TECHNICAL MEMORANDUM

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ENVIRONMENTAL | GEOTECHNICAL | NATURAL RESOURCES

TO: Mohsen Kourehdar, P.E., Washington State Department of Ecology

FROM: Lawrence D. Beard, P.E., L.G., and Christine Kimmel, L.G.

DATE: July 11, 2011

RE: NORTH POINT/PHASE III CAPPING PROJECT
SUMMARY OF COMPLIANCE MONITORING
CASCADE POLE SITE, OLYMPIA, WASHINGTON

At the request of Mr. Don Bache of the Port of Olympia, we are providing the Washington State Department of Ecology (Ecology) with the results of the soil compliance monitoring conducted as part of the remedial excavation activities for the North Point/Phase III Capping Area (subject property) of the former Cascade Pole Company (CPC) site. This compliance monitoring memorandum was written to document completion of the confirmation soil sampling activities specified in Amendment No. 2 to Agreed Order No. DE 00TCPSR – 753 between Ecology and the Port of Olympia.

BACKGROUND

The CPC site is a former wood treatment facility located on Port of Olympia property in Olympia, Washington. The subject property is located within the northwest corner of the CPC site, as shown on Figure 1. Chemicals used in the former wood treatment operations include creosote and pentachlorophenol (PCP). The subject property has historically been used for log storage during CPC operation and is not located in the vicinity of primary wood treating operations.

Two investigations have been conducted at the subject property to evaluate if historical wood treatment operations have impacted the site (Landau Associates 2005a,b), and an investigation was also conducted on the adjacent property to the west (Landau Associates 2009a). The locations of these previous investigation locations are shown on Figure 1.

The results of the November 2004 investigation indicated that carcinogenic polycyclic aromatic hydrocarbons (cPAHs) were present at concentrations above the Model Toxics Control Act (MTCA) Method B cleanup level for unrestricted site use [0.137 milligrams per kilogram (mg/kg)] within the upper 1 ft of soil along the southern portion of the subject property at two sampling locations (NP-1 and NP-2). In addition, the surface soil sample results indicated the Toxicity Equivalency Quotient (TEQ) for dioxins/furans at NP-1 were also greater than the MTCA Method B cleanup level for unrestricted use. Soil samples collected from lower depth intervals (2 to 5 ft below grade) indicate concentrations below the cleanup levels.

Based on the results of the initial investigation, a supplemental surface soil investigation was conducted in September 2005. A total of nine surface soil samples were collected from the upper 1-ft interval and analyzed for cPAHs to better delineate the extent of shallow soil contamination. The results of the supplemental investigation indicated the presence of cPAHs above the cleanup level across the southern half of the parcel and in an isolated area in the northwest portion of the parcel.

PLANNED INTERIM ACTION

Based on the extent of contamination delineated by the site investigation activities described above, the area shown on Figure 2 was identified for excavation to remove contaminated soil to the MTCA Method B cleanup levels. The excavated soil was to be placed and contained at another location on the site, as described in the engineering design report (GeoEngineers 2006). The planned excavation was to extend to a depth of 1.5 ft below ground surface (BGS), although it was recognized that the excavation might extend deeper, depending on the results of the compliance monitoring

REMEDIAL EXCAVATION AND COMPLIANCE MONITORING

Site preparation activities included removal of debris piles and removal of vegetation. Consistent with the interim action plan, the area shown on Figure 2 was excavated to remove the upper 1.5 ft below original ground surface as impacted soil in the southern portion of the subject property and in an isolated area along the northwest portion. Debris fill material (i.e., timber, concrete rubble, and other construction debris) was encountered during the excavation of areas CMP-8 and CMP-11. The excavated soil was placed and contained in an area inside the slurry wall to the southeast of the excavation area, as described in the engineering design report (GeoEngineers 2006).

Upon completion of the initial excavation [approximately 2,400 cubic yards (yd^3) of soil], compliance monitoring samples were collected by P.I. Resources, LLC, in accordance with procedures described in the compliance monitoring plan (CMP: Landau Associates 2009b). Soil samples were collected from 11 locations (CM-1 through CM-11) on August 5, 2010, as shown on Figure 2. Soil samples were collected from two intervals at each location to represent the upper 0 to 1 ft and the 1 to 2 ft below the base of the initial excavation using procedures described in the CMP. In accordance with the CMP, the upper sampling interval for each location was selected for analytical testing, while the lower sampling intervals were placed on hold for possible follow up analyses. Compliance soil samples were analyzed for cPAHs using U.S. Environmental Protection Agency (EPA) Method 8270. Additionally, the soil sample collected from compliance monitoring location CM-11 was tested for dioxins/furans using EPA Method 8290. Analytical results for cPAHs were evaluated by calculating the TEQ for individual cPAHs and summing the values for comparison to the benzo(a)pyrene Method B cleanup level for

unrestricted site use (0.137 mg/kg). Similarly, the TEQ for dioxins/furans were calculated based on conversion and summation of other congeners to their equivalent 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) concentration, and the TEQ values were compared against the MTCA Method B cleanup level for unrestricted site use [11 nanograms per kilogram (ng/kg)].

Analytical results from the compliance monitoring samples are summarized in Table 1 and the analytical data provided by the Port contractor are provided in Attachment 1. A review of the data was conducted by Landau Associates through a focused data validation process, as described in the CMP. All data was found to be acceptable for monitoring purposes, with the qualifications specified in Table 1.

The results of the compliance monitoring samples from the upper sampling interval indicate concentrations were below the cleanup level with the following exceptions:

- Results from CM-8 at 0 to 1 ft reported a cPAHs TEQ concentration (0.8847 mg/kg) above the Method B cleanup level (0.137 mg/kg).
- Results from CM-11 at 0 to 1 ft exhibited TEQ concentrations for both cPAHs (0.238 ng/kg and dioxins/furans (926 ng/kg) above their respective Method B cleanup levels.

Based on the surface soil sample results, the deeper sampling interval representing 1 to 2 ft below the base of the excavation was analyzed for cPAHs and dioxins/furans at CM-8 and for cPAHs at CM-11. In addition, the deeper sampling interval at location CM-9 was selected for additional analyses to further characterize the low level TEQ concentrations for cPAHs (0.116 mg/kg). The results of the follow up analyses indicated exceedance of the dioxins/furans cleanup level at CM-8 (447 ng/kg) and exceedance of the cPAHs cleanup level at CM-11 (0.277 mg/kg) (dioxin was not tested in this sample from CM-11).

ADDITIONAL EXCAVATION ACTIVITIES

Due to elevated cPAHs and/or dioxins/furans at the CMP-8 and CMP-11 sampling locations, the Port, in consultation with Ecology, conducted additional excavation in these areas. The CMP-11 area was excavated first, and compliance monitoring samples were collected from the CM-11 area as the excavation was extended vertically to about 3 ft below the initial excavation at this location. The compliance sample results for the sample collected from 3 to 4 ft indicated a TEQ concentration of dioxins/furans (75 ng/kg) remained above the cleanup level in the excavation. Because the excavation remained within the debris fill material discussed above, it was decided that the cleanup level exceedances were likely associated with the debris fill material.

The Port, in consultation with Ecology, decided to extend the excavations in the areas associated with CMP-8 and CMP-11 vertically and laterally to remove all the debris fill material. As a result, the excavations were extended vertically to the top of the hydraulic fill soil, which was present at approximately 6 ft below initial excavation grade, prior to collection of the final compliance monitoring samples in these areas. The excavations were also expanded laterally in both areas to the limits of the

debris fill, which extended the excavations well beyond the originally planned excavation boundaries. As shown on Figure 2 and on the attached as-built drawing (Attachment 2) provided by the contractor (P.I. Resources, LLC), the final excavation limits for area CM-11 encompassed much of the area associated with CMP-9 and, as a result, an additional compliance monitoring sample was also collected at the CMP-9 location.

The final confirmation soil samples collected at the base of the additional excavation areas indicated TEQs for both cPAHs and dioxins/furans at CM-8, CM-9, and CM-11 were below their respective cleanup levels. Approximately 1,000 yd^3 of additional soil were excavated from these areas, for a total of approximately 3,400 yd^3 for the entire excavation.

Additionally, two soil samples [CM-2(1-2) and CM-3(1-2)] collected from locations outside the limits of the expanded excavations were tested for dioxins/furans to confirm that the elevated dioxins/furans concentrations were associated with the debris fill and not the hydraulic fill. The dioxins/furans concentrations in these two samples were well below the dioxins/furans cleanup level.

Upon receipt of the final confirmation soil sampling results, a nonwoven geotextile fabric layer was placed in the areas of over-excavation prior to the placement of imported clean backfill material, which occurred between September 9 and 15, 2010. Following backfilling, approximately 7.5 ft of clean fill soil covered the over-excavated areas and a minimum of 1.5 ft of clean fill soil covered the remainder of the site.

COMPLIANCE MONITORING EVALUATION

Based on the results of compliance monitoring following additional excavation, cPAHs and dioxins/furans cleanup levels appear to have been achieved in the North Point/Phase III excavation area and the Port has met its obligations under Amendment No. 2 to Agreed Order No. DE 00TCPSR – 753. Historically, cPAHs analytical data have been utilized as an indicator parameter for impacts from the CPC site, including dioxins/furans contamination. For the Phase III excavation area, a total of eight samples were submitted for chemical testing for both cPAHs and dioxins/furans (seven compliance monitoring samples and one investigation sample).

The analytical results indicate a strong correlation between the cPAHs and dioxins/furans for the six samples collected from soil fill. For instance, the investigation sample NP-1 (0 to 1 ft) exhibited a cPAHs TEQ concentration of 0.491 mg/kg and a dioxins/furans TEQ of 616.3 ng/kg, and sample CM-11 (0 to 1 ft) exhibited a cPAHs TEQ concentration of 0.238 mg/kg and a dioxins/furans TEQ concentration of 926 ng/kg. A strong correlation between cPAHs and dioxins/furans results also occurred with low level concentrations in four of the eight samples; analytical results for sample CM-9 (1 to 2 ft) exhibited a cPAHs TEQ concentration below laboratory reporting limits and a dioxins/furans TEQ concentration of

7.4 ng/kg, and a similar correlation was observed in the three final bottom samples at locations CM-8, CM-9, and CM-11.

A poor correlation between cPAHs and dioxins/furans concentrations was observed in the two samples, CM-8 (1-2) and CM-11 (3-4), that were collected from the debris fill material. This poor correlation appears to result from the heterogeneity inherent in the debris material rather than a lack of correlation between cPAHs and dioxins/furans concentrations for typical Site soil, as is illustrated by the six soil samples discussed above. Based on these considerations, and recognizing the inherent heterogeneity associated with the debris fill material, it is our opinion that cPAHs and dioxins/furans concentrations correlate well in Site soil and that cPAHs should continue to be used as an indicator constituent for dioxins/furans.

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This summary technical memorandum has been prepared for the exclusive use of the Port of Olympia for specific application to the North Point/Phase III Capping Area Cleanup Action. No other party is entitled to rely on the information and recommendations included in this document without the express written consent of Landau Associates. Further, the reuse of information 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.

REFERENCES

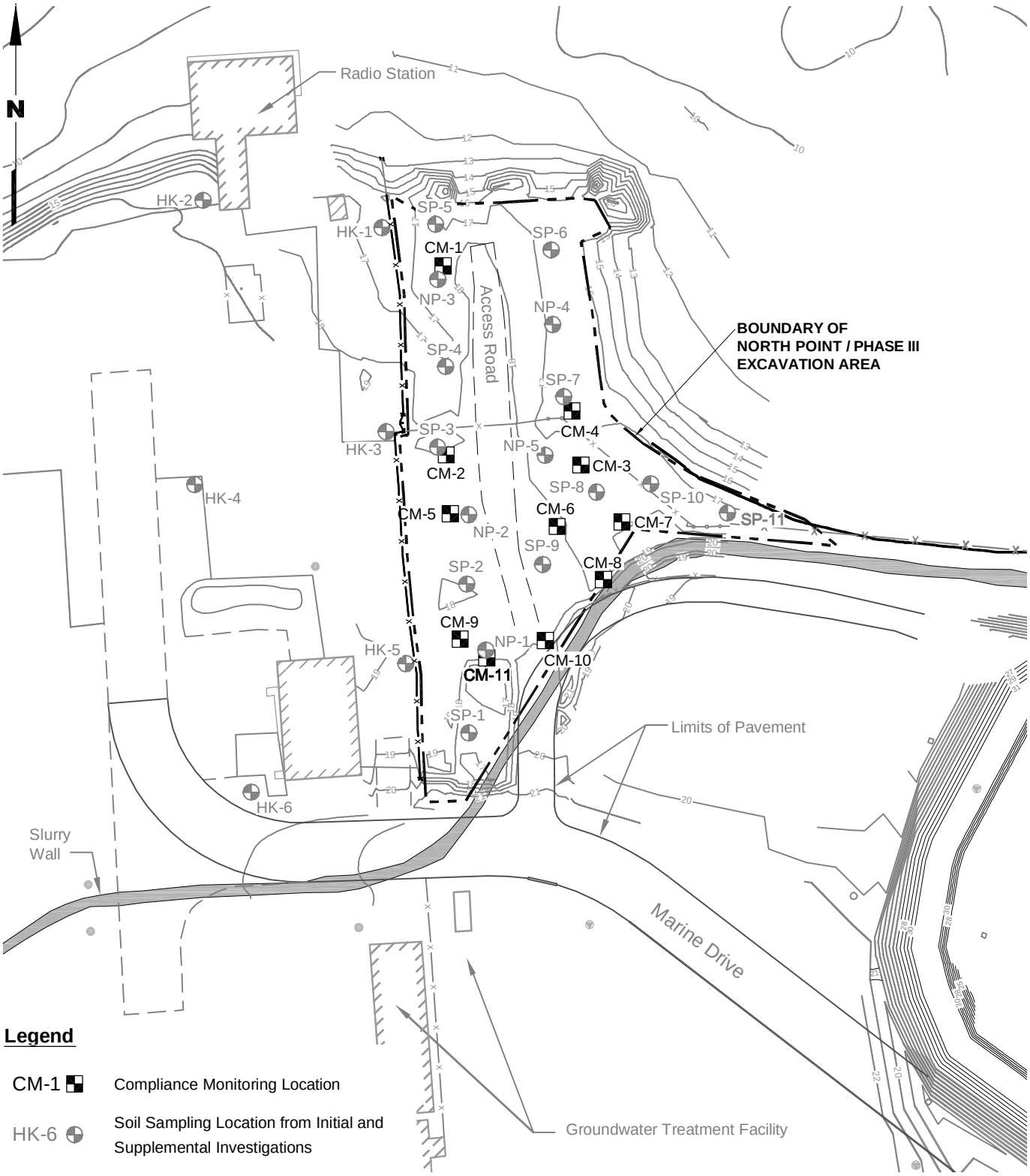
GeoEngineers. 2006. Preliminary Draft *Supplemental Engineering Design Report, North Point/Phase III Capping Project, Cascade Pole Site, Olympia, Washington.* Prepared for Port of Olympia. Steven C. Woodward, L.G., Associate, and Bo McFadden, LG, LEG, Associate, GeoEngineers, Inc., Seattle, Washington. January 5.

Landau Associates. 2009a. Technical Memorandum to Mohsen Kourehdar, Washington State Department of Ecology, re: *Supplemental Soil Investigation Report, Holbrook/KGY Area, Port of Olympia, Olympia,Washington*. Lawrence Beard and Christine Kimmel, Landau Associates. July 22.

Landau Associates 2009b. *Compliance Monitoring Plan, Confirmation Soil Sampling, North Point/ Phase III Capping Area Investigation, Cascade Pole Company Site, Olympia, Washington*. May 5.

Landau Associates 2005a. *Report, North Point/Phase IV Capping Area Investigation,* Cascade Pole Company Site, Olympia, Washington. February 3.

Landau Associates 2005b. *Technical Memorandum, Supplemental Soil Investigation Report, North Point/Phase IV Capping Area,* Cascade Pole Company Site, Olympia, Washington. November 16.



Legend

CM-1	Compliance Monitoring Location
HK-6	Soil Sampling Location from Initial and Supplemental Investigations
SP-10	Former Supplemental Investigation Sampling Location
— — —	Approximate Limits of North Point/Phase III Excavation Area

0 80 160

Scale in Feet

Cascade Pole | V:\021\039\030.031\Figure 1.dwg (A) "Figure 1" 7/6/2011

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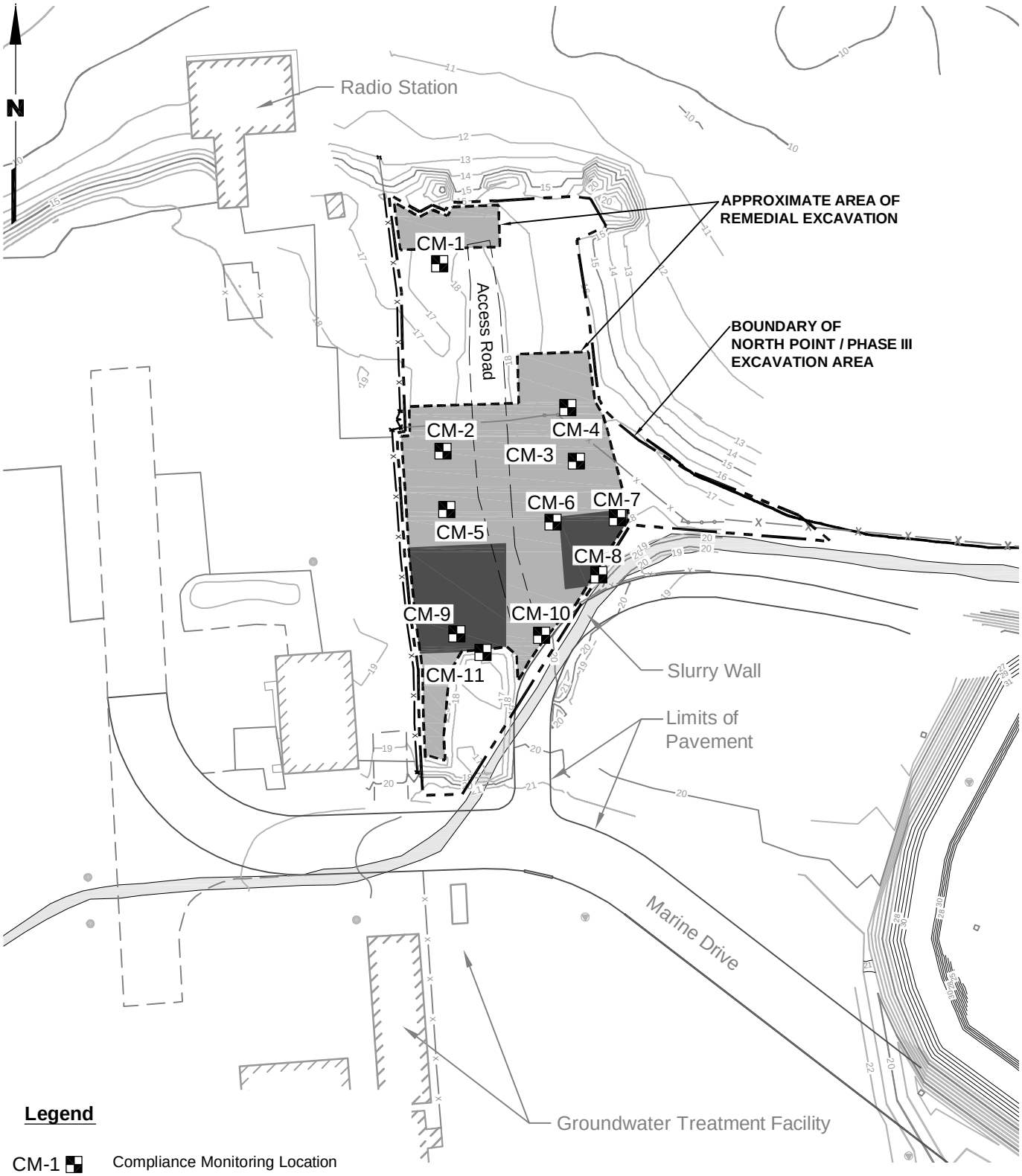
Cascade Pole Site Olympia, Washington	**North Point/Phase III Site Map**	Figure 1



Cascade Pole | V:\021\039\030.031\Figure 2.dwg (A) "Figure 2" 7/6/2011

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Cascade Pole Site
Olympia, Washington

North Point/Phase III Compliance Monitoring Locations and Remedial Excavation Area

