Groundwater Monitoring Report
February 2010 through May 2011
Cascade Pole Site
Olympia, Washington

December 15, 2011

Prepared for

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1.0 INTRODUCTION

This report summarizes groundwater monitoring activities conducted between February 2010 and March 2011 at the Cascade Pole Site (Site), in Olympia, Washington. This report is the fourth 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 for a 5-year period. 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 for a 5-year period. 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. Only an isolated area for the proposed upgraded treatment facility remains without a low-permeability cap.

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, at which time the long-term goals will be implemented. Because the Site has not been fully capped, due to the pending treatment system construction, the short-term goals are presently in effect for this report.

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 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 groundwater quality monitoring events were conducted at the Site during this reporting period (October 2010 and March 2011). In addition, 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 (February 2010 through March 2011). Groundwater levels were not collected from the following wells due to the wells being inaccessible at the time: LW-3 (August 2010 and November 2010); LW-4R (April 2010, January 2011, and February 2011); and PZ-18 (May 2010 and December 2010).

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 October 2010 during a time of low groundwater elevations, which corresponded to a typical "dry season", and in March 2011 at a time when high groundwater elevations corresponded to a typical "wet season." 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 non-dedicated peristaltic pumps (shallow wells) and dedicated submersible pumps (deep wells). 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 15 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 October 2010 and March 2011 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 central 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. Monthly 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), LW-3 and PZ-17 (southern portion of the Site), and MW-05S and MW-05S (northeast portion of the Site). However, the short-term groundwater elevation criteria were exceeded during the reporting period at the following times and locations:

- Groundwater elevations observed at perimeter well LW-4R exceeded the short-term goal for four of the fourteen measurements collected between February 2010 and March 2011. The goal exceedances occurred in May 2010, September 2010, October 2010, and March 2011. The exceedance frequency was reduced from 2009 data and the four cases exceeded the short-term elevation goal by approximately 0.25 ft or less. Well LW-4R was not measured in April 2010, January 2011, or February 2011 due to the well being inaccessible.
- Groundwater elevations observed at perimeter well MW-02S exceeded the short-term goal for five of the fourteen measurements collected between February 2010 and March 2011. The goal exceedances occurred in February 2010, March 2010, December 2010, January 2011, and March 2011, which are typically considered months during the wet season.

The extraction system continued to operate during this reporting period, which resulted in very few exceedances of the short-term hydraulic control goals. The Port is currently starting construction for a new groundwater treatment system and anticipates that construction of the replacement system will be completed in late 2011.

3.2 ANALYTICAL RESULTS

The groundwater analytical results for the two semiannual sampling events (October 2010 and March 2011) 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

The results for the two groundwater sampling events indicate no concentrations of the tested analytes were above the cleanup screening levels for wells located outside the slurry wall.

No constituent of concern (COC) was detected above the screening levels in any sample collected outside of the slurry wall. A low-level PCP concentration was reported for the October 2010 sample from exterior well PZ-18 (0.91 µg/L), which is below the screening level (3.0 µg/L). Trends in historical and current analytical results for PZ-18 indicate that PCP concentrations ranged from nondetect at the reporting limit (0.25 µg/L) to 1.8 µg/L (July 2008). A low-level naphthalene concentration was reported for the March 2011 sample collected from exterior well PZ-17 (3.2 µg/L), which is well below the screening level (4,900 µg/L). The only other historically reported naphthalene concentration at well PZ-17 was from November 2006 (0.11µg/L).

A number of COCs were detected above the screening levels in the groundwater samples collected from MW-01S, as shown on Figure 3. Naphthalene concentrations were detected at 9,100 µg/L (October 2010) and 5,400 µg/L (March 2011) compared to the cleanup screening level of 4,900 µg/L. PCP concentrations were detected at 3,500 µg/L (October 2010) and 4,200 µg/L (March 2011) compared to the cleanup screening level of 3 µg/L. The TEQ concentrations for cPAHs were calculated at 0.288 µg/L (October 2010) compared to the screening level of 0.1 µg/L, although cPAHs were not detected in the March 2011 sample. TPH-G concentrations at MW-01S were above the cleanup screening level (1,000 µg/L) with concentrations ranging from 36,000 µg/L (October 2010) to 57,000 µg/L (March 2011). TPH-D (4,800 to 5,100 µg/L) and creosote (35,000 to 24,000 µg/L) concentrations at MW-01S were also above the respective cleanup screening levels of 500 µg/L. Exceedances of the cleanup screening levels at well MW-01S are not a compliance issue because the well is located within the groundwater containment area and represents shallow groundwater conditions.

The analytical results for other shallow wells located inside the slurry wall indicate no exceedances of the screening levels.. Low-level naphthalene concentrations were reported at interior shallow wells PZ-12 (3.0 µg/L during March 2011); LW-3 (7.9 µg/L during March 2011); and MW-05S

(4.8 µg/L during October 2011). Low-level PCP concentrations were reported at interior shallow wells PZ-12 (1.8 µg/L during March 2011) and LW-4R (0.42 µg/L during October 2010). A low-level creosote concentration was detected at LW-3 (170µg/L) during the October 2010 sampling event, which is well below the screening level of 500 µg/L.

3.2.2 DEEP WELLS

The analytical results from the two semiannual sampling events indicate no concentrations of the tested analytes above the respective laboratory reporting limits for interior deep well MW-01D and no concentrations reported above the respective screening levels for the three deep interior wells. A low-level naphthalene concentration was detected during the March 2011 event at MW-02D (76.0 µg/L), which is well below the screening level (4,900 µg/L). TPH-G concentrations at MW-02D ranged from 420 to 620 µg/L (October 2010 and March 2011, respectively), which are below the screening level of 1,000 µg/L. Creosote concentrations at MW-02D were 270 and 280 µg/L for October 2010 and March 2011, respectively, which is well below the screening level of 500 µg/L. Historically, creosote concentrations at MW-02D have ranged from not detected at the reporting limit to 4,200 µg/L.

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 a couple of exceptions. Perimeter well pair LW-4R and PZ-18 and well pair MW-02S and PZ-19 exceeded the goal at various times during this reporting period, typically during the wet season. The recently completed Phase III capping activities and improvements to the extraction well pumping system appear to have reduced the number of exceedances of the containment goals.

Analytical results indicate no exceedances of the groundwater screening levels in shallow wells located outside of the slurry wall; shallow interior wells (PZ-12, LW-3, LW-4R, MW-02s, MW-05s, and CW-13); or the interior deep wells. Groundwater cleanup screening levels were exceeded for a number of constituents in samples collected from shallow interior well MW-01S, but these exceedances are not of concern because the well is located inside the containment system perimeter.

The next semiannual sampling event is currently scheduled for September 2011, to coincide with typical low groundwater elevations representative of a "dry season" event. The "wet season" event will be conducted in February or March 2012, depending on precipitation rates. Results of these sampling events will be reported following completion of the 2012 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.

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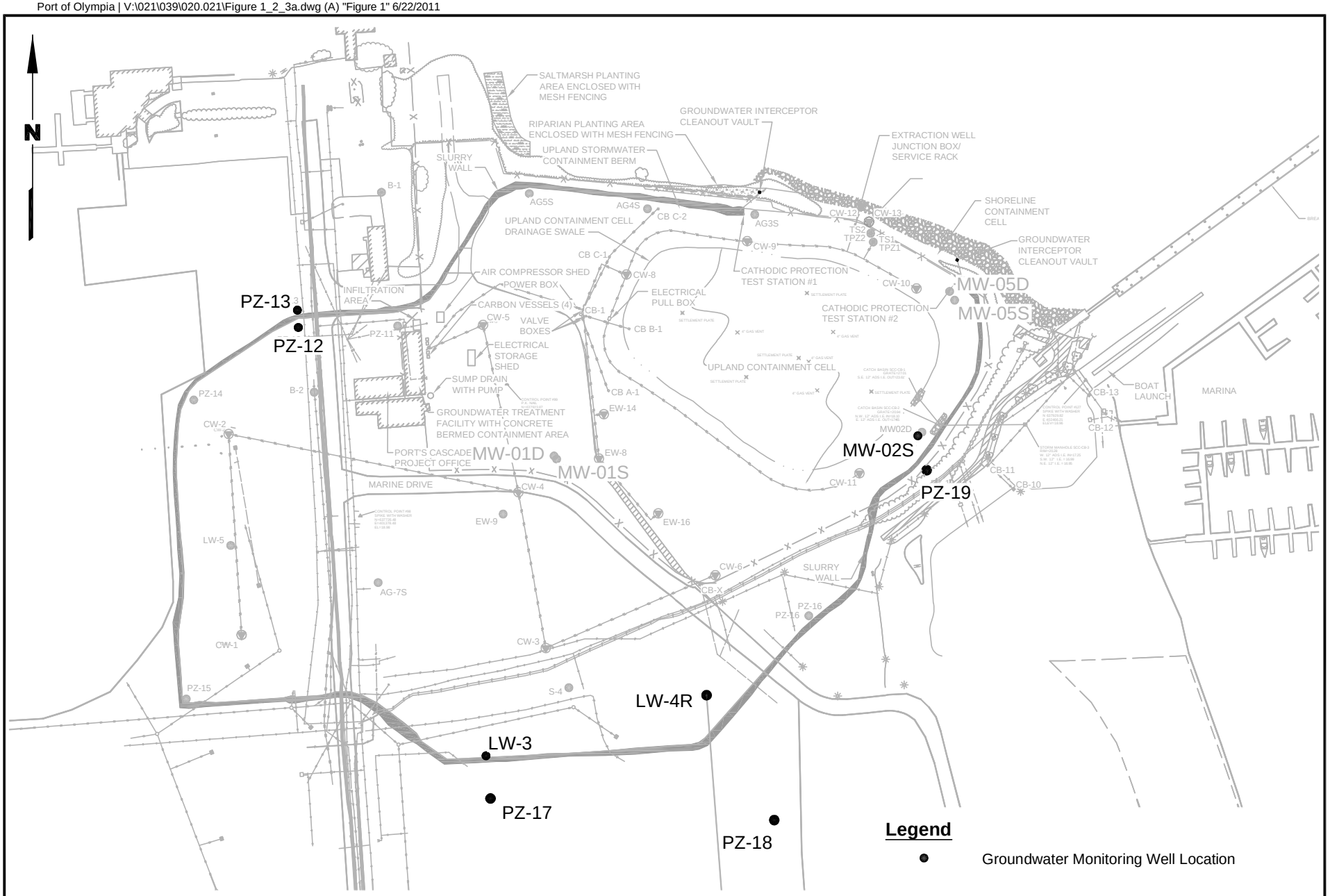
Landau Associates. 1993a. *Feasibility Study, Sediments Operable Unit, Cascade Pole Company Site, Port of Olympia, Washington.* October 18.

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



0 200 400

Scale in Feet

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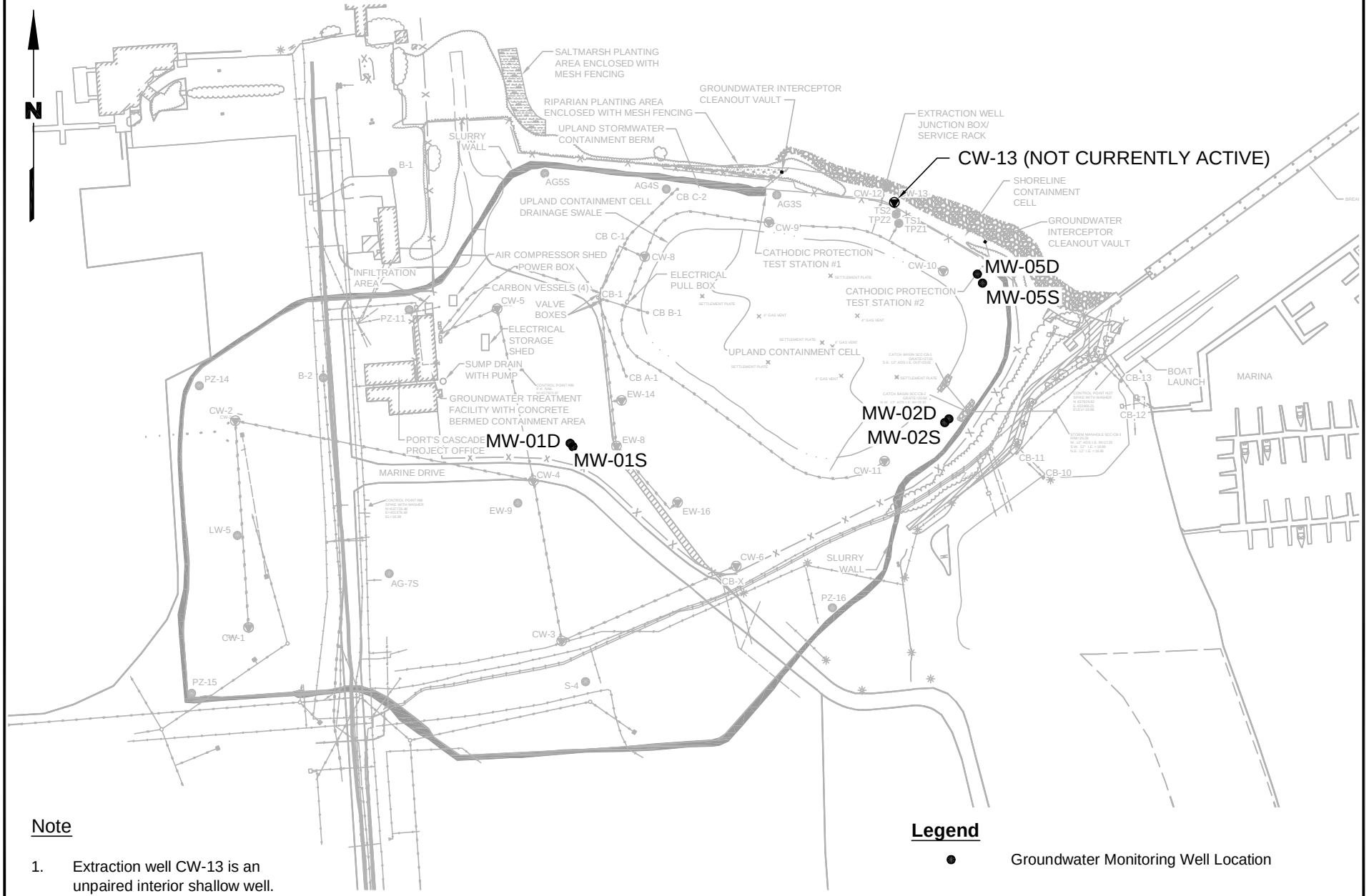
Port of Olympia
Olympia, Washington

Paired Shallow 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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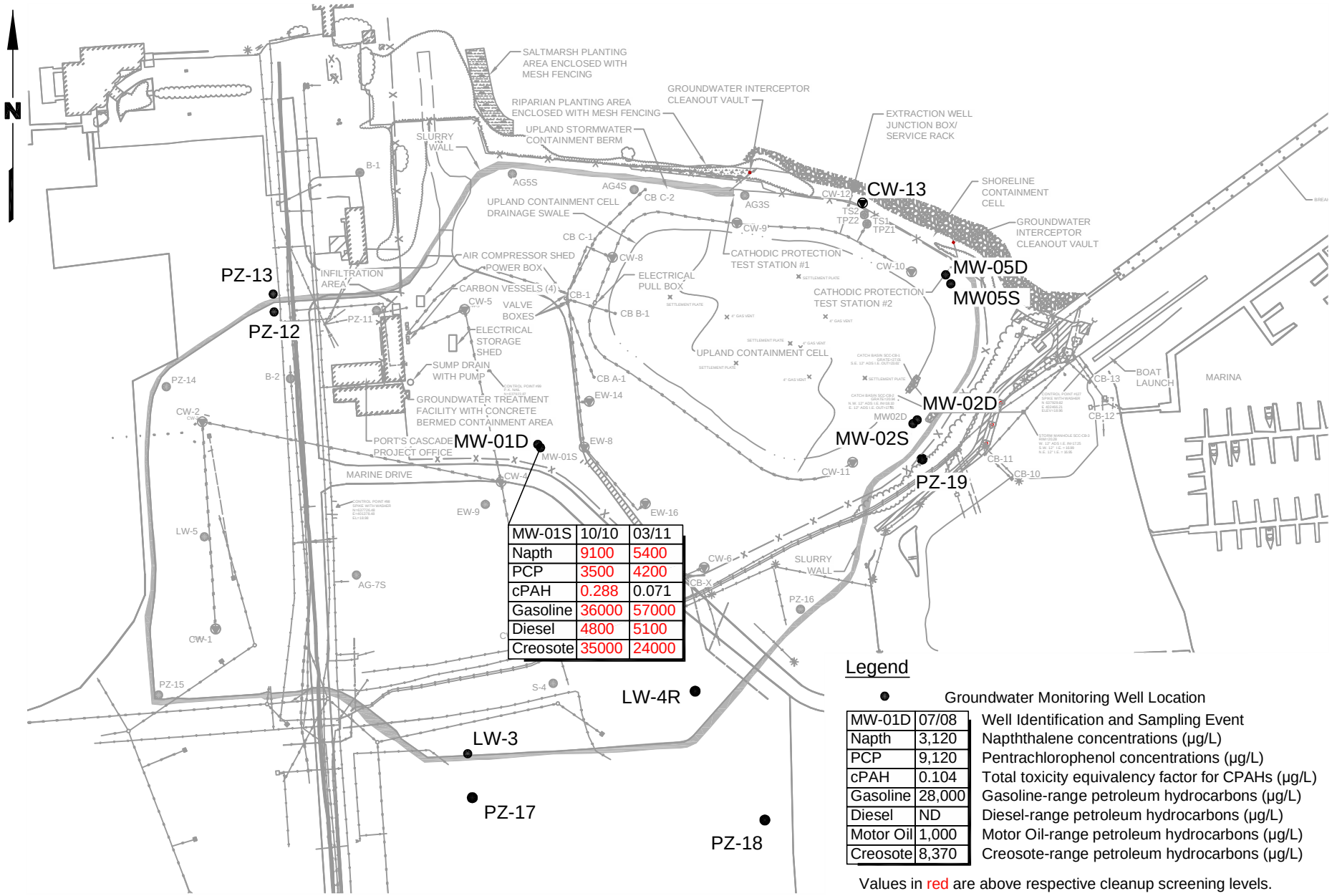
Deep and Shallow Groundwater Monitoring Well Pairs

Figure
2



MW-01S	10/10	03/11
Napth	9100	5400
PCP	3500	4200
cPAH	0.288	0.071
Gasoline	36000	57000
Diesel	4800	5100
Creosote	35000	24000

Legend

Groundwater Monitoring Well Location

MW-01D	07/08 — Well Identification and Sampling Event
Napth	3,120 — Naphthalene concentrations (µg/L)
PCP	9,120 — Pentrachlorophenol concentrations (µg/L)
cPAH	0.104 — Total toxicity equivalency factor for CPAHs (µg/L)
Gasoline	28,000 — Gasoline-range petroleum hydrocarbons (µg/L)
Diesel	ND — Diesel-range petroleum hydrocarbons (µg/L)
Motor Oil	1,000 — Motor Oil-range petroleum hydrocarbons (µg/L)
Creosote	8,370 — Creosote-range petroleum hydrocarbons (µg/L)

Values in red are above respective cleanup screening levels.

0 200 400
Scale in Feet

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Groundwater Quality Exceedances

Figure 3

TABLE 1
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)	Maximum Elevation Goal (b)	Goal Exceeded?
1	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	--	
	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
2	2/21/2010	PZ-17	7.17	20.48	13.31	--	
	2/21/2010	LW-3	6.94	20.03	13.09	15.50	No
	3/17/2010	PZ-17	7.22	20.48	13.26	--	

TABLE 1
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)	Maximum Elevation Goal (b)	Goal Exceeded?
	3/17/2010	LW-3	6.37	20.03	13.66	15.50	--
	4/25/2010	PZ-17	7.04	20.48	13.44	--	
	4/25/2010	LW-3	6.18	20.03	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	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	13.16	15.50	No
	7/23/2010	PZ-17	7.35	20.48	13.13	--	
	7/23/2010	LW-3	6.26	20.03	13.77	15.50	No
	8/30/2010	PZ-17	7.61	20.48	12.87	--	
	8/30/2010	LW-3	NA	19.83	NA	15.50	NA
	9/30/2010	PZ-17	7.64	20.48	12.84	--	
	9/30/2010	LW-3	6.63	19.83	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	13.93	15.50	No
	11/29/2010	PZ-17	7.50	20.48	12.98	--	
	11/29/2010	LW-3	NA	19.83	NA	15.50	NA
	12/25/2010	PZ-17	7.00	20.48	13.48	--	
	12/25/2010	LW-3	6.63	19.83	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	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	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	14.11	15.50	No
3	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

TABLE 1
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)	Maximum Elevation Goal (b)	Goal Exceeded?
	5/16/2010	PZ-18	NA	21.20	NA	--	
	5/16/2010	LW-4R	6.30	22.02	15.72	15.50	Yes
	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	--	
	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	No
	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	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

TABLE 1
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)	Maximum Elevation Goal (b)	Goal Exceeded?
	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
	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
5	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	--	
	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	--	

TABLE 1
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)	Maximum Elevation Goal (b)	Goal Exceeded?
	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	--	
6	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	--	

TABLE 1
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)	Maximum Elevation Goal (b)	Goal Exceeded?
	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		
	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	--	
7	2/21/2010	MW-05S	14.71	29.45	14.74	16.50	No
	2/21/2010	MW-05D	10.63	26.50	15.87	--	--
	3/17/2010	MW-05S	13.53	29.45	15.92	16.50	No
	3/17/2010	MW-05D	11.63	26.50	14.87	--	--
	4/25/2010	MW-05S	16.11	29.45	13.34	16.50	No
	4/25/2010	MW-05D	12.26	26.50	14.24	--	--
	5/16/2010	MW-05S	16.14	29.45	13.31	16.50	No
	5/16/2010	MW-05D	14.97	26.50	11.53	--	--
	6/26/2010	MW-05S	17.07	29.45	12.38	16.50	No
	6/26/2010	MW-05D	15.20	26.50	11.30	--	--
	7/23/2010	MW-05S	17.73	29.45	11.72	16.50	No
	7/23/2010	MW-05D	15.31	26.50	11.19	--	--
	8/30/2010	MW-05S	15.58	29.45	13.87	16.50	No
	8/30/2010	MW-05D	12.01	26.50	14.49	--	--
	9/30/2010	MW-05S	14.32	29.45	15.13	16.50	No
	9/30/2010	MW-05D	12.83	26.50	13.67	--	--

TABLE 1
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)	Maximum Elevation Goal (b)	Goal Exceeded?
	10/18/2010	MW-05S	15.52	29.45	13.93	16.50	No
	10/18/2010	MW-05D	15.58	26.50	10.92	--	--
	11/29/2010	MW-05S	15.14	29.45	14.31	16.50	No
	11/29/2010	MW-05D	10.32	26.50	16.18	--	--
	12/25/2010	MW-05S	13.03	29.45	16.42	16.50	No
	12/25/2010	MW-05D	9.02	26.50	17.48	--	--
	1/29/2011	MW-05S	13.29	29.45	16.16	16.50	No
	1/29/2011	MW-05D	11.80	26.50	14.70	--	--
	2/20/2011	MW-05S	13.22	29.45	16.23	16.50	No
	2/20/2011	MW-05D	14.33	26.50	12.17	--	--
	3/24/2011	MW-05S	13.15	29.45	16.30	16.50	No
	3/24/2011	MW-05D	9.11	26.50	17.39	--	--

NA = Not available.
NM = Not measured.
MLLW = Mean low low water.

(a) Below top of PVC well casing.
(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.

Notes:
- Groundwater elevations determined by subtracting depth to groundwater below top of casing (ft) from top of well casing elevation (MLLW, ft).
- 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.

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

	Cleanup Screening Levels (a)	PZ-12 10/18/2010 RS33A	PZ-12 03/24/2011 SO90O	PZ-13 10/18/2010 RS33B	PZ-13 03/24/2011 SO90E	PZ-17 10/18/2010 RS33D	PZ-17 03/24/2011 SO90L	PZ-18 10/19/2010 RS33L	PZ-18 03/24/2011 SO90F	PZ-19 10/19/2010 RS33H
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)										
EPA Method 8270D / 8270D-SIM										
Naphthalene	4900	1.0 U	**3.0**	1.0 U	1.0 U	1.0 U	**3.2**	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
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
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
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
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
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	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
Carbazole		1.0 UJ	1.0 U	1.0 UJ	1.0 U	1.0 UJ	1.0 U	1.0 UJ	1.0 U	1.0 UJ
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
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
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
Benzo(a)Anthracene		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		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(a)Pyrene		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		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		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		1.0 U	1.0 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	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	0.10 U	0.11 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
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.071	0.071	0.071	0.071	0.071	0.078	0.071	0.071	0.071
PENTACHLOROPHENOL (µg/L)										
EPA Method 8041										
Pentachlorophenol	3	0.25 U	**1.8**	0.25 U	0.25 U	0.25 U	0.25 U	**0.91**	0.25 U	0.25 U
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
Method NWTPH-Dx (µg/L)										
Diesel	500	100 U	110 U	100 U	100 U	100 U	100 U	100 U	110 U	100 U
Motor Oil	500	200 U	220 U	200 U	200 U	200 U	200 U	200 U	220 U	200 U
Creosote Oil	500	100 U	220 U	100 U	200 U	100 U	200 U	100 U	220 U	100 U

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

	Cleanup Screening Levels (a)	PZ-19 03/25/2011 SO90H	LW-3 10/18/2010 RS33C	LW-3 03/24/2011 SO90M	LW-4R 10/19/2010 RS33N	LW-4R 03/24/2011 SO90A	MW-01S 10/19/2010 RS33M	MW-01S 03/25/2011 SO90N	MW-02S 10/18/2010 RS33E	MW-02S 03/25/2011 SO90I
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)										
EPA Method 8270D / 8270D-SIM										
Naphthalene	4900	1.0 U	3.0 U	**7.9**	1.0 U	1.0 U	**9100**	**5400**	1.0 U	1.0 U
2-Methylnaphthalene		1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	**750**	**740**	1.0 U	1.0 U
Acenaphthylene		1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	100 U	1.0 U	1.0 U	1.0 U
Acenaphthene		1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	**190**	**200**	1.0 U	1.0 U
Dibenzofuran		1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	100 U	**64**	1.0 U	1.0 U
Fluorene		1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	100 U	**47**	1.0 U	1.0 U
Pentachlorophenol	3	5.0 U	15 U	5.0 U	5.0 U	5.0 U	**3500**	**4200**	5.0 U	5.0 U
Phenanthrene		1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	100 U	**44**	1.0 U	1.0 U
Carbazole		1.0 U	3.0 UJ	1.0 U	1.0 UJ	1.0 U	100 UJ	**57**	1.0 UJ	1.0 U
Anthracene		1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	100 U	**12**	1.0 U	1.0 U
Fluoranthene		1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	100 U	**7.8**	1.0 U	1.0 U
Pyrene	2600	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	100 U	**3.9**	1.0 U	1.0 U
Benzo(a)Anthracene		0.10 U	0.10 U	1.0 U	0.10 U	0.10 U	**0.58**	1.0 U	0.10 U	0.12 U
Chrysene		0.10 U	0.10 U	1.0 U	0.10 U	0.10 U	**0.51**	1.0 U	0.10 U	0.12 U
Benzo(a)Pyrene		0.10 U	0.10 U	1.0 U	0.10 U	0.10 U	**0.18**	1.0 U	0.10 U	0.12 U
Indeno(1,2,3-cd)Pyrene		0.10 U	0.10 U	1.0 U	0.10 U	0.10 U	0.10 U	1.0 U	0.10 U	0.12 U
Dibenz(a,h)Anthracene		0.10 U	0.10 U	1.0 U	0.10 U	0.10 U	0.10 U	1.0 U	0.10 U	0.12 U
Benzo(g,h,i)Perylene		1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	100 U	1.0 U	1.0 U	1.0 U
1-Methylnaphthalene		1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	**400**	**380**	1.0 U	1.0 U
Total Benzofluoranthenes		0.10 U	0.10 U	1.0 U	0.10 U	0.10 U	**0.35**	1.0 U	0.10 U	0.12 U
cPAH TEQ (b)	0.1 (c)	ND	ND	ND	ND	ND	**0.278**	ND	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.071	0.071	0.71 U	0.071	0.071	**0.288**	0.71 U	0.071	0.085
PENTACHLOROPHENOL (µg/L)										
EPA Method 8041										
Pentachlorophenol	3	0.25 U	0.25 U	0.25 U	**0.42**	0.25 U	NA	NA	0.25 U	0.25 U
PETROLEUM HYDROCARBONS										
Method NWTPH-G (µg/L)										
Gasoline	1,000	250 U	250 U	250 U	250 U	250 U	**36,000**	**57,000**	250 U	250 U
Method NWTPH-Dx (µg/L)										
Diesel	500	110 U	100 U	120 U	100 U	130 U	**4800**	**5100**	100 U	120 U
Motor Oil	500	230 U	200 U	250 U	200 U	260 U	2000 U	**500**	200 U	240 U
Creosote Oil	500	230 U	**170**	250 U	100 U	260 U	**35,000**	**24,000**	100 U	240 U

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

	Cleanup Screening Levels (a)	MW-05S 10/19/2010 RS33I	Dup of MW-05S Duplicate 10/19/2010 RS33J	MW-05S 03/25/2011 SO90C	Dup of MW-05S Duplicate 03/25/2011 SO90B	MW-01D 10/19/2010 RS33O	MW-01D 03/25/2011 SO90J	MW-02D 10/18/2010 RS33F	MW-02D 03/25/2011 SO90G	MW-05D 10/19/2010 RS33K
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)										
EPA Method 8270D / 8270D-SIM										
Naphthalene	4900	**1.8** J	**4.8** J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**76**	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	**13**	1.0 U
Acenaphthylene		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
Acenaphthene		**9.0**	**8.3**	**6.0**	**6.1**	1.0 U	1.0 U	**8.8**	**21**	**4.2**
Dibenzofuran		**2.0**	**2.0**	1.0 U	1.0 U	1.0 U	1.0 U	**3.0**	**7.9**	1.0 U
Fluorene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**11**	**8.4**	1.0 U
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	5.0 U
Phenanthrene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**5.0**	**5.1**	1.0 U
Carbazole		1.0 UJ	1.0 UJ	1.0 U	1.0 U	1.0 UJ	1.0 U	**8.3** J	**5.7**	**1.6** J
Anthracene		1.0 U	1.0 U	**1.2**	**1.2**	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	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
Benzo(a)Anthracene		0.10 U	0.10 U	0.12 U	0.12 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Chrysene		0.10 U	0.10 U	0.12 U	0.12 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	0.12 U	0.12 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	0.12 U	0.12 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	0.12 U	0.12 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	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	1.0 U	1.0 U	1.0 U	1.0 U	**15**	1.0 U
Total Benzofluoranthenes		0.10 U	0.10 U	0.12 U	0.12 U	0.10 U	0.10 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
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.071	0.071	0.085	0.085	0.071	0.071	0.071	0.071	0.071
PENTACHLOROPHENOL (µg/L)										
EPA Method 8041										
Pentachlorophenol	3	0.25 U	0.27 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.26 U
PETROLEUM HYDROCARBONS										
Method NWTPH-G (µg/L)										
Gasoline	1,000	250 U	250 U	250 U	250 U	250 U	250 U	**420**	**620**	250 U
Method NWTPH-Dx (µg/L)										
Diesel	500	100 U	100 U	120 U	120 U	100 U	100 U	100 U	120 U	100 U
Motor Oil	500	200 U	200 U	250 U	230 U	200 U	200 U	200 U	230 U	200 U
Creosote Oil	500	100 U	100 U	250 U	230 U	100 U	200 U	**270**	**280**	100 U

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

	Cleanup Screening Levels (a)	MW-05D 03/25/2011 SO90D	CW-13 10/19/2010 RS33G	CW-13 03/25/2011 SO90K
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)				
EPA Method 8270D / 8270D-SIM				
Naphthalene	4900	1.0 U	1.0 U	1.0 U
2-Methylnaphthalene		1.0 U	1.0 U	1.0 U
Acenaphthylene		1.0 U	1.0 U	1.0 U
Acenaphthene		**1.3**	**5.4**	1.0 U
Dibenzofuran		1.0 U	**1.5**	1.0 U
Fluorene		1.0 U	**2.4**	1.0 U
Pentachlorophenol	3	5.0 U	5.0 U	5.0 U
Phenanthrene		1.0 U	**1.2**	1.0 U
Carbazole		1.0 U	1.0 UJ	1.0 U
Anthracene		1.0 U	1.0 U	1.0 U
Fluoranthene		1.0 U	1.0 U	1.0 U
Pyrene	2600	1.0 U	1.0 U	1.0 U
Benzo(a)Anthracene		0.12 U	0.10 U	0.10 U
Chrysene		0.12 U	0.10 U	0.10 U
Benzo(a)Pyrene		0.12 U	0.10 U	0.10 U
Indeno(1,2,3-cd)Pyrene		0.12 U	0.10 U	0.10 U
Dibenz(a,h)Anthracene		0.12 U	0.10 U	0.10 U
Benzo(g,h,i)Perylene		1.0 U	1.0 U	1.0 U
1-Methylnaphthalene		1.0 U	1.0 U	1.0 U
Total Benzofluoranthenes		0.12 U	0.10 U	0.10 U
cPAH TEQ (b)	0.1 (c)	ND	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.085	0.071	0.071
PENTACHLOROPHENOL (µg/L)				
EPA Method 8041				
Pentachlorophenol	3	0.25 U	0.25 U	0.25 U
PETROLEUM HYDROCARBONS				
Method NWTPH-G (µg/L)				
Gasoline	1,000	250 U	250 U	250 U
Method NWTPH-Dx (µg/L)				
Diesel	500	110 U	100 U	100 U
Motor Oil	500	220 U	200 U	200 U
Creosote Oil	500	220 U	100 U	200 U

ND = Not Detected.
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.
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.

