
	7/23/2010	MW-05S	17.73	29.45	(d)	11.72	--	16.50	No
	7/23/2010	MW-05D	15.31	26.50	(d)	11.19	--	--	--
	8/30/2010	MW-05S	15.58	29.45	(d)	13.87	--	16.50	No
	8/30/2010	MW-05D	12.01	26.50	(d)	14.49	--	--	--
	9/30/2010	MW-05S	14.32	29.45	(d)	15.13	--	16.50	No
	9/30/2010	MW-05D	12.83	26.50	(d)	13.67	--	--	--
	10/18/2010	MW-05S	15.52	29.45	(d)	13.93	--	16.50	No
	10/18/2010	MW-05D	15.58	26.50	(d)	10.92	--	--	--
	11/29/2010	MW-05S	15.14	29.45	(d)	14.31	--	16.50	No
	11/29/2010	MW-05D	10.32	26.50	(d)	16.18	--	--	--
	12/25/2010	MW-05S	13.03	29.45	(d)	16.42	--	16.50	No
	12/25/2010	MW-05D	9.02	26.50	(d)	17.48	--	--	--
	1/29/2011	MW-05S	13.29	29.45	(d)	16.16	--	16.50	No
	1/29/2011	MW-05D	11.80	26.50	(d)	14.70	--	--	--
	2/20/2011	MW-05S	13.22	29.45	(d)	16.23	--	16.50	No
	2/20/2011	MW-05D	14.33	26.50	(d)	12.17	--	--	--
	3/24/2011	MW-05S	13.15	29.45	(d)	16.30	--	16.50	No
	3/24/2011	MW-05D	9.11	26.50	(d)	17.39	--	--	--
	4/23/2011	MW-05S	12.78	29.45	(d)	16.67	--	16.50	Yes
	4/23/2011	MW-05D	16.44	26.50	(d)	10.06	--	--	--
	5/30/2011	MW-05S	13.40	29.45	(d)	16.05	--	16.50	No
	5/30/2011	MW-05D	16.18	26.50	(d)	10.32	--	--	--

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)		Groundwater Elevation (MLLW) (a)	Gradient Direction (b)	Maximum Elevation Goal (b)	Goal Exceeded?
	6/26/2011	MW-05S	13.94	29.45	(d)	15.51	--	16.50	No
	6/26/2011	MW-05D	12.31	26.50	(d)	14.19	--	--	--
	7/30/2011	MW-05S	14.08	29.45	(d)	15.37	--	16.50	No
	7/30/2011	MW-05D	17.13	26.50	(d)	9.37	--	--	--
	8/8/2011	MW-05S	14.27	29.45	(d)	15.18	--	16.50	No
	8/8/2011	MW-05D	15.50	26.50	(d)	11.00	--	--	--
	9/24/2011	MW-05S	14.42	29.45	(d)	15.03	--	16.50	No
	9/24/2011	MW-05D	16.02	26.50	(d)	10.48	--	--	--
	10/29/2011	MW-05S	14.62	29.45	(d)	14.83	--	16.50	No
	10/29/2011	MW-05D	11.59	26.50	(d)	14.91	--	--	--
	11/26/2011	MW-05S	12.74	29.45	(d)	16.71	--	16.50	Yes
	11/26/2011	MW-05D	10.19	26.50	(d)	16.31	--	--	--
	12/26/2011	MW-05S	14.43	29.45	(d)	15.02	--	16.50	No
	12/26/2011	MW-05D	13.68	26.50	(d)	12.82	--	--	--
	1/28/2012	MW-05S	13.28	29.45	(d)	16.17	--	16.50	No
	1/28/2012	MW-05D	10.15	26.50	(d)	16.35	--	--	--
	2/26/2012	MW-05S	12.81	29.45	(d)	16.64	--	16.50	Yes
	2/26/2012	MW-05D	15.87	26.50	(d)	10.63	--	--	--
	3/7/2012	MW-05S	13.30	29.45	(d)	16.15	--	16.50	No
	3/7/2012	MW-05D	15.35	26.50	(d)	11.15	--	--	--
	4/21/2012	MW-05S	12.79	29.45	(d)	16.66	--	16.50	Yes
	4/21/2012	MW-05D	12.84	26.50	(d)	13.66	--	--	--
	5/19/2012	MW-05S	13.54	29.45	(d)	15.91	--	16.50	No
	5/19/2012	MW-05D	14.39	26.50	(d)	12.11	--	--	--
	6/30/2012	MW-05S	13.20	29.45	(d)	16.25	--	16.50	No
	6/30/2012	MW-05D	10.74	26.50	(d)	15.76	--	--	--
	7/27/2012	MW-05S	13.26	29.45	(d)	16.19	--	16.50	No
	7/27/2012	MW-05D	13.21	26.50	(d)	13.29	--	--	--
	8/12/2012	MW-05S	11.66	29.45	(d)	17.79	--	16.50	Yes
	8/12/2012	MW-05D	12.99	26.50	(d)	13.51	--	--	--
	9/30/2012	MW-05S	13.23	29.45	(d)	16.22	--	16.50	No
	9/30/2012	MW-05D	11.39	26.50	(d)	15.11	--	--	--
	10/24/2012	MW-05S	13.45	29.45	(d)	16.00	--	16.50	No
	10/24/2012	MW-05D	14.10	26.50	(d)	12.40	--	--	--
	11/24/2012	MW-05S	11.57	29.45	(d)	17.88	--	16.50	Yes
	11/24/2012	MW-05D	10.2	26.50	(d)	16.3	--	--	--
	12/30/2012	MW-05S	12.23	29.45	(d)	17.22	--	16.50	Yes
	12/30/2012	MW-05D	12.05	26.50	(d)	14.45	--	--	--

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)		Groundwater Elevation (MLLW) (a)	Gradient Direction (b)	Maximum Elevation Goal (b)	Goal Exceeded?
	1/25/2013	MW-05S	10.55	29.45	(d)	18.90	--	16.50	Yes
	1/25/2013	MW-05D	13.13	26.50	(d)	13.37	--	--	--
	2/9/2013	MW-05S	10.16	29.45	(d)	19.29	--	16.50	Yes
	2/9/2013	MW-05D	13.60	26.50	(d)	12.90	--	--	--
	3/31/2013	MW-05S	13.61	29.45	(d)	15.84	--	16.50	No
	3/31/2013	MW-05D	16.55	26.50	(d)	9.95	--	--	--
	4/29/2013	MW-05S	13.84	29.45		15.61	--	16.50	No
	4/29/2013	MW-05D	14.19	26.50		12.31	--	--	--
	5/31/2013	MW-05S	14.42	29.45		15.03	--	16.50	No
	5/31/2013	MW-05D	14.81	26.50		11.69	--	--	--
	6/9/2013	MW-05S	14.43	29.45		15.02	--	16.50	No
	6/9/2013	MW-05D	16.60	26.50		9.90	--	--	--
	7/21/2013	MW-05S	14.63	29.45		14.82	--	16.50	No
	7/21/2013	MW-05D	11.63	26.50		14.87	--	--	--
	8/29/2013	MW-05S	14.92	29.45		14.53	--	16.50	No
	8/29/2013	MW-05D	14.51	26.50		11.99	--	--	--
	9/21/2013	MW-05S	14.56	29.45		14.89	--	16.50	No
	9/21/2013	MW-05D	13.68	26.50		12.82	--	--	--
	10/6/2013	MW-05S	13.06	29.45		16.39	--	16.50	No
	10/6/2013	MW-05D	12.61	26.50		13.89	--	--	--
	11/10/2013	MW-05S	14.15	29.45		15.30	--	16.50	No
	11/10/2013	MW-05D	11.59	26.50		14.91	--	--	--
	12/15/2013	MW-05S	14.61	29.45		14.84	--	16.50	No
	12/15/2013	MW-05D	10.91	26.50		15.59	--	--	--
	1/5/2014	MW-05S	14.91	29.45		14.54	--	16.50	No
	1/5/2014	MW-05D	14.88	26.50		11.62	--	--	--
	2/1/2014	MW-05S	14.37	29.45		15.08	--	16.50	No
	2/1/2014	MW-05D	12.02	26.50		14.48	--	--	--
	3/1/2014	MW-05S	13.03	29.45		16.42	--	16.50	No
	3/1/2014	MW-05D	10.92	26.50		15.58	--	--	--

TABLE A-2
CUMULATIVE GROUNDWATER ELEVATIONS
CASCADE POLE SITE
PORT OF OLYMPIA, WASHINGTON

Well Pair	Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation (MLLW)	Groundwater Elevation (MLLW) (a)	Gradient Direction (b)	Maximum Elevation Goal (b)	Goal Exceeded?

MLLW = Mean low low water.
Groundwater elevations determined by subtracting depth to groundwater below top of casing (ft) from top of well casing elevation (MLLW, ft).
(a) Below top of PVC well casing.
(b) Hydraulic gradient direction of groundwater. Long term goal is inward for well pairs 1, 2, 3, and 4, and upwards for well pairs 5, 6, and 7. Long term goals initiated in 2012.
(b) Short term hydraulic control goal is 15.5 ft along the majority of the cutoff wall alignment and 16.5 ft adjacent to Budd Inlet.
(c) Well LW-3 casing modified and re-surveyed January 2009. On 7/28/10 the well casing at LW-3 cut down 0.2 ft to make room for new well monument lid. Elevation was adjusted from 20.03 to 19.83.
(d) Wells MW-02s, MW-02d, MW-05s, and MW-05d were modified during construction activities and re-surveyed February 2009.
(e) MW-02D and MW-02S inner north rim elevations modified in September 2011.
(f) On 12/8/11 the inner well casing was cut down at MW-01D by 0.15'. Outer casing cut down corresponding amount. New MW-01D measuring point elevation is 21.72' MLLW.

NM = Not measured.
NA = Not available.

APPENDIX B

Laboratory Analytical Results

Analytical Resources, Incorporated
Analytical Chemists and Consultants

September 19, 2013

Chris Kimmel
Landau Associates, Inc.
130 2nd Avenue S.
Edmonds, WA 98020

RE: Project: Port of Olympia
ARI Job No: XC81

Dear Chris:

Please find enclosed the original *Chain of Custody*, sample receipt documentation, and final results for the project referenced above. Analytical Resources, Inc. accepted eleven water samples and a trip blank in good condition on August 29, 2013.

The samples were analyzed for NWTPH-Gx, NWTPH-Dx, cPAHs by method 8270 SIM, PAHs by method 8270 and PCP on select samples by method 8041, as requested on the *Chain of Custody*.

Please refer to the *Case Narrative* for analytical details regarding the sample.

A copy of this report and all associated ARI raw data will be kept on file with ARI. Should you have any questions or problems, please feel free to contact me at any time.

Sincerely,
ANALYTICAL RESOURCES, INC.

Kelly Bottem
Client Services Manager
(206) 695-6211

Enclosures

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

LANDAU ASSOCIATES

- ☐ **Seattle/Edmonds** (425) 778-0907
- ☒ **Tacoma** (253) 926-2493
- ☐ **Spokane** (509) 327-9737
- ☐ **Portland** (503) 542-1080
- ☐ ______

Date 8/28/13

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Chain-of-Custody Record

Project Name: Port of Olympia
Project No. 21039.~~050.051~~ .090.091

Project Location/Event: Cascade Pole, Dry Season

Sampler's Name: Sarah Weeks, Sierra Mott

Project Contact: Chris Kimmel

Send Results To: Chris Kimmel, Anne Halvorsen

Turnaround Time
- ☒ Standard
- ☐ Accelerated
- ☐ ______

Testing Parameters

Sample I.D.	Date	Time	Matrix	No. of Containers	NWTPH-Gx	NWTPH-Dx+creosote	PAHs (8270)	cPAHs SIM	PCP (8270)	PCP (8041)
MW-05D-20130828	8/28/13	1115	H_2O	10	X	X	X	X	X	X
MW-02D-20130828	8/28/13	1219	|	10	X	X	X	X	X	X
CW-13-20130828	8/28/13	1029	|	10	X	X	X	X	X	X
MW-05S-20130828	8/28/13	1240	|	10	X	X	X	X	X	X
PZ-19-20130828	8/28/13	1032	|	10	X	X	X	X	X	X
MW-02S-20130828	8/28/13	1126	|	10	X	X	X	X	X	X
PZ-30-20130828	8/28/13	1246	|	10	X	X	X	X	X	X
Trip Blanks	8/22/13	–	|	2	X					
PZ-17-20130828	8/28/13	1643	|	10	X	X	X	X	X	X
PZ-18-20130828	8/28/13	1533	|	10	X	X	X	X	X	X
LW-3-20130828	8/28/13	1650	|	10	X	X	X	X	X	X
LW-4K-20130828	8/28/13	1536	|	10	X	X	X	X	X	X

Observations/Comments

- X Allow water samples to settle, collect aliquot from clear portion
- X NWTPH-Dx - run acid wash/silica gel cleanup
- __ run samples standardized to ______ product
- __ Analyze for EPH if no specific product identified

VOC/BTEX/VPH (soil):
- __ non-preserved
- __ preserved w/methanol
- __ preserved w/sodium bisulfate
- __ Freeze upon receipt

__ Dissolved metal water samples field filtered

Other: Run all samples for PCP using 8270. If result = ND then and only then run PCP by 8041

Special Shipment/Handling or Storage Requirements

Method of Shipment

Relinquished by	Received by	Relinquished by	Received by
Signature: [signature]	Signature: [signature]	Signature: [signature]	Signature: [signature]
Printed Name: Sarah Weeks	Printed Name: Rachel Morgan	Printed Name: Rachel Morgan	Printed Name: Rich Hudson
Company: Landau Associates	Company: Landau Associates	Company: Landau Associates	Company: ARI
Date 8/28/2013 Time 1920	Date 8/29/13 Time 0830	Date 8/29/13 Time 1005	Date 8/29/13 Time 1015

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Landau

Project Name: Port of Olympia

COC No(s): (NA)

Delivered by: Fed-Ex UPS Courier Hand Delivered Other:

Assigned ARI Job No: XCS1

Tracking No: (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry): 4.0 2.7 2.6 2.6 .6 2.4

If cooler temperature is out of compliance fill out form 00070F — Temp Gun ID#: 12241222A

Cooler Accepted by: _____ Date: 8/29/13 Time: 1015

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used? ...	(Bubble Wrap) (Wet Ice) Gel Packs Baggies Foam Block Paper Other:		
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
Were all bottles sealed in individual plastic bags?		YES	(NO)
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	(NO) JM
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)...	NA	YES	(NO)
Were all VOC vials free of air bubbles?	NA	YES	(NO)
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	NA	8/22/13	

Was Sample Split by ARI: (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: JM Date: 8/29/13 Time: 1302

***** Notify Project Manager of discrepancies or concerns *****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC
MW05S 20130828	MW-05S-20130828	LW3 - 20130828	LW-3-20130828
PZ19-20130828	PZ-19-20130828	LW4R- 20130828	LW-4R-20130828
MW02- 20130828	MW-02-20130828		
PZ30- 20130828	PZ-30-20130828		

Additional Notes, Discrepancies, & Resolutions:

MW-02D= sm in 2 of 2
MW-05S = sm in 1 of 2
PZ-19 = sm in 1 of 2
MW-02S = sm in 1 of 2
PZ-50 = sm in 1 of 2
PZ-17 = sm in 2 of 2
PZ-18 = sm in 2 of 2
LW-4R = sm in 2 of 2
Trip Blanks = sm in 2 of 2

By: JM Date: 8/29/13

Small Air Bubbles ~2mm	Peabubbles 2-4 mm	LARGE Air Bubbles > 4 mm
		

Small → "sm"
Peabubbles → "pb"
Large → "lg"
Headspace → "hs"

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: XC81
Client: Landau Associates, Inc.
Project Event: 21039.090.091
Project Name: Port of Olympia

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	MW-05D-20130828	XC81A	13-18053	Water	08/28/13 11:15	08/29/13 10:15
2.	MW-02D-20130828	XC81B	13-18054	Water	08/28/13 12:19	08/29/13 10:15
3.	CW-13-20130828	XC81C	13-18055	Water	08/28/13 10:29	08/29/13 10:15
4.	MW-05S-20130828	XC81D	13-18056	Water	08/28/13 12:40	08/29/13 10:15
5.	PZ-19-20130828	XC81E	13-18057	Water	08/28/13 10:32	08/29/13 10:15
6.	MW-02S-20130828	XC81F	13-18058	Water	08/28/13 11:26	08/29/13 10:15
7.	PZ-30-20130828	XC81G	13-18059	Water	08/28/13 12:46	08/29/13 10:15
8.	PZ-17-20130828	XC81H	13-18060	Water	08/28/13 16:43	08/29/13 10:15
9.	PZ-18-20130828	XC81I	13-18061	Water	08/28/13 15:33	08/29/13 10:15
10.	LW-3-20130828	XC81J	13-18062	Water	08/28/13 16:50	08/29/13 10:15
11.	LW-4R-20130828	XC81K	13-18063	Water	08/28/13 15:36	08/29/13 10:15
12.	Trip Blanks	XC81L	13-18064	Water	08/28/13	08/29/13 10:15

Case Narrative

Project: 0021039.050.051
ARI Job No.: XC81
September 19, 2013

Sample Receipt

Please find enclosed the original *Chain of Custody (COC)* record and analytical results for the project referenced above. Analytical Resources, Inc. accepted eleven water samples and a trip blank in good condition on August 29, 2013. The samples were received at cooler temperatures between 0.6 and 4.0°C. Please see the *Cooler Receipt Form* for further details. Per Landau Associates, select samples were allowed to settle and sample volume was collected from the clear portion.

The following tests were performed on selected samples, as requested on the *Chain of Custody*.

Semivolatile Organics by method 8270D Water

The samples were extracted on 9/2/13. The samples were analyzed between 9/5/13 and 9/13/13 - within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: The surrogate TBP is out of control high in samples PZ-19-20130828, PZ-17-20130828 and LW-3-20130828. All other surrogate recoveries were in control.

LCS/LSCD (s): Are in control.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: Are in control.

SIM PNA by method 8270-SIM Water

The samples were extracted on 9/3/13 and analyzed on 9/5/13 and 9/6/13 - within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: Are in control.

LCS/LSCD (s): All percent recoveries and other RPDs for the analytes of interest were within compliance.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: Are in control.

PCP Only by method 8041

The samples were extracted on 8/31/13 and analyzed on 9/5/13 - within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Case Narrative

Project: 0021039.050.051
ARI Job No.: XC81
September 19, 2013
Page 2 of 2

Surrogates: Are in control.

LCS/LSCD (s): All percent recoveries and RPDs for the analytes of interest were within compliance.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: Are in control.

NWTPH-Gx

The samples were analyzed on 8/30/13 and 9/2/13 - within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: All surrogate recoveries were in control.

LCS/LCSD (s): All percent recoveries and RPDs for the analytes of interest were within compliance.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: Are in control.

NWTPH-Dx

The samples were extracted on 8/30/13 and analyzed on 9/3/13 - within the method recommended holding time.

Surrogates: All surrogate recoveries were in control.

Samples: There were no anomalies associated with these samples.

