

LETTER OF TRANSMITTAL

To:	Julia Mizuhata	Contract & Task Order:	Y-11848 DA
From:	Ron Paananen	File Code:	Y-11848 DA
Date:	January 29th, 2024		4.1.23
Copies To:	WSDOT Document Control Project Files	LOT #:	LOT-2824

These are:

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We are transmitting the following materials:

Y-11848 DA 4.1.23 Final Q7 Groundwater Monitoring Report

Comments:

Please find the above document(s) enclosed. We are submitting the *Final Q7 Groundwater Monitoring Report* in accordance with Contract Y-11848, Task Order DA, Deliverables 4.1.23


Program Engineering Manager

1/29/2024
Date

MEMORANDUM

To: Ron Paananen, HDR

Contract & Task Order: DA Deliverable 4.1.23

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

File Code:

Date: January 22, 2024

Copies To: Robyn Boyd
Dave Becher
Margaret Kucharski

Subject: Groundwater Monitoring Memorandum – Quarter No. 7, 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 Plan detailing the proposed remediation excavation activities for the site (PBS, 2021a). In August and September 2021, PBS oversaw the closure and removal of the site's underground storage tanks and piping, as well as the excavation of the associated petroleum-contaminated soil source zone (source zone), as documented in the Remedial Action Completion Report (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, 2022a). The CGM well network

for the site previously consisted of six monitoring wells: MW-2-19, MW-3-19, MW-6-22, MW-7-22, MW-8-22, and MW-9-22. On July 10, 2023, MW-7-22 was decommissioned due to ongoing project construction needs, and the CGM well network now consists of the remaining five wells listed above. The monitoring wells have been surveyed and locations are depicted in Exhibit 1. This memorandum presents the results of Quarter No. 7 CGM and documents the continued effect(s) of the source zone removal on site groundwater quality. Results of the Quarter Nos. 1 through 6 CGM have been presented previously under a separate cover (Shannon & Wilson, 2022b, 2022c, 2023a, 2023b, and 2023c, 2023d). Unlike previous Quarterly CGM events, per Ecology's guidance, the Quarter No. 7 event was limited to sampling three of the remaining GCM wells: MW-3-19, MW-8-22, and MW-9-22.

Quarter No. 7 Groundwater Monitoring Activities

Well Gauging

On November 17 and 18, 2023, Shannon & Wilson gauged MW-2-19, MW-3-19, MW-8-22, and MW-9-22 to monitor for the presence of free product and to measure groundwater elevations. MW-2-19 was gauged to aid in generating groundwater direction as an additional interpolation point, which adds to the confidence level for the Quarter No. 7 groundwater potentiometric surface (refer to Exhibit 1). MW-7-22 was not gauged because the well has been decommissioned. MW-6-22 was not gauged due to access issues. Measurable free product was not encountered within the four CGM wells during Quarter No. 7 gauging; however, a petroleum odor was observed at MW-3-19 on November 18, 2023.

Groundwater Sampling

During the Quarter No. 7 CGM event, Shannon & Wilson purged MW-3-19, MW-8-22, and MW-9-22 using a peristaltic pump with a flow-through cell and a 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 – Groundwater Sampling Field Forms. Prior to purging MW-3-19, Shannon & Wilson removed the three Regenesis oxygen-releasing compound (ORC®) socks from the well on November 14, 2023, four days prior to collecting groundwater samples from the well on November 18, 2023. Upon stabilization of the field parameters during well purging (indicating steady groundwater flow to the well), groundwater samples were collected from the three CGM wells 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 the three CGM wells were delivered to OnSite Environmental Inc. of Redmond, Washington (OnSite), under standard chain-of-custody procedures and analyzed for:

- Gasoline-range petroleum hydrocarbons using Ecology's Northwest Total Petroleum Hydrocarbon (NWTPH)-Gasoline Extended Method;
- Benzene, toluene, ethylbenzene, and xylene (BTEX) by U.S. Environmental Protection Agency (EPA) 8260 Method;

- Diesel- and oil-range petroleum hydrocarbons using Ecology's NWTPH-Diesel Extended Method (NWTPH-Dx); and
- Total and dissolved arsenic by EPA Method 200.8.

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

ORC Sock Deployment

On December 12, 2023, following the completion of the Quarter No. 7 well gauging and groundwater sampling activities, Shannon & Wilson reinstalled the three Regenesis ORC[®] socks below the water table and within the screened portion of MW-3-19 due to continued contaminant detections at the well. The ORC[®] socks are designed by Regenesis to expedite and aid in the natural aerobic degradation process of petroleum hydrocarbon contaminants.

Quarter No. 7 Results and Interpretation

Groundwater Elevation and Flow Directions

Measured groundwater elevations for Quarter No. 7 are displayed in Exhibit 1 and reported in Exhibit 2. Groundwater elevations in North American Vertical Datum (of 1988) during November 2023 ranged from as low as 41.8 feet (MW-3-19) to as high as 49.9 feet (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 equipotential lines comprising the potentiometric surface. (See Exhibit 1: Note that because groundwater elevations were not collected from MW-6-22 nor MW-7-22 during Quarter No. 7, these wells have been excluded from the groundwater interpolations presented in Exhibit 1). The groundwater elevation measured at MW-3-19 was again significantly lower with less seasonal fluctuation compared to the other CGM wells (see Exhibit 2). The much lower and static nature of the groundwater elevations monitored at MW-3-19 is suggestive of hydraulic isolation from the more uniform groundwater flow regime encountered across the site.

The groundwater setting at the site observed during Quarter No. 7 is consistent with that observed during the RI and previous quarterly CGM events (Shannon & Wilson, 2020, 2022b, 2022c, 2023a, 2023b, and 2023c, 2023d). In general, groundwater elevations measured in Quarter No. 7 were higher by approximately 1.6 to 4.2 feet, compared to groundwater elevations measured during Quarter No. 6. The higher groundwater elevations observed likely reflect the shallow groundwater response to the beginning of the wet season.

The groundwater elevation observed at MW-3-19 rose only 0.2 foot between the Quarter No. 6 and Quarter No. 7 groundwater monitoring events (August to November 2023). This lack of fluctuation in groundwater elevation is different in nature compared to the other CGM wells, as discussed above.

The estimated groundwater flow direction for Quarter No. 7 is uniformly north to northwest, consistent with previous monitoring events, when MW-3-19 was included as part of the potentiometric surface (Shannon & Wilson, 2022b, 2023b, 2023c, 2023d).

Groundwater Sampling Results

The laboratory analytical results for collected groundwater samples are summarized in Exhibit 3. The laboratory reports are included as Attachment 2. Exhibit 1 indicates which monitoring wells had groundwater sample contaminant concentrations that exceed applicable cleanup levels (CULs) during the November 2023 sampling event.

Groundwater Sampling Interpretation

Groundwater samples collected from the CGM wells located within the property boundary (MW-8-22 and MW-9-22) had non-detectable concentrations of all the analytes tested: petroleum hydrocarbons (gasoline-, diesel-, and oil-range), BTEX, and total and dissolved arsenic (Exhibit 3).

Groundwater samples from one CGM well, MW-3-19, contained contaminant concentrations that exceeded applicable CULs (Exhibits 1 and 3). During Quarter Nos. 2 and 3, groundwater samples from MW-3-19 were not collected because measurable free product was detected in the well. During Quarter Nos. 4 through 7, a petroleum odor and/or sheen was observed, but with no measurable product, and thus, groundwater samples were collected and analyzed.

Concentrations of gasoline-range petroleum hydrocarbons and benzene (the identified primary site contaminants) detected in MW-3-19 during Quarter No. 7 were lower compared to Quarter No. 6. Concentrations of diesel-range petroleum hydrocarbons, total arsenic, ethylbenzene, and m,p-xylenes were also lower compared to Quarter No. 6. Concentrations of oil-range petroleum hydrocarbons, toluene, o-xylene, and dissolved arsenic were comparable to Quarter No. 6. The diesel-range petroleum hydrocarbon concentration continues to be flagged as being influenced by the gasoline-range petroleum hydrocarbons (Exhibit 3). MW-3-19 is the most downgradient CGM well at the site, the furthest from the remedial excavation area, and is located outside the property boundary. The decreasing primary contaminant concentrations observed at MW-3-19 during Quarter No. 7 may be reflective of the lagged timing that would be expected for remedial action to manifest in groundwater concentrations near the furthest downgradient well.

The concentration of gasoline-range petroleum hydrocarbons measured in the CGM wells over time have been summarized in trend plots, included as Exhibit 4.

The concentration of diesel-range plus oil-range petroleum hydrocarbons measured in the CGM wells over time have been summarized in trend plots, included as Exhibit 5.

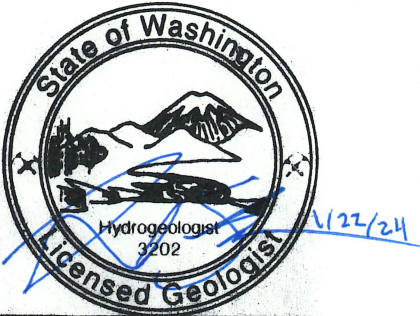
The concentration of benzene measured in the CGM wells over time has been summarized in trend plots, included as Exhibit 6.

The concentration of total and dissolved arsenic in the CGM wells over time has been summarized in trend plots, included as Exhibit 7.

