

January 23, 2017

Whitley Fuel Company
c/o Mr. Ben Whitley
1617 2nd Avenue N.
Okanogan, WA 98840

RE: Whitley Fuels Tanker Spill Groundwater Monitoring Wells near Monitor, Washington – Groundwater Sampling Event, September 2016
Loss 83A012312-1 Whitley Fuel LLC
WA Facility/Site ID No.: 357
Cleanup Site ID No.: 4757

Dear Mr. Whitley,

Fulcrum Environmental Consulting, Inc. (Fulcrum) has completed groundwater sampling of monitoring wells at the Whitley Tanker Spill, located on Highway 2, approximately one half mile east of Monitor, Washington (site). Sampling was completed to evaluate groundwater conditions as a result of a 1991 fuel tanker accident.

Groundwater sampling was completed by Kyle Ames, an environmental technician with Fulcrum. Project services were completed under the direction of Travis Trent, a Washington State Licensed Hydrogeologist with Fulcrum. See Attachment A for professional certifications. See Figure 1 in Attachment B for the site location map.

Background

The site is situated south of Highway 2 along the southern boundary of a Washington Department of Transportation Right-of-Way and northern boundary of property owned by Washington State (Chelan County Parcel No. 231913625077). The southern property is currently known as the Wenatchee River County Park.

On July 24, 1991, a transporter tanker owned by Whitley Fuels Company of Okanogan, Washington was involved in an accident and released 10,000 gallons of gasoline along the south side of Highway 2. A resulting fire consumed an unknown amount of fuel.

In 1992, approximately 1,300 cubic yards of petroleum contaminated soil was removed under the supervision of DRT Environmental Consultants, Inc. Two soil samples collected from along the edge of the highway were reported with gasoline concentrations above the current Models Toxic Control Act (MTCA) Method A cleanup level; one of the two samples was reported with benzene concentrations above the cleanup level. Contaminated soils located beneath the highway were not removed to avoid impacting the highway.

Three groundwater monitoring wells were installed in 1994 to assess groundwater conditions. Wells were completed to the following depths:

- MW-01, Western Well: 8.31 feet below ground surface (bgs)
- MW-02, North-Central Well: 11.78 feet bgs (within original gasoline footprint)
- MW-03, Eastern Well: 10.48 feet bgs

Since 1994, sampling had occurred on an about-annual schedule. However, MW-01 and MW-02 were “lost” during extensive flooding in 1996 and were not sampled. MW-03 remained accessible and continued to show elevated gasoline and benzene impact. In 2016, Fulcrum, located MW-01 and MW-02 through the utilization

of metal-detecting equipment and was able to excavate the wells by hand. See Attachment B, Figure 2 for monitoring well locations.

MW-01 is viewed as hydrogeologically upgradient; until the December, 2016 sampling event no analytes had been detected at or above the method reporting limits. While Toluene was found at a concentration of 4.84 µg/L, it is well below MTCA clean up levels. MW-02 is located within the footprint of the original gasoline release. Since sampling began in 1994, MW-02 has shown progressively lower values of gasoline and gasoline constituents. Since the recovery of MW-02 in 2016, all analytes detected have been below MTCA clean up levels. Similarly, MW-03 initially exhibited high values for gasoline, benzene and xylenes in a 1994 sampling event. During the sampling event of September 1995, gasoline was detected at 5,200 µg/L and benzene was detected at 46 µg/L. While in general, these values have decreased since the 1995 sampling event, there have been occasional increases in contamination concentrations. See tables 1 to 3 for the last four monitoring event results.

Scope of Work

Fulcrum's scope of work for this groundwater monitoring event consisted of collection and analysis of groundwater samples from the three onsite monitoring wells. Fulcrum utilized portions of the following documents as guidance criteria for current confirmation sampling protocol:

- *Practical Guidance for Ground-Water Sampling*, Michael J. Barcelona, James P. Gibb, John A. Helfrich, and Edward E. Garske, dated November 1985.
- American Standard of Testing and Materials International (ASTM) D4448 – 01(2013) *Standard Guide for Sampling Ground-Water Monitoring Wells*.
- *Model Toxics Control Act Statute and Regulations*, Washington State Department of Ecology Publication No. 94-06, Revised November 2007.

Samples were collected using a peristaltic pump with disposable tubing following standard sample collection procedures. Field measurements for pH, total dissolved solids, dissolved oxygen content, turbidity, conductivity, temperature and oxygen-reduction potential were collected utilizing a Horiba W-20 Series water quality monitoring system which was calibrated prior to sampling. Collected groundwater samples were submitted under chain-of-custody to Fremont Analytical, Inc., a Washington State Department of Ecology accredited laboratory in Seattle, Washington, for analysis.

Fulcrum has evaluated analytical results against both MTCA Method A and Method B cleanup levels where appropriate. Where Method A cleanup levels have not been established, Fulcrum has defaulted to using Method B cleanup levels established for site-specific conditions. Application of the MTCA Method A or Method B cleanup levels during this portion of the project does not exclude the potential for reevaluation of site contaminants by other methods or other applicable standards at any time.

Field Activities

On September 19, 2016, Fulcrum completed sampling of site groundwater wells. All wells were found with sufficient water; wells were sampled and purged using a peristaltic pump with clean and new disposable polyethylene tubing. A field duplicate sample was collected concurrently with MW-02 and documented as MW-04.

Fulcrum utilized pH, total dissolved solids, turbidity, conductivity, temperature, oxygen-reduction potential, and purge volume in accordance with ASTM Standards to confirm adequate purging of the wells prior to sample collection.

Analytical Results

Samples were submitted for the following analysis:

- Northwest Total Petroleum Hydrocarbon (NWTPH) – Gasoline (Gx)
- Volatile Organic Compounds by Environmental Protection Agency (EPA) Method 8260 – Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX)
- Methane by RSK-175
- Ions (Nitrite, Nitrate, Sulfate, Alkalinity) by EPA Method 300.0
- Dissolved Manganese (Mn) by EPA Method 200.8

See Attachment C for a summary of laboratory analytical results presented in Table 1. Results are presented in micrograms of analyte per Liter of water ($\mu\text{g/L}$) which is equal to parts per billion (ppb). See Attachment D for complete laboratory analytical results. See Figure 2 for a groundwater concentration and flow map.

