

# **BP West Coast Products, LLC**

# CONSTRUCTION PLANS AND SPECIFICATIONS SUMMARY REPORT

Former ARCO Olympia Bulk Terminal Industrial Petroleum Distributors Site 1120 West Bay Drive Olympia, Washington 98502 Agreed Order DE 10470

F/S ID: 1436

Cleanup Site ID: 4240

October 3, 2016

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ii

# **CONTENTS**

Ac	ronyms	and A	bbreviations	V
1	Introd	uction		1
2	Pre-E	xcavat	on Soil Sampling Activities	1
	2.1	Soil S	ampling Locations	1
		2.1.1	Sample Logging and Field Screening	1
		2.1.2	Sample Collection	2
		2.1.3	Field Quality Control	2
	2.2	Devia	tions During Soil Sampling Activities	2
3	Pre-E	xcavat	on Sampling Results	3
	3.1	Soil C	leanup Levels	3
	3.2	Data \	/alidation	4
	Holo	ling Tin	nes	4
	Blar	k Cont	amination	5
	Surr	ogates	/System Monitoring Compounds	5
	MS/	MSD A	nalysis	5
	Lab	oratory	Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis	5
	Field	d Duplie	cate Analysis	5
	Sysi	tem Pe	rformance and Overall Assessment	5
	3.3	Soil A	nalytical Results	6
		3.3.1	Total Petroleum Hydrocarbons	6
		3.3.2	Carcinogenic Polycyclic Aromatic Hydrocarbons	7
		3.3.3	Total Naphthalenes	7
		3.3.4	Results Summary	8
	3.4	Pre-E	xcavation Groundwater Monitoring Report	8
4	Cons	truction	Plans and Specifications	9
	4.1	Prelim	ninary Excavation Plan	9
		4.1.1	Well Abandonment	9
		4.1.2	Temporary Erosion and Sedimentation Control	9
		4.1.3	Excavation Area	9

# CONSTRUCTION PLANS AND SPECIFICATIONS SUMMARY REPORT

		4.1.4	Existing Pip	ing Abandonment And Debris Handling	9
		4.1.5	Soil Handlin	ng1	0
		4.1.6	Fill Material	Specifications1	0
		4.1.7	Monitoring \	Well Installation1	1
	4.2	Waste	e Characteriz	ation and Disposal1	1
	4.3	Permi	tting Require	ments1	1
5	Refer	ences.		1	3
T.	ABL	ES			
			Table 1	Pre-Excavation Soil Analytical Results	
F	IGUI	RES			
			Figure 1	Site Map	
		1	Figure 2	Soil Sample Locations and Analytical Results – Shallow Interval Depth	
		1	Figure 3	Soil Sample Locations and Analytical Results – Middle Interval Depth	
		I	Figure 4	Soil Sample Locations and Analytical Results – Deep Interval Depth	
A	PPE	NDI	CES		
			Appendix A	Data Validation Reports	
			Appendix B	Laboratory Analytical Reports	
			Appendix C	TPH Chromatogram Assessment	
			Appendix D	Pre-Excavation Groundwater Monitoring Report	
			Appendix E	Construction Plans and Specifications	
			Appendix F	Traffic Control Plan	
			Annendiy G	Stormwater Pollution Prevention Plan	

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# **ACRONYMS AND ABBREVIATIONS**

AO Agreed Order

Arcadis ARCADIS U.S., Inc.

BaP benzo(a)pyrene

BMPs Best Management Practices

bgs below ground surface

CAP Cleanup Action Plan

Cascade Drilling, L.P.

cPAHs carcinogenic polycyclic aromatic hydrocarbons

cPAHs TEQ cPAHs adjusted for toxicity

CPS Construction Plans and Specifications

COC Constituent of concern

CULs cleanup levels

DRO diesel range organics

DU Decision Unit

Ecology Washington State Department of Ecology

eNOI Electronic Notice of Intent

GRO gasoline range organics

HO heavy oil range organics

IPD Industrial Petroleum Distributors

Lancaster Eurofins Lancaster Laboratories Environmental, LLC in Lancaster, Pennsylvania

LCS Laboratory Control Sample

LCSD Laboratory Control Sample Duplicate

MDL laboratory method detection limit

mg/kg milligram per kilogram

MS matrix spike

MSD matrix spike duplicate

MTCA Model Toxics Control Act

NOM natural organic material

Otak Otak, Inc.

PID photo ionization detector

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#### CONSTRUCTION PLANS AND SPECIFICATIONS SUMMARY REPORT

ppm part per million

QA Quality assurance

QC Quality control

RCW Revised Code of Washington

RPD relative percent difference

SEPA State Environmental Policy Act

site lowland portion of the former IPD Site located 1120 West Bay Drive in Olympia,

Washington

SVOCs Semi-Volatile Organic Hydrocarbons

SWPPP Stormwater Pollution Prevention Plan

TEF toxic equivalence factor

TEQ toxic equivalence quotient

TPH total petroleum hydrocarbons

ULS ULS Services Corporation

USEPA United States Environmental Protection Agency

VOCs Volatile Organic Hydrocarbons

WAC Washington Administrative Code

WP Work Plan

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# 1 INTRODUCTION

On behalf of BP West Coast Products, LLC, Arcadis U.S., Inc. (Arcadis) has prepared this draft Construction Plans and Specifications (CPS) for the lowland portion of the former Industrial Petroleum Distributors (IPD) Site located at 1120 West Bay Drive in Olympia, Washington (the "site"). A Site Location Map is presented on Figure 1.

The purpose of this CPS is to summarize the results of the completed remedial investigation and propose specifications of the cleanup action to address petroleum hydrocarbons in soil exceeding the Model Toxics Control Act (MTCA) Method A cleanup levels (CULs). This CPS is in accordance with the Washington State Department of Ecology (Ecology) Cleanup Action Plan (CAP; Ecology 2014) and Agreed Order (AO) No. DE 10470, effective October 24, 2014. All field activities were performed in accordance with Pre-Excavation Soil Sampling and Excavation Work Plan (WP; Arcadis 2015).

# 2 PRE-EXCAVATION SOIL SAMPLING ACTIVITIES

# 2.1 Soil Sampling Locations

Between August 17 and September 2, 2015, Arcadis oversaw the advancement of 71 boring locations at decision units (DU) surrounding previously identified areas of impacted soil within the Port of Olympia property boundary (GP-2, GP-5, GP-6, and MW-6R) and BNSF Right-of-Way (MW-11 and MW-12). Cascade Drilling, L.P. (Cascade) used a combination of direct-push, hollow stem auger, and air knife to advance to a maximum depth of 15 feet below ground surface (bgs). In addition, hand auger methodology was performed by Arcadis and Cascade to advance to shallow depths (6.5 feet bgs). Borings were advanced in all proposed DU locations.

Prior to drilling activities, sample locations where surveyed, staked, and marked with spray paint by Otak, Inc. (Otak) and a subsurface utility investigation was performed by ULS Services Corporation (ULS). Soil samples that were collected from shallow (0 to 5 feet bgs), medium (5 to 10 feet bgs) and deep (10 to 15 feet bgs) intervals are shown in Figures 2, 3 and 4, respectively.

Samples collected at the following intervals include:

- Shallow Interval Depth (0 to 5 feet bgs) 64 of 71 boring locations, excluding the DUs identified for excavation in the WP.
- Medium Interval Depth (5 to 10 feet bgs) 71 of 71 boring locations.
- Deep Interval Depth (10 to 15 feet bgs) 18 of 71 boring locations where field screening indicated the presence of hydrocarbons from 5 to 10 feet bgs.

#### 2.1.1 Sample Logging and Field Screening

Soil borings were cleared to 6.5 feet bgs using a hand auger or air knife. Each soil sample was characterized and observations of soil classification, moisture content, debris, sample recovery, and sample interval were recorded on a boring log. Each soil sample was also screened for Volatile Organic

Hydrocarbons (VOCs) using a photo ionization detector (PID). Elevated VOC readings, defined in the field as greater than or equal to 10 ppm within a soil sample, generally correlate with the presence of petroleum hydrocarbon impacts. Samples collected during soil screening between 5 and 10 feet bgs that exhibited elevated VOC readings where advanced to a depth of 15 feet bgs and an additional sample was collected between 10 to 15 feet bgs.

## 2.1.2 Sample Collection

153 soil samples were collected, placed on ice, and shipped to Eurofins Lancaster Laboratories Environmental, LLC in Lancaster, Pennsylvania (Lancaster) under chain-of custody protocols. Samples were analysed for:

- Total petroleum hydrocarbons (TPH) as gasoline range organics (GRO) by NWTPH-Gx
- TPH as diesel range organics (DRO) and heavy oil range organics (HO) by NWTPH-Dx with 2gram Silica gel cleanup (shake method).
- Carcinogenic polycyclic aromatic hydrocarbons (cPAHs) and total naphthalenes by United States Environmental Protection Agency (USEPA) Method 8270

# 2.1.3 Field Quality Control

Quality control (QC) samples were collected in accordance with the WP. The QC samples included blind field duplicates, trip blanks and sample spikes.

Blind field duplicates were collected at a rate of one for every 20 samples (9 total). Blind duplicates were labeled with a generic sample designation (DUP-1 to DUP-9) and were used to assess the precision of the laboratory results. Field duplicates were analyzed for the same parameters as the associated parent samples, and were used to measure the variability inherent in the sampling process. An additional duplicate (DUP-9) was created at the lab and was also analyzed.

Trip blanks were prepared and submitted at a rate of one per shipment (7 total). Trip blanks containing analyte-free water were produced by Lancaster and were shipped with the collected samples.

Matrix spike/matrix spike duplicates (MS/MSD) were generated by Lancaster at a rate greater than one for every 20 samples (9 total). For the samples designated as MS/MSD samples, approximately three times the standard sample volume was collected.

# 2.2 Deviations During Soil Sampling Activities

During sampling, adjustments to the WP were made when unanticipated circumstances were encountered. Adjustments in the field were made after collaboration and considerations from the project team and the regulator. Samples were collected within each of the designated DUs. However, borings at eight DUs could not be advanced at their centers due to the following obstructions:

 A large rock was encountered less than 5 feet bgs at AUS-SB43. The boring was offset approximately 2.8 feet to the southeast. Samples collected at this offset were relabeled AUS-SB43A.

- Trees blocked access to the center of AUS-SB25 and AUS-SB26. The borings were offset approximately 4 feet to the south.
- Abandoned underground piping was located at the center of AUS-SB23. The boring was offset approximately 4.2 feet to the northeast.
- On the northwest corner of the property, a large pile of rock filled dirt was encountered within the
  pre-excavation soil sampling area. To avoid disturbing the pile prior to excavation activities, AUSSB1, AUS-SB4 and AUS-SB5 boring locations were moved 4 feet to the east, 5.7 feet to the
  southeast, and 4 feet to the east, respectively, each within their DU.
- Samples were collected from 0 to 5 feet bgs and 5 to 10 feet bgs at the center of AUS-SB18.
  Refusal was encountered at approximately 7 to 9 feet bgs. PID field screening indicated the
  presence of elevated VOCs; therefore, another boring 3.5 feet to the northwest was advanced
  and sampled within the 10-15 feet bgs depth interval. The sample collected at this offset was
  relabeled AUS-SB18A.

During field activities, elevated PID readings were detected at AUS-SB52. Since this sample location is located along the perimeter of the original sampling horizontal extent, additional DUs (AUS-SB41-A, AUS-52-A and AUS-62-A) adjacent and to the northeast of AUS-SB52, were advanced to further delineate potential petroleum-related impacts. Subsequently, elevated PID readings were encountered at AUS-SB-41-A and six additional DUs (AUS-SB41-B, AUS-SB41-C, AUS-SB41-D, AUS-SB41-E, and AUS-SB52-B) were added to include the area surrounding this sample. PID readings in these surrounding samples did not exceed 40 ppm.

During sampling, a layer of organic debris primarily comprised of decaying wood was encountered in approximately 75 percent of soil borings between 3 to 15 feet bgs. Boring locations where woody debris was not observed were located along the western edge of the sample area, with woody debris present in borings extending towards the east. Due to the high organic material content of these samples and the likelihood for results to be biased high due to the presence of biogenic interference, DRO and HO were analyzed using silica gel cleanup with the approval of Ecology.

# 3 PRE-EXCAVATION SAMPLING RESULTS

# 3.1 Soil Cleanup Levels

Soil CULs for the site were established under AO No. DE 10470. Petroleum hydrocarbons and their constituents are the primary constituents of concern (COCs) related to historical site operations. Previous investigations indicate impacts are present in soil and groundwater at the site. MTCA Methods A CULs for Unrestricted Land Use are used for soil at the site and are listed below, according to MTCA Table 740-1.

#### MTCA Method A CULs for Soil

COC	CUL (mg/kg)
GRO	30/100 <sup>1</sup>
DRO	2,000
НО	2,000
cPAHs <sup>2</sup>	0.1
Total Naphthalenes <sup>3</sup>	5

#### Notes:

CULs from Ecology's MTCA Method A Soil CULs for Unrestricted Land Uses (Washington Administrative Code [WAC] 173-340-900, Table 740-1).

Soil CULs were based on estimates of the reasonable maximum exposure scenario expected to occur, given current and/or future use of the site. According to WAC-173-340-740(1)(a), "The department has determined that residential land use is generally the site use requiring the most protective cleanup levels and that exposure to hazardous substances under residential land use conditions represents the reasonable maximum exposure scenario." Therefore, CULs established under MTCA Method A are protective for the maximum exposure scenario for impacted soil, given current and/or future anticipated land use at the site.

#### 3.2 Data Validation

A data quality assessment was performed for all soil samples collected. The assessment was conducted as a Tier II evaluation and included the review for data package completeness and annotation of sample results sheets and chain of custody. Data validation reports for each sample set are included as Appendix A.

#### **Holding Times**

Two samples and one duplicate were analyzed outside of the specified holding time for semi-volatile organic hydrocarbons (SVOCs) and three samples and one duplicate were analyzed outside of the specified holding time for TPH. Samples results that were associated with analyses that exceeded the specified holding times were qualified as noted in the data validation reports. All other holding times were met.

<sup>&</sup>lt;sup>1</sup> Method A CULs for GRO are determined based on the presence of benzene. As presented in the Pre-excavation Soil Sampling and Excavation Work Plan (Arcadis 2014), benzene was not detected in soils at the site.

<sup>&</sup>lt;sup>2</sup> cPAHs adjusted for toxicity (cPAHs TEQ) according to WAC 173-340-708(8). CUL based on benzo(a)pyrene (BaP) equivalencies (WAC 173-340-900, Table 740-1) for the following constituents: benzo(a)anthracene, BaP, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene. If one or more adjusted cPAH constituents were reported as Non-Detect, half of the reporting limit was used in calculations.

<sup>&</sup>lt;sup>3</sup> Naphthalenes is a sum total of 1-methyl-naphthalene, 2-methyl-naphthalene, and naphthalene. If one or more Naphtalenes constituents were reported as Non-Detect, half of the reporting limit was used in calculations.

mg/kg = milligram per kilogram.

#### CONSTRUCTION PLANS AND SPECIFICATIONS SUMMARY REPORT

#### Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Compounds were not detected above the laboratory method detection limit (MDL) in any of the associated QA blanks; therefore detected samples results were not associated with blank contamination.

#### Surrogates/System Monitoring Compounds

All samples analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation in the lab to evaluate the performance and efficiency of the analytical technique. Surrogate recoveries for SVOC analysis were outside of the control limits for at least one surrogate compound in six samples and two duplicates. Additionally, six samples analyzed for SVOCs required dilution due to the high concentration of a target compound. Recoveries for at least one surrogate compound used for TPH analysis were outside of the control limits in 24 samples, three duplicates, and one MS/MSD.

#### MS/MSD Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. Recoveries for eight MS and nine MSD samples were outside the control limits for at least one of the analyzed SVOC compounds. Two MS/MSD samples exhibited a relative percent difference (RPD) for at least one SVOC compound that was greater than the control limit. Recoveries for eight MS and 10 MSD samples were outsides the control limits and four MS/MSD samples exhibited an RPD that was greater than the control for at least one TPH compound.

#### Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The LCS associated with eight samples and two duplicates had a recovery for one SVOC compound that was outside the control limits. Recoveries of LCS/LCSD analyses for TPH were within the control limits for all samples.

#### Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. The RPD for six of the duplicates compared to their respective parent samples was outside the control limits for at least one of the SVOC compounds that were analyzed. Four of the duplicates displayed an RPD that was outside the control limits for at least one of the TPH compounds that were analyzed.

#### System Performance and Overall Assessment

The laboratory noted that an SVOC internal standard (Perylene-d12) did not meet QC acceptance limits for nine samples and one duplicate. The results for the compounds associated with that standard were qualified as estimated for these locations.

Overall system performance was acceptable. Other than for those deviations summarized here and specifically mentioned in the data validation reports, the overall data quality is within the guidelines specified in the methods. The sample results presented in Table 1 are qualified as documented in the data validation reports to reflect the deviations outside the established quality control limits.

# 3.3 Soil Analytical Results

Soil analytical results are shown in Table 1 and on Figures 2, 3 and 4. Laboratory Analytical Reports are included as Appendix B.

# 3.3.1 Total Petroleum Hydrocarbons

#### Shallow Interval Depth (0-5 feet bgs)

GRO were detected at concentrations above the CUL in four samples, with concentrations ranging from 150 to 2,400 mg/kg. DRO and HO concentrations were not detected above their respective CULs in any samples from the shallow interval depth.

#### Medium Interval Depth (5-10 feet bgs)

GRO were detected at concentrations above the CUL in four samples, with concentrations ranging from 160 to 1,700 mg/kg. GRO concentrations were estimated above the CUL in seven samples, with GRO concentrations ranging from 110 to 870 mg/kg. The MDLs of three samples were above the CUL with MDLs ranging from 260 to 1,000 mg/kg.

DRO were detected at concentrations above the CUL in three samples, with concentrations ranging from 4,400 to 9,600 mg/kg. HO was detected at concentrations above the CUL in the same three samples and five additional samples, with concentrations ranging from 2,100 to 64,000 mg/kg. The duplicate of one sample (DUP-6) also contained DRO and HO concentrations (8,900 and 44,000 mg/kg, respectively) above their respective CULs while the parent sample (SB-36-7.5) contained DRO and HO concentrations (710 and 1,200 mg/kg respectively) below the respective CULs.

The duplicate of one sample (DUP-6) also contained a GRO concentration (1,100 mg/kg) above the CUL while the parent sample (SB-36-7.5) contained an estimated GRO concentration (71 mg/kg) below the CUL. This may have been due to insufficient homogenization of the sample in the field.

#### Deep Interval Depth (10-15 feet bgs)

GRO were not detected at concentrations above the CUL; however, the MDL of SB-41-E-12.5 was above the CUL (230 mg/kg).

DRO were detected at concentrations above the CUL in one sample with a concentration of 2,500 mg/kg. HO was detected at concentrations above the CUL in three samples, with concentrations ranging from 2,100 to 2,300 mg/kg.

# 3.3.2 Carcinogenic Polycyclic Aromatic Hydrocarbons

Ecology uses the toxic equivalence factor (TEF) methodology developed by the USEPA to evaluate the toxicity and assess the risks of cPAH mixtures. The TEF methodology uses a reference chemical, BaP, that has a well characterized toxicity. The TEF applied to each cPAH compound is an estimate of the relative toxicity compared to BaP. The toxic equivalence quotient (TEQ) is calculated by applying the TEF to each compound and summing, to produce a total concentration of cPAHs as BaP. The required TEF used in calculating the TEQ for each sample are established under WAC 173-340-708(e).

#### Shallow Interval Depth (0-5 feet bgs)

At least one cPAHs constituent was detected above the MDL in each of the 64 samples. None of the samples collected from the shallow interval depth contained cPAHs TEQ concentrations above the CUL.

#### Medium Interval Depth (5-10 feet bgs)

No detections of cPAHs above the MDL were observed in 12 samples. Results for cPAH TEQ were calculated at concentrations above the CUL in six samples, with concentrations ranging from 0.173 to 22.757 mg/kg.

The duplicate of one sample (DUP-6) had a calculated cPAH TEQ concentration (5.509 mg/kg) above the CUL while the parent sample (SB-36-7.5) was substantially lower (0.004 mg/kg).

#### Deep Interval Depth (10-15 feet bgs)

No detections of cPAHs above the MDL were observed in five samples. Results for cPAH TEQ were calculated at concentrations above the CUL in two samples with concentrations of 0.175 and 8.786 mg/kg.

#### 3.3.3 Total Naphthalenes

#### Shallow Interval Depth (0-5 feet bgs)

At least one naphthalene constituent was detected above the MDL in each of the 64 samples. Total naphthalenes were detected at concentrations above the CUL in two samples with concentrations of 14.2 and 5.61 mg/kg.

#### Medium Interval Depth (5-10 feet bgs)

Total naphthalenes were detected at concentrations above the CUL in 11 samples, with concentrations ranging from 6.36 to 56 mg/kg. The duplicate of two samples (DUP-6 and DUP-7) also contained total naphthalenes concentrations (12.8 and 20.15 mg/kg respectively) above the CUL while the parent sample (SB-36-7.5 and SB-6-7.5) contained total naphthalenes concentrations (0.77 and 3.356 mg/kg respectively) below the CUL. This may have been due to insufficient homogenization of the sample in the field.

#### Deep Interval Depth (10-15 feet bgs)

Total naphthalenes were detected at concentrations above the CUL in one sample with a concentration of 87 mg/kg.

# 3.3.4 Results Summary

153 soil samples were collected and analyzed for TPH as GRO, DRO and HO, cPAHs and naphthalenes. A summary of the soil analytical results is presented in the following table.

COC	Numb	er of soil analyse	•		per of soil s aining COC CUL	•
Depth Interval	(0-5)	(5-10)	(10-15)	(0-5)	(5-10)	(10-15)
GRO	64	71	18	4	15	1
DRO	64	71	18	0	4	1
НО	64	71	18	0	9	3
cPAHs	64	71	18	0	7	2
Naphthalenes	64	71	18	2	13	1
Total DUs to be	Excavat		4	26	6	

<sup>1 =</sup> Total soil samples may be different that the sum of numbers for each COC since the same sample could contain more than one exceedance.

Arcadis examined the chromatograms for samples SB-41-B-12.5, SB-41-C-12.5, and SB-41-D-12.5 due to their exclusive HO exceedances. Due to the presence of large amounts of natural organic material ([NOM]; woody, organic debris) observed along the western portion of the sampling grid, Arcadis believes that detected exceedances at these locations for DRO and HO indicate that NOM has influenced the results. Since these chromatograms do not indicate the presence of gasoline, diesel or heavy range petroleum products, these DUs are assumed to be naturally occurring organic matter and will not be removed during excavation activities. These chromatograms and associated assessment are included as Appendix C.

# 3.4 Pre-Excavation Groundwater Monitoring Report

The Pre-Excavation Groundwater Monitoring event was completed on September 2, 2015 following preexcavation soil sampling activities. The report is included as Appendix D.

<sup>2 =</sup> Quality control samples are not included in total soil samples count for this table.

# 4 CONSTRUCTION PLANS AND SPECIFICATIONS

A preliminary outline of the anticipated excavation procedure and activities is presented in the following sections. CPS drawings are included as Appendix E. Excavation activities will be completed under the supervision of Arcadis field staff.

# 4.1 Preliminary Excavation Plan

#### 4.1.1 Well Abandonment

Prior to excavation activities, four monitoring wells within proposed areas of excavation (MW-10, MW-11, MW-12 and MW-6R) will be decommissioned following Washington State Standards (WAC 173-160-381). As described below, following the completion of the proposed excavation, one new monitoring well will be installed approximately 5 feet to the south of MW-10. The proposed monitoring well location is depicted on the restoration plan included in the CPS drawings included as Appendix E.

## 4.1.2 Temporary Erosion and Sedimentation Control

Erosion and sediment control best management practices (BMPs) will be implemented to minimize storm and surface water pollution due to site construction activities. Temporary BMPs used at the site will include wattles and sand bags around stormwater infrastructure, a construction entrance, and a silt fence surrounding the active work area. An erosion and sediment control plan has been prepared as part of the CPS drawings included as Appendix E.

#### 4.1.3 Excavation Area

The extent of remedial excavation was established based on the analytical results collected as part of the Pre-excavation Soil Sampling event. Soil within each DU where analytical samples exceed CULs will be excavated and disposed off-site. DUs measure 10 feet by 10 feet and were evaluated in 5 foot intervals, up to a maximum depth of 15 feet bgs. Three DUs will be excavated within the shallow interval depth, 26 DUs will be excavated in the medium interval depth, and 6 DUs will be excavated within the deep depth interval. In addition, 10 DUs that were previously identified within the shallow interval depth will be removed. In total, approximately 840 cubic yards of soil will be excavated. The excavation areas are included in the CPS drawings as Appendix E.

In locations where there are exceedances within the middle or deep interval, but not within the shallow interval, the top 5 feet of soil will be excavated, stockpiled and used as backfill above 5 feet bgs in the excavated DUs.

# 4.1.4 Existing Piping Abandonment And Debris Handling

Underground piping present on the western side of the excavation area will be removed above 5 feet bgs with the remaining piping abandoned in place. The end of the abandoned piping below 5 feet will be sealed and grouted in place.

A metal sheet is present on the ground surface within sample grids G-5, G-6, H-5 and H-6. The metal sheet, including all other surficial debris encountered during excavation activities, will be relocated or disposed of off-site prior to excavation in that area.

## 4.1.5 Soil Handling

Soil will be excavated mechanically using trench boxes at depths below 5 feet bgs. This approach will not require dewatering within the excavation area. DU locations will be excavated to the appropriate depth, then backfilled with clean course angular material below the water table. During previous groundwater monitoring events, groundwater has been observed between 1.9 and 3.9 feet bgs in monitoring wells within the excavation area (MW-10, MW-11, MW-12, MW-6R). Soils from DUs that are excavated but do not exceed CULs will be stockpiled and reused as backfill above 5 feet bgs. Impacted soil will be stockpiled on-site and loaded into dump trucks for hauling and off-site disposal.

A staging area for placement of impacted soils will be established on the north side of the excavation and will consist of a double layer of chemically resistant reinforced polyethylene liner wrapped over staked hay bales on the edges. The containment area will also be surrounded by silt fencing and will be covered with plastic sheeting during while staff is off-site. Trucks may also be directly loaded in the areas that are located adjacent to the excavation. Locations of soil stockpile areas are shown on the CPS drawings included as Appendix E. On-site truck routes are described in the Traffic Control Plan included as Appendix F.

# 4.1.6 Fill Material Specifications

To restore the excavations to pre-existing grade and create a stable surface, a mixture of coarse sand, aggregate, previously-excavated material/imported general fill, and topsoil will be used to backfill excavated areas. A processed sand and aggregate mixture with minimal fines content will be used as backfill below the groundwater table because it will compact readily by tamping with the excavator bucket and because its strength will not be compromised by being placed underwater.

The sand and aggregate mixture will be placed in approximately horizontal layers, although it is recognized that backfilling below the water table will limit the operator's control of lift thickness. The aggregate will be compacted by tamping with the excavator bucket. Aggregate placement will continue until the grade is above the groundwater table, at which point general fill will be placed to grade.

Backfilling to grade above the groundwater table will be accomplished using previously excavated soil with concentrations below MTCA Method A CULs. If additional material is needed, general fill will be imported from an off-site source. Prior to acceptance of an off-site borrow source, Arcadis will review fill specifications to verify the lack of chemical constituents above applicable criteria and to establish basic geotechnical properties. The previously-excavated soil/ imported general fill will be placed in lifts of controlled thickness and compacted using equipment appropriately sized for the excavation. Because of the variable nature of the previously-excavated soil/general fill, compaction assessment may be assessed by proof-rolling or similar testing rather than by achieving a percentage of maximum dry density from a laboratory compaction curve. A test pad may also be used to establish the necessary compaction effort so that direct testing of the backfill in the excavations will not be necessary. Fill material specifications and restoration plan are presented in the CPS included as Appendix E.

# 4.1.7 Monitoring Well Installation

As mentioned above, monitoring wells within areas of excavation will be abandoned prior to removal activities. Arcadis will install one replacement monitoring (MW-13) to ensure adequate downgradient monitoring. If additional monitoring wells are deemed necessary, the specific locations will be determined post excavation.

# 4.2 Waste Characterization and Disposal

Soil will be disposed of at a Subtitle D landfill approved to accept petroleum contaminated soil. Waste will be characterized using the sampling data collected during the pre-excavation soil sampling event. If additional analytical is required by the waste disposal facility or Ecology, additional sampling of the impacted stockpile for select constituents of concern will be performed. It is anticipated that the material will be classified as non-hazardous, non-regulated, petroleum contaminated soil.

Dump trucks and trailers, equipped with an open-box bed, will loaded onsite. Prior to loaded trucks leaving the property, tires will be inspected and cleaned manually to remove visible debris. All loads will be covered to control fugitive dust during transportation. West Bay Drive will be monitored to confirm that excavated materials are not tracked to the roadway. All trucks will be transported under bill of lading and soils excavated will be tracked with weight tickets provided by the trucking company to the Arcadis staff.

# 4.3 Permitting Requirements

In addition to the approved State Environmental Policy Act (SEPA) Checklist and Unanticipated Discovery of Cultural Resources and Human Skeletal Remains Plan prepared as part of the WP (Arcadis 2015), the following plans have been prepared as part of these CPS documentation:

- Stormwater Pollution Prevention Plan (SWPPP) in accordance with the Washington State water
  pollution control requirements (Chapter 90.48 Revised Code of Washington [RCW]) An
  electronic notice of intent (eNOI) has been submitted for coverage under the Washington State
  Construction Stormwater Permit. Arcadis is currently working with Ecology toward approval,
  which will be completed within 60 days prior to the commencement of work. The SWPPP is
  included as Appendix G.
- Traffic Control Plan in accordance with Washington State Department of Transportation requirements - Included as Appendix F.

Additionally, a clearing permit in accordance with the City of Olympia Municipal Code (Chapter 16.48) will be prepared prior to construction activities. An Air Monitoring Plan will also be prepared and implemented by the selected excavation contractor prior to excavation activities in accordance with the Regulations of the Olympic Region Clean Air Agency and the Washington State Clean Air Act (Chapter 70.94 RCW).

The cleanup action must still comply with the substantive requirements of the laws in accordance with Chapter VII, Section O, Paragraph 2 of the AO and with WAC 173-340-710(9)(c). Although no Shoreline Substantial Development permit (City of Olympia Municipal Code Chapter 14.08) is required under WAC 173-340-710(9)(c), Arcadis will evaluate the substantive requirements of the Shoreline Management Act

# CONSTRUCTION PLANS AND SPECIFICATIONS SUMMARY REPORT

(Chapter 90.58 RCW) and applicable Shoreline Management Plan (Chapter 173-27 WAC) in coordination with the City of Olympia.

# **5 REFERENCES**

Arcadis U.S., Inc. 2015. Pre-excavation Soil Sampling and Excavation Work Plan, Former ARCO Olympia Bulk Terminal, Industrial Petroleum Distributors Site (Facility Identification No. 1436), 1120 West Bay Drive, Olympia, Washington. June 2.

Washington State Department of Ecology, 2014. Cleanup Action Plan, Industrial Petroleum Distributors. October.

Washington State Department of Ecology, 2014. Agreed Order No. DE 10470. October 24.

# **TABLES**

#### Former ARCO Olympia Bulk Terminal Industrial Petroleum Distributors Site CONSTRUCTION PLANS AND SPECIFICATIONS SUMMARY REPORT Table 1: Pre-Excavation Soil Analytical Results

								Table 1	L: Pre-Excavation Soi	l Analytical Results										
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	Act (MTCA) Method A Cleanu	<u> </u>		30/100	2000	2000	2,000	2,000											5	0.1
AUS-SB01	AUS-SB-1A(4.5-5)	(4.5-5) (0-5)	08/17/2015	ND 1.5	-	-	9.2	64	0.0012	J 0.0014 J	0.0035	0.0014	0.0028	ND 0.00085	ND 0.00085	0.0029	0.0049	0.0037	0.0115	0.002
AUS-SB01 AUS-SB01	SB-1A-12.5 SB-1A-7.5	7.5 (10-15) (5-10)	08/28/2015 08/28/2015	ND 1.2 ND 80	-	-	ND 3.6 1,300	ND 12 680	ND 0.00080 0.044	ND 0.00080 0.045	ND 0.00080 0.060	ND 0.00080 0.020	ND 0.00040 0.048	ND 0.00080 0.0036 J	ND 0.00080 0.012	ND 0.00080 0.013	ND 0.00080 0.019	ND 0.00080 0.046	0.0012 0.078	0.001
AUS-SB02	AUS-SB-2(2-2.5)	(2-2.5) (0-5)	08/17/2015	ND 1.3	-	-	5.7 J	49	ND 0.00083	ND 0.00083	0.0012	J ND 0.00083			ND 0.00083	ND 0.00083	0.0019	0.0024	0.078	0.009
AUS-SB02	SB-2-9.5	9.5 (5-10)	08/28/2015	ND 10	-	-	ND 3.4	ND 11	0.0079	0.0082	0.012	0.0040	0.0086	ND 0.00076	0.0017 J	0.00076 J	0.0019	0.0020	0.003313	0.001
AUS-SB03	AUS-SB-3(2-2.5)	(2-2.5) (0-5)	08/17/2015	ND 1.5	-	-	8.7	68	0.0056	0.0062	0.013	0.0052	0.01	0.00084 J	0.0028	0.001 J	0.002	0.0045	0.0075	0.009
AUS-SB03	SB-3-7.5	7.5 (5-10)	08/31/2015	ND 57	-	-	170	1,500	ND 0.0021	ND 0.0021	0.0030	J ND 0.0021	0.0050 J	ND 0.0021	ND 0.0021	0.12	0.054	0.041	0.215	0.002
AUS-SB04	AUS-SB-4A(2-2.5)	(2-2.5) (0-5)	08/20/2015	ND 16	-	-	ND 3.6	ND 12	0.0036	0.0030	0.0096	0.0041	0.011	ND 0.00081	0.0018 J	0.0012 J	0.0022	0.0019	J 0.0053	0.005
AUS-SB04	SB-4A-7.5	7.5 (5-10)	08/28/2015	ND 11	-	-	ND 3.4	ND 11	ND 0.00075	ND 0.00075	0.0012	J ND 0.00075		ND 0.00075	ND 0.00075	ND 0.00075	ND 0.00075	ND 0.00075	0.001125	0.001
AUS-SB05	AUS-SB-5A(4.5-5)	(4.5-5) (0-5)	08/17/2015	ND 1.3	-	-	ND 3.8	ND 13	0.0029	0.0031	0.006	0.002	0.0043	ND 0.00083	0.0012 J	0.0053	0.012	0.0074	0.0247	0.004
AUS-SB05	SB-5A-12.5	12.5 (10-15)	08/28/2015	ND 1.0	-	-	ND 3.4	ND 11	ND 0.0010	ND 0.0010	ND 0.0010	ND 0.0010	ND 0.00051		ND 0.0010	ND 0.0010	ND 0.0010	ND 0.0010	0.0015	0.001
AUS-SB05 AUS-SB05	SB-5A-7.5 DUP-5	7.5 (5-10) 12.5 (10-15)	08/28/2015 08/28/2015	ND 73 ND 1.0	-	-	850 ND 3.5	580 ND 12	0.0049 , ND 0.00077	J 0.0057 J ND 0.00077	0.010 ND 0.00077	0.0037 ND 0.00077	0.0057 J ND 0.00039	ND 0.0030 ND 0.00077	ND 0.0030 ND 0.00077	0.065 0.011	0.093 0.012	0.018 0.0057	0.176 0.0287	0.008
AUS-SB05	AUS-SB-6(2-2.5)	(2-2.5) (0-5)	08/17/2015	2.4	-	-	13	120	0.00077	J ND 0.00077	0.0034	0.00077			ND 0.00077	0.001	0.0012	0.007	0.0287	0.001
AUS-SB06	SB-6-7.5	7.5 (5-10)	08/31/2015	ND 69	-	-	290	1.100	ND 0.013	ND 0.013	ND 0.013	ND 0.013			ND 0.013 UJ	1.4	1.9	0.056	3.356	0.010
AUS-SB06	DUP-7	7.5 (5-10)	08/31/2015	77 .	-	-	440	1,500	ND 0.025	ND 0.025	ND 0.025	ND 0.025	ND 0.012	ND 0.025	ND 0.025	7.9 J	J 12 .	0.25	20.15	0.019
AUS-SB07	AUS-SB-7(2-2.5)	(2-2.5) (0-5)	08/17/2015	ND 1.4	-	-	5.9 J	22 J	0.0017 ,	J 0.002 J	0.0051	0.0016	0.004	ND 0.00086	0.001 J	ND 0.00086	0.0011	0.0022	0.00373	0.003
AUS-SB07	SB-7-7.5	7.5 (5-10)	08/31/2015	ND 65	-	-	290	1,700	0.0026	J ND 0.0024	0.0061	ND 0.0024	0.0076		ND 0.0024	0.96	0.62	0.23	1.81	0.003
AUS-SB08	AUS-SB-8(2-2.5)	(2-2.5) (0-5)	08/17/2015	ND 1.5	-	-	ND 3.6	ND 12	0.0011 ,	J 0.0013 J	0.0049	0.0013	0.0039		ND 0.0008	0.0018 J	0.0025	0.0075	0.0118	0.002
AUS-SB08	SB-8-7.5	7.5 (5-10)	09/01/2015	ND 54	-	-	310 20	1,800	ND 0.011	ND 0.011 0.040	ND 0.011	ND 0.011	0.0062 J 0.080	ND 0.011	ND 0.011	0.22	0.091 0.042	0.083	0.394	800.0
AUS-SB09 AUS-SB09	AUS-SB-9(2-2.5) SB-9-7.5	(2-2.5) (0-5) 7.5 (5-10)	08/17/2015 08/28/2015	1.0 ND 13	-	-	ND 3.8	110 ND 13	0.035 0.0043	0.040	0.13 0.012	0.032 0.0034	0.080	0.0070 ND 0.00085	0.020 0.0016 J	0.026 0.0013	J 0.0028	0.038 0.0040	0.106 0.0081	0.063
AUS-SB10	AUS-SB-10A(2-2.5)	(2-2.5) (0-5)	08/17/2015	ND 1.4		-	ND 3.6	ND 12	0.033	0.035	0.095	0.0034	0.070	0.0050	0.017	0.0013 3	0.0020	0.013	0.0081	0.055
AUS-SB10	SB-10-7.5	7.5 (5-10)	08/28/2015	ND 11	-	-	ND 3.6	21	0.15	0.16	0.21	0.095	0.16	0.011	0.032	0.011	0.019	0.043	0.073	0.211
AUS-SB11	AUS-SB-11(2-2.5)	(2-2.5) (0-5)	08/17/2015	ND 1.3	-	-	ND 3.8	ND 13	0.0030	0.0040	0.010	0.0033	0.0076	ND 0.00083	0.0021	0.0023	0.0028	0.0048	0.0099	0.006
AUS-SB11	SB-11-12.5	12.5 (10-15)	08/31/2015	ND 11	-	-	ND 3.4	ND 11	0.13	0.13	0.18	0.073	0.14	0.012	0.039	0.027	0.031	0.026	0.084	0.175
AUS-SB11	SB-11-7.5	7.5 (5-10)	08/31/2015	ND 63	-	-	310	1,300	ND 0.012	ND 0.012	0.016	J ND 0.012		ND 0.012	ND 0.012	0.57	0.75	0.093	1.413	0.010
AUS-SB12	AUS-SB-12(2-2.5)	(2-2.5) (0-5)	08/18/2015	2.4	-	-	3.6 J		ND 0.00080	ND 0.00080		ND 0.00080			ND 0.00080	0.0034	0.0060	0.0081	0.0175	0.001
AUS-SB12	SB-12-7.5	7.5 (5-10)	08/31/2015	ND 69	-	-	580	1,900	ND 0.0026 U	ND 0.0026 UJ	0.0035	ND 0.0026 U	0.0029 J		ND 0.0026 UJ ND 0.00079	0.12 J 0.0017 J	J 0.044 (	0.017 0.0043	0.181	0.002
AUS-SB12 AUS-SB13	DUP-2 AUS-SB-13(2-2.5)	(2-2.5) (0-5) (2-2.5) (0-5)	08/18/2015 08/18/2015	1.7	-	-	ND 3.5 ND 3.5	25 J ND 12	ND 0.00079 0.00097	ND 0.00079 J 0.0010 J	0.00093	J ND 0.00079 ND 0.00078	0.00071 J 0.0028	ND 0.00079 ND 0.00078	ND 0.00079 0.00088 J	ND 0.00078	0.0032	0.0043	0.0092 0.00549	0.001
AUS-SB13	SB-13-7.5	7.5 (5-10)	09/01/2015		-	-	340	1,900	ND 0.011	ND 0.011	ND 0.011	ND 0.00078	0.0056		ND 0.011	0.48	0.22	0.21	0.00349	0.002
AUS-SB14	AUS-SB-14(2-2.5)	(2-2.5) (0-5)	08/18/2015	2.4	-	-	5.9 J	·	ND 0.00080	ND 0.00080		J ND 0.00080		ND 0.00080	ND 0.00080	0.00084 J	0.0016	0.011	0.01344	0.001
AUS-SB14	SB-14-7.5	7.5 (5-10)	09/01/2015	ND 47	-	-	210	1,200	ND 0.0096	ND 0.0096	ND 0.0096	ND 0.0096	0.0066 J	ND 0.0096	ND 0.0096	0.030	0.020	0.018	0.068	0.007
AUS-SB15	SB-15-7.5	7.5 (5-10)	08/27/2015	ND 0.94	-	-	ND 3.3	ND 11	ND 0.00074	ND 0.00074	ND 0.00074	ND 0.00074	ND 0.00037	ND 0.00074	ND 0.00074	ND 0.00074	ND 0.00074	ND 0.00074	0.00111	0.001
AUS-SB16	SB-16-7.5	7.5 (5-10)	08/27/2015	ND 0.84	-	-	4.0 J	24 J	1.4	1.8	2.1	0.86	1.5	0.10	0.27	0.019	0.052	0.13	0.201	2.288
AUS-SB17	AUS-SB-17(2-2.5)	(2-2.5) (0-5)	08/18/2015	ND 1.5	-	-	ND 3.8	ND 13	0.012	0.011	0.046	0.018	0.043	0.0016 J	0.0063	0.0085	0.015	0.014	0.0375	0.020
AUS-SB17 AUS-SB18	SB-17-7.5 AUS-SB-18(2-2.5)	7.5 (5-10) (2-2.5) (0-5)	08/31/2015 08/18/2015	ND 0.99 ND 1.4	-	-	ND 3.4 ND 3.4	ND 11 26 J	0.018	0.019 0.0023	0.023 0.0054	0.011 0.0020	0.019 0.0046	0.0017 J ND 0.00075	0.0055 0.0011 J	0.0021 ND 0.00075	0.0027	0.0045	0.0093 J 0.002615	0.025
AUS-SB18	SB-18-7.5	7.5 (5-10)	08/31/2015	55	-	-	4.500 J	10.000	19 ,	J 16 J		J ND 0.34 U.	0.0040 J 26 J	2.4 J	4.4 J	16 J	J 19	19 .	J 54	22.757
AUS-SB18A	SB-18A-12.5	12.5 (10-15)	08/31/2015	2.0	-	-	ND 3.2	ND 11	0.0011	0.00096 J		J ND 0.00072	0.00095 J	ND 0.00072	ND 0.00072	0.00083	0.0014	ND 0.00072	0.00259	0.001
AUS-SB19	AUS-SB-19(2-2.5)	(2-2.5) (0-5)	08/18/2015	ND 1.3	-	-	ND 3.4	ND 11	ND 0.00075	ND 0.00075	0.0012	ND 0.00075	0.0013 J	ND 0.00075	ND 0.00075	ND 0.00075	ND 0.00075	0.00075	0.0015	0.001
AUS-SB19	SB-19-14.5	14.5 (10-15)	08/31/2015	28	-	-	580	2,300	7.7 ,	J 6.7 J	6.7	3.1	J 7.7 J	0.69 J	1.9 J	14 J	J 23 .	50 .	87	8.786
AUS-SB19	SB-19-7.5	7.5 (5-10)	08/31/2015	ND 58	-	-	<b>9,600</b> J	<b>64,000</b> J	7.7	J 7.0 J	16 .	J ND 0.11 U.	J 11 J	0.87 J	1.7 J	2.1 J	J 2.0 .	3.3	7.4	9.743
AUS-SB20	AUS-SB-20(2-2.5)	(2-2.5) (0-5)	08/18/2015	_	-	-	ND 3.5	ND 12	0.0011	0.0015 J	0.0036	0.0011	0.0036	ND 0.00078	0.0013 J	ND 0.00078	0.00088	0.0016	J 0.00287	0.002
AUS-SB20 AUS-SB20	SB-20-12.5 SB-20-7.5	7.5 (10-15) (5-10)	08/31/2015 08/31/2015	ND 73	-	-	170 150	630 810	ND 0.0027 ND 0.0023	ND 0.0027 ND 0.0023		J ND 0.0027 J ND 0.0023		ND 0.0027 ND 0.0023	0.0028 J ND 0.0023	0.10 0.41	0.11 0.42	0.049 0.057	0.259	0.003
AUS-SB20 AUS-SB21	AUS-SB-21(2-2.5)	(2-2.5) (0-5)	08/18/2015		-	-		ND 12	ND 0.0023	ND 0.0023		J ND 0.0023			ND 0.0023 ND 0.00078	ND 0.00078	ND 0.00078	0.0022	0.887 0.00298	0.002
AUS-SB21	SB-21-7.5	7.5 (5-10)	08/28/2015		-	-	340	1,800	ND 0.0025	ND 0.0025		J ND 0.0025			ND 0.0025	0.36	0.14	0.052	0.552	0.002
AUS-SB22	AUS-SB-22(2-2.5)	(2-2.5) (0-5)	08/20/2015	_	-			ND 12	0.0082	J 0.0023	0.018	0.0051	0.016 J	0.0015 J	0.0052 J	0.011 J	0.015	0.016	J 0.042	0.002
AUS-SB22	SB-22-7.5	7.5 (5-10)	08/27/2015		-	-	ND 3.3	ND 11	ND 0.00073	ND 0.00073		J ND 0.00073	ND 0.00037	ND 0.00073 UJ		ND 0.00073	ND 0.00073	ND 0.00073	0.001095	0.001
AUS-SB23-A	SB-23-A-7.5	7.5 (5-10)	08/27/2015	_	-	-	ND 3.3	ND 11	ND 0.00074		ND 0.00074	ND 0.00074	ND 0.00037		ND 0.00074	ND 0.00074	ND 0.00074	ND 0.00074	0.00111	0.001
AUS-SB24	SB-24-7.5	7.5 (5-10)	08/31/2015		-	-	ND 3.2	ND 11	ND 0.00072		ND 0.00072	ND 0.00072	ND 0.00036		ND 0.00072	ND 0.00072	ND 0.00072	ND 0.00072	0.00108	0.001
AUS-SB25	AUS-SB-25A(2-2.5) SB-25A-12.5	(2-2.5) (0-5	,	_	-	-	5.8 J	55 ND 43	0.0036	0.0049 ND 0.00080	0.012 ND 0.00080	0.0045 J	0.0079 ND 0.00040	0.00098 J	0.0036 ND 0.00080	0.0017 J ND 0.00080	0.0032 ND 0.00080	0.0046	0.0095	0.007
AUS-SB25 AUS-SB25	SB-25A-12.5 SB-25A-7.5	7.5 (10-15) (5-10)	08/28/2015 08/28/2015	ND 1.1 ND <b>1,000</b>	-	-	ND 3.6 500	ND 12 2,000	ND 0.00080 0.0053	ND 0.00080 J ND 0.0025	ND 0.00080 0.0065	ND 0.00080 ND 0.0025	0.0065		ND 0.00080 ND 0.0025	0.012	0.000	ND 0.00080 0.021	0.0012 0.044	0.001
AUS-SB26	AUS-SB-26A(2-2.5)	(2-2.5) (0-5)	08/20/2015	_	-	-	76	900	ND 0.0047	ND 0.0023	0.0049	J ND 0.0047			ND 0.0023	ND 0.0047	ND 0.0047	0.0048	J 0.0095	0.003
AUS-SB26	SB-26A-12.5	12.5 (10-15)		ND 67	-	-	300	1,200	0.026	0.030	0.040	0.021			ND 0.012	0.029	0.021	0.062	0.112	0.040
AUS-SB26	SB-26A-7.5	7.5 (5-10)	09/01/2015	240	-	-	1,700	2,000	ND 0.012	ND 0.012		J ND 0.012			ND 0.012	1.5	1.5	0.23	3.23	0.010
AUS-SB27	AUS-SB-27(2-2.5)	(2-2.5) (0-5	08/20/201	5 ND 21	-	-	52	500	0.0021	0.026 J	0.031	J ND 0.00084 UJ	0.0053	ND 0.00084 UJ	0.0011 J	0.0022	0.0045	0.0077	0.0144	0.030
AUS-SB27	SB-27-7.5	7.5 (5-10)	08/28/2015	140	-	-	220	1,400	ND 0.0030	ND 0.0030	0.0059	J 0.0032			ND 0.0030	0.64	0.21	0.066	0.916	0.003
AUS-SB28	AUS-SB-28(2-2.5)	(2-2.5) (0-5)	08/18/2015	8.1	-	-	61	410	0.0011 ,	J 0.0016 J	0.0044	0.0010	0.0029		ND 0.00082	0.0038	0.0063	0.0069	0.017	0.002
AUS-SB28	SB-28-7.5	7.5 (5-10)	08/28/2015	ND 73	-	-	220	1,600	ND 0.0027	0.0028 J	0.0081	ND 0.0027	-		ND 0.0027	0.76	0.21	0.11	1.08	0.004
AUS-SB29	AUS-SB-29(2-2.5) SB-29-7.5	(2-2.5) (0-5) 7.5 (5-10)	08/18/2015	3.8	-	-	-	ND 12	0.0076	0.0079 ND 0.0023	0.028 0.0034	0.011 J ND 0.0023	0.034 0.0035 J	0.0014 J ND 0.0023	0.0053 ND 0.0033	0.0038 2.0	0.0044 2.3	0.0088	0.017	0.014
AUS-SB29 AUS-SB30	SB-29-7.5 AUS-SB-30(2-2.5)	7.5 (5-10) (2-2.5) (0-5)	08/28/2015 08/18/2015	80	-	-	420 430 J	1,300 700 J	ND 0.0023 0.0074	0.0023 0.0076	0.0034	0.0023 0.0079	0.0035	ND 0.0023 0.0015 J	ND 0.0023 0.0049	0.073	0.23	0.38	4.68 0.394	0.002
AUS-SB30 AUS-SB30	SB-30-7.5	7.5 (5-10)	08/28/2015	160	-	-	280	1,500	ND 0.025	ND 0.025	ND 0.025	ND 0.025	ND 0.013	ND 0.025	ND 0.025	2.9	3.8	1.2	7.9	0.013
AUS-SB31	AUS-SB-31(2-2.5)	(2-2.5) (0-5)	08/20/2015		-	-	53	170	0.0092	0.013 J	0.037	0.0086	0.017	ND 0.0013 UJ	0.0045 J	0.016	0.020	0.030	0.066	0.019
AUS-SB31	SB-31-7.5	7.5 (5-10)	08/27/2015	ND 0.98	-	-	ND 3.4	ND 11	ND 0.00074	ND 0.00074	ND 0.00074	ND 0.00074	ND 0.00037	ND 0.00074	ND 0.00074	ND 0.00074	ND 0.00074	ND 0.00074	0.00111	0.001
AUS-SB32	AUS-SB-32(2-2.5)	(2-2.5) (0-5)	08/20/2015	ND 14	-	-	ND 3.8	ND 13	0.0014 ,	0.0021	0.0046	0.0012	0.0036	ND 0.00084	0.00090 J	0.0028	0.0055	0.0053	0.0136	0.003
AUS-SB32	SB-32-7.5	7.5 (5-10)	08/27/2015	_	-	-	37 J	2,200	0.011	0.015	0.016	0.0079	0.013	0.0025	0.0091	0.0013 J	0.0022	0.0053	0.0088	0.020
AUS-SB33	SB-33-7.5	7.5 (5-10)	08/31/2015	ND 20	-	-	ND 3.3	ND 11	ND 0.00074	ND 0.00074	ND 0.00074	ND 0.00074	ND 0.00037		ND 0.00074	ND 0.00074	ND 0.00074	ND 0.00074	0.00111	0.001
AUS-SB34	AUS-SB-34(4.5-5)	(4.5-5) (0-5)	08/19/2015	180	-	-	420	51 J	0.0056	0.047 J	0.073	J ND 0.0012 UJ	0.012	0.0015 J	0.0029 J	1.3	1.7	0.38	3.38	0.055

Arcadis 1 of 3

#### Former ARCO Olympia Bulk Terminal Industrial Petroleum Distributors Site CONSTRUCTION PLANS AND SPECIFICATIONS SUMMARY REPORT

The control of the		Table 1: Pre-Excavation Soil Analytical Results																				
Section   Sect		·	Depth (feet bgs)	range	Date	NWTPH-GX Soil C7-C12	Diesel Range C12-C	Heavy Range C24-C4	DRO C12-C24 w/Si Gel	HRO C24-C40 w/Si Gel	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Indeno(1,2,3-cd)pyrene	1-Methylnaphthalene	2-Methylnaphthalene	Naphthalene	Naphthalenes <sup>1</sup>	Total Adjusted cPAHs <sup>2</sup>
March   September   Septembe				(5-10)	08/31/2015																	
Column																+						
Column				` '			-	-		†												
Property   Property				, ,																		
March   Marc				, ,												+						
Company				( /		7	<u> </u>	1														
March   Marc		` '		, ,												*******			1			
Control   Cont				, ,			-	-	740	1,700	ND 0.011	ND 0.011		ND 0.011		+		0.57	0.26	0.090		
Control   Cont				, ,			-	+		· · · · · · · · · · · · · · · · · · ·												
March   Marc				, ,				1		,												
March   Marc	AUS-SB39	SB-39-7.5	7.5	(5-10)	08/28/2015		J -	-													4.8	0.016
March   Marc		` '		, ,			-	+														
March   1988				, ,			J -	1														
March   Marc			_	` '		_	J -	-														
ACCORNIA   CONTINUE							~															
Marcheller   Mar				( /			+															
March   Marc			_	, ,				+														
March   Marc			_	, ,	_		-	1														
March   Marc			_	, ,			J -	-			0.029	J 0.016			0.051							
March   Marc				, ,			J -	1								+						
AUSSAFE   SS-16-25   SS   6-9   SS-16-25   SS   6-9   SS-16-25   SS   SS-16-25   SS-16				, ,			-	1														
MS-Self-LD 98-41-07-5				, ,			-	-		,						J ND 0.0096 UJ I	ND 0.0096 U					
MASSMARIE   SASHEP, 17.5   17.5   17.5   19.10   19.																						
ALS-SHA11   SAL167   7				` '																		
Marging   Marg			_	, ,			-	-	· · -		0.00000	0.00000										
Als-Select   Select   F   Select   F   Select   F   Select   Select   F   Select   Select   F   Select   Sele				, ,			-				****											
MAS-SB444 Sp.4-7.5 (5-10) 0827/2019 NO 1.3				, ,			-	-														
AUS-S8444 AUS-S8-4446-50		· · · · · ·		, ,		110	-	1														
AUS-S844   S94-475   75   (6-10)   0.02/20115   VB   6.7   R				, ,			-											<u> </u>				
AUS-S846 AUS-S8-46(2.29)		SB-44-7.5	7.5	, ,	08/31/2015		٠ -	-	ND 3.4		0.0052	0.0069	0.010	0.0045		ND 0.00074					0.0073	0.009
Subsect   Subs				( /			J -	-								*****						
AUS-Sel46   AUS-Sel46 2.25   2.25   0.5   0.919/2015   ND   0.91			, ,	, ,			-	-					-			·			J 0.015 J			
AUS-S846   SB-46-12.5   12.5   10.15   0.0831/2015   ND   0.06   ND   3.5   ND   12   ND   0.00077   ND			_		_		J -	-														
AUS-SB4G   SB4-67.5   7.5   (5-10)   08/31/2015   ND   00   -   -   240   7-10   0.14   0.13   0.18   0.0965   0.14   ND   0.011   0.024   J   2.0   1.6   0.99   4.99   0.0173   0.018   0.0093				, ,																		
AUS-SB47 AUS-SB47(2-2.5) [2-2.5] [0-5] 08/19/2015 ND 14 370 210 0.0021 0.0032 0.0085 0.0022 0.0082 ND 0.00078 0.0018 JO 0.0088 0.0088 0.0088 0.0038 0.0114 0.005   AUS-SB47 SB47-7.5 7.5 [6-10] 08/01/2015 ND 53 12.5 0.0082 ND 0.0013 ND 0.013 ND 0.0080 ND 0.0080 ND 0.0088 ND 0.008			_	,			-	-														
AUS-SB47 SB47.7.5 7.5 (5-10) 6901/2015 ND 53 - 120 690 0.020 J 0.024 J 0.034 0.015 J 0.026 ND 0.010 ND 0.010 0.048 0.046 0.051 0.145 0.032 NS5847 SB47.7.5 7.5 (5-10) 6901/2015 ND 14 - 120 0.020 ND 12 ND 0.0020 J 0.024 J 0.031 ND 0.013 ND 0.013 ND 0.013 ND 0.013 ND 0.013 ND 0.013 ND 0.0031 ND 0.0				, ,																		
AUS-SB47   SB-477.5   C5-10   O901/2015   A20   -   1,500   1,000   ND   0,013   ND   0,0002   ND		` '		` '				1														
AUS-SB48 SB-48-7.5 7.5 (6-10) 08/31/2015 ND 72 530 1,300 ND 0.0027 ND 0.	AUS-SB47	SB-47-7.5	7.5	(5-10)	09/01/2015	420	-	-			ND 0.013					J ND 0.013 I	ND 0.013				4.68	0.010
AUS-SB49 SB-49-7.5				, ,		_																
AUS-SB50 SB-507.5 7.5 (5-10) 08/28/2015 38 J 350 2,100 0.0098 J ND 0.0040 0.0099 J ND 0.0040 0.0051 J 2.7 2.9 0.76 6.36 0.005   AUS-SB51 AUS-SB51(2.5) (2.2.5) (0.5) 08/17/2015 ND 1.7 24 15 J 0.0017 J 0.0016 J 0.0079 ND 0.002 J 0.0064 ND 0.0087 0.0013 J 0.014 0.022 0.057 0.003   AUS-SB51 SB-517.5 7.5 (5-10) 08/28/2015 ND 84 220 1,300 ND 0.0084 ND 0.030 ND 0.030 ND 0.030 ND 0.030 ND 0.030 ND 0.0084 ND 0			_	, ,		_	+															
AUS-SB51																						
AUS-SB51 SB-51-7.5 7.5 (5-10) 08/28/2015 ND 84 220 1,300 ND 0.030 ND 0.				` '		_																
AUS-SB52 SB-52-7.5 7.5 (5-10) 08/28/2015 110 J 640 1,100 0.0048 J 0.0034 J 0.0088 0.0049 J 0.0090 ND 0.0026 ND 0.0026 6.6 8.9 1.3 16.8 0.006 ND 0.0026 ND 0.0028 N				· · ·	_		+															
AUS-SB52 DUP-1 (2-2.5) (0-5) 08/17/2015 1,200 J 3,800 J 170 J ND 0.0089 UJ 0.0092 J ND 0.0089 UJ 0.008		` '		, ,										******								
AUS-SB52-A				` '	_		<u> </u>	-														
AUS-SB52-A SB-52-Offset-7.5 7.5 (5-10) 09/01/2015 160 J 740 980 ND 0.0099 ND 0.009	AUS-SB52-A	AUS-SB-52-Offset(2-2.5)	(2-2.5)	(0-5)	08/20/2015	ND 1.2	-		J ND 3.6 U.	ND 12 UJ	ND 0.00082	ND 0.00082	0.0020 J	ND 0.00082	0.0025	ND 0.00082 I	ND 0.00082	0.0014 ,	0.0030	0.014	0.0184	0.001
				, ,			-															
			_	, ,				1													_	

Arcadis 2 of 3

#### Former ARCO Olympia Bulk Terminal Industrial Petroleum Distributors Site CONSTRUCTION PLANS AND SPECIFICATIONS SUMMARY REPORT

	Table 1: Pre-Excavation Soil Analytical Results																		
Sample Location	Sample ID	Sample Depth Depth range (feet bgs) (feet bgs	Date )	NWTPH-GX Soil C7-C12	Diesel Range Organics C12-C24	Heavy Range Organics C24-C40	DRO C12-C24 w/Si Gel	HRO C24-C40 w/Si Gel	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Indeno(1,2,3-cd)pyrene	1-Methylnaphthalene	2-Methylnaphthalene	Naphthalene	Naphthalenes¹ Total Adjusted cPAHs²
Model Toxics Control	Act (MTCA) Method A Cleanup	Levels		30/100	2000	2000	2,000	2,000							-				5 0.1
AUS-SB52-B	SB-52-B-7.5	7.5 (5-10)	09/02/2015	ND 14	-	-	12	20	J ND 0.00088	ND 0.00088	0.0018	J ND 0.00088	0.0016	J ND 0.00088	ND 0.00088	0.0027	0.0047	0.013	0.0204 0.001
AUS-SB53	SB-53-7.5	7.5 (5-10)	08/27/2015	ND 1.0	-	-	ND 3.4	ND 11	ND 0.00075	ND 0.00075	ND 0.00075	ND 0.00075	ND 0.00037	ND 0.00075	ND 0.00075	ND 0.00075	ND 0.00075	ND 0.00075	0.001125 0.001
AUS-SB54	AUS-SB-54(2-2.5)	(2-2.5) (0-5)	08/20/2015	ND 14	-	-	23	140	0.040	0.036	0.092	0.025 J	0.075	0.0075 J	0.025	0.033	0.054	0.053	0.14 0.056
AUS-SB54	SB-54-7.5	7.5 (5-10)	08/27/2015	ND 1.0	-	-	ND 3.4	ND 11	ND 0.00076	ND 0.00076	ND 0.00076	ND 0.00076	ND 0.00038	ND 0.00076	ND 0.00076	0.00092	0.0021	0.0018	J 0.00482 0.001
AUS-SB55	AUS-SB-55(4.5-5)	(4.5-5) (0-5)	08/19/2015	ND 17	-	-	ND 4.2	ND 14	ND 0.00094	0.0011 J	0.0019	J ND 0.00094	0.0011	J ND 0.00094	ND 0.00094	0.0011	J 0.0017 J	0.0074	0.0102 0.001
AUS-SB55	SB-55-9.5	9.5 (5-10)	08/27/2015	ND 27	-	-	57	260	4.7	4.7	5.5	2.1	5.0	0.59	2.4	0.72	0.90	2.3	3.92 <b>6.279</b>
AUS-SB56	AUS-SB-56(4.5-5)	(4.5-5) (0-5)	08/19/2015	ND 16	-	-	23	81	0.0016	0.0025	0.0070	0.0017 J	0.0046	ND 0.00088	0.0013 J	0.0084	0.015	0.028	0.0514 0.004
AUS-SB56	SB-56-7.5	7.5 (5-10)	08/31/2015	ND 15	-	-	9.9	23 ,	J 0.0012	J 0.0014 J	0.0046	0.0013 J	0.0031	ND 0.00093	ND 0.00093	0.0088	0.013	0.034	0.0558 0.002
AUS-SB57	AUS-SB-57(2-2.5)	(2-2.5) (0-5)	08/19/2015	ND 1.2	-	-	4.1 ,	J 25 .	J 0.00097	J 0.0018 J	0.0052	J 0.00094 J	0.0035	ND 0.00075 UJ	1	0.0012	J 0.0018 J	0.0030	0.006 0.003
AUS-SB57	SB-57-7.5	7.5 (5-10)	08/31/2015	ND 14	-	-	ND 4.0	14 ,	J 0.0027	0.0025	0.0067	0.0022 J	0.0060	ND 0.00090	0.00093 J	0.013	0.028	0.042	0.083 0.004
AUS-SB58	AUS-SB-58(2-2.5)	(2-2.5) (0-5)	08/19/2015	ND 14	-	-	ND 3.4	12 .	J 0.00092	J 0.0012 J	0.0045	0.0011 J	0.0042	ND 0.00075	0.00097 J	ND 0.00075	0.0012 J	0.0034	0.004975 0.002
AUS-SB58	SB-58-7.5	7.5 (5-10)	08/28/2015	57	-	-	30		J ND 0.00085	ND 0.00085	ND 0.00085	ND 0.00085	ND 0.00043	ND 0.00085	ND 0.00085	ND 0.00085	ND 0.00085	ND 0.00085	0.001275 0.001
AUS-SB59	AUS-SB-59(4.5-5)	(4.5-5) (0-5)	08/19/2015	ND 16	-	-	10	69	0.0034	0.0048	0.0081	0.0031	0.0070	ND 0.00088	0.0029	0.0072	0.013	0.040	0.0602 0.007
AUS-SB59	SB-59-7.5	7.5 (5-10)	09/01/2015	ND 15	-	-		J ND 14	ND 0.00091	ND 0.00091	0.0021	J ND 0.00091	0.0013	J ND 0.00091	ND 0.00091	0.013	0.0092	0.045	0.0672 0.001
AUS-SB60	AUS-SB-60(2-2.5)	(2-2.5) (0-5)	08/19/2015	ND 17	-	-	ND 3.6	ND 12	0.0012	J 0.0017 J	0.0051	0.0014 J	0.0048	ND 0.00080	0.0018 J	0.00093	J 0.0017 J	0.0092	0.01183 0.003
AUS-SB60	SB-60-7.5	7.5 (5-10)	09/01/2015	ND 17	-	-	ND 4.1	ND 14	ND 0.00091	ND 0.00091	0.0020	J ND 0.00091	0.0015	J ND 0.00091	ND 0.00091	0.027	0.025	0.10	0.152 0.001
AUS-SB61	AUS-SB-61(2-2.5)	(2-2.5) (0-5)	08/17/2015	ND 1.3	-	-	ND 3.5		J ND 0.00079	0.00085 J	0.0038	0.00094 J	0.003	ND 0.00079	ND 0.00079	0.0050	0.010	0.0073	0.0223 0.001
AUS-SB61	SB-61-7.5	7.5 (5-10)	08/28/2015	40 J	-	-	260	1,400	0.0046	J 0.0048 J	0.011	0.0049 J	0.013	ND 0.0034	ND 0.0034	0.11	0.10	0.79	1 0.007
AUS-SB62	AUS-SB-62(2-2.5)	(2-2.5) (0-5)	08/17/2015	ND 2	-	-	6.6	1 49	ND 0.00082	0.00098 J	0.0049	0.00095 J	0.0043	ND 0.00082	0.00091 J	0.0011	J 0.0019 J	0.014	0.017 0.002
AUS-SB62	SB-62-7.5	7.5 (5-10)	08/28/2015	52 J	- 20	- 50	190	1,100	ND 0.030	ND 0.030	0.052	J ND 0.030	0.065	J ND 0.030	ND 0.030	0.64	0.60	2.5	3.74 0.027
AUS-SB62-A	AUS-SB-62-Offset(4.5-5)	(4.5-5) (0-5)	08/20/2015	33 ND 25	29 J	58	11 ,		J ND 0.00084	ND 0.00084	0.0026 0.0059	ND 0.00084	0.0026 0.0027	ND 0.00084	0.0010 J 0.0012 J	0.0034 0.0043	0.0044 0.0045	0.025 0.042	0.0328 0.001
AUS-SB62-A	SB-62-Offset-7.5	7.5 (5-10) (2-2.5) (0-5)	09/01/2015	¥ · -	+		6.4	ND 14 J 61	ND 0.00097	0.0018 J J 0.0050 J	0.0059	0.0013 J	0.0027	ND 0.00097	0.0012 J 0.0052 J		0.0045 0.0038 J		0.0508 0.003
AUS-SB63	AUS-SB-63(2-2.5) SB-63-7.5	( - / ( /	08/20/2015	ND 12 ND 13	-	-	ND 3.6	ND 12	0.0062 ND 0.00079	ND 0.00079	0.018	0.0069 J J ND 0.00079	0.0097	ND 0.0035 J ND 0.00079	ND 0.00079	ND 0.0035 ND 0.00079	ND 0.00079	0.0056 0.00088	J 0.01115 0.009
AUS-SB63	AUS-SB-22(2-2.5)MS	7.5 (5-10) (2-2.5) (0-5)	08/27/2015 08/20/2015	18	-	-	140	ND 13	ND 0.00079 0.060	0.056	0.079	0.058	0.074	J ND 0.00079 0.032	0.037	0.064	0.072	0.0008	J 0.00167 0.001 0.199 0.083
MS	AUS-SB-40(2-2.5)-MS	(2-2.5) (0-5)	08/18/2015	31	-	-	110	82	0.036	0.038	0.050	0.038	0.043	0.032	0.037	0.045	0.064	0.049	0.158 0.057
MS	AUS-SB-41(2-2.5)-MS	(2-2.5) (0-5)	08/17/2015	97		-	210	110	0.046	0.042	0.053	0.042	0.053	0.038	0.038	0.06	0.09	0.12	0.130 0.037
MS	AUS-SB-57(2-2.5)MS	(2-2.5) (0-5)	08/19/2015	17		_	110	24	J 0.033	0.035	0.052	0.042	0.037	0.023	0.021	0.038	0.041	0.042	0.121 0.052
MS	SB-1A-12.5 MS	12.5 (10-15)	08/28/2015	9.7	-	-	140	ND 12	0.046	0.043	0.052	0.041	0.045	0.044	0.042	0.040	0.041	0.041	0.122 0.066
MS	SB-36-7.5 MS	7.5 (5-10)	08/31/2015	<b>250</b> J	-	-	870	860	0.084	0.10	0.13	0.13	0.085	0.060	0.058	0.71	0.62	0.20	1.53 0.147
MS	SB-36-7.5 MSD	7.5 (5-10)	08/31/2015	250 J	-	-	870	860	0.084	0.10	0.13	0.13	0.085	0.060	0.058	0.71	0.62	0.20	1.53 0.147
MS	SB-45-7.5 MS	7.5 (5-10)	08/31/2015	130 J	-	_	440	400	0.18	0.18	0.25	0.19	0.18	0.10	0.099	0.18	0.20	0.20	0.58 0.264
MS	SB-6-7.5 MS	7.5 (5-10)	08/31/2015	170 J	_	-	880	1.900	0.13	0.12	0.16	0.14	0.12	0.057	0.056	3.5	4.8	0.24	8.54 0.176
MSD	AUS-SB-22(2-2.5)MSD	(2-2.5) (0-5)	08/20/2015	19 J	-	-	110	ND 13	0.067	0.066	0.096	0.066	0.082	0.030	0.038	0.069	0.076	0.070	0.215 0.097
MSD	AUS-SB-40(2-2.5)-MSD	(2-2.5) (0-5)	08/18/2015	32	-	-	100	89	0.034	0.038	0.050	0.048	0.039	0.025	0.024	0.043	0.057	0.046	0.146 0.056
MSD	AUS-SB-41(2-2.5)-MSD	(2-2.5) (0-5)	08/17/2015	45	-	-	170	71	0.041	0.041	0.05	0.045	0.051	0.031	0.03	0.075	0.12	0.17	0.365 0.061
MSD	AUS-SB-57(2-2.5)MSD	(2-2.5) (0-5)	08/19/2015	17	-	-	120	26	J 0.034	0.034	0.050	0.040	0.038	0.021	0.020	0.034	0.036	0.037	0.107 0.051
MSD	SB-1A-12.5 MSD	12.5 (10-15)	08/28/2015	8.7	-	-	150	ND 12	0.047	0.045	0.054	0.044	0.047	0.046	0.045	0.043	0.044	0.043	0.13 0.069
MSD	SB-36-7.5 MSD	7.5 (5-10)	8/31/2015	180	-	-	850	1,000	0.084	0.091	0.12	0.11	0.080	0.054	0.052	0.36	0.34	0.16	0.86 <b>0.134</b>
MSD	SB-45-7.5 MSD	7.5 (5-10)	08/31/2015	ND 63	-	-	420	450	0.16	0.17	0.22	0.20	0.16	0.095	0.092	0.18	0.19	0.20	0.57 <b>0.248</b>
MSD	SB-6-7.5 MSD	7.5 (5-10)	08/31/2015	<b>140</b> J	-	-	810	1,400	0.13	0.13	0.19	0.14	0.13	0.061	0.057	2.4	2.8	0.23	5.43 0.189

Notes:
All samples labeled "offset" in this table and analytical reports have been replaced with -A in the figure.
Samples labeled SB1A, SB4A, SB5A, SB23A, SB25A, and SB26A in the table and analytical reports are labeled without the "A" in the figure.
Concentrations compared to the Model Toxics Control Act (MTCA) Method A soil cleanup levels for unrestricted land uses presented in Table 740-1 of Chapter 173-340 of the Washington Administrative Code (WAC)
The MTCA cleanup level for gasoline range total petroleum hydrocarbons is 100-mg/kg without benzene and 30-mg/kg with benzene present. Benzene was observed in groundwater collected from sample ID-4 in 2001, thus the cleanup level of 30-mg/kg was utilized.

bgs = Below ground surface

mg/kg = milligram per kilogram - = not applicable or analyzed

cPAH = Carcinogenic polyaromatic hydrocarbons

J = estimated value – The result is greater than or equal to the Method Detection Limit (MDL) and less than the Limit of Quantitation (LOQ)

ND = Chemical not detected above the laboratory reporting limit

Bolded and highlighted font indicates results above the MTCA Method A cleanup level

(1) = MTCA cleanup level is 5-mg/kg for total concentration of naphthalene, 1-methylnaphthalene and 2-methylnaphthalene
(2) = Total concentration of cPAHs calculated using the toxicity equivalency method in WAC 173-340-708(8)

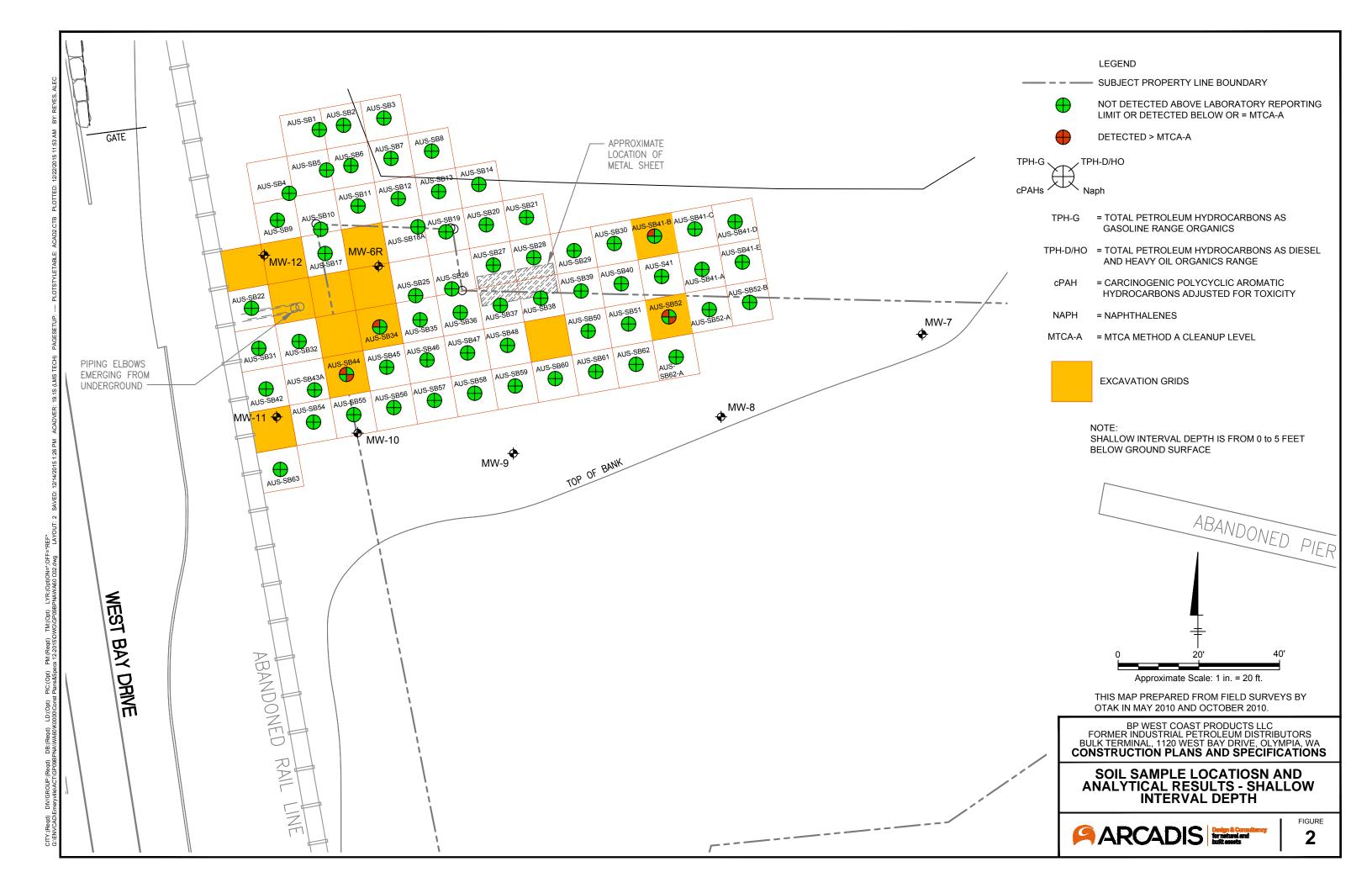
Lab QA/QC surrogate recovery was outside control limits due to matrix interference for samples GP1-4-4.5, GP1-6-6.5, GP2-4-4.5, GP5-4-4.5, GP6-4-6.5

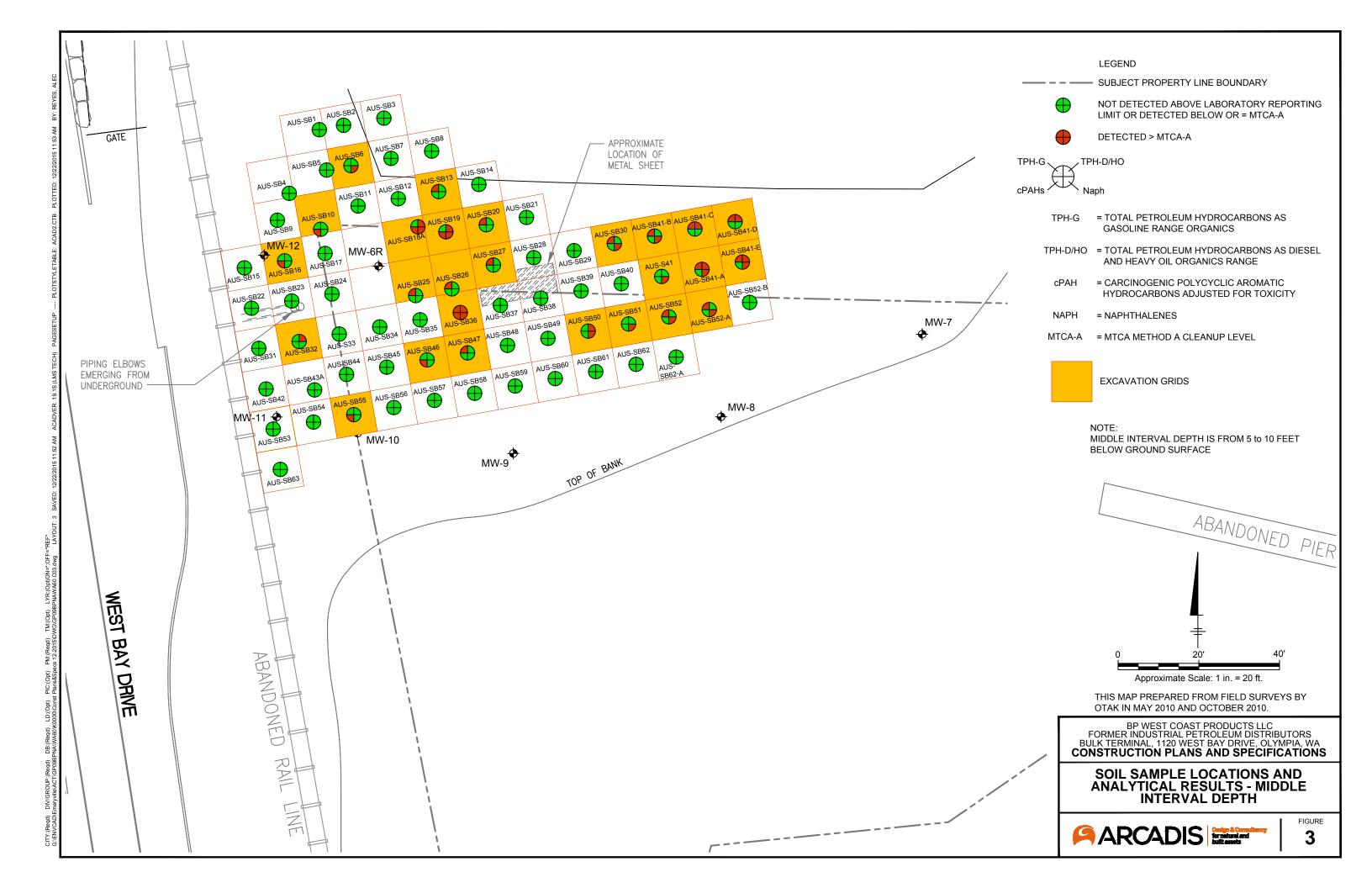
Arcadis 3 of 3

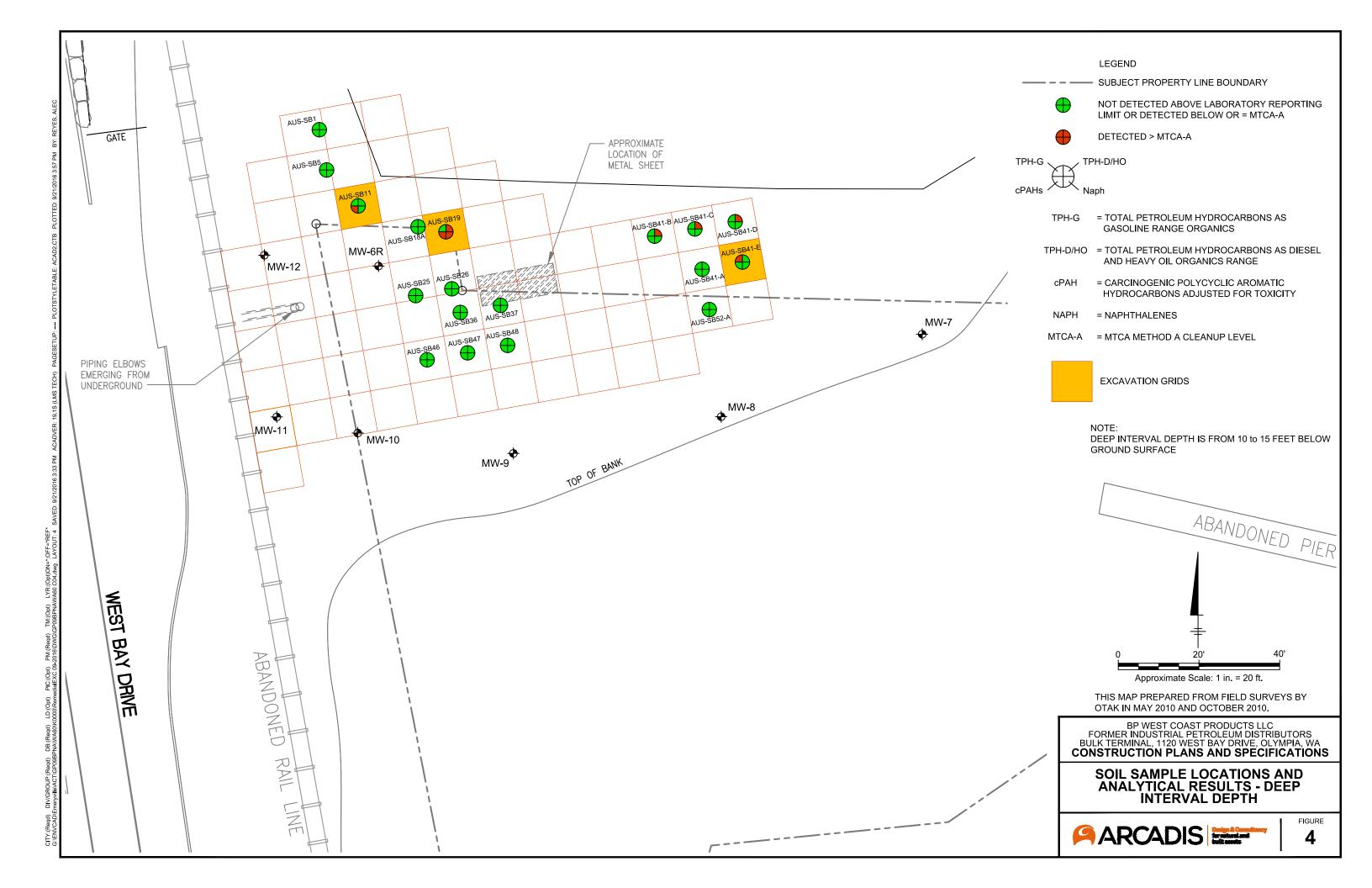
# **FIGURES**

TM:(Opt)

PM:(Redd)







# APPENDIX A

**Data Validation Reports** 



# **BP OLY**

# **Data Review**

OLYMPIA, WA

Semivolatiles and TPH

SDG # 1586402

Analyses Performed By: Lancaster Laboratories Lancaster, PA

Report # 24719R Review Level: Tier II

Project: GP09BPNA.WA60.K000

#### **SUMMARY**

This data quality assessment summarizes the review of Sample Delivery Group (SDG) #1586402 for samples collected in association with the BP OLY site. The review was conducted at a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

			Comple		Analysis				
Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	voc	svoc	TPH	MET	TSS
AUS-SB-41(2-2.5)	8015041	Soil	08/17/15			Х	Х		
AUS-SB-52(2-2.5)	8015044	Soil	08/17/15			Х	Х		
AUS-SB-62(2-2.5)	8015045	Soil	08/17/15			Х	Х		
AUS-SB-1A(4.5-5)	8015046	Soil	08/17/15			Х	Х		
AUS-SB-2(2-2.5)	8015047	Soil	08/17/15			Х	Х		
AUS-SB-3(2-2.5)	8015048	Soil	08/17/15			Х	Х		
AUS-SB-5A(4.5-5)	8015049	Soil	08/17/15			Х	Х		
AUS-SB-6(2-2.5)	8015050	Soil	08/17/15			Х	Х		
AUS-SB-7(2-2.5)	8015051	Soil	08/17/15			Х	Х		
AUS-SB-8(2-2.5)	8015052	Soil	08/17/15			Х	Х		
AUS-SB-51(2-2.5)	8015053	Soil	08/17/15			Х	Х		
AUS-SB-9(2-2.5)	8015054	Soil	08/17/15			Х	Х		
AUS-SB-10A(2-2.5)	8015055	Soil	08/17/15			Х	Х		
AUS-SB-11(2-2.5)	8015056	Soil	08/17/15			Х	Х		
AUS-SB-61(2-2.5)	8015057	Soil	08/17/15			Х	Х		
AUS-SB-50(2-2.5)	8015058	Soil	08/17/15			Х	Х		
AUS-SB-40(2-2.5)	8015059	Soil	08/18/15			Х	Х		
AU-SB-12(2-2.5)	8015062	Soil	08/18/15			Х	Х		
AU-SB-13(2-2.5)	8015063	Soil	08/18/15			Х	Х		
AU-SB-30(2-2.5)	8015064	Soil	08/18/15			Х	Х		
AU-SB-14(2-2.5)	8015065	Soil	08/18/15			Х	Х		
AU-SB-20(2-2.5)	8015066	Soil	08/18/15			Х	Х		
AU-SB-21(2-2.5)	8015067	Soil	08/18/15			Х	Х		
AU-SB-29(2-2.5)	8015068	Soil	08/18/15			Х	Х		
AU-SB-19(2-2.5)	8015069	Soil	08/18/15			Х	Х		
AU-SB-39(2-2.5)	8015070	Soil	08/18/15			Х	Х		
AU-SB-18(2-2.5)	8015071	Soil	08/18/15			Х	Χ		

					Analysis				
Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	voc	svoc	ТРН	MET	TSS
AU-SB-17(2-2.5)	8015072	Soil	08/18/15			Х	Х		
AU-SB-28(2-2.5)	8015074	Soil	08/18/15			Х	Х		
AU-SB-38(2-2.5)	8015076	Soil	08/18/15			Х	Х		
DUP-1	8015078	Soil	08/17/15	AUS-SB- 52(2-2.5)		Х	Х		
DUP-2	8015079	Soil	08/18/15	AU-SB- 12(2-2.5)		Х	Х		
Trip Blank	8015080	Water	08/17/15				Х		

#### Note:

- 1. Samples AUS-SB-41(2-2.5) and AUS-SB-40(2-2.5) were used as the MS/MSDs for the SVOC analyses.
- 2. Samples AUS-SB-41(2-2.5), AUS-SB-40(2-2.5) and AUS-SB-19(2-2.5) were used as the MS/MSDs for the Dx analyses.
- 3. Samples AUS-SB-41(2-2.5) and AUS-SB-40(2-2.5) were used as the MS/MSDs for the Gx analyses.
- 4. Sample DUP-9 from SDG 1597468 was a blind field duplicate associated with sample AUS-SB-41(2-2.5).