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

Joseph Sawdey, LG, LHG
Senior Hydrogeologist

Meg Strong, LG, LHG
Senior Consultant

JXS:MJS:JNB/jxs

References

PBS Engineering and Environmental, 2021a, Remedial action plan, Montlake Gas Station, State Route 520 Montlake to Lake Washington Interchange and Bridge Replacement Project, Seattle, Washington: Report prepared by PBS, Seattle, Wash., project no. 41221.003, for Graham Contracting Ltd, Bellevue, Wash., March Seattle, Wash., March 2021.

PBS Engineering and Environmental, 2021b, Remedial action completion report, Montlake Gas Station, State Route 520 Montlake to Lake Washington Interchange and Bridge Replacement Project, Seattle, Washington: Report prepared by PBS, Seattle, Wash., 41221.003, for Graham Contracting Ltd., Bellevue, Wash., December.

Shannon & Wilson, 2019, Data gaps investigation work plan/sampling and analysis plan for Montlake Gas Station, SR 520 Bridge Replacement and HOV Program, Seattle, Washington: Workplan prepared by Shannon & Wilson, Seattle, Wash., 21-1-22242-101, for Washington State Department of Transportation, July.

Shannon & Wilson, 2020, Remedial investigation report for Montlake Gas Station, SR 520 Bridge Replacement and HOV Program, Seattle, Washington: Report prepared by Shannon & Wilson, Seattle, Wash., 21-1-22242-104, for Washington State Department of Transportation, 1 v., March.

Shannon & Wilson, 2022a, Compliance groundwater monitoring well installation exhibit for Montlake Gas Station, SR 520 Bridge Replacement and HOV Program, Seattle, Washington: Exhibit prepared by Shannon & Wilson, Seattle, Wash., 21-1-22242-104, for Washington State Department of Transportation, May 2022.

Shannon & Wilson, 2022b, Groundwater monitoring memorandum – quarter no. 1, voluntary cleanup program NW3242, Montlake Gas Station, SR 520 Bridge Replacement and HOV Program, Seattle, Washington: Memorandum from Joseph Sawdey and Meg Strong, Shannon & Wilson, Seattle, Wash., 21-1-22242-104, to Ron Paananen, HDR, June 27.

Shannon & Wilson, 2022c, Groundwater monitoring memorandum – quarter no. 2, voluntary cleanup program NW3242, Montlake Gas Station, SR 520 Bridge Replacement and HOV Program, Seattle, Washington: Memorandum from Joseph Sawdey and Meg Strong, Shannon & Wilson, Seattle, Wash., 21-1-22242-104, to Ron Paananen, HDR, October 6.

Shannon & Wilson, 2023a, Groundwater monitoring memorandum – quarter no. 3, voluntary cleanup program NW3242, Montlake Gas Station, SR 520 Bridge Replacement and HOV Program, Seattle, Washington: Memorandum from Joseph Sawdey and Meg Strong, Shannon & Wilson, Seattle, Wash., 21-1-22242-104, to Ron Paananen, HDR, January 5.

Shannon & Wilson, 2023b, Groundwater monitoring memorandum – quarter no. 4, voluntary cleanup program NW3242, Montlake Gas Station, SR 520 Bridge Replacement and HOV Program, Seattle, Washington: Memorandum from Joseph Sawdey and Meg Strong, Shannon & Wilson, Seattle, Wash., 21-1-22242-104, to Ron Paananen, HDR, March 30.

Shannon & Wilson, 2023c, Groundwater monitoring memorandum – quarter no. 5, voluntary cleanup program NW3442, Montlake Gas Station, SR 520 Bridge Replacement and HOV Program, Seattle, Washington: Memorandum from Joseph Sawdey and Meg Strong, Shannon & Wilson, Seattle, Wash., 21-1-22242-104, to Ron Paananen, HDR, June 23.

Shannon & Wilson, 2023d, Groundwater monitoring memorandum – quarter no. 6, voluntary cleanup program NW3442, Montlake Gas Station, SR 520 Bridge Replacement and HOV Program, Seattle, Washington: Memorandum from Joseph Sawdey and Meg Strong, Shannon & Wilson, Seattle, Wash., 21-1-22242-104, to Ron Paananen, HDR, October 30.

Exhibits

Exhibit 1 – Groundwater Potentiometric Surface Map with Groundwater Elevation

Exhibit 2 – Groundwater Level Measurements

Exhibit 3 – Summary of Groundwater Analytical Results

Exhibit 4 – Groundwater Concentration Trend Plots – Gasoline

Exhibit 5 – Groundwater Concentration Trend Plots – Diesel Plus Oil

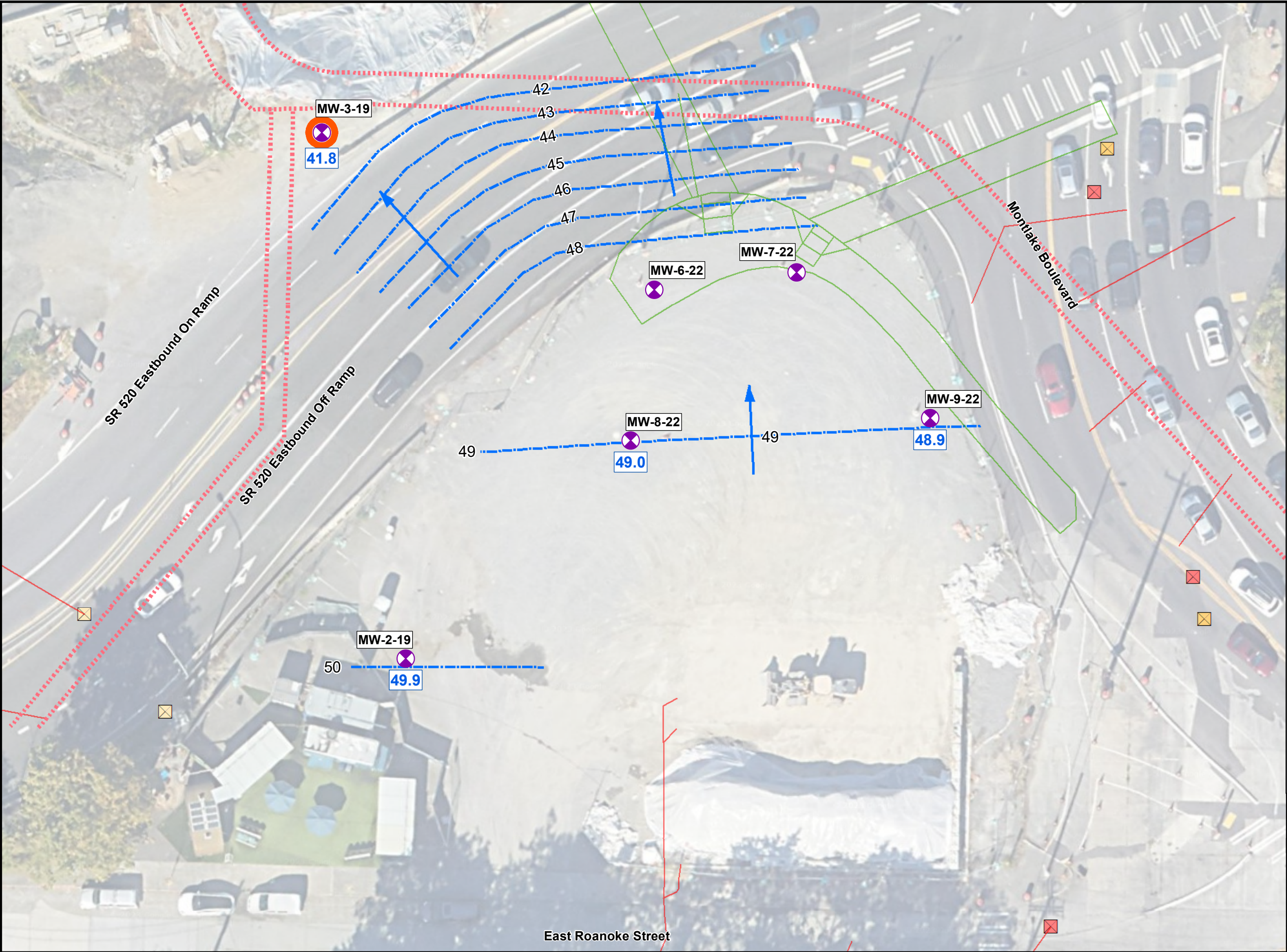
Exhibit 6 – Groundwater Concentration Trend Plots – Benzene

Exhibit 7 – Groundwater Concentration Trend Plots – Arsenic

Attachments

Attachment 1 – Groundwater Sampling Field Forms

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



LEGEND

Monitoring Well Location and Designation

Well With Groundwater Concentrations Exceeding Applicable Cleanup Levels

Interpolated Groundwater Elevation (Feet, NAVD 88)

Interpolated Groundwater Flowline

Groundwater Elevation at Monitoring Well (November 2023)

Existing Utility - Catch Basin

Existing Utility - Inlet

Existing Utility - Wastewater Pipe

Existing Utility - Sewer or Combined-Sewer Line

Approximate Post Construction Crosswalk/Sidewalk Configuration

NOTES:

1. All Existing Utility data should be considered approximate. City of Seattle, 2019.
2. *MW-6-22 (inaccessible) and MW-7-22 (decommissioned) not gauged during quarter 7 and therefor have not been included in the potentiometric surface interpolation.

