ANNUAL GROUNDWATER MONITORING REPORT - YEAR 5

Olympic Water & Sewer, Inc.
781 Walker Way
Port Ludlow, Washington 98365
VCP Identification No. SW1311

Prepared for: Raydient

Project No. AS130046 • August 13, 2024 FINAL

Aspect
A Geosyntec Company

earth + water

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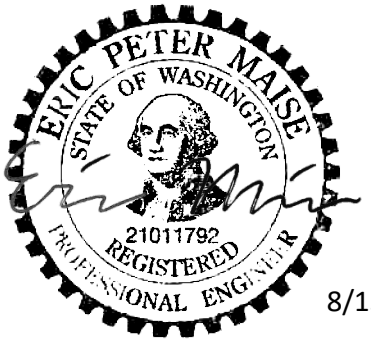

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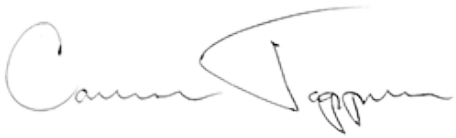

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Abbreviations

AGI	Applied Geotechnology, Inc.
Aspect	Aspect Consulting
bgs	below ground surface
BETX	benzene, ethylbenzene, toluene, and xylenes
COCs	Contaminants of concern
DO	dissolved oxygen
Ecology	Washington Department of Ecology
EIM	Environmental Information Management
EPA	U.S. Environmental Protection Agency
FFS	Focused Feasibility Study
GRO	gasoline-range organics
GMP	Groundwater Monitoring Plan
GWMR	Groundwater Monitoring Report
µg/L	micrograms per liter
MTCA	Model Toxics Control Act
MNA	Monitored Natural Attenuation
NFA	No Further Action
OWSI	Olympic Water & Sewer, Inc.
ORP	oxygen-reduction potential
RL	Reporting Limit
USTs	Underground Storage Tanks
VCP	Voluntary Cleanup Program
WAC	Washington Administrative Code

1 Introduction

Aspect Consulting, a Geosyntec Company (Aspect), has prepared this Annual Groundwater Monitoring Report (GWMR) on behalf of Raydient LLC for the Olympic Water & Sewer, Inc. (OWSI) Site (the Site), which is located at 781 Walker Way in Port Ludlow, Washington (the Property).

1.1 Regulatory Framework

In September 1990, Applied Geotechnology, Inc. (AGI), removed three underground storage tanks (USTs) from the Property—one 1,000-gallon UST and two 2,000-gallon USTs. During the UST removals, a release of gasoline from the 1,000-gallon UST was discovered, and gasoline-impacted soil was removed to the extents practicable. During the installation of a water supply well in April 2009, gasoline impacts to shallow, perched groundwater were discovered. The Jefferson County Health Department was notified, who further notified the Washington State Department of Ecology (Ecology). In September 2009, Ecology listed the Site on its Confirmed or Suspected Contaminated Sites list; the Site is identified as the OWSI Site, cleanup Site ID 1196, and facility ID 62223345.

The Model Toxics Control Act (MTCA) defines the Site as anywhere where a hazardous substance has come to be located (Washington Administrative Code [WAC] 173-340-200). Further investigation through 2013 confirmed that the Site can be defined as the release(s) of total petroleum hydrocarbons measured as gasoline-range organics (GRO) and benzene, toluene, ethylbenzene, and total xylenes (BTEX) to soil and groundwater. As part of Site investigation and cleanup activities, a Focused Feasibility Study (FFS; Aspect, 2013) was performed, which identified a preferred remedial alternative in accordance with MTCA. The preferred remedial alternative for the Site consisted of three primary components:

- **Source Removal:** In 1990, three USTs were removed. During removal, a release of gasoline was discovered, and overexcavation of GRO-contaminated soil was performed. The cleanup action consisted of excavation of the impacted soil to the extents practicable; however, residual impacted soil was left in place at the base of one of the UST excavations to prevent structural damage to a nearby building. At that time, residual impacted soil was expected to occur from approximately 10 feet below ground surface (bgs) to the perched groundwater table between approximately 20 to 41 feet bgs (SLR, 2011).
- **Institutional Controls:** An environmental covenant was filed with Jefferson County on September 24, 2015, with the deed on the Property that restricts certain activities that could cause exposure to impacted soils or groundwater, or otherwise result in mobilization of contaminants at the Site. Specifically, the environmental covenant included the following deed restrictions:

  - The Property zoning and use will remain commercial, as the cleanup levels established for compliance are based on a commercial land use.
  - The contaminated soil, which exceeds cleanup levels and remains on the Property, is under existing structures and an existing layer of clean soil from the ground surface to a depth of 15 feet bgs. The covenant restricts the alteration of the current Property configuration, including earthwork activities that may disturb the clean soil cap.
  - Groundwater use in the shallow, perched groundwater at the Site will not be used for water supply.
  - Groundwater monitoring will be maintained until groundwater at the Site meets applicable cleanup levels. The groundwater monitoring program was further defined in the second portion of the selected cleanup action as described below.

- **Monitored Natural Attenuation (MNA):** Cleanup levels at the Site will be achieved by the natural attenuation of GRO and BTEX in soil and groundwater. To monitor the natural attenuation of contaminants at the Site, a Groundwater Monitoring Plan (GMP) was developed that describes the frequency, location, and analyses of groundwater sampling activities to ensure the protectiveness of the selected cleanup action (Aspect, 2015). The GMP prescribed quarterly groundwater sampling during the first year of MNA, and annual groundwater sampling thereafter. The results of these groundwater sampling events will be evaluated during Ecology's 5-Year Site review.

The Site entered in the Ecology Voluntary Cleanup Program (VCP) in 2013 and was assigned identification number SW1311. Ecology provided an opinion that upon completion of the preferred remedial alternative, no further remedial action would be necessary to clean up contamination at the Site (Ecology, 2014). The recorded environmental covenant was sent to Ecology on June 2, 2016. Ecology issued the no further action (NFA) determination letter on January 19, 2021.

1.2 Report Organization

This GWMR documents the results of the fifth year of MNA groundwater monitoring, in accordance with the Ecology-approved GMP. This report is organized to include the following Sections:

- **Section 2 – Site Background** describes the Property location and zoning, operational history, topography, land use, and hydrogeology.
- **Section 3 – Groundwater Monitoring Procedures** describes the monitoring well network, contaminants of concern (COCs), and cleanup levels established for the Site, and the procedures for obtaining groundwater samples.
- **Section 4 – Groundwater Monitoring Results** describes the groundwater elevations, gradient, and flow directions, and laboratory analytical results for COCs during Year 5 of groundwater monitoring.

- **Section 5 – Summary and Recommendations** presents a summary of Year 5 groundwater monitoring activities and presents recommendations for continued monitoring under the GMP.

2 Site Background

2.1 Site Location and Description

The Site is located in Section 8, Township 28 North, Range 1 East in Port Ludlow, Washington (Figure 1). Identified as Jefferson County Parcel No. 821084004, the Site consists of an approximately 2.2-acre parcel of land located approximately 0.5 miles northwest of the Port Ludlow Bay. The Site is located at the southwest corner of the intersection of Walker Way and Rainer Lane at 781 Walker Way (Figure 2).

The Site is densely forested, with an approximate 0.5-acre area developed with an OWSI operations and maintenance facility, consisting of an office/shop/garage building (garage building), a public water supply well (Well #2), pump house building for Well #2, and a storage trailer (Figure 2). The ground surface within the developed portion of the Site is primarily unpaved, except for a narrow asphalt driveway that runs down the center of the OWSI facility from Walker Way to approximately the storage trailer. A densely vegetated gulley, containing an intermittent seasonal stream, bisects the western half of the parcel, west of the OWSI facility, and flows off-Property (Figure 2).

In 2020, OWSI, assisted by Robinson Noble, began the process of siting and installing a new public water supply well (Well #18) at the Site. A location in the northeast corner of the Site was selected based on the known location of petroleum impacts on the Site. Prior to Well #18 installation, a monitoring well (MW-18T; Figure 2) was installed to evaluate groundwater quality in the shallow, perched water-bearing zone in the vicinity of the well (Robinson Noble, 2020; Robinson Noble, 2021). In consultation with Ecology in December 2020, MW-18T and Well #18 were added to the annual groundwater monitoring program and the GMP has now been formally amended to include these wells (Aspect, 2022).

The ground surface elevation proximate to the northern Property boundary of the Site is approximately 290 feet above mean sea level. The ground surface of the OWSI facility slopes gently to the southwest toward the intermittent stream (Figure 2).

2.2 Hydrogeology

Shallow groundwater at the Site occurs as a shallow, perched water-bearing zone within the glacial advance outwash and lacustrine deposits at depths above approximately 60 feet bgs. Seasonally, groundwater in the shallow, perched water-bearing zone at the Site ranges between 22 and 44 feet bgs, with individual wells showing seasonal fluctuations of groundwater levels of approximately 4.6 to 8.0 feet (Table 1). A deeper, regional water-bearing unit used for drinking water occurs at depths of between 215 and 245 feet bgs at Well #2 and Well #18. The regional aquifer depth to water has been documented to be between 85 and 97 feet bgs (Table 1), which indicates this is a confined aquifer with a potentiometric surface that is higher than the top of the water-bearing unit.

The shallow, perched water-bearing zone and the regional aquifer are separated by a thick aquitard comprised of clay and cemented silty sand. This aquitard was encountered in all borings at thicknesses ranging from 15 to more than 23 feet thick (Aspect, 2013). The regional aquifer is greater than 150 feet below the top of the aquitard and the base of the shallow, perched water-bearing zone.

The shallow, perched water-bearing zone occurs within a sand to gravel unit, which is perched on top of the underlying clayey to gravelly, cemented silt to sand unit that comprises the aquitard (SLR, 2011). During periods of seasonal recharge, groundwater appears to collect above the silt and overlying silty sand units. In areas where the silty sands and silts are present at higher elevations, the groundwater elevations are higher. Groundwater within the shallow, perched water-bearing unit (wells MW-3 through MW-5) is hydraulically continuous with the deeper perched water intercepted by wells MW-1 and MW-2. The horizontal hydraulic conductivity of the sand to gravel unit is expected to be significantly (i.e., orders of magnitude) greater than the vertical hydraulic conductivity of the underlying silt and silty sand (Aspect, 2013). Therefore, groundwater accumulating in the shallow, perched water-bearing zone is expected to primarily flow laterally toward the intermittent stream in the gulley to the west.

The points of compliance for the shallow, perched groundwater at the Site were set for the protection of drinking water and the protection of surface water. Therefore, the points of compliance are within the perched aquifer extending vertically to the lowest depth potentially affected (the regional aquifer) and the discharge of groundwater to the intermittent stream.

3 Groundwater Monitoring Procedures

Year 5 of annual groundwater monitoring occurred on May 8 and 10, 2024. Detailed sampling and quality assurance/quality control procedures are presented in the GMP (Aspect, 2015). In addition to the work outlined in the GMP, Year 5 monitoring included the addition of monitoring groundwater at Well #18, in accordance with the addendum to the GMP dated July 11, 2022 (Aspect, 2022).

The following presents a summary of procedures performed during Year 5 of groundwater monitoring.

3.1 Groundwater Monitoring Well Network

The long-term groundwater monitoring network at the Site consists of the existing monitoring wells on the Site (MW-1, MW-2, MW-3, MW-4, MW-5, and MW-18T), the water supply wells (Well #2 and Well #18), and the intermittent stream. Monitoring wells MW-1, MW-2, and MW-4 represent the source area wells because of their locations relative to the release of gasoline from the 1,000-gallon UST (Figure 2). Monitoring wells MW-5 and MW-18T represent the upgradient wells, as they are outside of the plume boundary. Water supply Well #2 and Well #18, and the intermittent stream serve as monitoring points to ensure that human and ecological receptors are protected.

3.2 Contaminants of Concern and Cleanup Levels

As described in the FFS, the groundwater cleanup levels for the Site are the MTCA Method A cleanup levels for unrestricted land use. MTCA Method A cleanup levels are appropriate because the Site meets the criteria of WAC 173-340-704(1): there are few hazardous substances at the Site, the implemented remedy qualifies as a routine cleanup action, and numerical standards are established for the hazardous substances at the Site. The groundwater COCs and applicable MTCA Method A cleanup levels are:

- GRO – 800 micrograms per liter (µg/L)
- Benzene – 5 µg/L
- Toluene – 1,000 µg/L
- Ethylbenzene – 700 µg/L
- Total xylenes – 1,000 µg/L

3.3 Groundwater Monitoring Procedures

The following procedures were implemented during the collection of groundwater samples for each quarter:

- Prior to sampling, all monitoring wells were inspected to ensure that the well monuments, well caps, and well casings were in good working order and remained undamaged between sampling events.

- Depth-to-groundwater measurements were recorded for each monitoring well except for Well #2, which was not gauged since it is an active water supply well. The water level indicator was decontaminated between wells.
- Except for Well #2, each monitoring well was sampled using standard low-flow procedures. Wells were sampled using a portable bladder pump, which was decontaminated between wells, and a new bladder and tubing used at each monitoring well.
- During purging, field parameters (temperature, pH, specific electrical conductance, dissolved oxygen, and oxidation-reduction potential) were monitored using a YSI meter and flow-through cell. Turbidity was also monitored using a separate turbidimeter.
- To sample Well #2, the sample port closest to the wellhead was opened, and the pump was allowed to run for a minimum of 10 minutes to purge the well and flush the lines prior to collecting the sample.
- Groundwater samples were collected directly into laboratory-supplied sample containers.
- Quality control groundwater samples (field duplicates and trip blanks) were collected during each monitoring event.
- The intermittent stream was sampled using a peristaltic pump and standard low-flow procedures.
- Samples were maintained at the proper temperature for sample preservation and under chain of custody until delivered to the laboratory.
- Samples were submitted for analysis of COCs (Section 3.2). In addition, groundwater samples were analyzed for geochemical parameters to support the assessment of ongoing MNA processes.

There were no deviations from the GMP and the agreed- upon sampling protocol with Ecology during the Year 5 monitoring event.

4 Groundwater Monitoring Results

This section presents the results of the Year 5 groundwater monitoring at the Site.

4.1 Groundwater Elevations, Gradient, and Flow Direction

Groundwater elevations are summarized in Table 1 and depicted on Figure 7. During the fifth year of groundwater monitoring, groundwater elevations at the Site showed seasonal variation consistent with historical data. Compared with Years 1, 2, 3, and 4, the groundwater elevation in the shallow, perched water-bearing zone at individual wells fluctuated between 0.07 and 6.61 feet. Similarly, groundwater elevations in the deeper, regional aquifer (measured at Well #2 in Year 2 and Well #18 in Year 3, 4, and 5) used for water supply showed a seasonal fluctuation of 5.60 feet. Groundwater elevations in the shallow, perched aquifer at the most upgradient (MW-18T) and downgradient (MW-2) monitoring wells differed by approximately 18 feet.

In the shallow, perched water-bearing zone, the flow direction is primarily to the west, with slight southerly flow in the northern portion of the Site and slight northerly flow in the southern portion of the Site. This gradient and direction are consistent with the results collected in Year 1, 2, 3, and 4 of groundwater monitoring (Figure 3, Figure 4, Figure 5, and Figure 6, respectively). Groundwater elevations and contours from Year 5 of groundwater monitoring are presented on Figure 7.

The groundwater flow direction was consistent with previous monitoring events. The horizontal hydraulic gradient varied slightly from previous monitoring events. In the central portion of the Site, horizontal gradient was approximately 0.13 feet/feet as measured in May 2024. Horizontal hydraulic gradients measured during previous events ranged from approximately 0.06 (February 2020) and 0.22 (May 2022) feet/feet in previous monitoring events.

4.2 Groundwater and Surface Water Analytical Results

Groundwater analytical results from Year 5 are summarized in Table 2 and displayed on Figure 8. The laboratory analytical reports for Year 5 are included as Appendix A.

Groundwater analytical results were consistent with previous annual groundwater monitoring events and historical results (Table 3). GRO and benzene were detected at concentrations exceeding the MTCA Method A cleanup levels at monitoring wells MW-1 and MW-2:

- Concentrations of GRO at MW-1 and MW-2 were 3,000 and 1,200 µg/L, respectively; the MTCA Method A cleanup level for GRO is 800 µg/L.
- Concentrations of benzene at MW-1 and MW-2 were 84 and 38 µg/L, respectively; the MTCA Method A cleanup level for benzene is 5 µg/L.

- Toluene, ethylbenzene, and total xylenes were also detected at MW-1, and toluene and ethylbenzene were also detected at MW-2, but at concentrations below the respective MTCA Method A cleanup levels.

Toluene was detected at Well #18, but at concentrations below the MTCA Method A cleanup level. At the remaining monitoring wells (MW-3, MW-4, MW-5, and MW-18T) and the water supply well (Well #2), COCs were not detected above the laboratory reporting limit during the Year 5 monitoring event. Similarly, COCs were not detected in the sample collected from the intermittent stream (Table 2).

Geochemical parameters were also collected from each monitoring well to support the assessment of ongoing MNA processes. The geochemical parameters included total alkalinity, nitrate, sulfate, dissolved methane, and soluble manganese (Table 2). Depressed dissolved oxygen (DO), oxidation-reduction potential (ORP), nitrate, and sulfate, as well as elevated alkalinity, manganese, ferrous iron, and methane are considered indicative of biological degradation of GRO. A review of these parameters at monitoring well MW-1 indicates that DO, ORP, nitrate, and sulfate are notably depressed while alkalinity, manganese, ferrous iron, and methane are elevated as compared to wells located further away for the GRO source area. These conditions support the conclusion that natural attenuation via biological degradation is ongoing at the Site.

4.3 Plume Stability Assessment

A linear regression analysis and nonparametric analysis for plume stability was performed using the groundwater results collected from monitoring wells MW-1 and MW-2, and Ecology's data analysis tools (Ecology, 2007). The analysis included groundwater results collected since implementation of MNA and the GMP in 2019. The Mann-Kendall Trend Test results indicate that the groundwater plume is stable for GRO and shrinking for benzene at MW-1 and shrinking for both COCs at MW-2. The results of the test are provided in Appendix B.

4.4 Data Validation and Management

The groundwater data was managed in a project database operated by Aspect and has been uploaded to Ecology's Environmental Information Management (EIM) database.

Aspect's database manager verified the completeness and correctness of all laboratory deliverables (laboratory report and EDDs) before loading the data into EIM. Field and laboratory quality control were validated in accordance with the U.S. Environmental Protection Agency (EPA) *National Functional Guidelines for organic and inorganic analyses* (EPA, 2008 and 2010, respectively), and laboratory-defined QC limits, with regard to the following (as appropriate to the particular analysis): sample documentation/custody, holding times, reporting limits, blank/rinsate sample, surrogate percent recoveries, laboratory duplicates, field duplicate, comparability, and completeness.

For each sampling event, blind field duplicates were submitted to the laboratory. EPA data validation guidance provides no specific evaluation criteria for field duplicate samples. Advisory evaluation criteria are set forth at 35 percent for relative percent difference (if both results are greater than 5 times the reporting limit [RL]) and two times

the RLs for concentration difference (if either of the result is less than 5 times the RL) between the original and field duplicate results. Results between the field duplicate and sample varied between 0 and 10.7 percent, indicating the results were valid and reproducible.

A trip blank was submitted to monitor possible cross-contamination occurring during sample transport. There were no detections of GRO or BTEX in the trip blank.

5 Summary and Recommendations

Groundwater elevations, flow directions, and horizontal hydraulic gradients were consistent with historical results. The flow direction (to the west) and the steep hydraulic gradient are driven by local geology: the clayey and gravelly silt bed, which creates the perched groundwater condition, dips steeply to the west towards the gully and intermittent stream. However, the interconnectedness of the shallow, perched groundwater to surface water is not apparent, as the stream only flows intermittently, and COCs have never been detected in surface water at the Site.

Analytical results from Year 5 groundwater sampling were consistent with historical results. GRO and benzene concentrations exceeded the Site cleanup levels at MW-1 and MW-2. Only toluene was detected at Well #18 at a concentration below the cleanup level. COCs were not detected at any of the remaining monitoring wells, in water supply Well #2, nor the intermittent stream.

