

LETTER OF TRANSMITTAL

To: Julia Mizuhata
From: Ron Paananen
Date: July 1, 2022
Copies To: WSDOT Document Control
Project Files

Contract & Task Order: Y-11848 DA
File Code: Y-11848 DA 4.1.11
LOT #: LOT-2702

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We are transmitting the following materials:

Y-11848 DA 4.1.11 FINAL Quarter 1 Groundwater Monitoring Report

Comments:

Please find the above document(s) enclosed. We are submitting the *Final Q1 Groundwater Monitoring Report* in accordance with Contract Y-11848, Task Order DA, Deliverable 4.1.11.

If you have questions please contact Meg Strong.



Program Engineering Manager

7/1/2022
Date



MEMORANDUM

To: Ron Paananen, HDR
Contract & Task Order: DA Deliverable 4.1.11

From: Joseph Sawdey, LG, LHG
Meg Strong, LG, LHG
Shannon & Wilson
File Code:

Date: June 27, 2022

Copies To: Robyn Boyd
Dave Becher
Margaret Kucharski

Subject: Groundwater Monitoring Memorandum – Quarter No. 1, Voluntary Cleanup Program NW3242, Montlake Gas Station, Seattle, Washington

Background

In 2019, the Washington State Department of Transportation (WSDOT) entered the Former Montlake Gas Station property located in Seattle, Washington (site) into the Washington State Department of Ecology (Ecology) Voluntary Cleanup Program (VCP).

As part of the VCP application, Shannon & Wilson submitted a Remedial Investigation (RI) work plan and a subsequent RI Report to Ecology, on behalf of WSDOT. The RI Report included investigation data that was used to characterize the nature and extent of petroleum hydrocarbon contamination in soil and groundwater associated with historic fueling operations at the site (Shannon & Wilson, 2020).

In 2021, PBS Engineering and Environmental prepared and submitted to Ecology a Remedial Action Work Plan detailing the proposed remediation excavation activities (PBS, 2021a). In August and September 2021, PBS oversaw the closure and removal of the former gas station underground storage tanks and piping, as well as the excavation of the petroleum contaminated soil source zone (source zone), as documented in the Remedial Action Completion Plan (PBS, 2021b). Soil compliance has been achieved at the site as documented by confirmation sampling performed by PBS during the remedial excavation.

Groundwater compliance is currently being evaluated. On April 19 and 20, 2022, Shannon & Wilson installed additional compliance groundwater monitoring (CGM) wells at the site following Ecology recommendations (Shannon & Wilson, 2022). The CGM well network

developed for the site consists of six monitoring wells: MW-2-19, MW-3-19, MW-6-22, MW-7-22, MW-8-22, and MW-9-22. The monitoring wells have been surveyed and locations are depicted in Exhibit 1.

This memorandum presents the results of the Quarter No. 1 CGM event and documents the initial effect(s) of the source zone removal on site groundwater quality.

Quarter No. 1 Groundwater Monitoring Activities

Well Gauging

On May 2, 2022, Shannon & Wilson gauged each of the CGM wells to check for free product (if present) and to measure groundwater elevations. Measurable free product was not encountered within any of the CGM wells; however, at MW-3-19, a petroleum hydrocarbon-like sheen and odor was noted on the oil-water interface probe following gauging of the well.

Groundwater Sampling

On May 2, 2022, Shannon & Wilson purged each of the CGM wells using a peristaltic pump with a flow-through cell and water quality meter to measure the following field parameters: temperature, oxidation-reduction potential, pH, conductivity, dissolved oxygen, turbidity, salinity, and total dissolved solids. Field parameters collected during purging of the CGM wells can be found in Attachment 1: Ground Water Sampling Field Forms.

Upon stabilization of the field parameters during well purging (indicating steady groundwater flow to the well), groundwater samples were collected by discharging groundwater from the end of the peristaltic tubing into clean, laboratory-supplied containers. Collected groundwater samples were immediately put on ice and stored within an insulated cooler. Groundwater samples from each of the CGM wells were delivered to Onsite Environmental Inc., of Redmond, Washington, under standard chain-of-custody procedures and analyzed for:

- Gasoline-range petroleum hydrocarbons using Ecology's Northwest Total Petroleum Hydrocarbon-Gasoline Extended Method;
- Benzene, toluene, ethylbenzene, and xylene (BTEX) by United States Environmental Protection Agency (EPA) 8260 Method;
- Diesel- and oil-range petroleum hydrocarbons using Ecology's Northwest Total Petroleum Hydrocarbon-Diesel Extended Method; and
- Total and dissolved arsenic by EPA Method 6010/7470.

For complete details on the groundwater sampling methodology, refer to the Sample Collection and Chemical Testing sections of the RI Work Plan (Shannon & Wilson, 2019).

Quarter No. 1 Results and Interpretation

Groundwater Elevation and Flow Directions

Measured groundwater elevations are reported in Exhibit 2 and displayed in Exhibit 1. Groundwater elevations in May 2022 ranged from as low as 41.75 feet (MW-3-19) above mean

sea level (AMSL) to as high as 49.82 feet AMSL (MW-2-19). Using the measured groundwater elevations, a groundwater potentiometric surface was interpolated with associated groundwater flow directions inferred to occur perpendicular to the equipotentials comprising the potentiometric surface (refer to Exhibit 1).

In general, the groundwater setting at the site observed during Quarter No. 1 is consistent with that observed during the RI (Shannon & Wilson, 2020). At previously existing wells MW-2-19 and MW-3-19, groundwater elevations measured in Quarter No. 1 were higher by 1.82 feet and 0.18 feet, respectively, compared to the RI levels collected in October 2019. The higher groundwater elevations were expected; as seasonally, groundwater elevation in the vicinity tends to be highest from March through May (end of wet season).

The estimated groundwater flow direction for Quarter No. 1 is to the northeast and northwest, consistent with the RI findings. The hydraulic gradient across the remedial excavation is relatively flat compared to the hydraulic gradient surrounding the remedial excavation (Exhibit 1).

Groundwater Sampling Results

The laboratory analytical results for collected groundwater samples are presented in Exhibit 3. The full laboratory report is included as Attachment 2. Monitoring wells with groundwater sample contaminant concentrations that exceed applicable Cleanup Levels (CULs) are also depicted in Exhibit 1.

Groundwater Sampling Interpretation

Consistent with findings from the RI (Shannon & Wilson, 2020), groundwater contaminant concentrations measured in MW-2-19 (upgradient well) during Quarter No. 1 were non-detect.

MW-6-22 and MW-7-22 were installed to be immediately downgradient of the former (excavated) source zone within an area of known groundwater contamination. Groundwater contaminant concentrations measured in MW-6-22 and MW-7-22 were mostly non-detect, with the exception of concentrations of summed diesel- and oil-range petroleum hydrocarbons above CULs in MW-6-22. Since groundwater contaminant concentrations collected during Quarter No. 1 from MW-6-22 and MW-7-22 were below applicable CULs for the primary contaminants (gasoline and benzene), these wells document groundwater quality improvement following the remedial excavation.

MW-8-22 and MW-9-22 were targeted to be installed near former soil borings SB-7-19 and H-19-18, respectively. During the RI, reconnaissance groundwater samples collected from SB-7-19 and H-19-19 exceeded applicable CULs for petroleum hydrocarbons and BTEX. Groundwater samples collected from MW-8-22 and MW-9-22 during the Quarter No. 1 monitoring event did not exceed any of the applicable CULs, again documenting groundwater quality improvement following the remedial excavation.

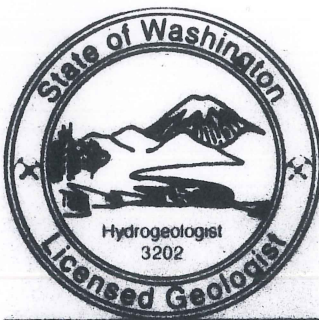
Groundwater samples from one CGM well, MW-3-19, contained contaminant concentrations that exceeded applicable CULs (Exhibits 1 and 3). Concentrations of gasoline-range petroleum hydrocarbons and BTEX increased at MW-3-19 compared to the RI and following the remedial

excavation, while diesel- and oil-range petroleum hydrocarbon concentrations have decreased to concentrations below applicable CULs. MW-3-19 is the most downgradient CGM well at the site and the furthest from the remedial excavation area. Being downgradient and furthest from the remedial excavation, it would be expected for MW-3-19 to take the longest to be impacted by the remediation.