0 40

Feet

SR 520 Bridge Replacement and HOV Program
SR 520 I-5 to Montlake -I/C and Bridge Replacement
Groundwater Monitoring Report No. 7
2625 East Montlake Place East
Seattle, WA

**GROUNDWATER
POTENTIOMETRIC SURFACE MAP
WITH GROUNDWATER ELEVATION**

January 2024 21-1-22242-104

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

EXHIBIT 1

EXHIBIT 2
GROUNDWATER LEVEL MEASUREMENTS

SR 520 Bridge Replacement and HOV Program
SR 520 I-5 to Montlake - I/C and Bridge Replacement
Groundwater Monitoring Memorandum - Quarter No. 7

Montlake Gas Station Monitoring Well	Screened Interval (feet bgs)	Surveyed Monitoring Well Elevation ¹ (feet)	TOC Elevation (feet)	Date	Depth to Water (feet below TOC)	Groundwater Elevation (feet)
MW-2-19	10 to 20	58.87	58.12	10/17/2019	10.1	48.0
				5/2/2022	8.3	49.8
				8/16/2022	9.4	48.7
				11/15/2022	9.9	48.2
				2/14/2023	8.4	49.8
				5/17/2023	8.6	49.6
				8/9/2023	9.8	48.3
				11/17/2023	8.2	49.9
MW-3-19	10 to 25	59.29	59.01	10/17/2019	17.4	41.6
				5/2/2022	17.3	41.8
				8/16/2022	17.4	41.6
				11/15/2022	17.5	41.5
				2/14/2023	17.5	41.6
				5/17/2023	17.4	41.6
				8/25/2023	17.5	41.6
				11/17/2023	17.2	41.8
MW-6-22	11 to 26	59.71	59.36	5/2/2022	12.2	47.2
				8/16/2022	13.9	45.5
				11/15/2022	14.9	44.4
				2/14/2023	12.5	46.8
				5/17/2023	13.0	46.4
				8/9/2023	14.7	44.7
				11/17/2023 ²	-	-

EXHIBIT 2
GROUNDWATER LEVEL MEASUREMENTS

SR 520 Bridge Replacement and HOV Program
SR 520 I-5 to Montlake - I/C and Bridge Replacement
Groundwater Monitoring Memorandum - Quarter No. 7

Montlake Gas Station Monitoring Well	Screened Interval (feet bgs)	Surveyed Monitoring Well Elevation ¹ (feet)	TOC Elevation (feet)	Date	Depth to Water (feet below TOC)	Groundwater Elevation (feet)
MW-7-22	10.5 to 25.5	59.68	59.18	5/2/2022	12.1	47.1
				8/17/2022	13.8	45.4
				11/15/2022	14.8	44.4
				2/14/2023	12.4	46.8
				5/17/2023	12.8	46.3
				7/5/2023 ³	13.9	45.2
MW-8-22	10.5 to 25.5	58.90	58.55	5/2/2022	11.3	47.2
				8/16/2022	13.0	45.6
				11/15/2022	14.0	44.5
				2/14/2023	11.6	46.9
				5/17/2023	12.1	46.5
				8/9/2023	13.8	44.8
				11/17/2023	9.6	49.0
MW-9-22	10 to 25	59.93	59.58	5/2/2022	12.4	47.2
				8/17/2022	14.1	45.5
				11/15/2022	15.1	44.5
				2/14/2023	12.7	46.9
				5/17/2023	13.1	46.4
				8/3/2023	14.9	44.7
				11/17/2023	10.7	48.9

NOTES:

- 1 Monitoring well elevation was surveyed from the center of the well monument lid.
2 Monitoring well was inaccessible, no measurement was taken.
3 MW-7-22 was gauged and sampled prior to it being decommissioned on 7/10/2022 by Graham.
The reference vertical datum is the North American Vertical Datum (of 1988).
bgs = below ground surface; TOC = top of casing

EXHIBIT 3
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS

		Petroleum Hydrocarbons (µg/L)			Volatile Organic Compounds (µg/L) ³					Metals (µg/L) ⁴	
Montlake Gas Station Monitoring Well	Sample Date	Gasoline Range Organics ¹	Diesel Range Organics ²	Lube Oil Range Organics ²	Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Total Arsenic	Dissolved Arsenic
MW-2-19	10/17/2019	<100	<260	<420	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	5/2/2022	<100	<180	<240	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	8/16/2022	<100	<130	<210	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	11/15/2022	<100	<210	<210	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	2/14/2023	<100	<200	<200	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	5/17/2023	<100	<210	<210	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	8/9/2023	<100	<110	<220	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
MW-3-19 ⁵	10/17/2019	1400	630	660	98	<4	24	9.3	1.1	17	7.4
	5/2/2022	5800	1300 M	500	170	<10	190	220	3.2	16	11
	2/14/2023	7300	2100 M	320	140	<5.0	72	94	2.3	22	13
	5/17/2023	8400	<1700 M	340	100	<20	79	120	<4.0	25	14
	8/25/2023	10000	2900 M	320	82	<20	37	90	<4.0	24	21
	11/18/2023	4900	1700 M	320	43	<10	11	22	<2.0	20	21
MW-6-22	5/2/2022	<100	210	330	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	8/16/2022	<100	<130	290	<0.20	<1.0	<0.20	<0.40	<0.20	6.3	4.5
	11/15/2022	<100	<200	<200	<0.20	<1.0	<0.20	<0.40	<0.20	7.3	4.6
	2/14/2023	<100	<210	<210	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	5/17/2023	<100	<210	<210	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	8/9/2023	<100	<100	<210	<0.20	<1.0	<0.20	<0.40	<0.20	4.6	<3.0
	8/25/2023	--	<160	<160	--	--	--	--	--	--	--
MW-7-22	5/2/2022	<100	<170	<230	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	8/17/2022	<100	<130	250	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	11/15/2022	<100	<210	<210	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	11/15/2022	<100	<210	220	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	2/14/2023	<100	<200	<200	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	5/17/2023	<100	<210	<210	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	7/6/2023	<100	<210	<210	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0

EXHIBIT 3
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS

		Petroleum Hydrocarbons (µg/L)			Volatile Organic Compounds (µg/L) ³					Metals (µg/L) ⁴	
Montlake Gas Station Monitoring Well	Sample Date	Gasoline Range Organics ¹	Diesel Range Organics ²	Lube Oil Range Organics ²	Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Total Arsenic	Dissolved Arsenic
MW-8-22	5/2/2022	<100	<170	<220	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	5/2/2022	<100	<170	240	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	8/16/2022	<100	<130	360	<0.20	<1.0	<0.20	<0.40	<0.20	6.6	3.8
	8/16/2022	<100	<140	340	<0.20	<1.0	<0.20	<0.40	<0.20	6.5	4.3
	11/15/2022	<100	<200	<200	<0.20	<1.0	<0.20	<0.40	<0.20	6	5.7
	2/14/2023	<100	<210	<210	<0.20	<1.0	<0.20	<0.40	<0.20	4.2	<3.0
	2/14/2023	<100	<200	<200	<0.20	<1.0	<0.20	<0.40	<0.20	4.4	<3.0
	5/17/2023	<100	<210	<210	<0.20	<1.0	<0.20	<0.40	<0.20	4	<3.0
	5/17/2023	<100	<220	<220	<0.20	<1.0	<0.20	<0.40	<0.20	4.1	<3.0
	8/9/2023	<100	<110	260	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	8/9/2023	<100	<110	<230	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	11/17/2023	<100	<110	<210	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	11/17/2023	<100	<110	<210	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
MW-9-22	5/2/2022	<100	<160	<220	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	8/17/2022	<100	1900	<300	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	11/15/2022	<100	<210	<210	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	2/14/2023	<100	<210	<210	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	3.0
	5/17/2023	<100	<220	<220	<0.20	<1.0	<0.20	<0.40	<0.20	3.9	<3.0
	8/9/2023	<100	<110	310	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
	11/17/203	<100	<100	<200	<0.20	<1.0	<0.20	<0.40	<0.20	<3.3	<3.0
Trip Blank	5/2/2022	<100	--	--	<0.20	<1.0	<0.20	<0.40	<0.20	--	--
	8/18/2022	<100	--	--	<0.20	<1.0	<0.20	<0.40	<0.20	--	--
	11/15/2022	<100	--	--	<0.20	<1.0	<0.20	<0.40	<0.20	--	--
	2/14/2023	<100	--	--	<0.20	<1.0	<0.20	<0.40	<0.20	--	--
	7/6/2021	<100	--	--	<0.20	<1.0	<0.20	<0.40	<0.20	--	--
	8/9/2023	<100	--	--	<0.20	<1.0	<0.20	<0.40	<0.20	--	--
MTCA Method A CUL		1000/800*	500	500	5.00	1000	700	1000†	1000†	20§	20§

NOTES:

1 Gasoline-range petroleum hydrocarbons using Washington State Department of Ecology's (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

5 In August and November 2022, MW-3-19 had measurable free product and was not sampled.

Highlighted text indicates the analyte was detected above the MTCA Method A CUL.

Highlighted text indicates the analyte was not detected, however the practical quantitation limit is above the MTCA Method A CUL.

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.

* Cleanup level (CUL) for gasoline-range organics is 1,000 µg/L without the presence of benzene and 800 µg/L with the presence of benzene.