Note: Beginning with October 2010 data, lab no longer reports benzo(b)fluoranthenes or benzo(k)fluoranthenes but does report total benzofluoranthenes.

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)	PZ12 6/27/2005 2005060439-08	PZ12 3/20/2006 2006030253-01	PZ12 11/11/2006 2006110182-02	PZ12 10/1/2007 LS10B	PZ12 3/20/2008 MO26G	PZ12 7/29/2008 NH92A	PZ12 1/8/2009 OH11B	PZ12 8/11/2009 PK28A	PZ12 1/15/2010 QF84J	PZ-12 10/18/2010 RS33A	PZ-12 03/24/2011 SO90O	PZ13 6/27/2005 2005060392-01
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)													
EPA Method 8270 / 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**	0.10 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	NA
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	0.10 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	0.10 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	NA
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	0.10 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	NA
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	0.10 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	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	0.10 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	0.10 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	0.10 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
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
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	0.10 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	0.10 UJ	0.10 U	NA	NA	0.10 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	0.10 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
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
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	0.10 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	NA
Total Benzofluoranthenes											0.10 U	0.10 U	
cPAH TEQ (b)	0.1 (c)	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	0.076
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**	10 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	50 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
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	500 U
Creosote Oil	500	NA	NA	NA	NA	250 U	500 U	250 U	500 U	250 U	100 U	220 U	NA
BTEX (µg/L)													
Method SW8021B/SW021B MOD													
Benzene	5	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
Ethylbenzene	700	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
o-Xylene	1,000	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)	PZ13 3/19/2006 2006030241-01	PZ13 11/11/2006 2006110182-01	PZ13 9/30/2007 LS10A	PZ13 3/19/2008 MO26H	PZ13 7/29/2008 NH92B	PZ13 1/8/2009 OH11A	PZ13 8/11/2009 PK28B	PZ13 9/21/2009 PP40A	PZ13 1/14/2010 QF84F	PZ-13 10/18/2010 RS33B	PZ-13 03/24/2011 SO90E	PZ17 6/28/2005 2005060439-04	PZ17 3/20/2006 2006030253-02
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)														
EPA Method 8270 / 8270D-SIM														
Naphthalene	4900	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	0.10 U	NA
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	NA	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	0.10 U	NA
Acenaphthene		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	0.10 U	NA
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	NA	NA
Fluorene		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	0.10 U	NA
Pentachlorophenol	3	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	NA	NA
Phenanthrene		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	0.10 U	NA
Carbazole		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	NA	NA
Anthracene		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	0.10 U	NA
Fluoranthene		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	0.10 U	NA
Pyrene	2600	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	0.10 U	NA
Benzo(a)Anthracene		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
Chrysene		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
Benzo(b)Fluoranthene		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	0.10 U	0.10 U
Benzo(k)Fluoranthene		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	0.10 U	0.10 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	1.0 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	1.0 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	1.0 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	1.0 U	1.0	1.0 U	1.0 U	1.0 U	1.0 U	0.10 U	NA
1-Methylnaphthalene		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	NA	NA
Total Benzofluoranthenes											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
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	0.76	0.076	0.071	0.071	0.076	0.076
PENTACHLOROPHENOL (µg/L)														
EPA Method 8041 / 8270C,D														
Pentachlorophenol	3	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	10 U	0.10 U
PETROLEUM HYDROCARBONS														
Method NWTPH-G (µg/L)														
Gasoline	1,000	50 U	**112**	250 U	250 U	250 U	250 U	**1,900**	**310**	250 U	250 U	250 U	50 U	50 U
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
Motor Oil	500	500 U	500 U	500 U	500 U	500 U	500 U	250 U		500 U	200 U	200 U	500 U	500 U
Creosote Oil	500	NA	NA	NA	250 U	500 U	250 U	500 U		250 U	100 U	200 U	NA	NA
BTEX (µg/L)														
Method SW8021B/SW021B MOD														
Benzene	5	NA	NA	NA	NA	NA	NA	NA	1 U	NA	NA	NA	NA	NA
Toluene	1,000	NA	NA	NA	NA	NA	NA	NA	**56**	NA	NA	NA	NA	NA
Ethylbenzene	700	NA	NA	NA	NA	NA	NA	NA	1 U	NA	NA	NA	NA	NA
m, p-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	1 U	NA	NA	NA	NA	NA
o-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	1 U	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)	PZ17 11/13/2006 2006110200-01	PZ17 10/1/2007 LS10E	PZ17 3/19/2008 MO07B	PZ17 7/28/2008 NH70B	PZ17 1/8/2009 OH11C	PZ17 8/10/2009 PJ99B	PZ17 1/14/2010 QF84C	PZ-17 10/18/2010 RS33D	PZ-17 03/24/2011 SO90L	PZ18 6/29/2005 2005060439-01	PZ18 3/21/2006 2006030261-01
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)												
EPA Method 8270 / 8270D-SIM												
Naphthalene	4900	**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**	0.10 U	NA
2-Methylnaphthalene		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	NA	NA
Acenaphthylene		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	0.10 U	NA
Acenaphthene		**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	0.10 U	NA
Dibenzofuran		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	NA	NA
Fluorene		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	0.10 U	NA
Pentachlorophenol	3	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	NA	NA
Phenanthrene		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	0.10 U	NA
Carbazole		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	NA	NA
Anthracene		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	0.10 U	NA
Fluoranthene		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	0.10 U	NA
Pyrene	2600	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	0.10 U	NA
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	0.11 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	0.11 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	NA	NA	0.10 U	0.10 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	NA	NA	0.10 U	0.10 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	0.10 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	0.11 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	0.11 U	0.10 U	0.10 U
Benzo(g,h,i)Perylene		0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.2 U	1.0 U	1.0 U	1.0 U	0.10 U	NA
1-Methylnaphthalene		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	NA	NA
Total Benzofluoranthenes									0.10 U	0.11 U		
cPAH TEQ (b)	0.1 (c)	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	0.071	0.078	0.076	0.076
PENTACHLOROPHENOL (µg/L)												
EPA Method 8041 / 8270C,D												
Pentachlorophenol	3	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	10 U	0.10 U
PETROLEUM HYDROCARBONS												
Method NWTPH-G (µg/L)												
Gasoline	1,000	50 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	50 U	50 U
Method NWTPH-Dx (µg/L)												
Diesel	500	100 U	250 U	250 U	250 U	250 U	250 U	250 U	100 U	100 U	100 UJ	100 U
Motor Oil	500	500 U	500 U	500 U	500 U	500 U	500 U	500 U	200 U	200 U	500 UJ	500 U
Creosote Oil	500	NA	NA	250 U	500 U	250 U	250 U	250 U	100 U	200 U	NA	**140**
BTEX (µg/L)												
Method SW8021B/SW021B MOD												
Benzene	5	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
Ethylbenzene	700	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
o-Xylene	1,000	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)	PZ18 11/14/2006 2006110239-01	PZ18 10/1/2007 LS10C	PZ18 3/19/2008 MO07C	PZ18 7/28/2008 NH70C	PZ18 8/28/2008 NM64A	PZ18 1/8/2009 OH11E	PZ18 8/10/2009 PJ99C	PZ18 9/21/2009 PP40B	PZ18 1/15/2010 QF84K	PZ-18 10/19/2010 RS33L	PZ-18 03/24/2011 SO90F	PZ19 6/29/2005 2005060439-03	PZ19 3/22/2006 2006030294-04
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)														
EPA Method 8270 / 8270D-SIM														
Naphthalene	4900	**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	**0.13**	NA
2-Methylnaphthalene		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	NA	NA
Acenaphthylene		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	0.10 U	NA
Acenaphthene		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	0.10 U	NA
Dibenzofuran		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	NA	NA
Fluorene		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	0.10 U	NA
Pentachlorophenol	3	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	NA	NA
Phenanthrene		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	0.10 U	NA
Carbazole		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	NA	NA
Anthracene		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	0.10 U	NA
Fluoranthene		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	0.10 U	NA
Pyrene	2600	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	0.10 U	NA
Benzo(a)Anthracene		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	0.10 U	0.10 U
Chrysene		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	0.10 U	0.10 U
Benzo(b)Fluoranthene		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	0.10 U	0.10 U
Benzo(k)Fluoranthene		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	0.10 U	0.10 U
Benzo(a)Pyrene		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	0.10 U	0.10 U
Indeno(1,2,3-cd)Pyrene		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	0.10 U	0.10 U
Dibenz(a,h)Anthracene		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	0.10 U	0.10 U
Benzo(g,h,i)Perylene		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	0.10 U	NA
1-Methylnaphthalene		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	NA	NA
Total Benzofluoranthenes											0.10 U	0.10 U		
cPAH TEQ (b)	0.1 (c)	ND	ND	ND	ND	NA	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	NA	0.076	0.076	0.76	0.083	0.071	0.071	0.076	0.076
PENTACHLOROPHENOL (µg/L)														
EPA Method 8041 / 8270C,D														
Pentachlorophenol	3	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	10 U	0.10 U
PETROLEUM HYDROCARBONS														
Method NWTPH-G (µg/L)														
Gasoline	1,000	50 U	250 U	250 U	250 U	NA	250 U	250 U	NA	250 U	250 U	250 U	50 U	50 U
Method NWTPH-Dx (µg/L)														
Diesel	500	100 U	250 U	250 U	250 U	NA	250 U	250 U	NA	250 U	100 U	110 U	**106**	100 U
Motor Oil	500	500 U	500 U	500 U	500 U	NA	500 U	500 U	NA	500 U	200 U	220 U	500 U	500 U
Creosote Oil	500	NA	NA	250 U	500 U	NA	250 U	250 U	NA	250 U	100 U	220 U	NA	NA
BTEX (µg/L)														
Method SW8021B/SW021B MOD														
Benzene	5	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
Ethylbenzene	700	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
o-Xylene	1,000	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)	PZ19 11/14/2006 2006110239-04	PZ19 10/2/2007 LS21E	PZ19 3/20/2008 MO26B	PZ19 7/28/2008 NH70E	PZ19 8/28/2008 NM64B	PZ19 1/9/2009 OH25C	PZ19 8/11/2009 PK28E	PZ19 1/18/2010 QG15C	PZ-19 10/19/2010 RS33H	PZ-19 03/25/2011 SO90H	LW3 6/28/2005 2005060439-05	LW3 3/23/2006 2006030316-02	LW3 11/13/2006 2006110200-02
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)														
EPA Method 8270 / 8270D-SIM														
Naphthalene	4900	0.10 U	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	**0.21**	NA	**0.12**
2-Methylnaphthalene		NA	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	NA	NA	NA
Acenaphthylene		0.10 U	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	0.10 U	NA	0.10 U
Acenaphthene		0.10 U	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	0.10 U	NA	0.10 U
Dibenzofuran		NA	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	NA	NA	NA
Fluorene		0.10 U	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	0.10 U	NA	0.10 U
Pentachlorophenol	3	NA	5.0 U	5.0 U	5.0 U	NA	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	NA	NA	NA
Phenanthrene		0.10 U	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	0.10 U	NA	0.10 U
Carbazole		NA	1.0 U	1.0 U	1.0 U	NA	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U	NA	NA	NA
Anthracene		0.10 U	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	0.10 U	NA	0.10 U
Fluoranthene		0.10 U	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	0.10 U	NA	0.10 U
Pyrene	2600	0.10 U	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	0.10 U	NA	0.10 U
Benzo(a)Anthracene		0.10 U	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 UJ	0.10 U
Chrysene		0.10 U	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 UJ	0.10 U
Benzo(b)Fluoranthene		0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 U	0.10 U	NA	NA	0.10 U	0.10 UJ	0.10 U
Benzo(k)Fluoranthene		0.10 U	0.10 U	0.10 U	0.10 U	NA	0.10 U	0.10 UJ	0.10 U	NA	NA	0.10 U	0.10 UJ	0.10 U
Benzo(a)Pyrene		0.10 U	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 UJ	0.10 U
Indeno(1,2,3-cd)Pyrene		0.10 U	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 UJ	0.10 U
Dibenz(a,h)Anthracene		0.10 U	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 UJ	0.10 U
Benzo(g,h,i)Perylene		0.10 U	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	0.10 U	NA	0.10 U
1-Methylnaphthalene		NA	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	NA	NA	NA
Total Benzofluoranthenes										0.10 U	0.10 U			
cPAH TEQ (b)	0.1 (c)	ND	ND	ND	ND	NA	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	NA	0.076	0.076	0.076	0.071	0.071	0.076	0.076	0.076
PENTACHLOROPHENOL (µg/L)														
EPA Method 8041 / 8270C,D														
Pentachlorophenol	3	0.10 U	0.21 U	0.25 U	**0.70** J (f)	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	10 U	0.10 U	0.10 U
PETROLEUM HYDROCARBONS														
Method NWTPH-G (µg/L)														
Gasoline	1,000	50 U	250 U	250 U	250 U	NA	250 U	250 U	250 U	250 U	250 U	**1,750** (e)	**53**	50 U
Method NWTPH-Dx (µg/L)														
Diesel	500	100 U	250 U	250 U	250 U	NA	250 U	250 U	250 U	100 U	110 U	100 U	100 U	100 U
Motor Oil	500	500 U	500 U	500 U	500 U	NA	500 U	250 U	500 U	200 U	230 U	500 U	500 U	500 U
Creosote Oil	500	NA	NA	250 U	500 U	NA	250 U	500 U	250 U	100 U	230 U	NA	NA	NA
BTEX (µg/L)														
Method SW8021B/SW021B MOD														
Benzene	5	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
Ethylbenzene	700	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
o-Xylene	1,000	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)	Dup of LW3 PZ30 11/13/2006 2006110200-04	LW3 10/1/2007 LS10G	LW3 3/19/2008 MO07A	LW3 7/28/2008 NH70A	LW3 1/8/2009 OH11D	LW3 8/10/2009 PJ99A	LW3 1/14/2010 QF84E	LW-3 10/18/2010 RS33C	LW-3 03/24/2011 SO90M	LW-4R 6/29/2005 2005060439-02	LW-4R 3/23/2006 2006030316-01	LW-4R 11/14/2006 2006110239-02	LW-4R 10/1/2007 LS10D
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)														
EPA Method 8270 / 8270D-SIM														
Naphthalene	4900	**0.13**	1.0 U	1.0 U	1.0 U	1.0 U	2.0 UJ	1.0 U	3.0 U	**7.9**	0.10 U	NA	0.10 U	1.0 U
2-Methylnaphthalene		NA	1.0 U	1.0 U	1.0 U	1.0 U	2.0 UJ	1.0 U	3.0 U	1.0 U	NA	NA	NA	1.0 U
Acenaphthylene		0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 UJ	1.0 U	3.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U
Acenaphthene		0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 UJ	1.0 U	3.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U
Dibenzofuran		NA	1.0 U	1.0 U	1.0 U	1.0 U	2.0 UJ	1.0 U	3.0 U	1.0 U	NA	NA	NA	1.0 U
Fluorene		0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 UJ	1.0 U	3.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U
Pentachlorophenol	3	NA	5.0 U	5.0 U	5.0 U	5.0 U	10 UJ	5.0 U	15 U	5.0 U	NA	NA	NA	5.0 U
Phenanthrene		0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 UJ	1.0 U	3.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U
Carbazole		NA	1.0 U	1.0 U	1.0 U	1.0 U	2.0 UJ	1.0 U	3.0 UJ	1.0 U	NA	NA	NA	1.0 U
Anthracene		0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 UJ	1.0 U	3.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U
Fluoranthene		0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 UJ	1.0 U	3.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U
Pyrene	2600	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 UJ	1.0 U	3.0 U	1.0 U	0.10 U	NA	0.10 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
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
Benzo(b)Fluoranthene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	NA	0.10 U	0.10 U	0.10 U	0.10 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	NA	NA	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	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
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
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
Benzo(g,h,i)Perylene		0.10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 UJ	1.0 U	3.0 U	1.0 U	0.10 U	NA	0.10 U	1.0 U
1-Methylnaphthalene		NA	1.0 U	1.0 U	1.0 U	1.0 U	2.0 UJ	1.0 U	3.0 U	1.0 U	NA	NA	NA	1.0 U
Total Benzofluoranthenes									0.10 U	1.0 U				
cPAH TEQ (b)	0.1 (c)	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	0.071	0.71 U	0.076	0.076	0.076	0.076
PENTACHLOROPHENOL (µg/L)														
EPA Method 8041 / 8270C,D														
Pentachlorophenol	3	0.10 U	**3.6** J	0.25 U	**0.57**	0.25 U	0.28 U	0.25 U	0.25 U	0.25 U	10 U	0.10 U	0.10 U	0.25 U
PETROLEUM HYDROCARBONS														
Method NWTPH-G (µg/L)														
Gasoline	1,000	50 U	250 U	250 U	250 U	250 U	**20,000**	**1800**	250 U	250 U	50 U	50 U	50 U	250 U
Method NWTPH-Dx (µg/L)														
Diesel	500	100 U	250 U	250 U	250 U	250 U	**770**	**1200**	100 U	120 U	100 U	100 U	100 U	250 U
Motor Oil	500	500 U	500 U	500 U	500 U	500 U	**1,300**	**1200**	200 U	250 U	500 U	500 U	500 U	500 U
Creosote Oil	500	NA	NA	250 U	500 U	250 U	**2,000**	**4400**	**170**	250 U	NA	NA	NA	NA
BTEX (µg/L)														
Method SW8021B/SW021B MOD														
Benzene	5	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
Ethylbenzene	700	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
o-Xylene	1,000	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 3/19/2008 MO07D	LW-4R 7/28/2008 NH70D	LW-4R 1/8/2009 OH11F	LW-4R 8/10/2009 PJ99D	LW-4R 1/15/2010 QF84L	LW-4R 10/19/2010 RS33N	LW-4R 03/24/2011 SO90A	MW-01S 6/30/2005 2005070010-01	MW-01S 3/21/2006 2006030261-04	Dup of MW-01S PZ30 3/21/2006 2006030261-05	MW-01S 11/15/2006 2006110251-01	MW-01S 10/1/2007 LS10F	MW-01S 3/19/2008 MO07F
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)														
EPA Method 8270 / 8270D-SIM														
Naphthalene	4900	1.0 U	1.0 U	1.0 U	**1.9**	1.0 U	1.0 U	1.0 U	**5,130**	NA	NA	**3,120**	**11,000**	**7,100**
2-Methylnaphthalene		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	**920**	**1,000**
Acenaphthylene		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**	**8.9**	**10**
Acenaphthene		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**	**210**	**290**
Dibenzofuran		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	**73**	**130**
Fluorene		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**	**59**	**100**
Pentachlorophenol	3	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	NA	NA	NA	NA	**8,300**	**4,100**
Phenanthrene		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**	**46**	**98**
Carbazole		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U	NA	NA	NA	NA	**120**	**120**
Anthracene		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**	**14**	**26**
Fluoranthene		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**	**6.3**	**30**
Pyrene	2600	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**	**7.8**	**15**
Benzo(a)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	10 U	**0.84**	**0.86**	10 U	**1.6**	**2.1**
Chrysene		0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	10 U	**0.55**	**0.57**	10 U	**1.7**	**2.2**
Benzo(b)Fluoranthene		0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	NA	NA	10 U	**0.98**	**1.05**	10 U	**0.88**	**1.1**
Benzo(k)Fluoranthene		0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	NA	NA	10 U	**0.55**	**0.59**	10 U	**0.32**	1.0 U
Benzo(a)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	10 U	**0.74**	**0.80**	10 U	**0.53**	1.0 U
Indeno(1,2,3-cd)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	10 U	**0.22**	**0.24**	10 U	**0.12**	1.0 U
Dibenz(a,h)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	10 U	0.10 U	0.10 U	10 U	0.10 U	1.0 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	10 U	NA	NA	10 U	1.0 U	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	NA	NA	NA	NA	**470**	**640**
Total Benzofluoranthenes							0.10 U	0.10 U						
cPAH TEQ (b)	0.1 (c)	ND	ND	ND	ND	ND	ND	ND	ND	**1.00**	**1.08**	ND	**0.839**	**0.342**
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.076	0.076	0.076	0.076	0.083	0.071	0.071	0.076	**1.01**	**1.08**	0.076	**0.84**	**0.992**
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	**0.42**	0.25 U	**7,470**	**3,440**	**3,330**	**9,120**	NA	NA
PETROLEUM HYDROCARBONS														
Method NWTPH-G (µg/L)														
Gasoline	1,000	250 U	250 U	250 U	250 U	250 U	250 U	250 U	**5,830** (f)	**9,620**	**9,580**	**28,000**	**52,000**	**16,000**
Method NWTPH-Dx (µg/L)														
Diesel	500	250 U	250 U	250 U	250 U	250 U	100 U	130 U	100 U	100 U	100 U	100 U	**9,100**	**9,300**
Motor Oil	500	500 U	500 U	500 U	500 U	500 U	200 U	260 U	500 U	500 U	500 U	500 U	2500 U	5000 U
Creosote Oil	500	250 U	500 U	250 U	250 U	250 U	100 U	260 U	**13,000**	**6530** J	**5,090** J	**8,370**	NA	**48,000**
BTEX (µg/L)														
Method SW8021B/SW021B MOD														
Benzene	5	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
Ethylbenzene	700	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
o-Xylene	1,000	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 7/29/2008 NH92C	MW-01S 1/9/2009 OH25E	MW-01S 8/10/2009 PJ99F	MW-01S 1/15/2010 QF84H	MW-01S 10/19/2010 RS33M	MW-01S 03/25/2011 SO90N	MW-02S 7/1/2005 2005070010-05	MW-02S 3/22/2006 2006030294-01	MW-02S 11/15/2006 2006110251-04	MW-02S 10/2/2007 LS21A	MW-02S 3/20/2008 MO26E	MW-02S 7/28/2008 NH70G	MW-02S 1/7/2009 OG76B
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)														
EPA Method 8270 / 8270D-SIM														
Naphthalene	4900	**11,000**	**9,000**	**9100**	**5000**	**9100**	**5400**	**0.29**	NA	**44.1**	1.0 U	1.0 U	1.0 U	1.0 U
2-Methylnaphthalene		**810**	**1,000**	**890**	**900**	**750**	**740**	NA	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U
Acenaphthylene		**6.6**	**9.7** J	2.0 U	100 U	100 U	1.0 U	**0.10**	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U
Acenaphthene		**200**	**290**	**250**	**270**	**190**	**200**	**0.92**	NA	**0.36**	1.0 U	1.0 U	1.0 U	1.0 U
Dibenzofuran		**98**	**110**	**99**	**120**	100 U	**64**	NA	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U
Fluorene		**63**	**86**	**72**	100 U	100 U	**47**	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U
Pentachlorophenol	3	**2,000**	**1,600**	**3900**	**4400**	**3500**	**4200**	NA	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U
Phenanthrene		**53**	**76**	**44**	100 U	100 U	**44**	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbazole		**69**	**80**	**86**	100 U	100 UJ	**57**	NA	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U
Anthracene		**14**	**17**	**40**	100 U	100 U	**12**	**1.19** E	NA	**1.65**	1.0 U	1.0 U	1.0 U	1.0 U
Fluoranthene		**11**	**13**	**14**	100 U	100 U	**7.8**	**0.28**	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U
Pyrene	2600	**5.2**	**11**	**7.4**	100 U	100 U	**3.9**	**0.18**	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzo(a)Anthracene		5.0 U	**1.5** J	**3.6** J	**4.2**	**0.58**	1.0 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Chrysene		5.0 U	**1.6** J	**3.8** J	**4.4**	**0.51**	1.0 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		5.0 U	1.0 U	**1.0**	**1.3**	NA	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(k)Fluoranthene		5.0 U	1.0 U	**1.0**	**1.3**	NA	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(a)Pyrene		5.0 U	1.0 U	**1.3**	**1.6**	**0.18**	1.0 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		5.0 U	1.0 U	**0.34**	**0.35**	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
Dibenz(a,h)Anthracene		5.0 U	1.0 U	**0.20**	**0.17**	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
Benzo(g,h,i)Perylene		5.0 U	10 U	2.0 U	100 U	100 U	1.0 U	0.10 U	NA	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U
1-Methylnaphthalene		**570**	**610**	**520**	**520**	**400**	**380**	NA	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U
Total Benzofluoranthenes						**0.35**	1.0 U							
cPAH TEQ (b)	0.1 (c)	ND	**0.166**	**1.95**	**2.38**	**0.278**	ND	ND	ND	ND	ND	ND	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	**3.78**	**0.866**	**1.95**	**2.38**	**0.288**	0.71 U	0.076	0.076	0.076	0.076	0.076	0.076	0.076
PENTACHLOROPHENOL (µg/L)														
EPA Method 8041 / 8270C,D														
Pentachlorophenol	3	NA	NA	NA	NA	NA	NA	0.50 U	0.10 U	**0.63**	0.21 U	0.25 U	**1.0**	0.25 U
PETROLEUM HYDROCARBONS														
Method NWTPH-G (µg/L)														
Gasoline	1,000	**40,000**	**41,000**	**14,000**	**23,000**	**36,000**	**57,000**	50 U	50 U	**99**	250 U	250 U	250 U	250 U
Method NWTPH-Dx (µg/L)														
Diesel	500	**7,800**	**5,600**	**7,600**	**6000**	**4800**	**5100**	100 U	100 U	100 U	250 U	250 U	250 U	250 U
Motor Oil	500	5,000 U	5,000 U	2500 U	5000 U	2000 U	**500**	500 U	500 U	500 U	500 U	500 U	500 U	500 U
Creosote Oil	500	**46,000**	**48,000**	**22,000**	**24,000**	**35,000**	**24,000**	NA	NA	NA	NA	250 U	500 U	250 U
BTEX (µg/L)														
Method SW8021B/SW021B MOD														
Benzene	5	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
Ethylbenzene	700	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
o-Xylene	1,000	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)	Dup of MW-02S MW30 1/7/2009 OG76A	MW-02S 8/11/2009 PK28C	MW-02S 1/18/2010 QG15B	MW-02S 10/18/2010 RS33E	MW-02S 03/25/2011 SO90I	MW-05S 6/30/2005 2005070010-03	Dup of MW-05S PZ30 6/30/2005 2005070010-04	MW-05S 3/22/2006 2006030294-07	MW-05S 11/16/2006 2006110275-01	MW-05S 10/2/2007 LS21C	MW-05S 3/20/2008 MO26C	Dup of MW-05S PZ30 3/20/2008 MO26A
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)													
EPA Method 8270 / 8270D-SIM													
Naphthalene	4900	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**10.8** E	**11.8** E	NA	**29.1**	**92**	**48**	**43**
2-Methylnaphthalene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA	**2.5**	**2.0**	**1.8**
Acenaphthylene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**0.29**	**0.27**	NA	**0.14**	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	**5.25** E	**5.13** E	NA	**5.91**	**9.2**	**8.8**	**7.6**
Dibenzofuran		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA	NA	NA	**3.2**	**2.9**	**2.5**
Fluorene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**2.26** E	**2.26** E	NA	**1.00**	**2.8**	**2.6**	**2.2**
Pentachlorophenol	3	5.0 U	5.0 U	5.0 U	5.0 U	5.0 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	**1.45** E	**1.76** E	NA	**1.18**	**1.9**	**1.8**	**1.6**
Carbazole		1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U	NA	NA	NA	NA	**1.9**	**1.1**	1.0 U
Anthracene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1.23** E	**1.25** E	NA	**1.02**	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	**1.71** E	**1.75** E	NA	**0.90**	1.0 U	**1.1**	**1.0**
Pyrene	2600	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1.64** E	**1.71** E	NA	**0.41**	1.0 U	1.0 U	1.0 U
Benzo(a)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	0.12 U	**0.28**	**0.33**	0.10 U	**0.18**	0.10 U	**0.10**	**0.10**
Chrysene		0.10 U	0.10 U	0.10 U	0.10 U	0.12 U	**0.20**	**0.22**	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	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(k)Fluoranthene		0.10 U	0.10 UJ	0.10 U	NA	NA	0.10 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	0.10 U	0.10 U	0.12 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	0.12 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	0.12 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		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.10 U	0.10 U	NA	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	NA	NA	NA	NA	**5.2**	**3.9**	**3.4**
Total Benzofluoranthenes					0.10 U	0.12 U							
cPAH TEQ (b)	0.1 (c)	ND	ND	ND	ND	ND	**0.030**	**0.035**	ND	**0.018**	ND	0.010	0.010
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.076	0.076	0.076	0.071	0.085	**0.039**	**0.044**	0.076	**0.089**	0.076	0.081	0.081
PENTACHLOROPHENOL (µg/L)													
EPA Method 8041 / 8270C,D													
Pentachlorophenol	3	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.10 U	0.50 U	0.10 U	0.10 U	0.25 U	0.25 U	0.25 U
PETROLEUM HYDROCARBONS													
Method NWTPH-G (µg/L)													
Gasoline	1,000	250 U	250 U	250 U	250 U	250 U	50 U	50 U	50 U	50 U	**530**	**320**	250 U
Method NWTPH-Dx (µg/L)													
Diesel	500	250 U	250 U	250 U	100 U	120 U	100 U	100 U	**430**	100 U	250 U	250 U	250 U
Motor Oil	500	500 U	250 U	500 U	200 U	240 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U
Creosote Oil	500	250 U	500 U	250 U	100 U	240 U	NA	NA	NA	NA	NA	**410**	**390**
BTEX (µg/L)													
Method SW8021B/SW021B MOD													
Benzene	5	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
Ethylbenzene	700	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
o-Xylene	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE A-1
HISTORICAL ANALYTICAL RESULTS
GROUNDWATER COMPLIANCE MONITORING
CASCADE POLE SITE
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	Cleanup Screening Levels For Groundwater (a)	MW-05S 7/29/2008 NH92E	Dup of MW-05S PZ30 7/29/2008 NH92F	MW-05S 1/7/2009 OG76C	MW-05S 8/11/2009 PK28H	Dup of MW-05S PZ30 8/11/2009 PK28I	MW-05S 1/14/2010 QF84B	Dup of MW-05S PZ30 1/14/2010 QF84G	MW-05S 10/19/2010 RS33I	Dup of MW-05S Duplicate 10/19/2010 RS33J	MW-05S 03/25/2011 SO90C	Dup of MW-05S Duplicate 03/25/2011 SO90B	MW-01D 10/7/1998	MW-01D 3/21/2006 2006030261-02
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)														
EPA Method 8270 / 8270D-SIM														
Naphthalene	4900	**46**	**39**	**17**	1.0 U	1.0 U	**5.3**	**5.3**	**1.8** J	**4.8** J	1.0 U	1.0 U	**91**	NA
2-Methylnaphthalene		**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	1.0 U	1.0 U	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	0.2 U	NA
Acenaphthene		**8.3**	**7.3**	**6.6**	**4.3**	**4.4**	**13**	**11**	**9.0**	**8.3**	**6.0**	**6.1**	**58**	NA
Dibenzofuran		**2.6**	**2.3**	**1.6**	1.0 U	1.0 U	**3.1**	**2.2**	**2.0**	**2.0**	1.0 U	1.0 U	NA	NA
Fluorene		**2.0**	**1.7**	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	**30**	NA
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	5.0 U	5.0 U	5.0 U	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	**56**	NA
Carbazole		**1.0**	1.0 U	**1.2**	1.0 U	1.0 U	**1.9**	**1.3**	1.0 UJ	1.0 UJ	1.0 U	1.0 U	NA	NA
Anthracene		1.0 U	1.0 U	**1.0**	**1.2**	**1.3**	**1.4**	**1.5**	1.0 U	1.0 U	**1.2**	**1.2**	**8.7**	NA
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	**9.4**	NA
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	**7.6**	NA
Benzo(a)Anthracene		**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	0.12 U	0.12 U	**1.0**	0.10 U
Chrysene		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	0.12 U	0.12 U	**1.2**	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	NA	NA	NA	NA	**0.3**	0.10 U
Benzo(k)Fluoranthene		0.10 U	0.10 U	0.10 U	0.10 UJ	0.10 UJ	0.10 U	0.10 U	NA	NA	NA	NA	**0.3**	0.10 U
Benzo(a)Pyrene		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	0.12 U	0.12 U	0.2 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	0.12 U	0.2 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	0.12 U	0.2 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	1.0 U	1.0 U	0.2 U	NA
1-Methylnaphthalene		**4.0**	**3.6**	**1.7**	1.0 U	1.0 U	**2.6** J	**1.5** J	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA
Total Benzofluoranthenes									0.10 U	0.10 U	0.12 U	0.12 U		
cPAH TEQ (b)	0.1 (c)	0.011	ND	**0.134**	ND	ND	ND	ND	ND	ND	ND	ND	**0.172**	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.082	0.076	**0.154**	0.076	0.076	0.076	0.076	0.071	0.071	0.085	0.085	**0.292**	0.076
PENTACHLOROPHENOL (µg/L)														
EPA Method 8041 / 8270C,D														
Pentachlorophenol	3	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	0.25 U	0.25 U	**18**	0.10 U
PETROLEUM HYDROCARBONS														
Method NWTPH-G (µg/L)														
Gasoline	1,000	**270**	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	NA	50 U
Method NWTPH-Dx (µg/L)														
Diesel	500	250 U	NA	250 U	250 U	250 U	250 U	250 U	100 U	100 U	120 U	120 U	**2500**	100 U
Motor Oil	500	500 U	NA	500 U	250 U	250 U	500 U	500 U	200 U	200 U	250 U	230 U	**2800**	500 U
Creosote Oil	500	500 U	NA	250 U	500 U	500 U	250 U	250 U	100 U	100 U	250 U	230 U		**106**
BTEX (µg/L)														
Method SW8021B/SW021B MOD														
Benzene	5	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
Ethylbenzene	700	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
o-Xylene	1,000	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 11/15/2006 2006110251-02	MW-01D 10/1/2007 LS10H	MW-01D 3/19/2008 MO07E	MW-01D 7/29/2008 NH92D	MW-01D 1/9/2009 OH25D	MW-01D 8/10/2009 PJ99E	MW-01D 1/15/2010 QF84I	MW-01D 10/19/2010 RS33O	MW-01D 03/25/2011 SO90J	MW-02D 10/7/1998	MW-02D 3/22/2006 2006030294-02	MW-02D 11/15/2006 2006110251-05	MW-02D 10/2/2007 LS21B
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)														
EPA Method 8270 / 8270D-SIM														
Naphthalene	4900	**1.24**	1.0 U	1.0 U	**2.2**	**0.7** J	**1.8**	1.0 U	1.0 U	1.0 U	**600**	NA	**143**	**680** J
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	NA	NA	NA	**120**
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**	NA	**0.95**	**1.6**
Acenaphthene		**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	**54**	NA	**96**	**86** J
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	NA	NA	NA	**35**
Fluorene		**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	**18**	NA	**40**	**37** J
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	NA	NA	NA	5.0 U
Phenanthrene		**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	**7.1**	NA	**27**	**23** J
Carbazole		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	NA	NA	NA	**23**
Anthracene		**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	NA	**0.50**	1.0 U
Fluoranthene		**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	**2.0**	NA	0.10 U	1.0 U
Pyrene	2600	**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	**1.7**	NA	0.10 U	1.0 U
Benzo(a)Anthracene		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	1.0 U	0.10 U	0.10 U	0.10 U
Chrysene		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	1.0 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	0.11 U	NA	NA	1.0 U	0.10 U	0.10 U	0.10 U
Benzo(k)Fluoranthene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.11 U	NA	NA	1.0 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	0.10 U	0.10 U	0.11 U	0.10 U	0.10 U	1.0 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	0.11 U	0.10 U	0.10 U	1.0 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	0.11 U	0.10 U	0.10 U	1.0 U	0.10 U	0.10 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	NA	0.10 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	NA	NA	NA	**77**
Total Benzofluoranthenes									0.10 U	0.10 U				
cPAH TEQ (b)	0.1 (c)	ND	**0.0121**	ND	ND	ND	ND	ND	ND	ND	**15**	ND	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.076	**0.082**	0.076	0.076	0.076	0.076	0.083	0.071	0.071	ND	0.076	0.076	0.076
PENTACHLOROPHENOL (µg/L)														
EPA Method 8041 / 8270C,D														
Pentachlorophenol	3	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	5.0 U	0.10 U	10 U	0.23 U
PETROLEUM HYDROCARBONS														
Method NWTPH-G (µg/L)														
Gasoline	1,000	50 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	NA	**495**	**830**	**3,100**
Method NWTPH-Dx (µg/L)														
Diesel	500	100 U	250 U	250 U	250 U	250 U	250 U	250 U	100 U	100 U	**1800**	100 U	100 U	**290**
Motor Oil	500	500 U	500 U	500 U	500 U	500 U	500 U	500 U	200 U	200 U	**5200**	500 U	500 U	500 U
Creosote Oil	500	NA	NA	250 U	500 U	250 U	250 U	250 U	100 U	200 U		**790**	**1,710**	NA
BTEX (µg/L)														
Method SW8021B/SW021B MOD														
Benzene	5	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
Ethylbenzene	700	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
o-Xylene	1,000	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)	Dup of MW-02D 10/2/2007 LS21F	MW-02D 3/19/2008 MO26I	MW-02D 7/29/2008 NH92H	MW-02D 1/9/2009 OH25A	MW-02D 8/11/2009 PK28D	MW-02D 1/18/2010 QG15A	MW-02D 10/18/2010 RS33F	MW-02D 03/25/2011 SO90G	MW-05D 10/7/1998	MW-05D 3/22/2006 2006030294-06	MW-05D 11/16/2006 2006110275-02
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)												
EPA Method 8270 / 8270D-SIM												
Naphthalene	4900	**500** J	**380**	1.1 U	**210**	**230**	**180**	1.0 U	**76**	**4.0**	NA	**21.0**
2-Methylnaphthalene		**85**	**94**	1.1 U	**26**	**38**	**36**	1.0 U	**13**	NA	NA	NA
Acenaphthylene		**1.3**	**1.2**	1.1 U	1.0 U	1.0 U	1.0 U	**1.9**	1.0 U	**4.1**	NA	**0.10**
Acenaphthene		**67** J	**70**	1.1 U	**26**	**35**	**34**	**8.8**	**21**	**15**	NA	**6.39**
Dibenzofuran		**26**	**30**	1.1 U	**8.1**	**12**	**14**	**3.0**	**7.9**	NA	NA	NA
Fluorene		**28** J	**30**	1.1 U	**9.3**	**12**	**15**	**11**	**8.4**	**5.0**	NA	**2.60**
Pentachlorophenol	3	5.0 U	5.0 U	5.5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	NA	NA	NA
Phenanthrene		**18** J	**22**	1.1 U	**6.0**	**7.2**	**9.1**	**5.0**	**5.1**	**8.5**	NA	**0.89**
Carbazole		**16**	**21**	**1.5**	**8.0**	**9.0**	**9.1**	**8.3** J	**5.7**	NA	NA	NA
Anthracene		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	NA	**0.25**
Fluoranthene		1.0 U	1.0 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**8.5**	NA	**0.60**
Pyrene	2600	1.0 U	1.0 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**7.0**	NA	**0.27**
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
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
Benzo(b)Fluoranthene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	NA	1.0 U	0.10 U	0.10 U
Benzo(k)Fluoranthene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 UJ	0.10 U	NA	NA	1.0 U	0.10 U	0.10 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	0.10 U	1.0 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
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
Benzo(g,h,i)Perylene		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	NA	0.10 U
1-Methylnaphthalene		**68**	**66**	1.1 U	**22**	**32**	**30**	1.0 U	**15**	NA	NA	NA
Total Benzofluoranthenes								0.10 U	0.10 U			
cPAH TEQ (b)	0.1 (c)	ND	ND	ND	ND	ND	ND	ND	ND	**4.0**	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	0.071	0.071	ND	0.076	0.076
PENTACHLOROPHENOL (µg/L)												
EPA Method 8041 / 8270C,D												
Pentachlorophenol	3	0.25 U	0.25 U	0.25 UJ	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	5.0 U	0.10 U	0.10 U
PETROLEUM HYDROCARBONS												
Method NWTPH-G (µg/L)												
Gasoline	1,000	**2,900**	**1,700**	**980**	**760**	**790**	**600**	**420**	**620**	NA	50 U	50 U
Method NWTPH-Dx (µg/L)												
Diesel	500	**280**	**540**	250 U	250 U	250 U	250 U	100 U	120 U	**440**	100 U	100 U
Motor Oil	500	500 U	500 U	500 U	500 U	250 U	500 U	200 U	230 U	**520**	500 U	500 U
Creosote Oil	500	NA	**4,200**	500 U	**990**	**600**	**700**	**270**	**280**	NA	NA	NA
BTEX (µg/L)												
Method SW8021B/SW021B MOD												
Benzene	5	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
Ethylbenzene	700	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
o-Xylene	1,000	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 10/2/2007 LS21D	MW-05D 3/20/2008 MO26F	MW-05D 7/29/2008 NH92G	MW-05D 1/9/2009 OH25B	MW-05D 8/11/2009 PK28G	MW-05D 1/14/2010 QF84A	MW-05D 10/19/2010 RS33K	MW-05D 03/25/2011 SO90D	CW-13 11/16/2006 2006110275-04	CW-13 10/2/2007 LS22A	CW-13 3/20/2008 MO26D	CW-13 7/28/2008 NH70F	CW-13 8/11/2009 PK28F
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)														
EPA Method 8270 / 8270D-SIM														
Naphthalene	4900	**28**	**27**	**2.2**	**1.2**	**3.4**	1.0 U	1.0 U	1.0 U	**1.54**	**8.7**	**11**	**30**	**4.8**
2-Methylnaphthalene		**3.0**	**3.0**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	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	**1.1**	1.0 U	1.0 U	**0.48**	1.0 U	1.0 U	1.0 U	1.0 U
Acenaphthene		**5.8**	**6.7**	**3.9**	**0.6** J	**3.7**	1.0 U	**4.2**	**1.3**	**50.0**	**64**	**44**	**51**	**25**
Dibenzofuran		**2.2**	**2.5**	**1.4**	1.0 U	**1.1**	1.0 U	1.0 U	1.0 U	NA	**19**	**15**	**18**	**7.6**
Fluorene		**1.8**	**2.3**	**1.0**	1.0 U	**1.2**	1.0 U	1.0 U	1.0 U	**20.7**	**25**	**16**	**21**	**8.7**
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	NA	5.0 U	5.0 U	5.0 U	5.0 U
Phenanthrene		**1.1**	**1.2**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**34.5**	**31**	**14**	**21**	**8.2**
Carbazole		**1.5**	**1.6**	**1.4**	1.0 U	**1.5**	1.0 U	**1.6** J	1.0 U	NA	**14**	**11**	**13**	**3.0**
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	**4.38**	**3.3**	**1.8**	**2.8**	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	**5.47**	**5.9**	**1.8**	**3.2**	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	**2.44**	**2.2**	1.0 U	**1.4**	1.0 U
Benzo(a)Anthracene		1.0 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.12 U	**0.37**	**0.24**	**0.14**	**0.13**	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	0.12 U	**0.25**	**0.24**	**0.10**	**0.12**	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	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	0.10 U	0.10 UJ	0.10 U	NA	NA	0.10 U	0.10 U	0.10 U	0.10 U	0.10 UJ
Benzo(a)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.12 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	0.12 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	0.12 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	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.10 U	1.0 U	1.0 U	1.0 U	1.0 U
1-Methylnaphthalene		**2.8**	**3.1**	1.0 U	1.0 U	**1.0**	1.0 U	1.0 U	1.0 U	NA	**34**	**27**	**34**	**12**
Total Benzofluoranthenes								0.10 U	0.12 U					
cPAH TEQ (b)	0.1 (c)	ND	ND	ND	ND	ND	ND	ND	ND	**0.040**	**0.0264**	**0.015**	**0.014**	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	0.071	0.085	**0.110**	**0.096**	**0.085**	**0.084**	0.076
PENTACHLOROPHENOL (µg/L)														
EPA Method 8041 / 8270C,D														
Pentachlorophenol	3	0.22 U	0.25 U	0.25 UJ	0.25 U	0.25 U	0.25 U	0.26 U	0.25 U	0.10 U	0.22 U	0.25 U	**2.9**	0.26 U
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	**83**	**750**	**630**	**1,000**	250 U
Method NWTPH-Dx (µg/L)														
Diesel	500	250 U	250 U	250 U	250 U	250 U	250 U	100 U	110 U	100 U	250 U	**290**	**270**	250 U
Motor Oil	500	500 U	500 U	500 U	500 U	250 U	500 U	200 U	220 U	500 U	500 U	500 U	500 U	250 U
Creosote Oil	500	NA	**370**	500 U	250 U	500 U	250 U	100 U	220 U	**471**	NA	**1,100**	**960**	500 U
BTEX (µg/L)														
Method SW8021B/SW021B MOD														
Benzene	5	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
Ethylbenzene	700	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
o-Xylene	1,000	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 1/14/2010 QF84D	CW-13 10/19/2010 RS33G	CW-13 03/25/2011 SO90K
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)				
EPA Method 8270 / 8270D-SIM				
Naphthalene	4900	1.0 U	1.0 U	1.0 U
2-Methylnaphthalene		1.0 U	1.0 U	1.0 U
Acenaphthylene		1.0 U	1.0 U	1.0 U
Acenaphthene		1.0 U	**5.4**	1.0 U
Dibenzofuran		1.0 U	**1.5**	1.0 U
Fluorene		1.0 U	**2.4**	1.0 U
Pentachlorophenol	3	5.0 U	5.0 U	5.0 U
Phenanthrene		1.0 U	**1.2**	1.0 U
Carbazole		1.0 U	1.0 UJ	1.0 U
Anthracene		1.0 U	1.0 U	1.0 U
Fluoranthene		1.0 U	1.0 U	1.0 U
Pyrene	2600	1.0 U	1.0 U	1.0 U
Benzo(a)Anthracene		0.10 U	0.10 U	0.10 U
Chrysene		0.10 U	0.10 U	0.10 U
Benzo(b)Fluoranthene		0.10 U	NA	NA
Benzo(k)Fluoranthene		0.10 U	NA	NA
Benzo(a)Pyrene		0.10 U	0.10 U	0.10 U
Indeno(1,2,3-cd)Pyrene		0.10 U	0.10 U	0.10 U
Dibenz(a,h)Anthracene		0.10 U	0.10 U	0.10 U
Benzo(g,h,i)Perylene		1.0 U	1.0 U	1.0 U
1-Methylnaphthalene		1.0 U	1.0 U	1.0 U
Total Benzofluoranthenes			0.10 U	0.10 U
cPAH TEQ (b)	0.1 (c)	ND	ND	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.076	0.071	0.071
PENTACHLOROPHENOL (µg/L)				
EPA Method 8041 / 8270C,D				
Pentachlorophenol	3	0.25 U	0.25 U	0.25 U
PETROLEUM HYDROCARBONS				
Method NWTPH-G (µg/L)				
Gasoline	1,000	250 U	250 U	250 U
Method NWTPH-Dx (µg/L)				
Diesel	500	250 U	100 U	100 U
Motor Oil	500	500 U	200 U	200 U
Creosote Oil	500	250 U	100 U	200 U
BTEX (µg/L)				
Method SW8021B/SW021B MOD				
Benzene	5	NA	NA	NA
Toluene	1,000	NA	NA	NA
Ethylbenzene	700	NA	NA	NA
m, p-Xylene	1,000	NA	NA	NA
o-Xylene	1,000	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.