We appreciate this opportunity to provide environmental services to you for this project. If you have questions regarding this letter, please contact the undersigned at (206) 632-8020.

Sincerely,

Shannon & Wilson



Joseph Russell Sawdey

[Handwritten signature] 6/29/22

Joseph Sawdey, LG, LHG
Senior Hydrogeologist

[Handwritten signature]

Meg Strong, LG, LHG
Senior Consultant

JXS:MJS/jxs:mrh

References

PBS Engineering and Environmental, 2021a, Remedial Action Plan, Montlake Gas Station, Seattle, Wash., March 2021.

PBS Engineering and Environmental, 2021b, Remedial Action Completion Report, Montlake Gas Station, Seattle, Wash., December 2021.

Shannon & Wilson, 2019, Data Gaps Investigation Work Plan/Sampling and Analysis Plan for Montlake Gas Station, Seattle, Wash., July 2019.

Shannon & Wilson, 2020, Remedial Investigation Report for Montlake Gas Station, Seattle, Wash., March 2020.

Shannon & Wilson, 2022, Compliance Groundwater Monitoring Well Installation Memo, Montlake Gas Station, Seattle, Wash., May 2022.

Exhibits

Exhibit 1 – Groundwater Potentiometric Surface Map with Groundwater Elevation

Exhibit 2 – Groundwater Level Measurements

Exhibit 3 – Summary of Groundwater Analytical Results

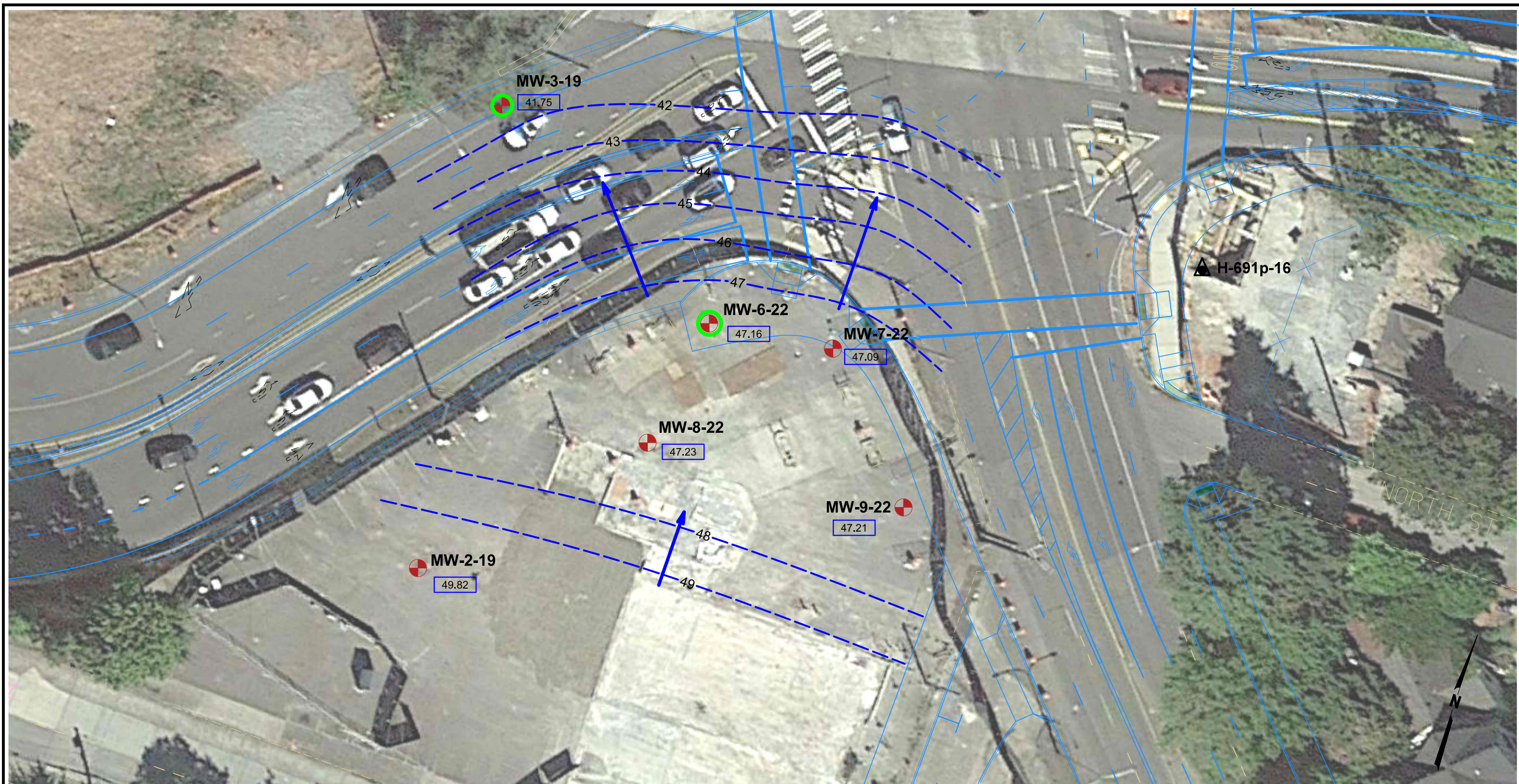
Attachments

Attachment 1 – Groundwater Sampling Field Forms

Attachment 2 – Laboratory Report and Chain-of-Custody Form

Filename: C:\Users\cyh\CAD_Group\Dropbox\OpenRoads\21122242\104\comments\211-22242-104-FIG.dgn
 3:41:40 PM
 6/8/2022

Model: FIG 2



NOTES:

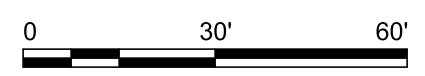
1. VERTICAL DATUM: NAVD 88
2. HORIZONTAL DATUM
WSDOT PROJECT DATUM
SR520 BRIDGE REPLACEMENT
MODIFIED NAD 83/91 4601 WA NORTH
3. POST CONSTRUCTION CONFIGURATION SHOWN AS: ———

PLAN

SCALE: 1" = 30'

LEGEND:

- H-667p-15** DECOMMISSIONED WELL LOCATION AND DESIGNATION
- MW-2-19** MONITORING WELL LOCATION AND DESIGNATION
- MW-3-19** GROUNDWATER CONCENTRATIONS FROM THE WELL EXCEED APPLICABLE CLEANUP LEVELS
- 47** GROUNDWATER ELEVATION (FEET, NAVD 88)
- GROUNDWATER FLOWLINE
- 49.82** GROUNDWATER ELEVATION AT MONITORING WELL (MAY 2022)



SR 520 Bridge Replacement and HOV Program
 SR 520 I-5 to Montlake -I/C and Bridge Replacement
 Groundwater Monitoring Report-Quarter No.1

**GROUNDWATER
 POTENTIOMETRIC SURFACE MAP
 WITH GROUNDWATER ELEVATION**

JUNE 2022 21-1-22242-104

EXHIBIT 2
Groundwater Level Measurements

SR 520 Bridge Replacement and HOV Program
Montlake Gas Station
Groundwater Monitoring Memorandum - Quarter No. 1

Monitoring Well	Screened Interval (feet bgs)	Surveyed Monitoring Well Elevation¹ (feet)	TOC Elevation (feet)	Date	Depth to Water (feet below TOC)	Groundwater Elevation (feet)
MW-2-19	10-20	58.87	58.12	10/17/2019	10.12	48.00
MW-2-19	10-20	58.87	58.12	5/2/2022	8.3	49.82
MW-3-19	10-25	59.29	59.01	10/17/2019	17.44	41.57
MW-3-19	10-25	59.29	59.01	5/2/2022	17.26	41.75
MW-6-22	11-26	59.71	59.36	5/2/2022	12.2	47.16
MW-7-22	10.5-25.5	59.677	59.177	5/2/2022	12.09	47.09
MW-8-22	10.5-25.5	58.896	58.546	5/2/2022	11.32	47.23
MW-9-22	10-25	59.93	59.58	5/2/2022	12.37	47.21

