

September 1, 2016

Mr. Steve Teel
Site Manager/Hydrogeologist
Washington State Department of Ecology
Toxics Cleanup Program, Southwest Regional Office
P.O. Box 47775
Olympia, Washington 98504-7775

Subject: Groundwater Monitoring Report, July 2016

CenturyLink Longview Facility

1305 Washington Way, Longview, Washington 98632

Dear Mr. Teel:

This letter provides a summary of the groundwater sampling event conducted on July 7 and 8, 2016. Groundwater monitoring events are being conducted as a continuation of the Groundwater Monitoring Plan developed in 2008 under the Voluntary Cleanup Program. Groundwater monitoring was conducted in accordance with the Final Direct-Push Sampling Plan, dated March 2, 2015, and approved by Washington State Department of Ecology (Ecology).

Groundwater Levels

The depth to groundwater was measured using an electronic static water level indicator that was lowered into each well. Depth to groundwater was measured to the nearest hundredth of a foot from the top of the well casing. Static water levels ranged from 2.41 to 2.54 feet above mean sea level, and are summarized in the table below and shown on Figure 1. Groundwater levels were approximately 1.8 foot lower than observed in March 2016.

JULY 7, 2016 GROUNDWATER ELEVATIONS

Location	Surveyed Top of Casing (ft amsl)	July 7, 2016 Depth to Water (ft)	July 7, 2016 Groundwater Elevation (ft amsl)
MW-01	15.64	13.12	2.52
MW-02	16.17	13.69	2.48
MW-03	15.02	12.48	2.54
MW-04	14.55	12.08	2.47
MW-05	14.75	12.34	2.41

Notes:

ft Feet

ft amsl Feet above mean sea level

Based on groundwater level data shown on Figure 1, the direction of groundwater flow appears to be toward the west, with a relatively flat gradient of approximately 0.0006 foot per foot. Historically, groundwater flow direction has ranged from west to northwest.

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Groundwater Sampling from Permanent Monitoring Wells

Groundwater samples were obtained from all five permanent monitoring wells at the facility on July 7 and 8, 2016. After groundwater level measurements were documented, field personnel collected groundwater samples using a peristaltic pump. New dedicated tubing was used to collect the sample at each well. In accordance with the work plan, low-flow sampling procedures were used. Sampling flow rates ranged from 300 to 400 milliliters per minute for purging and groundwater sample collection.

A calibrated YSI 600 multi-probe water meter was used to measure field parameters during well purging, and before and after sampling. A HACH 2100Q was used to measure turbidity. Water quality parameters measured with the YSI 600 included pH, dissolved oxygen, oxidation-reduction potential, and specific conductance. Low-flow pumping continued until field parameters stabilized within acceptable parameter limits, before samples were collected. Attachment A includes the logs of field parameters measured during the low-flow sampling.

Groundwater Sample Analysis

Once obtained, groundwater samples were labeled in accordance with Tetra Tech, Inc. (Tetra Tech) standard operating procedures, placed in a cooler, and chilled to below 4 degrees Celsius. Samples were delivered directly to ALS Laboratories (ALS), located at 1317 S. 13th Avenue in Kelso, Washington. Samples were delivered following standard chain-of-custody protocol. Chain of custody forms are included with the laboratory data packages in Attachment B.

ALS analyzed the samples for total petroleum hydrocarbons-diesel (TPH-DRO) and total petroleum hydrocarbons-residual range organics (TPH-RRO) by Method Northwest Total Petroleum Hydrocarbons-Diesel Extended Range (Ecology 1997), without silica gel cleanup. ALS also analyzed the samples for polycyclic aromatic hydrocarbons (PAH) by modified U.S. Environmental Protection Agency Method 625-Selected Ion Monitoring. The samples were filtered with a 0.7-micron (µm) filter before analysis by the PAH method.

Groundwater Sample Analytical Results

Table 1 presents analyte concentrations for the sample analyses of permanent groundwater wells sampled during the July 2016 event. At well MW-02, TPH-DRO was detected at 330 micrograms per liter (μ g/L) and at 310 μ g/L in the duplicate sample. This is below the Washington Model Toxic Control Act (MTCA) Method A cleanup level for groundwater of 500 μ g/L. TPH-DRO was detected at low concentrations in samples from the other four wells, ranging from 21 μ g/L to 34 μ g/L.

TPH-RRO was detected in all five wells, ranging from 33 μ g/L to 140 μ g/L. Samples from all five wells were below the 500 μ g/L TPH-RRO Washington Model Toxic Control Act (MTCA) Method A cleanup level for groundwater. MW-02 had the highest TPH-RRO concentration.

Most TPH-DRO and TPH-RRO detections carry a J qualifier that indicates that the concentration is estimated because the constituent was detected below the method detection limit, but above zero. The TPH-DRO results for MW-02 and the associated duplicate sample carried a Y qualifier, indicating that the chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.

The laboratory method blank contained no detectable concentrations of TPH-DRO but did contain TPH-RRO (at 23 μ g/L with a J qualifier). These detections could be used to revise and lower the reported concentrations for some of the field samples, but such revisions would not significantly affect the results or change the conclusions in this letter report.

Low concentrations of PAHs were detected in all monitoring wells, except for MW-1; Table 1 summarizes these results. There are no total PAH or compound specific MTCA action levels for PAHs. The MTCA action level of 0.1 μ g/L for PAHs is based on the benzo(a)pyrene toxic equivalent quotient (BaP TEQ). Table 1 also shows the BaP TEQ results, which are based on the individual PAH analytical results in Appendix B. None of the BaP TEQ constituents (benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo (a,h)anthracene, and indeno(1,2,3cd)pyrene) were detected in the samples from MW-01, MW-02, and MW-05. BaP TEQ concentrations were 0.00027 μ g/L and 0.00035 μ g/L in MW-03 and MW-04, respectively, below the MTCA action level of 0.1 μ g/L.

Table 2 summarizes the historical results for DRO and RRO for each well. Table 3 summarizes the historical results for BaP TEQ for each well.

Laboratory Method Detection Limits

In an email dated May 4, 2016, Ecology commented on the March 2016 summary report. Ecology noted that reporting limits for PAHs included in the summary report (0.2 μ g/L), were above the MTCA Method A cleanup level of 0.1 μ g/L. The PAH laboratory method detection limits in this report are all 0.1 μ g/L.

To address this concern, Tetra Tech had ALS reissue the December 2015 and March 2016 laboratory reports with the lower detection limits; the method had been run in such a way that these detection limits were achieved, but the data workup by the laboratory had used an incorrect method setup, resulting in incorrect detection limits being reported. These reissued reports are included as Attachments C and D, respectively. The lower detection limits changed some of the previously reported values for total PAH and BaP TEQ. However, none of the revised BaP TEQ levels are above the MTCA Method A cleanup levels.

The historical data presented in Tables 2 and 3 in this report have been revised to show the method detection limits, rather than "ND" for non-detect. Tables 2 and 3 also include the revised total PAH and BaP TEQ results from December 2015 and March 2016. Tables in future reports also will report non-detect results using the method detection limits.

Conclusions and Recommendations

For the first sampling event of 2016, analytical results for samples from all five wells were below MTCA Method A cleanup level for BaP TEQ and TPH-RRO. Four of the wells were below the MTCA Method A cleanup level for TPH-DRO, but MW-02 contained elevated concentrations of TPH that exceeded the MTCA Method A cleanup level.

During the second sampling event of 2016, analytical results for samples from all monitoring wells had concentrations of TPH-DRO, TPH-RRO, and BaP TEQ below Washington MTCA Method A cleanup levels. MW-02 had the highest concentrations of TPH-DRO and TPH-RRO, however, the MTCA Method A cleanup levels were not exceeded.

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Tetra Tech recommends that quarterly sampling continue at the five monitoring wells to demonstrate continued contaminant concentrations below MTCA Method A cleanup levels. The third quarterly sampling event for 2016 is scheduled for October.

If you have any questions or concerns, please call me at (303) 312-8856 or email me at david.berestka@tetratech.com.

Sincerely,

David Berestka, P.E. Project Manager Tetra Tech, Inc.

Rob Tisdale, Ph.D. Chemist and Program Manager Tetra Tech, Inc.

cc: Ed Clement, Regional Environmental Health and Safety Manager, CenturyLink

Attachments:

- A Low-Flow Groundwater Sampling Parameter Forms
- B Laboratory Analytical Reports and Chain of Custody Records
- C Revised Laboratory Analytical Reports and Chain of Custody Records March 2016 Sampling Event
- D Revised Laboratory Analytical Reports and Chain of Custody Records December 2015 Sampling Event



TABLE 1 GROUNDWATER SAMPLE ANALYTICAL RESULTS CENTURYLINK LONGVIEW, WASHINGTON FACILITY

Analy	rte	TPH-DRO	TPH-RRO	Total PAH	BaP TEQ
MTCA Method A Clea	anup Level	500 (μg/L)	500 (μg/L)	NA	0.1 (μg/L)
Location	Date				
MW-01	7/7/2016	24 J	44 J	<0.01	<0.0043
MW-02	7/8/2016	330 Y	140 J	0.019	< 0.0043
MW-02 (duplicate)	7/8/2016	310 Y	140 J	0.017	< 0.0043
MW-03	7/8/2016	22 J	41 J	0.0092	0.00027
MW-04	7/7/2016	34 J	33 J	2.18	0.00035
MW-05	7/8/2016	21 J	34 J	0.0236	< 0.0043

Notes:

All concentrations in micrograms per liter (µg/L)

For wells with duplicate samples, the highest value reported is shown for each constituent

BaP TEQ Benzo(a)Pyrene Toxic Equivalent Quotient

J Data qualifier indicating that the result is an estimated quantity below reporting limit

MTCA Model Toxics Control Act Method A for groundwater NA Not applicable (no applicable MTCA standard)

O Data qualifier indicating that the chromatographic fingerprint of the sample resembles an oil, but does not match

the calibration standard

PAH Polycyclic aromatic hydrocarbon

TPH-DRO Total petroleum hydrocarbons diesel range organics
TPH-RRO Total petroleum hydrocarbons residual range organics

Data qualifier indicating that the chromatographic fingerprint of the sample resembles a petroleum product eluting

in approximately the correct carbon range, but the elution pattern does not match the calibration standard.

< 0.01 Concentration is less than the method detection limit shown

TABLE 2 HISTORICAL GROUNDWATER SAMPLE RESULTS - DRO AND RRO **CENTURYLINK LONGVIEW, WASHINGTON FACILITY**

Analyte	Date	Sampling Method	MW-01	MW-02	MW-03	MW-04	MW-05
	3/25/1992	Bailer	82	112	<50		
	12/16/2003	Bailer	<250	<250	<250		
	8/10/2006	Bailer	<50	140	<50		
	9/23/2008	Bailer				<50	140
	2/26/2010	Bailer				<25	100
	9/2/2011	Bailer				73	120
TPH-DRO	2/26/2013	Bailer				1,700	<51
II II DICO	6/3/2013	Bailer	<50	66	<50	210	<50
(MTCA Method	12/5/2013	Bailer	97	72	47	1,500	100
A Cleanup Level	3/27/2014	Bailer	63	87	<250	550	47
= 500 µg/L)	6/25/2014	Bailer	50	33	<260	1,100	<260
	9/10/2014	Bailer	240	90	36	790	48
	3/5/2015	Low Flow	22	82	20	20	27
	7/20/2015	Low Flow	22	77	21	24	30
	12/18/15	Low Flow	38	83	46	96	120
	3/31/16	Low Flow	41	1500	58	30	30
	7/7/2016	Low Flow	24	330	22	34	21
	3/25/1992	Bailer	<200	<200	<200		
	8/10/2006	Bailer	<250	<250	<250		
	9/23/2008	Bailer				<250	<250
	2/26/2010	Bailer				140	200
	9/2/2011	Bailer				350	210
	2/26/2013	Bailer				11,000	220
TPH-RRO	6/3/2013	Bailer	150	<100	<100	1,600	<100
(NATOA Martha al	12/5/2013	Bailer	440	120	120	11,000	170
(MTCA Method A Cleanup Level	3/27/2014	Bailer	370	63	<500	3,900	190
= 500 µg/L)	6/25/2014	Bailer	340	62	21	8,400	51
,	9/10/2014	Bailer	1,500	140	120	6,600	82
	3/5/2015	Low Flow	43	70	37	48	53
	7/20/2015	Low Flow	52	71	49	52	42
	12/18/15	Low Flow	84	160	81	81	82
	3/31/16	Low Flow	83	340	110	54	53
	7/7/2016	Low Flow	44	140	41	33	34

Notes:

All concentrations in micrograms per liter (µg/L) **Bold** values indicate exceedance of the MTCA Method A Cleanup Level

For wells with duplicate samples, the highest value reported is shown for each constituent

Model Toxics Control Act Method A for groundwater Total petroleum hydrocarbons diesel range organics MTCA TPH-DRO Total petroleum hydrocarbons residual range organics Not sampled TPH-RRO

< 0.01 Concentration is less than the method detection limit shown

TABLE 3 HISTORICAL GROUNDWATER SAMPLE ANALYTICAL RESULTS -**BAP TEQ AND TOTAL PAH CENTURYLINK LONGVIEW, WASHINGTON FACILITY**

Analyte	Date	Sampling Method	MW-01	MW-02	MW-03	MW-04	MW-05
BaP TEQ	6/3/2013	Bailer	2.2	< 0.1	< 0.1	0.36	< 0.1
Unfiltered analysis	12/5/2013	Bailer	0.20	0.027	0.074	1.4	0.0062
	3/27/2014	Bailer	0.37	0.080	0.049	0.27	0.073
(MTCA Method A Cleanup Level =	6/25/2014	Bailer	0.39	0.012	0.00033	0.40	0.0054
0.1 μg/L)	9/10/2014	Bailer	0.14	0.090	0.0037	0.39	0.0051
	12/5/2013	Bailer	0.00033	-	0.00068	0.00084	
	3/27/2014	Bailer	< 0.019	< 0.019		< 0.019	< 0.019
BaP TEQ	6/25/2014	Bailer	< 0.020	-		< 0.200	
Filtered analysis	9/10/2014	Bailer	0.00030	0.00027		< 0.020	
	3/5/2015	Low Flow	0.00074	0.00038	< 0.019	0.00044	0.00029
(MTCA Method A Cleanup Level =	7/20/2015	Low Flow	0.00029	< 0.020	< 0.021	< 0.021	< 0.021
0.1 μg/L)	12/18/2015	Low Flow	0.0065	0.00029	< 0.019	0.0005	0.00039
	3/31/2016	Low Flow	0.00035	< 0.020	< 0.020	0.00026	< 0.020
	7/7/2016	Low Flow	< 0.020	< 0.020	0.00027	0.00035	< 0.020
Total PAH	6/3/2013	Bailer	16	1.6	< 0.1	8.7	< 0.1
	12/5/2013	Bailer	1.7	0.83	0.85	16	2.4
Unfiltered analysis	3/27/2014	Bailer	3.5	1.3	0.50	3.1	0.80
(No MTCA Method	6/25/2014	Bailer	3.9	2.3	0.12	4.8	0.37
A Cleanup Level)	9/10/2014	Bailer	1.2	1.5	0.049	6.0	5.5
	12/5/2013	Bailer	0.028		0.043	0.52	
	3/27/2014	Bailer	0.018	0.21		0.080	0.064
Total PAH	6/25/2014	Bailer	0.063			0.11	
TOTAL	9/10/2014	Bailer	0.012	0.041		0.42	
Filtered analysis	3/5/2015	Low Flow	0.046	0.58	0.013	0.24	0.26
(No MTCA Method	7/20/2015	Low Flow	0.0077	0.019	0.0056	0.29	0.15
A Cleanup Level)	12/18/2015	Low Flow	0.039	1.9	< 0.019	9.7	8.5
	3/31/2016	Low Flow	0.0035	0.032	< 0.020	0.041	0.0092
	7/7/2016	Low Flow	< 0.020	0.019	0.0092	2.2	0.024

All concentrations in micrograms per liter (µg/L) **Bold** values indicate exceedance of the MTCA Cleanup Level

For wells with duplicate samples, the highest value reported is shown for each constituent

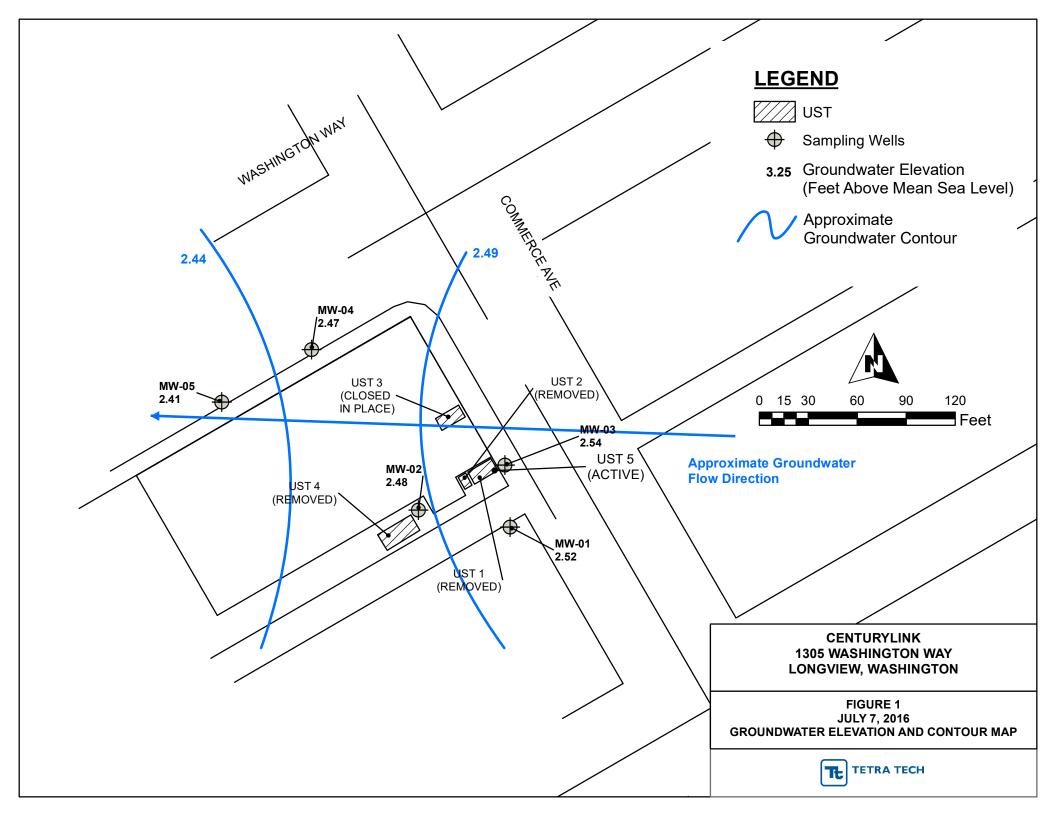
BaP TEQ Benzo(a)Pyrene Toxic Equivalent Quotient

Model Toxics Control Act Method A for groundwater MTCA

Not analyzed

< 0.01 Concentration is less than the method detection limit shown





ATTACHMENT A LOW-FLOW GROUNDWATER SAMPLING PARAMETER FORMS

MICROPURGING GROUNDWATER SAMPLING DATA SHEET

Page	ſ	of_	<u> </u>
Date	71	71	16

	Well Nam	J-1			Scree	n Interval							
	Project Century L		ew GW Sa	mpling					TOC	Immis	cible Phas	es Present	Yes No
	Project No.												_
	Well Location							14	N 197				
	Sample Date	7/7	110		Static	Elevation							
	Sampling Person		P										
		M	P		_								
	Sample ID												
	Duplicate ID												
			DDATIO	NC	- Casiii	g volume.				Dever	opineni Da	le(3)	
	FIELD CHEMIS Date/Time				Spec. C	Conductan	ce: Standar	·d	umhos/cr	n at 25⋅C	Reading	um	hos/cm at C
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	Dissolved Oxyge	en: D.O. Me	eter	mg/L	at	_ c 、	PID: Ca	libration Ga					ading
						14			5,3,				
			_		Т		PUR	GING	storte	g at l	450		
	Discharge	Dissolved				Specific Conduct.			Volume of ved (Purged)	PID/OVA	Reading	Depth to	
_	Rate Time (mL/min)	Oxygen	pН	Eh/ORP (mV)	Temp.	(µmhos/cm at · C)	Turbidity (NTU)	Gallons	Casing Vol.	Location	Value	Water (ft)	Comments
	1450 350	LOS	6.61	15.2	15.48		10.8	Galloris	Cubing voi.	EGGGGGT	Value	13,72	Comments
/	455 250	0.43	6.53	10.5	15.14	345	7.87					17110	
	1500 350	V 35	1.52	-7.1	5.07	ZUS	6.20						
	1505 350	0.29	6.53	94	1491	345	5.12					+ +	
	1510 350	0.23	6,41	151	14.91	321/1	4.06					13.12	
	1515 357	10.23	655	-26.9	14.92	341)	3.03	,				10711	
	157/20	5.19	35	-25.4	14.95	341	2.9			†		1	
	1525 3-D	219	600	-31 (0	50	230	2,26					1	
	1530 300	0.17	656	-32.7	15.02	338	1.91						
= 200 -	1535 300	0.19	6.57	-35.1	15.03	233	1.90						
said.		1	1	97 11	-	720							
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	Remarks:	-	10+9	1 p	urge		4.5	58	-				
	FIELD EQUIPME	NT		1	•					Field Chem	istry Calib	orations	
	pH Meter				Serial	Number_				Fractions _			
	Spec. Cond. Mete				Serial	Number _							
	Pump												
	Water Level Mete	r			Serial	Number _		Ä		Number of B	Bottles		
	D.O. Meter												
	Filter Apparatus _				Filters	·		36		Field Notebo	ook		
	Temperature Mea	sure						17		Sample Met	hod		
	Interface Probe _				Serial	Number _					_		
	PID/OVA				Serial	Number _				Discharge V	Vater Conta	ainerized	Yes No
	PID/OVA				Seriai	Number_		100		Discharge v	vater Conta	ainerized [Yes No

	Tetra Tech EMMO 0708 6	CROPURGING GROUNDY	
	JUP-020810	SAMPLING DATA SHEE	ĒT Date <u>₹/8 / ₩</u>
	Well Name MN-2	Secretary Internal	
	Project Century Link - Longview GW Sampling	Station Elevation GND TOC	Immiscible Phases Present Yes No
		12 7	Type
	Project No.	Well Stick Up	
	Well Location Sample Date 7/8/10	Static Elevation	PID Readings (background) N/A
	Sampling Personnel MP/VY	Well Dooth MEAS PPTD	PID Reading (TOC) NA
	Sampling resolutes		Wells Installed by
	Sample ID	'	
	Duplicate ID	Casing Volume	Development Date(s)
	FIELD CHEMISTRY CALIBRATIONS	tubing inlet set e	+ 16' PTOC
		Spec. Conductance: Standard µmhos/cn	n at 25· C Reading µmhos/cm at·
	pH: pH 4.00 at · C	pH 7.00 at · C pH 10.00	at · C Slope NA PPM Span Reading
	Dissolved Oxygen: D.O. Meter mg/L	at C PID: Calibration Gas	PPM Span Reading
		PURGING (2) 1057	
		Specific Cumulative Volume of	
	Discharge Dissolved	Conduct. Water Removed (Purged)	PID/OVA Reading Depth to
	Rate Oxygen Eh/ORP Time (mL/min) (mg/L) pH (mV)		Location Value (ft) Comments
	1095 325 1.95 6.58 72.0	1699543 071	13.70
	1100 300 1.20 6.46 68.3	-16.39 515 D.67	
	1105 300 0.92 6.40 66.0	16.64 493 0.3	
	1110 300 0.83 6.38 65.2	16.60 487 0.40	
	115 300 0.65 6.37 64.4	16.58 479 0.46	[3.7]
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b.		16.65 46 9 0.27	
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	1154 300 3.35 6.38 53	16.63 452 0.20	
	Condition of well:		
	Remarks:		
	FIELD EQUIPMENT		Field Chemistry Calibrations
	pH Meter	Serial Number	Fractions
	Spec. Cond. Meter		
	Pump		
	Water Level Meter	Serial Number	Number of Bottles
	D.O. Meter		Sample Depth
	Filter Apparatus	Filters	Field Notebook
	Temperature Measure		Sample Method
	Interface Probe	Serial Number	
	PID/OVA	Serial Number	Discharge Water Containerized Yes No

MICROPURGING GROUNDWATER SAMPLING DATA SHEET

Page _	(_ of _	þ
Date _	7/5	P /	16

Well N	lame/	NW-	-3		Scree	n Interval _							
Projec	Century LI	nk - Longvie	w GW Sa	ampling							scible Phas	es Present	Yes No
Projec	t No				Static	Water Lev	el (from To	oc) 17.	50/81	OC Type			
Well L	ocation				Wells	Stick Up		@ 85	0	Meas	ured with _		
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						45/cm	C PUR	GING (1	-CV-20	1 4+ 9	1111		
	<u> </u>	Γ	Т	Γ	l	Specific	1 0.0		e Volume of	1	1-1-		
	Discharge	Dissolved		F. 40.00	_	Conduct.		Water Remo	oved (Purged)	PID/OVA	Reading	Depth to	
Time	Rate (mL/min)	Oxygen (mg/L)	pН	Eh/ORP (mV)	Temp. (·C)	(µmhos/cm at · C)	Turbidity (NTU)	Gallons	Casing Vol.	Location	Value	Water (ft)	Comments
2917	300	1.14	624	165.0	15.13	366	0.66					12.50	
SSPO	300	0.61	635	138.5	15.04	358	0.38						
FSPO	300	0.58	6.33	122.D	15.02	35	0.32						
5380	300	0.51	6.40	105.3	15.05	348	0.25						
0987	300	0.48	6,41	94	15.00	346	0.27					12.50	
0942	300	0.50	641	85.0	15.05	347	6.21						
0947	300	0.49	641	76.0	15.10	348	0.26						
°52	300	0.41	6.43	08.6	15.69	345	0.15						
0957	300	0.52	6.42	62.8	15.12	349	0.20		ļ				
1005	300	0.41	6.43	68.	15.11	348	0.18			ļ			
1007	300	0.43	6.43	54.2	15.08	347	0.25		<u> </u>	<u> </u>			
SAMPL	E PARAM	ETERS					86	suplin	gtme	: 1007	b		
1020	300	0.59	6.43	43.2	15.14	347	0.23		Ĭ	4		1	
Conditio	n of well:												111 111 1201
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				0						F1. 1.1.01.		4.9	
	EQUIPMEN	_			Sarial	Nisaabaa				Field Chem			
•	er									Fractions _			
Pump	ond. Meter				_	_							
. –										Number of F	Bottles		
						_							
					Serial	Number							
										Discharge V	Vater Conta	ainerized	Yes No
,										5.00.10.90 ¥			a

