# Memorandum

To:	John Mefford, Washington State Department of Ecology
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From:	Gabe Cisneros and Manique Talaia-Murray, Floyd   Snider
Date:	January 15, 2025
Project No:	CL-Ellensburg, Big B (Cleanup Site ID: 4901)
Re:	2024 Data Summary Memorandum

#### PURPOSE

Floyd | Snider has prepared this technical memorandum to summarize semiannual groundwater compliance monitoring performed in 2024 at the Big B Mini Mart Site (Site; Facility Site ID [FSID] #386, Cleanup Site ID [CSID] #4901) located at 1611 Canyon Road in Ellensburg, Washington (referred to as the Big B property; Figure 1). All work was completed in accordance with the Cleanup Action Plan (CAP) approved by the Washington State Department of Ecology (Ecology) in November 2020 (Ecology 2020).

In accordance with the CAP and Engineering Design Report (EDR; Appendix B of Ecology 2020), Phase I remedial excavation activities were conducted between May and October 2021, and Phase II remedial excavation activities were conducted in June 2022. During excavation, a total of 625.55 tons of petroleum-impacted soil were removed from the Site, including from areas on the south-adjacent Toad's (Astro) Station (herein referred to as Toad's) property and the westadjacent BNSF Railway Company property. Impacted soil was excavated to Site-specific remediation levels (RELs) based on residual saturation levels for diesel-range organics (DRO) and gasoline-range organics (GRO) defined in the CAP, which are greater than the Site cleanup levels (CULs). Therefore, soil impacted with contaminants of concern (COCs) at concentrations greater than the CULs and less than the RELs was left in place. The remaining petroleum-impacted soil in the vadose zone is being treated using a bioventing system beneath the properties to prevent leaching of contamination to groundwater. A temporary subslab soil vapor monitoring point was installed on July 6, 2022, within the former station building, and three monitoring wells were replaced in areas that had been excavated in 2021 and 2022 (MW-2A, MW-4B, and MW-9A). Excavation activities are summarized in the Remedial Action Completion Report (RACR; Floyd Snider 2022). The extent of excavation activities, key Site features, and monitoring locations are displayed on Figure 2.



Bioventing was selected as part of the remedy to remediate impacted soil remaining in the vadose/capillary fringe after excavation activities are complete to ensure protection of groundwater. The bioventing system was installed on May 16, 2023, and has been operational continuously since that date, except between August 27 and September 6, 2023, during which the power to the Site was turned off.

This memorandum summarizes the results for the second round of semiannual groundwater sampling event that were conducted in accordance with the CAP and EDR. Environmental data associated with the 2024 monitoring events were submitted to Ecology's Environmental Information Management (EIM) database on December 16, 2024.

#### **GROUNDWATER MONITORING AND SAMPLING EVENTS**

The first monitoring event of 2024 occurred on May 7, 2024, and the second event occurred on September 10, 2024. Light non-aqueous phase liquid (LNAPL) and static water levels were collected from Site wells prior to groundwater sample collection. LNAPL was not detected on any monitoring well. Potentiometric surface maps and approximate groundwater flow directions for each event are shown on Figures 3 and 4, and groundwater elevations are summarized in Table 1. Groundwater flow direction was generally toward the southwest in the spring; and in the fall, flow direction was toward the southwest on the Big B property and shifted to the southeast on the Toad's property. The hydraulic gradient for both field events was approximately 0.001 feet per foot (ft/ft).

Groundwater sampling was performed on the Big B property upgradient wells MW-1A and MW-3; Big B property performance wells MW-2A, MW-4B, and MW-9A; and Toad's property wells MW-1 and MW-2 (shown as T-MW-1 and T-MW-2 on Figures 3 and 4). The upgradient wells were added to the sampling network to comply with the recommendations in Ecology's *Guidance for Silica Gel Cleanup in Washington State* (2023) for quantifying naturally occurring organics in pre- and post-silica gel cleanup (SGC) DRO samples.

At each monitoring well, disposable polyethylene tubing was inserted so that the intake was at the approximate midpoint of the well screened interval. The tubing was attached to a peristaltic pump, and groundwater was purged at a low-flow rate of less than 0.5 liters per minute. During purging, water quality parameters (i.e., temperature, pH, specific conductivity, and turbidity) were recorded at approximately 3- to 5-minute intervals using a YSI Pro DDS multiparameter water quality meter (YSI) until parameters were approximately stable (within 10%), or until a maximum of 30 minutes of purging had elapsed.

After the well had been purged, the groundwater samples were collected by directly filling the laboratory-provided bottles from the pump discharge at the same flow rate that was used for purging.

All performance groundwater samples were stored on ice for transport and submitted to Friedman & Bruya, Inc. for analysis of the following constituents:

- GRO by NWTPH-Gx
- DRO and oil-range organics (ORO) by NWTPH-Dx, with and without SGC
- Benzene, toluene, ethylbenzene, total xylenes, and naphthalene (BTEXN) by USEPA Method 8260

A subset of performance wells, MW-2A (Big B), MW-4B (Big B), and MW-1 (Toad's), were analyzed for total organic carbon (TOC) by USEPA Method 9060A and monitored natural attenuation (MNA) parameters. The following geochemical parameters were recorded in the field for MNA monitoring:

- Dissolved oxygen (DO; YSI)
- Oxidation-reduction potential (ORP; YSI)
- pH (YSI)
- Conductivity (YSI)
- Temperature (YSI)
- Ferrous iron (Hach field kits)

Samples from these wells were also analyzed for additional geochemical MNA indicators:

- Nitrate by USEPA Method 300.0
- Manganese (soluble) by USEPA Method 200.8 (field filtered)
- Sulfate by USEPA Method 300.0
- Methane by RSK-175

To account for naturally occurring organics, upgradient wells MW-1A and MW-3 were analyzed for DRO and ORO with and without SGC and for MNA parameters. MW-1A and MW-3 are hydraulically upgradient and cross-gradient, respectively, of contaminant sources and releases to the Site.

#### **GROUNDWATER SAMPLING RESULTS**

Groundwater analytical results are provided in Table 2. The laboratory analytical reports and groundwater sampling forms are included as Attachment 1. Concentrations of GRO from all samples were either not detected or were detected at concentrations less than the Site CUL of 800 micrograms per liter ( $\mu$ g/L). Additionally, BTEXN has not been detected in any well at concentrations exceeding their respective laboratory reporting limits since cleanup actions were completed.

TOC concentrations from upgradient/background monitoring wells MW-1A and MW-3 were used to quantify the amount of naturally occurring organics present in Site groundwater. The concentration of polar metabolic by-products was calculated using the following formula:

NWTPH-Dx (no SGC) – NWTPH-Dx (with SGC) – Background NWTPH-Dx (no SGC) = polar metabolic by-product concentration; where, NWTPH-Dx (no SGC) is the total concentration of DRO, ORO, and polar metabolic by-products, NWTPH-Dx (with SGC) is the concentration of non-polar hydrocarbons, and background NWTPH-Dx (no SGC) is the seasonal concentration of total DRO+ORO at unimpacted upgradient wells.

The results of these calculations are presented in Table 2. The concentration of polar metabolic by-products was compared to a CUL of 500  $\mu$ g/L because DRO is detected in Site groundwater in pre-SGC analyses.

**DRO Results without SGC:** During the 2024 spring event, concentrations of DRO without SGC exceeded the Site CUL of 500  $\mu$ g/L in the following wells:

- MW-2A
- MW-4B
- MW-1 (Toad's)
- MW-2 (Toad's)

During the 2024 fall event, concentrations of DRO without SGC exceeded the Site CUL of 500  $\mu g/L$  in the following wells:

- MW-4B
- MW-1 (Toad's)
- MW-2 (Toad's)

MW-9A, located in the southeast corner of the Big B property, and MW-2A, located in the center of the Big B property, both contained measurable LNAPL thicknesses prior to cleanup activities and were less the CUL during the 2024 fall event. During the 2024 spring event, the concentration of DRO of the sampled wells was greatest at MW-2 (6,400  $\mu$ g/L) on Toad's. During the 2024 fall event, the concentration of DRO was greatest at MW-4B (3,300  $\mu$ g/L), located in the southwestern corner of the Site. These findings are identical to those observed in the 2023 events. Concentrations of DRO generally decreased between the spring and fall monitoring events, a trend that was also observed in 2023, indicating there are seasonal trends to DRO concentrations coinciding with lower fall water levels.

**DRO Results with SGC:** Silica gel absorbs polar compounds such as acids (and esters), alcohols, ketones, phenols, aldehydes, and naturally occurring organic matter in the groundwater sample, leaving the nonpolar DRO to be quantified more accurately in the analytical sample.

During the 2024 spring event, DRO concentrations analyzed with SGC in groundwater exceeded the CUL in the following wells:

- MW-4B
- MW-2 (Toad's)

During the 2024 fall event, DRO concentrations using SGC exceeded the CUL in the following wells:

- MW-1 (Toad's)
- MW-2 (Toad's)

The 2024 fall results at MW-1 (Toad's) and MW-2 (Toad's) were elevated compared to 2023 fall results.

**Polar Metabolic By-Products:** Polar metabolic by-products exceeded the CUL of 500  $\mu$ g/L in the following wells:

- MW-4B
- MW-2A
- MW-1 (Toad's)
- MW-2 (Toad's)

Concentrations of total metabolic by-products were greatest at MW-4B and MW-2 (Toad's), which is understandable given the linear relationship between elevated DRO and the concentration of total metabolic by-products. The results of these calculations show that a substantial portion of the DRO results (without SGC) at monitoring locations within the dissolved phase plume can be accounted for by polar metabolites, which account for between 60% to 90% of the NWTPH-Dx result in all samples except for the fall sample collected from MW-1 (Toad's), which had an elevated post-SGC NWTPH-Dx concentration.

Chromatogram patterns indicate weathered diesel and biodegradation metabolites, which are present in the chromatograms for samples analyzed without SGC but are absent in chromatograms for samples analyzed with SGC (Attachment 1). The chromatograms are one line of evidence that biodegradation is occurring at the Site.

Attachment 2 contains a detailed analysis of the MNA analytical results and trends analysis. The trend analysis concludes that there is strong evidence that natural attenuation of groundwater contaminants by aerobic and anaerobic biodegradation is occurring in Site groundwater, particularly at the monitoring locations with the greatest mass of dissolved-phase total petroleum hydrocarbons (TPH) in groundwater.

#### **BIOVENTING SYSTEM STATUS**

As specified in the bioventing system operations and maintenance (O&M) manual (Attachment 3 of Appendix D, Floyd|Snider 2022), blower operation, injection pressure, and temperature were monitored for 24 hours following system installation and have been regularly monitored monthly. Except for the time frame between August 7 and September 6, 2023, the blower has been running continuously, and these parameters are within expected limits.

The O&M manual also specifies that readings of the bioventing lines flow rate will also be periodically collected using a handheld anemometer. Readings were collected at each semiannual monitoring event using a TSI Model 9565 VelociCalc<sup>®</sup> multi-function ventilation meter. Readings to each line have varied slightly but are within acceptable ranges.

The bioventing system layout is presented on Figure 2.

#### CONCLUSIONS AND NEXT STEPS

Semiannual monitoring of groundwater was completed at the Big B Site in May and September 2024.

DRO concentrations analyzed without SGC show exceedances in all groundwater samples, except for samples from MW-1A, MW-3, and MW-9A, as observed in 2023. DRO results analyzed with SGC indicate that dissolved DRO in a subset of wells (MW-4B, MW-1 [Toad's], and MW-2 [Toad's]) were elevated compared to the 2023 results. The calculated concentrations of total metabolic by-products mirror the elevated concentrations of DRO in groundwater in the monitoring network.

Analytical groundwater results collected between 2023 and 2024 at the Site provide strong evidence that natural attenuation of groundwater contaminants by aerobic and anaerobic biodegradation is occurring in Site groundwater, particularly at the monitoring locations with the greatest mass of dissolved-phase TPH in groundwater. Because these monitoring results were successful in establishing MNA as an ongoing process at the Site, we propose that future groundwater sampling does not include the full suite of MNA parameters. However, field parameters, such as conductivity, temperature, pH, turbidity, DO, and ORP, will continue to be collected and recorded as part of the low-flow sampling procedure.

In addition, we also propose that NWTPH-Gx and BTEXN be eliminated from future analytical reporting because there have been no CUL exceedances in GRO, and all BTEXN results have been less than their respective reporting limits to date in all performance samples. However, GRO and BTEXN will be analyzed in these wells when collecting four consecutive quarters of confirmation samples.

To comply with Ecology's *Guidance for Silica Gel Cleanup in Washington State* for quantifying naturally occurring organics in pre- and post-SGC DRO samples, the monitoring network will continue to consist of the following monitoring wells: MW-1A, MW-2, MW-3, MW-4B, and MW-9A on the Big B property and MW-1 and MW-2 on the Toad's property.

The bioventing system is operating normally but will be monitored monthly for general operations, outflow temperature, and outflow pressure. Flow rates from individual bioventing lines will be analyzed semiannually, coincident with future monitoring events. Future groundwater monitoring results will be used to determine whether the system is assisting with natural attenuation processes.