NOTES:

1 Monitoring well elevation was surveyed from the center of the well monument lid.
The reference vertical datum is the North American Vertical Datum (NAVD88) (feet).
bgs = below ground surface; TOC = top of casing

EXHIBIT 3
Summary of Groundwater Analytical Results

Monitoring Well:	MW-2-19		MW-3-19		MW-6-22	MW-7-22	MW-8-22		MW-9-22	Trip Blank	MTCA Method A CUL for Unrestricted Land Use
Sample Name:	MW-2-101719	MW-2-19:GW-05022022	MW-3-101719	MW-3-19:GW-05022022	MW-6-22:GW-05022022	MW-7-22:GW-05022022	MW-8-22:GW-05022022	MW-100-22:GW-05022022	MW-9-22:GW-05022022	TB-1-05022022	
Sample Date:	10/17/2019	5/2/2022	10/17/2019	5/2/2022	5/2/2022	5/2/2022	5/2/2022	5/2/2022	5/2/2022	5/2/2022	
Petroleum Hydrocarbons (µg/L)											
Gasoline Range Organics ¹	<100	<100	1400	5800	<100	<100	<100	<100	<100	<100	1000/800*
Diesel Range Organics ²	<260	<0.18	630	1.3 M	0.21	<0.17	<0.17	<0.17	<0.16	--	500
Lube Oil Range Organics ²	<420	<0.24	660	0.5	0.33	<0.23	<0.22	0.24	<0.22	--	500
Volatile Organic Compounds (µg/L)³											
Benzene	<0.2	<0.20	98	170	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	5.00
Toluene	<1	<1.0	<4	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1000
Ethylbenzene	<0.2	<0.20	24	190	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	700
m,p-Xylene	<0.4	<0.40	9.3	220	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	1000†
o-Xylene	<0.2	<0.20	1.1	3.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	1000†
Metals (µg/L)⁴											
Total Arsenic	<3.3	<3.3	17	16	<3.3	<3.3	<3.3	<3.3	<3.3	--	20§
Dissolved Arsenic	<3	<3.0	7.4	11	<3.0	<3.0	<3.0	<3.0	<3.0	--	20§

NOTES:
1 Gasoline-range petroleum hydrocarbons using Ecology's NWTPH-Gasoline Extended Method
2 Diesel- and oil-range petroleum hydrocarbons using Ecology's NWTPH-Diesel Extended Method
3 Volatile organic compounds by EPA Method 8260D
4 Total and dissolved arsenic by EPA Method 200.8
Highlighted text indicates the analyte was detected above the MTCA Method A cleanup level.
Bold text indicates the analyte was detected above laboratory practical quantitation limit.
M flag indicates hydrocarbons in the gasoline range are impacting the diesel range result.
* CUL for gasoline-range organics is 1,000 µg without the presence of benzene and 800 µg with the presence of benzene.
† MTCA Method A CUL for total xylenes is used since a MTCA Method A CUL is not established for the isomers of m-, p-, or o-xylene.
§ Site specific CUL for arsenic (total and dissolved) based on statistical analysis of natural background levels of arsenic in groundwater.
-- = not analyzed; < = not detected above laboratory reporting limit; µg/L = micrograms per liter; CUL = cleanup level; EPA = U.S. Environmental Protection Agency; MTCA = Model Toxics Control Act; NWTPH = Northwest Total Petroleum Hydrocarbon

Attachment 1

Contents:

Groundwater Sampling Field Forms

OWNER / LOCATION: Montlake 76 Gas Station DATE: 5/2/2022
 WELL NO: MW-2-19 SAMPLE NO: MW-2-19-GW-05022022 ECOLOGY TAG NO: BLT 996 DUPLICATE NO:
 WEATHER: Rain, high 40s MS / MSD? Yes No
 WELL SITE CONDITIONS / MP DEFINITION: NTOC
 (MP is typically the north PVC rim)

SAMPLING DATA

TIME STARTED: 0645 LNAPL THICKNESS: Ø ft. Sample
 PID HEAD SPACE: 0.3 ppm DNAPL THICKNESS: _____ ft. Sample
 MP DISTANCE ABOVE / BELOW GROUND SURFACE: 0.8 ft.
 TOTAL DEPTH OF WELL BELOW MP: 19.26 ft.
 DTW BELOW MP: 8.30 ft.
 WATER COLUMN IN WELL: 10.96 ft.
 CASING DIAMETER: 2 in.
 GALLONS PER FOOT: 0.16
 GALLONS IN WELL: 1.75 x 3 = 5.26
 TIME PURGING STARTED: 0710

SAMPLE CONTAINERS			
Number	Size	Type	Pres.
<u>5</u>	<u>0.5 nL</u>	<u>VOA</u>	<u>HCl</u>
<u>2</u>	<u>50</u>	<u>Amber</u>	
<u>2</u>	<u>50</u>	<u>Poly</u>	<u>1/1 1/1/0</u>

FIELD PARAMETERS

GALLONS REMOVED	TEMP. (C°)	ORP (mv)	pH	COND. (µmhos / cm)	D.O. (mg / L)	TURBIDITY (NTU)	SALINITY (%)	TDS (g / L)	COLOR	TIME
Initial	<u>12.96</u>	<u>76.6</u>	<u>6.51</u>	<u>415</u>	<u>4.76</u>	<u>26.7</u>	<u>0.20</u>	<u>0.276</u>	<u>clear</u>	<u>0713</u>
<u>0.5</u>	<u>12.80</u>	<u>12.7</u>	<u>6.75</u>	<u>412</u>	<u>3.75</u>	<u>28.3</u>	<u>0.20</u>	<u>0.268</u>	<u>clear</u>	<u>0718</u>
<u>0.75</u>	<u>12.75</u>	<u>7.0</u>	<u>6.85</u>	<u>411</u>	<u>3.67</u>	<u>30.7</u>	<u>0.20</u>	<u>0.267</u>	<u>clear</u>	<u>0724</u>
<u>1.0</u>	<u>13.03</u>	<u>5.7</u>	<u>6.88</u>	<u>413</u>	<u>0.85</u>	<u>24.6</u>	<u>0.20</u>	<u>0.269</u>	<u>clear</u>	<u>0728</u>
<u>1.5</u>	<u>13.01</u>	<u>5.4</u>	<u>6.88</u>	<u>441</u>	<u>2.12</u>	<u>18.2</u>	<u>0.21</u>	<u>0.286</u>	<u>clear</u>	<u>0733</u>
<u>2.0</u>	<u>13.10</u>	<u>5.9</u>	<u>6.87</u>	<u>425</u>	<u>2.90</u>	<u>13.6</u>	<u>0.21</u>	<u>0.276</u>	<u>clear</u>	<u>0740</u>
<u>2.4</u>	<u>13.15</u>	<u>6.8</u>	<u>6.86</u>	<u>425</u>	<u>2.66</u>	<u>9.43</u>	<u>0.21</u>	<u>0.276</u>	<u>clear</u>	<u>0746</u>
<u>3.0</u>	<u>13.12</u>	<u>6.4</u>	<u>6.87</u>	<u>431</u>	<u>0.57</u>	<u>5.37</u>	<u>0.21</u>	<u>0.280</u>	<u>clear</u>	<u>0752</u>
<u>3.5</u>	<u>13.27</u>	<u>9.5</u>	<u>6.81</u>	<u>426</u>	<u>0.84</u>	<u>14.4</u>	<u>0.21</u>	<u>0.277</u>	<u>clear</u>	<u>0800</u>
After Sampling	<u>13.23</u>	<u>7.8</u>	<u>6.84</u>	<u>428</u>	<u>0.55</u>	<u>10.6</u>	<u>0.21</u>	<u>0.278</u>	<u>clear</u>	<u>0807</u>

EVACUATION METHOD: Peri-pump
 PUMP INTAKE DEPTH (if applicable): Mid screen
 PURGE WATER DISPOSITION (e.g., drum #): Drum on site
 WATER QUALITY (e.g., sheen, odor): No sheen or odor observed
 WATER QUALITY METER(S) USED; CALIBRATION DATE / TIME: YSI
 SAMPLING METHOD: EPA Low Flow SAMPLE TIME: 0830
 SAMPLING PERSONNEL: MRT DUPLICATE "TIME": _____
 REMARKS (e.g., recovery rate): _____