LCS/LCSD (s): All percent recoveries and RPDs for the analytes of interest were within compliance.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: Are in control.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: MW-05D-20130828
SAMPLE

Lab Sample ID: XC81A
LIMS ID: 13-18053
Matrix: Water
Data Release Authorized:
Reported: 09/16/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
21039.090.091
Date Sampled: 08/28/13
Date Received: 08/29/13

Date Extracted: 09/02/13
Date Analyzed: 09/13/13 16:06
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	**Acenaphthene**	**1.0**	**5.5**
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	75.6%
d14-p-Terphenyl	88.8%
2,4,6-Tribromophenol	120%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: MW-02D-20130828
SAMPLE

Lab Sample ID: XC81B
LIMS ID: 13-18054
Matrix: Water
Data Release Authorized:
Reported: 09/16/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
21039.090.091
Date Sampled: 08/28/13
Date Received: 08/29/13

Date Extracted: 09/02/13
Date Analyzed: 09/13/13 16:44
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	**Acenaphthene**	**1.0**	**4.7**
132-64-9	**Dibenzofuran**	**1.0**	**1.0**
86-73-7	**Fluorene**	**1.0**	**3.3**
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	56.0%
d14-p-Terphenyl	76.0%
2,4,6-Tribromophenol	104%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: CW-13-20130828
SAMPLE

Lab Sample ID: XC81C
LIMS ID: 13-18055
Matrix: Water
Data Release Authorized:
Reported: 09/16/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
21039.090.091
Date Sampled: 08/28/13
Date Received: 08/29/13

Date Extracted: 09/02/13
Date Analyzed: 09/13/13 17:18
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	**Acenaphthene**	**1.0**	**1.5**
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	60.8%
d14-p-Terphenyl	70.0%
2,4,6-Tribromophenol	111%

XC81:000005

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: MW-05S-20130828
SAMPLE

Lab Sample ID: XC81D
LIMS ID: 13-18056
Matrix: Water
Data Release Authorized:
Reported: 09/16/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
21039.090.091
Date Sampled: 08/28/13
Date Received: 08/29/13

Date Extracted: 09/02/13
Date Analyzed: 09/13/13 17:52
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	**Acenaphthene**	**1.0**	**8.7**
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	66.8%
d14-p-Terphenyl	66.4%
2,4,6-Tribromophenol	116%

XC81:00010

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: PZ-19-20130828
SAMPLE

Lab Sample ID: XC81E
LIMS ID: 13-18057
Matrix: Water
Data Release Authorized:
Reported: 09/16/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
21039.090.091
Date Sampled: 08/28/13
Date Received: 08/29/13

Date Extracted: 09/02/13
Date Analyzed: 09/05/13 21:38
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	41.2%
d14-p-Terphenyl	85.2%
2,4,6-Tribromophenol	151%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: MW-02S-20130828
SAMPLE

Lab Sample ID: XC81F
LIMS ID: 13-18058
Matrix: Water
Data Release Authorized:
Reported: 09/16/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
21039.090.091
Date Sampled: 08/28/13
Date Received: 08/29/13

Date Extracted: 09/02/13
Date Analyzed: 09/16/13 14:05
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	**Acenaphthene**	**1.0**	**1.2**
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	75.2%
d14-p-Terphenyl	87.2%
2,4,6-Tribromophenol	120%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: PZ-30-20130828
SAMPLE

Lab Sample ID: XC81G
LIMS ID: 13-18059
Matrix: Water
Data Release Authorized:
Reported: 09/16/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
21039.090.091
Date Sampled: 08/28/13
Date Received: 08/29/13

Date Extracted: 09/02/13
Date Analyzed: 09/13/13 18:59
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	**Acenaphthene**	**1.0**	**9.4**
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	64.8%
d14-p-Terphenyl	72.0%
2,4,6-Tribromophenol	119%

XC81:00013

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: PZ-17-20130828
SAMPLE

Lab Sample ID: XC81H
LIMS ID: 13-18060
Matrix: Water
Data Release Authorized:
Reported: 09/16/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
21039.090.091
Date Sampled: 08/28/13
Date Received: 08/29/13

Date Extracted: 09/02/13
Date Analyzed: 09/05/13 23:21
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	61.2%
d14-p-Terphenyl	83.2%
2,4,6-Tribromophenol	170%

XC81:00014

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
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Sample ID: PZ-18-20130828
SAMPLE

Lab Sample ID: XC81I
LIMS ID: 13-18061
Matrix: Water
Data Release Authorized:
Reported: 09/16/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
21039.090.091
Date Sampled: 08/28/13
Date Received: 08/29/13

Date Extracted: 09/02/13
Date Analyzed: 09/13/13 19:33
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	70.0%
d14-p-Terphenyl	84.0%
2,4,6-Tribromophenol	119%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
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Sample ID: LW-3-20130828
SAMPLE

Lab Sample ID: XC81J
LIMS ID: 13-18062
Matrix: Water
Data Release Authorized:
Reported: 09/16/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
21039.090.091
Date Sampled: 08/28/13
Date Received: 08/29/13

Date Extracted: 09/02/13
Date Analyzed: 09/13/13 20:07
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	71.6%
d14-p-Terphenyl	54.0%
2,4,6-Tribromophenol	128%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
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Sample ID: LW-4R-20130828
SAMPLE

Lab Sample ID: XC81K
LIMS ID: 13-18063
Matrix: Water
Data Release Authorized:
Reported: 09/16/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
21039.090.091
Date Sampled: 08/28/13
Date Received: 08/29/13

Date Extracted: 09/02/13
Date Analyzed: 09/13/13 20:41
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	69.6%
d14-p-Terphenyl	78.8%
2,4,6-Tribromophenol	118%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
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Sample ID: MB-090213
METHOD BLANK

Lab Sample ID: MB-090213
LIMS ID: 13-18053
Matrix: Water
Data Release Authorized:
Reported: 09/16/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
21039.090.091
Date Sampled: NA
Date Received: NA

Date Extracted: 09/02/13
Date Analyzed: 09/16/13 15:21
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	56.0%
d14-p-Terphenyl	76.0%
2,4,6-Tribromophenol	89.6%

ANALYTICAL RESOURCES INCORPORATED

SW8270 SEMIVOLATILES WATER SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
21039.090.091

Client ID	FBP	TPH	TBP	TOT OUT
MB-090213	56.0%	76.0%	89.6%	0
LCS-090213	73.6%	96.8%	86.4%	0
LCSD-090213	74.8%	101%	58.4%	0
MW-05D-20130828	75.6%	88.8%	120%	0
MW-02D-20130828	56.0%	76.0%	104%	0
CW-13-20130828	60.8%	70.0%	111%	0
MW-05S-20130828	66.8%	66.4%	116%	0
PZ-19-20130828	41.2%	85.2%	151%*	1
MW-02S-20130828	75.2%	87.2%	120%	0
PZ-30-20130828	64.8%	72.0%	119%	0
PZ-17-20130828	61.2%	83.2%	170%*	1
PZ-18-20130828	70.0%	84.0%	119%	0
LW-3-20130828	71.6%	54.0%	128%*	1
LW-4R-20130828	69.6%	78.8%	118%	0

	LCS/MB LIMITS	QC LIMITS
(FBP) = 2-Fluorobiphenyl	(43-120)	(33-120)
(TPH) = d14-p-Terphenyl	(53-120)	(28-120)
(TBP) = 2,4,6-Tribromophenol	(53-126)	(52-120)

Prep Method: SW3520C
Log Number Range: 13-18053 to 13-18063

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
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Sample ID: LCS-090213
LCS/LCSD

Lab Sample ID: LCS-090213
LIMS ID: 13-18053
Matrix: Water
Data Release Authorized:
Reported: 09/16/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
21039.090.091
Date Sampled: 08/28/13
Date Received: 08/29/13

Date Extracted LCS/LCSD: 09/02/13

Date Analyzed LCS: 09/05/13 17:40
LCSD: 09/05/13 18:14
Instrument/Analyst LCS: NT6/JZ
LCSD: NT6/JZ
GPC Cleanup: NO

Sample Amount LCS: 500 mL
LCSD: 500 mL
Final Extract Volume LCS: 0.50 mL
LCSD: 0.50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Naphthalene	18.1	25.0	72.4%	18.5	25.0	74.0%	2.2%
2-Methylnaphthalene	18.0	25.0	72.0%	18.4	25.0	73.6%	2.2%
Acenaphthylene	18.3	25.0	73.2%	18.8	25.0	75.2%	2.7%
Acenaphthene	17.2	25.0	68.8%	17.6	25.0	70.4%	2.3%
Dibenzofuran	17.5	25.0	70.0%	18.2	25.0	72.8%	3.9%
Fluorene	18.6	25.0	74.4%	19.5	25.0	78.0%	4.7%
Pentachlorophenol	58.9	75.0	78.5%	62.1	75.0	82.8%	5.3%
Phenanthrene	18.8	25.0	75.2%	20.0	25.0	80.0%	6.2%
Anthracene	18.4	25.0	73.6%	19.4	25.0	77.6%	5.3%
Fluoranthene	20.0	25.0	80.0%	21.0	25.0	84.0%	4.9%
Pyrene	23.6	25.0	94.4%	25.1	25.0	100%	6.2%
Benzo(a)anthracene	21.3	25.0	85.2%	22.6	25.0	90.4%	5.9%
Chrysene	20.1	25.0	80.4%	21.1	25.0	84.4%	4.9%
Benzo(a)pyrene	19.7	25.0	78.8%	21.1	25.0	84.4%	6.9%
Indeno(1,2,3-cd)pyrene	19.8	25.0	79.2%	20.9	25.0	83.6%	5.4%
Dibenz(a,h)anthracene	15.1	25.0	60.4%	16.2	25.0	64.8%	7.0%
Benzo(g,h,i)perylene	17.2	25.0	68.8%	18.6	25.0	74.4%	7.8%
1-Methylnaphthalene	20.2	25.0	80.8%	20.9	25.0	83.6%	3.4%
Total Benzofluoranthenes	43.2	50.0	86.4%	46.4	50.0	92.8%	7.1%

Semivolatile Surrogate Recovery

	LCS	LCSD
2-Fluorobiphenyl	73.6%	74.8%
d14-p-Terphenyl	96.8%	101%
2,4,6-Tribromophenol	86.4%	58.4%

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

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C
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Sample ID: MW-05D-20130828
SAMPLE

Lab Sample ID: XC81A
LIMS ID: 13-18053
Matrix: Water
Data Release Authorized:
Reported: 09/09/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.090.091
Date Sampled: 08/28/13
Date Received: 08/29/13

Date Extracted: 09/03/13
Date Analyzed: 09/05/13 20:36
Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	65.3%
d14-Dibenzo(a,h)anthracene	76.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C
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Sample ID: MW-02D-20130828
SAMPLE

Lab Sample ID: XC81B
LIMS ID: 13-18054
Matrix: Water
Data Release Authorized: MW
Reported: 09/09/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.090.091
Date Sampled: 08/28/13
Date Received: 08/29/13

Date Extracted: 09/03/13
Date Analyzed: 09/05/13 21:05
Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	55.7%
d14-Dibenzo(a,h)anthracene	74.7%

XC81:00022

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C
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Sample ID: CW-13-20130828
SAMPLE

Lab Sample ID: XC81C
LIMS ID: 13-18055
Matrix: Water
Data Release Authorized: MW
Reported: 09/09/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.090.091
Date Sampled: 08/28/13
Date Received: 08/29/13

Date Extracted: 09/03/13
Date Analyzed: 09/05/13 21:33
Instrument/Analyst: NT4/JZ

Sample Amount: 450 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	0.11	< 0.11 U
218-01-9	Chrysene	0.11	< 0.11 U
50-32-8	Benzo(a)pyrene	0.11	< 0.11 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.11	< 0.11 U
53-70-3	Dibenz(a,h)anthracene	0.11	< 0.11 U
TOTBFA	Total Benzofluoranthenes	0.22	< 0.22 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	66.3%
d14-Dibenzo(a,h)anthracene	67.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C
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Sample ID: MW-05S-20130828
SAMPLE

Lab Sample ID: XC81D
LIMS ID: 13-18056
Matrix: Water
Data Release Authorized: MW
Reported: 09/09/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.090.091
Date Sampled: 08/28/13
Date Received: 08/29/13

Date Extracted: 09/03/13
Date Analyzed: 09/05/13 22:02
Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	64.7%
d14-Dibenzo(a,h)anthracene	69.3%

XC81:090924

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C
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Sample ID: PZ-19-20130828
SAMPLE

Lab Sample ID: XC81E
LIMS ID: 13-18057
Matrix: Water
Data Release Authorized: MW
Reported: 09/09/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.090.091
Date Sampled: 08/28/13
Date Received: 08/29/13

Date Extracted: 09/03/13
Date Analyzed: 09/05/13 22:31
Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	62.7%
d14-Dibenzo(a,h)anthracene	87.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C

Sample ID: MW-02S-20130828
SAMPLE

Lab Sample ID: XC81F
LIMS ID: 13-18058
Matrix: Water
Data Release Authorized: MW
Reported: 09/09/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.090.091
Date Sampled: 08/28/13
Date Received: 08/29/13

Date Extracted: 09/03/13
Date Analyzed: 09/05/13 22:59
Instrument/Analyst: NT4/JZ

Sample Amount: 445 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	0.11	< 0.11 U
218-01-9	Chrysene	0.11	< 0.11 U
50-32-8	Benzo(a)pyrene	0.11	< 0.11 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.11	< 0.11 U
53-70-3	Dibenz(a,h)anthracene	0.11	< 0.11 U
TOTBFA	Total Benzofluoranthenes	0.22	< 0.22 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	61.0%
d14-Dibenzo(a,h)anthracene	74.7%

XC81:000025

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C

Sample ID: PZ-30-20130828
SAMPLE

Lab Sample ID: XC81G
LIMS ID: 13-18059
Matrix: Water
Data Release Authorized:
Reported: 09/09/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.090.091
Date Sampled: 08/28/13
Date Received: 08/29/13

Date Extracted: 09/03/13
Date Analyzed: 09/05/13 23:28
Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	67.7%
d14-Dibenzo(a,h)anthracene	70.3%

XC81:080827

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C
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Sample ID: PZ-17-20130828
SAMPLE

Lab Sample ID: XC81H
LIMS ID: 13-18060
Matrix: Water
Data Release Authorized: MW
Reported: 09/09/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.090.091
Date Sampled: 08/28/13
Date Received: 08/29/13

Date Extracted: 09/03/13
Date Analyzed: 09/05/13 23:57
Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	62.3%
d14-Dibenzo(a,h)anthracene	77.7%

XC81:00026

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C
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Sample ID: PZ-18-20130828
SAMPLE

Lab Sample ID: XC81I
LIMS ID: 13-18061
Matrix: Water
Data Release Authorized: MW
Reported: 09/09/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.090.091
Date Sampled: 08/28/13
Date Received: 08/29/13

Date Extracted: 09/03/13
Date Analyzed: 09/06/13 00:25
Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	51.3%
d14-Dibenzo(a,h)anthracene	70.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: LW-3-20130828
SAMPLE

Lab Sample ID: XC81J
LIMS ID: 13-18062
Matrix: Water
Data Release Authorized:
Reported: 09/09/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.090.091
Date Sampled: 08/28/13
Date Received: 08/29/13

Date Extracted: 09/03/13
Date Analyzed: 09/06/13 00:54
Instrument/Analyst: NT4/JZ

Sample Amount: 450 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	0.11	< 0.11 U
218-01-9	Chrysene	0.11	< 0.11 U
50-32-8	Benzo(a)pyrene	0.11	< 0.11 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.11	< 0.11 U
53-70-3	Dibenz(a,h)anthracene	0.11	< 0.11 U
TOTBFA	Total Benzofluoranthenes	0.22	< 0.22 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	62.0%
d14-Dibenzo(a,h)anthracene	65.3%

XC81:66838

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: LW-4R-20130828
SAMPLE

Lab Sample ID: XC81K
LIMS ID: 13-18063
Matrix: Water
Data Release Authorized: MW
Reported: 09/09/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.090.091
Date Sampled: 08/28/13
Date Received: 08/29/13

Date Extracted: 09/03/13
Date Analyzed: 09/06/13 01:23
Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	60.3%
d14-Dibenzo(a,h)anthracene	53.0%

XC81:00031

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C
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Sample ID: MB-090313
METHOD BLANK

Lab Sample ID: MB-090313
LIMS ID: 13-18053
Matrix: Water
Data Release Authorized:
Reported: 09/09/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.090.091
Date Sampled: NA
Date Received: NA

Date Extracted: 09/03/13
Date Analyzed: 09/05/13 19:10
Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	67.7%
d14-Dibenzo(a,h)anthracene	73.3%

ANALYTICAL RESOURCES INCORPORATED

SIM SW8270 SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
21039.090.091

Client ID	MNP	DBA	TOT OUT
MB-090313	67.7%	73.3%	0
LCS-090313	61.7%	83.0%	0
LCSD-090313	67.7%	66.3%	0
MW-05D-20130828	65.3%	76.0%	0
MW-02D-20130828	55.7%	74.7%	0
CW-13-20130828	66.3%	67.7%	0
MW-05S-20130828	64.7%	69.3%	0
PZ-19-20130828	62.7%	87.0%	0
MW-02S-20130828	61.0%	74.7%	0
PZ-30-20130828	67.7%	70.3%	0
PZ-17-20130828	62.3%	77.7%	0
PZ-18-20130828	51.3%	70.3%	0
LW-3-20130828	62.0%	65.3%	0
LW-4R-20130828	60.3%	53.0%	0

	LCS/MB LIMITS	QC LIMITS
(MNP) = d10-2-Methylnaphthalene	(40-120)	(33-120)
(DBA) = d14-Dibenzo(a,h)anthracene	(33-120)	(10-120)

Prep Method: SW3520C
Log Number Range: 13-18053 to 13-18063

XC81 : 00033

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS

Sample ID: LCS-090313
LAB CONTROL SAMPLE

Lab Sample ID: LCS-090313
LIMS ID: 13-18053
Matrix: Water
Data Release Authorized: MW
Reported: 09/09/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.090.091
Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 09/03/13

Date Analyzed LCS: 09/05/13 19:39
LCSD: 09/05/13 20:07
Instrument/Analyst LCS: NT4/JZ
LCSD: NT4/JZ

Sample Amount LCS: 500 mL
LCSD: 500 mL
Final Extract Volume LCS: 0.50 mL
LCSD: 0.50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzo(a)anthracene	2.74	3.00	91.3%	2.90	3.00	96.7%	5.7%
Chrysene	2.72	3.00	90.7%	2.86	3.00	95.3%	5.0%
Benzo(a)pyrene	2.56	3.00	85.3%	2.88	3.00	96.0%	11.8%
Indeno(1,2,3-cd)pyrene	2.46	3.00	82.0%	2.63	3.00	87.7%	6.7%
Dibenz(a,h)anthracene	2.37	3.00	79.0%	2.70	3.00	90.0%	13.0%
Total Benzofluoranthenes	9.13	9.00	101%	9.22	9.00	102%	1.0%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

SIM Semivolatile Surrogate Recovery

	LCS	LCSD
d10-2-Methylnaphthalene	61.7%	67.7%
d14-Dibenzo(a,h)anthracene	83.0%	66.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
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Sample ID: MW-05D-20130828
SAMPLE

Lab Sample ID: XC81A
LIMS ID: 13-18053
Matrix: Water
Data Release Authorized:
Reported: 09/11/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
21039.090.091
Date Sampled: 08/28/13
Date Received: 08/29/13

Date Extracted: 08/31/13
Date Analyzed: 09/05/13 15:15
Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	88.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
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Sample ID: MW-02D-20130828
SAMPLE

Lab Sample ID: XC81B
LIMS ID: 13-18054
Matrix: Water
Data Release Authorized:
Reported: 09/11/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
21039.090.091
Date Sampled: 08/28/13
Date Received: 08/29/13

Date Extracted: 08/31/13
Date Analyzed: 09/05/13 15:52
Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	0.37

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	87.2%

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
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Sample ID: CW-13-20130828
SAMPLE

Lab Sample ID: XC81C
LIMS ID: 13-18055
Matrix: Water
Data Release Authorized:
Reported: 09/11/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
21039.090.091
Date Sampled: 08/28/13
Date Received: 08/29/13

Date Extracted: 08/31/13
Date Analyzed: 09/05/13 16:29
Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	92.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
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Sample ID: MW-05S-20130828
SAMPLE