#### REFERENCES

- Floyd|Snider. 2022. *Remedial Action Completion Report: Big B Mini Mart Site*. Prepared for Big B LLC. November.
- Washington State Department of Ecology (Ecology). 2020. *Cleanup Action Plan: Big B Mini Mart Site, Ellensburg, WA*. Prepared by Floyd | Snider. November.
- \_\_\_\_\_. 2022. Guidance for Evaluating Vapor Intrusion in Washington State: Investigation and Remedial Action. Originally published January 2009. Revised March 2022.
- \_\_\_\_\_. 2023. *Guidance for Silica Gel Cleanup in Washington State*. Publication No. 22-09-059. November.
- . 2024. "CLARC Data Tables and Other Technical Information." Last accessed November 1, 2024. https://ecology.wa.gov/regulations-permits/guidance-technical-assistance/ contamination-clean-up-tools/clarc/data-tables

#### LIST OF ATTACHMENTS

- Table 1Groundwater Elevation Summary
- Table 2Groundwater Analytical Results
- Figure 1 Vicinity Map
- Figure 2 Site Map
- Figure 3 Groundwater Elevation and Contour Map, May 7, 2024
- Figure 4 Groundwater Elevation and Contour Map, September 10, 2024
- Attachment 1 Spring and Fall 2024 Laboratory Reports and Groundwater Sampling Forms
- Attachment 2 Monitored Natural Attenuation at Big B Mini Mart Site



Tables

	Screened Interval	TOC Elevation		Depth to Water	Groundwater Elevation
Well ID	(feet bgs)	(feet NAVD 88)	Date	(feet bTOC)	(feet NAVD 88)
Big B Property	,				
			5/1/2023	4.64	1,486.12
MW-1A	4–14	1 400 76	9/7/2023	5.61	1,485.15
IVI VV-1A	4-14	1,490.76	5/7/2024	4.88	1,485.88
			9/10/2024	5.57	1,485.19
			5/1/2023	4.85	1,486.06
	2 12	1 400 01	9/7/2023	5.89	1,485.02
MW-2A	/-2A 3–13	1,490.91	5/7/2024	5.11	1,485.80
			9/10/2024	5.75	1,485.16
			5/1/2023	4.82	1,486.06
N 40 4 / 2	1 11	1 400 00	9/7/2023	5.78	1,485.10
MW-3	1–11	1,490.88	5/7/2024	5.07	1,485.81
			9/10/2024	5.70	1,485.18
			5/1/2023	3.85	1,485.94
N 404 / 45	2.42	4 400 70	9/7/2023	4.82	1,484.97
MW-4B	3–13	1,489.79	5/7/2024	4.19	1,485.60
			9/10/2024	4.79	1,485.00
MW-8 3–13			5/1/2023	4.72	1,486.13
	2.42	1 400 05	9/7/2023	5.76	1,485.09
IVI VV-8	3-13	1,490.85	5/7/2024	5.04	1,485.81
			9/10/2024	5.66	1,485.19
			5/1/2023	3.96	1,486.01
N 414/ 0 A	2 12	1 400 07	9/7/2023	4.95	1,485.02
MW-9A	3–13	1,489.97	5/7/2024	4.89	NM
			9/10/2024	4.90	1,485.07
			5/1/2023	4.78	1,486.05
NAVA 10		1 400 02	9/7/2023	5.81	1,485.02
MW-10	4–14	1,490.83	5/7/2024	5.04	1,485.79
			9/10/2024	5.66	1,485.17
oad's Proper	ty				
			5/1/2023	4.36	1,485.95
T N 41 4		1 400 04	9/7/2023	5.39	1,484.92
T-MW-1	4–14	1,490.31	5/7/2024	4.69	1,485.62
			9/10/2024	5.37	1,484.94
			5/1/2023	4.35	1,485.89
TAMA		1 400 24	9/7/2023	5.22	1,485.02
T-MW-2	4–14	1,490.24	5/7/2024	4.53	NM
			9/10/2024	5.19	1,485.05

Table 1Groundwater Elevation Summary

Abbreviations:

bgs Below ground surface

bTOC Below top of casing

NM Not measured

NAVD 88 North American Vertical Datum of 1988

TOC Top of casing

			Area		Upgradient/I	Background			Within Dissolve	ed-Phase Plume	
		L	ocation Name	MM	V-1A	M	N-3		MM	/-2A	
			Sample Name						MW-2A-090723		
			Sample Date	5/7/2024	9/10/2024	5/7/2024	9/10/2024	5/1/2023	9/7/2023	5/7/2024	9/10/2024
Analyte	CAS No.	CUL <sup>(1)</sup>	Unit								
Total Petroleum Hydrocarbons by NWTPH-Gx, -Dx		-						_		-	
Gasoline-range organics	GRO	800	μg/L					390	330	410	440
Diesel-range organics	DRO	500	μg/L	110 (2)	50 U	430 <sup>(2)</sup>	64 <sup>(2)</sup>	<b>2,700</b> <sup>(2)</sup>	540 <sup>(2)</sup>	<b>1,200</b> <sup>(2)</sup>	490 <sup>(2)</sup>
Oil-range organics	ORO		μg/L	250 U	250 U	250 U	250 U	340 (2)	250 U	250 U	250 U
Total DRO & ORO	T_DRO&ORO (U=0)	500	μg/L	110	250 U	430	64	3,000	540	1,200	490
Total Petroleum Hydrocarbons by NWTPH-Dx w/ Silica Gel Cleanup											
Diesel-range organics	DRO	500	μg/L	50 U	50 U	60 U	50 U	110	50 U	50 U	79 <sup>(2)</sup>
Oil-range organics	ORO		μg/L	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U
Total DRO & ORO	T_DRO&ORO (U=0)	500	μg/L	250 U	250 U	250 U	250 U	110	250 U	250 U	79
Adjusted for Silica Gel Cleanup							-		-		
Non-Polar Hydrocarbons	T_DRO&ORO (U=0)		μg/L	250 U	250 U	250 U	250 U	110	50 U	50 U	79
Total Polar Metabolites and NOC Quantified within the DRO and ORO (3)			μg/L	110	250 U	430	64	2,900	540	1,200	410
Naturally Occurring Organics <sup>(3,4)</sup>			μg/L	110		430	64			270	64
Polar Metabolic By-Products <sup>(5)</sup>		500/700								930	350
BTEX-N by EPA 8260D							-		-		
Benzene	71-43-2	5	μg/L					0.35 U	0.35 U	0.35 U	0.35 U
Toluene	108-88-3	1,000	μg/L					1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	100-41-4	700	μg/L					1.0 U	1.0 U	1.0 U	1.0 U
Xylene (meta & para)	108-38-3/106-42-3		μg/L					2.0 U	2.0 U	2.0 U	2.0 U
Xylene (ortho)	95-47-6		μg/L					1.0 U	1.0 U	1.0 U	1.0 U
Xylene (total)	1330-20-7	1,000	μg/L					2.0 U	2.0 U	2.0 U	2.0 U
Naphthalene	91-20-3	160	μg/L					1.0 U	1.0 U	1.0 U	1.0 U
Dissolved Gases by RSK 175		•			•						
Methane	74-82-8		mg/L	0.0061	0.0050 U	0.0053	0.0089	0.27	0.22	0.49	0.61
Dissolved Metals by EPA 6020B		•			•						
Manganese	7439-96-5		μg/L	41	2	290	190	760	760	710	750
Conventionals											
Ferrous iron	15438-31-0		mg/L	0 1	0 1	0 1	0 1	1.5 J	3.0 J	2.5 J	3.5 J
Nitrate (as Nitrogen)			mg/L	6.5 J	3.8	2.7 J	1.4	0.20 UJ	0.20 UJ	0.20 UJ	0.40 U
Sulfate	14808-79-8		mg/L	20	16	23	13	13	16	24	17
Total Organic Carbon <sup>(7)</sup>	TOC		μg/L	3,300	2,000	2,600	1,900	7,800	4,200	4,900	3,900

			Area		Upgradient/B	Background		Within Dissolved-Phase Plume			
			Location Name	MM	/-1A	MW-3		MW-2A			
Sample Name				MW-1A-050724	MW-1A-091024	MW-3-050724	MW-3-091024	MW-2A-050123	MW-2A-090723	MW-2A-050724	MW-2A-091024
			Sample Date	5/7/2024	9/10/2024	5/7/2024	9/10/2024	5/1/2023	9/7/2023	5/7/2024	9/10/2024
Analyte	CAS No.	CUL <sup>(1)</sup>	Unit								
Field Parameters											
Depth to Water	WDepth		ft	4.9	4.88	5.08	5.07	4.85	5.87	5.12	5.11
Dissolved Oxygen			mg/L	0.45	1.21	0.45	0.37	0.21	0.29	0.4	0.35
ORP			mV	107.6	114.4	46.1	124	23.5	-91	-50.5	-86.5
рН	рН		рН	6.59	6.42	6.64	6.5	6.96	6.72	6.68	6.57
Specific Conductance			μS/cm	269.6	625	325.1	670	521	770	389.4	745
Temperature			°C	13.5	21.5	12.1	18.8	10.7	20	12.3	21
Turbidity			ntu	1.9	1.52	0.66	1.57	3.98	0.67	2.3	2.68

Notes:

All blank cells are intentional.

All chemistry results are rounded to two significant figures.

Field parameters are reported as displayed by the sampling equipment.

-- Not available.

RED/BOLD Analyte was detected at a concentration greater than the CUL.

1 CULs are based on MTCA Method A values (Ecology 2024).

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

3 Characterizing the contribution from naturally occurring organics in groundwater to the TPH totals may be done by analyzing clean representative background samples (located hydraulically upgradient of contaminant sources and releases to the site) from permanent monitoring wells.

4 The average concentration of naturally occurring organics is obtained by using the total organic carbon concentrations from the two upgradient wells MW-1A and MW-3 during each monitoring event.

5 The polar metabolic byproduct concentration is derived by [NWTPH-Dx (no SGC)] – [NWTPH-Dx (with SGC)] – [Background NWTPH-Dx (no SGC)] = polar metabolic byproduct concentration.

6 A Site-wide CUL of 700 μg/L may be applied for sites that have no detectable concentrations of petroleum hydrocarbons (i.e., no detects using NWTPH-Gx or -Dx with silica gel cleanup).

7 Total organic carbon by SM 5310C.

#### Abbreviations:

BTEX-N Benzene, toluene, ethylene, xylene, and naphthalene

- °C Degrees Celsius
- CAS Chemical Abstracts Service
- CUL Cleanup level

ft Feet Qualifiers:

J Analyte was detected; concentration is an estimate.

U Analyte was not detected at the associated reporting limit.

UJ Analyte was not detected at the associated reporting limit, which is an estimate.

µg/L Micrograms per liter µS/cm Microsiemens per centimeter mg/L Milligrams per liter mV Millivolts MTCA Model Toxics Control Act

ntu Nephelometric turbidity unit ORP Oxidation-reduction potential TPH Total petroleum hydrocarbons VOC Volatile organic compound

Table 2Groundwater Analytical Results

			Area			Wi	thin Dissolved-	Phase Plume (cont	)			
		Locati	ion Name			MW-4B			-	MM	/-9A	
					MW-4B-	MW-104B-	MW-4B-		MW-9A-	MW-9A-	MW-9A-	MW-9A-
		Samj	ple Name	MW-4B-050123	090723	090723	050724	MW-4B-091024	050123	090723	050724	091024
		San	nple Date	5/1/2023	9/7/2023	9/7/2023	5/7/2024	9/10/2024	5/1/2023	9/7/2023	5/7/2024	9/10/2024
Analyte	CAS No.	CUL <sup>(1)</sup>	Unit									
Total Petroleum Hydrocarbons by NWTPH-Gx, -Dx												
Gasoline-range organics	GRO	800	μg/L	440	490	490	360	550	100 U	100 U	100 U	100 U
Diesel-range organics	DRO	500	μg/L	5,000 <sup>(2)</sup>	<b>2,200</b> <sup>(2)</sup>	<b>2,200</b> <sup>(2)</sup>	5,300 <sup>(2)</sup>	3,300 <sup>(2)</sup>	120 <sup>(2)</sup>	50 U	160 <sup>(2)</sup>	160 <sup>(2)</sup>
Oil-range organics	ORO		μg/L	470 <sup>(2)</sup>	370 <sup>(2)</sup>	350 <sup>(2)</sup>	530 <sup>(2)</sup>	300 (2)	250 U	250 U	250 U	250 U
Total DRO & ORO	T_DRO&ORO (U=0)	500	μg/L	5,500	2,600	2,600	5,800	3,600	120	250 U	160	160
Total Petroleum Hydrocarbons by NWTPH-Dx w/ Silica Gel Cleanup												
Diesel-range organics	DRO	500	μg/L	360	390	430	<b>510</b> <sup>(2)</sup>	390 <sup>(2)</sup>	50 U	50 U	50 U	50 U
Oil-range organics	ORO		μg/L	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U
Total DRO & ORO	T_DRO&ORO (U=0)	500	μg/L	360	390	430	510	390	250 U	250 U	250 U	250 U
Adjusted for Silica Gel Cleanup												
Non-Polar Hydrocarbons	T_DRO&ORO (U=0)	500	μg/L	360	390	430	510	390	250 U	250 U	250 U	250 U
Total Polar Metabolites and NOC Quantified within the DRO and ORO <sup>(3)</sup>			μg/L	5,100	2,200	2,200	5,300	3,200	120	250 U	160	160
Naturally Occurring Organics <sup>(3,4)</sup>			μg/L				270	64			270	64
Polar Metabolic By-Products <sup>(5)</sup>		500/700 <sup>(6)</sup>	μg/L				5,000	3,100			250 U	250 U
BTEX-N by EPA 8260D												
Benzene	71-43-2	5	μg/L	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U
Toluene	108-88-3	1,000	μg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	100-41-4	700	μg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylene (meta & para)	108-38-3/106-42-3		μg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Xylene (ortho)	95-47-6		μg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylene (total)	1330-20-7	1,000	μg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Naphthalene	91-20-3	160	μg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dissolved Gases by RSK 175												
Methane	74-82-8		mg/L	0.65	0.62	0.62	1.5	1.3				
Dissolved Metals by EPA 6020B												
Manganese	7439-96-5		μg/L	1,400	960	910	1,100	1,000				
Conventionals												
Ferrous iron	15438-31-0		mg/L	2.0 J	3.0 J		2.0 J	5.0 J			3.0 J	0.5 J
Nitrate (as Nitrogen)			mg/L	0.20 UJ	0.20 UJ	0.20 UJ	0.20 UJ	0.40 U				
Sulfate	14808-79-8		mg/L	7.9	2.7	2.6	2.2	2.0				
Total Organic Carbon <sup>(7)</sup>	TOC		μg/L	12,000	6,300	6,600	8,900	11,000				

			Area	Within Dissolved-Phase Plume (cont.)										
	Location Name				MW-4B						MW-9A			
					MW-4B-	MW-104B-	MW-4B-		MW-9A-	MW-9A-	MW-9A-	MW-9A-		
		Sam	ple Name	MW-4B-050123	090723	090723	050724	MW-4B-091024	050123	090723	050724	091024		
		San	nple Date	5/1/2023	9/7/2023	9/7/2023	5/7/2024	9/10/2024	5/1/2023	9/7/2023	5/7/2024	9/10/2024		
Analyte	CAS No.	CUL <sup>(1)</sup>	Unit											
Field Parameters														
Depth to Water	WDepth		ft	3.85	4.84		4.25	4.19	3.96	5	4.95	4.89		
Dissolved Oxygen			mg/L	0.2	0.13		0.29	0.21	0.3	0.17	0.34	0.34		
ORP			mV	6	-86.2		-21.3	-94.6	60.8	60.5	89.2	30		
рН	рН		рН	7	6.7		6.79	6.69	7.04	6.67	6.61	6.6		
Specific Conductance			μS/cm	491.6	716		261.1	682	344	716	264.2	626		
Temperature			°C	10.4	20.8		12.4	21.1	11.1	19.5	13.2	19.8		
Turbidity			ntu	1.61	0.57		1.45	0.98	1.42	0.65	2.58	5.61		

Notes:

All blank cells are intentional.