# **ANALYTICAL DATA PACKAGE DOCUMENTATION**

The table below is the evaluation of the data package completeness.

		Rep	orted		mance ptable	Not
	Items Reviewed	No	Yes	No	Yes	Required
1.	Sample receipt condition		Х		Х	
2.	Requested analyses and sample results		Х		Х	
3.	Master tracking list		Х		Х	
4.	Methods of analysis		Х		Х	
5.	Reporting limits		Х		Х	
6.	Sample collection date		Х		Х	
7.	Laboratory sample received date		Х		Х	
8.	Sample preservation verification (as applicable)		Х		Х	
9.	Sample preparation/extraction/analysis dates		Х		Х	
10.	Fully executed Chain-of-Custody (COC) form		Х		Х	
11.	Narrative summary of QA or sample problems provided		Х		Х	
12.	Data Package Completeness and Compliance		Х		Х	

QA - Quality Assurance

#### ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 8270 (SIM) and ECY 97-602. Data were reviewed in accordance with the USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines and as requested by USEPA Region 10:

- Concentration (C) Qualifiers
  - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
  - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
  - E The compound was quantitated above the calibration range.
  - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
  - U The analyte was not detected at or above the reported result.
  - J The analyte was positively identified. The associated numerical result is an estimate.
  - UJ The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
  - R The data are unusable for all purposes.
  - N There is evidence the analyte is present in this sample.
  - JN There is evidence the analyte is present in this sample. The associated numerical result is an estimate.
  - D The sample result is reported from a diluted analysis.
  - EJ The sample result is greater than the calibration range. The associated numerical value is an estimated concentration only.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

# SEMIVOLATILE ORGANIC COMPOUND (SVOC) ANALYSES

# 1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8270	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
(SIM)	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

#### 2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

#### 3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	Recovery
	Fluoranthene-d10	AC
AUS-SB-52(2-2.5)	Benzo(a)pyrene-d12	AC
	1-Methylnaphthalene-d10	>UL
AUC CD 20/2 2 E/	Fluoranthene-d10	<ll but="">10%</ll>
AUS-SB-38(2-2.5)	Benzo(a)pyrene-d12	<ll but="">10%</ll>

Sample Locations	Surrogate	Recovery
AUS-SB-38(2-2.5)	1-Methylnaphthalene-d10	<ll but="">10%</ll>
	Fluoranthene-d10	AC
DUP-1	Benzo(a)pyrene-d12	AC
	1-Methylnaphthalene-d10	>UL

UL Upper control limit

LL Low Limit AC Acceptable

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results associated with the deviant fraction are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	No Action
- OL	Detect	J
< LL but > 10%	Non-detect	UJ
CLE but > 10%	Detect	J
< 10%	Non-detect	R
< 10%	Detect	J
Surrogates diluted below the calibration curve due to the	Non-detect	<sub>1</sub> 1
high concentration of a target compounds	Detect	J

A more concentrated analysis was not performed with surrogate compounds within the calibration range; therefore, no determination of extraction efficiency could be made.

#### 4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery
	Dibenz(a,h)anthracene	AC	<ll but="">10%</ll>
AUS-SB-41(2-2.5)	Indeno(1,2,3-cd)pyrene	AC	<ll but="">10%</ll>
AUS-3B-41(2-2.3)	1-Methylnaphthalene	AC	>UL
	2-Methylnaphthalene	AC	>UL

Sample Locations	Compound	MS Recovery	MSD Recovery
AUS-SB-41(2-2.5)	Napthalane	AC	>UL
AUS-SB-40(2-2.5)	Dibenz(a,h)anthracene	<ll but="">10%</ll>	<ll but="">10%</ll>
AUS-3D-40(2-2.5)	Indeno(1,2,3-cd)pyrene	<ll but="">10%</ll>	<ll but="">10%</ll>

AC Acceptable

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
> tile upper control limit (OL)	Detect	J
< the lower central limit (LL) but > 100/	Non-detect	Ω
< the lower control limit (LL) but > 10%	Detect	J
< 10%	Non-detect	R
< 10%	Detect	J
Parent sample concentration > four times the MS/MSD	Detect	No Action
spiking solution concentration.	Non-detect	NO ACTOR

Sample locations associated with MS/MSD recoveries exhibiting an RPD greater than of the control limit presented in the following table.

Sample Locations	Compound
AUS-SB-41(2-2.5)	Napthalane

The criteria used to evaluate the RPD between the MS/MSD recoveries are presented in the following table. In the case of an RPD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	UJ
/ UL	Detect	J

#### 5. Laboratory Control Sample

The LCS/ analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

#### 6. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
	Benzo(b)fluoranthene	0.014 J	0.0092 J	AC
	Chrysene	0.015 J	0.010 J	AC
AUS-SB-52(2-2.5)/DUP-1	1-Methylnaphthalene	4.6	7.8	51.6%
	2-Methylnaphthalene	7.7	12	43.7%
	Naphthalene 1.9	1.9	2.9	41.7%
	Benzo(b)fluoranthene	0.0084 J	0.0093 J	AC
	Chrysene	0.0011 J	0.0071 J	AC
AUS-SB-12(2-2.5)/DUP-2	1-Methylnaphthalene	0.0034	0.0017 J	AC
	2-Methylnaphthalene		0.0032	AC
	Naphthalene	0.0081	0.0043	AC

AC Acceptable

The compound(s) 1-methylnaphthalene associated with sample locations AUS-SB-52(2-2.5) and DUP-1 exhibited a field duplicate RPD greater than the control limit. The associated sample results from sample locations for the listed analyte were qualified as estimated.

#### 7. System Performance and Overall Assessment

The laboratory noted that the internal standard Perylene-d12 did not meet QC acceptance limits for sample locations AUS-SB-39(2-2.5), AUS-SB-38(2-2.5) and DUP-1. The results for associated compounds Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene and Dibenz(a,h)anthracene in sample locations AUS-SB-39(2-2.5), AUS-SB-38(2-2.5) and DUP-1 were qualified as estimated.

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

### **DATA VALIDATION CHECKLIST FOR SVOCs**

SVOCs: SW-846 8270 (SIM)	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	Required
GAS CHROMATOGRAPHY/MASS SPECTROM	ETRY (GC/	MS)			
Tier II Validation					
Holding times		Х		Х	
Reporting limits (units)		Х		Х	
Blanks			•		
A. Method blanks		Х		Х	
B. Equipment blanks	Х				Х
Laboratory Control Sample (LCS) %R		Х		Х	
Laboratory Control Sample Duplicate(LCSD) %R	Х				Х
LCS/LCSD Precision (RPD)	Х				Х
Matrix Spike (MS) %R		Х	Х		
Matrix Spike Duplicate(MSD) %R		Х	Х		
MS/MSD Precision (RPD)		Х	Х		
Field Duplicate (RPD)		Х	Х		
Surrogate Spike Recoveries		Х	Х		
Dilution Factor		Х		Х	
Moisture Content		Х		Х	

%R

Percent recovery
Relative percent difference RPD

#### **NWTPH-GX AND DX**

#### 1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
NWTPH – Gx and Dx ECY 97-602	Soil	14 days from collection to analysis	Cool to <6 °C

All samples were analyzed within the specified holding times.

#### 2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

#### 3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. The analysis requires surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	Recovery
AUS-SB-51(2-2.5) AUS-SB-9(2-2.5) AUS-SB-10A(2-2.5) AUS-SB-11(2-2.5) AUS-SB-61(2-2.5)	Trifluorotoluene-F	>UL

Sample Locations	Surrogate	Recovery
AUS-SB-50(2-2.5) AU-SB-12(2-2.5) AU-SB-13(2-2.5) AU-SB-30(2-2.5) AUS-SB-40(2-2.5) AU-SB-40(2-2.5)-MS AU-SB-40(2-2.5)-MSD AU-SB-14(2-2.5) AU-SB-20(2-2.5) AU-SB-21(2-2.5) AU-SB-29(2-2.5) AU-SB-18(2-2.5) AU-SB-18(2-2.5) AU-SB-18(2-2.5) AU-SB-39(2-2.5) AU-SB-39(2-2.5)	Trifluorotoluene-F	>UL
DUP-1 AU-SB-52(2-2.5)	Trifluorotoluene-F	D
AU-SB-30(2-2.5)	Orthoterphenyl	>UL

Upper control limit (UL) Diluted (D)

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results associated with the deviant fraction are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	No Action
/ OL	Detect	J
< LL but > 10%	Non-detect	ΠΊ
CLE but > 10%	Detect	J
< 10%	Non-detect	R
1070	Detect	J

#### 4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery				
AU-SB-40(2-2.5)	DRO/HRO	AC	<ll but="">10%</ll>				
AU-SB-41(2-2.5)	Gx	>UL	>UL				

AC = Acceptable

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification					
> the upper central limit (LIL)	Non-detect	No Action					
> the upper control limit (UL)	Detect	J					
< the lower control limit (LL) but > 10%	Non-detect	ΠΊ					
the lower control limit (EE) but > 10 %	Detect	J					
< 10%	Non-detect	R					
< 10%	Detect	J					
Parent sample concentration > four times the MS/MSD	Detect	No Action					
spiking solution concentration (D).	Non-detect	INO ACTION					

Sample locations associated with MS/MSD recoveries exhibiting an RPD greater than of the control limit presented in the following table.

Sample Locations	Compound
AU-SB-41(2-2.5)	Gx

The criteria used to evaluate the RPD between the MS/MSD recoveries are presented in the following table. In the case of an RPD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	UJ
^ OL	Detect	J

### 5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

#### 6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the

RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
	Gx	2400	1200	AC
AUS-SB-52(2-2.5/DUP-1	DRO	1300	3800	98%
	HRO	380 U	170 J	AC
	Gx	2.4 J	1.7 J	AC
AUS-SB-12(2-2.5)/DUP-2	DRO	3.6 J	8.3 U	AC
	HRO	16 J	25 J	AC

AC = Acceptable.

The compound DRO associated with sample locations AUS-SB-52(2-2.5) and DUP-1 exhibited a field duplicate RPD greater than the control limit. The associated sample results from sample locations for the listed analyte were qualified as estimated.

#### 7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

### **DATA VALIDATION CHECKLIST FOR TPH**

Gx/Dx; ECY 97-602	Rep	orted		mance ptable	Not Required		
	No	Yes	No	Yes	Required		
GAS CHROMATOGRAPHY (GC/FID)							
Tier II Validation							
Holding times		Х		Х			
Reporting limits (units)		Х		Х			
Blanks			•	•			
A. Method blanks		Х		Х			
B. Trip blanks		Х		Х			
Laboratory Control Sample (LCS) %R		Х		Х			
Laboratory Control Sample Duplicate(LCSD) %R	Х				Х		
LCS/LCSD Precision (RPD)	Х				Х		
Matrix Spike (MS) %R		Х	Х				
Matrix Spike Duplicate(MSD) %R		Х	Х				
MS/MSD Precision (RPD)		Х	Х				
Field/Lab Duplicate (RPD)		Х	Х				
Surrogate Spike Recoveries		Х	Х				
Dilution Factor		Х		Х			
Moisture Content		Х		Х			

<sup>%</sup>R - percent recovery, RPD - relative percent difference,

VALIDATION PERFORMED

BY: Rachelle Borne

SIGNATURE: Partie Par

DATE: November 30, 2015

PEER REVIEW: Joseph C. Houser

DATE: December 11, 2015

# CHAIN OF CUSTODY/ CORRECTED SAMPLE ANALYSIS DATA SHEETS



BP Site Node Path: \_

# 13955 1586402 8015041-80 Laboratory Management Program LaMP Chain of Custody Record R224110

Page	$\_$ of $\mathcal U$
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BP Site Node Path:	n: Req Due Date (m	m/dd/yy): Stradard TAT	Rush TAT: Yes No							
BP Facility No:	o: Former Olympin Bulk Plant Lab Work Order	Number: 175-798								
Lab Name: Lancaster Laborutories			CADIS							
Lab Address: 2425 New Holland Pike	City, State, ZIP Code: Oly of Pala, WA	Consultant/Contractor Project No: C PO9BPNA. WA 60								
Lab PM: Stacy Beatt	Lead Regulatory Agency: WADOE	Address: 1100 Or Ve								
Lab Phone: 717-656-2300	California Global ID No.:	Consultant/Contractor PM:								
Lab Shipping Accnt:	Enfos Proposal No:		Email: brian, mare un Carcady-us							
Lab Bottle Order No: 175798	Accounting Mode: Provision OOC-BU OOC-RM	Email EDD To: Prican Marc	and to lab.enfosdoc@bp.com							
Other Info:	Stage: Activity:	Invoice To: BP								
BP Project Manager (PM):	Matrix No. Containers / Preservative Requ	ested Analyses	Report Type & QC Level							
BP PM Phone:			Standard 🔀							
BP PM Email:	Well? Container: TPH-Cx TPH-Dx		Full Data Package							
Lab No. Sample Description Date Time	Soil / Solid Water / Liquid Air / Vapor Is this location a well? Total Number of Container: Unpreserved HZSO4 HNO3 HCI Methanol  GRO & WWTPH-Cx PRO & WWTPH-Cx		Comments  Note: If sample not collected, indicate "No Cample" in comments and single-strike out and initial any preprinted sample description.							
AUS-58-41 (2-2.5) 08-17-15 1130	$\times$ 96 3 $\times$ $\times$		MS/MSD, Rush TATE2 Pa							
AUS-SB-52(2-2.5)   1200	X 3 2 1 XXX		Rush TAT (2-Dow)							
AUS-58-62(2-2.5) 1215	X 3 2 1 X X X									
AUS-58-14(22.5) 1225										
AUS-SB-2 (2-2.5) 1235										
AUS-58-3(2-2.5) 1245										
AUS-58-5A(2-25)(413-0) 1255										
AUS-58-6(2-2.5) 1305										
Aus-58-7(2-2.5) 1320	1 1 1 1 1 1 1 1 1									
AUS-58-8(2-7.5) 08-17-15 1340	X		_							
Sampler's Name: Entry Copple	Relinquished By / Affiliation Date Time	Accepted By / Affiliat	tion Date Time							
Sampler's Company: ARCADIS	5Der 8/7/15/425		and the state of t							
Shipment Method: UPS Ship Date: 08-19-15	3/19/15 1700									
Shipment Tracking No: 12 75 1 02 x 10 4232 8367			LLE 320.15 10 cc							
		58-52(2-2.5)								
THIS LINE - LAB USE ONLY: Custody Seals In Place Yes / No	Temp Blank: Yes No Cooler Temp on Receipt: 1.5-1-4 °FC	Trip Blank: (es)/ No MS/M	ISD Sample Submitted (Yes) / No							

Lab Name:

Other Info:

BP PM Phone: BP PM Email:

Lab

No.

Lab Address: Lab PM: Lab Phone:

Lab Shipping Accnt: Lab Bottle Order No:

BP Project Manager (PM):

bp	Laborat	ory Man	د ا ag	575 em	。> ent l	oro!	s 86° grai	10 3 <b>n L</b>	≀ ≥ aM.	3013 <b>P</b> (	S04 Chai	in d	of C	ust	tody	/ R	eco	rd	R2	24	11	1	Pag	e 2	of U
rm	BP Site	Node Path:				W104-						_	Red	g Du	e Dat	e (m	m/dd/	′уу): _	Star	rdar	d T	AT	Rush TAT:	Yes	No
	aborator		Faci	lity Ac	ddress:		111	7	We	stl	Bay	7)	r." V (	િ			Consi	ıltant/C	ontrac	tor:	-	4RC	ADIS		
dress: 2425 New	Holland	Drive	City,	State	e, ZIP C					, h							Consultant/Contractor Project No: 6P098PNA, WA60								
1: Stacy (	Sutt		Lead	d Reg	ulatory A	genc				10E							Address: 100 Olive Way, Suite 800								
one: 717-656	- 2500		Calif	ornia	Global I	D No.		,			****						Consultant/Contractor PM: Brian Marcan								
ipping Accnt:			Enfo	s Pro	posal N	o:		4									Phone	):	-				nail: 6 - Lan M		real succe
ttle Order No: 175-79	P		Accounting Mode: Provision OOC-BU OOC-RM Email EDD To:												Vi'd n	Mar	CNM	and to <u>lab</u>	.enfosdoc@	bp.com					
nfo:	Stage: Activity: Invoice To: BP Contractor X																								
ect Manager (PM):	>			Mat	rix	N	o. Co	ntain	ers /	Pres	ervati	ive			F	equ	ested	Anal	/ses			Report Type & QC Level			
Phone:	-												B										Stan	dard X	
Email:						Container							STA	Š	4			Ī					Full Data Pac	kage	
Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor Is this location a well?	7		H2SO4	HNO3	HCI	Methanol		Varia by	SRO 63 NWTPH-GE	DRO 63 NWTPH-D.							Sam	Com b: If sample not co ple" in comments initial any preprint	and single-st	ike out
AVS-58-51 (2-7.5)	08-17-15	1400	X			3	2				j		X	X	X										
AUS-SP-9(2-2.5)		1420				li	li						1	7											
AUS-SB-10A(2-2.5)		1430				П								П	$\Pi$										
AUS-SB-1162-2.5)		1440	П										$\prod$	$\prod$	T										
AUS-58-61 (2-2.5)	*	1510	Y	ĺ		1	Y				4		П	$\prod$	11										
AUS-SP-50(2-2.5)	08-17-15	1545	X			3	2				ı		$\prod$	П	$\Pi$										
7.03 20 100 0 2 0	08-18-15	0805	X			9	6				3			П									MS/MSI	)	
AUS-88-15 (2-2.5)		0826				3	2				ı														
AUS-SB-13 (72-2.5)	1	0840	4			3	2				1		4	4	V		$\neg$								
AUS-58-30(2-2.5)	03-13-15	0811	X			3	2				1		X		X							1	Rush TAT	(2- Dr.	$\frac{7}{2}$

			7	<u> </u>		9	,				,		1	9-	8				. 1	1	1 1	l			
	AUS-SB-	30(2-2.5)	03-13-15	0811	X	9 8	7 2	2			١	3 2	$\times$	×	Y							Rush	TAT	(2-Dr	(3)
Sample	er's Name:	Enic For	ie			Relinqu	ished	By/	Affiliat	lion			Dat	te	Tir	ne		Ac	cepte	d By	/ Affil	liation		Date	Time
Sample	er's Company:	AR CADE	ľ.		E	rik Epple		25		and the second		(	08/	19	17	50							- 17950 PAGE	ASSESSMENT OF THE PARTY OF THE	
Shipmo	ent Method:	UPS	Ship Date: O	8-19-15											-				The State of the S	A STATE OF THE PARTY OF THE PAR	parameter a sea of the control	State of the State	144		
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Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: (79) / No	Temp Blank: Yes No	Cooler Temp on Receipt: 1-5~2-4 °F©	Trip Blank: (es) / No	MS/MSD Sample Submitted: Yes No
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### 13255 1586402 8015041-80

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3	rm		Site Node Path												Re	q Du	ue Date	(mm/d	ld/yy):	5	tandi	rd	TA	Rush TA	T: Yes	
À			BP Facility No	:	Fo	rM	v	$\mathcal{C}$	lyr	~ pi	a B	ulk	Ph	nr	L	ab W	ork Or	der Nu	mber:		1.	75	-79	8		
Lab Na	ame: Lancaster	labora	tories	Fac	cility A	Addre	ss:	1	111	7	W	est	Bai	^	De	( P		Cor	nsultant	'Contr	actor:	<del></del>	1	APCAUTS		
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Lab Ph		- 230	<u>&gt;0</u>	Cal	iforni	a Glo	bal II	No.:				-						Cor	sultant/	Contr				Brian M		
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Lab Bo	ottle Order No: 175-	798		Acc	ounti	ng M	ode:		Pro	vision	າ	00	C-BU		00	C-RM	1	Em	ail EDD	To:	Bril	11/	Narc	nn and to	lab.enfosdoc@	
Other				Sta	ge:				A	ctivity:	•								ice To:						or <u>X</u>	
BP Pro	oject Manager (PM):	~			Ma	atrix		No	o. Co	ntain	ners /	Pres	ervati	ve			Re	quest	ed Ana	lyse	S			Report T	ype & QC L	_evel
BP PM	Phone:														E									S	tandard 🗡	-
BP PN	Email:							tainer							79	ې	Ä							Full Data P	ackage	-
Lab	Sample Description	Date	Time		did		tion a well?	Total Number of Container	pa						Naph 63 8270C	NWTPH-6x	NWTPH-DX								_	
No.	Sample Description	Date	e i ime	Soil / Solid	Water / Liquid	Air / Vapor	Is this location	Total Num	Unpreserved	H2SO4	HNO3	HCI	Methanol		PAKS	GRO 43	DRO 63							Note: If sample not Sample" in comme and initial any prep	nts and single-s	strike out
	AUS-58-14(2-2.5)	08-18-	15 0940	X				3	2				1		X	X	Contract Con									
	AUS-58-20(2-2.5)	03-18-1	5 1000	X				3	2				1		X	X	X		$\dagger$							
	AUS-58-21(2-2.5)	j	1035	1				1	1				1		1	T										
	AUS-SB-29(2-2.5)		1040	П					П				П				$\Pi$									
	AUS-58-1962-2.5)		1100														$\Pi T$									
	AUS-58-39(2-2.5)		1110																							
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	AUS-58-1762-2.5)		1140						and the second																	
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	ampler's Name: Eric Epple				Relinquished By / Affiliation					Da		Time														
Sample	er's Company: ARCADES				Er.	6 E	pple	, _	2					1	08	199	1700								and the second s	

Aus-58- 18(2-2.5) 08-18-15 13:30	x 3 2 1	XXX		
Sampler's Name: Fric Epp IC	Relinquished By / Affiliation	Date Time	Accepted By / Affiliation	Date Time
Sampler's Company: ARCADTS	En's Epple Zall	08/94 1700		and the second s
Shipment Method: UPS Ship Date: 08-19-15				
Shipment Tracking No:			YA COLECE	87015 10-0

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: (es) No Temp Blank: Yes / No Cooler Temp on Receipt: 1.5 - 2.4 °F/Ø Trip Blank: Yes/ No MS/MSD Sample Submitted: Ver / No

# 13755 1586402 8015041-80 Laboratory Management Program LaMP Chain of Custody Record R

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BP Site Node Path:					Req Due Date (mm/dd/yy):	Standard	TAT	Rush TAT: Yes	No
BP Facility No:	Former	Olympia	Bulk P	1 L	Lab Work Order Number:	175	748		

Lab Address: 2420 New Hill Dayle				Facility Address: 1117 West Ban Dr. Ve											Consultant/Contractor: AR CAPTS															
Lab A	- 1-3 . 311 1/01	lland Oriv	18	City,	Stat	e, ZIP	Cod	de:		Oli	n.	pila s	, 1	WA					Consu	ltant/	Contra	actor	Proje	ct No:				4. WA	60	)
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Lab Bo	ottle Order No: 175	798		Acco	ountir	ng Mod	de:		Pro	vision		00	C-BU		00	C-RM	1		Email I	EDD	To:	R	Ju.	Mas	renm			.enfosdoo		
Other	Info:			Stag	e:				A	ctivity:									Invoice	To:			BP				ractor_	X		
BP Pro	oject Manager (PM):	-			Ma	trix		No	. Co	ntain	ers /	Pres	ervat	ive			R	eque	sted	Ana	lyses	;				Repo	rt Typ	e & QC	Lev	el
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Lab No.	Sample Description	Time	Soil / Solid	Water / Liquid	Air / Vapor	Is this location a well?	Total Number of Container	Unpreserved	H2SO4	ниоз	HCI	Methanol		PAHL + Naph 62 S	CRO by NWTPH-Gx	DRO 63 AWTOH-DX								Note: I	If sample le" in con	Com e not col	ments lected, ind and single ed sample	licate '	e out	
	AVS-SP-15 (2-2.5)	68-18-15	1340	X				3	2						X	Y	X													
	AUS-58-38 (2-2.5)	08-18-15	1405	X				3	2				1		X	X	X										·-/			
	AUS-5B-49(2-2.5)	08-18-15	1445	X	-			3	2				Ì		X	X	X													
	DUP-1	08-17-15	Company of the Compan	X				3	5				1		X	X	X		$\top$											
	DVP-2	21-81-60		X				3	2						X	X		$\exists$		$\dashv$	7									
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Sample	ampler's Name: Eric Estil					Re	line	quish	ed E	By / At	ffiliat	ion			Da	ite	Tim	е	<del></del>		Acce	pted	By /	/ Affil	iation			Date	T 7	Гime
Sample	ampler's Company: ARCADIS				Eric Epile / 200 08-14 1700							00																		
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2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-41(2-2.5) Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015041

LL Group # 1586402 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 11:30 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00 630 Plaza Drive

Reported: 09/22/2015 16:07 Highlands Ranch CO 80129

#### ASB41

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.0035 <sup>J</sup>	0.00080	0.0020	1
10725	Benzo(a)pyrene	50-32-8	0.0035	0.00080	0.0020	1
10725	Benzo(b)fluoranthene	205-99-2	0.012	0.00080	0.0020	1
10725	Benzo(k)fluoranthene	207-08-9	0.0026	0.00080	0.0020	1
10725	Chrysene	218-01-9	0.012	0.00040	0.0020	1
10725	Dibenz(a,h)anthracene	53-70-3	0.0013 J	0.00080	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0030 J	0.00080	0.0020	1
10725	1-Methylnaphthalene	90-12-0	0.024 <sup>J</sup>	0.00080	0.0020	1
10725	2-Methylnaphthalene	91-57-6	0.055 <sup>J</sup>	0.00080	0.0020	1
10725	Naphthalene	91-20-3	0.087 <sup>J</sup>	0.00080	0.0020	1
GC Vol	latiles ECY 97	-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	27 <b>J</b>	1.5	7.5	31.27
GC Pet	croleum ECY 97	-602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si modifi	ed				
02214	DRO C12-C24 w/Si Gel	n.a.	28	3.6	8.3	1
02214	HRO C24-C40 w/Si Gel	n.a.	82	12	36	1
Wet Ch	nemistry SM 254	0 G-1997	%	8	%	
00111	Moisture	n.a.	16.4	0.50	0.50	1
	Moisture represents the loss 103 - 105 degrees Celsius. Tas-received basis.	_	-			

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

			-				
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026	09/01/2015 00:48	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15236SLC026	08/24/2015 16:30	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15235A34A	08/23/2015 12:23	Marie D Beamenderfer	31.27
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/17/2015 11:30	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520004A	09/11/2015 19:50	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520004A	08/27/2015 19:00	Sally L Appleyard	1
00111	Moisture	SM 2540 G-1997	1	15237820002B	08/25/2015 19:44	Scott W Freisher	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-41(2-2.5)-MS Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015042 LL Group # 1586402 Account # 13255

Project Name: Former Olympia Bulk Plant

Reported: 09/22/2015 16:07

Collected: 08/17/2015 11:30 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00 630 Plaza Drive

Highlands Ranch CO 80129

#### ASB41

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 82	70C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.046	0.00079	0.0020	1
10725	Benzo(a)pyrene		50-32-8	0.042	0.00079	0.0020	1
10725	Benzo(b)fluoranthene	<u>:</u>	205-99-2	0.053	0.00079	0.0020	1
10725	Benzo(k)fluoranthene	<u>:</u>	207-08-9	0.042	0.00079	0.0020	1
10725	Chrysene		218-01-9	0.053	0.00040	0.0020	1
10725	Dibenz(a,h)anthracen	ıe	53-70-3	0.038	0.00079	0.0020	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	0.038	0.00079	0.0020	1
10725	1-Methylnaphthalene		90-12-0	0.060	0.00079	0.0020	1
10725	2-Methylnaphthalene		91-57-6	0.090	0.00079	0.0020	1
10725	Naphthalene		91-20-3	0.12	0.00079	0.0020	1
GC Vol	latiles	ECY 97-602	2 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12		n.a.	97	1.8	8.9	37.25
		ECY 97-602 modified	2 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
02214	DRO C12-C24 w/Si Gel		n.a.	210	3.6	8.3	1
02214	HRO C24-C40 w/Si Gel		n.a.	110	12	36	1
Wet Ch	nemistry	SM 2540 G-	-1997	%	%	%	
00118	Moisture		n.a.	16.4	0.50	0.50	1

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tim	ıe.	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026	09/01/2015	01:21	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15236SLC026	08/24/2015	16:30	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15235A34A	08/23/2015	13:23	Marie D Beamenderfer	37.25
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/17/2015	11:30	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520004A	09/11/2015	20:12	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520004A	08/27/2015	19:00	Sally L Appleyard	1
00118	Moisture	SM 2540 G-1997	1	15237820002B	08/25/2015	19:44	Scott W Freisher	1



Account

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-41(2-2.5)-MSD Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015043 LL Group # 1586402

# 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 11:30 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00 630 Plaza Drive

Reported: 09/22/2015 16:07 Highlands Ranch CO 80129

#### ASB41

CAT No.	Analysis Name			CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-	846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene			56-55-3	0.041	0.00079	0.0020	1
10725	Benzo(a)pyrene			50-32-8	0.041	0.00079	0.0020	1
10725	Benzo(b)fluoranthene	9		205-99-2	0.050	0.00079	0.0020	1
10725	Benzo(k)fluoranthene	2		207-08-9	0.045	0.00079	0.0020	1
10725	Chrysene			218-01-9	0.051	0.00039	0.0020	1
10725	Dibenz(a,h)anthracen	ne		53-70-3	0.031	0.00079	0.0020	1
10725	Indeno(1,2,3-cd)pyre	ene		193-39-5	0.030	0.00079	0.0020	1
10725	1-Methylnaphthalene			90-12-0	0.075	0.00079	0.0020	1
10725	2-Methylnaphthalene			91-57-6	0.12	0.00079	0.0020	1
10725	Naphthalene			91-20-3	0.17	0.00079	0.0020	1
GC Vol	latiles	ECY	97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	2		n.a.	45	1.4	6.8	28.37
GC Pet	roleum	ECY	97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	mod:	ified					
02214	DRO C12-C24 w/Si Gel			n.a.	170	3.6	8.3	1
	HRO C24-C40 w/Si Gel			n.a.	71	12	36	1
Wet Ch	nemistry	SM :	2540 G-	1997	%	%	%	
00118	Moisture			n.a.	16.4	0.50	0.50	1
00121	Moisture Duplicate			n.a.	14.3	0.50	0.50	1
	The duplicate moistumoisture test. For determination is the	comp	arability	purposes, th	e initial mo	oisture		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tir	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026	09/01/2015	01:53	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15236SLC026	08/24/2015	16:30	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15235A34A	08/23/2015	13:58	Marie D Beamenderfer	28.37
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/17/2015	11:30	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520004A	09/11/2015	20:33	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520004A	08/27/2015	19:00	Sally L Appleyard	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



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Sample Description: AUS-SB-41(2-2.5)-MSD Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015043

LL Group # 1586402 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 08/20/2015 10:00

Reported: 09/22/2015 16:07

Collected: 08/17/2015 11:30 by EE Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

ASB41

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00118	Moisture	SM 2540 G-1997	1	15237820002B	08/25/2015 19:44	Scott W Freisher	1
00121	Moisture Duplicate	SM 2540 G-1997	1	15237820002B	08/25/2015 19:44	Scott W Freisher	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-52(2-2.5) Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015044 LL Group # 1586402 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 12:00 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00 630 Plaza Drive

Reported: 09/22/2015 16:07 Highlands Ranch CO 80129

#### ASB52

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles SW-846 82	70C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D.	0.0084	0.021	10
10725	Benzo(a)pyrene	50-32-8	N.D.	0.0084	0.021	10
10725	Benzo(b)fluoranthene	205-99-2	0.014 J	0.0084	0.021	10
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.0084	0.021	10
10725	Chrysene	218-01-9	0.015 J	0.0042	0.021	10
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0084	0.021	10
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.0084	0.021	10
10725	1-Methylnaphthalene	90-12-0	4.6 J	0.084	0.21	100
10725	2-Methylnaphthalene	91-57-6	7.7	0.084	0.21	100
10725	Naphthalene	91-20-3	1.9	0.0084	0.021	10
GC Vol	latiles ECY 97-60	2 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	2,400 J	390	2,000	7673.56
		2 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
-	carbons w/Si modified		<del>-</del>			
02214	DRO C12-C24 w/Si Gel	n.a.	1,300 🗸	38	89	10
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	130	380	10
Wet Ch	nemistry SM 2540 G	;-1997	%	%	%	
00111	Moisture	n.a.	22.2	0.50	0.50	1
	Moisture represents the loss in 103 - 105 degrees Celsius. The as-received basis.	_		ing at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

			-					
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tim	A	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026		10:09	Brian K Graham	10
			_		, ,			
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026	08/31/2015	10:42	Brian K Graham	100
10811	BNA Soil Microwave SIM	SW-846 3546	1	15236SLC026	08/24/2015	16:30	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15235A34B	08/24/2015	18:03	Marie D	7673.56
		NWTPH-Gx					Beamenderfer	
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/17/2015	12:00	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520004A	09/11/2015	23:48	Heather E Williams	10
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520004A	08/27/2015	19:00	Sally L Appleyard	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



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Sample Description: AUS-SB-52(2-2.5) Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Group # 1586402 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 08/20/2015 10:00

Reported: 09/22/2015 16:07

Collected: 08/17/2015 12:00 by EE Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

ASB52

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15237820002B	08/25/2015 19:44	Scott W Freisher	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-62(2-2.5) Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015045 LL Group # 1586402

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 12:15 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00 630 Plaza Drive

Reported: 09/22/2015 16:07 Highlands Ranch CO 80129

#### ASB62

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.00082	0.0020	1
10725	Benzo(a)pyrene		50-32-8	0.00098 J	0.00082	0.0020	1
10725	Benzo(b)fluoranthene		205-99-2	0.0049	0.00082	0.0020	1
10725	Benzo(k)fluoranthene		207-08-9	0.00095 J	0.00082	0.0020	1
10725	Chrysene		218-01-9	0.0043	0.00041	0.0020	1
10725	Dibenz(a,h)anthracen	.e	53-70-3	N.D.	0.00082	0.0020	1
10725	Indeno(1,2,3-cd)pyre	ne	193-39-5	0.00091 J	0.00082	0.0020	1
10725	1-Methylnaphthalene		90-12-0	0.0011 J	0.00082	0.0020	1
10725	2-Methylnaphthalene		91-57-6	0.0019 J	0.00082	0.0020	1
10725	Naphthalene		91-20-3	0.014	0.00082	0.0020	1
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12		n.a.	N.D.	2.0	9.9	40.14
			NWTPH-Dx	mg/kg	mg/kg	mg/kg	
-		modified					_
02214	DRO C12-C24 w/Si Gel		n.a.	6.6 J	3.7	8.6	1 1
02214	HRO C24-C40 w/Si Gel		n.a.	49	12	37	1
Wet Ch	nemistry	SM 2540 G-	1997	%	%	%	
00111	Moisture		n.a.	19.3	0.50	0.50	1
	Moisture represents 103 - 105 degrees Ce as-received basis.		_	sample after oven dryi reported is on an	ng at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026	09/01/2015 02:58	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15236SLC026	08/24/2015 16:30	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15235A34A	08/23/2015 16:19	Marie D Beamenderfer	40.14
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/17/2015 12:15	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520004A	09/11/2015 20:55	Heather E Williams	3 1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520004A	08/27/2015 19:00	Sally L Appleyard	1
00111	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015 19:13	Scott W Freisher	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-1A(4.5-5) Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015046 LL Group # 1586402

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 12:25 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00 630 Plaza Drive

Reported: 09/22/2015 16:07 Highlands Ranch CO 80129

#### ASB1A

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.0012 J	0.00085	0.0021	1
10725	Benzo(a)pyrene		50-32-8	0.0014 J	0.00085	0.0021	1
10725	Benzo(b)fluoranthene	e	205-99-2	0.0035	0.00085	0.0021	1
10725	Benzo(k)fluoranthene	e	207-08-9	0.0014 J	0.00085	0.0021	1
10725	Chrysene		218-01-9	0.0028	0.00042	0.0021	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.00085	0.0021	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.	0.00085	0.0021	1
10725	1-Methylnaphthalene		90-12-0	0.0029	0.00085	0.0021	1
10725	2-Methylnaphthalene		91-57-6	0.0049	0.00085	0.0021	1
10725	Naphthalene		91-20-3	0.0037	0.00085	0.0021	1
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1:	2	n.a.	N.D.	1.5	7.7	29.91
GC Pet	croleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modified					
02214	DRO C12-C24 w/Si Ge	1	n.a.	9.2	3.8	8.9	1
02214	HRO C24-C40 w/Si Ge	1	n.a.	64	13	38	1
Wet Ch	nemistry	SM 2540 G-	1997	8	%	8	
00111	Moisture		n.a.	22.0	0.50	0.50	1
	Moisture represents 103 - 105 degrees Co as-received basis.			sample after oven dryi reported is on an	ing at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tir	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026	09/01/2015	03:32	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15236SLC026	08/24/2015	16:30	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15235A34A	08/23/2015	16:54	Marie D Beamenderfer	29.91
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/17/2015	12:25	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520004A	09/11/2015	21:17	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520004A	08/27/2015	19:00	Sally L Appleyard	1
00111	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015	19:13	Scott W Freisher	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



Account

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-2(2-2.5) Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015047 LL Group # 1586402

# 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 12:35 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00 630 Plaza Drive

Reported: 09/22/2015 16:07 Highlands Ranch CO 80129

#### ASB02

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles SW-846 82	70C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D.	0.00083	0.0021	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.00083	0.0021	1
10725	Benzo(b)fluoranthene	205-99-2	0.0012 J	0.00083	0.0021	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.00083	0.0021	1
10725	Chrysene	218-01-9	0.0012 J	0.00041	0.0021	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00083	0.0021	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00083	0.0021	1
10725	1-Methylnaphthalene	90-12-0	N.D.	0.00083	0.0021	1
10725	2-Methylnaphthalene	91-57-6	0.0011 J	0.00083	0.0021	1
10725	Naphthalene	91-20-3	0.0024	0.00083	0.0021	1
GC Vol	latiles ECY 97-60	2 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	1.3	6.5	26.04
		2 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
-	carbons w/Si modified					_
02214	DRO C12-C24 w/Si Gel	n.a.	5.7 J	3.7	8.7	1
02214	HRO C24-C40 w/Si Gel	n.a.	49	12	37	1
Wet Ch	nemistry SM 2540 G	-1997	%	%	%	
00111	Moisture	n.a.	20.3	0.50	0.50	1
	Moisture represents the loss in 103 - 105 degrees Celsius. The as-received basis.			ng at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

			-				
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026	09/01/2015 04:	:04 Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15236SLC026	08/24/2015 16:	:30 Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15235A34A	08/23/2015 17:	:29 Marie D Beamenderfer	26.04
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/17/2015 12:	:35 Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520004A	09/11/2015 21:	:38 Heather E Williams	3 1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520004A	08/27/2015 19:	:00 Sally L Appleyard	1
00111	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015 19:	:13 Scott W Freisher	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-3(2-2.5) Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015048 LL Group # 1586402

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 12:45 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00 630 Plaza Drive

Reported: 09/22/2015 16:07 Highlands Ranch CO 80129

#### ASB03

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.0056	0.00082	0.0020	1
10725	Benzo(a)pyrene	50-32-8	0.0062	0.00082	0.0020	1
10725	Benzo(b)fluoranthene	205-99-2	0.013	0.00082	0.0020	1
10725	Benzo(k)fluoranthene	207-08-9	0.0052	0.00082	0.0020	1
10725	Chrysene	218-01-9	0.010	0.00041	0.0020	1
10725	Dibenz(a,h)anthracene	53-70-3	0.00084 J	0.00082	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0028	0.00082	0.0020	1
10725	1-Methylnaphthalene	90-12-0	0.0010 J	0.00082	0.0020	1
10725	2-Methylnaphthalene	91-57-6	0.0020 J	0.00082	0.0020	1
10725	Naphthalene	91-20-3	0.0045	0.00082	0.0020	1
GC Vol	latiles ECY 97-	602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	1.5	7.3	29.4
		602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
-	carbons w/Si modifie	:d				
02214	DRO C12-C24 w/Si Gel	n.a.	8.7	3.7	8.7	1
02214	HRO C24-C40 w/Si Gel	n.a.	68	12	37	1
Wet Ch	nemistry SM 2540	G-1997	%	%	%	
00111	Moisture	n.a.	19.4	0.50	0.50	1
	Moisture represents the loss 103 - 105 degrees Celsius. Thas-received basis.					

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

			-	•				
CAT	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tir		Analyst	Dilution
No.					Date and Til	ne		Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026	09/01/2015	04:37	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15236SLC026	08/24/2015	16:30	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15235A34A	08/23/2015	18:05	Marie D Beamenderfer	29.4
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/17/2015	12:45	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520004A	09/11/2015	22:00	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520004A	08/27/2015	19:00	Sally L Appleyard	1
00111	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015	19:13	Scott W Freisher	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-5A(4.5-5) Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015049 LL Group # 1586402 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 12:55 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00 630 Plaza Drive

Reported: 09/22/2015 16:07 Highlands Ranch CO 80129

#### ASB5A

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.0029	0.00083	0.0021	1
10725	Benzo(a)pyrene	50-32-8	0.0031	0.00083	0.0021	1
10725	Benzo(b)fluoranthene	205-99-2	0.0060	0.00083	0.0021	1
10725	Benzo(k)fluoranthene	207-08-9	0.0020 J	0.00083	0.0021	1
10725	Chrysene	218-01-9	0.0043	0.00041	0.0021	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00083	0.0021	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0012 J	0.00083	0.0021	1
10725	1-Methylnaphthalene	90-12-0	0.0053	0.00083	0.0021	1
10725	2-Methylnaphthalene	91-57-6	0.012	0.00083	0.0021	1
10725	Naphthalene	91-20-3	0.0074	0.00083	0.0021	1
GC Vol	latiles ECY 97-	602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	1.3	6.6	26.31
GC Pet		602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si modified	i				
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.8	8.8	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	13	38	1
Wet Ch	nemistry SM 2540	G-1997	%	%	%	
00111	Moisture	n.a.	20.4	0.50	0.50	1
	Moisture represents the loss 103 - 105 degrees Celsius. The as-received basis.	_	-			

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

	• • • • • • • • • • • • • • • • • • • •										
CAT	Analysis Name	Method	Trial#	Batch#	Analysis		Analyst	Dilution			
No.					Date and Ti	me		Factor			
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026	09/01/2015	05:10	Brian K Graham	1			
10811	BNA Soil Microwave SIM	SW-846 3546	1	15236SLC026	08/24/2015	16:30	Shawn J McMullen	1			
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15235A34A	08/23/2015	18:40	Marie D Beamenderfer	26.31			
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/17/2015	12:55	Client Supplied	n.a.			
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520004A	09/11/2015	22:22	Heather E Williams	1			
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520004A	08/27/2015	19:00	Sally L Appleyard	1			
00111	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015	19:13	Scott W Freisher	1			

<sup>\*=</sup>This limit was used in the evaluation of the final result



Account

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-6(2-2.5) Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015050 LL Group # 1586402

# 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 13:05 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00 630 Plaza Drive

Reported: 09/22/2015 16:07 Highlands Ranch CO 80129

#### ASB06

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.00095 J	0.00091	0.0023	1
10725	Benzo(a)pyrene		50-32-8	N.D.	0.00091	0.0023	1
10725	Benzo(b)fluoranthene		205-99-2	0.0034	0.00091	0.0023	1
10725	Benzo(k)fluoranthene		207-08-9	0.00095 J	0.00091	0.0023	1
10725	Chrysene		218-01-9	0.0022 J	0.00045	0.0023	1
10725	Dibenz(a,h)anthracen	e	53-70-3	N.D.	0.00091	0.0023	1
10725	Indeno(1,2,3-cd)pyre	ne	193-39-5	N.D.	0.00091	0.0023	1
10725	1-Methylnaphthalene		90-12-0	0.0010 J	0.00091	0.0023	1
10725	2-Methylnaphthalene		91-57-6	0.0011 J	0.00091	0.0023	1
10725	Naphthalene		91-20-3	0.0070	0.00091	0.0023	1
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12		n.a.	2.4 J	1.8	8.9	32.37
GC Pet	roleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modified					
02214	DRO C12-C24 w/Si Gel		n.a.	13	4.1	9.6	1
02214	HRO C24-C40 w/Si Gel		n.a.	120	14	41	1 1
Wet Ch	nemistry	SM 2540 G-	1997	%	%	%	
00111	Moisture		n.a.	27.6	0.50	0.50	1
	Moisture represents 103 - 105 degrees Ce as-received basis.		_	ample after oven dryi reported is on an	ng at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026	09/01/2015 09:32	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15236SLC026	08/24/2015 16:30	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15235A34A	08/23/2015 19:15	Marie D Beamenderfer	32.37
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/17/2015 13:05	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520004A	09/11/2015 23:05	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520004A	08/27/2015 19:00	Sally L Appleyard	1
00111	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015 19:13	Scott W Freisher	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-7(2-2.5) Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015051 LL Group # 1586402 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 13:20 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00 630 Plaza Drive

Reported: 09/22/2015 16:07 Highlands Ranch CO 80129

#### ASB07

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg		mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.0017	J	0.00086	0.0021	1
10725	Benzo(a)pyrene		50-32-8	0.0020	J	0.00086	0.0021	1
10725	Benzo(b)fluoranthen	e	205-99-2	0.0051		0.00086	0.0021	1
10725	Benzo(k)fluoranthen	e	207-08-9	0.0016	J	0.00086	0.0021	1
10725	Chrysene		218-01-9	0.0040		0.00043	0.0021	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.		0.00086	0.0021	1
10725	Indeno(1,2,3-cd)pyr	ene	193-39-5	0.0010	J	0.00086	0.0021	1
10725	1-Methylnaphthalene		90-12-0	N.D.		0.00086	0.0021	1
10725	2-Methylnaphthalene		91-57-6	0.0011	J	0.00086	0.0021	1
10725	Naphthalene		91-20-3	0.0022		0.00086	0.0021	1
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg		mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1	2	n.a.	N.D.		1.4	7.1	27.33
	croleum carbons w/Si	ECY 97-602 modified	NWTPH-Dx	mg/kg		mg/kg	mg/kg	
02214	DRO C12-C24 w/Si Ge	1	n.a.	5.9	J	3.9	9.1	1
02214	HRO C24-C40 w/Si Ge	1	n.a.	22	J	13	39	1
Wet Ch	nemistry	SM 2540 G-	1997	%		%	%	
00111	Moisture		n.a.	23.3		0.50	0.50	1
	Moisture represents 103 - 105 degrees C as-received basis.					ng at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

			-					
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026	09/01/2015 05	:43	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15236SLC026	08/24/2015 16	:30	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15235A34A	08/23/2015 19		Marie D Beamenderfer	27.33
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/17/2015 13	:20	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520004A	09/11/2015 23	:26	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520004A	08/27/2015 19	:00	Sally L Appleyard	1
00111	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015 19	:13	Scott W Freisher	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-8(2-2.5) Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015052 LL Group # 1586402 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 13:40 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00 630 Plaza Drive

Reported: 09/22/2015 16:07 Highlands Ranch CO 80129

#### ASB08

CAT No.	Analysis Name	CA	S Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles SW-8	46 8270C	SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56	-55-3	0.0011 J	0.00080	0.0020	1
10725	Benzo(a)pyrene	50	-32-8	0.0013 J	0.00080	0.0020	1
10725	Benzo(b)fluoranthene	20	5-99-2	0.0049	0.00080	0.0020	1
10725	Benzo(k)fluoranthene	20	7-08-9	0.0013 J	0.00080	0.0020	1
10725	Chrysene	21	8-01-9	0.0039	0.00040	0.0020	1
10725	Dibenz(a,h)anthracene	53	-70-3	N.D.	0.00080	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	19	3-39-5	N.D.	0.00080	0.0020	1
10725	1-Methylnaphthalene	90	-12-0	0.0018 J	0.00080	0.0020	1
10725	2-Methylnaphthalene	91	-57-6	0.0025	0.00080	0.0020	1
10725	Naphthalene	91	-20-3	0.0075	0.00080	0.0020	1
GC Vol	latiles ECY	97-602 N	WTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a	a.	N.D.	1.5	7.3	30.03
GC Pet	croleum ECY	97-602 N	WTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si modi	fied					
02214	DRO C12-C24 w/Si Gel	n.a	a.	N.D.	3.6	8.4	1
02214	HRO C24-C40 w/Si Gel	n.a	a.	N.D.	12	36	1
Wet Ch	nemistry SM 2	540 G-19	97	8	8	%	
00111	Moisture	n.a	a.	17.7	0.50	0.50	1
	Moisture represents the 1 103 - 105 degrees Celsius as-received basis.				ng at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026	09/01/2015 06:	15 Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15236SLC026	08/24/2015 16:	30 Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15235A34A	08/23/2015 20:	26 Marie D Beamenderfer	30.03
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/17/2015 13:	40 Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520005A	09/12/2015 01:	15 Heather E William	ns 1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520005A	08/28/2015 10:	55 Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015 19:	13 Scott W Freisher	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



Account

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-51(2-2.5) Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015053 LL Group # 1586402

# 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 14:00 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00 630 Plaza Drive

Reported: 09/22/2015 16:07 Highlands Ranch CO 80129

#### ASB51

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles SW-84	6 8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.0017 J	0.00087	0.0022	1
10725	Benzo(a)pyrene	50-32-8	0.0016 J	0.00087	0.0022	1
10725	Benzo(b)fluoranthene	205-99-2	0.0079	0.00087	0.0022	1
10725	Benzo(k)fluoranthene	207-08-9	0.0020 J	0.00087	0.0022	1
10725	Chrysene	218-01-9	0.0064	0.00043	0.0022	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00087	0.0022	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0013 J	0.00087	0.0022	1
10725	1-Methylnaphthalene	90-12-0	0.014	0.00087	0.0022	1
10725	2-Methylnaphthalene	91-57-6	0.022	0.00087	0.0022	1
10725	Naphthalene	91-20-3	0.021	0.00087	0.0022	1
GC Vol	latiles ECY 9	7-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	1.7	8.4	32.19
GC Pet	croleum ECY 9	7-602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si modif	ied				
02214	DRO C12-C24 w/Si Gel	n.a.	24	3.9	9.1	1
02214	HRO C24-C40 w/Si Gel	n.a.	15 Ј	13	39	1
Wet Ch	nemistry SM 25	40 G-1997	%	%	%	
00111	Moisture	n.a.	23.7	0.50	0.50	1
	Moisture represents the load 103 - 105 degrees Celsius. as-received basis.					

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

			-					
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tim	ne	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026	09/01/2015	09:00	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15236SLC026	08/24/2015	16:30	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15235A34A	08/23/2015	21:01	Marie D Beamenderfer	32.19
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/17/2015	14:00	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520005A	09/12/2015	01:36	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520005A	08/28/2015	10:55	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015	19:13	Scott W Freisher	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-9(2-2.5) Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015054 LL Group # 1586402

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 14:20 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00 630 Plaza Drive

Reported: 09/22/2015 16:07 Highlands Ranch CO 80129

#### ASB09

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.035	0.00070	0.0018	1
10725	Benzo(a)pyrene		50-32-8	0.040	0.00070	0.0018	1
10725	Benzo(b)fluoranthene	е	205-99-2	0.13	0.00070	0.0018	1
10725	Benzo(k)fluoranthene	e	207-08-9	0.032	0.00070	0.0018	1
10725	Chrysene		218-01-9	0.080	0.00035	0.0018	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	0.0070	0.00070	0.0018	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	0.020	0.00070	0.0018	1
10725	1-Methylnaphthalene		90-12-0	0.026	0.00070	0.0018	1
10725	2-Methylnaphthalene		91-57-6	0.042	0.00070	0.0018	1
10725	Naphthalene		91-20-3	0.038	0.00070	0.0018	1
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1:	2	n.a.	1.0 J	1.0	5.1	23.78
GC Pet	croleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modified					
02214	DRO C12-C24 w/Si Ge	1	n.a.	20	3.1	7.3	1
02214	HRO C24-C40 w/Si Ge	1	n.a.	110	10	31	1
Wet Ch	nemistry	SM 2540 G-	1997	%	8	%	
00111	Moisture		n.a.	5.9	0.50	0.50	1
	Moisture represents 103 - 105 degrees Co as-received basis.			sample after oven dryi reported is on an	ng at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

			-					
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026	09/01/2015 10	0:06	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15236SLC026	08/24/2015 16	6:30	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15235A34A	08/23/2015 22	2:12	Marie D Beamenderfer	23.78
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/17/2015 14	4:20	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520005A	09/12/2015 05	5:12	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520005A	08/28/2015 10	0:55	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015 19	9:13	Scott W Freisher	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-10A(2-2.5) Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015055 LL Group # 1586402 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 14:30 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00 630 Plaza Drive

Reported: 09/22/2015 16:07 Highlands Ranch CO 80129

#### AS10A

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.033	0.00081	0.0020	1
10725	Benzo(a)pyrene		50-32-8	0.035	0.00081	0.0020	1
10725	Benzo(b)fluoranthene	e	205-99-2	0.095	0.00081	0.0020	1
10725	Benzo(k)fluoranthene	e	207-08-9	0.041	0.00081	0.0020	1
10725	Chrysene		218-01-9	0.079	0.00040	0.0020	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	0.0050	0.00081	0.0020	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	0.017	0.00081	0.0020	1
10725	1-Methylnaphthalene		90-12-0	0.0067	0.00081	0.0020	1
10725	2-Methylnaphthalene		91-57-6	0.0099	0.00081	0.0020	1
10725	Naphthalene		91-20-3	0.013	0.00081	0.0020	1
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1:	2	n.a.	N.D.	1.4	7.1	29.27
	croleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modified					
02214	DRO C12-C24 w/Si Ge	1	n.a.	N.D.	3.6	8.5	1
02214	HRO C24-C40 w/Si Ge	1	n.a.	N.D.	12	36	1
Wet Ch	nemistry	SM 2540 G-	-1997	8	%	8	
00111	Moisture		n.a.	17.5	0.50	0.50	1
	Moisture represents 103 - 105 degrees Co as-received basis.			sample after oven dryi reported is on an	ng at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT	Analysis Name	Method	Trial#	Batch#	Analysis		Analyst	Dilution		
No.					Date and Ti	me		Factor		
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026	09/01/2015	06:49	Brian K Graham	1		
10811	BNA Soil Microwave SIM	SW-846 3546	1	15236SLC026	08/24/2015	16:30	Shawn J McMullen	1		
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15235A34A	08/23/2015	22:47	Marie D Beamenderfer	29.27		
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/17/2015	14:30	Client Supplied	n.a.		
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520005A	09/12/2015	20:51	Heather E Williams	1		
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520005A	08/28/2015	10:55	Denise L Trimby	1		
00111	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015	19:13	Scott W Freisher	1		

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-11(2-2.5) Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015056

LL Group # 1586402 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 14:40 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00 630 Plaza Drive

Reported: 09/22/2015 16:07 Highlands Ranch CO 80129

#### ASB11

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.0030	0.00083	0.0021	1
10725	Benzo(a)pyrene		50-32-8	0.0040	0.00083	0.0021	1
10725	Benzo(b)fluoranthene	e	205-99-2	0.010	0.00083	0.0021	1
10725	Benzo(k)fluoranthene	e	207-08-9	0.0033	0.00083	0.0021	1
10725	Chrysene		218-01-9	0.0076	0.00042	0.0021	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.00083	0.0021	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	0.0021	0.00083	0.0021	1
10725	1-Methylnaphthalene		90-12-0	0.0023	0.00083	0.0021	1
10725	2-Methylnaphthalene		91-57-6	0.0028	0.00083	0.0021	1
10725	Naphthalene		91-20-3	0.0048	0.00083	0.0021	1
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1:	2	n.a.	N.D.	1.3	6.7	26.83
GC Pet	croleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modified					
02214	DRO C12-C24 w/Si Ge	1	n.a.	N.D.	3.8	8.8	1
02214	HRO C24-C40 w/Si Ge	1	n.a.	N.D.	13	38	1
Wet Ch	nemistry	SM 2540 G-	1997	8	%	%	
00111	Moisture		n.a.	20.5	0.50	0.50	1
	Moisture represents 103 - 105 degrees Co as-received basis.			sample after oven dryi reported is on an	ng at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT	Analysis Name	Method	Trial#	Batch#	Analysis		Analyst	Dilution		
No.					Date and Ti	me		Factor		
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026	09/01/2015	07:21	Brian K Graham	1		
10811	BNA Soil Microwave SIM	SW-846 3546	1	15236SLC026	08/24/2015	16:30	Shawn J McMullen	1		
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15235A34A	08/23/2015	23:22	Marie D Beamenderfer	26.83		
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/17/2015	14:40	Client Supplied	n.a.		
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520005A	09/12/2015	02:19	Heather E Williams	1		
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520005A	08/28/2015	10:55	Denise L Trimby	1		
00111	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015	19:13	Scott W Freisher	1		

<sup>\*=</sup>This limit was used in the evaluation of the final result



Account

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-61(2-2.5) Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015057 LL Group # 1586402

# 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 15:10 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00 630 Plaza Drive

Reported: 09/22/2015 16:07 Highlands Ranch CO 80129

#### ASB61

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles SW-84	6 8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D.	0.00079	0.0020	1
10725	Benzo(a)pyrene	50-32-8	0.00085 J	0.00079	0.0020	1
10725	Benzo(b)fluoranthene	205-99-2	0.0038	0.00079	0.0020	1
10725	Benzo(k)fluoranthene	207-08-9	0.00094 J	0.00079	0.0020	1
10725	Chrysene	218-01-9	0.0030	0.00039	0.0020	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00079	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00079	0.0020	1
10725	1-Methylnaphthalene	90-12-0	0.0050	0.00079	0.0020	1
10725	2-Methylnaphthalene	91-57-6	0.010	0.00079	0.0020	1
10725	Naphthalene	91-20-3	0.0073	0.00079	0.0020	1
GC Vol	latiles ECY 9	7-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	1.3	6.6	27.76
GC Pet	croleum ECY 9	7-602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si modif:	ied				
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.5	8.3	1
02214	HRO C24-C40 w/Si Gel	n.a.	12 J	12	35	1
Wet Ch	nemistry SM 25	40 G-1997	%	%	%	
00111	Moisture	n.a.	15.4	0.50	0.50	1
	Moisture represents the los 103 - 105 degrees Celsius. as-received basis.			rying at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

			-					
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tim	ıe	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026	09/01/2015	07:54	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15236SLC026	08/24/2015	16:30	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15235A34A	08/23/2015	23:57	Marie D Beamenderfer	27.76
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/17/2015	15:10	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520005A	09/12/2015	03:03	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520005A	08/28/2015	10:55	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015	19:13	Scott W Freisher	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-50(2-2.5) Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015058 LL Group # 1586402 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 15:45 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00 630 Plaza Drive

Reported: 09/22/2015 16:07 Highlands Ranch CO 80129

#### ASB50

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles S	W-846 827	OC SIM	mg/kg		mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.		0.00075	0.0019	1
10725	Benzo(a)pyrene		50-32-8	0.0011	J	0.00075	0.0019	1
10725	Benzo(b)fluoranthene		205-99-2	0.0041		0.00075	0.0019	1
10725	Benzo(k)fluoranthene		207-08-9	0.0012	J	0.00075	0.0019	1
10725	Chrysene		218-01-9	0.0031		0.00038	0.0019	1
10725	Dibenz(a,h)anthracene		53-70-3	N.D.		0.00075	0.0019	1
10725	Indeno(1,2,3-cd)pyren	.e	193-39-5	0.00077	J	0.00075	0.0019	1
10725	1-Methylnaphthalene		90-12-0	0.0025		0.00075	0.0019	1
10725	2-Methylnaphthalene		91-57-6	0.0062		0.00075	0.0019	1
10725	Naphthalene		91-20-3	0.0036		0.00075	0.0019	1
GC Vol	latiles E	CY 97-602	NWTPH-Gx	mg/kg		mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12		n.a.	N.D.		1.3	6.4	27.99
		CY 97-602	NWTPH-Dx	mg/kg		mg/kg	mg/kg	
-		nodified						
02214	DRO C12-C24 w/Si Gel		n.a.	10		3.4	7.9	1
02214	HRO C24-C40 w/Si Gel		n.a.	18	J	11	34	1
Wet Ch	nemistry S	M 2540 G-	1997	%		%	%	
00111	Moisture		n.a.	12.3		0.50	0.50	1
	Moisture represents t 103 - 105 degrees Cel as-received basis.					ng at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT	Analysis Name	Method	Trial#	Batch#	Analysis		Analyst	Dilution		
No.					Date and Ti	me		Factor		
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026	09/01/2015	08:27	Brian K Graham	1		
10811	BNA Soil Microwave SIM	SW-846 3546	1	15236SLC026	08/24/2015	16:30	Shawn J McMullen	1		
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15235A34A	08/24/2015	00:33	Marie D Beamenderfer	27.99		
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/17/2015	15:45	Client Supplied	n.a.		
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520005A	09/12/2015	03:24	Heather E Williams	1		
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520005A	08/28/2015	10:55	Denise L Trimby	1		
00111	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015	19:13	Scott W Freisher	1		

<sup>\*=</sup>This limit was used in the evaluation of the final result



Account

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-40(2-2.5) Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015059 LL Group # 1586402

# 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/18/2015 08:05 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00 630 Plaza Drive

Reported: 09/22/2015 16:07 Highlands Ranch CO 80129

#### ASB40

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles SW-846 82	270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.0016 J	0.00081	0.0020	1
10725	Benzo(a)pyrene	50-32-8	0.0023	0.00081	0.0020	1
10725	Benzo(b)fluoranthene	205-99-2	0.0090	0.00081	0.0020	1
10725	Benzo(k)fluoranthene	207-08-9	0.0022	0.00081	0.0020	1
10725	Chrysene	218-01-9	0.0075	0.00041	0.0020	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D. UJ	0.00081	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0018 J	0.00081	0.0020	1
10725	1-Methylnaphthalene	90-12-0	0.010	0.00081	0.0020	1
10725	2-Methylnaphthalene	91-57-6	0.029	0.00081	0.0020	1
10725	Naphthalene	91-20-3	0.014	0.00081	0.0020	1
GC Vol	latiles ECY 97-60	2 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	7.7 J	1.7	8.6	34.74
		2 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
-	carbons w/Si modified					
02214	DRO C12-C24 w/Si Gel	n.a.	9.7 <sup>J</sup>	3.7	8.6	1
02214	HRO C24-C40 w/Si Gel	n.a.	71	12	37	1
Wet Ch	nemistry SM 2540 C	3-1997	%	%	%	
00111	Moisture	n.a.	18.8	0.50	0.50	1
	Moisture represents the loss in 103 - 105 degrees Celsius. The as-received basis.	_		ing at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

			-					
CAT	Analysis Name	Method	Trial#	Batch#	Analysis		Analyst	Dilution
No.					Date and Time			Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLE026	09/03/2015 10	):15	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15238SLE026	08/27/2015 03	3:00	Sherry L Morrow	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15236A34A	08/25/2015 15	5:25	Jeremy C Giffin	34.74
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/18/2015 08	3:05	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520005A	09/12/2015 03	3:46	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520005A	08/28/2015 10	):55	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015 19	9:13	Scott W Freisher	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-40(2-2.5)-MS Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015060 LL Group # 1586402

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/18/2015 08:05 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00 630 Plaza Drive

Reported: 09/22/2015 16:07 Highlands Ranch CO 80129

#### ASB40

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.036	0.00081	0.0020	1
10725	Benzo(a)pyrene		50-32-8	0.038	0.00081	0.0020	1
10725	Benzo(b)fluoranthene	2	205-99-2	0.050	0.00081	0.0020	1
10725	Benzo(k)fluoranthene	2	207-08-9	0.043	0.00081	0.0020	1
10725	Chrysene		218-01-9	0.043	0.00041	0.0020	1
10725	Dibenz(a,h)anthracer	ie	53-70-3	0.027	0.00081	0.0020	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	0.027	0.00081	0.0020	1
10725	1-Methylnaphthalene		90-12-0	0.045	0.00081	0.0020	1
10725	2-Methylnaphthalene		91-57-6	0.064	0.00081	0.0020	1
10725	Naphthalene		91-20-3	0.049	0.00081	0.0020	1
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	2	n.a.	31	1.5	7.5	30.36
		ECY 97-602 modified	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
02214	DRO C12-C24 w/Si Gel		n.a.	110	3.7	8.5	1
02214	HRO C24-C40 w/Si Gel		n.a.	82	12	37	1
Wet Ch	nemistry	SM 2540 G-	1997	%	8	%	
00118	Moisture		n.a.	18.8	0.50	0.50	1

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLE026	09/03/2015 10:49	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15238SLE026	08/27/2015 03:00	Sherry L Morrow	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15236A34A	08/25/2015 16:01	Jeremy C Giffin	30.36
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/18/2015 08:05	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520005A	09/12/2015 04:07	Heather E Williams	: 1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520005A	08/28/2015 10:55	Denise L Trimby	1
00118	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015 19:13	Scott W Freisher	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-40(2-2.5)-MSD Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015061 LL Group # 1586402 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/18/2015 08:05 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00 630 Plaza Drive

Reported: 09/22/2015 16:07 Highlands Ranch CO 80129

#### ASB40

CAT No.	Analysis Name			CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-	846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene			56-55-3	0.034	0.00081	0.0020	1
10725	Benzo(a)pyrene			50-32-8	0.038	0.00081	0.0020	1
10725	Benzo(b)fluoranthene	9		205-99-2	0.050	0.00081	0.0020	1
10725	Benzo(k)fluoranthene	2		207-08-9	0.048	0.00081	0.0020	1
10725	Chrysene			218-01-9	0.039	0.00040	0.0020	1
10725	Dibenz(a,h)anthracen	ne		53-70-3	0.025	0.00081	0.0020	1
10725	Indeno(1,2,3-cd)pyre	ene		193-39-5	0.024	0.00081	0.0020	1
10725	1-Methylnaphthalene			90-12-0	0.043	0.00081	0.0020	1
10725	2-Methylnaphthalene			91-57-6	0.057	0.00081	0.0020	1
10725	Naphthalene			91-20-3	0.046	0.00081	0.0020	1
GC Vol	latiles	ECY	97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	2		n.a.	32	1.6	8.1	33.03
GC Pet	roleum	ECY	97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	mod	ified					
02214	DRO C12-C24 w/Si Gel			n.a.	100	3.7	8.5	1
	HRO C24-C40 w/Si Gel			n.a.	89	12	37	1
Wet Ch	nemistry	SM :	2540 G-	1997	%	8	%	
00118	Moisture			n.a.	18.8	0.50	0.50	1
00121	Moisture Duplicate			n.a.	17.3	0.50	0.50	1
	The duplicate moistumoisture test. For determination is the	comp	arability	purposes, th	e initial mo	oisture		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLE026	09/04/2015 08:3	4 Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15238SLE026	08/27/2015 03:0	) Sherry L Morrow	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15236A34A	08/25/2015 16:3	5 Jeremy C Giffin	33.03
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/18/2015 08:0	5 Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520005A	09/12/2015 04:2	9 Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520005A	08/28/2015 10:5	5 Denise L Trimby	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-40(2-2.5)-MSD Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015061 LL Group # 1586402 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 08/20/2015 10:00

Reported: 09/22/2015 16:07

Collected: 08/18/2015 08:05 by EE Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

ASB40

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00118	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015 19:13	Scott W Freisher	1
00121	Moisture Duplicate	SM 2540 G-1997	1	15238820003B	08/26/2015 19:13	Scott W Freisher	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-12(2-2.5) Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015062 LL Group # 1586402

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/18/2015 08:20 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00 630 Plaza Drive

Reported: 09/22/2015 16:07 Highlands Ranch CO 80129

#### ASB12

CAT No.	Analysis Name	CA	S Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles SW-8	46 8270C	SIM	mg/kg		mg/kg	mg/kg	
10725	Benzo(a)anthracene	56	-55-3	N.D.		0.00080	0.0020	1
10725	Benzo(a)pyrene	50	-32-8	N.D.		0.00080	0.0020	1
10725	Benzo(b)fluoranthene	20	5-99-2	0.00084	ł J	0.00080	0.0020	1
10725	Benzo(k)fluoranthene	20	7-08-9	N.D.		0.00080	0.0020	1
10725	Chrysene	21	8-01-9	0.0011	J	0.00040	0.0020	1
10725	Dibenz(a,h)anthracene	53	-70-3	N.D.		0.00080	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	19	3-39-5	N.D.		0.00080	0.0020	1
10725	1-Methylnaphthalene	90	-12-0	0.0034		0.00080	0.0020	1
10725	2-Methylnaphthalene	91	-57-6	0.0060		0.00080	0.0020	1
10725	Naphthalene	91	-20-3	0.0081		0.00080	0.0020	1
GC Vol	latiles ECY	97-602 N	WTPH-Gx	mg/kg		mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.	a.	2.4	J	1.5	7.5	30.9
GC Pet	roleum ECY	97-602 N	WTPH-Dx	mg/kg		mg/kg	mg/kg	
Hydrod	carbons w/Si modi	fied						
02214	DRO C12-C24 w/Si Gel	n.	a.	3.6	J	3.6	8.4	1
02214	HRO C24-C40 w/Si Gel	n.	a.	16	J	12	36	1
Wet Ch	nemistry SM 2	540 G-19	97	%		8	8	
00111	Moisture	n.	a.	17.2		0.50	0.50	1
	Moisture represents the 1 103 - 105 degrees Celsius as-received basis.	-	-	-	_	ng at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

	• • • • • • • • • • • • • • • • • • • •										
CAT	Analysis Name	Method	Trial#	Batch#	Analysis		Analyst	Dilution			
No.					Date and Ti	me		Factor			
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLE026	09/04/2015	02:15	Brian K Graham	1			
10811	BNA Soil Microwave SIM	SW-846 3546	1	15238SLE026	08/27/2015	03:00	Sherry L Morrow	1			
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15235A34A	08/24/2015	01:08	Marie D Beamenderfer	30.9			
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/18/2015	08:20	Client Supplied	n.a.			
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520005A	09/12/2015	04:51	Heather E Williams	1			
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520005A	08/28/2015	10:55	Denise L Trimby	1			
00111	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015	19:13	Scott W Freisher	1			

<sup>\*=</sup>This limit was used in the evaluation of the final result



Account

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-13(2-2.5) Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015063 LL Group # 1586402

# 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/18/2015 08:40 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00 630 Plaza Drive

Reported: 09/22/2015 16:07 Highlands Ranch CO 80129

#### ASB13

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles SW-846 8	3270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.00097 J	0.00078	0.0019	1
10725	Benzo(a)pyrene	50-32-8	0.0010 J	0.00078	0.0019	1
10725	Benzo(b)fluoranthene	205-99-2	0.0026	0.00078	0.0019	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.00078	0.0019	1
10725	Chrysene	218-01-9	0.0028	0.00039	0.0019	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00078	0.0019	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.00088 J	0.00078	0.0019	1
10725	1-Methylnaphthalene	90-12-0	N.D.	0.00078	0.0019	1
10725	2-Methylnaphthalene	91-57-6	0.0010 J	0.00078	0.0019	1
10725	Naphthalene	91-20-3	0.0041	0.00078	0.0019	1
GC Vol	latiles ECY 97-6	02 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	1.6 J	1.4	7.1	30.2
		02 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
-		=				
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.5	8.1	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	12	35	1
Wet Ch	nemistry SM 2540	G-1997	%	%	%	
00111	Moisture	n.a.	14.4	0.50	0.50	1
	Moisture represents the loss in 103 - 105 degrees Celsius. The as-received basis.	_		ing at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLE026	09/04/2015	02:50	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15238SLE026	08/27/2015	03:00	Sherry L Morrow	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15235A34A	08/24/2015	01:43	Marie D Beamenderfer	30.2
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/18/2015	08:40	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520009A	09/11/2015	19:50	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520009A	08/28/2015	10:55	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015	19:13	Scott W Freisher	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-30(2-2.5) Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015064 LL Group # 1586402

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/18/2015 08:55 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00 630 Plaza Drive

Reported: 09/22/2015 16:07 Highlands Ranch CO 80129

#### ASB30

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.0074	0.00076	0.0019	1
10725	Benzo(a)pyrene	50-32-8	0.0076	0.00076	0.0019	1
10725	Benzo(b)fluoranthene	205-99-2	0.029	0.00076	0.0019	1
10725	Benzo(k)fluoranthene	207-08-9	0.0079	0.00076	0.0019	1
10725	Chrysene	218-01-9	0.022	0.00038	0.0019	1
10725	Dibenz(a,h)anthracene	53-70-3	0.0015 J	0.00076	0.0019	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0049	0.00076	0.0019	1
10725	1-Methylnaphthalene	90-12-0	0.073	0.00076	0.0019	1
10725	2-Methylnaphthalene	91-57-6	0.23	0.00076	0.0019	1
10725	Naphthalene	91-20-3	0.091	0.00076	0.0019	1
GC Vol	latiles ECY 97	-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	24 <mark>J</mark>	1.6	8.2	35.44
		-602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
-	carbons w/Si modifie	ed	-			
02214	DRO C12-C24 w/Si Gel	n.a.	430 <sup>J</sup>	17	40	5 5
02214	HRO C24-C40 w/Si Gel	n.a.	700 J	57	170	5
Wet Ch	nemistry SM 254	G-1997	8	%	%	
00111	Moisture	n.a.	13.2	0.50	0.50	1
	Moisture represents the loss 103 - 105 degrees Celsius. T as-received basis.	_	-			

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

			-				
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15236SLC026	09/01/2015 02:26	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15236SLC026	08/24/2015 16:30	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15235A34A	08/23/2015 14:33	Marie D Beamenderfer	35.44
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/18/2015 08:55	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520004A	09/12/2015 00:10	Heather E Williams	5
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520004A	08/27/2015 19:00	Sally L Appleyard	1
00111	Moisture	SM 2540 G-1997	1	15237820002B	08/25/2015 19:44	Scott W Freisher	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-14(2-2.5) Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015065

LL Group # 1586402 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/18/2015 09:40 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00 630 Plaza Drive

Reported: 09/22/2015 16:07 Highlands Ranch CO 80129

#### ASB14

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles SV	7-846 827	OC SIM	mg/kg		mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.		0.00080	0.0020	1
10725	Benzo(a)pyrene		50-32-8	N.D.		0.00080	0.0020	1
10725	Benzo(b)fluoranthene		205-99-2	0.0013	J	0.00080	0.0020	1
10725	Benzo(k)fluoranthene		207-08-9	N.D.		0.00080	0.0020	1
10725	Chrysene		218-01-9	0.0014	J	0.00040	0.0020	1
10725	Dibenz(a,h)anthracene		53-70-3	N.D.		0.00080	0.0020	1
10725	Indeno(1,2,3-cd)pyrene		193-39-5	N.D.		0.00080	0.0020	1
10725	1-Methylnaphthalene		90-12-0	0.00084	ł J	0.00080	0.0020	1
10725	2-Methylnaphthalene		91-57-6	0.0016	J	0.00080	0.0020	1
10725	Naphthalene		91-20-3	0.011		0.00080	0.0020	1
GC Vol	atiles EC	Y 97-602	NWTPH-Gx	mg/kg		mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12		n.a.	2.4	J	1.3	6.7	27.56
GC Pet	roleum EC	Y 97-602	NWTPH-Dx	mg/kg		mg/kg	mg/kg	
Hydrod	arbons w/Si mo	dified						
02214	DRO C12-C24 w/Si Gel		n.a.	5.9	J	3.6	8.5	1
02214	HRO C24-C40 w/Si Gel		n.a.	18	J	12	36	1
Wet Ch	nemistry SM	1 2540 G-	1997	%		%	%	
00111	Moisture		n.a.	17.5		0.50	0.50	1
	Moisture represents th 103 - 105 degrees Cels as-received basis.					ng at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

			-					
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	e	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLE026	09/04/2015 (	03:25	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15238SLE026	08/27/2015 (	03:00	Sherry L Morrow	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15236A34A	08/25/2015 2	20:31	Jeremy C Giffin	27.56
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/18/2015 (	09:40	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520009A	09/11/2015 2	20:12	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520009A	08/28/2015	10:55	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015	19:13	Scott W Freisher	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



Account

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-20(2-2.5) Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015066 LL Group # 1586402

# 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/18/2015 10:00 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00 630 Plaza Drive

Reported: 09/22/2015 16:07 Highlands Ranch CO 80129

#### ASB20

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles SW-84	6 8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.0011 J	0.00078	0.0020	1
10725	Benzo(a)pyrene	50-32-8	0.0015 J	0.00078	0.0020	1
10725	Benzo(b)fluoranthene	205-99-2	0.0036	0.00078	0.0020	1
10725	Benzo(k)fluoranthene	207-08-9	0.0011 J	0.00078	0.0020	1
10725	Chrysene	218-01-9	0.0036	0.00039	0.0020	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00078	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0013 J	0.00078	0.0020	1
10725	1-Methylnaphthalene	90-12-0	N.D.	0.00078	0.0020	1
10725	2-Methylnaphthalene	91-57-6	0.00088 J	0.00078	0.0020	1
10725	Naphthalene	91-20-3	0.0016 Ј	0.00078	0.0020	1
GC Vol	latiles ECY 9	7-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	1.2	6.0	25.66
		7-602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si modif	ied				
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.5	8.2	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	12	35	1
Wet Ch	nemistry SM 25	540 G-1997	%	%	%	
00111	Moisture	n.a.	15.1	0.50	0.50	1
	Moisture represents the lo 103 - 105 degrees Celsius. as-received basis.	_	-			

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

	• • • • • • • • • • • • • • • • • • • •										
CAT	Analysis Name	Method	Trial#	Batch#	Analysis		Analyst	Dilution			
No.					Date and Tir	ne		Factor			
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLE026	09/04/2015	04:00	Brian K Graham	1			
10811	BNA Soil Microwave SIM	SW-846 3546	1	15238SLE026	08/27/2015	03:00	Sherry L Morrow	1			
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15236A34A	08/25/2015	21:06	Jeremy C Giffin	25.66			
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/18/2015	10:00	Client Supplied	n.a.			
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520009A	09/11/2015	20:33	Heather E Williams	1			
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520009A	08/28/2015	10:55	Denise L Trimby	1			
00111	Moisture	SM 2540 G-1997	1	15238820003B	08/26/2015	19:13	Scott W Freisher	1			

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-21(2-2.5) Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015067 LL Group # 1586402

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/18/2015 10:35 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00 630 Plaza Drive

Reported: 09/22/2015 16:07 Highlands Ranch CO 80129

#### ASB21

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles SW-8	346 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.00078	0.0019	1
10725	Benzo(a)pyrene		50-32-8	N.D.	0.00078	0.0019	1
10725	Benzo(b)fluoranthene		205-99-2	0.0015 J	0.00078	0.0019	1
10725	Benzo(k)fluoranthene		207-08-9	N.D.	0.00078	0.0019	1
10725	Chrysene		218-01-9	0.0015 J	0.00039	0.0019	1
10725	Dibenz(a,h)anthracene		53-70-3	N.D.	0.00078	0.0019	1
10725	Indeno(1,2,3-cd)pyrene		193-39-5	N.D.	0.00078	0.0019	1
10725	1-Methylnaphthalene		90-12-0	N.D.	0.00078	0.0019	1
10725	2-Methylnaphthalene		91-57-6	N.D.	0.00078	0.0019	1
10725	Naphthalene		91-20-3	0.0022	0.00078	0.0019	1
GC Vol	latiles ECY	97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12		n.a.	N.D.	1.3	6.3	27.06
GC Pet	croleum ECY	97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si mod:	ified					
02214	DRO C12-C24 w/Si Gel		n.a.	N.D.	3.5	8.1	1
02214	HRO C24-C40 w/Si Gel		n.a.	N.D.	12	35	1
Wet Ch	nemistry SM :	2540 G-	1997	%	8	%	
00111	Moisture		n.a.	14.4	0.50	0.50	1
	Moisture represents the 103 - 105 degrees Celsius as-received basis.		_	-			

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

			-					
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	<u>.</u>	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLE026	09/04/2015 0	4:35	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15238SLE026	08/27/2015 0	3:00	Sherry L Morrow	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15236A34A	08/25/2015 2	21:42	Jeremy C Giffin	27.06
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/18/2015 1	.0:35	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520009A	09/11/2015 2	20:55	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520009A	08/28/2015 1	.0:55	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15238820004A	08/26/2015 1	9:46	Scott W Freisher	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www,LancasterLabs.com

Sample Description: AUS-SB-29(2-2.5) Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015068

LL Group # 1586402 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/18/2015 10:40 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00 630 Plaza Drive