† MTCA Method A CUL for total xylenes is used because 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; CUL = cleanup level; EPA = U.S. Environmental Protection Agency; MTCA = Model Toxics Control Act; µg/L = micrograms per liter; NWTPH = Northwest Total Petroleum Hydrocarbon

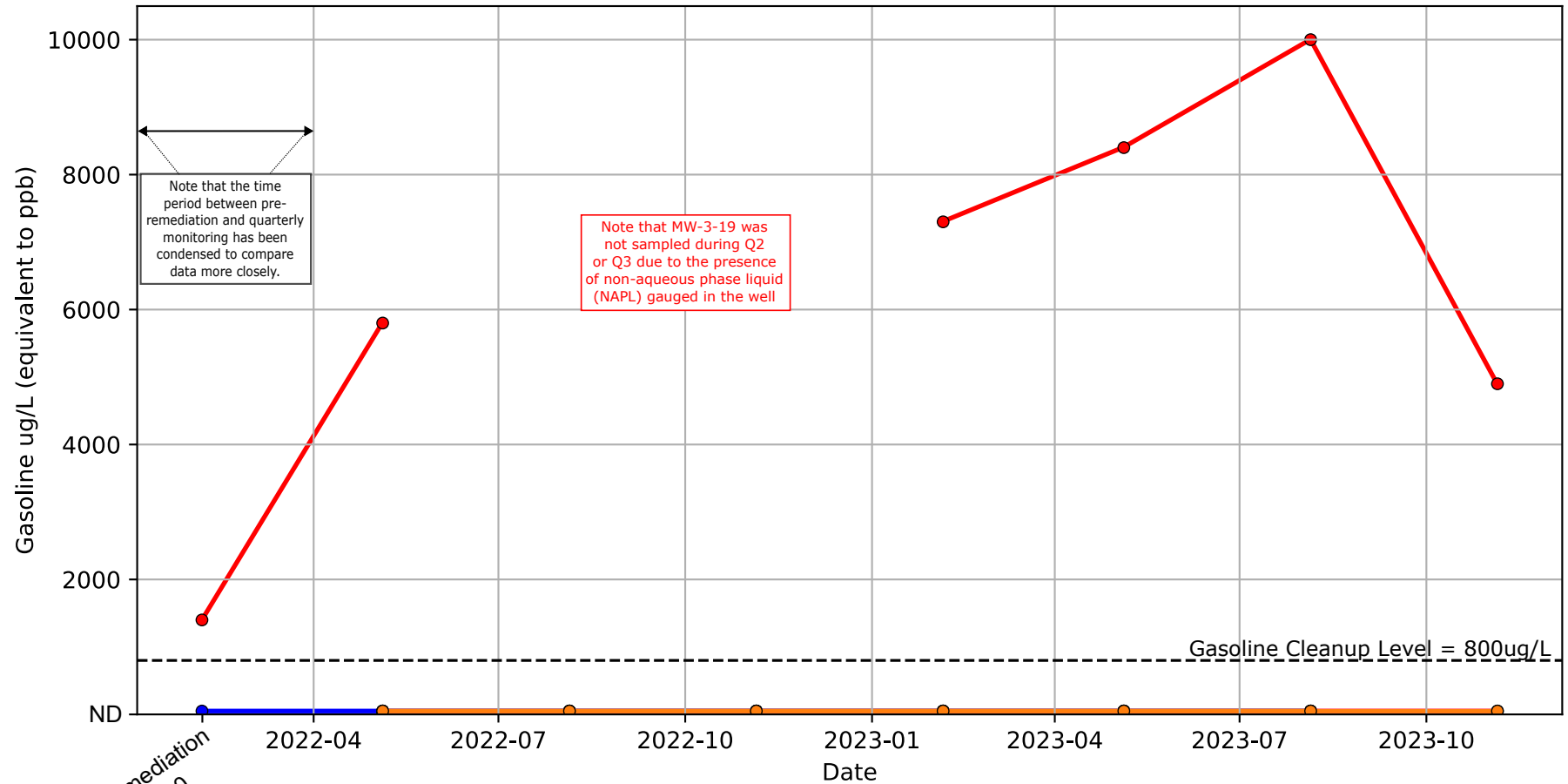


FIG. 4

Note: Gasoline concentrations non detect (ND) in MW-8-22 and MW-9-22 during Quarter No. 7. MW-2-19, MW-6-22, and MW-7-22 not sampled.

SR 520 Bridge Replacement and HOV Program
I-5 to Montlake - I/C and Bridge Replacement
Groundwater Monitoring Report - Quarter No. 7

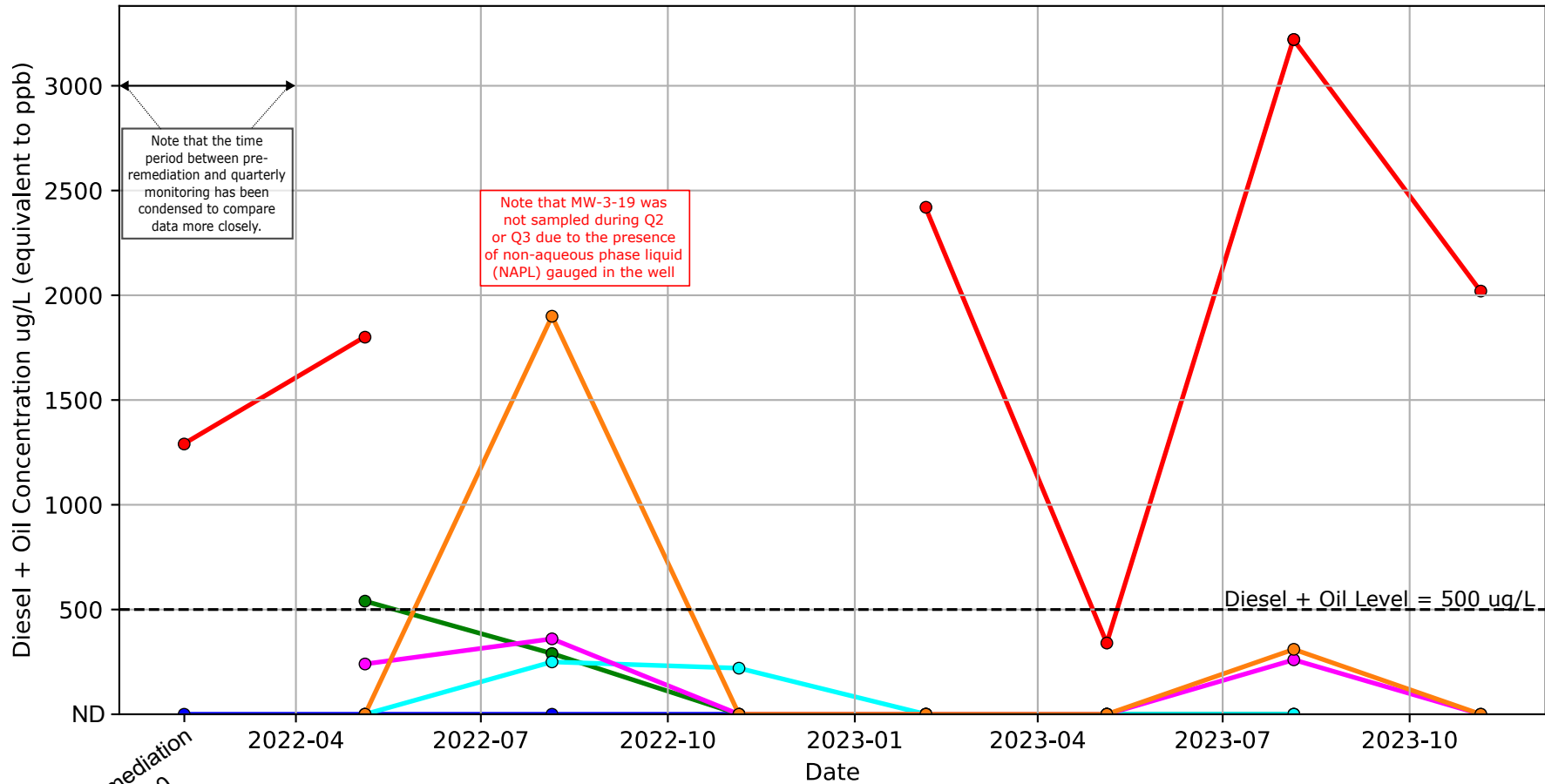
Groundwater Concentration Trend Plots - Gasoline

January 2024

21-1-22242-104

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FIG. 4



Note: Diesel concentrations non detect (ND) in MW-8-22 and MW-9-22 during Quarter No. 7. MW-2-19, MW-6-22, and MW-7-22 not sampled.