Figure 2

TABLE 1
SOIL ANALYTICAL RESULTS
CASCADE POLE PHASE III
CONFIRMATION SAMPLING

	Cleanup Level	CM-1 (0-1) 08/05/10	CM-2 (0-1) 08/05/10	CM-2 (1-2) 08/05/10	CM-3 (0-1) 08/05/10	CM-3 (1-2) 08/05/10	CM-4 (0-1) 08/05/10	CM-5 (0-1) 08/05/10
PAHs (mg/kg)								
Method 8270								
Acenaphthene		0.02 U	0.02 U	NA	0.02 U	NA	0.02 U	0.02 U
Acenaphthylene		0.02 U	0.02 U	NA	0.02 U	NA	0.02 U	0.02 U
Anthracene		0.02 U	0.02 U	NA	0.02 U	NA	0.02 U	0.02 U
Benzo(a)anthracene*		0.02 U	0.02 U	NA	**0.03**	NA	**0.06**	0.02 U
Benzo(a)pyrene*		0.02 U	0.02 U	NA	0.02 U	NA	**0.06**	0.02 U
Benzo(b)fluoranthene*		0.02 U	0.02 U	NA	0.02 U	NA	**0.04**	0.02 U
Benzo(ghi)perylene		0.02 U	0.02 U	NA	0.02 U	NA	**0.04**	0.02 U
Benzo(k)fluoranthene*		0.02 U	0.02 U	NA	0.02 U	NA	**0.06**	0.02 U
Chrysene*		0.02 U	0.02 U	NA	**0.02**	NA	**0.09**	0.02 U
Dibenzo(a,h)anthracene*		0.02 U	0.02 U	NA	0.02 U	NA	0.02 U	0.02 U
Fluorene		0.02 U	0.02 U	NA	0.02 U	NA	0.02 U	0.02 U
Fluoranthene		**0.03**	0.02 U	NA	**0.02**	NA	**0.12**	0.02 U
Indeno(1,2,3-cd)pyrene*		0.02 U	0.02 U	NA	0.02 U	NA	0.02 U	0.02 U
Naphthalene		0.02 U	0.02 U	NA	0.02 U	NA	**0.03**	0.02 U
1-Methylnaphthalene		0.02 U	0.02 U	NA	0.02 U	NA	**0.04**	0.02 U
2-Methylnaphthalene		0.02 U	0.02 U	NA	0.02 U	NA	**0.05**	0.02 U
Phenanthrene		0.02 U	0.02 U	NA	0.02 U	NA	**0.13**	0.02 U
Pyrene		**0.06**	0.02 U	NA	**0.05**	NA	**0.17**	0.02 U
cPAH TEQ (a)	0.137	0	0	NA	0.0032	NA	0.0769	0
cPAH TEQ (a) (1/2 RL for ND)	0.137	0.0151	0.0151	NA	0.0172	NA	0.0789	0.0151
DIOXIN/FURANS (ng/kg)								
Method SW8290								
2,3,7,8-TCDF		NA	NA	**0.103** J	NA	**0.956**	NA	NA
2,3,7,8-TCDD		NA	NA	**0.170** J	NA	**0.269** J	NA	NA
1,2,3,7,8-PeCDF		NA	NA	**0.324** J	NA	**0.786** J	NA	NA
2,3,4,7,8-PeCDF		NA	NA	**0.445** J	NA	**0.765** J	NA	NA
1,2,3,7,8-PeCDD		NA	NA	**0.326** J	NA	**0.784** J	NA	NA
1,2,3,4,7,8-HxCDF		NA	NA	**1.11** J	NA	**1.78** J	NA	NA
1,2,3,6,7,8-HxCDF		NA	NA	**0.431** J	NA	**1.05** J	NA	NA
2,3,4,6,7,8-HxCDF		NA	NA	**0.532** J	NA	**1.40** J	NA	NA
1,2,3,7,8,9-HxCDF		NA	NA	**0.493** J	NA	**0.731** J	NA	NA
1,2,3,4,7,8-HxCDD		NA	NA	**0.263** J	NA	**0.691** J	NA	NA
1,2,3,6,7,8-HxCDD		NA	NA	**1.92** J	NA	**3.83** J	NA	NA
1,2,3,7,8,9-HxCDD		NA	NA	**0.748** J	NA	**1.48** J	NA	NA
1,2,3,4,6,7,8-HpCDF		NA	NA	**4.54** J	NA	**17.1**	NA	NA
1,2,3,4,7,8,9-HpCDF		NA	NA	**0.324** J	NA	**1.06** J	NA	NA
1,2,3,4,6,7,8-HpCDD		NA	NA	**38.9**	NA	**95.2**	NA	NA
OCDF		NA	NA	**2.66** J	NA	**25.2**	NA	NA
OCDD		NA	NA	**489**	NA	**1060**	NA	NA
Total TCDF		NA	NA	**0.469**	NA	**16.4**	NA	NA
Total TCDD		NA	NA	**3.80**	NA	**11.1**	NA	NA
Total PeCDF		NA	NA	**4.69**	NA	**17.2**	NA	NA
Total PeCDD		NA	NA	**1.78**	NA	**9.76**	NA	NA
Total HxCDF		NA	NA	**17.4**	NA	**38.2**	NA	NA
Total HxCDD		NA	NA	**11.5**	NA	**30.6**	NA	NA
Total HpCDF		NA	NA	**14.3**	NA	**53.3**	NA	NA
Total HpCDD		NA	NA	**85.7**	NA	**218**	NA	NA
D/F TEQ (a)	11	NA	NA	**1.78**	NA	**3.96**	NA	NA

TABLE 1
SOIL ANALYTICAL RESULTS
CASCADE POLE PHASE III
CONFIRMATION SAMPLING

	Cleanup Level	CM-6 (0-1) 08/05/10	CM-7 (0-1) 08/05/10	CM-8 (0-1) 08/05/10	CM-8 (1-2) 08/05/10	CM-8 (F) 9/9/2010	CM-9 (0-1) 08/05/10	CM-9 (1-2) 08/05/10
PAHs (mg/kg)								
Method 8270								
Acenaphthene		0.02 U	0.02 U	**0.07**	**0.05**	0.02 U	0.02 U	**0.03**
Acenaphthylene		0.02 U	0.02 U	**0.07**	0.02 U	0.02 U	**0.02**	0.02 U
Anthracene		0.02 U	**0.07**	**0.55**	0.02 U	0.02 U	**0.03**	0.02 U
Benzo(a)anthracene*		**0.03**	**0.07**	**0.43**	0.02 U	0.02 U	**0.18**	0.02 U
Benzo(a)pyrene*		**0.03**	**0.03**	**0.53**	**0.05**	0.02 U	**0.05**	0.02 U
Benzo(b)fluoranthene*		0.02 U	**0.15**	**1.6**	**0.10**	0.02 U	**0.23**	0.02 U
Benzo(ghi)perylene		0.02 U	**0.07**	**0.82**	0.02 U	0.02 U	**0.08**	0.02 U
Benzo(k)fluoranthene*		**0.02**	**0.10**	**0.43**	**0.10**	0.02 U	**0.12**	0.02 U
Chrysene*		**0.03**	**0.15**	**0.87**	0.02 U	0.02 U	**0.20**	0.02 U
Dibenzo(a,h)anthracene*		0.02 U	0.02 U	**0.17**	0.02 U	0.02 U	0.02 U	0.02 U
Fluorene		0.02 U	0.02 U	**0.12**	0.02 U	0.02 U	0.02 U	0.02 U
Fluoranthene		**0.04**	**0.16**	**1.2**	**0.05**	0.02 U	**0.02**	0.02 U
Indeno(1,2,3-cd)pyrene*		0.02 U	**0.09**	**0.82**	0.02 U	0.02 U	**0.10**	0.02 U
Naphthalene		0.02 U	**0.03**	**0.05**	0.02 U	0.02 U	0.02 U	0.02 U
1-Methylnaphthalene		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
2-Methylnaphthalene		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Phenanthrene		0.02 U	**0.05**	**0.43**	0.02 U	0.02 U	**0.09**	0.02 U
Pyrene		**0.05**	**0.20**	**1.1**	**0.15**	0.02 U	**0.26**	**0.04**
cPAH TEQ (a)	0.137	0.0353	0.0725	0.8847	0.07	0 U	0.115	0 U
cPAH TEQ (a) (1/2 RL for ND)	0.137	0.0383	0.0735	0.8847	0.0731	0.0151 U	0.116	0.0151 U
DIOXIN/FURANS (ng/kg)								
Method SW8290								
2,3,7,8-TCDF		NA	NA	NA	**21** B	1.2 U	NA	**1.6** B
2,3,7,8-TCDD		NA	NA	NA	**3.1**	1.2 U	NA	**0.23** J
1,2,3,7,8-PeCDF		NA	NA	NA	**76**	6.1 U	NA	**1.7** J
2,3,4,7,8-PeCDF		NA	NA	NA	**80**	6.1 U	NA	**1.8** J
1,2,3,7,8-PeCDD		NA	NA	NA	**28**	6.1 U	NA	**1.1** J
1,2,3,4,7,8-HxCDF		NA	NA	NA	**240**	6.1 U	NA	**3.1** J
1,2,3,6,7,8-HxCDF		NA	NA	NA	**130** B	6.1 U	NA	**2.4** JB
2,3,4,6,7,8-HxCDF		NA	NA	NA	**110**	6.1 U	NA	**0.69** J
1,2,3,7,8,9-HxCDF		NA	NA	NA	**24**	6.1 U	NA	5.5 U
1,2,3,4,7,8-HxCDD		NA	NA	NA	**78**	6.1 U	NA	**1.9** J
1,2,3,6,7,8-HxCDD		NA	NA	NA	**840**	6.1 U	NA	**9.3**
1,2,3,7,8,9-HxCDD		NA	NA	NA	**130** B	6.1 U	NA	**3.2** JB
1,2,3,4,6,7,8-HpCDF		NA	NA	NA	**2500** B	**1.5** JB	NA	**23** B
1,2,3,4,7,8,9-HpCDF		NA	NA	NA	**110** B	6.1 U	NA	**1.4** JB
1,2,3,4,6,7,8-HpCDD		NA	NA	NA	**20,000** B	**1.1** JB	NA	**240** B
OCDF		NA	NA	NA	**2100** B	**0.55** J	NA	**32** B
OCDD		NA	NA	NA	**200,000** J	**6.3** JB	NA	**2,100** B
Total TCDF		NA	NA	NA	**140**	1.2 U	NA	**18**
Total TCDD		NA	NA	NA	**72**	**0.21**	NA	**9.4**
Total PeCDF		NA	NA	NA	**1300**	6.1 U	NA	**25**
Total PeCDD		NA	NA	NA	**250**	6.1 U	NA	**14**
Total HxCDF		NA	NA	NA	**7600**	**0.76**	NA	**63**
Total HxCDD		NA	NA	NA	**4,300**	**0.73**	NA	**58**
Total HpCDF		NA	NA	NA	**8000**	**2.5**	NA	**70**
Total HpCDD		NA	NA	NA	**45,000**	**2.4**	NA	**520**
D/F TEQ (a)	11	NA	NA	NA	**447**	**0.03**	NA	**7.4**

TABLE 1
SOIL ANALYTICAL RESULTS
CASCADE POLE PHASE III
CONFIRMATION SAMPLING

	Cleanup Level	CM-9 (F) 9/9/2010	CM-10 (0-1) 08/05/10	CM-11 (0-1) 08/05/10	CM-11 (1-2) 08/05/10	CM-11 (2-3) 08/13/10	CM-11 (3-4)(b) 08/13/10	CM-11 (F) 9/9/2010
PAHs (mg/kg)								
Method 8270								
Acenaphthene		0.02 U	**0.11**	**0.02**	0.02 U	0.02 U	**0.19** J	0.02 U
Acenaphthylene		0.02 U	0.02 U	**0.04**	**0.07**	0.02 U	0.02 UJ	0.02 U
Anthracene		0.02 U	0.02 U	**0.20**	**0.23**	0.02 U	0.02 UJ	0.02 U
Benzo(a)anthracene*		0.02 U	**0.11**	**0.22**	**0.28**	0.02 U	0.02 UJ	0.02 U
Benzo(a)pyrene*		0.02 U	0.02 U	**0.08**	**0.10**	0.02 U	0.02 UJ	0.02 U
Benzo(b)fluoranthene*		0.02 U	**0.11**	**0.71**	**0.74**	0.02 U	0.02 UJ	0.02 U
Benzo(ghi)perylene		0.02 U	0.02 U	**0.23**	**0.27**	0.02 U	0.02 UJ	0.02 U
Benzo(k)fluoranthene*		0.02 U	**0.08**	**0.32**	**0.36**	0.02 U	0.02 UJ	0.02 U
Chrysene*		0.02 U	**0.21**	**0.70**	**0.90**	0.02 U	0.02 UJ	0.02 U
Dibenzo(a,h)anthracene*		0.02 U	0.02 U	**0.05**	**0.05**	0.02 U	0.02 UJ	0.02 U
Fluorene		0.02 U	**0.05**	0.02 U	0.02 U	0.02 U	0.02 UJ	0.02 U
Fluoranthene		0.02 U	0.02 U	**0.97**	**1.2**	0.02 U	**0.05** J	0.02 U
Indeno(1,2,3-cd)pyrene*		0.02 U	0.02 U	**0.21**	**0.25**	0.02 U	0.02 UJ	0.0 U
Naphthalene		0.02 U	0.02 U	**0.09**	**0.03**	0.02 U	0.02 UJ	0.02 U
1-Methylnaphthalene		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 UJ	0.02 U
2-Methylnaphthalene		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 UJ	0.02 U
Phenanthrene		0.02 U	**0.16**	**0.31**	**0.25**	0.02 U	0.02 UJ	0.02 U
Pyrene		0.02 U	**0.81**	**0.93**	**1.2**	0.02 U	**0.13** J	0.02 U
cPAH TEQ (a)	0.137	0 U	0.0311	0.238	0.277	0 U	0 UJ	0 U
cPAH TEQ (a) (1/2 RL for ND)	0.137	0.0151 U	0.0431	0.238	0.277	0.0151 U	0.0151 UJ	0.0151 U
DIOXIN/FURANS (ng/kg)								
Method SW8290								
2,3,7,8-TCDF		**0.55** J	NA	**28**	NA	NA	**7.3**	1.2 U
2,3,7,8-TCDD		1.2 U	NA	**3.9**	NA	NA	**1.1** J	1.2 U
1,2,3,7,8-PeCDF		**0.18** J	NA	**100**	NA	NA	**5.1** J	6.0 U
2,3,4,7,8-PeCDF		6.1 U	NA	**110**	NA	NA	**6.4**	6.0 U
1,2,3,7,8-PeCDD		6.1 U	NA	**92**	NA	NA	**4.8** J	6.0 U
1,2,3,4,7,8-HxCDF		**0.38** JB	NA	**400**	NA	NA	**29**	**0.70** J
1,2,3,6,7,8-HxCDF		**0.34** JB	NA	**180**	NA	NA	**8.3**	**0.29** J
2,3,4,6,7,8-HxCDF		6.1 U	NA	**140**	NA	NA	**6.5**	**0.31** J
1,2,3,7,8,9-HxCDF		6.1 U	NA	**31**	NA	NA	6.0 U	6.0 U
1,2,3,4,7,8-HxCDD		6.1 U	NA	**200**	NA	NA	**14**	6.0 U
1,2,3,6,7,8-HxCDD		**0.46** J	NA	**1,500**	NA	NA	**81**	**1.2** J
1,2,3,7,8,9-HxCDD		**0.18** JB	NA	**490**	NA	NA	**29**	**0.26** JB
1,2,3,4,6,7,8-HpCDF		**9.2** B	NA	**3,700**	NA	NA	**240**	**5.8** JB
1,2,3,4,7,8,9-HpCDF		**0.23** JB	NA	**190**	NA	NA	**10**	**0.46** JB
1,2,3,4,6,7,8-HpCDD		**15** B	NA	**37,000** B	NA	NA	**3,700** J	**48** B
OCDF		**9.6** J	NA	**4,300**	NA	NA	**470**	**7.1** J
OCDD		**92** B	NA	**290,000** JB	NA	NA	**32,000** J	**450** B
Total TCDF		**2.0**	NA	**80**	NA	NA	**34**	1.2 U
Total TCDD		**0.91**	NA	**38**	NA	NA	**48**	**0.64**
Total PeCDF		**1.4**	NA	**930**	NA	NA	**94**	**1.6**
Total PeCDD		**1.2**	NA	**310**	NA	NA	**81**	**1.2**
Total HxCDF		**6.1**	NA	**8,300**	NA	NA	**420**	**10**
Total HxCDD		**4.6**	NA	**6,700**	NA	NA	**640**	**12**
Total HpCDF		**18**	NA	**13,000**	NA	NA	**830**	**18**
Total HpCDD		**31**	NA	**82,000**	NA	NA	**8,200**	**110**
D/F TEQ (a)	11	**0.47**	NA	**926**	NA	NA	**75**	**0.96**

* - Carcinogenic Analyte.
NA = Not Analylzed.
U = Indicates the compound was undetected at the given reporting limit.
B = Method blank contamination.
J = Estimated result.
Bold indicates detected compound.
Box indicates exceedance of screening level.

(a) TEQ = toxicity equivalency factor as described in WAC 173-340-708 (8).
(b) Sample was extracted for PAHs 2 weeks past the 2-week holding time. Results are considered estimated.

ATTACHMENT 1

Analytical Data

ESN NORTHWEST CHEMISTRY LABORATORY

PI Resources
Cascade Pole Phase III PROJECT
Client Project #10-002
Olympia, WA

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analysis of Polynuclear Aromatic Hydrocarbons in Soil by Method 8270

Analytical Results

		MTH BLK	LCS	CM-1	CM-2	CM-3	CM-4	CM-5	CM-6	CM-7	CM-8	CM-9	CM-10	CM-11	MS	MSD	RPD
Date extracted	Reporting	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10	
Date analyzed	Limits	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10	
Moisture, %	(mg/kg)			57%	18%	17%	19%	19%	10%	22%	50%	17%	12%	8%			
Acenaphthene	0.02	nd	98%	nd	nd	nd	nd	nd	nd	nd	0.07	nd	0.11	0.02	95%	107%	12%
Acenaphthylene	0.02	nd	73%	nd	nd	nd	nd	nd	nd	nd	0.07	0.02	nd	0.04			
Anthracene	0.02	nd	95%	nd	nd	nd	nd	nd	nd	0.07	0.55	0.03	nd	0.20			
Benzo(a)anthracene*	0.02	nd	76%	nd	nd	0.03	0.06	nd	0.03	0.07	0.43	0.18	0.11	0.22			
Benzo(a)pyrene*	0.02	nd	76%	nd	nd	nd	0.06	nd	0.03	0.03	0.53	0.05	nd	0.08			
Benzo(b)fluoranthene*	0.02	nd	84%	nd	nd	nd	0.04	nd	nd	0.15	1.6	0.23	0.11	0.71			
Benzo(ghi)perylene	0.02	nd	68%	nd	nd	nd	0.04	nd	nd	0.07	0.82	0.08	nd	0.23			
Benzo(k)fluoranthene*	0.02	nd	92%	nd	nd	nd	0.06	nd	0.02	0.10	0.43	0.12	0.08	0.32			
Chrysene*	0.02	nd	97%	nd	nd	0.02	0.09	nd	0.03	0.15	0.87	0.20	0.21	0.70			
Dibenzo(a,h)anthracene*	0.02	nd	64%	nd	nd	nd	nd	nd	nd	nd	0.17	nd	nd	0.05			
Fluorene	0.02	nd	96%	nd	nd	nd	nd	nd	nd	nd	0.12	nd	0.05	nd			
Fluoranthene	0.02	nd	91%	0.03	nd	0.02	0.12	nd	0.04	0.16	1.2	0.02	nd	0.97			
Indeno(1,2,3-cd)pyrene*	0.02	nd	93%	nd	nd	nd	nd	nd	nd	0.09	0.82	0.10	nd	0.21			
Naphthalene	0.02	nd	85%	nd	nd	nd	0.03	nd	nd	0.03	0.05	nd	nd	0.09			
1-Methylnaphthalene	0.02	nd	ns	nd	nd	nd	0.04	nd	nd	nd	nd	nd	nd	nd			
2-Methylnaphthalene	0.02	nd	ns	nd	nd	nd	0.05	nd	nd	nd	nd	nd	nd	nd			
Phenanthrene	0.02	nd	96%	nd	nd	nd	0.13	nd	nd	0.05	0.43	0.09	0.16	0.31			
Pyrene	0.02	nd	88%	0.06	nd	0.05	0.17	nd	0.05	0.20	1.1	0.26	0.81	0.93	78%	100%	25%
Total Carcinogens				nd	nd	0.05	0.31	nd	0.11	0.59	4.9	0.88	0.51	2.3			
Surrogate recoveries:																	
2-Fluorobiphenyl		80%	58%	85%	76%	79%	86%	81%	54%	73%	82%	82%	103%	108%	81%	88%	
p-Terphenyl-d14		78%	65%	85%	79%	83%	89%	84%	58%	81%	96%	92%	108%	122%	83%	100%	

Data Qualifiers and Analytical Comments

* - Carcinogenic Analyte
nd - not detected at listed reporting limits
na - not analyzed
C - coelution with sample peaks
M - matrix interference
J - estimated value
Results reported on dry-weight basis
Acceptable Recovery limits: 50% TO 150%
Acceptable RPD limit: 35%
ns- not in the spiking solution

ESN NORTHWEST CHEMISTRY LABORATORY

PI Resources
CASCADE POLE PHASE III PROJECT
Client Project #10-002
Olympia, WA

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analysis of Polynuclear Aromatic Hydrocarbons in Soil by Method 8270