Table 1: Laboratory Data for MW-01

Contaminants	Analyte	9/11/1995	12/4/1995	6/16/2016	9/19/2016	MTCA Method A CUL
	Gasoline	ND	ND	ND	ND	ND
Benzene	ND	ND	ND	ND	ND	5
Toluene	ND	ND	ND	ND	ND	1,000
Ethylbenzene	ND	ND	ND	ND	ND	700
Xylenes	ND	ND	ND	ND	ND	1,000
Geochemical Indicators	Nitrite	-	-	-	ND	NE
	Nitrate	-	-	-	2,430	NE
	Sulfate	-	-	-	9,510	NE
	Manganese	-	-	-	28	NE
	Alkalinity	-	-	-	103,000	NE
	Methane	-	-	-	5	NE

All values are presented in micrograms per Liter ($\mu\text{g/L}$)
 Contaminant Concentrations above MTCA are shown in **BOLD**
 ND – Non Detect
 NE – Not Established

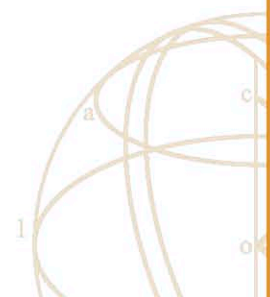


Table 2: Laboratory Data for MW-02

Contaminants	Analyte	6/12/1995	9/11/1995	6/16/2016	9/19/2016	MTCA Method A CUL
	Gasoline		ND	5,400	235	ND
Benzene		1	120	ND	ND	5
Toluene		ND	64	ND	ND	1,000
Ethylbenzene		ND	ND	4.54	ND	700
Xylenes		ND	770	3.54	ND	1,000
Geochemical Indicators	Nitrite	-	-	ND	ND	NE
	Nitrate	-	-	135	ND	NE
	Sulfate	-	-	18,800	28,400	NE
	Manganese	-	-	2,870	4,980	NE
	Alkalinity	-	-	392,000	597,000	NE
	Methane	-	-	20.5	34.6	NE

All values are presented in micrograms per Liter (µg/L)
 Contaminant Concentrations above MTCA are shown in **BOLD**
 ND – Non Detect
 NE – Not Established

Table 3: Laboratory Data for MW-03

Contaminants	Analyte	9/12/2012	9/10/2013	6/16/2016	9/19/2016	MTCA Method A CUL
	Gasoline		484	401	471	ND
Benzene		10.6	11.5	6.65	1.94	5
Toluene		<1	<1	ND	ND	1,000
Ethylbenzene		1.1	1.7	1.5	ND	700
Xylenes		<3	<3	ND	ND	1,000
Geochemical Indicators	Nitrite	-	-	ND	ND	NE
	Nitrate	-	-	364	ND	NE
	Sulfate	-	-	12,800	ND	NE
	Manganese	-	-	1,600	790	NE
	Alkalinity	-	-	802,000	543,000	NE
	Methane	-	-	43.3	810	NE

All values are presented in micrograms per Liter (µg/L)
 Contaminant Concentrations above MTCA are shown in **BOLD**
 ND – Non Detect
 NE – Not Established

The following data qualifiers were noted in the laboratory results. All analytical quality assurance parameters were within acceptable ranges.

- Dilution required for samples from MW-02 and MW-03 for Nitrite, Nitrate and Sulfate.
- Dilution required for samples from MW-03 for Methane.

No analytes were detected at or above the method reporting limit for the duplicate sample, labeled MW-04. The duplicate sample was obtained from MW-02.

Review of these notes indicates that laboratory QA/QC is satisfactory and identified laboratory QA/QC should not affect project data or objectives.

Discussion and Conclusions

Groundwater elevation and gradient data collected during the sampling event identified groundwater at elevations ranging from 7.03 feet bgs to 9.06 feet bgs. Groundwater at the site flows in a southeast direction. A groundwater gradient map is presented in Attachment B, Figure 2.

No contaminants were identified above MTCA Method A clean up levels.

Elevated concentrations of geochemical parameters, including Nitrate, Sulfate, Manganese, Alkalinity and Methane indicates that degradation of petroleum hydrocarbons is likely occurring within the historic plume boundaires.

Please contact Travis Trent at 509.459.9200 if you have any questions or comments.

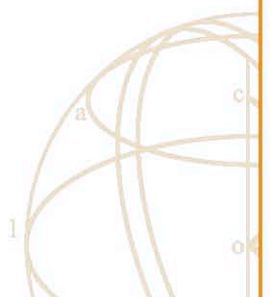
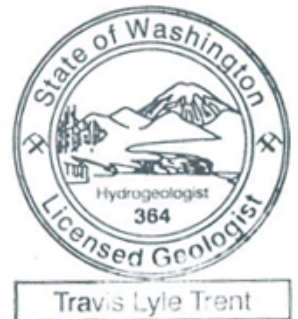
Sincerely,



Kyle Ames
Environmental Technician

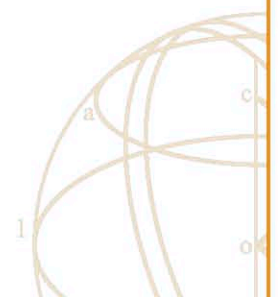


Travis Trent, LHG
Hydrogeologist



ATTACHMENT A

Professional Certificates



STATE OF WASHINGTON

DEPARTMENT OF LICENSING – BUSINESS AND PROFESSIONS DIVISION

THIS CERTIFIES THAT THE PERSON NAMED HEREON IS AUTHORIZED, AS PROVIDED BY LAW, AS A



GEOLOGIST
HYDROGEOLOGIST

TRAVIS LYLE TRENT
FULCRUM ENVIRONMENTAL CONSULT.
207 WEST BOONE AVENUE
SPOKANE WA 99201

Cert/Lic No.
364

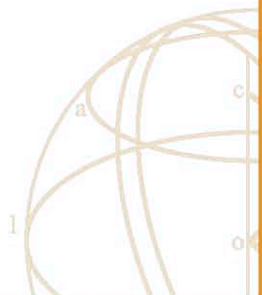
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01/08/2002

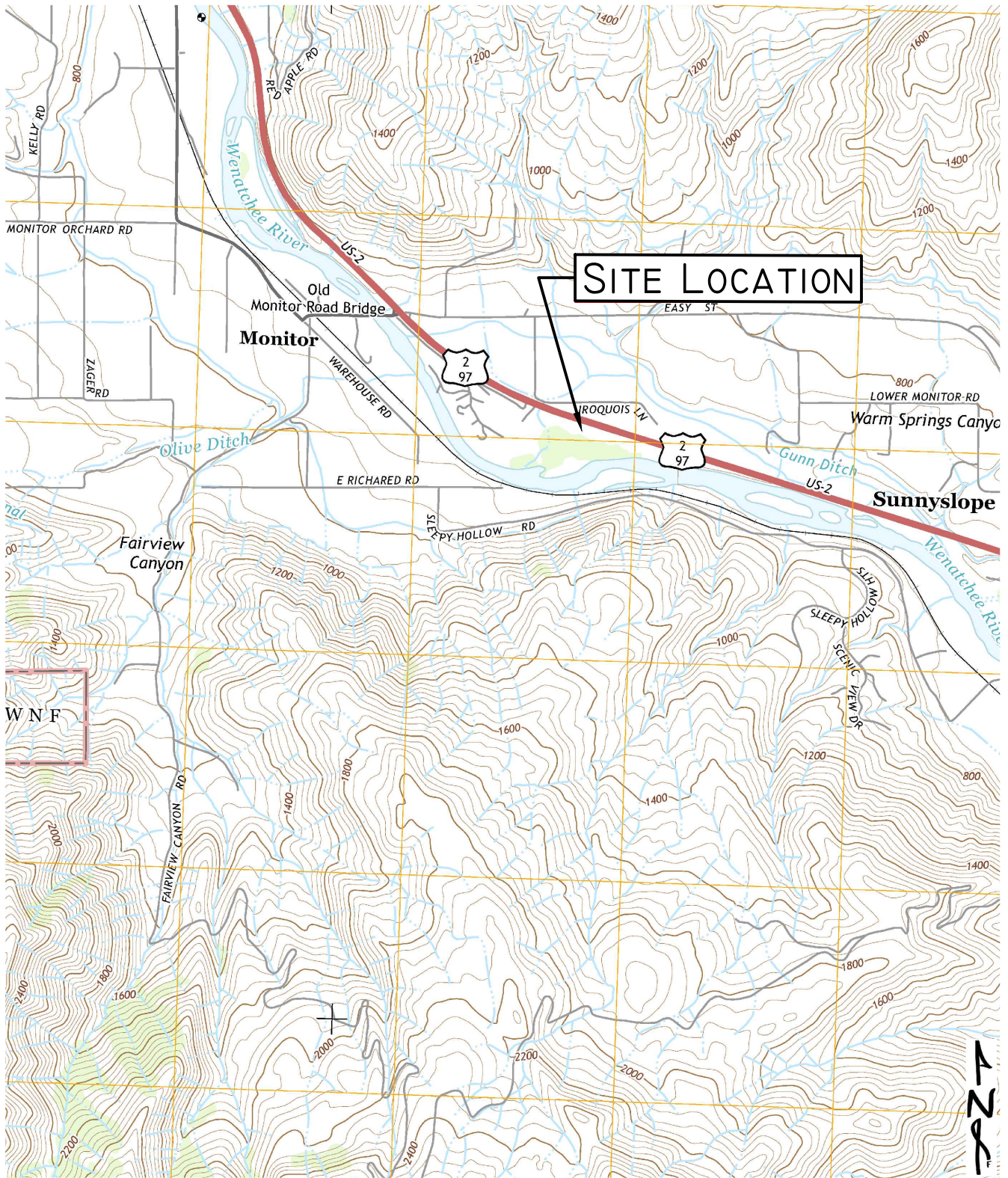
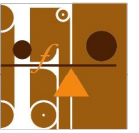
Expiration Date
06/06/2014