All chemistry results are rounded to two significant figures.

Field parameters are reported as displayed by the sampling equipment.

-- Not available.

**RED/BOLD** Analyte was detected at a concentration greater than the CUL.

1 CULs are based on MTCA Method A values (Ecology 2024).

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

3 Characterizing the contribution from naturally occurring organics in groundwater to the TPH totals may be done by analyzing clean representative background samples (located hydraulically upgradient of contaminant sources and releases to the site) from permanent monitoring wells.

4 The average concentration of naturally occurring organics is obtained by using the total organic carbon concentrations from the two upgradient wells MW-1A and MW-3 during each monitoring event.

5 The polar metabolic byproduct concentration is derived by [NWTPH-Dx (no SGC)] – [NWTPH-Dx (with SGC)] – [Background NWTPH-Dx (no SGC)] = polar metabolic byproduct concentration.

6 A Site-wide CUL of 700 μg/L may be applied for sites that have no detectable concentrations of petroleum hydrocarbons (i.e., no detects using NWTPH-Gx or -Dx with silica gel cleanup).

7 Total organic carbon by SM 5310C.

#### Abbreviations

BTEX-N Benzene, toluene, ethylene, xylene, and naphthalene

- °C Degrees Celsius
- CAS Chemical Abstracts Service
- CUL Cleanup level

ft Feet

#### Qualifiers:

J Analyte was detected; concentration is an estimate.

U Analyte was not detected at the associated reporting limit.

UJ Analyte was not detected at the associated reporting limit, which is an estimate.

µg/L Micrograms per liter µS/cm Microsiemens per centimeter mg/L Milligrams per liter mV Millivolts MTCA Model Toxics Control Act

ntu Nephelometric turbidity unit ORP Oxidation-reduction potential TPH Total petroleum hydrocarbons VOC Volatile organic compound

			Area Within Dissolved-Phase Plume (cont.)											
		<u> </u>	Area					Within Dissol	ved-Phase Plum	e (cont.)	r			
		Locati	on Name		1		MW-1 (Toad's)					1	Toad's)	
		6		MW-1-	NUL 404 050400	MW-1-	NAM 4 050724	MW-101-	MW-1-	MW-101-	MW-2-	MW-2-	MW-2-	MW-2-
			ole Name	050123	MW-101-050123	090723	MW-1-050724	050724	091024	091024	050123	090723	050724	091024
Analyte	CAS No.	CUL <sup>(1)</sup>	nple Date Unit	5/1/2023	5/1/2023	9/7/2023	5/7/2024	5/7/2024	9/10/2024	9/10/2024	5/1/2023	9/7/2023	5/7/2024	9/10/2024
Total Petroleum Hydrocarbons by NWTPH-Gx, -Dx	CAS NO.	COL	Unit				<u> </u>							
Gasoline-range organics	GRO	800	μg/L	100 U	100 U	100 U	100 U	100 U	210	280	160	100 U	100 U	100 U
Diesel-range organics	DRO	500	μg/L	640 <sup>(2)</sup>	680 <sup>(2)</sup>	1,700 <sup>(2)</sup>	1.000 <sup>(2)</sup>	1,100 <sup>(2)</sup>	1.200 <sup>(2)</sup>	2,200 <sup>(2)</sup>	5,400 <sup>(2)</sup>	1,300 <sup>(2)</sup>	6,400 <sup>(2)</sup>	<b>3,600</b> <sup>(2)</sup>
Oil-range organics	ORO		μg/L μg/L	250 U	250 U	250 U	250 U	250 U	700	1,500	780 (2)	370 <sup>(2)</sup>	700 <sup>(2)</sup>	450 <sup>(2)</sup>
Total DRO & ORO	T DRO&ORO (U=0)	500	μg/L μg/L	640	680	1,700	1.000	1.100	1.900	3,700	6,200	<b>1,700</b>	7,100	4,100
Total Petroleum Hydrocarbons by NWTPH-Dx w/ Silica Gel Cleanup		500	µg/L	040	000	1,700	1,000	1,100	1,900	5,700	0,200	1,700	7,100	4,100
Diesel-range organics	DRO	500	μg/L	99	82	210	130	120	540	1,400	300	150	640	780
Oil-range organics	ORO		μg/L	250 U	250 U	210 250 U	250 U	250 U	530	1,200	250 U	250 U	250 U	280 U
Total DRO & ORO	T DRO&ORO (U=0)	500	μg/L μg/L	99	82	210	130	120	1,100	2,600	300	150	640	780 780
Adjusted for Silica Gel Cleanup		500	μg/ L	33	02	210	130	120	1,100	2,000	300	150	040	780
Non-Polar Hydrocarbons	T DRO&ORO (U=0)		μg/L	99	82	210	130	120	1,100	2,600	300	150	640	780
Total Polar Metabolites and NOC Quantified within the DRO and ORO <sup>(3)</sup>	(		μg/L	540	600	1,500	870	980	800	1,100	5,900	1,600	6,500	3,300
Naturally Occurring Organics (3,4)			μg/L				270	270	64	64			270	64
Polar Metabolic By-Products <sup>(5)</sup>		500/700 <sup>(6)</sup>	μg/L				600	710	740	1.000			6.200	3.200
BTEX-N by EPA 8260D			P-0/ -											-,
Benzene	71-43-2	5	μg/L	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U
Toluene	108-88-3	1,000	μg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	100-41-4	700	μg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylene (meta & para)	108-38-3/106-42-3		μg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Xylene (ortho)	95-47-6		μg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylene (total)	1330-20-7	1,000	μg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Naphthalene	91-20-3	160	μg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dissolved Gases by RSK 175												•		
Methane	74-82-8		mg/L	0.11	0.10	0.20	0.11	0.11	0.21	0.15				
Dissolved Metals by EPA 6020B														
Manganese	7439-96-5		μg/L	780	770	860	730	730	750	730				
Conventionals														
Ferrous iron	15438-31-0		mg/L	3.5 J		3.5 J	4.5 J		2.5 J				2.5 J	4.0 J
Nitrate (as Nitrogen)			mg/L	0.20 UJ	0.20 UJ	0.20 UJ	0.20 U	0.20 U	0.40 U	0.40 U				
Sulfate	14808-79-8		mg/L	14	14	2.9	20	20	12	12				
Total Organic Carbon <sup>(7)</sup>	TOC		μg/L	4,500	4,500	7,200	4,600	4,600	4,600	4,500				

			Area		Within Dissolved-Phase Plume (cont.)									
		Locat	ion Name		MW-1 (Toad's) MW-2 (Toad'							(Toad's)		
				MW-1-		MW-1-		MW-101-	MW-1-	MW-101-	MW-2-	MW-2-	MW-2-	MW-2-
		Sam	ple Name	050123	MW-101-050123	090723	MW-1-050724	050724	091024	091024	050123	090723	050724	091024
		Sar	nple Date	5/1/2023	5/1/2023	9/7/2023	5/7/2024	5/7/2024	9/10/2024	9/10/2024	5/1/2023	9/7/2023	5/7/2024	9/10/2024
Analyte	CAS No.	CUL <sup>(1)</sup>	Unit											
Field Parameters														
Depth to Water	WDepth		ft	4.36		5.39	4.64		4.69		4.35	5.22	4.56	4.53
Dissolved Oxygen			mg/L	0.05		0.23	0.3		0.19		0.08	0.28	0.45	0.26
ORP			mV	-50.2		-106.2	26.7		-82.6		-68.9	-122.5	-67.8	-114.2
рН	рН		рН	6.86		6.74	6.77		6.78		6.81	6.71	6.61	6.65
Specific Conductance			μS/cm	470.1		828	266.5		653		551	764	369.5	759
Temperature			°C	10.8		20.3	12.2		20.5		11	21.7	12.2	21.8
Turbidity			ntu	3.67		0.41	3.16		0.97		2.2	0.82	1.73	2.25

Notes:

All blank cells are intentional.

All chemistry results are rounded to two significant figures.

Field parameters are reported as displayed by the sampling equipment.

-- Not available.

**RED/BOLD** Analyte was detected at a concentration greater than the CUL.

1 CULs are based on MTCA Method A values (Ecology 2024).

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

3 Characterizing the contribution from naturally occurring organics in groundwater to the TPH totals may be done by analyzing clean representative background samples (located hydraulically upgradient of contaminant sources and releases to the site) from permanent monitoring wells.

4 The average concentration of naturally occurring organics is obtained by using the total organic carbon concentrations from the two upgradient wells MW-1A and MW-3 during each monitoring event.

5 The polar metabolic byproduct concentration is derived by [NWTPH-Dx (no SGC)] – [NWTPH-Dx (with SGC)] – [Background NWTPH-Dx (no SGC)] = polar metabolic byproduct concentration.

6 A Site-wide CUL of 700 µg/L may be applied for sites that have no detectable concentrations of petroleum hydrocarbons (i.e., no detects using NWTPH-Gx or -Dx with silica gel cleanup).

7 Total organic carbon by SM 5310C.

#### Abbreviations:

BTEX-N Benzene, toluene, ethylene, xylene, and naphthalene

- °C Degrees Celsius
- CAS Chemical Abstracts Service
- CUL Cleanup level
- ft Feet

#### Qualifiers:

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µg/L Micrograms per liter µS/cm Microsiemens per centimeter mg/L Milligrams per liter mV Millivolts MTCA Model Toxics Control Act

ntu Nephelometric turbidity unit ORP Oxidation-reduction potential TPH Total petroleum hydrocarbons VOC Volatile organic compound