Reported: 09/22/2015 16:07 Highlands Ranch CO 80129

ASB29

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg		mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.0076		0.00083	0.0021	1
10725	Benzo(a)pyrene		50-32-8	0.0079		0.00083	0.0021	1
10725	Benzo(b)fluoranthene	2	205-99-2	0.028		0.00083	0.0021	1
10725	Benzo(k)fluoranthene	9	207-08-9	0.011		0.00083	0.0021	1
10725	Chrysene		218-01-9	0.034		0.00042	0.0021	1
10725	Dibenz(a,h)anthracen	ne	53-70-3	0.0014	J	0.00083	0.0021	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	0.0053		0.00083	0.0021	1
10725	1-Methylnaphthalene		90-12-0	0.0038		0.00083	0.0021	1
10725	2-Methylnaphthalene		91-57-6	0.0044		0.00083	0.0021	1
10725	Naphthalene		91-20-3	0.0088		0.00083	0.0021	1
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg		mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	2	n.a.	3.8	J	1.7	8.3	32.95
		ECY 97-602 modified	NWTPH-Dx	mg/kg		mg/kg	mg/kg	
02214	DRO C12-C24 w/Si Gel	l	n.a.	5.5	J	3.7	8.7	1
02214	HRO C24-C40 w/Si Gel	l	n.a.	N.D.		12	37	1
Wet Ch	nemistry	SM 2540 G-	1997	%		%	%	
00111	Moisture		n.a.	20.2		0.50	0.50	1
	Moisture represents 103 - 105 degrees Co as-received basis.		_	_	-	ng at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

#### Laboratory Sample Analysis Record Method CAT Analysis Name Trial# Batch# Analysis Analyst Dilution No. Date and Time Factor 10725 SIM SVOA (microwave) SW-846 8270C SIM 15238SLE026 09/04/2015 05:10 Brian K Graham 15238SLE026 Sherry L Morrow 10811 BNA Soil Microwave SIM SW-846 3546 1 08/27/2015 03:00 1 02005 NWTPH-GX Soil C7-C12 ECY 97-602 1 15236A34A 08/25/2015 22:17 Jeremy C Giffin 32.95 NWTPH-Gx 06647 GC-5g Field Preserved SW-846 5035A 201523338620 08/18/2015 10:40 Client Supplied n.a. MeOH 02214 NWTPH-Dx soil w/Si Gel 152520009A Heather E Williams ECY 97-602 1 09/11/2015 21:17 1 NWTPH-Dx modified 152520009A 07024 DRO Alternate Soil ECY 97-602 08/28/2015 10:55 Denise L Trimby Extraction NWTPH-Dx 06/97 15238820004A 00111 Moisture SM 2540 G-1997 08/26/2015 19:46 Scott W Freisher 1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-19(2-2.5) Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015069

LL Group # 1586402 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/18/2015 11:00 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00 630 Plaza Drive

Reported: 09/22/2015 16:07 Highlands Ranch CO 80129

#### ASB19

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.00075	0.0019	1
10725	Benzo(a)pyrene		50-32-8	N.D.	0.00075	0.0019	1
10725	Benzo(b)fluoranthen	e	205-99-2	0.0012 J	0.00075	0.0019	1
10725	Benzo(k)fluoranthen	e	207-08-9	N.D.	0.00075	0.0019	1
10725	Chrysene		218-01-9	0.0013 J	0.00037	0.0019	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.00075	0.0019	1
10725	Indeno(1,2,3-cd)pyr	ene	193-39-5	N.D.	0.00075	0.0019	1
10725	1-Methylnaphthalene		90-12-0	N.D.	0.00075	0.0019	1
10725	2-Methylnaphthalene		91-57-6	N.D.	0.00075	0.0019	1
10725	Naphthalene		91-20-3	0.00075 J	0.00075	0.0019	1
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1	2	n.a.	N.D.	1.3	6.7	29.74
	croleum carbons w/Si	ECY 97-602 modified	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
02214	DRO C12-C24 w/Si Ge	1	n.a.	N.D.	3.4	7.8	1
02214	HRO C24-C40 w/Si Ge	1	n.a.	N.D.	11	34	1
Wet Ch	nemistry	SM 2540 G-	1997	8	8	%	
00111	Moisture		n.a.	10.7	0.50	0.50	1
	Moisture represents 103 - 105 degrees C as-received basis.			sample after oven dry reported is on an	ng at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

	• • • • • • • • • • • • • • • • • • • •										
CAT	Analysis Name	Method	Trial#	Batch#	Analysis		Analyst	Dilution			
No.					Date and Ti	me		Factor			
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLE026	09/04/2015	05:44	Brian K Graham	1			
10811	BNA Soil Microwave SIM	SW-846 3546	1	15238SLE026	08/27/2015	03:00	Sherry L Morrow	1			
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15236A34A	08/25/2015	22:52	Jeremy C Giffin	29.74			
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/18/2015	11:00	Client Supplied	n.a.			
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520009A	09/11/2015	21:38	Heather E Williams	1			
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520009A	08/28/2015	10:55	Denise L Trimby	1			
00111	Moisture	SM 2540 G-1997	1	15238820004A	08/26/2015	19:46	Scott W Freisher	1			

<sup>\*=</sup>This limit was used in the evaluation of the final result



Account

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax; 717-656-2681 • www,LancasterLabs.com

Sample Description: AUS-SB-39(2-2.5) Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015070 LL Group # 1586402

# 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/18/2015 11:10 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00 630 Plaza Drive

Reported: 09/22/2015 16:07 Highlands Ranch CO 80129

ASB39

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.0018 J	0.00094	0.0024	1
10725	Benzo(a)pyrene		50-32-8	0.0013 J	0.00094	0.0024	1
10725	Benzo(b)fluoranthen	e	205-99-2	0.0044 J	0.00094	0.0024	1
10725	Benzo(k)fluoranthen	e	207-08-9	n.d. <mark>UJ</mark>	0.00094	0.0024	1
10725	Chrysene		218-01-9	0.0047	0.00047	0.0024	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	n.d. <mark>UJ</mark>	0.00094	0.0024	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	0.0017 J	0.00094	0.0024	1
10725	1-Methylnaphthalene		90-12-0	0.011	0.00094	0.0024	1
10725	2-Methylnaphthalene		91-57-6	0.016	0.00094	0.0024	1
10725	Naphthalene		91-20-3	0.0082	0.00094	0.0024	1
outs: The	sample was re-analyzed ide of the QC acceptared data is from	ance limits n the init:	s, indicating a maial analysis of the	atrix effect. ne sample.			
GC Vol	latiles	ECY 97-	602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1	2	n.a.	N.D.	52	260	918.64
GC Pet	troleum	ECY 97-	602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modifie	d				
02214	DRO C12-C24 w/Si Ge	1	n.a.	190	21	49	5
02214	HRO C24-C40 w/Si Ge	1	n.a.	1,300	70	210	5
Wet Ch	nemistry	SM 2540	G-1997	%	%	%	
00111	Moisture		n.a.	29.6	0.50	0.50	1
	Moisture represents 103 - 105 degrees Coas-received basis.			sample after ove			

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

#### Laboratory Sample Analysis Record Method CAT Analysis Name Trial# Batch# Analysis Analyst Dilution Date and Time No. Factor 09/04/2015 06:19 08/27/2015 03:00 10725 SIM SVOA (microwave) SW-846 8270C SIM 15238SLE026 Brian K Graham 10811 BNA Soil Microwave SIM SW-846 3546 15238SLE026 1 Sherry L Morrow 02005 NWTPH-GX Soil C7-C12 ECY 97-602 1 15236A34B 08/26/2015 16:16 Marie D 918.64 NWTPH-Gx Beamenderfer 06647 GC-5g Field Preserved SW-846 5035A 201523338620 08/18/2015 11:10 Client Supplied MeOH

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-39(2-2.5) Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

SM 2540 G-1997 1

LL Sample # SW 8015070 LL Group # 1586402

Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 08/20/2015 10:00

Reported: 09/22/2015 16:07

Collected: 08/18/2015 11:10 by EE Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

15238820004A 08/26/2015 19:46 Scott W Freisher

ASB39

00111 Moisture

Laboratory Sample Analysis Record									
CAT	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tir	ne	Analyst	Dilution Factor	
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520009A	09/11/2015	23:05	Heather E Williams	5	
07024	DRO Alternate Soil	ECY 97-602 NWTPH-Dx 06/97	1	152520009A	08/28/2015	10:55	Denise L Trimby	1	



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-18(2-2.5) Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015071 LL Group # 1586402

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/18/2015 11:30 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00 630 Plaza Drive

Reported: 09/22/2015 16:07 Highlands Ranch CO 80129

#### ASB18

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.0020	0.00075	0.0019	1
10725	Benzo(a)pyrene	50-32-8	0.0023	0.00075	0.0019	1
10725	Benzo(b)fluoranthene	205-99-2	0.0054	0.00075	0.0019	1
10725	Benzo(k)fluoranthene	207-08-9	0.0020	0.00075	0.0019	1
10725	Chrysene	218-01-9	0.0046	0.00037	0.0019	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00075	0.0019	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0011 J	0.00075	0.0019	1
10725	1-Methylnaphthalene	90-12-0	N.D.	0.00075	0.0019	1
10725	2-Methylnaphthalene	91-57-6	0.0013 J	0.00075	0.0019	1
10725	Naphthalene	91-20-3	0.00094 J	0.00075	0.0019	1
GC Vol	latiles ECY 97	-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	1.4	7.0	30.6
GC Pet	croleum ECY 97	-602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si modifi	ed				
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.4	7.9	1
02214	HRO C24-C40 w/Si Gel	n.a.	26 J	11	34	1
Wet Ch	nemistry SM 254	0 G-1997	8	8	%	
00111	Moisture	n.a.	12.0	0.50	0.50	1
	Moisture represents the loss 103 - 105 degrees Celsius. Tas-received basis.			ing at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLE026	09/04/2015 06	6:54	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15238SLE026	08/27/2015 03	3:00	Sherry L Morrow	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15236A34A	08/25/2015 1	7:23	Jeremy C Giffin	30.6
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/18/2015 13	1:30	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520009A	09/11/2015 23	3:26	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520009A	08/28/2015 10	0:55	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15238820004A	08/26/2015 19	9:46	Scott W Freisher	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-17(2-2.5) Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015072 LL Group # 1586402 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/18/2015 11:40 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00 630 Plaza Drive

Reported: 09/22/2015 16:07 Highlands Ranch CO 80129

#### ASB17

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles SW-846 83	270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.012	0.00084	0.0021	1
10725	Benzo(a)pyrene	50-32-8	0.011	0.00084	0.0021	1
10725	Benzo(b)fluoranthene	205-99-2	0.046	0.00084	0.0021	1
10725	Benzo(k)fluoranthene	207-08-9	0.018	0.00084	0.0021	1
10725	Chrysene	218-01-9	0.043	0.00042	0.0021	1
10725	Dibenz(a,h)anthracene	53-70-3	0.0016 J	0.00084	0.0021	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0063	0.00084	0.0021	1
10725	1-Methylnaphthalene	90-12-0	0.0085	0.00084	0.0021	1
10725	2-Methylnaphthalene	91-57-6	0.015	0.00084	0.0021	1
10725	Naphthalene	91-20-3	0.014	0.00084	0.0021	1
GC Vol	Latiles ECY 97-60	2 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	1.5	7.5	29.5
		02 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
-	carbons w/Si modified					
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.8	8.8	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	13	38	1
Wet Ch	nemistry SM 2540 (	G-1997	%	%	%	
00111	Moisture	n.a.	20.9	0.50	0.50	1
	Moisture represents the loss in 103 - 105 degrees Celsius. The as-received basis.	_		ing at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

			-					
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	e	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLE026	09/04/2015	07:28	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15238SLE026	08/27/2015 0	03:00	Sherry L Morrow	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15236A34A	08/26/2015 0	00:03	Jeremy C Giffin	29.5
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/18/2015 1	11:40	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520009A	09/11/2015 2	23:48	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520009A	08/28/2015 1	10:55	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15238820004A	08/26/2015 1	19:46	Scott W Freisher	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-28(2-2.5) Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015074

LL Group # 1586402 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/18/2015 13:30 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00 630 Plaza Drive

Reported: 09/22/2015 16:07 Highlands Ranch CO 80129

#### ASB28

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles SW-8	46 8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.0011 J	0.00082	0.0020	1
10725	Benzo(a)pyrene	50-32-8	0.0016 J	0.00082	0.0020	1
10725	Benzo(b)fluoranthene	205-99-2	0.0044	0.00082	0.0020	1
10725	Benzo(k)fluoranthene	207-08-9	0.0010 J	0.00082	0.0020	1
10725	Chrysene	218-01-9	0.0029	0.00041	0.0020	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00082	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00082	0.0020	1
10725	1-Methylnaphthalene	90-12-0	0.0038	0.00082	0.0020	1
10725	2-Methylnaphthalene	91-57-6	0.0063	0.00082	0.0020	1
10725	Naphthalene	91-20-3	0.0069	0.00082	0.0020	1
GC Vol	latiles ECY	97-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	8.1 J	1.6	7.9	31.84
GC Pet		97-602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si modi	fied				
02214	DRO C12-C24 w/Si Gel	n.a.	61	3.7	8.6	1
02214	HRO C24-C40 w/Si Gel	n.a.	410	12	37	1
Wet Ch	nemistry SM 2	540 G-1997	%	8	%	
00111	Moisture	n.a.	19.8	0.50	0.50	1
	Moisture represents the 1 103 - 105 degrees Celsius as-received basis.					

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLE026	09/04/2015	08:01	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15238SLE026	08/27/2015	03:00	Sherry L Morrow	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15236A34A	08/26/2015	00:38	Jeremy C Giffin	31.84
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/18/2015	13:30	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520009A	09/12/2015	00:10	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520009A	08/28/2015	10:55	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15238820004A	08/26/2015	19:46	Scott W Freisher	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-38(2-2.5) Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015076

LL Group # 1586402 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/18/2015 14:05 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00 630 Plaza Drive

Reported: 09/22/2015 16:07 Highlands Ranch CO 80129

ASB38

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles S	SW-846 8	3270C SIM	mg/kg		mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.011	J	0.0016	0.0041	1
10725	Benzo(a)pyrene		50-32-8	0.010 <sup>J</sup>		0.0016	0.0041	1
10725	Benzo(b)fluoranthene		205-99-2	0.029 J		0.0016	0.0041	1
10725	Benzo(k)fluoranthene		207-08-9	0.012 <sup>J</sup>		0.0016	0.0041	1
10725	Chrysene		218-01-9	0.025 J		0.00081	0.0041	1
10725	Dibenz(a,h)anthracene	<u> </u>	53-70-3	N.D. UJ		0.0016	0.0041	1
10725	Indeno(1,2,3-cd)pyren	ie	193-39-5	0.0033	J	0.0016	0.0041	1
10725	1-Methylnaphthalene		90-12-0	0.0094	J	0.0016	0.0041	1
10725	2-Methylnaphthalene		91-57-6	0.0081	J	0.0016	0.0041	1
10725	Naphthalene		91-20-3	0.0034	J	0.0016	0.0041	1
outs: The	sample was re-analyzed ide of the QC acceptan reported data is from	ce limits the initi	, indicating a ma al analysis of th	atrix eff ne sample	ect.			
GC Vol		ECY 97-6	02 NWTPH-Gx	mg/kg		mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12		n.a.	17	J	5.4	27	54.91
			02 NWTPH-Dx	mg/kg		mg/kg	mg/kg	
-		nodified	L					
02214			n.a.	470		37	86	5
02214	HRO C24-C40 w/Si Gel		n.a.	1,700		120	370	5
Wet Ch	nemistry S	SM 2540	G-1997	%		%	%	
00111	Moisture		n.a.	59.4		0.50	0.50	1
	Moisture represents t 103 - 105 degrees Cel as-received basis.		_	-	_	ing at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/05/2015	08:06	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015	07:45	Katheryne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15236A34A	08/26/2015	01:13	Jeremy C Giffin	54.91
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/18/2015	14:05	Client Supplied	n.a.

<sup>\*=</sup>This limit was used in the evaluation of the final result



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Sample Description: AUS-SB-38(2-2.5) Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015076 LL Group # 1586402

Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 08/20/2015 10:00

Reported: 09/22/2015 16:07

Collected: 08/18/2015 14:05 by EE Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

ASB38

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520006A	09/12/2015 01:15	Heather E Williams	5
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520006A	08/30/2015 15:30	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15238820004A	08/26/2015 19:46	Scott W Freisher	1



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Sample Description: DUP-1 Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Group # 1586402 Account # 13255

LL Sample # SW 8015078

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00 630 Plaza Drive

Reported: 09/22/2015 16:07 Highlands Ranch CO 80129

#### ASDP1

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 82	70C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.0089	0.022	10
10725	Benzo(a)pyrene		50-32-8	N.D. <mark>UJ</mark>	0.0089	0.022	10
10725	Benzo(b)fluoranthene	2	205-99-2	0.0092 J	0.0089	0.022	10
10725	Benzo(k)fluoranthene	2	207-08-9	N.D. <mark>UJ</mark>	0.0089	0.022	10
10725	Chrysene		218-01-9	0.010 J	0.0045	0.022	10
10725	Dibenz(a,h)anthracer	ne	53-70-3	N.D. <mark>UJ</mark>	0.0089	0.022	10
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D. <mark>UJ</mark>	0.0089	0.022	10
10725	1-Methylnaphthalene		90-12-0	7.8 <sup>J</sup>	0.089	0.22	100
10725	2-Methylnaphthalene		91-57-6	12	0.089	0.22	100
10725	Naphthalene		91-20-3	2.9	0.0089	0.022	10
outs	sample was re-analyze ide of the QC accepta reported data is from	nce limits,	indicating a ma	atrix effect.			
GC Vo	latiles	ECY 97-60	2 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	2	n.a.	1,200 <sup>J</sup>	190	970	3569.5
GC Pet	troleum	ECY 97-60	2 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydro	carbons w/Si	modified					
02214	DRO C12-C24 w/Si Gel	L	n.a.	3,800 J	40	94	10
02214	HRO C24-C40 w/Si Gel	L	n.a.	170 J	130	400	10
Wet Cl	nemistry	SM 2540 G	-1997	8	%	%	
00111	Moisture		n.a.	26.2	0.50	0.50	1
	Moisture represents 103 - 105 degrees Coas-received basis.		_	_	drying at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	<b>.</b>	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/05/2015 1	0:50	Brian K Graham	10
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/05/2015 1	1:56	Brian K Graham	100
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015 0	7:45	Katheryne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15235A34B	08/24/2015 2	1:15	Marie D	3569.5
		NWTPH-Gx					Beamenderfer	



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Sample Description: DUP-1 Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015078 LL Group # 1586402 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 08/20/2015 10:00

Reported: 09/22/2015 16:07

Collected: 08/17/2015 by EE Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

ASDP1

	Laboratory Sample Analysis Record										
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tir	ne	Analyst	Dilution Factor			
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/17/2015	00:00	Client Supplied	n.a.			
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520005A	09/12/2015	05:34	Heather E Williams	10			
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520005A	08/28/2015	10:55	Denise L Trimby	1			
00111	Moisture	SM 2540 G-1997	1	15238820004A	08/26/2015	19:46	Scott W Freisher	1			



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Sample Description: DUP-2 Grab Soil

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Sample # SW 8015079

LL Group # 1586402 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/18/2015 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00 630 Plaza Drive

Reported: 09/22/2015 16:07 Highlands Ranch CO 80129

#### ASDP2

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles SW-	846 827	OC SIM	mg/kg		mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.		0.00079	0.0020	1
10725	Benzo(a)pyrene		50-32-8	N.D.		0.00079	0.0020	1
10725	Benzo(b)fluoranthene		205-99-2	0.00093	J	0.00079	0.0020	1
10725	Benzo(k)fluoranthene		207-08-9	N.D.		0.00079	0.0020	1
10725	Chrysene		218-01-9	0.00071	. J	0.00040	0.0020	1
10725	Dibenz(a,h)anthracene		53-70-3	N.D.		0.00079	0.0020	1
10725	Indeno(1,2,3-cd)pyrene		193-39-5	N.D.		0.00079	0.0020	1
10725	1-Methylnaphthalene		90-12-0	0.0017	J	0.00079	0.0020	1
10725	2-Methylnaphthalene		91-57-6	0.0032		0.00079	0.0020	1
10725	Naphthalene		91-20-3	0.0043		0.00079	0.0020	1
GC Vol	latiles ECY	97-602	NWTPH-Gx	mg/kg		mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12		n.a.	1.7	J	1.4	7.2	30.09
GC Pet	roleum ECY	97-602	NWTPH-Dx	mg/kg		mg/kg	mg/kg	
Hydrod	carbons w/Si mod	ified						
02214	DRO C12-C24 w/Si Gel		n.a.	N.D.		3.5	8.3	1
02214	HRO C24-C40 w/Si Gel		n.a.	25	J	12	35	1
Wet Ch	nemistry SM	2540 G-	1997	%		%	%	
00111	Moisture		n.a.	16.6		0.50	0.50	1
	Moisture represents the 103 - 105 degrees Celsiu as-received basis.					ng at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

			-					
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tim	ne	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/05/2015	01:32	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015	07:45	Katheryne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15236A34A	08/26/2015	01:49	Jeremy C Giffin	30.09
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523338620	08/18/2015	00:00	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520006A	09/12/2015	01:36	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520006A	08/30/2015	15:30	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15238820004A	08/26/2015	19:46	Scott W Freisher	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



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Sample Description: Trip Blank Water

Former Olympia Bulk Plant COC: R224110

1117 West Bay Dr - Olympia, WA

LL Group # 1586402 Account # 13255

LL Sample # WW 8015080

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/20/2015 10:00 630 Plaza Drive

Reported: 09/22/2015 16:07 Highlands Ranch CO 80129

ASBTB

CAT No.	Analysis Name		CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Vo	latiles	ECY 97-60	2 NWTPH-Gx	ug/l	ug/l	ug/l	
08273	NWTPH-Gx water	C7-C12	n.a.	N.D.	50	250	1

#### General Sample Comments

State of Washington Lab Certification No. C457 State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	15232C20A	08/21/2015 12:11	Jeremy C Giffin	1
01146	GC VOA Water Prep	SW-846 5030B	1	15232C20A	08/21/2015 12:11	Jeremy C Giffin	1



### **BP OLY**

### **Data Review**

OLYMPIA, WA

Semivolatiles and TPH

SDG # 1586959

Analyses Performed By: Lancaster Laboratories Lancaster, PA

Report # 24720R Review Level: Tier II

Project: GP09BPNA.WA60.K000

#### **SUMMARY**

This data quality assessment summarizes the review of Sample Delivery Group (SDG) #1586959 for samples collected in association with the BP OLY site. The review was conducted at a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

					Analysis				
Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	voc	svoc	ТРН	MET	TSS
AUS-SB-62-Offset(4.5-5)	8018583	Soil	08/20/15			Х	Х		
AUS-SB-41-Offset(2-2.5)	8018584	Soil	08/20/15			Х	Х		
AUS-SB-52-Offset(2-2.5)	8018585	Soil	08/20/15			Х	Х		

#### Note:

<sup>1.</sup> Sample AUS-SB-62-Offset(4.5-5) was used as the MS/MSDs for the Dx analyses.

### ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

		Reported		Performance Acceptable		Not
	Items Reviewed	No	Yes	No	Yes	Required
1.	Sample receipt condition		Х		Х	
2.	Requested analyses and sample results		Х		Х	
3.	Master tracking list		Х		Х	
4.	Methods of analysis		Х		Х	
5.	Reporting limits		Х		Х	
6.	Sample collection date		Х		Χ	
7.	Laboratory sample received date		Х		Х	
8.	Sample preservation verification (as applicable)		Х		Х	
9.	Sample preparation/extraction/analysis dates		Х		Х	
10.	Fully executed Chain-of-Custody (COC) form		Х		Х	
11.	Narrative summary of QA or sample problems provided		Х		Х	
12.	Data Package Completeness and Compliance		Х		Х	

QA - Quality Assurance

#### ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 8270 (SIM) and ECY 97-602. Data were reviewed in accordance with the USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines and as requested by USEPA Region 10:

- Concentration (C) Qualifiers
  - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
  - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
  - E The compound was quantitated above the calibration range.
  - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
  - U The analyte was not detected at or above the reported result.
  - J The analyte was positively identified. The associated numerical result is an estimate.
  - UJ The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
  - R The data are unusable for all purposes.
  - N There is evidence the analyte is present in this sample.
  - JN There is evidence the analyte is present in this sample. The associated numerical result is an estimate.
  - D The sample result is reported from a diluted analysis.
  - EJ The sample result is greater than the calibration range. The associated numerical value is an estimated concentration only.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

#### SEMIVOLATILE ORGANIC COMPOUND (SVOC) ANALYSES

### 1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method Matrix		Holding Time	Preservation
SW-846 8270	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
(SIM)	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

#### 2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

#### 3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within the control limits.

#### 4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

A site-specific MS/MSD was not included in the data package.

### 5. Laboratory Control Sample

The LCS/ analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

### 6. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not included in the data package.

#### 7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

### **DATA VALIDATION CHECKLIST FOR SVOCs**

SVOCs: SW-846 8270 (SIM)	Rep	orted	Performance Acceptable		Not Required
	No	Yes	No	Yes	Required
GAS CHROMATOGRAPHY/MASS SPECTROM	ETRY (GC/	MS)			
Tier II Validation					
Holding times		Х		Х	
Reporting limits (units)		Х		Х	
Blanks					
A. Method blanks		Х		Х	
B. Equipment blanks	Х				Х
Laboratory Control Sample (LCS) %R		Х		Х	
Laboratory Control Sample Duplicate(LCSD) %R	Х				Х
LCS/LCSD Precision (RPD)	Х				Х
Matrix Spike (MS) %R	Х				Х
Matrix Spike Duplicate(MSD) %R	Х				Х
MS/MSD Precision (RPD)	Х				Х
Field Duplicate (RPD)	Х				Х
Surrogate Spike Recoveries		Х		Х	
Dilution Factor		Х		Х	
Moisture Content		Х		Х	

%R

Percent recovery
Relative percent difference RPD

#### **NWTPH-GX AND DX**

#### 1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
NWTPH – Gx and Dx ECY 97-602	Soil	14 days from collection to analysis	Cool to <6 °C

The analyses that exceeded the holding are presented in the following table.

Sample Locations	Holding Time	Criteria		
AUS-SB-62-Offset(4.5-5) AUS-SB-41-Offset(2-2.5) AUS-SB-52-Offset(2-2.5)	21 days	<14 Days		

Sample results associated with sample locations analyzed by analytical method ECY 97-602 DX with Silica Gel were qualified, as specified in the table below. All other holding times were met.

	Qualification			
Criteria	Detected Analytes	Non-detect Analytes		
Analysis completed less than two times holding time	J	UJ		
Analysis completed greater than two times holding time	J	R		

#### 2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

#### 3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. The analysis requires surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within the laboratory control limits.

#### 4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery
AUS-SB-62-Offset(4.5-5)	DRO	<ll but="">10%</ll>	<ll but="">10%</ll>

AC = Acceptable

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper central limit (LIL)	Non-detect	No Action
> the upper control limit (UL)	Detect	J
< the lower central limit (LL) but > 100/	Non-detect	UJ
< the lower control limit (LL) but > 10%	Detect	J
< 10%	Non-detect	R
< 1076	Detect	J
Parent sample concentration > four times the MS/MSD	Detect	No Action
spiking solution concentration (D).	Non-detect	INO ACTION

#### 5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS/LCSD analysis exhibited recoveries within the control limits.

#### 6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not included in the data package.

#### 7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

### **DATA VALIDATION CHECKLIST FOR TPH**

Gx/Dx; ECY 97-602	Reported			mance ptable	Not Required
	No	Yes	No	Yes	Required
GAS CHROMATOGRAPHY (GC/FID)					
Tier II Validation					
Holding times		Х	Х		
Reporting limits (units)		Х		Х	
Blanks					
A. Method blanks		Х		Х	
B. Trip blanks		Х		Х	
Laboratory Control Sample (LCS) %R		Х		Х	
Laboratory Control Sample Duplicate(LCSD) %R	х				Х
LCS/LCSD Precision (RPD)	Х				Х
Matrix Spike (MS) %R		Х	Х		
Matrix Spike Duplicate(MSD) %R		Х	Х		
MS/MSD Precision (RPD)		Х	Х		
Field/Lab Duplicate (RPD)		Х		Х	
Surrogate Spike Recoveries		Х		Х	
Dilution Factor		Х		Х	
Moisture Content		Х		Х	

<sup>%</sup>R - percent recovery, RPD - relative percent difference,

VALIDATION PERFORMED

BY: Rachelle Borne

SIGNATURE: Sand

DATE: December 1, 2015

PEER REVIEW: Joseph C. Houser

DATE: December 10, 2015

# CHAIN OF CUSTODY/ CORRECTED SAMPLE ANALYSIS DATA SHEETS



Laboratory Management Program LaMP Chain of Custody Record R224127

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2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-62-Offset(4.5-5) Soil

Former Olympia Bulk Plant COC: R224127

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018583

LL Group # 1586959 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 15:45 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/22/2015 10:25 630 Plaza Drive

Reported: 09/14/2015 17:32 Highlands Ranch CO 80129

#### AVS62

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	ug/kg	ug/kg	ug/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.84	2.1	1
10725	Benzo(a)pyrene		50-32-8	N.D.	0.84	2.1	1
10725	Benzo(b)fluoranthen	е	205-99-2	2.6	0.84	2.1	1
10725	Benzo(k)fluoranthen	е	207-08-9	N.D.	0.84	2.1	1
10725	Chrysene		218-01-9	2.6	0.42	2.1	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.84	2.1	1
10725	Indeno(1,2,3-cd)pyr	ene	193-39-5	1.0 J	0.84	2.1	1
10725	1-Methylnaphthalene		90-12-0	3.4	0.84	2.1	1
10725	2-Methylnaphthalene		91-57-6	4.4	0.84	2.1	1
10725	Naphthalene		91-20-3	25	0.84	2.1	1
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1	2	n.a.	33	2.7	13	52.03
GC Pet	croleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons	modified					
08272	Diesel Range Organi	cs C12-C24	n.a.	29 <mark>J</mark>	3.8	8.8	1
08272	Heavy Range Organic	s C24-C40	n.a.	58	13	38	1
GC Pet	roleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modified					
02214	DRO C12-C24 w/Si Ge	1	n.a.	11 J	3.8	8.8	1
02214	HRO C24-C40 w/Si Ge		n.a.	N.D. UJ	13	38	1
	holding time was not le with insufficient	met. The ana					
Wet Ch	nemistry	SM 2540 G-	1997	%	%	%	
02111	Moisture		n.a.	21.6	1.0	1.0	1
	"Moisture" represen infrared lamp at 15			e sample after drying	with an		

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15243SLE026	09/03/2015	04:34	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15243SLE026	09/01/2015	09:30	Katheryne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15243A34A	09/01/2015	14:33	Jeremy C Giffin	52.03



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Sample Description: AUS-SB-62-Offset(4.5-5) Soil

Former Olympia Bulk Plant COC: R224127

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018583 LL Group # 1586959

Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 08/22/2015 10:25

Reported: 09/14/2015 17:32

Collected: 08/20/2015 15:45 by EE Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

AVS62

		Laborat	ory Sa	mple Analysi	s Record			
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tir	ne	Analyst	Dilution Factor
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524038693	08/20/2015	15:45	Client Supplied	n.a.
08272	NWTPH-Dx soil	ECY 97-602 NWTPH-Dx modified	1	152430020A	09/01/2015	12:03	Christine E Dolman	1
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520029A	09/12/2015	14:15	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520029A	09/10/2015	09:00	Olivia Arosemena	1
11234	WA DRO NW DX Soils (Non SG)	ECY 97-602 NWTPH-Dx 06/97	1	152430020A	08/31/2015	18:45	Sally L Appleyard	1
02111	Moisture	SM 2540 G-1997	1	15244912201A	09/01/2015	12:26	Nancy J Shoop	1



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Sample Description: AUS-SB-41-Offset(2-2.5) Soil

Former Olympia Bulk Plant COC: R224127

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018584 LL Group # 1586959

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 16:20 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/22/2015 10:25 630 Plaza Drive

Reported: 09/14/2015 17:32 Highlands Ranch CO 80129

#### AVS41

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	ug/kg		ug/kg	ug/kg	
10725	Benzo(a)anthracene		56-55-3	0.91	J	0.77	1.9	1
10725	Benzo(a)pyrene		50-32-8	N.D.		0.77	1.9	1
10725	Benzo(b)fluoranthen	<b>e</b>	205-99-2	1.5	J	0.77	1.9	1
10725	Benzo(k)fluoranthen	<b>e</b>	207-08-9	N.D.		0.77	1.9	1
10725	Chrysene		218-01-9	2.7		0.39	1.9	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.		0.77	1.9	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.		0.77	1.9	1
10725	1-Methylnaphthalene		90-12-0	36		0.77	1.9	1
10725	2-Methylnaphthalene		91-57-6	99		0.77	1.9	1
10725	Naphthalene		91-20-3	63		0.77	1.9	1
GC Vol	atiles	ECY 97-	602 NWTPH-Gx	mg/kg		mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1	2	n.a.	55		5.6	28	119.02
	roleum		602 NWTPH-Dx	mg/kg		mg/kg	mg/kg	
Hydrod	arbons	modifie	d					
08272	Diesel Range Organi	cs C12-C24	n.a.	30		3.5	8.1	1
08272	Heavy Range Organic	s C24-C40	n.a.	N.D.		12	35	1
GC Pet	roleum	ECY 97-	602 NWTPH-Dx	mg/kg		mg/kg	mg/kg	
Hydrod	arbons w/Si	modifie	d					
-	DRO C12-C24 w/Si Ge		n.a.	44 <mark>J</mark>		3.4	8.0	1
02214	HRO C24-C40 w/Si Ge		n.a.	N.D. UJ		11	34	1
The l	nolding time was not le with insufficient	met. The	analysis was adde	d to the		11	31	-
Wet Ch	nemistry	SM 2540	G-1997	%		%	%	
02111	Moisture		n.a.	14.4		1.0	1.0	1
	"Moisture" represent infrared lamp at 15			e sample	after drying	with an		

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15243SLE026	09/03/2015	05:18	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15243SLE026	09/01/2015	09:30	Katheryne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15243A34A	09/01/2015	02:29	Jeremy C Giffin	119.02



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Sample Description: AUS-SB-41-Offset(2-2.5) Soil

LL Sample # SW 8018584 Former Olympia Bulk Plant COC: R224127 LL Group # 1586959 1117 West Bay Drive - Olympia, WA Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 16:20 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/22/2015 10:25 630 Plaza Drive

Highlands Ranch CO 80129 Reported: 09/14/2015 17:32

AVS41

		Laborat	ory Sa	mple Analysi	s Record			
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524038693	08/20/2015	16:20	Client Supplied	n.a.
08272	NWTPH-Dx soil	ECY 97-602 NWTPH-Dx modified	1	152430020A	09/01/2015	10:39	Christine E Dolman	1
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520029A	09/12/2015	14:58	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520029A	09/10/2015	09:00	Olivia Arosemena	1
11234	WA DRO NW DX Soils (Non SG)	ECY 97-602 NWTPH-Dx 06/97	1	152430020A	08/31/2015	18:45	Sally L Appleyard	1
02111	Moisture	SM 2540 G-1997	1	15244912201A	09/01/2015	12:40	Nancy J Shoop	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-52-Offset(2-2.5) Soil

Former Olympia Bulk Plant COC: R224127

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018585

LL Group # 1586959 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 08/22/2015 10:25

Reported: 09/14/2015 17:32

Collected: 08/20/2015 16:35 by EE Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

#### AVS52

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	ug/kg		ug/kg	ug/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.		0.82	2.1	1
10725	Benzo(a)pyrene		50-32-8	N.D.		0.82	2.1	1
10725	Benzo(b)fluoranthen	e	205-99-2	2.0	J	0.82	2.1	1
10725	Benzo(k)fluoranthen	е	207-08-9	N.D.		0.82	2.1	1
10725	Chrysene		218-01-9	2.5		0.41	2.1	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.		0.82	2.1	1
10725	Indeno(1,2,3-cd)pyr	ene	193-39-5	N.D.		0.82	2.1	1
10725	1-Methylnaphthalene		90-12-0	1.4	J	0.82	2.1	1
10725	2-Methylnaphthalene		91-57-6	3.0		0.82	2.1	1
10725	Naphthalene		91-20-3	14		0.82	2.1	1
GC Vol	atiles	ECY 97-602	NWTPH-Gx	mg/kg		mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1	2	n.a.	N.D.		1.2	6.2	25.02
GC Pet	roleum	ECY 97-602	NWTPH-Dx	mg/kg		mg/kg	mg/kg	
Hydrod	arbons	modified						
08272	Diesel Range Organi	cs C12-C24	n.a.	5.7	J	3.7	8.6	1
	Heavy Range Organic		n.a.	20	J	12	37	1
GC Pet	roleum	ECY 97-602	NWTPH-Dx	mg/kg		mg/kg	mg/kg	
Hydrod	arbons w/Si	modified						
02214	DRO C12-C24 w/Si Ge		n.a.	N.D. UJ	ī	3.6	8.5	1
02214	HRO C24-C40 w/Si Ge		n.a.	N.D. UJ		12	36	1
The l	nolding time was not	met. The ana	lysis was adde	d to the		12	30	1
samp.	le with insufficient	time remainin	g in the holdi	ng time.				
Wet Ch	nemistry	SM 2540 G-	1997	8		%	8	
02111	Moisture		n.a.	18.8		1.0	1.0	1
	"Moisture" represen infrared lamp at 15			e sample	after drying	with an		

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15243SLE026	09/03/2015	05:50	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15243SLE026	09/01/2015	09:30	Katheryne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15243A34A	08/31/2015	20:58	Jeremy C Giffin	25.02
			1		,			1 25.02



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-52-Offset(2-2.5) Soil

Former Olympia Bulk Plant COC: R224127

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018585 LL Group # 1586959

Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 08/22/2015 10:25

Reported: 09/14/2015 17:32

Collected: 08/20/2015 16:35 by EE Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

AVS52

		Laborat	ory Sa	mple Analysi	s Record			
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524038693	08/20/2015	16:35	Client Supplied	n.a.
08272	NWTPH-Dx soil	ECY 97-602 NWTPH-Dx modified	1	152430020A	09/01/2015	11:00	Christine E Dolman	1
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520029A	09/12/2015	15:20	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520029A	09/10/2015	09:00	Olivia Arosemena	1
11234	WA DRO NW DX Soils (Non SG)	ECY 97-602 NWTPH-Dx 06/97	1	152430020A	08/31/2015	18:45	Sally L Appleyard	1
02111	Moisture	SM 2540 G-1997	1	15244912201A	09/01/2015	12:48	Nancy J Shoop	1



### **BP OLY**

### **Data Review**

OLYMPIA, WA

Semivolatiles and TPH

SDG # 1586960

Analyses Performed By: Lancaster Laboratories Lancaster, PA

Report # 24721R Review Level: Tier II

Project: GP09BPNA.WA60.K000

### **SUMMARY**

This data quality assessment summarizes the review of Sample Delivery Group (SDG) #1586960 for samples collected in association with the BP OLY site. The review was conducted at a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

			Comple			Α	nalysis	S	
Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	voc	svoc	TPH	MET	TSS
AUS-SB-60(2-2.5)	8018587	Soil	08/19/15			Х	Х		
AUS-SB-59(4.5-5)	8018588	Soil	08/19/15			Х	Х		
AUS-SB-48(2-2.5)	8018589	Soil	08/19/15			Х	Χ		
AUS-SB-58(2-2.5)	8018590	Soil	08/19/15			Х	Х		
AUS-SB-47(2-2.5)	8018591	Soil	08/19/15			Х	Х		
AUS-SB-57(2-2.5)	8018592	Soil	08/19/15			Х	Х		
AUS-SB-46(2-2.5)	8018595	Soil	08/19/15			Х	Х		
AUS-SB-56(4.5-5)	8018596	Soil	08/19/15			Х	Х		
AUS-SB-55(4.5-5)	8018597	Soil	08/19/15			Х	Х		
AUS-SB-45(2-2.5)	8018598	Soil	08/19/15			Х	Х		
AUS-SB-34(4.5-5)	8018599	Soil	08/19/15			Х	Х		
AUS-SB-35(2-2.5)	8018600	Soil	08/19/15			Х	Х		
AUS-SB-36(2-2.5)	8018601	Soil	08/19/15			Х	Х		
AUS-SB-37(2-2.5)	8018602	Soil	08/20/15			Х	Х		
AUS-SB-27(2-2.5)	8018603	Soil	08/20/15			Х	Х		
AUS-SB-31(2-2.5)	8018604	Soil	08/20/15			Х	Х		
AUS-SB-32(2-2.5)	8018605	Soil	08/20/15			Х	Х		
AUS-SB-44(4.5-5)	8018606	Soil	08/20/15			Х	Х		
AUS-SB-22(2-2.5)	8018607	Soil	08/20/15			Х	Х		
AUS-SB-54(2-2.5)	8018611	Soil	08/20/15			Х	Х		
AUS-SB-4A(2-2.5)	8018612	Soil	08/20/15			Х	Χ		
AUS-SB-42(2-2.5)	8018613	Soil	08/20/15			Х	Х		
AUS-SB-26A(2-2.5)	8018615	Soil	08/20/15			Х	Х		
AUS-SB-25A(2-2.5)	8018616	Soil	08/20/15			Х	Х		
AUS-SB-43A(2-2.5)	8018617	Soil	08/20/15			Х	Х		
AUS-SB-63(2-2.5)	8018620	Soil	08/20/15			Х	Х		
DUP-3	8018621	Soil	08/19/15	AUS-SB- 46(2-2.5)		Х	Х		

					Analysis				
Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	voc	svoc	ТРН	MET	TSS
DUP-4	8018622	Soil	08/20/15	AUS-SB- 44(4.5-5)		Х	Х		

Note:
1. Samples AUS-SB-57(2-2.5) and AUS-SB-22(2-2.5) were used as the MS/MSDs.

### ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

		Rep	orted		mance ptable	Not
	Items Reviewed	No	Yes	No	Yes	Required
1.	Sample receipt condition		Х		Х	
2.	Requested analyses and sample results		Х		Х	
3.	Master tracking list		Х		Х	
4.	Methods of analysis		Х		Х	
5.	Reporting limits		Х		Х	
6.	Sample collection date		Х		Х	
7.	Laboratory sample received date		Х		Х	
8.	Sample preservation verification (as applicable)		Х		Х	
9.	Sample preparation/extraction/analysis dates		Х		Х	
10.	Fully executed Chain-of-Custody (COC) form		Х		Х	
11.	Narrative summary of QA or sample problems provided		Х		Х	
12.	Data Package Completeness and Compliance		Х		Х	

QA - Quality Assurance

#### ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 8270 (SIM) and ECY 97-602. Data were reviewed in accordance with the USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines and as requested by USEPA Region 10:

- Concentration (C) Qualifiers
  - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
  - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
  - E The compound was quantitated above the calibration range.
  - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
  - U The analyte was not detected at or above the reported result.
  - J The analyte was positively identified. The associated numerical result is an estimate.
  - UJ The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
  - R The data are unusable for all purposes.
  - N There is evidence the analyte is present in this sample.
  - JN There is evidence the analyte is present in this sample. The associated numerical result is an estimate.
  - D The sample result is reported from a diluted analysis.
  - EJ The sample result is greater than the calibration range. The associated numerical value is an estimated concentration only.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

### SEMIVOLATILE ORGANIC COMPOUND (SVOC) ANALYSES

### 1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8270	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
(SIM)	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

The analyses that exceeded the holding are presented in the following table.

Sample Locations	Holding Time	Criteria
AUS-SB-44(4.5-5)	43 Days	<14 Days

Sample results associated with sample locations analyzed by analytical method SW-846 8270 were qualified, as specified in the table below. All other holding times were met.

	Qualification			
Criteria	Detected Analytes	Non-detect Analytes		
Analysis completed less than two times holding time	J	UJ		
Analysis completed greater than two times holding time	J	R		

#### 2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

### 3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	Recovery
	Fluoranthene-d10	AC
AUS-SB-42(2-2.5)	Benzo(a)pyrene-d12	<ll but="">10%</ll>
	1-Methylnaphthalene-d10	AC
	Fluoranthene-d10	<ll but="">10%</ll>
DUP-3	Benzo(a)pyrene-d12	<ll but="">10%</ll>
	1-Methylnaphthalene-d10	<ll but="">10%</ll>
	Fluoranthene-d10	>UL
AUS-SB-44(4.5-5)	Benzo(a)pyrene-d12	AC
	1-Methylnaphthalene-d10	>UL

UL Upper control limit

LL Low Limit AC Acceptable

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results associated with the deviant fraction are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	No Action
	Detect	J
< LL but > 10%	Non-detect	UJ
CE but > 10 %	Detect	J
< 10%	Non-detect	R
< 10 //0	Detect	J
Surrogates diluted below the calibration curve due to the	Non-detect	1
high concentration of a target compounds	Detect	J

A more concentrated analysis was not performed with surrogate compounds within the calibration range; therefore, no determination of extraction efficiency could be made.

#### 4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established

acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery
ALIC CD 57/2 2 5)	Dibenz(a,h)anthracene	<ll but="">10%</ll>	<ll but="">10%</ll>
AUS-SB-57(2-2.5)	Indeno(1,2,3-cd)pyrene	<ll but="">10%</ll>	<ll but="">10%</ll>
	Benzo(a)Anthracene	>UL	>UL
	Benzo(a)Pyrene	>UL	>UL
	Benzo(k)Fluoranthene	>UL	>UL
ALIC CD 22/2 2 5)	Chrysene	>UL	>UL
AUS-SB-22(2-2.5)	Indeno(1,2,3-cd)pyrene	<ll but="">10%</ll>	AC
	1-Methylnaphthalene	>UL	>UL
	2-Methylnaphthalene	>UL	>UL
	Naphthalene	AC	>UL
	Chrysene	<ll but="">10%</ll>	<ll but="">10%</ll>
AUS-SB-44(4.5-5)	Dibenz(a,h)anthracene	<ll but="">10%</ll>	<ll but="">10%</ll>
	Indeno(1,2,3-cd)pyrene	<ll but="">10%</ll>	<ll but="">10%</ll>

AC Acceptable

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
> tile upper control limit (OL)	Detect	J
< the lower central limit (LL) but > 100/	Non-detect	UJ
< the lower control limit (LL) but > 10%	Detect	J
< 10%	Non-detect	R
< 10%	Detect	J
Parent sample concentration > four times the MS/MSD	Detect	No Action
spiking solution concentration.	Non-detect	INO ACTION

### 5. Laboratory Control Sample

The LCS/ analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

Sample locations associated with LCS analysis exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Compound	LCS Recovery
AUS-SB-22(2-2.5) AUS-SB-54(2-2.5) AUS-SB-4A(2-2.5) AUS-SB-42(2-2.5) AUS-SB-26A(2-2.5) AUS-SB-25A(2-2.5) AUS-SB-43A(2-2.5) AUS-SB-63(2-2.5) DUP-3 DUP-4	Benzo(k)Fluoranthene	>UL

The criteria used to evaluate the LCS/LCSD recoveries are presented in the following table. In the case of an LCS/LCSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper central limit (LIL)	Non-detect	No Action
> the upper control limit (UL)	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
the lower control limit (LL) but > 10 %	Detect	J
< 10%	Non-detect	R
1070	Detect	J

#### 6. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
	Benzo(a)anthracene	0.0055	0.0013 J	AC
AUS-SB-46(2-2.5)/DUP-3	Benzo(a)pyrene	0.0061	0.0014 J	AC
	Benzo(b)fluoranthene	0.013	0.0042	102.3%

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
	Benzo(k)fluoranthene	0.0042	0.0017 J	AC
	Chrysene	0.011	0.0038	97.3%
	Indeno(1,2,3-cd)pyrene	0.0025	0.0085 J	AC
AUS-SB-46(2-2.5)/DUP-3	1-Methylnaphthalene	0.013	0.0019 J	149%
	2-Methylnaphthalene	0.022	0.0031	150.6%
	Naphthalene	0.019	0.0038	133.3%
	Chrysene	0.028 J	0.038	AC
ALIC CD 44/4 E EVIDLID 4	1-Methylnaphthalene	2.6	2.5	3.9%
AUS-SB-44(4.5-5)/DUP-4	2-Methylnaphthalene	2.3	2.5	8.3%
	Naphthalene	0.71	0.55	25.4%

AC Acceptable

The compound(s) benzo(b)fluoranthene, chrysene, 1-methylnaphthalene, 2-methylnaphthalene and naphthalene associated with sample locations AUS-SB-46(2-2.5) and DUP-3 exhibited a field duplicate RPD greater than the control limit. The associated sample results from sample locations for the listed analyte were qualified as estimated.

#### 7. System Performance and Overall Assessment

The laboratory noted that the internal standard Perylene-d12 did not meet QC acceptance limits for sample locations AUS-SB-45(2-2.5), AUS-SB-34(4.5-5), Aus-SB-35(2-2.5), AUS-SB-36(2-2.5), AUS-SB-27(2-2.5), AUS-SB-31(2-2.5) and AUS-SB-57(2-2.5). The results for associated compounds Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene and Dibenz(a,h)anthracene in sample locations AUS-SB-45(2-2.5), AUS-SB-34(4.5-5), Aus-SB-35(2-2.5), AUS-SB-36(2-2.5), AUS-SB-37(2-2.5), AUS-SB-37(2-2.5) and AUS-SB-57(2-2.5) were qualified as estimated.

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

### **DATA VALIDATION CHECKLIST FOR SVOCs**

SVOCs: SW-846 8270 (SIM)	Rep	orted		mance ptable	Not Required
	No	Yes	No	Yes	Required
GAS CHROMATOGRAPHY/MASS SPECTROM	ETRY (GC/	MS)			
Tier II Validation					
Holding times		Х	Х		
Reporting limits (units)		Х		Х	
Blanks					
A. Method blanks		Х		Х	
B. Equipment blanks	Х				Х
Laboratory Control Sample (LCS) %R		Х	Х		
Laboratory Control Sample Duplicate(LCSD) %R	Х				Х
LCS/LCSD Precision (RPD)	Х				Х
Matrix Spike (MS) %R		Х	Х		
Matrix Spike Duplicate(MSD) %R		Х	Х		
MS/MSD Precision (RPD)		Х		Х	
Field Duplicate (RPD)		Х	Х		
Surrogate Spike Recoveries		Х	Х		
Dilution Factor		Х		Х	
Moisture Content		Х		Х	

%R RPD

Percent recovery
Relative percent difference

#### **NWTPH-GX AND DX**

#### 1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
NWTPH – Gx and Dx ECY 97-602	Soil	14 days from collection to analysis	Cool to <6 °C

All samples were analyzed within the specified holding times.

#### 2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

#### 3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. The analysis requires surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	Recovery
DUP-4	Trifluorotoluene-F	>UL

Upper control limit (UL)

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results associated with the deviant fraction are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	No Action
	Detect	J
< LL but > 10%	Non-detect	CO
CLE but > 10%	Detect	J
< 10%	Non-detect	R
1070	Detect	J

#### 4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery
AUS-SB-57(2-2.5)	Gx	AC	>UL
AUS-SB-22(2-2.5)	Gx	>UL	>UL

AC = Acceptable

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
> tile upper control limit (OL)	Detect	J
< the lower central limit (LL) but > 100/	Non-detect	UJ
< the lower control limit (LL) but > 10%	Detect	J
< 10%	Non-detect	R
< 10%	Detect	J
Parent sample concentration > four times the MS/MSD	Detect	No Action
spiking solution concentration (D).	Non-detect	No Action

Sample locations associated with MS/MSD recoveries exhibiting an RPD greater than of the control limit presented in the following table.

Sample Locations	Compound
AUS-SB-22(2-2.5)	DRO

The criteria used to evaluate the RPD between the MS/MSD recoveries are presented in the following table. In the case of an RPD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	UJ
	Detect	J

#### 5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

#### 6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
AUS-SB-46(2-2.5)/DUP-3	Gx	91 U	91 U	AC
	DRO	110	150	30.8%
	HRO	170	270	45.5%
AUS-SB-44(4.5-5)/DUP-4	Gx	1900	990	63.0%
	DRO	820	1900	79.4%
	HRO	34 J	300 U	AC

AC = Acceptable.

The compounds Gx and DRO associated with sample locations AUS-SB-44(4.5-5) and DUP-4 exhibited a field duplicate RPD greater than the control limit. The associated sample results from sample locations for the listed analyte were qualified as estimated.

#### 7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

### **DATA VALIDATION CHECKLIST FOR TPH**

Gx/Dx; ECY 97-602	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	Required
GAS CHROMATOGRAPHY (GC/FID)					
Tier II Validation					
Holding times		Х		Х	
Reporting limits (units)		Х		Х	
Blanks			•	•	
A. Method blanks		Х		Х	
B. Trip blanks		Х		Х	
Laboratory Control Sample (LCS) %R		Х		Х	
Laboratory Control Sample Duplicate(LCSD) %R	Х				Х
LCS/LCSD Precision (RPD)	Х				Х
Matrix Spike (MS) %R		Х	Х		
Matrix Spike Duplicate(MSD) %R		Х	Х		
MS/MSD Precision (RPD)		Х	Х		
Field/Lab Duplicate (RPD)		Х	Х		
Surrogate Spike Recoveries		Х	Х		
Dilution Factor		Х		Х	
Moisture Content		Х		Х	

<sup>%</sup>R - percent recovery, RPD - relative percent difference,

VALIDATION PERFORMED

BY: Rachelle Borne

SIGNATURE: Schull Bow

DATE: December 1, 2015

PEER REVIEW: Joseph C. Houser

DATE: December 11, 2015

# CHAIN OF CUSTODY/ CORRECTED SAMPLE ANALYSIS DATA SHEETS



13255 15%6960 801%587-623

Laboratory Management Program LaMP Chain of Custody Record R224123

Page 1 of 4

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Chain of Custody Record R224124

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Laboratory Management Program LaMP Chain of Custody Record R224125 | Page \_\_

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Laboratory Management Program LaMP Chain of Custody Record R224126

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BP Site Node Path:	Req Due Date (mm/dd/yy):
BP Facility No: Former Olympic Bulk Plant	Lab Work Order Number: 75 793

Lab Name: Lancaster Laborationies		Consultant/Contractor: ARCADIS					
	City, State, ZIP Code: Clympin, W/	Consultant/Contractor Project No: 6POJPPNA, WA68					
Lab PM: Stain Bindt		Address: 100 Olive Was, Scattle, WA					
Lab Phone: 717-656-2500		Consultant/Contractor PM: Brian Marcun					
Lab Shipping Acent:	Enfos Proposal No:	Phone: 206-726-4759 Email: Balan Manchar Carcadis-use					
Lab Bottle Order No:	Accounting Mode: Provision OOC-BU OOC-RM	Email EDD To: Prian Mirchan and to lab.enfosdoc@bp.com					
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BP Project Manager (PM):	Matrix No. Containers / Preservative	ested Analyses Report Type & QC Level					
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Lab No. Sample Description Date Time	Soil / Solid Water / Liquid Air / Vapor Is this location a well? Total Number of Container Unpreserved H2SO4 HNO3 HCI Methanol  ARIS - PANA 6-3-3-22 CRC 6-3 WM 75-11-3-4  ORC 6-3 WM 75-11-3-4  ORC 6-3 WM 75-11-3-4	Comments  Note: If sample not collected, indicate "No Sample" in comments and single-strike out and initial any preprinted sample description.					
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2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-60(2-2.5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018587

LL Group # 1586960 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 07:15 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/22/2015 10:25 630 Plaza Drive

Reported: 10/08/2015 14:30 Highlands Ranch CO 80129

#### AVS60

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.0012 J	0.00080	0.0020	1
10725	Benzo(a)pyrene		50-32-8	0.0017 J	0.00080	0.0020	1
10725	Benzo(b)fluoranthene	2	205-99-2	0.0051	0.00080	0.0020	1
10725	Benzo(k)fluoranthene	2	207-08-9	0.0014 J	0.00080	0.0020	1
10725	Chrysene		218-01-9	0.0048	0.00040	0.0020	1
10725	Dibenz(a,h)anthracer	ne	53-70-3	N.D.	0.00080	0.0020	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	0.0018 J	0.00080	0.0020	1
10725	1-Methylnaphthalene		90-12-0	0.00093 J	0.00080	0.0020	1
10725	2-Methylnaphthalene		91-57-6	0.0017 J	0.00080	0.0020	1
10725	Naphthalene		91-20-3	0.0092	0.00080	0.0020	1
GC Vol	latiles	ECY 97-	602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C12 rting limits were rai		n.a. o sample foaming.	N.D.	17	86	357.53
GC Pet	roleum	ECY 97-	602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modifie	ed.				
02214	DRO C12-C24 w/Si Gel	L	n.a.	N.D.	3.6	8.4	1
02214	HRO C24-C40 w/Si Gel	L	n.a.	N.D.	12	36	1
Wet Ch	nemistry	SM 2540	G-1997	%	%	%	
00111	Moisture		n.a.	17.1	0.50	0.50	1
	Moisture represents	the loss					
	103 - 105 degrees Ce as-received basis.		_	-			

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/05/2015	02:04	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015	07:45	Katheryne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15242A34A	08/30/2015	13:16	Jeremy C Giffin	357.53
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/19/2015	07:15	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520006A	09/12/2015	01:58	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520006A	08/30/2015	15:30	Denise L Trimby	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-60(2-2.5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018587 LL Group # 1586960 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

Collected: 08/19/2015 07:15 by EE Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

AVS60

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15240820002A	08/28/2015 22:28	Scott W Freisher	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-59(4.5-5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018588

LL Group # 1586960 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 07:30 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/22/2015 10:25 630 Plaza Drive

Reported: 10/08/2015 14:30 Highlands Ranch CO 80129

AVS59

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.0034	0.00088	0.0022	1
10725	Benzo(a)pyrene		50-32-8	0.0048	0.00088	0.0022	1
10725	Benzo(b)fluoranthene	9	205-99-2	0.0081	0.00088	0.0022	1
10725	Benzo(k)fluoranthene	2	207-08-9	0.0031	0.00088	0.0022	1
10725	Chrysene		218-01-9	0.0070	0.00044	0.0022	1
10725	Dibenz(a,h)anthracer	ne	53-70-3	N.D.	0.00088	0.0022	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	0.0029	0.00088	0.0022	1
10725	1-Methylnaphthalene		90-12-0	0.0072	0.00088	0.0022	1
10725	2-Methylnaphthalene		91-57-6	0.013	0.00088	0.0022	1
10725	Naphthalene		91-20-3	0.040	0.00088	0.0022	1
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C12 cting limits were rai		n.a. mple foaming.	N.D.	16	79	299.37
GC Pet	roleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	arbons w/Si	modified					
02214	DRO C12-C24 w/Si Gel	L	n.a.	10	3.9	9.2	1
02214	HRO C24-C40 w/Si Gel	L	n.a.	69	13	39	1
Wet Ch	nemistry	SM 2540 G-	1997	%	%	%	
00111	Moisture		n.a.	24.5	0.50	0.50	1
	Moisture represents 103 - 105 degrees Coas-received basis.		_	ample after oven dryi reported is on an	ng at		

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

			_	_				
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tir	<b></b>	Analyst	Dilution Factor
								Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/05/2015	02:37	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015	07:45	Katheryne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15242A34A	08/30/2015	13:52	Jeremy C Giffin	299.37
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/19/2015	07:30	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520006A	09/12/2015	02:19	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520006A	08/30/2015	15:30	Denise L Trimby	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



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Sample Description: AUS-SB-59(4.5-5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Group # 1586960 Account # 13255

LL Sample # SW 8018588

Project Name: Former Olympia Bulk Plant

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

Collected: 08/19/2015 07:30 by EE Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

AVS59

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15240820002A	08/28/2015 22:28	Scott W Freisher	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-48(2-2.5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018589

LL Group # 1586960 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 07:50 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/22/2015 10:25 630 Plaza Drive

Reported: 10/08/2015 14:30 Highlands Ranch CO 80129

AVS48

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.00080	0.0020	1
10725	Benzo(a)pyrene		50-32-8	0.0011 J	0.00080	0.0020	1
10725	Benzo(b)fluoranthene	9	205-99-2	0.0031	0.00080	0.0020	1
10725	Benzo(k)fluoranthene	9	207-08-9	N.D.	0.00080	0.0020	1
10725	Chrysene		218-01-9	0.0024	0.00040	0.0020	1
10725	Dibenz(a,h)anthracer	ie	53-70-3	N.D.	0.00080	0.0020	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.	0.00080	0.0020	1
10725	1-Methylnaphthalene		90-12-0	0.0055	0.00080	0.0020	1
10725	2-Methylnaphthalene		91-57-6	0.0043	0.00080	0.0020	1
10725	Naphthalene		91-20-3	0.0079	0.00080	0.0020	1
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C12 cting limits were rai		n.a. mple foaming.	N.D.	14	68	283.5
GC Pet	roleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	arbons w/Si	modified					
02214	DRO C12-C24 w/Si Gel	L	n.a.	20	3.6	8.4	1
02214	HRO C24-C40 w/Si Gel	L	n.a.	N.D.	12	36	1
Wet Ch	nemistry	SM 2540 G-	1997	%	%	%	
00111	Moisture		n.a.	17.2	0.50	0.50	1
	Moisture represents 103 - 105 degrees Coas-received basis.		_	sample after oven dryi reported is on an	ng at		

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/05/2015	03:10	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015	07:45	Katheryne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15242A34A	08/30/2015	14:27	Jeremy C Giffin	283.5
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/19/2015	07:50	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520006A	09/12/2015	03:03	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520006A	08/30/2015	15:30	Denise L Trimby	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



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Sample Description: AUS-SB-48(2-2.5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018589 LL Group # 1586960 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

Collected: 08/19/2015 07:50 by EE Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

AVS48

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15240820002A	08/28/2015 22:28	Scott W Freisher	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-58(2-2.5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018590

LL Group # 1586960 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 08:00 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/22/2015 10:25 630 Plaza Drive

Reported: 10/08/2015 14:30 Highlands Ranch CO 80129

AVS58

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor	
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg		mg/kg	mg/kg		
10725	Benzo(a)anthracene		56-55-3	0.00092	J	0.00075	0.0019	1	
10725	Benzo(a)pyrene		50-32-8	0.0012	J	0.00075	0.0019	1	
10725	Benzo(b)fluoranthene	2	205-99-2	0.0045		0.00075	0.0019	1	
10725	Benzo(k)fluoranthene	2	207-08-9	0.0011	J	0.00075	0.0019	1	
10725	Chrysene		218-01-9	0.0042		0.00038	0.0019	1	
10725	Dibenz(a,h)anthracen	ne	53-70-3	N.D.		0.00075	0.0019	1	
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	0.00097	J	0.00075	0.0019	1	
10725	1-Methylnaphthalene		90-12-0	N.D.		0.00075	0.0019	1	
10725	2-Methylnaphthalene		91-57-6	0.0012	J	0.00075	0.0019	1	
10725	Naphthalene		91-20-3	0.0034		0.00075	0.0019	1	
GC Vol	latiles	ECY 97-	602 NWTPH-Gx	mg/kg		mg/kg	mg/kg		
02005	NWTPH-GX Soil C7-C12	2	n.a.	N.D.		14	68	295.7	
Repo:	rting limits were rai	sed due t	o sample foaming.						
GC Pet	roleum	ECY 97-	602 NWTPH-Dx	mg/kg		mg/kg	mg/kg		
Hydrod	carbons w/Si	modifie	ed						
02214	DRO C12-C24 w/Si Gel	L	n.a.	N.D.		3.4	8.0	1	
02214	HRO C24-C40 w/Si Gel	L	n.a.	12	J	11	34	1	
Wet Ch	nemistry	SM 2540	G-1997	%		%	8		
00111	Moisture		n.a.	12.6		0.50	0.50	1	
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.								

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tim	ne	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/05/2015	03:43	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015	07:45	Katheryne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15242A34A	08/30/2015	15:02	Jeremy C Giffin	295.7
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/19/2015	08:00	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520006A	09/12/2015	03:24	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520006A	08/30/2015	15:30	Denise L Trimby	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



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Sample Description: AUS-SB-58(2-2.5) Soil

Project Name: Former Olympia Bulk Plant

AUS-SB-58(2-2.5) Soil

Former Olympia Bulk Plant COC: R224123

LL Sample # SW 8018590

LL Group # 1586960

1117 West Bay Drive - Olympia, WA

Account # 13255

Collected: 08/19/2015 08:00 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/22/2015 10:25 630 Plaza Drive

Reported: 10/08/2015 14:30 Highlands Ranch CO 80129

AVS58

#### Laboratory Sample Analysis Record

 CAT
 Analysis Name
 Method
 Trial#
 Batch#
 Analysis
 Analysis
 Analyst
 Dilution

 No.
 00111
 Moisture
 SM 2540 G-1997
 1
 15240820002A
 08/28/2015
 22:28
 Scott W Freisher
 1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-47(2-2.5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018591 LL Group # 1586960

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 08:15 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/22/2015 10:25 630 Plaza Drive

Reported: 10/08/2015 14:30 Highlands Ranch CO 80129

AVS47

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.0021	0.00078	0.0020	1
10725	Benzo(a)pyrene		50-32-8	0.0030	0.00078	0.0020	1
10725	Benzo(b)fluoranthene	e	205-99-2	0.0085	0.00078	0.0020	1
10725	Benzo(k)fluoranthene	e	207-08-9	0.0022	0.00078	0.0020	1
10725	Chrysene		218-01-9	0.0082	0.00039	0.0020	1
10725	Dibenz(a,h)anthracen	ne	53-70-3	N.D.	0.00078	0.0020	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	0.0015 J	0.00078	0.0020	1
10725	1-Methylnaphthalene		90-12-0	0.0028	0.00078	0.0020	1
10725	2-Methylnaphthalene		91-57-6	0.0048	0.00078	0.0020	1
10725	Naphthalene		91-20-3	0.0038	0.00078	0.0020	1
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C12 cting limits were rai	='	n.a. ample foaming.	N.D.	14	69	292.22
GC Pet	roleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	arbons w/Si	modified					
02214	DRO C12-C24 w/Si Gel	L	n.a.	370	3.5	8.3	1
02214	HRO C24-C40 w/Si Gel	L	n.a.	210	12	35	1
Wet Ch	nemistry	SM 2540 G-	-1997	8	8	%	
00111	Moisture		n.a.	15.3	0.50	0.50	1
	Moisture represents 103 - 105 degrees Coas-received basis.			sample after oven dryi reported is on an	ng at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tim	ne	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/05/2015	04:16	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015	07:45	Katheryne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15242A34A	08/30/2015	15:37	Jeremy C Giffin	292.22
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/19/2015	08:15	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520006A	09/12/2015	03:46	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520006A	08/30/2015	15:30	Denise L Trimby	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



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Sample Description: AUS-SB-47(2-2.5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018591 LL Group # 1586960 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

Collected: 08/19/2015 08:15 by EE Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

AVS47

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15240820002A	08/28/2015 22:28	Scott W Freisher	1



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Sample Description: AUS-SB-57(2-2.5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018592

LL Group # 1586960 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 08:40 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/22/2015 10:25 630 Plaza Drive

Reported: 10/08/2015 14:30 Highlands Ranch CO 80129

AVS57

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 82	270C SIM	mg/kg		mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.00097	J	0.00075	0.0019	1
10725	Benzo(a)pyrene		50-32-8	0.0018	J	0.00075	0.0019	1
10725	Benzo(b)fluoranthen	e	205-99-2	0.0052	J	0.00075	0.0019	1
10725	Benzo(k)fluoranthen	e	207-08-9	0.00094	J	0.00075	0.0019	1
10725	Chrysene		218-01-9	0.0035		0.00037	0.0019	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D. <sup>UJ</sup>		0.00075	0.0019	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D. <sup>UJ</sup>		0.00075	0.0019	1
10725	1-Methylnaphthalene		90-12-0	0.0012	J	0.00075	0.0019	1
10725	2-Methylnaphthalene		91-57-6	0.0018	J	0.00075	0.0019	1
10725	Naphthalene		91-20-3	0.0030		0.00075	0.0019	1
spike	lso outside the QC ace(s), indicating a malatiles  NWTPH-GX Soil C7-C1	trix effect  ECY 97-60	02 NWTPH-Gx	mg/kg N.D.	atrix	mg/kg 1.2	mg/kg 6.2	27.39
02005	NWIPH-GX SOII C/-CI	2	n.a.	N.D.		1.2	0.2	27.39
	croleum carbons w/Si	ECY 97-60 modified	02 NWTPH-Dx	mg/kg		mg/kg	mg/kg	
02214	DRO C12-C24 w/Si Ge	1	n.a.	4.1	J	3.4	7.9	1
02214	HRO C24-C40 w/Si Ge	1	n.a.	25	J	11	34	1
Wet Ch	nemistry	SM 2540 (	G-1997	%		%	%	
00111	Moisture		n.a.	11.5		0.50	0.50	1
	Moisture represents 103 - 105 degrees Coas-received basis.					ing at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/04/2015	10:47	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015	07:45	Katheryne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15238A34A	08/27/2015	17:54	Jeremy C Giffin	27.39
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/19/2015	08:40	Client Supplied	n.a.



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-57(2-2.5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018592 LL Group # 1586960 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

Collected: 08/19/2015 08:40 by EE Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

AVS57

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520006A	09/12/2015 04:07	Heather E Williams	: 1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520006A	08/30/2015 15:30	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15240820002A	08/28/2015 22:28	Scott W Freisher	1



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Sample Description: AUS-SB-57(2-2.5)MS Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018593 LL Group # 1586960

Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

Collected: 08/19/2015 08:40 by EE Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

AVS57

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles SW-8	346 8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.033	0.00075	0.0019	1
10725	Benzo(a)pyrene	50-32-8	0.035	0.00075	0.0019	1
10725	Benzo(b)fluoranthene	205-99-2	0.052	0.00075	0.0019	1
10725	Benzo(k)fluoranthene	207-08-9	0.042	0.00075	0.0019	1
10725	Chrysene	218-01-9	0.037	0.00037	0.0019	1
10725	Dibenz(a,h)anthracene	53-70-3	0.023	0.00075	0.0019	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.021	0.00075	0.0019	1
10725	1-Methylnaphthalene	90-12-0	0.038	0.00075	0.0019	1
10725	2-Methylnaphthalene	91-57-6	0.041	0.00075	0.0019	1
10725	Naphthalene	91-20-3	0.042	0.00075	0.0019	1
GC Vol	latiles ECY	97-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	17	1.4	7.1	31.36
		97-602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydro	carbons w/Si modi	.fied				
02214	DRO C12-C24 w/Si Gel	n.a.	110	3.4	7.8	1
02214	HRO C24-C40 w/Si Gel	n.a.	24 J	11	34	1
Wet Ch	nemistry SM 2	2540 G-1997	%	%	%	
00118	Moisture	n.a.	11.5	0.50	0.50	1

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tim	ıe	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/04/2015	11:21	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015	07:45	Katheryne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15238A34A	08/27/2015	18:33	Jeremy C Giffin	31.36
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/19/2015	08:40	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520006A	09/12/2015	04:29	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520006A	08/30/2015	15:30	Denise L Trimby	1
00118	Moisture	SM 2540 G-1997	1	15240820002A	08/28/2015	22:28	Scott W Freisher	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



Account

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-57(2-2.5)MSD Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018594 LL Group # 1586960

# 13255

Project Name: Former Olympia Bulk Plant

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

Collected: 08/19/2015 08:40 by EE Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

#### AVS57

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles S	W-846 827	OC SIM	mg/kg		mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.034		0.00075	0.0019	1
10725	Benzo(a)pyrene		50-32-8	0.034		0.00075	0.0019	1
10725	Benzo(b)fluoranthene		205-99-2	0.050		0.00075	0.0019	1
10725	Benzo(k)fluoranthene		207-08-9	0.040		0.00075	0.0019	1
10725	Chrysene		218-01-9	0.038		0.00037	0.0019	1
10725	Dibenz(a,h)anthracene		53-70-3	0.021		0.00075	0.0019	1
10725	Indeno(1,2,3-cd)pyrene	2	193-39-5	0.020		0.00075	0.0019	1
10725	1-Methylnaphthalene		90-12-0	0.034		0.00075	0.0019	1
10725	2-Methylnaphthalene		91-57-6	0.036		0.00075	0.0019	1
10725	Naphthalene		91-20-3	0.037		0.00075	0.0019	1
GC Vol	latiles E	CY 97-602	NWTPH-Gx	mg/kg		mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12		n.a.	17		1.2	5.9	25.91
GC Pet	croleum E	CY 97-602	NWTPH-Dx	mg/kg		mg/kg	mg/kg	
Hydrod	carbons w/Si m	odified						
02214	DRO C12-C24 w/Si Gel		n.a.	120		3.4	7.8	1
02214	HRO C24-C40 w/Si Gel		n.a.	26	J	11	34	1
Wet Ch	nemistry S	M 2540 G-	1997	%		%	%	
00118	Moisture		n.a.	11.5		0.50	0.50	1
00121	Moisture Duplicate		n.a.	11.6		0.50	0.50	1
00121	The duplicate moisture moisture test. For condetermination is the v	omparability	provided to ass purposes, the	sess the periods in the period in the periods in the periods in the periods in the periods in the periods in the period in t	moisture		0.00	-

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/04/2015 11:55	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015 07:45	Katheryne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15238A34A	08/27/2015 19:09	Jeremy C Giffin	25.91
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/19/2015 08:40	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520006A	09/12/2015 04:51	Heather E Williams	: 1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520006A	08/30/2015 15:30	Denise L Trimby	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-57(2-2.5)MSD Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Group # 1586960 Account # 13255

LL Sample # SW 8018594

Project Name: Former Olympia Bulk Plant

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

Collected: 08/19/2015 08:40 by EE Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

AVS57

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00118	Moisture	SM 2540 G-1997	1	15240820002A	08/28/2015 22:	28 Scott W Freisher	1
00121	Moisture Duplicate	SM 2540 G-1997	1	15240820002A	08/28/2015 22:	28 Scott W Freisher	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-46(2-2.5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018595

LL Group # 1586960 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

Collected: 08/19/2015 10:00 by EE Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

AVS46

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.0055	0.00081	0.0020	1
10725	Benzo(a)pyrene		50-32-8	0.0061	0.00081	0.0020	1
10725	Benzo(b)fluoranthene	<b>:</b>	205-99-2	0.013 <sup>J</sup>	0.00081	0.0020	1
10725	Benzo(k)fluoranthene	<b>:</b>	207-08-9	0.0042	0.00081	0.0020	1
10725	Chrysene		218-01-9	0.011 <sup>J</sup>	0.00041	0.0020	1
10725	Dibenz(a,h)anthracen	ie	53-70-3	N.D.	0.00081	0.0020	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	0.0025	0.00081	0.0020	1
10725	1-Methylnaphthalene		90-12-0	0.013 <sup>J</sup>	0.00081	0.0020	1
10725	2-Methylnaphthalene		91-57-6	0.022 J	0.00081	0.0020	1
10725	Naphthalene		91-20-3	0.019	0.00081	0.0020	1
GC Vol	latiles	ECY 97-	-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12 rting limits were rai		n.a.	N.D.	18	91	372.92
Kepo.	cting indics were rai	sea aue t	.o sample roaming.				
GC Pet	roleum	ECY 97-	-602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modifie	ed				
02214	DRO C12-C24 w/Si Gel	-	n.a.	110	3.6	8.4	1
02214	HRO C24-C40 w/Si Gel	-	n.a.	170	12	36	1
Wet Ch	nemistry	SM 2540	G-1997	%	%	%	
00111	Moisture		n.a.	17.9	0.50	0.50	1
	Moisture represents	the loss	in weight of the	sample after ov	ven drying at		
	103 - 105 degrees Ce as-received basis.	elsius. Th	ne moisture result	reported is or	n an		

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

			_	_				
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
	GIM GIZOR ()	SW-846 8270C SIM	1	15238SLG026			Position IV Goodham	1
10725	SIM SVOA (microwave)	SW-846 82/UC SIM	Τ.	15238SLGU26	09/05/2015	04:48	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015	07:45	Katheryne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15242A34A	08/30/2015	16:13	Jeremy C Giffin	372.92
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/19/2015	10:00	Client Supplied	n.a.
00014		DG11 0E 600	1	152520006A	00/10/0015	05.10	TT+b P M/11/	1
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520006A	09/12/2015	05:12	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520006A	08/30/2015	15:30	Denise L Trimby	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-46(2-2.5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018595

LL Group # 1586960 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

Collected: 08/19/2015 10:00 by EE Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

AVS46

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15240820002A	08/28/2015 22:28	Scott W Freisher	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-56(4.5-5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018596

LL Group # 1586960 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 10:15 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/22/2015 10:25 630 Plaza Drive

Reported: 10/08/2015 14:30 Highlands Ranch CO 80129

AVS56

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.0016 J	0.00088	0.0022	1
10725	Benzo(a)pyrene		50-32-8	0.0025	0.00088	0.0022	1
10725	Benzo(b)fluoranthen	е	205-99-2	0.0070	0.00088	0.0022	1
10725	Benzo(k)fluoranthen	е	207-08-9	0.0017 J	0.00088	0.0022	1
10725	Chrysene		218-01-9	0.0046	0.00044	0.0022	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.00088	0.0022	1
10725	Indeno(1,2,3-cd)pyr	ene	193-39-5	0.0013 J	0.00088	0.0022	1
10725	1-Methylnaphthalene		90-12-0	0.0084	0.00088	0.0022	1
10725	2-Methylnaphthalene		91-57-6	0.015	0.00088	0.0022	1
10725	Naphthalene		91-20-3	0.028	0.00088	0.0022	1
GC Vol	latiles	ECY 97-	602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1	2	n.a.	N.D.	16	79	296.61
Repo	rting limits were ra	ised due t	o sample foaming.				
GC Pet	roleum	ECY 97-	602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modifie	ed				
02214	DRO C12-C24 w/Si Ge	1	n.a.	23	3.9	9.2	1
02214	HRO C24-C40 w/Si Ge	1	n.a.	81	13	39	1
Wet Ch	nemistry	SM 2540	G-1997	%	%	%	
00111	Moisture		n.a.	25.0	0.50	0.50	1
	Moisture represents 103 - 105 degrees C as-received basis.		in weight of the	sample after ov	en drying at		

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/05/2015	07:00	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015	07:45	Katheryne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15242A34A	08/30/2015	16:48	Jeremy C Giffin	296.61
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/19/2015	10:15	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520007A	09/12/2015	06:18	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520007A	08/31/2015	08:45	Olivia Arosemena	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-56(4.5-5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Group # 1586960 Account # 13255

LL Sample # SW 8018596

Project Name: Former Olympia Bulk Plant

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

Collected: 08/19/2015 10:15 by EE Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

AVS56

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15240820002A	08/28/2015 22:28	Scott W Freisher	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-55(4.5-5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018597

LL Group # 1586960 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 10:40 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/22/2015 10:25 630 Plaza Drive

Reported: 10/08/2015 14:30 Highlands Ranch CO 80129

AVS55

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.00094	0.0023	1
10725	Benzo(a)pyrene		50-32-8	0.0011 J	0.00094	0.0023	1
10725	Benzo(b)fluoranthene	9	205-99-2	0.0019 J	0.00094	0.0023	1
10725	Benzo(k)fluoranthene	9	207-08-9	N.D.	0.00094	0.0023	1
10725	Chrysene		218-01-9	0.0011 J	0.00047	0.0023	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.00094	0.0023	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.	0.00094	0.0023	1
10725	1-Methylnaphthalene		90-12-0	0.0011 J	0.00094	0.0023	1
10725	2-Methylnaphthalene		91-57-6	0.0017 J	0.00094	0.0023	1
10725	Naphthalene		91-20-3	0.0074	0.00094	0.0023	1
GC Vol	latiles	ECY 97-	-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C12 cting limits were rai		n.a. to sample foaming.	N.D.	17	86	305.23
	croleum carbons w/Si	ECY 97- modifie	-602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
02214	DRO C12-C24 w/Si Ge		n.a.	N.D.	4.2	9.8	1
02214	HRO C24-C40 w/Si Ge:		n.a.	N.D.	14	42	1
02214	HRO C24-C40 W/S1 Ge.	L	n.a.	N.D.	14	42	1
Wet Ch	nemistry	SM 2540	G-1997	%	%	%	
00111	Moisture		n.a.	29.2	0.50	0.50	1
	Moisture represents 103 - 105 degrees Coas-received basis.		_	-			

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/05/2015 05:22	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015 07:45	Katheryne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15242A34A	08/30/2015 17:58	Jeremy C Giffin	305.23
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/19/2015 10:40	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520007A	09/12/2015 07:01	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520007A	08/31/2015 08:45	Olivia Arosemena	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-55(4.5-5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018597

LL Group # 1586960 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

Collected: 08/19/2015 10:40 by EE Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

AVS55

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15240820002A	08/28/2015 22:28	Scott W Freisher	1



Drv

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-45(2-2.5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018598

LL Group # 1586960 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 11:20 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Drv

Submitted: 08/22/2015 10:25 630 Plaza Drive

Reported: 10/08/2015 14:30 Highlands Ranch CO 80129

AVS45

CAT No.	Analysis Name		CAS Number	Dry Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8	270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.016	0.00095	0.0024	1
10725	Benzo(a)pyrene		50-32-8	0.040 <mark>J</mark>	0.00095	0.0024	1
10725	Benzo(b)fluoranthen	e	205-99-2	0.069 <sup>J</sup>	0.00095	0.0024	1
10725	Benzo(k)fluoranthen	e	207-08-9	0.014 <sup>J</sup>	0.00095	0.0024	1
10725	Chrysene		218-01-9	0.031	0.00047	0.0024	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	0.0027 J	0.00095	0.0024	1
10725	Indeno(1,2,3-cd)pyr	ene	193-39-5	0.0073 J	0.00095	0.0024	1
10725	1-Methylnaphthalene		90-12-0	0.034	0.00095	0.0024	1
10725	2-Methylnaphthalene		91-57-6	0.079	0.00095	0.0024	1
10725	Naphthalene		91-20-3	0.060	0.00095	0.0024	1
The	ide of the QC accepta reported data is from <b>latiles</b>	the initia			mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C1 rting limits were rai	=	n.a. sample foaming.	N.D.	19	94	329.79
GC Pet	roleum	ECY 97-6	02 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydro	carbons w/Si	${\tt modified}$					
02214	DRO C12-C24 w/Si Ge	1	n.a.	48	4.3	10	1
02214	HRO C24-C40 w/Si Ge	1	n.a.	130	14	43	1
Wet Cl	nemistry	SM 2540 (	G-1997	%	%	%	
00111	Moisture		n.a.	29.7	0.50	0.50	1
	Moisture represents 103 - 105 degrees Cas-received basis.		_	-	1 5		

### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/05/2015	08:39	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015	07:45	Katheryne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15242A34A	08/30/2015	18:34	Jeremy C Giffin	329.79
		NWTPH-Gx						



# 13255

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-45(2-2.5) Soil

LL Sample # SW 8018598 Former Olympia Bulk Plant COC: R224123 LL Group # 1586960 1117 West Bay Drive - Olympia, WA Account

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 11:20 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/22/2015 10:25 630 Plaza Drive

Highlands Ranch CO 80129 Reported: 10/08/2015 14:30

AVS45

	Laboratory Sample Analysis Record										
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor				
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/19/2015 11:2	Client Supplied	n.a.				
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520007A	09/12/2015 09:3	3 Heather E Williams	3 1				
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520007A	08/31/2015 08:4	5 Olivia Arosemena	1				
00111	Moisture	SM 2540 G-1997	1	15240820002A	08/28/2015 22:2	8 Scott W Freisher	1				

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-34(4.5-5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018599

LL Group # 1586960 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 11:55 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/22/2015 10:25 630 Plaza Drive

Reported: 10/08/2015 14:30 Highlands Ranch CO 80129

AVS34

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.0056	0.0012	0.0029	1
10725	Benzo(a)pyrene		50-32-8	0.047 <sup>J</sup>	0.0012	0.0029	1
10725	Benzo(b)fluoranthene	<u> </u>	205-99-2	0.073J	0.0012	0.0029	1
10725	Benzo(k)fluoranthene	<u> </u>	207-08-9	N.D. <mark>UJ</mark>	0.0012	0.0029	1
10725	Chrysene		218-01-9	0.012	0.00058	0.0029	1
10725	Dibenz(a,h)anthracen	ie	53-70-3	0.0015 J	0.0012	0.0029	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	0.0029 J	0.0012	0.0029	1
	1-Methylnaphthalene		90-12-0	1.3	0.012	0.029	10
10725	2-Methylnaphthalene		91-57-6	1.7	0.012	0.029	10
10725	Naphthalene		91-20-3	0.38	0.0012	0.0029	1
outs	sample was re-analyze ide of the QC accepta reported data is from	nce limits, i	ndicating a ma	trix effect.			
GC Vo	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	2	n.a.	180	27	130	383.19
GC Pet	troleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydro	carbons w/Si	modified					
02214	DRO C12-C24 w/Si Gel	_	n.a.	420	5.2	12	1
02214	HRO C24-C40 w/Si Gel	-	n.a.	51 Ј	17	52	1
Wet Cl	nemistry	SM 2540 G-	1997	%	%	%	
00111	Moisture		n.a.	42.4	0.50	0.50	1
	Moisture represents 103 - 105 degrees Ce as-received basis.		_	_			

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/05/2015	09:12	Brian K Graham	1
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/07/2015	00:57	Brian K Graham	10
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015	07:45	Katheryne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15242A34A	08/30/2015	19:09	Jeremy C Giffin	383.19



LL Sample # SW 8018599

LL Group # 1586960

Account # 13255

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-34(4.5-5) Soil

Collected: 08/19/2015 11:55

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

Project Name: Former Olympia Bulk Plant by EE

Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

AVS34

	Laboratory Sample Analysis Record										
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tir	me	Analyst	Dilution Factor			
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/19/2015	11:55	Client Supplied	n.a.			
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520007A	09/12/2015	07:23	Heather E Williams	1			
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520007A	08/31/2015	08:45	Olivia Arosemena	1			
00111	Moisture	SM 2540 G-1997	1	15240820002A	08/28/2015	22:28	Scott W Freisher	1			

<sup>\*=</sup>This limit was used in the evaluation of the final result



Drv

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-35(2-2.5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018600 LL Group # 1586960

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 12:00 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Drv

Submitted: 08/22/2015 10:25 630 Plaza Drive

Reported: 10/08/2015 14:30 Highlands Ranch CO 80129

AVS35

CAT No.	Analysis Name		CAS Number	Dry Result	Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.029	0.0078	0.020	10
10725	Benzo(a)pyrene		50-32-8	0.055 <sup>J</sup>	0.0078	0.020	10
10725	Benzo(b)fluoranthen	9	205-99-2	0.21 <sup>J</sup>	0.0078	0.020	10
10725	Benzo(k)fluoranthen	9	207-08-9	N.D. <mark>UJ</mark>	0.0078	0.020	10
10725	Chrysene		218-01-9	0.072	0.0039	0.020	10
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D. <mark>UJ</mark>	0.0078	0.020	10
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	0.014 J	0.0078	0.020	10
10725	1-Methylnaphthalene		90-12-0	0.013 J	0.0078	0.020	10
10725	2-Methylnaphthalene		91-57-6	0.025	0.0078	0.020	10
10725	Naphthalene		91-20-3	0.026	0.0078	0.020	10
The :	ide of the QC accepta reported data is from <b>latiles</b>	the init:			mg/kg	mg/kg	
	NWTPH-GX Soil C7-C1 rting limits were rai	=	n.a. o sample foaming.	N.D.	15	77	328.08
GC Pet	roleum	ECY 97-	602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydro	carbons w/Si	modifie	d				
02214	DRO C12-C24 w/Si Ge	L	n.a.	200	18	41	5
02214	HRO C24-C40 w/Si Ge	L	n.a.	1,900	59	180	5
Wet Ch	nemistry	SM 2540	G-1997	%	%	%	
00111	Moisture		n.a.	15.2	0.50	0.50	1
	Moisture represents 103 - 105 degrees Coas-received basis.		_	-			

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/05/2015 11:23	Brian K Graham	10
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015 07:45	Katheryne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15242A34A	08/30/2015 19:44	Jeremy C Giffin	328.08
		NWTPH-Gx					



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Sample Description: AUS-SB-35(2-2.5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018600 LL Group # 1586960

Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

Collected: 08/19/2015 12:00 by EE Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

AVS35

	Laboratory Sample Analysis Record									
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor		
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/19/2015	12:00	Client Supplied	n.a.		
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520007A	09/12/2015	12:48	Heather E Williams	5		
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520007A	08/31/2015	08:45	Olivia Arosemena	1		
00111	Moisture	SM 2540 G-1997	1	15240820002B	08/28/2015	22:28	Scott W Freisher	1		



Drv

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-36(2-2.5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018601

LL Group # 1586960 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 14:15 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Drv

Submitted: 08/22/2015 10:25 630 Plaza Drive

Reported: 10/08/2015 14:30 Highlands Ranch CO 80129

AVS36

CAT No.	Analysis Name		CAS Number	Dry Result	Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.014	0.00074	0.0019	1
10725	Benzo(a)pyrene		50-32-8	0.013 <sup>J</sup>	0.00074	0.0019	1
10725	Benzo(b)fluoranthen	e	205-99-2	0.036J	0.00074	0.0019	1
10725	Benzo(k)fluoranthen	e	207-08-9	0.012 <sup>J</sup>	0.00074	0.0019	1
10725	Chrysene		218-01-9	0.024	0.00037	0.0019	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	0.0021 <mark>J</mark>	0.00074	0.0019	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	0.0048J	0.00074	0.0019	1
10725	1-Methylnaphthalene		90-12-0	0.0022	0.00074	0.0019	1
10725	2-Methylnaphthalene		91-57-6	0.0036	0.00074	0.0019	1
10725	Naphthalene		91-20-3	0.0043	0.00074	0.0019	1
The :	ide of the QC accepta reported data is from <b>latiles</b>	the initi			mg/kg	mg/kg	
	NWTPH-GX Soil C7-C1 rting limits were rai	=	n.a. sample foaming.	N.D.	15	73	323.55
GC Pet	roleum	ECY 97-	602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydro	carbons w/Si	modifie	d				
02214	DRO C12-C24 w/Si Ge	1	n.a.	21	3.4	7.8	1
02214	HRO C24-C40 w/Si Ge	1	n.a.	240	11	34	1
Wet Cl	nemistry	SM 2540	G-1997	%	%	%	
00111	Moisture		n.a.	10.9	0.50	0.50	1
	Moisture represents 103 - 105 degrees Coas-received basis.			-			

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tir	ne	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/05/2015	09:44	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015	07:45	Katheryne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15242A34A	08/30/2015	20:19	Jeremy C Giffin	323.55
		NWTPH-Gx						



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Sample Description: AUS-SB-36(2-2.5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018601 LL Group # 1586960

Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

Collected: 08/19/2015 14:15 by EE Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

AVS36

	Laboratory Sample Analysis Record									
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor		
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/19/2015	14:15	Client Supplied	n.a.		
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520007A	09/12/2015	09:54	Heather E Williams	1		
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520007A	08/31/2015	08:45	Olivia Arosemena	1		
00111	Moisture	SM 2540 G-1997	1	15240820002B	08/28/2015	22:28	Scott W Freisher	1		

<sup>\*=</sup>This limit was used in the evaluation of the final result



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Sample Description: AUS-SB-37(2-2.5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018602 LL Group # 1586960

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 07:40 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/22/2015 10:25 630 Plaza Drive

Reported: 10/08/2015 14:30 Highlands Ranch CO 80129

AVS37

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.00083 J	0.00074	0.0019	1
10725	Benzo(a)pyrene		50-32-8	0.0014 J	0.00074	0.0019	1
10725	Benzo(b)fluoranthene	2	205-99-2	0.0047	0.00074	0.0019	1
10725	Benzo(k)fluoranthene	2	207-08-9	0.00095 J	0.00074	0.0019	1
10725	Chrysene		218-01-9	0.0031	0.00037	0.0019	1
10725	Dibenz(a,h)anthracer	ie	53-70-3	N.D.	0.00074	0.0019	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.	0.00074	0.0019	1
10725	1-Methylnaphthalene		90-12-0	N.D.	0.00074	0.0019	1
10725	2-Methylnaphthalene		91-57-6	N.D.	0.00074	0.0019	1
10725	Naphthalene		91-20-3	0.00080 J	0.00074	0.0019	1
GC Vol	latiles	ECY 97-	602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C12 cting limits were rai		n.a. o sample foaming.	N.D.	15	73	328.2
		ECY 97- modifie	602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
02214	DRO C12-C24 w/Si Gel	L	n.a.	10	3.3	7.8	1
02214	HRO C24-C40 w/Si Gel	L	n.a.	68	11	33	1
Wet Ch	nemistry	SM 2540	G-1997	%	%	%	
00111	Moisture		n.a.	10.2	0.50	0.50	1
	Moisture represents 103 - 105 degrees Coas-received basis.		_	-			

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tir	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/05/2015	05:54	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015	07:45	Katheryne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15242A34A	08/30/2015	20:55	Jeremy C Giffin	328.2
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/20/2015	07:40	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520007A	09/12/2015	07:44	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520007A	08/31/2015	08:45	Olivia Arosemena	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-37(2-2.5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018602

LL Group # 1586960 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

Collected: 08/20/2015 07:40 by EE Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

AVS37

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15240820002B	08/28/2015 22:28	Scott W Freisher	1



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Sample Description: AUS-SB-27(2-2.5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018603 LL Group # 1586960

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 08:05 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/22/2015 10:25 630 Plaza Drive

Reported: 10/08/2015 14:30 Highlands Ranch CO 80129

#### AVS27

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles SW	7-846 8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.0021	0.00084	0.0021	1
10725	Benzo(a)pyrene	50-32-8	0.026 <sup>J</sup>	0.00084	0.0021	1
10725	Benzo(b)fluoranthene	205-99-2	0.031 <sup>J</sup>	0.00084	0.0021	1
10725	Benzo(k)fluoranthene	207-08-9	N.D. <mark>UJ</mark>	0.00084	0.0021	1
10725	Chrysene	218-01-9	0.0053	0.00042	0.0021	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D. UJ	0.00084	0.0021	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0011 J	0.00084	0.0021	1
10725	1-Methylnaphthalene	90-12-0	0.0022	0.00084	0.0021	1
10725	2-Methylnaphthalene	91-57-6	0.0045	0.00084	0.0021	1
10725	Naphthalene	91-20-3	0.0077	0.00084	0.0021	1
The :	ide of the QC acceptance reported data is from the Latiles			mg/kg	mg/kg	
	NWTPH-GX Soil C7-C12 rting limits were raised	n.a. I due to sample foaming.	N.D.	21	110	417.27
GC Pet	roleum EC	Y 97-602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydro	carbons w/Si mo	dified				
02214	DRO C12-C24 w/Si Gel	n.a.	52	19	44	5
02214	HRO C24-C40 w/Si Gel	n.a.	500	63	190	5
Wat Cl	nemistry SM	2540 G-1997	%	%	%	
	-				•	1
00111	Moisture	n.a.	20.7	0.50	0.50	1
	<del>-</del>	e loss in weight of the ius. The moisture result	-			

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method Tri		Trial# Batch# Da		me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/05/2015	07:33	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015	07:45	Katheryne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15242A34A	08/30/2015	21:30	Jeremy C Giffin	417.27
		NWTPH-Gx						



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Sample Description: AUS-SB-27(2-2.5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018603

LL Group # 1586960 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

Collected: 08/20/2015 08:05 by EE Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

AVS27

	Laboratory Sample Analysis Record											
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tir	me	Analyst	Dilution Factor				
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/20/2015	08:05	Client Supplied	n.a.				
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520007A	09/12/2015	10:16	Heather E Williams	5				
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520007A	08/31/2015	08:45	Olivia Arosemena	1				
00111	Moisture	SM 2540 G-1997	1	15240820002B	08/28/2015	22:28	Scott W Freisher	1				



Drv

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Sample Description: AUS-SB-31(2-2.5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018604 LL Group # 1586960

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 09:00 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Drv

Submitted: 08/22/2015 10:25 630 Plaza Drive

Reported: 10/08/2015 14:30 Highlands Ranch CO 80129

AVS31

CAT No.	Analysis Name		CAS Number	Dry Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8	3270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.0092	0.0013	0.0032	1
10725	Benzo(a)pyrene		50-32-8	0.013 J	0.0013	0.0032	1
10725	Benzo(b)fluoranthene	<b>e</b>	205-99-2	0.037 <mark>J</mark>	0.0013	0.0032	1
10725	Benzo(k)fluoranthene	9	207-08-9	0.0086 J	0.0013	0.0032	1
10725	Chrysene		218-01-9	0.017	0.00065	0.0032	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D. <mark>UJ</mark>	0.0013	0.0032	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	0.0045 <sup>J</sup>	0.0013	0.0032	1
10725	1-Methylnaphthalene		90-12-0	0.016	0.0013	0.0032	1
10725	2-Methylnaphthalene		91-57-6	0.020	0.0013	0.0032	1
10725	Naphthalene		91-20-3	0.030	0.0013	0.0032	1
The :	ide of the QC accepta reported data is from <b>latiles</b>	the initi			mg/kg	mg/kg	
	NWTPH-GX Soil C7-C1: rting limits were rai	=	n.a. sample foaming.	N.D.	28	140	354.54
GC Pet	roleum	ECY 97-6	02 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydro	carbons w/Si	modified	i				
02214	DRO C12-C24 w/Si Ge	l	n.a.	53	5.8	14	1
02214	HRO C24-C40 w/Si Ge	L	n.a.	170	19	58	1
Wet Ch	nemistry	SM 2540	G-1997	%	%	%	
00111	Moisture		n.a.	48.5	0.50	0.50	1
	Moisture represents 103 - 105 degrees Coas-received basis.						

### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/05/2015 10:17	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015 07:45	Katheryne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15242A34A	08/30/2015 22:05	Jeremy C Giffin	354.54
		NWTPH-Gx					



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Sample Description: AUS-SB-31(2-2.5) Soil

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018604 LL Group # 1586960 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 09:00 by EE Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

AVS31

	Laboratory Sample Analysis Record										
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor			
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/20/2015	09:00	Client Supplied	n.a.			
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520007A	09/12/2015	08:06	Heather E Williams	1			
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520007A	08/31/2015	08:45	Olivia Arosemena	1			
00111	Moisture	SM 2540 G-1997	1	15240820002B	08/28/2015	22:28	Scott W Freisher	1			

<sup>\*=</sup>This limit was used in the evaluation of the final result



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Sample Description: AUS-SB-32(2-2.5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018605

LL Group # 1586960 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 09:10 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/22/2015 10:25 630 Plaza Drive

Reported: 10/08/2015 14:30 Highlands Ranch CO 80129

AVS32

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.0014 J	0.00084	0.0021	1
10725	Benzo(a)pyrene		50-32-8	0.0021	0.00084	0.0021	1
10725	Benzo(b)fluoranthene	2	205-99-2	0.0046	0.00084	0.0021	1
10725	Benzo(k)fluoranthene	2	207-08-9	0.0012 J	0.00084	0.0021	1
10725	Chrysene		218-01-9	0.0036	0.00042	0.0021	1
10725	Dibenz(a,h)anthracen	ne	53-70-3	N.D.	0.00084	0.0021	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	0.00090 J	0.00084	0.0021	1
10725	1-Methylnaphthalene		90-12-0	0.0028	0.00084	0.0021	1
10725	2-Methylnaphthalene		91-57-6	0.0055	0.00084	0.0021	1
10725	Naphthalene		91-20-3	0.0053	0.00084	0.0021	1
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C12 cting limits were rai		n.a. ample foaming.	N.D.	14	69	275.19
GC Pet	roleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	arbons w/Si	modified					
02214	DRO C12-C24 w/Si Gel	L	n.a.	N.D.	3.8	8.8	1
02214	HRO C24-C40 w/Si Ge	L	n.a.	N.D.	13	38	1
Wet Ch	nemistry	SM 2540 G-	-1997	%	8	8	
00111	Moisture		n.a.	20.3	0.50	0.50	1
	Moisture represents 103 - 105 degrees Co as-received basis.		_	sample after oven dry reported is on an	ing at		

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

			_	_				
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
								Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15238SLG026	09/05/2015	06:27	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	2	15238SLG026	08/27/2015	07:45	Katheryne V Dinan	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15242A34A	08/30/2015	22:40	Jeremy C Giffin	275.19
06647	GC-5g Field Preserved	SW-846 5035A	1	201523538634	08/20/2015	09:10	Client Supplied	n.a.
	MeOH							
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520008A	09/12/2015	07:44	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520008A	08/31/2015	08:45	Olivia Arosemena	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



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Sample Description: AUS-SB-32(2-2.5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018605 LL Group # 1586960 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

Collected: 08/20/2015 09:10 by EE Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

AVS32

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15240820002B	08/28/2015 22:28	Scott W Freisher	1



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Sample Description: AUS-SB-44(4.5-5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Group # 1586960 Account # 13255

LL Sample # SW 8018606

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 09:55 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/22/2015 10:25 630 Plaza Drive

Reported: 10/08/2015 14:30 Highlands Ranch CO 80129

#### AVS44

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg		mg/kg	mg/kg	
1 <del>0725</del>	Benzo(a)anthracene		56-55-3	N.D. R		0.027	0.068	20
10725	Benzo(a)pyrene		50-32-8	<del>N.D</del> . R		0.027	0.068	20
10725	Benzo(b)fluoranthene	2	205-99-2	<del>N.</del> D. <sup>R</sup>		0.027	0.068	20
10725	Benzo(k)fluoranthene	3	207-08-9	<del>N.</del> D. <sup>R</sup>		0.027	0.068	20
10725	Chrysene		218-01-9		J	0.014	0.068	20
10725	Dibenz(a,h)anthrace	ne	53-70-3	<del>- N.</del> D. <sup>R</sup>		0.027	0.068	20
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	<u>n.</u> D. R		0.027	0.068	20
10725	1-Methylnaphthalene		90-12-0	2.6 <u>J</u>		0.027	0.068	20
10725	2-Methylnaphthalene		91-57-6	2.3		0.027	0.068	20
10725	Naphthalene		91-20-3	0.71 <sup>J</sup>		0.027	0.068	20
was j time	holding time was not placed on hold. Wher had already expired. Latiles	released for	analysis, the			mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1:		n.a.	1,900		64	320	778.26
02005	NWIPH-GA SOII C/-CI.	2	II.a.	1,900		04	320	770.20
	croleum carbons w/Si	ECY 97-602 modified	NWTPH-Dx	mg/kg		mg/kg	mg/kg	
02214	DRO C12-C24 w/Si Ge	1	n.a.	820		6.1	14	1
02214	HRO C24-C40 w/Si Ge		n.a.	34	J	20	61	1
		_			-		<del>-</del>	_
Wet Ch	nemistry	SM 2540 G-	1997	%		%	%	
00111	Moisture		n.a.	51.0		0.50	0.50	1
	Moisture represents 103 - 105 degrees Co as-received basis.		_	-	_	ng at		

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15273SLE026	10/02/2015	16:14	Holly B Ziegler	20
10811	BNA Soil Microwave SIM	SW-846 3546	1	15273SLE026	10/01/2015	09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15268A31B	09/30/2015	04:40	Marie D Beamenderfer	778.26
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201527138944	08/20/2015	09:55	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152750011A	10/06/2015	19:46	Christine E Dolman	. 1

<sup>\*=</sup>This limit was used in the evaluation of the final result



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Sample Description: AUS-SB-44(4.5-5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018606

LL Group # 1586960 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

Collected: 08/20/2015 09:55 by EE Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

AVS44

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152750011A	10/03/2015 15:25	JoElla L Rice	1
00111	Moisture	SM 2540 G-1997	1	15268820001A	09/25/2015 20:03	Scott W Freisher	1



Dry

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-22(2-2.5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018607 LL Group # 1586960

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 11:40 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Dry

Submitted: 08/22/2015 10:25 630 Plaza Drive

Reported: 10/08/2015 14:30 Highlands Ranch CO 80129

AVS22

CAT No.	Analysis Name		CAS Number	Dry Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.0082 <sup>J</sup>	0.00084	0.0021	1
10725	Benzo(a)pyrene		50-32-8	0.0074 <sup>J</sup>	0.00084	0.0021	1
10725	Benzo(b)fluoranthene	<u>:</u>	205-99-2	0.018	0.00084	0.0021	1
10725	Benzo(k)fluoranthene	<u>:</u>	207-08-9	0.0051 <sup>J</sup>	0.00084	0.0021	1
10725	Chrysene		218-01-9	0.016 <sup>J</sup>	0.00042	0.0021	1
10725	Dibenz(a,h)anthracer	ie	53-70-3	0.0015 J	0.00084	0.0021	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	0.0052 <sup>J</sup>	0.00084	0.0021	1
10725	1-Methylnaphthalene		90-12-0	0.011 <sup>J</sup>	0.00084	0.0021	1
10725	2-Methylnaphthalene		91-57-6	0.015 <sup>J</sup>	0.00084	0.0021	1
10725	Naphthalene		91-20-3	0.016 <mark>J</mark>	0.00084	0.0021	1
time firs	sample was re-extract and the QC is compli t trial. Similar res <b>latiles</b>	ant. All res	sults are reportained in both	ted from the	mg/kg	mg/kg	
	NWTPH-GX Soil C7-C12						252 50
	rting limits were rai		n.a. ample foaming.	N.D.	18	90	353.72
GC Pet	roleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydro	carbons w/Si	modified					
02214	DRO C12-C24 w/Si Gel		n.a.	N.D. <mark>UJ</mark>	3.7	8.7	1
02214	HRO C24-C40 w/Si Gel	-	n.a.	N.D.	12	37	1
Wet Cl	nemistry	SM 2540 G-	-1997	%	8	%	
00111	Moisture		n.a.	21.0	0.50	0.50	1
	Moisture represents 103 - 105 degrees Ce as-received basis.						

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15240SLF026	09/08/2015 03:1	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15240SLF026	08/30/2015 15:0	Nicholas W Shroye	r 1



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Sample Description: AUS-SB-22(2-2.5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018607 LL Group # 1586960 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

Collected: 08/20/2015 11:40 by EE Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

AVS22

Laboratory Sample Analysis Record								
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tir	ne	Analyst	Dilution Factor
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15239A34A	08/31/2015	01:37	Jeremy C Giffin	353.72
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/20/2015	11:40	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520007A	09/12/2015	08:27	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520007A	08/31/2015	08:45	Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15240820002B	08/28/2015	22:28	Scott W Freisher	1



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Sample Description: AUS-SB-22(2-2.5)MS Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018608

LL Group # 1586960 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 11:40 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/22/2015 10:25 630 Plaza Drive

Reported: 10/08/2015 14:30 Highlands Ranch CO 80129

AVS22

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor			
GC/MS	Semivolatiles SW-846	8270C SIM	mg/kg	mg/kg	mg/kg				
10725	Benzo(a)anthracene	56-55-3	0.060	0.00083	0.0021	1			
10725	Benzo(a)pyrene	50-32-8	0.056	0.00083	0.0021	1			
10725	Benzo(b)fluoranthene	205-99-2	0.079	0.00083	0.0021	1			
10725	Benzo(k)fluoranthene	207-08-9	0.058	0.00083	0.0021	1			
10725	Chrysene	218-01-9	0.074	0.00042	0.0021	1			
10725	Dibenz(a,h)anthracene	53-70-3	0.032	0.00083	0.0021	1			
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.037	0.00083	0.0021	1			
10725	1-Methylnaphthalene	90-12-0	0.064	0.00083	0.0021	1			
10725	2-Methylnaphthalene	91-57-6	0.072	0.00083	0.0021	1			
10725	Naphthalene	91-20-3	0.063	0.00083	0.0021	1			
Summa The s time	e(s) is outside the QC accepta ary. The following corrective sample was re-extracted outsid and the QC is compliant. All t trial. Similar results were	e action was taken: de the method requi results are repor	red holding						
GC Vol	latiles ECY 97-	-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg				
02005	NWTPH-GX Soil C7-C12	n.a.	18 J	14	68	266.93			
GC Pet		-602 NWTPH-Dx	mg/kg	mg/kg	mg/kg				
Hydrocarbons w/Si modified									
02214	DRO C12-C24 w/Si Gel	n.a.	140	3.8	8.8	1			
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	13	38	1			
Wet Ch	nemistry SM 2540	G-1997	%	8	%				
00118	Moisture	n.a.	21.0	0.50	0.50	1			

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tir	ne	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15240SLF026	09/08/2015	04:54	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15240SLF026	08/30/2015	15:00	Nicholas W Shroyer	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15239A34A	08/31/2015	02:12	Jeremy C Giffin	266.93
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/20/2015	11:40	Client Supplied	n.a.

<sup>\*=</sup>This limit was used in the evaluation of the final result



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Sample Description: AUS-SB-22(2-2.5)MS Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018608 LL Group # 1586960 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

Collected: 08/20/2015 11:40 by EE Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

AVS22

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520007A	09/12/2015 08:4	9 Heather E William	s 1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520007A	08/31/2015 08:4	5 Olivia Arosemena	1
00118	Moisture	SM 2540 G-1997	1	15240820002B	08/28/2015 22:2	8 Scott W Freisher	1



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Sample Description: AUS-SB-22(2-2.5)MSD Soil

LL Sample # SW 8018609 Former Olympia Bulk Plant COC: R224123 LL Group # 1586960 1117 West Bay Drive - Olympia, WA Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 11:40 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/22/2015 10:25 630 Plaza Drive

Highlands Ranch CO 80129 Reported: 10/08/2015 14:30

AVS22

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 82	270C SIM	mg/kg		mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.067		0.00083	0.0021	1
10725	Benzo(a)pyrene		50-32-8	0.066		0.00083	0.0021	1
10725	Benzo(b)fluoranthen	e	205-99-2	0.096		0.00083	0.0021	1
10725	Benzo(k)fluoranthen	e	207-08-9	0.066		0.00083	0.0021	1
10725	Chrysene		218-01-9	0.082		0.00042	0.0021	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	0.030		0.00083	0.0021	1
10725	Indeno(1,2,3-cd)pyr	ene	193-39-5	0.038		0.00083	0.0021	1
10725	1-Methylnaphthalene		90-12-0	0.069		0.00083	0.0021	1
10725	2-Methylnaphthalene		91-57-6	0.076		0.00083	0.0021	1
10725	Naphthalene		91-20-3	0.070		0.00083	0.0021	1
time firs	sample was re-extract and the QC is complited trial. Similar restartiles	iant. All r sults were of ECY 97-60	esults are repor btained in both )2 NWTPH-Gx	tted from ttrials. mg/kg	che	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1	2	n.a.	19	J	15	73	287.48
	croleum		2 NWTPH-Dx	mg/kg		mg/kg	mg/kg	
-	carbons w/Si	modified						
02214	DRO C12-C24 w/Si Ge		n.a.	110		3.8	8.8	1
02214	HRO C24-C40 w/Si Ge	1	n.a.	N.D.		13	38	1
Wet Cl	nemistry	SM 2540 C	3-1997	%		%	%	
00118	Moisture		n.a.	21.0		0.50	0.50	1
00121	Moisture Duplicate		n.a.	17.0		0.50	0.50	1
	The duplicate moist moisture test. For determination is th	comparabili	ty purposes, the	e initial i	moisture	the		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15240SLF026	09/08/2015 05:2	7 Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15240SLF026	08/30/2015 15:0	O Nicholas W Shroye	r 1



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Sample Description: AUS-SB-22(2-2.5)MSD Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018609

LL Group # 1586960 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

Collected: 08/20/2015 11:40 by EE Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

AVS22

	Laboratory Sample Analysis Record										
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tir	me	Analyst	Dilution Factor			
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15239A34A	08/31/2015	02:47	Jeremy C Giffin	287.48			
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/20/2015	11:40	Client Supplied	n.a.			
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520007A	09/12/2015	09:11	Heather E Williams	1			
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520007A	08/31/2015	08:45	Olivia Arosemena	1			
00118 00121	Moisture Moisture Duplicate	SM 2540 G-1997 SM 2540 G-1997	1 1	15240820002B 15240820002B	08/28/2015 08/28/2015	22:28 22:28	Scott W Freisher Scott W Freisher	1 1			



Dry

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-54(2-2.5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018611

LL Group # 1586960 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 12:10 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Dry

Submitted: 08/22/2015 10:25 630 Plaza Drive

Reported: 10/08/2015 14:30 Highlands Ranch CO 80129

# AVS54

CAT No.	Analysis Name		CAS Number	Dry Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor	
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg	mg/kg	mg/kg		
10725	Benzo(a)anthracene		56-55-3	0.040	0.0038	0.0096	5	
10725	Benzo(a)pyrene		50-32-8	0.036	0.0038	0.0096	5	
10725	Benzo(b)fluoranthen	<b>e</b>	205-99-2	0.092	0.0038	0.0096	5	
10725	Benzo(k)fluoranthen	<b>e</b>	207-08-9	0.025 <sup>J</sup>	0.0038	0.0096	5	
10725	Chrysene		218-01-9	0.075	0.0019	0.0096	5	
10725	Dibenz(a,h)anthrace	ne	53-70-3	0.0075 J	0.0038	0.0096	5	
10725	Indeno(1,2,3-cd)pyr	ene	193-39-5	0.025	0.0038	0.0096	5	
10725	1-Methylnaphthalene		90-12-0	0.033	0.0038	0.0096	5	
10725	2-Methylnaphthalene		91-57-6	0.054	0.0038	0.0096	5	
10725	Naphthalene		91-20-3	0.053	0.0038	0.0096	5	
firs	and the QC is complication of the QC is completed and	ults were	-		mg/kg	mg/kg		
	NWTPH-GX Soil C7-C1		n.a.	N.D.	14	72	311.68	
	rting limits were rai			и.в.	11	, 2	311.00	
GC Pet	roleum	ECY 97-	602 NWTPH-Dx	mg/kg	mg/kg	mg/kg		
Hydrod	carbons w/Si	modifie	d					
02214	DRO C12-C24 w/Si Ge	L	n.a.	23	3.5	8.1	1	
02214	HRO C24-C40 w/Si Ge	L	n.a.	140	12	35	1	
Wet Ch	nemistry	SM 2540	G-1997	%	%	%		
00111	Moisture		n.a.	13.8	0.50	0.50	1	
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.							

# General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT	Analysis Name	Method	Trial#	Batch#	Analysis		Analyst	Dilution
No.					Date and Ti	me		Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15240SLF026	09/08/2015	03:48	Brian K Graham	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15240SLF026	08/30/2015	15:00	Nicholas W Shroyer	1



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Sample Description: AUS-SB-54(2-2.5) Soil

LL Sample # SW 8018611 Former Olympia Bulk Plant COC: R224123 LL Group # 1586960 Account # 13255

1117 West Bay Drive - Olympia, WA

Project Name: Former Olympia Bulk Plant

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

Collected: 08/20/2015 12:10 by EE Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

AVS54

	Laboratory Sample Analysis Record										
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor			
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15239A34A	08/31/2015	03:22	Jeremy C Giffin	311.68			
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/20/2015	12:10	Client Supplied	n.a.			
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520008A	09/12/2015	11:21	Heather E Williams	1			
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520008A	08/31/2015	08:45	Olivia Arosemena	1			
00111	Moisture	SM 2540 G-1997	1	15240820002B	08/28/2015	22:28	Scott W Freisher	1			



Dry

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Sample Description: AUS-SB-4A(2-2.5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018612

LL Group # 1586960 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 12:30 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Dry

Submitted: 08/22/2015 10:25 630 Plaza Drive

Reported: 10/08/2015 14:30 Highlands Ranch CO 80129

## AVS4A

CAT No.	Analysis Name		CAS Number	Dry Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor	
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg	mg/kg	mg/kg		
10725	Benzo(a)anthracene		56-55-3	0.0036	0.00081	0.0020	1	
10725	Benzo(a)pyrene		50-32-8	0.0030	0.00081	0.0020	1	
10725	Benzo(b)fluoranthen	e	205-99-2	0.0096	0.00081	0.0020	1	
10725	Benzo(k)fluoranthen	e	207-08-9	0.0041 <sup>J</sup>	0.00081	0.0020	1	
10725	Chrysene		218-01-9	0.011	0.00041	0.0020	1	
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.00081	0.0020	1	
10725	Indeno(1,2,3-cd)pyr	ene	193-39-5	0.0018 J	0.00081	0.0020	1	
10725	1-Methylnaphthalene		90-12-0	0.0012 J	0.00081	0.0020	1	
10725	2-Methylnaphthalene		91-57-6	0.0022	0.00081	0.0020	1	
10725	Naphthalene		91-20-3	0.0019 J	0.00081	0.0020	1	
time firs	sample was re-extract and the QC is compl t trial. Similar re: Latiles	ant. All sults were	results are repor	rted from the	mg/kg	mg/kg		
02005	NWTPH-GX Soil C7-C1		n.a.	N.D.	16	78	318.6	
Repo	rting limits were ra	sed due to	sample foaming.					
GC Pet	roleum	ECY 97-0	602 NWTPH-Dx	mg/kg	mg/kg	mg/kg		
Hydrod	carbons w/Si	modified	i					
02214	DRO C12-C24 w/Si Ge	1	n.a.	N.D.	3.6	8.5	1	
02214	HRO C24-C40 w/Si Ge	1	n.a.	N.D.	12	36	1	
Wet Ch	nemistry	SM 2540	G-1997	8	8	%		
00111	Moisture		n.a.	18.3	0.50	0.50	1	
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.							

## General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15240SLF026	09/08/2015 04:21	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15240SLF026	08/30/2015 15:00	Nicholas W Shroyer	1



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Sample Description: AUS-SB-4A(2-2.5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018612 LL Group # 1586960

Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

Collected: 08/20/2015 12:30 by EE Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

AVS4A

	Laboratory Sample Analysis Record										
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor			
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15239A34A	08/31/2015	03:58	Jeremy C Giffin	318.6			
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/20/2015	12:30	Client Supplied	n.a.			
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520008A	09/12/2015	08:06	Heather E Williams	1			
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520008A	08/31/2015	08:45	Olivia Arosemena	1			
00111	Moisture	SM 2540 G-1997	1	15240820002B	08/28/2015	22:28	Scott W Freisher	1			

<sup>\*=</sup>This limit was used in the evaluation of the final result



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Sample Description: AUS-SB-42(2-2.5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018613

LL Group # 1586960 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 10:00 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/22/2015 10:25 630 Plaza Drive

Highlands Ranch CO 80129 Reported: 10/08/2015 14:30

AVS42

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg		mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.028		0.0036	0.0091	5
10725	Benzo(a)pyrene		50-32-8	0.023		0.0036	0.0091	5
10725	Benzo(b)fluoranthen	e	205-99-2	0.051		0.0036	0.0091	5
10725	Benzo(k)fluoranthen	e	207-08-9	0.018 J		0.0036	0.0091	5
10725	Chrysene		218-01-9	0.046		0.0018	0.0091	5
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.		0.0036	0.0091	5
10725	Indeno(1,2,3-cd)pyr		193-39-5	0.011		0.0036	0.0091	5
10725	1-Methylnaphthalene		90-12-0	0.028		0.0036	0.0091	5
10725	2-Methylnaphthalene		91-57-6	0.037		0.0036	0.0091	5
10725	Naphthalene		91-20-3	0.032		0.0036	0.0091	5
The The time	QC acceptance limits following corrective sample was re-extract and the QC is complitional. Similar res	e action w ted outsid iant. All	was taken: de the method requi l results are repor	red hold:				
GC Vol	latiles	ECY 97-	-602 NWTPH-Gx	mg/kg		mg/kg	mg/kg	
	NWTPH-GX Soil C7-C1 rting limits were ra	_	n.a. so sample foaming.	N.D.		13	64	294.1
GC Pet	roleum	ECY 97-	-602 NWTPH-Dx	mg/kg		mg/kg	mg/kg	
Hydrod	carbons w/Si	modifie	ed					
02214	DRO C12-C24 w/Si Ge	1	n.a.	N.D.		3.3	7.7	1
	HRO C24-C40 w/Si Ge		n.a.	13	J	11	33	1
Wet Ch	nemistry	SM 2540	G-1997	8		%	%	
00111	Moisture		n.a.	8.7		0.50	0.50	1
	Moisture represents 103 - 105 degrees C as-received basis.					ng at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15240SLF026	09/08/2015 06:0	0 Brian K Graham	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15240SLF026	08/30/2015 15:0	0 Nicholas W Shroye	r 1



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Sample Description: AUS-SB-42(2-2.5) Soil

Former Olympia Bulk Plant COC: R224123 1117 West Bay Drive - Olympia, WA

LL Group # 1586960 Account # 13255

LL Sample # SW 8018613

Project Name: Former Olympia Bulk Plant

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

Collected: 08/20/2015 10:00 by EE Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

AVS42

	Laboratory Sample Analysis Record										
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tir	me	Analyst	Dilution Factor			
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15239A34A	08/31/2015	04:33	Jeremy C Giffin	294.1			
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/20/2015	10:00	Client Supplied	n.a.			
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520008A	09/12/2015	08:27	Heather E Williams	1			
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520008A	08/31/2015	08:45	Olivia Arosemena	1			
00111	Moisture	SM 2540 G-1997	1	15240820003A	08/28/2015	21:09	Scott W Freisher	1			



Drv

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www,LancasterLabs.com

Sample Description: AUS-SB-26A(2-2.5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018615

LL Group # 1586960 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 12:55 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Drv

Submitted: 08/22/2015 10:25 630 Plaza Drive

Reported: 10/08/2015 14:30 Highlands Ranch CO 80129

AVS26

CAT No.	Analysis Name		CAS Number	Dry Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.0047	0.012	5
10725	Benzo(a)pyrene		50-32-8	N.D.	0.0047	0.012	5
10725	Benzo(b)fluoranthene	2	205-99-2	0.0049 J	0.0047	0.012	5
10725	Benzo(k)fluoranthene	<u> </u>	207-08-9	N.D.	0.0047	0.012	5
10725	Chrysene		218-01-9	0.0042 J	0.0023	0.012	5
10725	Dibenz(a,h)anthracer	ie	53-70-3	N.D.	0.0047	0.012	5
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.	0.0047	0.012	5
10725	1-Methylnaphthalene		90-12-0	N.D.	0.0047	0.012	5
10725	2-Methylnaphthalene		91-57-6	N.D.	0.0047	0.012	5
10725	Naphthalene		91-20-3	0.0048 J	0.0047	0.012	5
_	rting limits were rai			_			
			-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12		n.a.	N.D.	23	110	401.88
Repo:	rting limits were rai	sed due t	to sample foaming.				
GC Pet	roleum	ECY 97-	-602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modifie	ed				
02214	DRO C12-C24 w/Si Gel	_	n.a.	76	21	49	5
02214	HRO C24-C40 w/Si Gel	-	n.a.	900	71	210	5
Wet Ch	nemistry	SM 2540	G-1997	%	%	%	
00111	Moisture		n.a.	29.2	0.50	0.50	1
	Moisture represents 103 - 105 degrees Ce as-received basis.		<del>-</del>	-			

#### General Sample Comments

Laboratory Sample Analysis Record

State of Washington Lab Certification No.  ${\tt C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

NWTPH-Dx modified

#### Method CAT Trial# Batch# Dilution Analysis Name Analysis Analyst No. Date and Time Factor 10725 SIM SVOA (microwave) SW-846 8270C SIM 15240SLF026 09/08/2015 06:33 Brian K Graham 5 10811 BNA Soil Microwave SIM SW-846 3546 1 15240SLF026 08/30/2015 15:00 Nicholas W Shroyer 1 02005 NWTPH-GX Soil C7-C12 ECY 97-602 15239A34A 08/31/2015 05:08 Jeremy C Giffin 401.88 NWTPH-Gx SW-846 5035A 201523538634 Client Supplied 06647 GC-5g Field Preserved 08/20/2015 12:55 n.a. MeOH 02214 NWTPH-Dx soil w/Si Gel ECY 97-602 152520008A 09/12/2015 22:39 Heather E Williams 5

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-26A(2-2.5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018615 LL Group # 1586960 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

Collected: 08/20/2015 12:55 by EE Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

AVS26

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520008A	08/31/2015 08:45	Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15240820003A	08/28/2015 21:09	Scott W Freisher	1



Dry

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-25A(2-2.5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018616

LL Group # 1586960 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 15:00 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Dry

Submitted: 08/22/2015 10:25 630 Plaza Drive

Reported: 10/08/2015 14:30 Highlands Ranch CO 80129

AVS25

CAT No.	Analysis Name		CAS Number	Dry Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.0036	0.00078	0.0019	1
10725	Benzo(a)pyrene		50-32-8	0.0049	0.00078	0.0019	1
10725	Benzo(b)fluoranthene		205-99-2	0.012	0.00078	0.0019	1
10725	Benzo(k)fluoranthene		207-08-9	0.0045 <sup>J</sup>	0.00078	0.0019	1
10725	Chrysene		218-01-9	0.0079	0.00039	0.0019	1
10725	Dibenz(a,h)anthracen	e	53-70-3	0.00098 J	0.00078	0.0019	1
10725	Indeno(1,2,3-cd)pyre	ne	193-39-5	0.0036	0.00078	0.0019	1
10725	1-Methylnaphthalene		90-12-0	0.0017 J	0.00078	0.0019	1
10725	2-Methylnaphthalene		91-57-6	0.0032	0.00078	0.0019	1
10725	Naphthalene		91-20-3	0.0046	0.00078	0.0019	1
firs	and the QC is compliant trial. Similar resu	ılts were obt	cained in both	trials.	(h		
		ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
	NWTPH-GX Soil C7-C12 rting limits were rais	ed due to sa	n.a. ample foaming.	N.D.	13	65	277.63
GC Pet	roleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydro	carbons w/Si	modified					
02214	DRO C12-C24 w/Si Gel		n.a.	5.8 J	3.5	8.1	1
02214	HRO C24-C40 w/Si Gel		n.a.	55	12	35	1
Wet Ch	nemistry	SM 2540 G-	-1997	%	%	%	
00111	Moisture		n.a.	14.3	0.50	0.50	1
	Moisture represents 103 - 105 degrees Ce as-received basis.				rying at		

## General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15240SLF026	09/08/2015 07:06	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15240SLF026	08/30/2015 15:00	Nicholas W Shroye	r 1



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Sample Description: AUS-SB-25A(2-2.5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018616

LL Group # 1586960 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

Collected: 08/20/2015 15:00 by EE Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

AVS25

	Laboratory Sample Analysis Record										
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor			
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15239A34A	08/31/2015	06:19	Jeremy C Giffin	277.63			
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/20/2015	15:00	Client Supplied	n.a.			
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520008A	09/12/2015	08:49	Heather E Williams	1			
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520008A	08/31/2015	08:45	Olivia Arosemena	1			
00111	Moisture	SM 2540 G-1997	1	15240820003A	08/28/2015	21:09	Scott W Freisher	1			



Dry

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-43A(2-2.5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Group # 1586960 Account # 13255

LL Sample # SW 8018617

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 13:05 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Dry

Submitted: 08/22/2015 10:25 630 Plaza Drive

Reported: 10/08/2015 14:30 Highlands Ranch CO 80129

#### AVS43

CAT No.	Analysis Name		CAS Number	Dry Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 82	70C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.066	0.0040	0.010	5
10725	Benzo(a)pyrene		50-32-8	0.059	0.0040	0.010	5
10725	Benzo(b)fluoranthene		205-99-2	0.13	0.0040	0.010	5
10725	Benzo(k)fluoranthene		207-08-9	0.053 <sup>J</sup>	0.0040	0.010	5
10725	Chrysene		218-01-9	0.11	0.0020	0.010	5
10725	Dibenz(a,h)anthracen	e	53-70-3	0.0082 J	0.0040	0.010	5
10725	Indeno(1,2,3-cd)pyre	ne	193-39-5	0.027	0.0040	0.010	5
10725	1-Methylnaphthalene		90-12-0	0.013	0.0040	0.010	5
10725	2-Methylnaphthalene		91-57-6	0.025	0.0040	0.010	5
10725	Naphthalene		91-20-3	0.052	0.0040	0.010	5
time firs	sample was re-extract and the QC is complit trial. Similar res	ant. All re ults were ob	sults are repor	ted from the	mg/kg	mg/kg	
	NWTPH-GX Soil C7-C12			N.D.	17	87	356.26
	rting limits were rai		n.a. ample foaming.	N.D.	17	87	356.26
GC Pet	croleum	ECY 97-60	2 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modified					
02214	DRO C12-C24 w/Si Gel		n.a.	10	3.6	8.4	1
02214	HRO C24-C40 w/Si Gel		n.a.	77	12	36	1
Wet Ch	nemistry	SM 2540 G	-1997	8	%	8	
00111	Moisture		n.a.	17.8	0.50	0.50	1
	Moisture represents 103 - 105 degrees Ce as-received basis.				rying at		

## General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15240SLF026	09/08/2015	07:39	Brian K Graham	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15240SLF026	08/30/2015	15:00	Nicholas W Shroyer	1



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Sample Description: AUS-SB-43A(2-2.5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018617 LL Group # 1586960 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

Collected: 08/20/2015 13:05 by EE Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

AVS43

	Laboratory Sample Analysis Record										
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor			
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15239A34A	08/31/2015	06:54	Jeremy C Giffin	356.26			
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/20/2015	13:05	Client Supplied	n.a.			
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520008A	09/12/2015	09:11	Heather E Williams	1			
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520008A	08/31/2015	08:45	Olivia Arosemena	1			
00111	Moisture	SM 2540 G-1997	1	15240820003A	08/28/2015	21:09	Scott W Freisher	1			



Dry

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-63(2-2.5) Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018620

LL Group # 1586960 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 16:00 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Dry

Submitted: 08/22/2015 10:25 630 Plaza Drive

Reported: 10/08/2015 14:30 Highlands Ranch CO 80129

AVS63

CAT No.	Analysis Name		CAS Number	Dry Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.0062 J	0.0035	0.0086	5
10725	Benzo(a)pyrene		50-32-8	0.0050 J	0.0035	0.0086	5
10725	Benzo(b)fluoranthene	2	205-99-2	0.018	0.0035	0.0086	5
10725	Benzo(k)fluoranthene	2	207-08-9	0.0069 J	0.0035	0.0086	5
10725	Chrysene		218-01-9	0.0097	0.0017	0.0086	5
10725	Dibenz(a,h)anthracer	ie	53-70-3	N.D.	0.0035	0.0086	5
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	0.0052 J	0.0035	0.0086	5
10725	1-Methylnaphthalene		90-12-0	N.D.	0.0035	0.0086	5
10725	2-Methylnaphthalene		91-57-6	0.0038 J	0.0035	0.0086	5
10725	Naphthalene		91-20-3	0.0056 J	0.0035	0.0086	5
time firs	sample was re-extract and the QC is compli t trial. Similar res	ant. All ults were	results are report obtained in both	rted from the trials.			
			602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	2	n.a.	N.D.	12	62	298.29
GC Pet	croleum	ECY 97-	602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydro	carbons w/Si	modifie	d.				
02214	DRO C12-C24 w/Si Gel	=	n.a.	6.4 J	3.1	7.3	1
02214	HRO C24-C40 w/Si Gel	=	n.a.	61	10	31	1
Wet Ch	nemistry	SM 2540	G-1997	%	%	%	
00111	Moisture		n.a.	4.1	0.50	0.50	1
	Moisture represents 103 - 105 degrees Co as-received basis.						

#### General Sample Comments

State of Washington Lab Certification No.  ${\tt C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
10725 10811	SIM SVOA (microwave) BNA Soil Microwave SIM	SW-846 8270C SIM SW-846 3546	1 1	15240SLF026 15240SLF026	,	8:13 5:00	Brian K Graham Nicholas W Shroyer	5 1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15239A34A	08/31/2015 07	7:29	Jeremy C Giffin	298.29

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: AUS-SB-63(2-2.5) Soil

Former Olympia Bulk Plant COC: R224123 1117 West Bay Drive - Olympia, WA

LL Group # 1586960 Account # 13255

LL Sample # SW 8018620

Project Name: Former Olympia Bulk Plant

Reported: 10/08/2015 14:30

Collected: 08/20/2015 16:00 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/22/2015 10:25 630 Plaza Drive

Highlands Ranch CO 80129

AVS63

	Laboratory Sample Analysis Record									
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor		
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/20/2015	16:00	Client Supplied	n.a.		
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520008A	09/12/2015	09:33	Heather E Williams	1		
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520008A	08/31/2015	08:45	Olivia Arosemena	1		
00111	Moisture	SM 2540 G-1997	1	15240820003A	08/28/2015	21:09	Scott W Freisher	1		



Dry

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: DUP-3 Soil

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018621

LL Group # 1586960 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Dry

Submitted: 08/22/2015 10:25 630 Plaza Drive

Reported: 10/08/2015 14:30 Highlands Ranch CO 80129

## AVSD3

CAT No.	Analysis Name		CAS Number	Dry Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.0013 J	0.00081	0.0020	1
10725	Benzo(a)pyrene		50-32-8	0.0014 J	0.00081	0.0020	1
10725	Benzo(b)fluoranthen	e	205-99-2	0.0042 <sup>J</sup>	0.00081	0.0020	1
10725	Benzo(k)fluoranthen	e	207-08-9	0.0017 J	0.00081	0.0020	1
10725	Chrysene		218-01-9	0.0038 <sup>J</sup>	0.00040	0.0020	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D. UJ	0.00081	0.0020	1
10725	Indeno(1,2,3-cd)pyr	ene	193-39-5	0.00085 J	0.00081	0.0020	1
10725	1-Methylnaphthalene		90-12-0	0.0019 J	0.00081	0.0020	1
10725	2-Methylnaphthalene		91-57-6	0.0031 <u>J</u>	0.00081	0.0020	1
10725	Naphthalene		91-20-3	0.0038 <sup>J</sup>	0.00081	0.0020	1
The time	following corrective sample was re-extract and the QC is complit trial.	ed outside th	ne method requi sults are repor		mg/kg	mg/kg	
							276 54
02005 Repo:	NWTPH-GX Soil C7-C1 rting limits were rai		n.a. ample foaming.	N.D.	18	91	376.54
GC Pet	roleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modified					
02214	DRO C12-C24 w/Si Ge	1	n.a.	150	3.6	8.4	1
02214	HRO C24-C40 w/Si Ge	1	n.a.	270	12	36	1
Wet Ch	nemistry	SM 2540 G-	1997	%	%	%	
00111	Moisture		n.a.	17.6	0.50	0.50	1
	Moisture represents 103 - 105 degrees Cas-received basis.		_	sample after oven dry reported is on an	ing at		

#### General Sample Comments

State of Washington Lab Certification No.  ${\tt C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	1	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15240SLF026	09/08/2015 0	8:46	Brian K Graham	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15240SLF026	08/30/2015 1	5:00	Nicholas W Shroyer	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: DUP-3 Soil

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018621 LL Group # 1586960

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/19/2015 by EE Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

AVSD3

	Laboratory Sample Analysis Record								
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor	
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15244A34A	09/02/2015	21:30	Marie D Beamenderfer	376.54	
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201523538634	08/19/2015	00:00	Client Supplied	n.a.	
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520008A	09/12/2015	10:59	Heather E Williams	1	
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520008A	08/31/2015	08:45	Olivia Arosemena	1	
00111	Moisture	SM 2540 G-1997	1	15240820003A	08/28/2015	21:09	Scott W Freisher	1	

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax; 717-656-2681 • www,LancasterLabs.com

Sample Description: DUP-4 Soil LL Sample # SW 8018622

Former Olympia Bulk Plant COC: R224123 LL Group # 1586960 1117 West Bay Drive - Olympia, WA Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 08/22/2015 10:25 630 Plaza Drive

Highlands Ranch CO 80129 Reported: 10/08/2015 14:30

#### AVSD4

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles SW-84	46 8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.026 Ј	0.013	0.033	10
10725	Benzo(a)pyrene	50-32-8	0.028 J	0.013	0.033	10
10725	Benzo(b)fluoranthene	205-99-2	0.032 J	0.013	0.033	10
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.013	0.033	10
10725	Chrysene	218-01-9	0.038	0.0065	0.033	10
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.013	0.033	10
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.013	0.033	10
10725	1-Methylnaphthalene	90-12-0	2.5	0.013	0.033	10
10725	2-Methylnaphthalene	91-57-6	2.5	0.013	0.033	10
10725	Naphthalene	91-20-3	0.55	0.013	0.033	10
GC Vol	Latiles ECY 9	97-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	990 <sup>J</sup>	120	620	1569.26
GC Pet		97-602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si modii	ied				
02214	DRO C12-C24 w/Si Gel	n.a.	1,900 <sup>J</sup>	30	69	5
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	98	300	5
Wet Ch	nemistry SM 25	540 G-1997	%	%	%	
00111	Moisture	n.a.	49.4	0.50	0.50	1
	Moisture represents the lo 103 - 105 degrees Celsius. as-received basis.		_			

## General Sample Comments

State of Washington Lab Certification No. C457

Extraction

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

#### Laboratory Sample Analysis Record Method CAT Analysis Name Trial# Batch# Analysis Analyst Dilution No. Date and Time Factor 10725 SIM SVOA (microwave) SW-846 8270C SIM 15240SLF026 09/09/2015 08:27 Brian K Graham 10 10811 BNA Soil Microwave SIM SW-846 3546 1 15240SLF026 08/30/2015 15:00 Nicholas W Shroyer 1 02005 NWTPH-GX Soil C7-C12 ECY 97-602 15239A34A 08/31/2015 08:04 Jeremy C Giffin 1569.26 NWTPH-Gx 06647 GC-5g Field Preserved SW-846 5035A 201523538634 08/20/2015 00:00 Client Supplied n.a. MeOH 02214 NWTPH-Dx soil w/Si Gel ECY 97-602 1 152520008A 09/12/2015 10:16 Heather E Williams 5 NWTPH-Dx modified 07024 DRO Alternate Soil ECY 97-602 152520008A 08/31/2015 08:45 Olivia Arosemena NWTPH-Dx 06/97

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: DUP-4 Soil

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8018622 LL Group # 1586960 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/20/2015 by EE Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

AVSD4

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15240820003A	08/28/2015 21:09	Scott W Freisher	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: TRIP BLANK Water

Former Olympia Bulk Plant COC: R224123

1117 West Bay Drive - Olympia, WA

LL Sample # WW 8018623 LL Group # 1586960

Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 08/22/2015 10:25

Reported: 10/08/2015 14:30

Collected: 08/19/2015 Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

AVSTB

Method Limit of CAT Dilution Detection Limit\* Quantitation Analysis Name CAS Number Result No. Factor GC Volatiles ug/1 ug/l ug/l ECY 97-602 NWTPH-Gx 250 08273 NWTPH-Gx water C7-C12 N.D. 50 n.a.

#### General Sample Comments

State of Washington Lab Certification No.  ${\tt C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	15238A53A	08/27/2015 14:50	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15238A53A	08/27/2015 14:50	Brett W Kenyon	1



# **BP OLY**

# **Data Review**

OLYMPIA, WA

Semivolatiles and TPH

SDG # 1589716

Analyses Performed By: Lancaster Laboratories Lancaster, PA

Report # 24722R Review Level: Tier II

Project: GP09BPNA.WA60.K000

# **SUMMARY**

This data quality assessment summarizes the review of Sample Delivery Group (SDG) #1589716 for samples collected in association with the BP OLY site. The review was conducted at a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

			Comple		Analysis				
Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	voc	svoc	TPH	MET	TSS
SB-53-7.5	8032047	Soil	08/27/15			Х	Х		
SB-42-7.5	8034048	Soil	08/27/15			Х	Х		
SB-31-7.5	8032049	Soil	08/27/15			Х	Х		
SB-32-7.5	8032050	Soil	08/27/15			Х	Х		
SB-22-7.5	8032051	Soil	08/27/15			Х	Х		
SB-23-A-7.5	8032052	Soil	08/27/15			Х	Х		
SB-16-7.5	8032053	Soil	08/27/15			Х	Х		
SB-15-7.5	8032054	Soil	08/27/15			Х	Х		
SB-63-7.5	8032055	Soil	08/27/15			Х	Х		
SB-54-7.5	8032056	Soil	08/27/15			Х	Х		
SB-43-A-7.5	8032057	Soil	08/27/15			Х	Х		
SB-55-9.5	8032058	Soil	08/27/15			Х	Х		
SB-1A-12.5	8032059	Soil	08/28/15			Х	Х		
SB-2-9.5	8032062	Soil	08/28/15			Х	Х		
SB-5A-12.5	8032063	Soil	08/28/15			Х	Х		
SB-4A-7.5	8032064	Soil	08/28/15			Х	Х		
SB-9-7.5	8032065	Soil	08/28/15			Х	Х		
SB-10-7.5	8032066	Soil	08/28/15			Х	Х		
SB-58-7.5	8032067	Soil	08/28/15			Х	Х		
DUP-5	8032068	Soil	08/28/15	SB-5A-12.5		Х	Х		
SB-41-7.5	8032069	Soil	08/28/15			Х	Х		
SB-52-7.5	8032070	Soil	08/28/15			Х	Х		
SB-30-7.5	8032071	Soil	08/28/15			Х	Х		
SB-40-7.5	8032072	Soil	08/28/15			Х	Х		
SB-51-7.5	8032073	Soil	08/28/15			Х	Х		
SB-62-7.5	8032074	Soil	08/28/15			Х	Х		
SB-1A-7.5	8032075	Soil	08/28/15			Х	Х		

					Analysis				
Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	voc	svoc	ТРН	MET	TSS
SB-29-7.5	8032076	Soil	08/28/15			Х	Х		
SB-39-7.5	8032077	Soil	08/28/15			Х	Х		
SB-25A-7.5	8032078	Soil	08/28/15			Х	Х		
SB-25A-12.5	8032079	Soil	08/28/15			Х	Х		
SB-5A-7.5	8032080	Soil	08/28/15			Х	Х		
SB-50-7.5	8032081	Soil	08/28/15			Х	Х		
SB-61-7.5	8032082	Soil	08/28/15			Х	Х		
SB-21-7.5	8032083	Soil	08/28/15			Х	Х		
SB-28-7.5	8032084	Soil	08/28/15			Х	Х		
SB-27-7.5	8032085	Soil	08/28/15			Х	Х		
SB-38-7.5	8032086	Soil	08/28/15			Х	Х		
SB-49-7.5	8032087	Soil	08/28/15			Х	Х		
TRIP Water	8032088	Water	08/27/15				Х		

# Note:

- 1. Samples SB-1A-12.5, SB-22-7.5 and SB-25A-12.5 were used as the MS/MSDs for the SVOC analyses.Sample SB-1A-12.5 was used as the MS/MSD for the TPH analyses.

# ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

		Rep	orted		mance ptable	Not
	Items Reviewed	No	Yes	No	Yes	Required
1.	Sample receipt condition		Х		Х	
2.	Requested analyses and sample results		Х		Х	
3.	Master tracking list		Х		Х	
4.	Methods of analysis		Х		Х	
5.	Reporting limits		Х		Х	
6.	Sample collection date		Х		Χ	
7.	Laboratory sample received date		Х		Х	
8.	Sample preservation verification (as applicable)		Х		Х	
9.	Sample preparation/extraction/analysis dates		Х		Х	
10.	Fully executed Chain-of-Custody (COC) form		Х		Х	
11.	Narrative summary of QA or sample problems provided		Х		Х	
12.	Data Package Completeness and Compliance		Х		Х	

QA - Quality Assurance

# ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 8270 (SIM) and ECY 97-602. Data were reviewed in accordance with the USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines and as requested by USEPA Region 10:

- Concentration (C) Qualifiers
  - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
  - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
  - E The compound was quantitated above the calibration range.
  - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
  - U The analyte was not detected at or above the reported result.
  - J The analyte was positively identified. The associated numerical result is an estimate.
  - UJ The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
  - R The data are unusable for all purposes.
  - N There is evidence the analyte is present in this sample.
  - JN There is evidence the analyte is present in this sample. The associated numerical result is an estimate.
  - D The sample result is reported from a diluted analysis.
  - EJ The sample result is greater than the calibration range. The associated numerical value is an estimated concentration only.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

# SEMIVOLATILE ORGANIC COMPOUND (SVOC) ANALYSES

# 1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method Matrix Holding Time		Preservation	
SW-846 8270	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
(SIM)	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

#### 2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

# 3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	Recovery
	Fluoranthene-d10	AC
SB-54-7.5	Benzo(a)pyrene-d12	<ll but="">10%</ll>
	1-Methylnaphthalene-d10	AC

LL Low Limit
AC Acceptable

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results associated with the deviant fraction are qualified as documented in the table below.

Control Limit	Sample Result	Qualification	
> UL	Non-detect	No Action	
- OL	Detect	J	
< LL but > 10%	Non-detect	UJ	
CLL but > 10%	Detect	J	
< 10%	Non-detect	R	
< 1076	Detect	J	
Surrogates diluted below the calibration curve due to the	Non-detect	J <sup>1</sup>	
high concentration of a target compounds	Detect	]	

A more concentrated analysis was not performed with surrogate compounds within the calibration range; therefore, no determination of extraction efficiency could be made.

# 4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery
	Benzo(b)Fluoranthene	>UL	AC
SB-22-7.5	Benzo(k)Fluoranthene	>UL	AC
SB-22-7.5	Dibenz(a,h)anthracene	<ll but="">10%</ll>	<ll but="">10%</ll>
	Indeno(1,2,3-cd)pyrene	<ll but="">10%</ll>	<ll but="">10%</ll>

AC Acceptable

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper central limit (LIL)	Non-detect	No Action
> the upper control limit (UL)	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
The lower control limit (LL) but > 10 %	Detect	J

Control Limit	Sample Result	Qualification
< 10%	Non-detect	R
< 10 / 0	Detect	٦
Parent sample concentration > four times the MS/MSD	Detect	No Action
spiking solution concentration.	Non-detect	NO ACION

# 5. Laboratory Control Sample

The LCS/ analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

#### 6. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
	1-Methylnaphthalene	0.0025 U	0.011	AC
SB-5A-12.5/DUP-5	2-Methylnaphthalene	0.0025 U	0.012	AC
	Naphthalene	0.0025 U	0.0057	AC

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

# 7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

# **DATA VALIDATION CHECKLIST FOR SVOCs**

SVOCs: SW-846 8270 (SIM)	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	Required
GAS CHROMATOGRAPHY/MASS SPECTROME	ETRY (GC/	/MS)			
Tier II Validation					
Holding times		Х		Х	
Reporting limits (units)		Х		Х	
Blanks			•		
A. Method blanks		Х		Х	
B. Equipment blanks	Х				Х
Laboratory Control Sample (LCS) %R		Х		Х	
Laboratory Control Sample Duplicate(LCSD) %R	Х				Х
LCS/LCSD Precision (RPD)	Х				Х
Matrix Spike (MS) %R		Х	Х		
Matrix Spike Duplicate(MSD) %R		Х	Х		
MS/MSD Precision (RPD)		Х		Х	
Field Duplicate (RPD)		Х		Х	
Surrogate Spike Recoveries		Х	Х		
Dilution Factor		Х		Х	
Moisture Content		Х		Х	

%R

Percent recovery
Relative percent difference RPD

# **NWTPH-GX AND DX**

# 1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
NWTPH – Gx and Dx ECY 97-602	Soil	14 days from collection to analysis	Cool to <6 °C

All samples were analyzed within the specified holding times.

# 2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

#### 3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. The analysis requires surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	Recovery	
SB-1A-7.5	Trifluorotoluono F	>UL	
SB-25A-7.5	Trifluorotoluene-F	>UL	

Upper control limit (UL)

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results associated with the deviant fraction are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	No Action
OL	Detect	J
< LL but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
1076	Detect	J

#### 4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD exhibited recoveries and RPDs within the laboratory control limits.

## 5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS/LCSD analysis exhibited recoveries within the control limits.

# 6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
	Gx	U	U	AC
SB-5A-12.5/DUP-5	DRO	C	U	AC
	HRO	U	U	AC

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

# 7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

# **DATA VALIDATION CHECKLIST FOR TPH**

Gx/Dx; ECY 97-602	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	Required
GAS CHROMATOGRAPHY (GC/FID)					
Tier II Validation					
Holding times		Х		Х	
Reporting limits (units)		Х		Х	
Blanks			•	•	
A. Method blanks		Х		Х	
B. Trip blanks		Х		Х	
Laboratory Control Sample (LCS) %R		Х		Х	
Laboratory Control Sample Duplicate(LCSD) %R		Х		Х	
LCS/LCSD Precision (RPD)		Х		Х	
Matrix Spike (MS) %R		Х		Х	
Matrix Spike Duplicate(MSD) %R		Х		Х	
MS/MSD Precision (RPD)		Х		Х	
Field/Lab Duplicate (RPD)		Х		Х	
Surrogate Spike Recoveries		Х	Х		
Dilution Factor		Х		Х	
Moisture Content		Х		Х	

<sup>%</sup>R - percent recovery, RPD - relative percent difference,

VALIDATION PERFORMED

BY: Rachelle Borne

SIGNATURE:

DATE: December 3, 2015 Revised

Lachelle Band

12/28/15

PEER REVIEW: Joseph C. Houser

DATE: December 11, 2015

### CHAIN OF CUSTODY/ CORRECTED SAMPLE ANALYSIS DATA SHEETS



# Laboratory Management Program LaMP Chain of Custody Record R224114 Page \_\_\_\_

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eq Due Date (mm/dd/yy):			Rush TAT: Yes	No

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Lab Ph	ione: 7/1-656-2300			Calif	ornia	Glob	al ID	No.:											Consulta	ant/Co	ontracto	or PM:	(35)	Pen Meri	<b>5</b>		
Lab Sh	ipping Accnt:			Enfo	s Pro	posa	l No:												Phone:/	206	-726	, _ (	4759	Email: 13 a	1. Moreme	Are	dis-us.con
Lab Bo	ttle Order No:			Acco	ountir	ng Mo	de:		Pro	vision		00	C-BU		000	C-RM			Email El	DD To	): <i>B</i>	on D	אמוח	~γ and	to <u>lab.enfosd</u>	c@b	p.com
Other I	nfo:			Stag	e:			Microsoft in	A	ctivity:									Invoice <sup>-</sup>	То:		BF	Ρ	Contr	actor		-
BP Pro	eject Manager (PM):				Ma	trix		No	o. Co	ntain	ers /	Pres	ervat	ive			F	?equ	ested A	naly	ses			Repor	t Type & Q0	Lev	/el
BP PM	Phone:														*	*		*-							Standard	_	
BP PM	Email:						~;	Container										*HORY						Full Dat	a Package		
Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Is this location a well?	Total Number of Coni	Unpreserved	H2SO4	HNO3	HCI	Methanol		NWTPH-GX	E	1515 F	CPATHS + LZ						Note: If sample Sample" in com and initial any p	ments and sing	le-stril	ke out
	53-93-7.5	8-27-15	9945	7				3	2				(		X	X		X									
	513-42-7.5	8-27-15	1000	V				3	2				1											* Anal	LICE S		
	58-31-7.5	x-27-15	1015	~				3	2				l											neane	ated e	21.	
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	SB-23A-7.5	8-27-15	1100	レ				3	2				1														
	SB-16-7.5	8-27-15	1590	ン				3	2																		
	SB-15-7.5	8-27-15		<u> </u>				3	2														<u> </u>				
	58 -63 -7.5	8-27-15		ン				3	2				1			4						ļ	<u> </u>				
	58-54-7.5	8-27-15	TUIS	V				3	2				Ш		$\mathbb{I}$	4		1					<u></u>				
Sample	er's Name: Juin Litry					R	elin	quisi	hed I	3y / A	ffiliat	tion	and the second second		Da	ite	Tin	ne		A	ccept	ed By	/ Affi	liation	Date		Time
	er's Company:									<u></u>	_										<u> </u>	<u> </u>	_			_	
	ent Method: V \( \rangle \)	Ship Date:											_						_/ _		1//,	1				Д,	11
Shipment Tracking No:						*********	wews.			***************************************							÷cnercovandic		150	w	VV		6	INE	<u>- 1411</u>		725
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	THIS LINE - LAB USE ONLY: Custod			DECEMBER STREET	remp	Blan		s / N	0			Temp		ceipt:	<u> </u>	4.6	.°F(C	<u>) l</u>	Trip B	lank	Yes / N	o l	MS	S/MSD Sample	Submitted: Ye	s/N	<u> </u>

bp CM

BP Site Node Path:

## Laboratory Management Program LaMP Chain of Custody Record R224115

of Custody Record	R224115	Page	_ of
Req Due Date (mm/dd/yy):		Rush TAT: Yes	No

BP Facility No	: Lasmas	olympia Vulu Plas	Lab Work Orde	r Number:					
Lab Name: Least, Labs	Facility Address:	1117 W Bey done	-	Consultant/Contractor:	rcidis				
Lab Address: 2429 New Hollond Pin, PA	City, State, ZIP Co	ode: Olympia WA		Consultant/Contractor Project No	CROABENA WALD				
Lab PM: Stacy Butt	Lead Regulatory A			Address: [[00 Olive	Way, Sentell WA				
Lab Phone: 717-656-2300	California Global II			Consultant/Contractor PM:	rian Mercan				
Lab Shipping Accnt:	Enfos Proposal No	<b>)</b> :		Phone: 206-726-415	S Email: Brion Mercin Darielis				
Lab Bottle Order No:	Accounting Mode:	Provision OOC-BU	OOC-RM	Email EDD To: Brian Ma					
Other Info:	Stage:	Activity:		Invoice To: BP					
BP Project Manager (PM):	Matrix	No. Containers / Preservative	Requ	uested Analyses	Report Type & QC Level				
BP PM Phone:			1 K3 K		Standard				
BP PM Email:		ainer	1 5 5		Full Data Package				
Lab No. Sample Description Date Time	Soil / Soild Water / Liquid Air / Vapor Is this location a Air / Vapor Is / Vapor Is / Vapor Is / Vapor Is / Vapor Is / Vapor Is / Vapor Is / Vapor Is / Va								
SB-43-A-7.5 8-27-15 1675		32 1	XXX						
SB-55-9.5 8-27-15 1715		32 1							
SB-1A-12.5 8-28-1(10)0	4	96 3			MS/MSD				
58-7-9.5 8-28-15 1030	V	3 2 1			, e				
SB-SA-125 1-28-15 1045		32 1 -			,				
513-4A-7.5 8-28-15 NID		3 1 1							
50-9-7.5 8-28-15 1170	M	3 2 1							
517-10-7,5 8-28-15 1155	M	32 1							
58-58-7.5 828-15 1315		3 2							
DUP-5 8-78-15		3 2	11 11 1						
Sampler's Name: Jush Litty	Relin	nquished By / Affiliation	Date Time	Accepted By / Aff	filiation Date Time				
Sampler's Company: KV/, J									
Shipment Method: P5 Ship Date:									
Shipment Tracking No:				Sm/4 (	ELUE 1945 1925				
Special Instructions:			2011						
THIS LINE - LAB USE ONLY: Custody Seals In Place:(Yes / No	Temp Blank: Y	res / No Cooler Temp on Receipt: Use for RemeRiatione 1945) ແທ້ຍາໄພໃດ projec	50.40°4c) 1	Trip Blank: Yes /No M	S/MSD Sample Submitted (Yes /)No BP LaMP COC Rev. 8, 24 June 2012				



## 13785 1589716 8037017-88

boratory Management Program LaMP	Chain of Custody Record	R224116	
BP Site Node Path:	Reg Due Date (mm/dd/vv):		R

Ž			e Node Path		-							<del>5</del> /			Re	q Du	e Dat	te (mı	n/dd/y	у): _				Rush T	AT: Yes	_ No
				Facility No:  Facility Address  City, State, ZII											L	ab W	ork C	rder	Numb	er: _						
Lab Na	- 46.031			Faci	ility A	ddres	s:	t(1°	7 h	16	3 m	. ત	M						Consult	ant/C	ontrac	tor: /	1160	712		
Lab Ad	dress: 2425 Now	4,000	Pily CONCON	City,	, Stat	e, ZIF	Coc	de:	01	بر ہمہ	117	, u	A`						Consult	ant/C	ontrac	tor Pro	ject No	Way,	ON AWAO	00
Lab PN				Lead	d Re	gulato	ry Ag	jency	W	A 0	سَنا (								Address	s: \	(Ó (	9	6/4	Way,	Scattle !	NA
Lab Ph	one: 717-656-230	0		ı		Glob													Consult	ant/C	ontrac	tor PM	: Br	ON MONU	^	
Lab Sh	ipping Accnt:		***************************************	Enfo	s Pr	oposa	ıl No:												none:	296	- 11	0 -	(75)	Email: 13,	en , Mari	n Care
Lab Bo	ttle Order No:			Acco	ountii	ng Ma	de:		Pro	vision		00	C-BU		000	C-RM			Email E	DD T	o: (} r	ica. M	orcan	(P) and t	o <u>lab.enfosdoc</u>	
Other I	nfo:			Stag	je:				Ad	tivity:									nvoice	To:	Č.	470981 E	P	Contra	ctor	
BP Pro	ject Manager (PM):				Ma	trix		No	. Co	ntain	ers /	Pres	ervati	ve		,	F	Reque	sted /	hal	/ses			Report	Type & QC	_evel
BP PM	Phone:															ka	*								Standard	_
BP PM	Email:							ainer							*	15.6	sh.							Full Data	Package	-
Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Is this location a well?	Total Number of Container	Unpreserved	H2SO4	HNO3	HCI	Methanol		NICIPH-GX	WINTPH - Dx WS.G.	CPAHS + naph							Note: If sample Sample" in com	Comments not collected, indi nents and single- eprinted sample	strike out
	513-41-7.5	8-28-15	0730	1				?	2				T		X	X	X						Ì			
	50-52-7.5	١	0890					3	2				7		T											
	50-70-7.5		0830					3	1				1													
	50-40-7.5	and the same of th	0900	/			and the party of t	3	2				1													
	18-51-7.5		0930	1				3	2																	
	50-62-7.5		0945	V				3	2																	
	53-1A-7.5		1000	1				3	2																	
	50-29-7,5		1022	U				3	2		,		(													
	50-39-7.5		1035	_				}	٦				- [													
	\$3-25A-7.5	<b>4</b>	1240		da kananangan a			}	7				1		1	Ų,	1									
Sample	r's Name: Jarn Litth					Re	elino	uisl	ed E	y / A	ffiliat	ion			Da	ite	Tin	ne		F	ccéb	ted B	y / Aff	liation	Date	Time
	r's Company: Areads									_										1						
	V 1 3	Ship Date:								-			<u> </u>													
Shipme	nt Tracking No:	cking No:					Kin								n/		N	<u>[[</u>	ilt _	19415	925					
Special Instructions:							-					~~~~			<del></del>		7									
D D	- Committee of the Comm	Гетр	Blanl	CONTRACTOR OF THE PARTY OF					THE RESIDENCE AND ADDRESS OF THE PARTY.	n Rec	_		-	_°F(C	<u>) I</u>	Trip B	lank:	Yes /	y <sub>o</sub>	I м	S/MSD Sample S					
SP Ren	nediation Management COC - Effective	Date: starting A	4U005t 16 201	1			_	⊌f€o f	ar Rai	noFilest	ion M	HB 2016	m/ann	roioc	to only						-			DD 1 - 8	ID COC Day 0	1 June 2012

Page \_



New

Lab Name:

Lab PM: Lab Phone:

Other Info:

Sampler's Company:

Shipment Method:

Shipment Tracking No: Special Instructions:

Lab Address: 747)

Lab Shipping Acent: Lab Bottle Order No:

BP Project Manager (PM):

Laboratory Mar	3255   5697 6 8632047-88 pagement Program LaMP Chain of Custody R	Record R224117 Page of
BP Site Node Path:		
BP Facility No:	E Torner Olympia Bul Man Lab Work Order	r Number:
	Facility Address: 117 W Bay drive	Consultant/Contractor: Actuals 5
land Pike	City, State, ZIP Code: Olynia, WA	Consultant/Contractor Project No: LP19BPNAWA 60
Story Butt	, , ,	Address: 100 DCM Vaz, Scuty, WA
300	California Global ID No.:	Consultant/Contractor PM: Brian Morcen
	Enfos Proposal No:	Phone: 206-726-4755 Email: Down, Marcin Caroccis- 65
	Accounting Mode: Provision OOC-BU OOC-RM	Email EDD To: Bring Morey and to lab.enfosdoc@bp.com
	Stage: Activity:	Invoice To: BP Contractor

Trip Blank: Yes / No

**Requested Analyses** 

BP PM	1 Phone:													1	John St.	$k \top$					Sta	ndard	
BP PM	1 Email:				ĺ		ontainer						7		Sige	なら					Full Data Pa	ckage	
Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Conta		H2SO4	HNO3	HCI	Methanol	·	NIOTA-1-GX	至	CFE-15 + B					Cor Note: If sample not c Sample" in comment and initial any preprir	s and single-	strike out
	SB-25A-12.5	8-28-15	1245	_			3	2				1		X	X	X							
	SB-5A -7.5	8-28-15	1040	N/			3	V				6		TT	$\prod'$	$\prod$							
	13-50-7.5		1050	Grav			ζ	1				7			П								
	58-61-7.5		1120				3	2				(		П	T								
	58-21-7.5		(140				3	12						П									
	58-28-7.8		1230	U			3	7				(											
	50-27-7.5		1250	U			3	2				1											<u></u> 1
	58-38-7.5	Circonnector	1305	V			3	7							1,1	1,							
	50-49-7.5		1320	V			7	1				1			١	V							
	TRIP	V		į			3	3				12	•	V									
Sample	er's Name: Jarn Littu			Relinquished By / Affiliation			Date Time Accepted By / A			/ Affi	liation	Date	Time										

No. Containers / Preservative

Matrix

Ship Date:

Arcadus

NAC

Cooler Temp on Receipt: 5.0 9.10 °F/C

Temp Blank: Yes / No

MS/MSD Sample Submitted (Yes //No

Report Type & QC Level



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-53-7.5 Soil

Former Olympia Bulk Plant COC: R224114 1117 West Bay Drive - Olympia, WA

LL Group # 1589716 Account # 13255

LL Sample # SW 8032047

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 09:45 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25 630 Plaza Drive

Reported: 09/28/2015 15:12 Highlands Ranch CO 80129

SB-53

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 82	70C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.00075	0.0019	1
10725	Benzo(a)pyrene		50-32-8	N.D.	0.00075	0.0019	1
10725	Benzo(b)fluoranthene	e	205-99-2	N.D.	0.00075	0.0019	1
10725	Benzo(k)fluoranthene	e	207-08-9	N.D.	0.00075	0.0019	1
10725	Chrysene		218-01-9	N.D.	0.00037	0.0019	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.00075	0.0019	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.	0.00075	0.0019	1
10725	1-Methylnaphthalene		90-12-0	N.D.	0.00075	0.0019	1
10725	2-Methylnaphthalene		91-57-6	N.D.	0.00075	0.0019	1
10725	Naphthalene		91-20-3	N.D.	0.00075	0.0019	1
GC Vol	latiles	ECY 97-60	2 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1:	2	n.a.	N.D.	1.0	5.0	22.17
GC Pet	roleum	ECY 97-60	2 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modified					
02214	DRO C12-C24 w/Si Ge	L	n.a.	N.D.	3.4	7.8	1
02214	HRO C24-C40 w/Si Ge	L	n.a.	N.D.	11	34	1 1
Wet Ch	nemistry	SM 2540 G	-1997	%	%	%	
00111	Moisture		n.a.	12.1	0.50	0.50	1
	Moisture represents 103 - 105 degrees Co as-received basis.		_	-			

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLE026	09/16/2015 15	5:11	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLE026	09/09/2015 09	9:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246A34A	09/03/2015 21	1:05	Jeremy C Giffin	22.17
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524538729	08/27/2015 09	9:45	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152480017A	09/10/2015 09	9:49	Nicholas R Rossi	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152480017A	09/08/2015 11	1:05	Denise L Trimby	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-53-7.5 Soil

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Group # 1589716 Account # 13255

LL Sample # SW 8032047

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 09:45 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

SB-53

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15251820003A	09/09/2015 09:19	William C Schwebel	L 1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-42-7.5 Soil

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032048

LL Group # 1589716 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 10:00 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25 630 Plaza Drive

Reported: 09/28/2015 15:12 Highlands Ranch CO 80129

SB-42

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles S	W-846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.00075	0.0019	1
10725	Benzo(a)pyrene		50-32-8	N.D.	0.00075	0.0019	1
10725	Benzo(b)fluoranthene		205-99-2	N.D.	0.00075	0.0019	1
10725	Benzo(k)fluoranthene		207-08-9	N.D.	0.00075	0.0019	1
10725	Chrysene		218-01-9	N.D.	0.00037	0.0019	1
10725	Dibenz(a,h)anthracene		53-70-3	N.D.	0.00075	0.0019	1
10725	Indeno(1,2,3-cd)pyren	9	193-39-5	N.D.	0.00075	0.0019	1
10725	1-Methylnaphthalene		90-12-0	N.D.	0.00075	0.0019	1
10725	2-Methylnaphthalene		91-57-6	N.D.	0.00075	0.0019	1
10725	Naphthalene		91-20-3	N.D.	0.00075	0.0019	1
GC Vol	latiles E	CY 97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12		n.a.	N.D.	1.1	5.5	24.33
		CY 97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
-		odified					
02214	DRO C12-C24 w/Si Gel		n.a.	N.D.	3.4	7.9	1 1
02214	HRO C24-C40 w/Si Gel		n.a.	N.D.	11	34	1
Wet Ch	nemistry S	M 2540 G-	1997	8	%	8	
00111	Moisture		n.a.	11.2	0.50	0.50	1
	Moisture represents to 103 - 105 degrees Cell as-received basis.				ing at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLE026	09/16/2015 15:44	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLE026	09/09/2015 09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246A34A	09/03/2015 21:41	Jeremy C Giffin	24.33
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524538729	08/27/2015 10:00	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152480017A	09/10/2015 10:31	Nicholas R Rossi	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152480017A	09/08/2015 11:05	Denise L Trimby	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-42-7.5 Soil

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Group # 1589716 Account # 13255

LL Sample # SW 8032048

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 10:00 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

SB-42

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15251820003A	09/09/2015 09:19	William C Schwebel	. 1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-31-7.5 Soil

SB-31-7.5 Soil

Former Olympia Bulk Plant COC: R224114

LL Sample # SW 8032049

LL Group # 1589716

1117 West Bay Drive - Olympia, WA

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 10:15 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25 630 Plaza Drive

Reported: 09/28/2015 15:12 Highlands Ranch CO 80129

SB-31

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.00074	0.0019	1
10725	Benzo(a)pyrene		50-32-8	N.D.	0.00074	0.0019	1
10725	Benzo(b)fluoranthen	е	205-99-2	N.D.	0.00074	0.0019	1
10725	Benzo(k)fluoranthen	е	207-08-9	N.D.	0.00074	0.0019	1
10725	Chrysene		218-01-9	N.D.	0.00037	0.0019	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.00074	0.0019	1
10725	Indeno(1,2,3-cd)pyr	ene	193-39-5	N.D.	0.00074	0.0019	1
10725	1-Methylnaphthalene		90-12-0	N.D.	0.00074	0.0019	1
10725	2-Methylnaphthalene		91-57-6	N.D.	0.00074	0.0019	1
10725	Naphthalene		91-20-3	N.D.	0.00074	0.0019	1
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1	2	n.a.	N.D.	0.98	4.9	21.79
	croleum carbons w/Si	ECY 97-602 modified	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
02214	DRO C12-C24 w/Si Ge		n.a.	N.D.	3.4	7.9	1
02214	HRO C24-C40 w/Si Ge		n.a.	N.D.	11	34	1
Wet Ch	nemistry	SM 2540 G-	1997	%	8	8	
00111	Moisture		n.a.	11.4	0.50	0.50	1
	Moisture represents 103 - 105 degrees Cas-received basis.			sample after oven dry reported is on an	ing at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLE026	09/16/2015	16:18	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLE026	09/09/2015	09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246A34A	09/03/2015	22:16	Jeremy C Giffin	21.79
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524538729	08/27/2015	10:15	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152480017A	09/10/2015	10:52	Nicholas R Rossi	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152480017A	09/08/2015	11:05	Denise L Trimby	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-31-7.5 Soil

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032049 LL Group # 1589716

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 10:15 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

SB-31

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15251820003A	09/09/2015 09:19	William C Schwebel	. 1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-32-7.5 Soil

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032050 LL Group # 1589716 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 10:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25 630 Plaza Drive

Reported: 09/28/2015 15:12 Highlands Ranch CO 80129

SB-32

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.011	0.00079	0.0020	1
10725	Benzo(a)pyrene		50-32-8	0.015	0.00079	0.0020	1
10725	Benzo(b)fluoranthene	e	205-99-2	0.016	0.00079	0.0020	1
10725	Benzo(k)fluoranthene	e	207-08-9	0.0079	0.00079	0.0020	1
10725	Chrysene		218-01-9	0.013	0.00039	0.0020	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	0.0025	0.00079	0.0020	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	0.0091	0.00079	0.0020	1
10725	1-Methylnaphthalene		90-12-0	0.0013 J	0.00079	0.0020	1
10725	2-Methylnaphthalene		91-57-6	0.0022	0.00079	0.0020	1
10725	Naphthalene		91-20-3	0.0053	0.00079	0.0020	1
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1:	2	n.a.	N.D.	1.3	6.3	26.18
GC Pet	croleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modified					
02214	DRO C12-C24 w/Si Ge	1	n.a.	37 ј	36	84	10
02214	HRO C24-C40 w/Si Ge	1	n.a.	2,200	120	360	10
Wet Ch	nemistry	SM 2540 G-	1997	8	%	%	
00111	Moisture		n.a.	16.9	0.50	0.50	1
	Moisture represents 103 - 105 degrees Co as-received basis.				ying at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tim	ne	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLE026	09/17/2015	07:13	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLE026	09/09/2015	09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246A34A	09/03/2015	22:51	Jeremy C Giffin	26.18
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524538729	08/27/2015	10:30	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152480017A	09/14/2015	23:39	Christine E Dolman	10
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152480017A	09/08/2015	11:05	Denise L Trimby	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



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Sample Description: SB-32-7.5 Soil

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032050

LL Group # 1589716 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 10:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