SR 520 Bridge Replacement and HOV Program
I-5 to Montlake - I/C and Bridge Replacement
Groundwater Monitoring Report - Quarter No. 7

Groundwater Concentration Trend Plots - Diesel plus Oil

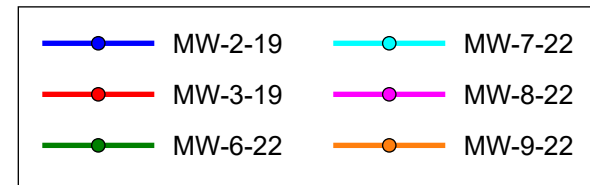
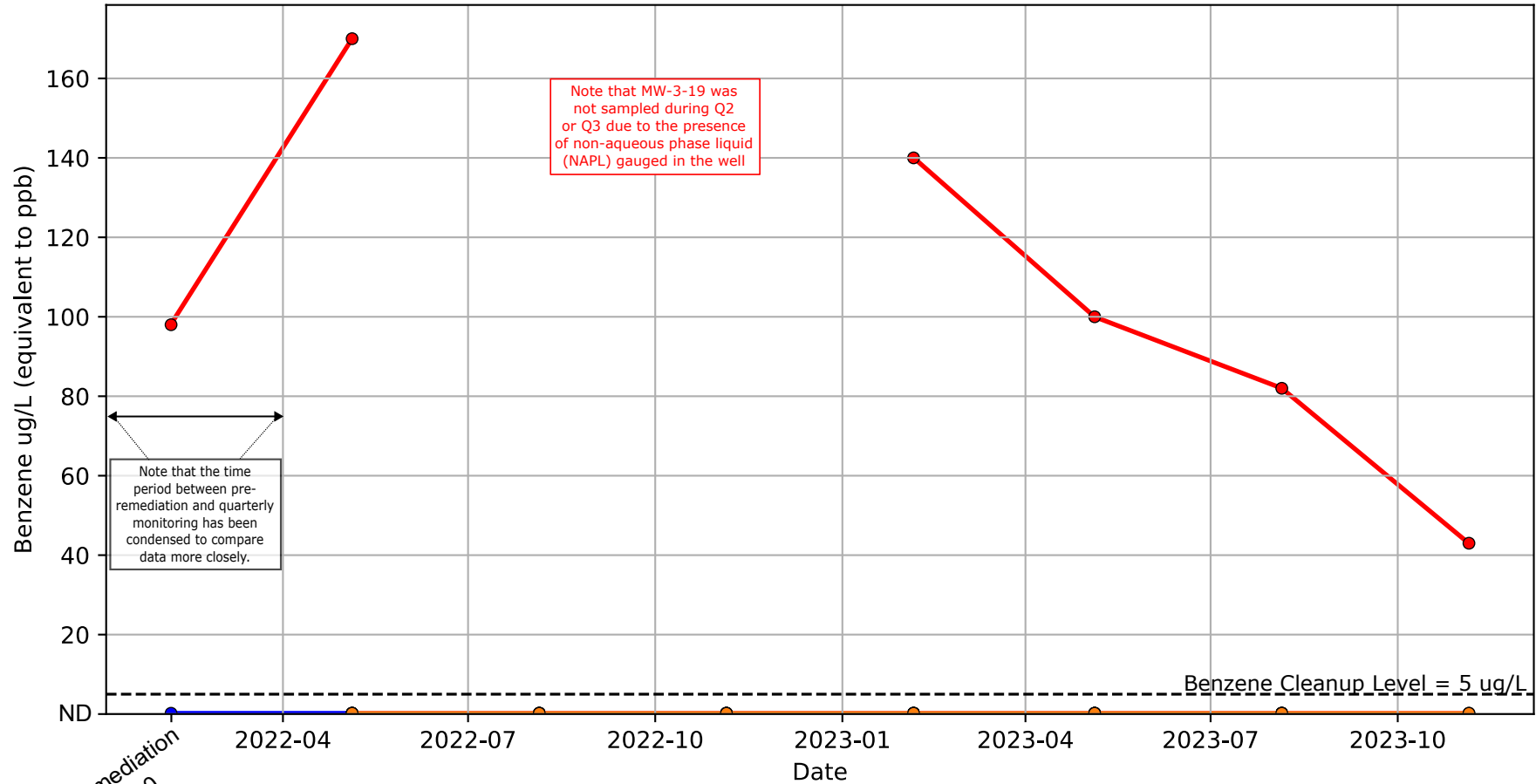
January 2024

21-1-22242-104

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FIG.5

FIG. 5



Note: Benzene concentrations non detect (ND) in MW-8-22 and MW-9-22 during Quarter No. 7. MW-2-19, MW-6-22, and MW-7-22 not sampled.

SR 520 Bridge Replacement and HOV Program
I-5 to Montlake - I/C and Bridge Replacement
Groundwater Monitoring Report - Quarter No. 7

Groundwater Concentration Trend Plots - Benzene

January 2024

21-1-22242-104

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FIG. 6

FIG. 6

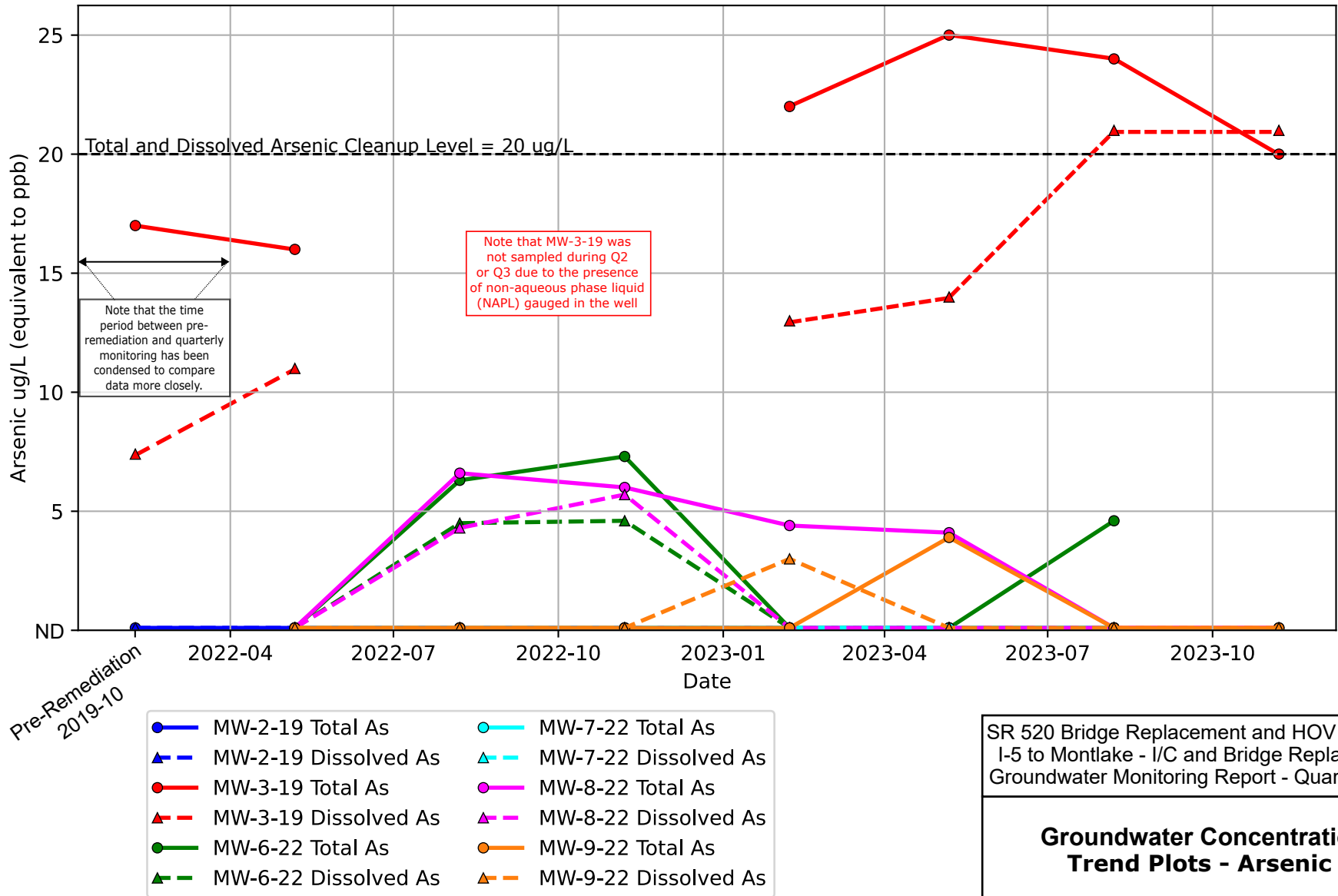


FIG. 7

Note: Arsenic concentrations non detect (ND) in MW-8-22 and MW-9-22 during Quarter No. 7. MW-2-19, MW-6-22, and MW-7-22

SR 520 Bridge Replacement and HOV Program
I-5 to Montlake - I/C and Bridge Replacement
Groundwater Monitoring Report - Quarter No. 7

Groundwater Concentration Trend Plots - Arsenic

January 2024

21-1-22242-104

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FIG. 7

Attachment 1

Contents:

Groundwater Sampling Field Forms (4 Sheets)

OWNER / LOCATION: Former Montlake Gas Station

DATE: 11/17/23

WELL NO: MW-8-22 SAMPLE NO: MW-8-22: 111723 ECOLOGY TAG NO: BNU406

DUPLICATE NO: MW-100: 111723

WEATHER: Clear, 40's-50's

MS / MSD? Yes ☐ No ☐WELL SITE CONDITIONS / MP DEFINITION:
(MP is typically the north PVC rim)

N TOC

SAMPLING DATA

TIME STARTED: 12:15

LNAPL THICKNESS: / ft. Sample ☐

PID HEAD SPACE: / ppm

DNAPL THICKNESS: / ft. Sample ☐

MP DISTANCE ABOVE / BELOW GROUND SURFACE: 0.33 ft.

TOTAL DEPTH OF WELL BELOW MP: 26.05 ft.

DTW BELOW MP: 9.58 ft.

WATER COLUMN IN WELL: 16.47 ft.

CASING DIAMETER: 2 in.

GALLONS PER FOOT: 0.16

GALLONS IN WELL: 2.64 (x3 = ~7.90)

TIME PURGING STARTED: 12:23

SAMPLE CONTAINERS			
Number	Size	Type	Pres.