Figures

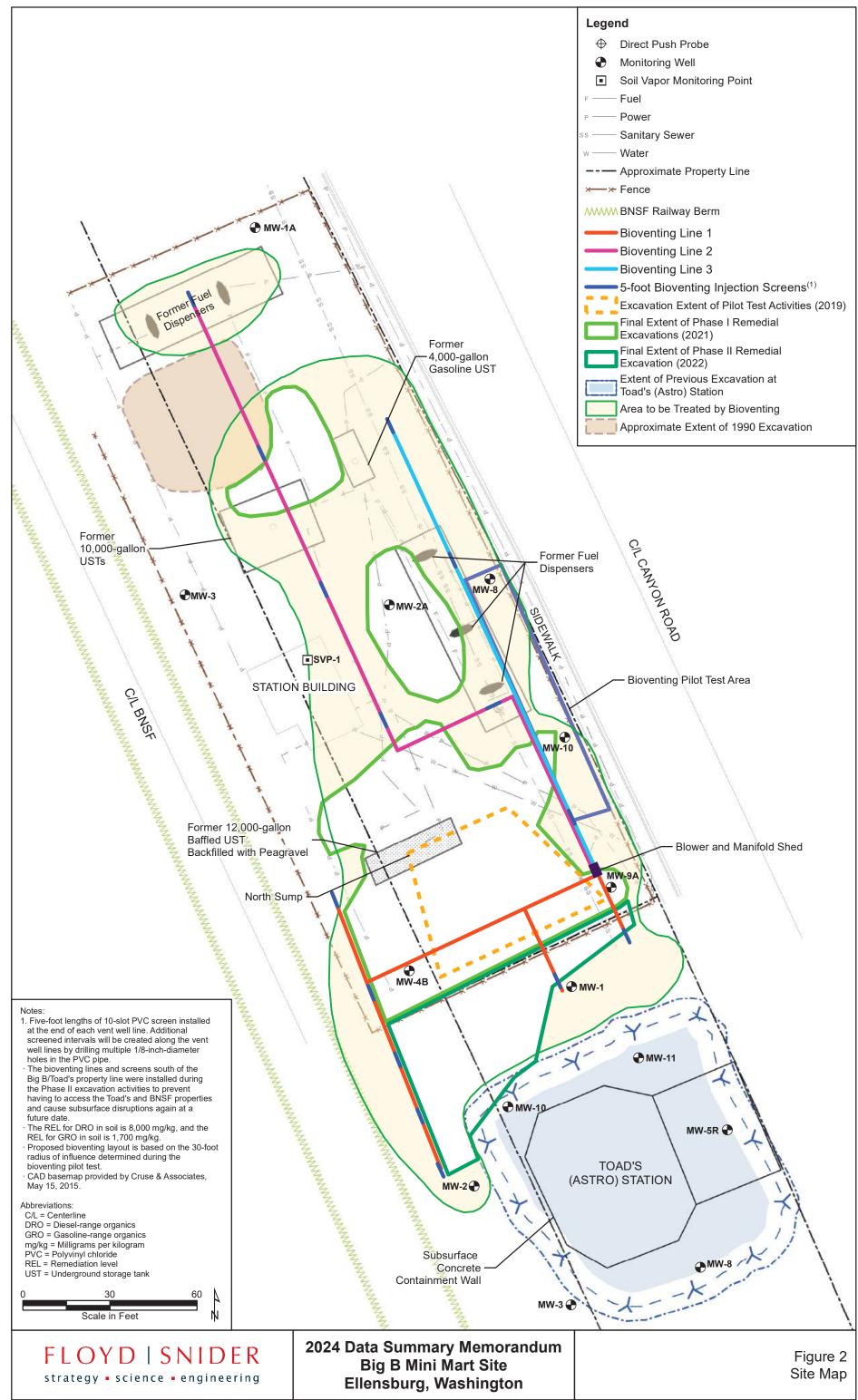


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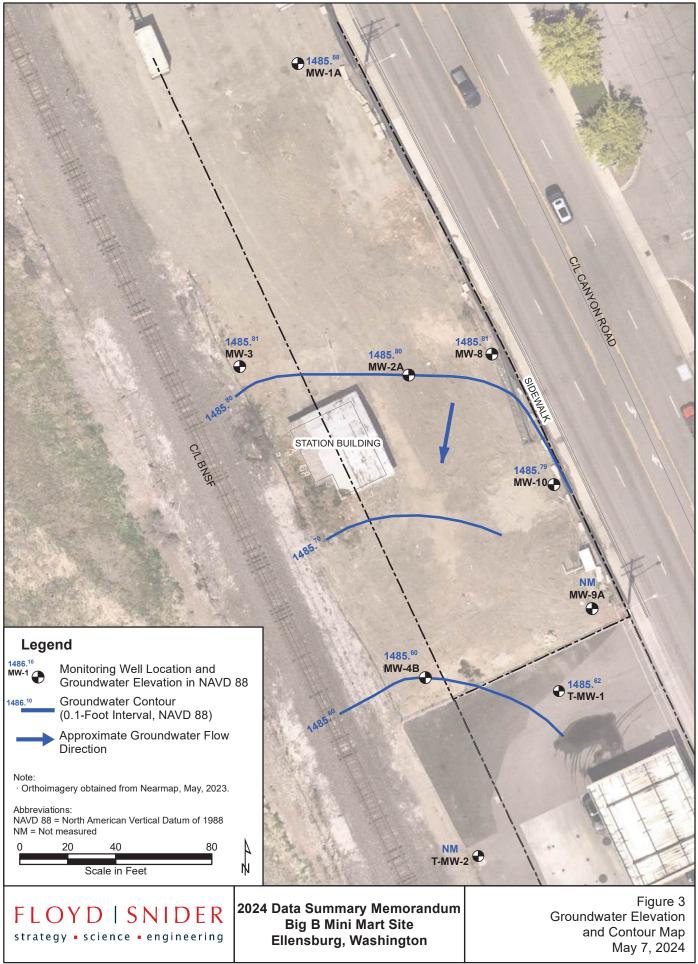
2024 Data Summary Memorandum Big B Mini Mart Site Ellensburg, Washington

Figure 1 Vicinity Map

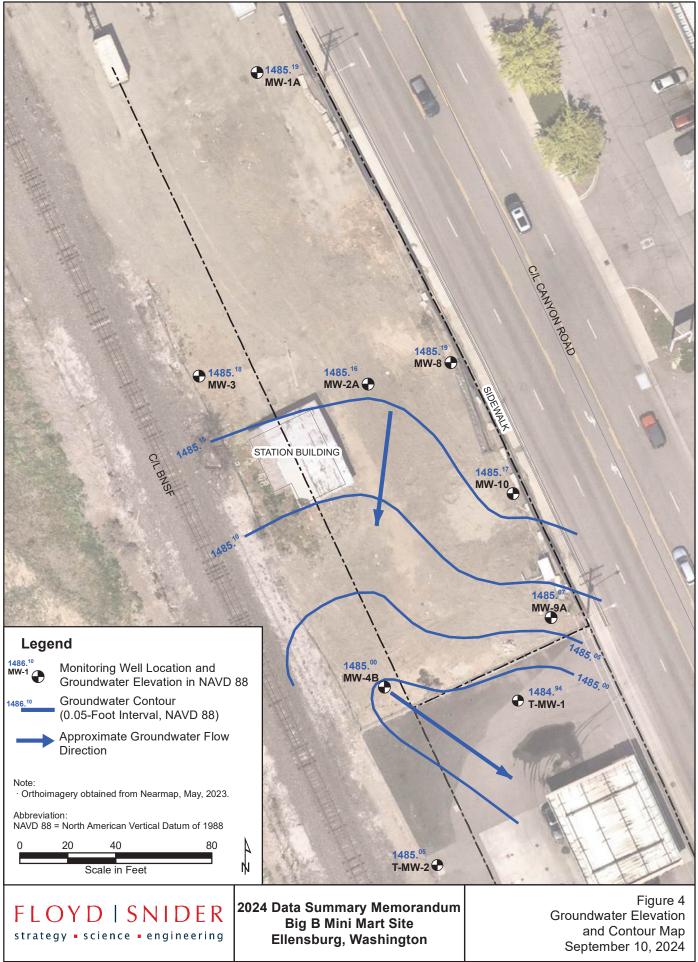
L Li\GIS\Projects\CL-Ellensburg\MXD\2024 Data Summary Memo\Figure 1 Vicinity Map.mxd 11/19/20204



I:\GIS\Projects\CL-Ellensburg\MXD\2024 Data Summary Memo\Figure 2 Site Map.mxd 11/25/2024



I:\GIS\Projects\CL-Ellensburg\MXD\2024 Data Summary Memo\Figure 3 Groundwater Elevation and Contour Map May 7, 2024.mxd 11/25/2024



L:\GIS\Projects\CL-Ellensburg\MXD\2024 Data Summary Memo\Figure 4 Groundwater Elevation and Contour Map September 10, 2024.mxd 11/25/2024 Attachment 1 Spring and Fall 2024 Laboratory Reports and Groundwater Sampling Forms

#### ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Michael Erdahl, B.S. Vineta Mills, M.S. Eric Young, B.S. July 16, 2024 5500 4th Ave South Seattle, WA 98108-2419 (206) 285-8282 office@friedmanandbruya.com www.friedmanandbruya.com

Gabriel Cisneros, Project Manager Floyd-Snider Two Union Square 601 Union St, Suite 600 Seattle, WA 98101

Dear Mr Cisneros:

Included is the amended report from the testing of material submitted on May 8, 2024 from the Big B Ellensburg, F&BI 405132 project. The motor oil reporting for sample MW-3-050724 was lowered to 250 ug/L.

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

Sincerely,

FRIEDMAN & BRUYA, INC.

A Calor

Michael Erdahl Project Manager

Enclosures c: Floyd Snider Lab Data, Manique Talaia-Murray FDS0517R.DOC

#### ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Michael Erdahl, B.S. Vineta Mills, M.S. Eric Young, B.S. May 17, 2024 5500 4th Ave South Seattle, WA 98108-2419 (206) 285-8282 office@friedmanandbruya.com www.friedmanandbruya.com

Gabriel Cisneros, Project Manager Floyd-Snider Two Union Square 601 Union St, Suite 600 Seattle, WA 98101

Dear Mr Cisneros:

Included are the results from the testing of material submitted on May 8, 2024 from the Big B Ellensburg, F&BI 405132 project. There are 24 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 should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Cale

Michael Erdahl Project Manager

Enclosures c: Floyd Snider Lab Data, Manique Talaia-Murray FDS0517R.DOC

#### ENVIRONMENTAL CHEMISTS

#### CASE NARRATIVE

This case narrative encompasses samples received on May 8, 2024 by Friedman & Bruya, Inc. from the Floyd-Snider Big B Ellensburg, F&BI 405132 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Floyd-Snider</u>
405132 -01	MW-9A-050724
405132 -02	MW-2-050724
405132 -03	MW-1-050724
405132 -04	MW-101-050724
405132 -05	MW-3-050724
405132 -06	MW-1A-050724
405132 -07	MW-4B-050724
405132 -08	MW-2A-050724
405132 -09	Trip Blank-050724

Samples MW-1-050724, MW-101-050724, MW-3-050724, MW-1A-050724, MW-4B-050724, and MW-2A-050724 were sent to Fremont Analytical for dissolved methane, TOC, nitrate, and sulfate analyses. The report is enclosed.

All quality control requirements were acceptable.

#### ENVIRONMENTAL CHEMISTS

Date of Report: 05/17/24 Date Received: 05/08/24 Project: Big B Ellensburg, F&BI 405132 Date Extracted: 05/09/24 Date Analyzed: 05/09/24

## RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Results Reported as ug/L (ppb)

<u>Sample ID</u> Laboratory ID	<u>Gasoline Range</u>	Surrogate ( <u>% Recovery)</u> (Limit 50-150)
MW-9A-050724 405132-01	<100	88
MW-2-050724 405132-02	<100	86
MW-1-050724 405132-03	<100	90
MW-101-050724 405132-04	<100	88
MW-4B-050724 405132-07	360	90
MW-2A-050724 405132-08	410	90
Method Blank 04-884 MB	<100	84

#### ENVIRONMENTAL CHEMISTS

Date of Report: 05/17/24 Date Received: 05/08/24 Project: Big B Ellensburg, F&BI 405132 Date Extracted: 05/09/24 Date Analyzed: 05/14/24

#### RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx Sample Extracts Passed Through a Silica Gel Column Prior to Analysis Results Reported as ug/L (ppb)

<u>Sample ID</u> Laboratory ID	Diesel Range (C10-C25)	Motor Oil Range (C25-C36)	Surrogate <u>(% Recovery)</u> (Limit 41-152)
MW-9A-050724 405132-01	<50	<250	113
MW-2-050724 405132-02	640	<250	118
MW-1-050724 405132-03	130	<250	112
MW-101-050724 405132-04	120	<250	118
MW-3-050724 405132-05	<50	<250	105
MW-1A-050724 405132-06	<50	<250	106
MW-4B-050724 405132-07	510 x	<250	109
MW-2A-050724 405132-08	<50	<250	111
Method Blank 04-1126 MB	<50	<250	101

#### ENVIRONMENTAL CHEMISTS

Date of Report: 05/17/24 Date Received: 05/08/24 Project: Big B Ellensburg, F&BI 405132 Date Extracted: 05/09/24 Date Analyzed: 05/09/24

### RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported as ug/L (ppb)

<u>Sample ID</u> Laboratory ID	Diesel Range (C10-C25)	Motor Oil Range (C25-C36)	Surrogate <u>(% Recovery)</u> (Limit 50-150)
MW-9A-050724 405132-01	160 x	<250	116
MW-2-050724 405132-02	6,400 x	700 x	114
MW-1-050724 405132-03	1,000 x	<250	126
MW-101-050724 405132-04	1,100 x	<250	129
MW-3-050724 405132-05	430 x	<250	123
MW-1A-050724 405132-06	110 x	<250	118
MW-4B-050724 405132-07	5,300 x	530 x	112
MW-2A-050724 405132-08	1,200 x	<250	123
Method Blank 04-1126 MB	<50	<250	112

# ENVIRONMENTAL CHEMISTS

Client Sample ID: Date Received: Date Extracted: Date Analyzed: Matrix: Units:	MW-9A-050 05/08/24 05/08/24 05/08/24 Water ug/L (ppb)	0724	Client: Project: Lab ID: Data File: Instrument: Operator:	Floyd-Snider Big B Ellensburg, F&BI 405132 405132-01 050821.D GCMS11 IJL
Surrogates: 1,2-Dichloroethane Toluene-d8 4-Bromofluorobenz		% Recovery: 96 100 98	Lower Limit: 78 84 72	Upper Limit: 126 115 130
Compounds:		Concentration ug/L (ppb)		
Benzene Toluene Ethylbenzene m,p-Xylene o-Xylene Naphthalene		<0.35 <1 <1 <2 <1 <1 <1		

# ENVIRONMENTAL CHEMISTS

Client Sample ID: Date Received: Date Extracted: Date Analyzed: Matrix: Units:	MW-2-0507 05/08/24 05/08/24 05/08/24 Water ug/L (ppb)	24	Client: Project: Lab ID: Data File: Instrument: Operator:	Floyd-Snider Big B Ellensburg, F&BI 405132 405132-02 050822.D GCMS11 IJL
Surrogates: 1,2-Dichloroethane Toluene-d8 4-Bromofluorobenz		% Recovery: 95 97 97	Lower Limit: 78 84 72	Upper Limit: 126 115 130
Compounds:		Concentration ug/L (ppb)		
Benzene Toluene Ethylbenzene m,p-Xylene o-Xylene Naphthalene		<0.35 <1 <1 <2 <1 <1 <1		