Based on the results of groundwater monitoring at the Site, the groundwater plume is stable or shrinking, and there are no complete exposure pathways of contaminated groundwater to either surface water or drinking water. In addition, geochemical conditions in groundwater support the conclusion that natural attenuation via biological degradation is ongoing at the Site.

Pending Ecology's 5-Year Site review, as required for sites with environmental covenants, it is recommended that groundwater monitoring frequency be reduced to coincide with Ecology's 5-year review period, or otherwise be eliminated for this Site in the future.

6 References

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7 Limitations

Work for this project was performed for Raydient LLC (Client), and this report was prepared in accordance with generally accepted professional practices for the nature and conditions of work completed in the same or similar localities, at the time the work was performed. This report does not represent a legal opinion. No other warranty, expressed or implied, is made.

All reports prepared by Aspect Consulting for the Client apply only to the services described in the Agreement(s) with the Client. Any use or reuse by any party other than the Client is at the sole risk of that party, and without liability to Aspect Consulting. Aspect Consulting's original files/reports shall govern in the event of any dispute regarding the content of electronic documents furnished to others.

Please refer to Appendix C titled "Report Limitations and Guidelines for Use" for additional information governing the use of this report.

TABLES

Table 1. Summary of Groundwater Elevation Data

Project No. AS130046, Port Ludlow, Washington

Well Number	Top of Casing elevation (feet)[a]	Date Measured	Depth to Groundwater (feet)[b]	Groundwater Elevation (feet)
MW-1	294.02	06/14/2010	41.33	252.69
		10/20/2010	40.3	253.72
		04/08/2011	36.98	257.04
		07/11/2019	37.89	256.13
		11/08/2019	40.14	253.88
		02/11/2020	39.42	254.6
		05/28/2020	36.75	257.27
		05/03/2022	35.57	258.45
		05/10/2023	36.16	257.86
		05/10/2024	35.48	258.54
MW-18T	300.74	05/03/2022	24.55	276.19
		05/09/2023	24.87	275.87
		05/08/2024	25.73	275.01
MW-2	293.79	06/14/2010	39.63	254.16
		10/20/2010	40.71	253.08
		04/08/2011	36.9	256.89
		07/11/2019	43.58	250.21
		11/08/2019	41.95	251.84
		02/11/2020	43.2	250.59
		05/28/2020	39.78	254.01
		05/04/2022	36.41	257.38
		05/10/2023	36.46	257.33
		05/10/2024	36.97	256.82
MW-3	289.37	06/14/2010	25.19	264.18
		10/20/2010	28.7	260.67
		04/08/2011	23.02	266.35
		07/11/2019	27.68	261.69
		11/08/2019	31.06	258.31
		02/11/2020	29.96	259.41
		05/28/2020	26.35	263.02
		05/03/2022	23.73	265.64
		05/09/2023	24.46	264.91
		05/08/2024	25.71	263.66
MW-4	295.33	06/14/2010	23.92	271.41
		10/20/2010	26.67	268.66
		04/08/2011	21.95	273.38
		07/11/2019	27.75	267.58
		11/08/2019	29.06	266.27
		02/11/2020	28.03	267.3
		05/28/2020	25.43	269.9
		05/03/2022	22.61	272.72
		05/09/2023	22.42	272.91
		05/08/2024	23.46	271.87
MW-5	299.4	04/08/2011	23.55	275.85
		07/11/2019	29.04	270.36
		11/08/2019	30.36	269.04
		02/11/2020	27.59	271.81
		05/28/2020	25.73	273.67
		05/03/2022	23.82	275.58
		05/09/2023	24.96	274.44
		05/08/2024	25.09	274.31
W-18	298	05/04/2022	92.11	205.89
		05/12/2023	97.1	200.90
		05/10/2024	97.71	200.29
W-2	297	07/11/2019	87.1	209.9
		11/08/2019	85.78	211.22
		02/11/2020	86.29	210.71
		05/28/2020	84.82	212.18

Notes:

[a] Top of casing elevations were surveyed relative to NAVD88 datum.

[b] Depth to groundwater measured in feet below top of PVC casing.

Table 2. Year 5 Groundwater Analytical Results

Project No. AS130046 , Port Ludlow, Washington

			Location	MW-1	MW-1	MW-2	MW-3	MW-4	MW-5	MW-18T	SW-1	W-2	W-18
			Date	05/10/2024	05/10/2024	05/10/2024	05/08/2024	05/08/2024	05/08/2024	05/08/2024	05/08/2024	05/08/2024	05/10/2024
			Sample	MW-X-240510	MW-1-240510	MW-2-240510	MW-3-240508	MW-4-240508	MW-5-240508	MW-18T-240508	SW-1-240508	WELL #2-240508	WELL #18-240510
			Notes	Field Duplicate							Surface Water		
Analyte	Fraction	Unit	MTCA Method A Cleanup Level										
Total Petroleum Hydrocarbons (TPH)													
Gasoline-Range Organics	T	ug/L	800 | 1000	**3000**	**3000**	**1200**	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U
BTEX													
Benzene	T	ug/L	5	**93**	**84**	**38**	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Toluene	T	ug/L	1000	**52**	**53**	**21**	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	**2.1**
Ethylbenzene	T	ug/L	700	**240**	**250**	**96**	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Total Xylenes	T	ug/L	1000	**49**	**50**	< 30 U	< 3 U	< 3 U	< 3 U	< 3 U	< 3 U	< 3 U	< 3 U
Conventionals													
Alkalinity, Total	T	mg/L as CaCO3		--	**267**	**313**	**186**	**99.1**	**113**	**145**	--	--	--
Nitrate-Nitrite	T	mg/L		--	< 0.4 U	< 0.4 U	**1.12**	< 0.4 U	< 0.4 U	< 0.4 U	--	--	--
Sulfate	T	mg/L		--	< 1 U	**13.3**	**17.4**	**8.17**	**5.33**	**8.2**	--	--	--
Total Organic Carbon	T	mg/L		--	--	--	**0.719**	< 0.7 U	< 0.7 U	**0.939**	--	--	--
Dissolved Gases													
Ethane	T	mg/L		--	< 0.01 U	< 0.01 U	--	--	--	--	--	--	--
Ethene	T	mg/L		--	< 0.01 U	< 0.01 U	--	--	--	--	--	--	--
Methane	T	mg/L		--	**0.0652**	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	--	--	--
Field Parameters													
Temperature	T	deg C		--	**12.4**	**11.6**	**10.6**	**14.4**	**10.8**	**12.3**	**8.9**	**10.3**	**11.3**
Specific Conductance	T	uS/cm		--	**446.9**	**532.4**	**413**	**241.1**	**324.2**	**402.4**	**169**	**253.2**	**128.3**
Dissolved Oxygen	T	mg/L		--	**1.44**	**0.6**	**3.33**	**6.25**	**7.93**	**4.13**	**9.12**	**2.66**	**0.36**
pH	T	pH units		--	**7.35**	**7.57**	**7.4**	**7.47**	**6.98**	**6.81**	**6.54**	**7.29**	**9.93**
Oxidation Reduction Potential	T	mV		--	**-155.5**	**-136.5**	**221.2**	**231.5**	**280.6**	**243.7**	**225.3**	**-48.9**	**98.6**
Turbidity	T	NTU		--	**9.65**	**1.68**	**1.03**	**2.26**	**19**	**1.06**	**0.8**	**0.45**	**11.3**
Iron, Ferrous, Fe+2	T	ppm		--	**0.5**	< 0 U	< 0 U	< 0 U	< 0 U	< 0 U	--	--	< 0 U
Metals													
Manganese	D	ug/L		--	**710**	**270**	< 1 U	**1.5**	**4.5**	**3.1**	--	--	--

Notes:
Bold - detected
Blue Shaded - Detected result exceeded screening level
U - Analyte not detected at or above Reporting Limit (RL) shown
D - Dissolved Fraction (filtered) sample result
T - Total Fraction (unfiltered) sample result
BTEX - benzene, toluene, ethylbenzene, and total xylenes
deg C - degrees Celsius
mg/L - milligrams per liter
mV - millivolts
µg/L - micrograms per liter
NTU - nephelometric turbidity units
ppm - parts per million
Gasoline Range Hydrocarbons are screened against a tighter value when benzene is present in the sample.
"--" - indicates results not available

Table 3. Summary of Historical Groundwater Analytical Results

Project No. AS130046, Port Ludlow, Washington

Location				MW-1										
Date				06/11/2010	10/20/2010	04/07/2011	07/11/2019	11/08/2019	02/11/2020	05/28/2020	11/04/2021	05/03/2022	05/10/2023	05/10/2024
Sample				MW1-0610	MW1-1010	MW1-411	MW-1-071119	MW-1-110819	MW-1-021120	MW-1-052820	MW-1-110421	MW-1-220503	MW-1-230510	MW-1-240510
Analyte	Fraction	Unit	MTCA Method A Cleanup Level											
Total Petroleum Hydrocarbons (TPHs)														
Gasoline Range Organics	T	ug/L	800 | 1000	**990**	**1900**	**3000**	**4000**	**3600**	**3900**	**4300**	**3700**	**3900**	**4100**	**3000**
BTEX														
Benzene	T	ug/L	5	**110**	**520**	**530**	**180**	**180**	**200**	**190**	**130**	**120**	**140**	**84**
Toluene	T	ug/L	1000	**45**	**140**	**82**	**61**	**58**	**72**	**100**	**60**	**87**	**46**	**53**
Ethylbenzene	T	ug/L	700	**1.1**	**110**	**160**	**360**	**340**	**420**	**410**	**320**	**350**	**270**	**250**
Total Xylenes	T	ug/L	1000	--	--	**120**	**68**	< 30 U	< 30 U	**120**	**50**	**100**	**44**	**50**
Conventionals														
Alkalinity as Carbonate	T	mg/L		--	--	--	--	--	--	--	--	**272**	--	--
Alkalinity, Total	T	mg/L as CaCO3		--	--	--	**312**	--	**292**	--	**282**	--	**303**	**267**
Nitrate as Nitrogen	T	mg/L		--	--	--	< 0.5 U	--	< 0.100 U	--	< 0.500 UJ	< 0.100 UJ	--	--
Nitrate-Nitrite	T	mg/L		--	--	--	--	--	--	--	--	--	< 0.240 UJ	< 0.4 U
Nitrite as Nitrogen	T	mg/L		--	--	--	< 0.5 U	--	< 0.100 U	--	< 0.500 UJ	--	--	--
Sulfate	T	mg/L		--	--	--	**0.868**	--	**0.963**	--	< 0.600 U	< 0.600 U	< 1.20 UJ	< 1 U
Total Organic Carbon	T	mg/L		--	--	--	--	--	--	--	--	--	--	--
Dissolved Gases														
Ethane	T	mg/L		--	--	--	--	--	--	--	--	--	--	< 0.01 U
Ethene	T	mg/L		--	--	--	--	--	--	--	--	--	--	< 0.01 U
Methane	T	mg/L		--	--	--	**0.057**	--	**0.0367**	--	**0.0739**	**30.6**	**0.0264**	**0.0652**
Field Parameters														
Temperature	T	deg C		--	--	--	--	--	--	--	**12**	**10.2**	**12**	**12.4**
Specific Conductance	T	uS/cm		--	--	--	--	--	--	--	**284.3**	**286.8**	**348.4**	**446.9**
Dissolved Oxygen	T	mg/L		--	--	--	--	--	--	--	**0.39**	**0.64**	**0.26**	**1.44**
pH	T	pH units		--	--	--	--	--	--	--	**6.88**	**7.47**	**7.32**	**7.35**
Oxidation Reduction Potential	T	mV		--	--	--	--	--	--	--	**62.7**	**-93.1**	**-13.1**	**-155.5**
Turbidity	T	NTU		--	--	--	--	--	--	--	**23.1**	**3.43**	**9.22**	**9.65**
Iron, Ferrous, Fe+2	T	ppm		--	--	--	**0.488**	--	--	--	< 0	--	**0.5**	**0.5**
Metals														
Iron	D	ug/L		--	--	--	**590**	--	--	--	--	--	--	--
Lead	T	ug/L	15	< 1 U	--	--	--	--	--	--	--	--	--	--
Manganese	D	ug/L		--	--	--	**805**	--	--	--	--	**614**	**651**	**710**
Polycyclic Aromatic Hydrocarbons (PAHs)														
Naphthalene	T	ug/L	160	< 1 U	**15**	--	--	--	--	--	--	--	--	--
Volatile Organic Compounds (VOCs)														
1,2-Dibromoethane (EDB)	T	ug/L	0.01	< 0.01 U	--	--	--	--	--	--	--	--	--	--
1,2-Dichloroethane (EDC)	T	ug/L	5	< 1 U	--	--	--	--	--	--	--	--	--	--
m,p-Xylenes	T	ug/L		**56**	**71**	--	--	--	--	--	--	--	--	--
Methyl tert-butyl ether (MTBE)	T	ug/L	20	< 1 U	--	--	--	--	--	--	--	--	--	--
o-Xylene	T	ug/L		**130**	**150**	--	--	--	--	--	--	--	--	--

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D - Dissolved Fraction (filtered) sample result
T - Total Fraction (unfiltered) sample result
BTEX - benzene, toluene, ethylbenzene, and total xylenes
deg C - degrees Celsius
mg/L - milligrams per liter
mV - millivolts
µg/L - micrograms per liter
NTU - nephelometric turbidity units
ppm - parts per million
Gasoline Range Hydrocarbons are screened against a tighter value when benzene is present in the sample.
"--" - indicates results not available

Table 3. Summary of Historical Groundwater Analytical Results

Project No. AS130046, Port Ludlow, Washington

Analyte	Fraction	Unit	MTCA Method A Cleanup Level	Location	MW-2									
				Date	06/11/2010	10/20/2010	04/07/2011	07/11/2019	11/08/2019	02/11/2020	05/28/2020	11/04/2021	05/04/2022	05/10/2023	05/10/2024
				Sample	MW2-0610	MW2-1010	MW2-411	MW-2-071119	MW-2-110819	MW-2-021120	MW-2-052820	MW-2-110421	MW-2-220504	MW-2-230510	MW-2-240510
Total Petroleum Hydrocarbons (TPHs)															
Gasoline Range Organics	T	ug/L	800 | 1000		**8400**	**3900**	**5600**	**6400**	**5400**	**5000**	**2800**	**2700**	**2200**	**1800**	**1200**
BTEX															
Benzene	T	ug/L	5		**2100**	**1300**	**500**	**780**	**820**	**840**	**150**	**220**	**79**	**61**	**38**
Toluene	T	ug/L	1000		**620**	**290**	**730**	**120**	**83**	**79**	**58**	**46**	**43**	**23**	**21**
Ethylbenzene	T	ug/L	700		**960**	**430**	**160**	**380**	**260**	**240**	**240**	**180**	**180**	**120**	**96**
Total Xylenes	T	ug/L	1000		--	--	**410**	**91**	**69**	**64**	< 60 U	**37**	**41**	< 30 U	< 30 U
Conventionals															
Alkalinity as Carbonate	T	mg/L			--	--	--	--	--	--	--	--	**336**	--	--
Alkalinity, Total	T	mg/L as CaCO3			--	--	--	**422**	--	**380**	--	**339**	--	**352**	**313**
Nitrate as Nitrogen	T	mg/L			--	--	--	< 0.5 U	--	< 0.100 U	--	< 0.500 UJ	< 0.200 UJ	--	--
Nitrate-Nitrite	T	mg/L			--	--	--	--	--	--	--	--	--	< 0.120 U	< 0.4 U
Nitrite as Nitrogen	T	mg/L			--	--	--	< 0.5 U	--	< 0.100 U	--	< 0.500 UJ	--	--	--
Sulfate	T	mg/L			--	--	--	**13.1**	--	**14.6**	--	**13.2**	**12.0**	**11.3**	**13.3**
Total Organic Carbon	T	mg/L			--	--	--	--	--	--	--	--	--	--	--
Dissolved Gases															
Ethane	T	mg/L			--	--	--	--	--	--	--	--	--	--	< 0.01 U
Ethene	T	mg/L			--	--	--	--	--	--	--	--	--	--	< 0.01 U
Methane	T	mg/L			--	--	--	**0.0284**	--	**0.0158**	--	**0.0153**	**0.684**	< 0.00675 U	< 0.005 U
Field Parameters															
Temperature	T	deg C			--	--	--	--	--	--	--	**11.2**	**10.3**	**11**	**11.6**
Specific Conductance	T	uS/cm			--	--	--	--	--	--	--	**342.5**	**283.2**	**414.8**	**532.4**
Dissolved Oxygen	T	mg/L			--	--	--	--	--	--	--	**1.29**	**0.45**	**0.71**	**0.6**
pH	T	pH units			--	--	--	--	--	--	--	**7.24**	**7.72**	**7.63**	**7.57**
Oxidation Reduction Potential	T	mV			--	--	--	--	--	--	--	**49**	**14.4**	**-40**	**-136.5**
Turbidity	T	NTU			--	--	--	--	--	--	--	**48.1**	**1.16**	**1.86**	**1.68**
Iron, Ferrous, Fe+2	T	ppm			--	--	--	**0.197**	--	--	--	< 0	--	< 0 U	< 0 U
Metals															
Iron	D	ug/L			--	--	--	**453**	--	--	--	--	--	--	--
Lead	T	ug/L	15		< 1 U	--	--	--	--	--	--	--	--	--	--
Manganese	D	ug/L			--	--	--	**491**	--	--	--	--	**325**	**284**	**270**
Polycyclic Aromatic Hydrocarbons (PAHs)															
Naphthalene	T	ug/L	160		**100**	**35**	--	--	--	--	--	--	--	--	--
Volatile Organic Compounds (VOCs)															
1,2-Dibromoethane (EDB)	T	ug/L	0.01		< 0.01 U	--	--	--	--	--	--	--	--	--	--
1,2-Dichloroethane (EDC)	T	ug/L	5		< 1 U	--	--	--	--	--	--	--	--	--	--
m,p-Xylenes	T	ug/L			**400**	**240**	--	--	--	--	--	--	--	--	--
Methyl tert-butyl ether (MTBE)	T	ug/L	20		< 1 U	--	--	--	--	--	--	--	--	--	--
o-Xylene	T	ug/L			**250**	**290**	--	--	--	--	--	--	--	--	--

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T - Total Fraction (unfiltered) sample result
BTEX - benzene, toluene, ethylbenzene, and total xylenes
deg C - degrees Celsius
mg/L - milligrams per liter
mV - millivolts
µg/L - micrograms per liter
NTU - nephelometric turbidity units
ppm - parts per million
Gasoline Range Hydrocarbons are screened against a tighter value when benzene is present in the sample.
"--" - indicates results not available