FIELD PARAMETERS

GALLONS REMOVED	TEMP. (C°)	Eh (mV)	pH	COND. (µmhos/cm)	D.O. (mg/L)	TURBIDITY (NTU)	SALINITY (%)	TDS (g/L)	COLOR	TIME
Initial	15.8	247.5	6.99	1308	2.59	15.27	0.66	0.8580	Clear	1225
0.3	15.5	243.7	7.06	1235	try'g to fix turbidity, meter issues				opaque	
0.3	15.5	243.7	7.06	1235	1.43	203	0.62	0.7995	Clear	1250
0.6	15.7	245.4	7.02	1148	1.65	272	0.6057	0.7475	opaque/white	1255
0.8	15.8	246.3	7.01	1104	1.65	323	0.55	0.7150	opaque	1300
1.1	15.8	248.7	6.99	1109	1.63	305	0.55	0.7215	opaque	1305
1.4	15.7	249.1	6.97	1015	1.78	247	0.51	0.6695	opaque	1310
1.6	15.7	251.4	6.95	929	1.82	174	0.46	0.5980	opaque	1315
1.9	15.7	254.0	6.89	844	1.87	75.3	0.41	0.5460	opaque	1320
After Sampling			more	on	back	→			(clearing up)	

EVACUATION METHOD: Peristaltic 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 Pro 15, 11/17/23 @ 900

SAMPLING METHOD: EPA low flow

SAMPLE TIME: 1415

SAMPLING PERSONNEL: MEH

DUPLICATE TIME: 1600

REMARKS (e.g., recovery rate): MW-100: 111723 = duplicate

Turbidity meter reading negative. Will reset batteries before next use. Water from well appears very clear (at start) and at the end

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: 1445

Login: sac

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

<u>Gal. removed</u>	^{3%} <u>Temp</u>	^{10mV} <u>ORP</u>	^{10.1} <u>pH</u>	^{3%} <u>Sp Cond</u>	^{10% 20.5} <u>DO</u>	^{10% 25.3} <u>Turbidity</u>	<u>SAL</u>	<u>TDS</u>	<u>Color</u>	<u>Time</u>
2.3	15.7	254.8	6.83	745	1.94	41.4	0.37	0.4810	opaque	1325
2.7	15.7	255.4	6.76	705	1.67	31.3	0.35	0.4550	opaque	1330
3.1	15.6	255.0	6.70	668	1.89	23.5	0.33	0.4290	opaque/clear	1335
YSI turned off, readings adjusting										
3.9	15.6	255.6	6.63	659	2.21	20.7	0.32	0.4290	clear	1340
4.2	15.6	257.1	6.63	653	2.40	11.8	0.32	0.4290	clear	1345
4.5	15.6	259.6	6.60	655	2.46	6.67	0.32	0.4225	clear	1350
4.8	15.6	261.3	6.60	659	2.62	5.81	0.32	0.4290	clear	1400
5.2	15.7	26 258.8	6.66	655	2.64	-0.5	0.32	0.4290	very clear	1405
5.4	15.7	260.9	6.63	657	2.68	1.37	0.32	0.4290	very clear	1408
5.7	15.7	261.2	6.63	651	2.73	2.13	0.32	0.4225	very clear	1411

Parameters stabilized, started sampling
@ 1415

OWNER / LOCATION: Former Montlake Gas Station
WELL NO: MW-9-22 SAMPLE NO: MW-9-22/111723 ECOLOGY TAG NO: BNV 409
WEATHER: Clear, 40-50's
WELL SITE CONDITIONS / MP DEFINITION: N TOC
(MP is typically the north PVC rim)

DATE: 11/17/23

DUPLICATE NO: ~~1~~ _____

MS / MSD? Yes ☐ No ☐

SAMPLING DATA

TIME STARTED: 1045

PID HEAD SPACE: _____ ppm

MP DISTANCE ABOVE / BELOW GROUND SURFACE: 0.36 ft.

TOTAL DEPTH OF WELL BELOW MP: 25.15 ft.

DTW BELOW MP: 10.69 ft.

WATER COLUMN IN WELL: 14.46 ft.

CASING DIAMETER: 2 in.

GALLONS PER FOOT: 0.16

GALLONS IN WELL: 2.31 (x3 ~ 6.94)

TIME PURGING STARTED: 1110

LNAPL THICKNESS: _____ ft. Sample ☐

DNAPL THICKNESS: _____ ft. Sample ☐

MP DISTANCE ABOVE / BELOW GROUND SURFACE: 0.36 ft.

TOTAL DEPTH OF WELL BELOW MP: 25.15 ft.

DTW BELOW MP: 10.69 ft.

WATER COLUMN IN WELL: 14.46 ft.

CASING DIAMETER: 2 in.

GALLONS PER FOOT: 0.16

GALLONS IN WELL: 2.31 (x3 = 6.94)

TIME PURGING STARTED: _____

[illegible]

10% 70.5, 3 < 0.5

3% I10mV I0.1 3% FIELD PARAMETERS 10% >50VU 3<50VU

[illegible]

EVACUATION METHOD: Peristaltic Pump

PUMP INTAKE DEPTH (if applicable): Mid screen

PURGE WATER DISPOSITION (e.g., drum #): Down on site

WATER QUALITY (e.g., sheen, odor): No sheen or odor

WATER QUALITY METER(S) USED; CALIBRATION DATE / TIME: YSI Pro Plus, 11/17/23 @ 900

SAMPLING METHOD: EPA Low Flow

SAMPLING PERSONNEL: MBH

REMARKS (e.g., recovery rate):

SAMPLE TIME: 1140

Duplicate "Time":

TIME COMPLETED: 1200

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

OWNER / LOCATION: Former Montlake Gas Station DATE: 11/18/2023
WELL NO: MW-3-19 SAMPLE NO: MW-3-19:111823 ECOLOGY TAG NO: BLT 987 DUPLICATE NO: ✓
WEATHER: clear, 40s - 50s MS / MSD? Yes ☐ No ☐
WELL SITE CONDITIONS / MP DEFINITION: North TOC
(MP is typically the north PVC rim)

SAMPLING DATA

TIME STARTED: 940 LNAPL THICKNESS: ft. Sample ☐
PID HEAD SPACE: 0 ppm DNAPL THICKNESS: ft. Sample ☐
MP DISTANCE ABOVE (BELOW GROUND SURFACE: 5.25 ft.
TOTAL DEPTH OF WELL BELOW MP: 24.79 ft.
DTW BELOW MP: 22.42 - 5.25 = 17.17 ft.
WATER COLUMN IN WELL: 7.62 ft.
CASING DIAMETER: 1 in.
GALLONS PER FOOT: 0.16
GALLONS IN WELL: 1.22 ($\times 3 = 3.66$)
TIME PURGING STARTED: 1000

10670.5 3005

3% ± 10 MU 101 3% FIELD PARAMETERS 10670.5, 3005

GALLONS REMOVED	TEMP. (C°)	Eh (mV)	pH	COND. (µmhos / cm)	D.O. (mg / L)	TURBIDITY (NTU)	SALINITY (%)	TDS (g / L)	COLOR	TIME
Initial	15.8	154.5	8.48	2249	0.57	1106	1.16	14567	light green	1000
0.2	15.9	-94.5	9.10	2200	0.43	464	1.13	1.4300	opaque	10:05
0.5	16.1	-134.4	8.72	2147	0.40	65.6	1.11	1.4040	opaque	1010
0.8	16.0	-127.4	8.52	2102	0.40	16.4	1.08	1.3650	clear	1015
1.1	16.2	-97.7	8.14	1968	0.37	11.2	1.01	1.2805	clear	1020
1.4	16.3	-88.9	7.90	1970	0.37	23.7	1.01	1.2805	clear	1025
1.7	16.2	-93.7	7.77	2010	0.32	-1.75	1.03	1.3065	clear	1030
2.0	16.0	-97.0	7.70	2029	0.32	-7.25	1.04	1.3195	clear	1035
2.2	16.0	-99.7	7.68	2042	0.30	-7.63	1.05	1.3260	clear	1040
After Sampling			parameters stabilized, started sampling @					1045		

EVACUATION METHOD: Peristaltic 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 but noticeable odor.
WATER QUALITY METER(S) USED; CALIBRATION DATE / TIME: YSI Pro Plus, 11/18/23 @0900
SAMPLING METHOD: EPA low flow SAMPLE TIME: 1045
SAMPLING PERSONNEL: MEH DUPLICATE "TIME": ✓
REMARKS (e.g., recovery rate): Even w/ new battery, very clear water turbidity showing negative. Do we need a new O MU cal blank?

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: 1130

Attachment 2

Contents:

Laboratory Report and Chain-of-Custody Form (29 Sheets)



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

December 6, 2023

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. 2311-216

Dear Joseph:

Enclosed are the analytical results and associated quality control data for samples submitted on November 20, 2023.

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: December 6, 2023
Samples Submitted: November 20, 2023
Laboratory Reference: 2311-216
Project: 21-1-22242-112

Case Narrative

Samples were collected on November 18, 2023 and received by the laboratory on November 20, 2023. 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. However the soil results for the QA/QC samples are reported on a wet-weight basis.