Analytical Results

		MTH BLK	LCS	CM-1 (0-1)	CM-2 (0-1)	CM-3 (0-1)	CM-4 (0-1)	CM-5 (0-1)	CM-6 (0-1)	CM-7 (0-1)	CM-8 (0-1)	CM-9 (0-1)	CM-10 (0-1)	CM-11 (0-1)
Date extracted	Reporting	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10
Date analyzed	Limits	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10	08/06/10
Moisture, %	(mg/kg)			57%	18%	17%	19%	19%	10%	22%	50%	17%	12%	8%
Acenaphthene	0.02	nd	98%	nd	nd	nd	nd	nd	nd	nd	**0.07**	nd	**0.11**	**0.02**
Acenaphthylene	0.02	nd	73%	nd	nd	nd	nd	nd	nd	nd	**0.07**	**0.02**	nd	**0.04**
Anthracene	0.02	nd	95%	nd	nd	nd	nd	nd	nd	**0.07**	**0.55**	**0.03**	nd	**0.20**
Benzo(a)anthracene*	0.02	nd	76%	nd	nd	**0.03**	**0.06**	nd	**0.03**	**0.07**	**0.43**	**0.18**	**0.11**	**0.22**
Benzo(a)pyrene*	0.02	nd	76%	nd	nd	nd	**0.06**	nd	**0.03**	**0.03**	**0.53**	**0.05**	nd	**0.08**
Benzo(b)fluoranthene*	0.02	nd	84%	nd	nd	nd	**0.04**	nd	nd	**0.15**	**1.6**	**0.23**	**0.11**	**0.71**
Benzo(ghi)perylene	0.02	nd	68%	nd	nd	nd	**0.04**	nd	nd	**0.07**	**0.82**	**0.08**	nd	**0.23**
Benzo(k)fluoranthene*	0.02	nd	92%	nd	nd	nd	**0.06**	nd	**0.02**	**0.10**	**0.43**	**0.12**	**0.08**	**0.32**
Chrysene*	0.02	nd	97%	nd	nd	**0.02**	**0.09**	nd	**0.03**	**0.15**	**0.87**	**0.20**	**0.21**	**0.70**
Dibenzo(a,h)anthracene*	0.02	nd	64%	nd	nd	nd	nd	nd	nd	nd	**0.17**	nd	nd	**0.05**
Fluorene	0.02	nd	96%	nd	nd	nd	nd	nd	nd	nd	**0.12**	nd	**0.05**	nd
Fluoranthene	0.02	nd	91%	**0.03**	nd	**0.02**	**0.12**	nd	**0.04**	**0.16**	**1.2**	**0.02**	nd	**0.97**
Indeno(1,2,3-cd)pyrene*	0.02	nd	93%	nd	nd	nd	nd	nd	nd	**0.09**	**0.82**	**0.10**	nd	**0.21**
Naphthalene	0.02	nd	85%	nd	nd	nd	**0.03**	nd	nd	**0.03**	**0.05**	nd	nd	**0.09**
1-Methylnaphthalene	0.02	nd	ns	nd	nd	nd	**0.04**	nd	nd	nd	nd	nd	nd	nd
2-Methylnaphthalene	0.02	nd	ns	nd	nd	nd	**0.05**	nd	nd	nd	nd	nd	nd	nd
Phenanthrene	0.02	nd	96%	nd	nd	nd	**0.13**	nd	nd	**0.05**	**0.43**	**0.09**	**0.16**	**0.31**
Pyrene	0.02	nd	88%	**0.06**	nd	**0.05**	**0.17**	nd	**0.05**	**0.20**	**1.1**	**0.26**	**0.81**	**0.93**
Total Carcinogens				nd	nd	**0.05**	**0.31**	nd	**0.11**	**0.59**	**4.9**	**0.88**	**0.51**	**2.3**
Surrogate recoveries:														
2-Fluorobiphenyl		80%	58%	85%	76%	79%	86%	81%	54%	73%	82%	82%	103%	108%
p-Terphenyl-d14		78%	65%	85%	79%	83%	89%	84%	58%	81%	96%	92%	108%	122%

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Acceptable Recovery limits: 50% TO 150%
Acceptable RPD limit: 35%
ns- not in the spiking solution

Client Information and Summary		Sample Information and Summary	
TEG Project Number:	S100806.1	# of Samples by Type:	
Chemist(s):	Dely Grace Agoy	Soils	11
Start (Collection) Date:	8/5/2010	Waters	
End (Analysis) Date:	8/6/2010	Soil Vapor	
Client:	PI Resources	# of Days:	24hr
Project Manager:	B. Chernick	On-site (Y/N):	n
Telephone:	206-799-3508	Outlab Analyses (Y/N):	
Fax:			
Client Project Number:	10-002	# of Analyses by Type:	
Client Job Name:	Cascade Pole Phase III	VOC 8021B	
City, State:	Olympia, WA	BTEX 8020	
		TPH-418.1	
		Gasoline 8015	
		Diesel 8015	
		Oil 8015	
		PAH 8100	
		Pesticides 8081	
		PCB 8082	
		Total Lead 7420	
		Total Cadmium 7130	
		Total Chromium 7190	
		Total Arsenic 7061	
		TCLP Lead 7420	
		TCLP Cadmium 7130	
		TCLP Chromium 7190	
		TCLP Arsenic 7061	

ESN NORTHWEST CHEMISTRY LABORATORY

PI Resources
Cascade Pole Phase III PROJECT
Client Project #10-002
Olympia, WA

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Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analysis of Polynuclear Aromatic Hydrocarbons in Soil by Method 8270

Analytical Results

		MTH BLK	LCS	CM-8 (1-2)	CM-11 (1-2)	MS	MSD	RPD
Date extracted	Reporting	08/10/10	08/10/10	08/10/10	08/10/10	08/10/10	08/10/10	
Date analyzed	Limits	08/10/10	08/10/10	08/10/10	08/10/10	08/10/10	08/10/10	
Moisture, %	(mg/kg)			67%	9%			
Acenaphthene	0.02	nd	122%	**0.05**	nd	105%	95%	10%
Acenaphthylene	0.02	nd	94%	nd	**0.07**			
Anthracene	0.02	nd	120%	nd	**0.23**			
Benzo(a)anthracene*	0.02	nd	83%	nd	**0.28**			
Benzo(a)pyrene*	0.02	nd	98%	**0.05**	**0.10**			
Benzo(b)fluoranthene*	0.02	nd	106%	**0.10**	**0.74**			
Benzo(ghi)perylene	0.02	nd	84%	nd	**0.27**			
Benzo(k)fluoranthene*	0.02	nd	114%	**0.10**	**0.36**			
Chrysene*	0.02	nd	125%	nd	**0.90**			
Dibenzo(a,h)anthracene*	0.02	nd	95%	nd	**0.05**			
Fluorene	0.02	nd	123%	nd	nd			
Fluoranthene	0.02	nd	109%	**0.05**	**1.2**			
Indeno(1,2,3-cd)pyrene*	0.02	nd	117%	nd	**0.25**			
Naphthalene	0.02	nd	106%	nd	**0.03**			
1-Methylnaphthalene	0.02	nd	ns	nd	nd			
2-Methylnaphthalene	0.02	nd	ns	nd	nd			
Phenanthrene	0.02	nd	117%	nd	**0.25**			
Pyrene	0.02	nd	104%	**0.15**	**1.2**	101%	93%	8%
Total Carcinogens				**0.25**	**2.7**			
Surrogate recoveries:								
2-Fluorobiphenyl		80%	79%	75%	85%	88%	75%	
p-Terphenyl-d14		83%	82%	85%	91%	95%	82%	

Data Qualifiers and Analytical Comments

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Acceptable RPD limit: 35%
ns- not in the spiking solution

ESN NORTHWEST, INC. | Environmental Services Network

CHAIN-OF-CUSTODY RECORD

CLIENT: PI Resources

ADDRESS: 5700 6th Ave S., Suite 101, Seattle, WA 98108

PHONE: (206) 799-3508 FAX: (206) 529-3991

CLIENT PROJECT #: 10-002 PROJECT MANAGER: B. Chernick

DATE: 8/5/10 PAGE 2 OF 2

PROJECT NAME: Cascade Pole Phase III

LOCATION: Port of Olympia

COLLECTOR: Bryan Chernick DATE OF COLLECTION 8/5/10

Sample Number	Depth	Time	Sample Type	Container Type	TPH-HCID	TPH - DIESEL & OIL	TPH - GASOLINE	BTEX	VOC 8260CL	VOC 8260	SemiVol 8270	PAH's 8270	PCB's 8082	CL Pesticides 8081	RCRA 8 Metals	MTCA 5 Metals	Pb	Asbestos-PLM	GRO Suite	DRO Suite	WO Suite	Dioxin 8290	NOTES	Total Number of Containers	Laboratory Note Number
1. CM-1 (1-2)	2'	0917	Soil	4oz							X												Hold Samples	1	
2. CM-2 (1-2)	2'	0951	↓	↓							X													1	
3. CM-3 (1-2)	2'	1030									X													1	
4. CM-4 (1-2)	2'	1103									X													1	
5. CM-5 (1-2)	2'	1141									X													1	
6. CM-6 (1-2)	2'	1214									X													1	
7. CM-7 (1-2)	2'	1339									X													1	
8. CM-8 (1-2)	2'	1413									X													1	
9. CM-9 (1-2)	2'	1441									X													1	
10. CM-10 (1-2)	2'	1522									X													1	
11. CM-11 (1-2)	2'	1636	↓	↓							X										X		↓	3	
12.																									
13.																									
14.																									
15.																									
16.																									
17.																									
18.																									

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
	8/5/10 1720		8/5/10 1720
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

☐ ESN DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:
e-mail Results to:
chernick@phoenixcorp.net

Turn Around Time: 24 HR 48 HR 5 DAY

ESN Northwest, Inc.

Sample ID: CM-8 (1-2)

Trace Level Organic Compounds

SW846 8290

Lot - Sample #....:	G0I070480 - 002	Work Order #....:	L6MAP1AC	Matrix....:	SOLID
Date Sampled....:	08/19/10	Date Received....:	08/20/10	Dilution Factor:	1
Prep Date....:	09/16/10	Analysis Date....:	09/27/10	Percent Moisture:	54
Prep Batch # ....:	0259409	Instrument ID....:	11D5		
Initial Wgt/Vol :	10 g	Analyst ID....:	Alora Kuczynski		

PARAMETER	RESULT		REPORTING LIMIT	ESTIMATED DETECTION LIMIT	UNITS
2,3,7,8-TCDD	3.1		2.2	0.46	pg/g
Total TCDD	72		2.2	0.46	pg/g
1,2,3,7,8-PeCDD	28		11	0.68	pg/g
Total PeCDD	250		11	0.68	pg/g
1,2,3,4,7,8-HxCDD	78		11	3.4	pg/g
1,2,3,6,7,8-HxCDD	840		11	2.9	pg/g
1,2,3,7,8,9-HxCDD	130	B	11	2.8	pg/g
Total HxCDD	4300		11	3.0	pg/g
1,2,3,4,6,7,8-HpCDD	20000	D B	110	42	pg/g
Total HpCDD	45000		110	42	pg/g
OCDD	200000	D E	220	48	pg/g
2,3,7,8-TCDF	21	CON B	2.2	1.1	pg/g
Total TCDF	140		2.2	0.95	pg/g
1,2,3,7,8-PeCDF	76		11	1.2	pg/g
2,3,4,7,8-PeCDF	80		11	1.3	pg/g
Total PeCDF	1300		11	1.3	pg/g
1,2,3,4,7,8-HxCDF	240		11	2.4	pg/g
1,2,3,6,7,8-HxCDF	130	B	11	2.1	pg/g
2,3,4,6,7,8-HxCDF	110		11	2.3	pg/g
1,2,3,7,8,9-HxCDF	24		11	2.6	pg/g
Total HxCDF	7600		11	2.3	pg/g
1,2,3,4,6,7,8-HpCDF	2500	B	11	2.3	pg/g
1,2,3,4,7,8,9-HpCDF	110	B	11	2.6	pg/g
Total HpCDF	8000		11	2.5	pg/g
OCDF	2100	D B	220	4.7	pg/g

ESN Northwest, Inc.

Sample ID: CM-8 (1-2)

Trace Level Organic Compounds

SW846 8290

Lot - Sample #....:	G0I070480 - 002	**Work Order #....:**	L6MAP1AC	**Matrix....:**	SOLID
Date Sampled....:	08/19/10	**Date Received....:**	08/20/10	**Dilution Factor:**	1
Prep Date....:	09/16/10	**Analysis Date....:**	09/27/10	**Percent Moisture:**	54
Prep Batch # ....:	0259409	**Instrument ID....:**	11D5		
Initial Wgt/Vol :	10 g	**Analyst ID....:**	Alora Kuczynski		

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	79	40 - 135
13C-1,2,3,7,8-PeCDD	69	40 - 135
13C-1,2,3,6,7,8-HxCDD	86	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	88	40 - 135
13C-OCDD	113	40 - 135
13C-2,3,7,8-TCDF	71	40 - 135
13C-1,2,3,7,8-PeCDF	66	40 - 135
13C-1,2,3,4,7,8-HxCDF	76	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	93	40 - 135

QUALIFIERS

Results and reporting limits have been adjusted for dry weight.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

CON Confirmation analysis.

D Result was obtained from the analysis of a dilution.

E Estimated result. Result concentration exceeds the calibration range

ESN Northwest, Inc.

Sample ID: CM-9 (1-2)

Trace Level Organic Compounds

SW846 8290

Lot - Sample #....:	G0I070480 - 001	Work Order #....:	L6MAL1AC	Matrix....:	SOLID
Date Sampled....:	08/19/10	Date Received....:	08/20/10	Dilution Factor:	0.92
Prep Date....:	09/16/10	Analysis Date....:	09/27/10	Percent Moisture:	17
Prep Batch # ....:	0259409	Instrument ID....:	11D5		
Initial Wgt/Vol :	10.8 g	Analyst ID....:	Alora Kuczynski		

PARAMETER	RESULT		REPORTING LIMIT	ESTIMATED DETECTION LIMIT	UNITS
2,3,7,8-TCDD	0.23	J Q	1.1	0.18	pg/g
Total TCDD	9.4		1.1	0.18	pg/g
1,2,3,7,8-PeCDD	1.1	J Q	5.5	0.19	pg/g
Total PeCDD	14		5.5	0.19	pg/g
1,2,3,4,7,8-HxCDD	1.9	J	5.5	0.31	pg/g
1,2,3,6,7,8-HxCDD	9.3		5.5	0.26	pg/g
1,2,3,7,8,9-HxCDD	3.2	J B	5.5	0.25	pg/g
Total HxCDD	58		5.5	0.27	pg/g
1,2,3,4,6,7,8-HpCDD	240	B	5.5	1.4	pg/g
Total HpCDD	520		5.5	1.4	pg/g
OCDD	2100	B	11	0.64	pg/g
2,3,7,8-TCDF	1.6	CON B	1.1	0.23	pg/g
Total TCDF	18		1.1	0.25	pg/g
1,2,3,7,8-PeCDF	1.7	J	5.5	0.35	pg/g
2,3,4,7,8-PeCDF	1.8	J	5.5	0.35	pg/g
Total PeCDF	25		5.5	0.35	pg/g
1,2,3,4,7,8-HxCDF	3.1	J	5.5	0.21	pg/g
1,2,3,6,7,8-HxCDF	2.4	J Q B	5.5	0.19	pg/g
2,3,4,6,7,8-HxCDF	0.69	J	5.5	0.20	pg/g
1,2,3,7,8,9-HxCDF	ND		5.5	0.23	pg/g
Total HxCDF	63		5.5	0.20	pg/g
1,2,3,4,6,7,8-HpCDF	23	B	5.5	0.28	pg/g
1,2,3,4,7,8,9-HpCDF	1.4	J B	5.5	0.32	pg/g
Total HpCDF	70		5.5	0.30	pg/g
OCDF	32	B	11	0.36	pg/g

ESN Northwest, Inc.

Sample ID: CM-9 (1-2)

Trace Level Organic Compounds

SW846 8290

Lot - Sample #....:	G0I070480 - 001	**Work Order #....:**	L6MAL1AC	**Matrix....:**	SOLID
Date Sampled....:	08/19/10	**Date Received....:**	08/20/10	**Dilution Factor:**	0.92
Prep Date....:	09/16/10	**Analysis Date....:**	09/27/10	**Percent Moisture:**	17
Prep Batch # ....:	0259409	**Instrument ID....:**	11D5		
Initial Wgt/Vol :	10.8 g	**Analyst ID....:**	Alora Kuczynski		

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	82	40 - 135
13C-1,2,3,7,8-PeCDD	62	40 - 135
13C-1,2,3,6,7,8-HxCDD	89	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	89	40 - 135
13C-OCDD	80	40 - 135
13C-2,3,7,8-TCDF	74	40 - 135
13C-1,2,3,7,8-PeCDF	65	40 - 135
13C-1,2,3,4,7,8-HxCDF	65	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	90	40 - 135

QUALIFIERS

Results and reporting limits have been adjusted for dry weight.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

CON Confirmation analysis.

J Estimated Result

Q Estimated maximum possible concentration (EMPC).

ESN NORTHWEST CHEMISTRY LABORATORY

PI Resources
CASCADE POLE PHASE III
Client Project #10-002
Olympia, WA

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analysis of Polynuclear Aromatic Hydrocarbons in Soil by Method 8270

Analytical Results

		MTH BLK	LCS	CM-9 (1-2)	MS	MSD	RPD
Date extracted	Reporting	08/18/10	08/18/10	08/18/10	08/18/10	08/18/10	
Date analyzed	Limits	08/18/10	08/18/10	08/18/10	08/18/10	08/18/10	
Moisture, %	(mg/kg)			17%			
Acenaphthene	0.02	nd	90%	**0.03**	88%	92%	4%
Acenaphthylene	0.02	nd	74%	nd			
Anthracene	0.02	nd	81%	nd			
Benzo(a)anthracene*	0.02	nd	98%	nd			
Benzo(a)pyrene*	0.02	nd	84%	nd			
Benzo(b)fluoranthene*	0.02	nd	105%	nd			
Benzo(ghi)perylene	0.02	nd	73%	nd			
Benzo(k)fluoranthene*	0.02	nd	97%	nd			
Chrysene*	0.02	nd	102%	nd			
Dibenzo(a,h)anthracene*	0.02	nd	86%	nd			
Fluorene	0.02	nd	84%	nd			
Fluoranthene	0.02	nd	88%	nd			
Indeno(1,2,3-cd)pyrene*	0.02	nd	79%	nd			
Naphthalene	0.02	nd	66%	nd			
1-Methylnaphthalene	0.02	nd	ns	nd			
2-Methylnaphthalene	0.02	nd	ns	nd			
Phenanthrene	0.02	nd	86%	nd			
Pyrene	0.02	nd	86%	**0.04**	84%	88%	5%
Total Carcinogens				nd			
Surrogate recoveries:							
2-Fluorobiphenyl		74%	67%	57%	74%	78%	
p-Terphenyl-d14		65%	81%	52%	73%	77%	

Data Qualifiers and Analytical Comments

* - Carcinogenic Analyte
nd - not detected at listed reporting limits
na - not analyzed
C - coelution with sample peaks
M - matrix interference
J - estimated value
Results reported on dry-weight basis
Acceptable Recovery limits: 50% TO 150%
Acceptable RPD limit: 35%
ns- not in the spiking solution

ESN NORTHWEST CHEMISTRY LABORATORY

PI Resources
CASCADE POLE PHASE III PROJECT
Client Project #10-002
Olympia, Washington

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analysis of Polynuclear Aromatic Hydrocarbons in Soil by Method 8270

Analytical Results

		MTH BLK	LCS	CM-11 (2-3)	MS	MSD	RPD
Date extracted	Reporting	08/16/10	08/16/10	08/16/10	08/16/10	08/16/10	
Date analyzed	Limits	08/16/10	08/16/10	08/16/10	08/16/10	08/16/10	
Moisture, %	(mg/kg)			13%			
Acenaphthene	0.02	nd	119%	nd	95%	74%	25%
Acenaphthylene	0.02	nd	107%	nd			
Anthracene	0.02	nd	112%	nd			
Benzo(a)anthracene*	0.02	nd	99%	nd			
Benzo(a)pyrene*	0.02	nd	95%	nd			
Benzo(b)fluoranthene*	0.02	nd	92%	nd			
Benzo(ghi)perylene	0.02	nd	97%	nd			
Benzo(k)fluoranthene*	0.02	nd	126%	nd			
Chrysene*	0.02	nd	112%	nd			
Dibenzo(a,h)anthracene*	0.02	nd	103%	nd			
Fluorene	0.02	nd	118%	nd			
Fluoranthene	0.02	nd	113%	nd			
Indeno(1,2,3-cd)pyrene*	0.02	nd	100%	nd			
Naphthalene	0.02	nd	132%	nd			
1-Methylnaphthalene	0.02	nd	ns	nd			
2-Methylnaphthalene	0.02	nd	ns	nd			
Phenanthrene	0.02	nd	130%	nd			
Pyrene	0.02	nd	106%	nd	83%	69%	18%
Total Carcinogens				nd			
Surrogate recoveries:							
2-Fluorobiphenyl		100%	103%	94%	95%	85%	
p-Terphenyl-d14		100%	87%	73%	78%	74%	

Data Qualifiers and Analytical Comments

* - Carcinogenic Analyte
nd - not detected at listed reporting limits
na - not analyzed
C - coelution with sample peaks
M - matrix interference
J - estimated value
Results reported on dry-weight basis
Acceptable Recovery limits: 50% TO 150%
Acceptable RPD limit: 35%
ns- not in the spiking solution

ESN NORTHWEST, INC. Environmental Services Network

CHAIN-OF-CUSTODY RECORD

CLIENT: PI Resources

ADDRESS: 5700 6th Ave S, Suite 101, Seattle, WA 98108

PHONE: (206) 799-3508 FAX: (206) 529-3991

CLIENT PROJECT #: 10-002 PROJECT MANAGER: B. Chernick

DATE: 8/13/10 PAGE 1 OF 1

PROJECT NAME: Cascade Pole Phase III

LOCATION: Port of Olympia

COLLECTOR: Bryan Chernick DATE OF COLLECTION 8/13/10

Sample Number	Depth	Time	Sample Type	Container Type	ANALYSES: TPH-HCID	TPH - DIESEL & OIL	TPH - GASOLINE	BTEX	VOC 8260CL	VOC 8260	SemiVol 8270	PAH's 8270	PCB's 8082	CL Pesticides 8081	RCRA 8 Metals	MTCA 5 Metals	Pb	Asbestos-PLM	GRO Suite	DRO Suite	WO Suite	Dioxins 8290	NOTES	Total Number of Containers	Laboratory Note Number
1. CM-11 (2-3)	2'-3'	1448	Soil	4 oz							X										X		Hold Dioxin Only	3	
2. CM-11 (3-4)	3'-4'	1511	Soil	4 oz							X										X		Hold Samples	3	
3.																									
4.																									
5.																									
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RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
[signature]	8/13/10 1634	[signature]	8/13/10 1634
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

☐ ESN DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:
e-mail results to:
chernick@phoinixcorp.net

Turn Around Time: 24 HR 48 HR 5 DAY

ESN Northwest, Inc.