SB-32

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15251820003A	09/09/2015 09:19	William C Schwebel	. 1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-22-7.5 Soil

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032051 LL Group # 1589716 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 10:45 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25 630 Plaza Drive

Reported: 09/28/2015 15:12 Highlands Ranch CO 80129

SB-22

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles SW-846	3270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D.	0.00073	0.0018	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.00073	0.0018	1
10725	Benzo(b)fluoranthene	205-99-2	0.00079 J	0.00073	0.0018	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.00073	0.0018	1
10725	Chrysene	218-01-9	N.D.	0.00037	0.0018	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D. <sup>UJ</sup>	0.00073	0.0018	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D. <mark>UJ</mark>	0.00073	0.0018	1
10725	1-Methylnaphthalene	90-12-0	N.D.	0.00073	0.0018	1
10725	2-Methylnaphthalene	91-57-6	N.D.	0.00073	0.0018	1
10725	Naphthalene	91-20-3	N.D.	0.00073	0.0018	1
GC Vol	latiles ECY 97-6	502 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	0.97	4.9	21.82
		502 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
-	carbons w/Si modified	1				
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.3	7.7	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	11	33	1
Wet Ch	nemistry SM 2540	G-1997	%	8	%	
00111	Moisture	n.a.	10.2	0.50	0.50	1
	Moisture represents the loss: 103 - 105 degrees Celsius. The as-received basis.	_	_	drying at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

	Laboratory Sample Analysis Record									
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor		
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/19/2015	03:22	Catherine E Bachman	1		
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLF026	09/09/2015	09:30	Jessica M Velez	1		
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246A34A	09/03/2015	23:27	Jeremy C Giffin	21.82		
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524538729	08/27/2015	10:45	Client Supplied	n.a.		
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152480017A	09/10/2015	11:13	Nicholas R Rossi	1		
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152480017A	09/08/2015	11:05	Denise L Trimby	1		

<sup>\*=</sup>This limit was used in the evaluation of the final result



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Sample Description: SB-22-7.5 Soil

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

Account # 13255

LL Sample # SW 8032051

LL Group # 1589716

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 10:45 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

SB-22

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15251820003A	09/09/2015 09:19	William C Schwebe	1 1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-23-A-7.5 Soil

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Group # 1589716 Account # 13255

LL Sample # SW 8032052

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 11:00 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25 630 Plaza Drive

Reported: 09/28/2015 15:12 Highlands Ranch CO 80129

SB23A

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles SV	v-846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.00074	0.0018	1
10725	Benzo(a)pyrene		50-32-8	N.D.	0.00074	0.0018	1
10725	Benzo(b)fluoranthene		205-99-2	N.D.	0.00074	0.0018	1
10725	Benzo(k)fluoranthene		207-08-9	N.D.	0.00074	0.0018	1
10725	Chrysene		218-01-9	N.D.	0.00037	0.0018	1
10725	Dibenz(a,h)anthracene		53-70-3	N.D.	0.00074	0.0018	1
10725	Indeno(1,2,3-cd)pyrene		193-39-5	N.D.	0.00074	0.0018	1
10725	1-Methylnaphthalene		90-12-0	N.D.	0.00074	0.0018	1
10725	2-Methylnaphthalene		91-57-6	N.D.	0.00074	0.0018	1
10725	Naphthalene		91-20-3	N.D.	0.00074	0.0018	1
GC Vol	latiles EG	CY 97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12		n.a.	N.D.	1.1	5.3	23.75
			NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si mo	odified					
02214	DRO C12-C24 w/Si Gel		n.a.	N.D.	3.3	7.8	1
02214	HRO C24-C40 w/Si Gel		n.a.	N.D.	11	33	1
Wet Ch	nemistry SI	4 2540 G-	1997	%	8	%	
00111	Moisture		n.a.	10.3	0.50	0.50	1
	Moisture represents the 103 - 105 degrees Cels as-received basis.		_	_	ying at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

		Laborat	ory Sa	mple Analysi	is Record			
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/19/2015	03:56	Catherine E Bachman	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLF026	09/09/2015	09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246A34A	09/04/2015	00:37	Jeremy C Giffin	23.75
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524538729	08/27/2015	11:00	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152480017A	09/10/2015	11:34	Nicholas R Rossi	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152480017A	09/08/2015	11:05	Denise L Trimby	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-23-A-7.5 Soil

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032052 LL Group # 1589716

Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Collected: 08/27/2015 11:00 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

SB23A

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15251820003A	09/09/2015 09:19	William C Schwebel	. 1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-16-7.5 Soil

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032053

LL Group # 1589716 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 15:00 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25 630 Plaza Drive

Reported: 09/28/2015 15:12 Highlands Ranch CO 80129

SB-16

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	70C SIM	mg/kg		mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	1.4		0.0080	0.020	10
10725	Benzo(a)pyrene		50-32-8	1.8		0.0080	0.020	10
10725	Benzo(b)fluoranthen	е	205-99-2	2.1		0.0080	0.020	10
10725	Benzo(k)fluoranthen	е	207-08-9	0.86		0.0080	0.020	10
10725	Chrysene		218-01-9	1.5		0.0040	0.020	10
10725	Dibenz(a,h)anthrace	ne	53-70-3	0.10		0.00080	0.0020	1
10725	Indeno(1,2,3-cd)pyr	ene	193-39-5	0.27		0.00080	0.0020	1
10725	1-Methylnaphthalene		90-12-0	0.019		0.00080	0.0020	1
10725	2-Methylnaphthalene		91-57-6	0.052		0.00080	0.0020	1
10725	Naphthalene		91-20-3	0.13		0.00080	0.0020	1
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg		mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1	2	n.a.	N.D.		0.84	4.2	17.2
	croleum carbons w/Si	ECY 97-602 modified	2 NWTPH-Dx	mg/kg		mg/kg	mg/kg	
02214	DRO C12-C24 w/Si Ge	1	n.a.	4.0	J	3.6	8.4	1
02214	HRO C24-C40 w/Si Ge	1	n.a.	24	J	12	36	1
Wet Ch	nemistry	SM 2540 G-	-1997	%		%	8	
00111	Moisture		n.a.	17.8		0.50	0.50	1
	Moisture represents 103 - 105 degrees Cas-received basis.					ing at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/19/2015	04:30	Catherine E Bachman	1
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/22/2015	12:23	Joseph M Gambler	10
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLF026	09/09/2015	09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246A34A	09/04/2015	01:12	Jeremy C Giffin	17.2
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524538729	08/27/2015	15:00	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152480017A	09/14/2015	23:18	Christine E Dolman	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-16-7.5 Soil

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032053 LL Group # 1589716 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 15:00 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

SB-16

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152480017A	09/08/2015 11:05	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15251820003A	09/09/2015 09:19	William C Schwebel	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-15-7.5 Soil

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032054 LL Group # 1589716 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 15:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25 630 Plaza Drive

Reported: 09/28/2015 15:12 Highlands Ranch CO 80129

SB-15

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles S	SW-846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.00074	0.0018	1
10725	Benzo(a)pyrene		50-32-8	N.D.	0.00074	0.0018	1
10725	Benzo(b)fluoranthene		205-99-2	N.D.	0.00074	0.0018	1
10725	Benzo(k)fluoranthene		207-08-9	N.D.	0.00074	0.0018	1
10725	Chrysene		218-01-9	N.D.	0.00037	0.0018	1
10725	Dibenz(a,h)anthracene	<u> </u>	53-70-3	N.D.	0.00074	0.0018	1
10725	Indeno(1,2,3-cd)pyrer	ie	193-39-5	N.D.	0.00074	0.0018	1
10725	1-Methylnaphthalene		90-12-0	N.D.	0.00074	0.0018	1
10725	2-Methylnaphthalene		91-57-6	N.D.	0.00074	0.0018	1
10725	Naphthalene		91-20-3	N.D.	0.00074	0.0018	1
GC Vol	latiles I	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12		n.a.	N.D.	0.94	4.7	21.23
GC Pet		ECY 97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si r	nodified					
02214	DRO C12-C24 w/Si Gel		n.a.	N.D.	3.3	7.7	1 1
02214	HRO C24-C40 w/Si Gel		n.a.	N.D.	11	33	1
Wet Ch	nemistry S	SM 2540 G-	1997	%	%	%	
00111	Moisture		n.a.	9.5	0.50	0.50	1
	Moisture represents t 103 - 105 degrees Cel as-received basis.		_	sample after oven dryi reported is on an	ng at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

	Laboratory Sample Analysis Record									
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor		
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/19/2015	05:03	Catherine E Bachman	1		
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLF026	09/09/2015	09:30	Jessica M Velez	1		
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246A34A	09/04/2015	01:48	Jeremy C Giffin	21.23		
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524538729	08/27/2015	15:30	Client Supplied	n.a.		
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152480017A	09/10/2015	12:16	Nicholas R Rossi	1		
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152480017A	09/08/2015	11:05	Denise L Trimby	1		

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-15-7.5 Soil

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032054

LL Group # 1589716 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 15:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

SB-15

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15251820003A	09/09/2015 09:19	William C Schwebel	. 1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-63-7.5 Soil LL Sample # SW 8032055

Former Olympia Bulk Plant COC: R224114 LL Group # 1589716 1117 West Bay Drive - Olympia, WA Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 16:00 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25 630 Plaza Drive

Reported: 09/28/2015 15:12 Highlands Ranch CO 80129

SB-63

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 82	70C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.00079	0.0020	1
10725	Benzo(a)pyrene		50-32-8	N.D.	0.00079	0.0020	1
10725	Benzo(b)fluoranthene	e	205-99-2	0.0013 J	0.00079	0.0020	1
10725	Benzo(k)fluoranthene	9	207-08-9	N.D.	0.00079	0.0020	1
10725	Chrysene		218-01-9	0.0011 J	0.00040	0.0020	1
10725	Dibenz(a,h)anthracen	ne	53-70-3	N.D.	0.00079	0.0020	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.	0.00079	0.0020	1
10725	1-Methylnaphthalene		90-12-0	N.D.	0.00079	0.0020	1
10725	2-Methylnaphthalene		91-57-6	N.D.	0.00079	0.0020	1
10725	Naphthalene		91-20-3	0.00088 J	0.00079	0.0020	1
GC Vol	latiles	ECY 97-60	2 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C12 cting limits were rai		n.a. sample foaming.	N.D.	13	63	263.59
GC Pet	roleum	ECY 97-60	2 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	arbons w/Si	modified					
02214	DRO C12-C24 w/Si Ge	L	n.a.	N.D.	3.6	8.3	1
02214	HRO C24-C40 w/Si Gel	L	n.a.	N.D.	12	36	1
Wet Ch	nemistry	SM 2540 G	;-1997	%	%	8	
00111	Moisture		n.a.	16.2	0.50	0.50	1
	Moisture represents 103 - 105 degrees Co as-received basis.		_	sample after oven dry: reported is on an	ing at		

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

			_	_				
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis	_	Analyst	Dilution Factor
NO.					Date and IIII	e		Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/22/2015	12:56	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLF026	09/09/2015	09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246A34A	09/04/2015	04:44	Jeremy C Giffin	263.59
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524538729	08/27/2015	16:00	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152480017A	09/10/2015	12:37	Nicholas R Rossi	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152480017A	09/08/2015	11:05	Denise L Trimby	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-63-7.5 Soil

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032055 LL Group # 1589716

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 16:00 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

SB-63

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15251820003A	09/09/2015 09:19	William C Schwebe	1 1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-54-7.5 Soil

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032056

LL Group # 1589716 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 16:15 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25 630 Plaza Drive

Reported: 09/28/2015 15:12 Highlands Ranch CO 80129

SB-54

CAT				Dry	Dry Method	Dry Limit of	Dilution
No.	Analysis Name		CAS Number	Result	Detection Limit*	Quantitation	Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.00076	0.0019	1
10725	Benzo(a)pyrene		50-32-8	N.D.	0.00076	0.0019	1
10725	Benzo(b)fluoranthen	9	205-99-2	N.D.	0.00076	0.0019	1
10725	Benzo(k)fluoranthen	2	207-08-9	N.D.	0.00076	0.0019	1
10725	Chrysene		218-01-9	N.D.	0.00038	0.0019	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.00076	0.0019	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.	0.00076	0.0019	1
10725	1-Methylnaphthalene		90-12-0	0.00092 J	0.00076	0.0019	1
10725	2-Methylnaphthalene		91-57-6	0.0021	0.00076	0.0019	1
10725	Naphthalene		91-20-3	0.0018 J	0.00076	0.0019	1
acce	recovery for the samp ptance limits as note acted and the data re	d on the (	, ,	~			
GC Vol	latiles	ECY 97-	602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1	2	n.a.	N.D.	1.0	5.1	22.51
GC Pet	roleum	ECY 97-	602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modifie	d				
02214	DRO C12-C24 w/Si Ge	L	n.a.	N.D.	3.4	7.9	1
02214	HRO C24-C40 w/Si Ge	L	n.a.	N.D.	11	34	1
Wet Ch	nemistry	SM 2540	G-1997	%	%	%	
00111	Moisture		n.a.	12.5	0.50	0.50	1
	Moisture represents 103 - 105 degrees Coas-received basis.						

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	e	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/22/2015 1	13:29	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLF026	09/09/2015 0	09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246A34A	09/04/2015 0	04:09	Jeremy C Giffin	22.51
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524538729	08/27/2015 1	16:15	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152480017A	09/10/2015 1	12:58	Nicholas R Rossi	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-54-7.5 Soil

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032056 LL Group # 1589716 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 16:15 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

SB-54

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152480017A	09/08/2015 11:05	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15251820003A	09/09/2015 09:19	William C Schwebel	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-43-A-7.5 Soil

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032057

LL Group # 1589716 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 16:45 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25 630 Plaza Drive

Reported: 09/28/2015 15:12 Highlands Ranch CO 80129

SB43A

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.0046	0.00078	0.0020	1
10725	Benzo(a)pyrene		50-32-8	0.0057	0.00078	0.0020	1
10725	Benzo(b)fluoranthene	e	205-99-2	0.0092	0.00078	0.0020	1
10725	Benzo(k)fluoranthene	e	207-08-9	0.0031	0.00078	0.0020	1
10725	Chrysene		218-01-9	0.0057	0.00039	0.0020	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.00078	0.0020	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	0.0016 J	0.00078	0.0020	1
10725	1-Methylnaphthalene		90-12-0	0.0023	0.00078	0.0020	1
10725	2-Methylnaphthalene		91-57-6	0.0034	0.00078	0.0020	1
10725	Naphthalene		91-20-3	0.010	0.00078	0.0020	1
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1:	2	n.a.	N.D.	1.3	6.4	27.49
GC Pet	croleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modified					
02214	DRO C12-C24 w/Si Ge	1	n.a.	100	3.5	8.1	1
02214	HRO C24-C40 w/Si Ge	1	n.a.	520	12	35	1
Wet Ch	nemistry	SM 2540 G-	1997	%	%	%	
00111	Moisture		n.a.	14.6	0.50	0.50	1
	Moisture represents 103 - 105 degrees Co as-received basis.			sample after oven dryi reported is on an	ng at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/22/2015	14:02	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLF026	09/09/2015	09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246A34A	09/04/2015	02:23	Jeremy C Giffin	27.49
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524538729	08/27/2015	16:45	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152480018A	09/10/2015	08:26	Christine E Dolman	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152480018A	09/08/2015	11:05	Denise L Trimby	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-43-A-7.5 Soil

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Group # 1589716 Account # 13255

LL Sample # SW 8032057

Project Name: Former Olympia Bulk Plant

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Collected: 08/27/2015 16:45 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

SB43A

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15251820003A	09/09/2015 09:19	William C Schwebel	. 1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-55-9.5 Soil

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Group # 1589716 Account # 13255

LL Sample # SW 8032058

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 17:15 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25 630 Plaza Drive

Reported: 09/28/2015 15:12 Highlands Ranch CO 80129

SB-55

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	4.7	0.013	0.033	10
10725	Benzo(a)pyrene		50-32-8	4.7	0.013	0.033	10
10725	Benzo(b)fluoranthene	2	205-99-2	5.5	0.013	0.033	10
10725	Benzo(k)fluoranthene	2	207-08-9	2.1	0.013	0.033	10
10725	Chrysene		218-01-9	5.0	0.0066	0.033	10
10725	Dibenz(a,h)anthracer	ne	53-70-3	0.59	0.013	0.033	10
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	2.4	0.013	0.033	10
10725	1-Methylnaphthalene		90-12-0	0.72	0.013	0.033	10
10725	2-Methylnaphthalene		91-57-6	0.90	0.013	0.033	10
10725	Naphthalene		91-20-3	2.3	0.013	0.033	10
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C12 cting limits were rai		n.a. mple foaming.	N.D.	27	140	341.72
GC Pet	roleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	arbons w/Si	modified					
02214	DRO C12-C24 w/Si Gel	L	n.a.	57	5.9	14	1
02214	HRO C24-C40 w/Si Gel	L	n.a.	260	20	59	1
Wet Ch	nemistry	SM 2540 G-	1997	%	%	%	
00111	Moisture		n.a.	50.0	0.50	0.50	1
	Moisture represents 103 - 105 degrees Coas-received basis.		_	sample after oven dryi reported is on an	ng at		

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

			_	_				
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	<b>-</b>	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026		09:23	Joseph M Gambler	10
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLF026	,	09:23	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246A34A	09/04/2015 (	05:20	Jeremy C Giffin	341.72
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524538729	08/27/2015	17:15	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152480018A	09/10/2015 (	08:03	Christine E Dolman	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152480018A	09/08/2015	11:05	Denise L Trimby	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-55-9.5 Soil

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032058 LL Group # 1589716 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 17:15 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

SB-55

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15251820003A	09/09/2015 09:19	William C Schwebel	L 1



LL Sample # SW 8032059

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-1A-12.5 Soil

Former Olympia Bulk Plant COC: R224114 LL Group # 1589716 1117 West Bay Drive - Olympia, WA Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 10:20 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25 630 Plaza Drive

Reported: 09/28/2015 15:12 Highlands Ranch CO 80129

#### S1A12

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles S	W-846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.00080	0.0020	1
10725	Benzo(a)pyrene		50-32-8	N.D.	0.00080	0.0020	1
10725	Benzo(b)fluoranthene		205-99-2	N.D.	0.00080	0.0020	1
10725	Benzo(k)fluoranthene		207-08-9	N.D.	0.00080	0.0020	1
10725	Chrysene		218-01-9	N.D.	0.00040	0.0020	1
10725	Dibenz(a,h)anthracene		53-70-3	N.D.	0.00080	0.0020	1
10725	Indeno(1,2,3-cd)pyrene	2	193-39-5	N.D.	0.00080	0.0020	1
10725	1-Methylnaphthalene		90-12-0	N.D.	0.00080	0.0020	1
10725	2-Methylnaphthalene		91-57-6	N.D.	0.00080	0.0020	1
10725	Naphthalene		91-20-3	N.D.	0.00080	0.0020	1
GC Vol	latiles E	CY 97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12		n.a.	N.D.	1.2	6.1	25.06
			NWTPH-Dx	mg/kg	mg/kg	mg/kg	
-		odified					
02214	DRO C12-C24 w/Si Gel		n.a.	N.D.	3.6	8.4	1
02214	HRO C24-C40 w/Si Gel		n.a.	N.D.	12	36	1
Wet Ch	nemistry S	M 2540 G-	1997	8	%	%	
00111	Moisture		n.a.	17.7	0.50	0.50	1
	Moisture represents the 103 - 105 degrees Cels as-received basis.				ing at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLE026	09/16/2015	06:55	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLE026	09/09/2015	09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246A34A	09/03/2015	19:19	Jeremy C Giffin	25.06
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524538729	08/28/2015	10:20	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152480018A	09/10/2015	04:12	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152480018A	09/08/2015	11:05	Denise L Trimby	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-1A-12.5 Soil

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032059

LL Group # 1589716 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Collected: 08/28/2015 10:20 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

S1A12

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15251820003B	09/09/2015 09:19	William C Schwebel	. 1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-1A-12.5 MS Soil

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032060 LL Group # 1589716

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 10:20 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25 630 Plaza Drive

Reported: 09/28/2015 15:12 Highlands Ranch CO 80129

#### S1A12

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8270	C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.046	0.00081	0.0020	1
10725	Benzo(a)pyrene		50-32-8	0.043	0.00081	0.0020	1
10725	Benzo(b)fluoranthen	e	205-99-2	0.052	0.00081	0.0020	1
10725	Benzo(k)fluoranthen	e	207-08-9	0.041	0.00081	0.0020	1
10725	Chrysene		218-01-9	0.045	0.00040	0.0020	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	0.044	0.00081	0.0020	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	0.042	0.00081	0.0020	1 1
10725	1-Methylnaphthalene		90-12-0	0.040	0.00081	0.0020	1
10725	2-Methylnaphthalene		91-57-6	0.041	0.00081	0.0020	1
10725	Naphthalene		91-20-3	0.041	0.00081	0.0020	1
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1	2	n.a.	9.7	1.1	5.7	23.35
	croleum carbons w/Si	ECY 97-602 modified	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
02214	DRO C12-C24 w/Si Ge			1.40	3.6	0 4	1
		=	n.a.	140		8.4 36	1 1
02214	HRO C24-C40 w/Si Ge	L	n.a.	N.D.	12	30	1
Wet Ch	nemistry	SM 2540 G-1	L997	%	%	%	
00118	Moisture		n.a.	17.7	0.50	0.50	1

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLE026	09/16/2015 07:	28 Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLE026	09/09/2015 09:	30 Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246A34A	09/03/2015 19:	55 Jeremy C Giffin	23.35
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524538729	08/28/2015 10:	20 Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152480018A	09/10/2015 04:	32 Heather E William	s 1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152480018A	09/08/2015 11:	)5 Denise L Trimby	1
00118	Moisture	SM 2540 G-1997	1	15251820003B	09/09/2015 09:	19 William C Schwebe	1 1



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Sample Description: SB-1A-12.5 MSD Soil

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032061 LL Group # 1589716

Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Collected: 08/28/2015 10:20 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

S1A12

CAT No.	Analysis Name			CAS Number	Dry Result	Dry Method Detection Limit	Dry Limit of c* Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-8	346 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene			56-55-3	0.047	0.00080	0.0020	1
10725	Benzo(a)pyrene			50-32-8	0.045	0.00080	0.0020	1
10725	Benzo(b)fluoranthen	е		205-99-2	0.054	0.00080	0.0020	1
10725	Benzo(k)fluoranthen	е		207-08-9	0.044	0.00080	0.0020	1
10725	Chrysene			218-01-9	0.047	0.00040	0.0020	1
10725	Dibenz(a,h)anthrace	ne		53-70-3	0.046	0.00080	0.0020	1
10725	Indeno(1,2,3-cd)pyr	ene		193-39-5	0.045	0.00080	0.0020	1
10725	1-Methylnaphthalene			90-12-0	0.043	0.00080	0.0020	1
10725	2-Methylnaphthalene			91-57-6	0.044	0.00080	0.0020	1
10725	Naphthalene			91-20-3	0.043	0.00080	0.0020	1
GC Vol	latiles	ECY	97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1	2		n.a.	8.7	1.1	5.6	22.85
GC Pet	croleum	ECY	97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydro	carbons w/Si	modi	ified					
02214	DRO C12-C24 w/Si Ge	1		n.a.	150	3.6	8.5	1
02214	HRO C24-C40 w/Si Ge			n.a.	N.D.	12	36	1 1
Wet Ch	nemistry	SM 2	2540 G-	1997	%	%	%	
00118	Moisture			n.a.	17.7	0.50	0.50	1
00121	Moisture Duplicate			n.a.	16.9	0.50	0.50	1
	The duplicate moist moisture test. For determination is the	compa	arability	purposes, th	e initial mo	isture		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLE026	09/16/2015 08:01	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLE026	09/09/2015 09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246A34A	09/03/2015 20:30	Jeremy C Giffin	22.85
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524538729	08/28/2015 10:20	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152480018A	09/10/2015 04:53	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152480018A	09/08/2015 11:05	Denise L Trimby	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



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Sample Description: SB-1A-12.5 MSD Soil

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032061

LL Group # 1589716 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Collected: 08/28/2015 10:20 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

S1A12

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00118	Moisture	SM 2540 G-1997	1	15251820003B	09/09/2015 09:19	William C Schwebel	. 1
00121	Moisture Duplicate	SM 2540 G-1997	1	15251820003B	09/09/2015 09:19	William C Schwebel	. 1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-2-9.5 Soil

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032062

LL Group # 1589716 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 10:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25 630 Plaza Drive

Reported: 09/28/2015 15:12 Highlands Ranch CO 80129

S295-

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 82	70C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.0079	0.00076	0.0019	1
10725	Benzo(a)pyrene		50-32-8	0.0082	0.00076	0.0019	1
10725	Benzo(b)fluoranthene	2	205-99-2	0.012	0.00076	0.0019	1
10725	Benzo(k)fluoranthene	9	207-08-9	0.0040	0.00076	0.0019	1
10725	Chrysene		218-01-9	0.0086	0.00038	0.0019	1
10725	Dibenz(a,h)anthracen	ne	53-70-3	N.D.	0.00076	0.0019	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	0.0017 J	0.00076	0.0019	1
10725	1-Methylnaphthalene		90-12-0	0.00076 J	0.00076	0.0019	1
10725	2-Methylnaphthalene		91-57-6	0.0019 J	0.00076	0.0019	1
10725	Naphthalene		91-20-3	0.0020	0.00076	0.0019	1
GC Vol	latiles	ECY 97-60	2 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C12 rting limits were rai	="	n.a. ample foaming.	N.D.	10	52	225.77
GC Pet	roleum	ECY 97-60	2 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	arbons w/Si	modified					
02214	DRO C12-C24 w/Si Gel	L	n.a.	N.D.	3.4	7.9	1
02214	HRO C24-C40 w/Si Ge	L	n.a.	N.D.	11	34	1
Wet Ch	nemistry	SM 2540 G	-1997	%	%	8	
00111	Moisture		n.a.	12.4	0.50	0.50	1
	Moisture represents 103 - 105 degrees Ce as-received basis.		_	sample after oven dry reported is on an	ing at		

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/22/2015	15:09	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLF026	09/09/2015	09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246B34A	09/05/2015	00:37	Jeremy C Giffin	225.77
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524538729	08/28/2015	10:30	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152480018A	09/10/2015	07:42	Christine E Dolman	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152480018A	09/08/2015	11:05	Denise L Trimby	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



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Sample Description: SB-2-9.5 Soil

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032062

LL Group # 1589716 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 10:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

S295-

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15251820003B	09/09/2015 09:19	William C Schwebe	1 1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-5A-12.5 Soil

Former Olympia Bulk Plant COC: R224114 1117 West Bay Drive - Olympia, WA

LL Group # 1589716 Account # 13255

LL Sample # SW 8032063

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 10:45 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25 630 Plaza Drive

Reported: 09/28/2015 15:12 Highlands Ranch CO 80129

SB-5A

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 82	70C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.0010	0.0025	1
10725	Benzo(a)pyrene		50-32-8	N.D.	0.0010	0.0025	1
10725	Benzo(b)fluoranthene	e	205-99-2	N.D.	0.0010	0.0025	1
10725	Benzo(k)fluoranthene	e	207-08-9	N.D.	0.0010	0.0025	1
10725	Chrysene		218-01-9	N.D.	0.00051	0.0025	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.0010	0.0025	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.	0.0010	0.0025	1
10725	1-Methylnaphthalene		90-12-0	N.D.	0.0010	0.0025	1
10725	2-Methylnaphthalene		91-57-6	N.D.	0.0010	0.0025	1
10725	Naphthalene		91-20-3	N.D.	0.0010	0.0025	1
GC Vol	latiles	ECY 97-60	2 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1:	2	n.a.	N.D.	1.0	5.2	22.36
GC Pet	roleum	ECY 97-60	2 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modified					
02214	DRO C12-C24 w/Si Ge	L	n.a.	N.D.	3.4	7.9	1
02214	HRO C24-C40 w/Si Ge	L	n.a.	N.D.	11	34	1
Wet Ch	nemistry	SM 2540 G	-1997	%	8	%	
00111	Moisture		n.a.	13.2	0.50	0.50	1
	Moisture represents 103 - 105 degrees Co as-received basis.		_	-			

### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/22/2015 15	:42	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLF026	09/09/2015 09	:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246B34A	09/04/2015 20	:30	Jeremy C Giffin	22.36
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524538729	08/28/2015 10	:45	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152480018A	09/10/2015 05	:15	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152480018A	09/08/2015 11	:05	Denise L Trimby	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-5A-12.5 Soil

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032063

LL Group # 1589716 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 10:45 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

SB-5A

#### Laboratory Sample Analysis Record

CAT Analysis Name Method Trial Batch# Analysis Analysis Dilution No. Trial Batch# Batch# Analysis Analysis Dilution Date and Time Factor 00111 Moisture SM 2540 G-1997 1 15251820003B 09/09/2015 09:19 William C Schwebel 1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-4A-7.5 Soil

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032064 LL Group # 1589716

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 11:10 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25 630 Plaza Drive

Reported: 09/28/2015 15:12 Highlands Ranch CO 80129

SB-4A

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8	270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.00075	0.0019	1
10725	Benzo(a)pyrene		50-32-8	N.D.	0.00075	0.0019	1
10725	Benzo(b)fluoranthene		205-99-2	0.0012 J	0.00075	0.0019	1
10725	Benzo(k)fluoranthene		207-08-9	N.D.	0.00075	0.0019	1
10725	Chrysene		218-01-9	0.00073 J	0.00037	0.0019	1
10725	Dibenz(a,h)anthracen	e	53-70-3	N.D.	0.00075	0.0019	1
10725	Indeno(1,2,3-cd)pyre	ne	193-39-5	N.D.	0.00075	0.0019	1
10725	1-Methylnaphthalene		90-12-0	N.D.	0.00075	0.0019	1
10725	2-Methylnaphthalene		91-57-6	N.D.	0.00075	0.0019	1
10725	Naphthalene		91-20-3	N.D.	0.00075	0.0019	1
GC Vol	latiles	ECY 97-6	02 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C12 rting limits were rais		n.a. sample foaming.	N.D.	11	54	237.54
		ECY 97-6 modified	02 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
02214	DRO C12-C24 w/Si Gel		n.a.	N.D.	3.4	7.9	1
02214	HRO C24-C40 w/Si Gel		n.a.	N.D.	11	34	1
Wet Ch	nemistry	SM 2540	G-1997	%	%	%	
00111	Moisture		n.a.	11.3	0.50	0.50	1
	Moisture represents 103 - 105 degrees Ce as-received basis.		_	-			

### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tim	ne	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/22/2015	16:15	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLF026	09/09/2015	09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246B34A	09/05/2015	01:12	Jeremy C Giffin	237.54
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524538729	08/28/2015	11:10	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152480018A	09/10/2015	05:35	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152480018A	09/08/2015	11:05	Denise L Trimby	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-4A-7.5 Soil

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032064

LL Group # 1589716 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 11:10 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

SB-4A

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15251820003B	09/09/2015 09:19	William C Schwebel	. 1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-9-7.5 Soil

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Group # 1589716 Account # 13255

LL Sample # SW 8032065

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 11:20 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25 630 Plaza Drive

Reported: 09/28/2015 15:12 Highlands Ranch CO 80129

SB-09

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 82	70C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.0043	0.00085	0.0021	1
10725	Benzo(a)pyrene		50-32-8	0.0053	0.00085	0.0021	1
10725	Benzo(b)fluoranthen	e	205-99-2	0.012	0.00085	0.0021	1
10725	Benzo(k)fluoranthen	e	207-08-9	0.0034	0.00085	0.0021	1
10725	Chrysene		218-01-9	0.0070	0.00043	0.0021	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.00085	0.0021	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	0.0016 J	0.00085	0.0021	1
10725	1-Methylnaphthalene		90-12-0	0.0013 J	0.00085	0.0021	1
10725	2-Methylnaphthalene		91-57-6	0.0028	0.00085	0.0021	1
10725	Naphthalene		91-20-3	0.0040	0.00085	0.0021	1
GC Vol	latiles	ECY 97-60	2 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1:	2	n.a.	N.D.	13	66	255.37
Repor	rting limits were rai	sed due to s	sample foaming.				
GC Pet	roleum	ECY 97-60	2 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modified					
02214	DRO C12-C24 w/Si Ge	1	n.a.	N.D.	3.8	8.9	1
02214	HRO C24-C40 w/Si Ge	1	n.a.	N.D.	13	38	1
Wet Ch	nemistry	SM 2540 G	-1997	%	%	%	
00111	Moisture		n.a.	22.1	0.50	0.50	1
00111		the loss in		sample after oven dry		0.30	_
	103 - 105 degrees Coas-received basis.				ing at		

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

			_	_				
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tir	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026		16:48	Joseph M Gambler	1
10/25	SIM SVOA (MICIOWAVE)	SW-040 02/0C SIM	1	13231311020	09/22/2015	10.40	JOSEPH M GAMBLEL	Τ.
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLF026	09/09/2015	09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246B34A	09/05/2015	01:47	Jeremy C Giffin	255.37
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524538729	08/28/2015	11:20	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152480018A	09/10/2015	07:00	Christine E Dolman	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152480018A	09/08/2015	11:05	Denise L Trimby	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



Account

LL Sample # SW 8032065

# 13255

LL Group # 1589716

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-9-7.5 Soil

Collected: 08/28/2015 11:20

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

Project Name: Former Olympia Bulk Plant

Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

SB-09

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15251820003B	09/09/2015 09:19	William C Schwebe	1 1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-10-7.5 Soil

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032066

LL Group # 1589716 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 11:55 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25 630 Plaza Drive

Reported: 09/28/2015 15:12 Highlands Ranch CO 80129

SB-10

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8	3270C SIM	mg/kg		mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.15		0.00079	0.0020	1
10725	Benzo(a)pyrene		50-32-8	0.16		0.00079	0.0020	1
10725	Benzo(b)fluoranthene	2	205-99-2	0.21		0.00079	0.0020	1
10725	Benzo(k)fluoranthene	2	207-08-9	0.095		0.00079	0.0020	1
10725	Chrysene		218-01-9	0.16		0.00039	0.0020	1
10725	Dibenz(a,h)anthracer	ne	53-70-3	0.011		0.00079	0.0020	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	0.032		0.00079	0.0020	1
10725	1-Methylnaphthalene		90-12-0	0.011		0.00079	0.0020	1
10725	2-Methylnaphthalene		91-57-6	0.019		0.00079	0.0020	1
10725	Naphthalene		91-20-3	0.043		0.00079	0.0020	1
GC Vol	latiles	ECY 97-6	02 NWTPH-Gx	mg/kg		mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C12 rting limits were rai		n.a. sample foaming.	N.D.		11	55	229.36
GC Pet	roleum	ECY 97-6	02 NWTPH-Dx	mg/kg		mg/kg	mg/kg	
Hydrod	carbons w/Si	modified	l					
02214	DRO C12-C24 w/Si Gel	L	n.a.	N.D.		3.6	8.3	1
02214	HRO C24-C40 w/Si Gel	L	n.a.	21	J	12	36	1
Wet Ch	nemistry	SM 2540	G-1997	%		%	8	
00111	Moisture		n.a.	16.0		0.50	0.50	1
	Moisture represents 103 - 105 degrees Co as-received basis.		_	_	_	ng at		

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

			_	_				
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026		7:22	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLF026	09/09/2015 0	9:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246B34A	09/05/2015 0	2:23	Jeremy C Giffin	229.36
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524538729	08/28/2015 1	1:55	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152480018A	09/10/2015 0	7:21	Christine E Dolman	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152480018A	09/08/2015 1	1:05	Denise L Trimby	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-10-7.5 Soil

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032066

LL Group # 1589716 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 11:55 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

SB-10

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15251820003B	09/09/2015 09:19	William C Schwebe	1 1



LL Sample # SW 8032067

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-58-7.5 Soil

Former Olympia Bulk Plant COC: R224114 LL Group # 1589716 1117 West Bay Drive - Olympia, WA Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 13:15 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25 630 Plaza Drive

Reported: 09/28/2015 15:12 Highlands Ranch CO 80129

SB-58

CAT No.	Analysis Name	CAS Numbe	Dry er Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles SW-8	346 8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D.	0.00085	0.0021	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.00085	0.0021	1
10725	Benzo(b)fluoranthene	205-99-2	N.D.	0.00085	0.0021	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.00085	0.0021	1
10725	Chrysene	218-01-9	N.D.	0.00043	0.0021	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00085	0.0021	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00085	0.0021	1
10725	1-Methylnaphthalene	90-12-0	N.D.	0.00085	0.0021	1
10725	2-Methylnaphthalene	91-57-6	N.D.	0.00085	0.0021	1
10725	Naphthalene	91-20-3	N.D.	0.00085	0.0021	1
GC Vol	latiles ECY	97-602 NWTPH-	Gx mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	57	4.9	25	95.3
GC Pet	croleum ECY	97-602 NWTPH-	Dx mg/kg	mg/kg	mg/kg	
Hydrod	arbons w/Si modi	.fied				
02214	DRO C12-C24 w/Si Gel	n.a.	30	3.8	8.9	1
02214	HRO C24-C40 w/Si Gel	n.a.	29 Ј	13	38	1
Wet Ch	nemistry SM 2	2540 G-1997	%	%	%	
00111	Moisture	n.a.	22.6	0.50	0.50	1
	Moisture represents the 1 103 - 105 degrees Celsius as-received basis.		_			

### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/23/2015	09:56	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLF026	09/09/2015	09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246B34A	09/05/2015	03:33	Jeremy C Giffin	95.3
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524538729	08/28/2015	13:15	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152480018A	09/10/2015	05:57	Christine E Dolman	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152480018A	09/08/2015	11:05	Denise L Trimby	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-58-7.5 Soil

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032067 LL Group # 1589716

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 13:15 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

SB-58

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15251820003B	09/09/2015 09:19	William C Schwebel	1 1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: DUP-5 Soil LL Sample # SW 8032068

Former Olympia Bulk Plant COC: R224114 LL Group # 1589716 1117 West Bay Drive - Olympia, WA Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25 630 Plaza Drive

Reported: 09/28/2015 15:12 Highlands Ranch CO 80129

DUP-5

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.00077	0.0019	1
10725	Benzo(a)pyrene		50-32-8	N.D.	0.00077	0.0019	1
10725	Benzo(b)fluoranthene	e	205-99-2	N.D.	0.00077	0.0019	1
10725	Benzo(k)fluoranthene	e	207-08-9	N.D.	0.00077	0.0019	1
10725	Chrysene		218-01-9	N.D.	0.00039	0.0019	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.00077	0.0019	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.	0.00077	0.0019	1
10725	1-Methylnaphthalene		90-12-0	0.011	0.00077	0.0019	1
10725	2-Methylnaphthalene		91-57-6	0.012	0.00077	0.0019	1
10725	Naphthalene		91-20-3	0.0057	0.00077	0.0019	1
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1:	2	n.a.	N.D.	1.0	5.1	21.64
GC Pet	croleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modified					
02214	DRO C12-C24 w/Si Ge	1	n.a.	N.D.	3.5	8.1	1
02214	HRO C24-C40 w/Si Ge	1	n.a.	N.D.	12	35	1
Wet Ch	nemistry	SM 2540 G-	1997	8	8	%	
00111	Moisture		n.a.	14.7	0.50	0.50	1
	Moisture represents 103 - 105 degrees Co as-received basis.			sample after oven dryi reported is on an	ng at		

### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tir	ne	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/23/2015	10:29	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLF026	09/09/2015	09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246B34A	09/04/2015	21:05	Jeremy C Giffin	21.64
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524538729	08/28/2015	00:00	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152480018A	09/10/2015	06:39	Christine E Dolman	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152480018A	09/08/2015	11:05	Denise L Trimby	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: DUP-5 Soil

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Group # 1589716 Account # 13255

LL Sample # SW 8032068

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

DUP-5

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15251820003B	09/09/2015 09:19	William C Schwebel	. 1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-41-7.5 Soil

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Group # 1589716 Account # 13255

LL Sample # SW 8032069

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 07:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25 630 Plaza Drive

Reported: 09/28/2015 15:12 Highlands Ranch CO 80129

SB-41

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg		mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.		0.0030	0.0074	1
10725	Benzo(a)pyrene		50-32-8	N.D.		0.0030	0.0074	1
10725	Benzo(b)fluoranthen	e	205-99-2	0.0039	J	0.0030	0.0074	1
10725	Benzo(k)fluoranthen	e	207-08-9	0.0067	J	0.0030	0.0074	1
10725	Chrysene		218-01-9	0.0030	J	0.0015	0.0074	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.		0.0030	0.0074	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.		0.0030	0.0074	1
10725	1-Methylnaphthalene		90-12-0	4.3		0.030	0.074	10
10725	2-Methylnaphthalene		91-57-6	5.5		0.030	0.074	10
10725	Naphthalene		91-20-3	0.76		0.0030	0.0074	1
GC Vol	latiles	ECY 97-	602 NWTPH-Gx	mg/kg		mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1:	2	n.a.	81	J	33	160	181.39
Repo	rting limits were rai	sed due t	o sample foaming.					
GC Pet	roleum	ECY 97-	602 NWTPH-Dx	mg/kg		mg/kg	mg/kg	
Hydrod	carbons w/Si	modifie	d					
02214	DRO C12-C24 w/Si Ge	1	n.a.	250		13	31	1
02214	HRO C24-C40 w/Si Ge	1	n.a.	750		45	130	1
Wet Ch	nemistry	SM 2540	G-1997	%		8	%	
00111	Moisture		n.a.	77.8		0.50	0.50	1
	Moisture represents 103 - 105 degrees Coas-received basis.		_	_		drying at		

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

			_	= =				
CAT	Analysis Name	Method	Trial#	Batch#	Analysis		Analyst	Dilution
No.					Date and Ti	me		Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/23/2015	11:02	Joseph M Gambler	1
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/24/2015	06:50	Joseph M Gambler	10
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLF026	09/09/2015	09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15246B34A	09/05/2015	04:08	Jeremy C Giffin	181.39
		NWTPH-Gx						
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201524538726	09/02/2015	20:22	Mitchell R Washel	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152520029A	09/12/2015	15:42	Heather E Williams	1
		NWTPH-Dx modified						
07024	DRO Alternate Soil	ECY 97-602	1	152520029A	09/10/2015	09:00	Olivia Arosemena	1
	Extraction	NWTPH-Dx 06/97						



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-41-7.5 Soil

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Group # 1589716 Account # 13255

LL Sample # SW 8032069

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 07:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

SB-41

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15251820004A	09/09/2015 10:04	William C Schwebe	1 1



LL Sample # SW 8032070

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-52-7.5 Soil

Former Olympia Bulk Plant COC: R224114 LL Group # 1589716 1117 West Bay Drive - Olympia, WA Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 08:00 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25 630 Plaza Drive

Reported: 09/28/2015 15:12 Highlands Ranch CO 80129

SB-52

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8	3270C SIM	mg/kg		mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.0048	J	0.0026	0.0064	1
10725	Benzo(a)pyrene		50-32-8	0.0034	J	0.0026	0.0064	1
10725	Benzo(b)fluoranthene	2	205-99-2	0.0088		0.0026	0.0064	1
10725	Benzo(k)fluoranthene	2	207-08-9	0.0049	J	0.0026	0.0064	1
10725	Chrysene		218-01-9	0.0090		0.0013	0.0064	1
10725	Dibenz(a,h)anthracen	ie	53-70-3	N.D.		0.0026	0.0064	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.		0.0026	0.0064	1
10725	1-Methylnaphthalene		90-12-0	6.6		0.026	0.064	10
10725	2-Methylnaphthalene		91-57-6	8.9		0.026	0.064	10
10725	Naphthalene		91-20-3	1.3		0.0026	0.0064	1
GC Vol	latiles	ECY 97-6	02 NWTPH-Gx	mg/kg		mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C12 cting limits were rai	=	n.a. sample foaming.	110	J	27	140	176.54
GC Pet	roleum		02 NWTPH-Dx	mg/kg		mg/kg	mg/kg	
Hydrod	arbons w/Si	modified	L					
02214	DRO C12-C24 w/Si Gel	L	n.a.	640		12	27	1
02214	HRO C24-C40 w/Si Gel	L	n.a.	1,100		39	120	1
Wet Ch	nemistry	SM 2540	G-1997	%		%	%	
00111	Moisture		n.a.	74.3		0.50	0.50	1
	Moisture represents 103 - 105 degrees Coas-received basis.		_	-	_	ing at		

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

			_	_				
CAT	Analysis Name	Method	Trial#	Batch#	Analysis		Analyst	Dilution
No.					Date and Ti	me		Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/23/2015	11:36	Joseph M Gambler	1
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/24/2015	07:22	Joseph M Gambler	10
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLF026	09/09/2015	09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15246B34A	09/05/2015	04:44	Jeremy C Giffin	176.54
		NWTPH-Gx						
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201524538726	09/02/2015	20:25	Mitchell R Washel	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152520029A	09/12/2015	16:03	Heather E Williams	1
		NWTPH-Dx modified						
07024	DRO Alternate Soil	ECY 97-602	1	152520029A	09/10/2015	09:00	Olivia Arosemena	1
	Extraction	NWTPH-Dx 06/97						

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-52-7.5 Soil

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032070

LL Group # 1589716 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 08:00 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

SB-52

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15251820004A	09/09/2015 10:04	William C Schwebel	. 1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-30-7.5 Soil

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Group # 1589716 Account # 13255

LL Sample # SW 8032071

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 08:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25 630 Plaza Drive

Reported: 09/28/2015 15:12 Highlands Ranch CO 80129

SB-30

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.025	0.063	10
10725	Benzo(a)pyrene		50-32-8	N.D.	0.025	0.063	10
10725	Benzo(b)fluoranthen	e	205-99-2	N.D.	0.025	0.063	10
10725	Benzo(k)fluoranthen	e	207-08-9	N.D.	0.025	0.063	10
10725	Chrysene		218-01-9	N.D.	0.013	0.063	10
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.025	0.063	10
10725	Indeno(1,2,3-cd)pyr	ene	193-39-5	N.D.	0.025	0.063	10
10725	1-Methylnaphthalene		90-12-0	2.9	0.025	0.063	10
10725	2-Methylnaphthalene		91-57-6	3.8	0.025	0.063	10
10725	Naphthalene		91-20-3	1.2	0.025	0.063	10
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1	2	n.a.	160	28	140	181.87
GC Pet	roleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modified					
02214	DRO C12-C24 w/Si Ge	1	n.a.	280	11	26	1
02214	HRO C24-C40 w/Si Ge	1	n.a.	1,500	38	110	1
Wet Ch	nemistry	SM 2540 G-	1997	%	%	8	
00111	Moisture		n.a.	73.6	0.50	0.50	1
	Moisture represents 103 - 105 degrees Cas-received basis.			sample after oven dry reported is on an	ring at		

### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tir	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/24/2015	07:55	Joseph M Gambler	10
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLF026	09/09/2015	09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246B34A	09/05/2015	05:19	Jeremy C Giffin	181.87
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201524538726	09/02/2015	20:28	Mitchell R Washel	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520029A	09/12/2015	16:25	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520029A	09/10/2015	09:00	Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15251820004A	09/09/2015	10:04	William C Schwebel	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-40-7.5 Soil

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032072 LL Group # 1589716

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 09:00 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25 630 Plaza Drive

Reported: 09/28/2015 15:12 Highlands Ranch CO 80129

SB-40

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg		mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.		0.023	0.059	10
10725	Benzo(a)pyrene		50-32-8	N.D.		0.023	0.059	10
10725	Benzo(b)fluoranthene	2	205-99-2	0.031	J	0.023	0.059	10
10725	Benzo(k)fluoranthene	2	207-08-9	N.D.		0.023	0.059	10
10725	Chrysene		218-01-9	0.040	J	0.012	0.059	10
10725	Dibenz(a,h)anthracen	ne	53-70-3	N.D.		0.023	0.059	10
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.		0.023	0.059	10
10725	1-Methylnaphthalene		90-12-0	1.8		0.023	0.059	10
10725	2-Methylnaphthalene		91-57-6	2.1		0.023	0.059	10
10725	Naphthalene		91-20-3	0.87		0.023	0.059	10
GC Volatiles ECY 97-602 NWTPH-Gx mg/kg						mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C12 rting limits were rai		n.a. o sample foaming.	N.D.		62	310	439.6
GC Pet	roleum	ECY 97-	602 NWTPH-Dx	mg/kg		mg/kg	mg/kg	
Hydrod	carbons w/Si	modifie	d					
02214	DRO C12-C24 w/Si Gel	L	n.a.	400		11	25	1
02214	HRO C24-C40 w/Si Gel	L	n.a.	1,200		35	110	1
Wet Ch	nemistry	SM 2540	G-1997	%		%	%	
00111	Moisture		n.a.	71.7		0.50	0.50	1
	Moisture represents 103 - 105 degrees Coas-received basis.		_	-				

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15251SLF026	09/24/2015	08:28	Joseph M Gambler	10
10811	BNA Soil Microwave SIM	SW-846 3546	1	15251SLF026	09/09/2015	09:30	Jessica M Velez	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246B34A	09/04/2015	19:19	Jeremy C Giffin	439.6
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201524538726	09/02/2015	20:30	Mitchell R Washel	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520029A	09/12/2015	16:47	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520029A	09/10/2015	09:00	Olivia Arosemena	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-40-7.5 Soil

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032072

LL Group # 1589716 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 09:00 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

SB-40

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15251820004A	09/09/2015 10:04	William C Schwebel	. 1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-51-7.5 Soil

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032073 LL Group # 1589716 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 09:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25 630 Plaza Drive

Reported: 09/28/2015 15:12 Highlands Ranch CO 80129

SB-51

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 82	270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.030	0.074	10
10725	Benzo(a)pyrene		50-32-8	N.D.	0.030	0.074	10
10725	Benzo(b)fluoranthene	2	205-99-2	N.D.	0.030	0.074	10
10725	Benzo(k)fluoranthene	2	207-08-9	N.D.	0.030	0.074	10
10725	Chrysene		218-01-9	N.D.	0.015	0.074	10
10725	Dibenz(a,h)anthracer	ne	53-70-3	N.D.	0.030	0.074	10
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.	0.030	0.074	10
10725	1-Methylnaphthalene		90-12-0	3.5	0.030	0.074	10
10725	2-Methylnaphthalene		91-57-6	3.8	0.030	0.074	10
10725	Naphthalene		91-20-3	0.87	0.030	0.074	10
GC Vol	latiles	ECY 97-60	02 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C12 cting limits were rai	=	n.a. sample foaming.	N.D.	84	420	470.2
GC Pet	roleum	ECY 97-60	02 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	arbons w/Si	modified					
02214	DRO C12-C24 w/Si Gel	<u>_</u>	n.a.	220	13	31	1
02214	HRO C24-C40 w/Si Gel	L	n.a.	1,300	45	130	1
Wet Ch	nemistry	SM 2540 (	G-1997	8	%	8	
00111	Moisture		n.a.	77.6	0.50	0.50	1
	Moisture represents 103 - 105 degrees Ce as-received basis.		_	-			

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis	Name	Method	Trial#	Batch#	Analysis Date and Tir	me	Analyst	Dilution Factor
10725	SIM SVOA	(microwave)	SW-846 8270C SIM	1	15251SLF026	09/24/2015	09:01	Joseph M Gambler	10
10811	BNA Soil	Microwave SIM	SW-846 3546	1	15251SLF026	09/09/2015	09:30	Jessica M Velez	1
02005	NWTPH-GX	Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246B34A	09/04/2015	22:15	Jeremy C Giffin	470.2
01150	GC - Bulk	Soil Prep	SW-846 5030A	1	201524538726	09/02/2015	20:32	Mitchell R Washel	n.a.
02214	NWTPH-Dx	soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520029A	09/12/2015	17:09	Heather E Williams	1
07024	DRO Alter Extraction	rnate Soil on	ECY 97-602 NWTPH-Dx 06/97	1	152520029A	09/10/2015	09:00	Olivia Arosemena	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-51-7.5 Soil

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032073

LL Group # 1589716 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 09:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

SB-51

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15251820004A	09/09/2015 10:04	William C Schwebel	. 1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-62-7.5 Soil

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032074 LL Group # 1589716

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 09:45 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25 630 Plaza Drive

Reported: 09/28/2015 15:12 Highlands Ranch CO 80129

SB-62

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles SW	7-846 827	OC SIM	mg/kg		mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.		0.030	0.074	1
10725	Benzo(a)pyrene		50-32-8	N.D.		0.030	0.074	1
10725	Benzo(b)fluoranthene		205-99-2	0.052	J	0.030	0.074	1
10725	Benzo(k)fluoranthene		207-08-9	N.D.		0.030	0.074	1
10725	Chrysene		218-01-9	0.065	J	0.015	0.074	1
10725	Dibenz(a,h)anthracene		53-70-3	N.D.		0.030	0.074	1
10725	Indeno(1,2,3-cd)pyrene		193-39-5	N.D.		0.030	0.074	1
10725	1-Methylnaphthalene		90-12-0	0.64		0.030	0.074	1
10725	2-Methylnaphthalene		91-57-6	0.60		0.030	0.074	1
10725	Naphthalene		91-20-3	2.5		0.030	0.074	1
_	rting limits were raised		_					
GC Vol	latiles EC	Y 97-602	NWTPH-Gx	mg/kg		mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12		n.a.	52	J	20	100	170.84
Repo	rting limits were raised	d due to sa	mple foaming.					
GC Pet	roleum EC	Y 97-602	NWTPH-Dx	mg/kg		mg/kg	mg/kg	
Hydrod	arbons w/Si mo	dified						
02214	DRO C12-C24 w/Si Gel		n.a.	190		8.9	21	1
02214	HRO C24-C40 w/Si Gel		n.a.	1,100		30	89	1
Wet Ch	nemistry SM	1 2540 G-	1997	%		%	%	
00111	Moisture		n.a.	66.2		0.50	0.50	1
	Moisture represents th 103 - 105 degrees Cels as-received basis.		eight of the	sample a	_			

#### General Sample Comments

State of Washington Lab Certification No.  ${\tt C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15252SLJ026	09/17/2015	11:37	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15252SLJ026	09/10/2015	17:40	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246B34A	09/05/2015	05:54	Jeremy C Giffin	170.84
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201524538726	09/02/2015	20:35	Mitchell R Washel	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520029A	09/12/2015	17:30	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520029A	09/10/2015	09:00	Olivia Arosemena	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-62-7.5 Soil

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032074 LL Group # 1589716 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 09:45 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

SB-62

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15251820004A	09/09/2015 10:04	William C Schwebe	1 1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-1A-7.5 Soil LL Sample # SW 8032075

Former Olympia Bulk Plant COC: R224114 LL Group # 1589716 1117 West Bay Drive - Olympia, WA Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 10:00 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25 630 Plaza Drive

Reported: 09/28/2015 15:12 Highlands Ranch CO 80129

S1A75

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.044	0.0019	0.0048	1
10725	Benzo(a)pyrene		50-32-8	0.045	0.0019	0.0048	1
10725	Benzo(b)fluoranthene	2	205-99-2	0.060	0.0019	0.0048	1
10725	Benzo(k)fluoranthene	2	207-08-9	0.020	0.0019	0.0048	1
10725	Chrysene		218-01-9	0.048	0.00097	0.0048	1
10725	Dibenz(a,h)anthracen	ne	53-70-3	0.0036 J	0.0019	0.0048	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	0.012	0.0019	0.0048	1
10725	1-Methylnaphthalene		90-12-0	0.013	0.0019	0.0048	1
10725	2-Methylnaphthalene		91-57-6	0.019	0.0019	0.0048	1
10725	Naphthalene		91-20-3	0.046	0.0019	0.0048	1
GC Vol	latiles	ECY 97-	-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C12 rting limits were rai		n.a. so sample foaming.	N.D.	80	400	684.04
GC Pet	roleum	ECY 97-	-602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	arbons w/Si	modifie	ed				
02214	DRO C12-C24 w/Si Gel	L	n.a.	1,300	8.7	20	1 1
02214	HRO C24-C40 w/Si Gel	_	n.a.	680	29	87	1
Wet Ch	nemistry	SM 2540	G-1997	%	8	%	
00111	Moisture		n.a.	65.7	0.50	0.50	1
	Moisture represents 103 - 105 degrees Coas-received basis.		_	-			

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15252SLJ026	09/17/2015	12:10	Joseph M Gambler	1
10811	BNA Soil Microwave SI	M SW-846 3546	1	15252SLJ026	09/10/2015	17:40	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246B34A	09/04/2015	22:51	Jeremy C Giffin	684.04
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201524538726	09/02/2015	20:36	Mitchell R Washel	n.a.
02214	NWTPH-Dx soil w/Si Ge	1 ECY 97-602 NWTPH-Dx modified	1	152520029A	09/12/2015	17:52	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520029A	09/10/2015	09:00	Olivia Arosemena	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-1A-7.5 Soil

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Group # 1589716 Account # 13255

LL Sample # SW 8032075

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 10:00 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

S1A75

#### Laboratory Sample Analysis Record

 CAT
 Analysis Name
 Method
 Trial#
 Batch#
 Analysis
 Analysis
 Analyst
 Dilution

 No.
 00111
 Moisture
 SM 2540 G-1997
 1
 15251820004A
 09/09/2015
 10:04
 William C Schwebel
 1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-29-7.5 Soil

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032076 LL Group # 1589716

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 10:22 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25 630 Plaza Drive

Reported: 09/28/2015 15:12 Highlands Ranch CO 80129

SB-29

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.0023	0.0058	1
10725	Benzo(a)pyrene		50-32-8	N.D.	0.0023	0.0058	1
10725	Benzo(b)fluoranthene	2	205-99-2	0.0034 J	0.0023	0.0058	1
10725	Benzo(k)fluoranthene	2	207-08-9	N.D.	0.0023	0.0058	1
10725	Chrysene		218-01-9	0.0035 J	0.0012	0.0058	1
10725	Dibenz(a,h)anthracen	ie	53-70-3	N.D.	0.0023	0.0058	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.	0.0023	0.0058	1
10725	1-Methylnaphthalene		90-12-0	2.0	0.023	0.058	10
10725	2-Methylnaphthalene		91-57-6	2.3	0.023	0.058	10
10725	Naphthalene		91-20-3	0.38	0.0023	0.0058	1
GC Vol	latiles	ECY 97-	602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C12 rting limits were rai		n.a. o sample foaming.	80 J	39	190	274.82
GC Pet	roleum	ECY 97-	602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modifie	ed				
02214	DRO C12-C24 w/Si Gel	-	n.a.	420	10	24	1
02214	HRO C24-C40 w/Si Gel	-	n.a.	1,300	35	100	1
Wet Ch	nemistry	SM 2540	G-1997	%	%	%	
00111	Moisture		n.a.	71.6	0.50	0.50	1
	Moisture represents 103 - 105 degrees Ce as-received basis.		_	_			

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15252SLJ026	09/17/2015	12:44	Joseph M Gambler	1
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15252SLJ026	09/17/2015	21:28	Catherine E Bachman	10
10811	BNA Soil Microwave SIM	SW-846 3546	1	15252SLJ026	09/10/2015	17:40	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246B34A	09/05/2015	06:29	Jeremy C Giffin	274.82
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201524538726	09/02/2015	20:38	Mitchell R Washel	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520030A	09/12/2015	14:58	Heather E Williams	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-29-7.5 Soil

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Group # 1589716 Account # 13255

LL Sample # SW 8032076

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 10:22 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

SB-29

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520030A	09/10/2015 09:00	Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15251820004A	09/09/2015 10:04	William C Schwebel	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-39-7.5 Soil

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Group # 1589716 Account # 13255

LL Sample # SW 8032077

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 10:35 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25 630 Plaza Drive

Reported: 09/28/2015 15:12 Highlands Ranch CO 80129

SB-39

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.020	0.0023	0.0057	1
10725	Benzo(a)pyrene		50-32-8	0.0099	0.0023	0.0057	1
10725	Benzo(b)fluoranthene	2	205-99-2	0.029	0.0023	0.0057	1
10725	Benzo(k)fluoranthene	2	207-08-9	0.0083	0.0023	0.0057	1
10725	Chrysene		218-01-9	0.036	0.0011	0.0057	1
10725	Dibenz(a,h)anthracer	ne	53-70-3	N.D.	0.0023	0.0057	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	0.0038 J	0.0023	0.0057	1
10725	1-Methylnaphthalene		90-12-0	1.9	0.023	0.057	10
10725	2-Methylnaphthalene		91-57-6	1.9	0.023	0.057	10
10725	Naphthalene		91-20-3	1.0	0.0023	0.0057	1
GC Vol	latiles	ECY 97-	-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C12 rting limits were rai		n.a. so sample foaming.	68 J	37	190	271.04
GC Pet	roleum	ECY 97-	-602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modifie	ed				
02214	DRO C12-C24 w/Si Gel	L	n.a.	330	10	24	1
02214	HRO C24-C40 w/Si Gel	L	n.a.	1,400	34	100	1
Wet Ch	nemistry	SM 2540	G-1997	%	%	%	
00111	Moisture		n.a.	71.0	0.50	0.50	1
	Moisture represents 103 - 105 degrees Ce as-received basis.		_	-			

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15252SLJ026	09/17/2015	13:17	Joseph M Gambler	1
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15252SLJ026	09/17/2015	22:01	Catherine E Bachman	10
10811	BNA Soil Microwave SIM	SW-846 3546	1	15252SLJ026	09/10/2015	17:40	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246B34A	09/05/2015	07:05	Jeremy C Giffin	271.04
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201524538726	09/02/2015	20:39	Mitchell R Washel	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520030A	09/12/2015	15:20	Heather E Williams	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



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Sample Description: SB-39-7.5 Soil

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Group # 1589716 Account # 13255

LL Sample # SW 8032077

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 10:35 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

SB-39

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520030A	09/10/2015 09:00	Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15251820004A	09/09/2015 10:04	William C Schwebel	1



Account

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-25A-7.5 Soil

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032078 LL Group # 1589716

# 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 12:40 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25 630 Plaza Drive

Reported: 09/28/2015 15:12 Highlands Ranch CO 80129

S25A7

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.0053 J	0.0025	0.0063	1
10725	Benzo(a)pyrene		50-32-8	N.D.	0.0025	0.0063	1
10725	Benzo(b)fluoranthene	2	205-99-2	0.0065	0.0025	0.0063	1
10725	Benzo(k)fluoranthene	2	207-08-9	N.D.	0.0025	0.0063	1
10725	Chrysene		218-01-9	0.0065	0.0013	0.0063	1
10725	Dibenz(a,h)anthracen	ne	53-70-3	N.D.	0.0025	0.0063	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.	0.0025	0.0063	1
10725	1-Methylnaphthalene		90-12-0	0.012	0.0025	0.0063	1
10725	2-Methylnaphthalene		91-57-6	0.011	0.0025	0.0063	1
10725	Naphthalene		91-20-3	0.021	0.0025	0.0063	1
GC Vol	latiles	ECY 97-	602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C12 cting limits were rai		n.a. o sample foaming.	N.D.	1,000	5,200	6802.42
GC Pet	roleum	ECY 97-	602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	arbons w/Si	modifie	đ				
02214	DRO C12-C24 w/Si Gel	L	n.a.	500	11	26	1
02214	HRO C24-C40 w/Si Gel	L	n.a.	2,000	38	110	1
Wet Ch	nemistry	SM 2540	G-1997	%	%	8	
00111	Moisture		n.a.	73.7	0.50	0.50	1
	Moisture represents 103 - 105 degrees Co as-received basis.		_	-			

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis N	Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (	(microwave)	SW-846 8270C SIM	1	15252SLJ026	09/17/2015	13:50	Joseph M Gambler	1
10811	BNA Soil M	Microwave SIM	SW-846 3546	1	15252SLJ026	09/10/2015	17:40	Shawn J McMullen	1
02005	NWTPH-GX S	Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246B34A	09/04/2015	23:26	Jeremy C Giffin	6802.42
01150	GC - Bulk	Soil Prep	SW-846 5030A	1	201524538726	09/02/2015	20:51	Mitchell R Washel	n.a.
02214	NWTPH-Dx s	soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520030A	09/12/2015	15:42	Heather E Williams	1
07024	DRO Altern		ECY 97-602 NWTPH-Dx 06/97	1	152520030A	09/10/2015	09:00	Olivia Arosemena	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-25A-7.5 Soil

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032078

LL Group # 1589716 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 12:40 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

S25A7

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15251820004A	09/09/2015 10:04	William C Schwebel	. 1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-25A-12.5 Soil

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032079 LL Group # 1589716

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 12:45 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25 630 Plaza Drive

Reported: 09/28/2015 15:12 Highlands Ranch CO 80129

#### 25A12

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.00080	0.0020	1
10725	Benzo(a)pyrene		50-32-8	N.D.	0.00080	0.0020	1
10725	Benzo(b)fluoranthene	:	205-99-2	N.D.	0.00080	0.0020	1
10725	Benzo(k)fluoranthene	!	207-08-9	N.D.	0.00080	0.0020	1
10725	Chrysene		218-01-9	N.D.	0.00040	0.0020	1
10725	Dibenz(a,h)anthracen	.e	53-70-3	N.D.	0.00080	0.0020	1
10725	Indeno(1,2,3-cd)pyre	ne	193-39-5	N.D.	0.00080	0.0020	1
10725	1-Methylnaphthalene		90-12-0	N.D.	0.00080	0.0020	1
10725	2-Methylnaphthalene		91-57-6	N.D.	0.00080	0.0020	1
10725	Naphthalene		91-20-3	N.D.	0.00080	0.0020	1
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12		n.a.	N.D.	1.1	5.5	22.7
		ECY 97-602 modified	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
-					2.5	0.5	
02214	DRO C12-C24 w/Si Gel		n.a.	N.D.	3.6	8.5	1 1
02214	HRO C24-C40 w/Si Gel		n.a.	N.D.	12	36	1
Wet Ch	nemistry	SM 2540 G-	1997	%	%	%	
00111	Moisture		n.a.	17.7	0.50	0.50	1
	Moisture represents 103 - 105 degrees Ce as-received basis.		_	sample after oven dry reported is on an	ing at		

### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tim	ne	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15252SLJ026	09/17/2015	08:19	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15252SLJ026	09/10/2015	17:40	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246B34A	09/04/2015	19:54	Jeremy C Giffin	22.7
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524538729	08/28/2015	12:45	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520030A	09/12/2015	21:13	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520030A	09/10/2015	09:00	Olivia Arosemena	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-25A-12.5 Soil

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032079

LL Group # 1589716 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Collected: 08/28/2015 12:45 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

25A12

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15251820004A	09/09/2015 10:04	William C Schwebel	. 1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-5A-7.5 Soil

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Group # 1589716 Account # 13255

LL Sample # SW 8032080

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 10:40 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25 630 Plaza Drive

Reported: 09/28/2015 15:12 Highlands Ranch CO 80129

S5A75

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 82	70C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.0049 J	0.0030	0.0074	1
10725	Benzo(a)pyrene		50-32-8	0.0057 J	0.0030	0.0074	1
10725	Benzo(b)fluoranthen	e	205-99-2	0.010	0.0030	0.0074	1
10725	Benzo(k)fluoranthen	e	207-08-9	0.0037 J	0.0030	0.0074	1
10725	Chrysene		218-01-9	0.0057 J	0.0015	0.0074	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.0030	0.0074	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.	0.0030	0.0074	1
10725	1-Methylnaphthalene		90-12-0	0.065	0.0030	0.0074	1
10725	2-Methylnaphthalene		91-57-6	0.093	0.0030	0.0074	1
10725	Naphthalene		91-20-3	0.018	0.0030	0.0074	1
GC Vol	latiles	ECY 97-602	2 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1	="	n.a.	N.D.	73	360	451.9
Repo	rting limits were rai	sed due to s	ample foaming.				
GC Pet	roleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modified					
02214	DRO C12-C24 w/Si Ge	l	n.a.	850	12	28	1
02214	HRO C24-C40 w/Si Ge	L	n.a.	580	40	120	1
Wet Ch	nemistry	SM 2540 G-	-1997	%	%	%	
00111	Moisture		n.a.	75.1	0.50	0.50	1
	Moisture represents 103 - 105 degrees Coas-received basis.		weight of the s	sample after oven di			_

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15252SLJ026	09/17/2015	14:23	Joseph M Gambler	1
10811	BNA Soil Microwave S	IM SW-846 3546	1	15252SLJ026	09/10/2015	17:40	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15251A34A	09/08/2015	20:32	Jeremy C Giffin	451.9
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201524538726	09/02/2015	20:53	Mitchell R Washel	n.a.
02214	NWTPH-Dx soil w/Si G	el ECY 97-602 NWTPH-Dx modified	1	152520030A	09/12/2015	16:25	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520030A	09/10/2015	09:00	Olivia Arosemena	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-5A-7.5 Soil

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032080 LL Group # 1589716

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 10:40 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

S5A75

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15251820004B	09/09/2015 10:04	William C Schwebel	. 1



Drv

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-50-7.5 Soil

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Group # 1589716 Account # 13255

LL Sample # SW 8032081

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 10:50 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Drv

Submitted: 09/01/2015 09:25 630 Plaza Drive

Reported: 09/28/2015 15:12 Highlands Ranch CO 80129

SB-50

CAT No.	Analysis Name		CAS Number	Dry Result		Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg		mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.0098	J	0.0040	0.010	1
10725	Benzo(a)pyrene		50-32-8	N.D.		0.0040	0.010	1
10725	Benzo(b)fluoranthene		205-99-2	0.0099	J	0.0040	0.010	1
10725	Benzo(k)fluoranthene		207-08-9	N.D.		0.0040	0.010	1
10725	Chrysene		218-01-9	0.015		0.0020	0.010	1
10725	Dibenz(a,h)anthracen	.e	53-70-3	N.D.		0.0040	0.010	1
10725	Indeno(1,2,3-cd)pyre	ne	193-39-5	0.0051	J	0.0040	0.010	1
10725	1-Methylnaphthalene		90-12-0	2.7		0.040	0.10	10
10725	2-Methylnaphthalene		91-57-6	2.9		0.040	0.10	10
10725	Naphthalene		91-20-3	0.76		0.0040	0.010	1
Repo	rting limits were rai	sed due t	o limited sample v	rolume.				
GC Vol	latiles	ECY 97-	602 NWTPH-Gx	mg/kg		mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12		n.a.	38	J	33	170	268.3
Repo:	rting limits were rai	sed due t	o sample foaming.					
GC Pet	roleum	ECY 97-	602 NWTPH-Dx	mg/kg		mg/kg	mg/kg	
Hydrod	carbons w/Si	modifie	ed					
02214	DRO C12-C24 w/Si Gel		n.a.	350		18	43	2
02214	HRO C24-C40 w/Si Gel		n.a.	2,100		61	180	2
Wet Ch	nemistry	SM 2540	G-1997	%		%	%	
00111	Moisture		n.a.	67.5		0.50	0.50	1
	Moisture represents 103 - 105 degrees Ce as-received basis.		in weight of the	sample af		drying at		

#### General Sample Comments

State of Washington Lab Certification No.  ${\tt C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15252SLJ026	09/17/2015	14:57	Joseph M Gambler	1
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15252SLJ026	09/17/2015	22:34	Catherine E Bachman	10
10811	BNA Soil Microwave SIM	SW-846 3546	1	15252SLJ026	09/10/2015	17:40	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15246B34A	09/05/2015	07:40	Jeremy C Giffin	268.3
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201524538726	09/02/2015	20:55	Mitchell R Washel	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520030A	09/12/2015	23:01	Heather E Williams	2

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-50-7.5 Soil

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032081 LL Group # 1589716

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 10:50 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

SB-50

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520030A	09/10/2015 09:00	Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15251820004B	09/09/2015 10:04	William C Schwebel	1



Drv

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-61-7.5 Soil

Former Olympia Bulk Plant COC: R224114

LL Group # 1589716

1117 West Bay Drive - Olympia, WA

Account # 13255

LL Sample # SW 8032082

Project Name: Former Olympia Bulk Plant

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Collected: 08/28/2015 11:15

Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

Drv

SB-61

CAT No.	Analysis Name		CAS Number	Dry Result		Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	sw-846 8	8270C SIM	mg/kg		mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.0046	J	0.0034	0.0086	1
10725	Benzo(a)pyrene		50-32-8	0.0048	J	0.0034	0.0086	1
10725	Benzo(b)fluoranthene		205-99-2	0.011		0.0034	0.0086	1
10725	Benzo(k)fluoranthene		207-08-9	0.0049	J	0.0034	0.0086	1
10725	Chrysene		218-01-9	0.013		0.0017	0.0086	1
10725	Dibenz(a,h)anthracen	e	53-70-3	N.D.		0.0034	0.0086	1
10725	Indeno(1,2,3-cd)pyre	ne	193-39-5	N.D.		0.0034	0.0086	1
10725	1-Methylnaphthalene		90-12-0	0.11		0.0034	0.0086	1
10725	2-Methylnaphthalene		91-57-6	0.10		0.0034	0.0086	1
10725	Naphthalene		91-20-3	0.79		0.0034	0.0086	1
Repo	rting limits were rais	sed due to	o limited sample v	rolume.				
GC Vo	latiles	ECY 97-0	602 NWTPH-Gx	mg/kg		mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12		n.a.	40	J	32	160	269.47
Repo	rting limits were rais	sed due to	sample foaming.					
GC Pet	roleum	ECY 97-0	602 NWTPH-Dx	mg/kg		mg/kg	mg/kg	
Hydro	carbons w/Si	modified	f					
02214	DRO C12-C24 w/Si Gel		n.a.	260		9.0	21	1
02214	HRO C24-C40 w/Si Gel		n.a.	1,400		30	90	1
Wet Cl	nemistry	SM 2540	G-1997	8		%	%	
00111	Moisture		n.a.	66.6		0.50	0.50	1
	Moisture represents 103 - 105 degrees Ce as-received basis.		in weight of the	sample af	-			

## General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15252SLJ026	09/17/2015	15:30	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15252SLJ026	09/10/2015	17:40	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15251A34A	09/08/2015	23:28	Jeremy C Giffin	269.47
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201524538726	09/02/2015	20:56	Mitchell R Washel	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520030A	09/12/2015	17:09	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520030A	09/10/2015	09:00	Olivia Arosemena	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-61-7.5 Soil

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032082 LL Group # 1589716 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 11:15 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

SB-61

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15251820004B	09/09/2015 10:04	William C Schwebel	. 1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-21-7.5 Soil

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Group # 1589716 Account # 13255

LL Sample # SW 8032083

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 11:40 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25 630 Plaza Drive

Reported: 09/28/2015 15:12 Highlands Ranch CO 80129

SB-21

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.0025	0.0063	1
10725	Benzo(a)pyrene		50-32-8	N.D.	0.0025	0.0063	1
10725	Benzo(b)fluoranthene	9	205-99-2	0.0035 J	0.0025	0.0063	1
10725	Benzo(k)fluoranthene	e	207-08-9	N.D.	0.0025	0.0063	1
10725	Chrysene		218-01-9	0.0048 J	0.0013	0.0063	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.0025	0.0063	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.	0.0025	0.0063	1
10725	1-Methylnaphthalene		90-12-0	0.36	0.0025	0.0063	1
10725	2-Methylnaphthalene		91-57-6	0.14	0.0025	0.0063	1
10725	Naphthalene		91-20-3	0.052	0.0025	0.0063	1
GC Vol	latiles	ECY 97-	-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C12 cting limits were rai		n.a. so sample foaming.	N.D.	69	350	455.11
	croleum carbons w/Si	ECY 97- modifie	-602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
02214	DRO C12-C24 w/Si Ge	1	n.a.	340	11	27	1
02214	HRO C24-C40 w/Si Ge	1	n.a.	1,800	38	110	1
Wet Ch	nemistry	SM 2540	G-1997	%	%	8	
00111	Moisture		n.a.	73.8	0.50	0.50	1
	Moisture represents 103 - 105 degrees Coas-received basis.		_	-			

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis N	Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (	(microwave)	SW-846 8270C SIM	1	15252SLJ026	09/17/2015	16:03	Joseph M Gambler	1
10811	BNA Soil M	Microwave SIM	SW-846 3546	1	15252SLJ026	09/10/2015	17:40	Shawn J McMullen	1
02005	NWTPH-GX S	Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15251A34A	09/08/2015	19:22	Jeremy C Giffin	455.11
01150	GC - Bulk	Soil Prep	SW-846 5030A	1	201524538726	09/02/2015	20:58	Mitchell R Washel	n.a.
02214	NWTPH-Dx s	soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520030A	09/12/2015	17:30	Heather E Williams	1
07024	DRO Altern		ECY 97-602 NWTPH-Dx 06/97	1	152520030A	09/10/2015	09:00	Olivia Arosemena	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



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Sample Description: SB-21-7.5 Soil

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Group # 1589716 Account # 13255

LL Sample # SW 8032083

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 11:40 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

SB-21

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15251820004B	09/09/2015 10:04	William C Schwebe	1 1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-28-7.5 Soil

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032084 LL Group # 1589716

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 12:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25 630 Plaza Drive

Reported: 09/28/2015 15:12 Highlands Ranch CO 80129

SB-28

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.0027	0.0066	1
10725	Benzo(a)pyrene		50-32-8	0.0028 J	0.0027	0.0066	1
10725	Benzo(b)fluoranthene	2	205-99-2	0.0081	0.0027	0.0066	1
10725	Benzo(k)fluoranthene	2	207-08-9	N.D.	0.0027	0.0066	1
10725	Chrysene		218-01-9	0.0049 J	0.0013	0.0066	1
10725	Dibenz(a,h)anthracen	ne	53-70-3	N.D.	0.0027	0.0066	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.	0.0027	0.0066	1
10725	1-Methylnaphthalene		90-12-0	0.76	0.0027	0.0066	1
10725	2-Methylnaphthalene		91-57-6	0.21	0.0027	0.0066	1
10725	Naphthalene		91-20-3	0.11	0.0027	0.0066	1
GC Vol	latiles	ECY 97-	602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	2	n.a.	N.D.	73	360	449.8
Repo	rting limits were rai	sed due t	o sample foaming.				
GC Pet	roleum	ECY 97-	602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modifie	e <b>d</b>				
02214	DRO C12-C24 w/Si Gel	L	n.a.	220	12	28	1
02214	HRO C24-C40 w/Si Gel	L	n.a.	1,600	40	120	1
				,			
Wet Ch	nemistry	SM 2540	G-1997	%	8	8	
00111	Moisture		n.a.	75.3	0.50	0.50	1
	Moisture represents 103 - 105 degrees Co as-received basis.						