WELL CASING VOLUMES

Gal / ft 1-1/4" = 0.077 2" = 0.16 3" = 0.37 4" = 0.65
 1-1/2" = 0.10 2-1/2" = 0.24 3-1/2" = 0.50 6" = 1.46

TIME COMPLETED: 0845

Filename: J:\Support\Library\FIELD AND LAB FORMS\AutoCAD_Water Sampling Log.dwg Date: 02-10-2011 Login: sac

See back of page for comments

MIN-2-19

continued

5/2/22

Gallons	Temp	ORP	PH	Cond	DO	Turb	Sal	TDS	Color	Time
4.5	13.23	6.3	6.87	432	0.65	5.31	0.21	0.281	clear	0814
5.0	13.22	5.4	6.88	431	0.57	4.20	0.21	0.280	clear	0819
5.3	13.22	5.4	6.88	431	0.47	0.19	0.21	0.280	clear	0823

OWNER / LOCATION: Montlake 76 Gas Station
 WELL NO: MW-3-19 SAMPLE NO: MW-3-19-GW-05022022 ECOLOGY TAG NO: BLT 987
 WEATHER: Some rain, low SO2
 WELL SITE CONDITIONS / MP DEFINITION: North TDC
 (MP is typically the north PVC rim)

DATE: 5/2/2022
 DUPLICATE NO: _____
 MS / MSD? Yes No

SAMPLING DATA

TIME STARTED: 1315 LNAPL THICKNESS: Sheen ft. Sample
 PID HEAD SPACE: 344.6 ppm DNAPL THICKNESS: _____ ft. Sample
 MP DISTANCE ABOVE / BELOW GROUND SURFACE: _____ ft.
 TOTAL DEPTH OF WELL BELOW MP: 24.79 ft.
 DTW BELOW MP: 17.26 ft.
 WATER COLUMN IN WELL: 7.53 ft.
 CASING DIAMETER: 2 in.
 GALLONS PER FOOT: 0.16
 GALLONS IN WELL: 1.21 x 3 = 3.6
 TIME PURGING STARTED: 1347

SAMPLE CONTAINERS			
Number	Size	Type	Pres.

FIELD PARAMETERS

GALLONS REMOVED	TEMP. (C°)	ORP (mv)	pH	COND. (µmhos / cm)	D.O. (mg / L)	TURBIDITY (NTU)	SALINITY (%)	TDS (g / L)	COLOR	TIME
Initial	13.64	-53.2	7.92	1215	3.04	59.7	0.61	0.789	clear	1349
0.5	13.47	-54.5	7.94	1211	1.06	37.4	0.61	0.788	clear	1353
1.0	13.34	-56.6	7.98	1167	0.45	7.14	0.58	0.756	clear	1359
1.5	13.43	-58.1	8.01	1143	0.43	0.02	0.57	0.744	clear	1406
2.0	13.49	-61.7	8.07	1171	0.30	0.02	0.59	0.762	clear	1412
2.5	13.52	-63.0	8.09	1178	0.27	0.02	0.59	0.765	clear	1416
3.0	13.56	-59.9	8.09	1143	0.24	0.02	0.57	0.744	clear	1422
After Sampling										

EVACUATION METHOD: plri pump
 PUMP INTAKE DEPTH (if applicable): mid-screen
 PURGE WATER DISPOSITION (e.g., drum #): drum on site
 WATER QUALITY (e.g., sheen, odor): Slight sheen based on interface probe
 WATER QUALITY METER(S) USED; CALIBRATION DATE / TIME: VSI 556
 SAMPLING METHOD: EPA low flow SAMPLE TIME: 1430
 SAMPLING PERSONNEL: MRH DUPLICATE "TIME": _____
 REMARKS (e.g., recovery rate): slc

TIME COMPLETED: 1500

WELL CASING VOLUMES
 Gal / ft 1-1/4" = 0.077 2" = 0.16 3" = 0.37 4" = 0.65
 1-1/2" = 0.10 2-1/2" = 0.24 3-1/2" = 0.50 6" = 1.46

Filename: J:\Support\Library\FIELD AND LAB FORMS\VA-intoCAD\Water Sampling Log.dwg Date: 02-10-2011 Login: sac

OWNER / LOCATION: Mountain 76 Gas Station
 WELL NO: MW-6-22 SAMPLE NO: MW-6-22-GW-05012022 ECOLOGY TAG NO: BNV 407
 WEATHER: Rainy, low SO2 MS / MSD? Yes No
 WELL SITE CONDITIONS / MP DEFINITION: North TOC
 (MP is typically the north PVC rim)

SAMPLING DATA

TIME STARTED: 0950 LNAPL THICKNESS: — ft. Sample
 PID HEAD SPACE: 2.2 ppm DNAPL THICKNESS: — ft. Sample
 MP DISTANCE ABOVE / BELOW GROUND SURFACE: _____ ft.
 TOTAL DEPTH OF WELL BELOW MP: 25.98 ft.
 DTW BELOW MP: 12.20 ft.
 WATER COLUMN IN WELL: 13.78 ft.
 CASING DIAMETER: 2 in.
 GALLONS PER FOOT: 0.16
 GALLONS IN WELL: 2.21 x 3 = 6.61
 TIME PURGING STARTED: 0956

SAMPLE CONTAINERS			
Number	Size	Type	Pres.

FIELD PARAMETERS

GALLONS REMOVED	TEMP. (C°)	ORP (mv)	pH	COND. (µmhos / cm)	D.O. (mg / L)	TURBIDITY (NTU)	SALINITY (%)	TDS (g / L)	COLOR	TIME
Initial	13.01	-30.5	7.52	769	2.65	19.4	0.38	0.561	clear	0959
0.5	12.99	-35.8	7.62	753	1.08	6.23	0.37	0.488	clear	1002
1.0	12.94	-39.6	7.68	711	0.66	3.85	0.35	0.461	clear	1007
1.5	13.00	-40.6	7.70	730	0.47	2.30	0.36	0.476	clear	1012
2.0	13.20	-42.0	7.72	770	0.41	3.18	0.38	0.502	clear	1016
2.5	13.22	-43.3	7.75	777	0.39	3.67	0.39	0.504	clear	1019
After Sampling										

EVACUATION METHOD: peri pump
 PUMP INTAKE DEPTH (if applicable): Mid-screen
 PURGE WATER DISPOSITION (e.g., drum #): drum on site
 WATER QUALITY (e.g., sheen, odor): No sheen or odor observed
 WATER QUALITY METER(S) USED; CALIBRATION DATE / TIME: VSE 556
 SAMPLING METHOD: EPA low flow SAMPLE TIME: 1025
 SAMPLING PERSONNEL: MRH DUPLICATE "TIME": _____
 REMARKS (e.g., recovery rate): _____

WELL CASING VOLUMES

Gal / ft 1-1/4" = 0.077 2" = 0.16 3" = 0.37 4" = 0.65
 1-1/2" = 0.10 2-1/2" = 0.24 3-1/2" = 0.50 6" = 1.46

TIME COMPLETED: 1040

Filename: J:\Support\Library\FIELD AND LAB FORMS\AutoCAD\Water Sampling Log.dwg Date: 02-10-2011 Login: sac

OWNER / LOCATION: Montlake 76 Gas Station
 WELL NO: MW-7-22 SAMPLE NO: MW-7-22-GW-05022022 ECOLOGY TAG NO: BNV 408
 WEATHER: RAIN, 10W 50s
 WELL SITE CONDITIONS / MP DEFINITION: North TOC
 (MP is typically the north PVC rim)

DATE: 5/2/2022
 DUPLICATE NO: ---
 MS / MSD? Yes No

SAMPLING DATA

TIME STARTED: 1042 LNAPL THICKNESS: _____ ft. Sample
 PID HEAD SPACE: 1.0 ppm DNAPL THICKNESS: _____ ft. Sample
 MP DISTANCE ABOVE / BELOW GROUND SURFACE: _____ ft.
 TOTAL DEPTH OF WELL BELOW MP: 25.37 ft.
 DTW BELOW MP: 12.09 ft.
 WATER COLUMN IN WELL: 13.28 ft.
 CASING DIAMETER: 2 in.
 GALLONS PER FOOT: 0.16
 GALLONS IN WELL: 2.13 x 3 = 6.37
 TIME PURGING STARTED: 1048