Sample ID: CM-11(0-1)

Trace Level Organic Compounds

SW846 8290

Lot - Sample #....:	G0H090509 - 001	**Work Order #....:**	L5CAR1AC	**Matrix....:**	SOLID
Date Sampled....:	08/05/10	**Date Received....:**	08/09/10	**Dilution Factor:**	0.93
Prep Date....:	08/11/10	**Analysis Date....:**	08/13/10	**Percent Moisture:**	11
Prep Batch # ....:	0223347	**Instrument ID....:**	11D5		
Initial Wgt/Vol :	10.7 g	**Analyst ID....:**	Susan X. Yan		

PARAMETER	RESULT		REPORTING LIMIT	ESTIMATED DETECTION LIMIT	UNITS
2,3,7,8-TCDD	3.9		1.0	0.070	pg/g
Total TCDD	38		1.0	0.070	pg/g
1,2,3,7,8-PeCDD	92		5.2	0.60	pg/g
Total PeCDD	310		5.2	0.60	pg/g
1,2,3,4,7,8-HxCDD	200		5.2	2.9	pg/g
1,2,3,6,7,8-HxCDD	1500		5.2	2.5	pg/g
1,2,3,7,8,9-HxCDD	490		5.2	2.4	pg/g
Total HxCDD	6700		5.2	2.6	pg/g
1,2,3,4,6,7,8-HpCDD	37000	G B D	910	910	pg/g
Total HpCDD	82000	D	910	910	pg/g
OCDD	290000	E B D	210	170	pg/g
2,3,7,8-TCDF	28	CON	1.0	0.31	pg/g
Total TCDF	80		1.0	0.11	pg/g
1,2,3,7,8-PeCDF	100		5.2	0.62	pg/g
2,3,4,7,8-PeCDF	110		5.2	0.65	pg/g
Total PeCDF	930		5.2	0.64	pg/g
1,2,3,4,7,8-HxCDF	400		5.2	3.0	pg/g
1,2,3,6,7,8-HxCDF	180		5.2	2.7	pg/g
2,3,4,6,7,8-HxCDF	140		5.2	2.9	pg/g
1,2,3,7,8,9-HxCDF	31		5.2	3.2	pg/g
Total HxCDF	8300		5.2	2.9	pg/g
1,2,3,4,6,7,8-HpCDF	3700	D	100	17	pg/g
1,2,3,4,7,8,9-HpCDF	190	D	100	20	pg/g
Total HpCDF	13000	D	100	19	pg/g
OCDF	4300	D	210	8.9	pg/g

ESN Northwest, Inc.

Sample ID: CM-11(0-1)

Trace Level Organic Compounds

SW846 8290

Lot - Sample #....:	G0H090509 - 001	**Work Order #....:**	L5CAR1AC	**Matrix....:**	SOLID
Date Sampled....:	08/05/10	**Date Received....:**	08/09/10	**Dilution Factor:**	0.93
Prep Date....:	08/11/10	**Analysis Date....:**	08/13/10	**Percent Moisture:**	11
Prep Batch # ....:	0223347	**Instrument ID....:**	11D5		
Initial Wgt/Vol :	10.7 g	**Analyst ID....:**	Susan X. Yan		

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	77	40 - 135
13C-1,2,3,7,8-PeCDD	78	40 - 135
13C-1,2,3,6,7,8-HxCDD	83	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	90	40 - 135
13C-OCDD	117	40 - 135
13C-2,3,7,8-TCDF	76	40 - 135
13C-1,2,3,7,8-PeCDF	79	40 - 135
13C-1,2,3,4,7,8-HxCDF	71	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	77	40 - 135

QUALIFIERS

Results and reporting limits have been adjusted for dry weight

B	Method blank contamination. The associated method blank contains the target analyte at a reportable level.
CON	Confirmation analysis.
D	Result was obtained from the analysis of a dilution.
E	Estimated result. Result concentration exceeds the calibration range.
G	Elevated reporting limit. The reporting limit is elevated due to matrix interference.

ESN NORTHWEST, INC. Environmental Services Network

CHAIN-OF-CUSTODY RECORD

CLIENT: PI Resources

ADDRESS: 5700 6th Ave S, Suite 101, Seattle WA 98108

PHONE: (206) 799-3508 FAX: (206) 529-3791

CLIENT PROJECT #: 10-002 PROJECT MANAGER: B. Chernick

DATE: 8/5/10 PAGE 1 OF 2

PROJECT NAME: Cascade Pole Phase III

LOCATION: Port of Olympia

COLLECTOR: Bryan Chernick DATE OF COLLECTION 8/5/10

Sample Number	Depth	Time	Sample Type	Container Type	TPH-HCID	TPH - DIESEL & OIL	TPH - GASOLINE	BTEX	VOC 8260CL	VOC 8260	SemiVol 8270	PAH's 8270	PCB's 8082	CL Pesticides 8081	RCRA 8 Metals	MTCA 5 Metals	Pb	Asbestos-PLM	GRO Suite	DRO Suite	WO Suite	Dioxin 8290	NOTES	Total Number of Containers	Laboratory Note Number
1. CM-1 (0-1)	1'	0855	Soil	4 oz							X													1	
2. CM-2 (0-1)	1'	0940		4 oz							X													1	
3. CM-3 (0-1)	1'	1015									X													1	
4. CM-4 (0-1)	1'	1050									X													1	
5. CM-5 (0-1)	1'	1127									X													1	
6. CM-6 (0-1)	1'	1200									X													1	
7. CM-7 (0-1)	1'	1327									X													1	
8. CM-8 (0-1)	1'	1358									X													1	
9. CM-9 (0-1)	1'	1431									X													1	
10. CM-10 (0-1)	1'	1501									X													1	
11. CM-11 (0-1)	1'	1611									X										X			3	
12.																									
13.																									
14.																									
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RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
	8/5/10 1720		8/6/10 1700
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

☐ ESN DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:
e-mail results to chernick@phoenixcorp.net
TAT for 8290 = 5 days

Turn Around Time: (24 HR) 48 HR 5 DAY

ESN NORTHWEST CHEMISTRY LABORATORY

PI Resources
Cascade Pole Phase III PROJECT
Client Project #10-002
Olympia, WA

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analysis of Polynuclear Aromatic Hydrocarbons in Soil by Method 8270

Analytical Results

		MTH BLK	LCS	CM-11 (F)	CM-9 (F)	CM-8 (F)	MS	MSD	RPD
Date extracted	Reporting	09/13/10	09/13/10	09/13/10	09/13/10	09/13/10	09/13/10	09/13/10	
Date analyzed	Limits	09/13/10	09/13/10	09/13/10	09/13/10	09/13/10	09/13/10	09/13/10	
Moisture, %	(mg/kg)			17%	29%	26%			
Acenaphthene	0.02	nd	119%	nd	nd	nd	89%	75%	17%
Acenaphthylene	0.02	nd	95%	nd	nd	nd			
Anthracene	0.02	nd	123%	nd	nd	nd			
Benzo(a)anthracene*	0.02	nd	113%	nd	nd	nd			
Benzo(a)pyrene*	0.02	nd	105%	nd	nd	nd			
Benzo(b)fluoranthene*	0.02	nd	121%	nd	nd	nd			
Benzo(ghi)perylene	0.02	nd	122%	nd	nd	nd			
Benzo(k)fluoranthene*	0.02	nd	124%	nd	nd	nd			
Chrysene*	0.02	nd	113%	nd	nd	nd			
Dibenzo(a,h)anthracene*	0.02	nd	128%	nd	nd	nd			
Fluorene	0.02	nd	121%	nd	nd	nd			
Fluoranthene	0.02	nd	103%	nd	nd	nd			
Indeno(1,2,3-cd)pyrene*	0.02	nd	127%	nd	nd	nd			
Naphthalene	0.02	nd	97%	nd	nd	nd			
1-Methylnaphthalene	0.02	nd	ns	nd	nd	nd			
2-Methylnaphthalene	0.02	nd	ns	nd	nd	nd			
Phenanthrene	0.02	nd	114%	nd	nd	nd			
Pyrene	0.02	nd	103%	nd	nd	nd	72%	63%	13%
Total Carcinogens				nd	nd	nd			
Surrogate recoveries:									
2-Fluorobiphenyl		83%	92%	87%	78%	81%	78%	61%	
p-Terphenyl-d14		71%	83%	73%	68%	68%	72%	55%	

Data Qualifiers and Analytical Comments

* - Carcinogenic Analyte
nd - not detected at listed reporting limits
na - not analyzed
C - coelution with sample peaks
M - matrix interference
J - estimated value
Results reported on dry-weight basis
Acceptable Recovery limits: 50% TO 150%
Acceptable RPD limit: 35%
ns- not in the spiking solution

ESN NORTHWEST, INC. | Environmental Services Network

CHAIN-OF-CUSTODY RECORD

CLIENT: PI Resources

ADDRESS: 5700 6th Ave. S, Suite 101, Seattle, WA 98108

PHONE: (206) 799-3508 FAX: (206) 529-3991

CLIENT PROJECT #: 10-002 PROJECT MANAGER: B. Chernick

DATE: 9/9/10 PAGE 1 OF 1

PROJECT NAME: Cascade Pole Phase III

LOCATION: Port of Olympia

COLLECTOR: Bryan Chernick DATE OF COLLECTION 9/9/10

Sample Number	Depth	Time	Sample Type	Container Type	TPH-HCID	TPH - DIESEL & OIL	TPH - GASOLINE	BTEX	VOC 8260CL	VOC 8260	SemiVol 8270	PAH's 8270	PCB's 8082	CL Pesticides 8081	RCRA 8 Metals	MTCA 5 Metals	Pb	Asbestos-PLM	GRO Suite	DRO Suite	WO Suite	Dioxin 8290	NOTES	Total Number of Containers	Laboratory Note Number
1. CM-11 (F)	1'	0826	Soil	4 oz							X										X			3	
2. CM-9 (F)	1'	0851	Soil	4 oz							X										X			3	
3. CM-8 (F)	1'	0922	Soil	4 oz							X										X			3	
4.																									
5.																									
6.																									
7.																									
8.																									
9.																									
10.																									
11.																									
12.																									
13.																									
14.																									
15.																									
16.																									
17.																									
18.																									

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
[signature]	9/9/10 1207	[signature]	9/9/10
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

☐ ESN DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:
e-mail results to:
chernick@phoinixcorp.net
Standard TAT

Turn Around Time: 24 HR 48 HR 5 DAY

ESN NORTHWEST CHEMISTRY LABORATORY

PI Resources
CASCADE POLE PHASE III PROJECT
Client Project #10-002
Olympia, Washington

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analysis of Polynuclear Aromatic Hydrocarbons in Soil by Method 8270

Analytical Results

		MTH BLK	LCS	CM-11 (3-4)**	MS	MSD	RPD
Date extracted	Reporting	10/22/10	10/22/10	10/22/10	10/22/10	10/22/10	
Date analyzed	Limits	10/22/10	10/22/10	10/22/10	10/22/10	10/22/10	
Moisture, %	(mg/kg)			16%			
Acenaphthene	0.02	nd	115%	**0.19**	81%	79%	3%
Acenaphthylene	0.02	nd	108%	nd			
Anthracene	0.02	nd	107%	nd			
Benzo(a)anthracene*	0.02	nd	103%	nd			
Benzo(a)pyrene*	0.02	nd	99%	nd			
Benzo(b)fluoranthene*	0.02	nd	118%	nd			
Benzo(ghi)perylene	0.02	nd	99%	nd			
Benzo(k)fluoranthene*	0.02	nd	110%	nd			
Chrysene*	0.02	nd	118%	nd			
Dibenzo(a,h)anthracene*	0.02	nd	92%	nd			
Fluorene	0.02	nd	121%	nd			
Fluoranthene	0.02	nd	114%	**0.05**			
Indeno(1,2,3-cd)pyrene*	0.02	nd	94%	nd			
Naphthalene	0.02	nd	115%	nd			
1-Methylnaphthalene	0.02	nd	ns	nd			
2-Methylnaphthalene	0.02	nd	ns	nd			
Phenanthrene	0.02	nd	114%	nd			
Pyrene	0.02	nd	109%	**0.13**	66%	62%	6%
Total Carcinogens				nd			
Surrogate recoveries:							
2-Fluorobiphenyl		131%	102%	87%	99%	92%	
p-Terphenyl-d14		144%	104%	81%	99%	93%	

Data Qualifiers and Analytical Comments

* - Carcinogenic Analyte
** - Sample was extracted and analyzed past the 2 week holding time from date of collection
nd - not detected at listed reporting limits
na - not analyzed
C - coelution with sample peaks
M - matrix interference
J - estimated value
Results reported on dry-weight basis
Acceptable Recovery limits: 50% TO 150%
Acceptable RPD limit: 35%
ns- not in the spiking solution

ESN NORTHWEST, INC. | Environmental Services Network

CHAIN-OF-CUSTODY RECORD

CLIENT: PI Resources

ADDRESS: 5700 6th Ave S, Suite 101, Seattle, WA 98108

PHONE: (206) 799-3508 FAX: (206) 529-3991

CLIENT PROJECT #: 10-002 PROJECT MANAGER: B. Chernick

DATE: 8/13/10 PAGE 1 OF 1

PROJECT NAME: Cascade Pole Phase III

LOCATION: Port of Olympia

COLLECTOR: Bryan Chernick DATE OF COLLECTION 8/13/10

Sample Number	Depth	Time	Sample Type	Container Type	ANALYSES: TPH-HCID	TPH - DIESEL & OIL	TPH - GASOLINE	BTEX	VOC 8260CL	VOC 8260	SemiVol 8270	PAH's 8270	PCB's 8082	CL Pesticides 8081	RCRA 8 Metals	MTCA 5 Metals	Pb	Asbestos-PLM	GRO Suite	DRO Suite	WO Suite	Dioxins 8290	NOTES	Total Number of Containers	Laboratory Note Number
1. CM-11 (2-3)	2'-3'	1448	Soil	4 oz								X											Hold Dioxin Only	3	
* 2. CM-11 (3-4)	3'-4'	1511	Soil	4 oz								X									X		Hold Samples	3	
3.																									
4.																									
5.																									
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18.																									

(X) - Client added PAH analysis even though past hold time. 10/21 SK

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
[signature]	8/13/10 1634	[signature]	8/13/10 1634
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

☐ ESN DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES: e-mail results to: chernick@phoinixcorp.net

Turn Around Time: 24 HR 48 HR 5 DAY

Case Narrative

TestAmerica West Sacramento Project Number G0H200505

General Comments

It was noted that collection date is not listed on the chain of custody (coc) for these samples. They have been logged in using the collection date listed on the sample containers.

Sample CM-8 (1-2) was placed on "Hold" per request by Steve on August 20, 2010.

SOLID, 8290, Dioxins/Furans with Totals
Sample: 1
Some analytes in this sample and the associated method blank have an ion abundance ratio that is outside of criteria. The analytes are considered as an "estimated maximum possible concentration" (EMPC) because the quantitation is based on the theoretical ion abundance ratio. Analytical results are reported with a "Q" flag.

The concentrations of some analytes in this sample exceed the upper quantitation level of the initial calibration curve, but the peaks do not saturate the instrument detector. Historical data indicates that for the isotope dilution method, dilution and re-analysis will not produce significantly different results and the data is reported with an "E" flag.

The analytical result for 2,3,7,8-TCDF is reported from the confirmation data that was analyzed on August 27, 2010. The analytical result is reported with a "CON" flag.

There are no other anomalies associated with this project.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ACCREDITED IN ACCORDANCE WITH nelac

TestAmerica Laboratories West Sacramento Certifications/Accreditations

Certifying State	Certificate #	Certifying State	Certificate #
Alaska	UST-055	New York*	11666
Arizona	AZ0708	Oregon*	CA 200005
Arkansas	88-0691	Pennsylvania	68-1272
California*	01119CA	South Carolina	87014
Colorado	NA	Texas	T104704399-08-TX
Connecticut	PH-0691	Utah*	QUAN1
Florida*	E87570	Virginia	00178
Georgia	960	Washington	C1281
Hawaii	NA	West Virginia	9930C, 334
Illinois	200060	Wisconsin	998204680
Kansas*	E-10375	NFESC	NA
Louisiana*	30612	USACE	NA
Michigan	9947	USDA Foreign Plant	37-82605
Nevada	CA44	USDA Foreign Soil	P330-09-00055
New Jersey*	CA005	US Fish & Wildlife	LE148388-0
New Mexico	NA	Guam	09-014r

*NELAP accredited. A more detailed parameter list is available upon request. Updated 3/25/2009

QC Parameter Definitions

QC Batch: The QC batch consists of a set of up to 20 field samples that behave similarly (i.e., same matrix) and are processed using the same procedures, reagents, and standards at the same time.

Method Blank: An analytical control consisting of all reagents, which may include internal standards and surrogates, and is carried through the entire analytical procedure. The method blank is used to define the level of laboratory background contamination.

Laboratory Control Sample and Laboratory Control Sample Duplicate (LCS/LCSD): An aliquot of blank matrix spiked with known amounts of representative target analytes. The LCS (and LCSD as required) is carried through the entire analytical process and is used to monitor the accuracy of the analytical process independent of potential matrix effects. If an LCSD is performed, it may also be used to evaluate the precision of the process.

Duplicate Sample (DU): Different aliquots of the same sample are analyzed to evaluate the precision of an analysis.

Surrogates: Organic compounds not expected to be detected in field samples, which behave similarly to target analytes. These are added to every sample within a batch at a known concentration to determine the efficiency of the sample preparation and analytical process.

Matrix Spike and Matrix Spike Duplicate (MS/MSD): An MS is an aliquot of a matrix fortified with known quantities of specific compounds and subjected to an entire analytical procedure in order to indicate the appropriateness of the method for a particular matrix. The percent recovery for the respective compound(s) is then calculated. The MSD is a second aliquot of the same matrix as the matrix spike, also spiked, in order to determine the precision of the method.

Isotope Dilution: For isotope dilution methods, isotopically labeled analogs (internal standards) of the native target analytes are spiked into the sample at time of extraction. These internal standards are used for quantitation, and monitor and correct for matrix effects. Since matrix effects on method performance can be judged by the recovery of these analogs, there is little added benefit of performing MS/MSD for these methods. MS/MSD are only performed for client or QAPP requirements.

Control Limits: The reported control limits are either based on laboratory historical data, method requirements, or project data quality objectives. The control limits represent the estimated uncertainty of the test results.

Sample Summary

TestAmerica West Sacramento Project Number G0H200505

WO#	Sample #	Client Sample ID	Sampling Date	Received Date
L5W79	1	CM-11 (3-4)	8/13/2010 03:11 PM	8/20/2010 09:25 AM
L5W8H	2	CM-8 (1-2)	8/19/2010 08:42 AM	8/20/2010 09:25 AM
L5W8V	3	CM-11 (2-3)	8/13/2010 02:48 PM	8/20/2010 09:25 AM
L5W8W	4	CM-9 (1-2)	8/19/2010 03:52 PM	8/20/2010 09:25 AM

Notes(s):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity, pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

SOLID, 8290, Dioxins/Furans with Totals

ESN Northwest, Inc.