Note: Beginning with October 2010 data, lab no longer reports benzo(b)fluoranthenes or benzo(k)fluoranthenes but does report total benzofluoranthenes.

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)	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

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)	Maximum Elevation Goal (b)	Goal Exceeded?
	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
	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

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)	Maximum Elevation Goal (b)	Goal Exceeded?
	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	--	
	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

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)	Maximum Elevation Goal (b)	Goal Exceeded?
	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
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
	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

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)	Maximum Elevation Goal (b)	Goal Exceeded?
	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	--
	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

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)	Maximum Elevation Goal (b)	Goal Exceeded?
	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	--	
	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

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)	Maximum Elevation Goal (b)	Goal Exceeded?
	10/18/2010	PZ-17	7.76	20.48	12.72	--	
	10/18/2010	LW-3	5.90	19.83	13.93	15.50	No
	11/29/2010	PZ-17	7.50	20.48	12.98	--	
	11/29/2010	LW-3	NA	19.83	NA	15.50	NA
	12/25/2010	PZ-17	7.00	20.48	13.48	--	
	12/25/2010	LW-3	6.63	19.83	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	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	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	14.11	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
	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

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)	Maximum Elevation Goal (b)	Goal Exceeded?
	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
	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

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)	Maximum Elevation Goal (b)	Goal Exceeded?
	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	Yes
	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

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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)	Maximum Elevation Goal (b)	Goal Exceeded?
	7/23/2010	PZ-18	9.62	21.20	11.58	--	
	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	No
	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	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

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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)	Maximum Elevation Goal (b)	Goal Exceeded?
	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	--	
	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	--

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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)	Maximum Elevation Goal (b)	Goal Exceeded?
	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
	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

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)	Maximum Elevation Goal (b)	Goal Exceeded?
	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
	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
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	--	

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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)	Maximum Elevation Goal (b)	Goal Exceeded?
	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	--	
	9/20/2008	MW-02S	NM	30.47	--	--	
	9/20/2008	MW-02D	NM	31.79	--	--	

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)	Maximum Elevation Goal (b)	Goal Exceeded?
	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	--	

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)	Maximum Elevation Goal (b)	Goal Exceeded?
	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	--	
	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	--	

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)	Maximum Elevation Goal (b)	Goal Exceeded?
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	--	
	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	--	

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)	Maximum Elevation Goal (b)	Goal Exceeded?
	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	--	
	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	--	

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)	Maximum Elevation Goal (b)	Goal Exceeded?
	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		
	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	--	

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)	Maximum Elevation Goal (b)	Goal Exceeded?
	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	--	
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	--	--

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)	Maximum Elevation Goal (b)	Goal Exceeded?
	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	--	--
	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	--	--

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)	Maximum Elevation Goal (b)	Goal Exceeded?
	8/10/2009	MW-05S	16.82	29.45		12.63	16.50	No
	8/10/2009	MW-05D	12.10	26.50		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
	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		14.56	16.50	No
	1/14/2010	MW-05D	11.81	26.50		14.69	--	--
	2/21/2010	MW-05S	14.71	29.45		14.74	16.50	No
	2/21/2010	MW-05D	10.63	26.50		15.87	--	--
	3/17/2010	MW-05S	13.53	29.45		15.92	16.50	No
	3/17/2010	MW-05D	11.63	26.50		14.87	--	--
	4/25/2010	MW-05S	16.11	29.45		13.34	16.50	No
	4/25/2010	MW-05D	12.26	26.50		14.24	--	--
	5/16/2010	MW-05S	16.14	29.45		13.31	16.50	No
	5/16/2010	MW-05D	14.97	26.50		11.53	--	--
	6/26/2010	MW-05S	17.07	29.45		12.38	16.50	No
	6/26/2010	MW-05D	15.20	26.50		11.30	--	--
	7/23/2010	MW-05S	17.73	29.45		11.72	16.50	No
	7/23/2010	MW-05D	15.31	26.50		11.19	--	--
	8/30/2010	MW-05S	15.58	29.45		13.87	16.50	No
	8/30/2010	MW-05D	12.01	26.50		14.49	--	--
	9/30/2010	MW-05S	14.32	29.45		15.13	16.50	No
	9/30/2010	MW-05D	12.83	26.50		13.67	--	--
	10/18/2010	MW-05S	15.52	29.45		13.93	16.50	No
	10/18/2010	MW-05D	15.58	26.50		10.92	--	--

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)	Maximum Elevation Goal (b)	Goal Exceeded?
	11/29/2010	MW-05S	15.14	29.45	14.31	16.50	No
	11/29/2010	MW-05D	10.32	26.50	16.18	--	--
	12/25/2010	MW-05S	13.03	29.45	16.42	16.50	No
	12/25/2010	MW-05D	9.02	26.50	17.48	--	--
	1/29/2011	MW-05S	13.29	29.45	16.16	16.50	No
	1/29/2011	MW-05D	11.80	26.50	14.70	--	--
	2/20/2011	MW-05S	13.22	29.45	16.23	16.50	No
	2/20/2011	MW-05D	14.33	26.50	12.17	--	--
	3/24/2011	MW-05S	13.15	29.45	16.30	16.50	No
	3/24/2011	MW-05D	9.11	26.50	17.39	--	--

NM = Not measured.
NA = Not available.
MLLW = Mean low low water.

(a) Below top of PVC well casing.
(b) Hydraulic gradient direction of groundwater. Short term goal is inward for well pairs 1, 2, 3, and 4, and upwards for well pairs 5, 6, and 7.
(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.

Note: Groundwater elevations determined by subtracting depth to groundwater below top of casing (ft) from top of well casing elevation (MLLW, ft).

APPENDIX B

Laboratory Analytical Results

Analytical Resources, Incorporated
Analytical Chemists and Consultants

January 27, 2010

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

RE: Project: Port of Olympia
ARI Job No: QF84

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 twelve water samples and a trip blank in good condition on January 15, 2010.

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

KB/kb

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

Date 1/15/10
Page _____ of _____

Project Name PORT OF OLYMPIA Project No. 021034.010
Project Location/Event OLYMPIA, WA / SEMI ANNUAL
Sampler's Name JESSICA STONE
Project Contact CHRIS KIMMEL
Send Results To CHRIS KIMMEL

Turnaround Time
☒ Standard
☐ Accelerated
☐ _____

Sample I.D.	Date	Time	Matrix	No. of Containers	TPH-Gx	TPH-Dx + Creosote	PAHs (8270)	cPAHs SIM	PCP (8270)	PCP (8041)	Observations/Comments
~~LW-3-011410~~	~~1/14/10~~	~~1645~~	~~WATER~~	~~10~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	
~~PZ-17-011410~~	~~1/14/10~~	~~1535~~	~~WATER~~	~~10~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	
MW-05D-011410	1/14/10	1225	WATER	10	X	X	X	X	X	X	
MW-05S-011410	1/14/10	1055	WATER	10	X	X	X	X	X	X	
PZ-17-011410	1/14/10	1535	WATER	10	X	X	X	X	X	X	
CW-13-011410	1/14/10	1305	WATER	10	X	X	X	X	X	X	
LW-3-011410	1/14/10	1645	WATER	10	X	X	X	X	X	X	
PZ-13-011410	1/14/10	1440	WATER	10	X	X	X	X	X	X	
PZ-30-011410	1/14/10	1100	WATER	10	X	X	X	X	X	X	
MW-01S-011510	1/15/10	1056	WATER	10	X	X	X	X	X	X	
MW-01D-011510	1/15/10	1133	WATER	10	X	X	X	X	X	X	
PZ-12-011510	1/15/10	1605	WATER	10	X	X	X	X	X	X	
PZ-18-011510	1/15/10	1240	WATER	10	X	X	X	X	X	X	
LW-4R-011510	1/15/10	1344	WATER	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-SIM 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: CB	Signature: A. Volgardsen	Signature:	Signature:
Printed Name: Chris Burke	Printed Name: ARY	Printed Name:	Printed Name:
Company: LANDAU	Company:	Company:	Company:
Date: 1/15/10 Time: 1615	Date: 1/15/10 Time: 1615	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
COC No(s): _____ (NA)
Assigned ARI Job No: QF84

Project Name: Port of Olympia
Delivered by: Fed-Ex UPS Courier (Hand Delivered) Other: _____
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)..... 4.8 5.3 1.4 6.0 ___ ___

If cooler temperature is out of compliance fill out form 00070F — Temp Gun ID#: 90941619

Cooler Accepted by: AV Date: 1/15/10 Time: 1615

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	1/11/10	

Samples Logged by: JP Date: 1/16/10 Time: 1045

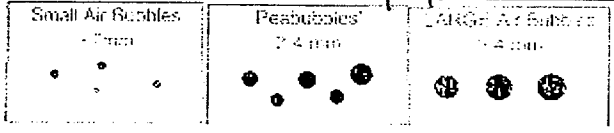
***** Notify Project Manager of discrepancies or concerns *****

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

Additional Notes, Discrepancies, & Resolutions:

Trip Blank isn't included on the Chain of Custody and has a "Sm" bubble in 1 of 2 HCl vials. "Sm" bubble in 1 of HCl vials ID = PZ-17-011
"Sm" bubbles in 2 of 2 HCl vials ID= LW-42-011510, + in PZ-18-011510.

By: JP Date: 1/16/10



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

ANALYTICAL
RESOURCES
INCORPORATED

Case Narrative
Project: 021034.010
ARI Job No.: QF84
January 27, 2010

Sample Receipt:

Please find enclosed the original *Chain of Custody (COC)* record and analytical results for the project referenced above. Analytical Resources, Inc. accepted twelve water samples and a trip blank in good condition on January 15, 2010. The samples were received at cooler temperatures between of 1.4 and 6.0°C. Please see the *Cooler Receipt Form* for further details.

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 1/20/10. The samples were analyzed on 1/22/10 within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: The surrogate FBP is out of control high for sample **LW-4R-011510**. All other surrogate recoveries were in control and no further corrective action was taken.

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.

SIM PNA by method 8270-SIM Water

The samples were extracted on 1/19/10 and analyzed on 1/23/10 within the method recommended holding time.

Samples: The internal standard d8-Naphthalene is out of control low for sample **MW-01S-011510** due to matrix effects. No further corrective action was taken.

Surrogates: All surrogate recoveries were 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.

Case Narrative
Project: 021034.010
ARI Job No.: QF84
January 27, 2010
Page 2

PCP Only by method 8041

The samples were extracted on 1/19/10 and analyzed on 1/22/10 within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: All surrogate recoveries were in control.

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

Method Blank: The method blanks were free of contamination.

NWTPH-Gx

The samples were analyzed on 1/19/10 and 1/20/10 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 blanks were free of contamination.

NWTPH-Dx

The samples were extracted on 1/18/10 - within the method recommended holding time. The extracts were analyzed between 1/25/10 and 1/26/10.

Surrogates: The method blank surrogate is out of control low. All associated sample surrogate recoveries and spike recoveries were in control and no further corrective action was taken.

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 blanks were free of contamination.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: MW-05D-011410
SAMPLE

Lab Sample ID: QF84A
LIMS ID: 10-1043
Matrix: Water
Data Release Authorized:
Reported: 01/27/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
021034-010
Date Sampled: 01/14/10
Date Received: 01/15/10

Date Extracted: 01/20/10
Date Analyzed: 01/22/10 13:22
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	< 1.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
208-96-8	**Acenaphthylene**	**1.0**	**1.1**
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	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	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
205-99-2	Benzo(b)fluoranthene	1.0	< 1.0 U
207-08-9	Benzo(k)fluoranthene	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

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	86.4%
d14-p-Terphenyl	95.2%
2,4,6-Tribromophenol	92.5%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-05S-011410
SAMPLE

Lab Sample ID: QF84B
LIMS ID: 10-1044
Matrix: Water
Data Release Authorized:
Reported: 01/27/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
021034-010
Date Sampled: 01/14/10
Date Received: 01/15/10

Date Extracted: 01/20/10
Date Analyzed: 01/22/10 13:54
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**	**5.3**
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**	**13**
132-64-9	**Dibenzofuran**	**1.0**	**3.1**
86-73-7	**Fluorene**	**1.0**	**1.0**
87-86-5	Pentachlorophenol	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	**Carbazole**	**1.0**	**1.9**
120-12-7	**Anthracene**	**1.0**	**1.4**
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
205-99-2	Benzo(b)fluoranthene	1.0	< 1.0 U
207-08-9	Benzo(k)fluoranthene	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**	**2.6**

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	84.8%
d14-p-Terphenyl	84.0%
2,4,6-Tribromophenol	100%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: PZ-17-011410
SAMPLE

Lab Sample ID: QF84C
LIMS ID: 10-1045
Matrix: Water
Data Release Authorized:
Reported: 01/27/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
021034-010
Date Sampled: 01/14/10
Date Received: 01/15/10

Date Extracted: 01/20/10
Date Analyzed: 01/22/10 17:07
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	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	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
205-99-2	Benzo(b)fluoranthene	1.0	< 1.0 U
207-08-9	Benzo(k)fluoranthene	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

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	83.6%
d14-p-Terphenyl	92.4%
2,4,6-Tribromophenol	98.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: CW-13-011410
SAMPLE

Lab Sample ID: QF84D
LIMS ID: 10-1046
Matrix: Water
Data Release Authorized:
Reported: 01/27/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
021034-010
Date Sampled: 01/14/10
Date Received: 01/15/10

Date Extracted: 01/20/10
Date Analyzed: 01/22/10 14:58
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	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	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
205-99-2	Benzo(b)fluoranthene	1.0	< 1.0 U
207-08-9	Benzo(k)fluoranthene	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

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	80.0%
d14-p-Terphenyl	97.2%
2,4,6-Tribromophenol	94.4%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: LW-3-011410
SAMPLE

Lab Sample ID: QF84E
LIMS ID: 10-1047
Matrix: Water
Data Release Authorized:
Reported: 01/27/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
021034-010
Date Sampled: 01/14/10
Date Received: 01/15/10

Date Extracted: 01/20/10
Date Analyzed: 01/22/10 15:30
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	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	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
205-99-2	Benzo(b)fluoranthene	1.0	< 1.0 U
207-08-9	Benzo(k)fluoranthene	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

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	64.0%
d14-p-Terphenyl	41.6%
2,4,6-Tribromophenol	90.9%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
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Sample ID: PZ-13-011410
SAMPLE

Lab Sample ID: QF84F
LIMS ID: 10-1048
Matrix: Water
Data Release Authorized:
Reported: 01/27/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
021034-010
Date Sampled: 01/14/10
Date Received: 01/15/10

Date Extracted: 01/20/10
Date Analyzed: 01/22/10 16:03
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**	**2.2**
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	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	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
205-99-2	Benzo(b)fluoranthene	1.0	< 1.0 U
207-08-9	Benzo(k)fluoranthene	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

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	90.8%
d14-p-Terphenyl	102%
2,4,6-Tribromophenol	101%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
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Sample ID: PZ-30-011410
SAMPLE

Lab Sample ID: QF84G
LIMS ID: 10-1049
Matrix: Water
Data Release Authorized:
Reported: 01/27/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
021034-010
Date Sampled: 01/14/10
Date Received: 01/15/10

Date Extracted: 01/20/10
Date Analyzed: 01/22/10 16:35
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**	**5.3**
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**	**11**
132-64-9	**Dibenzofuran**	**1.0**	**2.2**
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	**Carbazole**	**1.0**	**1.3**
120-12-7	**Anthracene**	**1.0**	**1.5**
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
205-99-2	Benzo(b)fluoranthene	1.0	< 1.0 U
207-08-9	Benzo(k)fluoranthene	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**	**1.5**

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	78.8%
d14-p-Terphenyl	81.2%
2,4,6-Tribromophenol	94.7%

ANALYTICAL RESOURCES INCORPORATED

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Semivolatiles by SW8270D GC/MS
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Sample ID: MW-01S-011510
SAMPLE

Lab Sample ID: QF84H
LIMS ID: 10-1050
Matrix: Water
Data Release Authorized:
Reported: 01/27/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
021034-010
Date Sampled: 01/15/10
Date Received: 01/15/10

Date Extracted: 01/20/10
Date Analyzed: 01/22/10 14:26
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**	**5,000**
91-57-6	**2-Methylnaphthalene**	**100**	**900**
208-96-8	Acenaphthylene	100	< 100 U
83-32-9	**Acenaphthene**	**100**	**270**
132-64-9	**Dibenzofuran**	**100**	**120**
86-73-7	Fluorene	100	< 100 U
87-86-5	**Pentachlorophenol**	**500**	**4,400**
85-01-8	Phenanthrene	100	< 100 U
86-74-8	Carbazole	100	< 100 U
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
205-99-2	Benzo(b)fluoranthene	100	< 100 U
207-08-9	Benzo(k)fluoranthene	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**	**520**

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	96.0%
d14-p-Terphenyl	100%
2,4,6-Tribromophenol	88.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: MW-01D-011510
SAMPLE

Lab Sample ID: QF84I
LIMS ID: 10-1051
Matrix: Water
Data Release Authorized:
Reported: 01/27/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
021034-010
Date Sampled: 01/15/10
Date Received: 01/15/10

Date Extracted: 01/20/10
Date Analyzed: 01/22/10 17:39
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	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	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
205-99-2	Benzo(b)fluoranthene	1.0	< 1.0 U
207-08-9	Benzo(k)fluoranthene	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

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	79.6%
d14-p-Terphenyl	91.2%
2,4,6-Tribromophenol	83.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: PZ-12-011510
SAMPLE

Lab Sample ID: QF84J
LIMS ID: 10-1052
Matrix: Water
Data Release Authorized:
Reported: 01/27/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
021034-010
Date Sampled: 01/15/10
Date Received: 01/15/10

Date Extracted: 01/20/10
Date Analyzed: 01/22/10 18:11
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	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	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
205-99-2	Benzo(b)fluoranthene	1.0	< 1.0 U
207-08-9	Benzo(k)fluoranthene	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

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	74.8%
d14-p-Terphenyl	83.6%
2,4,6-Tribromophenol	85.9%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
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Sample ID: PZ-18-011510
SAMPLE