Al Witt
Director

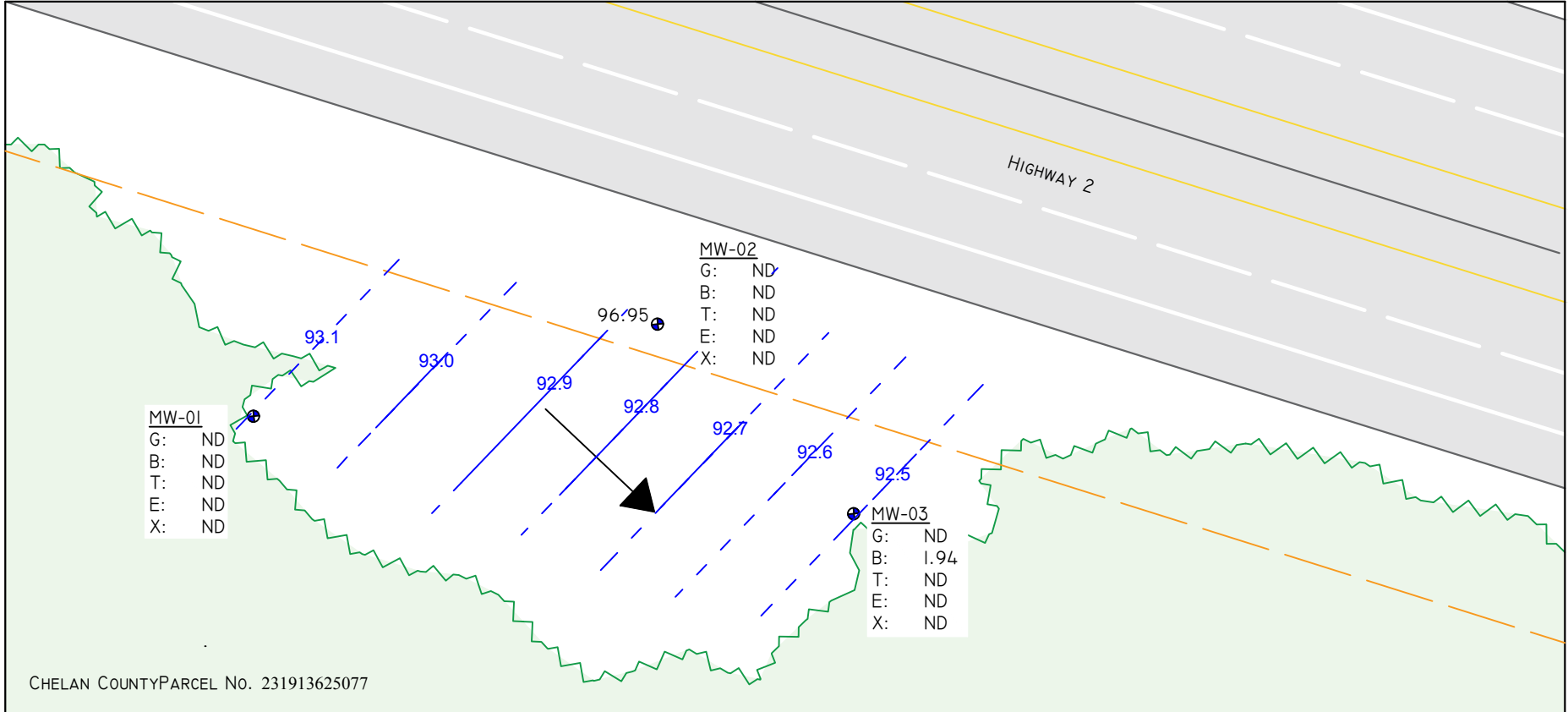
ATTACHMENT B

Figures





BACKGROUND IMAGE
COURTESY OF USGS







DEPTHS TO WATER (BELOW TOP OF CASING):

MW-01: 7.03 FT
MW-02: 7.12 FT
MW-03: 9.06 FT

CLEANUP LEVELS

G (GASOLINE): 800/1,000
B (BENZENE): 5.0
T (TOLUENE): 1,000
E (ETHYLBENZENE): 700
X (TOTAL XYLENES): 1,000

LEGEND

-  GROUNDWATER MONITORING WELL
-  GROUNDWATER FLOW DIRECTION
-  GROUNDWATER ELEVATION CONTOUR (FT)
-  PROPERTY BOUNDARY

A-Z

- NOTES:
- 1) GROUNDWATER ELEVATION WAS CALCULATED USING AN ARBITRARY DATUM. GROUNDWATER MEASUREMENTS IN MONITORING WELLS ARE RELATIVE TO EACH OTHER.
 - 2) DRAWING IS NOT TO EXACT SCALE AND IS FOR REFERENCE ONLY.
 - 3) SELECT ANALYTICAL DATA PRESENTED; SEE EVENT LETTER FOR ADDITIONAL DETAILS.
 - 4) RESULTS PRESENTED IN UG/L.