Sample ID: CM-11 (3-4)

Trace Level Organic Compounds

SW846 8290

Lot - Sample #....:	G0H200505 - 001	Work Order #....:	L5W791AC	Matrix....:	SOLID
Date Sampled....:	08/13/10	Date Received....:	08/20/10	Dilution Factor:	0.99
Prep Date....:	08/20/10	Analysis Date....:	08/24/10	Percent Moisture:	17
Prep Batch # ....:	0232371	Instrument ID....:	1D5		
Initial Wgt/Vol :	10.07 g	Analyst ID....:	Susan X. Yan		

PARAMETER	RESULT		REPORTING LIMIT	ESTIMATED DETECTION LIMIT	UNITS
2,3,7,8-TCDD	1.1	J	1.2	0.26	pg/g
Total TCDD	48		1.2	0.26	pg/g
1,2,3,7,8-PeCDD	4.8	J	6.0	1.0	pg/g
Total PeCDD	81		6.0	1.0	pg/g
1,2,3,4,7,8-HxCDD	14		6.0	0.94	pg/g
1,2,3,6,7,8-HxCDD	81		6.0	0.88	pg/g
1,2,3,7,8,9-HxCDD	29		6.0	0.78	pg/g
Total HxCDD	640		6.0	0.86	pg/g
1,2,3,4,6,7,8-HpCDD	3700	E B	6.0	2.0	pg/g
Total HpCDD	8200		6.0	2.0	pg/g
OCDD	32000	E B	12	3.4	pg/g
2,3,7,8-TCDF	7.3	CON	1.2	1.0	pg/g
Total TCDF	34		1.2	0.33	pg/g
1,2,3,7,8-PeCDF	5.1	J	6.0	0.51	pg/g
2,3,4,7,8-PeCDF	6.4		6.0	0.56	pg/g
Total PeCDF	94		6.0	0.53	pg/g
1,2,3,4,7,8-HxCDF	29		6.0	1.2	pg/g
1,2,3,6,7,8-HxCDF	8.3		6.0	1.1	pg/g
2,3,4,6,7,8-HxCDF	6.5		6.0	1.2	pg/g
1,2,3,7,8,9-HxCDF	ND		6.0	1.2	pg/g
Total HxCDF	420		6.0	1.2	pg/g
1,2,3,4,6,7,8-HpCDF	240	B	6.0	0.53	pg/g
1,2,3,4,7,8,9-HpCDF	10		6.0	0.60	pg/g
Total HpCDF	830		6.0	0.56	pg/g
OCDF	470	B	12	0.86	pg/g

ESN Northwest, Inc.

Sample ID: CM-11 (3-4)

Trace Level Organic Compounds

SW846 8290

Lot - Sample #....:	G0H200505 - 001	**Work Order #....:**	L5W791AC	**Matrix....:**	SOLID
Date Sampled....:	08/13/10	**Date Received....:**	08/20/10	**Dilution Factor:**	0.99
Prep Date....:	08/20/10	**Analysis Date....:**	08/24/10	**Percent Moisture:**	17
Prep Batch # ....:	0232371	**Instrument ID....:**	1D5		
Initial Wgt/Vol :	10.07 g	**Analyst ID....:**	Susan X. Yan		

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	54	40 - 135
13C-1,2,3,7,8-PeCDD	42	40 - 135
13C-1,2,3,6,7,8-HxCDD	54	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	54	40 - 135
13C-OCDD	51	40 - 135
13C-2,3,7,8-TCDF	51	40 - 135
13C-1,2,3,7,8-PeCDF	47	40 - 135
13C-1,2,3,4,7,8-HxCDF	56	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	52	40 - 135

QUALIFIERS

Results and reporting limits have been adjusted for dry weight.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

CON Confirmation analysis.

E Estimated result. Result concentration exceeds the calibration range.

J Estimated Result

QC DATA ASSOCIATION SUMMARY

G0H200505

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	SOLID	SW846 8290		0232371	
	SOLID	ASTM D 2216-90		0238329	0238198

Method Blank Report

Trace Level Organic Compounds

SW846 8290

Lot - Sample #....:	G0H200000 - 371B	**Work Order #....:**	L5XTJ1AA	**Matrix....:**	SOLID
Date Sampled....:	08/13/10	**Date Received....:**	08/20/10	**Dilution Factor:**	1
Prep Date....:	08/20/10	**Analysis Date....:**	08/25/10	**Percent Moisture:**	0.0
Prep Batch # ....:	0232371	**Instrument ID....:**	11D5		
Initial Wgt/Vol :	10 g	**Analyst ID....:**	Susan X. Yan		

PARAMETER	RESULT		REPORTING LIMIT	ESTIMATED DETECTION LIMIT	UNITS
2,3,7,8-TCDD	ND		1.0	0.072	pg/g
Total TCDD	ND		1.0	0.072	pg/g
1,2,3,7,8-PeCDD	ND		5.0	0.14	pg/g
Total PeCDD	**0.39**		**5.0**	**0.14**	**pg/g**
1,2,3,4,7,8-HxCDD	ND		5.0	0.091	pg/g
1,2,3,6,7,8-HxCDD	ND		5.0	0.079	pg/g
1,2,3,7,8,9-HxCDD	ND		5.0	0.077	pg/g
Total HxCDD	**0.12**		**5.0**	**0.082**	**pg/g**
1,2,3,4,6,7,8-HpCDD	**0.14**	**J Q**	**5.0**	**0.067**	**pg/g**
Total HpCDD	**0.25**		**5.0**	**0.067**	**pg/g**
OCDD	**0.67**	**J Q**	**10**	**0.052**	**pg/g**
2,3,7,8-TCDF	ND		1.0	0.074	pg/g
Total TCDF	ND		1.0	0.074	pg/g
1,2,3,7,8-PeCDF	ND		5.0	0.10	pg/g
2,3,4,7,8-PeCDF	ND		5.0	0.11	pg/g
Total PeCDF	ND		5.0	0.11	pg/g
1,2,3,4,7,8-HxCDF	ND		5.0	0.037	pg/g
1,2,3,6,7,8-HxCDF	ND		5.0	0.060	pg/g
2,3,4,6,7,8-HxCDF	ND		5.0	0.046	pg/g
1,2,3,7,8,9-HxCDF	ND		5.0	0.059	pg/g
Total HxCDF	ND		5.0	0.060	pg/g
1,2,3,4,6,7,8-HpCDF	**0.069**	**J Q**	**5.0**	**0.060**	**pg/g**
1,2,3,4,7,8,9-HpCDF	ND		5.0	0.069	pg/g
Total HpCDF	**0.069**		**5.0**	**0.064**	**pg/g**
OCDF	**0.23**	**J**	**10**	**0.047**	**pg/g**

Method Blank Report

Trace Level Organic Compounds

SW846 8290

Lot - Sample #....:	G0H200000 - 371B	**Work Order #....:**	L5XTJ1AA	**Matrix....:**	SOLID
Date Sampled....:	08/13/10	**Date Received....:**	08/20/10	**Dilution Factor:**	1
Prep Date....:	08/20/10	**Analysis Date....:**	08/25/10	**Percent Moisture:**	0.0
Prep Batch # ....:	0232371	**Instrument ID....:**	11D5		
Initial Wgt/Vol :	10 g	**Analyst ID....:**	Susan X. Yan		

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	71	40 - 135
13C-1,2,3,7,8-PeCDD	51	40 - 135
13C-1,2,3,6,7,8-HxCDD	69	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	73	40 - 135
13C-OCDD	70	40 - 135
13C-2,3,7,8-TCDF	78	40 - 135
13C-1,2,3,7,8-PeCDF	62	40 - 135
13C-1,2,3,4,7,8-HxCDF	81	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	81	40 - 135

QUALIFIERS

Results and reporting limits have been adjusted for dry weight.

J Estimated Result.

Q Estimated maximum possible concentration (EMPC).

LABORATORY CONTROL SAMPLE DATA REPORT

Trace Level Organic Compounds

Client Lot # ...:	G0H200505	**Work Order # ...:**	L5XTJ1AC-LCS	**Matrix .....:**	SOLID
LCS Lot-Sample# :	G0H200000 - 371				
Prep Date .....:	08/20/10	**Analysis Date ..:**	08/23/10		
Prep Batch # ...:	0232371				
Dilution Factor :	1				
Analyst ID.....:	Susan X. Yan	**Instrument ID..:**	1D5	**Method.....:**	SW846 8290
Initial Wgt/Vol:	10 g				

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RECOVERY LIMITS
2,3,7,8-TCDD	**20.0**	**19.2**	**pg/g**	**96**	**(77 - 130)**
1,2,3,7,8-PeCDD	**100**	**103**	**pg/g**	**103**	**(79 - 134)**
1,2,3,4,7,8-HxCDD	**100**	**89.7**	**pg/g**	**90**	**(65 - 144)**
1,2,3,6,7,8-HxCDD	**100**	**94.3**	**pg/g**	**94**	**(73 - 147)**
1,2,3,7,8,9-HxCDD	**100**	**82.2**	**pg/g**	**82**	**(80 - 143)**
1,2,3,4,6,7,8-HpCDD	**100**	**105**	**pg/g**	**105**	**(86 - 134)**
OCDD	**200**	**204**	**pg/g**	**102**	**(80 - 137)**
2,3,7,8-TCDF	**20.0**	**18.3**	**pg/g**	**91**	**(79 - 137)**
1,2,3,7,8-PeCDF	**100**	**93.7**	**pg/g**	**94**	**(81 - 134)**
2,3,4,7,8-PeCDF	**100**	**96.3**	**pg/g**	**96**	**(76 - 132)**
1,2,3,4,7,8-HxCDF	**100**	**87.5**	**pg/g**	**87**	**(72 - 140)**
1,2,3,6,7,8-HxCDF	**100**	**92.8**	**pg/g**	**93**	**(63 - 152)**
2,3,4,6,7,8-HxCDF	**100**	**93.3**	**pg/g**	**93**	**(72 - 151)**
1,2,3,7,8,9-HxCDF	**100**	**85.7**	**pg/g**	**86**	**(72 - 152)**
1,2,3,4,6,7,8-HpCDF	**100**	**93.6**	**pg/g**	**94**	**(81 - 137)**
1,2,3,4,7,8,9-HpCDF	**100**	**83.0**	**pg/g**	**83**	**(79 - 139)**
OCDF	**200**	**221**	**pg/g**	**110**	**(75 - 141)**

INTERNAL STANDARD	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	68	(40 - 135)
13C-1,2,3,7,8-PeCDD	55	(40 - 135)
13C-1,2,3,6,7,8-HxCDD	75	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDD	61	(40 - 135)
13C-OCDD	46	(40 - 135)
13C-2,3,7,8-TCDF	67	(40 - 135)
13C-1,2,3,7,8-PeCDF	63	(40 - 135)
13C-1,2,3,4,7,8-HxCDF	76	(40 - 135)
13C-1,2,3,4,6,7,8-HpCDF	69	(40 - 135)

Notes:

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

SOLID, D 2216-90, Percent Moisture

ESN Northwest, Inc.

Client Sample ID: CM-11 (3-4)

General Chemistry

Lot-Sample #...: G0H200505-001 Work Order #...: L5W79 Matrix.....: SOLID
Date Sampled...: 08/13/10 Date Received...: 08/20/10
% Moisture.....: 17

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Percent Moisture	17.5	0.10	%	ASTM D 2216-90	08/26/08/27/10	0238329

Dilution Factor: 1

QC DATA ASSOCIATION SUMMARY

G0H200505

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	SOLID	SW846 8290		0232371	
	SOLID	ASTM D 2216-90		0238329	0238198

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: G0H200505 Work Order #...: L5DXG-SMP Matrix.....: SOLID
L5DXG-DUP

Date Sampled...: 08/09/10 Date Received...: 08/10/10

% Moisture.....: 3.5

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Percent Moisture						SD Lot-Sample #:	G0H100576-003	
	3.5	3.2	%	9.4	(0-20)	ASTM D 2216-90	08/26-08/27/10	0238329

Dilution Factor: 1

021035

ESN NORTHWEST, INC. | Environmental Services Network

CHAIN-OF-CUSTODY RECORD

CLIENT: PI Resources
ADDRESS: 5700 6th Ave. S, Suite 101, Seattle, WA 98108
PHONE: (206) 799-3508 FAX: (206) 529-3991
CLIENT PROJECT #: 10-002 PROJECT MANAGER: B. Chernick

DATE: 9/9/10 PAGE 1 OF 1
PROJECT NAME: Cascade Pole Phase III
LOCATION: Port of Olympia
COLLECTOR: Bryan Chernick DATE OF COLLECTION 9/9/10

Sample Number	Depth	Time	Sample Type	Container Type	TPH-HCID	TPH - DIESEL & OIL	TPH - GASOLINE	BTEX	VOC 8260CL	VOC 8260	SemiVol 8270	PAH's 8270	PCB's 8082	CL Pesticides 8081	RCRA 8 Metals	MTCA 5 Metals	Pb	Asbestos-PLM	GRO Suite	DRO Suite	WO Suite	Dioxin 8290	NOTES	Total Number of Containers	Laboratory Note Number
1. CM-11 (F)	1'	0826	Soil	4oz							X										X			3	
2. CM-9 (F)	1'	0851	Soil	4oz							X										X			3	
3. CM-8 (F)	1'	0922	Soil	4oz							X										X			3	
4.																									
5.																									
6.																									
7.																									
8.																									
9.																									
10.																									
11.																									
12.																									
13.																									
14.																									
15.																									
16.																									
17.																									
18.																									

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
[signature]	9/9/10 1207	[signature]	9/9/10
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

☐ ESN DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:
e-mail results to:
chernick@phoinixcorp.net
Standard TAT
Turn Around Time: 24 HR 48 HR 5 DAY

CMITIN

ESN Northwest, Inc.

Sample ID: CM-8(F)

Trace Level Organic Compounds

SW846 8290

Lot - Sample #....:	G0I130442 - 003	**Work Order #....:**	L6WCJ2AC	**Matrix.....:**	SOLID
Date Sampled....:	09/09/10	**Date Received....:**	09/13/10	**Dilution Factor:**	0.95
Prep Date....:	10/05/10	**Analysis Date....:**	10/10/10	**Percent Moisture:**	21
Prep Batch # ....:	0278230	**Instrument ID....:**	4D5		
Initial Wgt/Vol :	10.43 g	**Analyst ID....:**	Susan X. Yan		

PARAMETER	RESULT		REPORTING LIMIT	ESTIMATED DETECTION LIMIT	UNITS
2,3,7,8-TCDD	ND		1.2	0.13	pg/g
Total TCDD	**0.21**		**1.2**	**0.13**	**pg/g**
1,2,3,7,8-PeCDD	ND		6.1	0.26	pg/g
Total PeCDD	ND		6.1	0.26	pg/g
1,2,3,4,7,8-HxCDD	ND		6.1	0.17	pg/g
1,2,3,6,7,8-HxCDD	ND		6.1	0.15	pg/g
1,2,3,7,8,9-HxCDD	ND		6.1	0.15	pg/g
Total HxCDD	**0.73**		**6.1**	**0.16**	**pg/g**
1,2,3,4,6,7,8-HpCDD	**1.1**	**J Q B**	**6.1**	**0.16**	**pg/g**
Total HpCDD	**2.4**		**6.1**	**0.16**	**pg/g**
OCDD	**6.3**	**J B**	**12**	**0.23**	**pg/g**
2,3,7,8-TCDF	ND		1.2	0.083	pg/g
Total TCDF	ND		1.2	0.083	pg/g
1,2,3,7,8-PeCDF	ND		6.1	0.13	pg/g
2,3,4,7,8-PeCDF	ND		6.1	0.14	pg/g
Total PeCDF	ND		6.1	0.14	pg/g
1,2,3,4,7,8-HxCDF	ND		6.1	0.099	pg/g
1,2,3,6,7,8-HxCDF	ND		6.1	0.094	pg/g
2,3,4,6,7,8-HxCDF	ND		6.1	0.098	pg/g
1,2,3,7,8,9-HxCDF	ND		6.1	0.11	pg/g
Total HxCDF	**0.76**		**6.1**	**0.10**	**pg/g**
1,2,3,4,6,7,8-HpCDF	**1.5**	**J B**	**6.1**	**0.18**	**pg/g**
1,2,3,4,7,8,9-HpCDF	ND		6.1	0.22	pg/g
Total HpCDF	**2.5**		**6.1**	**0.20**	**pg/g**
OCDF	**0.55**	**J Q**	**12**	**0.25**	**pg/g**

ESN Northwest, Inc.

Sample ID: CM-8(F)

Trace Level Organic Compounds

SW846 8290

Lot - Sample #....:	G0I130442 - 003	**Work Order #....:**	L6WCJ2AC	**Matrix....:**	SOLID
Date Sampled....:	09/09/10	**Date Received....:**	09/13/10	**Dilution Factor:**	0.95
Prep Date....:	10/05/10	**Analysis Date....:**	10/10/10	**Percent Moisture:**	21
Prep Batch # ....:	0278230	**Instrument ID....:**	4D5		
Initial Wgt/Vol :	10.43 g	**Analyst ID....:**	Susan X. Yan		

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	77	40 - 135
13C-1,2,3,7,8-PeCDD	78	40 - 135
13C-1,2,3,6,7,8-HxCDD	72	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	90	40 - 135
13C-OCDD	68	40 - 135
13C-2,3,7,8-TCDF	70	40 - 135
13C-1,2,3,7,8-PeCDF	80	40 - 135
13C-1,2,3,4,7,8-HxCDF	59	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	73	40 - 135

QUALIFIERS

Results and reporting limits have been adjusted for dry weight

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated Result.

Q Estimated maximum possible concentration (EMPC).

ESN Northwest, Inc.

Sample ID: CM-9(F)

Trace Level Organic Compounds

SW846 8290

Lot - Sample #....:	G0I130442 - 002	**Work Order #....:**	L6WCF2AC	**Matrix....:**	SOLID
Date Sampled....:	09/09/10	**Date Received....:**	09/13/10	**Dilution Factor:**	0.91
Prep Date....:	10/05/10	**Analysis Date....:**	10/10/10	**Percent Moisture:**	24
Prep Batch # ....:	0278230	**Instrument ID....:**	4D5		
Initial Wgt/Vol :	10.88 g	**Analyst ID....:**	Susan X. Yan		

PARAMETER	RESULT		REPORTING LIMIT	ESTIMATED DETECTION LIMIT	UNITS
2,3,7,8-TCDD	ND		1.2	0.076	pg/g
Total TCDD	**0.91**		**1.2**	**0.076**	**pg/g**
1,2,3,7,8-PeCDD	ND		6.1	0.23	pg/g
Total PeCDD	**1.2**		**6.1**	**0.23**	**pg/g**
1,2,3,4,7,8-HxCDD	ND		6.1	0.14	pg/g
1,2,3,6,7,8-HxCDD	**0.46**	**J**	**6.1**	**0.12**	**pg/g**
1,2,3,7,8,9-HxCDD	**0.18**	**J Q B**	**6.1**	**0.12**	**pg/g**
Total HxCDD	**4.6**		**6.1**	**0.13**	**pg/g**
1,2,3,4,6,7,8-HpCDD	**15**	**B**	**6.1**	**0.21**	**pg/g**
Total HpCDD	**31**		**6.1**	**0.21**	**pg/g**
OCDD	**92**	**B**	**12**	**0.41**	**pg/g**
2,3,7,8-TCDF	**0.55**	**J**	**1.2**	**0.096**	**pg/g**
Total TCDF	**2.0**		**1.2**	**0.096**	**pg/g**
1,2,3,7,8-PeCDF	**0.18**	**J**	**6.1**	**0.14**	**pg/g**
2,3,4,7,8-PeCDF	ND		6.1	0.15	pg/g
Total PeCDF	**1.4**		**6.1**	**0.16**	**pg/g**
1,2,3,4,7,8-HxCDF	**0.38**	**J B**	**6.1**	**0.13**	**pg/g**
1,2,3,6,7,8-HxCDF	**0.34**	**J B**	**6.1**	**0.13**	**pg/g**
2,3,4,6,7,8-HxCDF	ND		6.1	0.13	pg/g
1,2,3,7,8,9-HxCDF	ND		6.1	0.15	pg/g
Total HxCDF	**6.1**		**6.1**	**0.14**	**pg/g**
1,2,3,4,6,7,8-HpCDF	**9.2**	**B**	**6.1**	**0.14**	**pg/g**
1,2,3,4,7,8,9-HpCDF	**0.23**	**J Q B**	**6.1**	**0.17**	**pg/g**
Total HpCDF	**18**		**6.1**	**0.15**	**pg/g**
OCDF	**9.6**	**J**	**12**	**0.23**	**pg/g**

ESN Northwest, Inc.

Sample ID: CM-9(F)

Trace Level Organic Compounds

SW846 8290

Lot - Sample #....:	G0I130442 - 002	**Work Order #....:**	L6WCF2AC	**Matrix....:**	SOLID
Date Sampled....:	09/09/10	**Date Received....:**	09/13/10	**Dilution Factor:**	0.91
Prep Date....:	10/05/10	**Analysis Date....:**	10/10/10	**Percent Moisture:**	24
Prep Batch # ....:	0278230	**Instrument ID....:**	4D5		
Initial Wgt/Vol :	10.88 g	**Analyst ID....:**	Susan X. Yan		

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	87	40 - 135
13C-1,2,3,7,8-PeCDD	93	40 - 135
13C-1,2,3,6,7,8-HxCDD	90	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	102	40 - 135
13C-OCDD	85	40 - 135
13C-2,3,7,8-TCDF	80	40 - 135
13C-1,2,3,7,8-PeCDF	93	40 - 135
13C-1,2,3,4,7,8-HxCDF	67	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	87	40 - 135

QUALIFIERS

Results and reporting limits have been adjusted for dry weight.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated Result.