SAMPLE CONTAINERS			
Number	Size	Type	Pres.
<u>5</u>	<u>0.5ul</u>	<u>VOA</u>	<u>HCl</u>
<u>2</u>		<u>Amber</u>	
<u>2</u>		<u>poly</u>	

FIELD PARAMETERS

GALLONS REMOVED	TEMP. (C°)	ORP (mv)	pH	COND. (µmhos/cm)	D.O. (mg/L)	TURBIDITY (NTU)	SALINITY (%)	TDS (g/L)	COLOR	TIME
Initial	13.30	-34.0	7.59	872	3.19	22.1	0.43	0.567	clear	1050
0.5	13.53	-30.7	7.53	874	0.83	41.4	0.43	0.568	clear	1054
1.0	13.67	-34.0	7.58	874	0.47	130	0.43	0.567	slightly dark	1100
1.5	13.76	-34.7	7.59	861	0.34	232	0.43	0.558	}	1104
2.0	13.80	-34.3	7.59	846	0.31	184	0.42	0.550		1109
2.5	13.82	-34.4	7.59	839	0.25	131	0.41	0.545	}	1115
3.0	13.83	-35.0	7.60	835	0.26	97.9	0.41	0.542		1120
3.5	13.89	-35.2	7.60	829	0.28	94.6	0.41	0.538	}	1124
4.0	13.85	-35.2	7.60	829	0.27	91.0	0.41	0.538		↓
After Sampling										

EVACUATION METHOD: peri pump
 PUMP INTAKE DEPTH (if applicable): mid screen
 PURGE WATER DISPOSITION (e.g., drum #): drum on site
 WATER QUALITY (e.g., sheen, odor): No sheen or odor observed
 WATER QUALITY METER(S) USED; CALIBRATION DATE / TIME: YSI 556
 SAMPLING METHOD: EPA 10W flow SAMPLE TIME: 1130
 SAMPLING PERSONNEL: URH DUPLICATE "TIME": ---
 REMARKS (e.g., recovery rate): _____

WELL CASING VOLUMES

Gal / ft 1-1/4" = 0.077 2" = 0.16 3" = 0.37 4" = 0.65
 1-1/2" = 0.10 2-1/2" = 0.24 3-1/2" = 0.50 6" = 1.46

TIME COMPLETED: 1145

Filename: J:\support\library\FIELD AND LAB FORMS\AutoCAD_Lab Water Sampling Log.dwg Date: 02-10-2011 Login: sac

WATER SAMPLING LOG

OWNER / LOCATION: Montlake Gas Station DATE: 5/2/2022
 WELL NO: MW-8-22 SAMPLE NO: MW-8-22-GW-05022022 ECOLOGY TAG NO: BNV 406 DUPLICATE NO: MW-100-22-GW-05022022
 WEATHER: Rainy, high 40s MS / MSD? Yes No
 WELL SITE CONDITIONS / MP DEFINITION: North TOL
 (MP is typically the north PVC rim)

SAMPLING DATA

TIME STARTED: 0850 LNAPL THICKNESS: _____ ft. Sample
 PID HEAD SPACE: 0.4 ppm DNAPL THICKNESS: _____ ft. Sample
 MP DISTANCE ABOVE / BELOW GROUND SURFACE: _____ ft.
 TOTAL DEPTH OF WELL BELOW MP: 26.05 ft.
 DTW BELOW MP: 11.32 ft.
 WATER COLUMN IN WELL: 14.73 ft.
 CASING DIAMETER: 2 in.
 GALLONS PER FOOT: 0.16
 GALLONS IN WELL: 2.36 x 3 = 7.07
 TIME PURGING STARTED: 0852

SAMPLE CONTAINERS			
Number	Size	Type	Pres.

FIELD PARAMETERS

GALLONS REMOVED	TEMP. (C°)	ORP (mv)	pH	COND. (µmhos/cm)	D.O. (mg/L)	TURBIDITY (NTU)	SALINITY (%)	TDS (g/L)	COLOR	TIME
Initial	13.18	-15.9	7.28	590	3.30	10.3	0.29	0.385	clear	0854
0.5	13.18	-16.2	7.50	596	0.65	17.1	0.29	0.388	clear	0857
1.0	13.17	-31.3	7.53	595	0.42	51.1	0.29	0.386	clear	0902
1.5	13.15	-30.7	7.52	589	0.49	74.2	0.29	0.383	clear	0906
2.0	13.13	-30.3	7.51	582	0.55	82.5	0.28	0.379	clear	0911
2.5	13.23	-30.4	7.52	583	0.55	75.4	0.28	0.379	clear	0917
3.0	13.28	-30.9	7.53	588	0.53	73.2	0.29	0.382	clear	0922
After Sampling										

EVACUATION METHOD: peri-pump
 PUMP INTAKE DEPTH (if applicable): mid screen
 PURGE WATER DISPOSITION (e.g., drum #): Drum on site
 WATER QUALITY (e.g., sheen, odor): No sheen or odor
 WATER QUALITY METER(S) USED; CALIBRATION DATE / TIME: YSI 556
 SAMPLING METHOD: EPA low flow SAMPLE TIME: 0930
 SAMPLING PERSONNEL: MRH DUPLICATE "TIME": 1700
 REMARKS (e.g., recovery rate): _____

TIME COMPLETED: 0950

WELL CASING VOLUMES

Gal / ft 1-1/4" = 0.077 2" = 0.16 3" = 0.37 4" = 0.65
 1-1/2" = 0.10 2-1/2" = 0.24 3-1/2" = 0.50 6" = 1.46

Filename: J:\Support\Library\FIELD AND LAB FORMS\AutoCAD\Water Sampling Log.dwg Date: 02-10-2011 Login: sac

OWNER / LOCATION: Montlake Gas Station DATE: 5/2/2022
 WELL NO: MW-9-22 SAMPLE NO: MW-9-22-GW-05022022 ECOLOGY TAG NO: BNV 409 DUPLICATE NO: _____
 WEATHER: cloudy, low 50s MS / MSD? Yes No
 WELL SITE CONDITIONS / MP DEFINITION: Norm TOC
 (MP is typically the north PVC rim)

SAMPLING DATA

TIME STARTED: 1148 LNAPL THICKNESS: _____ ft. Sample
 PID HEAD SPACE: 0.1 ppm DNAPL THICKNESS: _____ ft. Sample
 MP DISTANCE ABOVE / BELOW GROUND SURFACE: _____ ft.
 TOTAL DEPTH OF WELL BELOW MP: 25.15 ft.
 DTW BELOW MP: 12.37 ft.
 WATER COLUMN IN WELL: 12.78 ft.
 CASING DIAMETER: 2 in.
 GALLONS PER FOOT: 0.16
 GALLONS IN WELL: 2.05 x 3 = 6.13
 TIME PURGING STARTED: 1152

SAMPLE CONTAINERS			
Number	Size	Type	Pres.