# ENVIRONMENTAL CHEMISTS

Client Sample ID: Date Received: Date Extracted: Date Analyzed: Matrix: Units:	MW-1-05072 05/08/24 05/08/24 05/08/24 Water ug/L (ppb)	24	Client: Project: Lab ID: Data File: Instrument: Operator:	Floyd-Snider Big B Ellensburg, F&BI 405132 405132-03 050823.D GCMS11 IJL
Surrogates: 1,2-Dichloroethane Toluene-d8 4-Bromofluorobenz		% Recovery: 102 98 96	Lower Limit: 78 84 72	Upper Limit: 126 115 130
Compounds:		Concentration ug/L (ppb)		
Benzene Toluene Ethylbenzene m,p-Xylene o-Xylene Naphthalene		<0.35 <1 <1 <2 <1 <1 <1		

# ENVIRONMENTAL CHEMISTS

Client Sample ID: Date Received: Date Extracted: Date Analyzed: Matrix: Units:	MW-101-05 05/08/24 05/08/24 05/08/24 Water ug/L (ppb)	50724	Client: Project: Lab ID: Data File: Instrument: Operator:	Floyd-Snider Big B Ellensburg, F&BI 405132 405132-04 050824.D GCMS11 IJL
Surrogates: 1,2-Dichloroethane Toluene-d8 4-Bromofluorobenz		% Recovery: 105 99 98	Lower Limit: 78 84 72	Upper Limit: 126 115 130
Compounds:		Concentration ug/L (ppb)		
Benzene Toluene Ethylbenzene m,p-Xylene o-Xylene Naphthalene		<0.35 <1 <1 <2 <1 <1 <1		

# ENVIRONMENTAL CHEMISTS

Client Sample ID: Date Received: Date Extracted: Date Analyzed: Matrix: Units:	MW-4B-050 05/08/24 05/08/24 05/08/24 Water ug/L (ppb)	0724	Client: Project: Lab ID: Data File: Instrument: Operator:	Floyd-Snider Big B Ellensburg, F&BI 405132 405132-07 050825.D GCMS11 IJL
Surrogates: 1,2-Dichloroethane Toluene-d8 4-Bromofluorobenz		% Recovery: 107 99 98	Lower Limit: 78 84 72	Upper Limit: 126 115 130
Compounds:		Concentration ug/L (ppb)		
Benzene Toluene Ethylbenzene m,p-Xylene o-Xylene Naphthalene		<0.35 <1 <1 <2 <1 <1 <1		

# ENVIRONMENTAL CHEMISTS

Client Sample ID: Date Received: Date Extracted: Date Analyzed: Matrix: Units:	MW-2A-050 05/08/24 05/08/24 05/08/24 Water ug/L (ppb)	)724	Client: Project: Lab ID: Data File: Instrument: Operator:	Floyd-Snider Big B Ellensburg, F&BI 405132 405132-08 050826.D GCMS11 IJL
Surrogates: 1,2-Dichloroethane Toluene-d8 4-Bromofluorobenz		% Recovery: 93 97 101	Lower Limit: 78 84 72	Upper Limit: 126 115 130
Compounds:		Concentration ug/L (ppb)		
Benzene Toluene Ethylbenzene m,p-Xylene o-Xylene Naphthalene		<0.35 <1 <1 <2 <1 <1 <1		

# ENVIRONMENTAL CHEMISTS

Client Sample ID: Date Received: Date Extracted: Date Analyzed: Matrix: Units:	Method Bla Not Applica 05/08/24 05/08/24 Water ug/L (ppb)		Client: Project: Lab ID: Data File: Instrument: Operator:	Floyd-Snider Big B Ellensburg, F&BI 405132 04-1066 mb 050809.D GCMS11 MD
Surrogates: 1,2-Dichloroethane Toluene-d8 4-Bromofluorobenz		% Recovery: 106 97 98	Lower Limit: 78 84 72	Upper Limit: 126 115 130
Compounds:		Concentration ug/L (ppb)		
Benzene Toluene Ethylbenzene m,p-Xylene o-Xylene Naphthalene		<0.35 <1 <1 <2 <1 <1 <1		

## ENVIRONMENTAL CHEMISTS

# Analysis For Dissolved Metals By EPA Method 6020B

Client ID: Date Received: Date Extracted: Date Analyzed: Matrix:	MW-1-050724 05/08/24 05/08/24 05/09/24 Water	Client: Project: Lab ID: Data File: Instrument:	Floyd-Snider Big B Ellensburg, F&BI 405132 405132-03 x20 405132-03 x20.075 ICPMS2
Units:	ug/L (ppb)	Operator:	SP
Analyte:	Concentration ug/L (ppb)		
Manganese	730		

12

## ENVIRONMENTAL CHEMISTS

# Analysis For Dissolved Metals By EPA Method 6020B

Client ID: Date Received: Date Extracted: Date Analyzed: Matrix: Units:	MW-101-050724 05/08/24 05/09/24 Water ug/L (ppb)	Client: Project: Lab ID: Data File: Instrument: Operator:	Floyd-Snider Big B Ellensburg, F&BI 405132 405132-04 x20 405132-04 x20.076 ICPMS2 SP
Analyte: Manganese	Concentration ug/L (ppb) 730	oporation	

13

## ENVIRONMENTAL CHEMISTS

# Analysis For Dissolved Metals By EPA Method 6020B

Client ID: Date Received: Date Extracted: Date Analyzed: Matrix:	MW-3-050724 05/08/24 05/08/24 05/09/24 Water	Client: Project: Lab ID: Data File: Instrument:	Floyd-Snider Big B Ellensburg, F&BI 405132 405132-05 x20 405132-05 x20.088 ICPMS2
Units:	ug/L (ppb)	Operator:	SP
Analyte:	Concentration ug/L (ppb)		
Manganese	290		

14

## ENVIRONMENTAL CHEMISTS

# Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	MW-1A-050724	Client:	Floyd-Snider
Date Received:	05/08/24	Project:	Big B Ellensburg, F&BI 405132
Date Extracted:	05/08/24	Lab ID:	405132-06 x20
Date Analyzed:	05/09/24	Data File:	405132-06 x20.192
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP
Analyte: Manganese	Concentration ug/L (ppb) 41	oporation	

## ENVIRONMENTAL CHEMISTS

# Analysis For Dissolved Metals By EPA Method 6020B

Client ID: Date Received: Date Extracted: Date Analyzed: Matrix: Units:	MW-4B-050724 05/08/24 05/09/24 Water ug/L (ppb)	Client: Project: Lab ID: Data File: Instrument: Operator:	Floyd-Snider Big B Ellensburg, F&BI 405132 405132-07 x20 405132-07 x20.193 ICPMS2 SP
Analyte: Manganese	Concentration ug/L (ppb) 1,100		

## ENVIRONMENTAL CHEMISTS

# Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	MW-2A-050724	Client:	Floyd-Snider
Date Received:	05/08/24	Project:	Big B Ellensburg, F&BI 405132
Date Extracted:	05/08/24	Lab ID:	405132-08 x20
Date Analyzed:	05/09/24	Data File:	405132-08 x20.194
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP
Analyte: Manganese	Concentration ug/L (ppb) 710		51

## ENVIRONMENTAL CHEMISTS

## Analysis For Dissolved Metals By EPA Method 6020B

Client ID: Date Received: Date Extracted: Date Analyzed: Matrix:	Method Blank NA 05/08/24 05/08/24 Water	Client: Project: Lab ID: Data File: Instrument:	Floyd-Snider Big B Ellensburg, F&BI 405132 I4-374 mb I4-374 mb.097 ICPMS2
Units:	ug/L (ppb)	Operator:	SP
Analyte:	Concentration ug/L (ppb)		
Manganese	<1		

18

#### ENVIRONMENTAL CHEMISTS

Date of Report: 05/17/24 Date Received: 05/08/24 Project: Big B Ellensburg, F&BI 405132

#### QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 40	5132-01 (Dupl	icate)					
	Reporting	Samp	le Duj	olicate	RPD		
Analyte	Units	Resu	lt Re	esult	(Limit 20)		
Gasoline	ug/L (ppb)	<100	) <	:100	nm		
Laboratory Code: Laboratory Control Sample Percent							
	Reporting	Spike	Recovery	Acceptance			
Analyte	Units	Level	LCS	Criteria	_		
Gasoline	ug/L (ppb)	1,000	96	70-130	_		

#### ENVIRONMENTAL CHEMISTS

Date of Report: 05/17/24 Date Received: 05/08/24 Project: Big B Ellensburg, F&BI 405132

### QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: Laboratory Control Sample Silica Gel								
			Percent	Percent				
	Reporting	Spike	Recovery	Recovery	Acceptance	RPD		
Analyte	Units	Level	LCS	LCSD	Criteria	(Limit 20)		
Diesel Extended	ug/L (ppb)	2,500	88	96	65 - 151	9		

#### ENVIRONMENTAL CHEMISTS

Date of Report: 05/17/24 Date Received: 05/08/24 Project: Big B Ellensburg, F&BI 405132

### QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: Laboratory Control Sample

			Percent	Percent		
	Reporting	Spike	Recovery	Recovery	Acceptance	$\operatorname{RPD}$
Analyte	Units	Level	LCS	LCSD	Criteria	(Limit 20)
Diesel Extended	ug/L (ppb)	2,500	96	104	65 - 151	8

#### ENVIRONMENTAL CHEMISTS

Date of Report: 05/17/24 Date Received: 05/08/24 Project: Big B Ellensburg, F&BI 405132

### QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: 405104-02 (Matrix Spike)

Č (	1 /			Percent	
	Reporting	Spike	Sample	Recovery	Acceptance
Analyte	Units	Level	Result	MS	Criteria
Benzene	ug/L (ppb)	10	< 0.35	99	50-150
Toluene	ug/L (ppb)	10	<1	99	50 - 150
Ethylbenzene	ug/L (ppb)	10	<1	100	50 - 150
m,p-Xylene	ug/L (ppb)	20	<2	99	50 - 150
o-Xylene	ug/L (ppb)	10	<1	99	50 - 150
Naphthalene	ug/L (ppb)	10	<1	95	50 - 150

Laboratory Code: Laboratory Control Sample

	• • • • • • • • • • • • • • • • • • •		Percent	Percent		
	Reporting	Spike	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	LCS	LCSD	Criteria	(Limit 20)
Benzene	ug/L (ppb)	10	99	97	70-130	2
Toluene	ug/L (ppb)	10	102	97	70-130	5
Ethylbenzene	ug/L (ppb)	10	103	99	70-130	4
m,p-Xylene	ug/L (ppb)	20	102	98	70-130	4
o-Xylene	ug/L (ppb)	10	101	96	70-130	<b>5</b>
Naphthalene	ug/L (ppb)	10	90	83	70-130	8

#### ENVIRONMENTAL CHEMISTS

Date of Report: 05/17/24 Date Received: 05/08/24 Project: Big B Ellensburg, F&BI 405132

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

Laboratory Cod	de: 405126-01 (	(Matrix Sp	oike)				
Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Manganese	ug/L (ppb)	20	239	142 b	174 b	75-125	20 b

Laboratory Code: Laboratory Control Sample

			Percent	
	Reporting	Spike	Recovery	Acceptance
Analyte	Units	Level	LCS	Criteria
Manganese	ug/L (ppb)	20	100	80-120

#### ENVIRONMENTAL CHEMISTS

## **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.

 ${\rm J}$  - 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.

 $k-\mbox{The calibration results}$  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.

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	X X	XX			*			X	7	GW	13:45	5/7/2\$	OS AG	0	MW-3-050724
-	XX	$\times$		P			$\geq$	X	در	GW	12:30	5/17/24	OYAM	0	MW-101-050724
Jonly BTEXT	XX	X			X		X	$\times$	5	GW	12:15	5/7/24	03 A-M	6	MW-1-050724
2Field Filtered	EX				×		X	X	1	GW	12:05		02 A-G-5/7/24	0	MW-Z-050724
DDX with two	()			~			X	X	Ţ	GW	11:00	5/7/24	OF A G		MW-9A-050724
Notes	Manganese, Diss Methane	TOC NArde/Sulfate	PCBs EPA 8082	PAHs EPA 8260	NWTPH-HCID VOCs EPA 8200	BTEX EPA 8021	NWTPH-Gx	NWTPH-Dx	# of Jars	Sample Type	Time Sampled	Date Sampled	Lab ID		Sample ID
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□ Other Default: Dispose after 30 days	□ Other Default: Dis						/ No	Yes /	10000	Project specific RLs? -	Ander. com	gabe, cranaragetleyes, not	prique to		Phone (266) 292 20 18 Email
SAMPLE DISPOSAL hive samples	SAMPLE DI Archive samples		ETO	INVOICE TO	INI					KS	REMARKS		WA 9810	5	City, State, ZIP Soft
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Page # // of //	Page #	00/2	00	à	AN N		m		uture)	SAMPLERS (signature)	SAMPLERS (signature)		2 Murra	Talaiz	Gabe Cisneros Report To Manfque Tol