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: December 6, 2023
 Samples Submitted: November 20, 2023
 Laboratory Reference: 2311-216
 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-3-19:111823					
Laboratory ID:	11-216-01					
Gasoline	4900	1000	NWTPH-Gx	11-27-23	11-27-23	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	84	65-122				



Date of Report: December 6, 2023
 Samples Submitted: November 20, 2023
 Laboratory Reference: 2311-216
 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:	MB1127W1					
Gasoline	ND	100	NWTPH-Gx	11-27-23	11-27-23	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	77	65-122				

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	11-242-01							
	ORIG	DUP						
Gasoline	ND	ND	NA	NA	NA	NA	NA	30
<i>Surrogate:</i>								
<i>Fluorobenzene</i>				82	72	65-122		



Date of Report: December 6, 2023
 Samples Submitted: November 20, 2023
 Laboratory Reference: 2311-216
 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-3-19:111823					
Laboratory ID:	11-216-01					
Benzene	43	2.0	EPA 8260D	11-20-23	11-20-23	
Toluene	ND	10	EPA 8260D	11-20-23	11-20-23	
Ethylbenzene	11	2.0	EPA 8260D	11-20-23	11-20-23	
m,p-Xylene	22	4.0	EPA 8260D	11-20-23	11-20-23	
o-Xylene	ND	2.0	EPA 8260D	11-20-23	11-20-23	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Dibromofluoromethane</i>	<i>87</i>	<i>75-127</i>				
<i>Toluene-d8</i>	<i>86</i>	<i>80-127</i>				
<i>4-Bromofluorobenzene</i>	<i>104</i>	<i>78-125</i>				



Date of Report: December 6, 2023
 Samples Submitted: November 20, 2023
 Laboratory Reference: 2311-216
 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:	MB1120W2					
Benzene	ND	0.20	EPA 8260D	11-20-23	11-20-23	
Toluene	ND	1.0	EPA 8260D	11-20-23	11-20-23	
Ethylbenzene	ND	0.20	EPA 8260D	11-20-23	11-20-23	
m,p-Xylene	ND	0.40	EPA 8260D	11-20-23	11-20-23	
o-Xylene	ND	0.20	EPA 8260D	11-20-23	11-20-23	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Dibromofluoromethane</i>	87	75-127				
<i>Toluene-d8</i>	87	80-127				
<i>4-Bromofluorobenzene</i>	103	78-125				

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB1120W2									
	SB	SBD	SB	SBD	SB	SBD				
Benzene	8.21	8.19	10.0	10.0	82	82	80-121	0	16	
Toluene	8.81	8.89	10.0	10.0	88	89	80-120	1	18	
Ethylbenzene	9.75	9.95	10.0	10.0	98	100	80-125	2	18	
m,p-Xylene	21.6	22.3	20.0	20.0	108	112	80-127	3	18	
o-Xylene	9.84	10.1	10.0	10.0	98	101	80-126	3	18	
Surrogate:										
Dibromofluoromethane					87	83	75-127			
Toluene-d8					90	87	80-127			
4-Bromofluorobenzene					108	108	78-125			



Date of Report: December 6, 2023
 Samples Submitted: November 20, 2023
 Laboratory Reference: 2311-216
 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-3-19:111823					
Laboratory ID:	11-216-01					
Diesel Range Organics	1.7	0.20	NWTPH-Dx	11-22-23	11-23-23	M
Lube Oil Range Organics	0.32	0.20	NWTPH-Dx	11-22-23	11-23-23	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	92	50-150				



Date of Report: December 6, 2023
 Samples Submitted: November 20, 2023
 Laboratory Reference: 2311-216
 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:	MB1122W1					
Diesel Range Organics	ND	0.16	NWTPH-Dx	11-22-23	11-22-23	
Lube Oil Range Organics	ND	0.16	NWTPH-Dx	11-22-23	11-22-23	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	82	50-150				

Analyte	Result		Spike Level		Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE										
Laboratory ID:	11-213-01									
	ORIG	DUP								
Diesel Range Organics	0.212	0.192	NA	NA		NA	NA	10	40	
Lube Oil Range Organics	0.260	0.253	NA	NA		NA	NA	3	40	
Surrogate:										
o-Terphenyl						80	79	50-150		



Date of Report: December 6, 2023
Samples Submitted: November 20, 2023
Laboratory Reference: 2311-216
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-3-19:111823					
Laboratory ID:	11-216-01					
Arsenic	20	3.3	EPA 200.8	12-5-23	12-6-23	



Date of Report: December 6, 2023
 Samples Submitted: November 20, 2023
 Laboratory Reference: 2311-216
 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:	MB1205WM1					
Arsenic	ND	3.3	EPA 200.8	12-5-23	12-6-23	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	11-066-06							
	ORIG	DUP						
Arsenic	ND	ND	NA	NA	NA	NA	NA	20

MATRIX SPIKES

Laboratory ID:	11-066-06							
	MS	MSD	MS	MSD		MS	MSD	
Arsenic	107	118	111	111	ND	97	106	75-125 9 20



Date of Report: December 6, 2023
Samples Submitted: November 20, 2023
Laboratory Reference: 2311-216
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-3-19:111823					
Laboratory ID:	11-216-01					
Arsenic	21	3.0	EPA 200.8		12-6-23	



Date of Report: December 6, 2023
 Samples Submitted: November 20, 2023
 Laboratory Reference: 2311-216
 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:	MB1206D1					
Arsenic	ND	3.0	EPA 200.8		12-6-23	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	11-267-02							
	ORIG	DUP						
Arsenic	ND	ND	NA	NA	NA	NA	NA	20

MATRIX SPIKES

Laboratory ID:	11-267-02									
	MS	MSD	MS	MSD		MS	MSD			
Arsenic	86.0	85.2	80.0	80.0	ND	108	107	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





Onsite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Page 1 of 1

Company: Shannon & Wilson Inc		Turnaround Request (in working days)		Laboratory Number: 11-216											
Project Number: 21-1-22242-112		<input type="checkbox"/> Same Day <input type="checkbox"/> 1 Day													
Project Name: Former Montlake Gas Station		<input type="checkbox"/> 2 Days <input type="checkbox"/> 3 Days													
Project Manager: Joseph Sauder		<input checked="" type="checkbox"/> Standard (7 Days)													
Sampled by: MEH		<input type="checkbox"/> _____ (other)													
Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers										
1	MW-3-19: 111823	11/19/23	1045	gw	9										
		NWTPH-HCID													
		<input checked="" type="checkbox"/> NWTPH-Gx/BTEX (8021 <input type="checkbox"/> 8260 <input checked="" type="checkbox"/>													
		NWTPH-Gx													
		<input checked="" type="checkbox"/> NWTPH-Dx (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															
<input checked="" type="checkbox"/> Total & Dissolved Arsenic															
200.8															
% Moisture															
Signature		Company		Date	Time	Comments/Special Instructions									
Relinquished		SWI	11/20/23	9:00	<input checked="" type="checkbox"/> - Unpreserved plastic bottle was field filtered										
Received		SPB	11/20/23	0930											
Relinquished		SPB	11/20/23	1045											
Received		SPB	11/20/23	1045											
Relinquished		SPB	11/20/23	1045											
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 checked="" type="checkbox"/>											



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

December 7, 2023

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. 2311-202

Dear Joseph:

Enclosed are the analytical results and associated quality control data for samples submitted on November 17, 2023.

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: December 7, 2023
Samples Submitted: November 17, 2023
Laboratory Reference: 2311-202
Project: 21-1-22242-112

Case Narrative

Samples were collected on November 17, 2023 and received by the laboratory on November 17, 2023. 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. However the soil results for the QA/QC samples are reported on a wet-weight basis.

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: December 7, 2023
 Samples Submitted: November 17, 2023
 Laboratory Reference: 2311-202
 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-9-22:111723					
Laboratory ID:	11-202-01					
Gasoline	ND	100	NWTPH-Gx	11-20-23	11-20-23	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	78	65-122				
Client ID:	MW-8-22:111723					
Laboratory ID:	11-202-02					
Gasoline	ND	100	NWTPH-Gx	11-20-23	11-20-23	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	79	65-122				
Client ID:	MW-100:111723					
Laboratory ID:	11-202-03					
Gasoline	ND	100	NWTPH-Gx	11-20-23	11-20-23	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	77	65-122				



Date of Report: December 7, 2023
 Samples Submitted: November 17, 2023
 Laboratory Reference: 2311-202
 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:	MB1120W1					
Gasoline	ND	100	NWTPH-Gx	11-20-23	11-20-23	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	91	65-122				

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	11-139-01							
	ORIG	DUP						
Gasoline	ND	ND	NA	NA	NA	NA	30	
Surrogate:								
Fluorobenzene				85	71	65-122		



Date of Report: December 7, 2023
 Samples Submitted: November 17, 2023
 Laboratory Reference: 2311-202
 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-9-22:111723						
Laboratory ID:	11-202-01					
Benzene	ND	0.20	EPA 8260D	11-20-23	11-20-23	
Toluene	ND	1.0	EPA 8260D	11-20-23	11-20-23	
Ethylbenzene	ND	0.20	EPA 8260D	11-20-23	11-20-23	
m,p-Xylene	ND	0.40	EPA 8260D	11-20-23	11-20-23	
o-Xylene	ND	0.20	EPA 8260D	11-20-23	11-20-23	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Dibromofluoromethane</i>	96	75-127				
<i>Toluene-d8</i>	94	80-127				
<i>4-Bromofluorobenzene</i>	97	78-125				
Client ID: MW-8-22:111723						
Laboratory ID:	11-202-02					
Benzene	ND	0.20	EPA 8260D	11-20-23	11-20-23	
Toluene	ND	1.0	EPA 8260D	11-20-23	11-20-23	
Ethylbenzene	ND	0.20	EPA 8260D	11-20-23	11-20-23	
m,p-Xylene	ND	0.40	EPA 8260D	11-20-23	11-20-23	
o-Xylene	ND	0.20	EPA 8260D	11-20-23	11-20-23	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Dibromofluoromethane</i>	98	75-127				
<i>Toluene-d8</i>	94	80-127				
<i>4-Bromofluorobenzene</i>	100	78-125				
Client ID: MW-100:111723						
Laboratory ID:	11-202-03					
Benzene	ND	0.20	EPA 8260D	11-20-23	11-20-23	
Toluene	ND	1.0	EPA 8260D	11-20-23	11-20-23	
Ethylbenzene	ND	0.20	EPA 8260D	11-20-23	11-20-23	
m,p-Xylene	ND	0.40	EPA 8260D	11-20-23	11-20-23	
o-Xylene	ND	0.20	EPA 8260D	11-20-23	11-20-23	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Dibromofluoromethane</i>	98	75-127				
<i>Toluene-d8</i>	94	80-127				
<i>4-Bromofluorobenzene</i>	99	78-125				