Lab Sample ID: QF84K
LIMS ID: 10-1053
Matrix: Water
Data Release Authorized:
Reported: 01/27/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
021034-010
Date Sampled: 01/15/10
Date Received: 01/15/10

Date Extracted: 01/20/10
Date Analyzed: 01/22/10 18:43
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**	**2.8**
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	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	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
205-99-2	Benzo(b)fluoranthene	1.0	< 1.0 U
207-08-9	Benzo(k)fluoranthene	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

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	68.8%
d14-p-Terphenyl	76.8%
2,4,6-Tribromophenol	76.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: LW-4R-011510
SAMPLE

Lab Sample ID: QF84L
LIMS ID: 10-1054
Matrix: Water
Data Release Authorized:
Reported: 01/27/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
021034-010
Date Sampled: 01/15/10
Date Received: 01/15/10

Date Extracted: 01/20/10
Date Analyzed: 01/22/10 19:15
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	< 1.0 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	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	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
205-99-2	Benzo(b)fluoranthene	1.0	< 1.0 U
207-08-9	Benzo(k)fluoranthene	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

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	106%
d14-p-Terphenyl	89.2%
2,4,6-Tribromophenol	92.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: MB-012010
METHOD BLANK

Lab Sample ID: MB-012010
LIMS ID: 10-1043
Matrix: Water
Data Release Authorized:
Reported: 01/27/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
021034-010
Date Sampled: NA
Date Received: NA

Date Extracted: 01/20/10
Date Analyzed: 01/22/10 11:46
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	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	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
205-99-2	Benzo(b)fluoranthene	1.0	< 1.0 U
207-08-9	Benzo(k)fluoranthene	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

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	89.2%
d14-p-Terphenyl	104%
2,4,6-Tribromophenol	94.4%

ANALYTICAL RESOURCES INCORPORATED

SW8270 SEMIVOLATILES WATER SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
021034-010

Client ID	FBP	TPH	TBP	TOT OUT
MB-012010	89.2%	104%	94.4%	0
LCS-012010	90.0%	100%	102%	0
LCSD-012010	90.4%	106%	101%	0
MW-05D-011410	86.4%	95.2%	92.5%	0
MW-05S-011410	84.8%	84.0%	100%	0
PZ-17-011410	83.6%	92.4%	98.4%	0
CW-13-011410	80.0%	97.2%	94.4%	0
LW-3-011410	64.0%	41.6%	90.9%	0
PZ-13-011410	90.8%	102%	101%	0
PZ-30-011410	78.8%	81.2%	94.7%	0
MW-01S-011510	96.0%	100%	88.0%	0
MW-01D-011510	79.6%	91.2%	83.7%	0
PZ-12-011510	74.8%	83.6%	85.9%	0
PZ-18-011510	68.8%	76.8%	76.8%	0
LW-4R-011510	106%*	89.2%	92.8%	1

	LCS/MB LIMITS	QC LIMITS
(FBP) = 2-Fluorobiphenyl	(49-100)	(42-100)
(TPH) = d14-p-Terphenyl	(53-119)	(26-114)
(TBP) = 2,4,6-Tribromophenol	(52-123)	(48-118)

Prep Method: SW3520C
Log Number Range: 10-1043 to 10-1054

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
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Sample ID: LCS-012010
LCS/LCSD

Lab Sample ID: LCS-012010
LIMS ID: 10-1043
Matrix: Water
Data Release Authorized:
Reported: 01/27/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
021034-010
Date Sampled: 01/14/10
Date Received: 01/15/10

Date Extracted LCS/LCSD: 01/20/10

Date Analyzed LCS: 01/22/10 12:18
LCSD: 01/22/10 12:50
Instrument/Analyst LCS: NT6/JZ
LCSD: NT6/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

GPC Cleanup: NO

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Naphthalene	19.2	25.0	76.8%	20.2	25.0	80.8%	5.1%
2-Methylnaphthalene	18.4	25.0	73.6%	19.9	25.0	79.6%	7.8%
Acenaphthylene	20.2	25.0	80.8%	20.6	25.0	82.4%	2.0%
Acenaphthene	20.6	25.0	82.4%	20.9	25.0	83.6%	1.4%
Dibenzofuran	20.9	25.0	83.6%	21.3	25.0	85.2%	1.9%
Fluorene	22.0	25.0	88.0%	22.2	25.0	88.8%	0.9%
Pentachlorophenol	19.4	25.0	77.6%	19.4	25.0	77.6%	0.0%
Phenanthrene	20.8	25.0	83.2%	21.7	25.0	86.8%	4.2%
Carbazole	21.2	25.0	84.8%	22.2	25.0	88.8%	4.6%
Anthracene	20.1	25.0	80.4%	21.1	25.0	84.4%	4.9%
Fluoranthene	21.1	25.0	84.4%	21.6	25.0	86.4%	2.3%
Pyrene	22.6	25.0	90.4%	23.8	25.0	95.2%	5.2%
Benzo(a)anthracene	21.9	25.0	87.6%	22.9	25.0	91.6%	4.5%
Chrysene	23.7	25.0	94.8%	24.8	25.0	99.2%	4.5%
Benzo(b)fluoranthene	19.3	25.0	77.2%	22.0	25.0	88.0%	13.1%
Benzo(k)fluoranthene	20.9	25.0	83.6%	19.6	25.0	78.4%	6.4%
Benzo(a)pyrene	20.2	25.0	80.8%	20.5	25.0	82.0%	1.5%
Indeno(1,2,3-cd)pyrene	23.7	25.0	94.8%	24.7	25.0	98.8%	4.1%
Dibenz(a,h)anthracene	24.5	25.0	98.0%	25.4	25.0	102%	3.6%
Benzo(g,h,i)perylene	24.3	25.0	97.2%	25.5	25.0	102%	4.8%
1-Methylnaphthalene	20.0	25.0	80.0%	21.2	25.0	84.8%	5.8%

Semivolatile Surrogate Recovery

	LCS	LCSD
2-Fluorobiphenyl	90.0%	90.4%
d14-p-Terphenyl	100%	106%
2,4,6-Tribromophenol	102%	101%

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
Page 1 of 1

Sample ID: MW-05D-011410
SAMPLE

Lab Sample ID: QF84A
LIMS ID: 10-1043
Matrix: Water
Data Release Authorized:
Reported: 01/25/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
Event: 021034-010
Date Sampled: 01/14/10
Date Received: 01/15/10

Date Extracted: 01/19/10
Date Analyzed: 01/23/10 15:42
Instrument/Analyst: NT8/YZ

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
205-99-2	Benzo(b)fluoranthene	0.10	< 0.10 U
207-08-9	Benzo(k)fluoranthene	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

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	59.7%
d14-Dibenzo(a,h)anthracene	64.7%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-05S-011410
SAMPLE

Lab Sample ID: QF84B
LIMS ID: 10-1044
Matrix: Water
Data Release Authorized:
Reported: 01/25/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
Event: 021034-010
Date Sampled: 01/14/10
Date Received: 01/15/10

Date Extracted: 01/19/10
Date Analyzed: 01/23/10 16:03
Instrument/Analyst: NT8/YZ

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
205-99-2	Benzo(b)fluoranthene	0.10	< 0.10 U
207-08-9	Benzo(k)fluoranthene	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

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	53.0%
d14-Dibenzo(a,h)anthracene	52.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
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Sample ID: PZ-17-011410
SAMPLE

Lab Sample ID: QF84C
LIMS ID: 10-1045
Matrix: Water
Data Release Authorized:
Reported: 01/25/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
Event: 021034-010
Date Sampled: 01/14/10
Date Received: 01/15/10

Date Extracted: 01/19/10
Date Analyzed: 01/23/10 16:24
Instrument/Analyst: NT8/YZ

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
205-99-2	Benzo(b)fluoranthene	0.10	< 0.10 U
207-08-9	Benzo(k)fluoranthene	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

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	47.0%
d14-Dibenzo(a,h)anthracene	54.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
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Sample ID: CW-13-011410
SAMPLE

Lab Sample ID: QF84D
LIMS ID: 10-1046
Matrix: Water
Data Release Authorized:
Reported: 01/25/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
Event: 021034-010
Date Sampled: 01/14/10
Date Received: 01/15/10

Date Extracted: 01/19/10
Date Analyzed: 01/23/10 16:45
Instrument/Analyst: NT8/YZ

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
205-99-2	Benzo(b)fluoranthene	0.10	< 0.10 U
207-08-9	Benzo(k)fluoranthene	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

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	58.3%
d14-Dibenzo(a,h)anthracene	72.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
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Sample ID: LW-3-011410
SAMPLE

Lab Sample ID: QF84E
LIMS ID: 10-1047
Matrix: Water
Data Release Authorized:
Reported: 01/25/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
Event: 021034-010
Date Sampled: 01/14/10
Date Received: 01/15/10

Date Extracted: 01/19/10
Date Analyzed: 01/23/10 17:06
Instrument/Analyst: NT8/YZ

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
205-99-2	Benzo(b)fluoranthene	0.10	< 0.10 U
207-08-9	Benzo(k)fluoranthene	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

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	52.3%
d14-Dibenzo(a,h)anthracene	22.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
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Sample ID: PZ-13-011410
SAMPLE

Lab Sample ID: QF84F
LIMS ID: 10-1048
Matrix: Water
Data Release Authorized:
Reported: 01/25/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
Event: 021034-010
Date Sampled: 01/14/10
Date Received: 01/15/10

Date Extracted: 01/19/10
Date Analyzed: 01/23/10 17:26
Instrument/Analyst: NT8/YZ

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
205-99-2	Benzo(b)fluoranthene	0.10	< 0.10 U
207-08-9	Benzo(k)fluoranthene	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

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	61.7%
d14-Dibenzo(a,h)anthracene	65.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
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Sample ID: PZ-30-011410
SAMPLE

Lab Sample ID: QF84G
LIMS ID: 10-1049
Matrix: Water
Data Release Authorized:
Reported: 01/25/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
Event: 021034-010
Date Sampled: 01/14/10
Date Received: 01/15/10

Date Extracted: 01/19/10
Date Analyzed: 01/23/10 17:47
Instrument/Analyst: NT8/YZ

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
205-99-2	Benzo(b)fluoranthene	0.10	< 0.10 U
207-08-9	Benzo(k)fluoranthene	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

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	59.7%
d14-Dibenzo(a,h)anthracene	61.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
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Sample ID: MW-01S-011510
SAMPLE

Lab Sample ID: QF84H
LIMS ID: 10-1050
Matrix: Water
Data Release Authorized:
Reported: 01/25/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
Event: 021034-010
Date Sampled: 01/15/10
Date Received: 01/15/10

Date Extracted: 01/19/10
Date Analyzed: 01/23/10 18:08
Instrument/Analyst: NT8/YZ

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	4.2
218-01-9	Chrysene	0.10	4.4
205-99-2	Benzo(b)fluoranthene	0.10	1.3
207-08-9	Benzo(k)fluoranthene	0.10	1.3
50-32-8	Benzo(a)pyrene	0.10	1.6
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	0.35
53-70-3	Dibenz(a,h)anthracene	0.10	0.17

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	105%
d14-Dibenzo(a,h)anthracene	55.0%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-01D-011510
SAMPLE

Lab Sample ID: QF84I
LIMS ID: 10-1051
Matrix: Water
Data Release Authorized:
Reported: 01/25/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
Event: 021034-010
Date Sampled: 01/15/10
Date Received: 01/15/10

Date Extracted: 01/19/10
Date Analyzed: 01/23/10 18:29
Instrument/Analyst: NT8/YZ

Sample Amount: 470 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
205-99-2	Benzo(b)fluoranthene	0.11	< 0.11 U
207-08-9	Benzo(k)fluoranthene	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

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	58.0%
d14-Dibenzo(a,h)anthracene	75.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
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Sample ID: PZ-12-011510
SAMPLE

Lab Sample ID: QF84J
LIMS ID: 10-1052
Matrix: Water
Data Release Authorized:
Reported: 01/25/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
Event: 021034-010
Date Sampled: 01/15/10
Date Received: 01/15/10

Date Extracted: 01/19/10
Date Analyzed: 01/23/10 18:49
Instrument/Analyst: NT8/YZ

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
205-99-2	Benzo(b)fluoranthene	0.10	< 0.10 U
207-08-9	Benzo(k)fluoranthene	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

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	51.0%
d14-Dibenzo(a,h)anthracene	68.7%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-18-011510
SAMPLE

Lab Sample ID: QF84K
LIMS ID: 10-1053
Matrix: Water
Data Release Authorized:
Reported: 01/25/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
Event: 021034-010
Date Sampled: 01/15/10
Date Received: 01/15/10

Date Extracted: 01/19/10
Date Analyzed: 01/23/10 19:10
Instrument/Analyst: NT8/YZ

Sample Amount: 440 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
205-99-2	Benzo(b)fluoranthene	0.11	< 0.11 U
207-08-9	Benzo(k)fluoranthene	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

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	45.3%
d14-Dibenzo(a,h)anthracene	66.7%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: LW-4R-011510
SAMPLE

Lab Sample ID: QF84L
LIMS ID: 10-1054
Matrix: Water
Data Release Authorized:
Reported: 01/25/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
Event: 021034-010
Date Sampled: 01/15/10
Date Received: 01/15/10

Date Extracted: 01/19/10
Date Analyzed: 01/23/10 19:31
Instrument/Analyst: NT8/YZ

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
205-99-2	Benzo(b)fluoranthene	0.11	< 0.11 U
207-08-9	Benzo(k)fluoranthene	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

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	42.0%
d14-Dibenzo(a,h)anthracene	57.0%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MB-011910
METHOD BLANK

Lab Sample ID: MB-011910
LIMS ID: 10-1043
Matrix: Water
Data Release Authorized:
Reported: 01/25/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
Event: 021034-010
Date Sampled: NA
Date Received: NA

Date Extracted: 01/19/10
Date Analyzed: 01/23/10 14:19
Instrument/Analyst: NT8/YZ

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
205-99-2	Benzo(b)fluoranthene	0.10	< 0.10 U
207-08-9	Benzo(k)fluoranthene	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

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	60.3%
d14-Dibenzo(a,h)anthracene	67.7%

ANALYTICAL RESOURCES INCORPORATED

SIM SW8270 SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
021034-010

Client ID	MNP	DBA	TOT OUT
MB-011910	60.3%	67.7%	0
LCS-011910	65.0%	82.3%	0
LCSD-011910	72.7%	79.7%	0
MW-05D-011410	59.7%	64.7%	0
MW-05S-011410	53.0%	52.3%	0
PZ-17-011410	47.0%	54.7%	0
CW-13-011410	58.3%	72.3%	0
LW-3-011410	52.3%	22.7%	0
PZ-13-011410	61.7%	65.7%	0
PZ-30-011410	59.7%	61.3%	0
MW-01S-011510	105%	55.0%	0
MW-01D-011510	58.0%	75.0%	0
PZ-12-011510	51.0%	68.7%	0
PZ-18-011510	45.3%	66.7%	0
LW-4R-011510	42.0%	57.0%	0

	LCS/MB LIMITS	QC LIMITS
(MNP) = d10-2-Methylnaphthalene	(36-101)	(30-106)
(DBA) = d14-Dibenzo(a,h)anthracene	(42-121)	(10-130)

Prep Method: SW3520C
Log Number Range: 10-1043 to 10-1054

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: LCS-011910
LAB CONTROL SAMPLE

Lab Sample ID: LCS-011910
LIMS ID: 10-1043
Matrix: Water
Data Release Authorized:
Reported: 01/25/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
Event: 021034-010
Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 01/19/10

Date Analyzed LCS: 01/23/10 15:01
LCSD: 01/23/10 15:22
Instrument/Analyst LCS: NT8/YZ
LCSD: NT8/YZ

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%	2.97	3.00	99.0%	8.1%
Chrysene	2.96	3.00	98.7%	3.12	3.00	104%	5.3%
Benzo(b)fluoranthene	2.73	3.00	91.0%	2.85	3.00	95.0%	4.3%
Benzo(k)fluoranthene	2.75	3.00	91.7%	3.05	3.00	102%	10.3%
Benzo(a)pyrene	2.44	3.00	81.3%	2.39	3.00	79.7%	2.1%
Indeno(1,2,3-cd)pyrene	2.34	3.00	78.0%	2.47	3.00	82.3%	5.4%
Dibenz(a,h)anthracene	2.54	3.00	84.7%	2.55	3.00	85.0%	0.4%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

SIM Semivolatile Surrogate Recovery

	LCS	LCSD
d10-2-Methylnaphthalene	65.0%	72.7%
d14-Dibenzo(a,h)anthracene	82.3%	79.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
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Sample ID: MW-05D-011410
SAMPLE

Lab Sample ID: QF84A
LIMS ID: 10-1043
Matrix: Water
Data Release Authorized:
Reported: 01/26/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
021034-010
Date Sampled: 01/14/10
Date Received: 01/15/10

Date Extracted: 01/19/10
Date Analyzed: 01/22/10 17:01
Instrument/Analyst: ECD1/AAR

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	66.4%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-05S-011410
SAMPLE

Lab Sample ID: QF84B
LIMS ID: 10-1044
Matrix: Water
Data Release Authorized:
Reported: 01/26/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
021034-010
Date Sampled: 01/14/10
Date Received: 01/15/10

Date Extracted: 01/19/10
Date Analyzed: 01/22/10 17:21
Instrument/Analyst: ECD1/AAR

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	72.8%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-17-011410
SAMPLE

Lab Sample ID: QF84C
LIMS ID: 10-1045
Matrix: Water
Data Release Authorized:
Reported: 01/26/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
021034-010
Date Sampled: 01/14/10
Date Received: 01/15/10

Date Extracted: 01/19/10
Date Analyzed: 01/22/10 18:01
Instrument/Analyst: ECD1/AAR

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	70.0%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: CW-13-011410
SAMPLE

Lab Sample ID: QF84D
LIMS ID: 10-1046
Matrix: Water
Data Release Authorized:
Reported: 01/26/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
021034-010
Date Sampled: 01/14/10
Date Received: 01/15/10

Date Extracted: 01/19/10
Date Analyzed: 01/22/10 18:21
Instrument/Analyst: ECD1/AAR

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	52.0%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: LW-3-011410
SAMPLE

Lab Sample ID: QF84E
LIMS ID: 10-1047
Matrix: Water
Data Release Authorized:
Reported: 01/26/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
021034-010
Date Sampled: 01/14/10
Date Received: 01/15/10

Date Extracted: 01/19/10
Date Analyzed: 01/22/10 18:41
Instrument/Analyst: ECD1/AAR

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	77.2%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-13-011410
SAMPLE

Lab Sample ID: QF84F
LIMS ID: 10-1048
Matrix: Water
Data Release Authorized:
Reported: 01/26/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
021034-010
Date Sampled: 01/14/10
Date Received: 01/15/10

Date Extracted: 01/19/10
Date Analyzed: 01/22/10 19:41
Instrument/Analyst: ECD1/AAR

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	53.6%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-30-011410
SAMPLE

Lab Sample ID: QF84G
LIMS ID: 10-1049
Matrix: Water
Data Release Authorized:
Reported: 01/26/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
021034-010
Date Sampled: 01/14/10
Date Received: 01/15/10

Date Extracted: 01/19/10
Date Analyzed: 01/22/10 20:00
Instrument/Analyst: ECD1/AAR

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	77.6%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-01D-011510
SAMPLE

Lab Sample ID: QF84I
LIMS ID: 10-1051
Matrix: Water
Data Release Authorized:
Reported: 01/26/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
021034-010
Date Sampled: 01/15/10
Date Received: 01/15/10

Date Extracted: 01/19/10
Date Analyzed: 01/22/10 20:20
Instrument/Analyst: ECD1/AAR

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	61.6%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-12-011510
SAMPLE

Lab Sample ID: QF84J
LIMS ID: 10-1052
Matrix: Water
Data Release Authorized:
Reported: 01/26/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
021034-010
Date Sampled: 01/15/10
Date Received: 01/15/10

Date Extracted: 01/19/10
Date Analyzed: 01/22/10 20:40
Instrument/Analyst: ECD1/AAR

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	66.4%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-18-011510
SAMPLE

Lab Sample ID: QF84K
LIMS ID: 10-1053
Matrix: Water
Data Release Authorized:
Reported: 01/26/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
021034-010
Date Sampled: 01/15/10
Date Received: 01/15/10

Date Extracted: 01/19/10
Date Analyzed: 01/22/10 21:00
Instrument/Analyst: ECD1/AAR

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

CAS Number	Analyte	RL	Result
87-86-5	**Pentachlorophenol**	0.25	0.41

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	59.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041

Sample ID: LW-4R-011510
SAMPLE

Lab Sample ID: QF84L
LIMS ID: 10-1054
Matrix: Water
Data Release Authorized:
Reported: 01/26/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
021034-010
Date Sampled: 01/15/10
Date Received: 01/15/10

Date Extracted: 01/19/10
Date Analyzed: 01/22/10 21:20
Instrument/Analyst: ECD1/AAR

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	51.6%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MB-011910
METHOD BLANK

Lab Sample ID: MB-011910
LIMS ID: 10-1043
Matrix: Water
Data Release Authorized:
Reported: 01/26/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
021034-010
Date Sampled: NA
Date Received: NA

Date Extracted: 01/19/10
Date Analyzed: 01/22/10 16:01
Instrument/Analyst: ECD1/AAR

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	64.0%

ANALYTICAL RESOURCES INCORPORATED

SW8041 CHLOROPHENOLICS SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
021034-010

Client ID	TBP	TOT OUT
MB-011910	64.0%	0
LCS-011910	63.0%	0
LCSD-011910	73.4%	0
MW-05D-011410	66.4%	0
MW-05S-011410	72.8%	0
PZ-17-011410	70.0%	0
CW-13-011410	52.0%	0
LW-3-011410	77.2%	0
PZ-13-011410	53.6%	0
PZ-30-011410	77.6%	0
MW-01D-011510	61.6%	0
PZ-12-011510	66.4%	0
PZ-18-011510	59.6%	0
LW-4R-011510	51.6%	0

	LCS/MB LIMITS	QC LIMITS
(TBP) = 2,4,6-Tribromophenol	(40-130)	(11-156)

Prep Method: SW3510C
Log Number Range: 10-1043 to 10-1054

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: LCS-011910
LCS/LCSD

Lab Sample ID: LCS-011910
LIMS ID: 10-1043
Matrix: Water
Data Release Authorized:
Reported: 01/26/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
021034-010
Date Sampled: 01/14/10
Date Received: 01/15/10

Date Extracted LCS/LCSD: 01/19/10

Date Analyzed LCS: 01/22/10 16:21
LCSD: 01/22/10 16:41
Instrument/Analyst LCS: ECD1/AAR
LCSD: ECD1/AAR

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	2.29	2.50	91.6%	2.46	2.50	98.4%	7.2%

Chlorophenols Surrogate Recovery

	LCS	LCSD
2,4,6-Tribromophenol	63.0%	73.4%

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

Data Release Authorized:
Reported: 01/27/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
Event: 021034-010
Date Sampled: 01/14/10
Date Received: 01/15/10

ARI ID	Client ID	Analysis Date	DL	Range	Result
MB-011910	Method Blank	01/19/10	1.0	Gasoline	< 250 U
10-1043		PID3		HC ID	---
				Trifluorotoluene	96.8%
				Bromobenzene	94.9%
QF84A	MW-05D-011410	01/19/10	1.0	Gasoline	< 250 U
10-1043		PID3		HC ID	---
				Trifluorotoluene	101%
				Bromobenzene	99.1%
QF84B	MW-05S-011410	01/19/10	1.0	Gasoline	< 250 U
10-1044		PID3		HC ID	---
				Trifluorotoluene	101%
				Bromobenzene	101%
QF84C	PZ-17-011410	01/19/10	1.0	Gasoline	< 250 U
10-1045		PID3		HC ID	---
				Trifluorotoluene	98.9%
				Bromobenzene	98.2%
QF84D	CW-13-011410	01/19/10	1.0	Gasoline	< 250 U
10-1046		PID3		HC ID	---
				Trifluorotoluene	99.9%
				Bromobenzene	97.6%
QF84E	LW-3-011410	01/19/10	1.0	**Gasoline**	**1800**
10-1047		PID3		HC ID	GRO
				Trifluorotoluene	98.5%
				Bromobenzene	95.0%
QF84F	PZ-13-011410	01/20/10	1.0	Gasoline	< 250 U
10-1048		PID3		HC ID	---
				Trifluorotoluene	97.9%
				Bromobenzene	94.1%
MB-012010	Method Blank	01/20/10	1.0	Gasoline	< 250 U
10-1049		PID3		HC ID	---
				Trifluorotoluene	94.4%
				Bromobenzene	94.7%
QF84G	PZ-30-011410	01/20/10	1.0	Gasoline	< 250 U
10-1049		PID3		HC ID	---
				Trifluorotoluene	97.2%
				Bromobenzene	96.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Matrix: Water

Data Release Authorized:
Reported: 01/27/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
Event: 021034-010
Date Sampled: 01/15/10
Date Received: 01/15/10

ARI ID	Client ID	Analysis Date	DL	Range	Result
QF84H 10-1050	MW-01S-011510	01/20/10 PID3	10	**Gasoline** HC ID Trifluorotoluene Bromobenzene	**23000** GRO 92.5% 92.0%
QF84I 10-1051	MW-01D-011510	01/20/10 PID3	1.0	Gasoline HC ID Trifluorotoluene Bromobenzene	< 250 U --- 97.2% 93.4%
QF84J 10-1052	PZ-12-011510	01/20/10 PID3	1.0	Gasoline HC ID Trifluorotoluene Bromobenzene	< 250 U --- 94.8% 92.9%
QF84K 10-1053	PZ-18-011510	01/20/10 PID3	1.0	Gasoline HC ID Trifluorotoluene Bromobenzene	< 250 U --- 83.7% 86.8%
QF84L 10-1054	LW-4R-011510	01/20/10 PID3	1.0	Gasoline HC ID Trifluorotoluene Bromobenzene	< 250 U --- 96.4% 95.0%
QF84M 10-1055	Trip Blank	01/19/10 PID3	1.0	Gasoline HC ID Trifluorotoluene Bromobenzene	< 250 U --- 99.9% 95.8%

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: QF84
Matrix: Water

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
Event: 021034-010

Client ID	TFT	BBZ	TOT OUT
MB-011910	96.8%	94.9%	0
LCS-011910	98.8%	95.4%	0
LCSD-011910	96.3%	95.2%	0
MW-05D-011410	101%	99.1%	0
MW-05S-011410	101%	101%	0
PZ-17-011410	98.9%	98.2%	0
CW-13-011410	99.9%	97.6%	0
LW-3-011410	98.5%	95.0%	0
PZ-13-011410	97.9%	94.1%	0
MB-012010	94.4%	94.7%	0
LCS-012010	97.7%	94.9%	0
LCSD-012010	96.3%	92.6%	0
PZ-30-011410	97.2%	96.6%	0
MW-01S-011510	92.5%	92.0%	0
MW-01D-011510	97.2%	93.4%	0
PZ-12-011510	94.8%	92.9%	0
PZ-18-011510	83.7%	86.8%	0
LW-4R-011510	96.4%	95.0%	0

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

Log Number Range: 10-1043 to 10-1054

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: LCS-011910
LAB CONTROL SAMPLE

Lab Sample ID: LCS-011910
LIMS ID: 10-1043
Matrix: Water
Data Release Authorized:
Reported: 01/27/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
Event: 021034-010
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 01/19/10 07:50
LCSD: 01/19/10 08:14
Instrument/Analyst LCS: PID3/MH
LCSD: PID3/MH

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	1030	1000	103%	1050	1000	105%	1.9%

Reported in ug/L (ppb)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	98.8%	96.3%
Bromobenzene	95.4%	95.2%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: LCS-012010
LAB CONTROL SAMPLE

Lab Sample ID: LCS-012010
LIMS ID: 10-1049
Matrix: Water
Data Release Authorized:
Reported: 01/27/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
Event: 021034-010
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 01/20/10 07:34
LCSD: 01/20/10 07:58
Instrument/Analyst LCS: PID3/MH
LCSD: PID3/MH

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	1020	1000	102%	970	1000	97.0%	5.0%

Reported in ug/L (ppb)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	97.7%	96.3%
Bromobenzene	94.9%	92.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD by GC/FID-Silica and Acid Cleaned
Page 1 of 2
Matrix: Water

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
021034-010

Data Release Authorized:
Reported: 01/27/10

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DL	Range	RL	Result
MB-011810	Method Blank	01/18/10	01/25/10	1.00	Diesel	250	< 250 U
10-1043	HC ID: ---		FID4A	1.0	Motor Oil	500	< 500 U
					Creosote	250	< 250 U
					o-Terphenyl		78.3%
QF84A	MW-05D-011410	01/18/10	01/25/10	1.00	Diesel	250	< 250 U
10-1043	HC ID: ---		FID4A	1.0	Motor Oil	500	< 500 U
					Creosote	250	< 250 U
					o-Terphenyl		78.1%
QF84B	MW-05S-011410	01/18/10	01/25/10	1.00	Diesel	250	< 250 U
10-1044	HC ID: ---		FID4A	1.0	Motor Oil	500	< 500 U
					Creosote	250	< 250 U
					o-Terphenyl		78.8%
QF84C	PZ-17-011410	01/18/10	01/25/10	1.00	Diesel	250	< 250 U
10-1045	HC ID: ---		FID4A	1.0	Motor Oil	500	< 500 U
					Creosote	250	< 250 U
					o-Terphenyl		79.4%
QF84D	CW-13-011410	01/18/10	01/25/10	1.00	Diesel	250	< 250 U
10-1046	HC ID: ---		FID4A	1.0	Motor Oil	500	< 500 U
					Creosote	250	< 250 U
					o-Terphenyl		83.0%
QF84E	LW-3-011410	01/18/10	01/26/10	1.00	**Diesel**	**250**	**1200**
10-1047	HC ID: **DRO/MOTOR OIL**		FID4A	1.0	**Motor Oil**	**500**	**1200**
					Creosote	**250**	**4400**
					o-Terphenyl		79.4%
QF84F	PZ-13-011410	01/18/10	01/26/10	1.00	Diesel	250	< 250 U
10-1048	HC ID: ---		FID4A	1.0	Motor Oil	500	< 500 U
					Creosote	250	< 250 U
					o-Terphenyl		84.9%
QF84G	PZ-30-011410	01/18/10	01/26/10	1.00	Diesel	250	< 250 U
10-1049	HC ID: ---		FID4A	1.0	Motor Oil	500	< 500 U
					Creosote	250	< 250 U
					o-Terphenyl		77.8%
QF84H	MW-01S-011510	01/18/10	01/26/10	1.00	**Diesel**	**2500**	**6000**
10-1050	HC ID: **CREOSOTE**		FID4A	10	Motor Oil	5000	< 5000 U
					Creosote	**2500**	**24000**
					o-Terphenyl		64.7%

ANALYTICAL RESOURCES INCORPORATED

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

Matrix: Water

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
021034-010

Data Release Authorized:
Reported: 01/27/10

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DL	Range	RL	Result
QF84I	MW-01D-011510	01/18/10	01/26/10	1.00	Diesel	250	< 250 U
10-1051	HC ID: ---		FID4A	1.0	Motor Oil	500	< 500 U
					Creosote	250	< 250 U
					o-Terphenyl		73.0%
QF84J	PZ-12-011510	01/18/10	01/26/10	1.00	Diesel	250	< 250 U
10-1052	HC ID: ---		FID4A	1.0	Motor Oil	500	< 500 U
					Creosote	250	< 250 U
					o-Terphenyl		75.6%
QF84K	PZ-18-011510	01/18/10	01/26/10	1.00	Diesel	250	< 250 U
10-1053	HC ID: ---		FID4A	1.0	Motor Oil	500	< 500 U
					Creosote	250	< 250 U
					o-Terphenyl		77.6%
QF84L	LW-4R-011510	01/18/10	01/26/10	1.00	Diesel	250	< 250 U
10-1054	HC ID: ---		FID4A	1.0	Motor Oil	500	< 500 U
					Creosote	250	< 250 U
					o-Terphenyl		68.7%

Reported in ug/L (ppb)

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

Diesel quantitation on total peaks in the range from C12 to C24.
Motor Oil quantitation on total peaks in the range from C24 to C38.
Creosote 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: QF84-Landau Associates, Inc.
Project: Port of Olympia
021034-010

Client ID	OTER	TOT OUT
MB-011810	78.3%	0
LCS-011810	84.9%	0
LCSD-011810	90.2%	0
MW-05D-011410	78.1%	0
MW-05S-011410	78.8%	0
PZ-17-011410	79.4%	0
CW-13-011410	83.0%	0
LW-3-011410	79.4%	0
PZ-13-011410	84.9%	0
PZ-30-011410	77.8%	0
MW-01S-011510	64.7%	0
MW-01D-011510	73.0%	0
PZ-12-011510	75.6%	0
PZ-18-011510	77.6%	0
LW-4R-011510	68.7%	0

	LCS/MB LIMITS	QC LIMITS
(OTER) = o-Terphenyl	(51-120)	(41-121)

Prep Method: SW3510C
Log Number Range: 10-1043 to 10-1054

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID-Silica and Acid Cleaned **Sample ID: LCS-011810**
Page 1 of 1 **LCS/LCSD**

Lab Sample ID: LCS-011810
LIMS ID: 10-1043
Matrix: Water
Data Release Authorized:
Reported: 01/27/10

QC Report No: QF84-Landau Associates, Inc.
Project: Port of Olympia
021034-010
Date Sampled: 01/14/10
Date Received: 01/15/10

Date Extracted LCS/LCSD: 01/18/10
Date Analyzed LCS: 01/25/10 19:53
LCSD: 01/25/10 20:19
Instrument/Analyst LCS: FID/MS
LCSD: FID/MS

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	2190	3000	73.0%	2260	3000	75.3%	3.1%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	84.9%	90.2%

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

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

Matrix: Water
Date Received: 01/15/10

ARI Job: QF84
Project: Port of Olympia
021034-010

ARI ID	Client ID	Samp Amt	Final Vol	Prep Date
10-1043-011810MB1	Method Blank	500 mL	1.00 mL	01/18/10
10-1043-011810LCS1	Lab Control	500 mL	1.00 mL	01/18/10
10-1043-011810LCSD1	Lab Control Dup	500 mL	1.00 mL	01/18/10
10-1043-QF84A	MW-05D-011410	500 mL	1.00 mL	01/18/10
10-1044-QF84B	MW-05S-011410	500 mL	1.00 mL	01/18/10
10-1045-QF84C	PZ-17-011410	500 mL	1.00 mL	01/18/10
10-1046-QF84D	CW-13-011410	500 mL	1.00 mL	01/18/10
10-1047-QF84E	LW-3-011410	500 mL	1.00 mL	01/18/10
10-1048-QF84F	PZ-13-011410	500 mL	1.00 mL	01/18/10
10-1049-QF84G	PZ-30-011410	500 mL	1.00 mL	01/18/10
10-1050-QF84H	MW-01S-011510	500 mL	1.00 mL	01/18/10
10-1051-QF84I	MW-01D-011510	500 mL	1.00 mL	01/18/10
10-1052-QF84J	PZ-12-011510	500 mL	1.00 mL	01/18/10
10-1053-QF84K	PZ-18-011510	500 mL	1.00 mL	01/18/10
10-1054-QF84L	LW-4R-011510	500 mL	1.00 mL	01/18/10

Analytical Resources, Incorporated
Analytical Chemists and Consultants

January 28, 2010

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

RE: Project: Port of Olympia
ARI Job No: QG15

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 three water samples and a trip blank in good condition on January 19, 2010.