ATTACHMENT C

Laboratory Analytical Results Summary Table

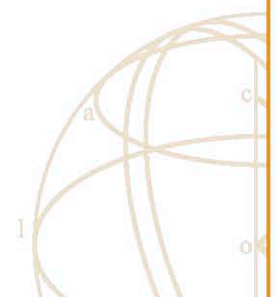




Table 1. Groundwater Analytical Summary – September 2016 Quarterly Event

	Analyte	MTCA Cleanup Level	MW-01	MW-02	MW-03
		<i>Depth to Water</i>	<i>7.03 ft.</i>	<i>7.12 ft.</i>	<i>9.06 ft.</i>
Field Parameters	pH	NE	5.86	6.92	7.14
	Conductivity (m S/M)	NE	11.6	18.1	56.9
	Turbidity (NTU)	NE	-	11.9	12.6
	DO (g/L)	NE	-	-	-
	Temperature (°C)	NE	15.81	18.25	15.95
	TDS (g/L)	NE	1.4	1.2	3.9
	ORP (mV)	NE	53	-138	-145
Regulatory Requirements ¹	Gasoline	800 / 1,000	ND	ND	ND
	Benzene	5.0	ND	ND	1.94
	Toluene	1,000	ND	ND	ND
	Ethylbenzene	700	ND	ND	ND
	m,p-Xylene	1,000³	ND	ND	ND
	o-Xylene		ND	ND	ND
Groundwater Quality ¹	Nitrite ⁴	1,600	ND	ND	ND
	Nitrate ⁴	25,600	2,430	ND	ND
	Sulfate ⁴	NE	9,510	28,400	ND
	Manganese ⁴	2,240	28	4,980	790
	Alkalinity	NE	103,000	597,000	543,000
	Methane	NE	5	35.6	810

NE – Not Established.

ND - Non-Detect

¹ Results presented in ug/L.

² Readings surpassed equipment reporting limits.

³ Results for total xylenes present.

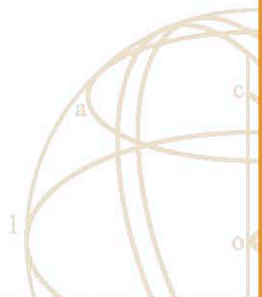
⁴ Nitrite, Nitrate, and Manganese cleanup levels are MTCA Method B Non-Cancer



Whitley Fuels Tanker Spill Groudwater Monitoring Data (1994 to Current)

Well	Date	10/26/1994	3/10/1995	6/12/1995	9/11/1995	12/4/1995	2/27/1996	9/10/2002	9/3/2003	9/2/2004	9/7/2005	9/13/2006	9/24/2007	9/3/2008	9/2/2009	9/7/2010	9/28/2011	9/12/2012	9/10/2013	6/16/2016	9/19/2016	MTCA Method A CUL		
MW-01	Contaminants	Gasoline	ND	ND	ND	ND	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	800	
		Benzene	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	5
		Toluene	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	1,000
		Ethylbenzene	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	700
		Xylene	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	1,000
	Geochemical Indicators	Nitrite	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	NE
		Nitrate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	170	2,430	NE
		Sulfate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,400	9,510	NE
		Manganese	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	51.2	28	NE
		Alkalinity	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	183,000	103,000	NE
		Methane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17.9	5	NE
		pH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.93	5.86	NE
		Cond. (m S/M)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	99.9	11.6	NE
		Turb. (NTU)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	NE
		DO (g/L)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.7	-	NE
		Temp. °C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12.47	15.81	NE
		TDS (g/L)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4	1.4	NE
		ORP (mV)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-204	53	NE
		Total Iron (mg/L)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NE
MW-02	Contaminants	Gasoline	91,400.00	ND	ND	5,400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	235	ND	800	
		Benzene	5,010	ND	1	120	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	5
		Toluene	14	ND	ND	64	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	1,000
		Ethylbenzene	0.8	ND	ND	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.54	ND	700
		Xylene	4,590	ND	ND	770	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.54	ND	1,000
	Geochemical Indicators	Nitrite	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	NE
		Nitrate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	135	ND	NE
		Sulfate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18,800	28,400	NE
		Manganese	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,870	4,980	NE
		Alkalinity	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	392,000	597,000	NE
		Methane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20.5	35.6	NE
		pH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.60	6.92	NE
		Cond. (m S/M)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.113	18.1	NE
		Turb. (NTU)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20.1	11.9	NE
		DO (g/L)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.0	-	NE
		Temp. °C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12.62	18.25	NE
		TDS (g/L)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.7	1.2	NE
		ORP (mV)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-181	-138	NE
		Total Iron (mg/L)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NE
MW-03	Contaminants	TPH (Gas)	23,700,000	311	280	5200	2400	ND	134	<100	696	837	<100	157	<100	239	377	491	484	401	471	ND	800	
		Benzene	203	ND	ND	46	21	ND	2	<0.5	47.9	46	1.33	12.5	4.3	10.3	14.7	8.5	10.6	11.5	6.65	1.94	5	
		Toluene	197	ND	ND	6.6	2.7	ND	<2	<2.0	2.57	2.38	<2	<2	<2	<1	<1	1	<1	<1	ND	ND	1,000	
		Ethylbenzene	ND	ND	ND	93	8.4	ND	<1	<1.0	76.2	47.8	<1	3.87	<1	6.29	3.54	<1	1.1	1.7	1.5	ND	ND	700
		Xylene	1050	9.3	ND	180	230	ND	<1.5	<1.5	67.3	82.8	<1.5	6.17	<1.5	3.3	<3	<3	<3	<3	ND	ND	ND	1,000
	Geochemical Indicators	Nitrite	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	NE
		Nitrate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	364	ND	NE
		Sulfate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12,800	ND	NE
		Manganese	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,600	790	NE
		Alkalinity	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	802,000	543,000	NE
		Methane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	43.3	810	NE
		pH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.66	7.14	NE
		Cond. (m S/M)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.182	56.9	NE
		Turb. (NTU)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14.0	12.6	NE
		DO (g/L)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.9	-	NE
		Temp. °C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12.20	15.95	NE
		TDS (g/L)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.2	3.9	NE
		ORP (mV)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-154	-145	NE
		Total Iron (mg/L)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NE

ATTACHMENT D
Complete Laboratory Analytical Results





3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Fulcrum Environmental

Kyle Ames
406 N. 2nd Street
Yakima, WA 98901

RE: Whitley Tanker Spill GWS

Lab ID: 1609248

September 27, 2016

Attention Kyle Ames:

Fremont Analytical, Inc. received 4 sample(s) on 9/20/2016 for the analyses presented in the following report.