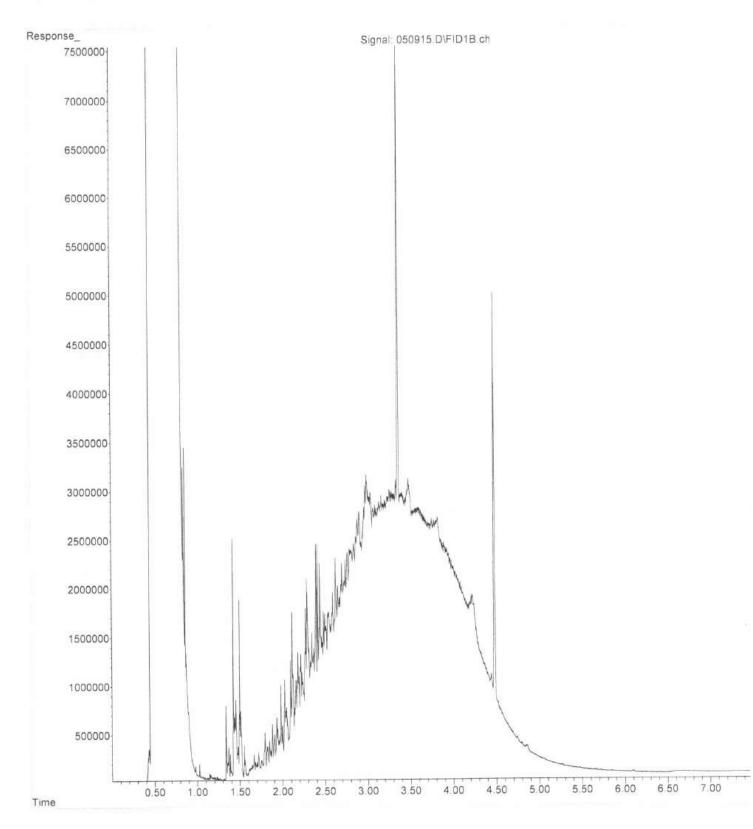
PROJECT # 405	132 CLIENT	FOS	INITIA DATE:_		8/
If custody seals a	are present on co	oler, are they intact?	Ø NA	D YES	
Cooler/Sample te	emperature		The	rmometer ID: Flu	L uke 9
Were samples rec	ceived on ice/cold	l packs?		Ø YES	une i
How did samples	arrive? er the Counter	□ Picked up by F&BI	D FedE	x/UPS/GSO	)
Is there a Chain-o *or other representativ	of-Custody* (COC e documents, letters, a	))? nd/or shipping memos		¢ yes	(
Number of days s	amples have been	n sitting prior to receipt	at laborat	ory _/	_ d
Are the samples c	learly identified	? (explain "no" answer below)		Ø YES	0
Were all sample c	ontainers receive	ed intact (i.e. not broken	,	Z YES	C
leaking etc.)? (expl	ain "no" answer below)	)		ж.	
leaking etc.)? (expl	ain "no" answer below)	)	ES 🗆 N	0 D U	nkı
Were appropriate	ain "no" answer below) sample containe	)	ES D NA		
Were appropriate	ain "no" answer below) e sample containe re present on san	ers used? [/ Y.			C
Were appropriate If custody seals an Are samples requi	ain "no" answer below) e sample containe re present on san iring no headspan formation provid	ers used? 🛛 🖓 Y. nples, are they intact?	Ø NA	★ XES	
Were appropriate If custody seals an Are samples requi	ain "no" answer below) e sample containe re present on san iring no headspace formation provide low)	ers used? [/ Y. nples, are they intact? ce, headspace free? ded on the COC, and doe	⊅ NA □ NA s it match	₩ YES ✓ YES the sampl	
Were appropriate Were appropriate If custody seals an Are samples requi Is the following in (explain "no" answer bel	ain "no" answer below) sample containe re present on san iring no headspan formation provid low)	ers used? If Y nples, are they intact? ce, headspace free? ded on the COC, and doe	⊅ NA □ NA s it match	∉ YES Ø YES the sampl	C e la
Were appropriate If custody seals an Are samples requi Is the following in (explain "no" answer bel Sample ID's	ain "no" answer below) e sample containe re present on san iring no headspan formation provid low) Ves $\Box$ No Ves $\Box$ No	ers used? pples, are they intact? ce, headspace free? ded on the COC, and doe	Ø NA NA s it match	★ YES ✓ YES the sampl	e la
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FRIEDMAN & BRUYA, INC./FORMS/CHECKIN/SAMPLECONDITION.doc

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Operator : TL
Acquired : 09 May 2024 03:21 pm using AcqMethod DX.M
Instrument : GC14
Sample Name: 405132-01
Misc Info :
Vial Number: 14

Response\_ Signal: 050914.D\FID1B.ch 6500000 6000000 5500000 5000000 4500000 4000000 3500000 3000000 2500000 2000000 1500000 1000000 500000 Julia 7.00 6.00 6.50 3.00 3.50 4 00 4.50 5.00 5.50 2.00 2.50 1.50 1.00 0.50 Time

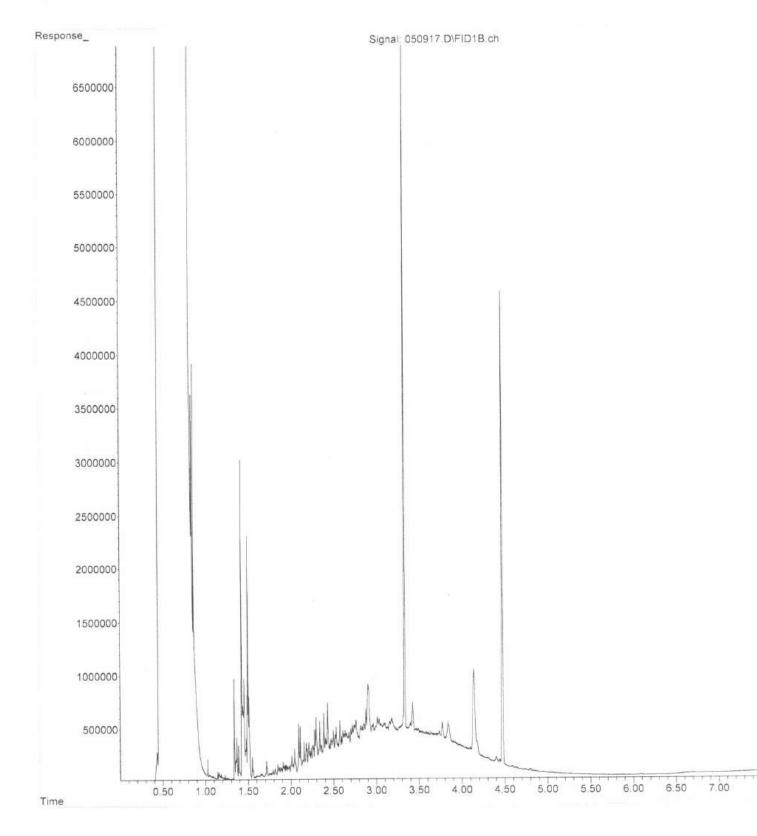
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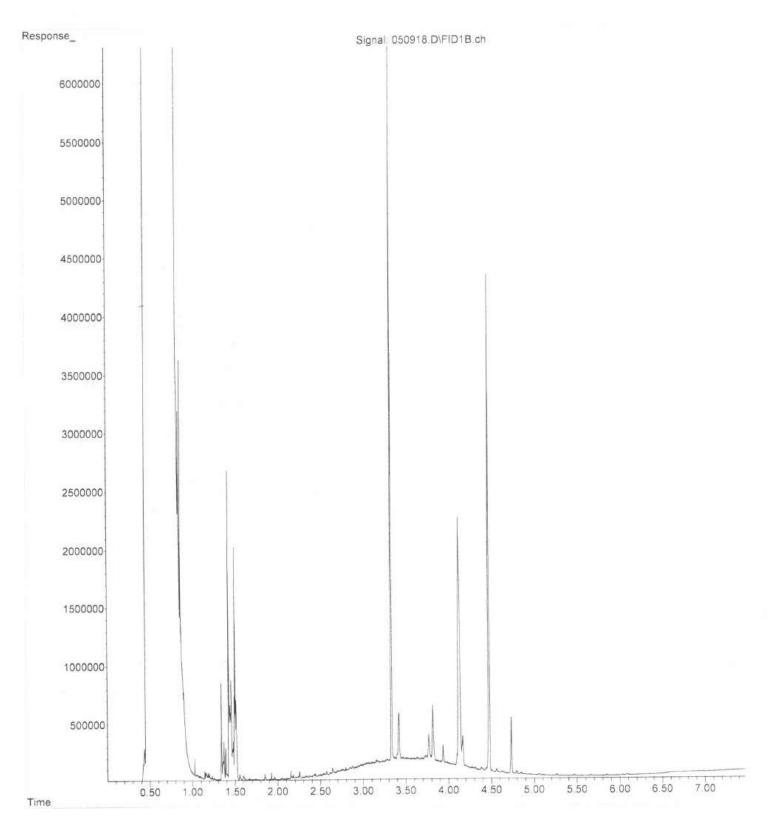
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Instrument : GC14
Sample Name: 405132-03
Misc Info :
Vial Number: 16

Response\_ Signal: 050916.D\FID1B ch 7000000 6500000 6000000 5500000 5000000 4500000 4000000 3500000 3000000 2500000 2000000 1500000 1000000 W Haw MAN 500000 7 00 3.50 4.00 4.50 5.00 5.50 6.00 6.50 2.00 2.50 3.00 1.00 1.50 0.50 Time

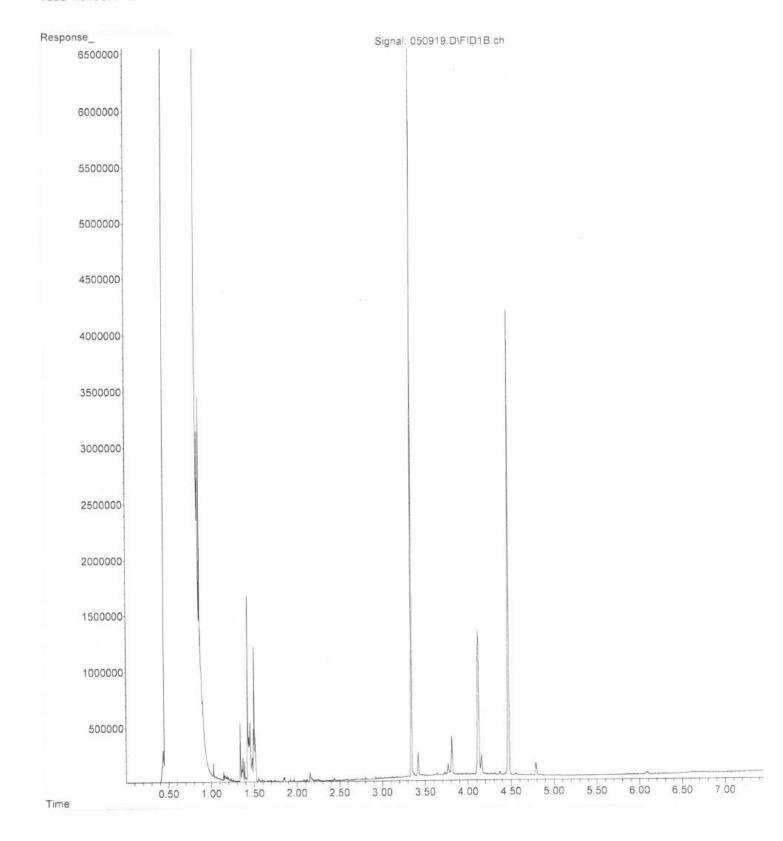
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Instrument : GC14
Sample Name: 405132-04
Misc Info :
Vial Number: 17



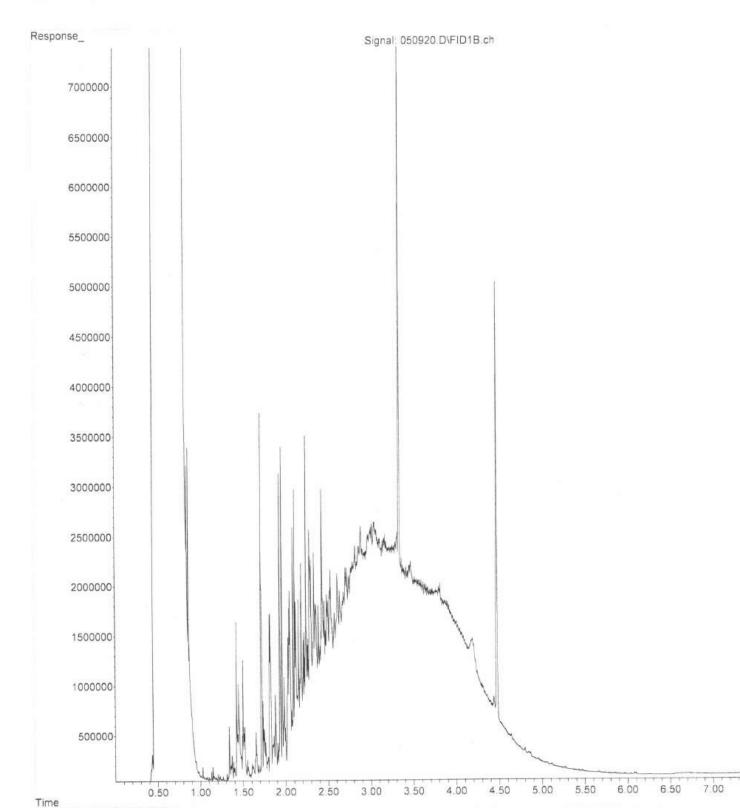
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Instrument : GC14
Sample Name: 405132-05
Misc Info :
Vial Number: 18