Table 3. Summary of Historical Groundwater Analytical Results

Project No. AS130046, Port Ludlow, Washington

Location				MW-3										
Date				06/11/2010	10/20/2010	04/07/2011	07/11/2019	11/08/2019	02/11/2020	05/28/2020	11/04/2021	05/03/2022	05/09/2023	05/08/2024
Sample				MW3-0610	MW3-1010	MW3-411	MW-3-071119	MW-3-110819	MW-3-021120	MW-3-052820	MW-3-110421	MW-3-220503	MW-3-230509	MW-3-240508
Analyte	**Fraction**	**Unit**	**MTCA Method A Cleanup Level**											
Total Petroleum Hydrocarbons (TPHs)														
Gasoline Range Organics	T	ug/L	800 | 1000	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U
BTEX														
Benzene	T	ug/L	5	**0.36**	< 0.35 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Toluene	T	ug/L	1000	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Ethylbenzene	T	ug/L	700	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Total Xylenes	T	ug/L	1000	--	--	< 3 U	< 3 U	< 3 U	< 3 U	< 3 U	< 3 U	< 3 U	< 3 U	< 3 U
Conventionals														
Alkalinity as Carbonate	T	mg/L		--	--	--	--	--	--	--	--	**201**	--	--
Alkalinity, Total	T	mg/L as CaCO3		--	--	--	**202**	--	**205**	--	**211**	--	**218**	**186**
Nitrate as Nitrogen	T	mg/L		--	--	--	**2.14**	--	**2.22**	--	**1.68**	**1.78 J**	--	--
Nitrate-Nitrite	T	mg/L		--	--	--	--	--	--	--	--	--	**1.19**	**1.12**
Nitrite as Nitrogen	T	mg/L		--	--	--	< 0.2 U	--	< 0.200 U	--	< 0.500 UJ	--	--	--
Sulfate	T	mg/L		--	--	--	**17.4**	--	**15.3**	--	**16.1**	**17.3**	**17.8**	**17.4**
Total Organic Carbon	T	mg/L		--	--	--	--	--	--	--	--	--	--	**0.719**
Dissolved Gases														
Ethane	T	mg/L		--	--	--	--	--	--	--	--	--	--	--
Ethene	T	mg/L		--	--	--	--	--	--	--	--	--	--	--
Methane	T	mg/L		--	--	--	< 0.00863 U	--	< 0.00863 U	--	< 0.00675 U	**0.198**	< 0.00675 U	< 0.005 U
Field Parameters														
Temperature	T	deg C		--	--	--	--	--	--	--	**12.3**	**10**	**10.1**	**10.6**
Specific Conductance	T	uS/cm		--	--	--	--	--	--	--	**234.1**	**216.5**	**321.4**	**413**
Dissolved Oxygen	T	mg/L		--	--	--	--	--	--	--	**4.07**	**3.58**	**4.64**	**3.33**
pH	T	pH units		--	--	--	--	--	--	--	**7.04**	**7.51**	**7.37**	**7.4**
Oxidation Reduction Potential	T	mV		--	--	--	--	--	--	--	**61.3**	**100.7**	**47.4**	**221.2**
Turbidity	T	NTU		--	--	--	--	--	--	--	**25**	**5.1**	**10**	**1.03**
Iron, Ferrous, Fe+2	T	ppm		--	--	--	**0.0959 J**	--	--	--	< 0	--	**6**	< 0 U
Metals														
Iron	D	ug/L		--	--	--	**128**	--	--	--	--	--	--	--
Lead	T	ug/L	15	< 1 U	--	--	--	--	--	--	--	--	--	--
Manganese	D	ug/L		--	--	--	< 1 U	--	--	--	--	< 1 U	**1.27**	< 1 U
Polycyclic Aromatic Hydrocarbons (PAHs)														
Naphthalene	T	ug/L	160	< 1 U	< 1 U	--	--	--	--	--	--	--	--	--
Volatile Organic Compounds (VOCs)														
1,2-Dibromoethane (EDB)	T	ug/L	0.01	< 0.01 U	--	--	--	--	--	--	--	--	--	--
1,2-Dichloroethane (EDC)	T	ug/L	5	< 1 U	--	--	--	--	--	--	--	--	--	--
m,p-Xylenes	T	ug/L		< 2 U	< 2 U	--	--	--	--	--	--	--	--	--
Methyl tert-butyl ether (MTBE)	T	ug/L	20	< 1 U	--	--	--	--	--	--	--	--	--	--
o-Xylene	T	ug/L		< 1 U	< 1 U	--	--	--	--	--	--	--	--	--

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BTEX - benzene, toluene, ethylbenzene, and total xylenes
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ppm - parts per million
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"--" - indicates results not available

Table 3. Summary of Historical Groundwater Analytical Results

Project No. AS130046, Port Ludlow, Washington

Location				MW-4										
Date				06/11/2010	10/20/2010	04/08/2011	07/11/2019	11/08/2019	02/11/2020	05/28/2020	11/04/2021	05/03/2022	05/09/2023	05/08/2024
Sample				MW4-0610	MW4-1010	MW4-411	MW-4-071119	MW-4-110819	MW-4-021120	MW-4-052820	MW-4-110421	MW-4-220503	MW-4-230509	MW-4-240508
Analyte	**Fraction**	**Unit**	**MTCA Method A Cleanup Level**											
Total Petroleum Hydrocarbons (TPHs)														
Gasoline Range Organics	T	ug/L	800 | 1000	< 100 U	< 100 U	**380**	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U
BTEX														
Benzene	T	ug/L	5	< 0.35 U	< 0.35 U	**5.3**	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Toluene	T	ug/L	1000	< 1 U	< 1 U	**75**	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Ethylbenzene	T	ug/L	700	< 1 U	< 1 U	**13**	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Total Xylenes	T	ug/L	1000	--	--	**47**	< 3 U	< 3 U	< 3 U	< 3 U	< 3 U	< 3 U	< 3 U	< 3 U
Conventionals														
Alkalinity as Carbonate	T	mg/L		--	--	--	--	--	--	--	--	**111**	--	--
Alkalinity, Total	T	mg/L as CaCO3		--	--	--	**140**	--	**239**	--	**127**	--	**130**	**99.1**
Nitrate as Nitrogen	T	mg/L		--	--	--	**0.551**	--	**0.604**	--	**0.580**	**0.335 J**	--	--
Nitrate-Nitrite	T	mg/L		--	--	--	--	--	--	--	--	--	**0.402**	< 0.4 U
Nitrite as Nitrogen	T	mg/L		--	--	--	< 0.1 U	--	< 0.100 U	--	< 0.500 UJ	--	--	--
Sulfate	T	mg/L		--	--	--	**8.76**	--	**8.17**	--	**7.59**	**7.68**	**7.07**	**8.17**
Total Organic Carbon	T	mg/L		--	--	--	--	--	--	--	--	--	--	< 0.7 U
Dissolved Gases														
Ethane	T	mg/L		--	--	--	--	--	--	--	--	--	--	--
Ethene	T	mg/L		--	--	--	--	--	--	--	--	--	--	--
Methane	T	mg/L		--	--	--	< 0.00863 U	--	< 0.00863 U	--	< 0.00675 U	< 0.00675 U	< 0.00675 U	< 0.005 U
Field Parameters														
Temperature	T	deg C		--	--	--	--	--	--	--	**12.5**	**10.8**	**11.9**	**14.4**
Specific Conductance	T	uS/cm		--	--	--	--	--	--	--	**149.6**	**147.1**	**203.1**	**241.1**
Dissolved Oxygen	T	mg/L		--	--	--	--	--	--	--	**5.18**	**5.73**	**6.76**	**6.25**
pH	T	pH units		--	--	--	--	--	--	--	**7.68**	**7.77**	**7.74**	**7.47**
Oxidation Reduction Potential	T	mV		--	--	--	--	--	--	--	**97.6**	**107.5**	**48.3**	**231.5**
Turbidity	T	NTU		--	--	--	--	--	--	--	**38.6**	**11**	**35**	**2.26**
Iron, Ferrous, Fe+2	T	ppm		--	--	--	**0.199**	--	--	--	< 0	--	**6**	< 0 U
Metals														
Iron	D	ug/L		--	--	--	**65.5**	--	--	--	--	--	--	--
Lead	T	ug/L	15	< 1 U	--	--	--	--	--	--	--	--	--	--
Manganese	D	ug/L		--	--	--	< 1 U	--	--	--	--	< 1 U	< 1 U	**1.5**
Polycyclic Aromatic Hydrocarbons (PAHs)														
Naphthalene	T	ug/L	160	< 1 U	< 1 U	--	--	--	--	--	--	--	--	--
Volatile Organic Compounds (VOCs)														
1,2-Dibromoethane (EDB)	T	ug/L	0.01	< 0.01 U	--	--	--	--	--	--	--	--	--	--
1,2-Dichloroethane (EDC)	T	ug/L	5	< 1 U	--	--	--	--	--	--	--	--	--	--
m,p-Xylenes	T	ug/L		< 2 U	< 2 U	--	--	--	--	--	--	--	--	--
Methyl tert-butyl ether (MTBE)	T	ug/L	20	< 1 U	--	--	--	--	--	--	--	--	--	--
o-Xylene	T	ug/L		< 1 U	< 1 U	--	--	--	--	--	--	--	--	--

Notes:
Bold - detected
Blue Shaded - Detected result exceeded screening level.
U - Analyte not detected at or above Reporting Limit (RL) shown.
J - Result value estimated
UJ - Analyte not detected and the Reporting Limit (RL) is an estimate.
D - Dissolved Fraction (filtered) sample result
T - Total Fraction (unfiltered) sample result
BTEX - benzene, toluene, ethylbenzene, and total xylenes
deg C - degrees Celsius
mg/L - milligrams per liter
mV - millivolts
µg/L - micrograms per liter
NTU - nephelometric turbidity units
ppm - parts per million
Gasoline Range Hydrocarbons are screened against a tighter value when benzene is present in the sample.
"--" - indicates results not available

Table 3. Summary of Historical Groundwater Analytical Results

Project No. AS130046, Port Ludlow, Washington

			Location	MW-5								MW-18T			
			Date	04/08/2011	07/11/2019	11/08/2019	02/11/2020	05/28/2020	11/04/2021	05/03/2022	05/09/2023	05/08/2024	11/04/2021	05/03/2022	05/09/2023	05/08/2024
			Sample	MW5-411	MW-5-071119	MW-5-110819	MW-5-021120	MW-5-052820	MW-5-110421	MW-5-220503	MW-5-230509	MW-5-240508	MW-18T-110421	MW-18T-220503	MW-18T-230509	MW-18T-240508
Analyte	**Fraction**	**Unit**	**MTCA Method A Cleanup Level**													
Total Petroleum Hydrocarbons (TPHs)																
Gasoline Range Organics	T	ug/L	800 | 1000	**220**	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U
BTEX																
Benzene	T	ug/L	5	**3.4**	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Toluene	T	ug/L	1000	**43**	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Ethylbenzene	T	ug/L	700	**7.8**	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Total Xylenes	T	ug/L	1000	**25**	< 3 U	< 3 U	< 3 U	< 3 U	< 3 U	< 3 U	< 3 U	< 3 U	< 3 U	< 3 U	< 3 U	< 3 U
Conventionals																
Alkalinity as Carbonate	T	mg/L		--	--	--	--	--	--	**116**	--	--	--	**156**	--	--
Alkalinity, Total	T	mg/L as CaCO3		--	**136**	--	**146**	--	**126**	--	**127**	**113**	--	--	**175**	**145**
Nitrate as Nitrogen	T	mg/L		--	**0.561**	--	**0.628**	--	**0.630**	**0.419 J**	--	--	--	**0.282 J**	--	--
Nitrate-Nitrite	T	mg/L		--	--	--	--	--	--	--	**0.424**	< 0.4 U	--	--	**0.340**	< 0.4 U
Nitrite as Nitrogen	T	mg/L		--	< 0.1 U	--	< 0.200 U	--	< 0.500 UJ	--	--	--	--	--	--	--
Sulfate	T	mg/L		--	**6.66**	--	**4.61**	--	**6.71**	**5.15**	**4.41**	**5.33**	--	**7.37**	**7.33**	**8.2**
Total Organic Carbon	T	mg/L		--	--	--	--	--	--	--	--	< 0.7 U	--	--	--	**0.939**
Dissolved Gases																
Ethane	T	mg/L		--	--	--	--	--	--	--	--	--	--	--	--	--
Ethene	T	mg/L		--	--	--	--	--	--	--	--	--	--	--	--	--
Methane	T	mg/L		--	< 0.00863 U	--	< 0.00863 U	--	< 0.00675 U	< 0.00675 U	< 0.00675 U	< 0.005 U	--	< 0.00675 U	< 0.00675 U	< 0.005 U
Field Parameters																
Temperature	T	deg C		--	--	--	--	--	**11.1**	**10.2**	**10.5**	**10.8**	**11.3**	**10.2**	**11.6**	**12.3**
Specific Conductance	T	uS/cm		--	--	--	--	--	**179.2**	**157.5**	**245.2**	**324.2**	**232.2**	**224.4**	**323.1**	**402.4**
Dissolved Oxygen	T	mg/L		--	--	--	--	--	**4.56**	**4.48**	**4.07**	**7.93**	**4.09**	**2.95**	**2.1**	**4.13**
pH	T	pH units		--	--	--	--	--	**6.52**	**7.14**	**6.94**	**6.98**	**6.81**	**6.97**	**6.95**	**6.81**
Oxidation Reduction Potential	T	mV		--	--	--	--	--	**100**	**81.9**	**30.9**	**280.6**	**69.7**	**130.6**	**65.8**	**243.7**
Turbidity	T	NTU		--	--	--	--	--	**93.7**	**67.5**	**13.7**	**19**	**56.6**	**77.4**	**33.1**	**1.06**
Iron, Ferrous, Fe+2	T	ppm		--	**0.591 J**	--	--	--	**0.5**	--	< 0 U	< 0 U	< 0	--	< 0 U	< 0 U
Metals																
Iron	D	ug/L		--	**81.3**	--	--	--	--	--	--	--	--	--	--	--
Lead	T	ug/L	15	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	D	ug/L		--	< 1 U	--	--	--	--	**2.46**	**1.04**	**4.5**	--	**28.3**	**3.73**	**3.1**
Polycyclic Aromatic Hydrocarbons (PAHs)																
Naphthalene	T	ug/L	160	--	--	--	--	--	--	--	--	--	--	--	--	--
Volatile Organic Compounds (VOCs)																
1,2-Dibromoethane (EDB)	T	ug/L	0.01	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloroethane (EDC)	T	ug/L	5	--	--	--	--	--	--	--	--	--	--	--	--	--
m,p-Xylenes	T	ug/L		--	--	--	--	--	--	--	--	--	--	--	--	--
Methyl tert-butyl ether (MTBE)	T	ug/L	20	--	--	--	--	--	--	--	--	--	--	--	--	--
o-Xylene	T	ug/L		--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:
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U - Analyte not detected at or above Reporting Limit (RL) shown.
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D - Dissolved Fraction (filtered) sample result
T - Total Fraction (unfiltered) sample result
BTEX - benzene, toluene, ethylbenzene, and total xylenes
deg C - degrees Celsius
mg/L - milligrams per liter
mV - millivolts
µg/L - micrograms per liter
NTU - nephelometric turbidity units
ppm - parts per million
Gasoline Range Hydrocarbons are screened against a tighter value when benzene is present in the sample.
"--" - indicates results not available

Table 3. Summary of Historical Groundwater Analytical Results

Project No. AS130046, Port Ludlow, Washington

			Location	W-2								W-18		
			Date	07/11/2019	11/08/2019	02/11/2020	05/28/2020	11/04/2021	05/09/2022	05/10/2023	05/08/2024	05/09/2022	05/12/2023	05/10/2024
			Sample	W-2-071119-P	W-2-110819	W-2-021120	W-2-052820	W-2-110421	WELL 2-220509	WELL 2-230510	WELL #2-240508	WELL 18-220509	WELL 18-230512	WELL #18-240510
Analyte	Fraction	Unit	MTCA Method A Cleanup Level											
Total Petroleum Hydrocarbons (TPHs)														
Gasoline Range Organics	T	ug/L	800 | 1000	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	**120**	< 100 U	< 100 U
BTEX														
Benzene	T	ug/L	5	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Toluene	T	ug/L	1000	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	**38**	**32**	**2.1**
Ethylbenzene	T	ug/L	700	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Total Xylenes	T	ug/L	1000	< 3 U	< 3 U	< 3 U	< 3 U	< 3 U	< 3 U	< 3 U	< 3 U	< 3 U	< 3 U	< 3 U
Conventionals														
Alkalinity as Carbonate	T	mg/L		--	--	--	--	--	--	--	--	--	--	--
Alkalinity, Total	T	mg/L as CaCO3		**68.2**	--	**102**	--	**53.2**	--	--	--	--	--	--
Nitrate as Nitrogen	T	mg/L		< 0.1 U	--	< 0.100 U	--	< 0.500 UJ	--	--	--	--	--	--
Nitrate-Nitrite	T	mg/L		--	--	--	--	--	--	--	--	--	--	--
Nitrite as Nitrogen	T	mg/L		< 0.1 U	--	< 0.100 U	--	< 0.500 UJ	--	--	--	--	--	--
Sulfate	T	mg/L		**43.2**	--	**47.4**	--	**16.0**	--	--	--	--	--	--
Total Organic Carbon	T	mg/L		--	--	--	--	--	--	--	--	--	--	--
Dissolved Gases														
Ethane	T	mg/L		--	--	--	--	--	--	--	--	--	--	--
Ethene	T	mg/L		--	--	--	--	--	--	--	--	--	--	--
Methane	T	mg/L		**0.0178**	--	**0.0574**	--	**0.00836**	--	--	--	--	--	--
Field Parameters														
Temperature	T	deg C		--	--	--	--	**11.9**	**10.9**	**10**	**10.3**	**11.2**	**13.2**	**11.3**
Specific Conductance	T	uS/cm		--	--	--	--	**106.6**	**1908**	**185.5**	**253.2**	**138.2**	**137**	**128.3**
Dissolved Oxygen	T	mg/L		--	--	--	--	**2.26**	**1.87**	**0.85**	**2.66**	**10.69**	**0.29**	**0.36**
pH	T	pH units		--	--	--	--	**7.15**	**7.19**	**6.83**	**7.29**	**8.95**	**9.52**	**9.93**
Oxidation Reduction Potential	T	mV		--	--	--	--	**85.4**	**-7.4**	**-25**	**-48.9**	**70.8**	**37.1**	**98.6**
Turbidity	T	NTU		--	--	--	--	**9.03**	**0.93**	**0**	**0.45**	**18.9**	**6.1**	**11.3**
Iron, Ferrous, Fe+2	T	ppm		< 0.05 UJ	--	--	--	< 0	--	--	--	--	--	< 0 U
Metals														
Iron	D	ug/L		**1150**	--	--	--	--	--	--	--	--	--	--
Lead	T	ug/L	15	--	--	--	--	--	--	--	--	--	--	--
Manganese	D	ug/L		**275**	--	--	--	--	--	--	--	--	--	--
Polycyclic Aromatic Hydrocarbons (PAHs)														
Naphthalene	T	ug/L	160	--	--	--	--	--	--	--	--	--	--	--
Volatile Organic Compounds (VOCs)														
1,2-Dibromoethane (EDB)	T	ug/L	0.01	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloroethane (EDC)	T	ug/L	5	--	--	--	--	--	--	--	--	--	--	--
m,p-Xylenes	T	ug/L		--	--	--	--	--	--	--	--	--	--	--
Methyl tert-butyl ether (MTBE)	T	ug/L	20	--	--	--	--	--	--	--	--	--	--	--
o-Xylene	T	ug/L		--	--	--	--	--	--	--	--	--	--	--

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T - Total Fraction (unfiltered) sample result
BTEX - benzene, toluene, ethylbenzene, and total xylenes
deg C - degrees Celsius
mg/L - milligrams per liter
mV - millivolts
µg/L - micrograms per liter
NTU - nephelometric turbidity units
ppm - parts per million
Gasoline Range Hydrocarbons are screened against a tighter value when benzene is present in the sample.
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FIGURES

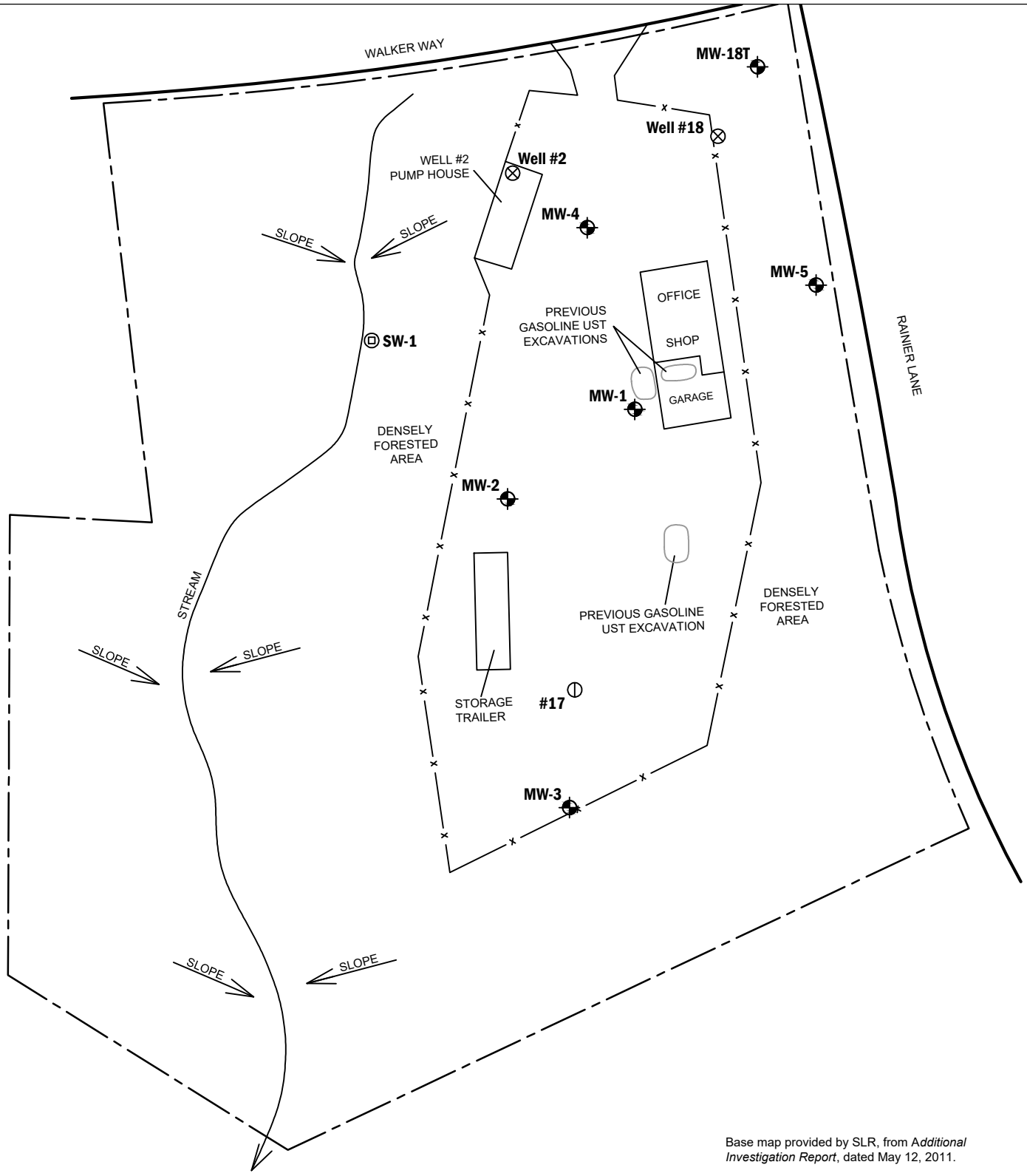
Site Location Map

Year 5 Annual Groundwater Monitoring Report
Olympic Water & Sewer, Inc.
Port Ludlow, Washington

Aspect CONSULTING	JUN-2023	BY: EPM / SCC	FIGURE NO. 1
	PROJECT NO. 130046	REVISED BY: CT / SCC	

Basemap Layer Credits || Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

GIS Path: Q:\Olympic Property Group\130046 Port Ludlow\2023-06 Year 4 Annual GW Monitoring Report\GIS\01 Site Location Map.mxd || Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet || Date Saved: 6/23/2023 || User: haley.duran || Print Date: 5/24/2024



Base map provided by SLR, from A*dditional Investigation Report*, dated May 12, 2011.