MICROPURGING GROUNDWATER SAMPLING DATA SHEET

Well Name MW-4	Screen Interval	
Project Century Link - Longview GW Sampling	Station Elevation GND TOC	Immiscible Phases Present Yes No
Project No.	(2m 47\lag{1}	Туре
Well Location		Measured with
Sample Date 7-11/	0 15 414	PID Readings (background)
Sampling Personnel PP/W	Well Depth MEAS RPTD	PID Reading (TOC)
	Feet of Water	
Sample ID	•	Installation Date
Duplicate ID		Development Date(s)
FIELD CHEMISTRY CALIBRATIONS	tubing inlet set at	15.5' BTOC
Date/Time	Spec. Conductance: Standard µmhos/cm at 25	C Reading µmhos/cm at(
	pH 7.00 at · C	
	t · C PID: Calibration Gas PF	M Span Reading
		1215
Discharge Dissolved	Conduct.	ID/OVA Reading Depth to
Rate Oxygen Eh/ORP Time (mL/min) (mg/L) pH (mV)	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	water (t) Comments
[1.20 575 0.56 6.5 8.6]	4.81 219 7.25	12.02
1225 350 0.40 6.37 -8.3 1	4.77 222 4.0	
1230 350 0.37 6.35 -20.8/	4.82 221 2.41	
1235 250 0.35 6.35 - 24.4 1	4.81 221 1.19	
1240 350 0135 631 -365 1	4.88 225 0.76	12.08
1245 YSD Freezes - nec	n to reset	
1250 325 0.41 6.32 - 34.81	14.94 22 0.59	
1255 325 0.45 6.3 1 - 38,0 1	4.98 223 0.55	
1300 325 043 631 40.1	5.00 223 0.47	
1305 325 3.41 6.32 39.7 1	4.96 221 0.98	
13:5 325 0. 1.34.31.11	5.14 224 0.64	
SAMPLE PARAMETERS	total purred	2 4.5 sa)
1305 325 10.41 16.32 - 39.71	496 221 10.48	
Condition of well:		
Remarks:		
FIELD EQUIPMENT	Field	Chemistry Calibrations
pH Meter	Serial Number Fracti	ons
Spec. Cond. Meter	Serial Number	
Pump	Serial Number	
Water Level Meter	Serial Number Numb	er of Bottles
D.O. Meter		le Depth
Filter Apparatus		Notebook
Temperature Measure		le Method
Interface Probe	Serial Number	
PID/OVA		arge Water Containerized Yes No

Post

MICROPURGING GROUNDWATER SAMPLING DATA SHEET

Page 1 of 2
Date 7/7/16

Well N	ame 🖊	W-5			Scree	n Interval _							
	Century Li			mpling	 _ Statio	n Elevation		_ GND	_ тос	Immi:	scible Phas	es Present	Yes No
Project	No				Static	Water Leve	el (from To	oc) 12.	341	Туре			
	ocation				Well	Stick Up		10:3	20	Meas	ured with		
Sampl	e Date	7171	16	•	Static	Elevation _		-		PID F	 Readings (b	ackground)	
Sampli	ng Person	nel Mi	<u> </u>	RUNYIL	_	_		-			Reading (TC	DC)	
	Vahe	<u>((</u>	fine	da	Feet	of Water			_	Wells	s Installed b	у	
Sampl	e ID	-			Gallo	ns/Foot				Instal	lation Date		
Duplic	ate ID				Casin	g Volume _				Deve	lopment_Da	te(s)	
FIELD	CHEMIST	RY CALII	BRATIO	NS	-+ L	Hins	1411	! - "]	et a	+ 15	7.5	BTOC	
					Spec. 0	Conductáno	e: Standa	rd	µmhos/cn	n at 25⋅ C	Reading	μn	nhos/cm atC
	H 4.00											C Slope	
Dissolv	ved Oxyger	n: D.O. Me	ter	mg/L	at	c	PID: Ca	llibration Ga	ıs	PPM	Span	Re	ading
							PUR	GING - (farte	1 at	101	28	
						Specific		Cumulativ	e Volume of			<u>1 </u>	
	Discharge Rate	Dissolved Oxygen		Eh/ORP	Temp.	Conduct. (µmhos/cm	Turbidity	Water Remo	oved (Purged)	PID/QV/	A Reading	Depth to Water	
Time	(mL/min)	(mg/L)	pН	(mV)	(·C)	at C)	(NTU)	Gallons	Casing Vol.	Location	Value	(ft)	Comments
1040	375	291	3.96	511.1	15.09	314	1.41					1235	
1042	350	2.48	60	2042.	15.04	293	0.85						
1000	350	231	6.0	201.2	1499	287	0.56						
1055	300	2.42	6.03	208.7	14.99	284	0.48						
1100	300	2.28	6.06	1940	15.07	284	0.34					12-35	
1105	300	231	6.07	173.1	15.06	284	0.33						
1110	300	1.29	607	151.2	15.0)	285	0.35						
1115	300	2.26	608	130.0	15.03	285	0.29						
1120	300	2.11	609	1040	15.13	285	0.26						
1100	300	2.09	6.09	413.	15.12	286	83.0						
1130	300	208	6.09	72.2	15.11	285	0.32			<u> </u>			
SAMPL	E PARAM	ETERS			74.	64		×	tuto	ci p	ursed	25	221
1135	300	204	6.09	66.9	15.18	288	0.26	}					
Conditio	on of well:			4									
Remark	s:												
FIELD I	EQUIPME	<u>NT</u>								Field Chen	nistry Calib	orations	
pH Mete	er				Serial	Number _				Fractions _			
Spec. C	ond. Meter	r			Serial	Number _							
Pump_													
										Number of	Bottles		
D.O. Me	eter												
						s							
	ature Meas					-							
Interfac	e Probe				Serial	Number _							
						Number _				Discharge \	Water Conta	ainerized [Yes No

MICROPURGING GROUNDWATER SAMPLING DATA SHEET

Page 2 of 2
Date 7/7/16

Well Name	Screen Interval					
Project Century Link - Longview GW Sampling	Station Elevation				ases Present	Yes
Project No.	Static Water Level (f	from TOC) <u>【 7</u>	34	Туре		
Well Location	Well Stick Up			Measured with	1	
Sample Date 7/7/16	Static Elevation				(background)	
Sampling Personnel VP	Well Depth	MEAS	_ RPTD	PID Reading (TOC)	
	Feet of Water			Wells Installed	d by	
Sample ID	Gallons/Foot			Installation Da	te	
Duplicate ID						
FIELD CHEMISTRY CALIBRATIONS	Casing Volume	4155	" BT	00		
Date/Time	Spec. Conductance: S	Standard	µmhos/cm	at 25 C Reading	μ	mhos/cm at
pH: pH 4.00 at · C	pH 7.00 at	·C	pH 10.00 -	at	_ · C Slope	NA
Dissolved Oxygen: D.O. Meter mg/L	at· C F	PID: Calibration Ga	ıs	PPM Sp	oan Re	eading
		PURGING C	-1-01	at 1038	<u> </u>	
	Specific		e Volume of	ar 1038		
Discharge Dissolved	Conduct.		oved (Purged)	PID/OVA Reading	Depth to	
Rate Oxygen Eh/ORP Time (mL/min) (mg/L) pH (mV)		urbidity (NTU) Gallons	Casing Vol.	Location Value	Water (ft)	Comments
1135 300 7.04 6.09 86.9	15.18 286 0	.26				
1150 300 2.03 1.10 27.3	15.52 288 1	.2				
		•				
[
SAMPLE PARAMETERS		10-	tal pu	ryed 2	590	
1135 300 2.04 6.09 66.9	15.12 7.26 0		 	·		
Condition of well:	12 100 10 10	-201				
Remarks:						
FIELD EQUIPMENT			F	ield Chemistry Ca	alibrations	
pH Meter	_ Serial Number			ractions		
Spec. Cond. Meter	_ Serial Number	-				
Pump	_ Serial Number					
Water Level Meter	Serial Number			Number of Bottles _		
D.O. Meter	_ Serial Number			Sample Depth		
Filter Apparatus	_ Filters		F	Field Notebook		· · · · · · · · · · · · · · · · · · ·
Temperature Measure				Sample Method		
Interface Probe	_ Serial Number					
Interface ProbePID/OVA	Serial Number _ Serial Number			Discharge Water Co	ontainerized	Yes [

ATTACHMENT B
LABORATORY ANALYTICAL REPORTS AND CHAIN OF CUSTODY RECORDS
JULY 2016 SAMPLING EVENT



August 03, 2016

ALS Environmental ALS Group USA, Corp 1317 South 13th Avenue Kelso, WA 98626

T:+1 360 577 7222

F:+1 360 636 1068 www.alsglobal.com

Analytical Report for Service Request No: K1607582

Tetra Tech EM, Incorporated 216 16th St , Suite 1500 Denver, CO 80202

RE: CenturyLink Longview WA / 103P3080177

Dear Rob,

Rob Tisdale

Enclosed are the results of the sample(s) submitted to our laboratory July 07, 2016 For your reference, these analyses have been assigned our service request number **K1607582**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3376. You may also contact me via email at gregory.salata@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Gregory Salata, Ph.D. Senior Project

Manager



ALS Environmental ALS Group USA, Corp 1317 South 13th Avenue Kelso, WA 98626

T: +1 360 577 7222 F: +1 360 636 1068 www.alsglobal.com

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Polynuclear Aromatic Hydrocarbons

Acronyms

ASTM American Society for Testing and Materials

A2LA American Association for Laboratory Accreditation

CARB California Air Resources Board

CAS Number Chemical Abstract Service registry Number

CFC Chlorofluorocarbon
CFU Colony-Forming Unit

DEC Department of Environmental Conservation

DEQ Department of Environmental Quality

DHS Department of Health Services

DOE Department of Ecology
DOH Department of Health

EPA U. S. Environmental Protection Agency

ELAP Environmental Laboratory Accreditation Program

GC Gas Chromatography

GC/MS Gas Chromatography/Mass Spectrometry

LOD Limit of Detection
LOQ Limit of Quantitation

LUFT Leaking Underground Fuel Tank

M Modified

MCL Maximum Contaminant Level is the highest permissible concentration of a substance

allowed in drinking water as established by the USEPA.

MDL Method Detection Limit
MPN Most Probable Number
MRL Method Reporting Limit

NA Not Applicable
NC Not Calculated

NCASI National Council of the Paper Industry for Air and Stream Improvement

ND Not Detected

NIOSH National Institute for Occupational Safety and Health

PQL Practical Quantitation Limit

RCRA Resource Conservation and Recovery Act

SIM Selected Ion Monitoring

TPH Total Petroleum Hydrocarbons

tr Trace level is the concentration of an analyte that is less than the PQL but greater than or

equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- F. The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
 DOD-QSM 4.2 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. DOD-QSM 4.2 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
 DOD-QSM 4.2 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- \boldsymbol{Q} $\;\;$ See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L14-51
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	Not available	_
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	03016
Maine DHS	Not available	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	_
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.



Case Narrative

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360)577-7222 Fax (360)636-1068 www.alsglobal.com

ALS ENVIRONMENTAL

Client: Tetra Tech EM, Incorporated Service Request No.: K1607582

Project: Century Link Longview WA/ 103P3080177 Date Received: 07/07/16

Sample Matrix: Water

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Laboratory Control Sample (LCS), and Laboratory/Duplicate Laboratory Control Sample (LCS/DLCS).

Sample Receipt

Three water samples were received for analysis at ALS Environmental on 07/07/16. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Diesel Range Organics by Method NWTPH-Dx

Relative Percent Difference Exceptions:

The Relative Percent Difference (RPD) criterion for the replicate analysis of all analytes in sample Batch QC was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

No other anomalies associated with the analysis of these samples were observed.

Polynuclear Aromatic Hydrocarbons by EPA Method 8270

Elevated Detection Limits:

The detection limit was elevated for Fluorene in sample MW-5. The chromatogram indicated the presence of non-target background components. The result was flagged to indicate the matrix interference.

Samples for PAH analysis were filtered prior to extraction.

No other anomalies associated with the analysis of these samples were observed.

Approved by



Chain of Custody

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360)577-7222 Fax (360)636-1068 www.alsglobal.com

Chain of Custody



ADDRESS 1317 South 13th Ave., Kelso, WA 98626 PHONE 1 360 577 7222 FAX 1 360 636 1068 Columbia Analytical Services, Inc.

Work Order No.:

K1607582

(ALS)	Part of the	e ALS Gro	up A	Campb	ell Brothers L	imited Co	mpa	ny																				
Project Manager:	David Be	restka											Bill	to:			Vanessa Pineda											
Client Name:	Tetra Ted	ch												npai				ra T										
Address:	216 16th													ires:	_		216 16th Street Suite 1500											
City, State ZIP:	Denver, C											_			ate Z	IP:				802								
Email:	David.Be					Phone:	30	3-31	2-88	<u> 356</u>		<u></u>	Ema							eda@	tetra	atech	i.cor	n Ph	one	303	-312-8812	
Project Name:	CenturyLi		iew N	/A										RE	QUE	STE	D AN	IAL'	/SIS			•						TAT
Project Number:	103P308	30177			٠.		_	1_																			Rout	
P.O. Number:]	<u> </u>	1	1																		e Day ***
Sampler's Name:	Mike Pav	/arini/Va	nessa	Pined	a]	S	L																		Next	Day ***
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Temperature (°C):	· · · · · · · · · · · · · · · · · · ·		T.		ank Present	<u> </u>]	o Lo	silic																		☐ 6 Da	/
Received Intact:		Yes	No_	N/A	Wet Ice / I	Blue Ice		Ē	2																		444 51	
Cooler Custody Sea	ls:	Yes	No	N/A	Total Cont	ainers:	_ [<u> </u>	8																			se call for
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Sample Identific	ation	Matrix	1	ate npled	Time Sampled	LabID	of Co	TPHDX	PAH 625 SIM (filtered-no silica gel cleanup)																			
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MW·5		G10	4	1/10	1135		3	1	2			I														<u> </u>		
MW-4		GW	11	1/110	1305		3	1	2		1	1									·····			†	!			***************************************
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Cooler Receipt and Preservation Form

PC Greg

Client	Tetra	tech	4			L		Servic	e Requ	est <i>K1</i>	5	07	58	1	Mark	
Receiv	ed: 7-7	-16	Opened:_	7-7	-16	B	y:_ _	5	ι	nloade	d:_ <u>7-`</u>	7-16	· 	By:_	e s	
2. San	mples were rec mples were rec ere <u>custody sea</u>	eived in: (c		Fed Ex Cooler NA	Во	VPS N	DH Envel	ope	PDX Oth w many	Couricerand wh		ind Del			NA	
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		~														_



Diesel and Residual Range Organics

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360)577-7222 Fax (360)636-1068 www.alsglobal.com

Analytical Results

Client: Tetra Tech EM, Incorporated

Service Request: K1607582 **Project:** CenturyLink Longview WA/103P3080177 **Date Collected:** 07/07/2016 **Date Received:** 07/07/2016 **Sample Matrix:** Water

Diesel and Residual Range Organics

Sample Name: MW-5 Units: ug/L Lab Code: K1607582-001 Basis: NA

Extraction Method: METHOD Level: Low **Analysis Method:** NWTPH-Dx

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Diesel Range Organics (DRO)	21 J	270	12	1	07/11/16	07/13/16	KWG1605678	
Residual Range Organics (RRO)	34 J	530	20	1	07/11/16	07/13/16	KWG1605678	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note	
o-Terphenyl	82	50-150	07/13/16	Acceptable	
n-Triacontane	78	50-150	07/13/16	Acceptable	

Comments:

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Analytical Results

Client: Tetra Tech EM, Incorporated

Service Request: K1607582 **Project:** CenturyLink Longview WA/103P3080177 **Date Collected:** 07/07/2016 **Sample Matrix:** Water **Date Received:** 07/07/2016

Diesel and Residual Range Organics

Sample Name: MW-4 Units: ug/L Lab Code: K1607582-002 Basis: NA

Extraction Method: METHOD Level: Low **Analysis Method:** NWTPH-Dx

Dilution Date Date **Extraction** MRL MDL Factor Extracted Analyzed **Analyte Name** Result Q Lot Note 12 1 KWG1605678 Diesel Range Organics (DRO) **34** J 270 07/11/16 07/13/16 KWG1605678 Residual Range Organics (RRO) **33** J 530 20 1 07/11/16 07/13/16

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note	
o-Terphenyl	74	50-150	07/13/16	Acceptable	
n-Triacontane	73	50-150	07/13/16	Acceptable	

Comments:

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SuperSet Reference:

RR190081

Analytical Results

Client: Tetra Tech EM, Incorporated

Service Request: K1607582 **Project:** CenturyLink Longview WA/103P3080177 **Date Collected:** 07/07/2016 **Date Received:** 07/07/2016 **Sample Matrix:** Water

Diesel and Residual Range Organics

Sample Name: MW-1 Units: ug/L Lab Code: K1607582-003 Basis: NA **Extraction Method: METHOD** Level: Low

Analysis Method: NWTPH-Dx

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Diesel Range Organics (DRO)	24 J	270	12	1	07/11/16	07/13/16	KWG1605678	
Residual Range Organics (RRO)	44 J	530	20	1	07/11/16	07/13/16	KWG1605678	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	76	50-150	07/13/16	Acceptable
n-Triacontane	76	50-150	07/13/16	Acceptable

Comments:

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Analytical Results

Client: Tetra Tech EM, Incorporated

Project: CenturyLink Longview WA/103P3080177

METHOD

Sample Matrix: Water

Service Request: K1607582

Date Collected: NA
Date Received: NA

Diesel and Residual Range Organics

Sample Name:Method BlankLab Code:KWG1605678-5

Extraction Method:
Analysis Method:

Analysis Method: NWTPH-Dx

Units:	ug/L
Basis:	NA

Level: Low

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Diesel Range Organics (DRO)	ND U	250	11	1	07/11/16	07/13/16	KWG1605678	
Residual Range Organics (RRO)	23 J	500	19	1	07/11/16	07/13/16	KWG1605678	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	77	50-150	07/13/16	Acceptable
n-Triacontane	79	50-150	07/13/16	Acceptable

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QA/QC Report

Service Request: K1607582

Client: Tetra Tech EM, Incorporated

Project: CenturyLink Longview WA/103P3080177

Sample Matrix: Water

Surrogate Recovery Summary Diesel and Residual Range Organics

Extraction Method:METHODUnits:PercentAnalysis Method:NWTPH-DxLow

Sample Name	Lab Code	Sur1	Sur2
Batch QC	K1607464-010	85	83
MW-5	K1607582-001	82	78
MW-4	K1607582-002	74	73
MW-1	K1607582-003	76	76
Batch QCDUP	KWG1605678-1	84	84
Method Blank	KWG1605678-5	77	79
Lab Control Sample	KWG1605678-4	95	90

Surrogate Recovery Control Limits (%)

Sur1 = o-Terphenyl 50-150 Sur2 = n-Triacontane 50-150

Results flagged with an asterisk $(\mbox{\ensuremath{}^{*}})$ indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

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QA/QC Report

Client: Tetra Tech EM, Incorporated

Service Request: K1607582 **Project:** CenturyLink Longview WA/103P3080177 **Date Extracted:** 07/11/2016

Sample Matrix: Water **Date Analyzed:** 07/13/2016

> **Duplicate Sample Summary Diesel and Residual Range Organics**

Sample Name: Batch QC Units: ug/L Lab Code: K1607464-010 Basis: NA

Extraction Method: METHOD Level: Low

Analysis Method: Extraction Lot: KWG1605678 NWTPH-Dx

Ratch OCDLIP

Analyte Name	MRL	MDL	Sample Result	KWG1605678-1 Duplicate Sample		Relative Percent	RPD Limit
				Result	Average	Difference	
Diesel Range Organics (DRO)	260	12	18	13	15	27 #	30
Residual Range Organics (RRO)	520	20	34	38	36	11 #	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client: Tetra Tech EM, Incorporated

Service Request: K1607582 **Project:** CenturyLink Longview WA/103P3080177 **Date Extracted:** 07/11/2016

Sample Matrix: Water **Date Analyzed:** 07/13/2016

> Lab Control Spike Summary **Diesel and Residual Range Organics**

Extraction Method: METHOD Units: ug/L **Analysis Method:** NWTPH-Dx Basis: NA

Level: Low Extraction Lot: KWG1605678

Lab Control Sample KWG1605678-4 Lab Control Spike

Analyte Name	Result	Spike Amount	%Rec	%Rec Limits
Diesel Range Organics (DRO)	2570	3200	80	46-140
Residual Range Organics (RRO)	1350	1600	84	45-159

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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Polynuclear Aromatic Hydrocarbons

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360)577-7222 Fax (360)636-1068 www.alsglobal.com

Analytical Results

Client: Tetra Tech EM, Incorporated

Project: CenturyLink Longview WA/103P3080177

Sample Matrix: Water

 Service Request:
 K1607582

 Date Collected:
 07/07/2016

 Date Received:
 07/07/2016

Polynuclear Aromatic Hydrocarbons

Sample Name: MW-5
Lab Code: K1607582-001

Extraction Method: EPA 3520C

Units: ug/L
Basis: NA
Level: Low

Analysis Method: 8270D SIM

					Dilution	Date	Date	Extraction	
Analyte Name	Result	Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Naphthalene	ND	U	0.020	0.0038	1	07/12/16	07/18/16	KWG1605713	
2-Methylnaphthalene	ND	U	0.020	0.0023	1	07/12/16	07/18/16	KWG1605713	
Acenaphthylene	0.0049	J	0.020	0.0034	1	07/12/16	07/18/16	KWG1605713	
Acenaphthene	0.0057	J	0.020	0.0044	1	07/12/16	07/18/16	KWG1605713	
Dibenzofuran	ND	U	0.020	0.0093	1	07/12/16	07/18/16	KWG1605713	
Fluorene	ND	Ui	0.020	0.0080	1	07/12/16	07/18/16	KWG1605713	
Phenanthrene	ND	U	0.020	0.0050	1	07/12/16	07/18/16	KWG1605713	
Anthracene	0.013	J	0.020	0.0036	1	07/12/16	07/18/16	KWG1605713	
Fluoranthene	ND	U	0.020	0.010	1	07/12/16	07/18/16	KWG1605713	
Pyrene	ND	U	0.020	0.0053	1	07/12/16	07/18/16	KWG1605713	
Benz(a)anthracene	ND	U	0.020	0.0026	1	07/12/16	07/18/16	KWG1605713	
Chrysene	ND	U	0.020	0.0034	1	07/12/16	07/18/16	KWG1605713	
Benzo(b)fluoranthene†	ND	U	0.020	0.0041	1	07/12/16	07/18/16	KWG1605713	
Benzo(k)fluoranthene	ND	U	0.020	0.0030	1	07/12/16	07/18/16	KWG1605713	
Benzo(a)pyrene	ND	U	0.020	0.0043	1	07/12/16	07/18/16	KWG1605713	
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0026	1	07/12/16	07/18/16	KWG1605713	
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	07/12/16	07/18/16	KWG1605713	
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	07/12/16	07/18/16	KWG1605713	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	81	42-131	07/18/16	Acceptable
Fluoranthene-d10	94	42-133	07/18/16	Acceptable
Terphenyl-d14	91	32-129	07/18/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene

This analyte cannot be separated from Benzo(j)fluoranthene.

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Analytical Results

Client: Tetra Tech EM, Incorporated

Project: CenturyLink Longview WA/103P3080177

Sample Matrix: Water

Service Request: K1607582

Date Collected: 07/07/2016

Date Received: 07/07/2016

Polynuclear Aromatic Hydrocarbons

Sample Name: MW-4

Lab Code: K1607582-002

Extraction Method: EPA 3520C

Analysis Method:

8270D SIM

Units: ug/L Basis: NA
Level: Low

Dilution Date Date **Extraction MDL MRL Factor Extracted** Analyzed **Analyte Name** Result Q Lot Note KWG1605713 1.5 0.020 0.0038 07/12/16 07/18/16 Naphthalene 1 2-Methylnaphthalene ND U 0.020 0.0023 1 07/12/16 07/18/16 KWG1605713 **0.0076** J 0.020 0.0034 1 07/12/16 07/18/16 KWG1605713 Acenaphthylene 0.0044 KWG1605713 Acenaphthene 0.52 0.020 1 07/12/16 07/18/16 KWG1605713 Dibenzofuran ND U 0.020 0.00931 07/12/16 07/18/16 Fluorene 0.062 0.020 0.0038 1 07/12/16 07/18/16 KWG1605713 KWG1605713 Phenanthrene ND U 0.020 0.0050 1 07/12/16 07/18/16 **0.010** J 0.020 0.0036 1 KWG1605713 Anthracene 07/12/16 07/18/16 Fluoranthene ND U 0.020 0.010 1 07/12/16 07/18/16 KWG1605713 Pyrene 0.079 0.020 0.0053 1 07/12/16 07/18/16 KWG1605713 0.0035 J 0.020 0.0026 1 07/12/16 07/18/16 KWG1605713 Benz(a)anthracene KWG1605713 Chrysene ND U 0.020 0.0034 1 07/12/16 07/18/16 ND U 0.020 1 07/12/16 07/18/16 KWG1605713 Benzo(b)fluoranthene† 0.0041 Benzo(k)fluoranthene ND U 0.020 0.0030 07/12/16 07/18/16 KWG1605713 1 KWG1605713 Benzo(a)pyrene ND U 0.020 0.00431 07/12/16 07/18/16 Indeno(1,2,3-cd)pyrene ND U 0.020 0.0026 1 07/12/16 07/18/16 KWG1605713 Dibenz(a,h)anthracene ND U 0.020 0.0025 1 07/12/16 07/18/16 KWG1605713 ND U 0.020 0.0029 1 07/12/16 07/18/16 KWG1605713 Benzo(g,h,i)perylene

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	74	42-131	07/18/16	Acceptable
Fluoranthene-d10	96	42-133	07/18/16	Acceptable
Terphenyl-d14	93	32-129	07/18/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene

This analyte cannot be separated from Benzo(j)fluoranthene.

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Analytical Results

Client: Tetra Tech EM, Incorporated

Project: CenturyLink Longview WA/103P3080177

Sample Matrix: Water

Service Request: K1607582

Date Collected: 07/07/2016

Date Received: 07/07/2016

Polynuclear Aromatic Hydrocarbons

Sample Name: MW-1

Lab Code: K1607582-003

Extraction Method: EPA 3520C

Analysis Method: 8270D SIM

Units: ug/L Basis: NA

EPA 3520C Level: Low

					Dilution	Date	Date	Extraction	
Analyte Name	Result	Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Naphthalene	ND	U	0.020	0.0038	1	07/12/16	07/18/16	KWG1605713	
2-Methylnaphthalene	ND	U	0.020	0.0023	1	07/12/16	07/18/16	KWG1605713	
Acenaphthylene	ND	U	0.020	0.0034	1	07/12/16	07/18/16	KWG1605713	
Acenaphthene	ND	U	0.020	0.0044	1	07/12/16	07/18/16	KWG1605713	
Dibenzofuran	ND	U	0.020	0.0093	1	07/12/16	07/18/16	KWG1605713	
Fluorene	ND	U	0.020	0.0038	1	07/12/16	07/18/16	KWG1605713	
Phenanthrene	ND	U	0.020	0.0050	1	07/12/16	07/18/16	KWG1605713	
Anthracene	ND	U	0.020	0.0036	1	07/12/16	07/18/16	KWG1605713	
Fluoranthene	ND	U	0.020	0.010	1	07/12/16	07/18/16	KWG1605713	
Pyrene	ND	U	0.020	0.0053	1	07/12/16	07/18/16	KWG1605713	
Benz(a)anthracene	ND	U	0.020	0.0026	1	07/12/16	07/18/16	KWG1605713	
Chrysene	ND	U	0.020	0.0034	1	07/12/16	07/18/16	KWG1605713	
Benzo(b)fluoranthene†	ND	U	0.020	0.0041	1	07/12/16	07/18/16	KWG1605713	
Benzo(k)fluoranthene	ND	U	0.020	0.0030	1	07/12/16	07/18/16	KWG1605713	
Benzo(a)pyrene	ND	U	0.020	0.0043	1	07/12/16	07/18/16	KWG1605713	
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0026	1	07/12/16	07/18/16	KWG1605713	
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	07/12/16	07/18/16	KWG1605713	
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	07/12/16	07/18/16	KWG1605713	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	77	42-131	07/18/16	Acceptable
Fluoranthene-d10	92	42-133	07/18/16	Acceptable
Terphenyl-d14	90	32-129	07/18/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene

This analyte cannot be separated from Benzo(j)fluoranthene.