Lab Sample ID: XC81D
LIMS ID: 13-18056
Matrix: Water
Data Release Authorized:
Reported: 09/11/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
21039.090.091
Date Sampled: 08/28/13
Date Received: 08/29/13

Date Extracted: 08/31/13
Date Analyzed: 09/05/13 17:06
Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	91.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
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Sample ID: PZ-19-20130828
SAMPLE

Lab Sample ID: XC81E
LIMS ID: 13-18057
Matrix: Water
Data Release Authorized:
Reported: 09/11/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
21039.090.091
Date Sampled: 08/28/13
Date Received: 08/29/13

Date Extracted: 08/31/13
Date Analyzed: 09/05/13 17:41
Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	95.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
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Sample ID: MW-02S-20130828
SAMPLE

Lab Sample ID: XC81F
LIMS ID: 13-18058
Matrix: Water
Data Release Authorized:
Reported: 09/11/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
21039.090.091
Date Sampled: 08/28/13
Date Received: 08/29/13

Date Extracted: 08/31/13
Date Analyzed: 09/05/13 18:18
Instrument/Analyst: ECD1/YZ

Sample Amount: 450 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.28	< 0.28 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	96.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
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Sample ID: PZ-30-20130828
SAMPLE

Lab Sample ID: XC81G
LIMS ID: 13-18059
Matrix: Water
Data Release Authorized:
Reported: 09/11/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
21039.090.091
Date Sampled: 08/28/13
Date Received: 08/29/13

Date Extracted: 08/31/13
Date Analyzed: 09/05/13 18:55
Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	94.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C

Sample ID: PZ-17-20130828
SAMPLE

Lab Sample ID: XC81H
LIMS ID: 13-18060
Matrix: Water
Data Release Authorized:
Reported: 09/11/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
21039.090.091
Date Sampled: 08/28/13
Date Received: 08/29/13

Date Extracted: 08/31/13
Date Analyzed: 09/05/13 19:29
Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery

2,4,6-Tribromophenol	93.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
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Sample ID: PZ-18-20130828
SAMPLE

Lab Sample ID: XC81I
LIMS ID: 13-18061
Matrix: Water
Data Release Authorized:
Reported: 09/11/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
21039.090.091
Date Sampled: 08/28/13
Date Received: 08/29/13

Date Extracted: 08/31/13
Date Analyzed: 09/05/13 20:06
Instrument/Analyst: ECD1/YZ

Sample Amount: 475 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.26	< 0.26 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	95.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
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Sample ID: LW-3-20130828
SAMPLE

Lab Sample ID: XC81J
LIMS ID: 13-18062
Matrix: Water
Data Release Authorized:
Reported: 09/11/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
21039.090.091
Date Sampled: 08/28/13
Date Received: 08/29/13

Date Extracted: 08/31/13
Date Analyzed: 09/05/13 21:19
Instrument/Analyst: ECD1/YZ

Sample Amount: 400 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.31	< 0.31 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	89.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
Page 1 of 1

Sample ID: LW-4R-20130828
SAMPLE

Lab Sample ID: XC81K
LIMS ID: 13-18063
Matrix: Water
Data Release Authorized:
Reported: 09/11/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
21039.090.091
Date Sampled: 08/28/13
Date Received: 08/29/13

Date Extracted: 08/31/13
Date Analyzed: 09/05/13 21:55
Instrument/Analyst: ECD1/YZ

Sample Amount: 450 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.28	< 0.28 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	88.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
Page 1 of 1

Sample ID: MB-083113
METHOD BLANK

Lab Sample ID: MB-083113
LIMS ID: 13-18053
Matrix: Water
Data Release Authorized:
Reported: 09/11/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
21039.090.091
Date Sampled: NA
Date Received: NA

Date Extracted: 08/31/13
Date Analyzed: 09/05/13 12:52
Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	94.0%

ANALYTICAL RESOURCES INCORPORATED

SW8041 CHLOROPHENOLICS SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
21039.090.091

Client ID	TBP	TOT OUT
MB-083113	94.0%	0
LCS-083113	89.6%	0
LCSD-083113	96.6%	0
MW-05D-20130828	88.8%	0
MW-02D-20130828	87.2%	0
CW-13-20130828	92.4%	0
MW-05S-20130828	91.2%	0
PZ-19-20130828	95.2%	0
MW-02S-20130828	96.8%	0
PZ-30-20130828	94.8%	0
PZ-17-20130828	93.6%	0
PZ-18-20130828	95.6%	0
LW-3-20130828	89.6%	0
LW-4R-20130828	88.0%	0

	LCS/MB LIMITS	QC LIMITS
(TBP) = 2,4,6-Tribromophenol	(41-98)	(26-113)

Prep Method: SW3510C
Log Number Range: 13-18053 to 13-18063

FORM-II SW8041

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041

Sample ID: LCS-083113
LCS/LCSD

Lab Sample ID: LCS-083113
LIMS ID: 13-18053
Matrix: Water
Data Release Authorized:
Reported: 09/11/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
21039.090.091
Date Sampled: 08/28/13
Date Received: 08/29/13

Date Extracted LCS/LCSD: 08/31/13

Date Analyzed LCS: 09/05/13 13:26
LCSD: 09/05/13 14:04
Instrument/Analyst LCS: ECD1/YZ
LCSD: ECD1/YZ

Sample Amount LCS: 500 mL
LCSD: 500 mL
Final Extract Volume LCS: 50 mL
LCSD: 50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Pentachlorophenol	2.13	2.50	85.2%	2.31	2.50	92.4%	8.1%

Chlorophenols Surrogate Recovery

	LCS	LCSD
2,4,6-Tribromophenol	89.6%	96.6%

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

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Matrix: Water

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.090.091

Data Release Authorized:
Reported: 09/03/13

ARI ID	Client ID	Analysis Date	DL	Range	Result
MB-083013	Method Blank	08/30/13	1.0	Gasoline	< 250 U
13-18053		PID3		HC ID	---
				Trifluorotoluene	103%
				Bromobenzene	103%
XC81A	MW-05D-20130828	08/30/13	1.0	Gasoline	< 250 U
13-18053		PID3		HC ID	---
				Trifluorotoluene	108%
				Bromobenzene	106%
MB-090213	Method Blank	09/02/13	1.0	Gasoline	< 250 U
13-18054		PID3		HC ID	---
				Trifluorotoluene	103%
				Bromobenzene	105%
XC81B	MW-02D-20130828	08/30/13	1.0	**Gasoline**	**620**
13-18054		PID3		HC ID	GRO
				Trifluorotoluene	105%
				Bromobenzene	102%
XC81C	CW-13-20130828	08/30/13	1.0	Gasoline	< 250 U
13-18055		PID3		HC ID	---
				Trifluorotoluene	106%
				Bromobenzene	105%
XC81D	MW-05S-20130828	08/30/13	1.0	Gasoline	< 250 U
13-18056		PID3		HC ID	---
				Trifluorotoluene	104%
				Bromobenzene	102%
XC81E	PZ-19-20130828	08/30/13	1.0	Gasoline	< 250 U
13-18057		PID3		HC ID	---
				Trifluorotoluene	104%
				Bromobenzene	103%
XC81F	MW-02S-20130828	09/02/13	1.0	Gasoline	< 250 U
13-18058		PID3		HC ID	---
				Trifluorotoluene	107%
				Bromobenzene	107%
XC81G	PZ-30-20130828	09/02/13	1.0	Gasoline	< 250 U
13-18059		PID3		HC ID	---
				Trifluorotoluene	107%
				Bromobenzene	105%
XC81H	PZ-17-20130828	09/02/13	1.0	Gasoline	< 250 U
13-18060		PID3		HC ID	---
				Trifluorotoluene	104%
				Bromobenzene	103%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Matrix: Water

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.090.091

Data Release Authorized:
Reported: 09/03/13

ARI ID	Client ID	Analysis Date	DL	Range	Result
XC81I 13-18061	PZ-18-20130828	09/02/13 PID3	1.0	Gasoline HC ID Trifluorotoluene Bromobenzene	< 250 U --- 103% 103%
XC81J 13-18062	LW-3-20130828	09/02/13 PID3	1.0	Gasoline HC ID Trifluorotoluene Bromobenzene	< 250 U --- 96.1% 93.7%
XC81K 13-18063	LW-4R-20130828	09/02/13 PID3	1.0	Gasoline HC ID Trifluorotoluene Bromobenzene	< 250 U --- 103% 102%
XC81L 13-18064	Trip Blanks	08/30/13 PID3	1.0	Gasoline HC ID Trifluorotoluene Bromobenzene	< 250 U --- 106% 105%

Gasoline values reported in µg/L (ppb)

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

ANALYTICAL RESOURCES INCORPORATED

TPHG WATER SURROGATE RECOVERY SUMMARY

ARI Job: XC81
Matrix: Water

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.090.091

Client ID	TFT	BBZ	TOT OUT
MB-083013	103%	103%	0
LCS-083013	111%	117%	0
LCSD-083013	108%	114%	0
MW-05D-20130828	108%	106%	0
MB-090213	103%	105%	0
LCS-090213	110%	120%	0
LCSD-090213	109%	118%	0
MW-02D-20130828	105%	102%	0
CW-13-20130828	106%	105%	0
MW-05S-20130828	104%	102%	0
PZ-19-20130828	104%	103%	0
MW-02S-20130828	107%	107%	0
PZ-30-20130828	107%	105%	0
PZ-17-20130828	104%	103%	0
PZ-18-20130828	103%	103%	0
LW-3-20130828	96.1%	93.7%	0
LW-4R-20130828	103%	102%	0
Trip Blanks	106%	105%	0

	LCS/MB LIMITS	QC LIMITS
(TFT) = Trifluorotoluene	(80-120)	(80-120)
(BBZ) = Bromobenzene	(80-120)	(80-120)

Log Number Range: 13-18053 to 13-18064

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: LCS-083013
LAB CONTROL SAMPLE

Lab Sample ID: LCS-083013
LIMS ID: 13-18053
Matrix: Water
Data Release Authorized:
Reported: 09/03/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.090.091
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 08/30/13 10:50
LCSD: 08/30/13 11:19
Instrument/Analyst LCS: PID3/PKC
LCSD: PID3/PKC

Purge Volume: 5.0 mL

Dilution Factor LCS: 1.0
LCSD: 1.0

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	2630	2500	105%	2640	2500	106%	0.4%

Reported in ug/L (ppb)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	111%	108%
Bromobenzene	117%	114%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: LCS-090213
LAB CONTROL SAMPLE

Lab Sample ID: LCS-090213
LIMS ID: 13-18054
Matrix: Water
Data Release Authorized:
Reported: 09/03/13

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.090.091
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 09/02/13 10:30
LCSD: 09/02/13 10:58
Instrument/Analyst LCS: PID3/PKC
LCSD: PID3/PKC

Purge Volume: 5.0 mL

Dilution Factor LCS: 1.0
LCSD: 1.0

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	2630	2500	105%	2540	2500	102%	3.5%

Reported in ug/L (ppb)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	110%	109%
Bromobenzene	120%	118%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD by GC/FID-Silica and Acid Cleaned
Extraction Method:

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
21039.090.091

Matrix: Water
Data Release Authorized: MW
Reported: 09/05/13

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DF	Range/Surrogate	RL	Result
MB-083013	Method Blank	08/30/13	09/03/13	1.00	Diesel Range	100	< 100 U
13-18053	HC ID: ---		FID9	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		91.7%
XC81A	MW-05D-20130828	08/30/13	09/03/13	1.00	Diesel Range	100	< 100 U
13-18053	HC ID: ---		FID9	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		90.1%
XC81B	MW-02D-20130828	08/30/13	09/03/13	1.00	**Diesel Range**	**100**	**160**
13-18054	HC ID: **CREOSOTE/MOTOR OIL**		FID9	1.0	**Motor Oil Range**	**200**	**470**
					Creosote Range	**100**	**530**
					o-Terphenyl		88.0%
XC81C	CW-13-20130828	08/30/13	09/03/13	1.00	Diesel Range	100	< 100 U
13-18055	HC ID: ---		FID9	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		91.7%
XC81D	MW-05S-20130828	08/30/13	09/03/13	1.00	Diesel Range	100	< 100 U
13-18056	HC ID: ---		FID9	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		96.5%
XC81E	PZ-19-20130828	08/30/13	09/03/13	1.00	Diesel Range	100	< 100 U
13-18057	HC ID: ---		FID9	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		89.2%
XC81F	MW-02S-20130828	08/30/13	09/03/13	1.00	Diesel Range	130	< 130 U
13-18058	HC ID: ---		FID9	1.0	Motor Oil Range	260	< 260 U
					Creosote Range	130	< 130 U
					o-Terphenyl		94.4%
XC81G	PZ-30-20130828	08/30/13	09/03/13	1.00	Diesel Range	100	< 100 U
13-18059	HC ID: ---		FID9	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		89.5%
XC81H	PZ-17-20130828	08/30/13	09/03/13	1.00	Diesel Range	100	< 100 U
13-18060	HC ID: ---		FID9	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		86.6%
XC81I	PZ-18-20130828	08/30/13	09/03/13	1.00	Diesel Range	110	< 110 U
13-18061	HC ID: ---		FID9	1.0	Motor Oil Range	210	< 210 U
					Creosote Range	110	< 110 U
					o-Terphenyl		90.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD by GC/FID-Silica and Acid Cleaned
Extraction Method:

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
21039.090.091

Matrix: Water
Data Release Authorized: MW
Reported: 09/05/13

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DF	Range/Surrogate	RL	Result
XC81J	LW-3-20130828	08/30/13	09/03/13	1.00	**Diesel Range**	**120**	**150**
13-18062	HC ID: **DRO**		FID9	1.0	Motor Oil Range	230	< 230 U
					Creosote Range	**110**	**580**
					o-Terphenyl		92.3%
XC81K	LW-4R-20130828	08/30/13	09/04/13	1.00	Diesel Range	100	< 100 U
13-18063	HC ID: ---		FID9	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		90.1%

Reported in ug/L (ppb)

EFV-Effective Final Volume in mL.
DL-Dilution of extract prior to analysis.
RL-Reporting limit.

Diesel range quantitation on total peaks in the range from C12 to C24.
Motor Oil range quantitation on total peaks in the range from C24 to C38.
Creosote range quantitation on total peaks in the range from C12 to C22.
HC ID: DRO/RRO indicate results of organics or additional hydrocarbons in ranges are not identifiable.

ANALYTICAL RESOURCES INCORPORATED

CLEANED TPHD SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: XC81-Landau Associates, Inc.
Project: Port of Olympia
21039.090.091

Client ID	OTER	TOT OUT
MB-083013	91.7%	0
LCS-083013	91.1%	0
LCSD-083013	92.6%	0
MW-05D-20130828	90.1%	0
MW-02D-20130828	88.0%	0
CW-13-20130828	91.7%	0
MW-05S-20130828	96.5%	0
PZ-19-20130828	89.2%	0
MW-02S-20130828	94.4%	0
PZ-30-20130828	89.5%	0
PZ-17-20130828	86.6%	0
PZ-18-20130828	90.4%	0
LW-3-20130828	92.3%	0
LW-4R-20130828	90.1%	0

	LCS/MB LIMITS	QC LIMITS
(OTER) = o-Terphenyl	(50-150)	(50-150)

Prep Method: SW3510C
Log Number Range: 13-18053 to 13-18063

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID-Silica and Acid Cleaned **Sample ID: LCS-083013**
Page 1 of 1 **LCS/LCSD**

Lab Sample ID: LCS-083013 QC Report No: XC81-Landau Associates, Inc.
LIMS ID: 13-18053 Project: Port of Olympia
Matrix: Water 21039.090.091
Data Release Authorized: Date Sampled: 08/28/13
Reported: 09/05/13 Date Received: 08/29/13

Date Extracted LCS/LCSD: 08/30/13 Sample Amount LCS: 500 mL
LCSD: 500 mL
Date Analyzed LCS: 09/03/13 18:05 Final Extract Volume LCS: 1.0 mL
LCSD: 09/03/13 18:27 LCSD: 1.0 mL
Instrument/Analyst LCS: FID/JLW Dilution Factor LCS: 1.00
LCSD: FID/JLW LCSD: 1.00

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	2630	3000	87.7%	2650	3000	88.3%	0.8%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	91.1%	92.6%

Results reported in ug/L
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

ARI Job: XC81
Matrix: Water Project: Port of Olympia
Date Received: 08/29/13 21039.090.091

ARI ID	Client ID	Samp Amt	Final Vol	Prep Date
13-18053-083013MB1	Method Blank	500 mL	1.00 mL	08/30/13
13-18053-083013LCS1	Lab Control	500 mL	1.00 mL	08/30/13
13-18053-083013LCSD1	Lab Control Dup	500 mL	1.00 mL	08/30/13
13-18053-XC81A	MW-05D-20130828	500 mL	1.00 mL	08/30/13
13-18054-XC81B	MW-02D-20130828	500 mL	1.00 mL	08/30/13
13-18055-XC81C	CW-13-20130828	500 mL	1.00 mL	08/30/13
13-18056-XC81D	MW-05S-20130828	500 mL	1.00 mL	08/30/13
13-18057-XC81E	PZ-19-20130828	500 mL	1.00 mL	08/30/13
13-18058-XC81F	MW-02S-20130828	385 mL	1.00 mL	08/30/13
13-18059-XC81G	PZ-30-20130828	500 mL	1.00 mL	08/30/13
13-18060-XC81H	PZ-17-20130828	500 mL	1.00 mL	08/30/13
13-18061-XC81I	PZ-18-20130828	470 mL	1.00 mL	08/30/13
13-18062-XC81J	LW-3-20130828	435 mL	1.00 mL	08/30/13
13-18063-XC81K	LW-4R-20130828	500 mL	1.00 mL	08/30/13

Analytical Resources, Incorporated
Analytical Chemists and Consultants

September 19, 2013

Chris Kimmel
Landau Associates, Inc.
130 2nd Avenue S.
Edmonds, WA 98020

RE: Project: Port of Olympia
ARI Job No: XC89

Dear Chris:

Please find enclosed the original *Chain of Custody*, sample receipt documentation, and final results for the project referenced above. Analytical Resources, Inc. accepted four water samples and a trip blank in good condition on August 29, 2013.

The samples were analyzed for NWTPH-Gx, NWTPH-Dx, cPAHs by method 8270 SIM, PAHs by method 8270 and PCP on select samples by method 8041, as requested on the *Chain of Custody*.

Please refer to the *Case Narrative* for analytical details regarding the sample.

A copy of this report and all associated ARI raw data will be kept on file with ARI. Should you have any questions or problems, please feel free to contact me at any time.

Sincerely,
ANALYTICAL RESOURCES, INC.

Kelly Bottem
Client Services Manager
(206) 695-6211

Enclosures

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

LANDAU ASSOCIATES

☐ Seattle/Edmonds (425) 778-0907
☒ Tacoma (253) 926-2493
☐ Spokane (509) 327-9737
☐ Portland (503) 542-1080
☐ _____

XC89

Date 8/29/13
Page 1 of 1

Chain-of-Custody Record

Project Name Port of Olympia Project No. 21039.050.051
Project Location/Event Cascade Pole, Dry Season
Sampler's Name Sarah Weeks, Sierra Mott
Project Contact Chris Kimmel
Send Results To Chris Kimmel, Anne Halvorsen

Turnaround Time
☒ Standard
☐ Accelerated
☐ _____

Sample I.D.	Date	Time	Matrix	No. of Containers	NWTPH-Gx	NWTPH-Dx+ creosote	PAHs (8270)	cPAHs SIM	PCP (8270)	PCP (8041)	Observations/Comments
MW-01D-20130829	8/29/13	1153	H_2O	10	X	X	X	X	X	X	
P2-13-20130829	8/29/13	1109		10	X	X	X	X	X	X	
Trip Blanks	8/22/13	—		2	X						
* MW-01S-20130829	8/29/13	1208		10	X	X	X	X	X	X	
P2-12-20130829	8/29/13	1118		10	X	X	X	X	X	X	

Testing Parameters

X Allow water samples to settle, collect aliquot from clear portion

X NWTPH-Dx - run acid wash/silica gel cleanup

___ run samples standardized to _____ product

___ Analyze for EPH if no specific product identified

VOC/BTEX/VPH (soil):
___ non-preserved
___ preserved w/methanol
___ preserved w/sodium bisulfate
___ Freeze upon receipt

___ Dissolved metal water samples field filtered

Other Run all samples for PCP using 8270. If result = ND, then end only then run PCP by 8041.