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15252SLJ026	09/17/2015	23:08	Catherine E Bachman	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15252SLJ026	09/10/2015	17:40	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15251A34A	09/08/2015	21:07	Jeremy C Giffin	449.8
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201524538726	09/02/2015	21:00	Mitchell R Washel	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152520030A	09/12/2015	17:52	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520030A	09/10/2015	09:00	Olivia Arosemena	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-28-7.5 Soil

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Group # 1589716 Account # 13255

LL Sample # SW 8032084

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 12:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

SB-28

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15251820004B	09/09/2015 10:04	William C Schwebel	. 1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-27-7.5 Soil

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032085

LL Group # 1589716 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 12:50 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25 630 Plaza Drive

Reported: 09/28/2015 15:12 Highlands Ranch CO 80129

SB-27

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 82	70C SIM	mg/kg		mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.		0.0030	0.0075	1
10725	Benzo(a)pyrene		50-32-8	N.D.		0.0030	0.0075	1
10725	Benzo(b)fluoranthene	2	205-99-2	0.0059 J		0.0030	0.0075	1
10725	Benzo(k)fluoranthene	9	207-08-9	0.0032 J		0.0030	0.0075	1
10725	Chrysene		218-01-9	0.0048 J		0.0015	0.0075	1
10725	Dibenz(a,h)anthracen	ne	53-70-3	N.D.		0.0030	0.0075	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.		0.0030	0.0075	1
10725	1-Methylnaphthalene		90-12-0	0.64		0.0030	0.0075	1
10725	2-Methylnaphthalene		91-57-6	0.21		0.0030	0.0075	1
10725	Naphthalene		91-20-3	0.066		0.0030	0.0075	1
GC Vol	latiles	ECY 97-60	2 NWTPH-Gx	mg/kg		mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C12 cting limits were rai	="	n.a. ample foaming.	140 J		52	260	288.78
GC Pet	roleum	ECY 97-60	2 NWTPH-Dx	mg/kg		mg/kg	mg/kg	
Hydrod	arbons w/Si	modified						
02214	DRO C12-C24 w/Si Gel	L	n.a.	220		13	31	1
02214	HRO C24-C40 w/Si Ge	L	n.a.	1,400		45	130	1
Wet Ch	nemistry	SM 2540 G	-1997	%		8	8	
00111	Moisture		n.a.	77.8		0.50	0.50	1
	Moisture represents 103 - 105 degrees Ce as-received basis.		_	_	_	ng at		

## General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

			_					
CAT	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti		Analyst	Dilution Factor
No.								Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15252SLJ026	09/17/2015	23:41	Catherine E	1
							Bachman	
10811	BNA Soil Microwave SIM	SW-846 3546	1	15252SLJ026	09/10/2015	17:40	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15251A34A	09/08/2015	22:18	Jeremy C Giffin	288.78
		NWTPH-Gx					•	
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201524538726	09/02/2015	21:01	Mitchell R Washel	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152520030A	09/12/2015	18:26	Heather E Williams	1
		NWTPH-Dx modified			05,12,2015	10 20		
07024	DRO Alternate Soil	ECY 97-602	1	152520030A	09/10/2015	09:00	Olivia Arosemena	1
	Extraction	NWTPH-Dx 06/97						

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-27-7.5 Soil

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Group # 1589716 Account # 13255

LL Sample # SW 8032085

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 12:50 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

SB-27

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15251820004B	09/09/2015 10:04	William C Schwebel	. 1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-38-7.5 Soil

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032086 LL Group # 1589716

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 13:05 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25 630 Plaza Drive

Reported: 09/28/2015 15:12 Highlands Ranch CO 80129

SB-38

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.0028	0.0071	1
10725	Benzo(a)pyrene		50-32-8	N.D.	0.0028	0.0071	1
10725	Benzo(b)fluoranthene	2	205-99-2	0.0046 J	0.0028	0.0071	1
10725	Benzo(k)fluoranthene	2	207-08-9	N.D.	0.0028	0.0071	1
10725	Chrysene		218-01-9	0.0030 J	0.0014	0.0071	1
10725	Dibenz(a,h)anthracer	ie	53-70-3	N.D.	0.0028	0.0071	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.	0.0028	0.0071	1
10725	1-Methylnaphthalene		90-12-0	0.068	0.0028	0.0071	1
10725	2-Methylnaphthalene		91-57-6	0.035	0.0028	0.0071	1
10725	Naphthalene		91-20-3	0.028	0.0028	0.0071	1
GC Vol	latiles	ECY 97-	-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C12 rting limits were rai		n.a. to sample foaming.	N.D.	77	390	453.02
	croleum carbons w/Si	ECY 97- modifie	-602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
02214	DRO C12-C24 w/Si Gel	L	n.a.	350	13	29	1
02214	HRO C24-C40 w/Si Gel	L	n.a.	1,400	42	130	1
Wet Ch	nemistry	SM 2540	G-1997	%	%	%	
00111	Moisture		n.a.	76.5	0.50	0.50	1
	Moisture represents 103 - 105 degrees Co as-received basis.		_	-			

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15252SLJ026	09/18/2015	00:14	Catherine E	1
							Bachman	
10811	BNA Soil Microwave SIM	SW-846 3546	1	15252SLJ026	09/10/2015	17:40	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15251A34A	09/08/2015	19:57	Jeremy C Giffin	453.02
		NWTPH-Gx						
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201524538726	09/02/2015	21:04	Mitchell R Washel	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152520031A	09/12/2015	12:48	Heather E Williams	1
		NWTPH-Dx modified						
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152520031A	09/10/2015	09:00	Olivia Arosemena	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-38-7.5 Soil

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032086

LL Group # 1589716 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 13:05 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

SB-38

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15251820004B	09/09/2015 10:04	William C Schwebel	. 1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax; 717-656-2681 • www,LancasterLabs.com

Sample Description: SB-49-7.5 Soil LL Sample # SW 8032087

Former Olympia Bulk Plant COC: R224114 LL Group # 1589716 1117 West Bay Drive - Olympia, WA Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 13:20 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/01/2015 09:25 630 Plaza Drive

Reported: 09/28/2015 15:12 Highlands Ranch CO 80129

SB-49

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles SW-84	6 8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.0027 J	0.0024	0.0060	1
10725	Benzo(a)pyrene	50-32-8	0.0025 J	0.0024	0.0060	1
10725	Benzo(b)fluoranthene	205-99-2	0.0075	0.0024	0.0060	1
10725	Benzo(k)fluoranthene	207-08-9	0.0057 J	0.0024	0.0060	1
10725	Chrysene	218-01-9	0.0049 J	0.0012	0.0060	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.0024	0.0060	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0024 J	0.0024	0.0060	1
10725	1-Methylnaphthalene	90-12-0	0.97	0.0024	0.0060	1
10725	2-Methylnaphthalene	91-57-6	0.31	0.0024	0.0060	1
10725	Naphthalene	91-20-3	0.11	0.0024	0.0060	1
GC Vol	latiles ECY 9	7-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	65 J	40	200	275.56
GC Pet	croleum ECY 9	7-602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si modif	ied				
02214	DRO C12-C24 w/Si Gel	n.a.	820	11	25	1
02214	HRO C24-C40 w/Si Gel	n.a.	1,700	36	110	1
Wet Ch	nemistry SM 25	40 G-1997	%	%	%	
00111	Moisture	n.a.	72.3	0.50	0.50	1
	Moisture represents the lo 103 - 105 degrees Celsius. as-received basis.	_	-			

### General Sample Comments

State of Washington Lab Certification No. C457

Extraction

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

NWTPH-Dx 06/97

#### Laboratory Sample Analysis Record Method CAT Analysis Name Trial# Batch# Analysis Analyst Dilution Date and Time No. Factor 10725 SIM SVOA (microwave) SW-846 8270C SIM 15252SLJ026 09/18/2015 00:47 Catherine E Bachman 10811 BNA Soil Microwave SIM SW-846 3546 15252SLJ026 09/10/2015 17:40 Shawn J McMullen 02005 NWTPH-GX Soil C7-C12 ECY 97-602 1 15251A34A 09/08/2015 22:53 Jeremy C Giffin 275.56 NWTPH-Gx 01150 GC - Bulk Soil Prep 201524538726 SW-846 5030A 09/02/2015 21:05 Mitchell R Washel n.a. 02214 NWTPH-Dx soil w/Si Gel 152520031A Heather E Williams ECY 97-602 1 09/12/2015 13:09 1 NWTPH-Dx modified ECY 97-602 152520031A 07024 DRO Alternate Soil 09/10/2015 09:00 Olivia Arosemena

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-49-7.5 Soil

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8032087 LL Group # 1589716

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/28/2015 13:20 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

SB-49

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15251820004B	09/09/2015 10:04	William C Schwebel	. 1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: TRIP Water

Submitted: 09/01/2015 09:25

Reported: 09/28/2015 15:12

Former Olympia Bulk Plant COC: R224114

1117 West Bay Drive - Olympia, WA

LL Sample # WW 8032088 LL Group # 1589716 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/27/2015 Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

OLYTB

CAT No.	Analysis Name		CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Vol	latiles E	Y 97-602	NWTPH-Gx	ug/l	ug/l	ug/l	
08273	NWTPH-Gx water C7-C12		n.a.	N.D.	50	250	1

#### General Sample Comments

State of Washington Lab Certification No.  ${\tt C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	15247A94A	09/08/2015 12:31	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15247A94A	09/08/2015 12:31	Brett W Kenyon	1



## **BP OLY**

## **Data Review**

OLYMPIA, WA

Semivolatiles and TPH

SDG # 1590592

Analyses Performed By: Lancaster Laboratories Lancaster, PA

Report # 24723R Review Level: Tier II

Project: GP09BPNA.WA60.K000

## **SUMMARY**

This data quality assessment summarizes the review of Sample Delivery Group (SDG) #1590592 for samples collected in association with the BP OLY site. The review was conducted at a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

			Comple		Analysis				
Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	voc	svoc	TPH	MET	TSS
SB-48-7.5	8036396	Soil	08/31/15			Х	Х		
SB-3-7.5	0836397	Soil	08/31/15			Х	Х		
SB-7-7.5	8036398	Soil	08/31/15			Х	Х		
SB-36-7.5	8036399	Soil	08/31/15			Х	Х		
SB-36-12.5	8036402	Soil	08/31/15			Х	Х		
SB-12-7.5	8036403	Soil	08/31/15			Χ	Х		
SB-18-7.5	8036404	Soil	08/31/15			Х	Х		
SB-18A-12.5	8036405	Soil	08/31/15			Х	Х		
SB-6-7.5	8036406	Soil	08/31/15			Х	Х		
SB-11-7.5	8036409	Soil	08/31/15			Х	Х		
SB-11-12.5	8036410	Soil	08/31/15			Х	Х		
SB-20-7.5	8036411	Soil	08/31/15			Х	Х		
SB-20-12.5	8036412	Soil	08/31/15			Х	Х		
SB-17-7.5	8036413	Soil	08/31/15			Х	Х		
SB-24-7.5	8036414	Soil	08/31/15						
SB-33-7.5	8036415	Soil	08/31/15			Х	Х		
SB-19-7.5	8036416	Soil	08/31/15			Х	Х		
SB-19-14.5	8036417	Soil	08/31/15			Χ	Х		
SB-44-7.5	8036418	Soil	08/31/15						
SB-56-7.5	8036419	Soil	08/31/15			Χ	Х		
SB-45-7.5	8036420	Soil	08/31/15			Χ	Х		
SB-46-7.5	8036423	Soil	08/31/15			Х	Х		
SB-46-12.5	8036424	Soil	08/31/15			Х	Х		
SB-57-7.5	8036425	Soil	08/31/15			Х	Х		
SB-34-7.5	8036426	Soil	08/31/15			Х	Х		
SB-8-7.5	8036427	Soil	09/01/15			Х	Х		
SB-13-7.5	8036428	Soil	09/01/15			Х	Х		

			0		Analysis				
Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	voc	svoc	TPH	MET	TSS
SB-41-Offset-7.5	8036429	Soil	09/01/15			Х	Х		
SB-41-Offset-12.5	8036430	Soil	09/01/15			Х	Х		
SB-52-Offset-7.5	8036431	Soil	09/01/15			Х	Х		
SB-52-Offset-12.5	8036432	Soil	09/01/15			Х	Х		
SB-60-Offset-7.5	8036433	Soil	09/01/15			Х	Х		
SB-60-7.5	8036434	Soil	09/01/15			Х	Х		
SB-59-7.5	8036435	Soil	09/01/15			Х	Х		
SB-47-7.5	8036436	Soil	09/01/15			Х	Х		
SB-47-12.5	8036437	Soil	09/01/15			Х	Х		
SB-37-7.5	8036438	Soil	09/01/15			Х	Х		
SB-37-12.5	8036439	Soil	09/01/15			Х	Х		
SB-26A-7.5	8036440	Soil	09/01/15			Х	Х		
SB-26A-12.5	8036441	Soil	09/01/15			Х	Х		
SB-35-7.5	8036442	Soil	09/01/15			Х	Х		
SB-14-7.5	8036443	Soil	09/01/15			Х	Х		
SB-41-D-2.5	8036444	Soil	09/01/15			Х	Х		
SB-41-E-2.5	8036445	Soil	09/01/15			Х	Х		
SB-41-C-2.5	8036446	Soil	09/01/15			Х	Х		
SB-41-E-7.5	8036447	Soil	09/01/15			Х	Х		
SB-41-E-12.5	8036448	Soil	09/01/15			Х	Х		
SB-41-C-7.5	8036449	Soil	09/01/15			Х	Х		
SB-41-C-12.5	8036450	Soil	09/01/15			Х	Х		
SB-41-D-7.5	8036451	Soil	09/01/15			Х	Х		
SB-41-D-12.5	8036452	Soil	09/01/15			Х	Х		
SB-41-B-2.5	8036453	Soil	09/02/15			Х	Х		
SB-52-B-2.5	8036454	Soil	09/02/15			Х	Х		
SB-41-B-7.5	8036455	Soil	09/02/15			Х	Х		
SB-41-B-12.5	8036456	Soil	09/02/15			Х	Х		
SB-52-B-7.5	8036457	Soil	09/02/15			Х	Х		
DUP-6	8036458	Soil	08/31/15	SB-36-7.5		Х	Х		
DUP-7	8036459	Soil	08/31/15	SB-6-7.5		Х	Х		
TRIP BLANK	8036460	Soil	09/01/15			Х			
DUP-8	8036461	Soil	08/31/15	SB-45-7.5		Х	Х		

## Note:

1. Samples SB-36-7.5, SB-6-7.5, SB-45-7.5, SB-52-B-2.5 and SB-52-B-7.5 were used as the MS/MSDs.

## ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

		Rep	orted		mance ptable	Not
	Items Reviewed	No	Yes	No	Yes	Required
1.	Sample receipt condition		Х		Х	
2.	Requested analyses and sample results		Х		Х	
3.	Master tracking list		Х		Х	
4.	Methods of analysis		Х		Х	
5.	Reporting limits		Х		Х	
6.	Sample collection date		Х		Χ	
7.	Laboratory sample received date		Х		Х	
8.	Sample preservation verification (as applicable)		Х		Х	
9.	Sample preparation/extraction/analysis dates		Х		Х	
10.	Fully executed Chain-of-Custody (COC) form		Х		Х	
11.	Narrative summary of QA or sample problems provided		Х		Х	
12.	Data Package Completeness and Compliance		Х		Х	

QA - Quality Assurance

## ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 8270 (SIM) and ECY 97-602. Data were reviewed in accordance with the USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines and as requested by USEPA Region 10:

- Concentration (C) Qualifiers
  - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
  - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
  - E The compound was quantitated above the calibration range.
  - D Concentration is based on a diluted sample analysis.
- · Validation Qualifiers
  - U The analyte was not detected at or above the reported result.
  - J The analyte was positively identified. The associated numerical result is an estimate.
  - UJ The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
  - R The data are unusable for all purposes.
  - N There is evidence the analyte is present in this sample.
  - JN There is evidence the analyte is present in this sample. The associated numerical result is an estimate.
  - D The sample result is reported from a diluted analysis.
  - EJ The sample result is greater than the calibration range. The associated numerical value is an estimated concentration only.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

## SEMIVOLATILE ORGANIC COMPOUND (SVOC) ANALYSES

## 1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Method Matrix Holding Time		
SW-846 8270	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
(SIM)	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

The analyses that exceeded the holding are presented in the following table.

Sample Locations	Holding Time	Criteria
SB-45-7.5	17 days	<14 Days

Sample results associated with sample locations analyzed by analytical method SW-846 8270 were qualified, as specified in the table below. All other holding times were met.

	Qualification		
Criteria	Detected Analytes	Non-detect Analytes	
Analysis completed less than two times holding time	J	UJ	
Analysis completed greater than two times holding time	J	R	

## 2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

## 3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	Recovery
	Fluoranthene-d10	AC
SB-12-7.5	Benzo(a)pyrene-d12	<ll but="">10%</ll>
	1-Methylnaphthalene-d10	AC
SB-19-14.5 SB-41-C-7.5	Fluoranthene-d10	D
SB-41-C-12.5	Benzo(a)pyrene-d12	D
SB-41-D-12.5 SB-18-7.5 SB-19-7.5	1-Methylnaphthalene-d10	D

LL Low Limit AC Acceptable D Dilution

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results associated with the deviant fraction are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	No Action
- OL	Detect	J
< LL but > 10%	Non-detect	ΠΊ
CE but > 10 %	Detect	J
< 10%	Non-detect	R
< 10%	Detect	J
Surrogates diluted below the calibration curve due to the	Non-detect	<sub>1</sub> 1
high concentration of a target compounds	Detect	J

A more concentrated analysis was not performed with surrogate compounds within the calibration range; therefore, no determination of extraction efficiency could be made.

### 4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery
SB-45-7.5	Dibenz(a,h)anthracene	<ll but="">10%</ll>	<ll but="">10%</ll>
3B-40-7.5	Indeno(1,2,3-cd)pyrene	<ll but="">10%</ll>	<ll but="">10%</ll>
	Benzo(a)Anthracene	<ll but="">10%</ll>	<ll but="">10%</ll>
	Benzo(a)Pyrene	AC	<ll but="">10%</ll>
	Benzo(k)Fluoranthene	AC	AC
	Chrysene	<ll but="">10%</ll>	<ll but="">10%</ll>
SB-36-7.5	Dibenz(a,h)anthracene	<ll but="">10%</ll>	<ll but="">10%</ll>
	Indeno(1,2,3-cd)pyrene	<ll but="">10%</ll>	<ll but="">10%</ll>
	1-Methylnaphthalene	>UL	<ll but="">10%</ll>
	2-Methylnaphthalene	>UL	<10%
	Naphthalene	>UL	AC
	Benzo(b)Fluoranthene	AC	>UL
SB-6-7.5	Dibenz(a,h)anthracene	<ll but="">10%</ll>	<ll but="">10%</ll>
30-0-1.3	Indeno(1,2,3-cd)pyrene	<ll but="">10%</ll>	<ll but="">10%</ll>
	Naphthalene	>UL	>UL

AC Acceptable

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper central limit (LIL)	Non-detect	No Action
> the upper control limit (UL)	Detect	٦
the lower central limit (LL) but > 100/	Non-detect	UJ
< the lower control limit (LL) but > 10%	Detect	J
< 10%	Non-detect	R
10%	Detect	J
Parent sample concentration > four times the MS/MSD	Detect	No Action
spiking solution concentration.	Non-detect	No Action

Sample locations associated with LCS/LCSD recoveries exhibiting an RPD greater than of the control limit presented in the following table.

Sample Locations Compound	
SD 26.7.5	1-Methylnaphthalene
SB-36-7.5	2-Methylnaphthalene

The criteria used to evaluate the RPD between the MS/MSD recoveries are presented in the following table. In the case of an RPD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	UJ
OL	Detect	J

## 5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS/LCSD analysis exhibited recoveries within the control limits.

## 6. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
	Benzo(a)Anthracene	0.0027 J	5.3	NC
	Benzo(a)Pyrene	0.0025 J	4.0	NC
	Benzo(b)Fluoranthene	0.0061	6.0	NC
	Benzo(k)Fluoranthene	0.0059 U	2.3	NC
SB-36-7.5/DUP-6	Chrysene	0.0065	5.5	NC
	Dibenz(a,h)anthracene	0.0059 U	0.27	NC
	Indeno(1,2,3-cd)pyrene	0.0059 U	0.67	NC
	1-Methylnaphthalene	0.37	3.4	NC
	2-Methylnaphthalene	0.35	3.4	NC

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
	Naphthalene	0.050	6.0	NC
	Chrysene	0.010 J	0.062 U	AC
OD 6 7 5/DUD 7	1-Methylnaphthalene	1.4	7.9	NC
SB-6-7.5/DUP-7	2-Methylnaphthalene	1.9	12	NC
	Naphthalene	0.056	0.25	NC
	Benzo(a)Anthracene	0.0052	0.0046 J	AC
	Benzo(a)Pyrene	0.0069	0.0057 J	AC
	Benzo(b)Fluoranthene	0.010	0.019	AC
	Benzo(k)Fluoranthene	0.0045	0.0065	AC
SB-45-7.5/DUP-8	Chrysene	0.0055	0.012	AC
	Indeno(1,2,3-cd)pyrene	0.0019	0.0034 J	AC
	1-Methylnaphthalene	0.0015 J	0.020	AC
	2-Methylnaphthalene	0.0015 J	0.015	AC
	Naphthalene 0.0043	0.0043	0.037	NC

AC Acceptable
NC Non Compliant

The compound(s) benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, 1-methylnaphthalene, 2-methylnaphthalene and naphthalene associated with sample locations SB-36-7.5 and DUP-6 exhibited a field duplicate RPD greater than the control limit. The associated sample results from sample locations for the listed analyte were qualified as estimated.

The compound(s) 1-methylnaphthalene, 2-methylnaphthalene and naphthalene associated with sample locations SB-6-7.5 and DUP-7 exhibited a field duplicate RPD greater than the control limit. The associated sample results from sample locations for the listed analyte were qualified as estimated.

The compound naphthalene associated with sample locations SB-6-7.5 and DUP-7 exhibited a field duplicate RPD greater than the control limit. The associated sample results from sample locations for the listed analyte were qualified as estimated.

## 7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

## **DATA VALIDATION CHECKLIST FOR SVOCs**

SVOCs: SW-846 8270 (SIM)	Reported		Reported Performance Acceptable		Not Required
	No	Yes	No	Yes	Required
GAS CHROMATOGRAPHY/MASS SPECTROME	TRY (GC/	MS)			
Tier II Validation					
Holding times		Х	Х		
Reporting limits (units)		Х		Х	
Blanks					
A. Method blanks		Х		Х	
B. Equipment blanks	Х				X
Laboratory Control Sample (LCS) %R		Х		Х	
Laboratory Control Sample Duplicate(LCSD) %R		Х		Х	
LCS/LCSD Precision (RPD)		Х		Х	
Matrix Spike (MS) %R		Х	Х		
Matrix Spike Duplicate(MSD) %R		Х	Х		
MS/MSD Precision (RPD)		Х	Х		
Field Duplicate (RPD)		Х	Х		
Surrogate Spike Recoveries		Х	Х		
Dilution Factor		Х		Х	
Moisture Content		Х		Х	

%R RPD Percent recovery
Relative percent difference

#### **NWTPH-GX AND DX**

## 1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
NWTPH – Gx and Dx ECY 97-602	Soil	14 days from collection to analysis	Cool to <6 °C

All samples were analyzed within the specified holding times.

## 2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

#### 3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. The analysis requires surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	Recovery			
SB-41-E-7.5 SB-41-B-7.5	Trifluorotoluene-F	>UL			
SB-18-7.5 SB-19-7.5 DUP-6	Orthoterphenyl	>UL			

Upper control limit (UL)

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results associated with the deviant fraction are qualified as documented

in the table below.

Control Limit	Sample Result	Qualification
<b>518</b>	Non-detect	No Action
> UL	Detect	J
< LL but > 10%	Non-detect	UJ
CLE but > 10%	Detect	J
- 109/	Non-detect	R
< 10%	Detect	J

## 4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery
SB-6-7.5	Gx	>UL	>UL
SB-36-7.5	Gx	>UL	>UL
SB-45-7.5	Gx	>UL	<10%
SB-36-7.5	DRO	<ll but="">10%</ll>	<ll but="">10%</ll>
SB-52-B-2.5	DRO	>UL	AC

AC = Acceptable

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
> tile upper control limit (OL)	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	ΠΊ
< tile lower control limit (EE) but > 10 %	Detect	J
< 10%	Non-detect	R
< 10%	Detect	J
Parent sample concentration > four times the MS/MSD	Detect	No Action
spiking solution concentration (D).	Non-detect	No Action

Sample locations associated with MS/MSD recoveries exhibiting an RPD greater than of the control limit presented in the following table.

Sample Locations	Compound
SB-36-7.5 SB-45-7.5	Gx

The criteria used to evaluate the RPD between the MS/MSD recoveries are presented in the following table. In the case of an RPD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
S 1 II	Non-detect	UJ
> UL	Detect	J

## 5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS/LCSD analysis exhibited recoveries within the control limits.

### 6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
	Gx	71 J	1100	175.7%
SB-36-7.5/DUP-6	DRO	710	8900	170.4%
	HRO	1200	44000	189.4%
	Gx	140 U	71 J	AC
SB-6-7.5/DUP-7	DRO	290	440	41.1%
	HRO	1100	1500	30.8%
SB-45-7.5/DUP-8	Gx	330 U	25 U	AC
3D-43-7.3/DUP-8	DRO	86	290	108.5%

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
SB-45-7.5/DUP-8	HRO	350	740	71.6%

## AC Acceptable

The compounds Gx, DRO and HRO associated with sample locations SB-36-7.5 and DUP-6 exhibited a field duplicate RPD greater than the control limit. The associated sample results from sample locations for the listed analyte were qualified as estimated.

The compounds Gx, DRO and HRO associated with sample locations SB-45-7.5 and DUP-8 exhibited a field duplicate RPD greater than the control limit. The associated sample results from sample locations for the listed analyte were qualified as estimated.

## 7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

## DATA VALIDATION CHECKLIST FOR TPH

Gx/Dx; ECY 97-602	Rep	orted		mance otable	Not Required
	No	Yes	No	Yes	Required
GAS CHROMATOGRAPHY (GC/FID)					
Tier II Validation					
Holding times		Х		Х	
Reporting limits (units)		Х		Х	
Blanks					
A. Method blanks		Х		Х	
B. Trip blanks		Х		Х	
Laboratory Control Sample (LCS) %R		Х		Х	
Laboratory Control Sample Duplicate(LCSD) %R		Х		Х	
LCS/LCSD Precision (RPD)		Х		Х	
Matrix Spike (MS) %R		Х	Х		
Matrix Spike Duplicate(MSD) %R		Х	Х		
MS/MSD Precision (RPD)		Х	Х		
Field/Lab Duplicate (RPD)		Х	Х		
Surrogate Spike Recoveries		Х	Х		
Dilution Factor		Х		Х	
Moisture Content		Х		Х	

<sup>%</sup>R - percent recovery, RPD - relative percent difference,

VALIDATION PERFORMED

BY: Rachelle Borne

SIGNATURE: Canul Road

DATE: December 7, 2015

PEER REVIEW: Joseph C. Houser

DATE: December 11, 2015

# CHAIN OF CUSTODY/ CORRECTED SAMPLE ANALYSIS DATA SHEETS



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f Custody Record R	224119	Page 2	of
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f Custody Record	R224121	Page 4 of 6
Req Due Date (mm/dd/yy): _	Studed TAT	Rush TAT: Yes No

3			e Node Path: P Facility No:					١٩. ٠		- />-	$\overline{\alpha}$	16	ħ/.								Itand	<u>-6</u>	TA	T Rush TA	T: Yes	_ No
		Dr	racility No.			water the latest trans	debut warmen	/			COMPANY AND DE		w. 4 y		Li	ad w	ork C	order N	umbei							
Lab Na	1 46 11 1 8 1 10 00 mg	90.5		Facili	ity A	ddres	s:	111	_	$\vee$	Da	7_	Dr	np					onsulta							
Lab Ad	dress: 2425 New Holle	-d Pine	bauth K	City,	State	e, ZIF	Coc	de:	01	ym	<u>019</u>	<u> </u>	WA	./				C	onsulta	nt/Cont	ractor	Projec	t No:	GF09B	PNAWI	160
Lab PN	1: Story Brit one: 717-656-2			City, Lead	Reg	julato	ry Ag	jency:	W	AU	000	<u> </u>						Ad	ddress:	11	00	C	100	ne Way,	Sente	LVA
Lab Ph	one: 717-656-2	500						No.:										C	onsulta	nt/Cont	ractor	PM: (	Brin	~ Mores	~	
Lab Sh	ipping Accnt:			Enfo	s Pro	posa	l No:			70m								Pl	none:)	16-	721	2-4	751	Email: Bru	1. Meri	ma con
Lab Bo	ttle Order No:			Acco	untin	ng Mo	de:		Pro	vision		00	C-BU		000	C-RM		Er	nail ED	D To:	Beia	1	Mer	Email: Bris	lab.enfosdoc	@bp.com Co
Other I	nfo:			Stage	э:					tivity:									voice T							
BP Pro	iect Manager (PM):				Mat	trix		No	. Co	ntaine	ers / I	Pres	ervat	ive			F	Reques	ted Ar	alyse	s			Report 1	ype & QC L	.evel
ВР РМ	Phone:														۲-۶									5	tandard	-
ВР РМ	Email:						Α.	Container							·hels		HO							Full Data F	ackage	-
Lab No.	Sample Description	Time	Soil / Solid	Water / Liquid	Air / Vapor	Is this location a well?	Total Number of Cont	Unpreserved	H2SO4	HNO3	HCI	Methanol		CARF + Non Korhola	NWT! H/gx	Nwtff//dx/							Construction of the constr	ents and single-	strike out	
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# Laboratory Management Program LaMP Chain of Custody Record R224120

8036396-૫૯I f Custody Record	R224120	Page 5 of 6	
Req Due Date (mm/dd/yy):		Rush TAT: Yes No	

3			Node Path:			**********								•	Re	q Du	e Dat	te (mn	n/dd/y	/):				R	ush TA	T: Yes	1	No
4		BF	Facility No:	<u></u> F	1/1	NC/		01-	mp	(A	301	a	p (an	<b>.</b>	Lá	ab W	ork C	Order I	Numbe	er:								
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Lab PN		,		Leac	Reg	julato	ry Aç	gency	: (	ŃΑ	DOL	, ,							Address	: 11	20	0	180	P 10	100	Scattle	<i>)</i> ,	WA
Lab Ph		<b>1)</b>						No.:		***************************************									Consult	ant/Co	ntracto	or PM:	Bri	ina	Mire	V/7	7	
Lab Sh	ipping Accnt:			Enfo	s Pro	posa	ıl No:	: .		Action (1977)								ļ	Phone: 2	16	-726	-47	158	Email:	Bei	. Marc	ne	)ared
Lab Bo	ottle Order No:			Acco	untir	ng Mo	de:		Pro	vision		00	C-BU		000	C-RM		E	Email El	DD To	Br	wn.	Merc	UN	and to	lab.enfosdoo	c@br	o.com
Other	nfo:			Stag	e:			·	Ac	tivity:					# consideration in	***************************************		- 1	nvoice <sup>·</sup>						Contract	or \		
BP Pro	oject Manager (PM):	·			Ma	trix		No	. Co	ntain	ers /	Pres	ervat	ive			F	Reque	sted A	nalys	es			R	eport T	ype & QC	Lev	el
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BP PM	Email:						ن	Container							k+h	\	H/X							Fı	ll Data F	ackage		
Lab No.	Sample Description	Time	Soil / Solid	Water / Liquid	Air / Vapor	Is this location a well?	Total Number of Con	Unpreserved	H2SO4	HNO3	HCI	Methanol		CAPLY + Nophtheir	~9- HULMN	7 0							Sample"	ample no	omments t collected, inc ents and single orinted sample	e-strike	e out	
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BP Site Node Path:

13255 1540592 8036346-46 Laboratory Management Program LaMP Chain of Custody Record R219428

f Custody Record	R219428	Pageon
Req Due Date (mm/dd/yy):	Siendad TAT	Rush TAT: Yes No

		Br	Pacility No		1 -7	14-17	()	49,	7/1	<u>^\</u>	001		1118	٦.	Li	ab W	ork (	Ordei	Num	ber:							
Lab Na					lity A	ddres	s:	(11	7	W	B	, V	d	ris	1				Cons	ultant	'Cont	actor	: <u>/</u> ¿	XI.	ides GP	09BPNA	:WAD
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Lab PN		**************************************	<i>'</i>		d Reg	julato	ry Ag			ν́ 🛕									Addre	ess:	UG	0	Oli	V	Way, S	cottle,	WA
Lab Ph	ione: 717-656-2503		····	Calif	fornia	Glob	al ID	No.:	**************************************	The state of the s	are a								Cons	ultant/	'Conti	actor	PM:	Bri	m Mores.	`	
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Lab Bo	ettle Order No:	76		Acco	ountir	ng Mo	de:		Pro	vision		00	C-BU		000	C-RM		_	B					Mo		ab.enfosdoc	
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Lab No.	Sample Description	Time	Soil / Solid	Water / Liquid	Air / Vapor	Is this location a well?	Total Number of Container	Unpreserved	H2SO4	HN03	HCI	Methanol		Physipper + 17417	=	NWTPH/6x								Co Note: If sample not Sample" in commer and initial any prepi	nts and single-	strike out	
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_	al Instructions:				Phinasan san									\	-					$\subset$	/						
No. of Concession, Name of Street, or other Designation, Name of Street, or other Designation, Name of Street,	THIS LINE - LAB USE ONLY: Custoo			CONTRACTOR OF THE PERSON NAMED IN	Temp	Blank	(Ye	s / No		Co	oler T	emp o	on Re	ceipt.	) 9-	2، ر	_°F <b>(</b> C	)	Trip	Blanl	c:(Yes	) No	Ī	MS	/MSD Sample Sub	mitted:(Yes)	/ No



LL Sample # SW 8036396

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-48-7.5 Soil

Former Olympia Bulk Plant COC: R224118 LL Group # 1590592 1117 West Bay Drive - Olympia, WA Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 10:45 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

48-75

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.0027	0.0067	1
10725	Benzo(a)pyrene		50-32-8	N.D.	0.0027	0.0067	1
10725	Benzo(b)fluoranthene	2	205-99-2	0.0051 J	0.0027	0.0067	1
10725	Benzo(k)fluoranthene	<u> </u>	207-08-9	N.D.	0.0027	0.0067	1
10725	Chrysene		218-01-9	0.0052 J	0.0013	0.0067	1
10725	Dibenz(a,h)anthracer	ie	53-70-3	N.D.	0.0027	0.0067	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.	0.0027	0.0067	1
10725	1-Methylnaphthalene		90-12-0	0.70	0.0027	0.0067	1
10725	2-Methylnaphthalene		91-57-6	0.26	0.0027	0.0067	1
10725	Naphthalene		91-20-3	0.080	0.0027	0.0067	1
GC Vol	latiles	ECY 97-	602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C12 rting limits were rai		n.a. o sample foaming.	N.D.	72	360	440.65
GC Pet	roleum	ECY 97-	602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modifie	ed				
02214	DRO C12-C24 w/Si Gel	-	n.a.	530	12	28	1
02214	HRO C24-C40 w/Si Gel	=	n.a.	1,300	40	120	1
Wet Ch	nemistry	SM 2540	G-1997	8	8	%	
00111	Moisture		n.a.	75.4	0.50	0.50	1
	Moisture represents 103 - 105 degrees Ce as-received basis.		_	-			

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

			_					
CAT	Analysis Name	Method	Trial#	Batch#	Analysis		Analyst	Dilution
No.					Date and Ti	me		Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLH026	09/30/2015	08:23	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLH026	09/11/2015	17:40	Benjamin J	1
							Rosenberger	
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15252A34A	09/09/2015	21:18	Jeremy C Giffin	440.65
		NWTPH-Gx						
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015	22:16	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152530014A	09/13/2015	05:31	Heather E Williams	1
		NWTPH-Dx modified						
07024	DRO Alternate Soil	ECY 97-602	1	152530014A	09/11/2015	11:00	Denise L Trimby	1
	Extraction	NWTPH-Dx 06/97					_	
	Extraction	NWTPH-Dx 06/97						

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-48-7.5 Soil

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Group # 1590592 Account # 13255

LL Sample # SW 8036396

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 10:45 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

48-75

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15258820004A	09/15/2015 22:33	Scott W Freisher	1



LL Sample # SW 8036397

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-3-7.5 Soil

Former Olympia Bulk Plant COC: R224118 LL Group # 1590592 1117 West Bay Drive - Olympia, WA Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 11:15 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

03-75

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	70C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.0021	0.0053	1
10725	Benzo(a)pyrene		50-32-8	N.D.	0.0021	0.0053	1
10725	Benzo(b)fluoranthene	e	205-99-2	0.0030 J	0.0021	0.0053	1
10725	Benzo(k)fluoranthene	e	207-08-9	N.D.	0.0021	0.0053	1
10725	Chrysene		218-01-9	0.0050 J	0.0011	0.0053	1
10725	Dibenz(a,h)anthracen	ne	53-70-3	N.D.	0.0021	0.0053	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.	0.0021	0.0053	1
10725	1-Methylnaphthalene		90-12-0	0.12	0.0021	0.0053	1
10725	2-Methylnaphthalene		91-57-6	0.054	0.0021	0.0053	1
10725	Naphthalene		91-20-3	0.041	0.0021	0.0053	1
GC Vol	latiles	ECY 97-602	2 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C12 cting limits were rai	="	n.a. ample foaming.	N.D.	57	280	447.77
GC Pet	roleum	ECY 97-602	2 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	arbons w/Si	modified					
02214	DRO C12-C24 w/Si Gel	L	n.a.	170	9.5	22	1
02214	HRO C24-C40 w/Si Gel	L	n.a.	1,500	32	95	1
Wet Ch	nemistry	SM 2540 G-	-1997	8	8	8	
00111	Moisture		n.a.	68.5	0.50	0.50	1
	Moisture represents 103 - 105 degrees Coas-received basis.			sample after oven dryi reported is on an	ng at		

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name		Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (mici	rowave)	SW-846 8270C SIM	1	15253SLH026	09/30/2015	09:02	Joseph M Gambler	1
10811	BNA Soil Micro	owave SIM	SW-846 3546	1	15253SLH026	09/11/2015	17:40	Benjamin J Rosenberger	1
02005	NWTPH-GX Soil	C7-C12	ECY 97-602 NWTPH-Gx	1	15252A34A	09/09/2015	21:53	Jeremy C Giffin	447.77
01150	GC - Bulk Soil	l Prep	SW-846 5030A	1	201525038756	09/06/2015	22:18	Scott W Freisher	n.a.
02214	NWTPH-Dx soil	w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530014A	09/13/2015	05:52	Heather E Williams	1
07024	DRO Alternate Extraction	Soil	ECY 97-602 NWTPH-Dx 06/97	1	152530014A	09/11/2015	11:00	Denise L Trimby	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-3-7.5 Soil

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036397 LL Group # 1590592

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 11:15 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

03-75

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15258820004A	09/15/2015 22:33	Scott W Freisher	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-7-7.5 Soil LL Sample # SW 8036398

Former Olympia Bulk Plant COC: R224118 LL Group # 1590592 1117 West Bay Drive - Olympia, WA Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 11:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

07-75

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles SV	V-846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.0026 J	0.0024	0.0060	1
10725	Benzo(a)pyrene		50-32-8	N.D.	0.0024	0.0060	1
10725	Benzo(b)fluoranthene		205-99-2	0.0061	0.0024	0.0060	1
10725	Benzo(k)fluoranthene		207-08-9	N.D.	0.0024	0.0060	1
10725	Chrysene		218-01-9	0.0076	0.0012	0.0060	1
10725	Dibenz(a,h)anthracene		53-70-3	N.D.	0.0024	0.0060	1
10725	Indeno(1,2,3-cd)pyrene		193-39-5	N.D.	0.0024	0.0060	1
10725	1-Methylnaphthalene		90-12-0	0.96	0.0024	0.0060	1
10725	2-Methylnaphthalene		91-57-6	0.62	0.0024	0.0060	1
10725	Naphthalene		91-20-3	0.23	0.0024	0.0060	1
GC Vol	latiles EG	CY 97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C12 rting limits were raise	d due to sa	n.a. ample foaming.	N.D.	65	320	448.79
GC Pet	roleum E0	CY 97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	arbons w/Si mo	odified					
02214	DRO C12-C24 w/Si Gel		n.a.	290	11	25	1
02214	HRO C24-C40 w/Si Gel		n.a.	1,700	36	110	1
Wet Ch	nemistry SI	1 2540 G-	·1997	8	%	%	
00111	Moisture		n.a.	72.3	0.50	0.50	1
	Moisture represents the 103 - 105 degrees Cels as-received basis.		_	_	ying at		

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

		_					
Analysis Name	Method	Trial#	Batch#	Analysis		Analyst	Dilution
				Date and Tir	ne		Factor
SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLH026	09/30/2015	09:35	Joseph M Gambler	1
BNA Soil Microwave SIM	SW-846 3546	1	15253SLH026	09/11/2015	17:40	Benjamin J	1
						Rosenberger	
NWTPH-GX Soil C7-C12	ECY 97-602	1	15252A34A	09/09/2015	22:28	Jeremy C Giffin	448.79
	NWTPH-Gx						
GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015	22:20	Scott W Freisher	n.a.
NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152530014A	09/13/2015	06:14	Heather E Williams	1
	NWTPH-Dx modified						
DRO Alternate Soil	ECY 97-602	1	152530014A	09/11/2015	11:00	Denise L Trimby	1
Extraction	NWTPH-Dx 06/97						
	SIM SVOA (microwave) BNA Soil Microwave SIM  NWTPH-GX Soil C7-C12  GC - Bulk Soil Prep NWTPH-Dx soil w/Si Gel  DRO Alternate Soil	SIM SVOA (microwave) BNA Soil Microwave SIM SW-846 8270C SIM SW-846 3546  NWTPH-GX Soil C7-C12 ECY 97-602 NWTPH-GX GC - Bulk Soil Prep SW-846 5030A NWTPH-Dx soil w/Si Gel DRO Alternate Soil ECY 97-602	SIM SVOA (microwave)   SW-846 8270C SIM   1	SIM SVOA (microwave) SW-846 8270C SIM 1 15253SLH026 BNA Soil Microwave SIM SW-846 3546 1 15253SLH026  NWTPH-GX Soil C7-C12 ECY 97-602 1 15252A34A  NWTPH-GX GC - Bulk Soil Prep SW-846 5030A 1 201525038756  NWTPH-Dx soil w/Si Gel ECY 97-602 1 152530014A  DRO Alternate Soil ECY 97-602 1 152530014A	Analysis Name    Trial# Batch# Date and Tin	Analysis Name  SIM SVOA (microwave) SW-846 8270C SIM 1 15253SLH026 09/30/2015 09:35 BNA Soil Microwave SIM SW-846 3546 1 15253SLH026 09/11/2015 17:40  NWTPH-GX Soil C7-C12 ECY 97-602 1 15252A34A 09/09/2015 22:28  NWTPH-GX GC - Bulk Soil Prep SW-846 5030A 1 201525038756 09/06/2015 22:20  NWTPH-Dx soil w/Si Gel ECY 97-602 1 152530014A 09/13/2015 06:14  DRO Alternate Soil ECY 97-602 1 152530014A 09/11/2015 11:00	Analysis Name    Sample   Samp

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-7-7.5 Soil

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036398

LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 11:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

07-75

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15258820004A	09/15/2015 22:33	Scott W Freisher	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-36-7.5 Soil LL Sample # SW 8036399

Former Olympia Bulk Plant COC: R224118 LL Group # 1590592 1117 West Bay Drive - Olympia, WA Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 11:50 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

36-75

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.0027 J	0.0023	0.0059	1
10725	Benzo(a)pyrene		50-32-8	0.0025 J	0.0023	0.0059	1
10725	Benzo(b)fluoranthene	9	205-99-2	0.0061 <sup>J</sup>	0.0023	0.0059	1
10725	Benzo(k)fluoranthene	9	207-08-9	N.D. UJ	0.0023	0.0059	1
10725	Chrysene		218-01-9	0.0065_ <mark>-</mark>	0.0012	0.0059	1
10725	Dibenz(a,h)anthracen	ne	53-70-3	N.D. UJ	0.0023	0.0059	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D. UJ	0.0023	0.0059	1
10725	1-Methylnaphthalene		90-12-0	0.37 _	0.0023	0.0059	1
10725	2-Methylnaphthalene		91-57-6	0.35 <sup>J</sup>	0.0023	0.0059	1
10725	Naphthalene		91-20-3	0.050 <sup>J</sup>	0.0023	0.0059	1
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C12 rting limits were rai	='	n.a. mple foaming.	71 Ј	63	320	445.31
GC Pet	roleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	arbons w/Si	modified					
02214	DRO C12-C24 w/Si Gel	L	n.a.	710 <mark>J</mark>	11	25	1
02214	HRO C24-C40 w/Si Gel	L	n.a.	1,200 <sup>J</sup>	35	110	1
Wet Ch	nemistry	SM 2540 G-	1997	%	%	%	
00111	Moisture		n.a.	71.9	0.50	0.50	1
	Moisture represents 103 - 105 degrees Coas-received basis.			sample after oven dryi reported is on an	ng at		

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

			_					
CAT	Analysis Name	Method	Trial#	Batch#	Analysis		Analyst	Dilution
No.					Date and Ti	me		Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLH026	09/29/2015	17:43	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLH026	09/11/2015	17:40	Benjamin J	1
							Rosenberger	
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15252A34A	09/09/2015	18:56	Jeremy C Giffin	445.31
		NWTPH-Gx						
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015	22:21	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152530014A	09/13/2015	06:36	Heather E Williams	1
		NWTPH-Dx modified						
07024	DRO Alternate Soil	ECY 97-602	1	152530014A	09/11/2015	11:00	Denise L Trimby	1
	Extraction	NWTPH-Dx 06/97						

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-36-7.5 Soil

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Group # 1590592 Account # 13255

LL Sample # SW 8036399

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 11:50 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

36-75

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15258820004A	09/15/2015 22:33	Scott W Freisher	1



Account

LL Sample # SW 8036400

# 13255

LL Group # 1590592

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-36-7.5 MS Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

r Dlant

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 11:50 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

36-75

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg		mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.084		0.0023	0.0058	1
10725	Benzo(a)pyrene		50-32-8	0.10		0.0023	0.0058	1
10725	Benzo(b)fluoranthen	e	205-99-2	0.13		0.0023	0.0058	1
10725	Benzo(k)fluoranthen	e	207-08-9	0.13		0.0023	0.0058	1
10725	Chrysene		218-01-9	0.085		0.0012	0.0058	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	0.060		0.0023	0.0058	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	0.058		0.0023	0.0058	1
10725	1-Methylnaphthalene		90-12-0	0.71		0.0023	0.0058	1
10725	2-Methylnaphthalene		91-57-6	0.62		0.0023	0.0058	1
10725	Naphthalene		91-20-3	0.20		0.0023	0.0058	1
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg		mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1	2	n.a.	250	J	61	310	429.88
Repo	rting limits were rai	sed due to sa	mple foaming.					
GC Pet	roleum	ECY 97-602	NWTPH-Dx	mg/kg		mg/kg	mg/kg	
Hydrod	carbons w/Si	modified						
02214	DRO C12-C24 w/Si Ge	1	n.a.	870		11	25	1
02214	HRO C24-C40 w/Si Ge	1	n.a.	860		36	110	1
	.,							
Wet Ch	nemistry	SM 2540 G-	1997	%		%	%	
00118	Moisture		n.a.	71.9		0.50	0.50	1

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLH026	09/29/2015	18:17	Joseph M Gambler	1
10811	BNA Soil Microwave S	IM SW-846 3546	1	15253SLH026	09/11/2015	17:40	Benjamin J Rosenberger	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252A34A	09/09/2015	19:32	Jeremy C Giffin	429.88
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015	22:23	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si G	el ECY 97-602 NWTPH-Dx modified	1	152530014A	09/13/2015	06:57	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530014A	09/11/2015	11:00	Denise L Trimby	1
00118	Moisture	SM 2540 G-1997	1	15258820004A	09/15/2015	22:33	Scott W Freisher	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-36-7.5 MSD Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036401

LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 11:50 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

36-75

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg		mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.084		0.0023	0.0058	1
10725	Benzo(a)pyrene		50-32-8	0.091		0.0023	0.0058	1
10725	Benzo(b)fluoranthen	е	205-99-2	0.12		0.0023	0.0058	1
10725	Benzo(k)fluoranthen	е	207-08-9	0.11		0.0023	0.0058	1
10725	Chrysene		218-01-9	0.080		0.0012	0.0058	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	0.054		0.0023	0.0058	1
10725	Indeno(1,2,3-cd)pyr	ene	193-39-5	0.052		0.0023	0.0058	1
10725	1-Methylnaphthalene		90-12-0	0.36		0.0023	0.0058	1
10725	2-Methylnaphthalene		91-57-6	0.34		0.0023	0.0058	1
10725	Naphthalene		91-20-3	0.16		0.0023	0.0058	1
GC Vol	latiles	ECY 97-	602 NWTPH-Gx	mg/kg		mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1	2	n.a.	180	J	59	290	413.72
Repor	rting limits were ra	sed due t	o sample foaming.					
GC Pet	roleum	ECY 97-	602 NWTPH-Dx	mg/kg		mg/kg	mg/kg	
Hydrod	carbons w/Si	modifie	ed					
02214	DRO C12-C24 w/Si Ge	1	n.a.	850 <sup>J</sup>		11	25	1
02214	HRO C24-C40 w/Si Ge	1	n.a.	1,000		35	110	1
Wet Ch	nemistry	SM 2540	G-1997	%		%	%	
00118	Moisture		n.a.	71.9		0.50	0.50	1
00121	Moisture Duplicate		n.a.	73.9		0.50	0.50	1
	The duplicate moist moisture test. For determination is th	comparabi	is provided to assility purposes, the	sess the periods in the period in the pe	moisture	the		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLH026	09/29/2015	18:50	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLH026	09/11/2015	17:40	Benjamin J Rosenberger	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252A34A	09/09/2015	20:07	Jeremy C Giffin	413.72
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015	22:24	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152530014A	09/13/2015	07:19	Heather E Williams	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



Account

LL Sample # SW 8036401

# 13255

LL Group # 1590592

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-36-7.5 MSD Soil

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 11:50 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

36-75

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
07024	DRO Alternate Soil	ECY 97-602	1	152530014A	09/11/2015 11:	00	Denise L Trimby	1
	Extraction	NWTPH-Dx 06/97						
00118	Moisture	SM 2540 G-1997	1	15258820004A	09/15/2015 22:	: 33	Scott W Freisher	1
00121	Moisture Duplicate	SM 2540 G-1997	1	15258820004A	09/15/2015 22:	: 33	Scott W Freisher	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-36-12.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036402

LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 12:15 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

36-12

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.0043	0.00092	0.0023	1
10725	Benzo(a)pyrene		50-32-8	0.0053	0.00092	0.0023	1
10725	Benzo(b)fluoranthene	2	205-99-2	0.0062	0.00092	0.0023	1
10725	Benzo(k)fluoranthene	2	207-08-9	0.0037	0.00092	0.0023	1
10725	Chrysene		218-01-9	0.0052	0.00046	0.0023	1
10725	Dibenz(a,h)anthracen	ie	53-70-3	N.D.	0.00092	0.0023	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	0.0018 J	0.00092	0.0023	1
10725	1-Methylnaphthalene		90-12-0	0.029	0.00092	0.0023	1
10725	2-Methylnaphthalene		91-57-6	0.026	0.00092	0.0023	1
10725	Naphthalene		91-20-3	0.014	0.00092	0.0023	1
GC Vol	latiles	ECY 97	-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C12 rting limits were rai		n.a. to sample foaming.	N.D.	14	72	259.88
		ECY 97- modifie	-602 NWTPH-Dx ed	mg/kg	mg/kg	mg/kg	
02214	DRO C12-C24 w/Si Gel	-	n.a.	11	4.2	9.7	1
02214	HRO C24-C40 w/Si Gel	-	n.a.	33 Ј	14	42	1
Wet Ch	nemistry	SM 254	G-1997	%	%	8	
00111	Moisture		n.a.	28.1	0.50	0.50	1
	Moisture represents 103 - 105 degrees Ce as-received basis.		_	-			

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tir	ne	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLH026	09/30/2015	10:09	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLH026	09/11/2015	17:40	Benjamin J Rosenberger	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252B34A	09/10/2015	21:04	Jeremy C Giffin	259.88
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524838751	08/31/2015	12:15	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530014A	09/15/2015	00:47	Heather E Williams	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-36-12.5 Soil

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036402 LL Group # 1590592

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 12:15 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

36-12

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530014A	09/11/2015 11:00	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15258820004A	09/15/2015 22:33	Scott W Freisher	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-12-7.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036403

LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 12:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

12-75

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D. UJ	0.0026	0.0066	1
10725	Benzo(a)pyrene		50-32-8	N.D. UJ	0.0026	0.0066	1
10725	Benzo(b)fluoranthen	e	205-99-2	0.0035 J	0.0026	0.0066	1
10725	Benzo(k)fluoranthen	e	207-08-9	N.D. <sup>UJ</sup>	0.0026	0.0066	1
10725	Chrysene		218-01-9	0.0029 J	0.0013	0.0066	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D. <mark>UJ</mark>	0.0026	0.0066	1
10725	Indeno(1,2,3-cd)pyr	ene	193-39-5	N.D. <mark>UJ</mark>	0.0026	0.0066	1
10725	1-Methylnaphthalene		90-12-0	0.12 <sup>J</sup>	0.0026	0.0066	1
10725	2-Methylnaphthalene		91-57-6	0.044 J	0.0026	0.0066	1
10725	Naphthalene		91-20-3	0.017 <sup>J</sup>	0.0026	0.0066	1
GC Vol	ptance limits as note acted and the data re Latiles NWTPH-GX Soil C7-C1	eported. ECY 97-	-602 <b>NWTPH-Gx</b>	mg/kg N.D.	mg/kg 69	<b>mg/kg</b> 350	438.34
Repo	rting limits were rai	sed due t	co sample foaming.				
GC Pet	roleum	ECY 97-	-602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modifie	ed				
02214	DRO C12-C24 w/Si Ge	1	n.a.	580	12	27	1
	HRO C24-C40 w/Si Ge		n.a.	1,900	39	120	1
	,	_		_,			_
Wet Ch	nemistry	SM 2540	G-1997	%	%	%	
00111	Moisture		n.a.	74.7	0.50	0.50	1
	Moisture represents 103 - 105 degrees Cas-received basis.		_	-			

#### General Sample Comments

State of Washington Lab Certification No.  ${\tt C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	<b>e</b>	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLH026	09/30/2015 1	L0:42	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLH026	09/11/2015 1	L7:40	Nicholas W Shroyer	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252A34A	09/09/2015 2	23:03	Jeremy C Giffin	438.34
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 2	22:26	Scott W Freisher	n.a.



LL Sample # SW 8036403

# 13255

LL Group # 1590592

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-12-7.5 Soil

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA Account

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 12:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

12-75

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530014A	09/13/2015 07:41	Heather E Williams	: 1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530014A	09/11/2015 11:00	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15258820004A	09/15/2015 22:33	Scott W Freisher	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-18-7.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Group # 1590592 Account # 13255

LL Sample # SW 8036404

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 12:40 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

18-75

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	19 <sup>J</sup>	0.34	0.85	5
10725	Benzo(a)pyrene		50-32-8	16 <mark>J</mark>	0.34	0.85	5
10725	Benzo(b)fluoranthene	<b>:</b>	205-99-2	39 <mark>J</mark>	0.34	0.85	5
10725	Benzo(k)fluoranthene	<b>:</b>	207-08-9	N.D. <mark>UJ</mark>	0.34	0.85	5
10725	Chrysene		218-01-9	26 J	0.17	0.85	5
10725	Dibenz(a,h)anthracen	ıe	53-70-3	2.4	0.34	0.85	5
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	4.4	0.34	0.85	5
10725	1-Methylnaphthalene		90-12-0	16	0.34	0.85	5
10725	2-Methylnaphthalene		91-57-6	19	0.34	0.85	5
10725	Naphthalene		91-20-3	19 <b>V</b>	0.34	0.85	5
Repo	rting limits were rai	sed due t	to interference fro	om the sample ma	atrix.		
GC Vol	latiles	ECY 97-	-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12		n.a.	55 J	33	170	399.28
Repo	rting limits were rai	sed due t	to sample foaming.				
GC Pet	roleum	ECY 97-	-602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	arbons w/Si	modifie	ed				
02214	DRO C12-C24 w/Si Gel		n.a.	4,500 <sup>J</sup>	150	360	25
02214	HRO C24-C40 w/Si Gel		n.a.	10,000 J	510	1,500	25
				,		•	
Wet Ch	nemistry	SM 2540	G-1997	%	8	%	
00111	Moisture		n.a.	51.7	0.50	0.50	1
	Moisture represents 103 - 105 degrees Ce as-received basis.			-			

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLH026	09/30/2015	11:15	Joseph M Gambler	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLH026	09/11/2015	17:40	Nicholas W Shroyer	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252A34A	09/09/2015	23:39	Jeremy C Giffin	399.28
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015	22:28	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530014A	09/15/2015	01:30	Heather E Williams	25

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-18-7.5 Soil

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036404

LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 12:40 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

18-75

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530014A	09/11/2015 11:00	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	15258820004A	09/15/2015 22:33	Scott W Freisher	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-18A-12.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036405 LL Group # 1590592

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 13:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

#### 18A12

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.0011 J	0.00072	0.0018	1
10725	Benzo(a)pyrene	50-32-8	0.00096 J	0.00072	0.0018	1
10725	Benzo(b)fluoranthene	205-99-2	0.0011 J	0.00072	0.0018	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.00072	0.0018	1
10725	Chrysene	218-01-9	0.00095 J	0.00036	0.0018	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00072	0.0018	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00072	0.0018	1
10725	1-Methylnaphthalene	90-12-0	0.00083 J	0.00072	0.0018	1
10725	2-Methylnaphthalene	91-57-6	0.0014 J	0.00072	0.0018	1
10725	Naphthalene	91-20-3	N.D.	0.00072	0.0018	1
GC Vol	latiles ECY 97	-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	2.0 J	0.91	4.6	21.02
GC Pet	croleum ECY 97	-602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si modific	ed				
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.2	7.5	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	11	32	1
Wet Ch	nemistry SM 254	0 G-1997	8	8	%	
00111	Moisture	n.a.	7.9	0.50	0.50	1
	Moisture represents the loss 103 - 105 degrees Celsius. T as-received basis.			ing at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

			_	_			
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLH026	09/30/2015 11:49	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLH026	09/11/2015 17:40	Nicholas W Shroyer	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252B34A	09/10/2015 21:39	Jeremy C Giffin	21.02
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524838751	08/31/2015 13:30	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530014A	09/15/2015 01:08	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530014A	09/11/2015 11:00	Denise L Trimby	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



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Sample Description: SB-18A-12.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036405

LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Collected: 08/31/2015 13:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

18A12

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15258820004A	09/15/2015 22:33	Scott W Freisher	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-6-7.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036406 LL Group # 1590592

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 13:40 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

06-75

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.013	0.032	5
10725	Benzo(a)pyrene		50-32-8	N.D.	0.013	0.032	5
10725	Benzo(b)fluoranthene	2	205-99-2	N.D.	0.013	0.032	5
10725	Benzo(k)fluoranthene	2	207-08-9	N.D.	0.013	0.032	5
10725	Chrysene		218-01-9	0.010 J	0.0064	0.032	5
10725	Dibenz(a,h)anthracer	ie	53-70-3	N.D. UJ	0.013	0.032	5
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D. UJ	0.013	0.032	5
10725	1-Methylnaphthalene		90-12-0	1.4 <sup>J</sup>	0.013	0.032	5
10725	2-Methylnaphthalene		91-57-6	1.9 <sup>J</sup>	0.013	0.032	5
10725	Naphthalene		91-20-3	0.056 J	0.013	0.032	5
GC Vol	latiles	ECY 97-	602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	2	n.a.	N.D.	69	340	443.49
Repo:	rting limits were rai	sed due t	o sample foaming.				
GC Pet	roleum	ECY 97-	602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modifie	d				
02214	DRO C12-C24 w/Si Gel	L	n.a.	290	12	27	1
02214	HRO C24-C40 w/Si Gel	Ĺ	n.a.	1,100	39	120	1
Wet Ch	nemistry	SM 2540	G-1997	%	8	%	
00111	Moisture		n.a.	74.2	0.50	0.50	1
	Moisture represents 103 - 105 degrees Co as-received basis.		_	-			

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/24/2015	22:07	Catherine E	5
							Bachman	
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLI026	09/11/2015	18:00	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15252A31A	09/09/2015	19:03	Jeremy C Giffin	443.49
		NWTPH-Gx						
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015	22:29	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152530026A	09/14/2015	23:42	Heather E Williams	1
		NWTPH-Dx modified						
07024	DRO Alternate Soil	ECY 97-602	1	152530026A	09/11/2015	16:50	JoElla L Rice	1
	Extraction	NWTPH-Dx 06/97						

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-6-7.5 Soil

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036406 LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 13:40 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

06-75

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15258820004B	09/15/2015 22:33	Scott W Freisher	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-6-7.5 MS Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036407 LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 13:40 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

06-75

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.13	0.013	0.032	5
10725	Benzo(a)pyrene		50-32-8	0.12	0.013	0.032	5
10725	Benzo(b)fluoranthene	<u> </u>	205-99-2	0.16	0.013	0.032	5
10725	Benzo(k)fluoranthene	<u> </u>	207-08-9	0.14	0.013	0.032	5
10725	Chrysene		218-01-9	0.12	0.0064	0.032	5
10725	Dibenz(a,h)anthracer	ıe	53-70-3	0.057	0.013	0.032	5
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	0.056	0.013	0.032	5
10725	1-Methylnaphthalene		90-12-0	3.5	0.013	0.032	5
10725	2-Methylnaphthalene		91-57-6	4.8	0.013	0.032	5
10725	Naphthalene		91-20-3	0.24	0.013	0.032	5
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12		n.a.	170 J	69	340	442.95
керо	rting limits were rai	sed due to sa	mple loaming.				
GC Pet	croleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modified					
02214	DRO C12-C24 w/Si Gel		n.a.	880	11	27	1
02214	HRO C24-C40 w/Si Gel		n.a.	1,900	38	110	1
Wet Ch	nemistry	SM 2540 G-	1997	%	8	%	
00118	Moisture		n.a.	74.2	0.50	0.50	1

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

#### Laboratory Sample Analysis Record Method CAT Analysis Name Trial# Batch# Analyst Dilution Date and Time Factor No. SW-846 8270C SIM 10725 SIM SVOA (microwave) 15253SLI026 09/24/2015 22:40 Catherine E Bachman Shawn J McMullen 10811 BNA Soil Microwave SIM SW-846 3546 1 15253SLI026 09/11/2015 18:00 1 02005 NWTPH-GX Soil C7-C12 ECY 97-602 1 15252A31A 09/09/2015 19:39 Jeremy C Giffin 442.95 NWTPH-Gx 01150 GC - Bulk Soil Prep 201525038756 Scott W Freisher SW-846 5030A 09/06/2015 22:31 n.a. 02214 NWTPH-Dx soil w/Si Gel ECY 97-602 152530026A 09/15/2015 01:52 Heather E Williams 1 1 NWTPH-Dx modified 152530026A JoElla L Rice 07024 DRO Alternate Soil ECY 97-602 09/11/2015 16:50 NWTPH-Dx 06/97 Extraction 00118 Moisture SM 2540 G-1997 1 15258820004B 09/15/2015 22:33 Scott W Freisher 1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-6-7.5 MSD Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Group # 1590592 Account # 13255

LL Sample # SW 8036408

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 13:40 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

06-75

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8	3270C SIM	mg/kg		mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.13		0.013	0.032	5
10725	Benzo(a)pyrene		50-32-8	0.13		0.013	0.032	5
10725	Benzo(b)fluoranthen	е	205-99-2	0.19		0.013	0.032	5
10725	Benzo(k)fluoranthen	e	207-08-9	0.14		0.013	0.032	5
10725	Chrysene		218-01-9	0.13		0.0064	0.032	5
10725	Dibenz(a,h)anthrace	ne	53-70-3	0.061		0.013	0.032	5
10725	Indeno(1,2,3-cd)pyr	ene	193-39-5	0.057		0.013	0.032	5
10725	1-Methylnaphthalene		90-12-0	2.4		0.013	0.032	5
10725	2-Methylnaphthalene		91-57-6	2.8		0.013	0.032	5
10725	Naphthalene		91-20-3	0.23		0.013	0.032	5
GC Vol	latiles	ECY 97-6	02 NWTPH-Gx	mg/kg		mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1	2	n.a.	140	J	69	340	444.82
Repor	rting limits were ra	sed due to	sample foaming.					
GC Pet	roleum	ECY 97-6	02 NWTPH-Dx	mg/kg		mg/kg	mg/kg	
Hydrod	carbons w/Si	modified	l					
02214	DRO C12-C24 w/Si Ge	1	n.a.	810		11	27	1
02214	HRO C24-C40 w/Si Ge	1	n.a.	1,400		38	110	1
Wet Ch	nemistry	SM 2540	G-1997	%		%	%	
00118	Moisture		n.a.	74.2		0.50	0.50	1
00121	Moisture Duplicate		n.a.	74.1		0.50	0.50	1
	The duplicate moist moisture test. For determination is th	comparabil	ity purposes, the	sess the periods in the period in the periods in the periods in the period in the	moisture	the		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/24/2015	23:13	Catherine E Bachman	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLI026	09/11/2015	18:00	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252A31A	09/09/2015	20:15	Jeremy C Giffin	444.82
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015	22:32	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152530026A	09/15/2015	02:13	Heather E Williams	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-6-7.5 MSD Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036408 LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Collected: 08/31/2015 13:40 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

06-75

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530026A	09/11/2015 16	5:50	JoElla L Rice	1
00118	Moisture	SM 2540 G-1997	1	15258820004B	09/15/2015 22	2:33	Scott W Freisher	1
00121	Moisture Duplicate	SM 2540 G-1997	1	15258820004B	09/15/2015 22	2:33	Scott W Freisher	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-11-7.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036409 LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 14:00 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

11-75

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	70C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.012	0.029	5
10725	Benzo(a)pyrene		50-32-8	N.D.	0.012	0.029	5
10725	Benzo(b)fluoranthen	e	205-99-2	0.016 J	0.012	0.029	5
10725	Benzo(k)fluoranthen	e	207-08-9	N.D.	0.012	0.029	5
10725	Chrysene		218-01-9	0.0098 J	0.0059	0.029	5
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.012	0.029	5
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.	0.012	0.029	5
10725	1-Methylnaphthalene		90-12-0	0.57	0.012	0.029	5
10725	2-Methylnaphthalene		91-57-6	0.75	0.012	0.029	5
10725	Naphthalene		91-20-3	0.093	0.012	0.029	5
GC Vol	latiles	ECY 97-602	2 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1	=	n.a.	N.D.	63	320	443.68
Repor	rting limits were rai	sed due to sa	ample foaming.				
GC Pet	roleum	ECY 97-602	2 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modified					
02214	DRO C12-C24 w/Si Ge	1	n.a.	310	11	25	1
02214	HRO C24-C40 w/Si Ge	1	n.a.	1,300	36	110	1
Wet Ch	nemistry	SM 2540 G-	-1997	%	%	%	
00111	Moisture		n.a.	72.0	0.50	0.50	1
	Moisture represents 103 - 105 degrees Coas-received basis.			sample after oven dryi reported is on an	ng at		

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tir	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLH026	09/30/2015	12:22	Joseph M Gambler	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLH026	09/11/2015	17:40	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252A34A	09/10/2015	00:49	Jeremy C Giffin	443.68
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015	22:34	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530026A	09/15/2015	02:35	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530026A	09/11/2015	16:50	JoElla L Rice	1
00111	Moisture	SM 2540 G-1997	1	15258820004B	09/15/2015	22:33	Scott W Freisher	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-11-12.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036410

LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 14:10 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

11-12

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8	270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.13	0.0038	0.0095	5
10725	Benzo(a)pyrene		50-32-8	0.13	0.0038	0.0095	5
10725	Benzo(b)fluoranthene	2	205-99-2	0.18	0.0038	0.0095	5
10725	Benzo(k)fluoranthene	2	207-08-9	0.073	0.0038	0.0095	5
10725	Chrysene		218-01-9	0.14	0.0019	0.0095	5
10725	Dibenz(a,h)anthracer	ie	53-70-3	0.012	0.0038	0.0095	5
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	0.039	0.0038	0.0095	5
10725	1-Methylnaphthalene		90-12-0	0.027	0.0038	0.0095	5
10725	2-Methylnaphthalene		91-57-6	0.031	0.0038	0.0095	5
10725	Naphthalene		91-20-3	0.026	0.0038	0.0095	5
GC Vol	latiles	ECY 97-6	02 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C12 cting limits were rai		n.a. sample foaming.	N.D.	11	54	234.04
GC Pet	roleum	ECY 97-6	02 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	arbons w/Si	modified					
02214	DRO C12-C24 w/Si Gel	_	n.a.	N.D.	3.4	8.0	1
02214	HRO C24-C40 w/Si Gel	=	n.a.	N.D.	11	34	1
Wet Ch	nemistry	SM 2540	G-1997	8	%	%	
00111	Moisture		n.a.	13.4	0.50	0.50	1
	Moisture represents 103 - 105 degrees Co as-received basis.		_	sample after oven dry reported is on an	ing at		

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLH026	09/30/2015	12:56	Joseph M Gambler	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLH026	09/11/2015	17:40	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15254A31A	09/11/2015	22:43	Jeremy C Giffin	234.04
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524838751	08/31/2015	14:10	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530026A	09/14/2015	21:34	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530026A	09/11/2015	16:50	JoElla L Rice	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-11-12.5 Soil

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036410 LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 14:10 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

11-12

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15258820004B	09/15/2015 22:33	Scott W Freisher	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-20-7.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036411

LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 14:20 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

20-75

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8	3270C SIM	mg/kg		mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.		0.0023	0.0057	1
10725	Benzo(a)pyrene		50-32-8	N.D.		0.0023	0.0057	1
10725	Benzo(b)fluoranthen	e	205-99-2	0.0047	J	0.0023	0.0057	1
10725	Benzo(k)fluoranthen	e	207-08-9	N.D.		0.0023	0.0057	1
10725	Chrysene		218-01-9	0.0020	J	0.0011	0.0057	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.		0.0023	0.0057	1
10725	Indeno(1,2,3-cd)pyr	ene	193-39-5	N.D.		0.0023	0.0057	1
10725	1-Methylnaphthalene		90-12-0	0.41		0.0023	0.0057	1
10725	2-Methylnaphthalene		91-57-6	0.42		0.0023	0.0057	1
10725	Naphthalene		91-20-3	0.057		0.0023	0.0057	1
GC Vol	latiles	ECY 97-6	02 NWTPH-Gx	mg/kg		mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1	2	n.a.	160	J	58	290	418.49
Repo	rting limits were ra	ised due to	sample foaming.					
GC Pet	roleum	ECY 97-6	02 NWTPH-Dx	mg/kg		mg/kg	mg/kg	
Hydrod	carbons w/Si	modified	l					
02214	DRO C12-C24 w/Si Ge	1	n.a.	150		10	24	1
02214	HRO C24-C40 w/Si Ge	1	n.a.	810		34	100	1
Wet Ch	nemistry	SM 2540	G-1997	%		8	%	
00111	Moisture		n.a.	71.2		0.50	0.50	1
	Moisture represents 103 - 105 degrees C as-received basis.		_	_		drying at		

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLH026	09/30/2015 13:30	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLH026	09/11/2015 17:40	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252A34A	09/10/2015 02:35	Jeremy C Giffin	418.49
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 22:36	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530026A	09/14/2015 23:21	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530026A	09/11/2015 16:50	JoElla L Rice	1
00111	Moisture	SM 2540 G-1997	1	15258820004B	09/15/2015 22:33	Scott W Freisher	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



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Sample Description: SB-20-12.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036412

LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 14:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

20-12

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.0027	0.0067	1
10725	Benzo(a)pyrene		50-32-8	N.D.	0.0027	0.0067	1
10725	Benzo(b)fluoranthene		205-99-2	0.0065 J	0.0027	0.0067	1
10725	Benzo(k)fluoranthene		207-08-9	N.D.	0.0027	0.0067	1
10725	Chrysene		218-01-9	0.0046 J	0.0013	0.0067	1
10725	Dibenz(a,h)anthracen	.e	53-70-3	N.D.	0.0027	0.0067	1
10725	Indeno(1,2,3-cd)pyre	ne	193-39-5	0.0028 J	0.0027	0.0067	1
10725	1-Methylnaphthalene		90-12-0	0.10	0.0027	0.0067	1
10725	2-Methylnaphthalene		91-57-6	0.11	0.0027	0.0067	1
10725	Naphthalene		91-20-3	0.049	0.0027	0.0067	1
GC Vol	latiles	ECY 97-	602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C12 rting limits were rai		n.a. o sample foaming.	N.D.	73	360	448.74
		ECY 97- modifie	602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
02214	DRO C12-C24 w/Si Gel		n.a.	170	12	28	1
02214	HRO C24-C40 w/Si Gel		n.a.	630	41	120	1
Wet Ch	nemistry	SM 2540	G-1997	%	%	%	
00111	Moisture		n.a.	75.4	0.50	0.50	1
	Moisture represents 103 - 105 degrees Ce as-received basis.		_	-			

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLH026	09/30/2015 14:0	3 Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLH026	09/11/2015 17:4	O Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252A34A	09/10/2015 01:2	4 Jeremy C Giffin	448.74
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 22:3	8 Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530026A	09/14/2015 23:0	O Heather E William	s 1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530026A	09/11/2015 16:5	0 JoElla L Rice	1
00111	Moisture	SM 2540 G-1997	1	15258820004B	09/15/2015 22:3	3 Scott W Freisher	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-17-7.5 Soil

SB-17-7.5 Soil

Former Olympia Bulk Plant COC: R224118

LL Sample # SW 8036413

LL Group # 1590592

1117 West Bay Drive - Olympia, WA

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 14:40 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

17-75

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8	270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.018	0.00074	0.0018	1
10725	Benzo(a)pyrene		50-32-8	0.019	0.00074	0.0018	1
10725	Benzo(b)fluoranthene	9	205-99-2	0.023	0.00074	0.0018	1
10725	Benzo(k)fluoranthene	9	207-08-9	0.011	0.00074	0.0018	1
10725	Chrysene		218-01-9	0.019	0.00037	0.0018	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	0.0017 J	0.00074	0.0018	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	0.0055	0.00074	0.0018	1
10725	1-Methylnaphthalene		90-12-0	0.0021	0.00074	0.0018	1
10725	2-Methylnaphthalene		91-57-6	0.0027	0.00074	0.0018	1
10725	Naphthalene		91-20-3	0.0045	0.00074	0.0018	1
GC Vol	latiles	ECY 97-6	02 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1:	2	n.a.	N.D.	0.99	4.9	22.05
GC Pet	roleum	ECY 97-6	02 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modified					
02214	DRO C12-C24 w/Si Ge	l	n.a.	N.D.	3.4	7.8	1
02214	HRO C24-C40 w/Si Ge	L	n.a.	N.D.	11	34	1
Wet Ch	nemistry	SM 2540 (	G-1997	%	%	%	
00111	Moisture		n.a.	10.7	0.50	0.50	1
	Moisture represents 103 - 105 degrees Co as-received basis.						

#### General Sample Comments

State of Washington Lab Certification No. C457

00111 Moisture

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

SM 2540 G-1997

#### Laboratory Sample Analysis Record Method CAT Analysis Name Trial# Batch# Analysis Analyst Dilution No. Date and Time Factor 10725 SIM SVOA (microwave) SW-846 8270C SIM 15253SLH026 09/30/2015 14:37 Joseph M Gambler 15253SLH026 Shawn J McMullen 10811 BNA Soil Microwave SIM SW-846 3546 1 09/11/2015 17:40 1 02005 NWTPH-GX Soil C7-C12 ECY 97-602 1 15254A31A 09/11/2015 21:29 Jeremy C Giffin 22.05 NWTPH-Gx 06647 GC-5g Field Preserved SW-846 5035A 201524838751 08/31/2015 14:40 Client Supplied n.a. MeOH 02214 NWTPH-Dx soil w/Si Gel 152530026A Heather E Williams ECY 97-602 1 09/14/2015 21:55 1 NWTPH-Dx modified 152530026A 07024 DRO Alternate Soil ECY 97-602 09/11/2015 16:50 JoElla L Rice Extraction NWTPH-Dx 06/97

15258820004B

09/15/2015 22:33

Scott W Freisher

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-24-7.5 Soil

Reported: 10/01/2015 13:13

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036414

LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 14:50 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Highlands Ranch CO 80129

24-75

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.00072	0.0018	1
10725	Benzo(a)pyrene		50-32-8	N.D.	0.00072	0.0018	1
10725	Benzo(b)fluoranthen	e	205-99-2	N.D.	0.00072	0.0018	1
10725	Benzo(k)fluoranthen	e	207-08-9	N.D.	0.00072	0.0018	1
10725	Chrysene		218-01-9	N.D.	0.00036	0.0018	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.00072	0.0018	1
10725	Indeno(1,2,3-cd)pyr	ene	193-39-5	N.D.	0.00072	0.0018	1
10725	1-Methylnaphthalene		90-12-0	N.D.	0.00072	0.0018	1
10725	2-Methylnaphthalene		91-57-6	N.D.	0.00072	0.0018	1
10725	Naphthalene		91-20-3	N.D.	0.00072	0.0018	1
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1	2	n.a.	N.D.	0.83	4.2	19.01
GC Pet	roleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modified					
02214	DRO C12-C24 w/Si Ge	1	n.a.	N.D.	3.2	7.6	1
02214	HRO C24-C40 w/Si Ge	1	n.a.	N.D.	11	32	1
Wet Ch	nemistry	SM 2540 G-	1997	%	%	%	
00111	Moisture		n.a.	8.8	0.50	0.50	1
	Moisture represents 103 - 105 degrees C as-received basis.			sample after oven dry reported is on an	ing at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	9	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLH026	09/30/2015 1	L5:10	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLH026	09/11/2015 1	L7:40	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252B34A	09/10/2015 2	23:25	Jeremy C Giffin	19.01
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524838751	08/31/2015 1	L4:50	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530026A	09/14/2015 2	22:16	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530026A	09/11/2015 1	L6:50	JoElla L Rice	1
00111	Moisture	SM 2540 G-1997	1	15258820004B	09/15/2015 2	22:33	Scott W Freisher	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-33-7.5 Soil LL Sample # SW 8036415

Former Olympia Bulk Plant COC: R224118 LL Group # 1590592 1117 West Bay Drive - Olympia, WA Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 15:00 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

33-75

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.00074	0.0018	1
10725	Benzo(a)pyrene		50-32-8	N.D.	0.00074	0.0018	1
10725	Benzo(b)fluoranthene	<b>e</b>	205-99-2	N.D.	0.00074	0.0018	1
10725	Benzo(k)fluoranthene	9	207-08-9	N.D.	0.00074	0.0018	1
10725	Chrysene		218-01-9	N.D.	0.00037	0.0018	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.00074	0.0018	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.	0.00074	0.0018	1
10725	1-Methylnaphthalene		90-12-0	N.D.	0.00074	0.0018	1
10725	2-Methylnaphthalene		91-57-6	N.D.	0.00074	0.0018	1
10725	Naphthalene		91-20-3	N.D.	0.00074	0.0018	1
GC Vol	latiles	ECY 97-	602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1:	2	n.a.	N.D.	20	99	443.47
Repo	rting limits were rai	sed due to	o sample foaming.				
GC Pet	roleum	ECY 97-	602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modifie	d				
02214	DRO C12-C24 w/Si Ge	l	n.a.	N.D.	3.3	7.7	1
02214	HRO C24-C40 w/Si Ge	L	n.a.	N.D.	11	33	1
Wet Ch	nemistry	SM 2540	G-1997	%	8	8	
00111	Moisture		n.a.	10.2	0.50	0.50	1
	Moisture represents 103 - 105 degrees Co as-received basis.		_	-			

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLH026	09/30/2015	15:43	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLH026	09/11/2015	17:40	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15254A31A	09/11/2015	23:19	Jeremy C Giffin	443.47
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524838751	08/31/2015	15:00	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530026A	09/14/2015	22:38	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530026A	09/11/2015	16:50	JoElla L Rice	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-33-7.5 Soil

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Group # 1590592 Account # 13255

LL Sample # SW 8036415

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 15:00 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

33-75

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15258820004B	09/15/2015 22:33	Scott W Freisher	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-19-7.5 Soil

LL Sample # SW 8036416 Former Olympia Bulk Plant COC: R224118 LL Group # 1590592 1117 West Bay Drive - Olympia, WA Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 15:05 Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Highlands Ranch CO 80129 Reported: 10/01/2015 13:13

19-75

CAT No.	Analysis Name	CAS Numb	Dry Der Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles SW-	-846 8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	7.7 <sup>J</sup>	0.11	0.28	5
10725	Benzo(a)pyrene	50-32-8	7.0 <mark>J</mark>	0.11	0.28	5
10725	Benzo(b)fluoranthene	205-99-2		0.11	0.28	5
10725	Benzo(k)fluoranthene	207-08-9	N.D. UJ	0.11	0.28	5
10725	Chrysene	218-01-9		0.057	0.28	5
10725	Dibenz(a,h)anthracene	53-70-3	0.87 <sup>J</sup>	0.11	0.28	5
10725	Indeno(1,2,3-cd)pyrene	193-39-5	1.7	0.11	0.28	5
10725	1-Methylnaphthalene	90-12-0	2.1	0.11	0.28	5
10725	2-Methylnaphthalene	91-57-6	2.0	0.11	0.28	5
10725	Naphthalene	91-20-3	3.3 <b>V</b>	0.11	0.28	5
Repor	rting limits were raised	due to interferen	ce from the sample m	matrix.		
GC Vol	latiles EC	7 97-602 NWTPH	-Gx mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	58	290	423.32
Repor	rting limits were raised	due to sample foa	ming.			
GC Pet	roleum EC	7 97-602 NWTPH	-Dx mg/kg	mg/kg	mg/kg	
Hydrod	arbons w/Si mod	dified				
02214	DRO C12-C24 w/Si Gel	n.a.	9,600 <sup>J</sup>	1,000	2,400	100
02214	HRO C24-C40 w/Si Gel	n.a.	64,000 J	3,400	10,000	100
rate of		2540 @ 1007	%	%	%	
	•	2540 G-1997				
00111	Moisture	n.a.	70.7	0.50	0.50	1
	Moisture represents the 103 - 105 degrees Celsi as-received basis.		_			

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLH026	09/30/2015	16:16	Joseph M Gambler	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLH026	09/11/2015	17:40	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252A34A	09/10/2015	02:00	Jeremy C Giffin	423.32
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015	22:39	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530026A	09/15/2015	03:18	Heather E Williams	100
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530026A	09/11/2015	16:50	JoElla L Rice	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-19-7.5 Soil

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036416 LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 15:05 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

19-75

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15258820004B	09/15/2015 22:33	Scott W Freisher	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-19-14.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036417

LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 15:25 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

19-14

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8270	C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	7.7 <sup>J</sup>	0.041	0.10	50
10725	Benzo(a)pyrene		50-32-8	6.7	0.041	0.10	50
10725	Benzo(b)fluoranthene	<b>:</b>	205-99-2	6.7	0.041	0.10	50
10725	Benzo(k)fluoranthene	<b>!</b>	207-08-9	3.1	0.041	0.10	50
10725	Chrysene		218-01-9	7.7	0.020	0.10	50
10725	Dibenz(a,h)anthracen	ıe	53-70-3	0.69	0.041	0.10	50
10725	Indeno(1,2,3-cd)pyre	ne	193-39-5	1.9	0.041	0.10	50
10725	1-Methylnaphthalene		90-12-0	14	0.041	0.10	50
10725	2-Methylnaphthalene		91-57-6	23	0.41	1.0	500
10725	Naphthalene		91-20-3	50 <b>V</b>	0.41	1.0	500
matr		n the sample of ECY 97-602	chromatogram.	mg/kg	mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C12 rting limits were rai		n.a. mple foaming.	28 Ј	12	59	235.66
GC Pet	roleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydro	carbons w/Si	modified					
02214	DRO C12-C24 w/Si Gel		n.a.	580	37	87	10
02214	HRO C24-C40 w/Si Gel		n.a.	2,300	120	370	10
Wet Cl	nemistry	SM 2540 G-1	L997	%	%	%	
00111	Moisture		n.a.	19.5	0.50	0.50	1
	Moisture represents 103 - 105 degrees Ce as-received basis.		_	sample after oven dry reported is on an	ing at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/28/2015	13:41	Joseph M Gambler	50
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/29/2015	09:57	Joseph M Gambler	500
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLI026	09/11/2015	18:00	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15254A31A	09/11/2015	23:55	Jeremy C Giffin	235.66
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524838751	08/31/2015	15:25	Client Supplied	n.a.

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-19-14.5 Soil

SB-19-14.5 Soil

Former Olympia Bulk Plant COC: R224118

LL Sample # SW 8036417

LL Group # 1590592

1117 West Bay Drive - Olympia, WA

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 15:25 by JL Atlantic Richfield c/o ARCADIS

Suite 600

15258820004B 09/15/2015 22:33 Scott W Freisher

Submitted: 09/04/2015 09:35 630 Plaza Drive

SM 2540 G-1997 1

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

19-14

00111 Moisture

Laboratory Sample Analysis Record								
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tim	ne	Analyst	Dilution Factor
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530026A	09/15/2015	02:56	Heather E Williams	10
07024	DRO Alternate Soil	ECY 97-602 NWTPH-Dx 06/97	1	152530026A	09/11/2015	16:50	JoElla L Rice	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-44-7.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036418 LL Group # 1590592

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 15:20 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

44-75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles SW	-846 8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.0052	0.00074	0.0019	1
10725	Benzo(a)pyrene	50-32-8	0.0069	0.00074	0.0019	1
10725	Benzo(b)fluoranthene	205-99-2	0.010	0.00074	0.0019	1
10725	Benzo(k)fluoranthene	207-08-9	0.0045	0.00074	0.0019	1
10725	Chrysene	218-01-9	0.0055	0.00037	0.0019	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00074	0.0019	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0019	0.00074	0.0019	1
10725	1-Methylnaphthalene	90-12-0	0.0015 J	0.00074	0.0019	1
10725	2-Methylnaphthalene	91-57-6	0.0015 J	0.00074	0.0019	1
10725	Naphthalene	91-20-3	0.0043	0.00074	0.0019	1
GC Vo	latiles EC	Y 97-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7 C12	n.a.	N.D. R	8.7	44	193.8
Repo	rting limits were raised	due to sample foaming.				
GC Pet	troleum EC	Y 97-602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydro	carbons w/Si mo	dified				
02214	DRO C12-C24 w/Si Gel	n.a.	N.D.	3.4	7.8	1
02214	HRO C24-C40 w/Si Gel	n.a.	N.D.	11	34	1
Wet Cl	nemistry SM	2540 G-1997	%	%	%	
00111	Moisture	n.a.	11.2	0.50	0.50	1
	Moisture represents the	e loss in weight of the	sample after ove	en drying at		
	103 - 105 degrees Celsi	us. The moisture result	reported is on	an		
	as-received basis.					