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Analytical Results

Client: Tetra Tech EM, Incorporated

Project: CenturyLink Longview WA/103P3080177

Sample Matrix: Water

Service Request: K1607582

Date Collected: NA
Date Received: NA

Polynuclear Aromatic Hydrocarbons

Sample Name:Method BlankLab Code:KWG1605713-3

Extraction Method: EPA 3520C **Analysis Method:** 8270D SIM

Units: ug/L Basis: NA

Level: Low

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Naphthalene	ND U	0.020	0.0038	1	07/12/16	07/18/16	KWG1605713	
2-Methylnaphthalene	ND U	0.020	0.0023	1	07/12/16	07/18/16	KWG1605713	
Acenaphthylene	ND U	0.020	0.0034	1	07/12/16	07/18/16	KWG1605713	
Acenaphthene	ND U	0.020	0.0044	1	07/12/16	07/18/16	KWG1605713	
Dibenzofuran	ND U	0.020	0.0093	1	07/12/16	07/18/16	KWG1605713	
Fluorene	ND U	0.020	0.0038	1	07/12/16	07/18/16	KWG1605713	
Phenanthrene	ND U	0.020	0.0050	1	07/12/16	07/18/16	KWG1605713	
Anthracene	ND U	0.020	0.0036	1	07/12/16	07/18/16	KWG1605713	
Fluoranthene	ND U	0.020	0.010	1	07/12/16	07/18/16	KWG1605713	
Pyrene	ND U	0.020	0.0053	1	07/12/16	07/18/16	KWG1605713	
Benz(a)anthracene	ND U	0.020	0.0026	1	07/12/16	07/18/16	KWG1605713	
Chrysene	ND U	0.020	0.0034	1	07/12/16	07/18/16	KWG1605713	
Benzo(b)fluoranthene†	ND U	0.020	0.0041	1	07/12/16	07/18/16	KWG1605713	
Benzo(k)fluoranthene	ND U	0.020	0.0030	1	07/12/16	07/18/16	KWG1605713	
Benzo(a)pyrene	ND U	0.020	0.0043	1	07/12/16	07/18/16	KWG1605713	
Indeno(1,2,3-cd)pyrene	ND U	0.020	0.0026	1	07/12/16	07/18/16	KWG1605713	
Dibenz(a,h)anthracene	ND U	0.020	0.0025	1	07/12/16	07/18/16	KWG1605713	
Benzo(g,h,i)perylene	ND U	0.020	0.0029	1	07/12/16	07/18/16	KWG1605713	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	81	42-131	07/18/16	Acceptable
Fluoranthene-d10	90	42-133	07/18/16	Acceptable
Terphenyl-d14	90	32-129	07/18/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene

This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

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QA/QC Report

Service Request: K1607582

Client: Tetra Tech EM, Incorporated

Project: CenturyLink Longview WA/103P3080177

Sample Matrix: Water

Surrogate Recovery Summary Polynuclear Aromatic Hydrocarbons

Extraction Method:EPA 3520CUnits:PercentAnalysis Method:8270D SIMLevel:Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
MW-5	K1607582-001	81	94	91
MW-4	K1607582-002	74	96	93
MW-1	K1607582-003	77	92	90
Method Blank	KWG1605713-3	81	90	90
Lab Control Sample	KWG1605713-1	87	96	92
Duplicate Lab Control Sample	KWG1605713-2	89	98	92

Surrogate Recovery Control Limits (%)

Sur1	=	Fluorene-d10	42-131
Sur2	=	Fluoranthene-d10	42-133
Sur3	=	Terphenyl-d14	32-129

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

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QA/QC Report

Client: Tetra Tech EM, Incorporated

Project: CenturyLink Longview WA/103P3080177

Sample Matrix: Water

Service Request: K1607582 **Date Extracted:** 07/12/2016 **Date Analyzed:** 07/18/2016

Lab Control Spike/Duplicate Lab Control Spike Summary Polynuclear Aromatic Hydrocarbons

Extraction Method: E **Analysis Method:** 87

EPA 3520C 8270D SIM yurocarbons

Units: ug/L Basis: NA

Level: Low Extraction Lot: KWG1605713

Lab Control Sample KWG1605713-1 Lab Control Spike Duplicate Lab Control Sample KWG1605713-2 Duplicate Lab Control Spike

		Lab Control Spike			e Lab Control	Spike			
Analyte Name	Result	Spike Amount	%Rec	Result	Spike Amount	%Rec	%Rec Limits	RPD	RPD Limit
Naphthalene	2.13	2.50	85	2.21	2.50	88	52-115	4	30
2-Methylnaphthalene	1.94	2.50	77	2.00	2.50	80	48-120	3	30
Acenaphthylene	2.31	2.50	92	2.39	2.50	95	58-124	3	30
Acenaphthene	2.30	2.50	92	2.35	2.50	94	63-121	2	30
Dibenzofuran	2.43	2.50	97	2.47	2.50	99	56-132	2	30
Fluorene	2.25	2.50	90	2.31	2.50	92	68-121	3	30
Phenanthrene	2.12	2.50	85	2.19	2.50	88	64-126	3	30
Anthracene	1.98	2.50	79	2.06	2.50	82	68-127	4	30
Fluoranthene	2.25	2.50	90	2.32	2.50	93	70-127	3	30
Pyrene	2.30	2.50	92	2.31	2.50	92	72-127	0	30
Benz(a)anthracene	2.20	2.50	88	2.20	2.50	88	74-124	0	30
Chrysene	2.37	2.50	95	2.38	2.50	95	74-132	0	30
Benzo(b)fluoranthene	2.36	2.50	94	2.36	2.50	94	73-136	0	30
Benzo(k)fluoranthene	2.38	2.50	95	2.42	2.50	97	74-134	1	30
Benzo(a)pyrene	2.11	2.50	84	2.14	2.50	85	75-131	1	30
Indeno(1,2,3-cd)pyrene	2.05	2.50	82	2.05	2.50	82	63-136	0	30
Dibenz(a,h)anthracene	1.99	2.50	79	2.01	2.50	80	59-135	1	30
Benzo(g,h,i)perylene	1.98	2.50	79	2.03	2.50	81	63-127	2	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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ALS Environmental ALS Group USA, Corp 1317 South 13th Avenue Kelso. WA 98626

T:+1 360 577 7222

F: +1 360 636 1068 www.alsglobal.com

August 03, 2016

Analytical Report for Service Request No: K1607647

Rob Tisdale Tetra Tech EM, Incorporated 216 16th St , Suite 1500 Denver, CO 80202

RE: Century Link Longview WA / 103P3080177

Dear Rob,

Enclosed are the results of the sample(s) submitted to our laboratory July 08, 2016 For your reference, these analyses have been assigned our service request number **K1607647**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3376. You may also contact me via email at gregory.salata@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Gregory Salata, Ph.D. Senior Project

Manager



ALS Environmental ALS Group USA, Corp 1317 South 13th Avenue Kelso, WA 98626

T: +1 360 577 7222 F: +1 360 636 1068 www.alsglobal.com

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Polynuclear Aromatic Hydrocarbons

Acronyms

ASTM American Society for Testing and Materials

A2LA American Association for Laboratory Accreditation

CARB California Air Resources Board

CAS Number Chemical Abstract Service registry Number

CFC Chlorofluorocarbon
CFU Colony-Forming Unit

DEC Department of Environmental Conservation

DEQ Department of Environmental Quality

DHS Department of Health Services

DOE Department of Ecology
DOH Department of Health

EPA U. S. Environmental Protection Agency

ELAP Environmental Laboratory Accreditation Program

GC Gas Chromatography

GC/MS Gas Chromatography/Mass Spectrometry

LOD Limit of Detection
LOQ Limit of Quantitation

LUFT Leaking Underground Fuel Tank

M Modified

MCL Maximum Contaminant Level is the highest permissible concentration of a substance

allowed in drinking water as established by the USEPA.

MDL Method Detection Limit
MPN Most Probable Number
MRL Method Reporting Limit

NA Not Applicable
NC Not Calculated

NCASI National Council of the Paper Industry for Air and Stream Improvement

ND Not Detected

NIOSH National Institute for Occupational Safety and Health

PQL Practical Quantitation Limit

RCRA Resource Conservation and Recovery Act

SIM Selected Ion Monitoring

TPH Total Petroleum Hydrocarbons

tr Trace level is the concentration of an analyte that is less than the PQL but greater than or

equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- F. The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
 DOD-QSM 4.2 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. DOD-QSM 4.2 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
 DOD-QSM 4.2 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- \boldsymbol{Q} $\;\;$ See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L14-51
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	Not available	_
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	03016
Maine DHS	Not available	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	_
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.



Case Narrative

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360)577-7222 Fax (360)636-1068 www.alsglobal.com

ALS ENVIRONMENTAL

Client: Tetra Tech EM, Incorporated Service Request No.: K1607647

Project: Century Link Longview WA/ 103P3080177 Date Received: 07/08/16

Sample Matrix: Water

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Laboratory Control Sample (LCS), and Laboratory/Duplicate Laboratory Control Sample (LCS/DLCS).

Sample Receipt

Three water samples were received for analysis at ALS Environmental on 07/08/16. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Diesel Range Organics by Method NWTPH-Dx

No anomalies associated with the analysis of these samples were observed.

Polynuclear Aromatic Hydrocarbons by EPA Method 8270

Sample Notes and Discussion:

The results reported for Pyrene in sample MW-3 may contain a slight bias. The chromatogram indicated the presence of non-target background components. The matrix interference may have resulted in a slight high bias in the affected sample. The result was flagged with "X" to indicate the issue.

Samples for PAH analysis were filtered prior to extraction.

No other anomalies associated with the analysis of these samples were observed.

Approved by Regard Salata



Chain of Custody

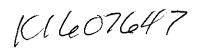
ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360)577-7222 Fax (360)636-1068 www.alsglobal.com

Chain of Custody



ADDRESS 1317 South 13th Ave., Kelso, WA 98626 PHONE 1 360 577 7222 FAX 1 360 636 1068 Columbia Analytical Services, Inc.

Work Order No.:



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Diesel and Residual Range Organics

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360)577-7222 Fax (360)636-1068 www.alsglobal.com

Analytical Results

Client: Tetra Tech EM, Incorporated

Service Request: K1607647 **Project:** Century Link Longview WA/103P3080177 **Date Collected:** 07/08/2016

Sample Matrix: Water **Date Received:** 07/08/2016

Diesel and Residual Range Organics

Sample Name: MW-3 Units: ug/L Lab Code: K1607647-001 Basis: NA

Extraction Method: METHOD Level: Low **Analysis Method:** NWTPH-Dx

Dilution Date Date **Extraction** MRL MDL Factor Extracted Analyzed **Analyte Name** Result Q Lot Note KWG1605678 12 1 Diesel Range Organics (DRO) **22** J 260 07/11/16 07/13/16 KWG1605678 Residual Range Organics (RRO) **41** J 510 20 1 07/11/16 07/13/16

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note	
o-Terphenyl	77	50-150	07/13/16	Acceptable	
n-Triacontane	73	50-150	07/13/16	Acceptable	

Comments:

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Form 1A - Organic Page 1 of 1 Printed: 07/14/2016 14:19:49

SuperSet Reference:

Analytical Results

Client: Tetra Tech EM, Incorporated

Service Request: K1607647 **Project:** Century Link Longview WA/103P3080177 **Date Collected:** 07/08/2016 **Sample Matrix:** Water

Date Received: 07/08/2016

RR190082

Diesel and Residual Range Organics

Sample Name: MW-2 Units: ug/L Lab Code: K1607647-002 Basis: NA

Extraction Method: METHOD Level: Low

Analysis Method: NWTPH-Dx

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Diesel Range Organics (DRO)	330 Y	270	12	1	07/11/16	07/13/16	KWG1605678	
Residual Range Organics (RRO)	140 J	530	20	1	07/11/16	07/13/16	KWG1605678	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	84	50-150	07/13/16	Acceptable
n-Triacontane	80	50-150	07/13/16	Acceptable

Comments:

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Analytical Results

Client: Tetra Tech EM, Incorporated

Service Request: K1607647 **Project:** Century Link Longview WA/103P3080177 **Date Collected:** 07/08/2016 **Date Received:** 07/08/2016 **Sample Matrix:** Water

Diesel and Residual Range Organics

Sample Name: Dup-070816 Units: ug/L Lab Code: K1607647-003 Basis: NA **Extraction Method: METHOD** Level: Low

Analysis Method: NWTPH-Dx

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Diesel Range Organics (DRO)	310 Y	250	11	1	07/11/16	07/13/16	KWG1605678	
Residual Range Organics (RRO)	140 J	500	19	1	07/11/16	07/13/16	KWG1605678	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note	
o-Terphenyl	77	50-150	07/13/16	Acceptable	
n-Triacontane	75	50-150	07/13/16	Acceptable	

Comments:

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Analytical Results

Client: Tetra Tech EM, Incorporated

Project: Century Link Longview WA/103P3080177

Sample Matrix: Water

Service Request: K1607647

Date Collected: NA

Date Received: NA

Units: ug/L

Basis: NA

Level: Low

Diesel and Residual Range Organics

Sample Name: Method Blank
Lab Code: KWG1605678-5

Extraction Method: METHOD

Analysis Method:

NWTPH-Dx

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Diesel Range Organics (DRO)	ND U	250	11	1	07/11/16	07/13/16	KWG1605678	
Residual Range Organics (RRO)	23 J	500	19	1	07/11/16	07/13/16	KWG1605678	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	77	50-150	07/13/16	Acceptable
n-Triacontane	79	50-150	07/13/16	Acceptable

Comments:

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SuperSet Reference:

QA/QC Report

Service Request: K1607647

Client: Tetra Tech EM, Incorporated

Project: Century Link Longview WA/103P3080177

Sample Matrix: Water

Surrogate Recovery Summary Diesel and Residual Range Organics

Extraction Method:METHODUnits:PercentAnalysis Method:NWTPH-DxLow

Sample Name	Lab Code	Sur1	Sur2
Batch QC	K1607464-010	85	83
MW-3	K1607647-001	77	73
MW-2	K1607647-002	84	80
Dup-070816	K1607647-003	77	75
Batch QCDUP	KWG1605678-1	84	84
Method Blank	KWG1605678-5	77	79
Lab Control Sample	KWG1605678-4	95	90

Surrogate Recovery Control Limits (%)

Sur1 = o-Terphenyl 50-150 Sur2 = n-Triacontane 50-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

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 Page
 1 of
 1

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 SuperSet Reference:
 RR190082

QA/QC Report

Client: Tetra Tech EM, Incorporated

Service Request: K1607647 **Project:** Century Link Longview WA/103P3080177 **Date Extracted:** 07/11/2016

Sample Matrix: Water **Date Analyzed:** 07/13/2016

> **Duplicate Sample Summary Diesel and Residual Range Organics**

Sample Name: Batch QC Units: ug/L Lab Code: K1607464-010 Basis: NA

Extraction Method: METHOD Level: Low

Analysis Method: Extraction Lot: KWG1605678 NWTPH-Dx

Ratch OCDLIP

			Sample	KWG16	05678-1	Relative Percent	RPD Limit
Analyte Name	MRL	MDL	Result	Result	Average	Difference	
Diesel Range Organics (DRO)	260	12	18	13	15	27 #	30
Residual Range Organics (RRO)	520	20	34	38	36	11 #	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

1 of 1 Form 3B - Organic Page Printed: 07/14/2016 14:20:06 $u:\Stealth\Crystal.rpt\Form3DUP.rpt$ SuperSet Reference: RR190082

QA/QC Report

Client: Tetra Tech EM, Incorporated

Project: Century Link Longview WA/103P3080177

Date Extracted: 07/11/2016 Sample Matrix: Water **Date Analyzed:** 07/13/2016

> Lab Control Spike Summary **Diesel and Residual Range Organics**

Extraction Method: METHOD Units: ug/L **Analysis Method:** NWTPH-Dx Basis: NA

> Level: Low Extraction Lot: KWG1605678

Service Request: K1607647

Lab Control Sample KWG1605678-4 Lab Control Spike

Analyte Name	Result	Spike Amount	%Rec	%Rec Limits
riesel Range Organics (DRO)	2570	3200	80	46-140
Residual Range Organics (RRO)	1350	1600	84	45-159

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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Polynuclear Aromatic Hydrocarbons

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360)577-7222 Fax (360)636-1068 www.alsglobal.com

Analytical Results

Client: Tetra Tech EM, Incorporated

Project: Century Link Longview WA/103P3080177

Sample Matrix: Water Service Request: K1607647 **Date Collected:** 07/08/2016 **Date Received:** 07/08/2016

Polynuclear Aromatic Hydrocarbons

Sample Name:

MW-3

Lab Code:

K1607647-001

Extraction Method:

EPA 3520C

Units: ug/L Basis: NA

Level: Low

Analysis	Method:	8270D SIM

					Dilution	Date	Date	Extraction	
Analyte Name	Result	Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Naphthalene	ND	U	0.020	0.0038	1	07/12/16	07/18/16	KWG1605713	
2-Methylnaphthalene	ND	U	0.020	0.0023	1	07/12/16	07/18/16	KWG1605713	
Acenaphthylene	ND	U	0.020	0.0034	1	07/12/16	07/18/16	KWG1605713	
Acenaphthene	ND	U	0.020	0.0044	1	07/12/16	07/18/16	KWG1605713	
Dibenzofuran	ND	U	0.020	0.0093	1	07/12/16	07/18/16	KWG1605713	
Fluorene	ND	U	0.020	0.0038	1	07/12/16	07/18/16	KWG1605713	
Phenanthrene	ND	U	0.020	0.0050	1	07/12/16	07/18/16	KWG1605713	
Anthracene	ND	U	0.020	0.0036	1	07/12/16	07/18/16	KWG1605713	
Fluoranthene	ND	U	0.020	0.010	1	07/12/16	07/18/16	KWG1605713	
Pyrene	0.0065	JX	0.020	0.0053	1	07/12/16	07/18/16	KWG1605713	
Benz(a)anthracene	0.0027	J	0.020	0.0026	1	07/12/16	07/18/16	KWG1605713	
Chrysene	ND	U	0.020	0.0034	1	07/12/16	07/18/16	KWG1605713	
Benzo(b)fluoranthene†	ND	U	0.020	0.0041	1	07/12/16	07/18/16	KWG1605713	
Benzo(k)fluoranthene	ND	U	0.020	0.0030	1	07/12/16	07/18/16	KWG1605713	
Benzo(a)pyrene	ND	U	0.020	0.0043	1	07/12/16	07/18/16	KWG1605713	
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0026	1	07/12/16	07/18/16	KWG1605713	
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	07/12/16	07/18/16	KWG1605713	
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	07/12/16	07/18/16	KWG1605713	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	66	42-131	07/18/16	Acceptable
Fluoranthene-d10	90	42-133	07/18/16	Acceptable
Terphenyl-d14	90	32-129	07/18/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene

This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

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SuperSet Reference:

Analytical Results

Client: Tetra Tech EM, Incorporated

Century Link Longview WA/103P3080177 **Project:**

Sample Matrix: Water Service Request: K1607647 **Date Collected:** 07/08/2016 **Date Received:** 07/08/2016

Polynuclear Aromatic Hydrocarbons

Sample Name:

MW-2

Lab Code:

K1607647-002

Extraction Method:

EPA 3520C

Analysis Method:

8270D SIM

Units: ug/L Basis: NA

Level: Low

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND U	0.020	0.0038	1	07/12/16	07/18/16	KWG1605713	
2-Methylnaphthalene	ND U	0.020	0.0023	1	07/12/16	07/18/16	KWG1605713	
Acenaphthylene	ND U	0.020	0.0034	1	07/12/16	07/18/16	KWG1605713	
Acenaphthene	ND U	0.020	0.0044	1	07/12/16	07/18/16	KWG1605713	
Dibenzofuran	ND U	0.020	0.0093	1	07/12/16	07/18/16	KWG1605713	
Fluorene	ND U	0.020	0.0038	1	07/12/16	07/18/16	KWG1605713	
Phenanthrene	ND U	0.020	0.0050	1	07/12/16	07/18/16	KWG1605713	
Anthracene	0.019 J	0.020	0.0036	1	07/12/16	07/18/16	KWG1605713	
Fluoranthene	ND U	0.020	0.010	1	07/12/16	07/18/16	KWG1605713	
Pyrene	ND U	0.020	0.0053	1	07/12/16	07/18/16	KWG1605713	
Benz(a)anthracene	ND U	0.020	0.0026	1	07/12/16	07/18/16	KWG1605713	
Chrysene	ND U	0.020	0.0034	1	07/12/16	07/18/16	KWG1605713	
Benzo(b)fluoranthene†	ND U	0.020	0.0041	1	07/12/16	07/18/16	KWG1605713	
Benzo(k)fluoranthene	ND U	0.020	0.0030	1	07/12/16	07/18/16	KWG1605713	
Benzo(a)pyrene	ND U	0.020	0.0043	1	07/12/16	07/18/16	KWG1605713	
Indeno(1,2,3-cd)pyrene	ND U	0.020	0.0026	1	07/12/16	07/18/16	KWG1605713	
Dibenz(a,h)anthracene	ND U	0.020	0.0025	1	07/12/16	07/18/16	KWG1605713	
Benzo(g,h,i)perylene	ND U	0.020	0.0029	1	07/12/16	07/18/16	KWG1605713	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	82	42-131	07/18/16	Acceptable
Fluoranthene-d10	92	42-133	07/18/16	Acceptable
Terphenyl-d14	88	32-129	07/18/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene

This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

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Merged

SuperSet Reference:

Analytical Results

Client: Tetra Tech EM, Incorporated

Century Link Longview WA/103P3080177 **Project:**

Sample Matrix: Water Service Request: K1607647 **Date Collected:** 07/08/2016 **Date Received:** 07/08/2016

Polynuclear Aromatic Hydrocarbons

Sample Name: Dup-070816 Lab Code: K1607647-003 **Extraction Method:** EPA 3520C

Analysis Method:

8270D SIM

Units: ug/L Basis: NA

Level: Low

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND U	0.020	0.0038	1	07/12/16	07/18/16	KWG1605713	
2-Methylnaphthalene	ND U	0.020	0.0023	1	07/12/16	07/18/16	KWG1605713	
Acenaphthylene	ND U	0.020	0.0034	1	07/12/16	07/18/16	KWG1605713	
Acenaphthene	ND U	0.020	0.0044	1	07/12/16	07/18/16	KWG1605713	
Dibenzofuran	ND U	0.020	0.0093	1	07/12/16	07/18/16	KWG1605713	
Fluorene	ND U	0.020	0.0038	1	07/12/16	07/18/16	KWG1605713	
Phenanthrene	ND U	0.020	0.0050	1	07/12/16	07/18/16	KWG1605713	
Anthracene	0.017 J	0.020	0.0036	1	07/12/16	07/18/16	KWG1605713	
Fluoranthene	ND U	0.020	0.010	1	07/12/16	07/18/16	KWG1605713	
Pyrene	ND U	0.020	0.0053	1	07/12/16	07/18/16	KWG1605713	
Benz(a)anthracene	ND U	0.020	0.0026	1	07/12/16	07/18/16	KWG1605713	
Chrysene	ND U	0.020	0.0034	1	07/12/16	07/18/16	KWG1605713	
Benzo(b)fluoranthene†	ND U	0.020	0.0041	1	07/12/16	07/18/16	KWG1605713	
Benzo(k)fluoranthene	ND U	0.020	0.0030	1	07/12/16	07/18/16	KWG1605713	
Benzo(a)pyrene	ND U	0.020	0.0043	1	07/12/16	07/18/16	KWG1605713	
Indeno(1,2,3-cd)pyrene	ND U	0.020	0.0026	1	07/12/16	07/18/16	KWG1605713	
Dibenz(a,h)anthracene	ND U	0.020	0.0025	1	07/12/16	07/18/16	KWG1605713	
Benzo(g,h,i)perylene	ND U	0.020	0.0029	1	07/12/16	07/18/16	KWG1605713	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	73	42-131	07/18/16	Acceptable
Fluoranthene-d10	89	42-133	07/18/16	Acceptable
Terphenyl-d14	87	32-129	07/18/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene

This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

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SuperSet Reference:

Analytical Results

Client: Tetra Tech EM, Incorporated

Project: Century Link Longview WA/103P3080177

Sample Matrix: Water Service Request: K1607647 Date Collected: NA Date Received: NA

Polynuclear Aromatic Hydrocarbons

Sample Name: Method Blank Lab Code: KWG1605713-3

Extraction Method: Analysis Method:

EPA 3520C 8270D SIM

Units: ug/L Basis: NA

Level: Low

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND U	0.020	0.0038	1	07/12/16	07/18/16	KWG1605713	11000
2-Methylnaphthalene	ND U	0.020	0.0033	1	07/12/16	07/18/16	KWG1605713	
Acenaphthylene	ND U	0.020	0.0023	1	07/12/16	07/18/16	KWG1605713	
Acenaphthene	ND U	0.020	0.0044	1	07/12/16	07/18/16	KWG1605713	
Dibenzofuran	ND U	0.020	0.0093	1	07/12/16	07/18/16	KWG1605713	
Fluorene	ND U	0.020	0.0038	1	07/12/16	07/18/16	KWG1605713	
Phenanthrene	ND U	0.020	0.0050	1	07/12/16	07/18/16	KWG1605713	
Anthracene	ND U	0.020	0.0036	1	07/12/16	07/18/16	KWG1605713	
Fluoranthene	ND U	0.020	0.010	1	07/12/16	07/18/16	KWG1605713	
Pyrene	ND U	0.020	0.0053	1	07/12/16	07/18/16	KWG1605713	
Benz(a)anthracene	ND U	0.020	0.0026	1	07/12/16	07/18/16	KWG1605713	
Chrysene	ND U	0.020	0.0034	1	07/12/16	07/18/16	KWG1605713	
Benzo(b)fluoranthene†	ND U	0.020	0.0041	1	07/12/16	07/18/16	KWG1605713	
Benzo(k)fluoranthene	ND U	0.020	0.0030	1	07/12/16	07/18/16	KWG1605713	
Benzo(a)pyrene	ND U	0.020	0.0043	1	07/12/16	07/18/16	KWG1605713	
Indeno(1,2,3-cd)pyrene	ND U	0.020	0.0026	1	07/12/16	07/18/16	KWG1605713	
Dibenz(a,h)anthracene	ND U	0.020	0.0025	1	07/12/16	07/18/16	KWG1605713	
Benzo(g,h,i)perylene	ND U	0.020	0.0029	1	07/12/16	07/18/16	KWG1605713	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	81	42-131	07/18/16	Acceptable
Fluoranthene-d10	90	42-133	07/18/16	Acceptable
Terphenyl-d14	90	32-129	07/18/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene

This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

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SuperSet Reference:

QA/QC Report

Service Request: K1607647

Units: Percent

Level: Low

Client: Tetra Tech EM, Incorporated

Century Link Longview WA/103P3080177 **Project:**

Sample Matrix: Water

> **Surrogate Recovery Summary Polynuclear Aromatic Hydrocarbons**

Extraction Method: EPA 3520C **Analysis Method:** 8270D SIM

Sample Name	Lab Code	Sur1	Sur2	Sur3
MW-3	K1607647-001	66	90	90
MW-2	K1607647-002	82	92	88
Dup-070816	K1607647-003	73	89	87
Method Blank	KWG1605713-3	81	90	90
Lab Control Sample	KWG1605713-1	87	96	92
Duplicate Lab Control Sample	KWG1605713-2	89	98	92

Surrogate Recovery Control Limits (%)

Sur1	=	Fluorene-d10	42-131
Sur2	=	Fluoranthene-d10	42-133
Sur3	=	Terphenyl-d14	32-129

Results flagged with an asterisk (*) indicate values outside control criteria. Results flagged with a pound (#) indicate the control criteria is not applicable.