Dissolved Gases by RSK-175
Dissolved Metals by EPA Method 200.8
Gasoline by NWTPH-Gx
Ion Chromatography by EPA Method 300.0
Total Alkalinity by SM 2320B
Volatile Organic Compounds by EPA Method 8260C

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Chelsea Ward
Project Manager

DoD/ELAP Certification #L2371, ISO/ICC 17025:2005
ORELAP Certification: WA 100009-007 (NELAP Recognized)



Date: 09/27/2016

CLIENT: Fulcrum Environmental
Project: Whitley Tanker Spill GWS
Lab Order: 1609248

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1609248-001	91916-01	09/19/2016 10:30 AM	09/20/2016 11:05 AM
1609248-002	91916-02	09/19/2016 11:30 AM	09/20/2016 11:05 AM
1609248-003	91916-03	09/19/2016 12:20 PM	09/20/2016 11:05 AM
1609248-004	91916-04	09/19/2016 12:30 PM	09/20/2016 11:05 AM

CLIENT: Fulcrum Environmental
Project: Whitley Tanker Spill GWS

I. SAMPLE RECEIPT:

Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

- * - Flagged value is not within established control limits
- B - Analyte detected in the associated Method Blank
- D - Dilution was required
- E - Value above quantitation range
- H - Holding times for preparation or analysis exceeded
- I - Analyte with an internal standard that does not meet established acceptance criteria
- J - Analyte detected below Reporting Limit
- N - Tentatively Identified Compound (TIC)
- Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
- S - Spike recovery outside accepted recovery limits
- ND - Not detected at the Reporting Limit
- R - High relative percent difference observed

Acronyms:

- %Rec - Percent Recovery
- CCB - Continued Calibration Blank
- CCV - Continued Calibration Verification
- DF - Dilution Factor
- HEM - Hexane Extractable Material
- ICV - Initial Calibration Verification
- LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
- MB or MBLANK - Method Blank
- MDL - Method Detection Limit
- MS/MSD - Matrix Spike / Matrix Spike Duplicate
- PDS - Post Digestion Spike
- Ref Val - Reference Value
- RL - Reporting Limit
- RPD - Relative Percent Difference
- SD - Serial Dilution
- SGT - Silica Gel Treatment
- SPK - Spike
- Surr - Surrogate



Client: Fulcrum Environmental

Collection Date: 9/19/2016 10:30:00 AM

Project: Whitley Tanker Spill GWS

Lab ID: 1609248-001

Matrix: Water

Client Sample ID: 91916-01

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Dissolved Gases by RSK-175

Batch ID: R31970 Analyst: BC

Methane	0.00557	0.00500		mg/L	1	9/26/2016 4:00:00 PM
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Gasoline by NWTPH-Gx

Batch ID: 14887 Analyst: EM

Gasoline	ND	50.0		µg/L	1	9/21/2016 8:23:00 AM
Surr: Toluene-d8	108	65-135		%Rec	1	9/21/2016 8:23:00 AM
Surr: 4-Bromofluorobenzene	89.4	65-135		%Rec	1	9/21/2016 8:23:00 AM

Volatile Organic Compounds by EPA Method 8260C

Batch ID: 14887 Analyst: EM

Benzene	ND	1.00		µg/L	1	9/21/2016 8:23:00 AM
Toluene	ND	1.00		µg/L	1	9/21/2016 8:23:00 AM
Ethylbenzene	ND	1.00		µg/L	1	9/21/2016 8:23:00 AM
m,p-Xylene	ND	1.00		µg/L	1	9/21/2016 8:23:00 AM
o-Xylene	ND	1.00		µg/L	1	9/21/2016 8:23:00 AM
Surr: Dibromofluoromethane	77.0	45.4-152		%Rec	1	9/21/2016 8:23:00 AM
Surr: Toluene-d8	84.3	40.1-139		%Rec	1	9/21/2016 8:23:00 AM
Surr: 1-Bromo-4-fluorobenzene	92.8	64.2-128		%Rec	1	9/21/2016 8:23:00 AM

Ion Chromatography by EPA Method 300.0

Batch ID: R31873 Analyst: KT

Nitrite (as N)	ND	0.100		mg/L	1	9/20/2016 6:03:00 PM
Nitrate (as N)	2.43	0.100		mg/L	1	9/20/2016 6:03:00 PM
Sulfate	9.51	0.300		mg/L	1	9/20/2016 6:03:00 PM

Dissolved Metals by EPA Method 200.8

Batch ID: 14903 Analyst: TN

Manganese	28.0	2.00		µg/L	1	9/22/2016 11:35:13 AM
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Total Alkalinity by SM 2320B

Batch ID: R31914 Analyst: KT

Alkalinity, Total (As CaCO3)	103	2.50		mg/L	1	9/22/2016 3:24:00 PM
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Client: Fulcrum Environmental

Collection Date: 9/19/2016 11:30:00 AM

Project: Whitley Tanker Spill GWS

Lab ID: 1609248-002

Matrix: Water

Client Sample ID: 91916-02

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Dissolved Gases by RSK-175

Batch ID: R31970 Analyst: BC

Methane	0.0356	0.00500		mg/L	1	9/26/2016 4:02:00 PM
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Gasoline by NWTPH-Gx

Batch ID: 14887 Analyst: EM

Gasoline	ND	50.0		µg/L	1	9/21/2016 9:48:00 AM
Surr: Toluene-d8	104	65-135		%Rec	1	9/21/2016 9:48:00 AM
Surr: 4-Bromofluorobenzene	95.1	65-135		%Rec	1	9/21/2016 9:48:00 AM

Volatile Organic Compounds by EPA Method 8260C

Batch ID: 14887 Analyst: EM

Benzene	ND	1.00		µg/L	1	9/21/2016 9:48:00 AM
Toluene	ND	1.00		µg/L	1	9/21/2016 9:48:00 AM
Ethylbenzene	ND	1.00		µg/L	1	9/21/2016 9:48:00 AM
m,p-Xylene	ND	1.00		µg/L	1	9/21/2016 9:48:00 AM
o-Xylene	ND	1.00		µg/L	1	9/21/2016 9:48:00 AM
Surr: Dibromofluoromethane	78.4	45.4-152		%Rec	1	9/21/2016 9:48:00 AM
Surr: Toluene-d8	82.3	40.1-139		%Rec	1	9/21/2016 9:48:00 AM
Surr: 1-Bromo-4-fluorobenzene	98.7	64.2-128		%Rec	1	9/21/2016 9:48:00 AM

Ion Chromatography by EPA Method 300.0

Batch ID: R31873 Analyst: KT

Nitrite (as N)	ND	1.00	D	mg/L	10	9/20/2016 6:14:00 PM
Nitrate (as N)	ND	1.00	D	mg/L	10	9/20/2016 6:14:00 PM
Sulfate	28.4	3.00	D	mg/L	10	9/20/2016 6:14:00 PM

NOTES:

Diluted due to high levels of non-target analytes.

Dissolved Metals by EPA Method 200.8

Batch ID: 14903 Analyst: TN

Manganese	4,980	2.00		µg/L	1	9/22/2016 11:38:45 AM
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Total Alkalinity by SM 2320B

Batch ID: R31914 Analyst: KT

Alkalinity, Total (As CaCO3)	597	2.50		mg/L	1	9/22/2016 3:28:00 PM
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Client: Fulcrum Environmental

Collection Date: 9/19/2016 12:20:00 PM

Project: Whitley Tanker Spill GWS

Lab ID: 1609248-003

Matrix: Water

Client Sample ID: 91916-03

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Dissolved Gases by RSK-175

Batch ID: R31970 Analyst: BC

Methane	0.810	0.0500	D	mg/L	10	9/26/2016 4:10:00 PM
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Gasoline by NWTPH-Gx

Batch ID: 14887 Analyst: EM

Gasoline	ND	50.0		µg/L	1	9/21/2016 10:16:00 AM
Surr: Toluene-d8	105	65-135		%Rec	1	9/21/2016 10:16:00 AM
Surr: 4-Bromofluorobenzene	92.4	65-135		%Rec	1	9/21/2016 10:16:00 AM