This drawing is for conceptual purposes only. Actual locations may vary and not all structures are shown.

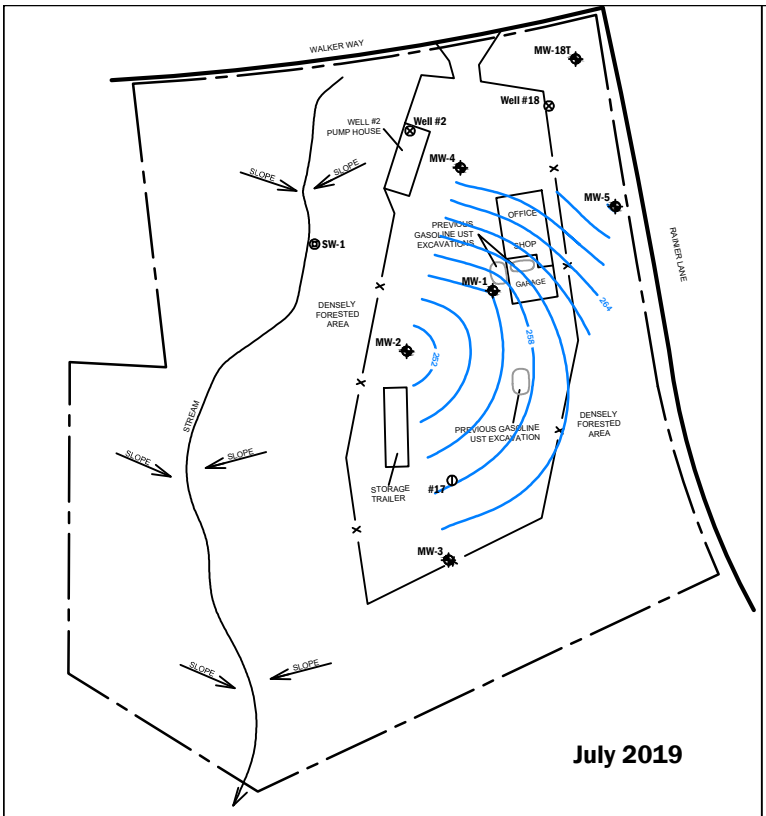
Legend

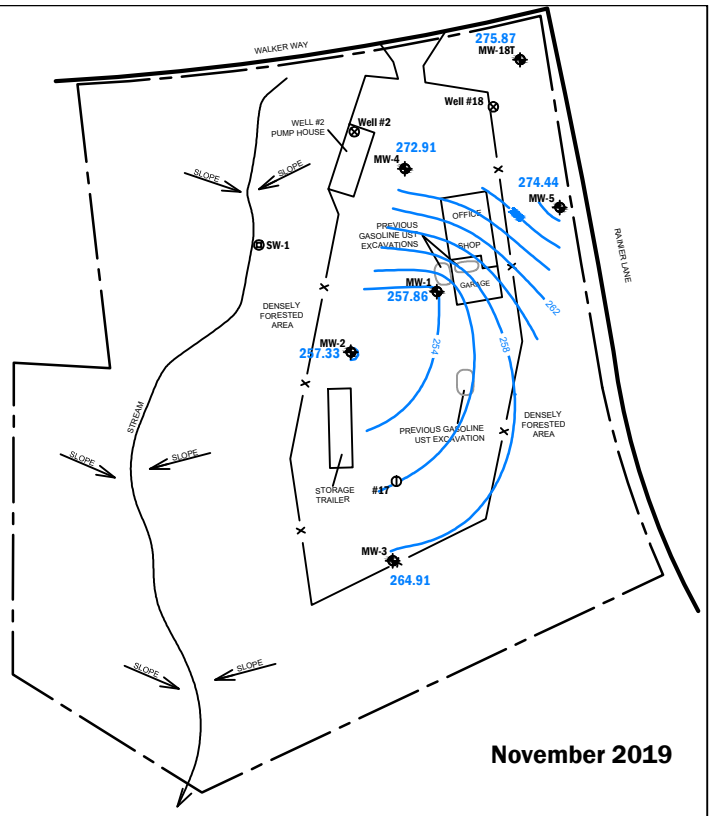
- Monitoring Well Location
- Stream Sample Location
- Water Supply Well Location
- Existing Casing Location

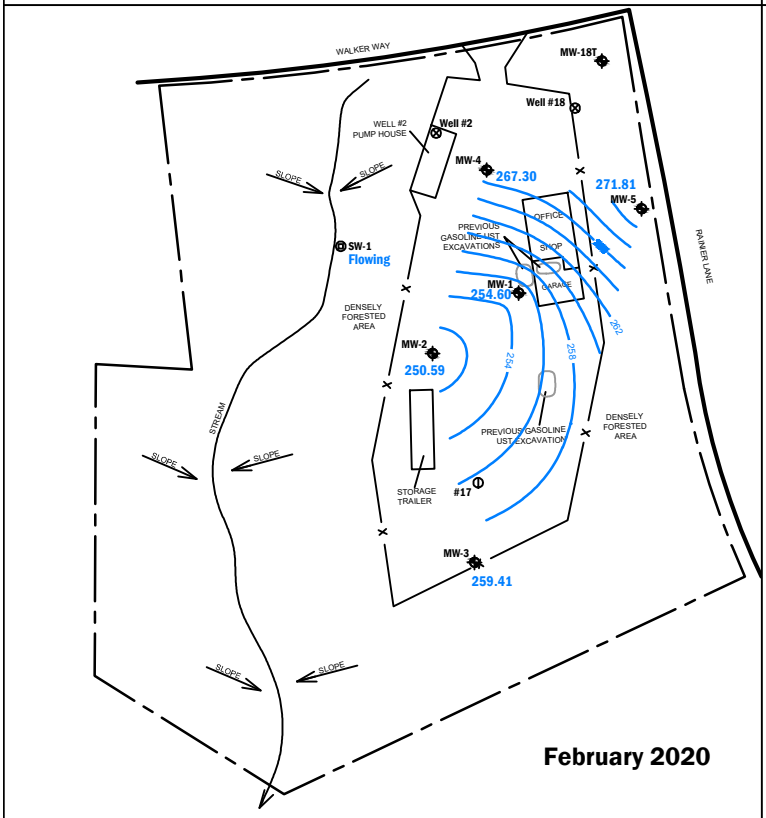
Site Plan

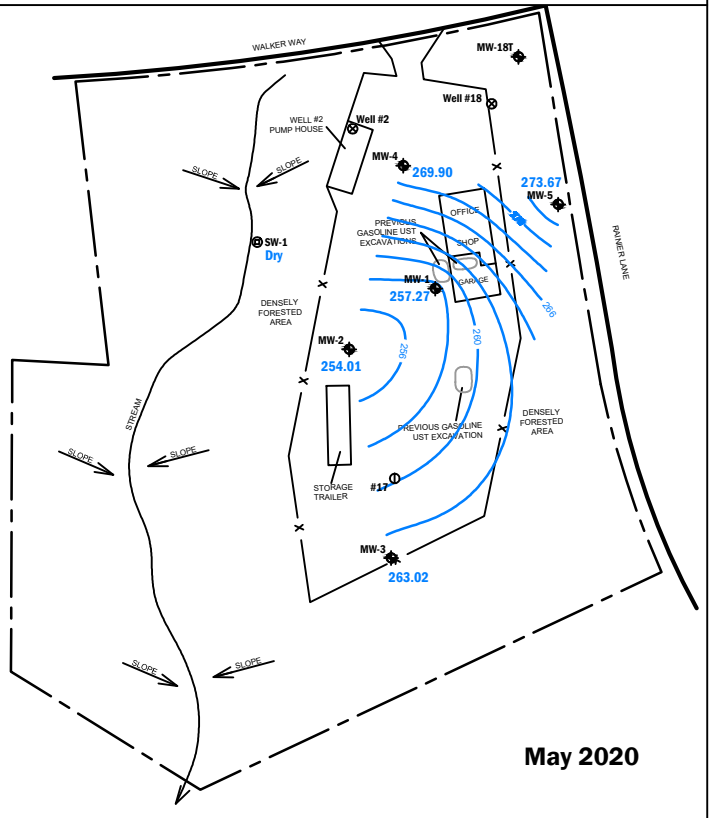
Year 5 Annual Groundwater Monitoring Report
Olympic Water & Sewer, Inc.
Port Ludlow, Washington

Aspect Consulting	May-2024	BY: DWU/SCC/CMV	FIGURE NO. 2
	PROJECT NO. 130046	REVISED BY: -	









Legend

- Monitoring Well Location
- Stream Sample Location
- Existing Water Supply Well Location
- Existing Casing Location
- Groundwater Elevation Contour Line (Feet)

Base map provided by SLR, from *Additional Investigation Report*, dated May 12, 2011.

This drawing is for conceptual purposes only. Actual locations may vary and not all structures are shown.

0 100 200 Feet

Year 1 Groundwater Elevation and Contours

Year 5 Annual Groundwater Monitoring Report
Olympic Water & Sewer, Inc.
Port Ludlow, Washington

Aspect Consulting	May-2024	BY: DWU/SCC/CMV	FIGURE NO. 3
	PROJECT NO. 130046	REVISED BY: -	

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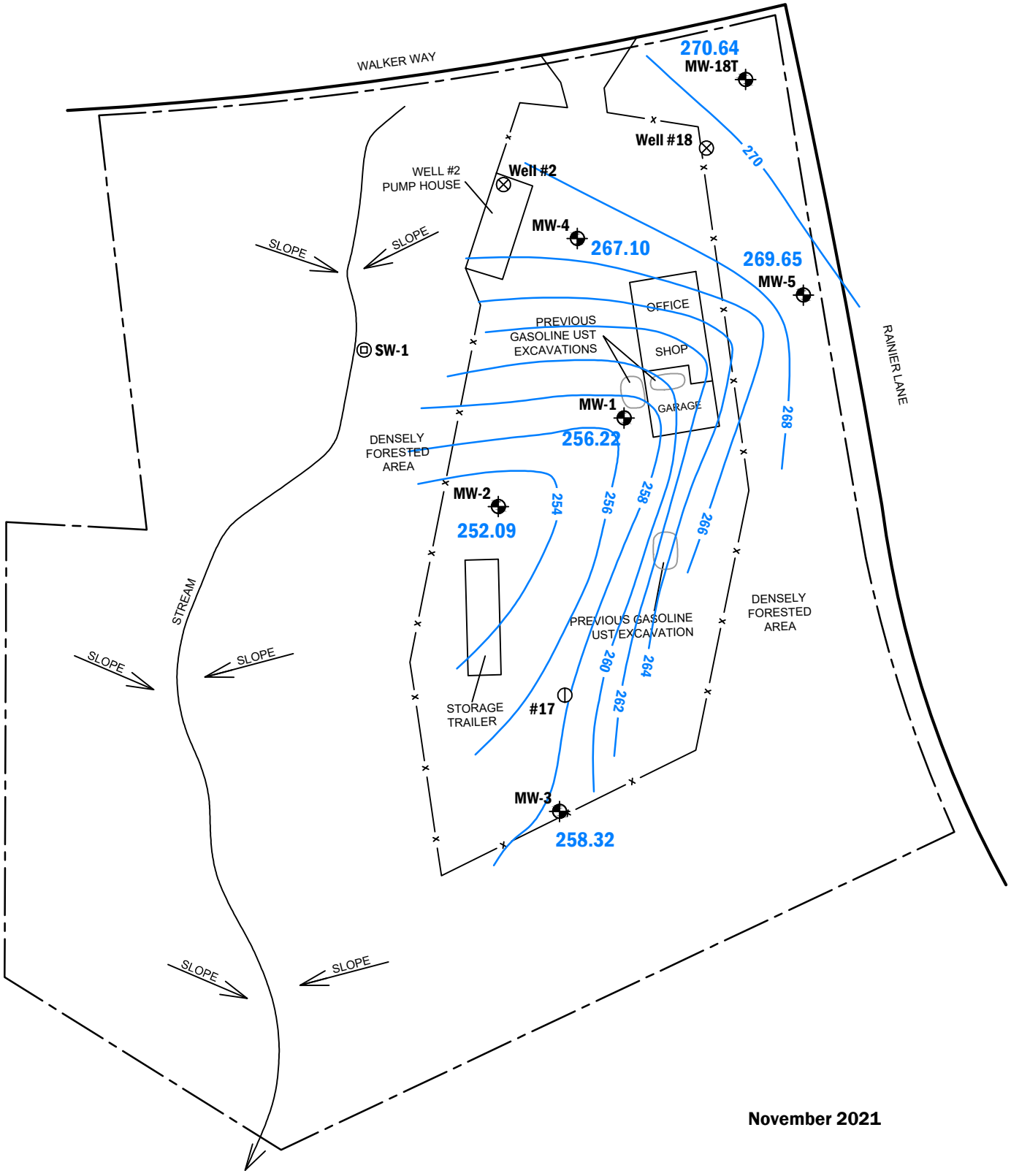

Legend

- Monitoring Well Location
- Stream Sample Location
- Existing Water Supply Well Location
- Existing Casing Location
- Groundwater Elevation Contour Line (Feet)

Base map provided by SLR, from *Additional Investigation Report*, dated May 12, 2011.

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0 50 100 Feet

Year 2 Groundwater Elevation and Contours

Year 5 Annual Groundwater Monitoring Report
Olympic Water & Sewer, Inc.
Port Ludlow, Washington

Aspect Consulting	May-2024	BY: DWU/SCC/CMV	FIGURE NO. 4
	PROJECT NO. 130046	REVISED BY: -	

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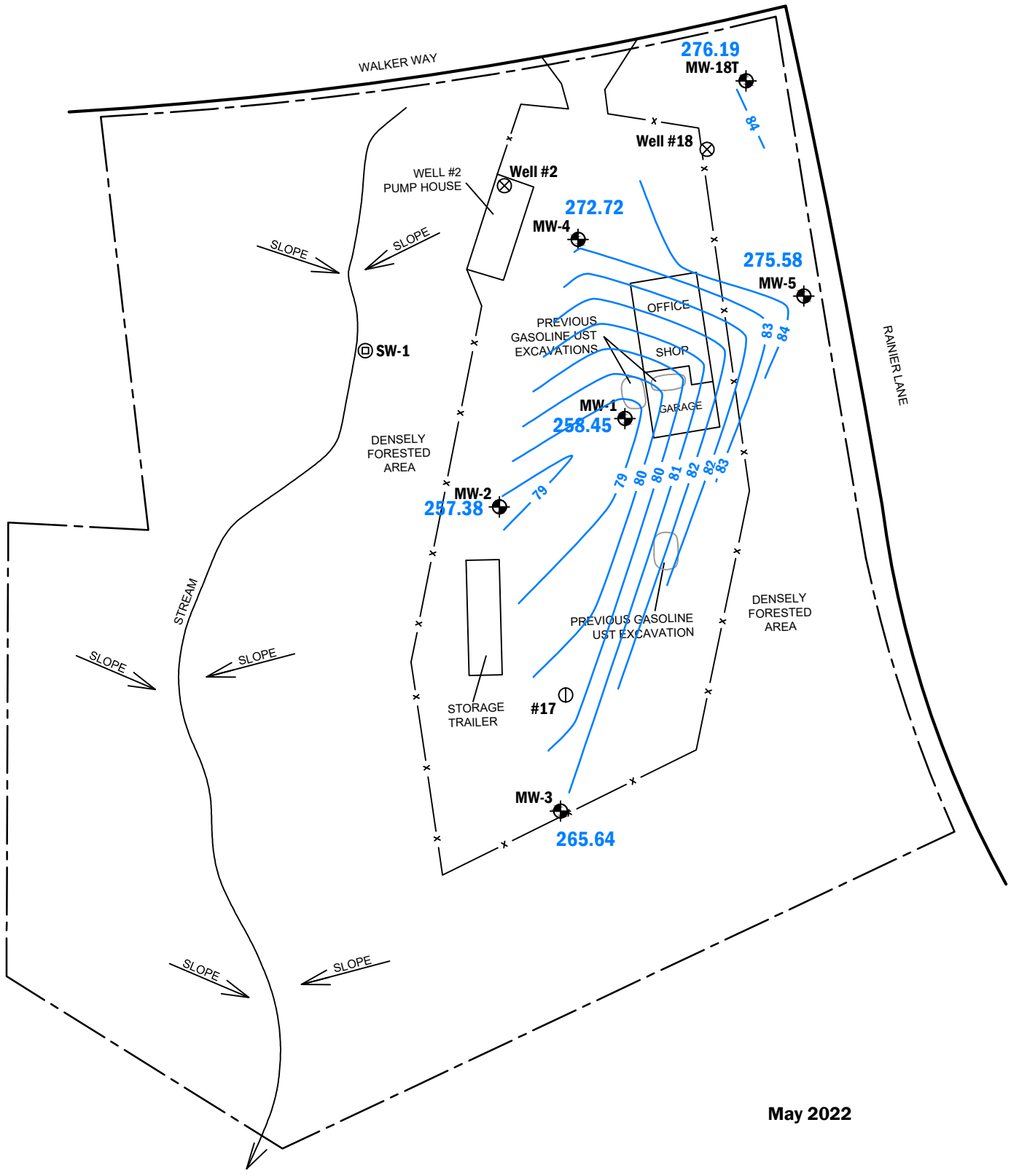


Legend

- Monitoring Well Location
- Stream Sample Location
- Existing Water Supply Well Location
- Existing Casing Location
- Groundwater Elevation Contour Line (Feet)

Base map provided by SLR, from A*dditional Investigation Report*, dated May 12, 2011.

This drawing is for conceptual purposes only. Actual locations may vary and not all structures are shown.