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SuperSet Reference:

QA/QC Report

Client: Tetra Tech EM, Incorporated

Project: Century Link Longview WA/103P3080177

Sample Matrix: Water

Service Request: K1607647 **Date Extracted:** 07/12/2016 **Date Analyzed:** 07/18/2016

Lab Control Spike/Duplicate Lab Control Spike Summary Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3520C **Analysis Method:** 8270D SIM

Units: ug/L Basis: NA

Level: Low **Extraction Lot:** KWG1605713

Lab Control Sample KWG1605713-1 Lab Control Spike Duplicate Lab Control Sample KWG1605713-2 Duplicate Lab Control Spike

Result	Spike Amount	%Rec	Result	Spike Amount	%Rec	%Rec Limits	RPD	RPD Limit
2.13	2.50	85	2.21	2.50	88	52-115	4	30
1.94	2.50	77	2.00	2.50	80	48-120	3	30
2.31	2.50	92	2.39	2.50	95	58-124	3	30
2.30	2.50	92	2.35	2.50	94	63-121	2	30
2.43	2.50	97	2.47	2.50	99	56-132	2	30
2.25	2.50	90	2.31	2.50	92	68-121	3	30
2.12	2.50	85	2.19	2.50	88	64-126	3	30
1.98	2.50	79	2.06	2.50	82	68-127	4	30
2.25	2.50	90	2.32	2.50	93	70-127	3	30
2.30	2.50	92	2.31	2.50	92	72-127	0	30
2.20	2.50	88	2.20	2.50	88	74-124	0	30
2.37	2.50	95	2.38	2.50	95	74-132	0	30
2.36	2.50	94	2.36	2.50	94	73-136	0	30
2.38	2.50	95	2.42	2.50	97	74-134	1	30
2.11	2.50	84	2.14	2.50	85	75-131	1	30
2.05	2.50	82	2.05	2.50	82	63-136	0	30
1.99	2.50	79	2.01	2.50	80	59-135	1	30
1.98	2.50	79	2.03	2.50	81	63-127	2	30
	2.13 1.94 2.31 2.30 2.43 2.25 2.12 1.98 2.25 2.30 2.20 2.37 2.36 2.38 2.11 2.05 1.99	Result Spike Amount 2.13 2.50 1.94 2.50 2.31 2.50 2.30 2.50 2.43 2.50 2.25 2.50 2.12 2.50 2.12 2.50 2.25 2.50 2.30 2.50 2.30 2.50 2.37 2.50 2.36 2.50 2.38 2.50 2.11 2.50 2.05 2.50 1.99 2.50	Result Spike Amount %Rec 2.13 2.50 85 1.94 2.50 77 2.31 2.50 92 2.30 2.50 92 2.43 2.50 97 2.25 2.50 90 2.12 2.50 85 1.98 2.50 79 2.25 2.50 90 2.30 2.50 92 2.20 2.50 88 2.37 2.50 95 2.36 2.50 94 2.38 2.50 95 2.11 2.50 84 2.05 2.50 82 1.99 2.50 79	Result Spike Amount %Rec Result 2.13 2.50 85 2.21 1.94 2.50 77 2.00 2.31 2.50 92 2.39 2.30 2.50 92 2.35 2.43 2.50 97 2.47 2.25 2.50 90 2.31 2.12 2.50 85 2.19 1.98 2.50 79 2.06 2.25 2.50 90 2.32 2.30 2.50 92 2.31 2.20 2.50 88 2.20 2.37 2.50 95 2.38 2.36 2.50 94 2.36 2.38 2.50 95 2.42 2.11 2.50 84 2.14 2.05 2.50 82 2.05 1.99 2.50 79 2.01	Result Spike Amount %Rec Result Spike Amount 2.13 2.50 85 2.21 2.50 1.94 2.50 77 2.00 2.50 2.31 2.50 92 2.39 2.50 2.30 2.50 92 2.35 2.50 2.43 2.50 97 2.47 2.50 2.25 2.50 90 2.31 2.50 2.12 2.50 85 2.19 2.50 2.12 2.50 85 2.19 2.50 2.12 2.50 85 2.19 2.50 2.25 2.50 90 2.32 2.50 2.25 2.50 90 2.32 2.50 2.25 2.50 90 2.32 2.50 2.30 2.50 92 2.31 2.50 2.30 2.50 92 2.31 2.50 2.37 2.50 95 2.38 2.50	Result Spike Amount %Rec Result Spike Amount %Rec 2.13 2.50 85 2.21 2.50 88 1.94 2.50 77 2.00 2.50 80 2.31 2.50 92 2.39 2.50 95 2.30 2.50 92 2.35 2.50 94 2.43 2.50 97 2.47 2.50 99 2.25 2.50 90 2.31 2.50 92 2.12 2.50 85 2.19 2.50 88 1.98 2.50 79 2.06 2.50 82 2.25 2.50 90 2.32 2.50 82 2.25 2.50 90 2.32 2.50 82 2.25 2.50 90 2.32 2.50 93 2.30 2.50 92 2.31 2.50 92 2.30 2.50 95 2.38 2.	Result Spike Amount Result Spike Amount %Rec %Rec Limits 2.13 2.50 85 2.21 2.50 88 52-115 1.94 2.50 77 2.00 2.50 80 48-120 2.31 2.50 92 2.39 2.50 95 58-124 2.30 2.50 92 2.35 2.50 94 63-121 2.43 2.50 97 2.47 2.50 99 56-132 2.25 2.50 90 2.31 2.50 92 68-121 2.12 2.50 85 2.19 2.50 88 64-126 1.98 2.50 79 2.06 2.50 82 68-127 2.25 2.50 90 2.32 2.50 93 70-127 2.30 2.50 79 2.06 2.50 82 68-127 2.25 2.50 90 2.32 2.50 93 70-127	Result Spike Amount %Rec Amount Result Spike Amount %Rec Limits RPD 2.13 2.50 85 2.21 2.50 88 52-115 4 1.94 2.50 77 2.00 2.50 80 48-120 3 2.31 2.50 92 2.39 2.50 95 58-124 3 2.30 2.50 92 2.35 2.50 94 63-121 2 2.43 2.50 97 2.47 2.50 99 56-132 2 2.25 2.50 90 2.31 2.50 92 68-121 3 2.12 2.50 85 2.19 2.50 88 64-126 3 1.98 2.50 79 2.06 2.50 82 68-127 4 2.25 2.50 90 2.32 2.50 93 70-127 3 2.30 2.50 92 2.31 2.50 <td< td=""></td<>

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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ATTACHMENT C
REVISED LABORATORY ANALYTICAL REPORTS AND CHAIN OF CUSTODY RECORDS
MARCH 2016 SAMPLING EVENT



June 02, 2016

Rob Tisdale Tetra Tech EM, Incorporated

Denver, CO 80202

216 16th St. Suite 1500

RE: CenturyLink Longview WA / 103P3080177

Dear Rob,

Enclosed is the revised report for the sample(s) submitted to our laboratory March 31, 2016 For your reference, these analyses have been assigned our service request number **K1603183**.

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue

Kelso, WA 98626 T:+1 360 577 7222 F:+1 360 636 1068 www.alsglobal.com

Revised Service Request No: K1603183.01

Analytical Report for Service Request No: K1603183

The PAH reporting list has been corrected.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

We apologize for any inconvenience this may have created.

Please contact me if you have any questions. My extension is 3376. You may also contact me via email at gregory.salata@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Gregory Salata, Ph.D. Senior Project

Manager



ALS Environmental ALS Group USA, Corp 1317 South 13th Avenue Kelso, WA 98626

T: +1 360 577 7222 F: +1 360 636 1068 www.alsglobal.com

Table of Contents

Acronyms

Qualifiers

State Certifications, Accreditations, And Licenses

Case Narrative

Chain of Custody

Diesel and Residual Range Organics

Polynuclear Aromatic Hydrocarbons

Acronyms

ASTM American Society for Testing and Materials

A2LA American Association for Laboratory Accreditation

CARB California Air Resources Board

CAS Number Chemical Abstract Service registry Number

CFC Chlorofluorocarbon
CFU Colony-Forming Unit

DEC Department of Environmental Conservation

DEQ Department of Environmental Quality

DHS Department of Health Services

DOE Department of Ecology
DOH Department of Health

EPA U. S. Environmental Protection Agency

ELAP Environmental Laboratory Accreditation Program

GC Gas Chromatography

GC/MS Gas Chromatography/Mass Spectrometry

LOD Limit of Detection
LOQ Limit of Quantitation

LUFT Leaking Underground Fuel Tank

M Modified

MCL Maximum Contaminant Level is the highest permissible concentration of a substance

allowed in drinking water as established by the USEPA.

MDL Method Detection Limit
MPN Most Probable Number
MRL Method Reporting Limit

NA Not Applicable
NC Not Calculated

NCASI National Council of the Paper Industry for Air and Stream Improvement

ND Not Detected

NIOSH National Institute for Occupational Safety and Health

PQL Practical Quantitation Limit

RCRA Resource Conservation and Recovery Act

SIM Selected Ion Monitoring

TPH Total Petroleum Hydrocarbons

tr Trace level is the concentration of an analyte that is less than the PQL but greater than or

equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- F. The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
 DOD-QSM 4.2 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. DOD-QSM 4.2 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
 DOD-QSM 4.2 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L14-51
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	Not available	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	03016
Maine DHS	Not available	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.alsglobal.com_	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.



Case Narrative

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360)577-7222 Fax (360)636-1068 www.alsglobal.com

ALS ENVIRONMENTAL

Client: Tetra Tech EM, Incorporated Service Request No.: K1603215

Project: CenturyLink Longview WA/ 103P3070177 Date Received: 04/01/16

Sample Matrix: Water

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Laboratory Control Sample (LCS), and Laboratory/Duplicate Laboratory Control Sample (LCS/DLCS).

Sample Receipt

Three water samples were received for analysis at ALS Environmental on 04/01/16. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Diesel Range Organics by Method NWTPH-Dx

Sample Notes and Discussion:

Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD). A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

No other anomalies associated with the analysis of these samples were observed.

Polynuclear Aromatic Hydrocarbons by EPA Method 8270

Lab Control Sample Exceptions:

The lower control criterion was exceeded by 1-19% for several compounds in replicate Laboratory Control Samples (LCS/DLCS) KWG1602648-1 and KWG1602648-52. The analytes in question were not detected in the associated field samples. The error associated with reduced recovery equates to a potential low bias. The results were flagged to indicate the issue. No further corrective action was taken.

No other anomalies associated with the analysis of these samples were observed.

Approved by_____



Chain of Custody

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360)577-7222 Fax (360)636-1068 www.alsglobal.com

Chain of Custody



ADDRESS 1317 South 13th Ave., Kelso, WA 98626 PHONE 1 360 577 7222 FAX 1 360 636 1068 Columbia Analytical Services, Inc.

Work Order No.:

K1603183	
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Cooler Receipt and Preservation Form Service Request K16 Opened:3 Unloaded: Samples were received via? Mail UPS DHL(Hand Delivered 1. Fed Ex PDX Courier Samples were received in: (circle) (Cooler) Box Envelope Other NA Were custody seals on coolers? NA N If yes, how many and where? If present, were they signed and dated? If present, were custody seals intact? Y Y Ν **Tracking Number** Corr. Thermometer **Factor** Packing material Inserts Baggies Bubble Wrap Gel Packs Wet Ice Dry Ice Sleeves Were custody papers properly filled out (ink, signed, etc.)? 5. N Did all bottles arrive in good condition (unbroken)? Indicate in the table below. N Were all sample labels complete (i.e analysis, preservation, etc.)? N Did all sample labels and tags agree with custody papers? Indicate major discrepancies in the table on page 2. Were appropriate bottles/containers and volumes received for the tests indicated? NA N Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? Indicate in the table below NA N Were VOA vials received without headspace? Indicate in the table below. 12. Was C12/Res negative? N Sample ID on Bottle Sample ID on COC Identified by: Out of Head-**Bottle Count** Volume Reagent Lot Number Initials Sample ID **Bottle Type** Temp space Broke Reagent added Time Notes, Discrepancies, & Resolutions:

Page	_of



Diesel and Residual Range Organics

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360)577-7222 Fax (360)636-1068 www.alsglobal.com

Analytical Results

Client: Tetra Tech EM, Incorporated

Service Request: K1603183 CenturyLink Longview WA/103P3080177 **Date Collected:** 03/31/2016 **Project:**

Date Received: 03/31/2016 **Sample Matrix:** Water

Diesel and Residual Range Organics

Sample Name: MW5 Units: ug/L Lab Code: K1603183-001 Basis: NA

Extraction Method: METHOD Level: Low **Analysis Method:** NWTPH-Dx

Dilution Date Date **Extraction**

Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Diesel Range Organics (DRO)	30 J	260	12	1	04/06/16	04/11/16	KWG1602647	
Residual Range Organics (RRO)	53 J	510	20	1	04/06/16	04/11/16	KWG1602647	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	84	50-150	04/11/16	Acceptable
n-Triacontane	81	50-150	04/11/16	Acceptable

Comments:

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SuperSet Reference:

RR187438

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Analytical Results

Client: Tetra Tech EM, Incorporated

Service Request: K1603183 CenturyLink Longview WA/103P3080177 **Date Collected:** 03/31/2016 **Project: Date Received:** 03/31/2016 **Sample Matrix:** Water

Diesel and Residual Range Organics

Units: ug/L

Sample Name: MW4 Lab Code: K1603183-002

Basis: NA **Extraction Method:** METHOD Level: Low

Analysis Method: NWTPH-Dx

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Diesel Range Organics (DRO)	30 J	260	12	1	04/06/16	04/11/16	KWG1602647	
Residual Range Organics (RRO)	54 J	510	20	1	04/06/16	04/11/16	KWG1602647	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	89	50-150	04/11/16	Acceptable
n-Triacontane	86	50-150	04/11/16	Acceptable

Comments:

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SuperSet Reference:

Analytical Results

Client: Tetra Tech EM, Incorporated

Service Request: K1603183 CenturyLink Longview WA/103P3080177 **Date Collected:** 03/31/2016 **Project: Date Received:** 03/31/2016 **Sample Matrix:** Water

Diesel and Residual Range Organics

Sample Name: MW4-BT Units: ug/L Lab Code: K1603183-003 Basis: NA **Extraction Method:** METHOD Level: Low

Analysis Method: NWTPH-Dx

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Diesel Range Organics (DRO)	33 J	260	12	1	04/06/16	04/11/16	KWG1602647	
Residual Range Organics (RRO)	97 J	510	20	1	04/06/16	04/11/16	KWG1602647	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	91	50-150	04/11/16	Acceptable
n-Triacontane	89	50-150	04/11/16	Acceptable

Comments:

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SuperSet Reference:

Analytical Results

Client: Tetra Tech EM, Incorporated

Service Request: K1603183 CenturyLink Longview WA/103P3080177 **Date Collected:** 03/31/2016 **Project: Sample Matrix: Date Received:** 03/31/2016 Water

Diesel and Residual Range Organics

Sample Name: MW4-BB Units: ug/L Lab Code: K1603183-004 Basis: NA **Extraction Method:** METHOD Level: Low

Analysis Method: NWTPH-Dx

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO) Residual Range Organics (RRO)	90 J 590 O	260 510	12 20	1	04/06/16 04/06/16	04/11/16 04/11/16	KWG1602647 KWG1602647	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	81	50-150	04/11/16	Acceptable
n-Triacontane	85	50-150	04/11/16	Acceptable

Comments:

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SuperSet Reference:

Analytical Results

Client: Tetra Tech EM, Incorporated

Service Request: K1603183 CenturyLink Longview WA/103P3080177 **Date Collected:** 03/31/2016 **Project: Date Received:** 03/31/2016 **Sample Matrix:** Water

Diesel and Residual Range Organics

Sample Name: MW-1 Units: ug/L Lab Code: K1603183-005 Basis: NA

Extraction Method: METHOD Level: Low **Analysis Method:** NWTPH-Dx

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Diesel Range Organics (DRO)	41 J	260	12	1	04/06/16	04/11/16	KWG1602647	
Residual Range Organics (RRO)	83 J	510	20	1	04/06/16	04/11/16	KWG1602647	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	82	50-150	04/11/16	Acceptable
n-Triacontane	82	50-150	04/11/16	Acceptable

Comments:

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SuperSet Reference:

Analytical Results

Client: Tetra Tech EM, Incorporated

Project: CenturyLink Longview WA/103P3080177

NWTPH-Dx

Sample Matrix: Water

Analysis Method:

Service Request: K1603183 **Date Collected:** NA

Date Received: NA

Diesel and Residual Range Organics

Sample Name:Method BlankUnits:ug/LLab Code:KWG1602647-3Basis:NAExtraction Method:METHODLevel:Low

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Diesel Range Organics (DRO)	21 J	250	11	1	04/06/16	04/11/16	KWG1602647	
Residual Range Organics (RRO)	55 J	500	19	1	04/06/16	04/11/16	KWG1602647	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	94	50-150	04/11/16	Acceptable
n-Triacontane	91	50-150	04/11/16	Acceptable

Comments:

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QA/QC Report

Service Request: K1603183

Client: Tetra Tech EM, Incorporated

Project: CenturyLink Longview WA/103P3080177

Sample Matrix: Water

Surrogate Recovery Summary Diesel and Residual Range Organics

Extraction Method:METHODUnits:PercentAnalysis Method:NWTPH-DxLevel:Low

Sample Name	<u>Lab Code</u>	Sur1	Sur2
MW5	K1603183-001	84	81
MW4	K1603183-002	89	86
MW4-BT	K1603183-003	91	89
MW4-BB	K1603183-004	81	85
MW-1	K1603183-005	82	82
Method Blank	KWG1602647-3	94	91
Lab Control Sample	KWG1602647-1	97	91
Duplicate Lab Control Sample	KWG1602647-2	99	93

Surrogate Recovery Control Limits (%)

Sur1 = o-Terphenyl 50-150 Sur2 = n-Triacontane 50-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

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 RR187438

QA/QC Report

Client: Tetra Tech EM, Incorporated

Project: CenturyLink Longview WA/103P3080177

Sample Matrix: Water Service Request: K1603183 **Date Extracted:** 04/06/2016

Date Analyzed: 04/11/2016

Lab Control Spike/Duplicate Lab Control Spike Summary **Diesel and Residual Range Organics**

Extraction Method: Analysis Method:

METHOD NWTPH-Dx

Units: ug/L Basis: NA

Level: Low

Extraction Lot: KWG1602647

Lab Control Sample KWG1602647-1 Lab Control Spike

Duplicate Lab Control Sample KWG1602647-2

Duplicate Lab Control Spike

		Spike			Spike		%Rec	RPD	
Analyte Name	Result	Amount	%Rec	Result	Amount	%Rec	Limits	RPD	Limit
Diesel Range Organics (DRO)	2920	3200	91	3030	3200	95	46-140	4	30
Residual Range Organics (RRO)	1380	1600	86	1420	1600	89	45-159	3	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Form 3C - Organic Page Printed: 04/12/2016 14:04:55 1 of 1 $u:\Stealth\Crystal.rpt\Form3DLC.rpt$ SuperSet Reference: RR187438



Polynuclear Aromatic Hydrocarbons

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360)577-7222 Fax (360)636-1068 www.alsglobal.com

REVISED1:27 pm, Jun 02, 2016

Analytical Results

Client: Tetra Tech EM, Incorporated

Project: CenturyLink Longview WA/103P3080177

Sample Matrix: Water Service Request: K1603183 **Date Collected:** 03/31/2016 **Date Received:** 03/31/2016

Polynuclear Aromatic Hydrocarbons

Sample Name:

MW5

Lab Code:

Extraction Method: Analysis Method:

K1603183-001

EPA 3520C 8270D SIM Units: ug/L Basis: NA

Level: Low

					Dilution	Date	Date	Extraction	
Analyte Name	Result	Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Naphthalene	ND	U	0.020	0.0038	1	04/06/16	04/11/16	KWG1602648	
2-Methylnaphthalene	ND	U	0.020	0.0023	1	04/06/16	04/11/16	KWG1602648	
1-Methylnaphthalene	ND	U	0.020	0.0035	1	04/06/16	04/11/16	KWG1602648	
Acenaphthylene	ND	U	0.020	0.0034	1	04/06/16	04/11/16	KWG1602648	
Acenaphthene	ND	U	0.020	0.0044	1	04/06/16	04/11/16	KWG1602648	
Fluorene	ND	U	0.020	0.0038	1	04/06/16	04/11/16	KWG1602648	
Phenanthrene	ND	U	0.020	0.0050	1	04/06/16	04/11/16	KWG1602648	
Anthracene	0.0092	J	0.020	0.0036	1	04/06/16	04/11/16	KWG1602648	*
Carbazole	ND	U	0.020	0.0045	1	04/06/16	04/11/16	KWG1602648	
Fluoranthene	ND	U	0.020	0.010	1	04/06/16	04/11/16	KWG1602648	*
Pyrene	ND	U	0.020	0.0053	1	04/06/16	04/11/16	KWG1602648	*
Benz(a)anthracene	ND	U	0.020	0.0026	1	04/06/16	04/11/16	KWG1602648	*
Chrysene	ND	U	0.020	0.0034	1	04/06/16	04/11/16	KWG1602648	*
Benzo(b)fluoranthene†	ND	U	0.020	0.0041	1	04/06/16	04/11/16	KWG1602648	*
Benzo(k)fluoranthene	ND	U	0.020	0.0030	1	04/06/16	04/11/16	KWG1602648	*
Benzo(a)pyrene	ND	U	0.020	0.0043	1	04/06/16	04/11/16	KWG1602648	*
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0026	1	04/06/16	04/11/16	KWG1602648	*
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	04/06/16	04/11/16	KWG1602648	*
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	04/06/16	04/11/16	KWG1602648	*

^{*} See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	89	42-131	04/11/16	Acceptable
Fluoranthene-d10	104	42-133	04/11/16	Acceptable
Terphenyl-d14	97	32-129	04/11/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene

This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

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SuperSet Reference:

Analytical Results

Client: Tetra Tech EM, Incorporated

Project: CenturyLink Longview WA/103P3080177

Sample Matrix: Water

Service Request: K1603183

Date Collected: 03/31/2016

Date Received: 03/31/2016

Polynuclear Aromatic Hydrocarbons

Sample Name:

MW4

Lab Code: K1603183-002

EPA 3520C

Extraction Method: Analysis Method:

8270D SIM

Units: ug/L Basis: NA

Level: Low

Dilution **Extraction Date Date** Analyte Name MRL MDL Factor Extracted Analyzed Lot Result O Note KWG1602648 Naphthalene ND U 0.020 0.0038 04/06/16 04/11/16 KWG1602648 2-Methylnaphthalene 0.020 0.0023 04/06/16 04/11/16 ND U 1 1-Methylnaphthalene ND U 0.020 0.0035 1 04/06/16 04/11/16 KWG1602648 KWG1602648 Acenaphthylene ND U 0.020 0.0034 1 04/06/16 04/11/16 Acenaphthene ND U 0.020 0.0044 1 04/06/16 04/11/16 KWG1602648 KWG1602648 Fluorene ND U 0.020 0.0038 1 04/06/16 04/11/16 KWG1602648 Phenanthrene ND U 0.020 0.0050 1 04/06/16 04/11/16 Anthracene 0.0040 J 0.020 0.0036 04/06/16 04/11/16 KWG1602648 1 Carbazole 0.020 0.0045 04/06/16 04/11/16 KWG1602648 ND U 1 KWG1602648 Fluoranthene ND U 0.020 0.010 1 04/06/16 04/11/16 Pyrene 0.034 0.020 0.0053 1 04/06/16 04/11/16 KWG1602648 Benz(a)anthracene 0.0026 J 0.020 0.0026 1 04/06/16 04/11/16 KWG1602648 0.020 0.0034 1 04/06/16 04/11/16 KWG1602648 Chrysene ND U Benzo(b)fluoranthene† ND U 0.020 0.0041 04/06/16 04/11/16 KWG1602648 1 04/11/16 KWG1602648 Benzo(k)fluoranthene ND U 0.020 0.0030 1 04/06/16 Benzo(a)pyrene 0.020 0.0043 1 04/11/16 KWG1602648 ND U 04/06/16 0.020 0.0026 04/11/16 KWG1602648 Indeno(1,2,3-cd)pyrene ND U 1 04/06/16 * KWG1602648 Dibenz(a,h)anthracene ND U 0.020 0.0025 1 04/06/16 04/11/16 KWG1602648 Benzo(g,h,i)perylene ND U 0.020 0.0029 1 04/06/16 04/11/16

^{*} See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	93	42-131	04/11/16	Acceptable
Fluoranthene-d10	108	42-133	04/11/16	Acceptable
Terphenyl-d14	100	32-129	04/11/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene

This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

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SuperSet Reference: RR188834

Analytical Results

Client: Tetra Tech EM, Incorporated

Project: CenturyLink Longview WA/103P3080177

Sample Matrix: Water Service Request: K1603183 **Date Collected:** 03/31/2016 **Date Received:** 03/31/2016

Polynuclear Aromatic Hydrocarbons

Sample Name: MW4-BT Lab Code: K1603183-003 **Extraction Method: EPA 3520C**

Analysis Method:

8270D SIM

Units: ug/L Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.020	0.0038	1	04/06/16	04/11/16	KWG1602648	
2-Methylnaphthalene	ND	U	0.020	0.0023	1	04/06/16	04/11/16	KWG1602648	
1-Methylnaphthalene	ND	U	0.020	0.0035	1	04/06/16	04/11/16	KWG1602648	
Acenaphthylene	ND	U	0.020	0.0034	1	04/06/16	04/11/16	KWG1602648	
Acenaphthene	ND	U	0.020	0.0044	1	04/06/16	04/11/16	KWG1602648	
Fluorene	ND	U	0.020	0.0038	1	04/06/16	04/11/16	KWG1602648	
Phenanthrene	ND	U	0.020	0.0050	1	04/06/16	04/11/16	KWG1602648	
Anthracene	ND	U	0.020	0.0036	1	04/06/16	04/11/16	KWG1602648	*
Carbazole	ND	U	0.020	0.0045	1	04/06/16	04/11/16	KWG1602648	
Fluoranthene	ND	U	0.020	0.010	1	04/06/16	04/11/16	KWG1602648	*
Pyrene	ND	U	0.020	0.0053	1	04/06/16	04/11/16	KWG1602648	*
Benz(a)anthracene	ND	U	0.020	0.0026	1	04/06/16	04/11/16	KWG1602648	*
Chrysene	ND	U	0.020	0.0034	1	04/06/16	04/11/16	KWG1602648	*
Benzo(b)fluoranthene†	ND	U	0.020	0.0041	1	04/06/16	04/11/16	KWG1602648	*
Benzo(k)fluoranthene	ND	U	0.020	0.0030	1	04/06/16	04/11/16	KWG1602648	*
Benzo(a)pyrene	ND	U	0.020	0.0043	1	04/06/16	04/11/16	KWG1602648	*
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0026	1	04/06/16	04/11/16	KWG1602648	*
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	04/06/16	04/11/16	KWG1602648	*
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	04/06/16	04/11/16	KWG1602648	*