FIELD PARAMETERS

GALLONS REMOVED	TEMP. (C°)	ORP (mv)	pH	COND. (µmhos / cm)	D.O. (mg / L)	TURBIDITY (NTU)	SALINITY (%)	TDS (g / L)	COLOR	TIME
Initial	13.32	-30.0	7.72	619	0.20	151	0.30	0.401	clear	1154
0.5	13.18	-17.3	7.29	611	0.74	88.9	0.30	0.397	clear	1159
1.0	13.17	-19.9	7.33	611	0.50	60.5	0.30	0.397	clear	1204
1.5	13.19	-23.7	7.40	615	0.39	41.7	0.30	0.400	clear	1209
2.0	13.19	-25.3	7.43	618	0.32	29.4	0.30	0.402	clear	1213
2.5	13.22	-26.7	7.45	620	0.27	26.4	0.30	0.403	clear	1218
3.0	13.22	-27.5	7.47	621	0.26	26.1	0.30	0.404	clear	1223
After Sampling										

EVACUATION METHOD: peri pump
 PUMP INTAKE DEPTH (if applicable): Mid-screen
 PURGE WATER DISPOSITION (e.g., drum #): drum on site
 WATER QUALITY (e.g., sheen, odor): No sheen or odor
 WATER QUALITY METER(S) USED; CALIBRATION DATE / TIME: YSI 556
 SAMPLING METHOD: EPA low flow SAMPLE TIME: 1230
 SAMPLING PERSONNEL: MRH DUPLICATE "TIME": _____
 REMARKS (e.g., recovery rate): _____

TIME COMPLETED: 1245

WELL CASING VOLUMES

Gal / ft 1-1/4" = 0.077 2" = 0.16 3" = 0.37 4" = 0.65
 1-1/2" = 0.10 2-1/2" = 0.24 3-1/2" = 0.50 6" = 1.46

Attachment 2

Contents:

Laboratory Report and Chain-of-Custody Form



14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

May 10, 2022

Joseph Sawdey
Shannon & Wilson, Inc.
400 N 34th Street, Suite 100
Seattle, WA 98103

Re: Analytical Data for Project 21-1-22242-112
Laboratory Reference No. 2205-019

Dear Joseph:

Enclosed are the analytical results and associated quality control data for samples submitted on May 3, 2022.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

A handwritten signature in black ink, appearing to read "DB", with a long horizontal flourish extending to the right.

David Baumeister
Project Manager

Enclosures



OnSite Environmental, Inc. 14648 NE 95th Street, Redmond, WA 98052 (425) 883-3881

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: May 10, 2022
Samples Submitted: May 3, 2022
Laboratory Reference: 2205-019
Project: 21-1-22242-112

Case Narrative

Samples were collected on May 2, 2022 and received by the laboratory on May 3, 2022. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.



Date of Report: May 10, 2022
 Samples Submitted: May 3, 2022
 Laboratory Reference: 2205-019
 Project: 21-1-22242-112

**GASOLINE RANGE ORGANICS
 NWTPH-Gx**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-100-22:GW-05022022					
Laboratory ID:	05-019-01					
Gasoline	ND	100	NWTPH-Gx	5-4-22	5-4-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	93	65-122				
Client ID:	MW-6-22:GW-05022022					
Laboratory ID:	05-019-02					
Gasoline	ND	100	NWTPH-Gx	5-4-22	5-4-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	93	65-122				
Client ID:	MW-7-22:GW-05022022					
Laboratory ID:	05-019-03					
Gasoline	ND	100	NWTPH-Gx	5-4-22	5-4-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	95	65-122				
Client ID:	MW-8-22:GW-05022022					
Laboratory ID:	05-019-04					
Gasoline	ND	100	NWTPH-Gx	5-4-22	5-4-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	93	65-122				
Client ID:	MW-9-22:GW-05022022					
Laboratory ID:	05-019-05					
Gasoline	ND	100	NWTPH-Gx	5-4-22	5-4-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	93	65-122				
Client ID:	MW-2-19:GW-05022022					
Laboratory ID:	05-019-06					
Gasoline	ND	100	NWTPH-Gx	5-4-22	5-4-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	93	65-122				
Client ID:	MW-3-19:GW-05022022					
Laboratory ID:	05-019-07					
Gasoline	5800	100	NWTPH-Gx	5-4-22	5-4-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	101	65-122				



Date of Report: May 10, 2022
 Samples Submitted: May 3, 2022
 Laboratory Reference: 2205-019
 Project: 21-1-22242-112

GASOLINE RANGE ORGANICS
NWTPH-Gx

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	Trip Blank					
Laboratory ID:	05-019-09					
Gasoline	ND	100	NWTPH-Gx	5-4-22	5-4-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
Fluorobenzene	94	65-122				



Date of Report: May 10, 2022
 Samples Submitted: May 3, 2022
 Laboratory Reference: 2205-019
 Project: 21-1-22242-112

**GASOLINE RANGE ORGANICS
 NWTPH-Gx
 QUALITY CONTROL**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0504W2					
Gasoline	ND	100	NWTPH-Gx	5-4-22	5-4-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	94	65-122				

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	05-019-02							
	ORIG	DUP						
Gasoline	ND	ND	NA	NA	NA	NA	NA	30
<i>Surrogate:</i>								
<i>Fluorobenzene</i>				93	93	65-122		



Date of Report: May 10, 2022
 Samples Submitted: May 3, 2022
 Laboratory Reference: 2205-019
 Project: 21-1-22242-112

**DIESEL AND HEAVY OIL RANGE ORGANICS
 NWTPH-Dx**

Matrix: Water
 Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-100-22:GW-05022022					
Laboratory ID:	05-019-01					
Diesel Range Organics	ND	0.17	NWTPH-Dx	5-9-22	5-9-22	
Lube Oil Range Organics	0.24	0.22	NWTPH-Dx	5-9-22	5-9-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	97	50-150				

Client ID:	MW-6-22:GW-05022022					
Laboratory ID:	05-019-02					
Diesel Range Organics	0.21	0.16	NWTPH-Dx	5-9-22	5-9-22	
Lube Oil Range Organics	0.33	0.22	NWTPH-Dx	5-9-22	5-9-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	79	50-150				

Client ID:	MW-7-22:GW-05022022					
Laboratory ID:	05-019-03					
Diesel Range Organics	ND	0.17	NWTPH-Dx	5-9-22	5-9-22	
Lube Oil Range Organics	ND	0.23	NWTPH-Dx	5-9-22	5-9-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	79	50-150				

Client ID:	MW-8-22:GW-05022022					
Laboratory ID:	05-019-04					
Diesel Range Organics	ND	0.17	NWTPH-Dx	5-9-22	5-9-22	
Lube Oil Range Organics	ND	0.22	NWTPH-Dx	5-9-22	5-9-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	95	50-150				

Client ID:	MW-9-22:GW-05022022					
Laboratory ID:	05-019-05					
Diesel Range Organics	ND	0.16	NWTPH-Dx	5-9-22	5-9-22	
Lube Oil Range Organics	ND	0.22	NWTPH-Dx	5-9-22	5-9-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	81	50-150				

Client ID:	MW-2-19:GW-05022022					
Laboratory ID:	05-019-06					
Diesel Range Organics	ND	0.18	NWTPH-Dx	5-9-22	5-9-22	
Lube Oil Range Organics	ND	0.24	NWTPH-Dx	5-9-22	5-9-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	81	50-150				



Date of Report: May 10, 2022
 Samples Submitted: May 3, 2022
 Laboratory Reference: 2205-019
 Project: 21-1-22242-112

**DIESEL AND HEAVY OIL RANGE ORGANICS
 NWTPH-Dx**

Matrix: Water
 Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-3-19:GW-05022022					
Laboratory ID:	05-019-07					
Diesel Range Organics	1.3	0.16	NWTPH-Dx	5-9-22	5-9-22	M
Lube Oil Range Organics	0.50	0.21	NWTPH-Dx	5-9-22	5-9-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	85	50-150				



Date of Report: May 10, 2022
 Samples Submitted: May 3, 2022
 Laboratory Reference: 2205-019
 Project: 21-1-22242-112

**DIESEL AND HEAVY OIL RANGE ORGANICS
 NWTPH-Dx
 QUALITY CONTROL**

Matrix: Water
 Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0509W1					
Diesel Range Organics	ND	0.12	NWTPH-Dx	5-9-22	5-9-22	
Lube Oil Range Organics	ND	0.16	NWTPH-Dx	5-9-22	5-9-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	91	50-150				

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	05-019-07							
	ORIG	DUP						
Diesel Range Organics	1.25	0.828	NA	NA	NA	NA	41	NA M
Lube Oil Range Organics	0.499	0.380	NA	NA	NA	NA	27	NA
<i>Surrogate:</i>								
<i>o-Terphenyl</i>				85	82	50-150		



Date of Report: May 10, 2022
 Samples Submitted: May 3, 2022
 Laboratory Reference: 2205-019
 Project: 21-1-22242-112