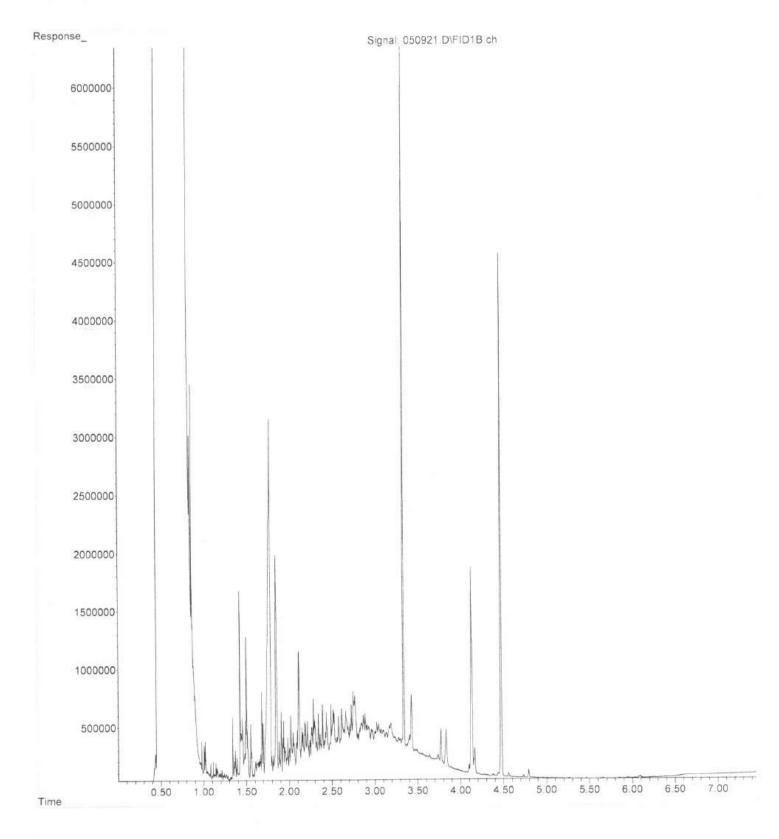
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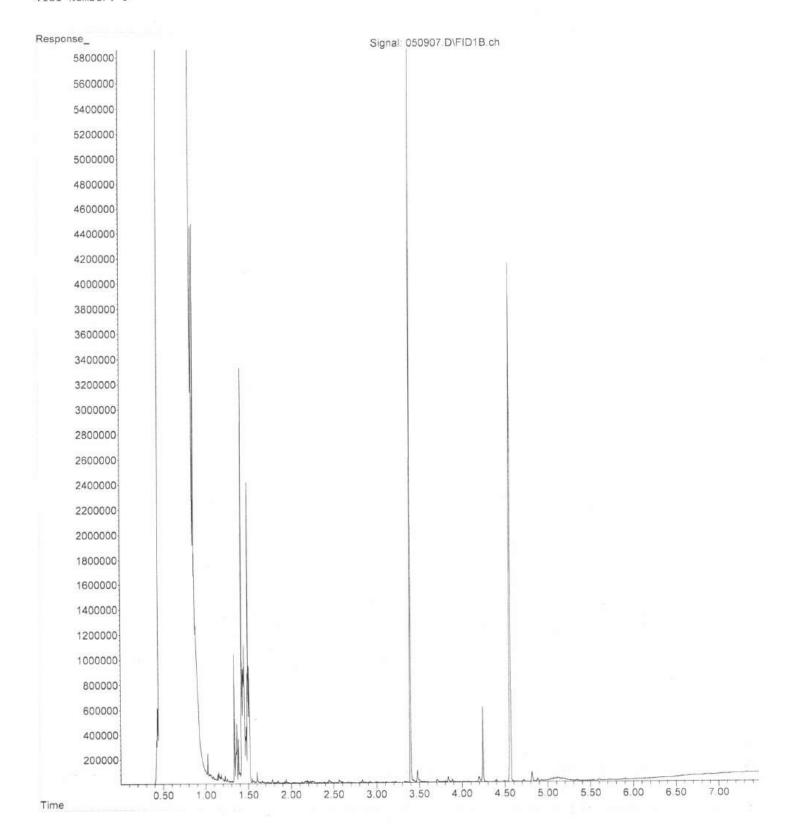
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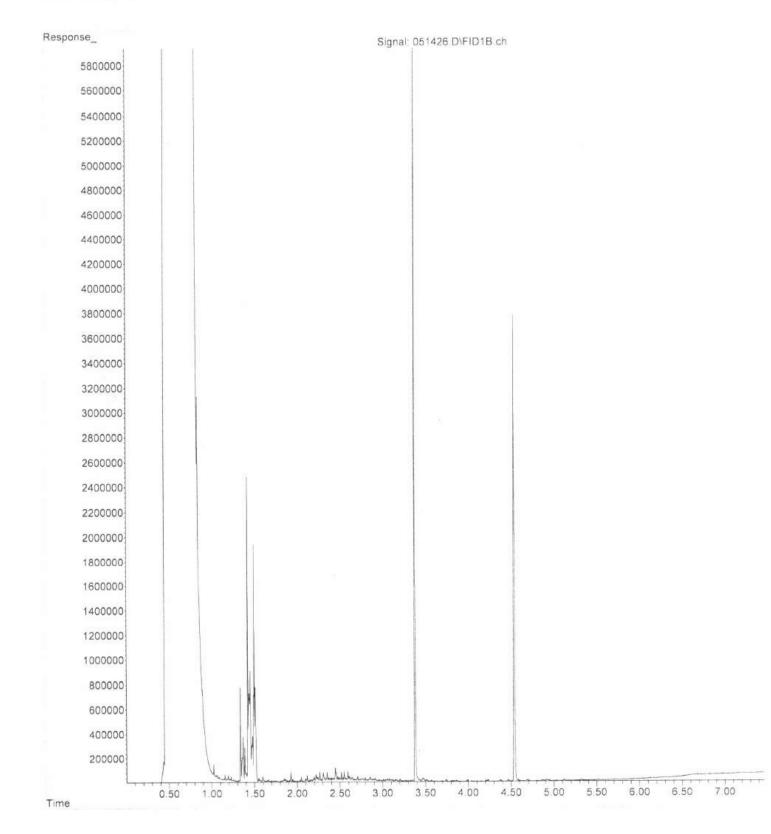
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Instrument : GC14
Sample Name: 405132-08
Misc Info :
Vial Number: 21



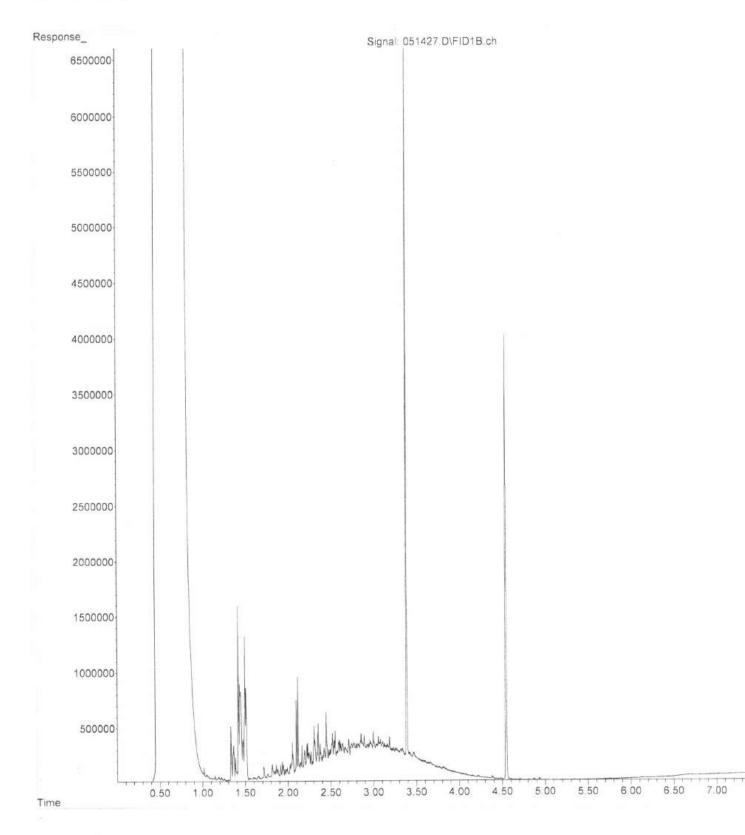
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Instrument : GC14
Sample Name: 04-1126 mb
Misc Info :
Vial Number: 9



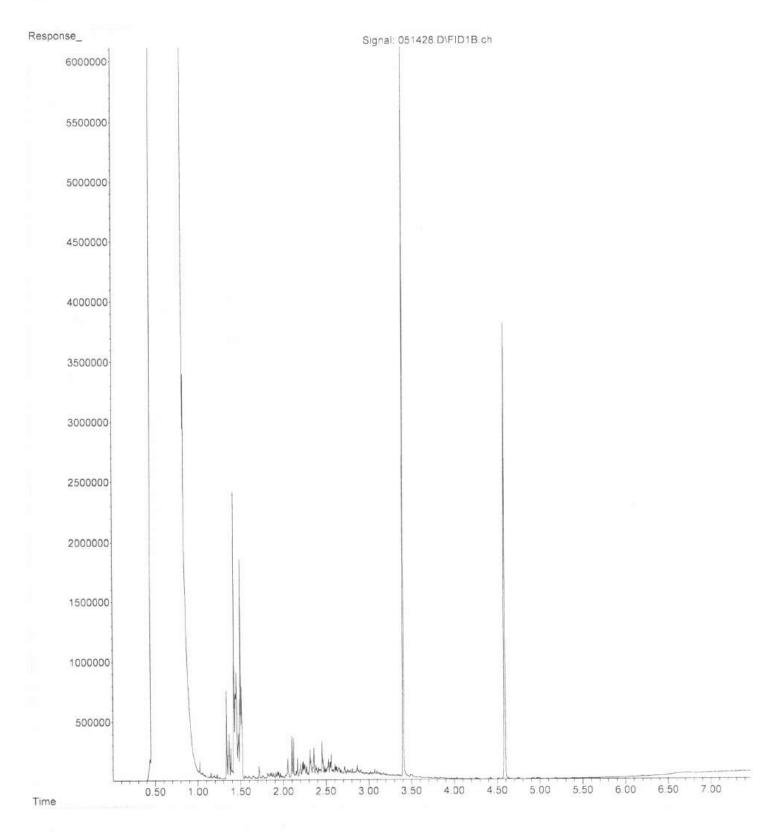
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Acquired : 14 May 2024 01:26 pm using AcqMethod DX.M
Instrument : GC14
Sample Name: 405132-01 sg rr
Misc Info :
Vial Number: 25



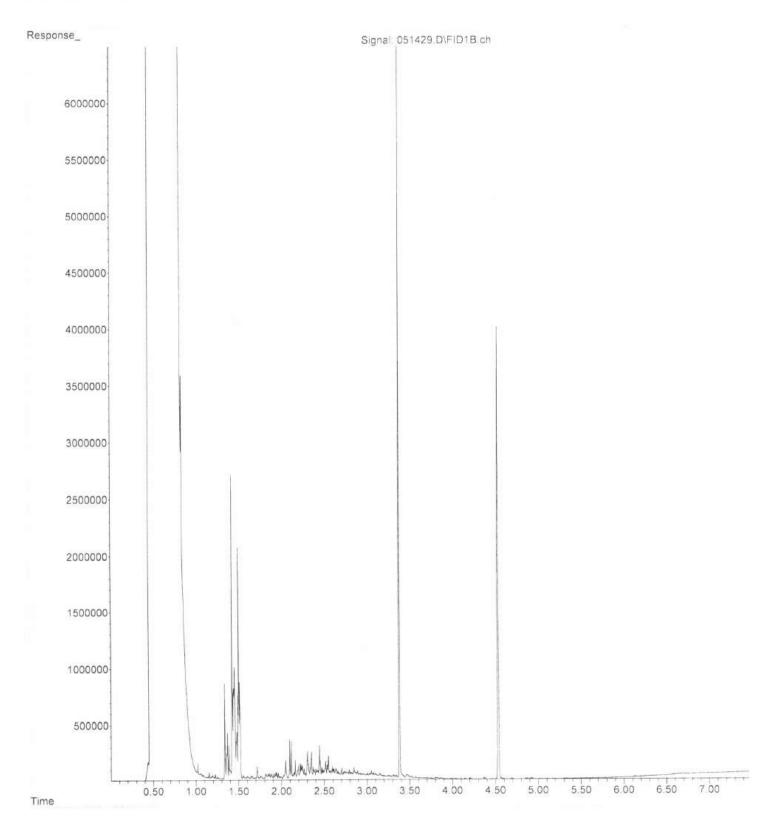
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Instrument : GC14
Sample Name: 405132-02 sg rr
Misc Info :
Vial Number: 26



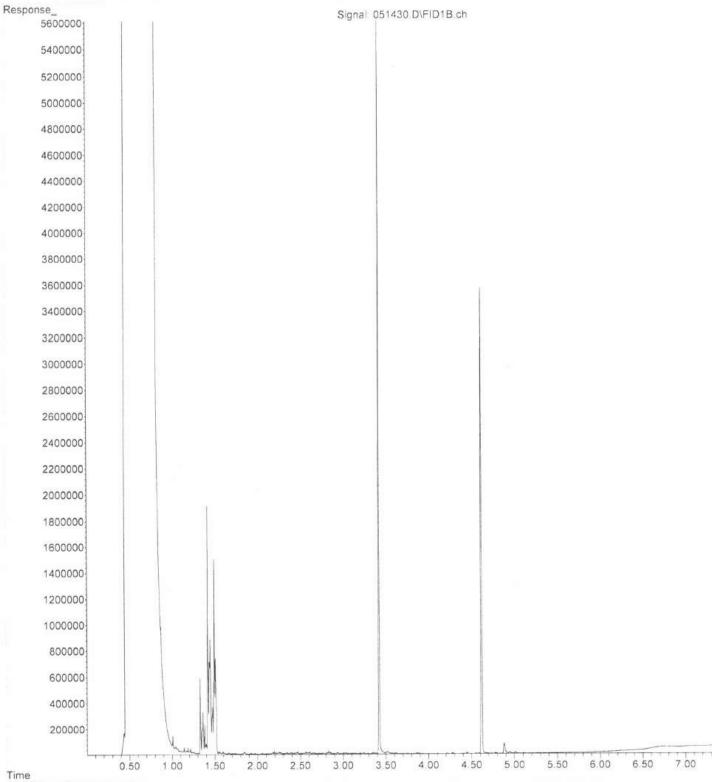
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Operator : TL
Acquired : 14 May 2024 01:50 pm using AcqMethod DX.M
Instrument : GC14
Sample Name: 405132-03 sg rr
Misc Info :
Vial Number: 27