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

KB/kb

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

Case Narrative
Project: 021034.010
ARI Job No.: QG15
January 28, 2010

Sample Receipt:

Please find enclosed the original *Chain of Custody (COC)* record and analytical results for the project referenced above. Analytical Resources, Inc. accepted three water samples and a trip blank in good condition on January 19, 2010. The samples were received at a cooler temperature of 3.4°C. Please see the *Cooler Receipt Form* for further details.

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 1/21/10. The samples were analyzed on 1/22/10 and 1/26/10 within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: All surrogate recoveries were 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.

SIM PNA by method 8270-SIM Water

The samples were extracted on 1/21/10 and analyzed on 1/23/10 within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: All surrogate recoveries were 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.

Case Narrative
Project: 021034.010
ARI Job No.: QG15
January 27, 2010
Page 2

PCP Only by method 8041

The samples were extracted on 1/20/10 and analyzed on 1/22/10 within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: All surrogate recoveries were in control.

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

Method Blank: The method blanks were free of contamination.

NWTPH-Gx

The samples were analyzed on 1/20/10 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 blanks were free of contamination.

NWTPH-Dx

The samples were extracted on 1/20/10 - within the method recommended holding time. The extracts were analyzed on 1/23/10.

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 blanks were free of contamination.

LANDAU ASSOCIATES

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

Chain-of-Custody Record

Date 1/18/10
Page 1 of 1

Project Name Port of Olympia Project No. 021034.010
Project Location/Event Olympia, WA / Semi Annual
Sampler's Name Jessica Stone
Project Contact Chris Kimmel
Send Results To Chris Kimmel

Turnaround Time
☒ Standard
☐ Accelerated
☐ _____

Sample I.D.	Date	Time	Matrix	No. of Containers	Testing Parameters: TPH-Gx	TPH-Dx + Creosote	PAHs (8270)	cPAHs SIM	PCP (8270)	PCP (8041)	Observations/Comments
MW-02D-011810	1/18/10	0920	WATER	10	X	X	X	X	X	X	
MW-02S-011810	1/18/10	1019	WATER	10	X	X	X	X	X	X	
PZ-19-011810	1/18/10	1134	WATER	10	X	X	X	X	X	X	
TRIP BLANKS	1/18/10	-	WATER	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 Run all sample for PCP using 8270-SIM 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
Printed Name JESSICA STONE	Printed Name Rich Hudson	Printed Name	Printed Name
Company LANDAU ASSOCIATES	Company ARI	Company	Company
Date 1/19/10 Time 1335	Date 1/19/10 Time 1335	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

COC No(s): _____ (NA)

Assigned ARI Job No: QF15

Project Name: Port of Olympia

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

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)		3.4

If cooler temperature is out of compliance fill out form 00070F — Temp Gun ID#: 90941619

Cooler Accepted by: _____ Date: 1/19/10 Time: 1505

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	1/11/10	

Samples Logged by: JP Date: 1/19/10 Time: 1630

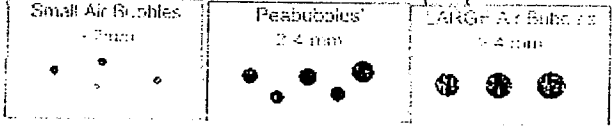
*** Notify Project Manager of discrepancies or concerns ***

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

Additional Notes, Discrepancies, & Resolutions:

"Pb" in both Trip Blanks.

By: JP Date: 1/19/10



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

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-02D-011810
SAMPLE

Lab Sample ID: QG15A
LIMS ID: 10-1195
Matrix: Water
Data Release Authorized:
Reported: 01/28/10

QC Report No: QG15-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 01/18/10
Date Received: 01/19/10

Date Extracted: 01/21/10
Date Analyzed: 01/22/10 21:22
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**	**100 E**
91-57-6	**2-Methylnaphthalene**	**1.0**	**36**
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	**Acenaphthene**	**1.0**	**34**
132-64-9	**Dibenzofuran**	**1.0**	**14**
86-73-7	**Fluorene**	**1.0**	**15**
87-86-5	Pentachlorophenol	5.0	< 5.0 U
85-01-8	**Phenanthrene**	**1.0**	**9.1**
86-74-8	**Carbazole**	**1.0**	**9.1**
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
205-99-2	Benzo(b)fluoranthene	1.0	< 1.0 U
207-08-9	Benzo(k)fluoranthene	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**	**30**

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	77.2%
d14-p-Terphenyl	86.8%
2,4,6-Tribromophenol	80.3%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-02D-011810
DILUTION

Lab Sample ID: QG15A
LIMS ID: 10-1195
Matrix: Water
Data Release Authorized:
Reported: 01/28/10

QC Report No: QG15-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 01/18/10
Date Received: 01/19/10

Date Extracted: 01/21/10
Date Analyzed: 01/26/10 18:02
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 3.00

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**3.0**	**180**
91-57-6	**2-Methylnaphthalene**	**3.0**	**41**
208-96-8	Acenaphthylene	3.0	< 3.0 U
83-32-9	**Acenaphthene**	**3.0**	**38**
132-64-9	**Dibenzofuran**	**3.0**	**13**
86-73-7	**Fluorene**	**3.0**	**16**
87-86-5	Pentachlorophenol	15	< 15 U
85-01-8	**Phenanthrene**	**3.0**	**9.5**
86-74-8	**Carbazole**	**3.0**	**9.7**
120-12-7	Anthracene	3.0	< 3.0 U
206-44-0	Fluoranthene	3.0	< 3.0 U
129-00-0	Pyrene	3.0	< 3.0 U
56-55-3	Benzo(a)anthracene	3.0	< 3.0 U
218-01-9	Chrysene	3.0	< 3.0 U
205-99-2	Benzo(b)fluoranthene	3.0	< 3.0 U
207-08-9	Benzo(k)fluoranthene	3.0	< 3.0 U
50-32-8	Benzo(a)pyrene	3.0	< 3.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	3.0	< 3.0 U
53-70-3	Dibenz(a,h)anthracene	3.0	< 3.0 U
191-24-2	Benzo(g,h,i)perylene	3.0	< 3.0 U
90-12-0	**1-Methylnaphthalene**	**3.0**	**35**

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	80.5%
d14-p-Terphenyl	79.8%
2,4,6-Tribromophenol	92.0%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-02S-011810
SAMPLE

Lab Sample ID: QG15B
LIMS ID: 10-1196
Matrix: Water
Data Release Authorized:
Reported: 01/28/10

QC Report No: QG15-LANDAU ASSOCIATES, INC.
Project: Port of Olympia
021034.010
Date Sampled: 01/18/10
Date Received: 01/19/10

Date Extracted: 01/21/10
Date Analyzed: 01/22/10 21:54
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	< 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	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	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
205-99-2	Benzo(b)fluoranthene	1.0	< 1.0 U
207-08-9	Benzo(k)fluoranthene	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

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	77.6%
d14-p-Terphenyl	74.4%
2,4,6-Tribromophenol	86.1%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-19-011810
SAMPLE

Lab Sample ID: QG15C
LIMS ID: 10-1197
Matrix: Water
Data Release Authorized:
Reported: 01/28/10

QC Report No: QG15-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 01/18/10
Date Received: 01/19/10

Date Extracted: 01/21/10
Date Analyzed: 01/22/10 22:26
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	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	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
205-99-2	Benzo(b)fluoranthene	1.0	< 1.0 U
207-08-9	Benzo(k)fluoranthene	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

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	82.8%
d14-p-Terphenyl	91.2%
2,4,6-Tribromophenol	86.7%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MB-012110
METHOD BLANK

Lab Sample ID: MB-012110
LIMS ID: 10-1195
Matrix: Water
Data Release Authorized:
Reported: 01/28/10

QC Report No: QG15-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: NA
Date Received: NA

Date Extracted: 01/21/10
Date Analyzed: 01/22/10 19:46
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	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	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
205-99-2	Benzo(b)fluoranthene	1.0	< 1.0 U
207-08-9	Benzo(k)fluoranthene	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

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	90.4%
d14-p-Terphenyl	103%
2,4,6-Tribromophenol	95.5%

ANALYTICAL RESOURCES INCORPORATED

SW8270 SEMIVOLATILES WATER SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: QG15-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010

Client ID	FBP	TPH	TBP	TOT OUT
MB-012110	90.4%	103%	95.5%	0
LCS-012110	88.0%	83.6%	97.3%	0
LCSD-012110	91.2%	92.0%	105%	0
MW-02D-011810	77.2%	86.8%	80.3%	0
MW-02D-011810 DL	80.5%	79.8%	92.0%	0
MW-02S-011810	77.6%	74.4%	86.1%	0
PZ-19-011810	82.8%	91.2%	86.7%	0

	LCS/MB LIMITS	QC LIMITS
(FBP) = 2-Fluorobiphenyl	(49-100)	(42-100)
(TPH) = d14-p-Terphenyl	(53-119)	(26-114)
(TBP) = 2,4,6-Tribromophenol	(52-123)	(48-118)

Prep Method: SW3520C
Log Number Range: 10-1195 to 10-1197

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: LCS-012110
LCS/LCSD

Lab Sample ID: LCS-012110
LIMS ID: 10-1195
Matrix: Water
Data Release Authorized:
Reported: 01/28/10

QC Report No: QG15-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 01/18/10
Date Received: 01/19/10

Date Extracted LCS/LCSD: 01/21/10

Date Analyzed LCS: 01/26/10 18:34
LCSD: 01/26/10 19:06
Instrument/Analyst LCS: NT6/JZ
LCSD: NT6/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

GPC Cleanup: NO

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Naphthalene	19.2	25.0	76.8%	20.4	25.0	81.6%	6.1%
2-Methylnaphthalene	18.6	25.0	74.4%	19.5	25.0	78.0%	4.7%
Acenaphthylene	19.4	25.0	77.6%	20.5	25.0	82.0%	5.5%
Acenaphthene	20.0	25.0	80.0%	21.2	25.0	84.8%	5.8%
Dibenzofuran	20.0	25.0	80.0%	20.6	25.0	82.4%	3.0%
Fluorene	19.8	25.0	79.2%	21.9	25.0	87.6%	10.1%
Pentachlorophenol	20.9	25.0	83.6%	22.6	25.0	90.4%	7.8%
Phenanthrene	19.8	25.0	79.2%	21.0	25.0	84.0%	5.9%
Carbazole	20.7	25.0	82.8%	22.0	25.0	88.0%	6.1%
Anthracene	19.4	25.0	77.6%	20.5	25.0	82.0%	5.5%
Fluoranthene	21.5	25.0	86.0%	23.0	25.0	92.0%	6.7%
Pyrene	18.4	25.0	73.6%	20.6	25.0	82.4%	11.3%
Benzo(a)anthracene	20.4	25.0	81.6%	22.3	25.0	89.2%	8.9%
Chrysene	22.1	25.0	88.4%	24.1	25.0	96.4%	8.7%
Benzo(b)fluoranthene	20.2	25.0	80.8%	22.2	25.0	88.8%	9.4%
Benzo(k)fluoranthene	17.0	25.0	68.0%	19.5	25.0	78.0%	13.7%
Benzo(a)pyrene	19.2	25.0	76.8%	20.5	25.0	82.0%	6.5%
Indeno(1,2,3-cd)pyrene	20.1	25.0	80.4%	21.3	25.0	85.2%	5.8%
Dibenz(a,h)anthracene	20.8	25.0	83.2%	21.9	25.0	87.6%	5.2%
Benzo(g,h,i)perylene	19.6	25.0	78.4%	20.4	25.0	81.6%	4.0%
1-Methylnaphthalene	19.8	25.0	79.2%	21.3	25.0	85.2%	7.3%

Semivolatile Surrogate Recovery

	LCS	LCSD
2-Fluorobiphenyl	88.0%	91.2%
d14-p-Terphenyl	83.6%	92.0%
2,4,6-Tribromophenol	97.3%	105%

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
Page 1 of 1

Sample ID: MW-02D-011810
SAMPLE

Lab Sample ID: QG15A
LIMS ID: 10-1195
Matrix: Water
Data Release Authorized:
Reported: 01/25/10

QC Report No: QG15-LANDAU ASSOCIATES, INC.
Project: Port of Olympia
Event: 021034.010
Date Sampled: 01/18/10
Date Received: 01/19/10

Date Extracted: 01/21/10
Date Analyzed: 01/23/10 11:54
Instrument/Analyst: NT8/YZ

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
205-99-2	Benzo(b)fluoranthene	0.10	< 0.10 U
207-08-9	Benzo(k)fluoranthene	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

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	54.7%
d14-Dibenzo(a,h)anthracene	69.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: MW-02S-011810
SAMPLE

Lab Sample ID: QG15B
LIMS ID: 10-1196
Matrix: Water
Data Release Authorized:
Reported: 01/25/10

QC Report No: QG15-LANDAU ASSOCIATES, INC.
Project: Port of Olympia
Event: 021034.010
Date Sampled: 01/18/10
Date Received: 01/19/10

Date Extracted: 01/21/10
Date Analyzed: 01/23/10 12:14
Instrument/Analyst: NT8/YZ

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
205-99-2	Benzo(b)fluoranthene	0.10	< 0.10 U
207-08-9	Benzo(k)fluoranthene	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

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	58.3%
d14-Dibenzo(a,h)anthracene	48.0%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-19-011810
SAMPLE

Lab Sample ID: QG15C
LIMS ID: 10-1197
Matrix: Water
Data Release Authorized: 
Reported: 01/25/10

QC Report No: QG15-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 021034.010
Date Sampled: 01/18/10
Date Received: 01/19/10

Date Extracted: 01/21/10
Date Analyzed: 01/23/10 12:35
Instrument/Analyst: NT8/YZ

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
205-99-2	Benzo(b)fluoranthene	0.10	< 0.10 U
207-08-9	Benzo(k)fluoranthene	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

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	58.0%
d14-Dibenzo(a,h)anthracene	64.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: MB-012110
METHOD BLANK

Lab Sample ID: MB-012110
LIMS ID: 10-1195
Matrix: Water
Data Release Authorized:
Reported: 01/25/10

QC Report No: QG15-LANDAU ASSOCIATES, INC.
Project: Port of Olympia
Event: 021034.010
Date Sampled: NA
Date Received: NA

Date Extracted: 01/21/10
Date Analyzed: 01/23/10 10:51
Instrument/Analyst: NT8/YZ

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
205-99-2	Benzo(b)fluoranthene	0.10	< 0.10 U
207-08-9	Benzo(k)fluoranthene	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

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	67.3%
d14-Dibenzo(a,h)anthracene	84.0%

ANALYTICAL RESOURCES INCORPORATED

SIM SW8270 SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: QG15-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010

Client ID	MNP	DBA	TOT OUT
MB-012110	67.3%	84.0%	0
LCS-012110	62.0%	86.7%	0
LCSD-012110	64.3%	85.7%	0
MW-02D-011810	54.7%	69.0%	0
MW-02S-011810	58.3%	48.0%	0
PZ-19-011810	58.0%	64.7%	0

	LCS/MB LIMITS	QC LIMITS
(MNP) = d10-2-Methylnaphthalene	(36-101)	(30-106)
(DBA) = d14-Dibenzo(a,h)anthracene	(42-121)	(10-130)

Prep Method: SW3520C
Log Number Range: 10-1195 to 10-1197

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: LCS-012110
LAB CONTROL SAMPLE

Lab Sample ID: LCS-012110
LIMS ID: 10-1195
Matrix: Water
Data Release Authorized:
Reported: 01/25/10

QC Report No: QG15-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 021034.010
Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 01/21/10

Date Analyzed LCS: 01/23/10 11:12
LCSD: 01/23/10 11:32
Instrument/Analyst LCS: NT8/YZ
LCSD: NT8/YZ

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	2.57	3.00	85.7%	2.80	3.00	93.3%	8.6%
Chrysene	2.78	3.00	92.7%	3.04	3.00	101%	8.9%
Benzo(b)fluoranthene	2.61	3.00	87.0%	2.84	3.00	94.7%	8.4%
Benzo(k)fluoranthene	2.46	3.00	82.0%	2.86	3.00	95.3%	15.0%
Benzo(a)pyrene	2.40	3.00	80.0%	2.40	3.00	80.0%	0.0%
Indeno(1,2,3-cd)pyrene	2.47	3.00	82.3%	2.54	3.00	84.7%	2.8%
Dibenz(a,h)anthracene	2.64	3.00	88.0%	2.70	3.00	90.0%	2.2%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

SIM Semivolatile Surrogate Recovery

	LCS	LCSD
d10-2-Methylnaphthalene	62.0%	64.3%
d14-Dibenzo(a,h)anthracene	86.7%	85.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041

Sample ID: MW-02D-011810
SAMPLE

Lab Sample ID: QG15A
LIMS ID: 10-1195
Matrix: Water
Data Release Authorized:
Reported: 01/26/10

QC Report No: QG15-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 01/18/10
Date Received: 01/19/10

Date Extracted: 01/20/10
Date Analyzed: 01/22/10 14:21
Instrument/Analyst: ECD1/AAR

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	72.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041

Sample ID: MW-02S-011810
SAMPLE

Lab Sample ID: QG15B
LIMS ID: 10-1196
Matrix: Water
Data Release Authorized:
Reported: 01/26/10

QC Report No: QG15-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 01/18/10
Date Received: 01/19/10

Date Extracted: 01/20/10
Date Analyzed: 01/22/10 14:41
Instrument/Analyst: ECD1/AAR

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	67.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041

Sample ID: PZ-19-011810
SAMPLE

Lab Sample ID: QG15C
LIMS ID: 10-1197
Matrix: Water
Data Release Authorized:
Reported: 01/26/10

QC Report No: QG15-LANDAU ASSOCIATES, INC.
Project: Port of Olympia
021034.010
Date Sampled: 01/18/10
Date Received: 01/19/10

Date Extracted: 01/20/10
Date Analyzed: 01/22/10 15:01
Instrument/Analyst: ECD1/AAR

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	52.8%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MB-012010
METHOD BLANK

Lab Sample ID: MB-012010
LIMS ID: 10-1195
Matrix: Water
Data Release Authorized:
Reported: 01/26/10

QC Report No: QG15-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: NA
Date Received: NA

Date Extracted: 01/20/10
Date Analyzed: 01/22/10 13:21
Instrument/Analyst: ECD1/AAR

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	68.0%

ANALYTICAL RESOURCES INCORPORATED

SW8041 CHLOROPHENOLICS SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: QG15-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010

Client ID	TBP	TOT OUT
MB-012010	68.0%	0
LCS-012010	70.0%	0
LCSD-012010	67.0%	0
MW-02D-011810	72.4%	0
MW-02S-011810	67.6%	0
PZ-19-011810	52.8%	0

	LCS/MB LIMITS	QC LIMITS
(TBP) = 2,4,6-Tribromophenol	(40-130)	(11-156)

Prep Method: SW3510C
Log Number Range: 10-1195 to 10-1197

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: LCS-012010
LCS/LCSD

Lab Sample ID: LCS-012010
LIMS ID: 10-1195
Matrix: Water
Data Release Authorized:
Reported: 01/26/10

QC Report No: QG15-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 01/18/10
Date Received: 01/19/10

Date Extracted LCS/LCSD: 01/20/10

Date Analyzed LCS: 01/22/10 13:41
LCSD: 01/22/10 14:01
Instrument/Analyst LCS: ECD1/AAR
LCSD: ECD1/AAR

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	2.37	2.50	94.8%	2.36	2.50	94.4%	0.4%

Chlorophenols Surrogate Recovery

	LCS	LCSD
2,4,6-Tribromophenol	70.0%	67.0%

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

Data Release Authorized:
Reported: 01/27/10

QC Report No: QG15-LANDAU ASSOCIATES, INC.
Project: Port of Olympia
Event: 021034.010
Date Sampled: 01/18/10
Date Received: 01/19/10

ARI ID	Client ID	Analysis Date	DL	Range	Result
MB-012010	Method Blank	01/20/10	1.0	Gasoline	< 250 U
10-1195		PID3		HC ID	---
				Trifluorotoluene	94.4%
				Bromobenzene	94.7%
QG15A	MW-02D-011810	01/20/10	1.0	**Gasoline**	**600**
10-1195		PID3		HC ID	GRO
				Trifluorotoluene	94.9%
				Bromobenzene	92.5%
QG15B	MW-02S-011810	01/20/10	1.0	Gasoline	< 250 U
10-1196		PID3		HC ID	---
				Trifluorotoluene	97.8%
				Bromobenzene	96.1%
QG15C	PZ-19-011810	01/20/10	1.0	Gasoline	< 250 U
10-1197		PID3		HC ID	---
				Trifluorotoluene	94.0%
				Bromobenzene	94.3%
QG15D	Trip Blanks	01/20/10	1.0	Gasoline	< 250 U
10-1198		PID3		HC ID	---
				Trifluorotoluene	90.3%
				Bromobenzene	89.8%

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

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

Sample ID: LCS-012010
LAB CONTROL SAMPLE

Lab Sample ID: LCS-012010
LIMS ID: 10-1195
Matrix: Water
Data Release Authorized:
Reported: 01/27/10

QC Report No: QG15-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 021034.010
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 01/20/10 07:34
LCSD: 01/20/10 07:58
Instrument/Analyst LCS: PID3/MH
LCSD: PID3/MH

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	1020	1000	102%	970	1000	97.0%	5.0%

Reported in ug/L (ppb)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	97.7%	96.3%
Bromobenzene	94.9%	92.6%

ANALYTICAL RESOURCES INCORPORATED

TPHG WATER SURROGATE RECOVERY SUMMARY

ARI Job: QG15
Matrix: Water

QC Report No: QG15-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 021034.010

Client ID	TFT	BBZ	TOT OUT
MB-012010	94.4%	94.7%	0
LCS-012010	97.7%	94.9%	0
LCSD-012010	96.3%	92.6%	0
MW-02D-011810	94.9%	92.5%	0
MW-02S-011810	97.8%	96.1%	0
PZ-19-011810	94.0%	94.3%	0
Trip Blanks	90.3%	89.8%	0

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

Log Number Range: 10-1195 to 10-1198

ANALYTICAL RESOURCES INCORPORATED

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

QC Report No: QG15-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010

Data Release Authorized:
Reported: 01/27/10

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DL	Range	RL	Result
MB-012010	Method Blank	01/20/10	01/22/10	1.00	Diesel	250	< 250 U
10-1195	HC ID: ---		FID4A	1.0	Motor Oil	500	< 500 U
					Creosote	250	< 250 U
					o-Terphenyl		87.0%
QG15A	MW-02D-011810	01/20/10	01/23/10	1.00	Diesel	250	< 250 U
10-1195	HC ID: **CREOSOTE**		FID4A	1.0	Motor Oil	500	< 500 U
					Creosote	**250**	**700**
					o-Terphenyl		87.1%
QG15B	MW-02S-011810	01/20/10	01/23/10	1.00	Diesel	250	< 250 U
10-1196	HC ID: ---		FID4A	1.0	Motor Oil	500	< 500 U
					Creosote	250	< 250 U
					o-Terphenyl		89.1%
QG15C	PZ-19-011810	01/20/10	01/23/10	1.00	Diesel	250	< 250 U
10-1197	HC ID: ---		FID4A	1.0	Motor Oil	500	< 500 U
					Creosote	250	< 250 U
					o-Terphenyl		74.4%

Reported in ug/L (ppb)

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

Diesel quantitation on total peaks in the range from C12 to C24.
Motor Oil quantitation on total peaks in the range from C24 to C38.
Creosote 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: QG15-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010

Client ID	OTER	TOT OUT
MB-012010	87.0%	0
LCS-012010	84.7%	0
LCSD-012010	88.5%	0
MW-02D-011810	87.1%	0
MW-02S-011810	89.1%	0
PZ-19-011810	74.4%	0

	LCS/MB LIMITS	QC LIMITS
(OTER) = o-Terphenyl	(51-120)	(41-121)

Prep Method: SW3510C
Log Number Range: 10-1195 to 10-1197

FORM-II TPHD

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID-Silica and Acid Cleaned **Sample ID: LCS-012010**
Page 1 of 1 **LCS/LCSD**

Lab Sample ID: LCS-012010
LIMS ID: 10-1195
Matrix: Water
Data Release Authorized:
Reported: 01/27/10

QC Report No: QG15-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 01/18/10
Date Received: 01/19/10

Date Extracted LCS/LCSD: 01/20/10

Date Analyzed LCS: 01/23/10 00:22
LCSD: 01/23/10 00:48
Instrument/Analyst LCS: FID/MS
LCSD: FID/MS

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	2140	3000	71.3%	2280	3000	76.0%	6.3%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	84.7%	88.5%

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

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

Matrix: Water
Date Received: 01/19/10

ARI Job: QG15
Project: Port of Olympia
021034.010

ARI ID	Client ID	Samp Amt	Final Vol	Prep Date
10-1195-012010MB1	Method Blank	500 mL	1.00 mL	01/20/10
10-1195-012010LCS1	Lab Control	500 mL	1.00 mL	01/20/10
10-1195-012010LCSD1	Lab Control Dup	500 mL	1.00 mL	01/20/10
10-1195-QG15A	MW-02D-011810	500 mL	1.00 mL	01/20/10
10-1196-QG15B	MW-02S-011810	500 mL	1.00 mL	01/20/10
10-1197-QG15C	PZ-19-011810	500 mL	1.00 mL	01/20/10

Analytical Resources, Incorporated
Analytical Chemists and Consultants

November 15, 2010

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

RE: Project: Port of Olympia
ARI Job No: RS33

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 October 19, 2010.

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

KB/kb

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

LANDAU ASSOCIATES

- [X] **Seattle/Edmonds** (425) 778-0907
- [ ] **Tacoma** (253) 926-2493
- [ ] **Spokane** (509) 327-9737
- [ ] **Portland** (503) 542-1080
- [ ] _____

RS33 — 10-26943 to 10-26958

Date 10/19/10

Page 1 of 1

Chain-of-Custody Record

Project Name PORT OF OLYMPIA — Project No. 021034.010

Project Location/Event OLYMPIA, WA / Semi Annual

Sampler's Name JESSICA STONE / DYLAN FRAZER

Project Contact CHRIS KIMMEL

Send Results To CHRIS KIMMEL

Turnaround Time
- [X] Standard
- [ ] Accelerated
- [ ] _____

Sample I.D.	Date	Time	Matrix	No. of Containers	TPH-Gx	TPH-Dx + Creosote	PAH's (8270)	cPAH's SIM	PCP (8270)	PCP (8041)	Observations/Comments
PZ-12-101810	10/18/10	1232	WATER	10	X	X	X	X	X	X	
PZ-13-101810	10/18/10	1230	WATER	10	X	X	X	X	X	X	
LW-3-101810	10/18/10	1609	WATER	10	X	X	X	X	X	X	
PZ-17-101810	10/18/10	1606	WATER	10	X	X	X	X	X	X	
MW-2S-101810	10/18/10	1432	WATER	10	X	X	X	X	X	X	
MW-2D-101810	10/18/10	1445	WATER	10	X	X	X	X	X	X	
CW-13-101910	10/19/10	1035	WATER	10	X	X	X	X	X	X	
PZ-19-101910	10/19/10	0915	WATER	10	X	X	X	X	X	X	
MW-5S-101910	10/19/10	1012	WATER	10	X	X	X	X	X	X	
DUPLICATE	10/19/10	1018	WATER	10	X	X	X	X	X	X	
MW-5D-101910	10/19/10	1118	WATER	10	X	X	X	X	X	X	
PZ-18-101910	10/19/10	1500	WATER	9	X	X	X	X	X	X	
MW-01S-101910	10/19/10	1444	WATER	10	X	X	X	X	X	X	
LW-4R-101910	10/19/10	1459	WATER	10	X	X	X	X	X	X	
MW-01D-101910	10/19/10	1355	WATER	10	X	X	X	X	X	X	
TRIP BLANKS				4	X						

Testing Parameters

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: STORE DARK 4°C

Method of Shipment: DROP OFF AT ARI

Relinquished by	Received by	Relinquished by	Received by
Signature: D	Signature:	Signature:	Signature:
Printed Name: DYLAN FRAZER	Printed Name: A. Volgardsen	Printed Name:	Printed Name:
Company: LAI	Company: ARI	Company:	Company:
Date: 10/19/10 Time: 1745	Date: 10/19/10 Time: 1745	Date: Time:	Date: Time:

WHITE COPY - Project File — YELLOW COPY - Laboratory — PINK COPY - Client Representative

Rev 8/09

RS33 - 000002

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: RS33 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) 7.8 6.1 7.2 1.7 2.8 1.6 1.8

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

Cooler Accepted by: AV Date: 10/19/10 Time: 1745

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	10/14/10	

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

Samples Logged by: JM Date: 10/20/10 Time: 1130

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

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC
MW-DZD-101810	MW-ZD-101810		

Additional Notes, Discrepancies, & Resolutions:
One 500 mL Amber bottle for PZ-12-101810 was broken during Cozen;

By: JM Date: 10/20/10

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

Small → "sm"	PZ-12, LWR, DUP, PZ18, MW-015
Peabubbles → "pb"	LW-3, PZ-17, MW-55, MW-01D
Large → "lg"	MW-25
Headspace → "hs"	

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Temperature Compliance Form

Cooler#: 1	Temperature(°C): 7.8	
Sample ID	**Bottle Count**	**Bottle Type**
MW-5S-101910	8	8-500 mL Ambers
Duplicate	8	8-500 mL Ambers

Cooler#: 2	Temperature(°C): 6.1	
Sample ID	**Bottle Count**	**Bottle Type**
MW-2D-101810	8	8-500 mL Ambers
MW-5D-101910	8	8-500 mL Ambers

Cooler#: 3	Temperature(°C): 7.2	
Sample ID	**Bottle Count**	**Bottle Type**
LW-4R-101910	8	8-500 mL Ambers
MW-01D-101910	8	"

Cooler#:	Temperature(°C):	
Sample ID	**Bottle Count**	**Bottle Type**

Completed by: JM Date: 10/20/10 Time: 1015

ANALYTICAL
RESOURCES
INCORPORATED

Case Narrative
Project: 021034.010
ARI Job No.: RS33
November 15, 2010

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 October 19, 2010. The samples were received at cooler temperatures between of 1.6 and 7.8°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 10/22/10. The samples were analyzed between 10/28/10 and 11/1/10 within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: All surrogate recoveries were in control.

LCS/LSCD (s): The LCS and/or LCSD are out of control high for Indeno(1,2,3-cd) pyrene and out of control low for Carbazole. No further action was taken.

Method Blank: The method blank was free of contamination.

Continuing Calibrations: The 10/28/10 CCAL is out of control high for Indeno(1,2,3-cd) pyrene. All associated samples that contain analyte have been flagged with a "Q" qualifier.