* MW01S is hot - strong HCodor

Special Shipment/Handling or Storage Requirements

Method of Shipment

Relinquished by	Received by	Relinquished by	Received by
Signature Sarah Weeks	Signature	Signature	Signature
Printed Name Sarah Weeks	Printed Name Taylor Stuecker	Printed Name	Printed Name
Company Landau Associates	Company ARI	Company	Company
Date 8/29/13 Time 1431	Date 8-29-13 Time 1451	Date _____ Time _____	Date _____ Time _____

WHITE COPY - Project File YELLOW COPY - Laboratory PINK COPY - Client Representative Rev 8/09

XC89 : SOX

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Landau Project Name: Port of Olympia

COC No(s): _____ (NA) Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: XC89 Tracking No: _____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES (NO)

Were custody papers included with the cooler? ..... (YES) NO

Were custody papers properly filled out (ink, signed, etc.) ..... (YES) NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)..... 5.8 0.5

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 90877952

Cooler Accepted by: TS Date: 8-29-13 Time: 1437

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? ..... YES (NO)

What kind of packing material was used? ... Bubble Wrap (Wet Ice) Gel Packs Baggies Foam Block Paper Other: _____

Was sufficient ice used (if appropriate)? ..... NA (YES) NO

Were all bottles sealed in individual plastic bags? ..... (YES) (NO)

Did all bottles arrive in good condition (unbroken)? ..... (YES) NO

Were all bottle labels complete and legible? ..... (YES) NO

Did the number of containers listed on COC match with the number of containers received? ..... (YES) NO

Did all bottle labels and tags agree with custody papers? ..... (YES) NO

Were all bottles used correct for the requested analyses? ..... (YES) NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)... (NA) YES NO

Were all VOC vials free of air bubbles? ..... NA YES (NO)

Was sufficient amount of sample sent in each bottle? ..... (YES) NO

Date VOC Trip Blank was made at ARI..... NA 8/29/13

Was Sample Split by ARI : (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: AV Date: 8/29/13 Time: 1632

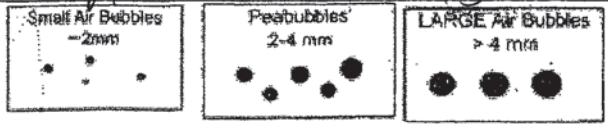
***** Notify Project Manager of discrepancies or concerns *****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

TB=2sm

By: AV Date: 8/29/13



Small → "sm"
Peabubbles → "pb"
Large → "lg"
Headspace → "hs"

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: XC89
Client: Landau Associates, Inc.
Project Event: 21039.050.051
Project Name: Port of Olympia

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	MW-01D-20130829	XC89A	13-18085	Water	08/29/13 11:53	08/29/13 14:51
2.	PZ-13-20130829	XC89B	13-18086	Water	08/29/13 11:09	08/29/13 14:51
3.	MW-01S-20130829	XC89C	13-18087	Water	08/29/13 12:08	08/29/13 14:51
4.	PZ-12-20130829	XC89D	13-18088	Water	08/29/13 11:18	08/29/13 14:51
5.	Trip Blanks	XC89E	13-18089	Water	08/29/13	08/29/13 14:51

ANALYTICAL
RESOURCES
INCORPORATED

Case Narrative

Project: 0021039.050.051
ARI Job No.: XC89
September 19, 2013
Page 1 of 2

Sample Receipt

Please find enclosed the original *Chain of Custody (COC)* record and analytical results for the project referenced above. Analytical Resources, Inc. accepted four water samples and a trip blank in good condition on August 29, 2013. The samples were received at cooler temperatures between 0.5 and 5.8°C. Please see the *Cooler Receipt Form* for further details. Per Landau Associates, select samples were allowed to settle and sample volume was collected from the clear portion.

The following tests were performed on selected samples, as requested on the *Chain of Custody*.

Semivolatile Organics by method 8270D Water

The samples were extracted on 9/2/13. The samples were analyzed between 9/5/13 and 9/13/13 - within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: The surrogate TBP is out of control high in the original analysis of sample MW-01S-20130829. The sample was re-analyzed at a dilution with surrogate recoveries in control and both sets of data have been included for your review. All other surrogate recoveries were in control.

LCS/LSCD (s): Are in control.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: Are in control.

SIM PNA by method 8270-SIM Water

The samples were extracted on 9/4/13 and analyzed on 9/6/13 - within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: Are in control.

LCS/LSCD (s): All percent recoveries and other RPDs for the analytes of interest were within compliance.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: Are in control.

PCP Only by method 8041

The samples were extracted on 8/31/13 and analyzed on 9/5/13 and 9/6/13 - within the method recommended holding time.

Case Narrative

Project: 0021039.050.051
ARI Job No.: XC89
September 19, 2013
Page 2 of 2

Samples: There were no anomalies associated with these samples.

Surrogates: Are in control.

LCS/LSCD (s): All percent recoveries and RPDs for the analytes of interest were within compliance.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: Are in control.

NWTPH-Gx

The samples were analyzed on 8/30/13 and 9/2/13 - within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: All surrogate recoveries were in control.

LCS/LCSD (s): All percent recoveries and RPDs for the analytes of interest were within compliance.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: Are in control.

NWTPH-Dx

The samples were extracted on 8/30/13 and analyzed on 9/4/13 - within the method recommended holding time.

Surrogates: All surrogate recoveries were in control.

Samples: There were no anomalies associated with these samples.

LCS/LCSD (s): All percent recoveries and RPDs for the analytes of interest were within compliance.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: Are in control.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: MW-01D-20130829
SAMPLE

Lab Sample ID: XC89A
LIMS ID: 13-18085
Matrix: Water
Data Release Authorized:
Reported: 09/16/13

QC Report No: XC89-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 08/29/13
Date Received: 08/29/13

Date Extracted: 09/02/13
Date Analyzed: 09/13/13 21:15
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**1.0**	**1.1**
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	70.8%
d14-p-Terphenyl	85.6%
2,4,6-Tribromophenol	117%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: PZ-13-20130829
SAMPLE

Lab Sample ID: XC89B
LIMS ID: 13-18086
Matrix: Water
Data Release Authorized:
Reported: 09/16/13

QC Report No: XC89-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 08/29/13
Date Received: 08/29/13

Date Extracted: 09/02/13
Date Analyzed: 09/13/13 21:48
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	51.6%
d14-p-Terphenyl	53.6%
2,4,6-Tribromophenol	97.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: MW-01S-20130829
SAMPLE

Lab Sample ID: XC89C
LIMS ID: 13-18087
Matrix: Water
Data Release Authorized:
Reported: 09/16/13

QC Report No: XC89-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 08/29/13
Date Received: 08/29/13

Date Extracted: 09/02/13
Date Analyzed: 09/13/13 22:56
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 10.0

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**10**	**8,000 ES**
91-57-6	**2-Methylnaphthalene**	**10**	**780**
208-96-8	Acenaphthylene	10	< 10 U
83-32-9	**Acenaphthene**	**10**	**270**
132-64-9	**Dibenzofuran**	**10**	**140**
86-73-7	**Fluorene**	**10**	**110**
87-86-5	**Pentachlorophenol**	**100**	**4,600 ES**
85-01-8	**Phenanthrene**	**10**	**130**
120-12-7	**Anthracene**	**10**	**39**
206-44-0	**Fluoranthene**	**10**	**56**
129-00-0	**Pyrene**	**10**	**34**
56-55-3	Benzo(a)anthracene	10	< 10 U
218-01-9	Chrysene	10	< 10 U
50-32-8	Benzo(a)pyrene	10	< 10 U
193-39-5	Indeno(1,2,3-cd)pyrene	10	< 10 U
53-70-3	Dibenz(a,h)anthracene	10	< 10 U
191-24-2	Benzo(g,h,i)perylene	10	< 10 U
90-12-0	**1-Methylnaphthalene**	**10**	**580**
TOTBFA	Total Benzofluoranthenes	50	< 50 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	72.4%
d14-p-Terphenyl	49.6%
2,4,6-Tribromophenol	122%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: MW-01S-20130829
DILUTION

Lab Sample ID: XC89C
LIMS ID: 13-18087
Matrix: Water
Data Release Authorized:
Reported: 09/16/13

QC Report No: XC89-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 08/29/13
Date Received: 08/29/13

Date Extracted: 09/02/13
Date Analyzed: 09/13/13 23:30
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 100

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**100**	**6,800**
91-57-6	**2-Methylnaphthalene**	**100**	**920**
208-96-8	Acenaphthylene	100	< 100 U
83-32-9	**Acenaphthene**	**100**	**330**
132-64-9	**Dibenzofuran**	**100**	**140**
86-73-7	**Fluorene**	**100**	**120**
87-86-5	**Pentachlorophenol**	**1,000**	**4,000**
85-01-8	**Phenanthrene**	**100**	**160**
120-12-7	Anthracene	100	< 100 U
206-44-0	Fluoranthene	100	< 100 U
129-00-0	Pyrene	100	< 100 U
56-55-3	Benzo(a)anthracene	100	< 100 U
218-01-9	Chrysene	100	< 100 U
50-32-8	Benzo(a)pyrene	100	< 100 U
193-39-5	Indeno(1,2,3-cd)pyrene	100	< 100 U
53-70-3	Dibenz(a,h)anthracene	100	< 100 U
191-24-2	Benzo(g,h,i)perylene	100	< 100 U
90-12-0	**1-Methylnaphthalene**	**100**	**600**
TOTBFA	Total Benzofluoranthenes	500	< 500 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	D
d14-p-Terphenyl	D
2,4,6-Tribromophenol	D

XC89:00016

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: PZ-12-20130829
SAMPLE

Lab Sample ID: XC89D
LIMS ID: 13-18088
Matrix: Water
Data Release Authorized:
Reported: 09/16/13

QC Report No: XC89-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 08/29/13
Date Received: 08/29/13

Date Extracted: 09/02/13
Date Analyzed: 09/13/13 22:22
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**1.0**	**1.8**
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	56.4%
d14-p-Terphenyl	78.4%
2,4,6-Tribromophenol	105%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: MB-090213
METHOD BLANK

Lab Sample ID: MB-090213
LIMS ID: 13-18085
Matrix: Water
Data Release Authorized:
Reported: 09/16/13

QC Report No: XC89-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: NA
Date Received: NA

Date Extracted: 09/02/13
Date Analyzed: 09/16/13 15:21
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	56.0%
d14-p-Terphenyl	76.0%
2,4,6-Tribromophenol	89.6%

ANALYTICAL RESOURCES INCORPORATED

SW8270 SEMIVOLATILES WATER SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: XC89-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051

Client ID	FBP	TPH	TBP	TOT OUT
MB-090213	56.0%	76.0%	89.6%	0
LCS-090213	73.6%	96.8%	86.4%	0
LCSD-090213	74.8%	101%	58.4%	0
MW-01D-20130829	70.8%	85.6%	117%	0
PZ-13-20130829	51.6%	53.6%	97.6%	0
MW-01S-20130829	72.4%	49.6%	122%*	1
MW-01S-20130829 DL	D	D	D	0
PZ-12-20130829	56.4%	78.4%	105%	0

	LCS/MB LIMITS	QC LIMITS
(FBP) = 2-Fluorobiphenyl	(43-120)	(33-120)
(TPH) = d14-p-Terphenyl	(53-120)	(28-120)
(TBP) = 2,4,6-Tribromophenol	(53-126)	(52-120)

Prep Method: SW3520C
Log Number Range: 13-18085 to 13-18088

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: LCS-090213
LCS/LCSD

Lab Sample ID: LCS-090213
LIMS ID: 13-18085
Matrix: Water
Data Release Authorized:
Reported: 09/16/13

QC Report No: XC89-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 08/29/13
Date Received: 08/29/13

Date Extracted LCS/LCSD: 09/02/13

Date Analyzed LCS: 09/05/13 17:40
LCSD: 09/05/13 18:14
Instrument/Analyst LCS: NT6/JZ
LCSD: NT6/JZ
GPC Cleanup: NO

Sample Amount LCS: 500 mL
LCSD: 500 mL
Final Extract Volume LCS: 0.50 mL
LCSD: 0.50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Naphthalene	18.1	25.0	72.4%	18.5	25.0	74.0%	2.2%
2-Methylnaphthalene	18.0	25.0	72.0%	18.4	25.0	73.6%	2.2%
Acenaphthylene	18.3	25.0	73.2%	18.8	25.0	75.2%	2.7%
Acenaphthene	17.2	25.0	68.8%	17.6	25.0	70.4%	2.3%
Dibenzofuran	17.5	25.0	70.0%	18.2	25.0	72.8%	3.9%
Fluorene	18.6	25.0	74.4%	19.5	25.0	78.0%	4.7%
Pentachlorophenol	58.9	75.0	78.5%	62.1	75.0	82.8%	5.3%
Phenanthrene	18.8	25.0	75.2%	20.0	25.0	80.0%	6.2%
Anthracene	18.4	25.0	73.6%	19.4	25.0	77.6%	5.3%
Fluoranthene	20.0	25.0	80.0%	21.0	25.0	84.0%	4.9%
Pyrene	23.6	25.0	94.4%	25.1	25.0	100%	6.2%
Benzo(a)anthracene	21.3	25.0	85.2%	22.6	25.0	90.4%	5.9%
Chrysene	20.1	25.0	80.4%	21.1	25.0	84.4%	4.9%
Benzo(a)pyrene	19.7	25.0	78.8%	21.1	25.0	84.4%	6.9%
Indeno(1,2,3-cd)pyrene	19.8	25.0	79.2%	20.9	25.0	83.6%	5.4%
Dibenz(a,h)anthracene	15.1	25.0	60.4%	16.2	25.0	64.8%	7.0%
Benzo(g,h,i)perylene	17.2	25.0	68.8%	18.6	25.0	74.4%	7.8%
1-Methylnaphthalene	20.2	25.0	80.8%	20.9	25.0	83.6%	3.4%
Total Benzofluoranthenes	43.2	50.0	86.4%	46.4	50.0	92.8%	7.1%

Semivolatile Surrogate Recovery

	LCS	LCSD
2-Fluorobiphenyl	73.6%	74.8%
d14-p-Terphenyl	96.8%	101%
2,4,6-Tribromophenol	86.4%	58.4%

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

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: MW-01D-20130829
SAMPLE

Lab Sample ID: XC89A
LIMS ID: 13-18085
Matrix: Water
Data Release Authorized:
Reported: 09/10/13

QC Report No: XC89-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.050.051
Date Sampled: 08/29/13
Date Received: 08/29/13

Date Extracted: 09/04/13
Date Analyzed: 09/06/13 22:28
Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	61.3%
d14-Dibenzo(a,h)anthracene	67.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C

Sample ID: PZ-13-20130829
SAMPLE

Lab Sample ID: XC89B
LIMS ID: 13-18086
Matrix: Water
Data Release Authorized:
Reported: 09/10/13

QC Report No: XC89-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.050.051
Date Sampled: 08/29/13
Date Received: 08/29/13

Date Extracted: 09/04/13
Date Analyzed: 09/06/13 22:56
Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	59.7%
d14-Dibenzo(a,h)anthracene	60.3%

XC89:00016

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C

Sample ID: MW-01S-20130829
SAMPLE

Lab Sample ID: XC89C
LIMS ID: 13-18087
Matrix: Water
Data Release Authorized:
Reported: 09/10/13

QC Report No: XC89-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.050.051
Date Sampled: 08/29/13
Date Received: 08/29/13

Date Extracted: 09/04/13
Date Analyzed: 09/06/13 23:25
Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	0.10	4.1
218-01-9	Chrysene	0.10	3.4
50-32-8	Benzo(a)pyrene	0.10	1.4
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	0.58
53-70-3	Dibenz(a,h)anthracene	0.10	0.53
TOTBFA	Total Benzofluoranthenes	0.20	2.7

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	87.0%
d14-Dibenzo(a,h)anthracene	46.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C

Sample ID: PZ-12-20130829
SAMPLE

Lab Sample ID: XC89D
LIMS ID: 13-18088
Matrix: Water
Data Release Authorized:
Reported: 09/10/13

QC Report No: XC89-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.050.051
Date Sampled: 08/29/13
Date Received: 08/29/13

Date Extracted: 09/04/13
Date Analyzed: 09/06/13 23:54
Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	52.7%
d14-Dibenzo(a,h)anthracene	73.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C

Sample ID: MB-090413
METHOD BLANK

Lab Sample ID: MB-090413
LIMS ID: 13-18085
Matrix: Water
Data Release Authorized:
Reported: 09/10/13

QC Report No: XC89-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.050.051
Date Sampled: NA
Date Received: NA

Date Extracted: 09/04/13
Date Analyzed: 09/06/13 20:33
Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	60.7%
d14-Dibenzo(a,h)anthracene	81.3%

ANALYTICAL RESOURCES INCORPORATED

SIM SW8270 SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: XC89-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051

Client ID	MNP	DBA	TOT OUT
MB-090413	60.7%	81.3%	0
LCS-090413	62.0%	90.3%	0
LCSD-090413	59.7%	77.7%	0
MW-01D-20130829	61.3%	67.3%	0
PZ-13-20130829	59.7%	60.3%	0
MW-01S-20130829	87.0%	46.7%	0
PZ-12-20130829	52.7%	73.7%	0

	LCS/MB LIMITS	QC LIMITS
(MNP) = d10-2-Methylnaphthalene	(40-120)	(33-120)
(DBA) = d14-Dibenzo(a,h)anthracene	(33-120)	(10-120)

Prep Method: SW3520C
Log Number Range: 13-18085 to 13-18088

FORM-II SIM SW8270

XC89:00020

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS

Sample ID: LCS-090413
LAB CONTROL SAMPLE

Lab Sample ID: LCS-090413
LIMS ID: 13-18085
Matrix: Water
Data Release Authorized:
Reported: 09/10/13

QC Report No: XC89-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.050.051
Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 09/04/13

Date Analyzed LCS: 09/06/13 21:02
LCSD: 09/06/13 21:30
Instrument/Analyst LCS: NT4/JZ
LCSD: NT4/JZ

Sample Amount LCS: 500 mL
LCSD: 500 mL
Final Extract Volume LCS: 0.50 mL
LCSD: 0.50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzo(a)anthracene	2.91	3.00	97.0%	2.97	3.00	99.0%	2.0%
Chrysene	2.58	3.00	86.0%	2.63	3.00	87.7%	1.9%
Benzo(a)pyrene	2.71	3.00	90.3%	2.71	3.00	90.3%	0.0%
Indeno(1,2,3-cd)pyrene	2.58	3.00	86.0%	2.67	3.00	89.0%	3.4%
Dibenz(a,h)anthracene	2.71	3.00	90.3%	2.66	3.00	88.7%	1.9%
Total Benzofluoranthenes	8.43	9.00	93.7%	8.58	9.00	95.3%	1.8%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

SIM Semivolatile Surrogate Recovery

	LCS	LCSD
d10-2-Methylnaphthalene	62.0%	59.7%
d14-Dibenzo(a,h)anthracene	90.3%	77.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
Page 1 of 1