VOLATILE ORGANICS EPA 8260D

Matrix: Water
 Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID: MW-100-22:GW-05022022						
Laboratory ID: 05-019-01						
Benzene	ND	0.20	EPA 8260D	5-4-22	5-4-22	
Toluene	ND	1.0	EPA 8260D	5-4-22	5-4-22	
Ethylbenzene	ND	0.20	EPA 8260D	5-4-22	5-4-22	
m,p-Xylene	ND	0.40	EPA 8260D	5-4-22	5-4-22	
o-Xylene	ND	0.20	EPA 8260D	5-4-22	5-4-22	
<i>Surrogate: Percent Recovery Control Limits</i>						
<i>Dibromofluoromethane</i>	<i>103</i>	<i>75-127</i>				
<i>Toluene-d8</i>	<i>101</i>	<i>80-127</i>				
<i>4-Bromofluorobenzene</i>	<i>100</i>	<i>78-125</i>				

Client ID: MW-6-22:GW-05022022						
Laboratory ID: 05-019-02						
Benzene	ND	0.20	EPA 8260D	5-4-22	5-4-22	
Toluene	ND	1.0	EPA 8260D	5-4-22	5-4-22	
Ethylbenzene	ND	0.20	EPA 8260D	5-4-22	5-4-22	
m,p-Xylene	ND	0.40	EPA 8260D	5-4-22	5-4-22	
o-Xylene	ND	0.20	EPA 8260D	5-4-22	5-4-22	
<i>Surrogate: Percent Recovery Control Limits</i>						
<i>Dibromofluoromethane</i>	<i>102</i>	<i>75-127</i>				
<i>Toluene-d8</i>	<i>101</i>	<i>80-127</i>				
<i>4-Bromofluorobenzene</i>	<i>100</i>	<i>78-125</i>				

Client ID: MW-7-22:GW-05022022						
Laboratory ID: 05-019-03						
Benzene	ND	0.20	EPA 8260D	5-4-22	5-4-22	
Toluene	ND	1.0	EPA 8260D	5-4-22	5-4-22	
Ethylbenzene	ND	0.20	EPA 8260D	5-4-22	5-4-22	
m,p-Xylene	ND	0.40	EPA 8260D	5-4-22	5-4-22	
o-Xylene	ND	0.20	EPA 8260D	5-4-22	5-4-22	
<i>Surrogate: Percent Recovery Control Limits</i>						
<i>Dibromofluoromethane</i>	<i>104</i>	<i>75-127</i>				
<i>Toluene-d8</i>	<i>102</i>	<i>80-127</i>				
<i>4-Bromofluorobenzene</i>	<i>101</i>	<i>78-125</i>				



Date of Report: May 10, 2022
 Samples Submitted: May 3, 2022
 Laboratory Reference: 2205-019
 Project: 21-1-22242-112

VOLATILE ORGANICS EPA 8260D

Matrix: Water
 Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-8-22:GW-05022022					
Laboratory ID:	05-019-04					
Benzene	ND	0.20	EPA 8260D	5-4-22	5-4-22	
Toluene	ND	1.0	EPA 8260D	5-4-22	5-4-22	
Ethylbenzene	ND	0.20	EPA 8260D	5-4-22	5-4-22	
m,p-Xylene	ND	0.40	EPA 8260D	5-4-22	5-4-22	
o-Xylene	ND	0.20	EPA 8260D	5-4-22	5-4-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Dibromofluoromethane</i>	<i>101</i>	<i>75-127</i>				
<i>Toluene-d8</i>	<i>101</i>	<i>80-127</i>				
<i>4-Bromofluorobenzene</i>	<i>100</i>	<i>78-125</i>				

Client ID:	MW-9-22:GW-05022022					
Laboratory ID:	05-019-05					
Benzene	ND	0.20	EPA 8260D	5-4-22	5-4-22	
Toluene	ND	1.0	EPA 8260D	5-4-22	5-4-22	
Ethylbenzene	ND	0.20	EPA 8260D	5-4-22	5-4-22	
m,p-Xylene	ND	0.40	EPA 8260D	5-4-22	5-4-22	
o-Xylene	ND	0.20	EPA 8260D	5-4-22	5-4-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Dibromofluoromethane</i>	<i>105</i>	<i>75-127</i>				
<i>Toluene-d8</i>	<i>103</i>	<i>80-127</i>				
<i>4-Bromofluorobenzene</i>	<i>103</i>	<i>78-125</i>				

Client ID:	MW-2-19:GW-05022022					
Laboratory ID:	05-019-06					
Benzene	ND	0.20	EPA 8260D	5-4-22	5-4-22	
Toluene	ND	1.0	EPA 8260D	5-4-22	5-4-22	
Ethylbenzene	ND	0.20	EPA 8260D	5-4-22	5-4-22	
m,p-Xylene	ND	0.40	EPA 8260D	5-4-22	5-4-22	
o-Xylene	ND	0.20	EPA 8260D	5-4-22	5-4-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Dibromofluoromethane</i>	<i>104</i>	<i>75-127</i>				
<i>Toluene-d8</i>	<i>101</i>	<i>80-127</i>				
<i>4-Bromofluorobenzene</i>	<i>101</i>	<i>78-125</i>				



Date of Report: May 10, 2022
 Samples Submitted: May 3, 2022
 Laboratory Reference: 2205-019
 Project: 21-1-22242-112

VOLATILE ORGANICS EPA 8260D

Matrix: Water
 Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-3-19:GW-05022022					
Laboratory ID:	05-019-07					
Benzene	170	2.0	EPA 8260D	5-4-22	5-4-22	
Toluene	ND	10	EPA 8260D	5-4-22	5-4-22	
Ethylbenzene	190	2.0	EPA 8260D	5-4-22	5-4-22	
m,p-Xylene	220	4.0	EPA 8260D	5-4-22	5-4-22	
o-Xylene	3.2	2.0	EPA 8260D	5-4-22	5-4-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Dibromofluoromethane</i>	<i>103</i>	<i>75-127</i>				
<i>Toluene-d8</i>	<i>102</i>	<i>80-127</i>				
<i>4-Bromofluorobenzene</i>	<i>103</i>	<i>78-125</i>				

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	Trip Blank					
Laboratory ID:	05-019-09					
Benzene	ND	0.20	EPA 8260D	5-4-22	5-4-22	
Toluene	ND	1.0	EPA 8260D	5-4-22	5-4-22	
Ethylbenzene	ND	0.20	EPA 8260D	5-4-22	5-4-22	
m,p-Xylene	ND	0.40	EPA 8260D	5-4-22	5-4-22	
o-Xylene	ND	0.20	EPA 8260D	5-4-22	5-4-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Dibromofluoromethane</i>	<i>101</i>	<i>75-127</i>				
<i>Toluene-d8</i>	<i>101</i>	<i>80-127</i>				
<i>4-Bromofluorobenzene</i>	<i>99</i>	<i>78-125</i>				



Date of Report: May 10, 2022
 Samples Submitted: May 3, 2022
 Laboratory Reference: 2205-019
 Project: 21-1-22242-112

**VOLATILE ORGANICS EPA 8260D
 QUALITY CONTROL**

Matrix: Water
 Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0504W1					
Benzene	ND	0.20	EPA 8260D	5-4-22	5-4-22	
Toluene	ND	1.0	EPA 8260D	5-4-22	5-4-22	
Ethylbenzene	ND	0.20	EPA 8260D	5-4-22	5-4-22	
m,p-Xylene	ND	0.40	EPA 8260D	5-4-22	5-4-22	
o-Xylene	ND	0.20	EPA 8260D	5-4-22	5-4-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Dibromofluoromethane</i>	<i>104</i>	<i>75-127</i>				
<i>Toluene-d8</i>	<i>101</i>	<i>80-127</i>				
<i>4-Bromofluorobenzene</i>	<i>100</i>	<i>78-125</i>				

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0504W1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	11.2	11.1	10.0	10.0	112	111	78-125	1	19	
Benzene	10.7	10.5	10.0	10.0	107	105	80-121	2	16	
Trichloroethene	10.4	10.3	10.0	10.0	104	103	80-122	1	18	
Toluene	10.2	10.1	10.0	10.0	102	101	80-120	1	18	
Chlorobenzene	9.65	9.54	10.0	10.0	97	95	80-120	1	17	
<i>Surrogate:</i>										
<i>Dibromofluoromethane</i>					104	101	75-127			
<i>Toluene-d8</i>					102	101	80-127			
<i>4-Bromofluorobenzene</i>					103	102	78-125			