Q Estimated maximum possible concentration (EMPC).

ESN Northwest, Inc.

Sample ID: CM-11(F)

Trace Level Organic Compounds

SW846 8290

Lot - Sample #....:	G0I130442 - 001	**Work Order #....:**	L6WCA2AC	**Matrix....:**	SOLID
Date Sampled....:	09/09/10	**Date Received....:**	09/13/10	**Dilution Factor:**	0.96
Prep Date....:	10/05/10	**Analysis Date....:**	10/10/10	**Percent Moisture:**	19
Prep Batch # ....:	0278230	**Instrument ID....:**	4D5		
Initial Wgt/Vol :	10.33 g	**Analyst ID....:**	Susan X. Yan		

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	60	40 - 135
13C-1,2,3,7,8-PeCDD	65	40 - 135
13C-1,2,3,6,7,8-HxCDD	59	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	72	40 - 135
13C-OCDD	65	40 - 135
13C-2,3,7,8-TCDF	54	40 - 135
13C-1,2,3,7,8-PeCDF	64	40 - 135
13C-1,2,3,4,7,8-HxCDF	47	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	60	40 - 135

QUALIFIERS

Results and reporting limits have been adjusted for dry weight.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated Result

Q Estimated maximum possible concentration (EMPC).

Table of Contents: ARI Job SO94

Client: Landau Associates, Inc. Project: 0021035.010 Port of Olympia

Signature

April-20-2011
Date

Analytical Resources, Incorporated
Analytical Chemists and Consultants

April 20, 2011

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

RE: Project: Port of Olympia
ARI Job No: SO94

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 two soil samples in good condition on March 26, 2011.

The samples were analyzed for Dioxins and Furans, 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

Chain of Custody Documentation

ARI Job ID: SO94

5094

LANDAU ASSOCIATES

- [X] **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. 002035.010

Project Location/Event Cascade Pole

Sampler's Name PI Resources

Project Contact Chris Kimmel

Send Results To Chris Kimmel

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

Sample I.D.	Date	Time	Matrix	No. of Containers	Testing Parameters: Dioxin (8290)	Observations/Comments
CM-2 (1-2)	8/5/10	0951	soil	1	X	
CM-3 (1-2)	8/5/10	1030	soil	1	X	

Observations/Comments:

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

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

- ___ Dissolved metal water samples field filtered

Other _____

Special Shipment/Handling or Storage Requirements

Method of Shipment

Relinquished by	Received by	Relinquished by	Received by
Signature	Signature	Signature	Signature
Jessica Stone	Pikka Mulumba		
Printed Name	Printed Name	Printed Name	Printed Name
Landau Associates, Inc.	ARI		
Company	Company	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

5094 : 50005

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: Prop Box

Assigned ARI Job No: 5094 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): 4.6 ___ ___ ___

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

Cooler Accepted by: MM Date: 3/26/11 Time: 0930

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)		

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

Samples Logged by: MM Date: 3/29/11 Time: 1000

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

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

Additional Notes, Discrepancies, & Resolutions:

By: Date:

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

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

Case Narrative, Data Qualifiers, Control Limits

ARI Job ID: SO94

Case Narrative

Client: Landau Associates
Project: Port of Olympia
ARI Job No.: SO94

Dioxin/Furans by EPA 8290

The sample and associated laboratory QC were prepared and analyzed within the method recommended holding times.

Analysis was performed using the application specific RTX-Dioxin 2 column, which has a unique elution order and selectivity for the target compounds, as well as a unique isomer separation for the 2378-TCDF. A resolution test mixture was designed specifically for this column, consisting of 2348-TCDF, 2378-TCDF and 3467-TCDF to evaluate the method required minimum valley between isomer of 25%. Use of the RTX-Dioxin2 column eliminates the need for second column confirmation.

Initial and continuing calibration results were within method requirements.

The method blank had hits below the RL. Associated sample results are greater then ten times the concentrations found in the method blank therefore no action was taken. The OPR (Ongoing Precision and Accuracy or LCS) sample percent recoveries were within control limits.

The percent recoveries for all preparation and cleanup surrogates were within established QC limits.

The TEQ was calculated with WHO2005 with ND=0 for undetects (flagged "U"), following EPA protocols. A more conservative estimate of the TEQ would be to include EMPC values in the calculation.

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: SO94
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.	CM-2(1-2)	SO94A	11-6769	Soil	08/05/10 09:51	03/26/11 08:30
2.	CM-3(1-2)	SO94B	11-6770	Soil	08/05/10 10:30	03/26/11 08:30

Printed 03/28/11

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Data Reporting Qualifiers

Effective 2/14/2011

Inorganic Data

U	Indicates that the target analyte was not detected at the reported concentration
*	Duplicate RPD is not within established control limits
B	Reported value is less than the CRDL but ≥ the Reporting Limit
N	Matrix Spike recovery not within established control limits
NA	Not Applicable, analyte not spiked
H	The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible
L	Analyte concentration is ≤5 times the Reporting Limit and the replicate control limit defaults to ±1 RL instead of the normal 20% RPD

Organic Data

U	Indicates that the target analyte was not detected at the reported concentration
*	Flagged value is not within established control limits
B	Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.
J	Estimated concentration when the value is less than ARI's established reporting limits
D	The spiked compound was not detected due to sample extract dilution
E	Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
Q	Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20%Drift or minimum RRF).

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

NA The flagged analyte was not analyzed for

NR Spiked compound recovery is not reported due to chromatographic interference

NS The flagged analyte was not spiked into the sample

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

M2 The sample contains PCB congeners that do not match any standard Aroclor pattern. The PCBs are identified and quantified as the Aroclor whose pattern most closely matches that of the sample. The reported value is an estimate.

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

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

EMPC Estimated Maximum Possible Concentration (EMPC) defined in EPA Statement of Work DLM02.2 as a value "calculated for 2,3,7,8-substituted isomers for which the quantitation and /or confirmation ion(s) has signal to noise in excess of 2.5, but does not meet identification criteria" **(Dioxin/Furan analysis only)**

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

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

X Analyte signal includes interference from polychlorinated diphenyl ethers. **(Dioxin/Furan analysis only)**

Z Analyte signal includes interference from the sample matrix or perfluorokerosene ions. **(Dioxin/Furan analysis only)**

Geotechnical Data

A	The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.
F	Samples were frozen prior to particle size determination
SM	Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations
SS	Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis
W	Weight of sample in some pipette aliquots was below the level required for accurate weighting

Dioxin Analysis
Report and Summary QC Forms

ARI Job ID: SO94

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: CM-2(1-2)**

Lab Sample ID: SO94A
LIMS ID: 11-6769
Matrix: Soil
Data Release Authorized: VJS
Reported: 04/19/11

QC Report No: SO94-Landau Associates, Inc.
Project: Port of Olympia
0021035.010
Date Sampled: 08/05/10
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/15/11 17:39
Instrument/Analyst: AS1/PK
Acid Cleanup: Yes
Silica-Carbon Cleanup: No

Sample Amount: 10.1 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00
Silica-Florisil Cleanup: Yes

Analyte	Ion Ratio	Ratio Limits	EDL	RL	Result	
2,3,7,8-TCDF	0.64	0.65-0.89		0.989	0.103	JEMPC
2,3,7,8-TCDD	0.35	0.65-0.89		0.989	0.170	JEMPC
1,2,3,7,8-PeCDF	1.40	1.32-1.78		4.95	0.324	J
2,3,4,7,8-PeCDF	1.72	1.32-1.78		4.95	0.445	J
1,2,3,7,8-PeCDD	1.52	1.32-1.78		4.95	0.326	J
1,2,3,4,7,8-HxCDF	1.20	1.05-1.43		4.95	1.11	J
1,2,3,6,7,8-HxCDF	1.16	1.05-1.43		4.95	0.431	J
2,3,4,6,7,8-HxCDF	1.17	1.05-1.43		4.95	0.532	J
1,2,3,7,8,9-HxCDF	1.07	1.05-1.43		4.95	0.493	J
1,2,3,4,7,8-HxCDD	1.05	1.05-1.43		4.95	0.263	JEMPC
1,2,3,6,7,8-HxCDD	1.22	1.05-1.43		4.95	1.92	J
1,2,3,7,8,9-HxCDD	1.27	1.05-1.43		4.95	0.748	J
1,2,3,4,6,7,8-HpCDF	0.98	0.88-1.20		4.95	4.54	J
1,2,3,4,7,8,9-HpCDF	1.02	0.88-1.20		4.95	0.324	J
1,2,3,4,6,7,8-HpCDD	1.06	0.88-1.20		4.95	38.9	
OCDF	0.94	0.76-1.02		9.89	2.66	J
OCDD	0.89	0.76-1.02		9.89	489	

Homologue Group	EDL	RL	W/O EMPC	WITH EMPC
Total TCDF		0.989	0.138	0.469
Total TCDD		0.989	3.58	3.80
Total PeCDF		4.95	4.55	4.69
Total PeCDD		4.95	1.56	1.78
Total HxCDF		4.95	17.2	17.4
Total HxCDD		4.95	10.8	11.5
Total HpCDF		4.95	14.3	
Total HpCDD		4.95	85.7	

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 1.78

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 1.78

Reported in pg/g

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290
Page 1 of 1

Sample ID: CM-2(1-2)

Lab Sample ID: SO94A
LIMS ID: 11-6769
Matrix: Soil
Data Release Authorized: VTS
Reported: 04/19/11

QC Report No: SO94-Landau Associates, Inc.
Project: Port of Olympia
0021035.010
Date Sampled: 08/05/10
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/15/11 17:39
Instrument/Analyst: AS1/PK

Sample Amount: 10.1 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits
13C-2,3,7,8-TCDF	0.79	0.65-0.89	94.2	40-135
13C-2,3,7,8-TCDD	0.78	0.65-0.89	83.3	40-135
13C-1,2,3,7,8-PeCDF	1.58	1.32-1.78	89.5	40-135
13C-2,3,4,7,8-PeCDF	1.58	1.32-1.78	80.9	40-135
13C-1,2,3,7,8-PeCDD	1.59	1.32-1.78	81.2	40-135
13C-1,2,3,4,7,8-HxCDF	0.52	0.43-0.59	84.7	40-135
13C-1,2,3,6,7,8-HxCDF	0.53	0.43-0.59	88.4	40-135
13C-2,3,4,6,7,8-HxCDF	0.53	0.43-0.59	80.9	40-135
13C-1,2,3,7,8,9-HxCDF	0.53	0.43-0.59	76.9	40-135
13C-1,2,3,4,7,8-HxCDD	1.27	1.05-1.43	83.0	40-135
13C-1,2,3,6,7,8-HxCDD	1.25	1.05-1.43	84.0	40-135
13C-1,2,3,4,6,7,8-HpCDF	0.45	0.37-0.51	66.7	40-135
13C-1,2,3,4,7,8,9-HpCDF	0.44	0.37-0.51	64.8	40-135
13C-1,2,3,4,6,7,8-HpCDD	1.07	0.88-1.20	72.5	40-135
13C-OCDD	0.90	0.76-1.02	57.4	40-135
37Cl4-2,3,7,8-TCDD			92.1	35-197

Reported in Percent Recovery

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290
Page 1 of 1

Sample ID: CM-3(1-2)

Lab Sample ID: SO94B
LIMS ID: 11-6770
Matrix: Soil
Data Release Authorized: VJS
Reported: 04/19/11

QC Report No: SO94-Landau Associates, Inc.
Project: Port of Olympia
0021035.010
Date Sampled: 08/05/10
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/15/11 18:30
Instrument/Analyst: AS1/PK
Acid Cleanup: Yes
Silica-Carbon Cleanup: No

Sample Amount: 10.5 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00
Silica-Florisil Cleanup: Yes

Analyte	Ion Ratio	Ratio Limits	EDL	RL	Result	
2,3,7,8-TCDF	0.73	0.65-0.89		0.949	0.956	
2,3,7,8-TCDD	0.45	0.65-0.89		0.949	0.269	JEMPC
1,2,3,7,8-PeCDF	1.56	1.32-1.78		4.74	0.786	JX
2,3,4,7,8-PeCDF	1.67	1.32-1.78		4.74	0.765	J
1,2,3,7,8-PeCDD	1.59	1.32-1.78		4.74	0.784	J
1,2,3,4,7,8-HxCDF	1.24	1.05-1.43		4.74	1.78	J
1,2,3,6,7,8-HxCDF	1.32	1.05-1.43		4.74	1.05	J
2,3,4,6,7,8-HxCDF	1.22	1.05-1.43		4.74	1.40	J
1,2,3,7,8,9-HxCDF	1.29	1.05-1.43		4.74	0.731	J
1,2,3,4,7,8-HxCDD	1.09	1.05-1.43		4.74	0.691	J
1,2,3,6,7,8-HxCDD	1.25	1.05-1.43		4.74	3.83	J
1,2,3,7,8,9-HxCDD	1.29	1.05-1.43		4.74	1.48	J
1,2,3,4,6,7,8-HpCDF	1.02	0.88-1.20		4.74	17.1	
1,2,3,4,7,8,9-HpCDF	1.10	0.88-1.20		4.74	1.06	J
1,2,3,4,6,7,8-HpCDD	1.05	0.88-1.20		4.74	95.2	
OCDF	0.88	0.76-1.02		9.49	25.2	
OCDD	0.90	0.76-1.02		9.49	1,060	

Homologue Group	EDL	RL	W/O EMPC	WITH EMPC
Total TCDF		0.949	16.2	16.4
Total TCDD		0.949	10.6	11.1
Total PeCDF		4.74	16.6	17.2
Total PeCDD		4.74	9.15	9.76
Total HxCDF		4.74	37.7	38.2
Total HxCDD		4.74	30.2	30.6
Total HpCDF		4.74	53.1	53.3
Total HpCDD		4.74	218	

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 3.96

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 3.96

Reported in pg/g

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290
Page 1 of 1

Sample ID: CM-3(1-2)

Lab Sample ID: SO94B
LIMS ID: 11-6770
Matrix: Soil
Data Release Authorized: VTB
Reported: 04/19/11

QC Report No: SO94-Landau Associates, Inc.
Project: Port of Olympia
0021035.010
Date Sampled: 08/05/10
Date Received: 03/26/11

Date Extracted: 03/30/11
Date Analyzed: 04/15/11 18:30
Instrument/Analyst: AS1/PK

Sample Amount: 10.5 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits
13C-2,3,7,8-TCDF	0.79	0.65-0.89	86.7	40-135
13C-2,3,7,8-TCDD	0.78	0.65-0.89	82.7	40-135
13C-1,2,3,7,8-PeCDF	1.58	1.32-1.78	79.2	40-135
13C-2,3,4,7,8-PeCDF	1.57	1.32-1.78	79.4	40-135
13C-1,2,3,7,8-PeCDD	1.57	1.32-1.78	79.0	40-135
13C-1,2,3,4,7,8-HxCDF	0.52	0.43-0.59	84.0	40-135
13C-1,2,3,6,7,8-HxCDF	0.52	0.43-0.59	83.1	40-135
13C-2,3,4,6,7,8-HxCDF	0.53	0.43-0.59	86.4	40-135
13C-1,2,3,7,8,9-HxCDF	0.53	0.43-0.59	90.5	40-135
13C-1,2,3,4,7,8-HxCDD	1.27	1.05-1.43	83.8	40-135
13C-1,2,3,6,7,8-HxCDD	1.26	1.05-1.43	84.6	40-135
13C-1,2,3,4,6,7,8-HpCDF	0.45	0.37-0.51	76.2	40-135
13C-1,2,3,4,7,8,9-HpCDF	0.45	0.37-0.51	79.7	40-135
13C-1,2,3,4,6,7,8-HpCDD	1.05	0.88-1.20	84.1	40-135
13C-OCDD	0.90	0.76-1.02	76.9	40-135
37Cl4-2,3,7,8-TCDD			92.6	35-197

Reported in Percent Recovery

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: OPR-033011**

Lab Sample ID: OPR-033011
LIMS ID: 11-6769
Matrix: Soil
Data Release Authorized: VTS
Reported: 04/19/11

QC Report No: SO94-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 16:48
Instrument/Analyst: AS1/PK
Acid Cleanup: Yes
Silica-Carbon Cleanup: No

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00
Silica-Florisil Cleanup: Yes

Analyte	Ion Ratio	Ratio Limits	RL	Result
2,3,7,8-TCDF	0.77	0.65-0.89	1.00	22.0
2,3,7,8-TCDD	0.77	0.65-0.89	1.00	20.4
1,2,3,7,8-PeCDF	1.55	1.32-1.78	5.00	102
2,3,4,7,8-PeCDF	1.56	1.32-1.78	5.00	102
1,2,3,7,8-PeCDD	1.56	1.32-1.78	5.00	101
1,2,3,4,7,8-HxCDF	1.24	1.05-1.43	5.00	103
1,2,3,6,7,8-HxCDF	1.26	1.05-1.43	5.00	100
2,3,4,6,7,8-HxCDF	1.24	1.05-1.43	5.00	100
1,2,3,7,8,9-HxCDF	1.20	1.05-1.43	5.00	104
1,2,3,4,7,8-HxCDD	1.25	1.05-1.43	5.00	101
1,2,3,6,7,8-HxCDD	1.26	1.05-1.43	5.00	105
1,2,3,7,8,9-HxCDD	1.27	1.05-1.43	5.00	97.5
1,2,3,4,6,7,8-HpCDF	1.03	0.88-1.20	5.00	124
1,2,3,4,7,8,9-HpCDF	1.06	0.88-1.20	5.00	103
1,2,3,4,6,7,8-HpCDD	1.02	0.88-1.20	5.00	101
OCDF	0.90	0.76-1.02	10.0	176
OCDD	0.88	0.76-1.02	10.0	197

Homologue Group	EDL	RL	W/O EMPC	WITH EMPC
Total TCDF	0.0195	1.00	24.8	24.9
Total TCDD	0.0432	1.00	21.1	
Total PeCDF	0.0363	5.00	214	215
Total PeCDD	0.0400	5.00	102	
Total HxCDF	0.0529	5.00	411	
Total HxCDD	0.0496	5.00	303	
Total HpCDF		5.00	227	228
Total HpCDD	0.0777	5.00	103	

Reported in pg/g

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: OPR-033011**

Lab Sample ID: OPR-033011
LIMS ID: 11-6769
Matrix: Soil
Data Release Authorized: VB
Reported: 04/19/11

QC Report No: SO94-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 16:48
Instrument/Analyst: AS1/PK

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits
13C-2,3,7,8-TCDF	0.79	0.65-0.89	78.2	40-135
13C-2,3,7,8-TCDD	0.79	0.65-0.89	72.5	40-135
13C-1,2,3,7,8-PeCDF	1.56	1.32-1.78	76.1	40-135
13C-2,3,4,7,8-PeCDF	1.58	1.32-1.78	68.8	40-135
13C-1,2,3,7,8-PeCDD	1.58	1.32-1.78	71.7	40-135
13C-1,2,3,4,7,8-HxCDF	0.53	0.43-0.59	79.2	40-135
13C-1,2,3,6,7,8-HxCDF	0.53	0.43-0.59	87.4	40-135
13C-2,3,4,6,7,8-HxCDF	0.52	0.43-0.59	78.5	40-135
13C-1,2,3,7,8,9-HxCDF	0.52	0.43-0.59	66.9	40-135
13C-1,2,3,4,7,8-HxCDD	1.26	1.05-1.43	81.8	40-135
13C-1,2,3,6,7,8-HxCDD	1.26	1.05-1.43	82.0	40-135
13C-1,2,3,4,6,7,8-HpCDF	0.45	0.37-0.51	65.2	40-135
13C-1,2,3,4,7,8,9-HpCDF	0.45	0.37-0.51	59.4	40-135
13C-1,2,3,4,6,7,8-HpCDD	1.05	0.88-1.20	70.0	40-135
13C-OCDD	0.90	0.76-1.02	58.3	40-135
37Cl4-2,3,7,8-TCDD			79.9	35-197

Reported in Percent Recovery

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: OPR-033011**

Lab Sample ID: OPR-033011
LIMS ID: 11-6769
Matrix: Soil
Data Release Authorized: VJS
Reported: 04/19/11

QC Report No: SO94-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 16:48
Instrument/Analyst: AS1/PK

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00

Analyte	OPR	Spiked	Recovery	Limits
2,3,7,8-TCDF	22.0	20.0	110	30-160
2,3,7,8-TCDD	20.4	20.0	102	30-160
1,2,3,7,8-PeCDF	102	100	102	30-160
2,3,4,7,8-PeCDF	102	100	102	30-160
1,2,3,7,8-PeCDD	101	100	101	30-160
1,2,3,4,7,8-HxCDF	103	100	103	30-160
1,2,3,6,7,8-HxCDF	100	100	100	30-160
2,3,4,6,7,8-HxCDF	100	100	100	30-160
1,2,3,7,8,9-HxCDF	104	100	104	30-160
1,2,3,4,7,8-HxCDD	101	100	101	30-160
1,2,3,6,7,8-HxCDD	105	100	105	30-160
1,2,3,7,8,9-HxCDD	97.5	100	97.5	30-160
1,2,3,4,6,7,8-HpCDF	124	100	124	30-160
1,2,3,4,7,8,9-HpCDF	103	100	103	30-160
1,2,3,4,6,7,8-HpCDD	101	100	101	30-160
OCDF	176	200	88.0	30-160
OCDD	197	200	98.5	30-160