Volatile Organic Compounds by EPA Method 8260C

Batch ID: 14887 Analyst: EM

Benzene	1.94	1.00		µg/L	1	9/21/2016 10:16:00 AM
Toluene	ND	1.00		µg/L	1	9/21/2016 10:16:00 AM
Ethylbenzene	ND	1.00		µg/L	1	9/21/2016 10:16:00 AM
m,p-Xylene	ND	1.00		µg/L	1	9/21/2016 10:16:00 AM
o-Xylene	ND	1.00		µg/L	1	9/21/2016 10:16:00 AM
Surr: Dibromofluoromethane	79.7	45.4-152		%Rec	1	9/21/2016 10:16:00 AM
Surr: Toluene-d8	84.1	40.1-139		%Rec	1	9/21/2016 10:16:00 AM
Surr: 1-Bromo-4-fluorobenzene	95.9	64.2-128		%Rec	1	9/21/2016 10:16:00 AM

Ion Chromatography by EPA Method 300.0

Batch ID: R31873 Analyst: KT

Nitrite (as N)	ND	1.00	D	mg/L	10	9/20/2016 6:26:00 PM
Nitrate (as N)	ND	1.00	D	mg/L	10	9/20/2016 6:26:00 PM
Sulfate	ND	3.00	D	mg/L	10	9/20/2016 6:26:00 PM

NOTES:

Diluted due to high levels of non-target analytes.

Dissolved Metals by EPA Method 200.8

Batch ID: 14903 Analyst: TN

Manganese	790	2.00		µg/L	1	9/22/2016 11:42:17 AM
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Total Alkalinity by SM 2320B

Batch ID: R31914 Analyst: KT

Alkalinity, Total (As CaCO ₃)	543	2.50		mg/L	1	9/22/2016 3:32:00 PM
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Client: Fulcrum Environmental

Collection Date: 9/19/2016 12:30:00 PM

Project: Whitley Tanker Spill GWS

Lab ID: 1609248-004

Matrix: Water

Client Sample ID: 91916-04

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Gasoline by NWTPH-Gx

Batch ID: 14887

Analyst: EM

Gasoline	ND	50.0		µg/L	1	9/21/2016 10:45:00 AM
Surr: Toluene-d8	104	65-135		%Rec	1	9/21/2016 10:45:00 AM
Surr: 4-Bromofluorobenzene	95.5	65-135		%Rec	1	9/21/2016 10:45:00 AM

Volatile Organic Compounds by EPA Method 8260C

Batch ID: 14887

Analyst: EM

Benzene	ND	1.00		µg/L	1	9/21/2016 10:45:00 AM
Toluene	ND	1.00		µg/L	1	9/21/2016 10:45:00 AM
Ethylbenzene	ND	1.00		µg/L	1	9/21/2016 10:45:00 AM
m,p-Xylene	ND	1.00		µg/L	1	9/21/2016 10:45:00 AM
o-Xylene	ND	1.00		µg/L	1	9/21/2016 10:45:00 AM
Surr: Dibromofluoromethane	75.9	45.4-152		%Rec	1	9/21/2016 10:45:00 AM
Surr: Toluene-d8	79.5	40.1-139		%Rec	1	9/21/2016 10:45:00 AM
Surr: 1-Bromo-4-fluorobenzene	99.0	64.2-128		%Rec	1	9/21/2016 10:45:00 AM

Work Order: 1609248
CLIENT: Fulcrum Environmental
Project: Whitley Tanker Spill GWS

QC SUMMARY REPORT
Total Alkalinity by SM 2320B

Sample ID MB-R31914	SampType: MBLK	Units: mg/L	Prep Date: 9/22/2016	RunNo: 31914							
Client ID: MBLKW	Batch ID: R31914		Analysis Date: 9/22/2016	SeqNo: 603155							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Alkalinity, Total (As CaCO3) ND 2.50

Sample ID LCS-R31914	SampType: LCS	Units: mg/L	Prep Date: 9/22/2016	RunNo: 31914							
Client ID: LCSW	Batch ID: R31914		Analysis Date: 9/22/2016	SeqNo: 603156							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Alkalinity, Total (As CaCO3) 97.5 2.50 100.0 0 97.5 80 120

Sample ID 1609174-001BDUP	SampType: DUP	Units: mg/L	Prep Date: 9/22/2016	RunNo: 31914							
Client ID: BATCH	Batch ID: R31914		Analysis Date: 9/22/2016	SeqNo: 603158							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Alkalinity, Total (As CaCO3) 151 2.50 145.7 3.39 20

Sample ID 1609201-002BDUP	SampType: DUP	Units: mg/L	Prep Date: 9/22/2016	RunNo: 31914							
Client ID: BATCH	Batch ID: R31914		Analysis Date: 9/22/2016	SeqNo: 603174							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Alkalinity, Total (As CaCO3) 193 2.50 191.0 1.31 20

Work Order: 1609248
CLIENT: Fulcrum Environmental
Project: Whitley Tanker Spill GWS

QC SUMMARY REPORT
Ion Chromatography by EPA Method 300.0

Sample ID MB-R31873	SampType: MBLK	Units: mg/L	Prep Date: 9/20/2016	RunNo: 31873							
Client ID: MBLKW	Batch ID: R31873		Analysis Date: 9/20/2016	SeqNo: 602217							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Nitrite (as N)	ND	0.100									
Nitrate (as N)	ND	0.100									
Sulfate	ND	0.300									

Sample ID LCS-R31873	SampType: LCS	Units: mg/L	Prep Date: 9/20/2016	RunNo: 31873							
Client ID: LCSW	Batch ID: R31873		Analysis Date: 9/20/2016	SeqNo: 602218							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Nitrite (as N)	2.80	0.100	3.000	0	93.4	90	110				
Nitrate (as N)	2.96	0.100	3.000	0	98.6	90	110				
Sulfate	16.5	0.300	15.00	0	110	90	110				

Sample ID 1609218-001ADUP	SampType: DUP	Units: mg/L	Prep Date: 9/20/2016	RunNo: 31873							
Client ID: BATCH	Batch ID: R31873		Analysis Date: 9/20/2016	SeqNo: 602225							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Nitrite (as N)	ND	0.100						0		20	
Nitrate (as N)	ND	0.100						0		20	
Sulfate	1.65	0.300						1.635	0.829	20	

Sample ID 1609218-001AMS	SampType: MS	Units: mg/L	Prep Date: 9/20/2016	RunNo: 31873							
Client ID: BATCH	Batch ID: R31873		Analysis Date: 9/20/2016	SeqNo: 602226							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Nitrite (as N)	3.10	0.100	3.000	0	103	80	120				
Nitrate (as N)	3.09	0.100	3.000	0.04510	101	80	120				
Sulfate	19.3	0.300	15.00	1.635	118	80	120				

Work Order: 1609248
CLIENT: Fulcrum Environmental
Project: Whitley Tanker Spill GWS