Sample ID: MW-01D-20130829
SAMPLE

Lab Sample ID: XC89A
LIMS ID: 13-18085
Matrix: Water
Data Release Authorized:
Reported: 09/11/13

QC Report No: XC89-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 08/29/13
Date Received: 08/29/13

Date Extracted: 08/31/13
Date Analyzed: 09/05/13 22:32
Instrument/Analyst: ECD1/YZ

Sample Amount: 450 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.28	< 0.28 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery

2,4,6-Tribromophenol	86.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
Page 1 of 1

Sample ID: PZ-13-20130829
SAMPLE

Lab Sample ID: XC89B
LIMS ID: 13-18086
Matrix: Water
Data Release Authorized:
Reported: 09/11/13

QC Report No: XC89-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 08/29/13
Date Received: 08/29/13

Date Extracted: 08/31/13
Date Analyzed: 09/05/13 23:08
Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	88.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
Page 1 of 1

Sample ID: PZ-12-20130829
SAMPLE

Lab Sample ID: XC89D
LIMS ID: 13-18088
Matrix: Water
Data Release Authorized:
Reported: 09/11/13

QC Report No: XC89-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 08/29/13
Date Received: 08/29/13

Date Extracted: 08/31/13
Date Analyzed: 09/06/13 00:21
Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	5.8

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	87.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C

Sample ID: MB-083113
METHOD BLANK

Lab Sample ID: MB-083113
LIMS ID: 13-18085
Matrix: Water
Data Release Authorized:
Reported: 09/11/13

QC Report No: XC89-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: NA
Date Received: NA

Date Extracted: 08/31/13
Date Analyzed: 09/05/13 12:52
Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery

2,4,6-Tribromophenol	94.0%

ANALYTICAL RESOURCES INCORPORATED

SW8041 CHLOROPHENOLICS SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: XC89-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051

Client ID	TBP	TOT OUT
MB-083113	94.0%	0
LCS-083113	89.6%	0
LCSD-083113	96.6%	0
MW-01D-20130829	86.0%	0
PZ-13-20130829	88.8%	0
PZ-12-20130829	87.6%	0

	LCS/MB LIMITS	QC LIMITS
(TBP) = 2,4,6-Tribromophenol	(41-98)	(26-113)

Prep Method: SW3510C
Log Number Range: 13-18085 to 13-18088

FORM-II SW8041

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041

Sample ID: LCS-083113
LCS/LCSD

Lab Sample ID: LCS-083113
LIMS ID: 13-18085
Matrix: Water
Data Release Authorized:
Reported: 09/11/13

QC Report No: XC89-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 08/29/13
Date Received: 08/29/13

Date Extracted LCS/LCSD: 08/31/13

Date Analyzed LCS: 09/05/13 13:26
LCSD: 09/05/13 14:04
Instrument/Analyst LCS: ECD1/YZ
LCSD: ECD1/YZ

Sample Amount LCS: 500 mL
LCSD: 500 mL
Final Extract Volume LCS: 50 mL
LCSD: 50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Pentachlorophenol	2.13	2.50	85.2%	2.31	2.50	92.4%	8.1%

Chlorophenols Surrogate Recovery

	LCS	LCSD
2,4,6-Tribromophenol	89.6%	96.6%

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

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Matrix: Water

QC Report No: XC89-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.050.051

Data Release Authorized:
Reported: 09/03/13

ARI ID	Client ID	Analysis Date	DL	Range	Result
MB-090213	Method Blank	09/02/13	1.0	Gasoline	< 250 U
13-18085		PID3		HC ID	---
				Trifluorotoluene	103%
				Bromobenzene	105%
XC89A	MW-01D-20130829	09/02/13	1.0	Gasoline	< 250 U
13-18085		PID3		HC ID	---
				Trifluorotoluene	104%
				Bromobenzene	104%
XC89B	PZ-13-20130829	09/02/13	1.0	Gasoline	< 250 U
13-18086		PID3		HC ID	---
				Trifluorotoluene	104%
				Bromobenzene	102%
XC89C	MW-01S-20130829	09/02/13	20	**Gasoline**	**48000**
13-18087		PID3		HC ID	GAS/GRO
				Trifluorotoluene	99.7%
				Bromobenzene	104%
XC89D	PZ-12-20130829	09/02/13	1.0	Gasoline	< 250 U
13-18088		PID3		HC ID	---
				Trifluorotoluene	103%
				Bromobenzene	104%
MB-083013	Method Blank	08/30/13	1.0	Gasoline	< 250 U
13-18089		PID3		HC ID	---
				Trifluorotoluene	103%
				Bromobenzene	103%
XC89E	Trip Blanks	08/30/13	1.0	Gasoline	< 250 U
13-18089		PID3		HC ID	---
				Trifluorotoluene	107%
				Bromobenzene	104%

Gasoline values reported in µg/L (ppb)

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

ANALYTICAL RESOURCES INCORPORATED

TPHG WATER SURROGATE RECOVERY SUMMARY

ARI Job: XC89
Matrix: Water

QC Report No: XC89-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.050.051

Client ID	TFT	BBZ	TOT OUT
MB-090213	103%	105%	0
LCS-090213	110%	120%	0
LCSD-090213	109%	118%	0
MW-01D-20130829	104%	104%	0
PZ-13-20130829	104%	102%	0
MW-01S-20130829	99.7%	104%	0
PZ-12-20130829	103%	104%	0
MB-083013	103%	103%	0
LCS-083013	111%	117%	0
LCSD-083013	108%	114%	0
Trip Blanks	107%	104%	0

	LCS/MB LIMITS	QC LIMITS
(TFT) = Trifluorotoluene	(80-120)	(80-120)
(BBZ) = Bromobenzene	(80-120)	(80-120)

Log Number Range: 13-18085 to 13-18089

FORM II TPHG

XC89:00029

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: LCS-083013
LAB CONTROL SAMPLE

Lab Sample ID: LCS-083013
LIMS ID: 13-18089
Matrix: Water
Data Release Authorized:
Reported: 09/03/13

QC Report No: XC89-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.050.051
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 08/30/13 10:50
LCSD: 08/30/13 11:19
Instrument/Analyst LCS: PID3/PKC
LCSD: PID3/PKC

Purge Volume: 5.0 mL

Dilution Factor LCS: 1.0
LCSD: 1.0

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	2630	2500	105%	2640	2500	106%	0.4%

Reported in ug/L (ppb)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	111%	108%
Bromobenzene	117%	114%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: LCS-090213
LAB CONTROL SAMPLE

Lab Sample ID: LCS-090213
LIMS ID: 13-18085
Matrix: Water
Data Release Authorized:
Reported: 09/03/13

QC Report No: XC89-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.050.051
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 09/02/13 10:30
LCSD: 09/02/13 10:58
Instrument/Analyst LCS: PID3/PKC
LCSD: PID3/PKC

Purge Volume: 5.0 mL

Dilution Factor LCS: 1.0
LCSD: 1.0

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	2630	2500	105%	2540	2500	102%	3.5%

Reported in ug/L (ppb)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	110%	109%
Bromobenzene	120%	118%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD by GC/FID-Silica and Acid Cleaned
Extraction Method:
Page 1 of 1

QC Report No: XC89-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051

Matrix: Water
Data Release Authorized: MW
Reported: 09/05/13

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DF	Range/Surrogate	RL	Result
MB-083013	Method Blank	08/30/13	09/04/13	1.00	Diesel Range	100	< 100 U
13-18085	HC ID: ---		FID9	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		99.8%
XC89A	MW-01D-20130829	08/30/13	09/04/13	1.00	Diesel Range	100	< 100 U
13-18085	HC ID: ---		FID9	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		101%
XC89B	PZ-13-20130829	08/30/13	09/04/13	1.00	Diesel Range	100	< 100 U
13-18086	HC ID: **DRO/MOTOR OIL**		FID9	1.0	**Motor Oil Range**	**200**	**540**
					Creosote Range	**100**	**160**
					o-Terphenyl		97.7%
XC89C	MW-01S-20130829	08/30/13	09/04/13	1.00	**Diesel Range**	**100**	**10000 E**
13-18087	HC ID: **CREOSOTE/RRO**		FID9	1.0	**Motor Oil Range**	**200**	**280**
					Creosote Range	**100**	**42000 E**
					o-Terphenyl		NR
XC89C DIL	MW-01S-20130829	08/30/13	09/04/13	1.00	**Diesel Range**	**1000**	**9400**
13-18087	HC ID: **CREOSOTE**		FID9	10	Motor Oil Range	2000	< 2000 U
					Creosote Range	**1000**	**39000**
					o-Terphenyl		95.8%
XC89D	PZ-12-20130829	08/30/13	09/04/13	1.00	Diesel Range	100	< 100 U
13-18088	HC ID: ---		FID9	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		96.0%

Reported in ug/L (ppb)

EFV-Effective Final Volume in mL.
DL-Dilution of extract prior to analysis.
RL-Reporting limit.

Diesel range quantitation on total peaks in the range from C12 to C24.
Motor Oil range quantitation on total peaks in the range from C24 to C38.
Creosote range quantitation on total peaks in the range from C12 to C22.
HC ID: DRO/RRO indicate results of organics or additional hydrocarbons in ranges are not identifiable.

ANALYTICAL RESOURCES INCORPORATED

CLEANED TPHD SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: XC89-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051

Client ID	OTER	TOT OUT
MB-083013	99.8%	0
LCS-083013	100%	0
LCSD-083013	99.7%	0
MW-01D-20130829	101%	0
PZ-13-20130829	97.7%	0
MW-01S-20130829	NR	0
MW-01S-20130829 DL	95.8%	0
PZ-12-20130829	96.0%	0

	LCS/MB LIMITS	QC LIMITS
(OTER) = o-Terphenyl	(50-150)	(50-150)

Prep Method: SW3510C
Log Number Range: 13-18085 to 13-18088

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID-Silica and Acid Cleaned **Sample ID: LCS-083013**
Page 1 of 1 **LCS/LCSD**

Lab Sample ID: LCS-083013
LIMS ID: 13-18085
Matrix: Water
Data Release Authorized:
Reported: 09/05/13

QC Report No: XC89-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 08/29/13
Date Received: 08/29/13

Date Extracted LCS/LCSD: 08/30/13

Date Analyzed LCS: 09/04/13 11:48
LCSD: 09/04/13 12:10
Instrument/Analyst LCS: FID/JLW
LCSD: FID/JLW

Sample Amount LCS: 500 mL
LCSD: 500 mL
Final Extract Volume LCS: 1.0 mL
LCSD: 1.0 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	2810	3000	93.7%	2710	3000	90.3%	3.6%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	100%	99.7%

Results reported in ug/L
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

ARI Job: XC89
Matrix: Water Project: Port of Olympia
Date Received: 08/29/13 21039.050.051

ARI ID	Client ID	Samp Amt	Final Vol	Prep Date
13-18085-083013MB1	Method Blank	500 mL	1.00 mL	08/30/13
13-18085-083013LCS1	Lab Control	500 mL	1.00 mL	08/30/13
13-18085-083013LCSD1	Lab Control Dup	500 mL	1.00 mL	08/30/13
13-18085-XC89A	MW-01D-20130829	500 mL	1.00 mL	08/30/13
13-18086-XC89B	PZ-13-20130829	500 mL	1.00 mL	08/30/13
13-18087-XC89C	MW-01S-20130829	500 mL	1.00 mL	08/30/13
13-18088-XC89D	PZ-12-20130829	500 mL	1.00 mL	08/30/13

Analytical Resources, Incorporated
Analytical Chemists and Consultants

October 4, 2013

Chris Kimmel
Landau Associates, Inc.
130 2nd Avenue S.
Edmonds, WA 98020

RE: Project: Port of Olympia
ARI Job No: XH58

Dear Chris:

Please find enclosed the original *Chain of Custody*, sample receipt documentation, and final results for the project referenced above. Analytical Resources, Inc. accepted one water sample in good condition on October 1, 2013.

The samples were analyzed for NWTPH-Dx, as requested on the *Chain of Custody*.

Please refer to the *Case Narrative* for analytical details regarding the sample.

A copy of this report and all associated ARI raw data will be kept on file with ARI. Should you have any questions or problems, please feel free to contact me at any time.

Sincerely,
ANALYTICAL RESOURCES, INC.

Kelly Bottem
Client Services Manager
(206) 695-6211

Enclosures

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

LANDAU ASSOCIATES

- ☐ **Seattle/Edmonds** (425) 778-0907
- ☒ **Tacoma** (253) 926-2493
- ☐ **Spokane** (509) 327-9737
- ☐ **Portland** (503) 542-1080
- ☐ ______

Chain-of-Custody Record

XH58

Date 10/1/13
Page 1 of 1

Project Name Port of Olympia Project No. 21039.090.091
Project Location/Event Cascade Pole, PZ-13 Re-sampling
Sampler's Name Siena Mott
Project Contact Chris Kimmel
Send Results To Chris Kimmel, Anne Halvorsen

Turnaround Time
- ☒ Standard
- ☐ Accelerated
- ☐ ______

Sample I.D.	Date	Time	Matrix	No. of Containers	Testing Parameters: NWTPH-Dx+creosote											
PZ-13-20131001	10/1/13	1117	H2O	2	X											

Observations/Comments
- X Allow water samples to settle, collect aliquot from clear portion
- X NWTPH-Dx - run acid wash/silica gel cleanup
- __ run samples standardized to ______ product
- __ Analyze for EPH if no specific product identified
- VOC/BTEX/VPH (soil):
  - __ non-preserved
  - __ preserved w/methanol
  - __ preserved w/sodium bisulfate
  - __ Freeze upon receipt
- __ Dissolved metal water samples field filtered
- Other ______

Special Shipment/Handling or Storage Requirements: on ice

Method of Shipment: drop off

Relinquished by	Received by	Relinquished by	Received by
Signature: [signature]	Signature: [signature]	Signature:	Signature:
Printed Name: Siena Mott	Printed Name: Jennifer Millsop	Printed Name:	Printed Name:
Company: Landau Associates	Company: ARI	Company:	Company:
Date 10/01/13 Time 1310	Date 10/1/13 Time 1310	Date Time	Date Time

WHITE COPY - Project File **YELLOW COPY - Laboratory** **PINK COPY - Client Representative**

Rev 8/09

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Landau

Project Name: Port of Olympia

COC No(s). ______ (NA)

Delivered by: Fed-Ex UPS Courier (Hand Delivered) Other: ______

Assigned ARI Job No: XH58

Tracking No: ______ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) 10.4 ___ ___ ___ ___
Time 1312

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: 90877952

Cooler Accepted by: JM Date: 10/1/13 Time: 1310

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES (NO)

What kind of packing material was used? (Bubble Wrap) (Wet Ice) Gel Packs Baggies Foam Block Paper Other: ______

Was sufficient ice used (if appropriate)?	NA	YES	(NO)
Were all bottles sealed in individual plastic bags?		YES	(NO)
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)	(NA)	YES	NO
Were all VOC vials free of air bubbles?	(NA)	YES	NO
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	(NA)	______	

Was Sample Split by ARI: (NA) YES Date/Time. ______ Equipment. ______ Split by: ______

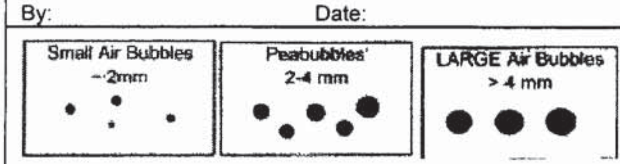
Samples Logged by: TL Date: 10-2-13 Time: 1320

***** Notify Project Manager of discrepancies or concerns *****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:



Small → "sm" (< 2 mm)
Peabubbles → "pb" (2 to < 4 mm)
Large → "lg" (4 to < 6 mm)
Headspace → "hs" (> 6 mm)

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: XH58
Client: Landau Associates, Inc.
Project Event: 21039.090.091
Project Name: Port of Olympia

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	PZ-13-20131001	XH58A	13-21197	Water	10/01/13 11:17	10/01/13 13:10

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Temperature Compliance Form

Cooler#: 1 Temperature(°C): 10.4

Sample ID	Bottle Count	Bottle Type
Samples recieved above 6°C		

Cooler#: Temperature(°C):

Sample ID	Bottle Count	Bottle Type

Cooler#: Temperature(°C):

Sample ID	Bottle Count	Bottle Type

Cooler#: Temperature(°C):

Sample ID	Bottle Count	Bottle Type

Completed by: TS Date: 10-1-13 Time: 1330

ANALYTICAL
RESOURCES
INCORPORATED

Case Narrative

Project: 0021039.090.051
ARI Job No.: XH58
October 4, 2013
Page 1 of 1

Sample Receipt

Please find enclosed the original *Chain of Custody (COC)* record and analytical results for the project referenced above. Analytical Resources, Inc. accepted one water sample in good condition on October 1, 2013. The samples were received at a cooler temperature of 10.4°C. Please see the *Cooler Receipt Form* for further details. Per Landau Associates, select samples were allowed to settle and sample volume was collected from the clear portion.

The following tests were performed on selected samples, as requested on the *Chain of Custody*.

NWTPH-Dx

The samples were extracted on 10/2/13 and analyzed on 10/3/13 - within the method recommended holding time.

Surrogates: All surrogate recoveries were in control.

Samples: There were no anomalies associated with these samples.

LCS/LCSD (s): All percent recoveries and RPDs for the analytes of interest were within compliance.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: Are in control.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS

NWTPHD by GC/FID-Silica and Acid Cleaned
Extraction Method:
Page 1 of 1

QC Report No: XH58-Landau Associates, Inc.
Project: Port of Olympia
21039.090.091

Matrix: Water
Data Release Authorized:
Reported: 10/03/13

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DF	Range/Surrogate	RL	Result
MB-100213	Method Blank	10/02/13	10/03/13	1.00	Diesel Range	100	< 100 U
13-21197	HC ID: ---		FID9	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		85.4%
XH58A	PZ-13-20131001	10/02/13	10/03/13	1.00	Diesel Range	100	< 100 U
13-21197	HC ID: ---		FID9	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		80.7%

Reported in ug/L (ppb)

EFV-Effective Final Volume in mL.
DL-Dilution of extract prior to analysis.
RL-Reporting limit.

Diesel range quantitation on total peaks in the range from C12 to C24.
Motor Oil range quantitation on total peaks in the range from C24 to C38.
Creosote range quantitation on total peaks in the range from C12 to C22.
HC ID: DRO/RRO indicate results of organics or additional hydrocarbons in ranges are not identifiable.