Reported in pg/g

4DF - FORM IV-HR CDD
CDD/CDF METHOD BLANK SUMMARY
HIGH RESOLUTION

Sample No.
SO94MB

Lab Name: ANALYTICAL RESOURCES, INC. Contract: LANDAU

Lab Code: S094 Case No.: PORT OF OLYMPIA TO No.: _____ SDG No.: _____

Matrix: (Soil/Water/Ash/Tissue/Oil) SOIL

Sample wt/vol: 10 (g/ml) g

Water Sample Prep: _____ (SEPF/SPE)

GC Column: RTX-DIOXIN2 ID: 0.25 (mm)

Instrument ID: AUTOSPEC1

Lab Sample ID: SO94MB

Lab File ID: 11041505

Date Received: 26-MAR-11

Date Extracted: 30-MAR-11

Date Analyzed: 15-APR-11

Client Sample No.	Lab Sample ID	Lab File ID	Date Analyzed
SO94OPR	SO94OPR	11041506	04/15/11
CM-2(1-2)	SO94A	11041507	04/15/11
CM-3(1-2)	SO94B	11041508	04/15/11

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: MB-033011**

Lab Sample ID: MB-033011
LIMS ID: 11-6769
Matrix: Soil
Data Release Authorized: VB
Reported: 04/19/11

QC Report No: SO94-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 15:57
Instrument/Analyst: AS1/PK
Acid Cleanup: Yes
Silica-Carbon Cleanup: No

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00
Silica-Florisil Cleanup: Yes

Analyte	Ion Ratio	Ratio Limits	EDL	RL	Result	
2,3,7,8-TCDF		0.65-0.89	0.0195	1.00	< 0.0195	U
2,3,7,8-TCDD		0.65-0.89	0.0432	1.00	< 0.0432	U
1,2,3,7,8-PeCDF		1.32-1.78	0.0330	5.00	< 0.0330	U
2,3,4,7,8-PeCDF		1.32-1.78	0.0363	5.00	< 0.0363	U
1,2,3,7,8-PeCDD		1.32-1.78	0.0400	5.00	< 0.0400	U
1,2,3,4,7,8-HxCDF		1.05-1.43	0.0372	5.00	< 0.0372	U
1,2,3,6,7,8-HxCDF		1.05-1.43	0.0335	5.00	< 0.0335	U
2,3,4,6,7,8-HxCDF		1.05-1.43	0.0381	5.00	< 0.0381	U
1,2,3,7,8,9-HxCDF		1.05-1.43	0.0529	5.00	< 0.0529	U
1,2,3,4,7,8-HxCDD		1.05-1.43	0.0475	5.00	< 0.0475	U
1,2,3,6,7,8-HxCDD		1.05-1.43	0.0480	5.00	< 0.0480	U
1,2,3,7,8,9-HxCDD		1.05-1.43	0.0496	5.00	< 0.0496	U
1,2,3,4,6,7,8-HpCDF	0.76	0.88-1.20		5.00	0.146	JEMPC
1,2,3,4,7,8,9-HpCDF		0.88-1.20	0.0711	5.00	< 0.0711	U
1,2,3,4,6,7,8-HpCDD		0.88-1.20	0.0777	5.00	< 0.0777	U
OCDF		0.76-1.02	0.115	10.0	< 0.115	U
OCDD	0.88	0.76-1.02		10.0	0.556	J

Homologue Group	EDL	RL	W/O EMPC	WITH EMPC	
Total TCDF	0.0195	1.00	< 0.195		U
Total TCDD	0.0432	1.00	< 0.432		U
Total PeCDF	0.0363	5.00	< 0.363		U
Total PeCDD	0.0400	5.00	< 0.400		U
Total HxCDF	0.0529	5.00	< 0.529		U
Total HxCDD	0.0496	5.00	< 0.496		U
Total HpCDF		5.00	< 0.711	0.146	U
Total HpCDD	0.0777	5.00	< 0.777		U

Reported in pg/g

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Dioxins/Furans by SW8290 **Sample ID: MB-033011**

Lab Sample ID: MB-033011
LIMS ID: 11-6769
Matrix: Soil
Data Release Authorized: VJ3
Reported: 04/19/11

QC Report No: SO94-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 15:57
Instrument/Analyst: AS1/PK

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 20 uL
Dilution Factor: 1.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits
13C-2,3,7,8-TCDF	0.79	0.65-0.89	89.1	40-135
13C-2,3,7,8-TCDD	0.78	0.65-0.89	81.4	40-135
13C-1,2,3,7,8-PeCDF	1.54	1.32-1.78	84.5	40-135
13C-2,3,4,7,8-PeCDF	1.58	1.32-1.78	75.9	40-135
13C-1,2,3,7,8-PeCDD	1.54	1.32-1.78	80.4	40-135
13C-1,2,3,4,7,8-HxCDF	0.52	0.43-0.59	87.6	40-135
13C-1,2,3,6,7,8-HxCDF	0.51	0.43-0.59	94.1	40-135
13C-2,3,4,6,7,8-HxCDF	0.52	0.43-0.59	85.7	40-135
13C-1,2,3,7,8,9-HxCDF	0.52	0.43-0.59	73.0	40-135
13C-1,2,3,4,7,8-HxCDD	1.27	1.05-1.43	89.2	40-135
13C-1,2,3,6,7,8-HxCDD	1.26	1.05-1.43	90.5	40-135
13C-1,2,3,4,6,7,8-HpCDF	0.45	0.37-0.51	73.4	40-135
13C-1,2,3,4,7,8,9-HpCDF	0.44	0.37-0.51	66.7	40-135
13C-1,2,3,4,6,7,8-HpCDD	1.04	0.88-1.20	79.2	40-135
13C-OCDD	0.89	0.76-1.02	66.4	40-135
37Cl4-2,3,7,8-TCDD			87.5	35-197

Reported in Percent Recovery

5DFA - FORM V-HR CDD-1
CDD/CDF WINDOW DEFINING MIX (WDM) SUMMARY
HIGH RESOLUTION

Sample No.: CS3

Lab Name: ANALYTICAL RESOURCES, INC. Contract: LANDAU

Lab Code: SO94 Case No.: PORT OF OLYMPIA TO No.: SDG No.:

GC Column: RTX-Dioxin2 ID: 0.25 (mm) Lab File ID: 11041503

Instrument ID: AUTOSPEC1 Date Analyzed: 15-APR-11

Time Analyzed: 1356

CDD/CDF	RT First Eluting	RT Last Eluting
TCDD	24.49	27.96
TCDF	23.22	28.23
PeCDD	29.73	32.86
PeCDF	28.06	33.26
HxCDD	34.95	37.64
HxCDF	34.15	38.07
HpCDD	40.75	42.06
HpCDF	40.18	42.99

5DFB - FORM V-HR CDD-2
CDD/CDF CHROMATOGRAPHIC RESOLUTION SUMMARY
HIGH RESOLUTION

Sample No.: CS3

Lab Name: ANALYTICAL RESOURCES, INC. Contract: LANDAU

Lab Code: SO94 Case No.: PORT OF OLYMPIA TO No.: SDG No.:

GC Column: RTX-DIOXIN2 ID: 0.25 (mm) Lab File ID: 11041503

Instrument ID: Autospec1 Date Analyzed: 15-APR-11

Time Analyzed: 1356

Percent Valley determination for DB-5 (or equivalent) column -
For the column performance solution beginning 12-hour period:

1238-TCDD/2378-TCDD: 0

Quality Control (QC) Limits:

Percent Valley between the TCDD isomers must be less than or equal to 25%

Percent Valley determination for DB-225 (or equivalent) column -
For the column performance solution beginning 12-hour period:

2347-TCDF/2378-TCDF: 21.7

QC Limits:

Percent Valley between the TCDD/TCDF isomers must be less than or equal to 25%

5DFB - FORM V-HR CDD-3
CDD/CDF ANALTYICAL SEQUENCE SUMMARY
HIGH RESOLUTION

Lab Name: ANALYTICAL RESOURCES, INC. Contract: LANDAU

Lab Code: SO94 Case No.: PORT OF OLYMPIA TO No.: SDG No.:

GC Column: RTX-DIOXIN2 ID: 0.25 (mm) Instrument ID: AUTOSPEC1

Init. Calib. Date(s): 25-JAN-11

Init: Calib. Times: 1106 1528

The Analytical Sequence of standards, samples, blanks, and Laboratory Control Samples (LCS) is as follows:

Client Sample No.	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
1756-1	TCDFS	11041502	04/15/11	1306
I5812	CS3	11041503	04/15/11	1356
SO94MB	SO94MB	11041505	04/15/11	1557
SO94OPR	SO94OPR	11041506	04/15/11	1648
CM-2(1-2)	SO94A	11041507	04/15/11	1739
CM-3(1-2)	SO94B	11041508	04/15/11	1830
I5812	CS3	11041510	04/15/11	2013

USEPA
6DFA - Form VI-HR CDD-1
CDD/CDF INITIAL CALIBRATION RESPONSE FACTOR SUMMARY
HIGH RESOLUTION

Lab Name: ARI Contract: LANDAU
Lab Code: SO94 Case No.: PORT OF OLYMPIA
GC Column: RTX-DIOXIN2 ID (mm): .25
Instrument ID: AUTOSPEC1

Init.Calib.Date CSL:	25-Jan-11	Init.Calib.Time CSL:	11:06:22
Init.Calib.Date CS1:	25-Jan-11	Init.Calib.Time CS1:	11:59:43
Init.Calib.Date CS2:	25-Jan-11	Init.Calib.Time CS2:	12:49:56
Init.Calib.Date CS3:	25-Jan-11	Init.Calib.Time CS3:	13:41:11
Init.Calib.Date CS4:	25-Jan-11	Init.Calib.Time CS4:	14:38:21
Init.Calib.Date CS5:	25-Jan-11	Init.Calib.Time CS5:	15:28:39

Target Analyte RRF

	CSL	CS1	CS2	CS3	CS4	CS5	MeanRRF	%RSD	QC Limits
2378-TCDF	0.90	0.90	0.92	0.91	0.92	0.91	0.91	1.1	20.0
12378-PeCDF	0.95	0.94	0.91	0.94	0.95	0.96	0.94	1.9	20.0
23478-PeCDF	0.95	0.96	0.96	0.95	0.96	0.98	0.96	1.2	20.0
123478-HxCDF	1.11	1.11	1.09	1.12	1.13	1.13	1.12	1.4	20.0
234678-HxCDF	1.07	1.08	1.10	1.10	1.10	1.11	1.09	1.3	20.0
123678-HxCDF	1.11	1.09	1.10	1.08	1.09	1.09	1.09	0.8	20.0
123789-HxCDF	1.00	1.00	1.03	1.02	1.02	1.05	1.02	1.9	20.0
1234678-HpCDF	1.34	1.32	1.25	1.27	1.28	1.28	1.29	2.6	20.0
1234789-HpCDF	1.19	1.29	1.28	1.28	1.28	1.28	1.27	2.8	20.0
OCDF 1	1.10	1.15	1.18	1.20	1.23	1.27	1.19	5.0	20.0
2378-TCDD	1.09	1.07	1.05	1.03	1.03	1.06	1.06	2.0	20.0
12378-PeCDD	0.99	1.00	0.99	1.00	1.00	1.03	1.00	1.4	20.0
123478-HxCDD	1.03	0.99	0.99	0.98	1.02	1.00	1.00	1.6	20.0
123678-HxCDD	1.06	0.91	0.93	0.94	0.94	0.96	0.94	2.5	20.0
123789-HxCDD 2	0.98	0.94	0.94	0.96	0.96	0.99	0.96	2.1	20.0
1234678-HpCDD	1.06	1.05	1.03	1.05	1.05	1.04	1.05	1.0	20.0
OCDD	1.04	1.01	1.02	1.03	1.03	1.03	1.03	1.2	20.0

(1) The RRF is calculated based on the labeled analog of OCDD.
(2) The relative response factor (RRF) is calculated based on the labeled analogs of the other two HxCDDs.

Labeled Compound RRF

	CSL	CS1	CS2	CS3	CS4	CS5	MeanRRF	%RSD	QC Limits
13C-2378-TCDF	1.57	1.51	1.52	1.54	1.55	1.62	1.55	2.4	20.0
13C-12378-PeCDF	1.24	1.21	1.17	1.18	1.23	1.40	1.24	6.6	20.0
13C-23478-PeCDF	1.16	1.17	1.13	1.15	1.19	1.37	1.20	7.4	20.0
13C-123478-HxCDF	1.24	1.24	1.28	1.26	1.23	1.23	1.25	1.6	20.0
13C-123678-HxCDF	1.32	1.36	1.34	1.36	1.32	1.32	1.34	1.5	20.0
13C-234678-HxCDF	1.27	1.28	1.27	1.29	1.27	1.24	1.27	1.3	20.0
13C-123789-HxCDF	1.14	1.15	1.15	1.15	1.13	1.15	1.15	0.6	20.0
13C-1234678-HpCDF	1.06	1.05	1.11	1.07	1.05	1.07	1.07	1.9	20.0
13C-1234789-HpCDF	0.81	0.82	0.83	0.83	0.81	0.84	0.82	1.8	20.0
13C-2378-TCDD	0.98	0.97	0.95	0.95	0.99	1.04	0.98	3.4	20.0
13C-12378-PeCDD	0.75	0.74	0.72	0.73	0.76	0.85	0.76	6.4	20.0
13C-123478-HxCDD	0.97	0.98	1.00	0.98	0.98	0.98	0.98	1.0	20.0
13C-123678-HxCDD	1.03	1.02	1.04	1.04	1.02	1.01	1.03	1.2	20.0
13C-1234678-HpCDD	0.83	0.83	0.85	0.83	0.82	0.84	0.83	1.1	20.0
13C-OCDD	0.72	0.74	0.77	0.74	0.71	0.80	0.75	4.5	20.0

USEPA
6DFB - Form VI-HR CDD-2
CDD/CDF INITIAL CALIBRATION ION ABUNDANCE RATIO SUMMARY
HIGH RESOLUTION

Lab Name: ARI Contract: LANDAU
Lab Code: SO94 Case No.: PORT OF OLYMPIA
GC Column: RTX-DIOXIN2 ID (mm): .25
Instrument ID: AUTOSPEC1

Init.Calib.Date CSL: 25-Jan-11 Init.Calib.Time CSL: 11:06:22
Init.Calib.Date CS1: 25-Jan-11 Init.Calib.Time CS1: 11:59:43
Init.Calib.Date CS2: 25-Jan-11 Init.Calib.Time CS2: 12:49:56
Init.Calib.Date CS3: 25-Jan-11 Init.Calib.Time CS3: 13:41:11
Init.Calib.Date CS4: 25-Jan-11 Init.Calib.Time CS4: 14:38:21
Init.Calib.Date CS5: 25-Jan-11 Init.Calib.Time CS5: 15:28:39

Target Analytes	Selected Ions	Ion Abundance Ratio CSL	CS1	CS2	CS3	CS4	CS5	Flag	QC Limits #
2378-TCDF	304/306	0.66	0.80	0.77	0.75	0.75	0.75		0.65 - 0.89
12378-PeCDF	340/342	1.49	1.52	1.54	1.54	1.54	1.53		1.32 - 1.78
23478-PeCDF	340/342	1.60	1.48	1.49	1.53	1.52	1.51		1.32 - 1.78
123478-HxCDF	374/376	1.26	1.30	1.24	1.23	1.21	1.21		1.05 - 1.43
234678-HxCDF	374/376	1.17	1.22	1.18	1.20	1.21	1.21		1.05 - 1.43
123678-HxCDF	374/376	1.19	1.24	1.25	1.23	1.22	1.21		1.05 - 1.43
123789-HxCDF	374/376	1.30	1.21	1.25	1.21	1.21	1.21		1.05 - 1.43
1234678-HpCDF	408/410	1.05	0.99	1.02	1.02	1.02	1.01		0.89 - 1.21
1234789-HpCDF	408/410	0.99	0.97	1.01	1.03	1.02	1.02		0.89 - 1.21
OCDF	442/444	0.88	0.90	0.91	0.89	0.89	0.89		0.76 - 1.02
2378-TCDD	320/322	0.79	0.88	0.75	0.78	0.79	0.78		0.65 - 0.89
12378-PeCDD	356/358	1.58	1.52	1.57	1.57	1.55	1.56		1.32 - 1.78
123478-HxCDD	390/392	1.39	1.25	1.21	1.26	1.29	1.25		1.05 - 1.43
123678-HxCDD	390/392	1.18	1.28	1.28	1.25	1.21	1.25		1.05 - 1.43
123789-HxCDD	390/392	1.20	1.19	1.21	1.24	1.24	1.24		1.05 - 1.43
1234678-HpCDD	424/426	0.98	1.06	1.06	1.04	1.06	1.05		0.89 - 1.21
OCDD	458/460	0.83	0.88	0.88	0.88	0.89	0.89		0.76 - 1.02

Labeled Compound	Selected Ions	Ion Abundance Ratio CSL	CS1	CS2	CS3	CS4	CS5	Flag	QC Limits #
13C-2378-TCDF	316/318	0.78	0.78	0.78	0.79	0.79	0.79		0.65 - 0.89
13C-12378-PeCDF	352/354	1.61	1.58	1.57	1.58	1.57	1.59		1.32 - 1.78
13C-23478-PeCDF	352/354	1.57	1.58	1.57	1.56	1.59	1.57		1.32 - 1.78
13C-123478-HxCDF	384/386	0.52	0.52	0.52	0.52	0.52	0.52		0.43 - 0.59
13C-123678-HxCDF	384/386	0.54	0.51	0.53	0.53	0.52	0.52		0.43 - 0.59
13C-234678-HxCDF	384/386	0.53	0.53	0.53	0.53	0.53	0.53		0.43 - 0.59
13C-123789-HxCDF	384/386	0.53	0.53	0.52	0.54	0.52	0.53		0.43 - 0.59
13C-1234678-HpCDF	418/420	0.44	0.45	0.45	0.45	0.46	0.45		0.37 - 0.51
13C-1234789-HpCDF	418/420	0.44	0.45	0.46	0.45	0.46	0.46		0.37 - 0.51
13C-2378-TCDD	332/334	0.78	0.78	0.79	0.79	0.79	0.78		0.65 - 0.89
13C-12378-PeCDD	368/370	1.57	1.59	1.58	1.56	1.57	1.58		1.32 - 1.78
13C-123478-HxCDD	402/404	1.25	1.27	1.26	1.27	1.27	1.27		1.05 - 1.43
13C-123678-HxCDD	402/404	1.25	1.26	1.25	1.24	1.25	1.25		1.05 - 1.43
13C-1234678-HpCDD	436/438	1.03	1.02	1.05	1.04	1.08	1.06		0.89 - 1.21
13C-OCDD	470/472	0.90	0.91	0.90	0.90	0.90	0.90		0.76 - 1.02

Internal Standard	Selected Ions	Ion Abundance Ratio CSL	CS1	CS2	CS3	CS4	CS5	Flag	QC Limits #
13C-1234-TCDD	332/334	0.79	0.79	0.79	0.79	0.79	0.79		0.65 - 0.89
13C-123789-HxCDD	402/404	1.24	1.25	1.25	1.25	1.25	1.25		1.05 - 1.43

(#) Quality Control (QC) limits represent ±15% window around the theoretical ion abundance ratio. The laboratory must flag any analyte in any calibration solution which does not meet the ion abundance ratio QC limit by placing an asterisk in the flag column.