QC SUMMARY REPORT
Ion Chromatography by EPA Method 300.0

Sample ID 1609218-001AMSD	SampType: MSD	Units: mg/L	Prep Date: 9/20/2016	RunNo: 31873							
Client ID: BATCH	Batch ID: R31873		Analysis Date: 9/20/2016	SeqNo: 602227							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Nitrite (as N)	3.15	0.100	3.000	0	105	80	120	3.097	1.63	20
Nitrate (as N)	3.13	0.100	3.000	0.04510	103	80	120	3.086	1.57	20
Sulfate	19.1	0.300	15.00	1.635	116	80	120	19.28	0.937	20

Sample ID 1609193-004ADUP	SampType: DUP	Units: mg/L	Prep Date: 9/20/2016	RunNo: 31873							
Client ID: BATCH	Batch ID: R31873		Analysis Date: 9/20/2016	SeqNo: 602237							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Nitrite (as N)	ND	0.100						0		20
Nitrate (as N)	ND	0.100						0		20
Sulfate	ND	0.300						0		20

Sample ID 1609193-004AMS	SampType: MS	Units: mg/L	Prep Date: 9/20/2016	RunNo: 31873							
Client ID: BATCH	Batch ID: R31873		Analysis Date: 9/20/2016	SeqNo: 602238							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Nitrite (as N)	3.15	0.100	3.000	0	105	80	120			
Nitrate (as N)	3.16	0.100	3.000	0	105	80	120			
Sulfate	17.5	0.300	15.00	0	116	80	120			

Work Order: 1609248
CLIENT: Fulcrum Environmental
Project: Whitley Tanker Spill GWS

QC SUMMARY REPORT
Dissolved Metals by EPA Method 200.8

Sample ID MB-14884FB	SampType: MBLK	Units: µg/L	Prep Date: 9/22/2016	RunNo: 31909							
Client ID: MBLKW	Batch ID: 14903	Analysis Date: 9/22/2016	SeqNo: 603075								
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Manganese ND 2.00

NOTES:
Filter Blank

Sample ID MB-14903	SampType: MBLK	Units: µg/L	Prep Date: 9/22/2016	RunNo: 31909							
Client ID: MBLKW	Batch ID: 14903	Analysis Date: 9/22/2016	SeqNo: 603076								
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Manganese ND 2.00

Sample ID LCS-14903	SampType: LCS	Units: µg/L	Prep Date: 9/22/2016	RunNo: 31909							
Client ID: LCSW	Batch ID: 14903	Analysis Date: 9/22/2016	SeqNo: 603077								
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Manganese 99.9 2.00 100.0 0 99.9 85 115

Sample ID 1609207-001CDUP	SampType: DUP	Units: µg/L	Prep Date: 9/22/2016	RunNo: 31909							
Client ID: BATCH	Batch ID: 14903	Analysis Date: 9/22/2016	SeqNo: 603081								
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Manganese 335 2.00 304.1 9.77 30

Sample ID 1609207-001CMS	SampType: MS	Units: µg/L	Prep Date: 9/22/2016	RunNo: 31909							
Client ID: BATCH	Batch ID: 14903	Analysis Date: 9/22/2016	SeqNo: 603082								
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Manganese 816 2.00 500.0 304.1 102 70 130



Work Order: 1609248
CLIENT: Fulcrum Environmental
Project: Whitley Tanker Spill GWS

QC SUMMARY REPORT
Dissolved Metals by EPA Method 200.8

Sample ID 1609207-001CMSD	SampType: MSD	Units: µg/L			Prep Date: 9/22/2016	RunNo: 31909					
Client ID: BATCH	Batch ID: 14903				Analysis Date: 9/22/2016	SeqNo: 603083					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	841	2.00	500.0	304.1	107	70	130	815.8	3.09	30	

Work Order: 1609248
CLIENT: Fulcrum Environmental
Project: Whitley Tanker Spill GWS

QC SUMMARY REPORT
Dissolved Gases by RSK-175

Sample ID	LCS-R31970	SampType:	LCS	Units:	mg/L	Prep Date:	9/26/2016	RunNo:	31970			
Client ID:	LCSW	Batch ID:	R31970			Analysis Date:	9/26/2016	SeqNo:	604421			
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Methane 0.445 0.00500 0.5000 0 89.0 80 120

Sample ID	MB-R31970	SampType:	MBLK	Units:	mg/L	Prep Date:	9/26/2016	RunNo:	31970			
Client ID:	MBLKW	Batch ID:	R31970			Analysis Date:	9/26/2016	SeqNo:	604422			
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Methane ND 0.00500

Sample ID	1609248-003DREP	SampType:	REP	Units:	mg/L	Prep Date:	9/26/2016	RunNo:	31970			
Client ID:	91916-03	Batch ID:	R31970			Analysis Date:	9/26/2016	SeqNo:	604418			
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Methane 0.752 0.00500 0.8103 7.47 20 E

NOTES:

E - Estimated value. The amount exceeds the linear working range of the instrument.

Work Order: 1609248
CLIENT: Fulcrum Environmental
Project: Whitley Tanker Spill GWS

QC SUMMARY REPORT
Gasoline by NWTPH-Gx

Sample ID LCS-14887	SampType: LCS	Units: µg/L	Prep Date: 9/20/2016	RunNo: 31893							
Client ID: LCSW	Batch ID: 14887		Analysis Date: 9/21/2016	SeqNo: 602738							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	589	50.0	500.0	0	118	65	135				
Surr: Toluene-d8	26.9		25.00		108	65	135				
Surr: 4-Bromofluorobenzene	23.8		25.00		95.0	65	135				

Sample ID MB-14887	SampType: MBLK	Units: µg/L	Prep Date: 9/20/2016	RunNo: 31893							
Client ID: MBLKW	Batch ID: 14887		Analysis Date: 9/21/2016	SeqNo: 602739							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	ND	50.0									
Surr: Toluene-d8	26.6		25.00		106	65	135				
Surr: 4-Bromofluorobenzene	23.5		25.00		94.1	65	135				

Sample ID 1609248-001ADUP	SampType: DUP	Units: µg/L	Prep Date: 9/20/2016	RunNo: 31893							
Client ID: 91916-01	Batch ID: 14887		Analysis Date: 9/21/2016	SeqNo: 602729							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	ND	50.0						0		30	
Surr: Toluene-d8	30.2		25.00		121	65	135		0		
Surr: 4-Bromofluorobenzene	21.9		25.00		87.6	65	135		0		

Sample ID 1609260-001BMS	SampType: MS	Units: µg/L	Prep Date: 9/20/2016	RunNo: 31893							
Client ID: BATCH	Batch ID: 14887		Analysis Date: 9/21/2016	SeqNo: 602734							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	416	50.0	500.0	0	83.3	65	135				
Surr: Toluene-d8	29.9		25.00		120	65	135				
Surr: 4-Bromofluorobenzene	23.2		25.00		93.0	65	135				



Work Order: 1609248
CLIENT: Fulcrum Environmental
Project: Whitley Tanker Spill GWS

QC SUMMARY REPORT
Gasoline by NWTPH-Gx

Sample ID 1609260-001BMSD	SampType: MSD	Units: µg/L			Prep Date: 9/20/2016	RunNo: 31893					
Client ID: BATCH	Batch ID: 14887				Analysis Date: 9/21/2016	SeqNo: 602735					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	446	50.0	500.0	0	89.2	65	135	416.3	6.92	30	
Surr: Toluene-d8	31.1		25.00		124	65	135		0		
Surr: 4-Bromofluorobenzene	23.0		25.00		92.1	65	135		0		