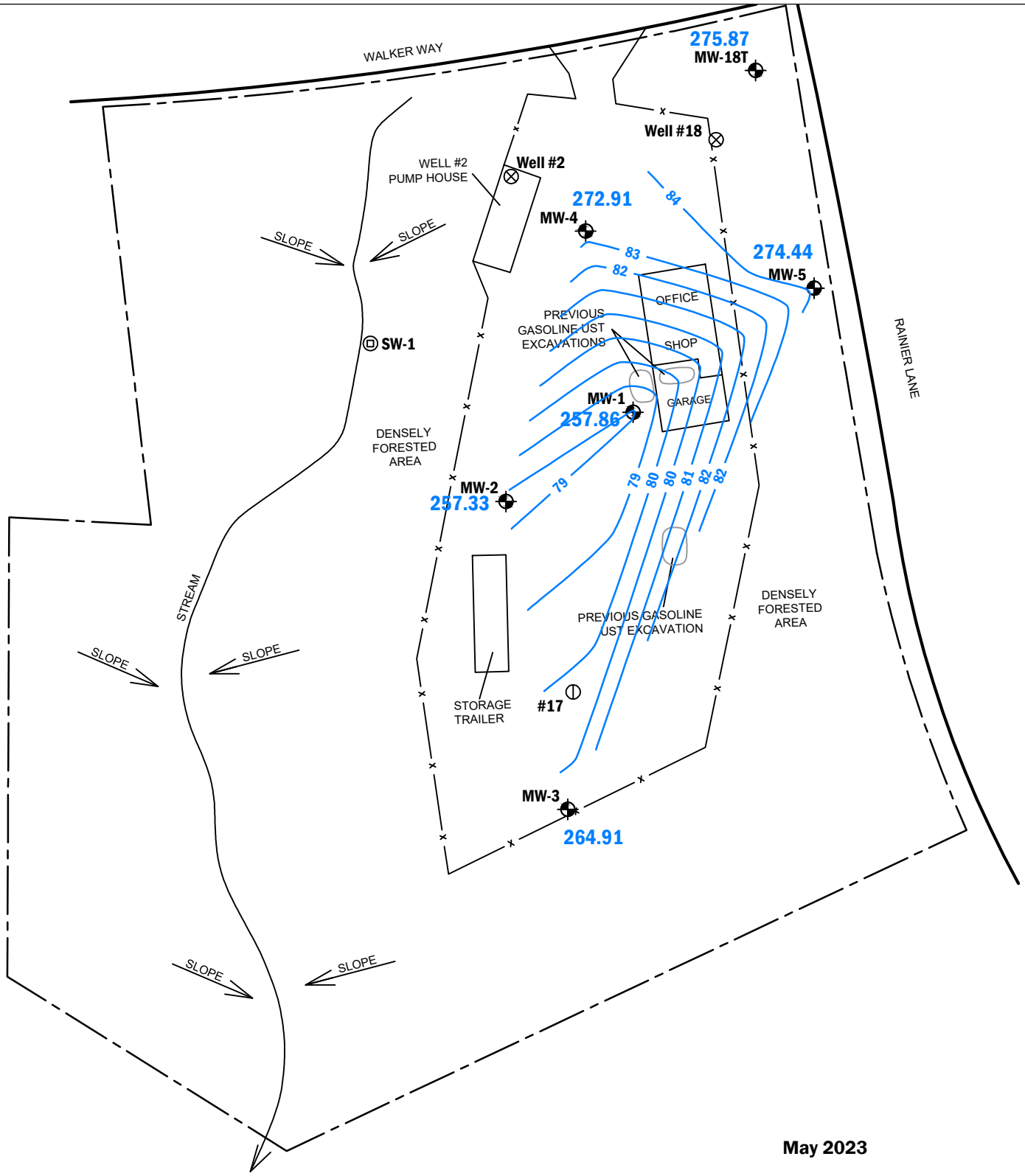
0 50 100 Feet

Year 3 Groundwater Elevation and Contours

Year 5 Annual Groundwater Monitoring Report
Olympic Water & Sewer, Inc.
Port Ludlow, Washington

Aspect Consulting	May-2024	BY: EPM/SCC	FIGURE NO. 5
	PROJECT NO. 130046	REVISED BY: CT / SCC	

CAD Path: Q:\Olympic Property Group\130046 Port Ludlow\2024-05 Year 5 Annual GW Report\130046-02.dwg Layout: 05 Year 3 GW Elevation and Contours || Date Saved: 5/29/2024 12:08:47 PM || User: caroline.vanslyke



Legend

- Monitoring Well Location
- Stream Sample Location
- Existing Water Supply Well Location
- Existing Casing Location
- Groundwater Elevation Contour Line (Feet)

Base map provided by SLR, from *Additional Investigation Report*, dated May 12, 2011.

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0 50 100 Feet

Year 4 Groundwater Elevation and Contours

Year 5 Annual Groundwater Monitoring Report
Olympic Water & Sewer, Inc.
Port Ludlow, Washington

Aspect Consulting	May-2024	BY: EPM/SCC/CMV	FIGURE NO. 6
	PROJECT NO. 130046	REVISED BY: -	

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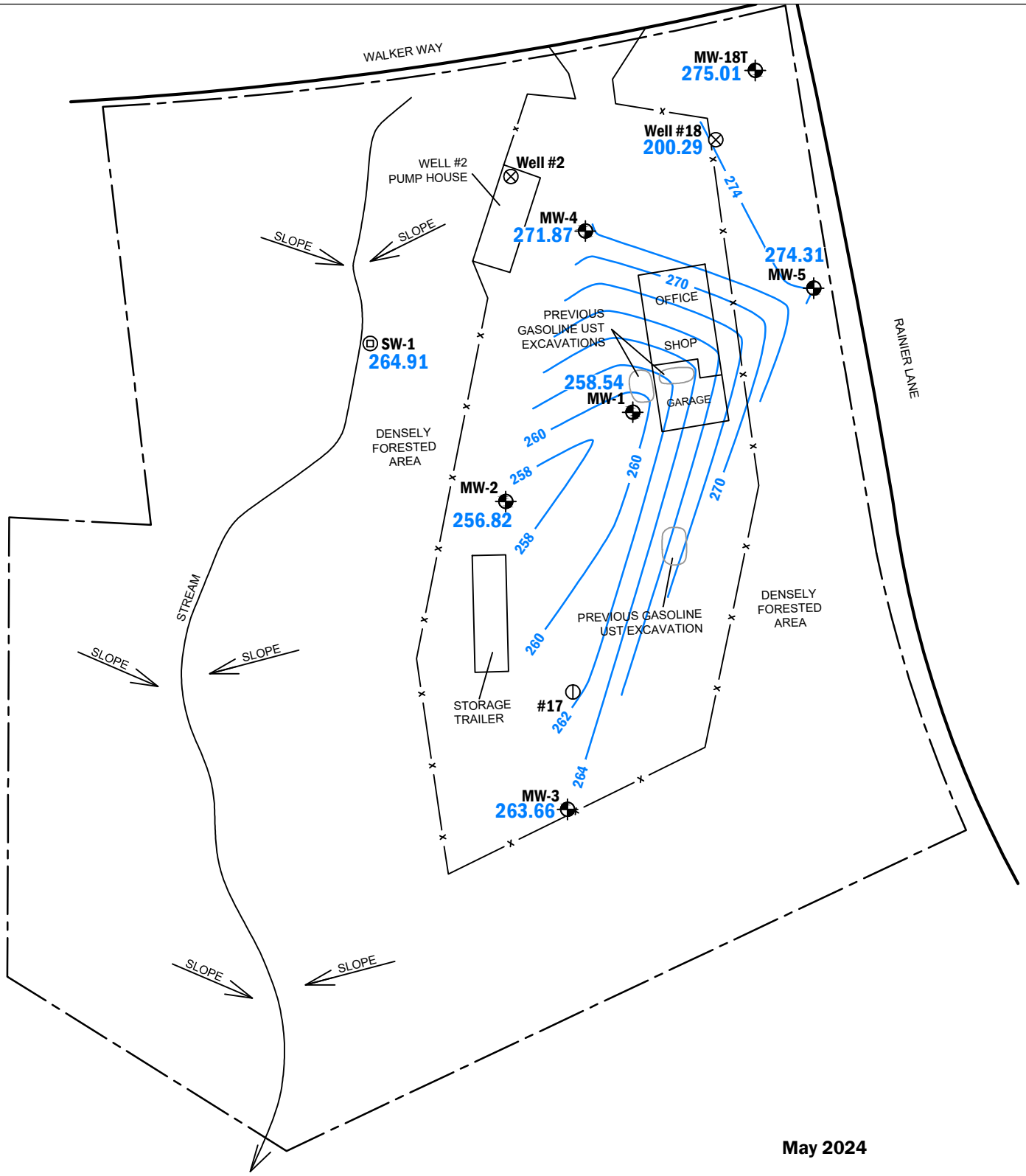

Legend

- Monitoring Well Location
- Stream Sample Location
- Existing Water Supply Well Location
- Existing Casing Location
- Groundwater Elevation Contour Line (Feet)

Base map provided by SLR, from *Additional Investigation Report*, dated May 12, 2011.

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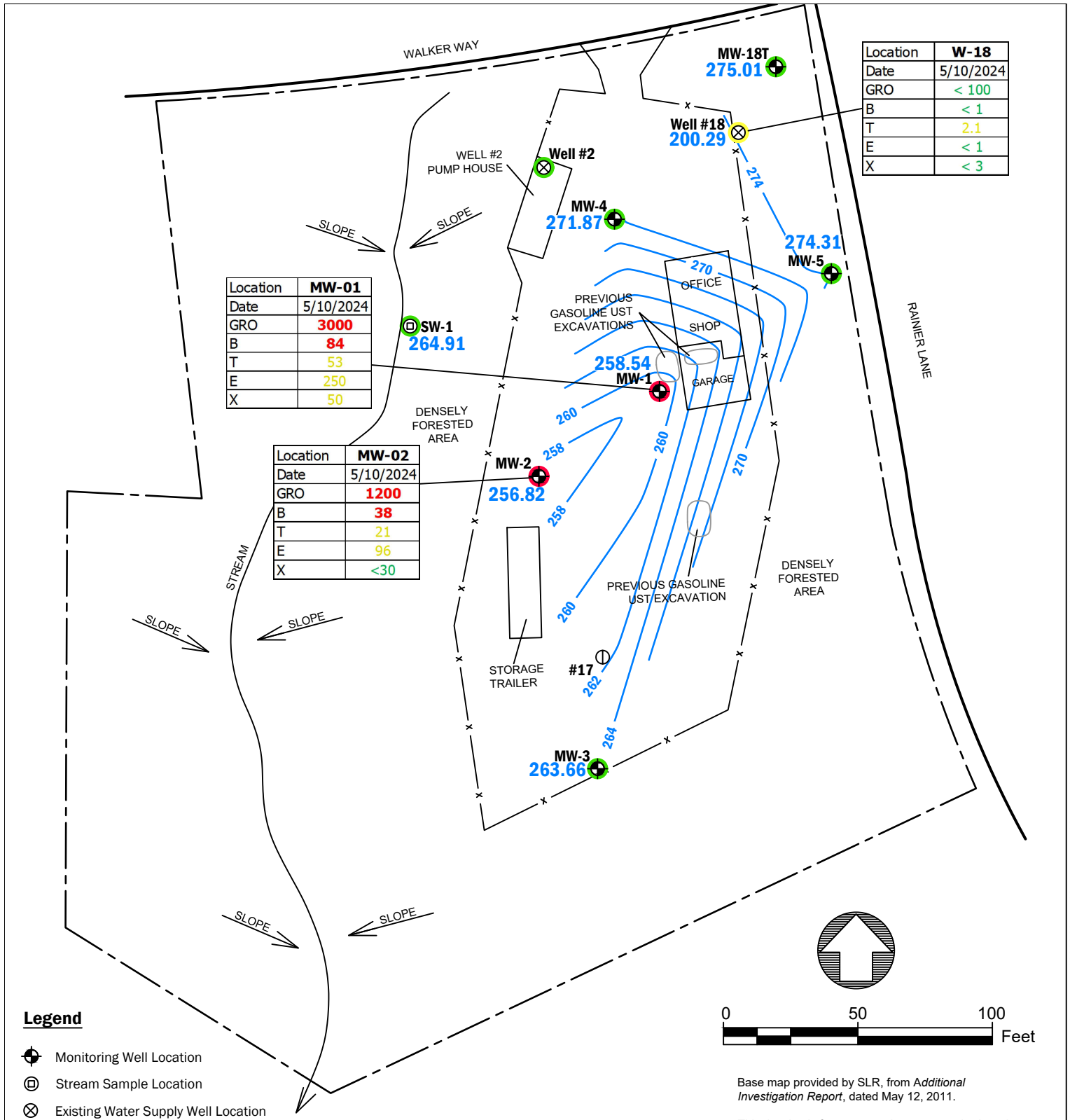
0 50 100 Feet

Year 5 Groundwater Elevation and Contours

Year 5 Annual Groundwater Monitoring Report
Olympic Water & Sewer, Inc.
Port Ludlow, Washington

Aspect Consulting	May-2024	BY: EPM/SCC/CMV	FIGURE NO. 7
	PROJECT NO. 130046	REVISED BY: -	

CAD Path: Q:\Olympic Property Group\130046 Port Ludlow\2024-05 Year 5 Annual GW Report\130046-02.dwg Layout: 07 Year 5 GW Elevation and Contours || Date Saved: 5/29/2024 12:08:47 PM || User: caroline.vanslyke



Location	W-18
Date	5/10/2024
GRO	< 100
B	< 1
T	2.1
E	< 1
X	< 3

Location	MW-01
Date	5/10/2024
GRO	3000
B	84
T	53
E	250
X	50

Location	MW-02
Date	5/10/2024
GRO	1200
B	38
T	21
E	96
X	<30

Legend

- Monitoring Well Location
- Stream Sample Location
- Existing Water Supply Well Location
- Existing Casing Location

Base map provided by SLR, from *Additional Investigation Report*, dated May 12, 2011.

This drawing is for conceptual purposes only. Actual locations may vary and not all structures are shown.

Analytical Results

- One or more petroleum hydrocarbon constituents was detected at a concentration exceeding its respective MTCA Method A Cleanup Level
- One or more petroleum hydrocarbons constituents was detected at a concentration less than its respective MTCA Method A Cleanup Level
- Petroleum hydrocarbon constituents not detected

GRO - Gasoline-range Total Petroleum Hydrocarbons
B - Benzene
T - Toluene
E - Ethylbenzene
X - Total Xylenes

Note: Concentrations are in µg/L

Groundwater and Surface Water Analytical Results

Year 5 Annual Groundwater Monitoring Report
Olympic Water & Sewer, Inc.
Port Ludlow, Washington

Aspect Consulting	Jun-2024	BY: EPM/SCC/CMV	FIGURE NO. 8
	PROJECT NO. 130046	REVISED BY: -	

CAD Path: Q:\Olympic Property Group\130046 Port Ludlow\2024-05 Year 5 Annual GW Report\130046-02 thru 08.dwg Layout: 08 Year 5 GW and SW Results || Date Saved: 6/7/2024 12:17:13 PM || User: caroline.vanslyke

APPENDIX A

Laboratory Analytical Reports

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Ave South
Seattle, WA 98108-2419
(206) 285-8282
office@friedmanandbruya.com
www.friedmanandbruya.com

May 21, 2024

Eric Maise, Project Manager
Aspect Consulting
710 2nd Ave S, Suite 550
Seattle, WA 98104

Dear Mr Maise:

Included are the results from the testing of material submitted on May 10, 2024 from the OWSI AS130046, F&BI 405191 project. There are 10 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Aspect Data, Carmen Tappero
ASP0521R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on May 10, 2024 by Friedman & Bruya, Inc. from the Aspect Consulting OWSI AS130046, F&BI 405191 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting
405191 -01	SW-1-240508
405191 -02	MW-5-240508
405191 -03	MW-4-240508
405191 -04	MW-3-240508
405191 -05	Well #2-240508
405191 -06	MW-18T-240508
405191 -07	Trip Blanks

Samples MW-5-240508, MW-4-240508, MW-3-240508, and MW-18T-240508 were sent to Alliance Technical Group for sulfate, nitrate, nitrite, alkalinity, and RSK-175 analyses. The report is enclosed.

All quality control requirements were acceptable.

Date of Report: 05/21/24
Date Received: 05/10/24
Project: OWSI AS130046, F&BI 405191
Date Extracted: 05/13/24
Date Analyzed: 05/13/24

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
SW-1-240508 405191-01	<1	<1	<1	<3	<100	69
MW-5-240508 405191-02	<1	<1	<1	<3	<100	67
MW-4-240508 405191-03	<1	<1	<1	<3	<100	67
MW-3-240508 405191-04	<1	<1	<1	<3	<100	65
Well #2-240508 405191-05	<1	<1	<1	<3	<100	74
MW-18T-240508 405191-06	<1	<1	<1	<3	<100	69
Trip Blanks 405191-07	<1	<1	<1	<3	<100	70
Method Blank 04-889 MB	<1	<1	<1	<3	<100	71

Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	MW-5-240508	Client:	Aspect Consulting
Date Received:	05/10/24	Project:	OWSI AS130046, F&BI 405191
Date Extracted:	05/13/24	Lab ID:	405191-02
Date Analyzed:	05/13/24	Data File:	405191-02.133
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Manganese	4.5

Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	MW-4-240508	Client:	Aspect Consulting
Date Received:	05/10/24	Project:	OWSI AS130046, F&BI 405191
Date Extracted:	05/13/24	Lab ID:	405191-03
Date Analyzed:	05/13/24	Data File:	405191-03.134
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Manganese	1.5

Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	MW-3-240508	Client:	Aspect Consulting
Date Received:	05/10/24	Project:	OWSI AS130046, F&BI 405191
Date Extracted:	05/13/24	Lab ID:	405191-04
Date Analyzed:	05/13/24	Data File:	405191-04.135
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Manganese	<1

Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	MW-18T-240508	Client:	Aspect Consulting
Date Received:	05/10/24	Project:	OWSI AS130046, F&BI 405191
Date Extracted:	05/13/24	Lab ID:	405191-06
Date Analyzed:	05/13/24	Data File:	405191-06.136
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Manganese	3.1

Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Aspect Consulting
Date Received:	NA	Project:	OWSI AS130046, F&BI 405191
Date Extracted:	05/13/24	Lab ID:	I4-390 mb
Date Analyzed:	05/13/24	Data File:	I4-390 mb.074
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Manganese	<1

Date of Report: 05/21/24
Date Received: 05/10/24
Project: OWSI AS130046, F&BI 405191

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 405191-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<1	<1	nm
Ethylbenzene	ug/L (ppb)	<1	<1	nm
Xylenes	ug/L (ppb)	<3	<3	nm
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/L (ppb)	50	96	70-130
Toluene	ug/L (ppb)	50	94	70-130
Ethylbenzene	ug/L (ppb)	50	96	70-130
Xylenes	ug/L (ppb)	150	93	70-130
Gasoline	ug/L (ppb)	1,000	100	70-130

Date of Report: 05/21/24
Date Received: 05/10/24
Project: OWSI AS130046, F&BI 405191

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR DISSOLVED METALS USING EPA METHOD 6020B

Laboratory Code: 405182-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Manganese	ug/L (ppb)	20	164	88 b	60 b	75-125	38 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Manganese	ug/L (ppb)	20	95	80-120

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria, biased low; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the standard reporting limit. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

k – The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

405191 ↗ Carmen Tappero @ aspectconsulting.com

SAMPLE CHAIN OF CUSTODY

05/10/24 VW5/K3

Page # _____ of _____

Report To Eric Maise + Carmen Tappero

Company Aspect Consulting

Address 710 2nd Ave #550

City, State, ZIP WA, Seattle, 98104

Phone _____ Email Eric.Maise @ aspectconsulting.com

SAMPLERS (*signature*) Carmen Tappero

PROJECT NAME: OW51

PO #: AS130046

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- ☑ Standard turnaround
- ☐ RUSH _____
- Rush charges authorized by: _____