^{*} See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	93	42-131	04/11/16	Acceptable
Fluoranthene-d10	95	42-133	04/11/16	Acceptable
Terphenyl-d14	89	32-129	04/11/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene

This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Printed: 06/01/2016 Form 1A - Organic Page 1 of 12:42:59 $u: \label{lem:limit} w: \label{lem:limit} u: \label{lem:limit} We w. rpt$ Merged RR188834 Page 23 of 28

SuperSet Reference:

Analytical Results

Client: Tetra Tech EM, Incorporated

CenturyLink Longview WA/103P3080177 **Project:**

Sample Matrix: Water Service Request: K1603183 **Date Collected:** 03/31/2016 **Date Received:** 03/31/2016

Units: ug/L

Basis: NA

Level: Low

Polynuclear Aromatic Hydrocarbons

Sample Name: MW4-BB Lab Code: K1603183-004 **Extraction Method:**

Analysis Method:

8270D SIM

EPA 3520C

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND U	0.020	0.0038	1	04/06/16	04/11/16	KWG1602648	
2-Methylnaphthalene	ND U	0.020	0.0023	1	04/06/16	04/11/16	KWG1602648	
1-Methylnaphthalene	ND U	0.020	0.0035	1	04/06/16	04/11/16	KWG1602648	
Acenaphthylene	ND U	0.020	0.0034	1	04/06/16	04/11/16	KWG1602648	
Acenaphthene	ND U	0.020	0.0044	1	04/06/16	04/11/16	KWG1602648	
Fluorene	ND U	0.020	0.0038	1	04/06/16	04/11/16	KWG1602648	
Phenanthrene	ND U	0.020	0.0050	1	04/06/16	04/11/16	KWG1602648	
Anthracene	ND U	0.020	0.0036	1	04/06/16	04/11/16	KWG1602648	*
Carbazole	ND U	0.020	0.0045	1	04/06/16	04/11/16	KWG1602648	
Fluoranthene	ND U	0.020	0.010	1	04/06/16	04/11/16	KWG1602648	*
Pyrene	0.0098 J	0.020	0.0053	1	04/06/16	04/11/16	KWG1602648	*
Benz(a)anthracene	ND U	0.020	0.0026	1	04/06/16	04/11/16	KWG1602648	*
Chrysene	ND U	0.020	0.0034	1	04/06/16	04/11/16	KWG1602648	*
Benzo(b)fluoranthene†	ND U	0.020	0.0041	1	04/06/16	04/11/16	KWG1602648	*
Benzo(k)fluoranthene	ND U	0.020	0.0030	1	04/06/16	04/11/16	KWG1602648	*
Benzo(a)pyrene	ND U	0.020	0.0043	1	04/06/16	04/11/16	KWG1602648	*
Indeno(1,2,3-cd)pyrene	ND U	0.020	0.0026	1	04/06/16	04/11/16	KWG1602648	*
Dibenz(a,h)anthracene	ND U	0.020	0.0025	1	04/06/16	04/11/16	KWG1602648	*
Benzo(g,h,i)perylene	ND U	0.020	0.0029	1	04/06/16	04/11/16	KWG1602648	*

^{*} See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	94	42-131	04/11/16	Acceptable
Fluoranthene-d10	105	42-133	04/11/16	Acceptable
Terphenyl-d14	97	32-129	04/11/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene

This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

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Analytical Results

Client: Tetra Tech EM, Incorporated

Project: CenturyLink Longview WA/103P3080177

Sample Matrix: Water Service Request: K1603183 **Date Collected:** 03/31/2016 **Date Received:** 03/31/2016

Polynuclear Aromatic Hydrocarbons

Sample Name:

MW-1

Lab Code: K1603183-005

Extraction Method: Analysis Method:

EPA 3520C 8270D SIM

Units: ug/L Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.020	0.0038	1	04/06/16	04/11/16	KWG1602648	
2-Methylnaphthalene	ND	U	0.020	0.0023	1	04/06/16	04/11/16	KWG1602648	
1-Methylnaphthalene	ND	U	0.020	0.0035	1	04/06/16	04/11/16	KWG1602648	
Acenaphthylene	ND	U	0.020	0.0034	1	04/06/16	04/11/16	KWG1602648	
Acenaphthene	ND	U	0.020	0.0044	1	04/06/16	04/11/16	KWG1602648	
Fluorene	ND	U	0.020	0.0038	1	04/06/16	04/11/16	KWG1602648	
Phenanthrene	ND	U	0.020	0.0050	1	04/06/16	04/11/16	KWG1602648	
Anthracene	ND	U	0.020	0.0036	1	04/06/16	04/11/16	KWG1602648	*
Carbazole	ND	U	0.020	0.0045	1	04/06/16	04/11/16	KWG1602648	
Fluoranthene	ND	U	0.020	0.010	1	04/06/16	04/11/16	KWG1602648	*
Pyrene	ND	U	0.020	0.0053	1	04/06/16	04/11/16	KWG1602648	*
Benz(a)anthracene	0.0035	J	0.020	0.0026	1	04/06/16	04/11/16	KWG1602648	*
Chrysene	ND	U	0.020	0.0034	1	04/06/16	04/11/16	KWG1602648	*
Benzo(b)fluoranthene†	ND	U	0.020	0.0041	1	04/06/16	04/11/16	KWG1602648	*
Benzo(k)fluoranthene	ND	U	0.020	0.0030	1	04/06/16	04/11/16	KWG1602648	*
Benzo(a)pyrene	ND	U	0.020	0.0043	1	04/06/16	04/11/16	KWG1602648	*
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0026	1	04/06/16	04/11/16	KWG1602648	*
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	04/06/16	04/11/16	KWG1602648	*
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	04/06/16	04/11/16	KWG1602648	*

^{*} See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	92	42-131	04/11/16	Acceptable
Fluoranthene-d10	107	42-133	04/11/16	Acceptable
Terphenyl-d14	98	32-129	04/11/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene

This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

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Analytical Results

Client: Tetra Tech EM, Incorporated

Project: CenturyLink Longview WA/103P3080177

Sample Matrix: Water

Service Request: K1603183

Date Collected: NA

Date Received: NA

Polynuclear Aromatic Hydrocarbons

Sample Name:Method BlankLab Code:KWG1602648-3

Extraction Method: Analysis Method:

EPA 3520C 8270D SIM Units: ug/L Basis: NA

Level: Low

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND U	0.020	0.0038	1	04/06/16	04/11/16	KWG1602648	
2-Methylnaphthalene	ND U	0.020	0.0023	1	04/06/16	04/11/16	KWG1602648	
1-Methylnaphthalene	ND U	0.020	0.0035	1	04/06/16	04/11/16	KWG1602648	
Acenaphthylene	ND U	0.020	0.0034	1	04/06/16	04/11/16	KWG1602648	
Acenaphthene	ND U	0.020	0.0044	1	04/06/16	04/11/16	KWG1602648	
Fluorene	ND U	0.020	0.0038	1	04/06/16	04/11/16	KWG1602648	
Phenanthrene	ND U	0.020	0.0050	1	04/06/16	04/11/16	KWG1602648	
Anthracene	ND U	0.020	0.0036	1	04/06/16	04/11/16	KWG1602648	*
Carbazole	ND U	0.020	0.0045	1	04/06/16	04/11/16	KWG1602648	
Fluoranthene	ND U	0.020	0.010	1	04/06/16	04/11/16	KWG1602648	*
Pyrene	ND U	0.020	0.0053	1	04/06/16	04/11/16	KWG1602648	*
Benz(a)anthracene	ND U	0.020	0.0026	1	04/06/16	04/11/16	KWG1602648	*
Chrysene	ND U	0.020	0.0034	1	04/06/16	04/11/16	KWG1602648	*
Benzo(b)fluoranthene†	ND U	0.020	0.0041	1	04/06/16	04/11/16	KWG1602648	*
Benzo(k)fluoranthene	ND U	0.020	0.0030	1	04/06/16	04/11/16	KWG1602648	*
Benzo(a)pyrene	ND U	0.020	0.0043	1	04/06/16	04/11/16	KWG1602648	*
Indeno(1,2,3-cd)pyrene	ND U	0.020	0.0026	1	04/06/16	04/11/16	KWG1602648	*
Dibenz(a,h)anthracene	ND U	0.020	0.0025	1	04/06/16	04/11/16	KWG1602648	*
Benzo(g,h,i)perylene	ND U	0.020	0.0029	1	04/06/16	04/11/16	KWG1602648	*

^{*} See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	96	42-131	04/11/16	Acceptable
Fluoranthene-d10	104	42-133	04/11/16	Acceptable
Terphenyl-d14	94	32-129	04/11/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene

This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

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SuperSet Reference:

QA/QC Report

Client: Tetra Tech EM, Incorporated

Project: CenturyLink Longview WA/103P3080177

Sample Matrix: Water

Surrogate Recovery Summary Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3520C
Analysis Method: 8270D SIM

Units: Percent Level: Low

Service Request: K1603183

Sample Name	<u>Lab Code</u>	Sur1	Sur2	Sur3
MW5	K1603183-001	89	104	97
MW4	K1603183-002	93	108	100
MW4-BT	K1603183-003	93	95	89
MW4-BB	K1603183-004	94	105	97
MW-1	K1603183-005	92	107	98
Method Blank	KWG1602648-3	96	104	94
Lab Control Sample	KWG1602648-1	105	116	101
Duplicate Lab Control Sample	KWG1602648-2	101	97	76

Surrogate Recovery Control Limits (%)

Sur1	=	Fluorene-d10	42-131
Sur2	=	Fluoranthene-d10	42-133
Sur3	=	Terphenyl-d14	32-129

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

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QA/QC Report

Client: Tetra Tech EM, Incorporated

Project: CenturyLink Longview WA/103P3080177

Sample Matrix: Water

Service Request: K1603183 **Date Extracted:** 04/06/2016 **Date Analyzed:** 04/12/2016

Lab Control Spike/Duplicate Lab Control Spike Summary Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3520C **Analysis Method:** 8270D SIM

Units: ug/L Basis: NA

Level: Low **Extraction Lot:** KWG1602648

Lab Control Sample KWG1602648-1 Lab Control Spike Duplicate Lab Control Sample KWG1602648-2 Duplicate Lab Control Spike

						I			
Analyte Name	Result	Spike Amount	%Rec	Result	Spike Amount	%Rec	%Rec Limits	RPD	RPD Limit
Naphthalene	2.04	2.50	82	2.09	2.50	84	52-115	2	30
2-Methylnaphthalene	1.83	2.50	73	1.81	2.50	72	48-120	1	30
1-Methylnaphthalene	1.86	2.50	74	1.84	2.50	73	47-119	1	30
Acenaphthylene	1.92	2.50	77	1.91	2.50	76	58-124	1	30
Acenaphthene	1.88	2.50	75	1.82	2.50	73	63-121	3	30
Fluorene	1.88	2.50	75	1.80	2.50	72	68-121	4	30
Phenanthrene	1.82	2.50	73	1.68	2.50	67	64-126	8	30
Anthracene	1.71	2.50	68	1.59	2.50	63 *	68-127	7	30
Carbazole	2.10	2.50	84	2.02	2.50	81	68-135	4	30
Fluoranthene	1.91	2.50	76	1.69	2.50	68 *	70-127	12	30
Pyrene	1.61	2.50	64 *	1.43	2.50	57 *	72-127	12	30
Benz(a)anthracene	1.61	2.50	64 *	1.39	2.50	56 *	74-124	15	30
Chrysene	1.82	2.50	73 *	1.58	2.50	63 *	74-132	14	30
Benzo(b)fluoranthene	1.73	2.50	69 *	1.48	2.50	59 *	73-136	16	30
Benzo(k)fluoranthene	1.87	2.50	75	1.58	2.50	63 *	74-134	17	30
Benzo(a)pyrene	1.64	2.50	66 *	1.40	2.50	56 *	75-131	16	30
Indeno(1,2,3-cd)pyrene	1.61	2.50	64	1.34	2.50	54 *	63-136	18	30
Dibenz(a,h)anthracene	1.56	2.50	62	1.35	2.50	54 *	59-135	15	30
Benzo(g,h,i)perylene	1.62	2.50	65	1.39	2.50	56 *	63-127	15	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



June 02, 2016

Rob Tisdale Tetra Tech EM, Incorporated 216 16th St. Suite 1500

Denver, CO 80202

RE: CenturyLink Longview WA / 103P3080177

Dear Rob,

Enclosed is the revised report for the sample(s) submitted to our laboratory April 01, 2016 For your reference, these analyses have been assigned our service request number K1603215.

ALS Environmental ALS Group USA, Corp 1317 South 13th Avenue

Kelso. WA 98626 T:+1 360 577 7222 F:+1 360 636 1068 www.alsglobal.com

Revised Service Request No: K1603215.01

Analytical Report for Service Request No: K1603215

The PAH reporting list has been corrected.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

We apologize for any inconvenience this may have created.

Please contact me if you have any questions. My extension is 3376. You may also contact me via email at gregory.salata@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Gregory Salata, Ph.D. Senior Project

Manager



ALS Environmental ALS Group USA, Corp 1317 South 13th Avenue Kelso, WA 98626

T: +1 360 577 7222 F: +1 360 636 1068 www.alsglobal.com

Table of Contents

Acronyms

Qualifiers

State Certifications, Accreditations, And Licenses

Case Narrative

Chain of Custody

Diesel and Residual Range Organics

Polynuclear Aromatic Hydrocarbons

Acronyms

ASTM American Society for Testing and Materials

A2LA American Association for Laboratory Accreditation

CARB California Air Resources Board

CAS Number Chemical Abstract Service registry Number

CFC Chlorofluorocarbon
CFU Colony-Forming Unit

DEC Department of Environmental Conservation

DEQ Department of Environmental Quality

DHS Department of Health Services

DOE Department of Ecology
DOH Department of Health

EPA U. S. Environmental Protection Agency

ELAP Environmental Laboratory Accreditation Program

GC Gas Chromatography

GC/MS Gas Chromatography/Mass Spectrometry

LOD Limit of Detection
LOQ Limit of Quantitation

LUFT Leaking Underground Fuel Tank

M Modified

MCL Maximum Contaminant Level is the highest permissible concentration of a substance

allowed in drinking water as established by the USEPA.

MDL Method Detection Limit
MPN Most Probable Number
MRL Method Reporting Limit

NA Not Applicable
NC Not Calculated

NCASI National Council of the Paper Industry for Air and Stream Improvement

ND Not Detected

NIOSH National Institute for Occupational Safety and Health

PQL Practical Quantitation Limit

RCRA Resource Conservation and Recovery Act

SIM Selected Ion Monitoring

TPH Total Petroleum Hydrocarbons

tr Trace level is the concentration of an analyte that is less than the PQL but greater than or

equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
 DOD-QSM 4.2 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. DOD-QSM 4.2 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
 DOD-QSM 4.2 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L14-51
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	Not available	_
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	03016
Maine DHS	Not available	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.alsglobal.com_	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.



Case Narrative

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360)577-7222 Fax (360)636-1068 www.alsglobal.com

ALS ENVIRONMENTAL

Client: Tetra Tech EM, Incorporated Service Request No.: K1603215

Project: CenturyLink Longview WA/ 103P3080177 Date Received: 04/01/16

Sample Matrix: Water

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Laboratory Control Sample (LCS), and Laboratory/Duplicate Laboratory Control Sample (LCS/DLCS).

Sample Receipt

Three water samples were received for analysis at ALS Environmental on 04/01/16. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Diesel Range Organics by Method NWTPH-Dx

Sample Notes and Discussion:

Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD). A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

No other anomalies associated with the analysis of these samples were observed.

Polynuclear Aromatic Hydrocarbons by EPA Method 8270

Lab Control Sample Exceptions:

The lower control criterion was exceeded by 1-19% for several compounds in replicate Laboratory Control Samples (LCS/DLCS) KWG1602648-1 and KWG1602648-52. The analytes in question were not detected in the associated field samples. The error associated with reduced recovery equates to a potential low bias. The results were flagged to indicate the issue. No further corrective action was taken.

No other anomalies associated with the analysis of these samples were observed.

Approved by_____



Chain of Custody

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360)577-7222 Fax (360)636-1068 www.alsglobal.com

Chain of Custody



ADDRESS 1317 South 13th Ave., Kelso, WA 98626 PHONE 1 360 577 7222 FAX 1 360 636 1068 Columbia Analytical Services, Inc.

Part of the ALS Group A Campbell Brothers Limited Company

Work Order No.:

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Project Manager:	David Be	- XIII						Bill	to:	41,000	Vanessa Pineda												
Client Name:	Tetra Ted	ch									Con	ıpan	y:		Tetra Tech								
Address:	216 16th	Street			-						21	216 16th Street Suite 1500											
City, State ZIP:	Denver, (CO 80202							·		City	State ZIP: Denver, CO 80202											
Email:	David.Be	restka@te	tratech.com		Phone:	30	3-31.	2-88	56		Ema	il:	Property.	va	nessa	.pined	a@tetr	atech	.com	Pho	ne 30	3-312-8	
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Sample Identifi	cation	Matrix	Date Sampled	Time Sampled	Lab ID	No. of Containers	NWTPHDx diesel and motor oil (no silica del cleanun)	AH 625 SIM (FI															Due Date: Comments
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5. We 6. Did 7. We 8. Did 9. We 10. W	Packing material: Inserts Baggies Bubble Wrap Gel Packs Wet Ice Dry Ice Sleeves Were custody papers properly filled out (ink, signed, etc.)? Did all bottles arrive in good condition (unbroken)? Indicate in the table below. Were all sample labels complete (i.e analysis, preservation, etc.)? Did all sample labels and tags agree with custody papers? Indicate major discrepancies in the table on page 2. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? Indicate in the table below NA Y N Were VOA vials received without headspace? Indicate in the table below. NA Y N Sample ID on Bottle Sample ID on COC Identified by:															
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Diesel and Residual Range Organics

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360)577-7222 Fax (360)636-1068 www.alsglobal.com

Analytical Results

Client: Tetra Tech EM, Incorporated

Service Request: K1603215 CenturyLink Longview WA/103P3080177 **Date Collected:** 04/01/2016 **Project: Sample Matrix:** Water **Date Received:** 04/01/2016

Diesel and Residual Range Organics

Sample Name: DUP-040116 Units: ug/L Lab Code: K1603215-001 Basis: NA **Extraction Method:** METHOD Level: Low

Analysis Method: NWTPH-Dx

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Diesel Range Organics (DRO)	1200 Y	260	12	1	04/06/16	04/11/16	KWG1602647	
Residual Range Organics (RRO)	280 J	510	20	1	04/06/16	04/11/16	KWG1602647	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	67	50-150	04/11/16	Acceptable
n-Triacontane	65	50-150	04/11/16	Acceptable

Comments:

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Analytical Results

Client: Tetra Tech EM, Incorporated

Service Request: K1603215 CenturyLink Longview WA/103P3080177 **Date Collected:** 04/01/2016 **Project: Date Received:** 04/01/2016 **Sample Matrix:** Water

Diesel and Residual Range Organics

Sample Name: MW-2 Units: ug/L Lab Code: K1603215-002 Basis: NA **Extraction Method:** METHOD Level: Low

Analysis Method: NWTPH-Dx

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Diesel Range Organics (DRO)	1500 Y	260	12	1	04/06/16	04/11/16	KWG1602647	
Residual Range Organics (RRO)	340 J	510	20	1	04/06/16	04/11/16	KWG1602647	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	61	50-150	04/11/16	Acceptable
n-Triacontane	59	50-150	04/11/16	Acceptable

Comments:

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RR187442

Analytical Results

Client: Tetra Tech EM, Incorporated

Service Request: K1603215 CenturyLink Longview WA/103P3080177 **Date Collected:** 04/01/2016 **Project: Date Received:** 04/01/2016 **Sample Matrix:** Water

Diesel and Residual Range Organics

Sample Name: MW-3 Units: ug/L Lab Code: K1603215-003 Basis: NA **Extraction Method:** METHOD Level: Low

Analysis Method: NWTPH-Dx

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Diesel Range Organics (DRO)	58 J	260	12	1	04/06/16	04/11/16	KWG1602647	
Residual Range Organics (RRO)	110 J	510	20	1	04/06/16	04/11/16	KWG1602647	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	94	50-150	04/11/16	Acceptable
n-Triacontane	90	50-150	04/11/16	Acceptable

Comments:

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Analytical Results

Service Request: K1603215

Client: Tetra Tech EM, Incorporated

CenturyLink Longview WA/103P3080177 Date Collected: NA **Project:**

Sample Matrix: Water Date Received: NA

Diesel and Residual Range Organics

Sample Name: Method Blank Units: ug/L KWG1602647-3 Lab Code: Basis: NA **Extraction Method:** METHOD Level: Low

Analysis Method: NWTPH-Dx

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	21 J	250	11	1	04/06/16	04/11/16	KWG1602647	
Residual Range Organics (RRO)	55 J	500	19	1	04/06/16	04/11/16	KWG1602647	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	94	50-150	04/11/16	Acceptable
n-Triacontane	91	50-150	04/11/16	Acceptable

Comments:

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QA/QC Report

Client: Tetra Tech EM, Incorporated

CenturyLink Longview WA/103P3080177 **Project:**

Sample Matrix: Water

> **Surrogate Recovery Summary Diesel and Residual Range Organics**

Units: Percent **Extraction Method: METHOD Analysis Method:** NWTPH-Dx Level: Low

Sample Name	Lab Code	Sur1	Sur2
DUP-040116	K1603215-001	67	65
MW-2	K1603215-002	61	59
MW-3	K1603215-003	94	90
Method Blank	KWG1602647-3	94	91
Lab Control Sample	KWG1602647-1	97	91
Duplicate Lab Control Sample	KWG1602647-2	99	93

Surrogate Recovery Control Limits (%)

Sur1 = o-Terphenyl 50-150 Sur2 = n-Triacontane 50-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

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Page RR187442

1 of 1

Service Request: K1603215

QA/QC Report

Client: Tetra Tech EM, Incorporated

Project: CenturyLink Longview WA/103P3080177

Sample Matrix: Water Service Request: K1603215 **Date Extracted:** 04/06/2016

Date Analyzed: 04/11/2016

Lab Control Spike/Duplicate Lab Control Spike Summary **Diesel and Residual Range Organics**

Extraction Method: METHOD Analysis Method:

NWTPH-Dx

Units: ug/L

Basis: NA Level: Low

Extraction Lot: KWG1602647

Lab Control Sample KWG1602647-1 Lab Control Spike

Duplicate Lab Control Sample KWG1602647-2

Duplicate Lab Control Spike

Analyte Name	Result	Spike Amount	%Rec	Result	Spike Amount	%Rec	%Rec Limits	RPD	RPD Limit
Diesel Range Organics (DRO)	2920	3200	91	3030	3200	95	46-140	4	30
Residual Range Organics (RRO)	1380	1600	86	1420	1600	89	45-159	3	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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Polynuclear Aromatic Hydrocarbons

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360)577-7222 Fax (360)636-1068 www.alsglobal.com

REVISED1:30 pm, Jun 02, 2016

Analytical Results

Client: Tetra Tech EM, Incorporated

Project: CenturyLink Longview WA/103P3080177

Sample Matrix: Water

Service Request: K1603215

Date Collected: 04/01/2016

Date Received: 04/01/2016

Polynuclear Aromatic Hydrocarbons

Sample Name: DUP-040116 Lab Code: K1603215-001 Extraction Method: EPA 3520C

Analysis Method: 8270D SIM

Units: ug/L Basis: NA

Level: Low

Analyte Name	Result	0	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
-		Ų			1			KWG1602648	Note
Naphthalene	0.032		0.020	0.0038	1	04/06/16	04/11/16		
2-Methylnaphthalene	ND	U	0.020	0.0023	1	04/06/16	04/11/16	KWG1602648	
1-Methylnaphthalene	ND	U	0.020	0.0035	1	04/06/16	04/11/16	KWG1602648	
Acenaphthylene	ND	U	0.020	0.0034	1	04/06/16	04/11/16	KWG1602648	
Acenaphthene	ND	U	0.020	0.0044	1	04/06/16	04/11/16	KWG1602648	
Fluorene	ND	U	0.020	0.0038	1	04/06/16	04/11/16	KWG1602648	
Phenanthrene	ND	U	0.020	0.0050	1	04/06/16	04/11/16	KWG1602648	
Anthracene	ND	U	0.020	0.0036	1	04/06/16	04/11/16	KWG1602648	*
Carbazole	ND	U	0.020	0.0045	1	04/06/16	04/11/16	KWG1602648	
Fluoranthene	ND	U	0.020	0.010	1	04/06/16	04/11/16	KWG1602648	*
Pyrene	ND	U	0.020	0.0053	1	04/06/16	04/11/16	KWG1602648	*
Benz(a)anthracene	ND	U	0.020	0.0026	1	04/06/16	04/11/16	KWG1602648	*
Chrysene	ND	U	0.020	0.0034	1	04/06/16	04/11/16	KWG1602648	*
Benzo(b)fluoranthene†	ND	U	0.020	0.0041	1	04/06/16	04/11/16	KWG1602648	*
Benzo(k)fluoranthene	ND	U	0.020	0.0030	1	04/06/16	04/11/16	KWG1602648	*
Benzo(a)pyrene	ND	U	0.020	0.0043	1	04/06/16	04/11/16	KWG1602648	*
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0026	1	04/06/16	04/11/16	KWG1602648	*
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	04/06/16	04/11/16	KWG1602648	*
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	04/06/16	04/11/16	KWG1602648	*

^{*} See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	91	42-131	04/11/16	Acceptable
Fluoranthene-d10	101	42-133	04/11/16	Acceptable
Terphenyl-d14	93	32-129	04/11/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene

This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

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 1 of

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Analytical Results

Client: Tetra Tech EM, Incorporated

CenturyLink Longview WA/103P3080177 **Project:**

Sample Matrix: Water Service Request: K1603215 **Date Collected:** 04/01/2016 **Date Received:** 04/01/2016

Units: ug/L

Basis: NA

Level: Low

Polynuclear Aromatic Hydrocarbons

Sample Name:

MW-2

Lab Code:

K1603215-002

Extraction Method:

EPA 3520C

Analysis Method:

8270D SIM

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	0.029	0.020	0.0038	1	04/06/16	04/11/16	KWG1602648	
2-Methylnaphthalene	ND U	0.020	0.0023	1	04/06/16	04/11/16	KWG1602648	
1-Methylnaphthalene	ND U	0.020	0.0035	1	04/06/16	04/11/16	KWG1602648	
Acenaphthylene	ND U	0.020	0.0034	1	04/06/16	04/11/16	KWG1602648	
Acenaphthene	ND U	0.020	0.0044	1	04/06/16	04/11/16	KWG1602648	
Fluorene	ND U	0.020	0.0038	1	04/06/16	04/11/16	KWG1602648	
Phenanthrene	ND U	0.020	0.0050	1	04/06/16	04/11/16	KWG1602648	
Anthracene	ND U	0.020	0.0036	1	04/06/16	04/11/16	KWG1602648	*
Carbazole	ND U	0.020	0.0045	1	04/06/16	04/11/16	KWG1602648	
Fluoranthene	ND U	0.020	0.010	1	04/06/16	04/11/16	KWG1602648	*
Pyrene	ND U	0.020	0.0053	1	04/06/16	04/11/16	KWG1602648	*
Benz(a)anthracene	ND U	0.020	0.0026	1	04/06/16	04/11/16	KWG1602648	*
Chrysene	ND U	0.020	0.0034	1	04/06/16	04/11/16	KWG1602648	*
Benzo(b)fluoranthene†	ND U	0.020	0.0041	1	04/06/16	04/11/16	KWG1602648	*
Benzo(k)fluoranthene	ND U	0.020	0.0030	1	04/06/16	04/11/16	KWG1602648	*
Benzo(a)pyrene	ND U	0.020	0.0043	1	04/06/16	04/11/16	KWG1602648	*
Indeno(1,2,3-cd)pyrene	ND U	0.020	0.0026	1	04/06/16	04/11/16	KWG1602648	*
Dibenz(a,h)anthracene	ND U	0.020	0.0025	1	04/06/16	04/11/16	KWG1602648	*
Benzo(g,h,i)perylene	ND U	0.020	0.0029	1	04/06/16	04/11/16	KWG1602648	*

^{*} See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	89	42-131	04/11/16	Acceptable
Fluoranthene-d10	104	42-133	04/11/16	Acceptable
Terphenyl-d14	95	32-129	04/11/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene

This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

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Analytical Results

Client: Tetra Tech EM, Incorporated

CenturyLink Longview WA/103P3080177 **Project:**

Sample Matrix: Water Service Request: K1603215 **Date Collected:** 04/01/2016 **Date Received:** 04/01/2016

Polynuclear Aromatic Hydrocarbons

Sample Name:

MW-3

Lab Code:

K1603215-003

Extraction Method:

EPA 3520C

Units: ug/L Basis: NA

Level: Low

Barraction returned.	211100200
Analysis Method:	8270D SIM

					Dilution	Date	Date	Extraction	
Analyte Name	Result	Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Naphthalene	ND	U	0.020	0.0038	1	04/06/16	04/11/16	KWG1602648	
2-Methylnaphthalene	ND	U	0.020	0.0023	1	04/06/16	04/11/16	KWG1602648	
1-Methylnaphthalene	ND	U	0.020	0.0035	1	04/06/16	04/11/16	KWG1602648	
Acenaphthylene	ND	U	0.020	0.0034	1	04/06/16	04/11/16	KWG1602648	
Acenaphthene	ND	U	0.020	0.0044	1	04/06/16	04/11/16	KWG1602648	
Fluorene	ND	U	0.020	0.0038	1	04/06/16	04/11/16	KWG1602648	
Phenanthrene	ND	U	0.020	0.0050	1	04/06/16	04/11/16	KWG1602648	
Anthracene	ND	U	0.020	0.0036	1	04/06/16	04/11/16	KWG1602648	*
Carbazole	ND	U	0.020	0.0045	1	04/06/16	04/11/16	KWG1602648	
Fluoranthene	ND	U	0.020	0.010	1	04/06/16	04/11/16	KWG1602648	*
Pyrene	ND	U	0.020	0.0053	1	04/06/16	04/11/16	KWG1602648	*
Benz(a)anthracene	ND	U	0.020	0.0026	1	04/06/16	04/11/16	KWG1602648	*
Chrysene	ND	U	0.020	0.0034	1	04/06/16	04/11/16	KWG1602648	*
Benzo(b)fluoranthene†	ND	U	0.020	0.0041	1	04/06/16	04/11/16	KWG1602648	*
Benzo(k)fluoranthene	ND	U	0.020	0.0030	1	04/06/16	04/11/16	KWG1602648	*
Benzo(a)pyrene	ND	U	0.020	0.0043	1	04/06/16	04/11/16	KWG1602648	*
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0026	1	04/06/16	04/11/16	KWG1602648	*
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	04/06/16	04/11/16	KWG1602648	*
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	04/06/16	04/11/16	KWG1602648	*

^{*} See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	97	42-131	04/11/16	Acceptable
Fluoranthene-d10	110	42-133	04/11/16	Acceptable
Terphenyl-d14	101	32-129	04/11/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene

This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

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Analytical Results

Client: Tetra Tech EM, Incorporated

Project: CenturyLink Longview WA/103P3080177

Sample Matrix: Water Service Request: K1603215 Date Collected: NA Date Received: NA

Polynuclear Aromatic Hydrocarbons

Sample Name: Method Blank Lab Code: KWG1602648-3

Extraction Method: Analysis Method:

EPA 3520C 8270D SIM

Units: ug/L Basis: NA

Level: Low

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND U	0.020	0.0038	1	04/06/16	04/11/16	KWG1602648	
2-Methylnaphthalene	ND U	0.020	0.0023	1	04/06/16	04/11/16	KWG1602648	
1-Methylnaphthalene	ND U	0.020	0.0035	1	04/06/16	04/11/16	KWG1602648	
Acenaphthylene	ND U	0.020	0.0034	1	04/06/16	04/11/16	KWG1602648	
Acenaphthene	ND U	0.020	0.0044	1	04/06/16	04/11/16	KWG1602648	
Fluorene	ND U	0.020	0.0038	1	04/06/16	04/11/16	KWG1602648	
Phenanthrene	ND U	0.020	0.0050	1	04/06/16	04/11/16	KWG1602648	
Anthracene	ND U	0.020	0.0036	1	04/06/16	04/11/16	KWG1602648	*
Carbazole	ND U	0.020	0.0045	1	04/06/16	04/11/16	KWG1602648	
Fluoranthene	ND U	0.020	0.010	1	04/06/16	04/11/16	KWG1602648	*
Pyrene	ND U	0.020	0.0053	1	04/06/16	04/11/16	KWG1602648	*
Benz(a)anthracene	ND U	0.020	0.0026	1	04/06/16	04/11/16	KWG1602648	*
Chrysene	ND U	0.020	0.0034	1	04/06/16	04/11/16	KWG1602648	*
Benzo(b)fluoranthene†	ND U	0.020	0.0041	1	04/06/16	04/11/16	KWG1602648	*
Benzo(k)fluoranthene	ND U	0.020	0.0030	1	04/06/16	04/11/16	KWG1602648	*
Benzo(a)pyrene	ND U	0.020	0.0043	1	04/06/16	04/11/16	KWG1602648	*
Indeno(1,2,3-cd)pyrene	ND U	0.020	0.0026	1	04/06/16	04/11/16	KWG1602648	*
Dibenz(a,h)anthracene	ND U	0.020	0.0025	1	04/06/16	04/11/16	KWG1602648	*
Benzo(g,h,i)perylene	ND U	0.020	0.0029	1	04/06/16	04/11/16	KWG1602648	*

^{*} See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	96	42-131	04/11/16	Acceptable
Fluoranthene-d10	104	42-133	04/11/16	Acceptable
Terphenyl-d14	94	32-129	04/11/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene

This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

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SuperSet Reference:

RR188835

QA/QC Report

Service Request: K1603215

Client: Tetra Tech EM, Incorporated

Project: CenturyLink Longview WA/103P3080177

Sample Matrix: Water

Surrogate Recovery Summary Polynuclear Aromatic Hydrocarbons

Extraction Method:EPA 3520CUnits:PercentAnalysis Method:8270D SIMLevel:Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
DUP-040116	K1603215-001	91	101	93
MW-2	K1603215-002	89	104	95
MW-3	K1603215-003	97	110	101
Method Blank	KWG1602648-3	96	104	94
Lab Control Sample	KWG1602648-1	105	116	101
Duplicate Lab Control Sample	KWG1602648-2	101	97	76

Surrogate Recovery Control Limits (%)

 $u:\Stealth\Crystal.rpt\Form2.rpt$

Sur1	=	Fluorene-d10	42-131
Sur2	=	Fluoranthene-d10	42-133
Sur3	=	Terphenyl-d14	32-129

Results flagged with an asterisk (*) indicate values outside control criteria. Results flagged with a pound (#) indicate the control criteria is not applicable.

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SuperSet Reference:

RR188835

QA/QC Report

Client: Tetra Tech EM, Incorporated

Project: CenturyLink Longview WA/103P3080177

Sample Matrix: Water

Service Request: K1603215 **Date Extracted:** 04/06/2016 **Date Analyzed:** 04/12/2016

Lab Control Spike/Duplicate Lab Control Spike Summary Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3520C **Analysis Method:** 8270D SIM

Units: ug/L Basis: NA

Level: Low
Extraction Lot: KWG1602648

Lab Control Sample KWG1602648-1 Lab Control Spike Duplicate Lab Control Sample KWG1602648-2 Duplicate Lab Control Spike

		control spine		- D upneue	e Euro Control	грине				
Analyte Name	Result	%Rec	Result	Spike Amount	%Rec	%Rec Limits	RPD	RPD Limit		
Naphthalene 2.04 2.50		2.50	82	2.09	2.50	84	52-115	2	30	
2-Methylnaphthalene	1.83	2.50	73	1.81	2.50	72	48-120	1	30	
1-Methylnaphthalene	1.86	2.50	74	1.84	2.50	73	47-119	1	30	
Acenaphthylene	1.92	2.50	77	1.91	2.50	76	58-124	1	30	
Acenaphthene	1.88	2.50	75	1.82	2.50	73	63-121	3	30	
Fluorene	1.88	2.50	75	1.80	2.50	72	68-121	4	30	
Phenanthrene	1.82	2.50	73	1.68	2.50	67	64-126	8	30	
Anthracene	1.71	2.50	68	1.59	2.50	63 *	68-127	7	30	
Carbazole	2.10	2.50	84	2.02	2.50	81	68-135	4	30	
Fluoranthene	1.91	2.50	76	1.69	2.50	68 *	70-127	12	30	
Pyrene	1.61	2.50	64 *	1.43	2.50	57 *	72-127	12	30	
Benz(a)anthracene	1.61	2.50	64 *	1.39	2.50	56 *	74-124	15	30	
Chrysene	1.82	2.50	73 *	1.58	2.50	63 *	74-132	14	30	
Benzo(b)fluoranthene	1.73	2.50	69 *	1.48	2.50	59 *	73-136	16	30	
Benzo(k)fluoranthene	1.87	2.50	75	1.58	2.50	63 *	74-134	17	30	
Benzo(a)pyrene	1.64	2.50	66 *	1.40	2.50	56 *	75-131	16	30	
Indeno(1,2,3-cd)pyrene	1.61	2.50	64	1.34	2.50	54 *	63-136	18	30	
Dibenz(a,h)anthracene	1.56	2.50	62	1.35	2.50	54 *	59-135	15	30	
Benzo(g,h,i)perylene	1.62	2.50	65	1.39	2.50	56 *	63-127	15	30	

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ATTACHMENT D
REVISED LABORATORY ANALYTICAL REPORTS AND CHAIN OF CUSTODY RECORDS
DECEMBER 2015 SAMPLING EVENT



January 14, 2016

Dr. Rob Tisdale

Tetra Tech EM, Incorporated 216 16th St, Suite 1500 Denver, CO 80202

ALS Environmental ALS Group USA, Corp 1317 South 13th Avenue Kelso, WA 98626

T:+1 360 577 7222

F:+1 360 636 1068 www.alsglobal.com

Analytical Report for Service Request No: K1514460

RE: CenturyLink Longview WA / 103P3080177

Dear Dr. Tisdale,

Enclosed are the results of the sample(s) submitted to our laboratory December 17, 2015 For your reference, these analyses have been assigned our service request number **K1514460**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3376. You may also contact me via email at gregory.salata@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Gregory Salata, Ph.D. Client Services

Manager



ALS Environmental ALS Group USA, Corp 1317 South 13th Avenue Kelso, WA 98626

T: +1 360 577 7222 F: +1 360 636 1068 www.alsglobal.com

Table of Contents

Acronyms

Qualifiers

State Certifications, Accreditations, And Licenses

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Chain of Custody

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Acronyms

ASTM American Society for Testing and Materials

A2LA American Association for Laboratory Accreditation

CARB California Air Resources Board

CAS Number Chemical Abstract Service registry Number

CFC Chlorofluorocarbon
CFU Colony-Forming Unit

DEC Department of Environmental Conservation

DEQ Department of Environmental Quality

DHS Department of Health Services

DOE Department of Ecology
DOH Department of Health

EPA U. S. Environmental Protection Agency

ELAP Environmental Laboratory Accreditation Program

GC Gas Chromatography

GC/MS Gas Chromatography/Mass Spectrometry

LOD Limit of Detection
LOQ Limit of Quantitation

LUFT Leaking Underground Fuel Tank

M Modified

MCL Maximum Contaminant Level is the highest permissible concentration of a substance

allowed in drinking water as established by the USEPA.

MDL Method Detection Limit
MPN Most Probable Number
MRL Method Reporting Limit

NA Not Applicable
NC Not Calculated

NCASI National Council of the Paper Industry for Air and Stream Improvement

ND Not Detected

NIOSH National Institute for Occupational Safety and Health

PQL Practical Quantitation Limit

RCRA Resource Conservation and Recovery Act

SIM Selected Ion Monitoring

TPH Total Petroleum Hydrocarbons

tr Trace level is the concentration of an analyte that is less than the PQL but greater than or

equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
 DOD-QSM 4.2 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. DOD-QSM 4.2 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
 DOD-QSM 4.2 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- \boldsymbol{Q} $\;\;$ See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso State Certifications, Accreditations, and Licenses

Web Site	Number
http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
http://www.azdhs.gov/lab/license/env.htm	AZ0339
http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L14-51
http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Not available	_
http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
http://www.pjlabs.com/	L14-50
http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	03016
Not available	WA01276
http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156,00.html	9949
http://www.health.state.mn.us/accreditation	053-999-457
http://www.dphhs.mt.gov/publichealth/	CERT0047
http://ndep.nv.gov/bsdw/labservice.htm	WA01276
http://www.nj.gov/dep/oqa/	WA005
http://www.dwqlab.org/	605
http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
http://www.scdhec.gov/environment/envserv/	61002
http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
http://dnr.wi.gov/	998386840
http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
www.alsglobal.com	NA
	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx http://www.azdhs.gov/lab/license/env.htm http://www.adeq.state.ar.us/techsvs/labcert.htm http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx http://www.pjlabs.com/ http://www.pjlabs.com/ http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx Not available http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156,00.html http://www.health.state.mn.us/accreditation http://www.deplhs.mt.gov/publichealth/ http://www.dphhs.mt.gov/publichealth/ http://www.nj.gov/bsdw/labservice.htm http://www.nj.gov/bsdw/labservice.htm http://www.deq.state.ok.us/CSDnew/labcert.htm http://www.deq.state.ok.us/CSDnew/labcert.htm http://www.deq.state.ok.us/CSDnew/labcert.htm http://www.deq.state.ok.us/CSDnew/labcert.htm http://www.scdhec.gov/environment/envserv/ http://www.scdhec.gov/environment/envserv/ http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html http://dnr.wi.gov/ http://www.epa.gov/region8/water/dwhome/wyomingdi.html

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.



Case Narrative

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360)577-7222 Fax (360)636-1068 www.alsglobal.com

ALS ENVIRONMENTAL

Client: Tetra Tech EM, Incorporated Service Request No.: K1514460

Project: CenturyLink Longview WA/ 103P3080177 Date Received: 12/17/15-12/18/15

Sample Matrix: Ground Water

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Laboratory Control Sample (LCS), and Laboratory/Duplicate Laboratory Control Sample (LCS/DLCS).

Sample Receipt

Six ground water samples were received for analysis at ALS Environmental between 12/17/15 and 12/18/15. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Diesel Range Organics by Method NWTPH-Dx

Relative Percent Difference Exceptions:

The Relative Percent Difference (RPD) criterion for the replicate analysis of Diesel Range Organics (DRO) and Residual Range Organics (RRO) in sample Batch QC was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

No other anomalies associated with the analysis of these samples were observed.

Polynuclear Aromatic Hydrocarbons by EPA Method 8270

Holding Time Exceptions:

All field samples were extracted past the recommended holding time due to a laboratory error. The samples were originally extracted within hold time however were not filtered as requested by the client. The re-extraction and reanalysis was performed as soon as possible after the error was discovered by the laboratory. The data was flagged to indicate the holding time violation. Both data sets are included in this report.

No other anomalies associated with the analysis of these samples were observed.

Approved by



Chain of Custody

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360)577-7222 Fax (360)636-1068 www.alsglobal.com

Chain of Custody



ADDRESS 1317 South 13th Ave., Kelso, WA 98626 PHONE 1 360 577 7222 FAX 1 360 636 1068 Columbia Analytical Services, Inc.

Work Order No.:

h1514460

(ALS)	Part of the	ALS Grou	mited Cor	npan	у														i	γ	<u> </u>	45	\mathcal{U})			
Project Manager:	David Ber	estka				Bill to:						Vanessa Pineda															
Client Name:	Tetra Tecl	h										Com	ıpan	y:		Tetr	a Te	ch									
Address:	216 16th 8	Street				Address:							216 16th Street Suite 1500														
City, State ZIP:	Denver, C	O 80202				City, State ZIP:							Denver, CO 80202														
Email:	David.Ber	estka@te	tratech.com		Phone:	303	3-31.									Ph	one	303	-312-8812								
Project Name:	CenturyLir	nk Longvi	ew_WA					REQUESTED ANALYSIS									7	13.3		/ TAT							
Project Number:	103P308	0177					Π	1																		✓ Routine	
P.O. Number:			-		•] .] <u>s</u>		1	}																Same Day ***)
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Cooler Custody Sea	ls:	Yes	No N/A	Total Cont	ainers:] _	둳	-ba																		*** Please call 1	- 1
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Chain of Custody



ADDRESS 1317 South 13th Ave., Kelso, WA 98626 PHONE 1 360 577 7222 FAX 1 360 636 1068 Columbia Analytical Services, Inc.

Work Order No.:

41514460

(ALS)	Part of the	ALS Group	A Campbe	ell Brothers Li	mited Co	npar	ıy										<i>y</i> 1	1/	191	<u> 1 4</u>					
Project Manager:	David Ber	estka									Bi	l to:			Van	essa	Pine	da							
Client Name:	Tetra Tecl	<u> </u>									Co	mpa	ny:		Tet	ra Te	ch								
Address:	216 16th 9	Street									Ac	ldres	s:	***************************************	216 16th Street Suite 1500										
City, State ZIP:	Denver, C	O 80202									Ci	ty, Sta	ate Z	IP:	Denver, CO 80202										
Email:	David.Ber	estka@tet	ratech.com		Phone:	30	3-31	2-88	56		Email: vanessa.p						nessa.pineda@tetratech.com Phone 303-312-8812					312-8812			
Project Name:	CenturyLir	nk Longvie	ew WA									RE	QUE	STEI	D AN	IALYS	SIS						7111		/ TAT
Project Number:	103P3080	0177				\prod			Π																Routine
P.O. Number:]	<u> </u>	1)	Same Day ***
Sampler's Name:	Mike Pava	arini/Van	essa Pineda	1			S	L													-				Next Day ***
	SA	MPLE RE	CEIPT				Ē.	a gel																	3 Day
Temperature (°C):				ink Present			0 0	silic																	6 Day
Received Intact:		Yes N	lo N/A	Wet Ice / I	Blue Ice] .	le E	ē																}	
Cooler Custody Sea	ls:	Yes N	lo N/A	Total Cont	ainers:	_ [巨	ė																	*** Please call for
Sample Custody Sea	als:	Yes N	lo N/A] e	 	<u>#</u>																	availability
Sample Identifi	cation	Matrix	Date Sampled	Time Sampled	Lab ID	of Containers	HDx diese	PAH 625 SIM (filtered-no silica gel cleanup)																	Due Date:
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Dissolved		A	g, Al, As, B, I	Ba, Be, Ca, Co	d, Co, Cr,	Cu,	Fe, K	, Li, N	/lg, Mn	Mo,	Na, Ni	P, Pb	, Sb,	Se, S	i, Sn,	Sr, Ti,	, V, Z	n, Zr				١.	100	Up	on Request
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Cooler Receipt and Preservation Form

PCAReg	-
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Client / Projec	ct: TETEM	Tern				_Serv	ice Re	quest K	15 / 4	1460			<i>U</i>
Received: /	2/11/15 C	pened: /2/	17/15	E	Ву:	_/	1	Unloade	d: /2/	117/15	By:_	1	
2. Samples w	vere received via? vere received in: (circody seals on coolers?		Box		DH Enve	lope		Courie		nd Delivered) ——	NA	
	were custody seals in		•	N N	/ 11	•		=		d dated?		Y	N
	· · · · · · · · · · · · · · · · · · ·		T	rmome	eter	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	er/COC			Tracking N	umber		
Cooler Temp Co	oler Temp Temp Blank	Corrected Corr. Temp Blank Factor	•	1D } \(\ \ \			(NA)				<u> </u>	NA Filed
4.0 4	3 5.6	217 013		Ģ I									
4 Poolsing m	etorial Incents P	aggies Bubble		C + P		IV at I	aa Du		Sleeves				
_	aterial: <i>Inserts B</i> ody papers properly f		- '	<u></u>	ICKS,	met 10	ce Dr	y ice s	steeves		NA		, N
	ttles arrive in good co	,			n the to	able be	low.				NA	Ý.	
	mple labels complete										NA	Ø	
8. Did all sam	ple labels and tags a	gree with custody	papers?	Indice	ate ma	jor dis	crepan	cies in th	e table o	n page 2.	NA	(Y)	N
9. Were appr	opriate bottles/contai	ners and volumes	received	l for th	ne tests	indica	ated?				NA	8	N
10. Were the	pH-preserved bottles	(see SMO GEN SO	P) receiv	ed at	the app	oropria	te pH?	Indicate	in the ta	ble below	(A)	Y	N
11. Were VO	A vials received with	out headspace? In	ıdicate i	n the t	able b	elow.					NA)	Y	N
12. Was C12/	Res negative?							200000000000000000000000000000000000000			NA	<u> </u>	N
San	nple ID on Bottle		Sample	e ID on	COC					Identified by:			

		Bottle Count	Out of I		.	2m	5.4		Volume	Reagent Lo			
34	ample ID	Bottle Type	temp s	pace	Droke:	pН	Rea	igent	added	Number	2223 J.M	itials	Time
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Notes, Discre	epancies, & Resolu	tions:									MW		
													
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Cooler Receipt and Preservation Form

Pallen	
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Page_____of____

Client / Project:	TETRA	4 TEC	11			_Servi	ice Request K	15/4	1460		
Received: 12/18/1	15	Opened:_	12/1.	8/15	By:	1	Unload	ed: 12	/18/15 B	y:	W. Company
. Samples were received. Samples were received. Were <u>custody seals</u>	ved in: (cir on coolers	5?	Fed Ex Cooler NA	UPS Box N	DH. Envei	<i>lope</i> yes, ho	DX Couri Other w many and w	here?		NA	
If present, were cust	tody seals	intact?	(Y) N			ent, were they	signed ar		Y) N
	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermo)	Coole	ricoc id		Tracking Num	ber (NA) File
4. Packing material: 5. Were custody paper 6. Did all bottles arrive 7. Were all sample labels 8. Did all sample labels 9. Were appropriate bottle. 10. Were the pH-preser 11. Were VOA vials re 12. Was C12/Res negat	es properly e in good of els comple s and tags ottles/cont rved bottle eccived witive?	ofilled out condition (ete (i.e anal agree with cainers and es (see SMC	(ink, signed (unbroken)? lysis, preser a custody pa volumes re O GEN SOP) space? Ind	d, etc.)? Indicate vation, et pers? Indicate ceived for received	e in the tac.)? licate mag the tests at the app	ble beloior disc indicatoropriat	ow. repancies in th		n page 2. N able below	IA Y	o N
Sample ID				ut of Head emp spac		рН	Reagent	Volume added	Reagent Lot Number	Initials	Time
Notes, Discrepancies,	V Dagal										
	. & Kesoi	utions:									



Diesel and Residual Range Organics

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360)577-7222 Fax (360)636-1068 www.alsglobal.com

Analytical Results

Client: Tetra Tech EM, Incorporated

Service Request: K1514460 CenturyLink Longview WA/103P3080177 **Date Collected:** 12/17/2015 **Project:**

Ground water **Date Received:** 12/17/2015 **Sample Matrix:**

Diesel and Residual Range Organics

Sample Name: MW-5 Units: ug/L Lab Code: K1514460-001 Basis: NA **Extraction Method:** METHOD Level: Low

Analysis Method: NWTPH-Dx

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Diesel Range Organics (DRO)	120 J	260	12	1	12/22/15	12/29/15	KWG1512424	
Residual Range Organics (RRO)	82 J	520	20	1	12/22/15	12/29/15	KWG1512424	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	86	50-150	12/29/15	Acceptable
n-Triacontane	92	50-150	12/29/15	Acceptable

Comments:

Printed: 12/30/2015 Form 1A - Organic 1 of 1 13:15:19 Page $u: \label{lem:linear_continuous_continuous} u: \label{lem:linear_continuous$ Merged RR185214 SuperSet Reference:

Analytical Results

Client: Tetra Tech EM, Incorporated

CenturyLink Longview WA/103P3080177 **Project:**

Ground water **Sample Matrix:**

Service Request: K1514460 **Date Collected:** 12/17/2015 **Date Received:** 12/17/2015

Diesel and Residual Range Organics

Sample Name: MW-4 Lab Code: K1514460-002

Extraction Method: METHOD **Analysis Method:** NWTPH-Dx Units: ug/L Basis: NA

Level: Low

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Diesel Range Organics (DRO)	96 J	260	12	1	12/22/15	12/29/15	KWG1512424	
Residual Range Organics (RRO)	81 J	520	20	1	12/22/15	12/29/15	KWG1512424	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	86	50-150	12/29/15	Acceptable
n-Triacontane	91	50-150	12/29/15	Acceptable

Comments:

Printed: 12/30/2015 Form 1A - Organic 1 of 1 13:15:23 Page $u: \label{lem:linear_continuous_continuous} u: \label{lem:linear_continuous$ Merged RR185214 Page 15 of 44

Analytical Results

Client: Tetra Tech EM, Incorporated

Service Request: K1514460 **Project:** CenturyLink Longview WA/103P3080177 **Date Collected:** 12/17/2015 **Sample Matrix:** Ground water

Date Received: 12/17/2015

Diesel and Residual Range Organics

MW-3 **Sample Name:** Units: ug/L Lab Code: K1514460-003 Basis: NA

Extraction Method: METHOD Level: Low **Analysis Method:** NWTPH-Dx

Dilution Date Date **Extraction** MRL MDL Factor Extracted **Analyte Name** Result Q Analyzed Lot Note KWG1512424 **46** J 260 12 12/22/15 12/30/15 Diesel Range Organics (DRO) 1 KWG1512424 Residual Range Organics (RRO) **81** J 520 20 1 12/22/15 12/30/15

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	93	50-150	12/30/15	Acceptable
n-Triacontane	99	50-150	12/30/15	Acceptable

Comments:

Form 1A - Organic Printed: 12/30/2015 13:15:27 Page 1 of 1 u:\Stealth\Crystal.rpt\Form1mNew.rpt SuperSet Reference: RR185214 Merged