ANALYTICAL RESOURCES INCORPORATED

CLEANED TPHD SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: XH58-Landau Associates, Inc.
Project: Port of Olympia
21039.090.091

Client ID	OTER	TOT OUT
MB-100213	85.4%	0
LCS-100213	77.5%	0
LCSD-100213	79.0%	0
PZ-13-20131001	80.7%	0

	LCS/MB LIMITS	QC LIMITS
(OTER) = o-Terphenyl	(50-150)	(50-150)

Prep Method: SW3510C
Log Number Range: 13-21197 to 13-21197

XH58:00006

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID-Silica and Acid Cleaned **Sample ID: LCS-100213**
Page 1 of 1 **LCS/LCSD**

Lab Sample ID: LCS-100213
LIMS ID: 13-21197
Matrix: Water
Data Release Authorized:
Reported: 10/03/13

QC Report No: XH58-Landau Associates, Inc.
Project: Port of Olympia
21039.090.091
Date Sampled: 10/01/13
Date Received: 10/01/13

Date Extracted LCS/LCSD: 10/02/13
Date Analyzed LCS: 10/03/13 11:05
LCSD: 10/03/13 11:27
Instrument/Analyst LCS: FID/JLW
LCSD: FID/JLW

Sample Amount LCS: 500 mL
LCSD: 500 mL
Final Extract Volume LCS: 1.0 mL
LCSD: 1.0 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	2240	3000	74.7%	2420	3000	80.7%	7.7%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	77.5%	79.0%

Results reported in ug/L
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

Matrix: Water
Date Received: 10/01/13

ARI Job: XH58
Project: Port of Olympia
21039.090.091

ARI ID	Client ID	Samp Amt	Final Vol	Prep Date
13-21197-100213MB1	Method Blank	500 mL	1.00 mL	10/02/13
13-21197-100213LCS1	Lab Control	500 mL	1.00 mL	10/02/13
13-21197-100213LCSD1	Lab Control Dup	500 mL	1.00 mL	10/02/13
13-21197-XH58A	PZ-13-20131001	500 mL	1.00 mL	10/02/13

Analytical Resources, Incorporated
Analytical Chemists and Consultants

March 12, 2014

Chris Kimmel
Landau Associates, Inc.
130 2nd Avenue S.
Edmonds, WA 98020

RE: Project: Port of Olympia
ARI Job No: YA02

Dear Chris:

Please find enclosed the original *Chain of Custody*, sample receipt documentation, and final results for the project referenced above. Analytical Resources, Inc. accepted fifteen water samples and a trip blank in good condition on February 20, 2014.

The samples were analyzed for NWTPH-Gx, NWTPH-Dx, cPAHs by method 8270 SIM, PAHs by method 8270 and PCP on select samples by method 8041, as requested on the *Chain of Custody*.

Please refer to the *Case Narrative* for analytical details regarding the sample.

A copy of this report and all associated ARI raw data will be kept on file with ARI. Should you have any questions or problems, please feel free to contact me at any time.

Sincerely,
ANALYTICAL RESOURCES, INC.

Kelly Bottem
Client Services Manager
(206) 695-6211

Enclosures

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

☐ **Seattle/Edmonds** (425) 778-0907
☒ **Tacoma** (253) 926-2493
☐ **Spokane** (509) 327-9737
☐ **Portland** (503) 542-1080
☐ ______

LANDAU ASSOCIATES

Chain-of-Custody Record

Date 2/19/14
Page 1 of 1

Project Name: Port of Olympia
Project No.: 21039.050.051
Project Location/Event: Cascade Pole, Wet Season
Sampler's Name: Sarah Weeks, Sienna Mott
Project Contact: Chris Kimmel
Send Results To: Chris Kimmel, Anne Halvorsen

Turnaround Time: ☒ Standard ☐ Accelerated ☐ ______

Testing Parameters

Sample I.D.	Date	Time	Matrix	No. of Containers	TPH-Gx	TPH-Dx+creosote	PAHs (8270)	cPAHs SIM	PCP (8270)	PCP (8041)						
P2-30-20140218	2/18/14	[illegible]	H2O	10	X	X	X	X	X	X						
MW-05S-20140218	2/18/14	1130		10	X	X	X	X	X	X						
CW-13-20140218	2/18/14	1459		10	X	X	X	X	X	X						
MW-02D-20140218	2/18/14	1403		10	X	X	X	X	X	X						
P2-19-20140218	2/18/14	1311		10	X	X	X	X	X	X						
P2-18-20140218	2/18/14	1631		10	X	X	X	X	X	X						
MW-05D-20140219	2/19/14	1215		10	X	X	X	X	X	X						
P2-13-20140219	2/19/14	1313		10	X	X	X	X	X	X						
Trip Blanks	2/19/14	-		2	X											
MW-01D-20140219	2/19/14	1413		10	X	X	X	X	X	X						
MW-02S-20140219	2/19/14	1216		10	X	X	X	X	X	X						
P2-12-20140219	2/19/14	1324		10	X	X	X	X	X	X						
LW-4R-20140219	2/19/14	1434		10	X	X	X	X	X	X						
MW-01S-20140219	2/19/14	1532		10	X	X	X	X	X	X						
LW-3-20140219	2/19/14	1640		10	X	X	X	X	X	X						
P2-17-20140219	2/19/14	1643		10	X	X	X	X	X	X						

Observations/Comments

X Allow water samples to settle, collect aliquot from clear portion

X NWTPH-Dx - run acid wash/silica gel cleanup

___ run samples standardized to ______ product

___ Analyze for EPH if no specific product identified

VOC/BTEX/VPH (soil):
___ non-preserved
___ preserved w/methanol
___ preserved w/sodium bisulfate
___ Freeze upon receipt

___ Dissolved metal water samples field filtered

Other: Run all Samples for PCP using 8270. If result = ND, then and only then run PCP by 8041

Special Shipment/Handling or Storage Requirements: coolers on ice (8) total coolers

Method of Shipment: drop off

Relinquished by	Received by	Relinquished by	Received by
Signature: [signature]	Signature: [signature]	Signature	Signature
Printed Name: Sarah Weeks	Printed Name: Jennifer Millsap	Printed Name	Printed Name
Company: Landau Associates	Company: ARI	Company	Company
Date 2/20/14 Time 0635	Date 2/20/14 Time 730	Date ___ Time ___	Date ___ Time ___

WHITE COPY - Project File YELLOW COPY - Laboratory PINK COPY - Client Representative

Rev 8/09

YA02:00002

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Landau Project Name: Port of Olympia

COC No(s): _____ NA Delivered by Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: YA02 Tracking No: _____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES NO JM

Were custody papers included with the cooler? YES NO

Were custody papers properly filled out (ink, signed, etc.) YES NO

Temperature of Cooler(s) (°C) (recommended 2 0-6 0 °C for chemistry) 3.2 5.1 3.1 2.0 5.3 4.6 5.3 4.8

Time: 745

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: _____

Cooler Accepted by: JM Date: 2/20/14 Time: 730

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES NO

What kind of packing material was used? Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other _____

Was sufficient ice used (if appropriate)? NA YES NO

Were all bottles sealed in individual plastic bags? YES NO

Did all bottles arrive in good condition (unbroken)? YES NO

Were all bottle labels complete and legible? YES NO

Did the number of containers listed on COC match with the number of containers received? YES NO

Did all bottle labels and tags agree with custody papers? YES NO

Were all bottles used correct for the requested analyses? YES NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs).. NA YES NO

Were all VOC vials free of air bubbles? NA YES NO

Was sufficient amount of sample sent in each bottle? YES NO

Date VOC Trip Blank was made at ARI NA 2/10/14

Was Sample Split by ARI: NA YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: JM Date: 2/20/14 Time: 844

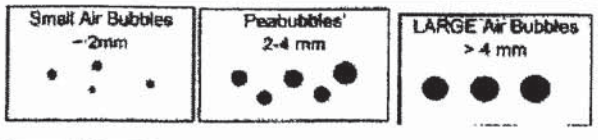
***** Notify Project Manager of discrepancies or concerns *****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

MW-028 – 20140219 = sm in 2 of 2

By: JM Date: 2/20/14



Small → "sm" (< 2 mm)

Peabubbles → "pb" (2 to < 4 mm)

Large → "lg" (4 to < 6 mm)

Headspace → "hs" (> 6 mm)

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: YA02
Client: Landau Associates, Inc.
Project Event: 21039.050.051
Project Name: Port of Olympia

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	PZ-30-20140218	YA02A	14-2844	Water	02/18/14 11:42	02/20/14 07:30
2.	MW-05S-20140218	YA02B	14-2845	Water	02/18/14 11:36	02/20/14 07:30
3.	CW-13-20140218	YA02C	14-2846	Water	02/18/14 14:59	02/20/14 07:30
4.	MW-02D-20140218	YA02D	14-2847	Water	02/18/14 14:03	02/20/14 07:30
5.	PZ-19-20140218	YA02E	14-2848	Water	02/18/14 13:11	02/20/14 07:30
6.	PZ-18-20140218	YA02F	14-2849	Water	02/18/14 16:31	02/20/14 07:30
7.	MW-05D-20140219	YA02G	14-2850	Water	02/19/14 12:15	02/20/14 07:30
8.	PZ-13-20140219	YA02H	14-2851	Water	02/19/14 13:13	02/20/14 07:30
9.	MW-01D-20140219	YA02I	14-2852	Water	02/19/14 14:13	02/20/14 07:30
10.	MW-02S-20140219	YA02J	14-2853	Water	02/19/14 12:16	02/20/14 07:30
11.	PZ-12-20140219	YA02K	14-2854	Water	02/19/14 13:24	02/20/14 07:30
12.	LW-4R-20140219	YA02L	14-2855	Water	02/19/14 14:34	02/20/14 07:30
13.	MW-01S-20140219	YA02M	14-2856	Water	02/19/14 15:32	02/20/14 07:30
14.	LW-3-20140219	YA02N	14-2857	Water	02/19/14 16:40	02/20/14 07:30
15.	PZ-17-20140219	YA02O	14-2858	Water	02/19/14 16:43	02/20/14 07:30
16.	Trip Blanks	YA02P	14-2859	Water	02/18/14	02/20/14 07:30

Case Narrative

Project: 0021039.050.051
ARI Job No.: YA02
March 12, 2014

Sample Receipt

Please find enclosed the original *Chain of Custody (COC)* record and analytical results for the project referenced above. Analytical Resources, Inc. accepted fifteen water samples and a trip blank in good condition on February 20, 2014. The samples were received at cooler temperatures between 2.0 and 5.3°C. Please see the *Cooler Receipt Form* for further details. Per Landau Associates, select samples were allowed to settle and sample volume was collected from the clear portion.

The following tests were performed on selected samples, as requested on the *Chain of Custody*.

Semivolatile Organics by method 8270D Water

The samples were extracted on 2/21/14. The samples were analyzed between 2/28/14 and 3/3/14 - within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: Are in control.

LCS/LSCD (s): Are in control.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: Are in control.

SIM cPAHs by method 8270-SIM Water

The samples were extracted on 2/24/14 and analyzed on 2/28/14 and 3/3/14 - within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: Are in control.

LCS/LSCD (s): All percent recoveries and other RPDs for the analytes of interest were within compliance.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: Are in control.

PCP Only by method 8041

The samples were extracted on 2/21/14 and analyzed on 2/27/14 and 2/28/14 - within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Case Narrative

Project: 0021039.050.051
ARI Job No.: YA02
March 12, 2014
Page 2 of 2

Surrogates: Are in control.

LCS/LSCD (s): All percent recoveries and RPDs for the analytes of interest were within compliance.

Method Blank: The method blank contained contamination. All associated samples that contain analyte have been flagged with a "B" qualifier.

Continuing Calibrations: Are in control.

NWTPH-Gx

The samples were analyzed on 2/21/14 and 2/24/14 - within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: All surrogate recoveries were in control.

LCS/LCSD (s): All percent recoveries and RPDs for the analytes of interest were within compliance.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: Are in control.

NWTPH-Dx

The samples were extracted on 2/21/14 and analyzed on 2/28/14 and 3/3/14 - within the method recommended holding time.

Surrogates: All surrogate recoveries were in control.

Samples: There were no anomalies associated with these samples.

LCS/LCSD (s): All percent recoveries and RPDs for the analytes of interest were within compliance.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: Are in control.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Matrix: Water

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.050.051

Data Release Authorized:
Reported: 02/25/14

ARI ID	Client ID	Analysis Date	DL	Range	Result
MB-022114	Method Blank	02/21/14	1.0	Gasoline	< 250 U
14-2844		PID1		HC ID	---
				Trifluorotoluene	95.4%
				Bromobenzene	82.3%
YA02A	PZ-30-20140218	02/21/14	1.0	Gasoline	< 250 U
14-2844		PID1		HC ID	---
				Trifluorotoluene	102%
				Bromobenzene	88.2%
YA02B	MW-05S-20140218	02/21/14	1.0	Gasoline	< 250 U
14-2845		PID1		HC ID	---
				Trifluorotoluene	107%
				Bromobenzene	94.3%
MB-022414	Method Blank	02/24/14	1.0	Gasoline	< 250 U
14-2846		PID1		HC ID	---
				Trifluorotoluene	97.2%
				Bromobenzene	87.0%
YA02C	CW-13-20140218	02/21/14	1.0	Gasoline	< 250 U
14-2846		PID1		HC ID	---
				Trifluorotoluene	105%
				Bromobenzene	92.5%
YA02D	MW-02D-20140218	02/21/14	1.0	Gasoline	< 250 U
14-2847		PID1		HC ID	---
				Trifluorotoluene	105%
				Bromobenzene	92.9%
YA02E	PZ-19-20140218	02/21/14	1.0	Gasoline	< 250 U
14-2848		PID1		HC ID	---
				Trifluorotoluene	104%
				Bromobenzene	92.9%
YA02F	PZ-18-20140218	02/21/14	1.0	Gasoline	< 250 U
14-2849		PID1		HC ID	---
				Trifluorotoluene	103%
				Bromobenzene	94.4%
YA02G	MW-05D-20140219	02/21/14	1.0	Gasoline	< 250 U
14-2850		PID1		HC ID	---
				Trifluorotoluene	100%
				Bromobenzene	90.9%
YA02H	PZ-13-20140219	02/21/14	1.0	Gasoline	< 250 U
14-2851		PID1		HC ID	---
				Trifluorotoluene	106%
				Bromobenzene	96.1%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Matrix: Water

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.050.051

Data Release Authorized:
Reported: 02/25/14

ARI ID	Client ID	Analysis Date	DL	Range	Result
YA02I 14-2852	MW-01D-20140219	02/21/14 PID1	1.0	Gasoline HC ID Trifluorotoluene Bromobenzene	< 250 U --- 101% 91.7%
YA02J 14-2853	MW-02S-20140219	02/21/14 PID1	1.0	Gasoline HC ID Trifluorotoluene Bromobenzene	< 250 U --- 107% 97.1%
YA02K 14-2854	PZ-12-20140219	02/21/14 PID1	1.0	Gasoline HC ID Trifluorotoluene Bromobenzene	< 250 U --- 102% 91.0%
YA02L 14-2855	LW-4R-20140219	02/21/14 PID1	1.0	Gasoline HC ID Trifluorotoluene Bromobenzene	< 250 U --- 99.6% 89.8%
YA02M 14-2856	MW-01S-20140219	02/24/14 PID1	20	**Gasoline** HC ID Trifluorotoluene Bromobenzene	**47000** GRO 108% 94.7%
YA02N 14-2857	LW-3-20140219	02/24/14 PID1	1.0	Gasoline HC ID Trifluorotoluene Bromobenzene	< 250 U --- 107% 94.0%
YA02O 14-2858	PZ-17-20140219	02/24/14 PID1	1.0	Gasoline HC ID Trifluorotoluene Bromobenzene	< 250 U --- 111% 99.5%
YA02P 14-2859	Trip Blanks	02/21/14 PID1	1.0	Gasoline HC ID Trifluorotoluene Bromobenzene	< 250 U --- 104% 88.6%

Gasoline values reported in µg/L (ppb)

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

ANALYTICAL RESOURCES INCORPORATED

TPHG WATER SURROGATE RECOVERY SUMMARY

ARI Job: YA02
Matrix: Water

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.050.051

Client ID	TFT	BBZ	TOT OUT
MB-022114	95.4%	82.3%	0
LCS-022114	117%	96.9%	0
LCSD-022114	110%	88.6%	0
PZ-30-20140218	102%	88.2%	0
MW-05S-20140218	107%	94.3%	0
MB-022414	97.2%	87.0%	0
LCS-022414	117%	99.6%	0
LCSD-022414	119%	98.8%	0
CW-13-20140218	105%	92.5%	0
MW-02D-20140218	105%	92.9%	0
PZ-19-20140218	104%	92.9%	0
PZ-18-20140218	103%	94.4%	0
MW-05D-20140219	100%	90.9%	0
PZ-13-20140219	106%	96.1%	0
MW-01D-20140219	101%	91.7%	0
MW-02S-20140219	107%	97.1%	0
PZ-12-20140219	102%	91.0%	0
LW-4R-20140219	99.6%	89.8%	0
MW-01S-20140219	108%	94.7%	0
LW-3-20140219	107%	94.0%	0
PZ-17-20140219	111%	99.5%	0
Trip Blanks	104%	88.6%	0

	LCS/MB LIMITS	QC LIMITS
(TFT) = Trifluorotoluene	(80-120)	(80-120)
(BBZ) = Bromobenzene	(80-120)	(80-120)

Log Number Range: 14-2844 to 14-2859

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: LCS-022414
LAB CONTROL SAMPLE

Lab Sample ID: LCS-022414
LIMS ID: 14-2846
Matrix: Water
Data Release Authorized:
Reported: 02/25/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.050.051
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 02/24/14 11:37
LCSD: 02/24/14 12:07
Instrument/Analyst LCS: PID1/PKC
LCSD: PID1/PKC

Purge Volume: 5.0 mL

Dilution Factor LCS: 1.0
LCSD: 1.0

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	2470	2500	98.8%	2480	2500	99.2%	0.4%

Reported in ug/L (ppb)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	117%	119%
Bromobenzene	99.6%	98.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: LCS-022114
LAB CONTROL SAMPLE

Lab Sample ID: LCS-022114
LIMS ID: 14-2844
Matrix: Water
Data Release Authorized:
Reported: 02/25/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.050.051
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 02/21/14 12:53
LCSD: 02/21/14 13:22
Instrument/Analyst LCS: PID1/PKC
LCSD: PID1/PKC

Purge Volume: 5.0 mL

Dilution Factor LCS: 1.0
LCSD: 1.0

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	2380	2500	95.2%	2520	2500	101%	5.7%

Reported in ug/L (ppb)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	117%	110%
Bromobenzene	96.9%	88.6%

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD by GC/FID-Silica and Acid Cleaned
Extraction Method:

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051

Matrix: Water
Data Release Authorized:
Reported: 03/03/14

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DF	Range/Surrogate	RL	Result
MB-022114	Method Blank	02/21/14	02/28/14	1.00	Diesel Range	100	< 100 U
14-2844	HC ID: ---		FID9	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		85.3%
YA02A	PZ-30-20140218	02/21/14	02/28/14	1.00	Diesel Range	100	< 100 U
14-2844	HC ID: ---		FID9	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		91.5%
YA02B	MW-05S-20140218	02/21/14	02/28/14	1.00	Diesel Range	100	< 100 U
14-2845	HC ID: ---		FID9	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		86.2%
YA02C	CW-13-20140218	02/21/14	02/28/14	1.00	Diesel Range	100	< 100 U
14-2846	HC ID: ---		FID9	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		72.5%
YA02D	MW-02D-20140218	02/21/14	02/28/14	1.00	Diesel Range	100	< 100 U
14-2847	HC ID: ---		FID9	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		81.4%
YA02E	PZ-19-20140218	02/21/14	02/28/14	1.00	Diesel Range	100	< 100 U
14-2848	HC ID: ---		FID9	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		88.5%
YA02F	PZ-18-20140218	02/21/14	02/28/14	1.00	Diesel Range	100	< 100 U
14-2849	HC ID: ---		FID9	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		84.1%
YA02G	MW-05D-20140219	02/21/14	02/28/14	1.00	Diesel Range	100	< 100 U
14-2850	HC ID: ---		FID9	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		81.2%
YA02H	PZ-13-20140219	02/21/14	02/28/14	1.00	Diesel Range	100	< 100 U
14-2851	HC ID: ---		FID9	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		82.8%
YA02I	MW-01D-20140219	02/21/14	02/28/14	1.00	Diesel Range	100	< 100 U
14-2852	HC ID: ---		FID9	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		82.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD by GC/FID-Silica and Acid Cleaned
Extraction Method:

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051

Matrix: Water
Data Release Authorized:
Reported: 03/03/14

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DF	Range/Surrogate	RL	Result
YA02J	MW-02S-20140219	02/21/14	02/28/14	1.00	Diesel Range	100	< 100 U
14-2853	HC ID: **MOTOR OIL**		FID9	1.0	**Motor Oil Range**	**200**	**240**
					Creosote Range	100	< 100 U
					o-Terphenyl		70.2%
YA02K	PZ-12-20140219	02/21/14	02/28/14	1.00	Diesel Range	100	< 100 U
14-2854	HC ID: ---		FID9	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		50.0%
YA02L	LW-4R-20140219	02/21/14	02/28/14	1.00	Diesel Range	100	< 100 U
14-2855	HC ID: ---		FID9	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		72.4%
YA02M	MW-01S-20140219	02/21/14	02/28/14	1.00	**Diesel Range**	**100**	**8000 E**
14-2856	HC ID: **CREOSOTE/RRO**		FID9	1.0	**Motor Oil Range**	**200**	**390**
					Creosote Range	**100**	**38000 E**
					o-Terphenyl		69.6%
YA02M DIL	MW-01S-20140219	02/21/14	03/03/14	1.00	**Diesel Range**	**1000**	**7300**
14-2856	HC ID: **CREOSOTE**		FID9	10	Motor Oil Range	2000	< 2000 U
					Creosote Range	**1000**	**34000**
					o-Terphenyl		65.8%
YA02N	LW-3-20140219	02/21/14	02/28/14	1.00	**Diesel Range**	**100**	**2100**
14-2857	HC ID: **DRO/MOTOR OIL**		FID9	1.0	**Motor Oil Range**	**200**	**1200**
					Creosote Range	**100**	**9800 E**
					o-Terphenyl		72.6%
YA02N DIL	LW-3-20140219	02/21/14	03/03/14	1.00	**Diesel Range**	**1000**	**2000**
14-2857	HC ID: **DRO**		FID9	10	Motor Oil Range	2000	< 2000 U
					Creosote Range	**1000**	**9200**
					o-Terphenyl		74.0%
YA02O	PZ-17-20140219	02/21/14	02/28/14	1.00	Diesel Range	100	< 100 U
14-2858	HC ID: ---		FID9	1.0	Motor Oil Range	200	< 200 U
					Creosote Range	100	< 100 U
					o-Terphenyl		84.2%

Reported in ug/L (ppb)

EFV-Effective Final Volume in mL.
DL-Dilution of extract prior to analysis.
RL-Reporting limit.