USEPA
7DFA - Form VII-HR CDD-1
CDD/CDF CONTINUING CALIBRATION SUMMARY
HIGH RESOLUTION

Lab Name:	ARI	Contract:	LANDAU
Lab Code:	SO94	Case No.:	PORT OF TACOMA
TO No.:		SDG No.:	
GC Column:	RTX-DIOXIN2	ID (mm):	.25
Instrument ID:	AUTOSPEC1	Lab File ID:	11041503
Date Analysed	15-Apr-11	Time Analysed	13:56:45
Init.Calib.Date:	25-JAN-11	Init.Calib.Time:	

Target Analytes	Selected Ions	RRF	Mean RRF	%D	%D Flag#	Ion Ratio	Ratio Flag#	Ratio QC Limits
2378-TCDD	320/322	1.05	1.06	-0.7		0.79		0.65 - 0.89
2378-TCDF	304/306	0.94	0.91	3.2		0.78		0.65 - 0.89
12378-PeCDF	340/342	0.97	0.94	3.5		1.55		1.32 - 1.78
12378-PeCDD	356/358	1.01	1.00	1.0		1.53		1.32 - 1.78
23478-PeCDF	340/342	0.99	0.96	2.7		1.54		1.32 - 1.78
123478-HxCDF	374/376	1.12	1.12	0.0		1.22		1.05 - 1.43
123678-HxCDF	374/376	1.11	1.09	1.6		1.25		1.05 - 1.43
123478-HxCDD	390/392	1.01	1.00	1.2		1.25		1.05 - 1.43
123678-HxCDD	390/392	1.00	0.94	6.4		1.25		1.05 - 1.43
123789-HxCDD	390/392	0.98	0.96	2.0		1.25		1.05 - 1.43
234678-HxCDF	374/376	1.12	1.09	2.4		1.23		1.05 - 1.43
123789-HxCDF	374/376	1.05	1.02	2.8		1.24		1.05 - 1.43
1234678-HpCDF	408/410	1.29	1.29	0.1		1.04		0.89 - 1.21
1234678-HpCDD	424/426	1.07	1.05	1.9		1.07		0.89 - 1.21
1234789-HpCDF	408/410	1.27	1.27	0.1		1.02		0.89 - 1.21
OCDD	458/460	1.04	1.03	1.7		0.89		0.76 - 1.02
OCDF	442/444	1.25	1.19	4.8		0.90		0.76 - 1.02

Labeled Compounds	Selected Ions	RRF	Mean RRF	%D	%D Flag#	Ion Ratio	Ratio Flag#	Ratio QC Limits
13C-2378-TCDD	332/334	0.99	0.98	1.3		0.78		0.65 - 0.89
13C-12378-PeCDD	368/370	0.79	0.76	4.8		1.59		1.32 - 1.78
13C-123478-HxCDD	402/404	1.00	0.98	1.5		1.27		1.05 - 1.43
13C-123678-HxCDD	402/404	1.04	1.03	1.4		1.24		1.05 - 1.43
13C-1234678-HpCDD	436/438	0.81	0.83	-3.0		1.06		0.89 - 1.21
13C-OCDD	470/472	0.69	0.75	-7.3		0.90		0.76 - 1.02
13C-2378-TCDF	316/318	1.61	1.55	3.6		0.79		0.65 - 0.89
13C-12378-PeCDF	352/354	1.30	1.24	5.3		1.57		1.32 - 1.78
13C-23478-PeCDF	352/354	1.28	1.20	6.9		1.58		1.32 - 1.78
13C-123478-HxCDF	384/386	1.32	1.25	5.3		0.53		0.43 - 0.59
13C-123678-HxCDF	384/386	1.39	1.33	4.1		0.53		0.43 - 0.59
13C-234678-HxCDF	384/386	1.32	1.27	4.1		0.53		0.43 - 0.59
13C-123789-HxCDF	384/386	1.17	1.15	2.0		0.53		0.43 - 0.59
13C-1234678-HpCDF	418/420	1.08	1.07	0.8		0.45		0.37 - 0.51
13C-1234789-HpCDF	418/420	0.83	0.82	0.8		0.45		0.37 - 0.51

Clean-up	Selected Ions	RRF	Mean RRF	%D	%D Flag#	Ion Ratio	Ratio Flag#	Ratio QC Limits

Internal Standards	Selected Ions	RRF	Mean RRF	%D	%D Flag#	Ion Ratio	Ion Ratio Flag#	Ion Ratio QC Limits
13C-1234-TCDD	332/334	NA	NA	NA	NA	0.80		0.65 - 0.89
13C-123789-HxCDD	402/404	NA	NA	NA	NA	1.24		1.05 - 1.43

(#) The laboratory must flag any analyte which does not meet the criteria for Percentage Difference (%D) or ion abundance ratio by placing an asterisk in the appropriate

USEPA
7DFB - Form VII-HR CDD-2
CDD/CDF CONTINUING CALIBRATION RETENTION TIME SUMMARY
HIGH RESOLUTION

Lab Name:	ARI	Contract:	LANDAU
Lab Code:	SO94	Case No.:	PORT OF TACOMA
TO No.:		SDG No.:	
GC Column:	RTX-DIOXIN2	ID (mm):	.25
Instrument ID:	AUTOSPEC1	Lab File ID:	11041503
Date Analysed	15-Apr-11	Time Analysed	13:56:45
Init.Calib.Date:	25-JAN-11	Init.Calib.Time:	

Target Analytes	RRT#	RT
2378-TCDD	1.00	27.36
2378-TCDF	1.00	26.72
12378-PeCDF	1.00	30.87
12378-PeCDD	1.00	32.46
23478-PeCDF	1.00	32.21
123478-HxCDF	1.00	35.88
123678-HxCDF	1.00	36.03
123478-HxCDD	1.00	37.11
123678-HxCDD	1.00	37.23
123789-HxCDD	1.01	37.64
234678-HxCDF	1.00	36.97
123789-HxCDF	1.00	38.07
1234678-HpCDF	1.00	40.19
1234678-HpCDD	1.00	42.06
1234789-HpCDF	1.00	42.99
OCDD	1.00	48.21
OCDF	1.01	48.52

Labeled Compounds	RRT#	RT
13C-2378-TCDD	1.03	27.35
13C-12378-PeCDD	1.22	32.45
13C-123478-HxCDD	0.99	37.08
13C-123678-HxCDD	0.99	37.22
13C-1234678-HpCDD	1.12	42.04
13C-OCDD	1.28	48.19
13C-2378-TCDF	1.01	26.70
13C-12378-PeCDF	1.16	30.86
13C-23478-PeCDF	1.21	32.20
13C-123478-HxCDF	0.95	35.87
13C-123678-HxCDF	0.96	36.01
13C-234678-HxCDF	0.98	36.95
13C-123789-HxCDF	1.01	38.05
13C-1234678-HpCDF	1.07	40.16
13C-1234789-HpCDF	1.14	42.97

Clean up Standard	RRT#	RT

Internal Standards	RRT#	RT
13C-1234-TCDD	0.00	26.53
13C-123789-HxCDD	0.00	37.62

(#) RRT = (RT of Analyte)/(RT of appropriate labeled compound).

USEPA
7DFA - Form VII-HR CDD-1
CDD/CDF CONTINUING CALIBRATION SUMMARY
HIGH RESOLUTION

Lab Name:	ARI	Contract:	LANDAU
Lab Code:	SO94	Case No.:	PORT OF OLYMPIA
TO No.:		SDG No.:	
GC Column:	RTX-DIOXIN2	ID (mm):	.25
Instrument ID:	AUTOSPEC1	Lab File ID:	11041510
Date Analysed	15-Apr-11	Time Analysed	20:13:18
Init.Calib.Date:	25-JAN-11	Init.Calib.Time:	

Target Analytes	Selected Ions	RRF	Mean RRF	%D	%D Flag#	Ion Ratio	Ratio Flag#	Ratio QC Limits
2378-TCDD	320/322	1.04	1.06	-1.4		0.77		0.65 - 0.89
2378-TCDF	304/306	0.95	0.91	3.9		0.78		0.65 - 0.89
12378-PeCDF	340/342	0.98	0.94	4.2		1.56		1.32 - 1.78
12378-PeCDD	356/358	1.02	1.00	1.6		1.58		1.32 - 1.78
23478-PeCDF	340/342	0.99	0.96	3.6		1.57		1.32 - 1.78
123478-HxCDF	374/376	1.15	1.12	2.7		1.24		1.05 - 1.43
123678-HxCDF	374/376	1.11	1.09	2.0		1.23		1.05 - 1.43
123478-HxCDD	390/392	1.05	1.00	4.9		1.25		1.05 - 1.43
123678-HxCDD	390/392	0.97	0.94	3.2		1.22		1.05 - 1.43
123789-HxCDD	390/392	0.99	0.96	3.5		1.25		1.05 - 1.43
234678-HxCDF	374/376	1.10	1.09	0.5		1.24		1.05 - 1.43
123789-HxCDF	374/376	1.06	1.02	4.1		1.24		1.05 - 1.43
1234678-HpCDF	408/410	1.32	1.29	2.3		1.04		0.89 - 1.21
1234678-HpCDD	424/426	1.07	1.05	2.0		1.04		0.89 - 1.21
1234789-HpCDF	408/410	1.30	1.27	2.7		1.00		0.89 - 1.21
OCDD	458/460	1.05	1.03	2.2		0.88		0.76 - 1.02
OCDF	442/444	1.26	1.19	6.1		0.92		0.76 - 1.02

Labeled Compounds	Selected Ions	RRF	Mean RRF	%D	%D Flag#	Ion Ratio	Ratio Flag#	Ratio QC Limits
13C-2378-TCDD	332/334	0.99	0.98	1.0		0.78		0.65 - 0.89
13C-12378-PeCDD	368/370	0.81	0.76	7.3		1.58		1.32 - 1.78
13C-123478-HxCDD	402/404	0.98	0.98	-0.5		1.28		1.05 - 1.43
13C-123678-HxCDD	402/404	1.03	1.03	0.8		1.26		1.05 - 1.43
13C-1234678-HpCDD	436/438	0.83	0.83	-0.2		1.05		0.89 - 1.21
13C-OCDD	470/472	0.70	0.75	-6.2		0.90		0.76 - 1.02
13C-2378-TCDF	316/318	1.58	1.55	1.7		0.79		0.65 - 0.89
13C-12378-PeCDF	352/354	1.34	1.24	7.9		1.57		1.32 - 1.78
13C-23478-PeCDF	352/354	1.31	1.20	9.3		1.57		1.32 - 1.78
13C-123478-HxCDF	384/386	1.27	1.25	1.4		0.52		0.43 - 0.59
13C-123678-HxCDF	384/386	1.36	1.33	1.7		0.53		0.43 - 0.59
13C-234678-HxCDF	384/386	1.32	1.27	4.3		0.53		0.43 - 0.59
13C-123789-HxCDF	384/386	1.16	1.15	0.9		0.52		0.43 - 0.59
13C-1234678-HpCDF	418/420	1.16	1.07	8.5		0.45		0.37 - 0.51
13C-1234789-HpCDF	418/420	0.82	0.82	-0.2		0.46		0.37 - 0.51

Clean-up	Selected Ions	RRF	Mean RRF	%D	%D Flag#	Ion Ratio	Ratio Flag#	Ratio QC Limits

Internal Standards	Selected Ions	RRF	Mean RRF	%D	%D Flag#	Ion Ratio	Ion Ratio Flag#	Ion Ratio QC Limits
13C-1234-TCDD	332/334	NA	NA	NA	NA	0.78		0.65 - 0.89
13C-123789-HxCDD	402/404	NA	NA	NA	NA	1.25		1.05 - 1.43

(#) The laboratory must flag any analyte which does not meet the criteria for Percentage Difference (%D) or ion abundance ratio by placing an asterisk in the appropriate

USEPA
7DFB - Form VII-HR CDD-2
CDD/CDF CONTINUING CALIBRATION RETENTION TIME SUMMARY
HIGH RESOLUTION

Lab Name:	ARI	Contract:	LANDAU
Lab Code:	SO94	Case No.:	PORT OF OLYMPIA
TO No.:		SDG No.:	
GC Column:	RTX-DIOXIN2	ID (mm):	.25
Instrument ID:	AUTOSPEC1	Lab File ID:	11041510
Date Analysed	15-Apr-11	Time Analysed	20:13:18
Init.Calib.Date:	25-JAN-11	Init.Calib.Time:	

Target Analytes	RRT#	RT
2378-TCDD	1.00	27.36
2378-TCDF	1.00	26.72
12378-PeCDF	1.00	30.87
12378-PeCDD	1.00	32.46
23478-PeCDF	1.00	32.21
123478-HxCDF	1.00	35.88
123678-HxCDF	1.00	36.03
123478-HxCDD	1.00	37.10
123678-HxCDD	1.00	37.23
123789-HxCDD	1.01	37.63
234678-HxCDF	1.00	36.97
123789-HxCDF	1.00	38.07
1234678-HpCDF	1.00	40.18
1234678-HpCDD	1.00	42.05
1234789-HpCDF	1.00	42.99
OCDD	1.00	48.21
OCDF	1.01	48.51

Labeled Compounds	RRT#	RT
13C-2378-TCDD	1.03	27.33
13C-12378-PeCDD	1.22	32.44
13C-123478-HxCDD	0.99	37.08
13C-123678-HxCDD	0.99	37.20
13C-1234678-HpCDD	1.12	42.04
13C-OCDD	1.28	48.19
13C-2378-TCDF	1.01	26.70
13C-12378-PeCDF	1.16	30.85
13C-23478-PeCDF	1.21	32.20
13C-123478-HxCDF	0.95	35.87
13C-123678-HxCDF	0.96	36.01
13C-234678-HxCDF	0.98	36.95
13C-123789-HxCDF	1.01	38.05
13C-1234678-HpCDF	1.07	40.16
13C-1234789-HpCDF	1.14	42.97

Clean up Standard	RRT#	RT

Internal Standards	RRT#	RT
13C-1234-TCDD	0.00	26.53
13C-123789-HxCDD	0.00	37.62

(#) RRT = (RT of Analyte)/(RT of appropriate labeled compound).

Total Solids

ARI Job ID: SO94

Extractions Total Solids-extts
Data By: Tarry Hawk
Created: 3/28/11

Worklist: 9123
Analyst: RVR
Comments:

Oven ID:_____

Balance ID:_____

Samples In: Date:_____ Time:_____ Temp:_____ Analyst:_____

Samples Out: Date:_____ Time:_____ Temp:_____ Analyst:_____

	ARI ID CLIENT ID	Tare Wt (g)	Wet Wt (g)	Dry Wt (g)	% Solids	pH
1.	SO94A 11-6769 CM-2(1-2)	1.16	10.62	8.53	77.9	NR
2.	SO94B 11-6770 CM-3(1-2)	1.17	10.81	9.96	91.2	NR

Extractions Total Solids-extts
Data By: Tarry Hawk
Created: 3/28/11

Worklist: 9123
Analyst: TH
Comments:

Oven ID: 015

Balance ID: 24150347

Samples In: Date: 3/28/11 Time: 16:25 Temp: 103 Analyst: TH

Samples Out: Date 3/29/11 Time: 06:35 Temp: 103° Analyst: RR

	ARI ID / CLIENT ID	Tare Wt (g)	Wet Wt (g)	Dry Wt (g)	% Solids	pH
1.	SO94A 11-6769 CM-2(1-2)	1.16	10.62	8.53		NR
2.	SO94B 11-6770 CM-3(1-2)	1.17	10.81	9.96		NR

ATTACHMENT 2

As-Built Drawing

NAD83

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

NOTE:
THE IMPROVEMENTS SHOWN HEREON REFLECT THE FIELD CONDITIONS ON DECEMBER 13, 2010.

BUDD INLET

EXCAVATION ELEVATIONS:
CM-8 SAMPLE ELEVATION = 11.93 TO 10.93, EXCAVATION FLOOR = 11.93
CM-9 SAMPLE ELEVATION = 11.68 TO 10.58, EXCAVATION FLOOR = 11.68
CM-11 SAMPLE ELEVATIONS = 12.18 TO 11.12, EXCAVATION FLOOR = 12.18

CATCH BASIN
RIM=19.79
IE=15.04 12" PVC(E)
IE=14.99 12" PVC(S)

MONITORING WELL
IN CONCRETE PAD

1" DIAMETER
PVC PIPES
(TYP.)

ROCKERY
(TYP.)

CONCRETE
(TYP.)

CURB LINE
(TYP.)

CONCRETE PAD
WITH PICNIC TABLE

GATE

ECOLOGY
BLOCK WALL

2" DIAMETER
METAL POST
(TYP.)

WOODEN
POSTS

CM-1 SOIL LOG
08/09/10

CM-2 SOIL LOG
08/09/10

CM-3 SOIL LOG
08/09/10

CM-4 SOIL LOG
08/09/10

CM-5 SOIL LOG
08/09/10

CM-6 SOIL LOG
08/09/10

CM-7 SOIL LOG
08/09/10

CM-8 SOIL LOG
09/09/10

CM-8 SOIL LOG
08/09/10

CM-8 EXCAVATION
LIMITS 08/09/10

CM-8 EXCAVATION
LIMITS 09/09/10

CM-9 SOIL LOG
08/09/10

CM-9 SOIL LOG
09/09/10

CM-10 SOIL LOG
08/09/10

CM-11 EXCAVATION
LIMITS 08/16/10

CM-9 & 11 EXCAVATION
LIMITS 09/09/10

CM-11 SOIL LOG
08/09/10

CM-11 SOIL LOG
09/09/10

CATCH BASIN
RIM=25.19
IE=22.64 8" D.I.(W)

CATCH BASIN
(SOLID LID)
RIM=26.41
IE=21.71 8" D.I.(E)
IE=21.66 8" D.I.(S)

CONCRETE
STAIRS

BOLLARD
(TYP.)

PAD MOUNTED
TRANSFORMER

UTILITY
VAULTS

WOODEN POST WITH
ELECTRICAL EQUIPMENT

UTILITY VAULT
"LIGHT"

PLASTIC UTILITY VAULT
"RECLAIMED WATER"

IRRIGATION
CONTROL
VALVE (TYP.)

UTILITY VAULT
"WATER METER"

YARD DRAIN
(3.3' ABOVE GRADE)
FUTURE RIM=23.5±

UTILITY VAULT
"LT"

STORMWATER PUMP CHAMBER
RIM=22.68
IE=13.38 18" PVC(NW)

STORM MANHOLE
RIM=22.90
IE=17.70 8" PVC(SE)
IE=13.83 12" PVC(NE)
IE=13.77 18"PVC(S)

UTILITY
VAULT

CONCRETE

CONCRETE VAULT
(LINEAR STORM FILTER)
RIM=26.53
IE=21.45 8" D.I.(N)
IE=19.11 8" D.I.(S)

STORM FILTER
CATCH BASIN
RIM=21.52
IE=19.20 8" D.I.(W)

CATCH BASIN
RIM=21.04
IE=19.22 8" D.I.(N)

UTILITY
VAULT

GRAVEL

H-FRAME WITH
2 POWER METERS

UNDERGROUND SLURRY CUTOFF WALL

DIRT

ASPHALT

SWALE

STRAIS

VALLEY

SITE DETAIL

LEGEND

- SUBJECT BOUNDARY LINE
- RIGHT-OF-WAY CENTERLINE
- RIGHT-OF-WAY LINE
- ADJACENT BOUNDARY LINE
- SECTIONAL BREAKDOWN LINE
- DP — OVERHEAD POWER LINE
- UP — BURIED POWER LINE
- G — BURIED GAS LINE
- OT — OVERHEAD TELEPHONE LINE
- UT — BURIED TELEPHONE LINE
- W — BURIED WATER LINE
- SS — BURIED SANITARY SEWER
- SD — BURIED STORM DRAIN
- DITCH LINE/FLOW LINE
- ROCK RETAINING WALL
- VEGETATION LINE
- CHAIN LINK FENCE
- WOOD FENCE
- PERIMETER CABLE FENCE

- TRANSFORMER
- LIGHT STANDARD
- POWER VAULT
- UTILITY BOX
- UTILITY POLE
- POLE GUY WIRE
- GAS VALVE
- GAS METER
- TELEPHONE VAULT
- TELEPHONE RISER
- FIRE HYDRANT
- GATE VALVE
- WATER METER
- FIRE STAND PIPE
- CATCH BASIN, TYPE I
- CATCH BASIN, TYPE II
- SIGN
- BOLLARD
- MAIL BOX
- 234.21 SPOT ELEVATION

NOTE:
1) ALL ELEVATIONS SHOWN ARE ABOVE MEAN SEA LEVEL (AMSL) AND ARE REFERENCED TO THE PROJECT DATUM.
2) PRE-EXISTING IMPROVEMENTS SHOWN HEREON SHADED BACK ARE PER DESIGN PLANS PREPARED BY HATTON GODAT PANTIER, INC., DATED MAY, 2010, AND ARE FOR INFORMATION PURPOSES ONLY. THEY WERE NOT RE-OBSERVED AT THE TIME OF THIS SURVEY.

CP-99

BENCHMARK IS "CP99"
CALLED OUT ON DESIGN PLANS
PREPARED BY HATTON GODAT
PANTIER, INC., DATED MAY, 2010
ELEV = 22.09'

SURVEY REFERENCE

THIS POST CONSTRUCTION EXHIBIT IS BASED ON FIELD TIES TO CONTROL BASE POINTS 111-113 ON THE FACE OF DESIGN PLANS PREPARED BY HATTON GODAT PANTIER, INC., DATED MAY, 2010.

BOUNDARY DISCLAIMER

THIS PLAN DOES NOT REPRESENT A BOUNDARY SURVEY. SUBJECT AND ADJACENT PROPERTY LINES ARE DEPICTED USING FIELD-FOUND EVIDENCE AND RECORD INFORMATION.

CAUTION!

UNDERGROUND UTILITIES EXIST IN THE AREA AND UTILITY INFORMATION SHOWN MAY BE INCOMPLETE. STATE LAW REQUIRES THAT CONTRACTOR CONTACT THE ONE-CALL UTILITY LOCATE SERVICE AT LEAST 48 HOURS BEFORE STARTING ANY CONSTRUCTION.

1-800-424-5555

DUNCANSON
Company, Inc.
145 SW 155th Street, Suite 102
Seattle, Washington 98166
Phone 206.244.4141
Fax 206.244.4455

P.I. RESOURCES, LLC
2008 238TH STREET SE
BOTHELL, WA 98021

REVISIONS

NO.	DATE	DESCRIPTION	BY

CASCADE POLE SITE
PHASE III CAPPING

POST-CONSTRUCTION EXHIBIT

FLD. CREW:	KB/JW
FLD. BOOK:	68/246
DRAWN BY:	MAC
JOB #:	10543
DATE:	01/10/11

REGISTERED PROFESSIONAL LAND SURVEYOR
STATE OF WASHINGTON
41277
JANUARY 10, 2011

SV1

1 OF 1