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Nam	me	Method	Trial#	Batch#	Analysis Date and Ti	ne	Analyst	Dilution Factor
10725	SIM SVOA (mi	icrowave)	SW-846 8270C SIM	1	15253SLI026	09/25/2015	00:19	Catherine E Bachman	1
10811	BNA Soil Mic	crowave SIM	SW-846 3546	1	15253SLI026	09/11/2015	18:00	Shawn J McMullen	1
02005	NWTPH-GX Soi	il C7-C12	ECY 97-602 NWTPH-Gx	1	15254A31B	09/14/2015	19:25	Marie D Beamenderfer	193.8
06647	GC-5g Field MeOH	Preserved	SW-846 5035A	1	201524838751	08/31/2015	15:20	Client Supplied	n.a.
02214	NWTPH-Dx soi	il w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530027A	09/12/2015	23:22	Heather E Williams	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-44-7.5 Soil

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036418

LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 15:20 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

44-75

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530027A	09/11/2015 16:50	JoElla L Rice	1
00111	Moisture	SM 2540 G-1997	1	15258820004B	09/15/2015 22:33	Scott W Freisher	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-56-7.5 Soil LL Sample # SW 8036419

Former Olympia Bulk Plant COC: R224118 LL Group # 1590592 1117 West Bay Drive - Olympia, WA Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 16:00 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

56-75

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg		mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.0012	J	0.00093	0.0023	1
10725	Benzo(a)pyrene		50-32-8	0.0014	J	0.00093	0.0023	1
10725	Benzo(b)fluoranthen	9	205-99-2	0.0046		0.00093	0.0023	1
10725	Benzo(k)fluoranthen	<b>e</b>	207-08-9	0.0013	J	0.00093	0.0023	1
10725	Chrysene		218-01-9	0.0031		0.00046	0.0023	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.		0.00093	0.0023	1
10725	Indeno(1,2,3-cd)pyr	ene	193-39-5	N.D.		0.00093	0.0023	1
10725	1-Methylnaphthalene		90-12-0	0.0088		0.00093	0.0023	1
10725	2-Methylnaphthalene		91-57-6	0.013		0.00093	0.0023	1
10725	Naphthalene		91-20-3	0.034		0.00093	0.0023	1
GC Vol	latiles	ECY 97-	602 NWTPH-Gx	mg/kg		mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1	2	n.a.	N.D.		15	75	266.65
Repo	rting limits were rai	sed due to	sample foaming.					
GC Pet	roleum	ECY 97-	602 NWTPH-Dx	mg/kg		mg/kg	mg/kg	
Hydrod	carbons w/Si	modifie	d					
02214	DRO C12-C24 w/Si Ge	L	n.a.	9.9		4.2	9.8	1
02214	HRO C24-C40 w/Si Ge	L	n.a.	23	J	14	42	1
Wot Cl	nemistry	SM 2540	C 1007	%		8	%	
	<del>-</del>	SM 2540						
00111	Moisture		n.a.	29.0		0.50	0.50	1
	Moisture represents 103 - 105 degrees C as-received basis.		_	_	_	ng at		

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/25/2015	00:52	Catherine E Bachman	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLI026	09/11/2015	18:00	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15254A31B	09/14/2015	20:02	Marie D Beamenderfer	266.65
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524838751	08/31/2015	16:00	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530027A	09/12/2015	23:44	Heather E Williams	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-56-7.5 Soil

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Group # 1590592 Account # 13255

LL Sample # SW 8036419

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 16:00 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

56-75

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530027A	09/11/2015 16:50	JoElla L Rice	1
00111	Moisture	SM 2540 G-1997	1	15258820004B	09/15/2015 22:33	Scott W Freisher	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax; 717-656-2681 • www,LancasterLabs.com

Sample Description: SB-45-7.5 Soil

LL Sample # SW 8036420

Former Olympia Bulk Plant COC: R224118 1117 West Bay Drive - Olympia, WA

LL Group # 1590592 # 13255

Account

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 16:10

Submitted: 09/04/2015 09:35

Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129 Reported: 10/01/2015 13:13

45-75

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.0052 J	0.0036	0.0089	1
10725	Benzo(a)pyrene		50-32-8	0.0054 J	0.0036	0.0089	1
10725	Benzo(b)fluoranthen	e	205-99-2	0.015 <sup>J</sup>	0.0036	0.0089	1
10725	Benzo(k)fluoranthen	e	207-08-9	0.0047_J	0.0036	0.0089	1
10725	Chrysene		218-01-9	0.011	0.0018	0.0089	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D. <sup>UJ</sup>	0.0036	0.0089	1
10725	Indeno(1,2,3-cd)pyr	ene	193-39-5	0.0043_J	0.0036	0.0089	1
10725	1-Methylnaphthalene		90-12-0	0.015 -	0.0036	0.0089	1
10725	2-Methylnaphthalene		91-57-6	0.015 <sup>J</sup>	0.0036	0.0089	1
10725	Naphthalene		91-20-3	0.038 <mark>J</mark>	0.0036	0.0089	1
The :	holding time was not	met due to a	laboratory err	or.			
GC Vo	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1	2	n.a.	N.D.	65	330	452.47
Repo	rting limits were ra	ised due to sa	mple foaming.				
GC Pet	croleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydro	carbons w/Si	modified					
02214	DRO C12-C24 w/Si Ge	1	n.a.	86 <sup>J</sup>	11	25	1
02211			n.a.	350 J	36	110	1
02211	INCO 021 010 W/D1 00	_	11.4.	330 -	30	110	±
Wet Cl	nemistry	SM 2540 G-	1997	%	%	%	
00111	Moisture		n.a.	72.3	0.50	0.50	1
	Moisture represents	the loss in w	eight of the s	sample after oven dry	ing at		
	103 - 105 degrees C				-		
	as-received basis.			_			

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

NWTPH-Dx modified

#### Laboratory Sample Analysis Record Method CAT Trial# Batch# Analyst Dilution Analysis Name Analysis No. Date and Time Factor SW-846 8270C SIM 15259SLF026 10725 SIM SVOA (microwave) 09/24/2015 19:55 Catherine E 1 Bachman 10811 BNA Soil Microwave SIM SW-846 3546 15259SLF026 09/17/2015 19:22 1 Benjamin J Rosenberger 02005 NWTPH-GX Soil C7-C12 ECY 97-602 15252B34A 452.47 09/10/2015 18:43 Jeremy C Giffin NWTPH-Gx 01150 GC - Bulk Soil Prep SW-846 5030A 201525038756 09/06/2015 22:40 Scott W Freisher 02214 NWTPH-Dx soil w/Si Gel ECY 97-602 152530027A 09/14/2015 22:16 Heather E Williams

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-45-7.5 Soil

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036420 LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 16:10 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

45-75

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530027A	09/11/2015 16:50	JoElla L Rice	1
00111	Moisture	SM 2540 G-1997	1	15258820005A	09/15/2015 20:32	Scott W Freisher	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www,LancasterLabs.com

Sample Description: SB-45-7.5 MS Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Group # 1590592 Account # 13255

LL Sample # SW 8036421

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 16:10 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

45-75

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg		mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.18		0.0036	0.0090	1
10725	Benzo(a)pyrene		50-32-8	0.18		0.0036	0.0090	1
10725	Benzo(b)fluoranthen	е	205-99-2	0.25		0.0036	0.0090	1
10725	Benzo(k)fluoranthen	е	207-08-9	0.19		0.0036	0.0090	1
10725	Chrysene		218-01-9	0.18		0.0018	0.0090	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	0.10		0.0036	0.0090	1
10725	Indeno(1,2,3-cd)pyr	ene	193-39-5	0.099		0.0036	0.0090	1
10725	1-Methylnaphthalene		90-12-0	0.18		0.0036	0.0090	1
10725	2-Methylnaphthalene		91-57-6	0.20		0.0036	0.0090	1
10725	Naphthalene		91-20-3	0.20		0.0036	0.0090	1
The l	nolding time was not	met due to a	laboratory err	or.				
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg		mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1	2	n.a.	130	J	63	310	434.28
Repor	rting limits were ra	ised due to sa	ample foaming.					
	roleum carbons w/Si	ECY 97-602 modified	NWTPH-Dx	mg/kg		mg/kg	mg/kg	
02214	DRO C12-C24 w/Si Ge	1	n.a.	440		11	25	1
02214	HRO C24-C40 w/Si Ge		n.a.	400		36	110	1
Wet Ch	nemistry Moisture	SM 2540 G-	- <b>1997</b> n.a.	% 72.3		% 0.50	% 0.50	1

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

#### Laboratory Sample Analysis Record Method Dilution CAT Analysis Name Trial# Batch# Analysis Analyst Date and Time No. Factor 10725 SIM SVOA (microwave) SW-846 8270C SIM 15259SLF026 09/24/2015 20:28 Catherine E 10811 BNA Soil Microwave SIM SW-846 3546 15259SLF026 09/17/2015 19:22 Benjamin J Rosenberger 02005 NWTPH-GX Soil C7-C12 ECY 97-602 15252B34A 09/10/2015 19:19 Jeremy C Giffin 434.28 ${\tt NWTPH-Gx}$ 01150 GC - Bulk Soil Prep SW-846 5030A 201525038756 09/06/2015 22:42 Scott W Freisher n.a. 02214 NWTPH-Dx soil w/Si Gel ECY 97-602 1 152530027A Heather E Williams 09/14/2015 22:38 1 NWTPH-Dx modified 07024 DRO Alternate Soil ECY 97-602 1 152530027A 09/11/2015 16:50 JoElla L Rice 1 Extraction NWTPH-Dx 06/97 00118 Moisture SM 2540 G-1997 15258820005A 09/15/2015 20:32 Scott W Freisher 1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-45-7.5 MSD Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036422

LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 16:10 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

45-75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.16	0.0035	0.0088	1
10725	Benzo(a)pyrene	50-32-8	0.17	0.0035	0.0088	1
10725	Benzo(b)fluoranthene	205-99-2	0.22	0.0035	0.0088	1
10725	Benzo(k)fluoranthene	207-08-9	0.20	0.0035	0.0088	1
10725	Chrysene	218-01-9	0.16	0.0018	0.0088	1
10725	Dibenz(a,h)anthracene	53-70-3	0.095	0.0035	0.0088	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.092	0.0035	0.0088	1
10725	1-Methylnaphthalene	90-12-0	0.18	0.0035	0.0088	1
10725	2-Methylnaphthalene	91-57-6	0.19	0.0035	0.0088	1
10725	Naphthalene	91-20-3	0.20	0.0035	0.0088	1
The :	holding time was not met due to	o a laboratory er	ror.			
GC Vo	latiles ECY 97-	602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	63	320	438.2

Reporting limits were raised due to sample foaming.

Reporting limits were raised due to interference from the sample matrix.

GC Pet	GC Petroleum ECY 97-		NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydro	carbons w/Si	modified					
02214	DRO C12-C24 w/Si	Gel	n.a.	420	11	25	1
02214	HRO C24-C40 w/Si	Gel	n.a.	450	36	110	1
Wet Cl	hemistry	SM 2540 G-	·1997	%	%	%	
00118	Moisture		n.a.	72.3	0.50	0.50	1
00121	Moisture Duplicat	e	n.a.	73.9	0.50	0.50	1
	The duplicate moi	sture value is p	provided to as	sess the precisi	ion of the		

The duplicate moisture value is provided to assess the precision of the moisture test. For comparability purposes, the initial moisture determination is the value used to perform dry weight calculations.

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name		Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (micro	wave)	SW-846 8270C SIM	1	15259SLF026	09/24/2015	21:01	Catherine E Bachman	1
10811	BNA Soil Microwa	ave SIM	SW-846 3546	1	15259SLF026	09/17/2015	19:22	Benjamin J Rosenberger	1
02005	NWTPH-GX Soil C'		ECY 97-602	1	15252B34A	09/10/2015	19:54	Jeremy C Giffin	438.2

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-45-7.5 MSD Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036422 LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Collected: 08/31/2015 16:10 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

45-75

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tim	ne	Analyst	Dilution Factor
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015	22:43	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530027A	09/14/2015	23:00	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530027A	09/11/2015	16:50	JoElla L Rice	1
00118	Moisture	SM 2540 G-1997	1	15258820005A	09/15/2015	20:32	Scott W Freisher	1
00121	Moisture Duplicate	SM 2540 G-1997	1	15258820005A	09/15/2015	20:32	Scott W Freisher	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-46-7.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036423 LL Group # 1590592

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 16:15 Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Highlands Ranch CO 80129 Reported: 10/01/2015 13:13

46-75

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.14	0.011	0.028	5
10725	Benzo(a)pyrene		50-32-8	0.13	0.011	0.028	5
10725	Benzo(b)fluoranthene	9	205-99-2	0.18	0.011	0.028	5
10725	Benzo(k)fluoranthene	9	207-08-9	0.065	0.011	0.028	5
10725	Chrysene		218-01-9	0.14	0.0055	0.028	5
10725	Dibenz(a,h)anthracer	ne	53-70-3	N.D.	0.011	0.028	5
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	0.024 J	0.011	0.028	5
10725	1-Methylnaphthalene		90-12-0	2.0	0.011	0.028	5
10725	2-Methylnaphthalene		91-57-6	1.6	0.011	0.028	5
10725	Naphthalene		91-20-3	0.99	0.011	0.028	5
GC Volatiles ECY 97-602 NWTPH				mg/kg	mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C12 rting limits were rai		n.a. mple foaming.	N.D.	60	300	449.3
GC Pet	roleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	arbons w/Si	modified					
02214	DRO C12-C24 w/Si Gel	L	n.a.	240	9.9	23	1
02214	HRO C24-C40 w/Si Gel	L	n.a.	710	33	99	1
Wet Ch	nemistry	SM 2540 G-	1997	%	%	%	
00111	Moisture		n.a.	70.0	0.50	0.50	1
	Moisture represents 103 - 105 degrees Coas-received basis.		_	sample after oven dryi reported is on an	ng at		

#### General Sample Comments

State of Washington Lab Certification No.  ${\tt C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

			_					
CAT	Analysis Name	Method	Trial#	Batch#	Analysis		Analyst	Dilution
No.					Date and Ti	me		Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/25/2015	01:25	Catherine E	5
							Bachman	
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLI026	09/11/2015	18:00	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15252A31A	09/09/2015	23:24	Jeremy C Giffin	449.3
		NWTPH-Gx	_		03,03,2013	20 21		
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015	22:46	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152530027A	09/14/2015	23:21	Heather E Williams	1
02211	IIIIII DII BOII III BOI	NWTPH-Dx modified	-	10200001711	03/11/2013	23.21	mederici i militamb	_
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530027A	09/11/2015	16:50	JoElla L Rice	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-46-7.5 Soil

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036423 LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 16:15 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

46-75

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15258820005A	09/15/2015 20:32	Scott W Freisher	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-46-12.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036424

LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 16:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

46-12

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles SW-	846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.00077	0.0019	1
10725	Benzo(a)pyrene		50-32-8	N.D.	0.00077	0.0019	1
10725	Benzo(b)fluoranthene		205-99-2	0.00078 J	0.00077	0.0019	1
10725	Benzo(k)fluoranthene		207-08-9	N.D.	0.00077	0.0019	1
10725	Chrysene		218-01-9	N.D.	0.00038	0.0019	1
10725	Dibenz(a,h)anthracene		53-70-3	N.D.	0.00077	0.0019	1
10725	Indeno(1,2,3-cd)pyrene		193-39-5	N.D.	0.00077	0.0019	1
10725	1-Methylnaphthalene		90-12-0	N.D.	0.00077	0.0019	1
10725	2-Methylnaphthalene		91-57-6	N.D.	0.00077	0.0019	1
10725	Naphthalene		91-20-3	0.0018 J	0.00077	0.0019	1
GC Vol	latiles ECY	97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12		n.a.	N.D.	0.96	4.8	20.69
GC Pet	croleum ECY	97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si mod	ified					
02214	DRO C12-C24 w/Si Gel		n.a.	N.D.	3.5	8.1	1
02214	HRO C24-C40 w/Si Gel		n.a.	N.D.	12	35	1
Wet Ch	nemistry SM :	2540 G-	1997	%	%	%	
00111	Moisture		n.a.	13.4	0.50	0.50	1
	Moisture represents the 103 - 105 degrees Celsiu as-received basis.		_	_	ying at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

#### Laboratory Sample Analysis Record Method CAT Analysis Name Trial# Batch# Analysis Analyst Dilution Date and Time Factor No. 10725 SIM SVOA (microwave) SW-846 8270C SIM 15253SLI026 09/25/2015 01:58 Catherine E Bachman 10811 BNA Soil Microwave SIM SW-846 3546 15253SLI026 09/11/2015 18:00 Shawn J McMullen 02005 NWTPH-GX Soil C7-C12 ECY 97-602 15254A31A 09/11/2015 22:06 Jeremy C Giffin 20.69 NWTPH-Gx 06647 GC-5g Field Preserved SW-846 5035A 201524838751 08/31/2015 16:30 Client Supplied n.a. MeOH 02214 NWTPH-Dx soil w/Si Gel ECY 97-602 1 152530027A 09/14/2015 21:12 Heather E Williams 1 NWTPH-Dx modified 07024 DRO Alternate Soil ECY 97-602 152530027A 09/11/2015 16:50 JoElla L Rice NWTPH-Dx 06/97 Extraction

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-46-12.5 Soil

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Group # 1590592 Account # 13255

LL Sample # SW 8036424

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 16:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

46-12

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15258820005A	09/15/2015 20:32	Scott W Freisher	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-57-7.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Group # 1590592 Account # 13255

LL Sample # SW 8036425

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 16:40 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

57-75

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg		mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.0027		0.00090	0.0022	1
10725	Benzo(a)pyrene		50-32-8	0.0025		0.00090	0.0022	1
10725	Benzo(b)fluoranthen	9	205-99-2	0.0067		0.00090	0.0022	1
10725	Benzo(k)fluoranthen	9	207-08-9	0.0022	J	0.00090	0.0022	1
10725	Chrysene		218-01-9	0.0060		0.00045	0.0022	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.		0.00090	0.0022	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	0.00093	J	0.00090	0.0022	1
10725	1-Methylnaphthalene		90-12-0	0.013		0.00090	0.0022	1
10725	2-Methylnaphthalene		91-57-6	0.028		0.00090	0.0022	1
10725	Naphthalene		91-20-3	0.042		0.00090	0.0022	1
GC Vol	latiles	ECY 97-	602 NWTPH-Gx	mg/kg		mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1:	2	n.a.	N.D.		14	70	261.17
Repo	rting limits were rai	sed due t	o sample foaming.					
GC Pet	roleum	ECY 97-	602 NWTPH-Dx	mg/kg		mg/kg	mg/kg	
Hydrod	carbons w/Si	modifie	d					
02214	DRO C12-C24 w/Si Ge	l	n.a.	N.D.		4.0	9.3	1
02214	HRO C24-C40 w/Si Ge	L	n.a.	14	J	13	40	1
Wot Cl	nemistry	SM 2540	C 1007	%		%	%	
	-	SM 2540						
00111	Moisture		n.a.	25.9		0.50	0.50	1
	Moisture represents 103 - 105 degrees Coas-received basis.		_	-		drying at		

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/25/2015	02:31	Catherine E Bachman	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLI026	09/11/2015	18:00	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15254A31B	09/14/2015	20:38	Marie D Beamenderfer	261.17
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524838751	08/31/2015	16:40	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530027A	09/14/2015	21:34	Heather E Williams	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



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Sample Description: SB-57-7.5 Soil

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Group # 1590592 Account # 13255

LL Sample # SW 8036425

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 16:40 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

57-75

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530027A	09/11/2015 16:50	JoElla L Rice	1
00111	Moisture	SM 2540 G-1997	1	15258820005A	09/15/2015 20:32	Scott W Freisher	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-34-7.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036426

LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 17:00 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

34 - 75

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 82	70C SIM	mg/kg		mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.019	J	0.011	0.028	5
10725	Benzo(a)pyrene		50-32-8	0.016	J	0.011	0.028	5
10725	Benzo(b)fluoranthene	2	205-99-2	0.044		0.011	0.028	5
10725	Benzo(k)fluoranthene	2	207-08-9	0.014	J	0.011	0.028	5
10725	Chrysene		218-01-9	0.025	J	0.0056	0.028	5
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.		0.011	0.028	5
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.		0.011	0.028	5
10725	1-Methylnaphthalene		90-12-0	1.3		0.011	0.028	5
10725	2-Methylnaphthalene		91-57-6	1.4		0.011	0.028	5
10725	Naphthalene		91-20-3	0.42		0.011	0.028	5
GC Vol	latiles	ECY 97-60	2 NWTPH-Gx	mg/kg		mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C1: rting limits were rai		n.a. sample foaming.	N.D.		55	270	406.28
GC Pet	roleum	ECY 97-60	2 NWTPH-Dx	mg/kg		mg/kg	mg/kg	
Hydrod	carbons w/Si	modified						
02214	DRO C12-C24 w/Si Ge	L	n.a.	130		10	23	1
02214	HRO C24-C40 w/Si Ge	L	n.a.	210		33	100	1
Wet Ch	nemistry	SM 2540 G	-1997	%		%	8	
00111	Moisture		n.a.	70.3		0.50	0.50	1
	Moisture represents 103 - 105 degrees Co as-received basis.		_	_	_	ng at		

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

#### Laboratory Sample Analysis Record Method Trial# Batch# Dilution CAT Analysis Name Analysis Analyst No. Date and Time Factor 10725 SIM SVOA (microwave) SW-846 8270C SIM 15253SLI026 09/25/2015 03:04 5 Catherine E Bachman 10811 BNA Soil Microwave SIM SW-846 3546 15253SLI026 09/11/2015 18:00 Shawn J McMullen 02005 NWTPH-GX Soil C7-C12 ECY 97-602 15254A31B 09/14/2015 21:14 406.28 1 Marie D NWTPH-Gx Beamenderfer 01150 GC - Bulk Soil Prep SW-846 5030A 201525038756 09/06/2015 22:47 Scott W Freisher 02214 NWTPH-Dx soil w/Si Gel Heather E Williams ECY 97-602 152530027A 09/14/2015 21:55 NWTPH-Dx modified 07024 DRO Alternate Soil ECY 97-602 1 152530027A 09/11/2015 16:50 JoElla L Rice Extraction NWTPH-Dx 06/97

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-34-7.5 Soil

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Group # 1590592 Account # 13255

LL Sample # SW 8036426

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 17:00 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

34-75

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15258820005A	09/15/2015 20:32	Scott W Freisher	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-8-7.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036427 LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 08:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

08-75

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 82	70C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.011	0.027	5
10725	Benzo(a)pyrene		50-32-8	N.D.	0.011	0.027	5
10725	Benzo(b)fluoranthene	9	205-99-2	N.D.	0.011	0.027	5
10725	Benzo(k)fluoranthene	e	207-08-9	N.D.	0.011	0.027	5
10725	Chrysene		218-01-9	0.0062 J	0.0054	0.027	5
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.011	0.027	5
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.	0.011	0.027	5
10725	1-Methylnaphthalene		90-12-0	0.22	0.011	0.027	5
10725	2-Methylnaphthalene		91-57-6	0.091	0.011	0.027	5
10725	Naphthalene		91-20-3	0.083	0.011	0.027	5
GC Vol	latiles	ECY 97-602	2 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C1: rting limits were rai		n.a. ample foaming.	N.D.	54	270	409.85
GC Pet	roleum	ECY 97-602	2 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
	carbons w/Si	modified					
02214	DRO C12-C24 w/Si Ge		n.a.	310	19	45	2
02214	HRO C24-C40 w/Si Gel		n.a.	1,800	65	190	2
02214	1110 CZ4 C40 W/D1 GC.	<u> </u>	11.4.	1,000	03	100	2
Wet Ch	nemistry	SM 2540 G	-1997	%	%	%	
00111	Moisture		n.a.	69.4	0.50	0.50	1
	Moisture represents 103 - 105 degrees Co as-received basis.		_	sample after oven dry reported is on an	ing at		

#### General Sample Comments

Laboratory Sample Analysis Record

State of Washington Lab Certification No.  ${\rm C457}$ 

07024 DRO Alternate Soil

Extraction

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

NWTPH-Dx modified

ECY 97-602

NWTPH-Dx 06/97

#### Method Trial# Batch# Dilution CAT Analysis Name Analysis Analyst No. Date and Time Factor 10725 SIM SVOA (microwave) SW-846 8270C SIM 15253SLI026 09/25/2015 03:37 5 Catherine E Bachman 10811 BNA Soil Microwave SIM SW-846 3546 15253SLI026 Shawn J McMullen 09/11/2015 18:00 02005 NWTPH-GX Soil C7-C12 ECY 97-602 15252A31A 09/10/2015 00:00 Jeremy C Giffin 409.85 1 ${\tt NWTPH-Gx}$ 01150 GC - Bulk Soil Prep SW-846 5030A 201525038756 09/06/2015 22:49 Scott W Freisher 02214 NWTPH-Dx soil w/Si Gel Heather E Williams ECY 97-602 152530027A 09/14/2015 23:42

1

152530027A

09/11/2015 16:50

JoElla L Rice

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-8-7.5 Soil

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Group # 1590592 Account # 13255

LL Sample # SW 8036427

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 08:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

08-75

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15258820005A	09/15/2015 20:32	Scott W Freisher	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-13-7.5 Soil

LL Sample # SW 8036428 Former Olympia Bulk Plant COC: R224118 LL Group # 1590592 1117 West Bay Drive - Olympia, WA Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 09:00 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Highlands Ranch CO 80129 Reported: 10/01/2015 13:13

13-75

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.011	0.027	5
10725	Benzo(a)pyrene		50-32-8	N.D.	0.011	0.027	5
10725	Benzo(b)fluoranthene	2	205-99-2	N.D.	0.011	0.027	5
10725	Benzo(k)fluoranthene	2	207-08-9	N.D.	0.011	0.027	5
10725	Chrysene		218-01-9	0.0056 J	0.0053	0.027	5
10725	Dibenz(a,h)anthracer		53-70-3	N.D.	0.011	0.027	5
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.	0.011	0.027	5
10725	1-Methylnaphthalene		90-12-0	0.48	0.011	0.027	5
10725	2-Methylnaphthalene		91-57-6	0.22	0.011	0.027	5
10725	Naphthalene		91-20-3	0.21	0.011	0.027	5
GC Vol	latiles	ECY 97-	602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	="	n.a.	N.D.	260	1,300	2024.3
Repor	rting limits were rai	sed due t	o sample foaming.				
GC Pet	roleum	ECY 97-	602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modifie	ed				
02214	DRO C12-C24 w/Si Gel	L	n.a.	340	48	110	5
02214	HRO C24-C40 w/Si Gel	L	n.a.	1,900	160	480	5
Wet Ch	nemistry	SM 2540	G-1997	%	%	%	
00111	Moisture		n.a.	69.0	0.50	0.50	1
00111	Moisture represents 103 - 105 degrees Ce as-received basis.		in weight of the	sample after ov	en drying at	2.30	-

#### General Sample Comments

State of Washington Lab Certification No.  ${\tt C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	.me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/25/2015	04:09	Catherine E Bachman	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLI026	09/11/2015	18:00	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15257A34A	09/14/2015	21:35	Jeremy C Giffin	2024.3
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201524838752	09/05/2015	15:00	Lisa J Cooke	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530027A	09/15/2015	00:47	Heather E Williams	5
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530027A	09/11/2015	16:50	JoElla L Rice	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-13-7.5 Soil

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Group # 1590592 Account # 13255

LL Sample # SW 8036428

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 09:00 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

13-75

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15258820005A	09/15/2015 20:32	Scott W Freisher	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www,LancasterLabs.com

Sample Description: SB-41-Offset-7.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036429

LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Collected: 09/01/2015 09:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

41075

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.0094	0.024	5
10725	Benzo(a)pyrene		50-32-8	N.D.	0.0094	0.024	5
10725	Benzo(b)fluoranthen	e	205-99-2	N.D.	0.0094	0.024	5
10725	Benzo(k)fluoranthen	e	207-08-9	N.D.	0.0094	0.024	5
10725	Chrysene		218-01-9	0.0084 J	0.0047	0.024	5
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.0094	0.024	5
10725	Indeno(1,2,3-cd)pyr	ene	193-39-5	N.D.	0.0094	0.024	5
10725	1-Methylnaphthalene		90-12-0	8.7	0.094	0.24	50
10725	2-Methylnaphthalene		91-57-6	13	0.094	0.24	50
10725	Naphthalene		91-20-3	24	0.094	0.24	50
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1	2	n.a.	1,700	190	970	1695.91
	croleum carbons w/Si	ECY 97-602 modified	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
02214	DRO C12-C24 w/Si Ge	1	n.a.	1,200	43	100	5
02214	HRO C24-C40 w/Si Ge	1	n.a.	2,400	140	430	5
Wet Ch	nemistry	SM 2540 G-	1997	8	%	%	
00111	Moisture		n.a.	65.0	0.50	0.50	1
	Moisture represents 103 - 105 degrees C as-received basis.			sample after oven dry reported is on an	ing at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

#### Laboratory Sample Analysis Record Method CAT Analysis Name Trial# Batch# Analysis Analyst Dilution Date and Time Factor No. 10725 SIM SVOA (microwave) SW-846 8270C SIM 15253SLI026 09/25/2015 05:15 Catherine E Bachman 10725 SIM SVOA (microwave) SW-846 8270C SIM 1 15253SLI026 09/28/2015 14:15 Joseph M Gambler 50 10811 BNA Soil Microwave SIM SW-846 3546 1 15253SLI026 09/11/2015 18:00 Shawn J McMullen 1695.91 02005 NWTPH-GX Soil C7-C12 ECY 97-602 1 15254A31B 09/14/2015 22:26 Marie D NWTPH-Gx Beamenderfer 01150 GC - Bulk Soil Prep SW-846 5030A 1 201525038756 09/06/2015 22:51 Scott W Freisher n.a. 02214 NWTPH-Dx soil w/Si Gel ECY 97-602 1 152530027A 09/15/2015 01:08 Heather E Williams 5 NWTPH-Dx modified 07024 DRO Alternate Soil ECY 97-602 1 152530027A 09/11/2015 16:50 JoElla L Rice NWTPH-Dx 06/97 Extraction

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-41-Offset-7.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036429 LL Group # 1590592

Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Collected: 09/01/2015 09:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

41075

#### Laboratory Sample Analysis Record

 CAT
 Analysis Name
 Method
 Trial#
 Batch#
 Analysis
 Analysis
 Analyst
 Dilution

 No.
 00111
 Moisture
 SM 2540 G-1997
 1
 15258820005A
 09/15/2015
 20:32
 Scott W Freisher
 1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-41-Offset-12.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036430 LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 09:40 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

41012

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8	3270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.0026	0.0066	1
10725	Benzo(a)pyrene		50-32-8	N.D.	0.0026	0.0066	1
10725	Benzo(b)fluoranthen	e	205-99-2	N.D.	0.0026	0.0066	1
10725	Benzo(k)fluoranthen	e	207-08-9	N.D.	0.0026	0.0066	1
10725	Chrysene		218-01-9	0.0030 J	0.0013	0.0066	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.0026	0.0066	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.	0.0026	0.0066	1
10725	1-Methylnaphthalene		90-12-0	0.23	0.0026	0.0066	1
10725	2-Methylnaphthalene		91-57-6	0.24	0.0026	0.0066	1
10725	Naphthalene		91-20-3	0.49	0.0026	0.0066	1
GC Vol	latiles	ECY 97-6	02 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1:	2	n.a.	N.D.	71	360	449.51
Repo	rting limits were rai	sed due to	sample foaming.				
GC Pet	roleum	ECY 97-6	02 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modified	1				
02214	DRO C12-C24 w/Si Ge	1	n.a.	250	12	27	1
02214	HRO C24-C40 w/Si Ge	1	n.a.	840	39	120	1
Wet Cl	nemistry	SM 2540	G-1997	%	%	%	
00111	Moisture		n.a.	74.7	0.50	0.50	1
	Moisture represents 103 - 105 degrees Co as-received basis.		_	-			

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tir	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/28/2015	14:48	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLI026	09/11/2015	18:00	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252A31A	09/10/2015	01:12	Jeremy C Giffin	449.51
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015	22:53	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530039A	09/15/2015	02:35	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530039A	09/14/2015	08:45	Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15258820005A	09/15/2015	20:32	Scott W Freisher	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-52-Offset-7.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036431

LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 10:00 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

52075

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg		mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.		0.0099	0.025	5
10725	Benzo(a)pyrene		50-32-8	N.D.		0.0099	0.025	5
10725	Benzo(b)fluoranthen	e	205-99-2	N.D.		0.0099	0.025	5
10725	Benzo(k)fluoranthen	e	207-08-9	N.D.		0.0099	0.025	5
10725	Chrysene		218-01-9	0.0084	Ţ	0.0050	0.025	5
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.		0.0099	0.025	5
10725	Indeno(1,2,3-cd)pyr	ene	193-39-5	N.D.		0.0099	0.025	5
10725	1-Methylnaphthalene		90-12-0	3.9		0.0099	0.025	5
10725	2-Methylnaphthalene		91-57-6	5.8		0.050	0.12	25
10725	Naphthalene		91-20-3	2.8		0.0099	0.025	5
GC Vol	latiles	ECY 97-	602 NWTPH-Gx	mg/kg		mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1		n.a.	160	J	52	260	431.91
Repo:	rting limits were rai	sed due t	o sample foaming.					
GC Pet	roleum	ECY 97-	602 NWTPH-Dx	mg/kg		mg/kg	mg/kg	
Hydro	carbons w/Si	modifie	ed					
02214	DRO C12-C24 w/Si Ge	1	n.a.	740		8.9	21	1
02214	HRO C24-C40 w/Si Ge	l	n.a.	980		30	89	1
Wet Ch	nemistry	SM 2540	G-1997	%		%	%	
00111	Moisture		n.a.	66.5		0.50	0.50	1
	Moisture represents 103 - 105 degrees C as-received basis.		in weight of the	sample af				_

### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

			_	_				
CAT	Analysis Name	Method	Trial#	Batch#	Analysis		Analyst	Dilution
No.					Date and Ti	me		Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/28/2015	15:21	Joseph M Gambler	5
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/29/2015	10:31	Joseph M Gambler	25
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLI026	09/11/2015	18:00	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15252A31A	09/10/2015	01:55	Jeremy C Giffin	431.91
		NWTPH-Gx						
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015	22:55	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152530039A	09/15/2015	02:56	Heather E Williams	1
		NWTPH-Dx modified						
07024	DRO Alternate Soil	ECY 97-602	1	152530039A	09/14/2015	08:45	Olivia Arosemena	1
	Extraction	NWTPH-Dx 06/97						

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-52-Offset-7.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036431

LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Collected: 09/01/2015 10:00 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

52075

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15258820005A	09/15/2015 20:32	Scott W Freisher	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-52-Offset-12.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036432

LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Collected: 09/01/2015 10:15 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

52012

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8	3270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.0064 J	0.0026	0.0066	1
10725	Benzo(a)pyrene		50-32-8	0.0062 J	0.0026	0.0066	1
10725	Benzo(b)fluoranthen	e	205-99-2	0.018	0.0026	0.0066	1
10725	Benzo(k)fluoranthen	e	207-08-9	N.D.	0.0026	0.0066	1
10725	Chrysene		218-01-9	0.014	0.0013	0.0066	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.0026	0.0066	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	0.0032 J	0.0026	0.0066	1
10725	1-Methylnaphthalene		90-12-0	0.68	0.0026	0.0066	1
10725	2-Methylnaphthalene		91-57-6	0.72	0.0026	0.0066	1
10725	Naphthalene		91-20-3	0.95	0.0026	0.0066	1
GC Vol	latiles	ECY 97-6	02 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1:	2	n.a.	N.D.	72	360	454.54
Repo	rting limits were rai	sed due to	sample foaming.				
GC Pet	roleum	ECY 97-6	02 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modified	l				
02214	DRO C12-C24 w/Si Ge	1	n.a.	1,000	12	28	1
02214	HRO C24-C40 w/Si Ge	1	n.a.	1,300	40	120	1
Wet Ch	nemistry	SM 2540	G-1997	%	%	%	
00111	Moisture		n.a.	74.9	0.50	0.50	1
	Moisture represents 103 - 105 degrees Co as-received basis.		_	-			

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/28/2015 15:	55 Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLI026	09/11/2015 18:	00 Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252A31A	09/09/2015 21:	28 Jeremy C Giffin	454.54
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 23:	29 Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530039A	09/15/2015 03:	18 Heather E William	s 1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530039A	09/14/2015 08:	45 Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15258820005A	09/15/2015 20:	32 Scott W Freisher	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-62-Offset-7.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036433

LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 10:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

62075

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 82	70C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.00097	0.0024	1
10725	Benzo(a)pyrene		50-32-8	0.0018 J	0.00097	0.0024	1
10725	Benzo(b)fluoranthene	2	205-99-2	0.0059	0.00097	0.0024	1
10725	Benzo(k)fluoranthene	9	207-08-9	0.0013 J	0.00097	0.0024	1
10725	Chrysene		218-01-9	0.0027	0.00049	0.0024	1
10725	Dibenz(a,h)anthracen	ne	53-70-3	N.D.	0.00097	0.0024	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	0.0012 J	0.00097	0.0024	1
10725	1-Methylnaphthalene		90-12-0	0.0043	0.00097	0.0024	1
10725	2-Methylnaphthalene		91-57-6	0.0045	0.00097	0.0024	1
10725	Naphthalene		91-20-3	0.042	0.00097	0.0024	1
GC Vol	latiles	ECY 97-60	2 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C12 cting limits were rai	=	n.a. ample foaming.	N.D.	25	120	426.35
GC Pet	roleum	ECY 97-60	2 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	arbons w/Si	modified					
02214	DRO C12-C24 w/Si Gel	L	n.a.	11	4.3	10	1
02214	HRO C24-C40 w/Si Ge	L	n.a.	N.D.	14	43	1
Wet Ch	nemistry	SM 2540 G	-1997	%	8	8	
00111	Moisture		n.a.	31.7	0.50	0.50	1
	Moisture represents 103 - 105 degrees Ce as-received basis.		_	sample after oven dry reported is on an	ing at		

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	e	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/28/2015	16:28	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLI026	09/11/2015	18:00	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252B31A	09/10/2015	21:24	Jeremy C Giffin	426.35
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524838751	09/01/2015	10:30	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530039A	09/15/2015	14:02	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530039A	09/14/2015	08:45	Olivia Arosemena	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-62-Offset-7.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Group # 1590592 Account # 13255

LL Sample # SW 8036433

Project Name: Former Olympia Bulk Plant

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Collected: 09/01/2015 10:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

62075

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15258820005B	09/15/2015 20:32	Scott W Freisher	1



Account

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-60-7.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036434 LL Group # 1590592

# 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 10:40 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

60-75

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8	270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.00091	0.0023	1
10725	Benzo(a)pyrene		50-32-8	N.D.	0.00091	0.0023	1
10725	Benzo(b)fluoranthene	2	205-99-2	0.0020 J	0.00091	0.0023	1
10725	Benzo(k)fluoranthene	2	207-08-9	N.D.	0.00091	0.0023	1
10725	Chrysene		218-01-9	0.0015 J	0.00046	0.0023	1
10725	Dibenz(a,h)anthracen	ne	53-70-3	N.D.	0.00091	0.0023	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.	0.00091	0.0023	1
10725	1-Methylnaphthalene		90-12-0	0.027	0.00091	0.0023	1
10725	2-Methylnaphthalene		91-57-6	0.025	0.00091	0.0023	1
10725	Naphthalene		91-20-3	0.10	0.00091	0.0023	1
GC Vol	latiles	ECY 97-6	02 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C12 rting limits were rai		n.a. sample foaming.	N.D.	17	86	310.86
GC Pet	roleum	ECY 97-6	02 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modified					
02214	DRO C12-C24 w/Si Gel	L	n.a.	N.D.	4.1	9.6	1
02214	HRO C24-C40 w/Si Ge	L	n.a.	N.D.	14	41	1
Wet Ch	nemistry	SM 2540	G-1997	8	%	%	
00111	Moisture		n.a.	27.4	0.50	0.50	1
	Moisture represents 103 - 105 degrees Co as-received basis.		_	sample after oven dry reported is on an	ying at		

### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

			_				
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
	GT14 GT103 / '	GTT 046 00E0G GTM	-	1505267 7006			raccor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	Τ	15253SLI026	09/28/2015 17:0	)2 Joseph M Gambler	Ţ
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLI026	09/11/2015 18:0	00 Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252B31A	09/10/2015 22:0	00 Jeremy C Giffin	310.86
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524838751	09/01/2015 10:	10 Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530039A	09/15/2015 04:	14 Heather E Williams	3 1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530039A	09/14/2015 08:	15 Olivia Arosemena	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-60-7.5 Soil

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Group # 1590592 Account # 13255

LL Sample # SW 8036434

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 10:40 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

60-75

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15258820005B	09/15/2015 20:32	Scott W Freisher	1



LL Sample # SW 8036435

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-59-7.5 Soil

Former Olympia Bulk Plant COC: R224118 LL Group # 1590592 1117 West Bay Drive - Olympia, WA Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 11:00 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

59-75

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.00091	0.0023	1
10725	Benzo(a)pyrene		50-32-8	N.D.	0.00091	0.0023	1
10725	Benzo(b)fluoranthene	2	205-99-2	0.0021 J	0.00091	0.0023	1
10725	Benzo(k)fluoranthene	2	207-08-9	N.D.	0.00091	0.0023	1
10725	Chrysene		218-01-9	0.0013 J	0.00045	0.0023	1
10725	Dibenz(a,h)anthracer	ie	53-70-3	N.D.	0.00091	0.0023	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.	0.00091	0.0023	1
10725	1-Methylnaphthalene		90-12-0	0.013	0.00091	0.0023	1
10725	2-Methylnaphthalene		91-57-6	0.0092	0.00091	0.0023	1
10725	Naphthalene		91-20-3	0.045	0.00091	0.0023	1
GC Vo	latiles	ECY 97-	602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	2	n.a.	N.D.	15	75	274.94
Repo	rting limits were rai	sed due t	o sample foaming.				
GC Pet	roleum	ECY 97-	602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydro	carbons w/Si	modifie	d				
02214	DRO C12-C24 w/Si Gel	L	n.a.	5.1 J	4.1	9.6	1
02214	HRO C24-C40 w/Si Gel	_	n.a.	N.D.	14	41	1
Wet Cl	nemistry	SM 2540	G-1997	%	%	%	
00111	Moisture		n.a.	26.9	0.50	0.50	1
	Moisture represents 103 - 105 degrees Ce as-received basis.		in weight of the	sample after ov	en drying at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

			_					
CAT	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	_	Analyst	Dilution Factor
No.					Date and Time	=		Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/28/2015 1	7:35	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLI026	09/11/2015 1	8:00	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252B31A	09/10/2015 2	23:19	Jeremy C Giffin	274.94
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524838751	09/01/2015 1	1:00	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530039A	09/15/2015 0	)5:06	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530039A	09/14/2015 0	8:45	Olivia Arosemena	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-59-7.5 Soil

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036435 LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 11:00 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

59-75

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15258820005B	09/15/2015 20:32	Scott W Freisher	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-47-7.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036436 LL Group # 1590592

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 11:10 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

47-75

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.013	0.033	5
10725	Benzo(a)pyrene		50-32-8	N.D.	0.013	0.033	5
10725	Benzo(b)fluoranthene	e	205-99-2	N.D.	0.013	0.033	5
10725	Benzo(k)fluoranthene	e	207-08-9	N.D.	0.013	0.033	5
10725	Chrysene		218-01-9	0.0080 J	0.0066	0.033	5
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.013	0.033	5
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.	0.013	0.033	5
10725	1-Methylnaphthalene		90-12-0	2.6	0.013	0.033	5
10725	2-Methylnaphthalene		91-57-6	1.7	0.013	0.033	5
10725	Naphthalene		91-20-3	0.38	0.013	0.033	5
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1:	2	n.a.	420	73	360	455.48
GC Pet	croleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modified					
02214	DRO C12-C24 w/Si Ge	1	n.a.	1,500	12	28	1
02214	HRO C24-C40 w/Si Ge	1	n.a.	1,000	40	120	1
Wet Ch	nemistry	SM 2540 G-	1997	%	%	%	
00111	Moisture		n.a.	74.9	0.50	0.50	1
	Moisture represents 103 - 105 degrees Co as-received basis.			sample after oven dry reported is on an	ing at		

### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	e	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/28/2015	18:08	Joseph M Gambler	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLI026	09/11/2015 1	18:00	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252A31A	09/10/2015 (	02:32	Jeremy C Giffin	455.48
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 2	23:31	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530039A	09/15/2015 (	05:27	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530039A	09/14/2015 (	08:45	Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15258820005B	09/15/2015 2	20:32	Scott W Freisher	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-47-12.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036437

LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 11:20 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

47-12

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8	270C SIM	mg/kg		mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.020	J	0.010	0.025	5
10725	Benzo(a)pyrene		50-32-8	0.024	J	0.010	0.025	5
10725	Benzo(b)fluoranthen	e	205-99-2	0.034		0.010	0.025	5
10725	Benzo(k)fluoranthen	e	207-08-9	0.015	J	0.010	0.025	5
10725	Chrysene		218-01-9	0.026		0.0051	0.025	5
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.		0.010	0.025	5
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.		0.010	0.025	5
10725	1-Methylnaphthalene		90-12-0	0.048		0.010	0.025	5
10725	2-Methylnaphthalene		91-57-6	0.046		0.010	0.025	5
10725	Naphthalene		91-20-3	0.051		0.010	0.025	5
GC Vol	latiles	ECY 97-6	02 NWTPH-Gx	mg/kg		mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1:	2	n.a.	N.D.		53	260	430.27
Repo	rting limits were rai	sed due to	sample foaming.					
GC Pet	roleum	ECY 97-6	02 NWTPH-Dx	mg/kg		mg/kg	mg/kg	
Hydrod	carbons w/Si	modified						
02214	DRO C12-C24 w/Si Ge	1	n.a.	120		9.2	21	1
02214	HRO C24-C40 w/Si Ge	1	n.a.	690		31	92	1
7.7. L (1)		GM 0540	a 1007	%		8	%	
	nemistry	SM 2540						
00111	Moisture		n.a.	67.3		0.50	0.50	1
	Moisture represents 103 - 105 degrees Coas-received basis.		_	_	_	ng at		

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/28/2015 18	:42	Joseph M Gambler	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLI026	09/11/2015 18	:00	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252A31A	09/10/2015 03	:08	Jeremy C Giffin	430.27
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 23	:33	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530039A	09/15/2015 05	:48	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530039A	09/14/2015 08	:45	Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15258820005B	09/15/2015 20	:32	Scott W Freisher	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-37-7.5 Soil LL Sample # SW 8036438

Former Olympia Bulk Plant COC: R224118 LL Group # 1590592 1117 West Bay Drive - Olympia, WA Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 12:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

37-75

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.011	0.029	5
10725	Benzo(a)pyrene		50-32-8	N.D.	0.011	0.029	5
10725	Benzo(b)fluoranthene		205-99-2	N.D.	0.011	0.029	5
10725	Benzo(k)fluoranthene		207-08-9	N.D.	0.011	0.029	5
10725	Chrysene		218-01-9	0.0066 J	0.0057	0.029	5
10725	Dibenz(a,h)anthracen	e	53-70-3	N.D.	0.011	0.029	5
10725	Indeno(1,2,3-cd)pyre	ne	193-39-5	N.D.	0.011	0.029	5
10725	1-Methylnaphthalene		90-12-0	0.57	0.011	0.029	5
10725	2-Methylnaphthalene		91-57-6	0.26	0.011	0.029	5
10725	Naphthalene		91-20-3	0.090	0.011	0.029	5
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12		n.a.	N.D.	63	310	449.97
Repo	rting limits were rais	sed due to sa	ample foaming.				
GC Pet	roleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	arbons w/Si	modified					
02214	DRO C12-C24 w/Si Gel		n.a.	740	10	24	1
02214	HRO C24-C40 w/Si Gel		n.a.	1,700	34	100	1
Wet Ch	nemistry	SM 2540 G-	1997	%	8	%	
00111	Moisture		n.a.	71.3	0.50	0.50	1
	Moisture represents 103 - 105 degrees Ce as-received basis.		_		ying at		

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLI026	09/28/2015	19:16	Joseph M Gambler	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLI026	09/11/2015	18:00	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252A31A	09/09/2015	22:04	Jeremy C Giffin	449.97
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015	23:34	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530039A	09/15/2015	06:10	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530039A	09/14/2015	08:45	Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15258820005B	09/15/2015	20:32	Scott W Freisher	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-37-12.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036439 LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 12:40 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

37-12

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.013	0.033	5
10725	Benzo(a)pyrene		50-32-8	N.D.	0.013	0.033	5
10725	Benzo(b)fluoranthene	9	205-99-2	N.D.	0.013	0.033	5
10725	Benzo(k)fluoranthene	9	207-08-9	N.D.	0.013	0.033	5
10725	Chrysene		218-01-9	0.0077 J	0.0065	0.033	5
10725	Dibenz(a,h)anthracen	ne	53-70-3	N.D.	0.013	0.033	5
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.	0.013	0.033	5
10725	1-Methylnaphthalene		90-12-0	0.041	0.013	0.033	5
10725	2-Methylnaphthalene		91-57-6	0.041	0.013	0.033	5
10725	Naphthalene		91-20-3	0.084	0.013	0.033	5
GC Vol	latiles	ECY 97	-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C12 rting limits were rai		n.a. to sample foaming.	N.D.	69	350	441.7
	croleum carbons w/Si	ECY 97	-602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
02214	DRO C12-C24 w/Si Gel	L	n.a.	260	12	27	1
02214	HRO C24-C40 w/Si Ge		n.a.	720	39	120	1
Wet Ch	nemistry	SM 254	G-1997	%	%	%	
00111	Moisture		n.a.	74.5	0.50	0.50	1
	Moisture represents 103 - 105 degrees Co as-received basis.						

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tir	ne	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLJ026	09/28/2015	19:49	Joseph M Gambler	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLJ026	09/11/2015	18:05	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252B31A	09/10/2015	23:56	Jeremy C Giffin	441.7
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015	23:36	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530039A	09/15/2015	14:23	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530039A	09/14/2015	08:45	Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15258820005B	09/15/2015	20:32	Scott W Freisher	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-26A-7.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036440 LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 12:50 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

26A75

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 82	70C SIM	mg/kg		mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.		0.012	0.030	5
10725	Benzo(a)pyrene		50-32-8	N.D.		0.012	0.030	5
10725	Benzo(b)fluoranthene	e	205-99-2	0.012	J	0.012	0.030	5
10725	Benzo(k)fluoranthene	e	207-08-9	N.D.		0.012	0.030	5
10725	Chrysene		218-01-9	0.014	J	0.0059	0.030	5
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.		0.012	0.030	5
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.		0.012	0.030	5
10725	1-Methylnaphthalene		90-12-0	1.5		0.012	0.030	5
10725	2-Methylnaphthalene		91-57-6	1.5		0.012	0.030	5
10725	Naphthalene		91-20-3	0.23		0.012	0.030	5
GC Vol	latiles	ECY 97-60	2 NWTPH-Gx	mg/kg		mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1	=	n.a.	240	J	65	330	451.96
Repo	rting limits were rai	sed due to s	ample foaming.					
GC Pet	roleum	ECY 97-60	2 NWTPH-Dx	mg/kg		mg/kg	mg/kg	
Hydrod	carbons w/Si	modified						
02214	DRO C12-C24 w/Si Ge	1	n.a.	1,700		11	25	1
02214	HRO C24-C40 w/Si Ge	1	n.a.	2,000		36	110	1
Wet Ch	nemistry	SM 2540 G	-1997	%		8	%	
00111	Moisture	<del>-</del>	n.a.	72.2		0.50	0.50	1
	Moisture represents 103 - 105 degrees Co as-received basis.		weight of the	sample a				_

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	<b>.</b>	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLJ026	09/28/2015 20	0:22	Joseph M Gambler	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLJ026	09/11/2015 18	8:05	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15254A31B	09/14/2015 21	1:50	Marie D	451.96
		NWTPH-Gx					Beamenderfer	
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 23	3:39	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530040A	09/15/2015 05	5:27	Heather E Williams	1
07024	DRO Alternate Soil	ECY 97-602 NWTPH-Dx 06/97	1	152530040A	09/14/2015 08	8:45	Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15258820005B	09/15/2015 20	0:32	Scott W Freisher	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-26A-12.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036441

LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 12:55 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

26A12

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	70C SIM	mg/kg		mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.026	J	0.012	0.030	5
10725	Benzo(a)pyrene		50-32-8	0.030		0.012	0.030	5
10725	Benzo(b)fluoranthene	e	205-99-2	0.040		0.012	0.030	5
10725	Benzo(k)fluoranthene	9	207-08-9	0.021	J	0.012	0.030	5
10725	Chrysene		218-01-9	0.029	J	0.0060	0.030	5
10725	Dibenz(a,h)anthracen	ne	53-70-3	N.D.		0.012	0.030	5
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.		0.012	0.030	5
10725	1-Methylnaphthalene		90-12-0	0.029	J	0.012	0.030	5
10725	2-Methylnaphthalene		91-57-6	0.021	J	0.012	0.030	5
10725	Naphthalene		91-20-3	0.062		0.012	0.030	5
GC Vol	latiles	ECY 97-602	2 NWTPH-Gx	mg/kg		mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C12 rting limits were rai	="	n.a. ample foaming.	N.D.		67	330	457.36
GC Pet	roleum	ECY 97-602	NWTPH-Dx	mg/kg		mg/kg	mg/kg	
Hydrod	arbons w/Si	modified						
02214	DRO C12-C24 w/Si Gel	L	n.a.	300		11	25	1
02214	HRO C24-C40 w/Si Gel	L	n.a.	1,200		36	110	1
Wet Ch	nemistry	SM 2540 G-	-1997	%		%	%	
00111	Moisture		n.a.	72.6		0.50	0.50	1
	Moisture represents 103 - 105 degrees Coas-received basis.					ng at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLJ026	09/28/2015 20	0:56	Joseph M Gambler	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLJ026	09/11/2015 18	8:05	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252B31A	09/11/2015 00	0:32	Jeremy C Giffin	457.36
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 23	3:41	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530040A	09/15/2015 05	5:48	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530040A	09/14/2015 08	8:45	Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15258820005B	09/15/2015 20	0:32	Scott W Freisher	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-35-7.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036442

LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 13:00 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

35-75

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.010	0.025	5
10725	Benzo(a)pyrene		50-32-8	N.D.	0.010	0.025	5
10725	Benzo(b)fluoranthene	<b>e</b>	205-99-2	N.D.	0.010	0.025	5
10725	Benzo(k)fluoranthene	<b>e</b>	207-08-9	N.D.	0.010	0.025	5
10725	Chrysene		218-01-9	0.0055 J	0.0050	0.025	5
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.010	0.025	5
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.	0.010	0.025	5
10725	1-Methylnaphthalene		90-12-0	1.2	0.010	0.025	5
10725	2-Methylnaphthalene		91-57-6	0.41	0.010	0.025	5
10725	Naphthalene		91-20-3	0.17	0.010	0.025	5
GC Vol	latiles	ECY 97-6	602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1:	2	n.a.	N.D.	51	260	424.34
Repo	rting limits were rai	sed due to	sample foaming.				
GC Pet	roleum	ECY 97-6	602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modified	i				
02214	DRO C12-C24 w/Si Ge	L	n.a.	130	9.0	21	1
02214	HRO C24-C40 w/Si Ge	L	n.a.	1,000	30	90	1
Wet Ch	nemistry	SM 2540	G-1997	%	%	%	
00111	Moisture		n.a.	67.0	0.50	0.50	1
	Moisture represents 103 - 105 degrees Co as-received basis.		_	-			

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLJ026	09/28/2015	21:29	Joseph M Gambler	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLJ026	09/11/2015	18:05	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252B31A	09/11/2015	01:08	Jeremy C Giffin	424.34
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015	23:43	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530040A	09/15/2015	06:10	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530040A	09/14/2015	08:45	Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15258820006A	09/15/2015	21:32	Scott W Freisher	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-14-7.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036443 LL Group # 1590592

Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Collected: 09/01/2015 13:20 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

14-75

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg		mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.		0.0096	0.024	5
10725	Benzo(a)pyrene		50-32-8	N.D.		0.0096	0.024	5
10725	Benzo(b)fluoranthene		205-99-2	N.D.		0.0096	0.024	5
10725	Benzo(k)fluoranthene		207-08-9	N.D.		0.0096	0.024	5
10725	Chrysene		218-01-9	0.0066	J	0.0048	0.024	5
10725	Dibenz(a,h)anthracene	e	53-70-3	N.D.		0.0096	0.024	5
10725	Indeno(1,2,3-cd)pyren	ne	193-39-5	N.D.		0.0096	0.024	5
10725	1-Methylnaphthalene		90-12-0	0.030		0.0096	0.024	5
10725	2-Methylnaphthalene		91-57-6	0.020	J	0.0096	0.024	5
10725	Naphthalene		91-20-3	0.018	J	0.0096	0.024	5
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg		mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12		n.a.	N.D.		47	240	408.71
Repo	rting limits were rais	sed due to sa	mple foaming.					
GC Pet	roleum	ECY 97-602	NWTPH-Dx	mg/kg		mg/kg	mg/kg	
Hydrod	carbons w/Si	modified						
02214	DRO C12-C24 w/Si Gel		n.a.	210		8.5	20	1
02214	HRO C24-C40 w/Si Gel		n.a.	1,200		28	85	1
Wet Ch	nemistry	SM 2540 G-	1997	%		%	%	
00111	Moisture		n.a.	65.4		0.50	0.50	1
	Moisture represents to 103 - 105 degrees Cetas-received basis.		_	_	_	ng at		

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLJ026	09/29/2015 11:	04 Joseph M Gambler	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLJ026	09/11/2015 18:	05 Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252B31A	09/11/2015 01:	44 Jeremy C Giffin	408.71
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 23:	44 Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530040A	09/15/2015 06:	31 Heather E William	s 1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530040A	09/14/2015 08:	45 Olivia Arosemena	1
00111	Moisture	SM 2540 G-1997	1	15258820006A	09/15/2015 21:	32 Scott W Freisher	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-41-D-2.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036444

LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 13:40 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

41D25

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.00086	0.0022	1
10725	Benzo(a)pyrene		50-32-8	N.D.	0.00086	0.0022	1
10725	Benzo(b)fluoranthen	e	205-99-2	0.0014 J	0.00086	0.0022	1
10725	Benzo(k)fluoranthen	e	207-08-9	N.D.	0.00086	0.0022	1
10725	Chrysene		218-01-9	0.0014 J	0.00043	0.0022	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.00086	0.0022	1
10725	Indeno(1,2,3-cd)pyr	ene	193-39-5	N.D.	0.00086	0.0022	1
10725	1-Methylnaphthalene		90-12-0	0.0028	0.00086	0.0022	1
10725	2-Methylnaphthalene		91-57-6	0.0047	0.00086	0.0022	1
10725	Naphthalene		91-20-3	0.0048	0.00086	0.0022	1
GC Vol	latiles	ECY 97-	-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1	2	n.a.	N.D.	2.0	9.8	37.81
Repo	rting limits were rai	lsed due t	o sample foaming.				
GC Pet	roleum	ECY 97-	-602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modifie	ed				
02214	DRO C12-C24 w/Si Ge	1	n.a.	N.D.	3.9	9.0	1
02214	HRO C24-C40 w/Si Ge	1	n.a.	N.D.	13	39	1
Wet Ch	nemistry	SM 2540	G-1997	%	%	%	
00111	Moisture		n.a.	22.7	0.50	0.50	1
	Moisture represents 103 - 105 degrees C as-received basis.		in weight of the	sample after ove	en drying at		

### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLJ026	09/29/2015 11:3	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLJ026	09/11/2015 18:0	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252B31A	09/11/2015 02:2	Jeremy C Giffin	37.81
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524838751	09/01/2015 13:4	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530040A	09/15/2015 14:0	Heather E Williams	: 1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530040A	09/14/2015 08:4	Olivia Arosemena	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-41-D-2.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036444

LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Collected: 09/01/2015 13:40 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

41D25

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15258820006A	09/15/2015 21:3	2 Scott W Freisher	1



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Sample Description: SB-41-E-2.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Group # 1590592 Account # 13255

LL Sample # SW 8036445

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 13:50 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

41E25

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.00085	0.0021	1
10725	Benzo(a)pyrene		50-32-8	N.D.	0.00085	0.0021	1
10725	Benzo(b)fluoranthen	e	205-99-2	N.D.	0.00085	0.0021	1
10725	Benzo(k)fluoranthen	e	207-08-9	N.D.	0.00085	0.0021	1
10725	Chrysene		218-01-9	0.00048 J	0.00043	0.0021	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.00085	0.0021	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.	0.00085	0.0021	1
10725	1-Methylnaphthalene		90-12-0	0.026	0.00085	0.0021	1
10725	2-Methylnaphthalene		91-57-6	0.063	0.00085	0.0021	1
10725	Naphthalene		91-20-3	0.040	0.00085	0.0021	1
GC Vol	latiles	ECY 97-	602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1	2	n.a.	N.D.	14	68	262.95
Repo:	rting limits were rai	sed due t	o sample foaming.				
GC Pet	roleum	ECY 97-	602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modifie	ed				
02214	DRO C12-C24 w/Si Ge	1	n.a.	N.D.	3.8	8.9	1
02214	HRO C24-C40 w/Si Ge	1	n.a.	N.D.	13	38	1
Wet Ch	nemistry	SM 2540	G-1997	%	8	%	
00111	Moisture		n.a.	22.5	0.50	0.50	1
	Moisture represents 103 - 105 degrees Coas-received basis.		_	-			

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tim	e	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLJ026	09/29/2015	12:10	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLJ026	09/11/2015	18:05	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252B31A	09/11/2015	03:04	Jeremy C Giffin	262.95
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524838751	09/01/2015	13:50	Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530040A	09/15/2015	14:23	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530040A	09/14/2015	08:45	Olivia Arosemena	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-41-E-2.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036445

LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Collected: 09/01/2015 13:50 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

41E25

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15258820006A	09/15/2015 21:3	2 Scott W Freisher	1



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Sample Description: SB-41-C-2.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036446

LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 14:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

41C25

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.00086	0.0021	1
10725	Benzo(a)pyrene		50-32-8	N.D.	0.00086	0.0021	1
10725	Benzo(b)fluoranthene	9	205-99-2	0.0015 J	0.00086	0.0021	1
10725	Benzo(k)fluoranthene	9	207-08-9	N.D.	0.00086	0.0021	1
10725	Chrysene		218-01-9	0.0012 J	0.00043	0.0021	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.00086	0.0021	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.	0.00086	0.0021	1
10725	1-Methylnaphthalene		90-12-0	0.0011 J	0.00086	0.0021	1
10725	2-Methylnaphthalene		91-57-6	0.0015 J	0.00086	0.0021	1
10725	Naphthalene		91-20-3	0.0097	0.00086	0.0021	1
GC Vol	latiles	ECY 97-	602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C1: rting limits were rai		n.a. o sample foaming.	N.D.	14	72	279.12
GC Pet	croleum	ECY 97-	602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modifie	d				
02214	DRO C12-C24 w/Si Ge	L	n.a.	N.D.	3.9	9.0	1
02214	HRO C24-C40 w/Si Ge	L	n.a.	N.D.	13	39	1
Wet Ch	nemistry	SM 2540	G-1997	8	%	%	
00111	Moisture		n.a.	22.8	0.50	0.50	1
	Moisture represents 103 - 105 degrees Co as-received basis.		_	-			

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

			_					
CAT	Analysis Name	Method	Trial#	Batch#	Analysis		Analyst	Dilution
No.					Date and Tim	ie		Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLJ026	09/29/2015	12:44	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLJ026	09/11/2015	18:05	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252B31A	09/11/2015	04:16	Jeremy C Giffin	279.12
06647	GC-5g Field Preserved	SW-846 5035A	1	201524838751	09/01/2015	14:30	Client Supplied	n.a.
	MeOH							
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152530040A	09/15/2015	08:18	Heather E Williams	1
		NWTPH-Dx modified						
07024	DRO Alternate Soil	ECY 97-602	1	152530040A	09/14/2015	08:45	Olivia Arosemena	1
	Extraction	NWTPH-Dx 06/97			12, 21, 2010			

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-41-C-2.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036446

LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Collected: 09/01/2015 14:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

41C25

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15258820006A	09/15/2015 21:32	Scott W Freisher	1



Drv

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www,LancasterLabs.com

Sample Description: SB-41-E-7.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036447

LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 14:40 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Drv

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

41E75

CAT No.	Analysis Name		CAS Number	Dry Result		Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg		mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.		0.025	0.062	10
10725	Benzo(a)pyrene		50-32-8	N.D.		0.025	0.062	10
10725	Benzo(b)fluoranthene	2	205-99-2	N.D.		0.025	0.062	10
10725	Benzo(k)fluoranthene	9	207-08-9	N.D.		0.025	0.062	10
10725	Chrysene		218-01-9	0.017	J	0.012	0.062	10
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.		0.025	0.062	10
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.		0.025	0.062	10
10725	1-Methylnaphthalene		90-12-0	1.3		0.025	0.062	10
10725	2-Methylnaphthalene		91-57-6	1.6		0.025	0.062	10
10725	Naphthalene		91-20-3	4.2		0.025	0.062	10
GC Vo	holding time was not	ECY 97-602	_	mg/kg		mg/kg	mg/kg	
	NWTPH-GX Soil C7-C1: rting limits were rai me caused by absorpti	sed due to li			J	160	820	1612
GC Pet	roleum	ECY 97-602	NWTPH-Dx	mg/kg		mg/kg	mg/kg	
Hydro	carbons w/Si	modified						
02214	DRO C12-C24 w/Si Ge	L	n.a.	1,400		15	35	2
02214	HRO C24-C40 w/Si Ge	L	n.a.	2,300		50	150	2
Wet Cl	nemistry	SM 2540 G-	1997	%		%	8	
00111	Moisture		n.a.	60.5		0.50	0.50	1
	Moisture represents 103 - 105 degrees Co as-received basis.		_	-	_	ing at		

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

#### Laboratory Sample Analysis Record Method Trial# Batch# CAT Analysis Name Analysis Analyst Dilution Date and Time Factor 10725 SIM SVOA (microwave) SW-846 8270C SIM 15259SLF026 09/25/2015 04:42 Catherine E Bachman 10811 BNA Soil Microwave SIM SW-846 3546 15259SLF026 09/17/2015 19:22 Benjamin J 1 Rosenberger 02005 NWTPH-GX Soil C7-C12 ECY 97-602 15252B31A 09/11/2015 07:24 Jeremy C Giffin 1612 NWTPH-Gx 01150 GC - Bulk Soil Prep SW-846 5030A 201525038756 Scott W Freisher 09/06/2015 23:46 n.a.

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-41-E-7.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036447

LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Collected: 09/01/2015 14:40 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

41E75

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152540006A	09/15/2015 19:22	Heather E Williams	3 2
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152540006A	09/14/2015 16:20	JoElla L Rice	1
00111	Moisture	SM 2540 G-1997	1	15258820006A	09/15/2015 21:32	Scott W Freisher	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-41-E-12.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036448

LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 14:50 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

#### 41E12

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.0082	0.021	5
10725	Benzo(a)pyrene		50-32-8	N.D.	0.0082	0.021	5
10725	Benzo(b)fluoranthene	2	205-99-2	N.D.	0.0082	0.021	5
10725	Benzo(k)fluoranthene	2	207-08-9	N.D.	0.0082	0.021	5
10725	Chrysene		218-01-9	0.0095 J	0.0041	0.021	5
10725	Dibenz(a,h)anthracen	ne	53-70-3	N.D.	0.0082	0.021	5
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.	0.0082	0.021	5
10725	1-Methylnaphthalene		90-12-0	0.17	0.0082	0.021	5
10725	2-Methylnaphthalene		91-57-6	0.19	0.0082	0.021	5
10725	Naphthalene		91-20-3	0.27	0.0082	0.021	5
GC Vol	latiles	ECY 97-	602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C12 rting limits were rai		n.a. o sample foaming.	N.D.	230	1,100	2250.78
	croleum		602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modifie	d				
02214	DRO C12-C24 w/Si Ge	L	n.a.	400	7.5	17	1
02214	HRO C24-C40 w/Si Ge	L	n.a.	920	25	75	1
Wet Ch	nemistry	SM 2540	G-1997	%	%	%	
00111	Moisture		n.a.	60.0	0.50	0.50	1
	Moisture represents 103 - 105 degrees Co as-received basis.		_	-			

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

			-	•				
CAT	Analysis Name	Method	Trial#	Batch#	Analysis		Analyst	Dilution
No.					Date and Time	e		Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLJ026	09/29/2015	13:17	Joseph M Gambler	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLJ026	09/11/2015	18:05	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15257A34A	09/14/2015	22:11	Jeremy C Giffin	2250.78
		NWTPH-Gx						
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201524838752	09/05/2015	14:55	Lisa J Cooke	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152540006A	09/15/2015	15:50	Heather E Williams	1
		NWTPH-Dx modified						
07024	DRO Alternate Soil	ECY 97-602	1	152540006A	09/14/2015	16:20	JoElla L Rice	1
	Extraction	NWTPH-Dx 06/97						
00111	Moisture	SM 2540 G-1997	1	15258820006A	09/15/2015	21:32	Scott W Freisher	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-41-C-7.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036449 LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 15:00 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

41C75

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D. <mark>UJ</mark>	0.011	0.027	5
10725	Benzo(a)pyrene	50-32-8	N.D.	0.011	0.027	5
10725	Benzo(b)fluoranthene	205-99-2	N.D.	0.011	0.027	5
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.011	0.027	5
10725	Chrysene	218-01-9	N.D.	0.0053	0.027	5
10725	Dibenz(a,h)anthracene	53-70-3	N.D. 🗸	0.011	0.027	5
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.011	0.027	5
10725	1-Methylnaphthalene	90-12-0	0.85 <sup>J</sup>	0.011	0.027	5
10725	2-Methylnaphthalene	91-57-6	0.94 <sup>J</sup>	0.011	0.027	5
10725	Naphthalene	91-20-3	2.7 <sup>J</sup>	0.011	0.027	5

Reporting limits were raised due to interference from the sample matrix.

The recovery for the sample surrogate(s) is outside the QC acceptance limits as noted on the QC Summary. The client was contacted and the data reported.

GC Volatiles	ECY 97-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005 NWTPH-GX Soil C7-0	n.a.	N.D.	570	2,900	4447.69
Reporting limits were r	aised due to sample foaming.				
GC Petroleum	ECY 97-602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrocarbons w/Si	modified				
00014 DD0 010 004/0; 0					

 Hydrocarbons w/Si
 modified

 02214
 DRO C12-C24 w/Si Gel
 n.a.
 4,400
 48
 110
 5

 02214
 HRO C24-C40 w/Si Gel
 n.a.
 8,200
 160
 480
 5

 Wet Chemistry
 SM 2540 G-1997
 %
 %
 %

 00111
 Moisture
 n.a.
 68.9
 0.50
 0.50
 1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an  $\,$ 

as-received basis.

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

			_					
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLJ026	09/29/2015	13:50	Joseph M Gambler	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLJ026	09/11/2015	18:05	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15254A31B	09/14/2015	23:09	Marie D	4447.69
		NWTPH-Gx					Beamenderfer	
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015	23:49	Scott W Freisher	n.a.



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Sample Description: SB-41-C-7.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036449

LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Collected: 09/01/2015 15:00 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

41C75

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152540006A	09/15/2015 20:05	Heather E Williams	5
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152540006A	09/14/2015 16:20	JoElla L Rice	1
00111	Moisture	SM 2540 G-1997	1	15258820006A	09/15/2015 21:32	Scott W Freisher	1



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Sample Description: SB-41-C-12.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Group # 1590592 Account # 13255

LL Sample # SW 8036450

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 15:20 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

41C12

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D. <sup>UJ</sup>	0.011	0.028	5
10725	Benzo(a)pyrene	50-32-8	N.D.	0.011	0.028	5
10725	Benzo(b)fluoranthene	205-99-2	N.D.	0.011	0.028	5
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.011	0.028	5
10725	Chrysene	218-01-9	N.D.	0.0055	0.028	5
10725	Dibenz(a,h)anthracene	53-70-3	N.D. 🗸	0.011	0.028	5
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.011	0.028	5
10725	1-Methylnaphthalene	90-12-0	1.5 <sup>J</sup>	0.011	0.028	5
10725	2-Methylnaphthalene	91-57-6	1.9 <sup>J</sup>	0.011	0.028	5
10725	Naphthalene	91-20-3	0.87 <sub>.T</sub>	0.011	0.028	5

Reporting limits were raised due to interference from the sample matrix.

The recovery for the sample surrogate(s) is outside the QC acceptance limits as noted on the QC Summary. The client was contacted and the data reported.

GC Volatiles	ECY 97-602 NWTPH-Gx	mg/kg		mg/kg	mg/kg	
02005 NWTPH-GX Soil C7-C	n.a.	63	J	60	300	444.86
Reporting limits were raised due to sample foaming.						

GC Petroleum Hydrocarbons w/Si	ECY 97-602 NWTPH-Dx modified	mg/kg	mg/kg	mg/kg	
02214 DRO C12-C24 w/Si	Gel n.a.	780	20	47	2
02214 HRO C24-C40 w/Si	Gel n.a.	2,200	67	200	2
Wet Chemistry	SM 2540 G-1997	%	%	%	
00111 Moisture	n.a.	70.1	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an  $\,$ 

as-received basis.

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	9	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLJ026	09/29/2015 1	14:24	Joseph M Gambler	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLJ026	09/11/2015 1	18:05	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15252B31A	09/11/2015 0	04:52	Jeremy C Giffin	444.86
01150	GC - Bulk Soil Prep	NWTPH-Gx SW-846 5030A	1	201525038756	09/06/2015 2	23:50	Scott W Freisher	n.a.

<sup>\*=</sup>This limit was used in the evaluation of the final result



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Sample Description: SB-41-C-12.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Group # 1590592 Account # 13255

LL Sample # SW 8036450

Project Name: Former Olympia Bulk Plant

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Collected: 09/01/2015 15:20 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

41C12

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152540006A	09/15/2015 22:57	Heather E Williams	2
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152540006A	09/14/2015 16:20	JoElla L Rice	1
00111	Moisture	SM 2540 G-1997	1	15258820006A	09/15/2015 21:32	Scott W Freisher	1



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Sample Description: SB-41-D-7.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036451

LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 15:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

41D75

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor	
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg		mg/kg	mg/kg		
10725	Benzo(a)anthracene		56-55-3	N.D.		0.0083	0.021	5	
10725	Benzo(a)pyrene		50-32-8	N.D.		0.0083	0.021	5	
10725	Benzo(b)fluoranthene		205-99-2	0.021	J	0.0083	0.021	5	
10725	Benzo(k)fluoranthene		207-08-9	N.D.		0.0083	0.021	5	
10725	Chrysene		218-01-9	0.021		0.0042	0.021	5	
10725	Dibenz(a,h)anthracen	.e	53-70-3	N.D.		0.0083	0.021	5	
10725	Indeno(1,2,3-cd)pyre	ne	193-39-5	N.D.		0.0083	0.021	5	
10725	1-Methylnaphthalene		90-12-0	0.055		0.0083	0.021	5	
10725	2-Methylnaphthalene		91-57-6	0.050		0.0083	0.021	5	
10725	Naphthalene		91-20-3	0.76		0.0083	0.021	5	
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg		mg/kg	mg/kg		
02005	NWTPH-GX Soil C7-C12		n.a.	270		42	210	419.84	
Repo:	rting limits were rais	sed due to sa	ample foaming.						
GC Pet	roleum	ECY 97-602	NWTPH-Dx	mg/kg		mg/kg	mg/kg		
Hydrod	carbons w/Si	modified							
02214	DRO C12-C24 w/Si Gel		n.a.	980		38	88	5	
02214	HRO C24-C40 w/Si Gel		n.a.	2,100		130	380	5	
Wet Ch	nemistry	SM 2540 G-	-1997	%		%	8		
00111	Moisture			60.4		0.50	0.50	1	
00111	Moisture n.a. 60.4 0.50 0.50 1  Moisture represents the loss in weight of the sample after oven drying at  103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.								

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLJ026	09/29/2015 14:57	Joseph M Gambler	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLJ026	09/11/2015 18:05	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252B31A	09/11/2015 05:35	Jeremy C Giffin	419.84
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 23:52	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152540006A	09/16/2015 18:39	Heather E Williams	5
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152540006A	09/14/2015 16:20	JoElla L Rice	1
00111	Moisture	SM 2540 G-1997	1	15258820006B	09/15/2015 21:32	Scott W Freisher	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-41-D-12.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036452

LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/01/2015 15:40 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

#### 41D12

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles SW-846	8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	N.D. <mark>UJ</mark>	0.0096	0.024	5
10725	Benzo(a)pyrene	50-32-8	N.D.	0.0096	0.024	5
10725	Benzo(b)fluoranthene	205-99-2	N.D.	0.0096	0.024	5
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.0096	0.024	5
10725	Chrysene	218-01-9	N.D.	0.0048	0.024	5
10725	Dibenz(a,h)anthracene	53-70-3	N.D. 🅢	0.0096	0.024	5
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.0096	0.024	5
10725	1-Methylnaphthalene	90-12-0	0.33 <sup>J</sup>	0.0096	0.024	5
10725	2-Methylnaphthalene	91-57-6	0.36 <sup>J</sup>	0.0096	0.024	5
10725	Naphthalene	91-20-3	0.79 <mark>J</mark>	0.0096	0.024	5

Reporting limits were raised due to interference from the sample matrix.

The recovery for the sample surrogate(s) is outside the QC acceptance limits as noted on the QC Summary. The client was contacted and the data reported.

GC Volatiles	ECY 97-602 NWT	PH-Gx mg/kg	mg/kg	mg/kg	
02005 NWTPH-GX Soil	C7-C12 n.a.	N.D.	49	240	417.05
Reporting limits wer	re raised due to sample :	foaming.			

GC Petroleum Hydrocarbons w/Si	ECY 97-602 NWTPH-D: modified	<b>x</b> mg/kg	mg/kg	mg/kg	
02214 DRO C12-C24 w/Si 02214 HRO C24-C40 w/Si		2,500 2,000	17 58	40 170	2 2
Wet Chemistry 00111 Moisture	SM 2540 G-1997	% 65.7	% 0.50	% 0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	<b>.</b>	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLJ026	09/29/2015 1	5:30	Joseph M Gambler	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLJ026	09/11/2015 1	8:05	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15252B31A	09/11/2015 0	6:11	Jeremy C Giffin	417.05
01150	GC - Bulk Soil Prep	NWTPH-Gx SW-846 5030A	1	201525038756	09/06/2015 2	23:54	Scott W Freisher	n.a.

<sup>\*=</sup>This limit was used in the evaluation of the final result



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NWTPH-Dx 06/97

SM 2540 G-1997

Sample Description: SB-41-D-12.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036452

LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Extraction

00111 Moisture

Collected: 09/01/2015 15:40 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

09/15/2015 21:32 Scott W Freisher

41D12

	Laboratory Sample Analysis Record									
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor		
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152540006A	09/15/2015	23:18	Heather E Williams	2		
07024	DRO Alternate Soil	ECY 97-602	1	152540006A	09/14/2015	16:20	JoElla L Rice	1		

15258820006B



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Sample Description: SB-41-B-2.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Group # 1590592 Account # 13255

LL Sample # SW 8036453

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 09:40 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

41B25

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.0069	0.017	5
10725	Benzo(a)pyrene		50-32-8	N.D.	0.0069	0.017	5
10725	Benzo(b)fluoranthen	e	205-99-2	N.D.	0.0069	0.017	5
10725	Benzo(k)fluoranthen	e	207-08-9	N.D.	0.0069	0.017	5
10725	Chrysene		218-01-9	0.0065 J	0.0034	0.017	5
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.0069	0.017	5
10725	Indeno(1,2,3-cd)pyr	ene	193-39-5	N.D.	0.0069	0.017	5
10725	1-Methylnaphthalene		90-12-0	0.012 J	0.0069	0.017	5
10725	2-Methylnaphthalene		91-57-6	0.017 J	0.0069	0.017	5
10725	Naphthalene		91-20-3	0.36	0.0069	0.017	5
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1	2	n.a.	150	12	61	147.53
GC Pet	croleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modified					
02214	DRO C12-C24 w/Si Ge	1	n.a.	340 <mark>J</mark>	12	29	2
02214	HRO C24-C40 w/Si Ge	1	n.a.	1,600	41	120	2
Wet Ch	nemistry	SM 2540 G-	1997	%	%	%	
00111	Moisture		n.a.	52.0	0.50	0.50	1
	Moisture represents 103 - 105 degrees C as-received basis.			sample after oven dryi reported is on an	ing at		

### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLJ026	09/29/2015 16:03	Joseph M Gambler	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLJ026	09/11/2015 18:05	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15257A34A	09/14/2015 20:25	Jeremy C Giffin	147.53
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015 23:55	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152540006A	09/15/2015 23:40	Heather E Williams	2
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152540006A	09/14/2015 16:20	JoElla L Rice	1
00111	Moisture	SM 2540 G-1997	1	15258820006B	09/15/2015 21:32	Scott W Freisher	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



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Sample Description: SB-52-B-2.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Group # 1590592 Account # 13255

LL Sample # SW 8036454

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 10:00 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

52B25

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.0040	0.0099	5
10725	Benzo(a)pyrene		50-32-8	N.D.	0.0040	0.0099	5
10725	Benzo(b)fluoranthene		205-99-2	0.0095 J	0.0040	0.0099	5
10725	Benzo(k)fluoranthene		207-08-9	N.D.	0.0040	0.0099	5
10725	Chrysene		218-01-9	N.D.	0.0020	0.0099	5
10725	Dibenz(a,h)anthracen	e	53-70-3	N.D.	0.0040	0.0099	5
10725	Indeno(1,2,3-cd)pyre	ne	193-39-5	N.D.	0.0040	0.0099	5
10725	1-Methylnaphthalene		90-12-0	N.D.	0.0040	0.0099	5
10725	2-Methylnaphthalene		91-57-6	N.D.	0.0040	0.0099	5
10725	Naphthalene		91-20-3	0.0051 J	0.0040	0.0099	5
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12		n.a.	N.D.	12	60	247.79
Repo:	rting limits were rais	sed due to sa	ample foaming.				
GC Pet	roleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modified					
02214	DRO C12-C24 w/Si Gel		n.a.	210	7.2	17	2
02214	HRO C24-C40 w/Si Gel		n.a.	340	24	72	2
Wet Ch	nemistry	SM 2540 G-	-1997	%	%	%	
00111	Moisture		n.a.	16.9	0.50	0.50	1
	Moisture represents 103 - 105 degrees Ce as-received basis.		weight of the	sample after oven	drying at		

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

			_	_			
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLiJ026	09/29/2015 16:	37 Joseph M Gambler	5
10/23	SIM SVOA (MICTOWAVE)	5W-040 02/0C 51M	_	13233310020	09/29/2013 10.	37 UUSEPII M Gamblel	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLJ026	09/11/2015 18:	05 Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15257A34A	09/14/2015 22:	46 Jeremy C Giffin	247.79
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201524838751	09/02/2015 10:	00 Client Supplied	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152540006A	09/16/2015 17:	34 Heather E Williams	3 2
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152540006A	09/14/2015 16:	20 JoElla L Rice	1



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Sample Description: SB-52-B-2.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036454

LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Collected: 09/02/2015 10:00 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

52B25

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15258820006B	09/15/2015 21:	32 Scott W Freisher	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-41-B-7.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Group # 1590592 Account # 13255

LL Sample # SW 8036455

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 10:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

41B75

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg		mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.029	J	0.012	0.030	5
10725	Benzo(a)pyrene		50-32-8	0.016	J	0.012	0.030	5
10725	Benzo(b)fluoranthen	e	205-99-2	0.036		0.012	0.030	5
10725	Benzo(k)fluoranthen	e	207-08-9	N.D.		0.012	0.030	5
10725	Chrysene		218-01-9	0.051		0.0060	0.030	5
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.		0.012	0.030	5
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.		0.012	0.030	5
10725	1-Methylnaphthalene		90-12-0	14		0.12	0.30	50
10725	2-Methylnaphthalene		91-57-6	25		0.12	0.30	50
10725	Naphthalene		91-20-3	17		0.12	0.30	50
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg		mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1	=	n.a.	870	J	660	3,300	4514.47
Repor	rting limits were rai	lsed due to sa	ample foaming.					
GC Pet	roleum	ECY 97-602	NWTPH-Dx	mg/kg		mg/kg	mg/kg	
Hydrod	carbons w/Si	modified						
02214	DRO C12-C24 w/Si Ge	1	n.a.	920		11	25	1
02214	HRO C24-C40 w/Si Ge	1	n.a.	1,400		36	110	1
Wet Ch	nemistry	SM 2540 G-	-1997	%		%	%	
00111	Moisture		n.a.	72.5		0.50	0.50	1
00111	Moisture represents 103 - 105 degrees Coas-received basis.		weight of the s	sample af				_
	as recerted basis.							

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

			_	_				
CAT	Analysis Name	Method	Trial#	Batch#	Analysis		Analyst	Dilution
No.					Date and Ti	me		Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLJ026	09/29/2015	17:10	Joseph M Gambler	5
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15253SLJ026	09/30/2015	06:09	Joseph M Gambler	50
10811	BNA Soil Microwave SIM	SW-846 3546	1	15253SLJ026	09/11/2015	18:05	Shawn J McMullen	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15257A34B	09/15/2015	19:56	Marie D	4514.47
		NWTPH-Gx					Beamenderfer	
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/06/2015	23:58	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152540006A	09/15/2015	22:35	Heather E Williams	1
		NWTPH-Dx modified						
07024	DRO Alternate Soil	ECY 97-602	1	152540006A	09/14/2015	16:20	JoElla L Rice	1
	Extraction	NWTPH-Dx 06/97						

<sup>\*=</sup>This limit was used in the evaluation of the final result



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Sample Description: SB-41-B-7.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036455

LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Collected: 09/02/2015 10:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

41B75

#### Laboratory Sample Analysis Record

 CAT
 Analysis Name
 Method
 Trial#
 Batch#
 Analysis
 Analysis
 Analyst
 Dilution

 No.
 00111
 Moisture
 SM 2540 G-1997
 1
 15258820006B
 09/15/2015
 21:32
 Scott W Freisher
 1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-41-B-12.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036456 LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 10:50 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

41B12

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg		mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.		0.021	0.053	10
10725	Benzo(a)pyrene		50-32-8	N.D.		0.021	0.053	10
10725	Benzo(b)fluoranthene	2	205-99-2	0.022	J	0.021	0.053	10
10725	Benzo(k)fluoranthene	2	207-08-9	N.D.		0.021	0.053	10
10725	Chrysene		218-01-9	0.032	J	0.011	0.053	10
10725	Dibenz(a,h)anthracer	ie	53-70-3	N.D.		0.021	0.053	10
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.		0.021	0.053	10
10725	1-Methylnaphthalene		90-12-0	1.3		0.021	0.053	10
10725	2-Methylnaphthalene		91-57-6	2.0		0.021	0.053	10
10725	Naphthalene		91-20-3	0.88		0.021	0.053	10
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg		mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C12 rting limits were rai		n.a. mple foaming.	83	J	55	280	432.08
GC Pet	roleum	ECY 97-602	NWTPH-Dx	mg/kg		mg/kg	mg/kg	
Hydrod	arbons w/Si	modified						
02214	DRO C12-C24 w/Si Gel	-	n.a.	920		19	45	2
02214	HRO C24-C40 w/Si Gel	-	n.a.	2,100		64	190	2
Wet Ch	nemistry	SM 2540 G-	1997	%		%	%	
00111	Moisture		n.a.	68.7		0.50	0.50	1
	Moisture represents 103 - 105 degrees Coas-received basis.		_	_	_	ng at		

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name		Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwa	ave)	SW-846 8270C SIM	1	15254SLF026	09/24/2015	10:40	Joseph M Gambler	10
10811	BNA Soil Microway	ve SIM	SW-846 3546	1	15254SLF026	09/14/2015	17:55	Benjamin J Rosenberger	1
02005	NWTPH-GX Soil C7-	-C12	ECY 97-602 NWTPH-Gx	1	15257A34B	09/15/2015	20:31	Marie D Beamenderfer	432.08
01150	GC - Bulk Soil Pr	rep	SW-846 5030A	1	201525038756	09/07/2015	00:00	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/S	Si Gel	ECY 97-602 NWTPH-Dx modified	1	152540006A	09/16/2015	00:02	Heather E Williams	2
07024	DRO Alternate So: Extraction	il	ECY 97-602 NWTPH-Dx 06/97	1	152540006A	09/14/2015	16:20	JoElla L Rice	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



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Sample Description: SB-41-B-12.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Group # 1590592 Account # 13255

LL Sample # SW 8036456

Project Name: Former Olympia Bulk Plant

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Collected: 09/02/2015 10:50 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

41B12

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15258820006B	09/15/2015 21:32	Scott W Freisher	1



2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SB-52-B-7.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036457

LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 11:00 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

52B75

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270C SIM	mg/kg		mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.		0.00088	0.0022	1
10725	Benzo(a)pyrene		50-32-8	N.D.		0.00088	0.0022	1
10725	Benzo(b)fluoranthen	e	205-99-2	0.0018	J	0.00088	0.0022	1
10725	Benzo(k)fluoranthen	e	207-08-9	N.D.		0.00088	0.0022	1
10725	Chrysene		218-01-9	0.0016	J	0.00044	0.0022	1
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.		0.00088	0.0022	1
10725	Indeno(1,2,3-cd)pyr	ene	193-39-5	N.D.		0.00088	0.0022	1
10725	1-Methylnaphthalene		90-12-0	0.0027		0.00088	0.0022	1
10725	2-Methylnaphthalene		91-57-6	0.0047		0.00088	0.0022	1
10725	Naphthalene		91-20-3	0.013		0.00088	0.0022	1
GC Vol	latiles	ECY 97-	602 NWTPH-Gx	mg/kg		mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1	2	n.a.	N.D.		14	72	270.3
Repo	rting limits were ra	ised due t	o sample foaming.					
GC Pet	roleum	ECY 97-	602 NWTPH-Dx	mg/kg		mg/kg	mg/kg	
Hydrod	carbons w/Si	modifie	d					
02214	DRO C12-C24 w/Si Ge	1	n.a.	12		4.0	9.2	1
02214	HRO C24-C40 w/Si Ge	1	n.a.	20	J	13	40	1
Wet Ch	nemistry	SM 2540	G-1997	%		%	8	
00111	Moisture		n.a.	25.3		0.50	0.50	1
	Moisture represents 103 - 105 degrees C as-received basis.		_	_	_	ring at		

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

			-					
CAT	Analysis Name	Method	Trial#	Batch#	Analysis		Analyst	Dilution
No.					Date and Tir	ne		Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15254SLF026	09/24/2015	11:13	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15254SLF026	09/14/2015	17:55	Benjamin J	1
							Rosenberger	
02005	NWTPH-GX Soil C7-C12	ECY 97-602	1	15257A34B	09/15/2015	21:06	Marie D	270.3
		NWTPH-Gx					Beamenderfer	
06647	GC-5g Field Preserved	SW-846 5035A	1	201524838751	09/02/2015	11:00	Client Supplied	n.a.
	MeOH							
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152540008A	09/15/2015	16:11	Heather E Williams	1
		NWTPH-Dx modified						

<sup>\*=</sup>This limit was used in the evaluation of the final result



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Sample Description: SB-52-B-7.5 Soil

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # SW 8036457 LL Group # 1590592

Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Collected: 09/02/2015 11:00 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

52B75

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152540008A	09/14/2015 20:00	Sally L Appleyard	1
00111	Moisture	SM 2540 G-1997	1	15258820006B	09/15/2015 21:32	Scott W Freisher	1



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Sample Description: DUP-6 Soil LL Sample # SW 8036458

Former Olympia Bulk Plant COC: R224118 LL Group # 1590592 1117 West Bay Drive - Olympia, WA Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

DUP-6

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor				
GC/MS	Semivolatiles SW-8	46 8270C SIM	mg/kg	mg/kg	mg/kg					
10725	Benzo(a)anthracene	56-55-3	5.3 <sup>J</sup>	0.036	0.091	1				
10725	Benzo(a)pyrene	50-32-8	4.0	0.036	0.091	1				
10725	Benzo(b)fluoranthene	205-99-2	6.0	0.036	0.091	1				
10725	Benzo(k)fluoranthene	207-08-9	2.3	0.036	0.091	1				
10725	Chrysene	218-01-9	5.5	0.018	0.091	1				
10725	Dibenz(a,h)anthracene	53-70-3	0.27	0.036	0.091	1				
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.67	0.036	0.091	1				
10725	1-Methylnaphthalene	90-12-0	3.4	0.036	0.091	1				
10725	2-Methylnaphthalene	91-57-6	3.4	0.036	0.091	1				
10725	Naphthalene	91-20-3	6.0 <b>V</b>	0.036	0.091	1				
GC Vol	latiles ECY :	97-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg					
02005	NWTPH-GX Soil C7-C12	n.a.	1,100 <sup>J</sup>	35	170	391.95				
GC Pet		97-602 NWTPH-Dx	mg/kg	mg/kg	mg/kg					
Hydrod	carbons w/Si modi:	fied	<del>-</del>							
02214	DRO C12-C24 w/Si Gel	n.a.	8,900 <sup>J</sup>	660	1,500	100				
02214	HRO C24-C40 w/Si Gel	n.a.	44,000 J	2,200	6,600	100				
Wet Ch	nemistry SM 2	540 G-1997	%	%	%					
00111	Moisture	n.a.	54.7	0.50	0.50	1				
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.									