Date of Report: May 10, 2022
 Samples Submitted: May 3, 2022
 Laboratory Reference: 2205-019
 Project: 21-1-22242-112

TOTAL ARSENIC
EPA 200.8

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID: MW-100-22:GW-05022022						
Laboratory ID: 05-019-01						
Arsenic	ND	3.3	EPA 200.8	5-6-22	5-6-22	
Client ID: MW-6-22:GW-05022022						
Laboratory ID: 05-019-02						
Arsenic	ND	3.3	EPA 200.8	5-6-22	5-6-22	
Client ID: MW-7-22:GW-05022022						
Laboratory ID: 05-019-03						
Arsenic	ND	3.3	EPA 200.8	5-6-22	5-6-22	
Client ID: MW-8-22:GW-05022022						
Laboratory ID: 05-019-04						
Arsenic	ND	3.3	EPA 200.8	5-6-22	5-6-22	
Client ID: MW-9-22:GW-05022022						
Laboratory ID: 05-019-05						
Arsenic	ND	3.3	EPA 200.8	5-6-22	5-6-22	
Client ID: MW-2-19:GW-05022022						
Laboratory ID: 05-019-06						
Arsenic	ND	3.3	EPA 200.8	5-6-22	5-6-22	
Client ID: MW-3-19:GW-05022022						
Laboratory ID: 05-019-07						
Arsenic	16	3.3	EPA 200.8	5-6-22	5-6-22	



Date of Report: May 10, 2022
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 Project: 21-1-22242-112

**TOTAL ARSENIC
 EPA 200.8
 QUALITY CONTROL**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0506WM1					
Arsenic	ND	3.3	EPA 200.8	5-6-22	5-6-22	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	05-019-01							
	ORIG	DUP						
Arsenic	ND	ND	NA	NA	NA	NA	NA	20

MATRIX SPIKES

Laboratory ID:	05-019-01									
	MS	MSD	MS	MSD		MS	MSD			
Arsenic	110	109	111	111	ND	99	98	75-125	1	20



Date of Report: May 10, 2022
 Samples Submitted: May 3, 2022
 Laboratory Reference: 2205-019
 Project: 21-1-22242-112

**DISSOLVED ARSENIC
 EPA 200.8**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID: MW-100-22:GW-05022022						
Laboratory ID: 05-019-01						
Arsenic	ND	3.0	EPA 200.8	5-3-22	5-6-22	
Client ID: MW-6-22:GW-05022022						
Laboratory ID: 05-019-02						
Arsenic	ND	3.0	EPA 200.8	5-3-22	5-6-22	
Client ID: MW-7-22:GW-05022022						
Laboratory ID: 05-019-03						
Arsenic	ND	3.0	EPA 200.8	5-3-22	5-6-22	
Client ID: MW-8-22:GW-05022022						
Laboratory ID: 05-019-04						
Arsenic	ND	3.0	EPA 200.8	5-3-22	5-6-22	
Client ID: MW-9-22:GW-05022022						
Laboratory ID: 05-019-05						
Arsenic	ND	3.0	EPA 200.8	5-3-22	5-6-22	
Client ID: MW-2-19:GW-05022022						
Laboratory ID: 05-019-06						
Arsenic	ND	3.0	EPA 200.8	5-3-22	5-6-22	
Client ID: MW-3-19:GW-05022022						
Laboratory ID: 05-019-07						
Arsenic	11	3.0	EPA 200.8	5-3-22	5-6-22	



Date of Report: May 10, 2022
 Samples Submitted: May 3, 2022
 Laboratory Reference: 2205-019
 Project: 21-1-22242-112

**DISSOLVED ARSENIC
 EPA 200.8
 QUALITY CONTROL**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0503F1					
Arsenic	ND	3.0	EPA 200.8	5-3-22	5-6-22	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	05-019-07							
	ORIG	DUP						
Arsenic	10.9	11.1	NA	NA	NA	NA	2	20

MATRIX SPIKES

Laboratory ID:	05-019-07									
	MS	MSD	MS	MSD	MS	MSD				
Arsenic	98.4	97.0	80.0	80.0	10.9	109	108	75-125	1	20





Data Qualifiers and Abbreviations

- A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.
 - B - The analyte indicated was also found in the blank sample.
 - C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.
 - E - The value reported exceeds the quantitation range and is an estimate.
 - F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.
 - H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.
 - I - Compound recovery is outside of the control limits.
 - J - The value reported was below the practical quantitation limit. The value is an estimate.
 - K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.
 - L - The RPD is outside of the control limits.
 - M - Hydrocarbons in the gasoline range are impacting the diesel range result.
 - M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.
 - N - Hydrocarbons in the lube oil range are impacting the diesel range result.
 - N1 - Hydrocarbons in diesel range are impacting lube oil range results.
 - O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.
 - P - The RPD of the detected concentrations between the two columns is greater than 40.
 - Q - Surrogate recovery is outside of the control limits.
 - S - Surrogate recovery data is not available due to the necessary dilution of the sample.
 - T - The sample chromatogram is not similar to a typical _____.
 - U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
 - U1 - The practical quantitation limit is elevated due to interferences present in the sample.
 - V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.
 - W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.
 - X - Sample extract treated with a mercury cleanup procedure.
 - X1 - Sample extract treated with a sulfuric acid/silica gel cleanup procedure.
 - X2 - Sample extract treated with a silica gel cleanup procedure.
 - Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.
 - Y1 - Negative effects of the matrix from this sample on the instrument caused values for this analyte in the bracketing continuing calibration verification standard (CCVs) to be outside of 20% acceptance criteria. Because of this, quantitation limits and sample concentrations should be considered estimates.
 - Z -
- ND - Not Detected at PQL
 PQL - Practical Quantitation Limit
 RPD - Relative Percent Difference



Chain of Custody

Company: Shannon & Wilson, Inc.
 Project Number: 21-1-22242-112
 Project Name: Former Montlake To Gas Station
 Project Manager: Joseph Sawdey
 Sampled by: Mitchell Harfield

Turnaround Request (in working days)

(Check One)

Same Day 1 Day
 2 Days 3 Days
 Standard (7 Days)
 _____ (other)

Laboratory Number: 05-019

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Analytes																				
						NWTPH-HCID	NWTPH-Gx/BTEX (8021 <input type="checkbox"/> 8260 <input checked="" type="checkbox"/>)	NWTPH-Gx	NWTPH-Dx (Acid / SG Clean-up <input type="checkbox"/>)	Volatiles 8260	Halogenated Volatiles 8260	EDB EPA 8011 (Waters Only)	Semivolatiles 8270/SIM (with low-level PAHs)	PAHs 8270/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081	Organophosphorus Pesticides 8270/SIM	Chlorinated Acid Herbicides 8151	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664	Total <u>& dissolved Arsenic</u> by 6010/7470	% Moisture		
1	MW-100-22:GW-05022022	5/2/22	1700	Water	9		X	X																X		
2	MW-6-22:GW-05022022	}	1025		9		X	X																X		
3	MW-7-22:GW-05022022		1130		9		X	X																X		
4	MW-8-22:GW-05022022		0930		9		X	X																X		
5	MW-9-22:GW-05022022		1230		9		X	X																X		
6	MW-2-19:GW-05022022																									
76	MW-2-19:GW-05022022		0830		9		X	X																X		
87	MW-3-19:GW-05022022		1430		9		X	X																X		
88	EB-1-05022022		1250		9		(X)	(X)																(X)		
109	Trip BLANK		0800		3		X																			

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished		SWI	5/3/22	0850	(X) = Hold Lab to filter for metals
Received	#17	Speedy Alpha	5/3/22	10:40	
Relinquished	#17	Speedy Alpha	5/3/22	1:03	
Received		OSE	5/3/22	1:03	
Relinquished					
Received					Data Package: Standard <input type="checkbox"/> Level III <input type="checkbox"/> Level IV <input type="checkbox"/>
Reviewed/Date		Reviewed/Date			Chromatograms with final report <input type="checkbox"/> Electronic Data Deliverables (EDDs) <input type="checkbox"/>