Work Order: 1609248
 CLIENT: Fulcrum Environmental
 Project: Whitley Tanker Spill GWS

QC SUMMARY REPORT
Volatile Organic Compounds by EPA Method 8260C

Sample ID	LCS-14887	SampType:	LCS	Units:	µg/L	Prep Date:	9/20/2016	RunNo:	31932		
Client ID:	LCSW	Batch ID:	14887			Analysis Date:	9/21/2016	SeqNo:	603545		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	17.7	1.00	20.00	0	88.7	69.3	132				
Toluene	17.7	1.00	20.00	0	88.6	61.3	145				
Ethylbenzene	20.5	1.00	20.00	0	102	72	130				
m,p-Xylene	40.4	1.00	40.00	0	101	70.3	134				
o-Xylene	21.1	1.00	20.00	0	105	72.1	131				
Surr: Dibromofluoromethane	20.2		25.00		80.6	45.4	152				
Surr: Toluene-d8	19.9		25.00		79.7	40.1	139				
Surr: 1-Bromo-4-fluorobenzene	25.9		25.00		104	64.2	128				

Sample ID	MB-14887	SampType:	MBLK	Units:	µg/L	Prep Date:	9/20/2016	RunNo:	31932		
Client ID:	MBLKW	Batch ID:	14887			Analysis Date:	9/21/2016	SeqNo:	603546		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	1.00									
Toluene	ND	1.00									
Ethylbenzene	ND	1.00									
m,p-Xylene	ND	1.00									
o-Xylene	ND	1.00									
Surr: Dibromofluoromethane	20.6		25.00		82.3	45.4	152				
Surr: Toluene-d8	16.2		25.00		64.9	40.1	139				
Surr: 1-Bromo-4-fluorobenzene	24.4		25.00		97.5	64.2	128				

Sample ID	1609248-001ADUP	SampType:	DUP	Units:	µg/L	Prep Date:	9/20/2016	RunNo:	31932		
Client ID:	91916-01	Batch ID:	14887			Analysis Date:	9/21/2016	SeqNo:	603539		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	1.00						0		30	
Toluene	ND	1.00						0		30	
Ethylbenzene	ND	1.00						0		30	
m,p-Xylene	ND	1.00						0		30	

Work Order: 1609248
CLIENT: Fulcrum Environmental
Project: Whitley Tanker Spill GWS

QC SUMMARY REPORT
Volatile Organic Compounds by EPA Method 8260C

Sample ID 1609248-001ADUP	SampType: DUP	Units: µg/L			Prep Date: 9/20/2016	RunNo: 31932					
Client ID: 91916-01	Batch ID: 14887				Analysis Date: 9/21/2016	SeqNo: 603539					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
o-Xylene	ND	1.00						0		30	
Surr: Dibromofluoromethane	20.2		25.00		80.7	45.4	152		0		
Surr: Toluene-d8	17.2		25.00		68.9	40.1	139		0		
Surr: 1-Bromo-4-fluorobenzene	22.8		25.00		91.0	64.2	128		0		

Sample ID 1609241-019AMS	SampType: MS	Units: µg/L			Prep Date: 9/20/2016	RunNo: 31932					
Client ID: BATCH	Batch ID: 14887				Analysis Date: 9/21/2016	SeqNo: 603536					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	19.2	1.00	20.00	0	95.8	65.4	138				
Toluene	19.3	1.00	20.00	0.1367	95.9	64	139				
Ethylbenzene	28.6	1.00	20.00	15.56	65.0	64.5	136				
m,p-Xylene	99.5	1.00	40.00	93.27	15.6	63.3	135				SE
o-Xylene	38.2	1.00	20.00	23.30	74.3	65.4	134				
Surr: Dibromofluoromethane	20.0		25.00		79.9	45.4	152				
Surr: Toluene-d8	20.6		25.00		82.3	40.1	139				
Surr: 1-Bromo-4-fluorobenzene	25.0		25.00		100	64.2	128				

NOTES:

S - Analyte concentration was too high for accurate spike recovery(ies).

Sample ID 1609241-019AMSD	SampType: MSD	Units: µg/L			Prep Date: 9/20/2016	RunNo: 31932					
Client ID: BATCH	Batch ID: 14887				Analysis Date: 9/21/2016	SeqNo: 603537					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	18.9	1.00	20.00	0	94.6	65.4	138	19.15	1.23	30	
Toluene	19.1	1.00	20.00	0.1367	95.1	64	139	19.32	0.874	30	
Ethylbenzene	28.1	1.00	20.00	15.56	62.5	64.5	136	28.55	1.76	30	S
m,p-Xylene	92.5	1.00	40.00	93.27	-1.96	63.3	135	99.53	7.33	30	SE
o-Xylene	43.6	1.00	20.00	23.30	102	65.4	134	38.16	13.4	30	
Surr: Dibromofluoromethane	19.8		25.00		79.1	45.4	152		0		
Surr: Toluene-d8	19.9		25.00		79.6	40.1	139		0		

Work Order: 1609248
CLIENT: Fulcrum Environmental
Project: Whitley Tanker Spill GWS

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID 1609241-019AMSD	SampType: MSD	Units: µg/L	Prep Date: 9/20/2016	RunNo: 31932							
Client ID: BATCH	Batch ID: 14887	Analysis Date: 9/21/2016	SeqNo: 603537								
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Surr: 1-Bromo-4-fluorobenzene	31.6		25.00		126	64.2	128		0		
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NOTES:

S - Analyte concentration was too high for accurate spike recovery(ies).

S - Outlying spike recovery(ies) observed for Ethylbenzene. A duplicate analysis was performed and recovered within range.

Client Name: **FE**

 Work Order Number: **1609248**

 Logged by: **Clare Griggs**

 Date Received: **9/20/2016 11:05:00 AM**
Chain of Custody

1. Is Chain of Custody complete? Yes No Not Present
2. How was the sample delivered? UPS

Log In

3. Coolers are present? Yes No NA
4. Shipping container/cooler in good condition? Yes No
5. Custody Seals present on shipping container/cooler?
(Refer to comments for Custody Seals not intact) Yes No Not Required
6. Was an attempt made to cool the samples? Yes No NA
7. Were all items received at a temperature of >0°C to 10.0°C * Yes No NA
8. Sample(s) in proper container(s)? Yes No
9. Sufficient sample volume for indicated test(s)? Yes No
10. Are samples properly preserved? Yes No
11. Was preservative added to bottles? Yes No NA
12. Is there headspace in the VOA vials? Yes No NA
13. Did all samples containers arrive in good condition(unbroken)? Yes No
14. Does paperwork match bottle labels? Yes No
15. Are matrices correctly identified on Chain of Custody? Yes No
16. Is it clear what analyses were requested? Yes No
17. Were all holding times able to be met? Yes No

Special Handling (if applicable)

18. Was client notified of all discrepancies with this order? Yes No NA

Person Notified:	<input type="text"/>	Date:	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

19. Additional remarks:

Item Information

Item #	Temp °C
Cooler	0.7
Sample	1.3

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