SIM PNA by method 8270-SIM Water

The samples were extracted on 10/23/10 and analyzed on 11/2/10 and 11/3/10 within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: All surrogate recoveries were 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.

RS33:00005 (B)

Case Narrative
Project: 021034.010
ARI Job No.: QF84
January 27, 2010
Page 2

PCP Only by method 8041

The samples were extracted on 10/23/10 and analyzed on 11/5/10 within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: All surrogate recoveries were in control.

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

Method Blank: The method blanks were free of contamination.

Continuing Calibrations: Are in control.

NWTPH-Gx

The samples were analyzed on 10/22/10 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 blanks were free of contamination.

Continuing Calibrations: Are in control.

NWTPH-Dx

The samples were extracted on 10/22/10 - within the method recommended holding time. The extracts were analyzed between 10/28/10 and 10/29/10.

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 blanks were free of contamination.

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-12-101810
SAMPLE

Lab Sample ID: RS33A
LIMS ID: 10-26943
Matrix: Water
Data Release Authorized:
Reported: 11/03/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 10/18/10
Date Received: 10/19/10

Date Extracted: 10/22/10
Date Analyzed: 10/28/10 16:18
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	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	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	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	81.2%
d14-p-Terphenyl	76.8%
2,4,6-Tribromophenol	87.7%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-13-101810
SAMPLE

Lab Sample ID: RS33B
LIMS ID: 10-26944
Matrix: Water
Data Release Authorized:
Reported: 11/03/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 10/18/10
Date Received: 10/19/10

Date Extracted: 10/22/10
Date Analyzed: 10/28/10 16:51
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	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	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	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	69.6%
d14-p-Terphenyl	71.2%
2,4,6-Tribromophenol	79.5%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: LW-3-101810
SAMPLE

Lab Sample ID: RS33C
LIMS ID: 10-26945
Matrix: Water
Data Release Authorized:
Reported: 11/03/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 10/18/10
Date Received: 10/19/10

Date Extracted: 10/22/10
Date Analyzed: 10/29/10 20:42
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 3.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	3.0	< 3.0 U
91-57-6	2-Methylnaphthalene	3.0	< 3.0 U
208-96-8	Acenaphthylene	3.0	< 3.0 U
83-32-9	Acenaphthene	3.0	< 3.0 U
132-64-9	Dibenzofuran	3.0	< 3.0 U
86-73-7	Fluorene	3.0	< 3.0 U
87-86-5	Pentachlorophenol	15	< 15 U
85-01-8	Phenanthrene	3.0	< 3.0 U
86-74-8	Carbazole	3.0	< 3.0 U
120-12-7	Anthracene	3.0	< 3.0 U
206-44-0	Fluoranthene	3.0	< 3.0 U
129-00-0	Pyrene	3.0	< 3.0 U
56-55-3	Benzo(a)anthracene	3.0	< 3.0 U
218-01-9	Chrysene	3.0	< 3.0 U
50-32-8	Benzo(a)pyrene	3.0	< 3.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	3.0	< 3.0 U
53-70-3	Dibenz(a,h)anthracene	3.0	< 3.0 U
191-24-2	Benzo(g,h,i)perylene	3.0	< 3.0 U
90-12-0	1-Methylnaphthalene	3.0	< 3.0 U
TOTBFA	Total Benzofluoranthenes	3.0	< 3.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	80.4%
d14-p-Terphenyl	32.6%
2,4,6-Tribromophenol	87.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: PZ-17-101810
SAMPLE

Lab Sample ID: RS33D
LIMS ID: 10-26946
Matrix: Water
Data Release Authorized:
Reported: 11/03/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 10/18/10
Date Received: 10/19/10

Date Extracted: 10/22/10
Date Analyzed: 10/28/10 17:56
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	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	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	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	74.4%
d14-p-Terphenyl	80.0%
2,4,6-Tribromophenol	99.7%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-2S-101810
SAMPLE

Lab Sample ID: RS33E
LIMS ID: 10-26947
Matrix: Water
Data Release Authorized:
Reported: 11/03/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 10/18/10
Date Received: 10/19/10

Date Extracted: 10/22/10
Date Analyzed: 10/28/10 18:29
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	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	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	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	68.4%
d14-p-Terphenyl	55.2%
2,4,6-Tribromophenol	86.9%

ANALYTICAL RESOURCES INCORPORATED

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Semivolatiles by SW8270D GC/MS
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Sample ID: MW-2D-101810
SAMPLE

Lab Sample ID: RS33F
LIMS ID: 10-26948
Matrix: Water
Data Release Authorized:
Reported: 11/03/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 10/18/10
Date Received: 10/19/10

Date Extracted: 10/22/10
Date Analyzed: 10/28/10 19:02
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**	**1.9**
83-32-9	**Acenaphthene**	**1.0**	**8.8**
132-64-9	**Dibenzofuran**	**1.0**	**3.0**
86-73-7	**Fluorene**	**1.0**	**11**
87-86-5	Pentachlorophenol	5.0	< 5.0 U
85-01-8	**Phenanthrene**	**1.0**	**5.0**
86-74-8	**Carbazole**	**1.0**	**8.3**
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	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	68.0%
d14-p-Terphenyl	92.0%
2,4,6-Tribromophenol	91.7%

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Semivolatiles by SW8270D GC/MS
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Sample ID: CW-13-101910
SAMPLE

Lab Sample ID: RS33G
LIMS ID: 10-26949
Matrix: Water
Data Release Authorized:
Reported: 11/03/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 10/19/10
Date Received: 10/19/10

Date Extracted: 10/22/10
Date Analyzed: 10/28/10 19:34
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**	**5.4**
132-64-9	**Dibenzofuran**	**1.0**	**1.5**
86-73-7	**Fluorene**	**1.0**	**2.4**
87-86-5	Pentachlorophenol	5.0	< 5.0 U
85-01-8	**Phenanthrene**	**1.0**	**1.2**
86-74-8	Carbazole	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	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	76.8%
d14-p-Terphenyl	90.4%
2,4,6-Tribromophenol	91.7%

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Semivolatiles by SW8270D GC/MS
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Sample ID: PZ-19-101910
SAMPLE

Lab Sample ID: RS33H
LIMS ID: 10-26950
Matrix: Water
Data Release Authorized:
Reported: 11/03/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 10/19/10
Date Received: 10/19/10

Date Extracted: 10/22/10
Date Analyzed: 10/28/10 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	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	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	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	72.8%
d14-p-Terphenyl	101%
2,4,6-Tribromophenol	87.7%

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Semivolatiles by SW8270D GC/MS
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Sample ID: MW-5S-101910
SAMPLE

Lab Sample ID: RS33I
LIMS ID: 10-26951
Matrix: Water
Data Release Authorized:
Reported: 11/03/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 10/19/10
Date Received: 10/19/10

Date Extracted: 10/22/10
Date Analyzed: 10/28/10 20:39
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**	**9.0**
132-64-9	**Dibenzofuran**	**1.0**	**2.0**
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	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	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	66.4%
d14-p-Terphenyl	54.8%
2,4,6-Tribromophenol	83.5%

ANALYTICAL RESOURCES INCORPORATED

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Semivolatiles by SW8270D GC/MS
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Sample ID: Duplicate
SAMPLE

Lab Sample ID: RS33J
LIMS ID: 10-26952
Matrix: Water
Data Release Authorized:
Reported: 11/03/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 10/19/10
Date Received: 10/19/10

Date Extracted: 10/22/10
Date Analyzed: 10/28/10 21:12
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**	**4.8**
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**	**8.3**
132-64-9	**Dibenzofuran**	**1.0**	**2.0**
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	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	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	67.6%
d14-p-Terphenyl	68.0%
2,4,6-Tribromophenol	85.6%

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Semivolatiles by SW8270D GC/MS
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Sample ID: MW-5D-101910
SAMPLE

Lab Sample ID: RS33K
LIMS ID: 10-26953
Matrix: Water
Data Release Authorized:
Reported: 11/03/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 10/19/10
Date Received: 10/19/10

Date Extracted: 10/22/10
Date Analyzed: 10/28/10 21:45
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	< 1.0 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**	**4.2**
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	**Carbazole**	**1.0**	**1.6**
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	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	48.0%
d14-p-Terphenyl	87.2%
2,4,6-Tribromophenol	74.4%

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Semivolatiles by SW8270D GC/MS
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Sample ID: PZ-18-101910
SAMPLE

Lab Sample ID: RS33L
LIMS ID: 10-26954
Matrix: Water
Data Release Authorized:
Reported: 11/03/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 10/19/10
Date Received: 10/19/10

Date Extracted: 10/22/10
Date Analyzed: 10/28/10 22:18
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	< 1.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	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	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	57.2%
d14-p-Terphenyl	66.4%
2,4,6-Tribromophenol	84.3%

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Semivolatiles by SW8270D GC/MS
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Sample ID: MW-01S-101910
SAMPLE

Lab Sample ID: RS33M
LIMS ID: 10-26955
Matrix: Water
Data Release Authorized:
Reported: 11/03/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 10/19/10
Date Received: 10/19/10

Date Extracted: 10/22/10
Date Analyzed: 10/29/10 21:15
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**	**9,700 E**
91-57-6	**2-Methylnaphthalene**	**100**	**750**
208-96-8	Acenaphthylene	100	< 100 U
83-32-9	**Acenaphthene**	**100**	**190**
132-64-9	Dibenzofuran	100	< 100 U
86-73-7	Fluorene	100	< 100 U
87-86-5	**Pentachlorophenol**	**500**	**3,500**
85-01-8	Phenanthrene	100	< 100 U
86-74-8	Carbazole	100	< 100 U
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**	**400**
TOTBFA	Total Benzofluoranthenes	100	< 100 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

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

ANALYTICAL RESOURCES INCORPORATED

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Sample ID: MW-01S-101910
DILUTION

Lab Sample ID: RS33M
LIMS ID: 10-26955
Matrix: Water
Data Release Authorized:
Reported: 11/03/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 10/19/10
Date Received: 10/19/10

Date Extracted: 10/22/10
Date Analyzed: 11/01/10 13:50
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 200

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**200**	**9,100**
91-57-6	**2-Methylnaphthalene**	**200**	**780**
208-96-8	Acenaphthylene	200	< 200 U
83-32-9	**Acenaphthene**	**200**	**210**
132-64-9	Dibenzofuran	200	< 200 U
86-73-7	Fluorene	200	< 200 U
87-86-5	**Pentachlorophenol**	**1,000**	**3,300**
85-01-8	Phenanthrene	200	< 200 U
86-74-8	Carbazole	200	< 200 U
120-12-7	Anthracene	200	< 200 U
206-44-0	Fluoranthene	200	< 200 U
129-00-0	Pyrene	200	< 200 U
56-55-3	Benzo(a)anthracene	200	< 200 U
218-01-9	Chrysene	200	< 200 U
50-32-8	Benzo(a)pyrene	200	< 200 U
193-39-5	Indeno(1,2,3-cd)pyrene	200	< 200 U
53-70-3	Dibenz(a,h)anthracene	200	< 200 U
191-24-2	Benzo(g,h,i)perylene	200	< 200 U
90-12-0	**1-Methylnaphthalene**	**200**	**410**
TOTBFA	Total Benzofluoranthenes	200	< 200 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

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

ANALYTICAL RESOURCES INCORPORATED

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Semivolatiles by SW8270D GC/MS
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Sample ID: LW-4R-101910
SAMPLE

Lab Sample ID: RS33N
LIMS ID: 10-26956
Matrix: Water
Data Release Authorized:
Reported: 11/03/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 10/19/10
Date Received: 10/19/10

Date Extracted: 10/22/10
Date Analyzed: 10/28/10 23:23
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	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	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	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	53.2%
d14-p-Terphenyl	64.0%
2,4,6-Tribromophenol	77.1%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
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Sample ID: MW-01D-101910
SAMPLE

Lab Sample ID: RS330
LIMS ID: 10-26957
Matrix: Water
Data Release Authorized:
Reported: 11/03/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 10/19/10
Date Received: 10/19/10

Date Extracted: 10/22/10
Date Analyzed: 10/28/10 23:56
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	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	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	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	59.6%
d14-p-Terphenyl	70.8%
2,4,6-Tribromophenol	75.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
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Sample ID: MB-102210
METHOD BLANK

Lab Sample ID: MB-102210
LIMS ID: 10-26943
Matrix: Water
Data Release Authorized:
Reported: 11/03/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: NA
Date Received: NA

Date Extracted: 10/22/10
Date Analyzed: 10/28/10 14:07
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	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	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

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	73.2%
d14-p-Terphenyl	107%
2,4,6-Tribromophenol	85.3%

ANALYTICAL RESOURCES INCORPORATED

SW8270 SEMIVOLATILES WATER SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010

Client ID	FBP	TPH	TBP	TOT OUT
MB-102210	73.2%	107%	85.3%	0
LCS-102210	76.4%	90.0%	93.3%	0
LCSD-102210	77.2%	94.4%	95.5%	0
PZ-12-101810	81.2%	76.8%	87.7%	0
PZ-13-101810	69.6%	71.2%	79.5%	0
LW-3-101810	80.4%	32.6%	87.2%	0
PZ-17-101810	74.4%	80.0%	99.7%	0
MW-2S-101810	68.4%	55.2%	86.9%	0
MW-2D-101810	68.0%	92.0%	91.7%	0
CW-13-101910	76.8%	90.4%	91.7%	0
PZ-19-101910	72.8%	101%	87.7%	0
MW-5S-101910	66.4%	54.8%	83.5%	0
Duplicate	67.6%	68.0%	85.6%	0
MW-5D-101910	48.0%	87.2%	74.4%	0
PZ-18-101910	57.2%	66.4%	84.3%	0
MW-01S-101910	D	D	D	0
MW-01S-101910 DL	D	D	D	0
LW-4R-101910	53.2%	64.0%	77.1%	0
MW-01D-101910	59.6%	70.8%	75.7%	0

	LCS/MB LIMITS	QC LIMITS
(FBP) = 2-Fluorobiphenyl	(49-100)	(42-100)
(TPH) = d14-p-Terphenyl	(53-119)	(26-114)
(TBP) = 2,4,6-Tribromophenol	(52-123)	(48-118)

Prep Method: SW3520C
Log Number Range: 10-26943 to 10-26957

ANALYTICAL RESOURCES INCORPORATED

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Semivolatiles by SW8270D GC/MS
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Sample ID: LCS-102210
LCS/LCSD

Lab Sample ID: LCS-102210
LIMS ID: 10-26943
Matrix: Water
Data Release Authorized:
Reported: 11/03/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 10/18/10
Date Received: 10/19/10

Date Extracted LCS/LCSD: 10/22/10

Date Analyzed LCS: 10/28/10 14:40
LCSD: 10/28/10 15:13
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	17.8	25.0	71.2%	17.7	25.0	70.8%	0.6%
2-Methylnaphthalene	17.6	25.0	70.4%	18.3	25.0	73.2%	3.9%
Acenaphthylene	18.5	25.0	74.0%	19.5	25.0	78.0%	5.3%
Acenaphthene	19.3	25.0	77.2%	20.4	25.0	81.6%	5.5%
Dibenzofuran	21.0	25.0	84.0%	22.5	25.0	90.0%	6.9%
Fluorene	20.8	25.0	83.2%	22.1	25.0	88.4%	6.1%
Pentachlorophenol	15.6	25.0	62.4%	17.0	25.0	68.0%	8.6%
Phenanthrene	22.6	25.0	90.4%	24.1	25.0	96.4%	6.4%
Carbazole	13.8	25.0	55.2%	14.6	25.0	58.4%	5.6%
Anthracene	19.7	25.0	78.8%	20.8	25.0	83.2%	5.4%
Fluoranthene	21.7	25.0	86.8%	22.6	25.0	90.4%	4.1%
Pyrene	22.4	25.0	89.6%	24.3	25.0	97.2%	8.1%
Benzo(a)anthracene	20.6	25.0	82.4%	22.0	25.0	88.0%	6.6%
Chrysene	22.0	25.0	88.0%	23.4	25.0	93.6%	6.2%
Benzo(a)pyrene	15.9	25.0	63.6%	16.9	25.0	67.6%	6.1%
Indeno(1,2,3-cd)pyrene	28.6 Q	25.0	114%	30.9 Q	25.0	124%	7.7%
Dibenz(a,h)anthracene	22.7	25.0	90.8%	24.7	25.0	98.8%	8.4%
Benzo(g,h,i)perylene	25.0	25.0	100%	27.2	25.0	109%	8.4%
1-Methylnaphthalene	18.3	25.0	73.2%	19.0	25.0	76.0%	3.8%

Semivolatile Surrogate Recovery

	LCS	LCSD
2-Fluorobiphenyl	76.4%	77.2%
d14-p-Terphenyl	90.0%	94.4%
2,4,6-Tribromophenol	93.3%	95.5%

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

Sample ID: PZ-12-101810
SAMPLE

Lab Sample ID: RS33A
LIMS ID: 10-26943
Matrix: Water
Data Release Authorized: MW
Reported: 11/03/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 021034.010
Date Sampled: 10/18/10
Date Received: 10/19/10

Date Extracted: 10/23/10
Date Analyzed: 11/02/10 20:27
Instrument/Analyst: NT8/VTS

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	68.7%
d14-Dibenzo(a,h)anthracene	84.7%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-13-101810
SAMPLE

Lab Sample ID: RS33B
LIMS ID: 10-26944
Matrix: Water
Data Release Authorized: MW
Reported: 11/03/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 021034.010
Date Sampled: 10/18/10
Date Received: 10/19/10

Date Extracted: 10/23/10
Date Analyzed: 11/02/10 20:50
Instrument/Analyst: NT8/VTS

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	80.7%
d14-Dibenzo(a,h)anthracene	89.0%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: LW-3-101810
SAMPLE

Lab Sample ID: RS33C
LIMS ID: 10-26945
Matrix: Water
Data Release Authorized:
Reported: 11/03/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 021034.010
Date Sampled: 10/18/10
Date Received: 10/19/10

Date Extracted: 10/23/10
Date Analyzed: 11/02/10 21:13
Instrument/Analyst: NT8/VTS

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	66.7%
d14-Dibenzo(a,h)anthracene	35.7%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-17-101810
SAMPLE

Lab Sample ID: RS33D
LIMS ID: 10-26946
Matrix: Water
Data Release Authorized:
Reported: 11/03/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 021034.010
Date Sampled: 10/18/10
Date Received: 10/19/10

Date Extracted: 10/23/10
Date Analyzed: 11/02/10 21:36
Instrument/Analyst: NT8/VTS

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	74.0%
d14-Dibenzo(a,h)anthracene	86.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
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Sample ID: MW-2S-101810
SAMPLE

Lab Sample ID: RS33E
LIMS ID: 10-26947
Matrix: Water
Data Release Authorized: MW
Reported: 11/03/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 021034.010
Date Sampled: 10/18/10
Date Received: 10/19/10

Date Extracted: 10/23/10
Date Analyzed: 11/02/10 21:59
Instrument/Analyst: NT8/VTS

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	71.7%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-2D-101810
SAMPLE

Lab Sample ID: RS33F
LIMS ID: 10-26948
Matrix: Water
Data Release Authorized:
Reported: 11/03/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 021034.010
Date Sampled: 10/18/10
Date Received: 10/19/10

Date Extracted: 10/23/10
Date Analyzed: 11/02/10 22:21
Instrument/Analyst: NT8/VTS

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	67.3%
d14-Dibenzo(a,h)anthracene	98.3%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: CW-13-101910
SAMPLE

Lab Sample ID: RS33G
LIMS ID: 10-26949
Matrix: Water
Data Release Authorized:
Reported: 11/03/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 021034.010
Date Sampled: 10/19/10
Date Received: 10/19/10

Date Extracted: 10/23/10
Date Analyzed: 11/02/10 22:44
Instrument/Analyst: NT8/VTS

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	72.0%
d14-Dibenzo(a,h)anthracene	97.0%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-19-101910
SAMPLE

Lab Sample ID: RS33H
LIMS ID: 10-26950
Matrix: Water
Data Release Authorized: MW
Reported: 11/03/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 021034.010
Date Sampled: 10/19/10
Date Received: 10/19/10

Date Extracted: 10/23/10
Date Analyzed: 11/02/10 23:07
Instrument/Analyst: NT8/VTS

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	69.7%
d14-Dibenzo(a,h)anthracene	95.0%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-5S-101910
SAMPLE

Lab Sample ID: RS33I
LIMS ID: 10-26951
Matrix: Water
Data Release Authorized: MW
Reported: 11/03/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 021034.010
Date Sampled: 10/19/10
Date Received: 10/19/10

Date Extracted: 10/23/10
Date Analyzed: 11/02/10 23:30
Instrument/Analyst: NT8/VTS

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	64.0%
d14-Dibenzo(a,h)anthracene	62.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
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Sample ID: Duplicate
SAMPLE

Lab Sample ID: RS33J
LIMS ID: 10-26952
Matrix: Water
Data Release Authorized:
Reported: 11/03/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 021034.010
Date Sampled: 10/19/10
Date Received: 10/19/10

Date Extracted: 10/23/10
Date Analyzed: 11/02/10 23:53
Instrument/Analyst: NT8/VTS

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	72.7%
d14-Dibenzo(a,h)anthracene	76.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
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Sample ID: MW-5D-101910
SAMPLE

Lab Sample ID: RS33K
LIMS ID: 10-26953
Matrix: Water
Data Release Authorized:
Reported: 11/03/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 021034.010
Date Sampled: 10/19/10
Date Received: 10/19/10

Date Extracted: 10/23/10
Date Analyzed: 11/03/10 00:16
Instrument/Analyst: NT8/VTS

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	79.0%
d14-Dibenzo(a,h)anthracene	84.0%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-18-101910
SAMPLE

Lab Sample ID: RS33L
LIMS ID: 10-26954
Matrix: Water
Data Release Authorized:
Reported: 11/03/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 021034.010
Date Sampled: 10/19/10
Date Received: 10/19/10

Date Extracted: 10/23/10
Date Analyzed: 11/03/10 00:39
Instrument/Analyst: NT8/VTS

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	68.0%
d14-Dibenzo(a,h)anthracene	83.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
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Sample ID: MW-01S-101910
SAMPLE

Lab Sample ID: RS33M
LIMS ID: 10-26955
Matrix: Water
Data Release Authorized:
Reported: 11/03/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 021034.010
Date Sampled: 10/19/10
Date Received: 10/19/10

Date Extracted: 10/23/10
Date Analyzed: 11/03/10 01:01
Instrument/Analyst: NT8/VTS

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	0.58
218-01-9	**Chrysene**	0.10	0.51
50-32-8	**Benzo(a)pyrene**	0.10	0.18
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	0.35

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	82.3%
d14-Dibenzo(a,h)anthracene	28.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
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Sample ID: LW-4R-101910
SAMPLE

Lab Sample ID: RS33N
LIMS ID: 10-26956
Matrix: Water
Data Release Authorized:
Reported: 11/03/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 021034.010
Date Sampled: 10/19/10
Date Received: 10/19/10

Date Extracted: 10/23/10
Date Analyzed: 11/03/10 01:24
Instrument/Analyst: NT8/VTS

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	71.7%
d14-Dibenzo(a,h)anthracene	87.3%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-01D-101910
SAMPLE

Lab Sample ID: RS330
LIMS ID: 10-26957
Matrix: Water
Data Release Authorized:
Reported: 11/03/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 021034.010
Date Sampled: 10/19/10
Date Received: 10/19/10

Date Extracted: 10/23/10
Date Analyzed: 11/03/10 01:47
Instrument/Analyst: NT8/VTS

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	80.3%
d14-Dibenzo(a,h)anthracene	95.3%

ANALYTICAL RESOURCES INCORPORATED

SIM SW8270 SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010

Client ID	MNP	DBA	TOT OUT
MB-102310	74.0%	83.3%	0
LCS-102310	69.0%	88.7%	0
LCSD-102310	77.0%	79.7%	0
PZ-12-101810	68.7%	84.7%	0
PZ-13-101810	80.7%	89.0%	0
LW-3-101810	66.7%	35.7%	0
PZ-17-101810	74.0%	86.7%	0
MW-2S-101810	56.3%	71.7%	0
MW-2D-101810	67.3%	98.3%	0
CW-13-101910	72.0%	97.0%	0
PZ-19-101910	69.7%	95.0%	0
MW-5S-101910	64.0%	62.3%	0
Duplicate	72.7%	76.0%	0
MW-5D-101910	79.0%	84.0%	0
PZ-18-101910	68.0%	83.3%	0
MW-01S-101910	82.3%	28.7%	0
LW-4R-101910	71.7%	87.3%	0
MW-01D-101910	80.3%	95.3%	0

	LCS/MB LIMITS	QC LIMITS
(MNP) = d10-2-Methylnaphthalene	(36-101)	(30-106)
(DBA) = d14-Dibenzo(a,h)anthracene	(42-121)	(10-130)

Prep Method: SW3520C
Log Number Range: 10-26943 to 10-26957

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MB-102310
METHOD BLANK

Lab Sample ID: MB-102310
LIMS ID: 10-26943
Matrix: Water
Data Release Authorized: MW
Reported: 11/03/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 021034.010
Date Sampled: NA
Date Received: NA

Date Extracted: 10/23/10
Date Analyzed: 11/02/10 19:19
Instrument/Analyst: NT8/VTS

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	74.0%
d14-Dibenzo(a,h)anthracene	83.3%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: LCS-102310
LAB CONTROL SAMPLE

Lab Sample ID: LCS-102310
LIMS ID: 10-26943
Matrix: Water
Data Release Authorized:
Reported: 11/03/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 021034.010
Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 10/23/10

Date Analyzed LCS: 11/02/10 19:41
LCSD: 11/02/10 20:04
Instrument/Analyst LCS: NT8/VTS
LCSD: NT8/VTS

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	2.50	3.00	83.3%	2.73	3.00	91.0%	8.8%
Chrysene	2.09	3.00	69.7%	2.25	3.00	75.0%	7.4%
Benzo(a)pyrene	1.52	3.00	50.7%	1.88	3.00	62.7%	21.2%
Indeno(1,2,3-cd)pyrene	2.01	3.00	67.0%	2.15	3.00	71.7%	6.7%
Dibenz(a,h)anthracene	2.16	3.00	72.0%	1.91	3.00	63.7%	12.3%
Total Benzofluoranthenes	4.33	6.00	72.2%	4.78	6.00	79.7%	9.9%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

SIM Semivolatile Surrogate Recovery

	LCS	LCSD
d10-2-Methylnaphthalene	69.0%	77.0%
d14-Dibenzo(a,h)anthracene	88.7%	79.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
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Sample ID: PZ-12-101810
SAMPLE

Lab Sample ID: RS33A
LIMS ID: 10-26943
Matrix: Water
Data Release Authorized: MW
Reported: 11/10/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 10/18/10
Date Received: 10/19/10

Date Extracted: 10/23/10
Date Analyzed: 11/05/10 03:18
Instrument/Analyst: ECD1/AAR

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	80.8%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-13-101810
SAMPLE

Lab Sample ID: RS33B
LIMS ID: 10-26944
Matrix: Water
Data Release Authorized:
Reported: 11/10/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 10/18/10
Date Received: 10/19/10

Date Extracted: 10/23/10
Date Analyzed: 11/05/10 03:38
Instrument/Analyst: ECD1/AAR

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	55.6%

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
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Sample ID: LW-3-101810
SAMPLE

Lab Sample ID: RS33C
LIMS ID: 10-26945
Matrix: Water
Data Release Authorized:
Reported: 11/10/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 10/18/10
Date Received: 10/19/10

Date Extracted: 10/23/10
Date Analyzed: 11/05/10 03:58
Instrument/Analyst: ECD1/AAR

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	68.4%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-17-101810
SAMPLE

Lab Sample ID: RS33D
LIMS ID: 10-26946
Matrix: Water
Data Release Authorized:
Reported: 11/10/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 10/18/10
Date Received: 10/19/10

Date Extracted: 10/23/10
Date Analyzed: 11/05/10 04:18
Instrument/Analyst: ECD1/AAR

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	80.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041

Sample ID: MW-2S-101810
SAMPLE

Lab Sample ID: RS33E
LIMS ID: 10-26947
Matrix: Water
Data Release Authorized:
Reported: 11/10/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 10/18/10
Date Received: 10/19/10

Date Extracted: 10/23/10
Date Analyzed: 11/05/10 04:38
Instrument/Analyst: ECD1/AAR

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	67.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
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Sample ID: MW-2D-101810
SAMPLE

Lab Sample ID: RS33F
LIMS ID: 10-26948
Matrix: Water
Data Release Authorized: MW
Reported: 11/10/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 10/18/10
Date Received: 10/19/10

Date Extracted: 10/23/10
Date Analyzed: 11/05/10 04:58
Instrument/Analyst: ECD1/AAR

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	72.0%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: CW-13-101910
SAMPLE

Lab Sample ID: RS33G
LIMS ID: 10-26949
Matrix: Water
Data Release Authorized:
Reported: 11/10/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 10/19/10
Date Received: 10/19/10

Date Extracted: 10/23/10
Date Analyzed: 11/05/10 05:18
Instrument/Analyst: ECD1/AAR

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	73.2%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-19-101910
SAMPLE

Lab Sample ID: RS33H
LIMS ID: 10-26950
Matrix: Water
Data Release Authorized: NW
Reported: 11/10/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 10/19/10
Date Received: 10/19/10

Date Extracted: 10/23/10
Date Analyzed: 11/05/10 06:18
Instrument/Analyst: ECD1/AAR

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	74.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041

Sample ID: MW-5S-101910
SAMPLE

Lab Sample ID: RS33I
LIMS ID: 10-26951
Matrix: Water
Data Release Authorized: MW
Reported: 11/10/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 10/19/10
Date Received: 10/19/10

Date Extracted: 10/23/10
Date Analyzed: 11/05/10 06:38
Instrument/Analyst: ECD1/AAR

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	119%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041
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Sample ID: Duplicate SAMPLE

Lab Sample ID: RS33J
LIMS ID: 10-26952
Matrix: Water
Data Release Authorized:
Reported: 11/10/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia 021034.010
Date Sampled: 10/19/10
Date Received: 10/19/10

Date Extracted: 10/23/10
Date Analyzed: 11/05/10 06:58
Instrument/Analyst: ECD1/AAR

Sample Amount: 460 mL
Final Extract Volume: 50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.27	< 0.27 U

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery

2,4,6-Tribromophenol	NR

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041

Sample ID: MW-5D-101910
SAMPLE

Lab Sample ID: RS33K
LIMS ID: 10-26953
Matrix: Water
Data Release Authorized: MW
Reported: 11/10/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 10/19/10
Date Received: 10/19/10

Date Extracted: 10/23/10
Date Analyzed: 11/05/10 07:18
Instrument/Analyst: ECD1/AAR

Sample Amount: 480 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	75.6%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-18-101910
SAMPLE

Lab Sample ID: RS33L
LIMS ID: 10-26954
Matrix: Water
Data Release Authorized:
Reported: 11/10/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 10/19/10
Date Received: 10/19/10

Date Extracted: 10/23/10
Date Analyzed: 11/05/10 07:38
Instrument/Analyst: ECD1/AAR

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

CAS Number	Analyte	RL	Result
87-86-5	**Pentachlorophenol**	0.25	0.91

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery

2,4,6-Tribromophenol	75.2%

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041

Sample ID: LW-4R-101910
SAMPLE

Lab Sample ID: RS33N
LIMS ID: 10-26956
Matrix: Water
Data Release Authorized:
Reported: 11/10/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 10/19/10
Date Received: 10/19/10

Date Extracted: 10/23/10
Date Analyzed: 11/07/10 05:17
Instrument/Analyst: ECD1/AAR

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

CAS Number	Analyte	RL	Result
87-86-5	Pentachlorophenol	0.25	0.42

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery	
2,4,6-Tribromophenol	77.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041

Sample ID: MW-01D-101910
SAMPLE

Lab Sample ID: RS330
LIMS ID: 10-26957
Matrix: Water
Data Release Authorized:
Reported: 11/10/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 10/19/10
Date Received: 10/19/10

Date Extracted: 10/23/10
Date Analyzed: 11/05/10 08:37
Instrument/Analyst: ECD1/AAR

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	75.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041

Sample ID: MB-102310
METHOD BLANK

Lab Sample ID: MB-102310
LIMS ID: 10-26943
Matrix: Water
Data Release Authorized:
Reported: 11/10/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: NA
Date Received: NA

Date Extracted: 10/23/10
Date Analyzed: 11/05/10 02:19
Instrument/Analyst: ECD1/AAR

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	77.2%

ANALYTICAL RESOURCES INCORPORATED

SW8041 CHLOROPHENOLICS SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010

Client ID	TBP	TOT OUT
MB-102310	77.2%	0
LCS-102310	80.8%	0
LCSD-102310	79.0%	0
PZ-12-101810	80.8%	0
PZ-13-101810	55.6%	0
LW-3-101810	68.4%	0
PZ-17-101810	80.8%	0
MW-2S-101810	67.2%	0
MW-2D-101810	72.0%	0
CW-13-101910	73.2%	0
PZ-19-101910	74.0%	0
MW-5S-101910	119%	0
Duplicate	NR	0
MW-5D-101910	75.6%	0
PZ-18-101910	75.2%	0
LW-4R-101910	77.2%	0
MW-01D-101910	75.6%	0