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other _____
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Sulfate EPA 300.0	Nitrate/Nitrite 352.2	diss. Methane by 175	diss. Mn	Alkalinity	Notes
SW-1-240508	01A-C	5/8/24	0830	W	3		X	X										
MW-5-240508	02A-I		1005		9								X	X	X	X	X	
MW-4-240508	03A-H		1430		9													
MW-3-240508	04A-I		1330		9													
Well #2-240508	05A-C		1220		3													GBTEX only per CT ME 05/13/24 Well#2
MW-18T-240508	06A-I	↓	1540	↓	9		↓	↓					↓	↓	↓	↓	↓	
Trip Blanks	07A-B	—	—	W	2		X	X										
								Samples received at 2										

ANALYSES REQUESTED

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Carmen Tappero	Carmen Tappero	Aspect Consulting	5/9/24	1330
Received by:	ANHPHAN	E&B	05/10/24	10:05
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
Ph. (206) 285-8282

SAMPLE CONDITION UPON RECEIPT CHECKLIST

PROJECT # 405191 CLIENT Asp INITIALS/ DATE: (NP) 05/10/24

If custody seals are present on cooler, are they intact? ☐ NA ☑ YES ☐ NO

Cooler/Sample temperature 2 °C
Thermometer ID: Fluke 96312917

Were samples received on ice/cold packs? ☑ YES ☐ NO

How did samples arrive?
☐ Over the Counter ☐ Picked up by F&BI ☑ FedEx/UPS/GSO

Is there a Chain-of-Custody* (COC)? ☑ YES ☐ NO
*or other representative documents, letters, and/or shipping memos

Number of days samples have been sitting prior to receipt at laboratory 2 days

Are the samples clearly identified? (explain "no" answer below) ☐ YES ☑ NO

Were all sample containers received intact (i.e. not broken, leaking etc.)? (explain "no" answer below) ☑ YES ☐ NO

Were appropriate sample containers used? ☑ YES ☐ NO ☐ Unknown

If custody seals are present on samples, are they intact? ☑ NA ☐ YES ☐ NO

Are samples requiring no headspace, headspace free? ☐ NA ☑ YES ☐ NO

Is the following information provided on the COC, and does it match the sample label?
(explain "no" answer below)

Sample ID's	☑ Yes ☐ No		
Date Sampled	☑ Yes ☐ No		☐ Not on COC/label
Time Sampled	☑ Yes ☐ No		☐ Not on COC/label
# of Containers	☐ Yes ☑ No		☐ Not on COC/label
Relinquished	☑ Yes ☐ No		
Requested analysis	☑ Yes ☐ On Hold		

Other comments (use a separate page if needed)
Sample MW-4-240508, received 8 containers and one 250 ml poly bottle F.F no Sample ID

Air Samples: Were any additional canisters/tubes received? ☑ NA ☐ YES ☐ NO

Number of unused TO15 canisters _____ **Number of unused TO17 tubes** _____

ORIGIN ID:BFIA (561) 995-0900
KIM PEABODY

710 2ND AVENUE
SUITE 550
SEATTLE, WA 98104
UNITED STATES US

SHIP DATE: 09MAY24
ACTWGT: 40.00 LB
CAD: 259316664/INET4535
DIMS: 23x15x14 IN

BILL SENDER

TO **FRIEDMAN & BRUYEA**

5500 4TH AVE S

SEATTLE WA 98108
(206) 838-6591 REF: AS130046
INV: 025
PO: 002 DEPT: 3730

583J3/C137/9AE3

FedEx Express

J242924032901uv

FRI - 10 MAY 10:30A
PRIORITY OVERNIGHT

TRK# 0201 **7763 1473 1132**

98108

85 BFIA

WA-US SEA

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

Friedman & Bruya
Michael Erdahl
5500 4th Ave S
Seattle, WA 98108

RE: 405191, E-191
Work Order Number: 2405207

May 17, 2024

Attention Michael Erdahl:

Fremont Analytical, Inc, an Alliance Technical Group company, received 4 sample(s) on 5/10/2024 for the analyses presented in the following report.

Dissolved Gases by RSK-175
Ion Chromatography by EPA 300.0
Total Alkalinity by SM 2320B
Total Organic Carbon by SM 5310C

All analyses were performed according to our accredited Quality Assurance program. Please contact the laboratory if you should have any questions about the results.

Please note, while the appearance of our logo and branding will update, our commitment to accuracy, speed, and customer service remain values celebrated and shared by Alliance Technical Group. Thank you for the opportunity to serve you.

Sincerely,

Brianna Barnes
Project Manager

DoD-ELAP Accreditation #79636 by PJLA, ISO/IEC 17025:2017 and QSM 5.4 for Environmental Testing
ORELAP Certification: WA 100009 (NELAP Recognized) for Environmental Testing
Washington State Department of Ecology Accredited for Environmental Testing, Lab ID C910

Original

Date: *05/17/2024*

CLIENT: Friedman & Bruya
Project: 405191
Work Order: 2405207

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2405207-001	MW-5-240508	05/08/2024 10:05 AM	05/10/2024 11:45 AM
2405207-002	MW-4-240508	05/08/2024 2:30 PM	05/10/2024 11:45 AM
2405207-003	MW-3-240508	05/08/2024 1:30 PM	05/10/2024 11:45 AM
2405207-004	MW-18T-240508	05/08/2024 3:40 PM	05/10/2024 11:45 AM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Case Narrative

WO#: **2405207**

Date: **5/17/2024**

CLIENT: Friedman & Bruya
Project: 405191

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

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

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

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

Qualifiers:

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

Acronyms:

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

Analytical Report

Work Order: **2405207**
Date Reported: **5/17/2024**

CLIENT: Friedman & Bruya
Project: 405191

Lab ID: 2405207-001 **Collection Date:** 5/8/2024 10:05:00 AM
Client Sample ID: **MW-5-240508** **Matrix:** Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Dissolved Gases by RSK-175				Batch ID: R91779		Analyst: LB
Methane	ND	0.00500		mg/L	1	5/16/2024 12:54:00 PM
Ion Chromatography by EPA 300.0				Batch ID: 43868		Analyst: FG
Nitrate (as N)+Nitrite (as N)	ND	0.400		mg/L	1	5/11/2024 6:49:00 AM
Sulfate	5.33	1.00		mg/L	1	5/11/2024 6:49:00 AM
Total Organic Carbon by SM 5310C				Batch ID: R91680		Analyst: FG
Total Organic Carbon	ND	0.700		mg/L	1	5/15/2024 3:27:00 AM
Total Alkalinity by SM 2320B				Batch ID: R91787		Analyst: NR
Alkalinity, Total (As CaCO3)	113	2.50		mg/L	1	5/16/2024 4:50:02 PM

Lab ID: 2405207-002 **Collection Date:** 5/8/2024 2:30:00 PM
Client Sample ID: **MW-4-240508** **Matrix:** Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Dissolved Gases by RSK-175				Batch ID: R91779		Analyst: LB
Methane	ND	0.00500		mg/L	1	5/16/2024 12:56:00 PM
Ion Chromatography by EPA 300.0				Batch ID: 43868		Analyst: FG
Nitrate (as N)+Nitrite (as N)	ND	0.400		mg/L	1	5/11/2024 7:43:00 AM
Sulfate	8.17	1.00		mg/L	1	5/11/2024 7:43:00 AM
Total Organic Carbon by SM 5310C				Batch ID: R91680		Analyst: FG
Total Organic Carbon	ND	0.700		mg/L	1	5/15/2024 5:10:00 AM
Total Alkalinity by SM 2320B				Batch ID: R91787		Analyst: NR
Alkalinity, Total (As CaCO3)	99.1	2.50		mg/L	1	5/16/2024 4:50:02 PM

CLIENT: Friedman & Bruya
Project: 405191

Lab ID: 2405207-003 **Collection Date:** 5/8/2024 1:30:00 PM
Client Sample ID: **MW-3-240508** **Matrix:** Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Dissolved Gases by RSK-175				Batch ID: R91779		Analyst: LB
Methane	ND	0.00500		mg/L	1	5/16/2024 12:58:00 PM
Ion Chromatography by EPA 300.0				Batch ID: 43868		Analyst: FG
Nitrate (as N)+Nitrite (as N)	1.12	0.400		mg/L	1	5/11/2024 9:00:00 AM
Sulfate	17.4	1.00		mg/L	1	5/14/2024 3:55:00 AM
Total Organic Carbon by SM 5310C				Batch ID: R91680		Analyst: FG
Total Organic Carbon	0.719	0.700		mg/L	1	5/15/2024 5:32:00 AM
Total Alkalinity by SM 2320B				Batch ID: R91787		Analyst: NR
Alkalinity, Total (As CaCO3)	186	2.50		mg/L	1	5/16/2024 4:50:02 PM

Lab ID: 2405207-004 **Collection Date:** 5/8/2024 3:40:00 PM
Client Sample ID: **MW-18T-240508** **Matrix:** Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Dissolved Gases by RSK-175				Batch ID: R91779		Analyst: LB
Methane	ND	0.00500		mg/L	1	5/16/2024 1:08:00 PM
Ion Chromatography by EPA 300.0				Batch ID: 43868		Analyst: FG
Nitrate (as N)+Nitrite (as N)	ND	0.400		mg/L	1	5/11/2024 9:26:00 AM
Sulfate	8.20	1.00		mg/L	1	5/11/2024 9:26:00 AM
Total Organic Carbon by SM 5310C				Batch ID: R91680		Analyst: FG
Total Organic Carbon	0.939	0.700		mg/L	1	5/15/2024 5:53:00 AM
Total Alkalinity by SM 2320B				Batch ID: R91787		Analyst: NR
Alkalinity, Total (As CaCO3)	145	2.50		mg/L	1	5/16/2024 4:50:02 PM

Work Order: 2405207
CLIENT: Friedman & Bruya
Project: 405191

QC SUMMARY REPORT

Total Alkalinity by SM 2320B

Sample ID: **MB-R91787**	SampType: **MBLK**	Units: **mg/L**	Prep Date: **5/16/2024**	RunNo: **91787**
Client ID: **MBLKW**	Batch ID: **R91787**		Analysis Date: **5/16/2024**	SeqNo: **1914978**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	ND	2.50									

Sample ID: **LCS-R91787**	SampType: **LCS**	Units: **mg/L**	Prep Date: **5/16/2024**	RunNo: **91787**
Client ID: **LCSW**	Batch ID: **R91787**		Analysis Date: **5/16/2024**	SeqNo: **1914979**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	106	2.50	100.0	0	106	89.7	129.7				

Sample ID: **2405207-001ADUP**	SampType: **DUP**	Units: **mg/L**	Prep Date: **5/16/2024**	RunNo: **91787**
Client ID: **MW-5-240508**	Batch ID: **R91787**		Analysis Date: **5/16/2024**	SeqNo: **1914981**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	112	2.50						112.9	1.07	20	

Work Order: 2405207
CLIENT: Friedman & Bruya
Project: 405191

QC SUMMARY REPORT

Ion Chromatography by EPA 300.0

Sample ID: **LCS-43868** SampType: **LCS** Units: **mg/L** Prep Date: **5/10/2024** RunNo: **91620**
Client ID: **LCSW** Batch ID: **43868** Analysis Date: **5/10/2024** SeqNo: **1911131**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as N)+Nitrite (as N)	1.48	0.400	1.500	0	98.5	90	110				
Sulfate	3.55	1.00	3.750	0	94.7	90	110				

Sample ID: **MB-43868** SampType: **MBLK** Units: **mg/L** Prep Date: **5/10/2024** RunNo: **91620**
Client ID: **MBLKW** Batch ID: **43868** Analysis Date: **5/10/2024** SeqNo: **1911133**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as N)+Nitrite (as N)	ND	0.400									
Sulfate	ND	1.00									

Sample ID: **2405211-003BDUP** SampType: **DUP** Units: **mg/L** Prep Date: **5/10/2024** RunNo: **91620**
Client ID: **BATCH** Batch ID: **43868** Analysis Date: **5/11/2024** SeqNo: **1911142**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as N)+Nitrite (as N)	ND	0.400						0		20	
Sulfate	6.94	1.00						6.912	0.447	20	

Sample ID: **2405211-003BMS** SampType: **MS** Units: **mg/L** Prep Date: **5/10/2024** RunNo: **91620**
Client ID: **BATCH** Batch ID: **43868** Analysis Date: **5/11/2024** SeqNo: **1911143**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as N)+Nitrite (as N)	1.48	0.400	1.500	0	98.7	80	120				
Sulfate	10.7	1.00	3.750	6.912	102	80	120				

Sample ID: **LCS-43905** SampType: **LCS** Units: **mg/L** Prep Date: **5/13/2024** RunNo: **91669**
Client ID: **LCSW** Batch ID: **43905** Analysis Date: **5/13/2024** SeqNo: **1912049**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	3.54	1.00	3.750	0	94.4	90	110				

Work Order: 2405207
CLIENT: Friedman & Bruya
Project: 405191

QC SUMMARY REPORT

Ion Chromatography by EPA 300.0

Sample ID: **MB-43905**	SampType: **MBLK**	Units: **mg/L**	Prep Date: **5/13/2024**	RunNo: **91669**
Client ID: **MBLKW**	Batch ID: **43905**		Analysis Date: **5/13/2024**	SeqNo: **1912051**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	ND	1.00									

Sample ID: **2405118-001BDUP**	SampType: **DUP**	Units: **mg/L**	Prep Date: **5/13/2024**	RunNo: **91669**
Client ID: **BATCH**	Batch ID: **43905**		Analysis Date: **5/13/2024**	SeqNo: **1912057**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	13.1	1.00						13.28	1.14	20	

Sample ID: **2405118-001BMS**	SampType: **MS**	Units: **mg/L**	Prep Date: **5/13/2024**	RunNo: **91669**
Client ID: **BATCH**	Batch ID: **43905**		Analysis Date: **5/13/2024**	SeqNo: **1912058**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	17.1	1.00	3.750	13.28	102	80	120				

Sample ID: **2405118-001BMSD**	SampType: **MSD**	Units: **mg/L**	Prep Date: **5/13/2024**	RunNo: **91669**
Client ID: **BATCH**	Batch ID: **43905**		Analysis Date: **5/13/2024**	SeqNo: **1912059**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	16.9	1.00	3.750	13.28	95.2	80	120	17.10	1.46	20	

Sample ID: **2405200-002CDUP**	SampType: **DUP**	Units: **mg/L**	Prep Date: **5/13/2024**	RunNo: **91669**
Client ID: **BATCH**	Batch ID: **43905**		Analysis Date: **5/14/2024**	SeqNo: **1912068**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	5.69	1.00						5.716	0.456	20	

Work Order: 2405207
CLIENT: Friedman & Bruya
Project: 405191

QC SUMMARY REPORT

Ion Chromatography by EPA 300.0

Sample ID: **2405200-002CMS** SampType: **MS** Units: **mg/L** Prep Date: **5/13/2024** RunNo: **91669**
Client ID: **BATCH** Batch ID: **43905** Analysis Date: **5/14/2024** SeqNo: **1912069**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	9.26	1.00	3.750	5.716	94.5	80	120				

Work Order: 2405207
CLIENT: Friedman & Bruya
Project: 405191

QC SUMMARY REPORT

Total Organic Carbon by SM 5310C

Sample ID: **MB-91680**	SampType: **MBLK**	Units: **mg/L**	Prep Date: **5/14/2024**	RunNo: **91680**
Client ID: **MBLKW**	Batch ID: **R91680**		Analysis Date: **5/14/2024**	SeqNo: **1912582**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	ND	0.700									

Sample ID: **LCS-91680**	SampType: **LCS**	Units: **mg/L**	Prep Date: **5/14/2024**	RunNo: **91680**
Client ID: **LCSW**	Batch ID: **R91680**		Analysis Date: **5/14/2024**	SeqNo: **1912583**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	4.94	0.700	5.000	0	98.7	90.6	119				

Sample ID: **2405160-001BDUP**	SampType: **DUP**	Units: **mg/L**	Prep Date: **5/14/2024**	RunNo: **91680**
Client ID: **BATCH**	Batch ID: **R91680**		Analysis Date: **5/14/2024**	SeqNo: **1912585**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	1.46	0.700						1.466	0.616	20	

Sample ID: **2405160-001BMS**	SampType: **MS**	Units: **mg/L**	Prep Date: **5/14/2024**	RunNo: **91680**
Client ID: **BATCH**	Batch ID: **R91680**		Analysis Date: **5/14/2024**	SeqNo: **1912586**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	6.65	0.700	5.000	1.466	104	74.4	117				

Sample ID: **2405160-001BMSD**	SampType: **MSD**	Units: **mg/L**	Prep Date: **5/14/2024**	RunNo: **91680**
Client ID: **BATCH**	Batch ID: **R91680**		Analysis Date: **5/14/2024**	SeqNo: **1912587**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	6.29	0.700	5.000	1.466	96.5	74.4	117	6.654	5.64	30	

Work Order: 2405207
CLIENT: Friedman & Bruya
Project: 405191

QC SUMMARY REPORT

Total Organic Carbon by SM 5310C

Sample ID: **2405211-001DDUP** SampType: **DUP** Units: **mg/L** Prep Date: **5/15/2024** RunNo: **91680**
Client ID: **BATCH** Batch ID: **R91680** Analysis Date: **5/15/2024** SeqNo: **1912600**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	2.80	0.700						2.807	0.428	20	

Sample ID: **2405211-001DMS** SampType: **MS** Units: **mg/L** Prep Date: **5/15/2024** RunNo: **91680**
Client ID: **BATCH** Batch ID: **R91680** Analysis Date: **5/15/2024** SeqNo: **1912601**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	7.53	0.700	5.000	2.807	94.4	74.4	117				

Work Order: 2405207
CLIENT: Friedman & Bruya
Project: 405191

QC SUMMARY REPORT

Dissolved Gases by RSK-175

Sample ID: **LCS-R91779**	SampType: **LCS**	Units: **ppmv**	Prep Date: **5/16/2024**	RunNo: **91779**
Client ID: **LCSW**	Batch ID: **R91779**		Analysis Date: **5/16/2024**	SeqNo: **1914871**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methane	935	0.00500	1,000	0	93.5	73.6	124				

Sample ID: **MB-R91779**	SampType: **MBLK**	Units: **mg/L**	Prep Date: **5/16/2024**	RunNo: **91779**
Client ID: **MBLKW**	Batch ID: **R91779**		Analysis Date: **5/16/2024**	SeqNo: **1914874**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methane	ND	0.00500									

Sample ID: **2405200-001AREP**	SampType: **REP**	Units: **mg/L**	Prep Date: **5/16/2024**	RunNo: **91779**
Client ID: **BATCH**	Batch ID: **R91779**		Analysis Date: **5/16/2024**	SeqNo: **1914853**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methane	0.00855	0.00500						0.008822	3.12	30	

Sample Log-In Check List

Client Name:	FB	Work Order Number:	2405207
Logged by:	Morgan Wilson	Date Received:	5/10/2024 11:45:00 AM

Chain of Custody

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

Log In

3.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes ☐	No ☐	Not Present ☑
4.	Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5.	Were all items received at a temperature of >2°C to 6°C *	Yes ☑	No ☐	NA ☐
6.	Sample(s) in proper container(s)?	Yes ☑	No ☐	
7.	Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8.	Are samples properly preserved?	Yes ☑	No ☐	
9.	Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10.	Is there headspace in the VOA vials?	Yes ☐	No ☑	NA ☐
11.	Did all samples containers arrive in good condition(unbroken)?	Yes ☑	No ☐	
12.	Does paperwork match bottle labels?	Yes ☑	No ☐	
13.	Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14.	Is it clear what analyses were requested?	Yes ☑	No ☐	
15.	Were all hold times (except field parameters, pH e.g.) able to be met?	Yes ☑	No ☐	

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☑ No ☐ NA ☐

Person Notified:	Michael Erdahl	Date:	5/10/2024
By Whom:	Morgan Wilson	Via:	☑ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:	Nitrate/Nitrite Method		
Client Instructions:	Okay to proceed with 300		

17. Additional remarks:

Item Information

Item #	Temp ºC
Sample	5.9

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

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2405207

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 5500 4th Ave S

City, State, ZIP Seattle, WA 98108

Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER Fremont	
PROJECT NAME/NO. 405191	PO # E-191
REMARKS Aspect EDD	

Page # 1 of 1

TURNAROUND TIME
☒ Standard TAT
RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

						ANALYSES REQUESTED										
Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	Sulfate	Nitrate/Nitrite 352.2	RSK Methane	Alkalinity	TOC	Nitrate	Nitrite	Sulfate	Chloride		Notes
MW-5-240508		5/8/2024	1005	water		x	x	x	x	x						
MW-4-240508		5/8/2024	1430	water		x	x	x	x	x						
MW-3-240508		5/8/2024	1330	water		x	x	x	x	x						
~~Well#2-240508~~		~~5/8/2024~~	~~1220~~	water		~~x~~	~~x~~	~~x~~	~~x~~	~~x~~						No, ME
MW-18T-240508		5/8/2024	1540	water		x	x	x	x	x						

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Michael Erdahl	Friedman & Bruya	5/10/24	1012
Received by:		Nathan Kaffle	ATG	5/10/24	1145
Relinquished by:					
Received by:					

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Ave South
Seattle, WA 98108-2419
(206) 285-8282
office@friedmanandbruya.com
www.friedmanandbruya.com

May 23, 2024

Eric Maise, Project Manager
Aspect Consulting
710 2nd Ave S, Suite 550
Seattle, WA 98104

Dear Mr Maise:

Included are the results from the testing of material submitted on May 14, 2024 from the OWSI AS130046, F&BI 405236 project. There are 8 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Aspect Data, Carmen Tappero
ASP0523R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on May 14, 2024 by Friedman & Bruya, Inc. from the Aspect Consulting OWSI AS130046, F&BI 405236 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting
405236 -01	Well #18-240510
405236 -02	MW-1-240510
405236 -03	MW-2-240510
405236 -04	MW-X-240510
405236 -05	EB-240510
405236 -06	Trip Blank

Samples MW-1-240510 and MW-2-240510 were sent to Alliance for sulfate, nitrate, nitrite, alkalinity, and RSK-175 analyses. The report is enclosed.