### General Sample Comments

State of Washington Lab Certification No. C457

00111 Moisture

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

SM 2540 G-1997

#### Laboratory Sample Analysis Record Method CAT Analysis Name Trial# Batch# Analysis Analyst Dilution No. Date and Time Factor 10725 SIM SVOA (microwave) SW-846 8270C SIM 15254SLF026 09/24/2015 11:46 Joseph M Gambler 10811 BNA Soil Microwave SIM SW-846 3546 1 15254SLF026 09/14/2015 17:55 Benjamin J 1 Rosenberger 02005 NWTPH-GX Soil C7-C12 ECY 97-602 1 15252A31A 09/10/2015 03:44 Jeremy C Giffin 391.95 NWTPH-Gx 01150 GC - Bulk Soil Prep 201525038756 SW-846 5030A 09/07/2015 00:01 Scott W Freisher n.a. 02214 NWTPH-Dx soil w/Si Gel 152530040A ECY 97-602 1 09/15/2015 09:22 Heather E Williams 100 NWTPH-Dx modified 152530040A 07024 DRO Alternate Soil ECY 97-602 09/14/2015 08:45 Olivia Arosemena Extraction NWTPH-Dx 06/97

15258820006B

09/15/2015 21:32

Scott W Freisher

1

<sup>\*=</sup>This limit was used in the evaluation of the final result



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Sample Description: DUP-7 Soil LL Sample # SW 8036459

> Former Olympia Bulk Plant COC: R224118 LL Group # 1590592 1117 West Bay Drive - Olympia, WA Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Highlands Ranch CO 80129 Reported: 10/01/2015 13:13

DUP-7

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 827	OC SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	N.D.	0.025	0.062	10
10725	Benzo(a)pyrene		50-32-8	N.D.	0.025	0.062	10
10725	Benzo(b)fluoranthen	e	205-99-2	N.D.	0.025	0.062	10
10725	Benzo(k)fluoranthen	e	207-08-9	N.D.	0.025	0.062	10
10725	Chrysene		218-01-9	N.D.	0.012	0.062	10
10725	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.025	0.062	10
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.	0.025	0.062	10
10725	1-Methylnaphthalene		90-12-0	7.9_ <sup>J</sup>	0.025	0.062	10
10725	2-Methylnaphthalene		91-57-6	12 <sup>J</sup>	0.025	0.062	10
10725	Naphthalene		91-20-3	0.25 J	0.025	0.062	10
GC Vol	latiles	ECY 97-602	NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C1	=	n.a.	77 J	66	330	438.24
Repor	rting limits were rai	sed due to sa	ample foaming.				
GC Pet	roleum	ECY 97-602	NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	carbons w/Si	modified					
02214	DRO C12-C24 w/Si Ge	1	n.a.	440	11	26	1
02214	HRO C24-C40 w/Si Ge	1	n.a.	1,500	37	110	1
Wet Ch	nemistry	SM 2540 G-	.1997	%	%	%	
00111	Moisture	DM 2540 G	n.a.	73.4	0.50	0.50	1
00111		the less in .				0.50	1
	Moisture represents 103 - 105 degrees Coas-received basis.				arying at		

#### General Sample Comments

State of Washington Lab Certification No.  ${\tt C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Analysis Name	Method	Trial#	Batch#	Analysis	_	Analyst	Dilution Factor
				Date and III	ie		Factor
SIM SVOA (microwave)	SW-846 8270C SIM	1	15254SLF026	09/24/2015	12:19	Joseph M Gambler	10
BNA Soil Microwave SIM	SW-846 3546	1	15254SLF026	09/14/2015	17:55	Benjamin J	1
						Rosenberger	
NWTPH-GX Soil C7-C12	ECY 97-602	1	15252A31A	09/10/2015	04:20	Jeremy C Giffin	438.24
	NWTPH-Gx						
GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/07/2015	00:03	Scott W Freisher	n.a.
NWTPH-Dx soil w/Si Gel	ECY 97-602	1	152530040A	09/15/2015	08:39	Heather E Williams	1
	NWTPH-Dx modified						
DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530040A	09/14/2015	08:45	Olivia Arosemena	1
	SIM SVOA (microwave) BNA Soil Microwave SIM  NWTPH-GX Soil C7-C12  GC - Bulk Soil Prep NWTPH-Dx soil w/Si Gel  DRO Alternate Soil	SIM SVOA (microwave) BNA Soil Microwave SIM SW-846 8270C SIM SW-846 3546  NWTPH-GX Soil C7-C12 ECY 97-602 NWTPH-GX GC - Bulk Soil Prep SW-846 5030A NWTPH-Dx soil w/Si Gel DRO Alternate Soil ECY 97-602	### SIM SVOA (microwave)	SIM SVOA (microwave) SW-846 8270C SIM 1 15254SLF026 BNA Soil Microwave SIM SW-846 3546 1 15254SLF026  NWTPH-GX Soil C7-C12 ECY 97-602 1 15252A31A  NWTPH-GX Soil Prep SW-846 5030A 1 201525038756  NWTPH-Dx soil w/Si Gel ECY 97-602 1 152530040A  DRO Alternate Soil ECY 97-602 1 152530040A	Analysis Name    Trial# Batch# Date and Tim	Analysis Name  SIM SVOA (microwave) SW-846 8270C SIM 1 15254SLF026 09/24/2015 12:19 BNA Soil Microwave SIM SW-846 3546 1 15254SLF026 09/14/2015 17:55  NWTPH-GX Soil C7-C12 ECY 97-602 1 15252A31A 09/10/2015 04:20  NWTPH-GX  GC - Bulk Soil Prep SW-846 5030A 1 201525038756 09/07/2015 00:03  NWTPH-Dx soil w/Si Gel ECY 97-602 1 152530040A 09/15/2015 08:39  DRO Alternate Soil ECY 97-602 1 152530040A 09/14/2015 08:45	Analysis Name    Trial# Batch# Date and Time   Date and Time



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Sample Description: DUP-7 Soil

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Group # 1590592 Account # 13255

LL Sample # SW 8036459

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

DUP-7

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15258820006B	09/15/2015 21:	32 Scott W Freisher	1



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Sample Description: TRIP BLANK Water

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036460

LL Group # 1590592 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Collected: 08/31/2015 Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

FOBTB

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Vo	latiles ECY 97-6	02 NWTPH-Gx	ug/l	ug/l	ug/l	
08273	NWTPH-Gx water C7-C12	n.a.	N.D.	50	250	1

#### General Sample Comments

State of Washington Lab Certification No.  ${\tt C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	15247A94A	09/08/2015 12:56	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15247A94A	09/08/2015 12:56	Brett W Kenyon	1



LL Sample # SW 8036461

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Sample Description: DUP-8 Soil

Former Olympia Bulk Plant COC: R224118 LL Group # 1590592 1117 West Bay Drive - Olympia, WA Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 10/01/2015 13:13 Highlands Ranch CO 80129

DUP-8

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8	270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene		56-55-3	0.0046 J	0.0024	0.0061	1
10725	Benzo(a)pyrene		50-32-8	0.0057 J	0.0024	0.0061	1
10725	Benzo(b)fluoranthene	2	205-99-2	0.019	0.0024	0.0061	1
10725	Benzo(k)fluoranthene	2	207-08-9	0.0065	0.0024	0.0061	1
10725	Chrysene		218-01-9	0.012	0.0012	0.0061	1
10725	Dibenz(a,h)anthracen	ne	53-70-3	N.D.	0.0024	0.0061	1
10725	Indeno(1,2,3-cd)pyre	ene	193-39-5	0.0034 J	0.0024	0.0061	1
10725	1-Methylnaphthalene		90-12-0	0.020	0.0024	0.0061	1
10725	2-Methylnaphthalene		91-57-6	0.015	0.0024	0.0061	1
10725	Naphthalene		91-20-3	0.037	0.0024	0.0061	1
GC Vol	latiles	ECY 97-6	02 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005 Repo	NWTPH-GX Soil C7-C12 cting limits were rai	=	n.a. sample foaming.	N.D. <mark>UJ</mark>	64	320	439.61
GC Pet	roleum	ECY 97-6	02 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydrod	arbons w/Si	modified	l				
02214	DRO C12-C24 w/Si Gel	L	n.a.	290 <sup>J</sup>	11	25	1
02214	HRO C24-C40 w/Si Ge	Ļ	n.a.	740 J	36	110	1
Wet Ch	nemistry	SM 2540	G-1997	%	%	%	
00111	Moisture		n.a.	72.6	0.50	0.50	1
	Moisture represents 103 - 105 degrees Ce as-received basis.		_	-			

#### General Sample Comments

State of Washington Lab Certification No.  ${\rm C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	15254SLF026	09/24/2015	12:52	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	15254SLF026	09/14/2015	17:55	Benjamin J Rosenberger	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	15252A31A	09/09/2015	22:47	Jeremy C Giffin	439.61
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201525038756	09/07/2015	00:05	Scott W Freisher	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152530040A	09/15/2015	09:00	Heather E Williams	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152530040A	09/14/2015	08:45	Olivia Arosemena	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



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Sample Description: DUP-8 Soil

Submitted: 09/04/2015 09:35

Reported: 10/01/2015 13:13

Former Olympia Bulk Plant COC: R224118

1117 West Bay Drive - Olympia, WA

LL Group # 1590592 Account # 13255

LL Sample # SW 8036461

Project Name: Former Olympia Bulk Plant

Collected: 08/31/2015 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

DUP-8

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM 2540 G-1997	1	15252820001B	09/09/2015 10:48	William C Schwebel	1



### **BP OLY**

### **Data Review**

OLYMPIA, WA

Semivolatiles and TPH

SDG # 1590593

Analyses Performed By: Lancaster Laboratories Lancaster, PA

Report # 24724R Review Level: Tier II

Project: GP09BPNA.WA60.K000

#### **SUMMARY**

This data quality assessment summarizes the review of Sample Delivery Group (SDG) #1590593 for samples collected in association with the BP OLY site. The review was conducted at a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

						Α	nalysis	3	
Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	voc	svoc	TPH	MET	TSS
MW-6R	8036462	Water	09/02/15		Χ	Х	Х	Χ	
MW-6R Filtered	8036463	Water	09/02/15					Х	
MW-7	8036464	Water	09/02/15		Χ	Х	Х	Χ	
MW-7 Filtered	8036465	Water	09/02/15					Х	
MW-8	8036466	Water	09/02/15		Х	Х	Х	Х	
MW-8 Filtered	8036467	Water	09/02/15					Х	
MW-9	8036468	Water	09/02/15		Χ	Х	Х	Χ	
MW-9 Filtered	8036469	Water	09/02/15					Х	
MW-10	8036470	Water	09/02/15		Х	Х	Х	Χ	
MW-10 Filtered	8036471	Water	09/02/15					Χ	
MW-11	8036472	Water	09/02/15		Х	Х	Х	Х	
MW-11 Filtered	8036473	Water	09/02/15					Χ	
MW-12	8036474	Water	09/02/15		Х	Х	Х	Х	
MW-12 Filtered	8036475	Water	09/02/15					Х	
DUP-1	8036476	Water	09/02/15	MW-7	Х	Х	Х	Х	
DUP-1 Filtered	8036477	Water	09/02/15	MW-7 Filtered				Х	
Trip Blank	8036478	Water	09/02/15		Χ	Х	Χ	Χ	

### ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

		Repo	orted	Performance Acceptable		Not
	Items Reviewed	No	Yes	No	Yes	Required
1.	Sample receipt condition		Х		Х	
2.	Requested analyses and sample results		Х		Х	
3.	Master tracking list		Х		Х	
4.	Methods of analysis		Х		Х	
5.	Reporting limits		Х		Х	
6.	Sample collection date		Х		Х	
7.	Laboratory sample received date		Х		Х	
8.	Sample preservation verification (as applicable)		Х		Х	
9.	Sample preparation/extraction/analysis dates		Х		Х	
10.	Fully executed Chain-of-Custody (COC) form		Х		Х	
11.	Narrative summary of QA or sample problems provided		Х		Х	
12.	Data Package Completeness and Compliance		Х		Х	

QA - Quality Assurance

#### ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 8260, 8270 (SIM), 8011 and ECY 97-602. Data were reviewed in accordance with the USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines and as requested by USEPA Region 10:

- Concentration (C) Qualifiers
  - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
  - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
  - E The compound was quantitated above the calibration range.
  - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
  - U The analyte was not detected at or above the reported result.
  - J The analyte was positively identified. The associated numerical result is an estimate.
  - UJ The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
  - R The data are unusable for all purposes.
  - N There is evidence the analyte is present in this sample.
  - JN There is evidence the analyte is present in this sample. The associated numerical result is an estimate.
  - D The sample result is reported from a diluted analysis.
  - EJ The sample result is greater than the calibration range. The associated numerical value is an estimated concentration only.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

### **VOLATILE ORGANIC COMPOUND (VOC) ANALYSES**

#### 1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Method Matrix Holding Time		Preservation
CW 946 9360	Water	14 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2 s.u.
SW-846 8260	Soil	48 hours from collection to extraction and 14 days from extraction to analysis	Cool to <6 °C.

s.u. Standard units

All samples were analyzed within the recommended holding time.

#### 2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

#### 3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

#### 4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

A MS/MSD was not included in the data package.

#### 5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS/LCSD analysis exhibited recoveries within the control limits.

#### 6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 40% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices. Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
MW-7/DUP-1	All Compounds	U	U	AC

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

#### 7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

### **DATA VALIDATION CHECKLIST FOR VOCs**

VOCs: SW-846 8260	Repo	orted		mance ptable	Not Required
	No	Yes	No	Yes	Required
GAS CHROMATOGRAPHY/MASS SPECTROMI	ETRY (GC/	MS)			
Tier II Validation					
Holding times		Х		Х	
Reporting limits (units)		Х		Х	
Blanks					
A. Method blanks		Х		Х	
B. Equipment blanks	Х				Х
C. Trip blanks		Х		Х	
Laboratory Control Sample (LCS)		Х		Х	
Laboratory Control Sample Duplicate(LCSD)		Х		Х	
LCS/LCSD Precision (RPD)		Х		Х	
Matrix Spike (MS)	Х				Х
Matrix Spike Duplicate(MSD)	Х				Х
MS/MSD Precision (RPD)	Х				Х
Field/Lab Duplicate (RPD)		Х		Х	
Surrogate Spike Recoveries		Х		Х	
Dilution Factor		Х		Х	
Moisture Content	Х				Х
A. Reporting limits adjusted to reflect sample dilutions		Х		Х	

%R RPD Percent recovery
Relative percent difference

#### SEMIVOLATILE ORGANIC COMPOUND (SVOC) ANALYSES

### 1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8270	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
(SIM)	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the recommended holding time.

#### 2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

#### 3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

#### 4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

A MS/MSD was not included in the data package.

#### 5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS/LCSD analysis exhibited recoveries within the control limits.

### 6. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
	1-Methylnaphthalene	0.16	0.21	AC
MW-7/DUP-1	2-Methylnaphthalenne	0.14	0.18	AC
	Naphthalene	0.062	0.088	AC

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

#### 7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

### DATA VALIDATION CHECKLIST FOR SVOCs

SVOCs: SW-846 8270 (SIM)	Reported		Performance Acceptable		Not Required	
	No	Yes	No	Yes	Required	
GAS CHROMATOGRAPHY/MASS SPECTROM	ETRY (GC/	MS)				
Tier II Validation						
Holding times		Х		Х		
Reporting limits (units)		Х		Х		
Blanks			•			
A. Method blanks		Х		Х		
B. Equipment blanks	Х				Х	
Laboratory Control Sample (LCS) %R		Х		Х		
Laboratory Control Sample Duplicate(LCSD) %R		Х		Х		
LCS/LCSD Precision (RPD)		Х		Х		
Matrix Spike (MS) %R	Х				Х	
Matrix Spike Duplicate(MSD) %R	Х				Х	
MS/MSD Precision (RPD)	X				Х	
Field Duplicate (RPD)		Х		Х		
Surrogate Spike Recoveries		Х		Х		
Dilution Factor		Х		Х		
Moisture Content	Х				Х	

%R

Percent recovery
Relative percent difference RPD

#### **PESTICIDES ANALYSES**

### 1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW 946 9044	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
SW-846 8011	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

#### 2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

#### 3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. pesticide analysis requires that one of the two pesticide surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries reported from the primary column were within control limits.

#### 4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS performed on sample MW-6R exhibited a recovery within the control limits

#### 5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS/LCSD analysis exhibited recoveries within the control limits.

#### 6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
MW-7/DUP-1	Ethylene Dibromide	0.029 U	0.028 U	AC

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

#### 7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

### **DATA VALIDATION CHECKLIST FOR PESTICIDES**

Pesticides; SW-846 8011	Rep	orted		mance ptable	Not Required	
	No	Yes	No	Yes	Required	
GAS CHROMATOGRAPHY (GC/ECD)						
Tier II Validation						
Holding times		Х		Х		
Reporting limits (units)		Х		Х		
Blanks						
D. Method blanks		Х		Х		
E. Equipment blanks	Х				Х	
Laboratory Control Sample (LCS)		Х		Х		
Laboratory Control Sample Duplicate(LCSD)		Х		Х		
LCS/LCSD Precision (RPD)		Х		Х		
Matrix Spike (MS)		Х		Х		
Matrix Spike Duplicate(MSD)	Х				Х	
MS/MSD Precision (RPD)	Х				Х	
Field/Lab Duplicate (RPD)		Х		Х		
Surrogate Spike Recoveries		Х		Х		
Column %D ≤ 40% (If dual column is performed for reporting-not confirmation)	Х				Х	
Dilution Factor		X		X		
Moisture Content	Х				Х	

#### **NWTPH-GX AND DX**

#### 1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
NWTPH – Gx and Dx ECY 97-602	Soil	14 days from collection to analysis	Cool to <6 °C

All samples were analyzed within the specified holding times.

#### 2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

#### 3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. The analysis requires surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries reported from the primary column were within control limits.

#### 4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

A MS/MSD was not included in the data package.

#### 5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS/LCSD analysis exhibited recoveries within the control limits.

### 6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
	Gx	0.029 U	0.028 U	AC
MW-7/DUP-1	DRO	130	110	16.7%
	HRO	250 U	250 U	AC

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

#### 7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

### **DATA VALIDATION CHECKLIST FOR TPH**

Gx/Dx; ECY 97-602	Rep	orted		mance ptable	Not Required
	No	Yes	No	Yes	Required
GAS CHROMATOGRAPHY (GC/FID)					
Tier II Validation					
Holding times		Х		Х	
Reporting limits (units)		Х		Х	
Blanks					
F. Method blanks		Х		Х	
G. Trip blanks		Х		Х	
Laboratory Control Sample (LCS) %R		Х		Х	
Laboratory Control Sample Duplicate(LCSD) %R		х		Х	
LCS/LCSD Precision (RPD)		Х		Х	
Matrix Spike (MS) %R	Х				Х
Matrix Spike Duplicate(MSD) %R	Х				Х
MS/MSD Precision (RPD)	Х				Х
Field/Lab Duplicate (RPD)		Х		Х	
Surrogate Spike Recoveries		Х		Х	
Dilution Factor		Х		Х	
Moisture Content	Х				Х

<sup>%</sup>R - percent recovery, RPD - relative percent difference,

#### INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to (United States Environmental Protection Agency) SW-846 6020. Data were reviewed in accordance with the National Functional Guidelines for Data Review for July 2002.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

#### Concentration (C) Qualifiers

- U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
- B The reported value was obtained from a reading less than the contract-required detection limit (CRDL), but greater than or equal to the instrument detection limit (IDL).

#### Quantitation (Q) Qualifiers

- E The reported value is estimated due to the presence of interference.
- N Spiked sample recovery is not within control limits.
- \* Duplicate analysis is not within control limits.

#### Validation Qualifiers

- J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
- UJ The analyte was not detected above the reported sample detection limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
- UB Analyte considered non-detect at the listed value due to associated blank contamination.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

#### **METALS ANALYSES**

#### 1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 6020	Water	180 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2.

All samples were analyzed within the specified holding times.

#### 2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

#### 3. Matrix Spike (MS) and Matrix Spike Duplicate (MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

#### 3.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 120%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS/MSD performed on sample location MW-6R exhibited recoveries and RPDs within the laboratory control limits.

#### 3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the CRDL. A control limit of 20% for water matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the CRDL, a control limit of one times the CRDL is applied for water matrices.

A laboratory duplicate was not included in the data package.

#### 4. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
MW-7/DUP-1	Lead	1.0 U	1.0 U	AC
MW-7 Filtered/DUP-1 Filtered	Lead (D)	1.0 U	1.0 U	AC

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

#### 5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 75% and 125%.

The LCS analysis exhibited recoveries within the control limits.

#### 6. Serial Dilution

The serial dilution analysis is used to assess if a significant physical or chemical interference exists due to sample matrix. Analytes exhibiting concentrations greater than 50 times the MDL in the undiluted sample are evaluated to determine if matrix interference exists. These analytes are required to have less than a 10% difference (%D) between sample results from the undiluted (parent) sample and results associated with the same sample analyzed with a five-fold dilution.

A serial dilution was not included in the data package.

#### 7. General Assessment - Total vs. Dissolved

The calculated %D between the total and the dissolved sample results were within the control limit.

#### 8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

### **DATA VALIDATION CHECKLIST FOR METAL**

METALS; SW-846 6020	Repo	orted		mance ptable	Not
,	No	Yes	No	Yes	Required
Inductively Coupled Plasma-Mass Spectrometry (I	CP-MS)				
Tier II Validation					
Holding Times		Х		Х	
Reporting limits (units)		Х		Х	
Blanks					
A. Instrument Blanks	Х				X
B. Method Blanks		X		Χ	
C. Equipment/Field Blanks	X				Χ
Laboratory Control Sample (LCS)		X		Χ	
Matrix Spike (MS) %R		X		Χ	
Matrix Spike Duplicate (MSD) %R		X		Χ	
MS/MSD Precision (RPD)		X		Χ	
Field/Lab Duplicate (RPD)		X		Χ	
ICP Serial Dilution	X				Χ
Total vs. Dissolved		Х		Х	
Reporting Limit Verification		Χ		Х	

%R Percent recovery
RPD Relative percent difference

VALIDATION PERFORMED

BY: Rachelle Borne

SIGNATURE: Parket Box

DATE: December 7, 2015

PEER REVIEW: Joseph C. Houser

DATE: December 11, 2015

# CHAIN OF CUSTODY/ CORRECTED SAMPLE ANALYSIS DATA SHEETS



| 3255 | 540593 | 6036462-78 | Laboratory Management Program LaMP Chain of Custody Record | R219429

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NAME OF TAXABLE PARTY.	THIS LINE - LAB USE ONLY: Custody Seals In Place: (Yes) No   Temp Blank: (Yes) No   Cooler Temp on Receipt: (Yo) - Fit   Trip Blank: (Yes) No   MS/MSD Sample Submitted: Yes / No   nediation Management COC - Effective Date: starting August 16, 2011																										



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Sample Description: MW-6R Water

Former Olympia Bulk Plant COC: R219429

1117 West Bay Drive - Olympia, WA

LL Group # 1590593 Account # 13255

LL Sample # WW 8036462

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 15:15 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 09/21/2015 14:19 Highlands Ranch CO 80129

OLY6R

CAT No.	Analysis Name		CAS Number	Result		Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS	Volatiles	SW-846	8260B	ug/l		ug/l	ug/l	
10335	Benzene		71-43-2	N.D.		0.50	1.0	1
10335	1,2-Dichloroethane		107-06-2	N.D.		0.50	1.0	1
10335	Ethylbenzene		100-41-4	N.D.		0.50	1.0	1
10335	Methyl Tertiary But	yl Ether	1634-04-4	N.D.		0.50	1.0	1
10335	Toluene	-	108-88-3	N.D.		0.50	1.0	1
10335	Xylene (Total)		1330-20-7	N.D.		0.50	1.0	1
GC/MS	Semivolatiles	SW-846	8270C SIM	ug/l		ug/l	ug/l	
08357	Benzo(a)anthracene		56-55-3	N.D.		0.010	0.051	1
08357	Benzo(a)pyrene		50-32-8	0.018	J	0.010	0.051	1
08357	Benzo(b)fluoranthen	е	205-99-2	0.016	J	0.010	0.051	1
08357	Benzo(k)fluoranthen	е	207-08-9	N.D.		0.010	0.051	1
08357	Chrysene		218-01-9	N.D.		0.010	0.051	1
08357	Dibenz(a,h)anthrace	ne	53-70-3	N.D.		0.010	0.051	1
08357	Indeno(1,2,3-cd)pyr	ene	193-39-5	0.015	J	0.010	0.051	1
08357	1-Methylnaphthalene		90-12-0	N.D.		0.010	0.051	1
08357	2-Methylnaphthalene		91-57-6	N.D.		0.010	0.051	1
08357	Naphthalene		91-20-3	N.D.		0.030	0.061	1
GC Vol	latiles	ECY 97-	-602 NWTPH-Gx	ug/l		ug/l	ug/l	
08273	NWTPH-Gx water C7-C	12	n.a.	N.D.		50	250	1
Pesti	cides/PCBs	SW-846	8011	ug/l		ug/l	ug/l	
10398	Ethylene dibromide		106-93-4	N.D.		0.0094	0.028	1
GC Pet	troleum	ECY 97-	-602 NWTPH-Dx	ug/l		ug/l	ug/l	
Hydrod	carbons	modifie	ed					
12899	DX DRO C12-C24		n.a.	N.D.		46	100	1
12899	DX HRO C24-C40		n.a.	N.D.		100	250	1
Metals	5	SW-846	6020	ug/l		ug/l	ug/l	
06035	Lead		7439-92-1	0.72	J	0.13	1.0	1

#### General Sample Comments

State of Washington Lab Certification No.  ${\tt C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
	BTEX, MTBE, EDC	SW-846 8260B	1	N152522AA	09/10/2015 03:28	Caitlin M Carmody	
01163	GC/MS VOA Water Prep	SW-846 5030B	1	N152522AA	09/10/2015 03:28	Caitlin M Carmody	1



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Sample Description: MW-6R Water

Submitted: 09/04/2015 09:35

Reported: 09/21/2015 14:19

Former Olympia Bulk Plant COC: R219429

1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036462

LL Group # 1590593 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 15:15 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

OLY6R

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	15248WAP026	09/11/2015	19:34	Holly B Ziegler	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	15248WAP026	09/08/2015	17:30	Ryan A Schafran	1
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	15247A94A	09/08/2015	15:54	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15247A94A	09/08/2015	15:54	Brett W Kenyon	1
10398	EDB in Wastewater	SW-846 8011	1	152550010A	09/19/2015	12:51	Richard A Shober	1
07786	EDB Extraction (8011)	SW-846 8011	1	152550010A	09/16/2015	09:00	Roman Kuropatkin	1
12899	DRO/DX Mini-extraction Master	ECY 97-602 NWTPH-Dx modified	1	152550007A	09/16/2015	15:41	Christine E Dolman	. 1
12907	Mini-extraction DRO DX (water)	ECY 97-602 NWTPH-Dx 06/97	1	152550007A	09/16/2015	02:00	Sherry L Morrow	1
06035	Lead	SW-846 6020	1	152526050004A	09/14/2015	11:08	Choon Y Tian	1
06050	ICPMS-Water, 3020A - U3	SW-846 3010A modified	1	152526050004	09/11/2015	09:22	Katlin N Cataldi	1



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Sample Description: MW-6R Filtered Water

Former Olympia Bulk Plant COC: R219429

1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036463

LL Group # 1590593 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 15:15 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 09/21/2015 14:19 Highlands Ranch CO 80129

CAT No. A	Analysis Name		CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
	<b>Dissolved</b> Lead	SW-846	<b>6020</b> 7439-92-1	ug/l N.D.	<b>ug/l</b> 0.13	<b>ug/l</b> 1.0	1

#### General Sample Comments

State of Washington Lab Certification No. C457 This sample was filtered in the lab for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tir	me	Analyst	Dilution Factor
06035	Lead	SW-846 6020	1	152526050004A	09/14/2015	11:10	Choon Y Tian	1
06050	ICPMS-Water, 3020A - U3	SW-846 3010A modified	1	152526050004	09/11/2015	09:22	Katlin N Cataldi	1



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Sample Description: MW-7 Water

Submitted: 09/04/2015 09:35

Reported: 09/21/2015 14:19

Former Olympia Bulk Plant COC: R219429

1117 West Bay Drive - Olympia, WA

LL Group # 1590593 Account # 13255

LL Sample # WW 8036464

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 20:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

OLY07

CAT No.	Analysis Name		CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS	Volatiles	SW-846	8260B	ug/l	ug/l	ug/l	
10335	Benzene		71-43-2	N.D.	0.50	1.0	1
10335	1,2-Dichloroethane		107-06-2	N.D.	0.50	1.0	1
10335	Ethylbenzene		100-41-4	N.D.	0.50	1.0	1
10335	Methyl Tertiary But	yl Ether	1634-04-4	N.D.	0.50	1.0	1
10335	Toluene	-	108-88-3	N.D.	0.50	1.0	1
10335	Xylene (Total)		1330-20-7	N.D.	0.50	1.0	1
GC/MS	Semivolatiles	SW-846	8270C SIM	ug/l	ug/l	ug/l	
08357	Benzo(a)anthracene		56-55-3	N.D.	0.010	0.051	1
08357	Benzo(a)pyrene		50-32-8	N.D.	0.010	0.051	1
08357	Benzo(b)fluoranthen	e	205-99-2	N.D.	0.010	0.051	1
08357	Benzo(k)fluoranthen	e	207-08-9	N.D.	0.010	0.051	1
08357	Chrysene		218-01-9	N.D.	0.010	0.051	1
08357	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.010	0.051	1
08357	Indeno(1,2,3-cd)pyr	ene	193-39-5	N.D.	0.010	0.051	1
08357	1-Methylnaphthalene		90-12-0	0.16	0.010	0.051	1
08357	2-Methylnaphthalene		91-57-6	0.14	0.010	0.051	1
08357	Naphthalene		91-20-3	0.062	0.030	0.061	1
GC Vol	latiles	ECY 97-	-602 NWTPH-Gx	ug/l	ug/l	ug/l	
08273	NWTPH-Gx water C7-C	12	n.a.	N.D.	50	250	1
Pesti	cides/PCBs	SW-846	8011	ug/l	ug/l	ug/l	
10398	Ethylene dibromide		106-93-4	N.D.	0.0096	0.029	1
GC Pet	roleum	ECY 97-	-602 NWTPH-Dx	ug/l	ug/l	ug/l	
Hydrod	carbons	modifie	ed				
12899	DX DRO C12-C24		n.a.	130	45	100	1
12899	DX HRO C24-C40		n.a.	N.D.	100	250	1
Metals	5	SW-846	6020	ug/l	ug/l	ug/l	
06035	Lead		7439-92-1	N.D.	0.13	1.0	1

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
	BTEX, MTBE, EDC	SW-846 8260B	1	N152522AA	09/10/2015 03:05	Caitlin M Carmody	
01163	GC/MS VOA Water Prep	SW-846 5030B	1	N152522AA	09/10/2015 03:05	Caitlin M Carmody	1



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modified

Sample Description: MW-7 Water

Submitted: 09/04/2015 09:35

Reported: 09/21/2015 14:19

Former Olympia Bulk Plant COC: R219429

1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036464 LL Group # 1590593

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 20:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

OLY07

Laboratory Sample Analysis Record												
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	.me	Analyst	Dilution Factor				
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	15248WAP026	09/11/2015	20:02	Holly B Ziegler	1				
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	15248WAP026	09/08/2015	17:30	Ryan A Schafran	1				
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	15247A94A	09/08/2015	16:20	Brett W Kenyon	1				
01146	GC VOA Water Prep	SW-846 5030B	1	15247A94A	09/08/2015	16:20	Brett W Kenyon	1				
10398	EDB in Wastewater	SW-846 8011	1	152550010A	09/16/2015	20:32	Richard A Shober	1				
07786	EDB Extraction (8011)	SW-846 8011	1	152550010A	09/16/2015	09:00	Roman Kuropatkin	1				
12899	DRO/DX Mini-extraction Master	ECY 97-602 NWTPH-Dx modified	1	152550007A	09/16/2015	16:05	Christine E Dolman	1				
12907	Mini-extraction DRO DX (water)	ECY 97-602 NWTPH-Dx 06/97	1	152550007A	09/16/2015	02:00	Sherry L Morrow	1				
06035	Lead	SW-846 6020	1	152526050004A	09/14/2015	10:48	Choon Y Tian	1				
06050	ICPMS-Water, 3020A - U3	SW-846 3010A	1	152526050004	09/11/2015	09:22	Katlin N Cataldi	1				



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Sample Description: MW-7 Filtered Water

Former Olympia Bulk Plant COC: R219429

1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036465

LL Group # 1590593 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 20:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 09/21/2015 14:19 Highlands Ranch CO 80129

CAT No.	Analysis Name		CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
Metals	Dissolved	SW-846	<b>6020</b> 7439-92-1	ug/l	<b>ug/l</b> 0.13	ug/l	1
00035	Lead		7439-92-1	N.D.	0.13	1.0	1

#### General Sample Comments

State of Washington Lab Certification No. C457 This sample was filtered in the lab for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tir	me	Analyst	Dilution Factor
06035	Lead	SW-846 6020	1	152526050004A	09/14/2015	11:11	Choon Y Tian	1
06050	ICPMS-Water, 3020A - U3	SW-846 3010A modified	1	152526050004	09/11/2015	09:22	Katlin N Cataldi	1



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Sample Description: MW-8 Water

Submitted: 09/04/2015 09:35

Reported: 09/21/2015 14:19

Former Olympia Bulk Plant COC: R219429

1117 West Bay Drive - Olympia, WA

LL Group # 1590593 Account # 13255

LL Sample # WW 8036466

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 19:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

OLY08

CAT No.	Analysis Name		CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS	Volatiles	SW-846	8260B	ug/l	ug/l	ug/l	
10335	Benzene		71-43-2	N.D.	0.50	1.0	1
10335	1,2-Dichloroethane		107-06-2	N.D.	0.50	1.0	1
10335	Ethylbenzene		100-41-4	N.D.	0.50	1.0	1
10335	Methyl Tertiary But	vl Ether	1634-04-4	N.D.	0.50	1.0	1
10335	Toluene	1	108-88-3	N.D.	0.50	1.0	1
10335	Xylene (Total)		1330-20-7	N.D.	0.50	1.0	1
GC/MS	Semivolatiles	SW-846	8270C SIM	ug/l	ug/l	ug/l	
08357	Benzo(a)anthracene		56-55-3	N.D.	0.010	0.051	1
08357	Benzo(a)pyrene		50-32-8	N.D.	0.010	0.051	1
08357	Benzo(b)fluoranthen	e	205-99-2	N.D.	0.010	0.051	1
08357	Benzo(k)fluoranthen	e	207-08-9	N.D.	0.010	0.051	1
08357	Chrysene		218-01-9	0.012 J	0.010	0.051	1
08357	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.010	0.051	1
08357	Indeno(1,2,3-cd)pyr	ene	193-39-5	N.D.	0.010	0.051	1
08357	1-Methylnaphthalene		90-12-0	0.12	0.010	0.051	1
08357	2-Methylnaphthalene		91-57-6	0.051 J	0.010	0.051	1
08357	Naphthalene		91-20-3	0.096	0.031	0.061	1
GC Vol	latiles	ECY 97-	-602 NWTPH-Gx	ug/l	ug/l	ug/l	
08273	NWTPH-Gx water C7-C	12	n.a.	N.D.	50	250	1
Pesti	cides/PCBs	SW-846	8011	ug/l	ug/l	ug/l	
10398	Ethylene dibromide		106-93-4	N.D.	0.0095	0.028	1
GC Petroleum ECY 97-602 NWTH			ug/l	ug/l	ug/l		
Hydrocarbons modified							
12899	DX DRO C12-C24		n.a.	670	49	110	1
12899	DX HRO C24-C40		n.a.	1,000	110	270	1
Metals	5	SW-846	6020	ug/l	ug/l	ug/l	
06035	Lead		7439-92-1	N.D.	0.13	1.0	1

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
	BTEX, MTBE, EDC	SW-846 8260B	1	N152522AA	09/10/2015 03:51	Caitlin M Carmody	
01163	GC/MS VOA Water Prep	SW-846 5030B	1	N152522AA	09/10/2015 03:51	Caitlin M Carmody	1



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Sample Description: MW-8 Water

Submitted: 09/04/2015 09:35

Reported: 09/21/2015 14:19

Former Olympia Bulk Plant COC: R219429

1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036466 LL Group # 1590593

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 19:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

OLY08

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	15248WAP026	09/11/2015	20:30	Holly B Ziegler	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	15248WAP026	09/08/2015	17:30	Ryan A Schafran	1
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	15247A94A	09/08/2015	16:45	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15247A94A	09/08/2015	16:45	Brett W Kenyon	1
10398	EDB in Wastewater	SW-846 8011	1	152550010A	09/16/2015	21:04	Richard A Shober	1
07786	EDB Extraction (8011)	SW-846 8011	1	152550010A	09/16/2015	09:00	Roman Kuropatkin	1
12899	DRO/DX Mini-extraction	ECY 97-602	1	152550007A	09/16/2015	16:28	Christine E Dolman	1
	Master	NWTPH-Dx modified						
12907	Mini-extraction DRO DX (water)	ECY 97-602 NWTPH-Dx 06/97	1	152550007A	09/16/2015	02:00	Sherry L Morrow	1
06035	Lead	SW-846 6020	1	152526050004A	09/14/2015	11:13	Choon Y Tian	1
06050	ICPMS-Water, 3020A - U3	SW-846 3010A modified	1	152526050004	09/11/2015	09:22	Katlin N Cataldi	1



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Sample Description: MW-8 Filtered Water

Former Olympia Bulk Plant COC: R219429

1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036467 LL Group # 1590593

Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 09/04/2015 09:35

Reported: 09/21/2015 14:19

Collected: 09/02/2015 19:30 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

CAT No.	Analysis Name		CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
Metals	Dissolved	SW-846	6020	ug/l	ug/l	ug/l	
06035	Lead		7439-92-1	N.D.	0.13	1.0	1

#### General Sample Comments

State of Washington Lab Certification No. C457 This sample was filtered in the lab for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
06035	Lead	SW-846 6020	1	152526050004A	09/14/2015	11:15	Choon Y Tian	1
06050	ICPMS-Water, 3020A - U3	SW-846 3010A modified	1	152526050004	09/11/2015	09:22	Katlin N Cataldi	1



LL Sample # WW 8036468

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Sample Description: MW-9 Water

Former Olympia Bulk Plant COC: R219429 LL Group # 1590593 1117 West Bay Drive - Olympia, WA Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 18:50 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 09/21/2015 14:19 Highlands Ranch CO 80129

OLY09

CAT No.	Analysis Name		CAS Number	Result		Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS	Volatiles	SW-846	8260B	ug/l		ug/l	ug/l	
10335	Benzene		71-43-2	N.D.		0.50	1.0	1
10335	1,2-Dichloroethane		107-06-2	N.D.		0.50	1.0	1
10335	Ethylbenzene		100-41-4	N.D.		0.50	1.0	1
10335	Methyl Tertiary But	yl Ether	1634-04-4	N.D.		0.50	1.0	1
10335	Toluene	-	108-88-3	N.D.		0.50	1.0	1
10335	Xylene (Total)		1330-20-7	N.D.		0.50	1.0	1
GC/MS	Semivolatiles	SW-846	8270C SIM	ug/l		ug/l	ug/l	
08357	Benzo(a)anthracene		56-55-3	N.D.		0.010	0.050	1
08357	Benzo(a)pyrene		50-32-8	N.D.		0.010	0.050	1
08357	Benzo(b)fluoranthen	e	205-99-2	N.D.		0.010	0.050	1
08357	Benzo(k)fluoranthen	e	207-08-9	N.D.		0.010	0.050	1
08357	Chrysene		218-01-9	N.D.		0.010	0.050	1
08357	Dibenz(a,h)anthrace	ne	53-70-3	N.D.		0.010	0.050	1
08357	Indeno(1,2,3-cd)pyr	ene	193-39-5	N.D.		0.010	0.050	1
08357	1-Methylnaphthalene		90-12-0	0.12		0.010	0.050	1
08357	2-Methylnaphthalene		91-57-6	0.058		0.010	0.050	1
08357	Naphthalene		91-20-3	0.37		0.030	0.060	1
GC Vol	latiles	ECY 97-	-602 NWTPH-Gx	ug/l		ug/l	ug/l	
08273	NWTPH-Gx water C7-C	12	n.a.	67	J	50	250	1
Pesti	cides/PCBs	SW-846	8011	ug/l		ug/l	ug/l	
10398	Ethylene dibromide		106-93-4	N.D.		0.0096	0.029	1
	croleum carbons	ECY 97-modifie	-602 NWTPH-Dx	ug/l		ug/l	ug/l	
12899	DX DRO C12-C24		n.a.	N.D.		45	100	1
12899	DX HRO C24-C40		n.a.	N.D.		100	250	1
Metals	5	SW-846	6020	ug/l		ug/l	ug/l	
06035	Lead		7439-92-1	0.30	J	0.13	1.0	1

#### General Sample Comments

State of Washington Lab Certification No.  ${\tt C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
	BTEX, MTBE, EDC GC/MS VOA Water Prep	SW-846 8260B SW-846 5030B	1 1	N152522AA N152522AA	09/10/2015 04:14 09/10/2015 04:14	-	



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Sample Description: MW-9 Water

Submitted: 09/04/2015 09:35

Reported: 09/21/2015 14:19

Former Olympia Bulk Plant COC: R219429

1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036468 LL Group # 1590593

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 18:50 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

OLY09

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	.me	Analyst	Dilution Factor
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	15248WAP026	09/11/2015	20:58	Holly B Ziegler	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	15248WAP026	09/08/2015	17:30	Ryan A Schafran	1
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	15247A94A	09/08/2015	17:10	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15247A94A	09/08/2015	17:10	Brett W Kenyon	1
10398	EDB in Wastewater	SW-846 8011	1	152550010A	09/16/2015	21:20	Richard A Shober	1
07786	EDB Extraction (8011)	SW-846 8011	1	152550010A	09/16/2015	09:00	Roman Kuropatkin	1
12899	DRO/DX Mini-extraction	ECY 97-602	1	152550007A	09/16/2015	16:52	Christine E Dolman	1
	Master	NWTPH-Dx modified						
12907	Mini-extraction DRO DX (water)	ECY 97-602 NWTPH-Dx 06/97	1	152550007A	09/16/2015	02:00	Sherry L Morrow	1
06035	Lead	SW-846 6020	1	152526050004A	09/14/2015	11:17	Choon Y Tian	1
06050	ICPMS-Water, 3020A - U3	SW-846 3010A modified	1	152526050004	09/11/2015	09:22	Katlin N Cataldi	1



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Sample Description: MW-9 Filtered Water

Former Olympia Bulk Plant COC: R219429

1117 West Bay Drive - Olympia, WA

LL Group # 1590593 Account # 13255

LL Sample # WW 8036469

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 18:50 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 09/21/2015 14:19 Highlands Ranch CO 80129

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
Metal	s Dissolved	SW-846 6020	ug/l	ug/l	ug/l	
06035	Lead	7439-92-1	N.D.	0.13	1.0	1

#### General Sample Comments

State of Washington Lab Certification No. C457 This sample was filtered in the lab for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
06035	Lead	SW-846 6020	1	152526050004A	09/14/2015	11:19	Choon Y Tian	1
06050	ICPMS-Water, 3020A - U3	SW-846 3010A modified	1	152526050004	09/11/2015	09:22	Katlin N Cataldi	1



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Sample Description: MW-10 Water

Submitted: 09/04/2015 09:35

Reported: 09/21/2015 14:19

Former Olympia Bulk Plant COC: R219429

1117 West Bay Drive - Olympia, WA

LL Group # 1590593 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 18:00 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

OLY10

CAT No.	Analysis Name		CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS	Volatiles	SW-846	8260B	ug/l	ug/l	ug/l	
10335	Benzene		71-43-2	N.D.	0.50	1.0	1
10335	1,2-Dichloroethane		107-06-2	N.D.	0.50	1.0	1
10335	Ethylbenzene		100-41-4	N.D.	0.50	1.0	1
10335	Methyl Tertiary But	yl Ether	1634-04-4	N.D.	0.50	1.0	1
10335	Toluene	2	108-88-3	N.D.	0.50	1.0	1
10335	Xylene (Total)		1330-20-7	N.D.	0.50	1.0	1
GC/MS	Semivolatiles	SW-846	8270C SIM	ug/l	ug/l	ug/l	
08357	Benzo(a)anthracene		56-55-3	N.D.	0.010	0.051	1
08357	Benzo(a)pyrene		50-32-8	N.D.	0.010	0.051	1
08357	Benzo(b)fluoranthen	.e	205-99-2	N.D.	0.010	0.051	1
08357	Benzo(k)fluoranthen	.e	207-08-9	N.D.	0.010	0.051	1
08357	Chrysene		218-01-9	N.D.	0.010	0.051	1
08357	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.010	0.051	1
08357	Indeno(1,2,3-cd)pyr	ene	193-39-5	N.D.	0.010	0.051	1
08357	1-Methylnaphthalene		90-12-0	N.D.	0.010	0.051	1
08357	2-Methylnaphthalene		91-57-6	N.D.	0.010	0.051	1
08357	Naphthalene		91-20-3	N.D.	0.030	0.061	1
GC Vol	latiles	ECY 97-	-602 NWTPH-Gx	ug/l	ug/l	ug/l	
08273	NWTPH-Gx water C7-C	12	n.a.	N.D.	50	250	1
Pesti	cides/PCBs	SW-846	8011	ug/l	ug/l	ug/l	
10398	Ethylene dibromide		106-93-4	N.D.	0.0094	0.028	1
GC Pet	croleum	ECY 97-	-602 NWTPH-Dx	ug/l	ug/l	ug/l	
Hvdro	carbons	modifie	ed				
12899	DX DRO C12-C24		n.a.	N.D.	45	100	1
12899	DX HRO C24-C40		n.a.	N.D.	100	250	1
120,7					200		_
Metals	5	SW-846	6020	ug/l	ug/l	ug/l	
06035	Lead		7439-92-1	2.1	0.13	1.0	1

#### General Sample Comments

State of Washington Lab Certification No.  ${\tt C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	BTEX, MTBE, EDC	SW-846 8260B	1	N152522AA	09/10/2015 04:37	Caitlin M Carmody	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	N152522AA	09/10/2015 04:37	Caitlin M Carmody	1



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Sample Description: MW-10 Water

Submitted: 09/04/2015 09:35

Reported: 09/21/2015 14:19

12907 Mini-extraction DRO DX

06050 ICPMS-Water, 3020A - U3

(water)

06035 Lead

Former Olympia Bulk Plant COC: R219429

1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036470

1

LL Group # 1590593 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 18:00 by JL Atlantic Richfield c/o ARCADIS

1

ECY 97-602 NWTPH-Dx 06/97

SW-846 6020

SW-846 3010A

modified

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

09/16/2015 02:00 Sherry L Morrow

09/11/2015 09:22 Katlin N Cataldi

Choon Y Tian

09/14/2015 11:20

OLY10

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	15248WAP026	09/14/2015 16:05	Holly B Ziegler	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	15248WAP026	09/08/2015 17:30	Ryan A Schafran	1
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	15247A94A	09/08/2015 17:35	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15247A94A	09/08/2015 17:35	Brett W Kenyon	1
10398	EDB in Wastewater	SW-846 8011	1	152550010A	09/16/2015 21:36	Richard A Shober	1
07786	EDB Extraction (8011)	SW-846 8011	1	152550010A	09/16/2015 09:00	Roman Kuropatkin	1
12899	DRO/DX Mini-extraction Master	ECY 97-602 NWTPH-Dx modified	1	152550007A	09/16/2015 17:39	Christine E Dolmar	n 1

152550007A

152526050004A

152526050004

<sup>\*=</sup>This limit was used in the evaluation of the final result



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Sample Description: MW-10 Filtered Water

Former Olympia Bulk Plant COC: R219429

1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036471

LL Group # 1590593 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 18:00 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 09/21/2015 14:19 Highlands Ranch CO 80129

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
Metal:	s Dissolved Lead	<b>SW-846 6020</b> 7439-92-1	<b>ug/1</b> 0.15 J	<b>ug/l</b> 0.13	ug/l	1
06035	Lead	7439-92-1	0.15	0.13	1.0	1

#### General Sample Comments

State of Washington Lab Certification No. C457 This sample was filtered in the lab for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
06035	Lead	SW-846 6020	1	152526050004A	09/14/2015	11:22	Choon Y Tian	1
06050	ICPMS-Water, 3020A - U3	SW-846 3010A modified	1	152526050004	09/11/2015	09:22	Katlin N Cataldi	1



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Sample Description: MW-11 Water

Submitted: 09/04/2015 09:35

Reported: 09/21/2015 14:19

Former Olympia Bulk Plant COC: R219429

1117 West Bay Drive - Olympia, WA

LL Group # 1590593 Account # 13255

LL Sample # WW 8036472

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 17:25 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

OLY11

CAT No.	Analysis Name		CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS	Volatiles	SW-846	8260B	ug/l	ug/l	ug/l	
10335	Benzene		71-43-2	N.D.	0.50	1.0	1
10335	1,2-Dichloroethane		107-06-2	N.D.	0.50	1.0	1
10335	Ethylbenzene		100-41-4	N.D.	0.50	1.0	1
10335	Methyl Tertiary But	yl Ether	1634-04-4	N.D.	0.50	1.0	1
10335	Toluene	-	108-88-3	N.D.	0.50	1.0	1
10335	Xylene (Total)		1330-20-7	N.D.	0.50	1.0	1
GC/MS	Semivolatiles	SW-846	8270C SIM	ug/l	ug/l	ug/l	
08357	Benzo(a)anthracene		56-55-3	N.D.	0.010	0.050	1
08357	Benzo(a)pyrene		50-32-8	N.D.	0.010	0.050	1
08357	Benzo(b)fluoranthen	e	205-99-2	N.D.	0.010	0.050	1
08357	Benzo(k)fluoranthen	e	207-08-9	N.D.	0.010	0.050	1
08357	Chrysene		218-01-9	N.D.	0.010	0.050	1
08357	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.010	0.050	1
08357	Indeno(1,2,3-cd)pyr	ene	193-39-5	N.D.	0.010	0.050	1
08357	1-Methylnaphthalene		90-12-0	N.D.	0.010	0.050	1
08357	2-Methylnaphthalene		91-57-6	N.D.	0.010	0.050	1
08357	Naphthalene		91-20-3	N.D.	0.030	0.060	1
GC Vol	latiles	ECY 97-	-602 NWTPH-Gx	ug/l	ug/l	ug/l	
08273	NWTPH-Gx water C7-C	12	n.a.	N.D.	50	250	1
Pesti	cides/PCBs	SW-846	8011	ug/l	ug/l	ug/l	
10398	Ethylene dibromide		106-93-4	N.D.	0.0096	0.029	1
	roleum carbons	ECY 97-	-602 NWTPH-Dx	ug/l	ug/l	ug/l	
12899	DX DRO C12-C24			N.D.	48	110	1
12899	DX DRO C12-C24 DX HRO C24-C40		n.a.	N.D. N.D.	48 110	270	1
12899	DA HRU C24-C40		n.a.	и	110	Z / U	1
Metals	5	SW-846	6020	ug/l	ug/l	ug/l	
06035	Lead		7439-92-1	0.87 J	0.13	1.0	1

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	BTEX, MTBE, EDC	SW-846 8260B	1	N152522AA	09/10/2015 05:00	Caitlin M Carmody	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	N152522AA	09/10/2015 05:00	Caitlin M Carmody	1



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Sample Description: MW-11 Water

Submitted: 09/04/2015 09:35

Reported: 09/21/2015 14:19

Former Olympia Bulk Plant COC: R219429

1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036472

LL Group # 1590593 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 17:25 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

OLY11

	Laboratory Sample Analysis Record											
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor				
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	15248WAP026	09/14/2015	16:33	Holly B Ziegler	1				
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	15248WAP026	09/08/2015	17:30	Ryan A Schafran	1				
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	15247A94A	09/08/2015	18:00	Brett W Kenyon	1				
01146	GC VOA Water Prep	SW-846 5030B	1	15247A94A	09/08/2015	18:00	Brett W Kenyon	1				
10398	EDB in Wastewater	SW-846 8011	1	152550010A	09/16/2015	21:52	Richard A Shober	1				
07786	EDB Extraction (8011)	SW-846 8011	1	152550010A	09/16/2015	09:00	Roman Kuropatkin	1				
12899	DRO/DX Mini-extraction Master	ECY 97-602 NWTPH-Dx modified	1	152550007A	09/16/2015	18:02	Christine E Dolman	1				
12907	Mini-extraction DRO DX (water)	ECY 97-602 NWTPH-Dx 06/97	1	152550007A	09/16/2015	02:00	Sherry L Morrow	1				
06035	Lead	SW-846 6020	1	152526050004A	09/14/2015	11:31	Choon Y Tian	1				
06050	ICPMS-Water, 3020A - U3	SW-846 3010A modified	1	152526050004	09/11/2015	09:22	Katlin N Cataldi	1				



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Sample Description: MW-11 Filtered Water

Former Olympia Bulk Plant COC: R219429

1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036473

LL Group # 1590593 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 17:25 by JL Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 09/21/2015 14:19 Highlands Ranch CO 80129

CAT No. Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
Metals Dissolved 06035 Lead	<b>SW-846 6020</b> 7439-92-1	ug/l N.D.	<b>ug/1</b> 0.13	<b>ug/l</b> 1.0	1

#### General Sample Comments

State of Washington Lab Certification No. C457 This sample was filtered in the lab for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tir	me	Analyst	Dilution Factor
06035	Lead	SW-846 6020	1	152526050004A	09/14/2015	11:33	Choon Y Tian	1
06050	ICPMS-Water, 3020A - U3	SW-846 3010A modified	1	152526050004	09/11/2015	09:22	Katlin N Cataldi	1



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Sample Description: MW-12 Water

Submitted: 09/04/2015 09:35

Reported: 09/21/2015 14:19

Former Olympia Bulk Plant COC: R219429

1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036474

LL Group # 1590593

Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 16:20 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

OLY12

CAT No.	Analysis Name		CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS	Volatiles	SW-846	8260B	ug/l	ug/l	ug/l	
10335	Benzene		71-43-2	N.D.	0.50	1.0	1
10335	1,2-Dichloroethane		107-06-2	N.D.	0.50	1.0	1
10335	Ethylbenzene		100-41-4	N.D.	0.50	1.0	1
10335	Methyl Tertiary But	yl Ether	1634-04-4	N.D.	0.50	1.0	1
10335	Toluene	-	108-88-3	N.D.	0.50	1.0	1
10335	Xylene (Total)		1330-20-7	N.D.	0.50	1.0	1
GC/MS	Semivolatiles	SW-846	8270C SIM	ug/l	ug/l	ug/l	
08357	Benzo(a)anthracene		56-55-3	N.D.	0.010	0.050	1
08357	Benzo(a)pyrene		50-32-8	N.D.	0.010	0.050	1
08357	Benzo(b)fluoranthen	e	205-99-2	N.D.	0.010	0.050	1
08357	Benzo(k)fluoranthen	e	207-08-9	N.D.	0.010	0.050	1
08357	Chrysene		218-01-9	N.D.	0.010	0.050	1
08357	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.010	0.050	1
08357	Indeno(1,2,3-cd)pyr	ene	193-39-5	N.D.	0.010	0.050	1
08357	1-Methylnaphthalene		90-12-0	N.D.	0.010	0.050	1
08357	2-Methylnaphthalene		91-57-6	N.D.	0.010	0.050	1
08357	Naphthalene		91-20-3	N.D.	0.030	0.060	1
GC Vol	latiles	ECY 97-	-602 NWTPH-Gx	ug/l	ug/l	ug/l	
08273	NWTPH-Gx water C7-C	12	n.a.	N.D.	50	250	1
Pesti	cides/PCBs	SW-846	8011	ug/l	ug/l	ug/l	
10398	Ethylene dibromide		106-93-4	N.D.	0.0096	0.029	1
	croleum carbons	ECY 97-	-602 NWTPH-Dx	ug/l	ug/l	ug/l	
12899	DX DRO C12-C24		n.a.	N.D.	48	110	1
12899	DX HRO C24-C40		n.a.	N.D.	110	270	1
Metals	5	SW-846	6020	ug/l	ug/l	ug/l	
06035	Lead		7439-92-1	N.D.	0.13	1.0	1

#### General Sample Comments

State of Washington Lab Certification No.  ${\tt C457}$ 

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	BTEX, MTBE, EDC	SW-846 8260B	1	N152522AA	09/10/2015 05:24	Caitlin M Carmody	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	N152522AA	09/10/2015 05:24	Caitlin M Carmody	1



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Sample Description: MW-12 Water

Submitted: 09/04/2015 09:35

Reported: 09/21/2015 14:19

Analysis Name

Former Olympia Bulk Plant COC: R219429

1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036474

LL Group # 1590593 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 16:20 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

OLY12

CAT

Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
SW-846 8270C SIM SW-846 3510C	1 1	15248WAP026 15248WAP026	09/14/2015 17:0 09/08/2015 17:3		1 1
ECY 97-602 NWTPH-Gx	1	15247A94A	09/08/2015 18:2	6 Brett W Kenyon	1
SW-846 5030B	1	15247A94A	09/08/2015 18:2	6 Brett W Kenyon	1

No.					Date and Ti	.me		Factor
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	15248WAP026	09/14/2015	17:01	Holly B Ziegler	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	15248WAP026	09/08/2015	17:30	Ryan A Schafran	1
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	15247A94A	09/08/2015	18:26	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15247A94A	09/08/2015	18:26	Brett W Kenyon	1
10398	EDB in Wastewater	SW-846 8011	1	152550010A	09/16/2015	22:07	Richard A Shober	1
07786	EDB Extraction (8011)	SW-846 8011	1	152550010A	09/16/2015	09:00	Roman Kuropatkin	1
12899	DRO/DX Mini-extraction	ECY 97-602	1	152550007A	09/16/2015	18:26	Christine E Dolman	1
	Master	NWTPH-Dx modified						
12907	Mini-extraction DRO DX (water)	ECY 97-602 NWTPH-Dx 06/97	1	152550007A	09/16/2015	02:00	Sherry L Morrow	1
06035	Lead	SW-846 6020	1	152526050004A	09/14/2015	11:35	Choon Y Tian	1
06050	ICPMS-Water, 3020A - U3	SW-846 3010A modified	1	152526050004	09/11/2015	09:22	Katlin N Cataldi	1



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Sample Description: MW-12 Filtered Water

Former Olympia Bulk Plant COC: R219429

1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036475

LL Group # 1590593

Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 09/04/2015 09:35

Reported: 09/21/2015 14:19

Collected: 09/02/2015 16:20 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

CAT No.	Analysis Name		CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
Metals 06035	Dissolved Lead	SW-846	<b>6020</b> 7439-92-1	ug/l N.D.	<b>ug/l</b> 0.13	<b>ug/l</b> 1.0	1

#### General Sample Comments

State of Washington Lab Certification No. C457 This sample was filtered in the lab for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
06035	Lead	SW-846 6020	1	152526050004A	09/14/2015	11:37	Choon Y Tian	1
06050	ICPMS-Water, 3020A - U3	SW-846 3010A modified	1	152526050004	09/11/2015	09:22	Katlin N Cataldi	1



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Sample Description: DUP-1 Water

Submitted: 09/04/2015 09:35

Reported: 09/21/2015 14:19

Former Olympia Bulk Plant COC: R219429

1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036476

LL Group # 1590593 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

OLYFD

CAT No.	Analysis Name		CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS	Volatiles	SW-846	8260B	ug/l	ug/l	ug/l	
10335	Benzene		71-43-2	N.D.	0.50	1.0	1
10335	1,2-Dichloroethane		107-06-2	N.D.	0.50	1.0	1
10335	Ethylbenzene		100-41-4	N.D.	0.50	1.0	1
10335	Methyl Tertiary But	yl Ether	1634-04-4	N.D.	0.50	1.0	1
10335	Toluene	-	108-88-3	N.D.	0.50	1.0	1
10335	Xylene (Total)		1330-20-7	N.D.	0.50	1.0	1
GC/MS	Semivolatiles	SW-846	8270C SIM	ug/l	ug/l	ug/l	
08357	Benzo(a)anthracene		56-55-3	N.D.	0.010	0.051	1
08357	Benzo(a)pyrene		50-32-8	N.D.	0.010	0.051	1
08357	Benzo(b)fluoranthen	e	205-99-2	N.D.	0.010	0.051	1
08357	Benzo(k)fluoranthen	e	207-08-9	N.D.	0.010	0.051	1
08357	Chrysene		218-01-9	N.D.	0.010	0.051	1
08357	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.010	0.051	1
08357	Indeno(1,2,3-cd)pyr	ene	193-39-5	N.D.	0.010	0.051	1
08357	1-Methylnaphthalene		90-12-0	0.21	0.010	0.051	1
08357	2-Methylnaphthalene		91-57-6	0.18	0.010	0.051	1
08357	Naphthalene		91-20-3	0.088	0.030	0.061	1
GC Vol	latiles	ECY 97-	-602 NWTPH-Gx	ug/l	ug/l	ug/l	
08273	NWTPH-Gx water C7-C	12	n.a.	N.D.	50	250	1
Pesti	cides/PCBs	SW-846	8011	ug/l	ug/l	ug/l	
10398	Ethylene dibromide		106-93-4	N.D.	0.0094	0.028	1
GC Pet	roleum	ECY 97-	-602 NWTPH-Dx	ug/l	ug/l	ug/l	
Hydrod	carbons	modifie	ed				
12899	DX DRO C12-C24		n.a.	110	45	100	1
12899	DX HRO C24-C40		n.a.	N.D.	100	250	1
Metals	3	SW-846	6020	ug/l	ug/l	ug/l	
06035	Lead		7439-92-1	N.D.	0.13	1.0	1

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
	BTEX, MTBE, EDC	SW-846 8260B	1	N152522AA	09/10/2015 05:47	Caitlin M Carmody	
01163	GC/MS VOA Water Prep	SW-846 5030B	1	N152522AA	09/10/2015 05:47	Caitlin M Carmody	1



09/14/2015 11:28 Choon Y Tian 09/11/2015 09:22 Katlin N Cataldi

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SW-846 6020

SW-846 3010A modified

Sample Description: DUP-1 Water

Submitted: 09/04/2015 09:35

Reported: 09/21/2015 14:19

Former Olympia Bulk Plant COC: R219429

1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036476

LL Group # 1590593 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

OLYFD

06035 Lead

06050 ICPMS-Water, 3020A - U3

	Laboratory Sample Analysis Record									
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	.me	Analyst	Dilution Factor		
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	15248WAP026	09/14/2015	17:29	Holly B Ziegler	1		
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	15248WAP026	09/08/2015	17:30	Ryan A Schafran	1		
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	15247A94A	09/08/2015	18:51	Brett W Kenyon	1		
01146	GC VOA Water Prep	SW-846 5030B	1	15247A94A	09/08/2015	18:51	Brett W Kenyon	1		
10398	EDB in Wastewater	SW-846 8011	1	152550010A	09/16/2015	22:55	Richard A Shober	1		
07786	EDB Extraction (8011)	SW-846 8011	1	152550010A	09/16/2015	09:00	Roman Kuropatkin	1		
12899	DRO/DX Mini-extraction	ECY 97-602	1	152550007A	09/16/2015	18:49	Christine E Dolman	. 1		
	Master	NWTPH-Dx modified								
12907	Mini-extraction DRO DX (water)	ECY 97-602 NWTPH-Dx 06/97	1	152550007A	09/16/2015	02:00	Sherry L Morrow	1		

152526050004A

<sup>\*=</sup>This limit was used in the evaluation of the final result



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Sample Description: DUP-1 Filtered Water

Former Olympia Bulk Plant COC: R219429

1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036477

LL Group # 1590593 Account # 13255

Project Name: Former Olympia Bulk Plant

Submitted: 09/04/2015 09:35

Reported: 09/21/2015 14:19

Collected: 09/02/2015 by JL Atlantic Richfield c/o ARCADIS

Suite 600

630 Plaza Drive

Highlands Ranch CO 80129

CAT No.	Analysis Name		CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
	Dissolved	SW-846		ug/l	ug/l	ug/l	
06035	Lead		7439-92-1	N.D.	0.13	1.0	1

#### General Sample Comments

State of Washington Lab Certification No. C457 This sample was filtered in the lab for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
06035	Lead	SW-846 6020	1	152526050004A	09/14/2015	11:29	Choon Y Tian	1
06050	ICPMS-Water, 3020A - U3	SW-846 3010A modified	1	152526050004	09/11/2015	09:22	Katlin N Cataldi	1



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Sample Description: TRIP-BLANK Water

Former Olympia Bulk Plant COC: R219429

1117 West Bay Drive - Olympia, WA

LL Sample # WW 8036478

LL Group # 1590593 Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 09/02/2015 Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 09/04/2015 09:35 630 Plaza Drive

Reported: 09/21/2015 14:19 Highlands Ranch CO 80129

TBOLY

CAT No.	Analysis Name		CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS	Volatiles	SW-846	8260B	ug/l	ug/l	ug/l	
10335	Benzene		71-43-2	N.D.	0.50	1.0	1
10335	1,2-Dichloroethane		107-06-2	N.D.	0.50	1.0	1
10335	Ethylbenzene		100-41-4	N.D.	0.50	1.0	1
10335	Methyl Tertiary Buty	yl Ether	1634-04-4	N.D.	0.50	1.0	1
10335	Toluene		108-88-3	N.D.	0.50	1.0	1
10335	Xylene (Total)		1330-20-7	N.D.	0.50	1.0	1
GC Vol	latiles	ECY 97-	-602 NWTPH-Gx	ug/l	ug/l	ug/l	
08273	NWTPH-Gx water C7-C	12	n.a.	N.D.	50	250	1

#### General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	BTEX, MTBE, EDC	SW-846 8260B	1	N152522AA	09/10/2015 06:10	Caitlin M Carmody	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	N152522AA	09/10/2015 06:10	Caitlin M Carmody	1
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	15247A94A	09/08/2015 13:22	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	15247A94A	09/08/2015 13:22	Brett W Kenyon	1



### **BP OLY**

### **Data Review**

OLYMPIA, WA

Semivolatiles and TPH

SDG # 1597468

Analyses Performed By: Lancaster Laboratories Lancaster, PA

Report # 24725R Review Level: Tier II

Project: GP09BPNA.WA60.K000

### **SUMMARY**

This data quality assessment summarizes the review of Sample Delivery Group (SDG) #1597468 for samples collected in association with the BP OLY site. The review was conducted at a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

				2		Ana		3	
Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	voc	svoc	ТРН	MET	TSS
DUP-9	8072191	Soil	08/17/15	AUS-SB- 41(2-2.5)		Х	Χ		

Note: Sample AUS-SB-41(2-2.5) is in SDG 1586402.

### ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

			Reported		mance ptable	Not
	Items Reviewed	No	Yes	No	Yes	Required
1.	Sample receipt condition		Х		Х	
2.	Requested analyses and sample results		Х		Х	
3.	Master tracking list		Х		Х	
4.	Methods of analysis		Х		Х	
5.	Reporting limits		Х		Х	
6.	Sample collection date		Х		Χ	
7.	Laboratory sample received date		Х		Х	
8.	Sample preservation verification (as applicable)		Х		Х	
9.	Sample preparation/extraction/analysis dates		Х		Х	
10.	Fully executed Chain-of-Custody (COC) form		Х		Х	
11.	Narrative summary of QA or sample problems provided		Х		Х	
12.	Data Package Completeness and Compliance		Х		Х	

QA - Quality Assurance

#### ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 8270 (SIM) and ECY 97-602. Data were reviewed in accordance with the USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines and as requested by USEPA Region 10:

- Concentration (C) Qualifiers
  - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
  - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
  - E The compound was quantitated above the calibration range.
  - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
  - U The analyte was not detected at or above the reported result.
  - J The analyte was positively identified. The associated numerical result is an estimate.
  - UJ The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
  - R The data are unusable for all purposes.
  - N There is evidence the analyte is present in this sample.
  - JN There is evidence the analyte is present in this sample. The associated numerical result is an estimate.
  - D The sample result is reported from a diluted analysis.
  - EJ The sample result is greater than the calibration range. The associated numerical value is an estimated concentration only.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

### SEMIVOLATILE ORGANIC COMPOUND (SVOC) ANALYSES

### 1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	hod Matrix Holding Time		Preservation
SW-846 8270	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
(SIM)	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

The analyses that exceeded the holding are presented in the following table.

Sample Locations	Holding Time	Criteria
DUP-9	55 days	<14 days

Sample results associated with sample locations analyzed by analytical method SW-846 8270 were qualified, as specified in the table below. All other holding times were met.

	Qualification			
Criteria	Detected Analytes	Non-detect Analytes		
Analysis completed less than two times holding time	J	UJ		
Analysis completed greater than two times holding time	J	R		

#### 2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

#### 3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within the control limits.

#### 4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

A site-specific MS/MSD was not included in the data package.

#### 5. Laboratory Control Sample

The LCS/ analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

#### 6. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
	Benzo(a)Anthracene	0.0035	0.20	193.1%
	Benzo(a)Pyrene	0.0035	0.23	194 %
	Benzo(b)Fluoranthene	0.012	0.36	187.1%
AUS-SB-41(2-2.5)/DUP-9	Benzo(k)Fluoranthene	0.0026	0.12	191.5%
	Chrysene	0.012	0.24	181%
	Dibenz(a,h)anthracene	0.0013 J	0.030	183.4%
	Indeno(1,2,3-cd)pyrene	0.0030	0.093	187.5%

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
	1-Methylnaphthalene	0.024	0.018	28.6%
AUS-SB-41(2-2.5)/DUP-9	2-Methylnaphthalene	0.055	0.043	24.5%
AUS-3B-41(2-2.5)/DUP-9	Naphthalene	0.087	0.060	36.7%

The compounds benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene and indeno(1,2,3-cd)pyrene associated with sample locations AUS-SB-41(2-2.5) and DUP-9 exhibited a field duplicate RPD greater than the control limit. The associated sample results from sample locations for the listed analyte were qualified as estimated.

### 7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

### **DATA VALIDATION CHECKLIST FOR SVOCs**

SVOCs: SW-846 8270 (SIM)	Rep	orted	Performance Acceptable		Not Required
	No	Yes	No	Yes	Required
GAS CHROMATOGRAPHY/MASS SPECTROMI	ETRY (GC/	MS)			
Tier II Validation					
Holding times		Х	Х		
Reporting limits (units)		Х		Х	
Blanks					
A. Method blanks		Х		Х	
B. Equipment blanks	Х				Х
Laboratory Control Sample (LCS) %R		Х		Х	
Laboratory Control Sample Duplicate(LCSD) %R	Х				Х
LCS/LCSD Precision (RPD)	Х				Х
Matrix Spike (MS) %R	Х				Х
Matrix Spike Duplicate(MSD) %R	Х				Х
MS/MSD Precision (RPD)	Х				Х
Field Duplicate (RPD)					
Surrogate Spike Recoveries		Х		Х	
Dilution Factor		Х		Х	
Moisture Content		Х		Х	

%R

Percent recovery
Relative percent difference RPD

#### **NWTPH-GX AND DX**

#### 1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
NWTPH – Gx and Dx ECY 97-602	Soil	14 days from collection to analysis	Cool to <6 °C

The analyses that exceeded the holding are presented in the following table.

Sample Locations	Holding Time	Criteria
DUP-9	43 Days	<14 Days

Sample results associated with sample locations analyzed by analytical method ECY 97-602 DX with Silica Gel were qualified, as specified in the table below. All other holding times were met.

	Qualification			
Criteria	Detected Analytes	Non-detect Analytes		
Analysis completed less than two times holding time	J	UJ		
Analysis completed greater than two times holding time	J	R		

#### 2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

#### 3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. The analysis requires surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within the laboratory control limits.

#### 4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

A MS/MSD was not included in the data package.

### 5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS/LCSD analysis exhibited recoveries within the control limits.

#### 6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
	Gx	27	6.4 J	AC
AUS-SB-41(2-2.5)/DUP-9	DRO	28	7.9 J	AC
	HRO	82	43	AC

The calculated RPDs between the parent sample and field duplicate were acceptable.

### 7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

### **DATA VALIDATION CHECKLIST FOR TPH**

Gx/Dx; ECY 97-602	Rep	Reported		mance otable	Not Required	
	No	Yes	No	Yes	Required	
GAS CHROMATOGRAPHY (GC/FID)						
Tier II Validation						
Holding times		Х		Х		
Reporting limits (units)		Х		Х		
Blanks						
A. Method blanks		Х		Х		
B. Trip blanks	Х				Х	
Laboratory Control Sample (LCS) %R		Х		Х		
Laboratory Control Sample Duplicate(LCSD) %R		Х		Х		
LCS/LCSD Precision (RPD)		Х		Х		
Matrix Spike (MS) %R	Х				Х	
Matrix Spike Duplicate(MSD) %R	Х				Х	
MS/MSD Precision (RPD)	Х				Х	
Field/Lab Duplicate (RPD)		Х		Х		
Surrogate Spike Recoveries		Х		Х		
Dilution Factor		Х		Х		
Moisture Content		Х		Х		

<sup>%</sup>R - percent recovery, RPD - relative percent difference,

VALIDATION PERFORMED

BY: Rachelle Borne

SIGNATURE: Part Par

DATE: December 7, 2015

PEER REVIEW: Joseph C. Houser

DATE: December 11, 2015

# CHAIN OF CUSTODY/ CORRECTED SAMPLE ANALYSIS DATA SHEETS

Laboratory Manag	3ə5 <i>5</i> g <mark>ement Pro</mark> g	↓ <del>S&amp;640⊋</del>  ram LaMP	8015041-80 6:159746 Chain of Custody Record	R224110	Page of U
BP Site Node Path:			Req Due Date (mm/dd/yy):	Strydard TAT	Rush TAT: Yes No
BP Facility No:	Former	Olympin	Bult Mark Lab Work Order Number:	175-798	

Lab Name: Lancaster Laboratories	Facility Address: Forge 1117 West Bay Orive Co	nsultant/Contractor: AR CADIS			
Lab Address: 2425 New Holland Pile	City, State, ZIP Code: Olympik, WA Co	Consultant/Contractor Project No: C PO9BINA, WA 60			
Lab PM: Stacy Butt	Lead Regulatory Agency: WADOE Add	Address: 1100 Olive Way, Inite 800			
Lab Phone: 717-656-2300	California Global ID No.: Col	Consultant/Contractor PM: Brian Marcum			
Lab Shipping Acent:	Enfos Proposal No:	one: 206-726-4755 Email: brian mare um Carrals-46			
Lab Bottle Order No: 175798	Accounting Mode: Provision OOC-BU OOC-RM Em	all EDD To: Pritan Marcum and to lab.enfosdoc@bp.com			
Other Info:		oice To: BP ContractorX			
BP Project Manager (PM):	Matrix No. Containers / Preservative Request	ed Analyses Report Type & QC Level			
BP PM Phone:		Standard X			
BP PM Email:	117 таinen таinen т-0х н-0х	Full Data Package			
Lab Sample Description Date Time	Soil / Soild Water / Liquid Air / Vapor Is this location a we Total Number of Co Unpreserved H2SO4 HNO3 HCI Methanol  PAHs + Nawh. 63 GRO 64 NWTP PRO 65 NWTP	Comments  Note: If sample not collected, indicate "No Sample" in comments and single-strike out and initial any preprinted sample description.			
AUS-58-41 (2-2.5) + 08-17-15 1130	$\times$ 96 3 $\times$ $\times$	MS/MSD, Rush TATIZPUS			
AUS-SB-52(1-2.5)   1200	X 3 $Z$ 1 $X$ $X$ $X$	RWR TAT (2-150)			
AUS-5B-62(2-2.5)   1215	X 32 IXXX				
AUS-58-11 (22.5) 1225		*Enter DUP-9 with			
AUS-SB-2(2-2.5) 1235		collection into too			
AUS-58-3(2-2.5) 1245		this sample per			
AUS-5B-5A(2-2-5)(4,3-6) 1255		M. Perkins SMB			
AUS-58-6(2-2,5) 1305		10/1/15			
KUS-SB-7(2-2.5) V 1320					
AUS-58-8(2-7.5) 08-17-15 1340	x 32 1 XXX				
Sampler's Name: Eric Cof R	Relinquished By / Affiliation Date Time	Accepted By / Affiliation Date Time			
Sampler's Company: ARCADIS	5Del 8/7/15/935				
Shipment Method: UPS Ship Date: 08-19-15	8/19/15 700				
Shipment Tracking No: 12 75 Y 02 X YO 4232 8367	7	1 FLLE 32018 1000			
Special Instructions: Rush TAT form Al	(US-SB-41 (2-2.5), AUS-SB-30 (2-2.5) and AUS-SB	-52(2-2.5)			
THIS LINE - LAB USE ONLY: Custody Seals In Place Yes / No	Temp Blank: Yesy No   Cooler Temp on Receipt: <u>したこり</u> °F (С)   Т	rip Blank: (es)/ No			
10.0					



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Sample Description: DUP-9 Soil LL Sample # SW 8072191

Former Olympia Bulk Plant COC: R224110 LL Group # 1597468 1117 West Bay Drive - Olympia, WA Account # 13255

Project Name: Former Olympia Bulk Plant

Collected: 08/17/2015 11:30 by EE Atlantic Richfield c/o ARCADIS

Suite 600

Submitted: 10/01/2015 14:38 630 Plaza Drive

Reported: 10/14/2015 12:26 Highlands Ranch CO 80129

DUP-9

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles SW-846	5 8270C SIM	mg/kg	mg/kg	mg/kg	
10725	Benzo(a)anthracene	56-55-3	0.20 <sup>J</sup>	0.00078	0.0019	1
10725	Benzo(a)pyrene	50-32-8	0.23	0.00078	0.0019	1
10725	Benzo(b)fluoranthene	205-99-2	0.36	0.00078	0.0019	1
10725	Benzo(k)fluoranthene	207-08-9	0.12	0.00078	0.0019	1
10725	Chrysene	218-01-9	0.24	0.00039	0.0019	1
10725	Dibenz(a,h)anthracene	53-70-3	0.030	0.00078	0.0019	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.093	0.00078	0.0019	1
10725	1-Methylnaphthalene	90-12-0	0.018	0.00078	0.0019	1
10725	2-Methylnaphthalene	91-57-6	0.043	0.00078	0.0019	1
10725	Naphthalene	91-20-3	0.060 <b>V</b>	0.00078	0.0019	1
GC Vol	latiles ECY 97	7-602 NWTPH-Gx	mg/kg	mg/kg	mg/kg	
02005	NWTPH-GX Soil C7-C12	n.a.	6.4 J	1.4	7.0	29.48
	nolding time was not met. The ratory outside of the holding	-	tted to the			
GC Pet		7-602 NWTPH-Dx	mg/kg	mg/kg	mg/kg	
Hydro	carbons w/Si modifi	ied				
02214	DRO C12-C24 w/Si Gel	n.a.	7.9 J	3.5	8.2	1
02214	HRO C24-C40 w/Si Gel	n.a.	43	12	35	1
	nolding time was not met. The reported.	he client was notif	ied and the			
Wet Ch	nemistry SM 254	10 G-1997	%	%	8	
00111	Moisture	n.a.	15.4	0.50	0.50	1
	Moisture represents the los 103 - 105 degrees Celsius. as-received basis.					

#### General Sample Comments

State of Washington Lab Certification No. C457 This sample was originally submitted to the laboratory on 08/20/15 at 10:00. We received authorization for further testing on 10/01/15.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

#### Laboratory Sample Analysis Record Method CAT Analysis Name Trial# Batch# Analyst Dilution Date and Time Factor No. 10725 SIM SVOA (microwave) SW-846 8270C SIM 15285SLE026 10/13/2015 23:22 Catherine E Bachman 10811 BNA Soil Microwave SIM SW-846 3546 1 15285SLE026 10/13/2015 07:30 Joseph S Feister 1 02005 NWTPH-GX Soil C7-C12 ECY 97-602 1 15279B34A 10/07/2015 19:49 Jeremy C Giffin 29.48 NWTPH-Gx

<sup>\*=</sup>This limit was used in the evaluation of the final result



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DUP-9

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
01150	GC - Bulk Soil Prep	SW-846 5030A	1	201527439004	10/01/2015	20:31	Mitchell R Washel	n.a.
02214	NWTPH-Dx soil w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	152750011A	10/06/2015	20:07	Christine E Dolman	1
07024	DRO Alternate Soil Extraction	ECY 97-602 NWTPH-Dx 06/97	1	152750011A	10/03/2015	15:25	JoElla L Rice	1
00111	Moisture	SM 2540 G-1997	1	15279820002B	10/06/2015	20:01	Scott W Freisher	1