	LCS/MB LIMITS	QC LIMITS
(TBP) = 2,4,6-Tribromophenol	(40-130)	(11-156)

Prep Method: SW3510C
Log Number Range: 10-26943 to 10-26957

FORM-II SW8041

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: LCS-102310
LCS/LCSD

Lab Sample ID: LCS-102310
LIMS ID: 10-26943
Matrix: Water
Data Release Authorized: MW
Reported: 11/10/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 10/18/10
Date Received: 10/19/10

Date Extracted LCS/LCSD: 10/23/10

Date Analyzed LCS: 11/05/10 02:39
LCSD: 11/05/10 02:59
Instrument/Analyst LCS: ECD1/AAR
LCSD: ECD1/AAR

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	2.35	2.50	94.0%	2.30	2.50	92.0%	2.2%

Chlorophenols Surrogate Recovery

	LCS	LCSD
2,4,6-Tribromophenol	80.8%	79.0%

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

Data Release Authorized:
Reported: 11/15/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 021034.010
Date Sampled: 10/18/10
Date Received: 10/19/10

ARI ID	Client ID	Analysis Date	DL	Range	Result
MB-102210 10-26943	Method Blank	10/22/10 PID3	1.0	Gasoline HC ID Trifluorotoluene Bromobenzene	< 250 U --- 92.5% 93.4%
RS33A 10-26943	PZ-12-101810	10/22/10 PID3	1.0	Gasoline HC ID Trifluorotoluene Bromobenzene	< 250 U --- 101% 99.0%
RS33B 10-26944	PZ-13-101810	10/22/10 PID3	1.0	Gasoline HC ID Trifluorotoluene Bromobenzene	< 250 U --- 101% 98.6%
RS33C 10-26945	LW-3-101810	10/22/10 PID3	1.0	Gasoline HC ID Trifluorotoluene Bromobenzene	< 250 U --- 100% 101%
RS33D 10-26946	PZ-17-101810	10/22/10 PID3	1.0	Gasoline HC ID Trifluorotoluene Bromobenzene	< 250 U --- 101% 98.9%
RS33E 10-26947	MW-2S-101810	10/22/10 PID3	1.0	Gasoline HC ID Trifluorotoluene Bromobenzene	< 250 U --- 100% 98.9%
RS33F 10-26948	MW-2D-101810	10/22/10 PID3	1.0	**Gasoline** HC ID Trifluorotoluene Bromobenzene	**420** GRO 98.6% 98.9%
RS33G 10-26949	CW-13-101910	10/22/10 PID3	1.0	Gasoline HC ID Trifluorotoluene Bromobenzene	< 250 U --- 99.8% 99.3%
RS33H 10-26950	PZ-19-101910	10/22/10 PID3	1.0	Gasoline HC ID Trifluorotoluene Bromobenzene	< 250 U --- 96.0% 96.9%
RS33I 10-26951	MW-5S-101910	10/22/10 PID3	1.0	Gasoline HC ID Trifluorotoluene Bromobenzene	< 250 U --- 100% 101%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Matrix: Water

Data Release Authorized:
Reported: 11/15/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 021034.010
Date Sampled: 10/19/10
Date Received: 10/19/10

ARI ID	Client ID	Analysis Date	DL	Range	Result
RS33J	Duplicate	10/22/10	1.0	Gasoline	< 250 U
10-26952		PID3		HC ID	---
				Trifluorotoluene	100%
				Bromobenzene	101%
RS33K	MW-5D-101910	10/22/10	1.0	Gasoline	< 250 U
10-26953		PID3		HC ID	---
				Trifluorotoluene	96.3%
				Bromobenzene	96.7%
RS33L	PZ-18-101910	10/22/10	1.0	Gasoline	< 250 U
10-26954		PID3		HC ID	---
				Trifluorotoluene	97.6%
				Bromobenzene	98.3%
RS33M	MW-01S-101910	10/22/10	10	**Gasoline**	**36000**
10-26955		PID3		HC ID	GAS/GRO
				Trifluorotoluene	116%
				Bromobenzene	117%
RS33N	LW-4R-101910	10/22/10	1.0	Gasoline	< 250 U
10-26956		PID3		HC ID	---
				Trifluorotoluene	100%
				Bromobenzene	101%
RS33O	MW-01D-101910	10/22/10	1.0	Gasoline	< 250 U
10-26957		PID3		HC ID	---
				Trifluorotoluene	96.2%
				Bromobenzene	96.3%
RS33P	Trip Blanks	10/22/10	1.0	Gasoline	< 250 U
10-26958		PID3		HC ID	---
				Trifluorotoluene	99.6%
				Bromobenzene	97.4%

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: RS33
Matrix: Water

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 021034.010

Client ID	TFT	BBZ	TOT OUT
MB-102210	92.5%	93.4%	0
LCS-102210	93.7%	93.6%	0
LCSD-102210	98.2%	98.2%	0
PZ-12-101810	101%	99.0%	0
PZ-13-101810	101%	98.6%	0
LW-3-101810	100%	101%	0
PZ-17-101810	101%	98.9%	0
MW-2S-101810	100%	98.9%	0
MW-2D-101810	98.6%	98.9%	0
CW-13-101910	99.8%	99.3%	0
PZ-19-101910	96.0%	96.9%	0
MW-5S-101910	100%	101%	0
Duplicate	100%	101%	0
MW-5D-101910	96.3%	96.7%	0
PZ-18-101910	97.6%	98.3%	0
MW-01S-101910	116%	117%	0
LW-4R-101910	100%	101%	0
MW-01D-101910	96.2%	96.3%	0
Trip Blanks	99.6%	97.4%	0

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

Log Number Range: 10-26943 to 10-26958

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: LCS-102210
LAB CONTROL SAMPLE

Lab Sample ID: LCS-102210
LIMS ID: 10-26943
Matrix: Water
Data Release Authorized:
Reported: 11/15/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 021034.010
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 10/22/10 07:00
LCSD: 10/22/10 07:25
Instrument/Analyst LCS: PID3/MH
LCSD: PID3/MH

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	940	1000	94.0%	930	1000	93.0%	1.1%

Reported in ug/L (ppb)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	93.7%	98.2%
Bromobenzene	93.6%	98.2%

ANALYTICAL RESOURCES INCORPORATED

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

Matrix: Water

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010

Data Release Authorized:
Reported: 11/15/10

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DL	Range	RL	Result
MB-102210	Method Blank	10/22/10	10/28/10	1.00	Diesel	100	< 100 U
10-26943	HC ID: ---		FID9	1.0	Motor Oil	200	< 200 U
					Creosote	100	< 100 U
					o-Terphenyl		70.4%
RS33A	PZ-12-101810	10/22/10	10/28/10	1.00	Diesel	100	< 100 U
10-26943	HC ID: ---		FID9	1.0	Motor Oil	200	< 200 U
					Creosote	100	< 100 U
					o-Terphenyl		75.4%
RS33B	PZ-13-101810	10/22/10	10/28/10	1.00	Diesel	100	< 100 U
10-26944	HC ID: ---		FID9	1.0	Motor Oil	200	< 200 U
					Creosote	100	< 100 U
					o-Terphenyl		63.6%
RS33C	LW-3-101810	10/22/10	10/28/10	1.00	Diesel	100	< 100 U
10-26945	HC ID: **DRO**		FID9	1.0	Motor Oil	200	< 200 U
					Creosote	**100**	**170**
					o-Terphenyl		75.2%
RS33D	PZ-17-101810	10/22/10	10/28/10	1.00	Diesel	100	< 100 U
10-26946	HC ID: ---		FID9	1.0	Motor Oil	200	< 200 U
					Creosote	100	< 100 U
					o-Terphenyl		74.8%
RS33E	MW-2S-101810	10/22/10	10/28/10	1.00	Diesel	100	< 100 U
10-26947	HC ID: ---		FID9	1.0	Motor Oil	200	< 200 U
					Creosote	100	< 100 U
					o-Terphenyl		74.2%
RS33F	MW-2D-101810	10/22/10	10/29/10	1.00	Diesel	100	< 100 U
10-26948	HC ID: **CREOSOTE**		FID9	1.0	Motor Oil	200	< 200 U
					Creosote	**100**	**270**
					o-Terphenyl		73.9%
RS33G	CW-13-101910	10/22/10	10/29/10	1.00	Diesel	100	< 100 U
10-26949	HC ID: ---		FID9	1.0	Motor Oil	200	< 200 U
					Creosote	100	< 100 U
					o-Terphenyl		69.6%
RS33H	PZ-19-101910	10/22/10	10/29/10	1.00	Diesel	100	< 100 U
10-26950	HC ID: ---		FID9	1.0	Motor Oil	200	< 200 U
					Creosote	100	< 100 U
					o-Terphenyl		75.4%
RS33I	MW-5S-101910	10/22/10	10/29/10	1.00	Diesel	100	< 100 U
10-26951	HC ID: ---		FID9	1.0	Motor Oil	200	< 200 U
					Creosote	100	< 100 U
					o-Terphenyl		67.4%

ANALYTICAL RESOURCES INCORPORATED

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

Matrix: Water

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010

Data Release Authorized:
Reported: 11/15/10

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DL	Range	RL	Result
RS33J	Duplicate	10/22/10	10/29/10	1.00	Diesel	100	< 100 U
10-26952	HC ID: ---		FID9	1.0	Motor Oil	200	< 200 U
					Creosote	100	< 100 U
					o-Terphenyl		70.4%
RS33K	MW-5D-101910	10/22/10	10/29/10	1.00	Diesel	100	< 100 U
10-26953	HC ID: ---		FID9	1.0	Motor Oil	200	< 200 U
					Creosote	100	< 100 U
					o-Terphenyl		66.1%
RS33L	PZ-18-101910	10/22/10	10/29/10	1.00	Diesel	100	< 100 U
10-26954	HC ID: ---		FID9	1.0	Motor Oil	200	< 200 U
					Creosote	100	< 100 U
					o-Terphenyl		74.0%
RS33M	MW-01S-101910	10/22/10	10/29/10	1.00	**Diesel**	**1000**	**4800**
10-26955	HC ID: **CREOSOTE**		FID9	10	Motor Oil	2000	< 2000 U
					Creosote	**1000**	**35000**
					o-Terphenyl		74.7%
RS33N	LW-4R-101910	10/22/10	10/29/10	1.00	Diesel	100	< 100 U
10-26956	HC ID: ---		FID9	1.0	Motor Oil	200	< 200 U
					Creosote	100	< 100 U
					o-Terphenyl		59.2%
RS33O	MW-01D-101910	10/22/10	10/29/10	1.00	Diesel	100	< 100 U
10-26957	HC ID: ---		FID9	1.0	Motor Oil	200	< 200 U
					Creosote	100	< 100 U
					o-Terphenyl		72.2%

Reported in ug/L (ppb)

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

Diesel quantitation on total peaks in the range from C12 to C24.
Motor Oil quantitation on total peaks in the range from C24 to C38.
Creosote 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: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010

Client ID	OTER	TOT OUT
MB-102210	70.4%	0
LCS-102210	70.1%	0
LCSD-102210	77.4%	0
PZ-12-101810	75.4%	0
PZ-13-101810	63.6%	0
LW-3-101810	75.2%	0
PZ-17-101810	74.8%	0
MW-2S-101810	74.2%	0
MW-2D-101810	73.9%	0
CW-13-101910	69.6%	0
PZ-19-101910	75.4%	0
MW-5S-101910	67.4%	0
Duplicate	70.4%	0
MW-5D-101910	66.1%	0
PZ-18-101910	74.0%	0
MW-01S-101910	74.7%	0
LW-4R-101910	59.2%	0
MW-01D-101910	72.2%	0

	LCS/MB LIMITS	QC LIMITS
(OTER) = o-Terphenyl	(51-120)	(41-121)

Prep Method: SW3510C
Log Number Range: 10-26943 to 10-26957

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID-Silica and Acid Cleaned **Sample ID: LCS-102210**
Page 1 of 1 **LCS/LCSD**

Lab Sample ID: LCS-102210
LIMS ID: 10-26943
Matrix: Water
Data Release Authorized:
Reported: 11/15/10

QC Report No: RS33-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
021034.010
Date Sampled: 10/18/10
Date Received: 10/19/10

Date Extracted LCS/LCSD: 10/22/10
Date Analyzed LCS: 10/28/10 21:52
LCSD: 10/28/10 22:14
Instrument/Analyst LCS: FID/MS
LCSD: FID/MS

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	1960	3000	65.3%	2180	3000	72.7%	10.6%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	70.1%	77.4%

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

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

Matrix: Water
Date Received: 10/19/10

ARI Job: RS33
Project: Port of Olympia
021034.010

ARI ID	Client ID	Samp Amt	Final Vol	Prep Date
10-26943-102210MB1	Method Blank	500 mL	1.00 mL	10/22/10
10-26943-102210LCS1	Lab Control	500 mL	1.00 mL	10/22/10
10-26943-102210LCSD1	Lab Control Dup	500 mL	1.00 mL	10/22/10
10-26943-RS33A	PZ-12-101810	500 mL	1.00 mL	10/22/10
10-26944-RS33B	PZ-13-101810	500 mL	1.00 mL	10/22/10
10-26945-RS33C	LW-3-101810	500 mL	1.00 mL	10/22/10
10-26946-RS33D	PZ-17-101810	500 mL	1.00 mL	10/22/10
10-26947-RS33E	MW-2S-101810	500 mL	1.00 mL	10/22/10
10-26948-RS33F	MW-2D-101810	500 mL	1.00 mL	10/22/10
10-26949-RS33G	CW-13-101910	500 mL	1.00 mL	10/22/10
10-26950-RS33H	PZ-19-101910	500 mL	1.00 mL	10/22/10
10-26951-RS33I	MW-5S-101910	500 mL	1.00 mL	10/22/10
10-26952-RS33J	Duplicate	500 mL	1.00 mL	10/22/10
10-26953-RS33K	MW-5D-101910	500 mL	1.00 mL	10/22/10
10-26954-RS33L	PZ-18-101910	500 mL	1.00 mL	10/22/10
10-26955-RS33M	MW-01S-101910	500 mL	1.00 mL	10/22/10
10-26956-RS33N	LW-4R-101910	500 mL	1.00 mL	10/22/10
10-26957-RS33O	MW-01D-101910	500 mL	1.00 mL	10/22/10

Analytical Resources, Incorporated
Analytical Chemists and Consultants

April 18, 2011

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

RE: Project: Port of Olympia
ARI Job No: SO90

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 March 26, 2011.

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

KB/kb

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

5090

LANDAU ASSOCIATES

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

Chain-of-Custody Record

Date 03/25/2011
Page 1 of 1

Project Name Port of Olympia   Project No. 0021035.010
Project Location/Event Olympia, WA / Semi-Annual
Sampler's Name Jessica Stone / Toni Smith
Project Contact Chris Kimmel
Send Results To Chris Kimmel

Turnaround Time
☒ Standard
☐ Accelerated
☐

Sample I.D.	Date	Time	Matrix	No. of Containers	TPH-Gx	TPH-Dx+creosote	PAHs (8270)	cPAHs SIM	PCP (8270)	PCP (8041)						
LW-4R-03242011	3/24	1820	H2O	10	X	X	X	X	X	X						
Duplicate	3/25	1240	↓	↓	↓	↓	↓	↓	↓	↓						
MW-05S-03252011	3/25	1230														
MW-05D-03252011	3/25	1433														
PZ-13-03242011	3/24	1530														
PZ-18-03242011	3/24	1827														
MW-02D-03252011	3/25	1055														
PZ-19-03252011	3/25	1249														
MW-02S-03252011	3/25	1037														
MW-01D-03252011	3/25	1615														
CW-13-03252011	3/25	1430														
PZ-17-03242011	3/24	1648														
LW-3-03242011	3/24	1645														
MW-01S-03252011	3/25	1600														
PZ-12-03242011	3/24	1438	↓	↓	↓	↓	↓	↓	↓	↓						
TRIP BLANKS	3/22	-	H2O	8	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-SIM IF result = ND, then and only then run PCP by 8041.

DOB 3/26/11

Special Shipment/Handling or Storage Requirements

Method of Shipment

Relinquished by	Received by	Relinquished by	Received by
Signature [signature]	Signature Mika Mulumba	Signature	Signature
Printed Name Jessica Stone	Printed Name	Printed Name	Printed Name
Company Landau Associates, Inc.	Company ARI	Company	Company
Date 03/25/2011 Time	Date 3/26/11 Time 0830	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: IP Drop Box

Assigned ARI Job No: 5090 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): 2.6 1.6 2.8 2.6 2.2 0.8 4.6 / 2.3 / 3.0

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 90441619

Cooler Accepted by: MM Date: 3/26/11 Time: 0830

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?			(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	3/22/11	

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

Samples Logged by: MM Date: 3/26/11 Time: 1200

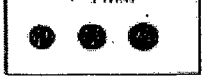
***** Notify Project Manager of discrepancies or concerns *****

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

Additional Notes, Discrepancies, & Resolutions:

10 TB received ·

By: MM Date: 3/26/11

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: SO90
Client: LANDAU ASSOCIATES,INC.
Project Event: 0021035.010
Project Name: Port of Olympia

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	LW-4R-03242011	SO90A	11-6749	Water	03/24/11 18:20	03/26/11 08:30
2.	Duplicate	SO90B	11-6750	Water	03/25/11 12:40	03/26/11 08:30
3.	MW-05S-03252011	SO90C	11-6751	Water	03/25/11 12:30	03/26/11 08:30
4.	MW-05D-03252011	SO90D	11-6752	Water	03/25/11 14:33	03/26/11 08:30
5.	PZ-13-03242011	SO90E	11-6753	Water	03/24/11 15:30	03/26/11 08:30
6.	PZ-18-03242011	SO90F	11-6754	Water	03/24/11 18:27	03/26/11 08:30
7.	MW-02D-03252011	SO90G	11-6755	Water	03/25/11 10:55	03/26/11 08:30
8.	PZ-19-03252011	SO90H	11-6756	Water	03/25/11 12:49	03/26/11 08:30
9.	MW-02S-03252011	SO90I	11-6757	Water	03/25/11 10:37	03/26/11 08:30
10.	MW-01D-03252011	SO90J	11-6758	Water	03/25/11 16:15	03/26/11 08:30
11.	CW-13-03252011	SO90K	11-6759	Water	03/25/11 14:30	03/26/11 08:30
12.	PZ-17-03242011	SO90L	11-6760	Water	03/24/11 16:48	03/26/11 08:30
13.	LW-3-03242011	SO90M	11-6761	Water	03/24/11 16:45	03/26/11 08:30
14.	MW-01S-03252011	SO90N	11-6762	Water	03/25/11 16:00	03/26/11 08:30
15.	PZ-12-03242011	SO90O	11-6763	Water	03/24/11 14:38	03/26/11 08:30
16.	TRIP BLANKS	SO90P	11-6764	Water	03/24/11	03/26/11 08:30

Printed 03/26/11

ANALYTICAL
RESOURCES
INCORPORATED

Case Narrative
Project: 021035.010
ARI Job No.: SO90
April 18, 2011

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 March 26, 2010. The samples were received at cooler temperatures between of 0.8 and 4.6°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 3/30/11. The samples were analyzed between 4/4/11 and 4/5/11 within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: All 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 3/30/11 and analyzed on 4/5/11 and 4/6/11 within the method recommended holding time.

Samples: Samples LW-3-03242011 and MWE-01S-03252011 required dilutions due to internal standard failures. There were no other anomalies associated with these samples.

Surrogates: All surrogate recoveries were 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.

Case Narrative
Project: 021035.010
ARI Job No.: SO90
April 18, 2011
Page 2

PCP Only by method 8041

The samples were extracted on 3/30/11 and analyzed on 4/13/11 within the method recommended holding time.

Samples: There were no anomalies associated with these samples.

Surrogates: All surrogate recoveries were in control.

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

Method Blank: The method blanks were free of contamination.

Continuing Calibrations: Are in control.

NWTPH-Gx

The samples were analyzed on 3/29/11 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 blanks were free of contamination.

Continuing Calibrations: The opening GCAL on 3/29/11 has high surrogate recoveries for TFT. The retention time standard is in control and no further action was taken.

NWTPH-Dx

The samples were extracted on 3/25/11 - within the method recommended holding time. The extracts were analyzed between 4/1/11 and 4/5/11.

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 blanks were free of contamination.

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: LW-4R-03242011
SAMPLE

Lab Sample ID: SO90A
LIMS ID: 11-6749
Matrix: Water
Data Release Authorized:
Reported: 04/13/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010
Date Sampled: 03/24/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/04/11 12:12
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	< 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	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	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	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	54.8%
d14-p-Terphenyl	48.0%
2,4,6-Tribromophenol	63.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
+.name SVOA Form I Water
Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: Duplicate
SAMPLE

Lab Sample ID: SO90B
LIMS ID: 11-6750
Matrix: Water
Data Release Authorized:
Reported: 04/13/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010
Date Sampled: 03/25/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/04/11 12:45
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	< 1.0 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**	**6.1**
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	**Anthracene**	**1.0**	**1.2**
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	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	66.0%
d14-p-Terphenyl	54.4%
2,4,6-Tribromophenol	70.9%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
+.name SVOA Form I Water
Semivolatiles by SW8270D GC/MS
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Sample ID: MW-05S-03252011
SAMPLE

Lab Sample ID: SO90C
LIMS ID: 11-6751
Matrix: Water
Data Release Authorized:
Reported: 04/13/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010
Date Sampled: 03/25/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/04/11 13:17
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**	**6.0**
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	**Anthracene**	**1.0**	**1.2**
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	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	64.8%
d14-p-Terphenyl	50.0%
2,4,6-Tribromophenol	72.3%

ANALYTICAL RESOURCES INCORPORATED

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+.name SVOA Form I Water
Semivolatiles by SW8270D GC/MS
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Sample ID: MW-05D-03252011
SAMPLE

Lab Sample ID: SO90D
LIMS ID: 11-6752
Matrix: Water
Data Release Authorized:
Reported: 04/13/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010
Date Sampled: 03/25/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/04/11 13:50
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**	**1.3**
132-64-9	Dibenzofuran	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	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	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	61.2%
d14-p-Terphenyl	66.4%
2,4,6-Tribromophenol	64.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
+.name SVOA Form I Water
Semivolatiles by SW8270D GC/MS
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Sample ID: PZ-13-03242011
SAMPLE

Lab Sample ID: SO90E
LIMS ID: 11-6753
Matrix: Water
Data Release Authorized:
Reported: 04/13/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010
Date Sampled: 03/24/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/04/11 14:23
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	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	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	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	62.8%
d14-p-Terphenyl	69.6%
2,4,6-Tribromophenol	66.1%

ANALYTICAL RESOURCES INCORPORATED

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Semivolatiles by SW8270D GC/MS
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Sample ID: PZ-18-03242011
SAMPLE

Lab Sample ID: SO90F
LIMS ID: 11-6754
Matrix: Water
Data Release Authorized:
Reported: 04/13/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010
Date Sampled: 03/24/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/04/11 14:56
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	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	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	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	66.0%
d14-p-Terphenyl	65.2%
2,4,6-Tribromophenol	66.9%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
+.name SVOA Form I Water
Semivolatiles by SW8270D GC/MS
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Sample ID: MW-02D-03252011
SAMPLE

Lab Sample ID: SO90G
LIMS ID: 11-6755
Matrix: Water
Data Release Authorized:
Reported: 04/13/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010
Date Sampled: 03/25/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/04/11 20:23
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**	**76**
91-57-6	**2-Methylnaphthalene**	**1.0**	**13**
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	**Acenaphthene**	**1.0**	**21**
132-64-9	**Dibenzofuran**	**1.0**	**7.9**
86-73-7	**Fluorene**	**1.0**	**8.4**
87-86-5	Pentachlorophenol	5.0	< 5.0 U
85-01-8	**Phenanthrene**	**1.0**	**5.1**
86-74-8	**Carbazole**	**1.0**	**5.7**
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**	**15**
TOTBFA	Total Benzofluoranthenes	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	67.2%
d14-p-Terphenyl	73.6%
2,4,6-Tribromophenol	72.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
+.name SVOA Form I Water
Semivolatiles by SW8270D GC/MS
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Sample ID: PZ-19-03252011
SAMPLE

Lab Sample ID: SO90H
LIMS ID: 11-6756
Matrix: Water
Data Release Authorized:
Reported: 04/13/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010
Date Sampled: 03/25/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/04/11 20:56
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	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	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	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	64.4%
d14-p-Terphenyl	66.0%
2,4,6-Tribromophenol	65.1%

ANALYTICAL RESOURCES INCORPORATED

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Semivolatiles by SW8270D GC/MS
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Sample ID: MW-02S-03252011
SAMPLE

Lab Sample ID: SO90I
LIMS ID: 11-6757
Matrix: Water
Data Release Authorized:
Reported: 04/13/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010
Date Sampled: 03/25/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/05/11 16:22
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	< 1.0 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	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	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	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	58.0%
d14-p-Terphenyl	50.8%
2,4,6-Tribromophenol	66.9%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
+.name SVOA Form I Water
Semivolatiles by SW8270D GC/MS

Sample ID: MW-01D-03252011
SAMPLE

Lab Sample ID: SO90J
LIMS ID: 11-6758
Matrix: Water
Data Release Authorized:
Reported: 04/13/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010
Date Sampled: 03/25/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/05/11 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	< 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	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	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	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	62.0%
d14-p-Terphenyl	70.4%
2,4,6-Tribromophenol	73.3%

ANALYTICAL RESOURCES INCORPORATED

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Semivolatiles by SW8270D GC/MS
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Sample ID: CW-13-03252011
SAMPLE

Lab Sample ID: SO90K
LIMS ID: 11-6759
Matrix: Water
Data Release Authorized:
Reported: 04/13/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010
Date Sampled: 03/25/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/05/11 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	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	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	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	62.8%
d14-p-Terphenyl	66.0%
2,4,6-Tribromophenol	68.8%

ANALYTICAL RESOURCES INCORPORATED

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Semivolatiles by SW8270D GC/MS
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Sample ID: PZ-17-03242011
SAMPLE

Lab Sample ID: SO90L
LIMS ID: 11-6760
Matrix: Water
Data Release Authorized:
Reported: 04/13/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010
Date Sampled: 03/24/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/05/11 18:01
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**	**3.2**
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	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	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	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	62.8%
d14-p-Terphenyl	66.4%
2,4,6-Tribromophenol	72.5%

ANALYTICAL RESOURCES INCORPORATED

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Semivolatiles by SW8270D GC/MS
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Sample ID: LW-3-03242011
SAMPLE

Lab Sample ID: SO90M
LIMS ID: 11-6761
Matrix: Water
Data Release Authorized:
Reported: 04/13/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010
Date Sampled: 03/24/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/05/11 18:34
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**	**7.9**
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	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	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	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	64.8%
d14-p-Terphenyl	57.2%
2,4,6-Tribromophenol	77.6%

ANALYTICAL RESOURCES INCORPORATED

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Sample ID: MW-01S-03252011
SAMPLE

Lab Sample ID: SO90N
LIMS ID: 11-6762
Matrix: Water
Data Release Authorized:
Reported: 04/13/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010
Date Sampled: 03/25/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/05/11 19:06
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**	**1,100 ES**
91-57-6	**2-Methylnaphthalene**	**1.0**	**500 ES**
208-96-8	Acenaphthylene	1.0	< 1.0 U
83-32-9	**Acenaphthene**	**1.0**	**130 ES**
132-64-9	**Dibenzofuran**	**1.0**	**64**
86-73-7	**Fluorene**	**1.0**	**47**
87-86-5	**Pentachlorophenol**	**5.0**	**2,200 ES**
85-01-8	**Phenanthrene**	**1.0**	**44**
86-74-8	**Carbazole**	**1.0**	**57**
120-12-7	**Anthracene**	**1.0**	**12**
206-44-0	**Fluoranthene**	**1.0**	**7.8**
129-00-0	**Pyrene**	**1.0**	**3.9**
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**	**300 ES**
TOTBFA	Total Benzofluoranthenes	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

2-Fluorobiphenyl	55.6%
d14-p-Terphenyl	40.4%
2,4,6-Tribromophenol	69.9%

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Semivolatiles by SW8270D GC/MS
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Sample ID: MW-01S-03252011
DILUTION

Lab Sample ID: SO90N
LIMS ID: 11-6762
Matrix: Water
Data Release Authorized:
Reported: 04/13/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010
Date Sampled: 03/25/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/05/11 20:44
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**	**5,400**
91-57-6	**2-Methylnaphthalene**	**100**	**740**
208-96-8	Acenaphthylene	100	< 100 U
83-32-9	**Acenaphthene**	**100**	**200**
132-64-9	Dibenzofuran	100	< 100 U
86-73-7	Fluorene	100	< 100 U
87-86-5	**Pentachlorophenol**	**500**	**4,200**
85-01-8	Phenanthrene	100	< 100 U
86-74-8	Carbazole	100	< 100 U
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**	**380**
TOTBFA	Total Benzofluoranthenes	100	< 100 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

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

ANALYTICAL RESOURCES INCORPORATED

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Semivolatiles by SW8270D GC/MS
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Sample ID: PZ-12-03242011
SAMPLE

Lab Sample ID: SO90O
LIMS ID: 11-6763
Matrix: Water
Data Release Authorized:
Reported: 04/13/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010
Date Sampled: 03/24/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/05/11 19:39
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**	**3.0**
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	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	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	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	60.0%
d14-p-Terphenyl	63.2%
2,4,6-Tribromophenol	68.5%

ANALYTICAL RESOURCES INCORPORATED

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Semivolatiles by SW8270D GC/MS
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Sample ID: MB-033011
METHOD BLANK

Lab Sample ID: MB-033011
LIMS ID: 11-6749
Matrix: Water
Data Release Authorized:
Reported: 04/13/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010
Date Sampled: NA
Date Received: NA

Date Extracted: 03/30/11
Date Analyzed: 04/04/11 10:02
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	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	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	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
2-Fluorobiphenyl	64.4%
d14-p-Terphenyl	73.6%
2,4,6-Tribromophenol	72.8%

ANALYTICAL RESOURCES INCORPORATED

SW8270 SEMIVOLATILES WATER SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010

Client ID	FBP	TPH	TBP	TOT OUT
MB-033011	64.4%	73.6%	72.8%	0
LCS-033011	69.6%	71.2%	79.5%	0
LCSD-033011	70.8%	76.4%	82.9%	0
LW-4R-03242011	54.8%	48.0%	63.7%	0
Duplicate	66.0%	54.4%	70.9%	0
MW-05S-03252011	64.8%	50.0%	72.3%	0
MW-05D-03252011	61.2%	66.4%	64.0%	0
PZ-13-03242011	62.8%	69.6%	66.1%	0
PZ-18-03242011	66.0%	65.2%	66.9%	0
MW-02D-03252011	67.2%	73.6%	72.5%	0
PZ-19-03252011	64.4%	66.0%	65.1%	0
MW-02S-03252011	58.0%	50.8%	66.9%	0
MW-01D-03252011	62.0%	70.4%	73.3%	0
CW-13-03252011	62.8%	66.0%	68.8%	0
PZ-17-03242011	62.8%	66.4%	72.5%	0
LW-3-03242011	64.8%	57.2%	77.6%	0
MW-01S-03252011	55.6%	40.4%	69.9%	0
MW-01S-03252011 DL	D	D	D	0
PZ-12-03242011	60.0%	63.2%	68.5%	0

	LCS/MB LIMITS	QC LIMITS
(FBP) = 2-Fluorobiphenyl	(49-100)	(42-100)
(TPH) = d14-p-Terphenyl	(53-119)	(26-114)
(TBP) = 2,4,6-Tribromophenol	(52-123)	(48-118)

Prep Method: SW3520C
Log Number Range: 11-6749 to 11-6763

ANALYTICAL RESOURCES INCORPORATED

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Semivolatiles by SW8270D GC/MS
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Sample ID: LCS-033011
LCS/LCSD

Lab Sample ID: LCS-033011
LIMS ID: 11-6749
Matrix: Water
Data Release Authorized:
Reported: 04/13/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010
Date Sampled: 03/24/11
Date Received: 03/26/11