All quality control requirements were acceptable.

Date of Report: 05/23/24
Date Received: 05/14/24
Project: OWSI AS130046, F&BI 405236
Date Extracted: 05/16/24
Date Analyzed: 05/16/24

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
Well #18-240510 405236-01	<1	2.1	<1	<3	<100	89
MW-1-240510 405236-02 1/10	84	53	250	50	3,000	96
MW-2-240510 405236-03 1/10	38	21	96	<30	1,200	91
MW-X-240510 405236-04 1/10	93	52	240	49	3,000	95
EB-240510 405236-05	<1	<1	<1	<3	<100	91
Trip Blank 405236-06	<1	<1	<1	<3	<100	93
Method Blank 04-895 MB	<1	<1	<1	<3	<100	91

Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	MW-1-240510	Client:	Aspect Consulting
Date Received:	05/14/24	Project:	OWSI AS130046, F&BI 405236
Date Extracted:	05/15/24	Lab ID:	405236-02
Date Analyzed:	05/16/24	Data File:	405236-02.257
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Manganese	710

Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	MW-2-240510	Client:	Aspect Consulting
Date Received:	05/14/24	Project:	OWSI AS130046, F&BI 405236
Date Extracted:	05/15/24	Lab ID:	405236-03
Date Analyzed:	05/16/24	Data File:	405236-03.263
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Manganese	270

Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Aspect Consulting
Date Received:	NA	Project:	OWSI AS130046, F&BI 405236
Date Extracted:	05/15/24	Lab ID:	I4-397 mb
Date Analyzed:	05/15/24	Data File:	I4-397 mb.130
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Manganese	<1

Date of Report: 05/23/24
Date Received: 05/14/24
Project: OWSI AS130046, F&BI 405236

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 405236-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	2.1	2.1	0
Ethylbenzene	ug/L (ppb)	<1	<1	nm
Xylenes	ug/L (ppb)	<3	<3	nm
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/L (ppb)	50	98	70-130
Toluene	ug/L (ppb)	50	94	70-130
Ethylbenzene	ug/L (ppb)	50	98	70-130
Xylenes	ug/L (ppb)	150	87	70-130
Gasoline	ug/L (ppb)	1,000	91	70-130

Date of Report: 05/23/24
Date Received: 05/14/24
Project: OWSI AS130046, F&BI 405236

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR DISSOLVED METALS USING EPA METHOD 6020B

Laboratory Code: 405241-03 x10 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Manganese	ug/L (ppb)	20	2,060	532 b	1040 b	75-125	65 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Manganese	ug/L (ppb)	20	97	80-120

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria, biased low; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the standard reporting limit. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

k – The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

Carmen.Tappero@aspectconsulting.com

405236

SAMPLE CHAIN OF CUSTODY

05/14/24 K2/VW2

Page # 1 of 1

Report To Eric Maise & Carmen Tappero

Company Aspect

Address

City, State, ZIP

Phone Email Eric.Maise@aspectconsulting.com

SAMPLERS (signature)

PROJECT NAME: OW51

PO #: AS130046

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- ☑ Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Sulfates 300.00	Nitrate/Nitrite 352.2	dissolved CH4 m 175	Diss. Mn	Alkalinity	Notes
Well #18-240510	01A-F	5/10/24	0835	W	3		X	X										
MW-1-240510	02A-I		1230		9		X	X					X	X	X	X	X	
MW-2-240510	03 ↓		1125		9		X	X					X	X	X	X	X	
MW-X-240510	04 A-C		0700		3		X	X										
EB-240510	05 ↓	↓	0900	↓	3		X	X										
Trip Blank	06 A-B	—	—	W	2		X	X										
							Samples received at 2 °C											

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Carmen Tappero	Aspect	5/13/24	1330
Received by:	ANH PHAN	FSB	05/14/24	08:51
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
Ph. (206) 285-8282

SAMPLE CONDITION UPON RECEIPT CHECKLIST

PROJECT # 405236 CLIENT ASP INITIALS/ DATE: AP 05/14/24

If custody seals are present on cooler, are they intact? ☒ NA (AP) ☒ YES ☐ NO

Cooler/Sample temperature 2 °C
Thermometer ID: Fluke 96312917

Were samples received on ice/cold packs? ☒ YES ☐ NO

How did samples arrive?
☐ Over the Counter ☐ Picked up by F&BI ☒ FedEx/UPS/GSO

Is there a Chain-of-Custody* (COC)? ☒ YES ☐ NO
*or other representative documents, letters, and/or shipping memos

Number of days samples have been sitting prior to receipt at laboratory 4 days

Are the samples clearly identified? (explain "no" answer below) ☒ YES ☐ NO

Were all sample containers received intact (i.e. not broken, leaking etc.)? (explain "no" answer below) ☒ YES ☐ NO

Were appropriate sample containers used? ☒ YES ☐ NO ☐ Unknown

If custody seals are present on samples, are they intact? ☒ NA ☐ YES ☐ NO

Are samples requiring no headspace, headspace free? ☐ NA ☒ YES ☐ NO

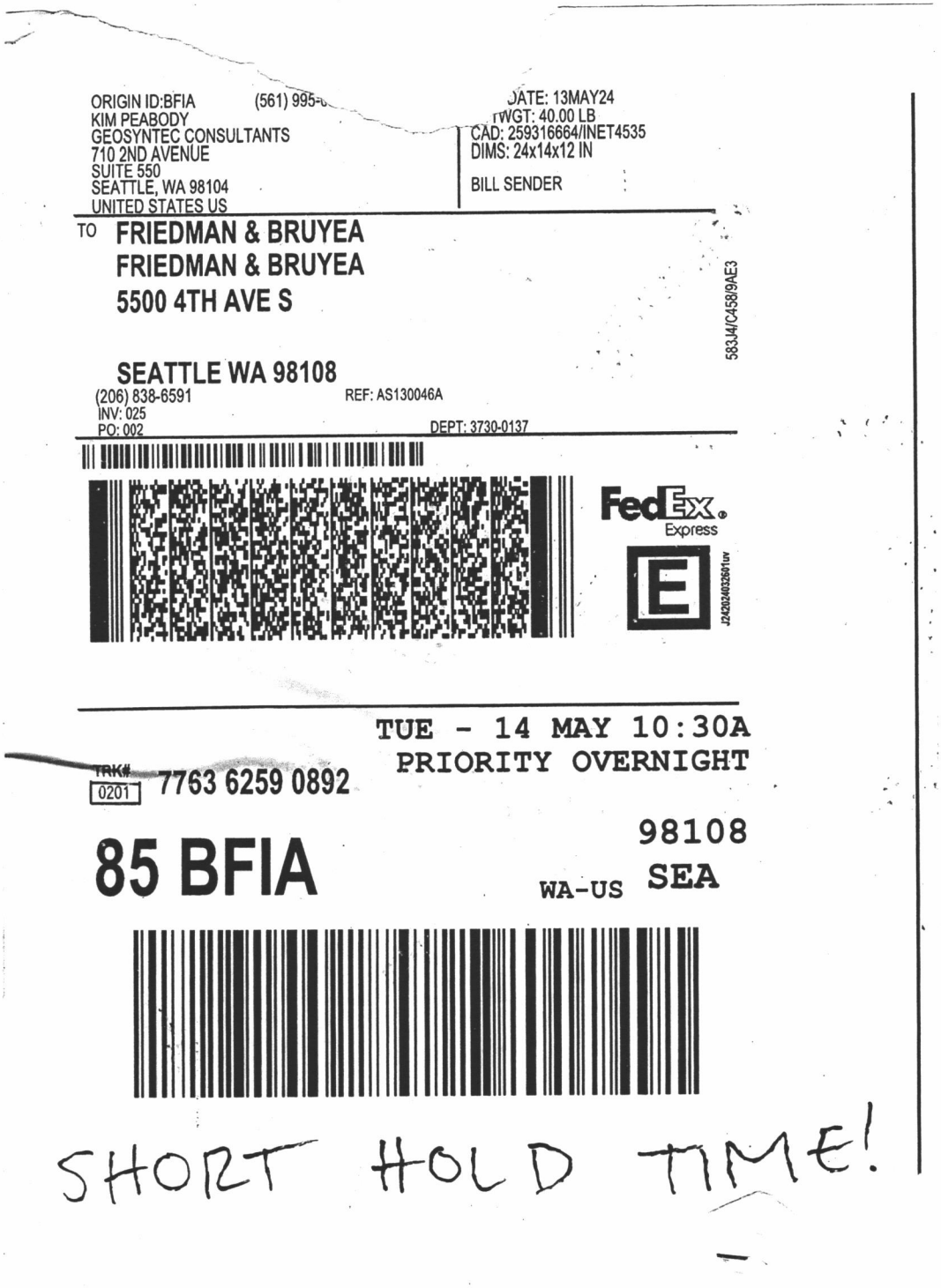
Is the following information provided on the COC, and does it match the sample label?
(explain "no" answer below)

Sample ID's	☒ Yes ☐ No		
Date Sampled	☒ Yes ☐ No		☐ Not on COC/label
Time Sampled	☒ Yes ☐ No		☐ Not on COC/label
# of Containers	☐ Yes ☒ No	Received 6 samples at lab for ID-01	☐ Not on COC/label
Relinquished	☒ Yes ☐ No		
Requested analysis	☒ Yes ☐ On Hold		

Other comments (use a separate page if needed)

Air Samples: Were any additional canisters/tubes received? ☒ NA ☐ YES ☐ NO

Number of unused TO15 canisters _____ **Number of unused TO17 tubes** _____



ORIGIN ID:BFIA (561) 995-
KIM PEABODY
GEOSYNTEC CONSULTANTS
710 2ND AVENUE
SUITE 550
SEATTLE, WA 98104
UNITED STATES US

DATE: 13MAY24
WGT: 40.00 LB
CAD: 259316664/INET4535
DIMS: 24x14x12 IN

BILL SENDER

TO FRIEDMAN & BRUYEA
FRIEDMAN & BRUYEA
5500 4TH AVE S

SEATTLE WA 98108
(206) 838-6591 REF: AS130046A
INV: 025
PO: 002 DEPT: 3730-0137

583J4/C458/9AE3

FedEx Express

J242024032501uv

TUE - 14 MAY 10:30A
PRIORITY OVERNIGHT

TRK# 0201 7763 6259 0892

98108
85 BFIA WA-US SEA

SHORT HOLD TIME!

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

Friedman & Bruya
Michael Erdahl
5500 4th Ave S
Seattle, WA 98108

RE: 405236, E-196
Work Order Number: 2405260

May 22, 2024

Attention Michael Erdahl:

Fremont Analytical, Inc, an Alliance Technical Group company, received 2 sample(s) on 5/14/2024 for the analyses presented in the following report.

Dissolved Gases by RSK-175
Ion Chromatography by EPA 300.0
Total Alkalinity by SM 2320B

All analyses were performed according to our accredited Quality Assurance program. Please contact the laboratory if you should have any questions about the results.

Please note, while the appearance of our logo and branding will update, our commitment to accuracy, speed, and customer service remain values celebrated and shared by Alliance Technical Group. Thank you for the opportunity to serve you.

Sincerely,

Brianna Barnes
Project Manager

Date: *05/22/2024*

CLIENT: Friedman & Bruya
Project: 405236
Work Order: 2405260

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2405260-001	MW-1-240510	05/10/2024 12:30 PM	05/14/2024 2:47 PM
2405260-002	MW-2-240510	05/10/2024 11:25 AM	05/14/2024 2:47 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Original

Case Narrative

WO#: **2405260**

Date: **5/22/2024**

CLIENT: Friedman & Bruya
Project: 405236

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

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

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

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

Qualifiers:

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

Acronyms:

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

Analytical Report

Work Order: **2405260**
Date Reported: **5/22/2024**

CLIENT: Friedman & Bruya
Project: 405236

Lab ID: 2405260-001 **Collection Date:** 5/10/2024 12:30:00 PM
Client Sample ID: **MW-1-240510** **Matrix:** Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Dissolved Gases by RSK-175				Batch ID: R91875		Analyst: CO
Methane	0.0652	0.00500		mg/L	1	5/20/2024 4:49:00 PM
Ethene	ND	0.0100		mg/L	1	5/20/2024 4:49:00 PM
Ethane	ND	0.0100		mg/L	1	5/20/2024 4:49:00 PM
Ion Chromatography by EPA 300.0				Batch ID: 43920		Analyst: FG
Nitrate (as N)+Nitrite (as N)	ND	0.400		mg/L	1	5/16/2024 3:27:00 AM
Sulfate	ND	1.00		mg/L	1	5/16/2024 3:27:00 AM
Total Alkalinity by SM 2320B				Batch ID: R91787		Analyst: NR
Alkalinity, Total (As CaCO3)	267	2.50		mg/L	1	5/16/2024 4:50:02 PM

Lab ID: 2405260-002 **Collection Date:** 5/10/2024 11:25:00 AM
Client Sample ID: **MW-2-240510** **Matrix:** Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Dissolved Gases by RSK-175				Batch ID: R91875		Analyst: CO
Methane	ND	0.00500		mg/L	1	5/20/2024 5:13:00 PM
Ethene	ND	0.0100		mg/L	1	5/20/2024 5:13:00 PM
Ethane	ND	0.0100		mg/L	1	5/20/2024 5:13:00 PM
Ion Chromatography by EPA 300.0				Batch ID: 43920		Analyst: FG
Nitrate (as N)+Nitrite (as N)	ND	0.400		mg/L	1	5/16/2024 4:36:00 AM
Sulfate	13.3	1.00		mg/L	1	5/20/2024 8:27:00 PM
Total Alkalinity by SM 2320B				Batch ID: R91787		Analyst: NR
Alkalinity, Total (As CaCO3)	313	2.50		mg/L	1	5/16/2024 4:50:02 PM

Work Order: 2405260
CLIENT: Friedman & Bruya
Project: 405236

QC SUMMARY REPORT

Total Alkalinity by SM 2320B

Sample ID: **MB-R91787**	SampType: **MBLK**	Units: **mg/L**	Prep Date: **5/16/2024**	RunNo: **91787**
Client ID: **MBLKW**	Batch ID: **R91787**		Analysis Date: **5/16/2024**	SeqNo: **1914978**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	ND	2.50									

Sample ID: **LCS-R91787**	SampType: **LCS**	Units: **mg/L**	Prep Date: **5/16/2024**	RunNo: **91787**
Client ID: **LCSW**	Batch ID: **R91787**		Analysis Date: **5/16/2024**	SeqNo: **1914979**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	106	2.50	100.0	0	106	89.7	129.7				

Sample ID: **2405207-001ADUP**	SampType: **DUP**	Units: **mg/L**	Prep Date: **5/16/2024**	RunNo: **91787**
Client ID: **BATCH**	Batch ID: **R91787**		Analysis Date: **5/16/2024**	SeqNo: **1914981**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	112	2.50						112.9	1.07	20	

Work Order: 2405260
CLIENT: Friedman & Bruya
Project: 405236

QC SUMMARY REPORT

Ion Chromatography by EPA 300.0

Sample ID: **LCS-43920** SampType: **LCS** Units: **mg/L** Prep Date: **5/15/2024** RunNo: **91753**
Client ID: **LCSW** Batch ID: **43920** Analysis Date: **5/15/2024** SeqNo: **1913864**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as N)+Nitrite (as N)	1.43	0.400	1.500	0	95.3	90	110				
Sulfate	3.55	1.00	3.750	0	94.7	90	110				

Sample ID: **MB-43920** SampType: **MBLK** Units: **mg/L** Prep Date: **5/15/2024** RunNo: **91753**
Client ID: **MBLKW** Batch ID: **43920** Analysis Date: **5/15/2024** SeqNo: **1913866**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as N)+Nitrite (as N)	ND	0.400									
Sulfate	ND	1.00									

Sample ID: **2405239-001BDUP** SampType: **DUP** Units: **mg/L** Prep Date: **5/15/2024** RunNo: **91753**
Client ID: **BATCH** Batch ID: **43920** Analysis Date: **5/16/2024** SeqNo: **1913894**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as N)+Nitrite (as N)	ND	0.400						0		20	
Sulfate	22.3	1.00						22.20	0.274	20	

Sample ID: **2405239-001BMS** SampType: **MS** Units: **mg/L** Prep Date: **5/15/2024** RunNo: **91753**
Client ID: **BATCH** Batch ID: **43920** Analysis Date: **5/16/2024** SeqNo: **1913895**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as N)+Nitrite (as N)	1.15	0.400	1.500	0	76.7	80	120				S
Sulfate	25.6	1.00	3.750	22.20	89.4	80	120				

NOTES:
S - Outlying spike recovery(ies) observed. A duplicate analysis was performed with similar results indicating a possible matrix effect.

Sample ID: **2405239-001BMSD** SampType: **MSD** Units: **mg/L** Prep Date: **5/15/2024** RunNo: **91753**
Client ID: **BATCH** Batch ID: **43920** Analysis Date: **5/16/2024** SeqNo: **1913896**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as N)+Nitrite (as N)	1.08	0.400	1.500	0	71.9	80	120	1.151	6.55	20	S

Work Order: 2405260
CLIENT: Friedman & Bruya
Project: 405236

QC SUMMARY REPORT

Ion Chromatography by EPA 300.0

Sample ID: **2405239-001BMSD** SampType: **MSD** Units: **mg/L** Prep Date: **5/15/2024** RunNo: **91753**
Client ID: **BATCH** Batch ID: **43920** Analysis Date: **5/16/2024** SeqNo: **1913896**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	25.6	1.00	3.750	22.20	91.1	80	120	25.55	0.246	20	

NOTES:
S - Outlying spike recovery(ies) observed. A duplicate analysis was performed with similar results indicating a possible matrix effect.