Diesel range quantitation on total peaks in the range from C12 to C24.
Motor Oil range quantitation on total peaks in the range from C24 to C38.
Creosote range quantitation on total peaks in the range from C12 to C22.
HC ID: DRO/RRO indicate results of organics or additional hydrocarbons in ranges are not identifiable.

ANALYTICAL RESOURCES INCORPORATED

CLEANED TPHD SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051

Client ID	OTER	TOT OUT
MB-022114	85.3%	0
LCS-022114	87.4%	0
LCSD-022114	80.3%	0
PZ-30-20140218	91.5%	0
MW-05S-20140218	86.2%	0
CW-13-20140218	72.5%	0
MW-02D-20140218	81.4%	0
PZ-19-20140218	88.5%	0
PZ-18-20140218	84.1%	0
MW-05D-20140219	81.2%	0
PZ-13-20140219	82.8%	0
MW-01D-20140219	82.2%	0
MW-02S-20140219	70.2%	0
PZ-12-20140219	50.0%	0
LW-4R-20140219	72.4%	0
MW-01S-20140219	69.6%	0
MW-01S-20140219 DL	65.8%	0
LW-3-20140219	72.6%	0
LW-3-20140219 DL	74.0%	0
PZ-17-20140219	84.2%	0

	LCS/MB LIMITS	QC LIMITS
(OTER) = o-Terphenyl	(50-150)	(50-150)

Prep Method: SW3510C
Log Number Range: 14-2844 to 14-2858

FORM-II TPHD

YA02:00014

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID-Silica and Acid Cleaned **Sample ID: LCS-022114**
Page 1 of 1 **LCS/LCSD**

Lab Sample ID: LCS-022114
LIMS ID: 14-2844
Matrix: Water
Data Release Authorized:
Reported: 03/03/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 02/18/14
Date Received: 02/20/14

Date Extracted LCS/LCSD: 02/21/14
Date Analyzed LCS: 02/28/14 14:13
LCSD: 02/28/14 14:34
Instrument/Analyst LCS: FID/JLW
LCSD: FID/JLW

Sample Amount LCS: 500 mL
LCSD: 500 mL
Final Extract Volume LCS: 1.0 mL
LCSD: 1.0 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	2810	3000	93.7%	2630	3000	87.7%	6.6%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	87.4%	80.3%

Results reported in ug/L
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

ARI Job: YA02
Matrix: Water
Project: Port of Olympia
Date Received: 02/20/14
21039.050.051

ARI ID	Client ID	Samp Amt	Final Vol	Prep Date
14-2844-022114MB1	Method Blank	500 mL	1.00 mL	02/21/14
14-2844-022114LCS1	Lab Control	500 mL	1.00 mL	02/21/14
14-2844-022114LCSD1	Lab Control Dup	500 mL	1.00 mL	02/21/14
14-2844-YA02A	PZ-30-20140218	500 mL	1.00 mL	02/21/14
14-2845-YA02B	MW-05S-20140218	500 mL	1.00 mL	02/21/14
14-2846-YA02C	CW-13-20140218	500 mL	1.00 mL	02/21/14
14-2847-YA02D	MW-02D-20140218	500 mL	1.00 mL	02/21/14
14-2848-YA02E	PZ-19-20140218	500 mL	1.00 mL	02/21/14
14-2849-YA02F	PZ-18-20140218	500 mL	1.00 mL	02/21/14
14-2850-YA02G	MW-05D-20140219	500 mL	1.00 mL	02/21/14
14-2851-YA02H	PZ-13-20140219	500 mL	1.00 mL	02/21/14
14-2852-YA02I	MW-01D-20140219	500 mL	1.00 mL	02/21/14
14-2853-YA02J	MW-02S-20140219	500 mL	1.00 mL	02/21/14
14-2854-YA02K	PZ-12-20140219	500 mL	1.00 mL	02/21/14
14-2855-YA02L	LW-4R-20140219	500 mL	1.00 mL	02/21/14
14-2856-YA02M	MW-01S-20140219	500 mL	1.00 mL	02/21/14
14-2857-YA02N	LW-3-20140219	500 mL	1.00 mL	02/21/14
14-2858-YA02O	PZ-17-20140219	500 mL	1.00 mL	02/21/14

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
Page 1 of 1

Sample ID: PZ-30-20140218
SAMPLE

Lab Sample ID: YA02A
LIMS ID: 14-2844
Matrix: Water
Data Release Authorized:
Reported: 03/06/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 02/18/14
Date Received: 02/20/14

Date Extracted: 02/21/14
Date Analyzed: 02/27/14 18:31
Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	**Pentachlorophenol**	**0.25**	**0.52 B**

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	78.4%

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
Page 1 of 1

Sample ID: MW-05S-20140218
SAMPLE

Lab Sample ID: YA02B
LIMS ID: 14-2845
Matrix: Water
Data Release Authorized:
Reported: 03/06/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 02/18/14
Date Received: 02/20/14

Date Extracted: 02/21/14
Date Analyzed: 02/27/14 19:08
Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	81.6%

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
Page 1 of 1

Sample ID: CW-13-20140218
SAMPLE

Lab Sample ID: YA02C
LIMS ID: 14-2846
Matrix: Water
Data Release Authorized: MW
Reported: 03/06/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 02/18/14
Date Received: 02/20/14

Date Extracted: 02/21/14
Date Analyzed: 02/27/14 19:43
Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	76.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
Page 1 of 1

Sample ID: MW-02D-20140218
SAMPLE

Lab Sample ID: YA02D
LIMS ID: 14-2847
Matrix: Water
Data Release Authorized:
Reported: 03/06/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 02/18/14
Date Received: 02/20/14

Date Extracted: 02/21/14
Date Analyzed: 02/27/14 20:21
Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	100%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
Page 1 of 1

Sample ID: PZ-19-20140218
SAMPLE

Lab Sample ID: YA02E
LIMS ID: 14-2848
Matrix: Water
Data Release Authorized:
Reported: 03/06/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 02/18/14
Date Received: 02/20/14

Date Extracted: 02/21/14
Date Analyzed: 02/27/14 20:56
Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	93.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
Page 1 of 1

Sample ID: PZ-18-20140218
SAMPLE

Lab Sample ID: YA02F
LIMS ID: 14-2849
Matrix: Water
Data Release Authorized: MW
Reported: 03/06/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 02/18/14
Date Received: 02/20/14

Date Extracted: 02/21/14
Date Analyzed: 02/27/14 21:32
Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	92.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
Page 1 of 1

Sample ID: MW-05D-20140219
SAMPLE

Lab Sample ID: YA02G
LIMS ID: 14-2850
Matrix: Water
Data Release Authorized:
Reported: 03/06/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 02/19/14
Date Received: 02/20/14

Date Extracted: 02/21/14
Date Analyzed: 02/27/14 22:09
Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	96.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
Page 1 of 1

Sample ID: PZ-13-20140219
SAMPLE

Lab Sample ID: YA02H
LIMS ID: 14-2851
Matrix: Water
Data Release Authorized:
Reported: 03/06/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 02/19/14
Date Received: 02/20/14

Date Extracted: 02/21/14
Date Analyzed: 02/27/14 22:45
Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	97.2%

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
Page 1 of 1

Sample ID: MW-01D-20140219
SAMPLE

Lab Sample ID: YA02I
LIMS ID: 14-2852
Matrix: Water
Data Release Authorized:
Reported: 03/06/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 02/19/14
Date Received: 02/20/14

Date Extracted: 02/21/14
Date Analyzed: 02/27/14 23:21
Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	98.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
Page 1 of 1

Sample ID: MW-02S-20140219
SAMPLE

Lab Sample ID: YA02J
LIMS ID: 14-2853
Matrix: Water
Data Release Authorized: MW
Reported: 03/06/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 02/19/14
Date Received: 02/20/14

Date Extracted: 02/21/14
Date Analyzed: 02/27/14 23:57
Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	85.6%

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
Page 1 of 1

Sample ID: PZ-12-20140219
SAMPLE

Lab Sample ID: YA02K
LIMS ID: 14-2854
Matrix: Water
Data Release Authorized:
Reported: 03/12/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 02/19/14
Date Received: 02/20/14

Date Extracted: 02/21/14
Date Analyzed: 02/28/14 01:09
Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	91.2%

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PCP by GC/ECD Method SW8041
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Sample ID: LW-4R-20140219
SAMPLE

Lab Sample ID: YA02L
LIMS ID: 14-2855
Matrix: Water
Data Release Authorized: MW
Reported: 03/06/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 02/19/14
Date Received: 02/20/14

Date Extracted: 02/21/14
Date Analyzed: 02/28/14 01:47
Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	< 0.25 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	93.6%

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
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Sample ID: LW-3-20140219
SAMPLE

Lab Sample ID: YA02N
LIMS ID: 14-2857
Matrix: Water
Data Release Authorized:
Reported: 03/06/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 02/19/14
Date Received: 02/20/14

Date Extracted: 02/21/14
Date Analyzed: 02/28/14 02:59
Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	3.7 B

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	77.2%

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
Extraction Method: SW3510C
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Sample ID: PZ-17-20140219
SAMPLE

Lab Sample ID: YA020
LIMS ID: 14-2858
Matrix: Water
Data Release Authorized:
Reported: 03/06/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 02/19/14
Date Received: 02/20/14

Date Extracted: 02/21/14
Date Analyzed: 02/28/14 03:34
Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	1.8 B

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	79.2%

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041 **Sample ID: MB-022114**
Extraction Method: SW3510C **METHOD BLANK**

Lab Sample ID: MB-022114
LIMS ID: 14-2844
Matrix: Water
Data Release Authorized:
Reported: 03/06/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: NA
Date Received: NA

Date Extracted: 02/21/14
Date Analyzed: 02/27/14 16:42
Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	1.4

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	83.2%

ANALYTICAL RESOURCES INCORPORATED

SW8041 CHLOROPHENOLICS SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051

Client ID	TBP	TOT OUT
MB-022114	83.2%	0
LCS-022114	105%	0
LCSD-022114	104%	0
PZ-30-20140218	78.4%	0
MW-05S-20140218	81.6%	0
CW-13-20140218	76.8%	0
MW-02D-20140218	100%	0
PZ-19-20140218	93.2%	0
PZ-18-20140218	92.0%	0
MW-05D-20140219	96.0%	0
PZ-13-20140219	97.2%	0
MW-01D-20140219	98.8%	0
MW-02S-20140219	85.6%	0
PZ-12-20140219	91.2%	0
LW-4R-20140219	93.6%	0
LW-3-20140219	77.2%	0
PZ-17-20140219	79.2%	0

	QC LIMITS
(TBP) = 2,4,6-Tribromophenol	(26-120)

Prep Method: SW3510C
Log Number Range: 14-2844 to 14-2858

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041

Sample ID: LCS-022114
LCS/LCSD

Lab Sample ID: LCS-022114
LIMS ID: 14-2844
Matrix: Water
Data Release Authorized:
Reported: 03/12/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 02/18/14
Date Received: 02/20/14

Date Extracted LCS/LCSD: 02/21/14
Date Analyzed LCS: 02/27/14 17:18
LCSD: 02/27/14 17:54
Instrument/Analyst LCS: ECD1/YZ
LCSD: ECD1/YZ

Sample Amount LCS: 500 mL
LCSD: 500 mL
Final Extract Volume LCS: 50 mL
LCSD: 50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Pentachlorophenol	2.10	2.50	84.0%	2.00	2.50	80.0%	4.9%

Chlorophenols Surrogate Recovery

	LCS	LCSD
2,4,6-Tribromophenol	105%	104%

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

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
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Sample ID: PZ-30-20140218
SAMPLE

Lab Sample ID: YA02A
LIMS ID: 14-2844
Matrix: Water
Data Release Authorized:
Reported: 03/04/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.050.051
Date Sampled: 02/18/14
Date Received: 02/20/14

Date Extracted: 02/24/14
Date Analyzed: 02/28/14 18:54
Instrument/Analyst: NT8/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.10	< 0.10 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	57.0%
d14-Dibenzo(a,h)anthracene	46.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
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Sample ID: MW-05S-20140218
SAMPLE

Lab Sample ID: YA02B
LIMS ID: 14-2845
Matrix: Water
Data Release Authorized: MW
Reported: 03/04/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.050.051
Date Sampled: 02/18/14
Date Received: 02/20/14

Date Extracted: 02/24/14
Date Analyzed: 02/28/14 19:22
Instrument/Analyst: NT8/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.10	< 0.10 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	55.7%
d14-Dibenzo(a,h)anthracene	36.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C
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Sample ID: CW-13-20140218
SAMPLE

Lab Sample ID: YA02C
LIMS ID: 14-2846
Matrix: Water
Data Release Authorized: MW
Reported: 03/04/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.050.051
Date Sampled: 02/18/14
Date Received: 02/20/14

Date Extracted: 02/24/14
Date Analyzed: 02/28/14 19:49
Instrument/Analyst: NT8/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.10	< 0.10 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	52.7%
d14-Dibenzo(a,h)anthracene	41.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
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Sample ID: MW-02D-20140218
SAMPLE

Lab Sample ID: YA02D
LIMS ID: 14-2847
Matrix: Water
Data Release Authorized: MW
Reported: 03/04/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.050.051
Date Sampled: 02/18/14
Date Received: 02/20/14

Date Extracted: 02/24/14
Date Analyzed: 02/28/14 20:17
Instrument/Analyst: NT8/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.10	< 0.10 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	52.3%
d14-Dibenzo(a,h)anthracene	53.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
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Sample ID: PZ-19-20140218
SAMPLE

Lab Sample ID: YA02E
LIMS ID: 14-2848
Matrix: Water
Data Release Authorized: MW
Reported: 03/04/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.050.051
Date Sampled: 02/18/14
Date Received: 02/20/14

Date Extracted: 02/24/14
Date Analyzed: 02/28/14 20:45
Instrument/Analyst: NT8/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.10	< 0.10 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	52.3%
d14-Dibenzo(a,h)anthracene	62.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
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Sample ID: PZ-18-20140218
SAMPLE

Lab Sample ID: YA02F
LIMS ID: 14-2849
Matrix: Water
Data Release Authorized:
Reported: 03/04/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.050.051
Date Sampled: 02/18/14
Date Received: 02/20/14

Date Extracted: 02/24/14
Date Analyzed: 02/28/14 21:13
Instrument/Analyst: NT8/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.10	< 0.10 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	56.3%
d14-Dibenzo(a,h)anthracene	47.3%

ANALYTICAL RESOURCES INCORPORATED

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PNAs by SW8270D-SIM GC/MS
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Sample ID: MW-05D-20140219
SAMPLE

Lab Sample ID: YA02G
LIMS ID: 14-2850
Matrix: Water
Data Release Authorized: MW
Reported: 03/04/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.050.051
Date Sampled: 02/19/14
Date Received: 02/20/14

Date Extracted: 02/24/14
Date Analyzed: 02/28/14 21:41
Instrument/Analyst: NT8/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.10	< 0.10 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	54.3%
d14-Dibenzo(a,h)anthracene	58.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C
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Sample ID: PZ-13-20140219
SAMPLE

Lab Sample ID: YA02H
LIMS ID: 14-2851
Matrix: Water
Data Release Authorized:
Reported: 03/04/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.050.051
Date Sampled: 02/19/14
Date Received: 02/20/14

Date Extracted: 02/24/14
Date Analyzed: 02/28/14 22:08
Instrument/Analyst: NT8/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.10	< 0.10 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	51.7%
d14-Dibenzo(a,h)anthracene	56.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C
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Sample ID: MW-01D-20140219
SAMPLE

Lab Sample ID: YA02I
LIMS ID: 14-2852
Matrix: Water
Data Release Authorized:
Reported: 03/04/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.050.051
Date Sampled: 02/19/14
Date Received: 02/20/14

Date Extracted: 02/24/14
Date Analyzed: 02/28/14 22:36
Instrument/Analyst: NT8/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.10	< 0.10 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	55.7%
d14-Dibenzo(a,h)anthracene	55.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C
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Sample ID: MW-02S-20140219
SAMPLE

Lab Sample ID: YA02J
LIMS ID: 14-2853
Matrix: Water
Data Release Authorized: MW
Reported: 03/04/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.050.051
Date Sampled: 02/19/14
Date Received: 02/20/14

Date Extracted: 02/24/14
Date Analyzed: 02/28/14 23:04
Instrument/Analyst: NT8/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.10	< 0.10 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	55.0%
d14-Dibenzo(a,h)anthracene	46.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C
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Sample ID: PZ-12-20140219
SAMPLE

Lab Sample ID: YA02K
LIMS ID: 14-2854
Matrix: Water
Data Release Authorized: MW
Reported: 03/04/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.050.051
Date Sampled: 02/19/14
Date Received: 02/20/14

Date Extracted: 02/24/14
Date Analyzed: 03/03/14 10:58
Instrument/Analyst: NT8/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.10	< 0.10 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	53.3%
d14-Dibenzo(a,h)anthracene	55.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C
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Sample ID: LW-4R-20140219
SAMPLE

Lab Sample ID: YA02L
LIMS ID: 14-2855
Matrix: Water
Data Release Authorized: MW
Reported: 03/04/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.050.051
Date Sampled: 02/19/14
Date Received: 02/20/14

Date Extracted: 02/24/14
Date Analyzed: 03/03/14 11:25
Instrument/Analyst: NT8/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.10	< 0.10 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	51.3%
d14-Dibenzo(a,h)anthracene	51.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C
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Sample ID: MW-01S-20140219
SAMPLE