Date Extracted LCS/LCSD: 03/30/11

Date Analyzed LCS: 04/04/11 10:34
LCSD: 04/04/11 11:07
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	17.0	25.0	68.0%	16.5	25.0	66.0%	3.0%
2-Methylnaphthalene	16.8	25.0	67.2%	16.6	25.0	66.4%	1.2%
Acenaphthylene	19.4	25.0	77.6%	19.7	25.0	78.8%	1.5%
Acenaphthene	18.9	25.0	75.6%	19.2	25.0	76.8%	1.6%
Dibenzofuran	19.8	25.0	79.2%	20.5	25.0	82.0%	3.5%
Fluorene	19.6	25.0	78.4%	20.3	25.0	81.2%	3.5%
Pentachlorophenol	19.9	25.0	79.6%	20.9	25.0	83.6%	4.9%
Phenanthrene	20.9	25.0	83.6%	21.6	25.0	86.4%	3.3%
Carbazole	21.1	25.0	84.4%	22.0	25.0	88.0%	4.2%
Anthracene	20.1	25.0	80.4%	21.0	25.0	84.0%	4.4%
Fluoranthene	22.2	25.0	88.8%	22.7	25.0	90.8%	2.2%
Pyrene	19.3	25.0	77.2%	20.9	25.0	83.6%	8.0%
Benzo(a)anthracene	20.8	25.0	83.2%	22.1	25.0	88.4%	6.1%
Chrysene	21.7	25.0	86.8%	23.1	25.0	92.4%	6.2%
Benzo(a)pyrene	17.3	25.0	69.2%	18.2	25.0	72.8%	5.1%
Indeno(1,2,3-cd)pyrene	22.6	25.0	90.4%	23.8	25.0	95.2%	5.2%
Dibenz(a,h)anthracene	23.2	25.0	92.8%	24.4	25.0	97.6%	5.0%
Benzo(g,h,i)perylene	23.0	25.0	92.0%	24.6	25.0	98.4%	6.7%
1-Methylnaphthalene	16.7	25.0	66.8%	16.4	25.0	65.6%	1.8%
Total Benzofluoranthenes	39.2	50.0	78.4%	41.0	50.0	82.0%	4.5%

Semivolatile Surrogate Recovery

	LCS	LCSD
2-Fluorobiphenyl	69.6%	70.8%
d14-p-Terphenyl	71.2%	76.4%
2,4,6-Tribromophenol	79.5%	82.9%

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

Sample ID: LW-4R-03242011
SAMPLE

Lab Sample ID: SO90A
LIMS ID: 11-6749
Matrix: Water
Data Release Authorized:
Reported: 04/14/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 0021035.010
Date Sampled: 03/24/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/05/11 23:33
Instrument/Analyst: NT12/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	54.7%
d14-Dibenzo(a,h)anthracene	78.0%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: Duplicate
SAMPLE

Lab Sample ID: SO90B
LIMS ID: 11-6750
Matrix: Water
Data Release Authorized:
Reported: 04/14/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 0021035.010
Date Sampled: 03/25/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/06/11 00:01
Instrument/Analyst: NT12/JZ

Sample Amount: 400 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	0.12	< 0.12 U
218-01-9	Chrysene	0.12	< 0.12 U
50-32-8	Benzo(a)pyrene	0.12	< 0.12 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.12	< 0.12 U
53-70-3	Dibenz(a,h)anthracene	0.12	< 0.12 U
TOTBFA	Total Benzofluoranthenes	0.12	< 0.12 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	50.7%
d14-Dibenzo(a,h)anthracene	88.7%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-05S-03252011
SAMPLE

Lab Sample ID: SO90C
LIMS ID: 11-6751
Matrix: Water
Data Release Authorized:
Reported: 04/14/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 0021035.010
Date Sampled: 03/25/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/06/11 00:29
Instrument/Analyst: NT12/JZ

Sample Amount: 420 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	0.12	< 0.12 U
218-01-9	Chrysene	0.12	< 0.12 U
50-32-8	Benzo(a)pyrene	0.12	< 0.12 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.12	< 0.12 U
53-70-3	Dibenz(a,h)anthracene	0.12	< 0.12 U
TOTBFA	Total Benzofluoranthenes	0.12	< 0.12 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	61.7%
d14-Dibenzo(a,h)anthracene	86.7%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-05D-03252011
SAMPLE

Lab Sample ID: SO90D
LIMS ID: 11-6752
Matrix: Water
Data Release Authorized:
Reported: 04/14/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 0021035.010
Date Sampled: 03/25/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/06/11 00:57
Instrument/Analyst: NT12/JZ

Sample Amount: 420 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	0.12	< 0.12 U
218-01-9	Chrysene	0.12	< 0.12 U
50-32-8	Benzo(a)pyrene	0.12	< 0.12 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.12	< 0.12 U
53-70-3	Dibenz(a,h)anthracene	0.12	< 0.12 U
TOTBFA	Total Benzofluoranthenes	0.12	< 0.12 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	59.3%
d14-Dibenzo(a,h)anthracene	87.0%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-13-03242011
SAMPLE

Lab Sample ID: SO90E
LIMS ID: 11-6753
Matrix: Water
Data Release Authorized:
Reported: 04/14/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 0021035.010
Date Sampled: 03/24/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/06/11 01:24
Instrument/Analyst: NT12/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	57.7%
d14-Dibenzo(a,h)anthracene	83.7%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-18-03242011
SAMPLE

Lab Sample ID: SO90F
LIMS ID: 11-6754
Matrix: Water
Data Release Authorized:
Reported: 04/14/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 0021035.010
Date Sampled: 03/24/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/06/11 01:52
Instrument/Analyst: NT12/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	58.3%
d14-Dibenzo(a,h)anthracene	88.0%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-02D-03252011
SAMPLE

Lab Sample ID: SO90G
LIMS ID: 11-6755
Matrix: Water
Data Release Authorized:
Reported: 04/14/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 0021035.010
Date Sampled: 03/25/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/06/11 02:20
Instrument/Analyst: NT12/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	83.3%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-19-03252011
SAMPLE

Lab Sample ID: SO90H
LIMS ID: 11-6756
Matrix: Water
Data Release Authorized:
Reported: 04/14/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 0021035.010
Date Sampled: 03/25/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/06/11 02:48
Instrument/Analyst: NT12/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	54.7%
d14-Dibenzo(a,h)anthracene	84.3%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-02S-03252011
SAMPLE

Lab Sample ID: SO90I
LIMS ID: 11-6757
Matrix: Water
Data Release Authorized:
Reported: 04/14/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 0021035.010
Date Sampled: 03/25/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/06/11 03:15
Instrument/Analyst: NT12/JZ

Sample Amount: 420 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	0.12	< 0.12 U
218-01-9	Chrysene	0.12	< 0.12 U
50-32-8	Benzo(a)pyrene	0.12	< 0.12 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.12	< 0.12 U
53-70-3	Dibenz(a,h)anthracene	0.12	< 0.12 U
TOTBFA	Total Benzofluoranthenes	0.12	< 0.12 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	59.0%
d14-Dibenzo(a,h)anthracene	87.0%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-01D-03252011
SAMPLE

Lab Sample ID: SO90J
LIMS ID: 11-6758
Matrix: Water
Data Release Authorized:
Reported: 04/14/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 0021035.010
Date Sampled: 03/25/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/06/11 03:43
Instrument/Analyst: NT12/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	58.0%
d14-Dibenzo(a,h)anthracene	81.7%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: CW-13-03252011
SAMPLE

Lab Sample ID: SO90K
LIMS ID: 11-6759
Matrix: Water
Data Release Authorized:
Reported: 04/14/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 0021035.010
Date Sampled: 03/25/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/06/11 04:11
Instrument/Analyst: NT12/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	83.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: PZ-17-03242011
SAMPLE

Lab Sample ID: SO90L
LIMS ID: 11-6760
Matrix: Water
Data Release Authorized:
Reported: 04/14/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 0021035.010
Date Sampled: 03/24/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/06/11 13:16
Instrument/Analyst: NT12/JZ

Sample Amount: 440 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	0.11	< 0.11 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	62.7%
d14-Dibenzo(a,h)anthracene	98.3%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: LW-3-03242011
SAMPLE

Lab Sample ID: SO90M
LIMS ID: 11-6761
Matrix: Water
Data Release Authorized:
Reported: 04/14/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 0021035.010
Date Sampled: 03/24/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/06/11 21:16
Instrument/Analyst: NT12/JZ

Sample Amount: 425 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 10.0

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	1.2	< 1.2 U
218-01-9	Chrysene	1.2	< 1.2 U
50-32-8	Benzo(a)pyrene	1.2	< 1.2 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.2	< 1.2 U
53-70-3	Dibenz(a,h)anthracene	1.2	< 1.2 U
TOTBFA	Total Benzofluoranthenes	1.2	< 1.2 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	60.0%
d14-Dibenzo(a,h)anthracene	86.7%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-01S-03252011
SAMPLE

Lab Sample ID: SO90N
LIMS ID: 11-6762
Matrix: Water
Data Release Authorized:
Reported: 04/14/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 0021035.010
Date Sampled: 03/25/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/06/11 21:44
Instrument/Analyst: NT12/JZ

Sample Amount: 420 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 100

CAS Number	Analyte	RL	Result
56-55-3	Benzo(a)anthracene	12	< 12 U
218-01-9	Chrysene	12	< 12 U
50-32-8	Benzo(a)pyrene	12	< 12 U
193-39-5	Indeno(1,2,3-cd)pyrene	12	< 12 U
53-70-3	Dibenz(a,h)anthracene	12	< 12 U
TOTBFA	Total Benzofluoranthenes	12	< 12 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	D
d14-Dibenzo(a,h)anthracene	D

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-12-03242011
SAMPLE

Lab Sample ID: SO90O
LIMS ID: 11-6763
Matrix: Water
Data Release Authorized:
Reported: 04/14/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 0021035.010
Date Sampled: 03/24/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/06/11 14:12
Instrument/Analyst: NT12/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	94.7%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MB-033011
METHOD BLANK

Lab Sample ID: MB-033011
LIMS ID: 11-6751
Matrix: Water
Data Release Authorized:
Reported: 04/14/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 0021035.010
Date Sampled: NA
Date Received: NA

Date Extracted: 03/30/11
Date Analyzed: 04/05/11 21:42
Instrument/Analyst: NT12/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	60.0%
d14-Dibenzo(a,h)anthracene	72.0%

ANALYTICAL RESOURCES INCORPORATED

SIM SW8270 SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010

Client ID	MNP	DBA	TOT OUT
LW-4R-03242011	54.7%	78.0%	0
Duplicate	50.7%	88.7%	0
MB-033011	60.0%	72.0%	0
LCS-033011	60.3%	57.3%	0
LCSD-033011	61.0%	70.0%	0
MW-05S-03252011	61.7%	86.7%	0
MW-05D-03252011	59.3%	87.0%	0
PZ-13-03242011	57.7%	83.7%	0
PZ-18-03242011	58.3%	88.0%	0
MW-02D-03252011	52.0%	83.3%	0
PZ-19-03252011	54.7%	84.3%	0
MW-02S-03252011	59.0%	87.0%	0
MW-01D-03252011	58.0%	81.7%	0
CW-13-03252011	54.3%	83.3%	0
PZ-17-03242011	62.7%	98.3%	0
LW-3-03242011	60.0%	86.7%	0
MW-01S-03252011	D	D	0
PZ-12-03242011	57.0%	94.7%	0

	LCS/MB LIMITS	QC LIMITS
(MNP) = d10-2-Methylnaphthalene	(36-101)	(30-106)
(DBA) = d14-Dibenzo(a,h)anthracene	(42-121)	(10-130)

Prep Method: SW3510C
Log Number Range: 11-6749 to 11-6763

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: LCS-033011
LAB CONTROL SAMPLE

Lab Sample ID: LCS-033011
LIMS ID: 11-6751
Matrix: Water
Data Release Authorized:
Reported: 04/14/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 0021035.010
Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 03/30/11

Date Analyzed LCS: 04/05/11 22:10
LCSD: 04/05/11 22:37
Instrument/Analyst LCS: NT12/JZ
LCSD: NT12/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	2.59	3.00	86.3%	2.67	3.00	89.0%	3.0%
Chrysene	2.70	3.00	90.0%	2.71	3.00	90.3%	0.4%
Benzo(a)pyrene	2.34	3.00	78.0%	2.44	3.00	81.3%	4.2%
Indeno(1,2,3-cd)pyrene	2.30	3.00	76.7%	2.61	3.00	87.0%	12.6%
Dibenz(a,h)anthracene	1.80	3.00	60.0%	2.22	3.00	74.0%	20.9%
Total Benzofluoranthenes	4.99	6.00	83.2%	5.41	6.00	90.2%	8.1%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

SIM Semivolatile Surrogate Recovery

	LCS	LCSD
d10-2-Methylnaphthalene	60.3%	61.0%
d14-Dibenzo(a,h)anthracene	57.3%	70.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041

Sample ID: LW-4R-03242011
SAMPLE

Lab Sample ID: SO90A
LIMS ID: 11-6749
Matrix: Water
Data Release Authorized:
Reported: 04/18/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010
Date Sampled: 03/24/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/13/11 12:24
Instrument/Analyst: ECD1/AAR

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	83.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041

Sample ID: Duplicate
SAMPLE

Lab Sample ID: SO90B
LIMS ID: 11-6750
Matrix: Water
Data Release Authorized:
Reported: 04/18/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010
Date Sampled: 03/25/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/13/11 13:00
Instrument/Analyst: ECD1/AAR

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	76.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041

Sample ID: MW-05S-03252011
SAMPLE

Lab Sample ID: SO90C
LIMS ID: 11-6751
Matrix: Water
Data Release Authorized:
Reported: 04/18/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010
Date Sampled: 03/25/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/13/11 13:36
Instrument/Analyst: ECD1/AAR

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	81.2%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: MW-05D-03252011
SAMPLE

Lab Sample ID: SO90D
LIMS ID: 11-6752
Matrix: Water
Data Release Authorized:
Reported: 04/18/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010
Date Sampled: 03/25/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/13/11 14:13
Instrument/Analyst: ECD1/AAR

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	89.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041

Sample ID: PZ-13-03242011
SAMPLE

Lab Sample ID: SO90E
LIMS ID: 11-6753
Matrix: Water
Data Release Authorized:
Reported: 04/18/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010
Date Sampled: 03/24/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/13/11 14:49
Instrument/Analyst: ECD1/AAR

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	89.6%

ANALYTICAL RESOURCES INCORPORATED

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

Sample ID: PZ-18-03242011
SAMPLE

Lab Sample ID: SO90F
LIMS ID: 11-6754
Matrix: Water
Data Release Authorized:
Reported: 04/18/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010
Date Sampled: 03/24/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/13/11 15:25
Instrument/Analyst: ECD1/AAR

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	84.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041

Sample ID: MW-02D-03252011
SAMPLE

Lab Sample ID: SO90G
LIMS ID: 11-6755
Matrix: Water
Data Release Authorized:
Reported: 04/18/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010
Date Sampled: 03/25/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/15/11 02:42
Instrument/Analyst: ECD1/AAR

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	87.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041

Sample ID: PZ-19-03252011
SAMPLE

Lab Sample ID: SO90H
LIMS ID: 11-6756
Matrix: Water
Data Release Authorized:
Reported: 04/18/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010
Date Sampled: 03/25/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/13/11 17:50
Instrument/Analyst: ECD1/AAR

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	87.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041

Sample ID: MW-02S-03252011
SAMPLE

Lab Sample ID: SO90I
LIMS ID: 11-6757
Matrix: Water
Data Release Authorized:
Reported: 04/18/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010
Date Sampled: 03/25/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/13/11 18:26
Instrument/Analyst: ECD1/AAR

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	75.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041

Sample ID: MW-01D-03252011
SAMPLE

Lab Sample ID: SO90J
LIMS ID: 11-6758
Matrix: Water
Data Release Authorized:
Reported: 04/18/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010
Date Sampled: 03/25/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/13/11 19:02
Instrument/Analyst: ECD1/AAR

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	75.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041

Sample ID: CW-13-03252011
SAMPLE

Lab Sample ID: SO90K
LIMS ID: 11-6759
Matrix: Water
Data Release Authorized:
Reported: 04/18/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010
Date Sampled: 03/25/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/13/11 19:38
Instrument/Analyst: ECD1/AAR

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	79.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041

Sample ID: PZ-17-03242011
SAMPLE

Lab Sample ID: SO90L
LIMS ID: 11-6760
Matrix: Water
Data Release Authorized:
Reported: 04/18/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010
Date Sampled: 03/24/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/13/11 20:14
Instrument/Analyst: ECD1/AAR

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	76.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041

Sample ID: LW-3-03242011
SAMPLE

Lab Sample ID: SO90M
LIMS ID: 11-6761
Matrix: Water
Data Release Authorized:
Reported: 04/18/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010
Date Sampled: 03/24/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/13/11 20:51
Instrument/Analyst: ECD1/AAR

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	80.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041

Sample ID: PZ-12-03242011
SAMPLE

Lab Sample ID: SO90O
LIMS ID: 11-6763
Matrix: Water
Data Release Authorized:
Reported: 04/18/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010
Date Sampled: 03/24/11
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/15/11 03:18
Instrument/Analyst: ECD1/AAR

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**

Reported in µg/L (ppb)

Chlorophenol Surrogate Recovery

2,4,6-Tribromophenol	90.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041

Sample ID: MB-033011
METHOD BLANK

Lab Sample ID: MB-033011
LIMS ID: 11-6749
Matrix: Water
Data Release Authorized:
Reported: 04/18/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010
Date Sampled: NA
Date Received: NA

Date Extracted: 03/30/11
Date Analyzed: 04/15/11 00:17
Instrument/Analyst: ECD1/AAR

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%

ANALYTICAL RESOURCES INCORPORATED

SW8041 CHLOROPHENOLICS SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010

Client ID	TBP	TOT OUT
MB-033011	81.6%	0
LCS-033011	83.8%	0
LCSD-033011	85.0%	0
LW-4R-03242011	83.2%	0
Duplicate	76.4%	0
MW-05S-03252011	81.2%	0
MW-05D-03252011	89.6%	0
PZ-13-03242011	89.6%	0
PZ-18-03242011	84.8%	0
MW-02D-03252011	87.6%	0
PZ-19-03252011	87.2%	0
MW-02S-03252011	75.6%	0
MW-01D-03252011	75.6%	0
CW-13-03252011	79.2%	0
PZ-17-03242011	76.4%	0
LW-3-03242011	80.8%	0
PZ-12-03242011	90.0%	0

	LCS/MB LIMITS	QC LIMITS
(TBP) = 2,4,6-Tribromophenol	(40-130)	(11-156)

Prep Method: SW3510C
Log Number Range: 11-6749 to 11-6763

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCP by GC/ECD Method SW8041

Sample ID: LCS-033011
LCS/LCSD

Lab Sample ID: LCS-033011
LIMS ID: 11-6749
Matrix: Water
Data Release Authorized:
Reported: 04/18/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010
Date Sampled: 03/24/11
Date Received: 03/26/11

Date Extracted LCS/LCSD: 03/30/11

Date Analyzed LCS: 04/15/11 00:53
LCSD: 04/15/11 01:29
Instrument/Analyst LCS: ECD1/AAR
LCSD: ECD1/AAR

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	2.19	2.50	87.6%	2.22	2.50	88.8%	1.4%

Chlorophenols Surrogate Recovery

	LCS	LCSD
2,4,6-Tribromophenol	83.8%	85.0%

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

ANALYTICAL RESOURCES INCORPORATED

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

Matrix: Water

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010

Data Release Authorized: MW
Reported: 04/06/11

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DL	Range	RL	Result
MB-032911	Method Blank	03/29/11	04/01/11	1.00	Diesel	100	< 100 U
11-6749	HC ID: ---		FID4A	1.0	Motor Oil	200	< 200 U
					Creosote	200	< 200 U
					o-Terphenyl		99.3%
SO90A	LW-4R-03242011	03/29/11	04/01/11	1.00	Diesel	130	< 130 U
11-6749	HC ID: ---		FID4A	1.0	Motor Oil	260	< 260 U
					Creosote	260	< 260 U
					o-Terphenyl		96.0%
SO90B	Duplicate	03/29/11	04/01/11	1.00	Diesel	120	< 120 U
11-6750	HC ID: ---		FID4A	1.0	Motor Oil	230	< 230 U
					Creosote	230	< 230 U
					o-Terphenyl		107%
SO90C	MW-05S-03252011	03/29/11	04/01/11	1.00	Diesel	120	< 120 U
11-6751	HC ID: ---		FID4A	1.0	Motor Oil	250	< 250 U
					Creosote	250	< 250 U
					o-Terphenyl		101%
SO90D	MW-05D-03252011	03/29/11	04/01/11	1.00	Diesel	110	< 110 U
11-6752	HC ID: ---		FID4A	1.0	Motor Oil	220	< 220 U
					Creosote	220	< 220 U
					o-Terphenyl		102%
SO90E	PZ-13-03242011	03/29/11	04/01/11	1.00	Diesel	100	< 100 U
11-6753	HC ID: ---		FID4A	1.0	Motor Oil	200	< 200 U
					Creosote	200	< 200 U
					o-Terphenyl		101%
SO90F	PZ-18-03242011	03/29/11	04/01/11	1.00	Diesel	110	< 110 U
11-6754	HC ID: ---		FID4A	1.0	Motor Oil	220	< 220 U
					Creosote	220	< 220 U
					o-Terphenyl		104%
SO90G	MW-02D-03252011	03/29/11	04/01/11	1.00	Diesel	120	< 120 U
11-6755	HC ID: **CREOSOTE**		FID4A	1.0	Motor Oil	230	< 230 U
					Creosote	**230**	**280**
					o-Terphenyl		89.7%
SO90H	PZ-19-03252011	03/29/11	04/01/11	1.00	Diesel	110	< 110 U
11-6756	HC ID: ---		FID4A	1.0	Motor Oil	230	< 230 U
					Creosote	230	< 230 U
					o-Terphenyl		105%
SO90I	MW-02S-03252011	03/29/11	04/01/11	1.00	Diesel	120	< 120 U
11-6757	HC ID: ---		FID4A	1.0	Motor Oil	240	< 240 U
					Creosote	240	< 240 U
					o-Terphenyl		108%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD by GC/FID-Silica and Acid Cleaned
Page 2 of 2
Matrix: Water

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010

Data Release Authorized: MW
Reported: 04/06/11

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DL	Range	RL	Result
SO90J	MW-01D-03252011	03/29/11	04/01/11	1.00	Diesel	100	< 100 U
11-6758	HC ID: ---		FID4A	1.0	Motor Oil	200	< 200 U
					Creosote	200	< 200 U
					o-Terphenyl		95.4%
SO90K	CW-13-03252011	03/29/11	04/01/11	1.00	Diesel	100	< 100 U
11-6759	HC ID: ---		FID4A	1.0	Motor Oil	200	< 200 U
					Creosote	200	< 200 U
					o-Terphenyl		98.4%
SO90L	PZ-17-03242011	03/29/11	04/01/11	1.00	Diesel	100	< 100 U
11-6760	HC ID: ---		FID4A	1.0	Motor Oil	200	< 200 U
					Creosote	200	< 200 U
					o-Terphenyl		96.5%
SO90M	LW-3-03242011	03/29/11	04/01/11	1.00	Diesel	120	< 120 U
11-6761	HC ID: ---		FID4A	1.0	Motor Oil	250	< 250 U
					Creosote	250	< 250 U
					o-Terphenyl		91.8%
SO90N	MW-01S-03252011	03/29/11	04/01/11	1.00	**Diesel**	**120**	**5100**
11-6762	HC ID: **CREOSOTE**		FID4A	1.0	**Motor Oil**	**250**	**500**
					Creosote	**250**	**24000 E**
					o-Terphenyl		87.8%
SO90N DIL	MW-01S-03252011	03/29/11	04/05/11	1.00	**Diesel**	**2500**	**4900**
11-6762	HC ID: **CREOSOTE**		FID4A	20	Motor Oil	4900	< 4900 U
					Creosote	**4900**	**24000**
					o-Terphenyl		106%
SO90O	PZ-12-03242011	03/29/11	04/01/11	1.00	Diesel	110	< 110 U
11-6763	HC ID: ---		FID4A	1.0	Motor Oil	220	< 220 U
					Creosote	220	< 220 U
					o-Terphenyl		95.9%

Reported in ug/L (ppb)

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

Diesel quantitation on total peaks in the range from C12 to C24.
Motor Oil quantitation on total peaks in the range from C24 to C38.
Creosote 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: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010

Client ID	OTER	TOT OUT
MB-032911	99.3%	0
LCS-032911	78.3%	0
LCSD-032911	95.6%	0
LW-4R-03242011	96.0%	0
Duplicate	107%	0
MW-05S-03252011	101%	0
MW-05D-03252011	102%	0
PZ-13-03242011	101%	0
PZ-18-03242011	104%	0
MW-02D-03252011	89.7%	0
PZ-19-03252011	105%	0
MW-02S-03252011	108%	0
MW-01D-03252011	95.4%	0
CW-13-03252011	98.4%	0
PZ-17-03242011	96.5%	0
LW-3-03242011	91.8%	0
MW-01S-03252011	87.8%	0
MW-01S-03252011 DL	106%	0
PZ-12-03242011	95.9%	0

	LCS/MB LIMITS	QC LIMITS
(OTER) = o-Terphenyl	(53-123)	(49-118)

Prep Method: SW3510C
Log Number Range: 11-6749 to 11-6763

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID-Silica and Acid Cleaned
Page 1 of 1

Sample ID: LCS-032911
LCS/LCSD

Lab Sample ID: LCS-032911
LIMS ID: 11-6749
Matrix: Water
Data Release Authorized:
Reported: 04/06/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
0021035.010
Date Sampled: 03/24/11
Date Received: 03/26/11

Date Extracted LCS/LCSD: 03/29/11

Date Analyzed LCS: 04/01/11 03:01
LCSD: 04/01/11 03:24
Instrument/Analyst LCS: FID/MS
LCSD: FID/MS

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	2360	3000	78.7%	2400	3000	80.0%	1.7%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	78.3%	95.6%

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

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

ARI Job: SO90
Matrix: Water Project: Port of Olympia
Date Received: 03/26/11 0021035.010

ARI ID	Client ID	Samp Amt	Final Vol	Prep Date
11-6749-032911MB1	Method Blank	500 mL	1.00 mL	03/29/11
11-6749-032911LCS1	Lab Control	500 mL	1.00 mL	03/29/11
11-6749-032911LCSD1	Lab Control Dup	500 mL	1.00 mL	03/29/11
11-6749-SO90A	LW-4R-03242011	385 mL	1.00 mL	03/29/11
11-6750-SO90B	Duplicate	435 mL	1.00 mL	03/29/11
11-6751-SO90C	MW-05S-03252011	405 mL	1.00 mL	03/29/11
11-6752-SO90D	MW-05D-03252011	460 mL	1.00 mL	03/29/11
11-6753-SO90E	PZ-13-03242011	500 mL	1.00 mL	03/29/11
11-6754-SO90F	PZ-18-03242011	460 mL	1.00 mL	03/29/11
11-6755-SO90G	MW-02D-03252011	430 mL	1.00 mL	03/29/11
11-6756-SO90H	PZ-19-03252011	440 mL	1.00 mL	03/29/11
11-6757-SO90I	MW-02S-03252011	410 mL	1.00 mL	03/29/11
11-6758-SO90J	MW-01D-03252011	500 mL	1.00 mL	03/29/11
11-6759-SO90K	CW-13-03252011	500 mL	1.00 mL	03/29/11
11-6760-SO90L	PZ-17-03242011	500 mL	1.00 mL	03/29/11
11-6761-SO90M	LW-3-03242011	400 mL	1.00 mL	03/29/11
11-6762-SO90N	MW-01S-03252011	405 mL	1.00 mL	03/29/11
11-6763-SO90O	PZ-12-03242011	455 mL	1.00 mL	03/29/11

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Matrix: Water

Data Release Authorized: MW
Reported: 04/07/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 0021035.010
Date Sampled: 03/24/11
Date Received: 03/26/11

ARI ID	Client ID	Analysis Date	DL	Range	Result
MB-032911	Method Blank	03/29/11	1.0	Gasoline	< 250 U
11-6749		PID1		HC ID	---
				Trifluorotoluene	101%
				Bromobenzene	101%
SO90A	LW-4R-03242011	03/29/11	1.0	Gasoline	< 250 U
11-6749		PID1		HC ID	---
				Trifluorotoluene	103%
				Bromobenzene	103%
SO90B	Duplicate	03/29/11	1.0	Gasoline	< 250 U
11-6750		PID1		HC ID	---
				Trifluorotoluene	106%
				Bromobenzene	105%
SO90C	MW-05S-03252011	03/29/11	1.0	Gasoline	< 250 U
11-6751		PID1		HC ID	---
				Trifluorotoluene	103%
				Bromobenzene	103%
SO90D	MW-05D-03252011	03/29/11	1.0	Gasoline	< 250 U
11-6752		PID1		HC ID	---
				Trifluorotoluene	104%
				Bromobenzene	103%
SO90E	PZ-13-03242011	03/29/11	1.0	Gasoline	< 250 U
11-6753		PID1		HC ID	---
				Trifluorotoluene	103%
				Bromobenzene	102%
SO90F	PZ-18-03242011	03/29/11	1.0	Gasoline	< 250 U
11-6754		PID1		HC ID	---
				Trifluorotoluene	98.0%
				Bromobenzene	102%
SO90G	MW-02D-03252011	03/29/11	1.0	**Gasoline**	**620**
11-6755		PID1		HC ID	GRO
				Trifluorotoluene	103%
				Bromobenzene	102%
SO90H	PZ-19-03252011	03/29/11	1.0	Gasoline	< 250 U
11-6756		PID1		HC ID	---
				Trifluorotoluene	102%
				Bromobenzene	103%
SO90I	MW-02S-03252011	03/29/11	1.0	Gasoline	< 250 U
11-6757		PID1		HC ID	---
				Trifluorotoluene	98.2%
				Bromobenzene	103%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Matrix: Water

Data Release Authorized:
Reported: 04/07/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 0021035.010
Date Sampled: 03/25/11
Date Received: 03/26/11

ARI ID	Client ID	Analysis Date	DL	Range	Result
SO90J	MW-01D-03252011	03/29/11	1.0	Gasoline	< 250 U
11-6758		PID1		HC ID	---
				Trifluorotoluene	98.9%
				Bromobenzene	99.2%
SO90K	CW-13-03252011	03/29/11	1.0	Gasoline	< 250 U
11-6759		PID1		HC ID	---
				Trifluorotoluene	102%
				Bromobenzene	104%
SO90L	PZ-17-03242011	03/29/11	1.0	Gasoline	< 250 U
11-6760		PID1		HC ID	---
				Trifluorotoluene	99.9%
				Bromobenzene	104%
SO90M	LW-3-03242011	03/29/11	1.0	Gasoline	< 250 U
11-6761		PID1		HC ID	---
				Trifluorotoluene	102%
				Bromobenzene	102%
MB-033111	Method Blank	03/31/11	1.0	Gasoline	< 250 U
11-6762		PID1		HC ID	---
				Trifluorotoluene	97.6%
				Bromobenzene	99.3%
SO90N	MW-01S-03252011	03/31/11	20	**Gasoline**	**57000**
11-6762		PID1		HC ID	GAS/GRO
				Trifluorotoluene	102%
				Bromobenzene	103%
SO90O	PZ-12-03242011	03/31/11	1.0	Gasoline	< 250 U
11-6763		PID1		HC ID	---
				Trifluorotoluene	101%
				Bromobenzene	105%
SO90P	TRIP BLANKS	03/29/11	1.0	Gasoline	< 250 U
11-6764		PID1		HC ID	---
				Trifluorotoluene	101%
				Bromobenzene	98.0%

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: SO90
Matrix: Water

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 0021035.010

Client ID	TFT	BBZ	TOT OUT
MB-032911	101%	101%	0
LCS-032911	108%	104%	0
LCSD-032911	108%	104%	0
LW-4R-03242011	103%	103%	0
Duplicate	106%	105%	0
MW-05S-03252011	103%	103%	0
MW-05D-03252011	104%	103%	0
PZ-13-03242011	103%	102%	0
PZ-18-03242011	98.0%	102%	0
MW-02D-03252011	103%	102%	0
PZ-19-03252011	102%	103%	0
MW-02S-03252011	98.2%	103%	0
MW-01D-03252011	98.9%	99.2%	0
CW-13-03252011	102%	104%	0
PZ-17-03242011	99.9%	104%	0
LW-3-03242011	102%	102%	0
MB-033111	97.6%	99.3%	0
LCS-033111	105%	101%	0
LCSD-033111	105%	102%	0
MW-01S-03252011	102%	103%	0
PZ-12-03242011	101%	105%	0
TRIP BLANKS	101%	98.0%	0

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

Log Number Range: 11-6749 to 11-6764

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG

Sample ID: LCS-032911
LAB CONTROL SAMPLE

Lab Sample ID: LCS-032911
LIMS ID: 11-6749
Matrix: Water
Data Release Authorized:
Reported: 04/07/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 0021035.010
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 03/29/11 10:53
LCSD: 03/29/11 11:22
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	1070	1000	107%	1060	1000	106%	0.9%

Reported in ug/L (ppb)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	108%	108%
Bromobenzene	104%	104%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG

Sample ID: LCS-033111
LAB CONTROL SAMPLE

Lab Sample ID: LCS-033111
LIMS ID: 11-6762
Matrix: Water
Data Release Authorized:
Reported: 04/07/11

QC Report No: SO90-LANDAU ASSOCIATES,INC.
Project: Port of Olympia
Event: 0021035.010
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 03/31/11 11:46
LCSD: 03/31/11 12:15
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	1090	1000	109%	1010	1000	101%	7.6%

Reported in ug/L (ppb)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	105%	105%
Bromobenzene	101%	102%