Analytical Results

Client: Tetra Tech EM, Incorporated

Residual Range Organics (RRO)

n-Triacontane

Service Request: K1514460 **Project:** CenturyLink Longview WA/103P3080177 **Date Collected:** 12/18/2015 **Date Received:** 12/18/2015 **Sample Matrix:** Ground water

Diesel and Residual Range Organics

MW-1 **Sample Name:** Units: ug/L Lab Code: K1514460-004 Basis: NA

Extraction Method: METHOD Level: Low **Analysis Method:** NWTPH-Dx

520

84 J

50-150

95

Dilution Date Date **Extraction** MRL MDL **Factor** Extracted **Analyte Name** Result Q Analyzed Lot Note KWG1512424 **38** J 260 12 12/22/15 12/30/15 Diesel Range Organics (DRO) 1

20

1

Acceptable

12/22/15

12/30/15

KWG1512424

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	92	50-150	12/30/15	Acceptable

12/30/15

Comments:

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Analytical Results

Client: Tetra Tech EM, Incorporated

Service Request: K1514460 CenturyLink Longview WA/103P3080177 **Date Collected:** 12/18/2015 **Project:** Ground water **Date Received:** 12/18/2015 **Sample Matrix:**

Diesel and Residual Range Organics

Sample Name: MW-2 Units: ug/L Lab Code: K1514460-005 Basis: NA **Extraction Method:** METHOD Level: Low

Analysis Method: NWTPH-Dx

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Diesel Range Organics (DRO)	83 J	260	12	1	12/22/15	12/30/15	KWG1512424	
Residual Range Organics (RRO)	160 J	520	20	1	12/22/15	12/30/15	KWG1512424	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	77	50-150	12/30/15	Acceptable
n-Triacontane	82	50-150	12/30/15	Acceptable

Comments:

Analytical Results

Client: Tetra Tech EM, Incorporated

Service Request: K1514460 CenturyLink Longview WA/103P3080177 **Date Collected:** 12/18/2015 **Project:**

Ground water **Date Received:** 12/18/2015 **Sample Matrix:**

Diesel and Residual Range Organics

Sample Name: DUP-121815 Units: ug/L Lab Code: K1514460-006 Basis: NA **Extraction Method:** METHOD Level: Low

Analysis Method: NWTPH-Dx

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Diesel Range Organics (DRO)	38 J	260	12	1	12/22/15	12/30/15	KWG1512424	
Residual Range Organics (RRO)	78 J	520	20	1	12/22/15	12/30/15	KWG1512424	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	88	50-150	12/30/15	Acceptable
n-Triacontane	92	50-150	12/30/15	Acceptable

Comments:

Printed: 12/30/2015 Form 1A - Organic 1 of 1 13:15:39 Page $u: \label{lem:linear_continuous_continuous} u: \label{lem:linear_continuous$ Merged RR185214 SuperSet Reference:

Analytical Results

Client: Tetra Tech EM, Incorporated

CenturyLink Longview WA/103P3080177 **Project:**

Ground water **Sample Matrix:**

Service Request: K1514460

Date Collected: NA Date Received: NA

Diesel and Residual Range Organics

Sample Name: Method Blank Units: ug/L Lab Code: KWG1512424-5 Basis: NA **Extraction Method:** METHOD Level: Low

Analysis Method: NWTPH-Dx

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Diesel Range Organics (DRO)	ND U	240	11	1	12/22/15	12/23/15	KWG1512424	
Residual Range Organics (RRO)	23 J	480	19	1	12/22/15	12/23/15	KWG1512424	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note	
o-Terphenyl	83	50-150	12/23/15	Acceptable	
n-Triacontane	83	50-150	12/23/15	Acceptable	

Comments:

Printed: 12/30/2015 Form 1A - Organic 1 of 1 13:15:43 Page RR185214 SuperSet Reference:

QA/QC Report

Service Request: K1514460

Client: Tetra Tech EM, Incorporated

Project: CenturyLink Longview WA/103P3080177

Sample Matrix: Water

Surrogate Recovery Summary Diesel and Residual Range Organics

Extraction Method:METHODUnits:PercentAnalysis Method:NWTPH-DxLevel:Low

Sample Name	<u>Lab Code</u>	Sur1	Sur2
Batch QC	K1514195-001	83 D	106 D
Batch QC	K1514358-003	83	82
MW-5	K1514460-001	86	92
MW-4	K1514460-002	86	91
MW-3	K1514460-003	93	99
MW-1	K1514460-004	92	95
MW-2	K1514460-005	77	82
DUP-121815	K1514460-006	88	92
Batch QCDUP	KWG1512424-1	86	86
Batch QCDUP	KWG1512424-6	69 D	88 D
Method Blank	KWG1512424-5	83	83
Lab Control Sample	KWG1512424-4	90	91

Surrogate Recovery Control Limits (%)

Sur1 = o-Terphenyl 50-150 Sur2 = n-Triacontane 50-150

Results flagged with an asterisk $(\mbox{\ensuremath{}^{*}})$ indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

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 Form 2A - Organic
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 SuperSet Reference:
 RR185214

QA/QC Report

Client: Tetra Tech EM, Incorporated

Project: CenturyLink Longview WA/103P3080177

Sample Matrix: Ground water

Service Request: K1514460 **Date Extracted:** 12/22/2015

Date Analyzed: 12/23/2015

Duplicate Sample Summary Diesel and Residual Range Organics

Sample Name: Batch QC Lab Code: K1514358-003 Units: ug/L Basis: NA

Extraction Method: METHOD

Level: Low

Analysis Method: NWTPH-Dx

Extraction Lot: KWG1512424

Batch QCDUP

Analyte Name			Sample	KWG15 Duplicate	12424-1	Relative Percent	RPD Limit
	MRL	MDL	Result	Result	Average	Difference	
Diesel Range Organics (DRO)	240	11	21	21	21	2 #	30
Residual Range Organics (RRO)	480	19	36	37	36	3 #	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

 Printed:
 12/30/2015
 13:15:51
 Form 3B - Organic
 Page
 1 of
 1

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 SuperSet Reference:
 RR185214

QA/QC Report

Client: Tetra Tech EM, Incorporated

Project: CenturyLink Longview WA/103P3080177

Sample Matrix: Water

Service Request: K1514460

Date Extracted: 12/22/2015

Date Application 12/22/2015

Date Analyzed: 12/23/2015

Duplicate Sample Summary Diesel and Residual Range Organics

Sample Name: Batch QC Lab Code: K1514195-001 Units: ug/L Basis: NA

Extraction Method: METHOD

Level: Low

Analysis Method: NWTPH-Dx

Extraction Lot: KWG1512424

Batch QCDUP

			Sample	KWG15		Relative Percent	RPD Limit
Analyte Name	MRL	MDL	Result	Result	Average	Difference	
Diesel Range Organics (DRO)	2500	110	1300	1200	1300	8 #	30
Residual Range Organics (RRO)	5000	190	8600	7900	8300	8 #	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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 SuperSet Reference:
 RR185214

QA/QC Report

Client: Tetra Tech EM, Incorporated

Project: CenturyLink Longview WA/103P3080177

Sample Matrix: Ground water

Service Request: K1514460 **Date Extracted:** 12/22/2015

Date Analyzed: 12/23/2015

Lab Control Spike Summary
Diesel and Residual Range Organics

Extraction Method:METHODUnits:ug/LAnalysis Method:NWTPH-DxBasis:NA

Level: Low Extraction Lot: KWG1512424

Lab Control Sample KWG1512424-4 Lab Control Spike

		Spike	_	%Rec
Analyte Name	Result	Amount	%Rec	Limits
Diesel Range Organics (DRO)	1440	1600	90	46-140
Residual Range Organics (RRO)	834	800	104	45-159

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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 SuperSet Reference:
 RR185214



Polynuclear Aromatic Hydrocarbons

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360)577-7222 Fax (360)636-1068 www.alsglobal.com



Analytical Results

Client: Tetra Tech EM, Incorporated

CenturyLink Longview WA/103P3080177 **Project:**

Sample Matrix: Ground water Service Request: K1514460 **Date Collected:** 12/17/2015 **Date Received:** 12/17/2015

Polynuclear Aromatic Hydrocarbons

Sample Name:

MW-5

Lab Code:

K1514460-001

Extraction Method:

EPA 3520C

Units: ug/L Basis: NA

Level: Low

Analysis Method:

8270D SIM

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	0.059	0.019	0.0038	1	12/21/15	12/30/15	KWG1512383	
2-Methylnaphthalene	ND U	0.019	0.0023	1	12/21/15	12/30/15	KWG1512383	
1-Methylnaphthalene	0.013 J	0.019	0.0035	1	12/21/15	12/30/15	KWG1512383	
Acenaphthylene	0.041	0.019	0.0034	1	12/21/15	12/30/15	KWG1512383	
Acenaphthene	5.7	0.019	0.0044	1	12/21/15	12/30/15	KWG1512383	
Fluorene	0.20	0.019	0.0038	1	12/21/15	12/30/15	KWG1512383	
Phenanthrene	0.027	0.019	0.0050	1	12/21/15	12/30/15	KWG1512383	
Anthracene	0.84	0.019	0.0036	1	12/21/15	12/30/15	KWG1512383	
Carbazole	0.019	0.019	0.0045	1	12/21/15	12/30/15	KWG1512383	
Fluoranthene	0.96	0.019	0.010	1	12/21/15	12/30/15	KWG1512383	
Pyrene	0.60	0.019	0.0053	1	12/21/15	12/30/15	KWG1512383	
Benz(a)anthracene	0.0039 J	0.019	0.0026	1	12/21/15	12/30/15	KWG1512383	
Chrysene	ND U	0.019	0.0034	1	12/21/15	12/30/15	KWG1512383	
Benzo(b)fluoranthene†	ND U	0.019	0.0041	1	12/21/15	12/30/15	KWG1512383	
Benzo(k)fluoranthene	ND U	0.019	0.0030	1	12/21/15	12/30/15	KWG1512383	
Benzo(a)pyrene	ND U	0.019	0.0043	1	12/21/15	12/30/15	KWG1512383	
Indeno(1,2,3-cd)pyrene	ND U	0.019	0.0026	1	12/21/15	12/30/15	KWG1512383	
Dibenz(a,h)anthracene	ND U	0.019	0.0025	1	12/21/15	12/30/15	KWG1512383	
Benzo(g,h,i)perylene	ND U	0.019	0.0029	1	12/21/15	12/30/15	KWG1512383	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	85	42-131	12/30/15	Acceptable
Fluoranthene-d10	106	42-133	12/30/15	Acceptable
Terphenyl-d14	103	32-129	12/30/15	Acceptable

† Analyte Comments

Benzo(b)fluoranthene

This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

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Analytical Results

Client: Tetra Tech EM, Incorporated

CenturyLink Longview WA/103P3080177 **Project:**

Sample Matrix: Ground water Service Request: K1514460 **Date Collected:** 12/17/2015 **Date Received:** 12/17/2015

Units: ug/L

Basis: NA

Level: Low

Polynuclear Aromatic Hydrocarbons

Sample Name:

MW-4

Lab Code:

K1514460-002

Extraction Method:

EPA 3520C

Analysis Method:

8270D SIM

-								
				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Naphthalene	0.11	0.019	0.0038	1	12/21/15	12/30/15	KWG1512383	
2-Methylnaphthalene	0.0080 J	0.019	0.0023	1	12/21/15	12/30/15	KWG1512383	
1-Methylnaphthalene	0.15	0.019	0.0035	1	12/21/15	12/30/15	KWG1512383	
Acenaphthylene	0.070	0.019	0.0034	1	12/21/15	12/30/15	KWG1512383	
Acenaphthene	5.7	0.019	0.0044	1	12/21/15	12/30/15	KWG1512383	
Fluorene	1.7	0.019	0.0038	1	12/21/15	12/30/15	KWG1512383	
Phenanthrene	0.41	0.019	0.0050	1	12/21/15	12/30/15	KWG1512383	
Anthracene	0.17	0.019	0.0036	1	12/21/15	12/30/15	KWG1512383	
Carbazole	1.0	0.019	0.0045	1	12/21/15	12/30/15	KWG1512383	
Fluoranthene	0.013 J	0.019	0.010	1	12/21/15	12/30/15	KWG1512383	
Pyrene	0.37	0.019	0.0053	1	12/21/15	12/30/15	KWG1512383	
Benz(a)anthracene	0.0050 J	0.019	0.0026	1	12/21/15	12/30/15	KWG1512383	
Chrysene	ND U	0.019	0.0034	1	12/21/15	12/30/15	KWG1512383	
Benzo(b)fluoranthene†	ND U	0.019	0.0041	1	12/21/15	12/30/15	KWG1512383	
Benzo(k)fluoranthene	ND U	0.019	0.0030	1	12/21/15	12/30/15	KWG1512383	
Benzo(a)pyrene	ND U	0.019	0.0043	1	12/21/15	12/30/15	KWG1512383	
Indeno(1,2,3-cd)pyrene	ND U	0.019	0.0026	1	12/21/15	12/30/15	KWG1512383	
Dibenz(a,h)anthracene	ND U	0.019	0.0025	1	12/21/15	12/30/15	KWG1512383	
Benzo(g,h,i)perylene	ND U	0.019	0.0029	1	12/21/15	12/30/15	KWG1512383	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	92	42-131	12/30/15	Acceptable
Fluoranthene-d10	108	42-133	12/30/15	Acceptable
Terphenyl-d14	108	32-129	12/30/15	Acceptable

† Analyte Comments

Benzo(b)fluoranthene

This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

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Analytical Results

Client: Tetra Tech EM, Incorporated

CenturyLink Longview WA/103P3080177 **Project:**

Sample Matrix: Ground water Service Request: K1514460 **Date Collected:** 12/17/2015 **Date Received:** 12/17/2015

Units: ug/L

Basis: NA

Polynuclear Aromatic Hydrocarbons

Sample Name:

MW-3

Lab Code: K1514460-003

Extraction Method: Analysis Method:

EPA 3520C

8270D SIM

Level: Low

Analyta Nama	Result	0	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Analyte Name					ractor		•		Note
Naphthalene	ND	U	0.019	0.0038	1	12/21/15	12/30/15	KWG1512383	
2-Methylnaphthalene	ND	U	0.019	0.0023	1	12/21/15	12/30/15	KWG1512383	
1-Methylnaphthalene	ND	U	0.019	0.0035	1	12/21/15	12/30/15	KWG1512383	
Acenaphthylene	ND	U	0.019	0.0034	1	12/21/15	12/30/15	KWG1512383	
Acenaphthene	ND	U	0.019	0.0044	1	12/21/15	12/30/15	KWG1512383	
Fluorene	ND	U	0.019	0.0038	1	12/21/15	12/30/15	KWG1512383	
Phenanthrene	ND	U	0.019	0.0050	1	12/21/15	12/30/15	KWG1512383	
Anthracene	ND	U	0.019	0.0036	1	12/21/15	12/30/15	KWG1512383	
Carbazole	ND	U	0.019	0.0045	1	12/21/15	12/30/15	KWG1512383	
Fluoranthene	ND	U	0.019	0.010	1	12/21/15	12/30/15	KWG1512383	
Pyrene	ND	U	0.019	0.0053	1	12/21/15	12/30/15	KWG1512383	
Benz(a)anthracene	ND	U	0.019	0.0026	1	12/21/15	12/30/15	KWG1512383	
Chrysene	ND	U	0.019	0.0034	1	12/21/15	12/30/15	KWG1512383	
Benzo(b)fluoranthene†	ND	U	0.019	0.0041	1	12/21/15	12/30/15	KWG1512383	
Benzo(k)fluoranthene	ND	U	0.019	0.0030	1	12/21/15	12/30/15	KWG1512383	
Benzo(a)pyrene	ND	U	0.019	0.0043	1	12/21/15	12/30/15	KWG1512383	
Indeno(1,2,3-cd)pyrene	ND	U	0.019	0.0026	1	12/21/15	12/30/15	KWG1512383	
Dibenz(a,h)anthracene	ND	U	0.019	0.0025	1	12/21/15	12/30/15	KWG1512383	
Benzo(g,h,i)perylene	ND	U	0.019	0.0029	1	12/21/15	12/30/15	KWG1512383	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	90	42-131	12/30/15	Acceptable
Fluoranthene-d10	102	42-133	12/30/15	Acceptable
Terphenyl-d14	107	32-129	12/30/15	Acceptable

† Analyte Comments

Benzo(b)fluoranthene

This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

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Analytical Results

Client: Tetra Tech EM, Incorporated

CenturyLink Longview WA/103P3080177 **Project:**

Sample Matrix: Ground water Service Request: K1514460 **Date Collected:** 12/18/2015 **Date Received:** 12/18/2015

Polynuclear Aromatic Hydrocarbons

Sample Name:

MW-1

Lab Code: K1514460-004

Extraction Method:

EPA 3520C

Analysis Method:

8270D SIM

Units: ug/L Basis: NA Level: Low

1

Analyte Name	Result	0	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND		0.019	0.0038	1	12/21/15	12/30/15	KWG1512383	
2-Methylnaphthalene	ND		0.019	0.0023	1	12/21/15	12/30/15	KWG1512383	
1-Methylnaphthalene	ND	U	0.019	0.0035	1	12/21/15	12/30/15	KWG1512383	
Acenaphthylene	ND	U	0.019	0.0034	1	12/21/15	12/30/15	KWG1512383	
Acenaphthene	ND	U	0.019	0.0044	1	12/21/15	12/30/15	KWG1512383	
Fluorene	ND	U	0.019	0.0038	1	12/21/15	12/30/15	KWG1512383	
Phenanthrene	ND	U	0.019	0.0050	1	12/21/15	12/30/15	KWG1512383	
Anthracene	ND	U	0.019	0.0036	1	12/21/15	12/30/15	KWG1512383	
Carbazole	ND	U	0.019	0.0045	1	12/21/15	12/30/15	KWG1512383	
Fluoranthene	ND	U	0.019	0.010	1	12/21/15	12/30/15	KWG1512383	
Pyrene	0.0074	J	0.019	0.0053	1	12/21/15	12/30/15	KWG1512383	
Benz(a)anthracene	0.0056	J	0.019	0.0026	1	12/21/15	12/30/15	KWG1512383	
Chrysene	0.0047	J	0.019	0.0034	1	12/21/15	12/30/15	KWG1512383	
Benzo(b)fluoranthene†	0.0071	J	0.019	0.0041	1	12/21/15	12/30/15	KWG1512383	
Benzo(k)fluoranthene	ND	U	0.019	0.0030	1	12/21/15	12/30/15	KWG1512383	
Benzo(a)pyrene	0.0047	J	0.019	0.0043	1	12/21/15	12/30/15	KWG1512383	
Indeno(1,2,3-cd)pyrene	0.0050	J	0.019	0.0026	1	12/21/15	12/30/15	KWG1512383	
Dibenz(a,h)anthracene	ND	U	0.019	0.0025	1	12/21/15	12/30/15	KWG1512383	
Benzo(g,h,i)perylene	0.0043	J	0.019	0.0029	1	12/21/15	12/30/15	KWG1512383	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	87	42-131	12/30/15	Acceptable
Fluoranthene-d10	103	42-133	12/30/15	Acceptable
Terphenyl-d14	106	32-129	12/30/15	Acceptable

† Analyte Comments

Benzo(b)fluoranthene

This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

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Analytical Results

Client: Tetra Tech EM, Incorporated

CenturyLink Longview WA/103P3080177 **Project:**

Sample Matrix: Ground water Service Request: K1514460 **Date Collected:** 12/18/2015 **Date Received:** 12/18/2015

Polynuclear Aromatic Hydrocarbons

Sample Name:

MW-2

Lab Code:

K1514460-005

Extraction Method:

EPA 3520C

Analysis Method:

8270D SIM

Units: ug/L Basis: NA Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	1.7		0.019	0.0038	1	12/21/15	12/30/15	KWG1512383	
2-Methylnaphthalene	ND	U	0.019	0.0023	1	12/21/15	12/30/15	KWG1512383	
1-Methylnaphthalene	0.057		0.019	0.0035	1	12/21/15	12/30/15	KWG1512383	
Acenaphthylene	ND	U	0.019	0.0034	1	12/21/15	12/30/15	KWG1512383	
Acenaphthene	0.053		0.019	0.0044	1	12/21/15	12/30/15	KWG1512383	
Fluorene	ND	U	0.019	0.0038	1	12/21/15	12/30/15	KWG1512383	
Phenanthrene	ND	U	0.019	0.0050	1	12/21/15	12/30/15	KWG1512383	
Anthracene	0.0039	J	0.019	0.0036	1	12/21/15	12/30/15	KWG1512383	
Carbazole	0.017	J	0.019	0.0045	1	12/21/15	12/30/15	KWG1512383	
Fluoranthene	0.012	J	0.019	0.010	1	12/21/15	12/30/15	KWG1512383	
Pyrene	0.046		0.019	0.0053	1	12/21/15	12/30/15	KWG1512383	
Benz(a)anthracene	0.0029	J	0.019	0.0026	1	12/21/15	12/30/15	KWG1512383	
Chrysene	ND	U	0.019	0.0034	1	12/21/15	12/30/15	KWG1512383	
Benzo(b)fluoranthene†	ND	U	0.019	0.0041	1	12/21/15	12/30/15	KWG1512383	
Benzo(k)fluoranthene	ND	U	0.019	0.0030	1	12/21/15	12/30/15	KWG1512383	
Benzo(a)pyrene	ND	U	0.019	0.0043	1	12/21/15	12/30/15	KWG1512383	
Indeno(1,2,3-cd)pyrene	ND	U	0.019	0.0026	1	12/21/15	12/30/15	KWG1512383	
Dibenz(a,h)anthracene	ND	U	0.019	0.0025	1	12/21/15	12/30/15	KWG1512383	
Benzo(g,h,i)perylene	ND	U	0.019	0.0029	1	12/21/15	12/30/15	KWG1512383	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	96	42-131	12/30/15	Acceptable
Fluoranthene-d10	112	42-133	12/30/15	Acceptable
Terphenyl-d14	114	32-129	12/30/15	Acceptable

† Analyte Comments

Benzo(b)fluoranthene

This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

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Analytical Results

Client: Tetra Tech EM, Incorporated

Project: CenturyLink Longview WA/103P3080177

Sample Matrix: Ground water

Service Request: K1514460 Date Collected: 12/18/2015 Date Received: 12/18/2015

Polynuclear Aromatic Hydrocarbons

Sample Name: DUP-121815 Lab Code: K1514460-006 Extraction Method: EPA 3520C

Analysis Method:

EPA 3520C 8270D SIM Units: ug/L Basis: NA

Level: Low

1 of

1

					Dilution	Date	Date	Extraction	
Analyte Name	Result	Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Naphthalene	ND	U	0.019	0.0038	1	12/21/15	12/30/15	KWG1512383	
2-Methylnaphthalene	ND	U	0.019	0.0023	1	12/21/15	12/30/15	KWG1512383	
1-Methylnaphthalene	ND	U	0.019	0.0035	1	12/21/15	12/30/15	KWG1512383	
Acenaphthylene	ND	U	0.019	0.0034	1	12/21/15	12/30/15	KWG1512383	
Acenaphthene	ND	U	0.019	0.0044	1	12/21/15	12/30/15	KWG1512383	
Fluorene	ND	U	0.019	0.0038	1	12/21/15	12/30/15	KWG1512383	
Phenanthrene	ND	U	0.019	0.0050	1	12/21/15	12/30/15	KWG1512383	
Anthracene	ND	U	0.019	0.0036	1	12/21/15	12/30/15	KWG1512383	
Carbazole	ND	U	0.019	0.0045	1	12/21/15	12/30/15	KWG1512383	
Fluoranthene	ND	U	0.019	0.010	1	12/21/15	12/30/15	KWG1512383	
Pyrene	0.0057	J	0.019	0.0053	1	12/21/15	12/30/15	KWG1512383	
Benz(a)anthracene	0.0050	J	0.019	0.0026	1	12/21/15	12/30/15	KWG1512383	
Chrysene	0.0036	J	0.019	0.0034	1	12/21/15	12/30/15	KWG1512383	
Benzo(b)fluoranthene†	0.0053	J	0.019	0.0041	1	12/21/15	12/30/15	KWG1512383	
Benzo(k)fluoranthene	ND	U	0.019	0.0030	1	12/21/15	12/30/15	KWG1512383	
Benzo(a)pyrene	ND	U	0.019	0.0043	1	12/21/15	12/30/15	KWG1512383	
Indeno(1,2,3-cd)pyrene	ND	U	0.019	0.0026	1	12/21/15	12/30/15	KWG1512383	
Dibenz(a,h)anthracene	ND	U	0.019	0.0025	1	12/21/15	12/30/15	KWG1512383	
Benzo(g,h,i)perylene	0.0036	J	0.019	0.0029	1	12/21/15	12/30/15	KWG1512383	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	89	42-131	12/30/15	Acceptable
Fluoranthene-d10	105	42-133	12/30/15	Acceptable
Terphenyl-d14	108	32-129	12/30/15	Acceptable

† Analyte Comments

Benzo(b)fluoranthene

This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client: Tetra Tech EM, Incorporated

Project: CenturyLink Longview WA/103P3080177

Sample Matrix: Water Service Request: K1514460 Date Collected: NA

Date Received: NA

Polynuclear Aromatic Hydrocarbons

Sample Name: Method Blank Lab Code: KWG1512383-3

Extraction Method: Analysis Method:

EPA 3520C

8270D SIM

Units: ug/L Basis: NA

Level: Low

Analyte Name	Result	0	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND		0.019	0.0038	1	12/21/15	12/30/15	KWG1512383	
2-Methylnaphthalene	ND		0.019	0.0023	1	12/21/15	12/30/15	KWG1512383	
1-Methylnaphthalene	ND		0.019	0.0035	1	12/21/15	12/30/15	KWG1512383	
Acenaphthylene	ND	U	0.019	0.0034	1	12/21/15	12/30/15	KWG1512383	
Acenaphthene	ND	U	0.019	0.0044	1	12/21/15	12/30/15	KWG1512383	
Fluorene	ND	U	0.019	0.0038	1	12/21/15	12/30/15	KWG1512383	
Phenanthrene	ND	U	0.019	0.0050	1	12/21/15	12/30/15	KWG1512383	
Anthracene	ND	U	0.019	0.0036	1	12/21/15	12/30/15	KWG1512383	
Carbazole	ND	U	0.019	0.0045	1	12/21/15	12/30/15	KWG1512383	
Fluoranthene	ND	U	0.019	0.010	1	12/21/15	12/30/15	KWG1512383	
Pyrene	ND	U	0.019	0.0053	1	12/21/15	12/30/15	KWG1512383	
Benz(a)anthracene	ND	U	0.019	0.0026	1	12/21/15	12/30/15	KWG1512383	
Chrysene	ND	U	0.019	0.0034	1	12/21/15	12/30/15	KWG1512383	
Benzo(b)fluoranthene†	ND	U	0.019	0.0041	1	12/21/15	12/30/15	KWG1512383	
Benzo(k)fluoranthene	ND	U	0.019	0.0030	1	12/21/15	12/30/15	KWG1512383	
Benzo(a)pyrene	ND	U	0.019	0.0043	1	12/21/15	12/30/15	KWG1512383	
Indeno(1,2,3-cd)pyrene	ND	U	0.019	0.0026	1	12/21/15	12/30/15	KWG1512383	
Dibenz(a,h)anthracene	ND	U	0.019	0.0025	1	12/21/15	12/30/15	KWG1512383	
Benzo(g,h,i)perylene	ND	U	0.019	0.0029	1	12/21/15	12/30/15	KWG1512383	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	98	42-131	12/30/15	Acceptable
Fluoranthene-d10	100	42-133	12/30/15	Acceptable
Terphenyl-d14	109	32-129	12/30/15	Acceptable

† Analyte Comments

Benzo(b)fluoranthene

This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

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SuperSet Reference:

RR188959

QA/QC Report

Client: Tetra Tech EM, Incorporated

CenturyLink Longview WA/103P3080177 **Project:**

Sample Matrix: Ground water

> **Surrogate Recovery Summary Polynuclear Aromatic Hydrocarbons**

Extraction Method: EPA 3520C **Analysis Method:** 8270D SIM Units: Percent Level: Low

Service Request: K1514460

Sample Name	Lab Code	Sur1	Sur2	Sur3
MW-5	K1514460-001	85	106	103
MW-4	K1514460-002	92	108	108
MW-3	K1514460-003	90	102	107
MW-1	K1514460-004	87	103	106
MW-2	K1514460-005	96	112	114
DUP-121815	K1514460-006	89	105	108
Method Blank	KWG1512383-3	98	100	109
Lab Control Sample	KWG1512383-1	97	103	103
Duplicate Lab Control Sample	KWG1512383-2	104	110	109

Surrogate Recovery Control Limits (%)

Sur1	=	Fluorene-d10	42-131
Sur2	=	Fluoranthene-d10	42-133
Sur3	=	Terphenyl-d14	32-129

Results flagged with an asterisk (*) indicate values outside control criteria. Results flagged with a pound (#) indicate the control criteria is not applicable.