Lab Sample ID: YA02M
LIMS ID: 14-2856
Matrix: Water
Data Release Authorized: MW
Reported: 03/04/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.050.051
Date Sampled: 02/19/14
Date Received: 02/20/14

Date Extracted: 02/24/14
Date Analyzed: 03/03/14 11:53
Instrument/Analyst: NT8/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
56-55-3	**Benzo(a)anthracene**	**0.10**	**2.1**
218-01-9	**Chrysene**	**0.10**	**2.2**
50-32-8	**Benzo(a)pyrene**	**0.10**	**0.69**
193-39-5	**Indeno(1,2,3-cd)pyrene**	**0.10**	**0.15**
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	**Total Benzofluoranthenes**	**0.10**	**1.4**

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	43.3%
d14-Dibenzo(a,h)anthracene	24.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C
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Sample ID: LW-3-20140219
SAMPLE

Lab Sample ID: YA02N
LIMS ID: 14-2857
Matrix: Water
Data Release Authorized:
Reported: 03/04/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.050.051
Date Sampled: 02/19/14
Date Received: 02/20/14

Date Extracted: 02/24/14
Date Analyzed: 03/03/14 12:21
Instrument/Analyst: NT8/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.10	< 0.10 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	42.7%
d14-Dibenzo(a,h)anthracene	15.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C
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Sample ID: PZ-17-20140219
SAMPLE

Lab Sample ID: YA02O
LIMS ID: 14-2858
Matrix: Water
Data Release Authorized:
Reported: 03/04/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.050.051
Date Sampled: 02/19/14
Date Received: 02/20/14

Date Extracted: 02/24/14
Date Analyzed: 03/03/14 12:49
Instrument/Analyst: NT8/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.10	< 0.10 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	52.0%
d14-Dibenzo(a,h)anthracene	49.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Extraction Method: SW3520C
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Sample ID: MB-022414
METHOD BLANK

Lab Sample ID: MB-022414
LIMS ID: 14-2845
Matrix: Water
Data Release Authorized: MW
Reported: 03/04/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.050.051
Date Sampled: NA
Date Received: NA

Date Extracted: 02/24/14
Date Analyzed: 02/28/14 17:30
Instrument/Analyst: NT8/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.10	< 0.10 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	59.0%
d14-Dibenzo(a,h)anthracene	56.7%

ANALYTICAL RESOURCES INCORPORATED

SIM SW8270 SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051

Client ID	MNP	DBA	TOT OUT
PZ-30-20140218	57.0%	46.7%	0
MB-022414	59.0%	56.7%	0
LCS-022414	55.0%	66.0%	0
LCSD-022414	53.3%	55.0%	0
MW-05S-20140218	55.7%	36.3%	0
CW-13-20140218	52.7%	41.3%	0
MW-02D-20140218	52.3%	53.7%	0
PZ-19-20140218	52.3%	62.7%	0
PZ-18-20140218	56.3%	47.3%	0
MW-05D-20140219	54.3%	58.3%	0
PZ-13-20140219	51.7%	56.0%	0
MW-01D-20140219	55.7%	55.0%	0
MW-02S-20140219	55.0%	46.3%	0
PZ-12-20140219	53.3%	55.3%	0
LW-4R-20140219	51.3%	51.7%	0
MW-01S-20140219	43.3%	24.3%	0
LW-3-20140219	42.7%	15.0%	0
PZ-17-20140219	52.0%	49.0%	0

	LCS/MB LIMITS	QC LIMITS
(MNP) = d10-2-Methylnaphthalene	(37-120)	(31-120)
(DBA) = d14-Dibenzo(a,h)anthracene	(16-132)	(10-125)

Prep Method: SW3520C
Log Number Range: 14-2844 to 14-2858

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
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Sample ID: LCS-022414
LAB CONTROL SAMPLE

Lab Sample ID: LCS-022414
LIMS ID: 14-2845
Matrix: Water
Data Release Authorized:
Reported: 03/04/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
Event: 21039.050.051
Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 02/24/14

Date Analyzed LCS: 02/28/14 17:58
LCSD: 02/28/14 18:26
Instrument/Analyst LCS: NT8/JZ
LCSD: NT8/JZ

Sample Amount LCS: 500 mL
LCSD: 500 mL
Final Extract Volume LCS: 0.50 mL
LCSD: 0.50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzo(a)anthracene	1.99	3.00	66.3%	1.93	3.00	64.3%	3.1%
Chrysene	2.07	3.00	69.0%	2.08	3.00	69.3%	0.5%
Benzo(a)pyrene	1.77	3.00	59.0%	1.76	3.00	58.7%	0.6%
Indeno(1,2,3-cd)pyrene	2.08	3.00	69.3%	2.09	3.00	69.7%	0.5%
Dibenz(a,h)anthracene	2.05	3.00	68.3%	2.02	3.00	67.3%	1.5%
Total Benzofluoranthenes	6.04	9.00	67.1%	6.08	9.00	67.6%	0.7%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

SIM Semivolatile Surrogate Recovery

	LCS	LCSD
d10-2-Methylnaphthalene	55.0%	53.3%
d14-Dibenzo(a,h)anthracene	66.0%	55.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
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Sample ID: PZ-30-20140218
SAMPLE

Lab Sample ID: YA02A
LIMS ID: 14-2844
Matrix: Water
Data Release Authorized:
Reported: 03/04/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 02/18/14
Date Received: 02/20/14

Date Extracted: 02/21/14
Date Analyzed: 02/28/14 15:12
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	**Acenaphthene**	**1.0**	**10**
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
120-12-7	**Anthracene**	**1.0**	**1.0**
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	82.4%
2-Fluorophenol	78.1%
2,4,6-Tribromophenol	108%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
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Sample ID: MW-05S-20140218
SAMPLE

Lab Sample ID: YA02B
LIMS ID: 14-2845
Matrix: Water
Data Release Authorized:
Reported: 03/04/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 02/18/14
Date Received: 02/20/14

Date Extracted: 02/21/14
Date Analyzed: 02/28/14 15:47
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	**Acenaphthene**	**1.0**	**9.0**
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	65.6%
2-Fluorophenol	69.1%
2,4,6-Tribromophenol	96.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
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Sample ID: CW-13-20140218
SAMPLE

Lab Sample ID: YA02C
LIMS ID: 14-2846
Matrix: Water
Data Release Authorized:
Reported: 03/04/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 02/18/14
Date Received: 02/20/14

Date Extracted: 02/21/14
Date Analyzed: 02/28/14 16:21
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	93.6%
2-Fluorophenol	75.5%
2,4,6-Tribromophenol	107%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
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Sample ID: MW-02D-20140218
SAMPLE

Lab Sample ID: YA02D
LIMS ID: 14-2847
Matrix: Water
Data Release Authorized:
Reported: 03/04/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 02/18/14
Date Received: 02/20/14

Date Extracted: 02/21/14
Date Analyzed: 02/28/14 16:55
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	**Acenaphthene**	**1.0**	**6.6**
132-64-9	**Dibenzofuran**	**1.0**	**2.3**
86-73-7	**Fluorene**	**1.0**	**3.2**
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	**Phenanthrene**	**1.0**	**2.0**
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	**1-Methylnaphthalene**	**1.0**	**2.1**
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
d14-p-Terphenyl	100%
2-Fluorophenol	78.9%
2,4,6-Tribromophenol	105%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
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Sample ID: PZ-19-20140218
SAMPLE

Lab Sample ID: YA02E
LIMS ID: 14-2848
Matrix: Water
Data Release Authorized:
Reported: 03/04/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 02/18/14
Date Received: 02/20/14

Date Extracted: 02/21/14
Date Analyzed: 02/28/14 17:29
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
d14-p-Terphenyl	96.4%
2-Fluorophenol	71.5%
2,4,6-Tribromophenol	99.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C

Sample ID: PZ-18-20140218
SAMPLE

Lab Sample ID: YA02F
LIMS ID: 14-2849
Matrix: Water
Data Release Authorized:
Reported: 03/04/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 02/18/14
Date Received: 02/20/14

Date Extracted: 02/21/14
Date Analyzed: 02/28/14 18:03
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
d14-p-Terphenyl	70.4%
2-Fluorophenol	61.1%
2,4,6-Tribromophenol	86.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
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Sample ID: MW-05D-20140219
SAMPLE

Lab Sample ID: YA02G
LIMS ID: 14-2850
Matrix: Water
Data Release Authorized:
Reported: 03/04/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 02/19/14
Date Received: 02/20/14

Date Extracted: 02/21/14
Date Analyzed: 02/28/14 18:37
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
d14-p-Terphenyl	96.8%
2-Fluorophenol	75.2%
2,4,6-Tribromophenol	97.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
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Sample ID: PZ-13-20140219
SAMPLE

Lab Sample ID: YA02H
LIMS ID: 14-2851
Matrix: Water
Data Release Authorized:
Reported: 03/04/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 02/19/14
Date Received: 02/20/14

Date Extracted: 02/21/14
Date Analyzed: 02/28/14 19:11
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	105%
2-Fluorophenol	80.8%
2,4,6-Tribromophenol	108%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: MW-01D-20140219
SAMPLE

Lab Sample ID: YA02I
LIMS ID: 14-2852
Matrix: Water
Data Release Authorized: JB
Reported: 03/04/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 02/19/14
Date Received: 02/20/14

Date Extracted: 02/21/14
Date Analyzed: 02/28/14 19:45
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**1.0**	**1.2**
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
d14-p-Terphenyl	86.8%
2-Fluorophenol	68.5%
2,4,6-Tribromophenol	93.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C

Sample ID: MW-02S-20140219
SAMPLE

Lab Sample ID: YA02J
LIMS ID: 14-2853
Matrix: Water
Data Release Authorized:
Reported: 03/04/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 02/19/14
Date Received: 02/20/14

Date Extracted: 02/21/14
Date Analyzed: 02/28/14 20:19
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	**Acenaphthene**	**1.0**	**1.2**
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
120-12-7	**Anthracene**	**1.0**	**1.1**
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
d14-p-Terphenyl	89.2%
2-Fluorophenol	74.9%
2,4,6-Tribromophenol	104%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: PZ-12-20140219
SAMPLE

Lab Sample ID: YA02K
LIMS ID: 14-2854
Matrix: Water
Data Release Authorized:
Reported: 03/04/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 02/19/14
Date Received: 02/20/14

Date Extracted: 02/21/14
Date Analyzed: 02/28/14 20:53
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
d14-p-Terphenyl	90.8%
2-Fluorophenol	67.5%
2,4,6-Tribromophenol	97.9%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: LW-4R-20140219
SAMPLE

Lab Sample ID: YA02L
LIMS ID: 14-2855
Matrix: Water
Data Release Authorized:
Reported: 03/04/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 02/19/14
Date Received: 02/20/14

Date Extracted: 02/21/14
Date Analyzed: 03/03/14 16:20
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**1.0**	**2.1**
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	59.2%
2-Fluorophenol	68.3%
2,4,6-Tribromophenol	100%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: MW-01S-20140219
SAMPLE

Lab Sample ID: YA02M
LIMS ID: 14-2856
Matrix: Water
Data Release Authorized:
Reported: 03/04/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 02/19/14
Date Received: 02/20/14

Date Extracted: 02/21/14
Date Analyzed: 02/28/14 22:01
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 10.0

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**10**	**2,500 ES**
91-57-6	**2-Methylnaphthalene**	**10**	**830 E**
208-96-8	Acenaphthylene	10	< 10 U
83-32-9	**Acenaphthene**	**10**	**330**
132-64-9	**Dibenzofuran**	**10**	**160**
86-73-7	**Fluorene**	**10**	**120**
87-86-5	**Pentachlorophenol**	**100**	**2,200 ES**
85-01-8	**Phenanthrene**	**10**	**120**
120-12-7	**Anthracene**	**10**	**27**
206-44-0	**Fluoranthene**	**10**	**44**
129-00-0	**Pyrene**	**10**	**22**
56-55-3	Benzo(a)anthracene	10	< 10 U
218-01-9	Chrysene	10	< 10 U
50-32-8	Benzo(a)pyrene	10	< 10 U
193-39-5	Indeno(1,2,3-cd)pyrene	10	< 10 U
53-70-3	Dibenz(a,h)anthracene	10	< 10 U
191-24-2	Benzo(g,h,i)perylene	10	< 10 U
90-12-0	**1-Methylnaphthalene**	**10**	**580**
TOTBFA	Total Benzofluoranthenes	50	< 50 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
d14-p-Terphenyl	83.6%
2-Fluorophenol	84.3%
2,4,6-Tribromophenol	106%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: MW-01S-20140219
DILUTION

Lab Sample ID: YA02M
LIMS ID: 14-2856
Matrix: Water
Data Release Authorized:
Reported: 03/04/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 02/19/14
Date Received: 02/20/14

Date Extracted: 02/21/14
Date Analyzed: 03/03/14 18:02
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 100

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**100**	**6,800**
91-57-6	**2-Methylnaphthalene**	**100**	**1,200**
208-96-8	Acenaphthylene	100	< 100 U
83-32-9	**Acenaphthene**	**100**	**300**
132-64-9	**Dibenzofuran**	**100**	**130**
86-73-7	**Fluorene**	**100**	**110**
87-86-5	**Pentachlorophenol**	**1,000**	**6,600**
85-01-8	**Phenanthrene**	**100**	**120**
120-12-7	Anthracene	100	< 100 U
206-44-0	Fluoranthene	100	< 100 U
129-00-0	Pyrene	100	< 100 U
56-55-3	Benzo(a)anthracene	100	< 100 U
218-01-9	Chrysene	100	< 100 U
50-32-8	Benzo(a)pyrene	100	< 100 U
193-39-5	Indeno(1,2,3-cd)pyrene	100	< 100 U
53-70-3	Dibenz(a,h)anthracene	100	< 100 U
191-24-2	Benzo(g,h,i)perylene	100	< 100 U
90-12-0	**1-Methylnaphthalene**	**100**	**600**
TOTBFA	Total Benzofluoranthenes	500	< 500 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	D
2-Fluorophenol	D
2,4,6-Tribromophenol	D

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C
Page 1 of 1

Sample ID: LW-3-20140219
SAMPLE

Lab Sample ID: YA02N
LIMS ID: 14-2857
Matrix: Water
Data Release Authorized:
Reported: 03/04/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 02/19/14
Date Received: 02/20/14

Date Extracted: 02/21/14
Date Analyzed: 03/03/14 16:54
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**1.0**	**2.0**
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
d14-p-Terphenyl	65.2%
2-Fluorophenol	75.5%
2,4,6-Tribromophenol	115%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C

Sample ID: PZ-17-20140219
SAMPLE

Lab Sample ID: YA02O
LIMS ID: 14-2858
Matrix: Water
Data Release Authorized:
Reported: 03/04/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 02/19/14
Date Received: 02/20/14

Date Extracted: 02/21/14
Date Analyzed: 03/03/14 17:28
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	75.2%
2-Fluorophenol	59.5%
2,4,6-Tribromophenol	91.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Extraction Method: SW3520C

Sample ID: MB-022114
METHOD BLANK

Lab Sample ID: MB-022114
LIMS ID: 14-2844
Matrix: Water
Data Release Authorized:
Reported: 03/04/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: NA
Date Received: NA

Date Extracted: 02/21/14
Date Analyzed: 02/28/14 13:30
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	1.0	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d14-p-Terphenyl	106%
2-Fluorophenol	77.9%
2,4,6-Tribromophenol	103%

ANALYTICAL RESOURCES INCORPORATED

SW8270 SEMIVOLATILES WATER SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051

Client ID	TPH	2FP	TBP	TOT OUT
MB-022114	106%	77.9%	103%	0
LCS-022114	105%	78.4%	109%	0
LCSD-022114	102%	78.1%	113%	0
PZ-30-20140218	82.4%	78.1%	108%	0
MW-05S-20140218	65.6%	69.1%	96.5%	0
CW-13-20140218	93.6%	75.5%	107%	0
MW-02D-20140218	100%	78.9%	105%	0
PZ-19-20140218	96.4%	71.5%	99.5%	0
PZ-18-20140218	70.4%	61.1%	86.4%	0
MW-05D-20140219	96.8%	75.2%	97.6%	0
PZ-13-20140219	105%	80.8%	108%	0
MW-01D-20140219	86.8%	68.5%	93.3%	0
MW-02S-20140219	89.2%	74.9%	104%	0
PZ-12-20140219	90.8%	67.5%	97.9%	0
LW-4R-20140219	59.2%	68.3%	100%	0
MW-01S-20140219	83.6%	84.3%	106%	0
MW-01S-20140219 DL	D	D	D	0
LW-3-20140219	65.2%	75.5%	115%	0
PZ-17-20140219	75.2%	59.5%	91.7%	0

	LCS/MB LIMITS	QC LIMITS
(TPH) = d14-p-Terphenyl	(53-120)	(28-120)
(2FP) = 2-Fluorophenol	(41-120)	(33-120)
(TBP) = 2,4,6-Tribromophenol	(53-126)	(52-120)

Prep Method: SW3520C
Log Number Range: 14-2844 to 14-2858

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
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Sample ID: LCS-022114
LCS/LCSD

Lab Sample ID: LCS-022114
LIMS ID: 14-2844
Matrix: Water
Data Release Authorized:
Reported: 03/04/14

QC Report No: YA02-Landau Associates, Inc.
Project: Port of Olympia
21039.050.051
Date Sampled: 02/18/14
Date Received: 02/20/14

Date Extracted LCS/LCSD: 02/21/14

Date Analyzed LCS: 02/28/14 14:04
LCSD: 02/28/14 14:38
Instrument/Analyst LCS: NT6/JZ
LCSD: NT6/JZ
GPC Cleanup: NO

Sample Amount LCS: 500 mL
LCSD: 500 mL
Final Extract Volume LCS: 0.50 mL
LCSD: 0.50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Naphthalene	22.2	25.0	88.8%	22.6	25.0	90.4%	1.8%
2-Methylnaphthalene	21.8	25.0	87.2%	22.5	25.0	90.0%	3.2%
Acenaphthylene	23.2	25.0	92.8%	25.0	25.0	100%	7.5%
Acenaphthene	24.6	25.0	98.4%	25.6	25.0	102%	4.0%
Dibenzofuran	24.9	25.0	99.6%	25.6	25.0	102%	2.8%
Fluorene	25.2	25.0	101%	26.4	25.0	106%	4.7%
Pentachlorophenol	71.7	75.0	95.6%	71.8	75.0	95.7%	0.1%
Phenanthrene	23.9	25.0	95.6%	24.3	25.0	97.2%	1.7%
Anthracene	23.2	25.0	92.8%	23.8	25.0	95.2%	2.6%
Fluoranthene	24.7	25.0	98.8%	25.2	25.0	101%	2.0%
Pyrene	27.3	25.0	109%	27.4	25.0	110%	0.4%
Benzo(a)anthracene	21.6	25.0	86.4%	22.0	25.0	88.0%	1.8%
Chrysene	24.0	25.0	96.0%	24.4	25.0	97.6%	1.7%
Benzo(a)pyrene	23.0	25.0	92.0%	23.6	25.0	94.4%	2.6%
Indeno(1,2,3-cd)pyrene	27.2	25.0	109%	26.2	25.0	105%	3.7%
Dibenz(a,h)anthracene	20.2	25.0	80.8%	19.5	25.0	78.0%	3.5%
Benzo(g,h,i)perylene	23.8	25.0	95.2%	23.0	25.0	92.0%	3.4%
1-Methylnaphthalene	22.5	25.0	90.0%	23.1	25.0	92.4%	2.6%
Total Benzofluoranthenes	50.2	50.0	100%	49.4	50.0	98.8%	1.6%

Semivolatile Surrogate Recovery

	LCS	LCSD
d14-p-Terphenyl	105%	102%
2-Fluorophenol	78.4%	78.1%
2,4,6-Tribromophenol	109%	113%

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