Date of Report: December 7, 2023
 Samples Submitted: November 17, 2023
 Laboratory Reference: 2311-202
 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:	MB1120W3					
Benzene	ND	0.20	EPA 8260D	11-20-23	11-20-23	
Toluene	ND	1.0	EPA 8260D	11-20-23	11-20-23	
Ethylbenzene	ND	0.20	EPA 8260D	11-20-23	11-20-23	
m,p-Xylene	ND	0.40	EPA 8260D	11-20-23	11-20-23	
o-Xylene	ND	0.20	EPA 8260D	11-20-23	11-20-23	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Dibromofluoromethane</i>	<i>102</i>	<i>75-127</i>				
<i>Toluene-d8</i>	<i>94</i>	<i>80-127</i>				
<i>4-Bromofluorobenzene</i>	<i>99</i>	<i>78-125</i>				



Date of Report: December 7, 2023
 Samples Submitted: November 17, 2023
 Laboratory Reference: 2311-202
 Project: 21-1-22242-112

**VOLATILE ORGANICS EPA 8260D
 QUALITY CONTROL**

Matrix: Water

Units: ug/L

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB1120W3									
	SB	SBD	SB	SBD	SB	SBD				
Benzene	11.7	11.6	10.0	10.0	117	116	80-121	1	16	
Toluene	11.2	10.9	10.0	10.0	112	109	80-120	3	18	
Ethylbenzene	11.8	11.1	10.0	10.0	118	111	80-125	6	18	
m,p-Xylene	23.7	22.1	20.0	20.0	119	111	80-127	7	18	
o-Xylene	11.9	11.2	10.0	10.0	119	112	80-126	6	18	
Surrogate:										
Dibromofluoromethane					94	102	75-127			
Toluene-d8					92	96	80-127			
4-Bromofluorobenzene					101	104	78-125			



Date of Report: December 7, 2023
 Samples Submitted: November 17, 2023
 Laboratory Reference: 2311-202
 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-9-22:111723					
Laboratory ID:	11-202-01					
Diesel Range Organics	ND	0.10	NWTPH-Dx	11-20-23	11-20-23	
Lube Oil Range Organics	ND	0.20	NWTPH-Dx	11-20-23	11-20-23	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	82	50-150				
Client ID:	MW-8-22:111723					
Laboratory ID:	11-202-02					
Diesel Range Organics	ND	0.11	NWTPH-Dx	11-20-23	11-20-23	
Lube Oil Range Organics	ND	0.21	NWTPH-Dx	11-20-23	11-20-23	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	76	50-150				
Client ID:	MW-100:111723					
Laboratory ID:	11-202-03					
Diesel Range Organics	ND	0.11	NWTPH-Dx	11-20-23	11-20-23	
Lube Oil Range Organics	ND	0.21	NWTPH-Dx	11-20-23	11-20-23	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	59	50-150				



Date of Report: December 7, 2023
 Samples Submitted: November 17, 2023
 Laboratory Reference: 2311-202
 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:	MB1120W1					
Diesel Range Organics	ND	0.080	NWTPH-Dx	11-20-23	11-20-23	
Lube Oil Range Organics	ND	0.16	NWTPH-Dx	11-20-23	11-20-23	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	80	50-150				

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	11-183-01							
	ORIG	DUP						
Diesel Range Organics	1.63	1.53	NA	NA	NA	NA	6	40
Lube Oil Range Organics	2.09	1.91	NA	NA	NA	NA	9	40
<i>Surrogate:</i>								
<i>o-Terphenyl</i>				83	82	50-150		



Date of Report: December 7, 2023
 Samples Submitted: November 17, 2023
 Laboratory Reference: 2311-202
 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-9-22:111723					
Laboratory ID:	11-202-01					
Arsenic	ND	3.3	EPA 200.8	12-5-23	12-7-23	

Client ID:	MW-8-22:111723					
Laboratory ID:	11-202-02					
Arsenic	ND	3.3	EPA 200.8	12-5-23	12-7-23	

Client ID:	MW-100:111723					
Laboratory ID:	11-202-03					
Arsenic	ND	3.3	EPA 200.8	12-5-23	12-7-23	



Date of Report: December 7, 2023
 Samples Submitted: November 17, 2023
 Laboratory Reference: 2311-202
 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:	MB1205WM1					
Arsenic	ND	3.3	EPA 200.8	12-5-23	12-7-23	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	11-066-06							
	ORIG	DUP						
Arsenic	ND	ND	NA	NA	NA	NA	NA	20

MATRIX SPIKES

Laboratory ID:	11-066-06							
	MS	MSD	MS	MSD		MS	MSD	
Arsenic	107	118	111	111	ND	97	106	75-125 9 20



Date of Report: December 7, 2023
 Samples Submitted: November 17, 2023
 Laboratory Reference: 2311-202
 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-9-22:111723					
Laboratory ID:	11-202-01					
Arsenic	ND	3.0	EPA 200.8	11-17-23	12-7-23	

Client ID:	MW-8-22:111723					
Laboratory ID:	11-202-02					
Arsenic	ND	3.0	EPA 200.8	11-17-23	12-7-23	

Client ID:	MW-100:111723					
Laboratory ID:	11-202-03					
Arsenic	ND	3.0	EPA 200.8	11-17-23	12-7-23	



Date of Report: December 7, 2023
 Samples Submitted: November 17, 2023
 Laboratory Reference: 2311-202
 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:	MB1117F1					
Arsenic	ND	3.0	EPA 200.8	11-17-23	12-7-23	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	11-188-01							
	ORIG	DUP						
Arsenic	ND	ND	NA	NA	NA	NA	NA	20

MATRIX SPIKES

Laboratory ID:	11-188-01									
	MS	MSD	MS	MSD		MS	MSD			
Arsenic	81.0	82.2	80.0	80.0	ND	101	103	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





**Onsite
Environmental Inc.**
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Chain of Custody

Page 1 of 1

Company: <u>Shannon & Wilson</u>		Turnaround Request (in working days)		Laboratory Number: <u>11-202</u>																																							
Project Number: <u>21-1-22242-112</u>		<input type="checkbox"/> Same Day <input type="checkbox"/> 1 Day <input type="checkbox"/> 2 Days <input type="checkbox"/> 3 Days <input checked="" type="checkbox"/> Standard (7 Days)																																									
Project Name: <u>Former Mortlake Gas Station</u>		<input type="checkbox"/> (other) _____																																									
Project Manager: <u>Joseh Sawdey</u>																																											
Sampled by: <u>MEH</u>																																											
Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers																																						
1	MW-9-22:111723	11/17/23	1140	6W	9																																						
2	MW-8-22:111723		1415		9																																						
3	MW-106:111723		1600		9																																						
<div>Number of Containers</div> <table border="1"><tr><td>NWTPH-HCID</td><td></td></tr><tr><td>NWTPH-Gx/BTEX (8021 <input type="checkbox"/> 8260 <input checked="" type="checkbox"/>)</td><td></td></tr><tr><td>NWTPH-Gx</td><td></td></tr><tr><td>NWTPH-Dx (SG Clean-up <input type="checkbox"/>)</td><td></td></tr><tr><td>Volatiles 8260</td><td></td></tr><tr><td>Halogenated Volatiles 8260</td><td></td></tr><tr><td>EDB EPA 8011 (Waters Only)</td><td></td></tr><tr><td>Semivolatiles 8270/SIM (with low-level PAHs)</td><td></td></tr><tr><td>PAHs 8270/SIM (low-level)</td><td></td></tr><tr><td>PCBs 8082</td><td></td></tr><tr><td>Organochlorine Pesticides 8081</td><td></td></tr><tr><td>Organophosphorus Pesticides 8270/SIM</td><td></td></tr><tr><td>Chlorinated Acid Herbicides 8151</td><td></td></tr><tr><td>Total RCRA Metals</td><td></td></tr><tr><td>Total MTCA Metals</td><td></td></tr><tr><td>TCLP Metals</td><td></td></tr><tr><td>HEM (oil and grease) 1664</td><td></td></tr><tr><td>Total & Dissolved } Asgenic 200.8 }</td><td></td></tr><tr><td>% Moisture</td><td></td></tr></table>						NWTPH-HCID		NWTPH-Gx/BTEX (8021 <input type="checkbox"/> 8260 <input checked="" type="checkbox"/>)		NWTPH-Gx		NWTPH-Dx (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 & Dissolved } Asgenic 200.8 }		% Moisture	
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Data Package: Standard ☐ Level III ☐ Level IV ☐
Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☒