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QA/QC Report

Client: Tetra Tech EM, Incorporated

Project: CenturyLink Longview WA/103P3080177

Sample Matrix: Water

Service Request: K1514460

Date Extracted: 12/21/2015

Date Analyzed: 12/30/2015

Lab Control Spike/Duplicate Lab Control Spike Summary Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3520C **Analysis Method:** 8270D SIM

Units: ug/L Basis: NA

Level: Low **Extraction Lot:** KWG1512383

Lab Control Sample KWG1512383-1 Lab Control Spike Duplicate Lab Control Sample KWG1512383-2 Duplicate Lab Control Spike

Analyte Name	Result	Spike Amount	%Rec	Result	Spike Amount	%Rec	%Rec Limits	RPD	RPD Limit
Naphthalene	2.33	2.50	93	2.53	2.50	101	52-115	8	30
2-Methylnaphthalene	2.19	2.50	88	2.40	2.50	96	48-120	9	30
1-Methylnaphthalene	2.14	2.50	86	2.35	2.50	94	47-119	10	30
Acenaphthylene	2.51	2.50	100	2.73	2.50	109	58-124	8	30
Acenaphthene	2.38	2.50	95	2.61	2.50	104	63-121	9	30
Fluorene	2.45	2.50	98	2.70	2.50	108	68-121	10	30
Phenanthrene	2.43	2.50	97	2.61	2.50	104	64-126	7	30
Anthracene	2.54	2.50	102	2.57	2.50	103	68-127	1	30
Carbazole	2.55	2.50	102	2.76	2.50	110	68-135	8	30
Fluoranthene	2.54	2.50	101	2.71	2.50	108	70-127	7	30
Pyrene	2.62	2.50	105	2.81	2.50	112	72-127	7	30
Benz(a)anthracene	2.45	2.50	98	2.59	2.50	104	74-124	5	30
Chrysene	2.61	2.50	104	2.78	2.50	111	74-132	7	30
Benzo(b)fluoranthene	2.63	2.50	105	2.85	2.50	114	73-136	8	30
Benzo(k)fluoranthene	2.75	2.50	110	2.96	2.50	118	74-134	7	30
Benzo(a)pyrene	2.68	2.50	107	2.86	2.50	115	75-131	6	30
Indeno(1,2,3-cd)pyrene	2.43	2.50	97	2.58	2.50	103	63-136	6	30
Dibenz(a,h)anthracene	2.18	2.50	87	2.32	2.50	93	59-135	6	30
Benzo(g,h,i)perylene	2.56	2.50	102	2.73	2.50	109	63-127	7	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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 RR188959



Polynuclear Aromatic Hydrocarbons

ALS Environmental—Kelso Laboratory 1317 South 13th Avenue, Kelso, WA 98626 Phone (360)577-7222 Fax (360)636-1068 www.alsglobal.com



Analytical Results

Client: Tetra Tech EM, Incorporated

Project: CenturyLink Longview WA/103P3080177

Sample Matrix: Ground water

Service Request: K1514460
Date Collected: 12/17/2015
Date Received: 12/17/2015

Polynuclear Aromatic Hydrocarbons

Sample Name:

MW-5

Lab Code:

K1514460-001

Extraction Method: Analysis Method:

EPA 3520C

Units: ug/L Basis: NA

Level: Low

Analysis Method:	8270D SIM

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Naphthalene	0.044	0.020	0.0038	1	12/28/15	01/06/16	KWG1512601	*
2-Methylnaphthalene	0.0038 J	0.020	0.0023	1	12/28/15	01/06/16	KWG1512601	*
1-Methylnaphthalene	0.023	0.020	0.0035	1	12/28/15	01/06/16	KWG1512601	*
Acenaphthylene	0.045	0.020	0.0034	1	12/28/15	01/06/16	KWG1512601	*
Acenaphthene	4.7	0.020	0.0044	1	12/28/15	01/06/16	KWG1512601	*
Fluorene	0.16	0.020	0.0038	1	12/28/15	01/06/16	KWG1512601	*
Phenanthrene	0.041	0.020	0.0050	1	12/28/15	01/06/16	KWG1512601	*
Anthracene	0.45	0.020	0.0036	1	12/28/15	01/06/16	KWG1512601	*
Carbazole	0.018 J	0.020	0.0045	1	12/28/15	01/06/16	KWG1512601	*
Fluoranthene	0.14	0.020	0.010	1	12/28/15	01/06/16	KWG1512601	*
Pyrene	0.046	0.020	0.0053	1	12/28/15	01/06/16	KWG1512601	*
Benz(a)anthracene	0.0040 J	0.020	0.0026	1	12/28/15	01/06/16	KWG1512601	*
Chrysene	ND U	0.020	0.0034	1	12/28/15	01/06/16	KWG1512601	*
Benzo(b)fluoranthene†	ND U	0.020	0.0041	1	12/28/15	01/06/16	KWG1512601	*
Benzo(k)fluoranthene	ND U	0.020	0.0030	1	12/28/15	01/06/16	KWG1512601	*
Benzo(a)pyrene	ND U	0.020	0.0043	1	12/28/15	01/06/16	KWG1512601	*
Indeno(1,2,3-cd)pyrene	0.0030 J	0.020	0.0026	1	12/28/15	01/06/16	KWG1512601	*
Dibenz(a,h)anthracene	0.0050 J	0.020	0.0025	1	12/28/15	01/06/16	KWG1512601	*
Benzo(g,h,i)perylene	ND U	0.020	0.0029	1	12/28/15	01/06/16	KWG1512601	*

^{*} See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	83	42-131	01/06/16	Acceptable
Fluoranthene-d10	91	42-133	01/06/16	Acceptable
Terphenyl-d14	85	32-129	01/06/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene

This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

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Analytical Results

Client: Tetra Tech EM, Incorporated

Project: CenturyLink Longview WA/103P3080177

Sample Matrix: Ground water

Service Request: K1514460 Date Collected: 12/17/2015 Date Received: 12/17/2015

Polynuclear Aromatic Hydrocarbons

Sample Name:

MW-4

Lab Code: K1:

K1514460-002

Extraction Method: Analysis Method:

EPA 3520C 8270D SIM Units: ug/L Basis: NA

Level: Low

KWG1512601

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	0.080	0.020	0.0038	1	12/28/15	01/06/16	KWG1512601	*
2-Methylnaphthalene	0.0063 J	0.020	0.0023	1	12/28/15	01/06/16	KWG1512601	*
1-Methylnaphthalene	0.12	0.020	0.0035	1	12/28/15	01/06/16	KWG1512601	*
Acenaphthylene	0.064	0.020	0.0034	1	12/28/15	01/06/16	KWG1512601	*
Acenaphthene	4.5	0.020	0.0044	1	12/28/15	01/06/16	KWG1512601	*
Fluorene	1.3	0.020	0.0038	1	12/28/15	01/06/16	KWG1512601	*
Phenanthrene	0.23	0.020	0.0050	1	12/28/15	01/06/16	KWG1512601	*
Anthracene	0.086	0.020	0.0036	1	12/28/15	01/06/16	KWG1512601	*
Carbazole	0.77	0.020	0.0045	1	12/28/15	01/06/16	KWG1512601	*
Fluoranthene	ND U	0.020	0.010	1	12/28/15	01/06/16	KWG1512601	*
Pyrene	0.031	0.020	0.0053	1	12/28/15	01/06/16	KWG1512601	*
Benz(a)anthracene	ND U	0.020	0.0026	1	12/28/15	01/06/16	KWG1512601	*
Chrysene	ND U	0.020	0.0034	1	12/28/15	01/06/16	KWG1512601	*
Benzo(b)fluoranthene†	ND U	0.020	0.0041	1	12/28/15	01/06/16	KWG1512601	*
Benzo(k)fluoranthene	ND U	0.020	0.0030	1	12/28/15	01/06/16	KWG1512601	*
Benzo(a)pyrene	ND U	0.020	0.0043	1	12/28/15	01/06/16	KWG1512601	*
Indeno(1,2,3-cd)pyrene	ND U	0.020	0.0026	1	12/28/15	01/06/16	KWG1512601	*
Dibenz(a,h)anthracene	ND U	0.020	0.0025	1	12/28/15	01/06/16	KWG1512601	*

^{*} See Case Narrative

Benzo(g,h,i)perylene

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	86	42-131	01/06/16	Acceptable
Fluoranthene-d10	96	42-133	01/06/16	Acceptable
Terphenyl-d14	96	32-129	01/06/16	Acceptable

0.0029

1

0.020

ND U

† Analyte Comments

Benzo(b)fluoranthene

This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

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Analytical Results

Client: Tetra Tech EM, Incorporated

CenturyLink Longview WA/103P3080177 **Project:**

Sample Matrix: Ground water Service Request: K1514460 **Date Collected:** 12/17/2015 **Date Received:** 12/17/2015

Polynuclear Aromatic Hydrocarbons

Sample Name:

MW-3

Lab Code:

K1514460-003

Extraction Method: Analysis Method:

EPA 3520C 8270D SIM

Basis: NA Level: Low

Units: ug/L

					Dilution	Date	Date	Extraction	
Analyte Name	Result	Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Naphthalene	ND	U	0.020	0.0038	1	12/28/15	01/06/16	KWG1512601	*
2-Methylnaphthalene	ND	U	0.020	0.0023	1	12/28/15	01/06/16	KWG1512601	*
1-Methylnaphthalene	ND	U	0.020	0.0035	1	12/28/15	01/06/16	KWG1512601	*
Acenaphthylene	ND	U	0.020	0.0034	1	12/28/15	01/06/16	KWG1512601	*
Acenaphthene	ND	U	0.020	0.0044	1	12/28/15	01/06/16	KWG1512601	*
Fluorene	ND	U	0.020	0.0038	1	12/28/15	01/06/16	KWG1512601	*
Phenanthrene	ND	U	0.020	0.0050	1	12/28/15	01/06/16	KWG1512601	*
Anthracene	ND	U	0.020	0.0036	1	12/28/15	01/06/16	KWG1512601	*
Carbazole	ND	U	0.020	0.0045	1	12/28/15	01/06/16	KWG1512601	*
Fluoranthene	ND	U	0.020	0.010	1	12/28/15	01/06/16	KWG1512601	*
Pyrene	ND	U	0.020	0.0053	1	12/28/15	01/06/16	KWG1512601	*
Benz(a)anthracene	0.0027	J	0.020	0.0026	1	12/28/15	01/06/16	KWG1512601	*
Chrysene	ND	U	0.020	0.0034	1	12/28/15	01/06/16	KWG1512601	*
Benzo(b)fluoranthene†	ND	U	0.020	0.0041	1	12/28/15	01/06/16	KWG1512601	*
Benzo(k)fluoranthene	ND	U	0.020	0.0030	1	12/28/15	01/06/16	KWG1512601	*
Benzo(a)pyrene	ND	U	0.020	0.0043	1	12/28/15	01/06/16	KWG1512601	*
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0026	1	12/28/15	01/06/16	KWG1512601	*
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	12/28/15	01/06/16	KWG1512601	*
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	12/28/15	01/06/16	KWG1512601	*

^{*} See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	77	42-131	01/06/16	Acceptable
Fluoranthene-d10	87	42-133	01/06/16	Acceptable
Terphenyl-d14	92	32-129	01/06/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene

This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

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Analytical Results

Client: Tetra Tech EM, Incorporated

CenturyLink Longview WA/103P3080177 **Project:**

Sample Matrix: Ground water Service Request: K1514460 **Date Collected:** 12/18/2015 **Date Received:** 12/18/2015

Polynuclear Aromatic Hydrocarbons

Sample Name:

MW-1

Lab Code:

K1514460-004

Extraction Method:

EPA 3520C

Units: ug/L Basis: NA

Level: Low

Analysis Method:	8270D SIM

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	0.0039	J	0.020	0.0038	1	12/28/15	01/06/16	KWG1512601	*
2-Methylnaphthalene	0.0035	J	0.020	0.0023	1	12/28/15	01/06/16	KWG1512601	*
1-Methylnaphthalene	0.0039	J	0.020	0.0035	1	12/28/15	01/06/16	KWG1512601	*
Acenaphthylene	ND	U	0.020	0.0034	1	12/28/15	01/06/16	KWG1512601	*
Acenaphthene	ND	U	0.020	0.0044	1	12/28/15	01/06/16	KWG1512601	*
Fluorene	0.0040	J	0.020	0.0038	1	12/28/15	01/06/16	KWG1512601	*
Phenanthrene	ND	U	0.020	0.0050	1	12/28/15	01/06/16	KWG1512601	*
Anthracene	ND	U	0.020	0.0036	1	12/28/15	01/06/16	KWG1512601	*
Carbazole	ND	U	0.020	0.0045	1	12/28/15	01/06/16	KWG1512601	*
Fluoranthene	ND	U	0.020	0.010	1	12/28/15	01/06/16	KWG1512601	*
Pyrene	ND	U	0.020	0.0053	1	12/28/15	01/06/16	KWG1512601	*
Benz(a)anthracene	ND	U	0.020	0.0026	1	12/28/15	01/06/16	KWG1512601	*
Chrysene	ND	U	0.020	0.0034	1	12/28/15	01/06/16	KWG1512601	*
Benzo(b)fluoranthene†	ND	U	0.020	0.0041	1	12/28/15	01/06/16	KWG1512601	*
Benzo(k)fluoranthene	ND	U	0.020	0.0030	1	12/28/15	01/06/16	KWG1512601	*
Benzo(a)pyrene	ND	U	0.020	0.0043	1	12/28/15	01/06/16	KWG1512601	*
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0026	1	12/28/15	01/06/16	KWG1512601	*
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	12/28/15	01/06/16	KWG1512601	*
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	12/28/15	01/06/16	KWG1512601	*

^{*} See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	78	42-131	01/06/16	Acceptable
Fluoranthene-d10	92	42-133	01/06/16	Acceptable
Terphenyl-d14	98	32-129	01/06/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene

This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

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SuperSet Reference:

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Analytical Results

Client: Tetra Tech EM, Incorporated

CenturyLink Longview WA/103P3080177 **Project:**

Sample Matrix: Ground water Service Request: K1514460 **Date Collected:** 12/18/2015 **Date Received:** 12/18/2015

Polynuclear Aromatic Hydrocarbons

Sample Name:

MW-2

Lab Code: K1514460-005

Extraction Method: Analysis Method:

EPA 3520C 8270D SIM

Units: ug/L Basis: NA

Level: Low

					Dilution	Date	Date	Extraction	
Analyte Name	Result	Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Naphthalene	0.0047	J	0.020	0.0038	1	12/28/15	01/06/16	KWG1512601	*
2-Methylnaphthalene	ND	U	0.020	0.0023	1	12/28/15	01/06/16	KWG1512601	*
1-Methylnaphthalene	ND	U	0.020	0.0035	1	12/28/15	01/06/16	KWG1512601	*
Acenaphthylene	0.0048	J	0.020	0.0034	1	12/28/15	01/06/16	KWG1512601	*
Acenaphthene	ND	U	0.020	0.0044	1	12/28/15	01/06/16	KWG1512601	*
Fluorene	ND	U	0.020	0.0038	1	12/28/15	01/06/16	KWG1512601	*
Phenanthrene	ND	U	0.020	0.0050	1	12/28/15	01/06/16	KWG1512601	*
Anthracene	ND	U	0.020	0.0036	1	12/28/15	01/06/16	KWG1512601	*
Carbazole	ND	U	0.020	0.0045	1	12/28/15	01/06/16	KWG1512601	*
Fluoranthene	ND	U	0.020	0.010	1	12/28/15	01/06/16	KWG1512601	*
Pyrene	ND	U	0.020	0.0053	1	12/28/15	01/06/16	KWG1512601	*
Benz(a)anthracene	ND	U	0.020	0.0026	1	12/28/15	01/06/16	KWG1512601	*
Chrysene	ND	U	0.020	0.0034	1	12/28/15	01/06/16	KWG1512601	*
Benzo(b)fluoranthene†	ND	U	0.020	0.0041	1	12/28/15	01/06/16	KWG1512601	*
Benzo(k)fluoranthene	ND	U	0.020	0.0030	1	12/28/15	01/06/16	KWG1512601	*
Benzo(a)pyrene	ND	U	0.020	0.0043	1	12/28/15	01/06/16	KWG1512601	*
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0026	1	12/28/15	01/06/16	KWG1512601	*
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	12/28/15	01/06/16	KWG1512601	*
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	12/28/15	01/06/16	KWG1512601	*

^{*} See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	77	42-131	01/06/16	Acceptable
Fluoranthene-d10	91	42-133	01/06/16	Acceptable
Terphenyl-d14	95	32-129	01/06/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene

This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

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SuperSet Reference:

Analytical Results

Client: Tetra Tech EM, Incorporated

Project: CenturyLink Longview WA/103P3080177

Sample Matrix: Ground water Service Request: K1514460 **Date Collected:** 12/18/2015 **Date Received:** 12/18/2015

Polynuclear Aromatic Hydrocarbons

Sample Name: DUP-121815 Lab Code: K1514460-006 **Extraction Method:**

Analysis Method:

EPA 3520C 8270D SIM

Units: ug/L Basis: NA

Level: Low

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND U	0.020	0.0038	1	12/28/15	01/06/16	KWG1512601	*
2-Methylnaphthalene	ND U	0.020	0.0023	1	12/28/15	01/06/16	KWG1512601	*
1-Methylnaphthalene	ND U	0.020	0.0035	1	12/28/15	01/06/16	KWG1512601	*
Acenaphthylene	ND U	0.020	0.0034	1	12/28/15	01/06/16	KWG1512601	*
Acenaphthene	ND U	0.020	0.0044	1	12/28/15	01/06/16	KWG1512601	*
Fluorene	ND U	0.020	0.0038	1	12/28/15	01/06/16	KWG1512601	*
Phenanthrene	ND U	0.020	0.0050	1	12/28/15	01/06/16	KWG1512601	*
Anthracene	ND U	0.020	0.0036	1	12/28/15	01/06/16	KWG1512601	*
Carbazole	ND U	0.020	0.0045	1	12/28/15	01/06/16	KWG1512601	*
Fluoranthene	ND U	0.020	0.010	1	12/28/15	01/06/16	KWG1512601	*
Pyrene	ND U	0.020	0.0053	1	12/28/15	01/06/16	KWG1512601	*
Benz(a)anthracene	ND U	0.020	0.0026	1	12/28/15	01/06/16	KWG1512601	*
Chrysene	ND U	0.020	0.0034	1	12/28/15	01/06/16	KWG1512601	*
Benzo(b)fluoranthene†	ND U	0.020	0.0041	1	12/28/15	01/06/16	KWG1512601	*
Benzo(k)fluoranthene	ND U	0.020	0.0030	1	12/28/15	01/06/16	KWG1512601	*
Benzo(a)pyrene	ND U	0.020	0.0043	1	12/28/15	01/06/16	KWG1512601	*
Indeno(1,2,3-cd)pyrene	ND U	0.020	0.0026	1	12/28/15	01/06/16	KWG1512601	*
Dibenz(a,h)anthracene	ND U	0.020	0.0025	1	12/28/15	01/06/16	KWG1512601	*
Benzo(g,h,i)perylene	ND U	0.020	0.0029	1	12/28/15	01/06/16	KWG1512601	*

^{*} See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	77	42-131	01/06/16	Acceptable
Fluoranthene-d10	90	42-133	01/06/16	Acceptable
Terphenyl-d14	100	32-129	01/06/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene

This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

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Analytical Results

Client: Tetra Tech EM, Incorporated

Project: CenturyLink Longview WA/103P3080177

Sample Matrix: Ground water Service Request: K1514460 Date Collected: NA Date Received: NA

Polynuclear Aromatic Hydrocarbons

Sample Name: Method Blank Lab Code: KWG1512601-4

Extraction Method: EPA 3520C **Analysis Method:** 8270D SIM

Units: ug/L Basis: NA

Level: Low

A 1 A N	ъ. и	0	MDI	MDI	Dilution	Date	Date	Extraction	N T 4
Analyte Name	Result	Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Naphthalene	ND	U	0.020	0.0038	1	12/28/15	01/06/16	KWG1512601	
2-Methylnaphthalene	ND	U	0.020	0.0023	1	12/28/15	01/06/16	KWG1512601	
1-Methylnaphthalene	ND	U	0.020	0.0035	1	12/28/15	01/06/16	KWG1512601	
Acenaphthylene	ND	U	0.020	0.0034	1	12/28/15	01/06/16	KWG1512601	
Acenaphthene	ND	U	0.020	0.0044	1	12/28/15	01/06/16	KWG1512601	
Fluorene	ND	U	0.020	0.0038	1	12/28/15	01/06/16	KWG1512601	
Phenanthrene	ND	U	0.020	0.0050	1	12/28/15	01/06/16	KWG1512601	
Anthracene	ND	U	0.020	0.0036	1	12/28/15	01/06/16	KWG1512601	
Carbazole	ND	U	0.020	0.0045	1	12/28/15	01/06/16	KWG1512601	
Fluoranthene	ND	U	0.020	0.010	1	12/28/15	01/06/16	KWG1512601	
Pyrene	ND	U	0.020	0.0053	1	12/28/15	01/06/16	KWG1512601	
Benz(a)anthracene	ND	U	0.020	0.0026	1	12/28/15	01/06/16	KWG1512601	
Chrysene	ND	U	0.020	0.0034	1	12/28/15	01/06/16	KWG1512601	
Benzo(b)fluoranthene†	ND	U	0.020	0.0041	1	12/28/15	01/06/16	KWG1512601	
Benzo(k)fluoranthene	ND	U	0.020	0.0030	1	12/28/15	01/06/16	KWG1512601	
Benzo(a)pyrene	ND	U	0.020	0.0043	1	12/28/15	01/06/16	KWG1512601	
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0026	1	12/28/15	01/06/16	KWG1512601	
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	12/28/15	01/06/16	KWG1512601	
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	12/28/15	01/06/16	KWG1512601	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	74	42-131	01/06/16	Acceptable
Fluoranthene-d10	87	42-133	01/06/16	Acceptable
Terphenyl-d14	94	32-129	01/06/16	Acceptable

† Analyte Comments

Benzo(b)fluoranthene

This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

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SuperSet Reference:

QA/QC Report

Client: Tetra Tech EM, Incorporated

CenturyLink Longview WA/103P3080177 **Project:**

Sample Matrix: Ground water

> **Surrogate Recovery Summary Polynuclear Aromatic Hydrocarbons**

Extraction Method: EPA 3520C **Analysis Method:** 8270D SIM Units: Percent Level: Low

Service Request: K1514460

Sample Name	Lab Code	Sur1	Sur2	Sur3
MW-5	K1514460-001	83	91	85
MW-4	K1514460-002	86	96	96
MW-3	K1514460-003	77	87	92
MW-1	K1514460-004	78	92	98
MW-2	K1514460-005	77	91	95
DUP-121815	K1514460-006	77	90	100
Method Blank	KWG1512601-4	74	87	94
Lab Control Sample	KWG1512601-1	78	86	78
Duplicate Lab Control Sample	KWG1512601-2	79	87	78

Surrogate Recovery Control Limits (%)

Sur1	=	Fluorene-d10	42-131
Sur2	=	Fluoranthene-d10	42-133
Sur3	=	Terphenyl-d14	32-129

Results flagged with an asterisk (*) indicate values outside control criteria. Results flagged with a pound (#) indicate the control criteria is not applicable.

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QA/QC Report

Client: Tetra Tech EM, Incorporated

Project: CenturyLink Longview WA/103P3080177

Ground water Sample Matrix:

Service Request: K1514460 **Date Extracted:** 12/28/2015 **Date Analyzed:** 01/06/2016

Lab Control Spike/Duplicate Lab Control Spike Summary Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3520C Analysis Method: 8270D SIM Units: ug/L Basis: NA

Level: Low Extraction Lot: KWG1512601

Lab Control Sample KWG1512601-1 Lab Control Spike

Duplicate Lab Control Sample KWG1512601-2 **Duplicate Lab Control Spike**

Analyte Name	Result	Spike Amount	%Rec	Result	Spike Amount	%Rec	%Rec Limits	RPD	RPD Limit
Naphthalene	1.96	2.50	78	1.95	2.50	78	52-115	1	30
2-Methylnaphthalene	1.84	2.50	74	1.84	2.50	74	48-120	0	30
1-Methylnaphthalene	1.87	2.50	75	1.88	2.50	75	47-119	0	30
Acenaphthylene	2.14	2.50	85	2.12	2.50	85	58-124	1	30
Acenaphthene	2.03	2.50	81	2.02	2.50	81	63-121	1	30
Fluorene	2.07	2.50	83	2.08	2.50	83	68-121	0	30
Phenanthrene	2.02	2.50	81	2.10	2.50	84	64-126	4	30
Anthracene	2.06	2.50	82	2.16	2.50	87	68-127	5	30
Carbazole	2.26	2.50	91	2.25	2.50	90	68-135	1	30
Fluoranthene	2.20	2.50	88	2.27	2.50	91	70-127	3	30
Pyrene	2.13	2.50	85	2.17	2.50	87	72-127	2	30
Benz(a)anthracene	1.96	2.50	78	2.01	2.50	81	74-124	3	30
Chrysene	2.15	2.50	86	2.23	2.50	89	74-132	4	30
Benzo(b)fluoranthene	1.91	2.50	76	2.02	2.50	81	73-136	6	30
Benzo(k)fluoranthene	2.08	2.50	83	2.14	2.50	86	74-134	3	30
Benzo(a)pyrene	2.03	2.50	81	2.11	2.50	84	75-131	4	30
Indeno(1,2,3-cd)pyrene	1.63	2.50	65	1.76	2.50	70	63-136	7	30
Dibenz(a,h)anthracene	1.68	2.50	67	1.82	2.50	73	59-135	8	30
Benzo(g,h,i)perylene	1.74	2.50	70	1.90	2.50	76	63-127	8	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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