Sample ID: **LCS-43971** SampType: **LCS** Units: **mg/L** Prep Date: **5/20/2024** RunNo: **91835**
Client ID: **LCSW** Batch ID: **43971** Analysis Date: **5/20/2024** SeqNo: **1915956**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as N)+Nitrite (as N)	1.45	0.400	1.500	0	96.5	90	110				
Sulfate	3.60	1.00	3.750	0	96.1	90	110				

Sample ID: **MB-43971** SampType: **MBLK** Units: **mg/L** Prep Date: **5/20/2024** RunNo: **91835**
Client ID: **MBLKW** Batch ID: **43971** Analysis Date: **5/20/2024** SeqNo: **1915958**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as N)+Nitrite (as N)	ND	0.400									
Sulfate	ND	1.00									

Sample ID: **2405335-001ADUP** SampType: **DUP** Units: **mg/L** Prep Date: **5/20/2024** RunNo: **91835**
Client ID: **BATCH** Batch ID: **43971** Analysis Date: **5/21/2024** SeqNo: **1916592**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as N)+Nitrite (as N)	ND	0.400						0		20	
Sulfate	20.0	1.00						19.88	0.577	20	

Sample ID: **2405335-001AMS** SampType: **MS** Units: **mg/L** Prep Date: **5/20/2024** RunNo: **91835**
Client ID: **BATCH** Batch ID: **43971** Analysis Date: **5/21/2024** SeqNo: **1916593**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as N)+Nitrite (as N)	1.47	0.400	1.500	0	98.0	80	120				
Sulfate	23.4	1.00	3.750	19.88	94.4	80	120				

Work Order: 2405260
CLIENT: Friedman & Bruya
Project: 405236

QC SUMMARY REPORT

Ion Chromatography by EPA 300.0

Sample ID: **2405335-001AMS** SampType: **MS** Units: **mg/L** Prep Date: **5/20/2024** RunNo: **91835**
Client ID: **BATCH** Batch ID: **43971** Analysis Date: **5/21/2024** SeqNo: **1916593**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID: **2405335-001AMSD** SampType: **MSD** Units: **mg/L** Prep Date: **5/20/2024** RunNo: **91835**
Client ID: **BATCH** Batch ID: **43971** Analysis Date: **5/21/2024** SeqNo: **1916594**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as N)+Nitrite (as N)	1.46	0.400	1.500	0	97.1	80	120	1.470	0.957	20	
Sulfate	23.4	1.00	3.750	19.88	94.3	80	120	23.42	0.0171	20	

Sample ID: **2405287-006ADUP** SampType: **DUP** Units: **mg/L** Prep Date: **5/20/2024** RunNo: **91835**
Client ID: **BATCH** Batch ID: **43971** Analysis Date: **5/21/2024** SeqNo: **1916598**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as N)+Nitrite (as N)	1.76	0.400						1.843	4.61	20	
Sulfate	9.66	1.00						10.08	4.27	20	

Sample ID: **2405287-006AMS** SampType: **MS** Units: **mg/L** Prep Date: **5/20/2024** RunNo: **91835**
Client ID: **BATCH** Batch ID: **43971** Analysis Date: **5/21/2024** SeqNo: **1916599**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as N)+Nitrite (as N)	3.28	0.400	1.500	1.843	95.9	80	120				
Sulfate	13.6	1.00	3.750	10.08	94.4	80	120				

Work Order: 2405260
CLIENT: Friedman & Bruya
Project: 405236

QC SUMMARY REPORT

Dissolved Gases by RSK-175

Sample ID: **LCS-R91875** SampType: **LCS** Units: **ppmv** Prep Date: **5/20/2024** RunNo: **91875**
Client ID: **LCSW** Batch ID: **R91875** Analysis Date: **5/20/2024** SeqNo: **1916889**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methane	925	0.00500	1,000	0	92.5	73.6	124				
Ethene	890	0.0100	1,000	0	89.0	76.3	122				
Ethane	889	0.0100	1,000	0	88.9	76.1	123				

Sample ID: **2405260-001BREP** SampType: **REP** Units: **mg/L** Prep Date: **5/20/2024** RunNo: **91875**
Client ID: **MW-1-240510** Batch ID: **R91875** Analysis Date: **5/20/2024** SeqNo: **1916876**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methane	0.0676	0.00500						0.06523	3.56	30	
Ethene	ND	0.0100						0		30	
Ethane	ND	0.0100						0		30	

Sample ID: **MB-R91875** SampType: **MBLK** Units: **mg/L** Prep Date: **5/20/2024** RunNo: **91875**
Client ID: **MBLKW** Batch ID: **R91875** Analysis Date: **5/20/2024** SeqNo: **1916886**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methane	ND	0.00500									
Ethene	ND	0.0100									
Ethane	ND	0.0100									

Sample Log-In Check List

Client Name:	FB	Work Order Number:	2405260
Logged by:	Morgan Wilson	Date Received:	5/14/2024 2:47:00 PM

Chain of Custody

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

Log In

3.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes ☐	No ☐	Not Present ☑
4.	Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5.	Were all items received at a temperature of >2°C to 6°C *	Yes ☑	No ☐	NA ☐
6.	Sample(s) in proper container(s)?	Yes ☑	No ☐	
7.	Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8.	Are samples properly preserved?	Yes ☑	No ☐	
9.	Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10.	Is there headspace in the VOA vials?	Yes ☐	No ☑	NA ☐
11.	Did all samples containers arrive in good condition(unbroken)?	Yes ☑	No ☐	
12.	Does paperwork match bottle labels?	Yes ☑	No ☐	
13.	Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14.	Is it clear what analyses were requested?	Yes ☑	No ☐	
15.	Were all hold times (except field parameters, pH e.g.) able to be met?	Yes ☑	No ☐	

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified:		Date:	
By Whom:		Via:	☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:			
Client Instructions:			

17. Additional remarks:

Item Information

Item #	Temp ºC
Sample	2.0

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

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2405260

Send Report To Michael Erdahl
Company Friedman and Bruya, Inc.
Address 5500 4th Ave S
City, State, ZIP Seattle, WA 98108
Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER	
Fremont	
PROJECT NAME/NO.	PO #
405236	E-196
REMARKS	
Aspect EDD	

TURNAROUND TIME
☒ Standard TAT
RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

						ANALYSES REQUESTED										
Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	Sulfate	Nitrate+Nitrite	RSK Methane	Alkalinity							Notes
MW-1-240510		5/10/2024	1230	water		x	x	x	x							
MW-2-240510		5/10/2024	1125	water		x	x	x	x							

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Michael Erdahl	Friedman & Bruya	5/14/24	0909
Received by:		G Hein-Gipson	AT G	5/14/24	14:47
Relinquished by:					
Received by:					

APPENDIX B

Plume Stability Analyses

Module1: Mann-Kendall Trend Test for Plume Stability (Non-parametric Statistical Test)

Site Name:	*Olympic Water & Sewer, Inc. Site*
Site Address:	*781 Walker Way, Port Ludlow, WA*
Additional Description:	

Well (Sampling) Location?	**MW-1**
Level of Confidence (Decision Criteria)?	**85%**

1. Monitoring Well Information: Contaminant Concentration at a well: Quarterly sampling recommended.

		Hazardous Substances (unit is ug/L)					
Sampling Event	Date Sampled	Benzene	TPHg				
#1	7/11/2019	180	4000				
#2	11/8/2019	180	3600				
#3	2/11/2020	200	3900				
#4	5/28/2020	190	4300				
#5	11/4/2021	130	3700				
#6	5/3/2022	120	3900				
#7	5/10/2023	140	4,100				
#8	5/10/2024	84	3000				
#9							
#10							
#11							
#12							
#13							
#14							
#15							
#16							

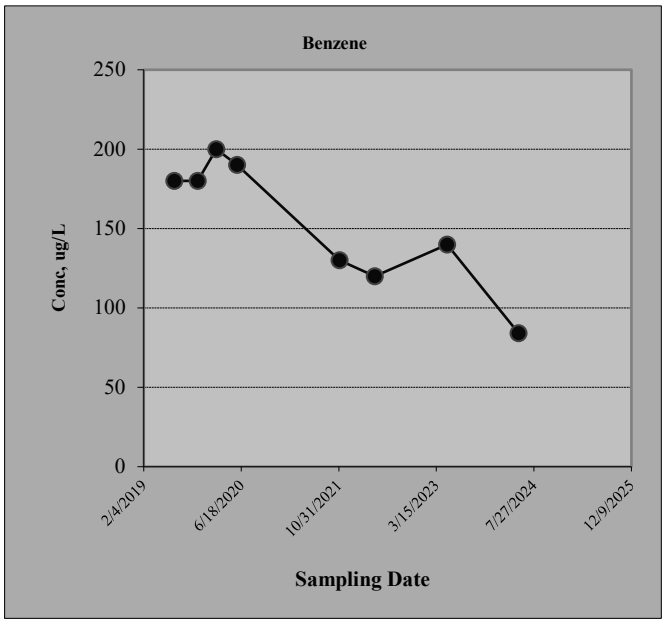
2. Mann-Kendall Non-parametric Statistical Test Results

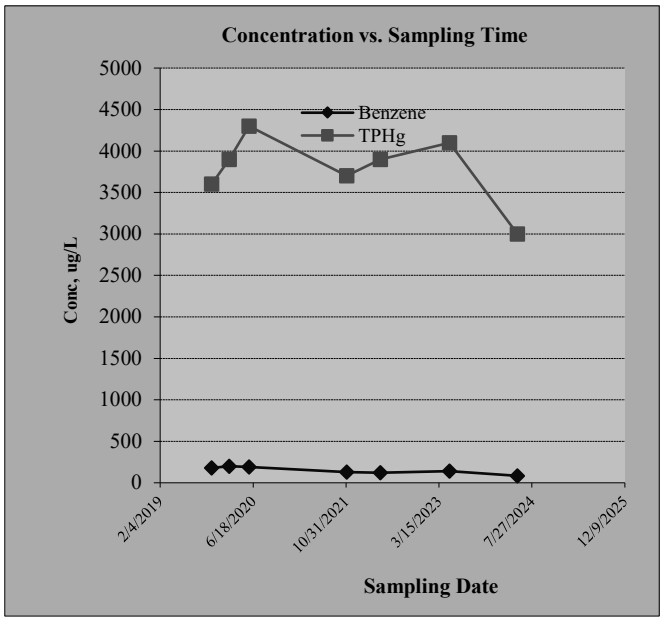
Hazardous Substance?	**Benzene**	**TPHg**				
Confidence Level Calculated?	98.50%	54.80%	NA	NA	NA	NA
Plume Stability?	Shrinking	Stable	NA	NA	NA	NA
Coefficient of Variation?		CV <= 1	n<4	n<4	n<4	n<4
Mann-Kendall Statistic "S" value?	-15	-3	0	0	0	0
Number of Sampling Rounds?	7	8	0	0	0	0
Average Concentration?	162.86	3928.57	NA	NA	NA	NA
Standard Deviation?	40.68	236.04	NA	NA	NA	NA
Coefficient of Variation?	0.25	0.06	NA	NA	NA	NA
Blank if No Errors found			n<4	n<4	n<4	n<4

3. Temporal Trend: Plot of Concentration vs. Sampling Time

Hazardous substance? **Benzene**

Plume Stability? **Shrinking**





Module1: Mann-Kendall Trend Test for Plume Stability (Non-parametric Statistical Test)

Site Name:	*Olympic Water & Sewer, Inc. Site*
Site Address:	*781 Walker Way, Port Ludlow, WA*
Additional Description:	

Well (Sampling) Location?	**MW-2**
Level of Confidence (Decision Criteria)?	**85%**

1. Monitoring Well Information: Contaminant Concentration at a well: Quarterly sampling recommended.

		Hazardous Substances (unit is ug/L)					
Sampling Event	Date Sampled	Benzene	TPHg				
#1	7/11/2019	780	6400				
#2	11/8/2019	820	5400				
#3	2/11/2020	840	5000				
#4	5/28/2020	150	2800				
#5	11/4/2021	220	2700				
#6	5/3/2022	79	2200				
#7	5/10/2023	61	1800				
#8	5/10/2024	38	1200				
#9							
#10							
#11							
#12							
#13							
#14							
#15							
#16							

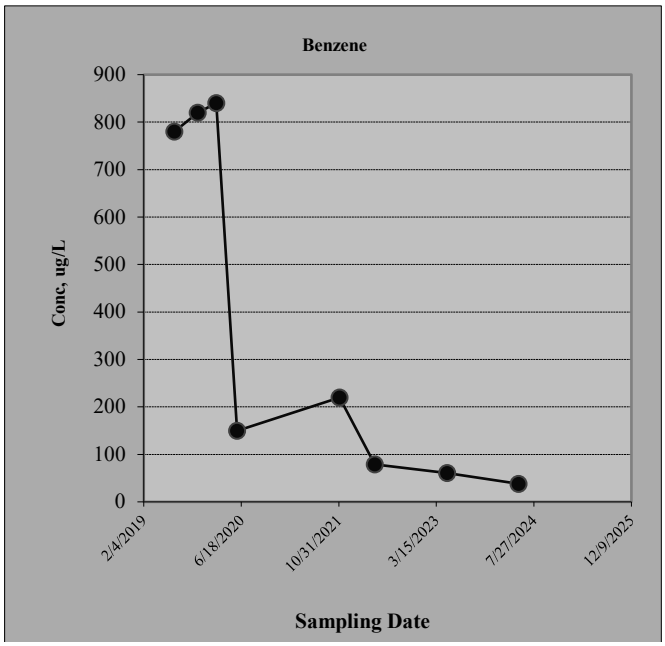
2. Mann-Kendall Non-parametric Statistical Test Results

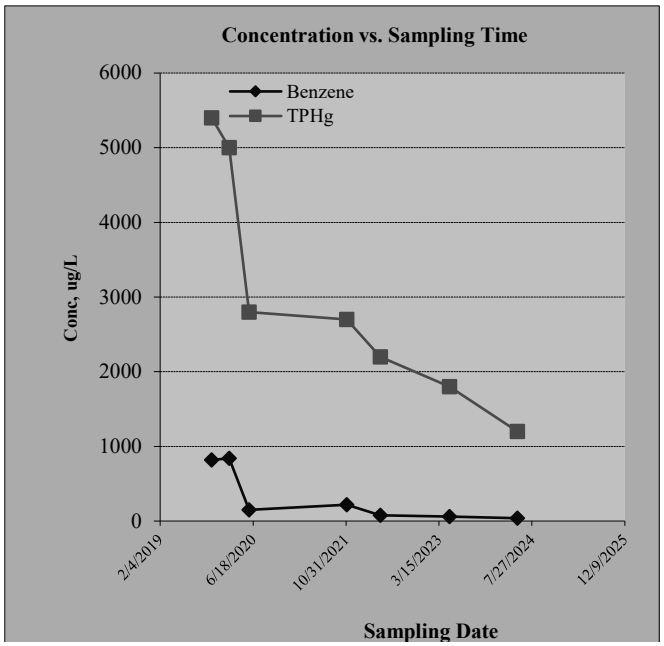
Hazardous Substance?	**Benzene**	**TPHg**				
Confidence Level Calculated?	99.3%	100%	NA	NA	NA	NA
Plume Stability?	Shrinking	Shrinking	NA	NA	NA	NA
Coefficient of Variation?	CV <= 1	CV <=1	n<4	n<4	n<4	n<4
Mann-Kendall Statistic "S" value?	-20	-28	0	0	0	0
Number of Sampling Rounds?	8	8	0	0	0	0
Average Concentration?	373.50	3437.50	NA	NA	NA	NA
Standard Deviation?	368.92	1898.82	NA	NA	NA	NA
Coefficient of Variation?	0.99	0.55	NA	NA	NA	NA
Blank if No Errors found			n<4	n<4	n<4	n<4

3. Temporal Trend: Plot of Concentration vs. Sampling Time

Hazardous substance? **Benzene**

Plume Stability? **Shrinking**





APPENDIX C

Report Guidelines and Limitations for Use

REPORT LIMITATIONS AND USE GUIDELINES

Reliance Conditions for Third Parties

This report was prepared for the exclusive use of the Client. No other party may rely on this report or the product of our services without the express written consent of Aspect Consulting (Aspect). This limitation is to provide our firm with reasonable protection against liability claims by third parties with whom there would otherwise be no contractual conditions or limitations and guidelines governing their use of the report. Within the limitations of scope, schedule and budget, our services have been executed in accordance with our Agreement with the Client and recognized standards of professionals in the same locality and involving similar conditions.

Services for Specific Purposes, Persons and Projects

Aspect has performed the services in general accordance with the scope and limitations of our Agreement. This report has been prepared for the exclusive use of the Client and their authorized third parties, approved in writing by Aspect. This report is not intended for use by others, and the information contained herein is not applicable to other properties.

This report is not, and should not, be construed as a warranty or guarantee regarding the presence or absence of hazardous substances or petroleum products that may affect the subject property. The report is not intended to make any representation concerning title or ownership to the subject property. If real property records were reviewed, they were reviewed for the sole purpose of determining the subject property's historical uses. All findings, conclusions, and recommendations stated in this report are based on the data and information provided to Aspect, current use of the subject property, and observations and conditions that existed on the date and time of the report.

Aspect structures its services to meet the specific needs of our clients. Because each environmental study is unique, each environmental report is unique, prepared solely for the specific client and subject property. This report should not be applied for any purpose or project except the purpose described in the Agreement.

This Report Is Project-Specific

Aspect considered a number of unique, project-specific factors when establishing the Scope of Work for this project and report. You should not rely on this report if it was:

- Not prepared for you
- Not prepared for the specific purpose identified in the Agreement
- Not prepared for the specific real property assessed
- Completed before important changes occurred concerning the subject property, project or governmental regulatory actions

If changes are made to the project or subject property after the date of this report, Aspect should be retained to assess the impact of the changes with respect to the conclusions contained in the report.

Geoscience Interpretations

The geoscience practices (geotechnical engineering, geology, and environmental science) require interpretation of spatial information that can make them less exact than other engineering and natural science disciplines. It is important to recognize this limitation in evaluating the content of the report. If you are unclear how these "Report Limitations and Use Guidelines" apply to your project or site, you should contact Aspect.

Discipline-Specific Reports Are Not Interchangeable

The equipment, techniques and personnel used to perform an environmental study differ significantly from those used to perform a geotechnical or geologic study and vice versa. For that reason, a geotechnical engineering or geologic report does not usually address any environmental findings, conclusions or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. Similarly, environmental reports are not used to address geotechnical or geologic concerns regarding the subject property.

Environmental Regulations Are Not Static

Some hazardous substances or petroleum products may be present near the subject property in quantities or under conditions that may have led, or may lead, to contamination of the subject property, but are not included in current local, state or federal regulatory definitions of hazardous substances or petroleum products or do not otherwise present potential liability. Changes may occur in the standards for appropriate inquiry or regulatory definitions of hazardous substance and petroleum products; therefore, this report has a limited useful life.

Property Conditions Change Over Time

This report is based on conditions that existed at the time the study was performed. The findings and conclusions of this report may be affected by the passage of time (for example, Phase I ESA reports are applicable for 180 days), by events such as a change in property use or occupancy, or by natural events, such as floods, earthquakes, slope failure or groundwater fluctuations. If more than six months have passed since issuance of our report, or if any of the described events may have occurred following the issuance of the report, you should contact Aspect so that we may evaluate whether changed conditions affect the continued reliability or applicability of our conclusions and recommendations.

Phase I ESAs – Uncertainty Remains After Completion

Aspect has performed the services in general accordance with the scope and limitations of our Agreement and the current version of the “Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process”, ASTM E1527, and U.S. Environmental Protection Agency (EPA)'s Federal Standard 40 CFR Part 312 "Innocent Landowners, Standards for Conducting All Appropriate Inquiries".

No ESA can wholly eliminate uncertainty regarding the potential for recognized environmental conditions in connection with subject property. Performance of an ESA study is intended to reduce, but not eliminate, uncertainty regarding the potential for environmental conditions affecting the subject property. There is always a potential that areas with contamination that were not identified during this ESA exist at the subject property or in the study area. Further evaluation of such potential would require additional research, subsurface exploration, sampling and/or testing.

Historical Information Provided by Others

Aspect has relied upon information provided by others in our description of historical conditions and in our review of regulatory databases and files. The available data does not provide definitive information with regard to all past uses, operations or incidents affecting the subject property or adjacent properties. Aspect makes no warranties or guarantees regarding the accuracy or completeness of information provided or compiled by others.

Exclusion of Mold, Fungus, Radon, Lead, and HBM

Aspect’s services do not include the investigation, detection, prevention or assessment of the presence of molds, fungi, spores, bacteria, and viruses, and/or any of their byproducts. Accordingly, this report does not include any interpretations, recommendations, findings, or conclusions regarding the detection, assessment, prevention or abatement of molds, fungi, spores, bacteria, and viruses, and/or any of their byproducts. Aspect’s services also do not include the investigation or assessment of hazardous building materials (HBM) such as asbestos, polychlorinated biphenyls (PCBs) in light ballasts, lead based paint, asbestos-containing building materials, urea-formaldehyde insulation in on-site structures or debris or any other HBMs. Aspect’s services do not include an evaluation of radon or lead in drinking water, unless specifically requested.