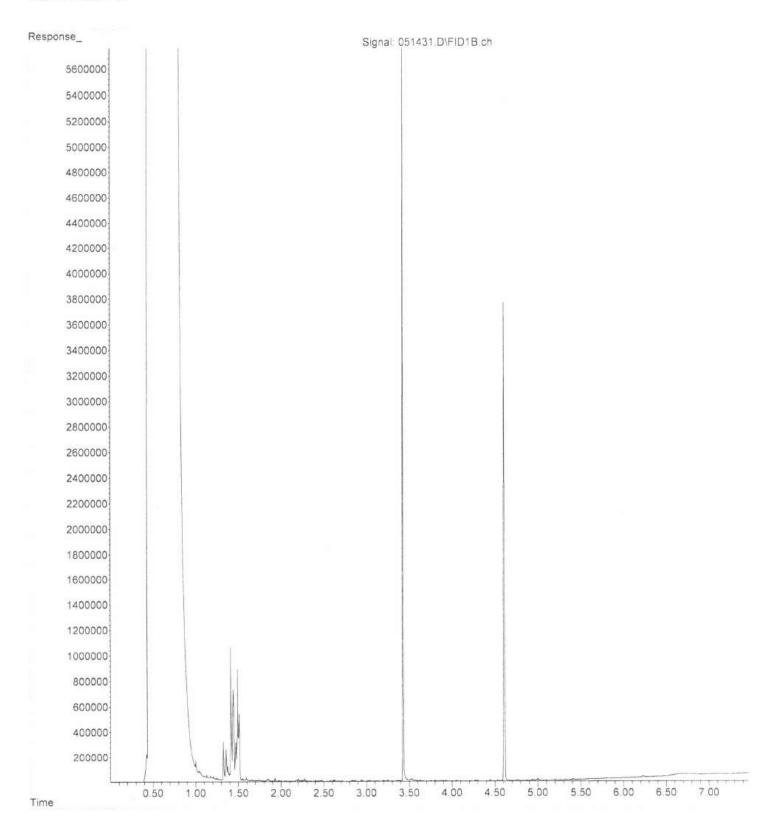
File :P:\Proc\_GC14\05-14-24\051429.D
Operator : TL
Acquired : 14 May 2024 02:02 pm using AcqMethod DX.M
Instrument : GC14
Sample Name: 405132-04 sg rr
Misc Info :
Vial Number: 28



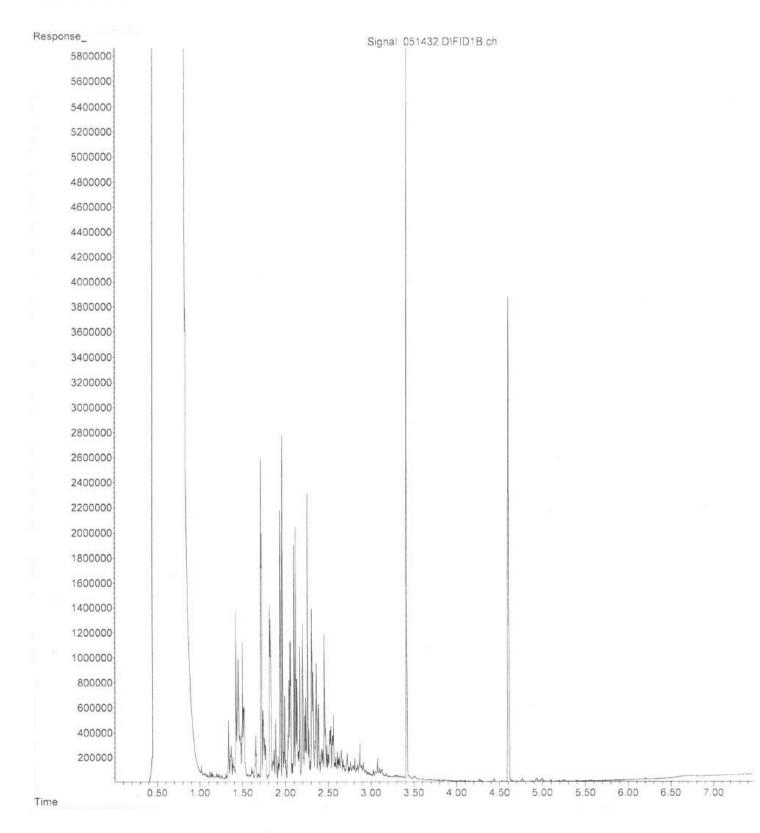
:P:\Proc\_GC14\05-14-24\051430.D File Operator : TL Acquired : 14 May 2024 02:14 pm using AcqMethod DX.M Instrument : GC14 Sample Name: 405132-05 sg rr Misc Info : Vial Number: 29



File :P:\Proc\_GC14\05-14-24\051431.D
Operator : TL
Acquired : 14 May 2024 02:26 pm using AcqMethod DX.M
Instrument : GC14
Sample Name: 405132-06 sg rr
Misc Info :
Vial Number: 30

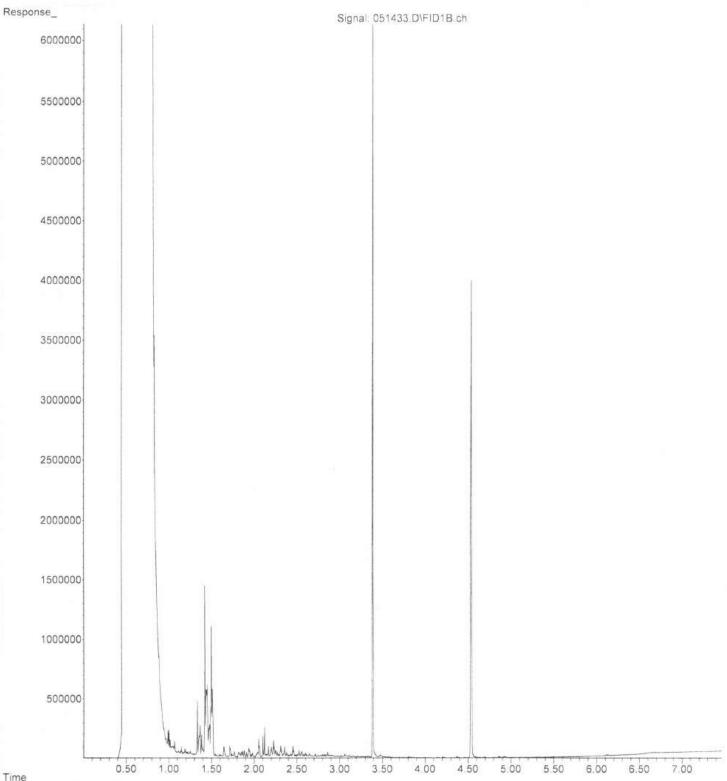


File :P:\Proc\_GC14\05-14-24\051432.D
Operator : TL
Acquired : 14 May 2024 02:38 pm using AcqMethod DX.M
Instrument : GC14
Sample Name: 405132-07 sg rr
Misc Info :
Vial Number: 31



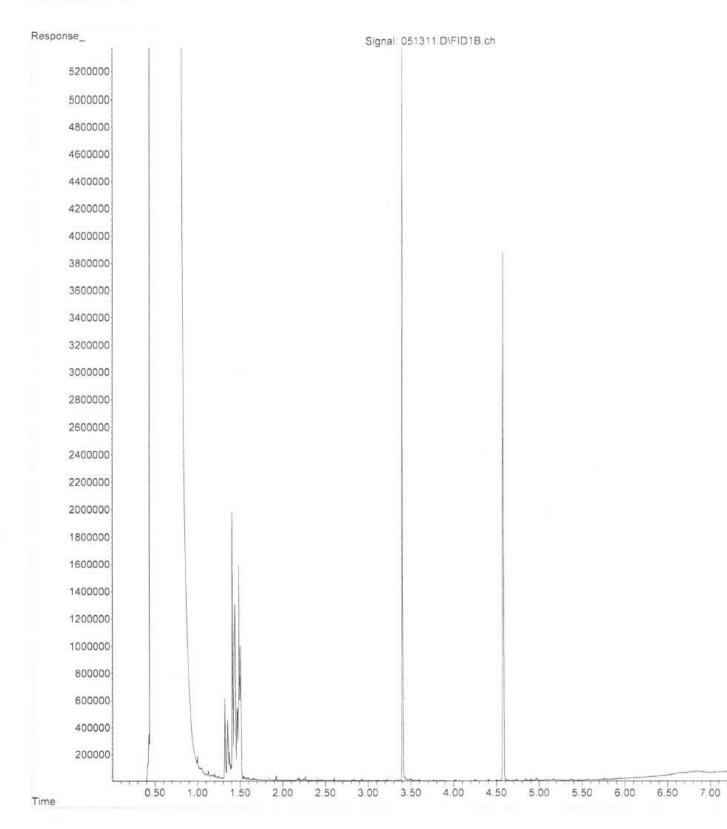
:P:\Proc\_GC14\05-14-24\051433.D File Operator : TL Acquired : 14 May 2024 02:50 pm using AcqMethod DX.M Instrument : GC14 Sample Name: 405132-08 sg rr Misc Info : Vial Number: 32

ERR

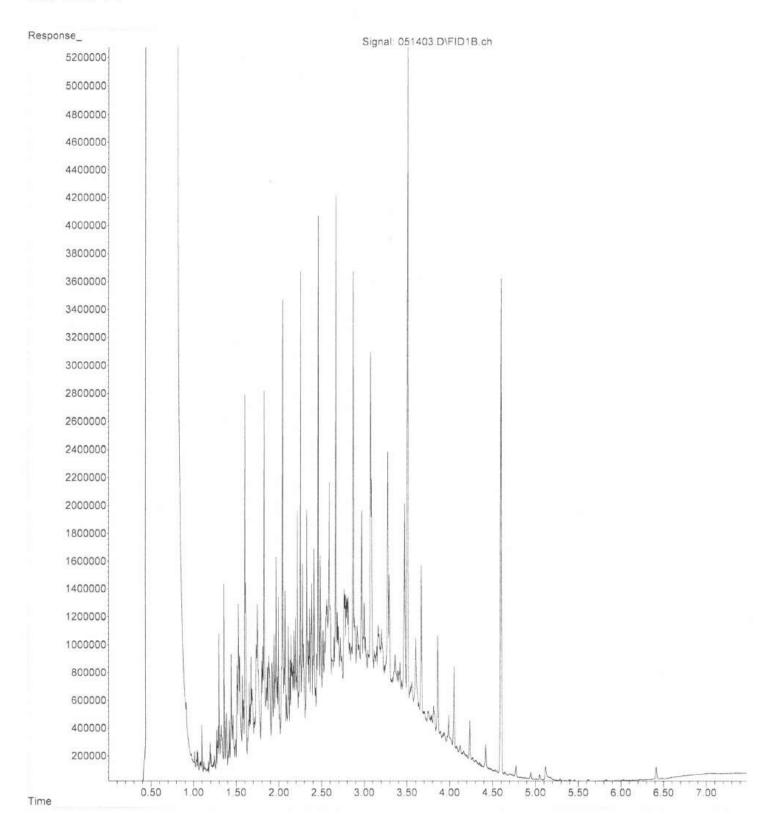


Time

File :P:\Proc\_GC14\05-13-24\051311.D
Operator : TL
Acquired : 13 May 2024 12:55 pm using AcqMethod DX.M
Instrument : GC14
Sample Name: 04-1126 mb sg
Misc Info :
Vial Number: 13



File :P:\Proc\_GC14\05-14-24\051403.D Operator : TL Acquired : 14 May 2024 08:38 am using AcqMethod DX.M Instrument : GC14 Sample Name: 500 Dx 71-40G Misc Info : Vial Number: 3





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: 405132, E-187 Work Order Number: 2405153

May 16, 2024

#### **Attention Michael Erdahl:**

Fremont Analytical, Inc, an Alliance Technical Group company, received 6 sample(s) on 5/8/2024 for the analyses presented in the following report.

### Dissolved Gases by RSK-175 Ion Chromatography by EPA 300.0 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





www.fremontanalytical.com



CLIENT: Project: Work Order:	Friedman & Bruya 405132 2405153	Work Order Sample Summ		
Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received	
2405153-001	MW-1-050724	05/07/2024 12:15 PM	05/08/2024 10:28 AM	
2405153-002	MW-101-050724	05/07/2024 12:30 PM	05/08/2024 10:28 AM	
2405153-003	MW-3-050724	05/07/2024 1:45 PM	05/08/2024 10:28 AM	
2405153-004	MW-1A-050724	05/07/2024 1:45 PM	05/08/2024 10:28 AM	
2405153-005	MW-4B-050724	05/07/2024 2:45 PM	05/08/2024 10:28 AM	
2405153-006	MW-2A-050724	05/07/2024 2:50 PM	05/08/2024 10:28 AM	



**Case Narrative** 

WO#: **2405153** Date: **5/16/2024** 

CLIENT:Friedman & BruyaProject:405132

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 & Acronyms**



WO#: **2405153** Date Reported: **5/16/2024** 

#### 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 Recoverv 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:
 2405153

 Date Reported:
 5/16/2024

CLIENT: Friedman & Bruya Project: 405132

Lab ID: 2405153-001 Client Sample ID: MW-1-050724			Collection Date: 5/7/2024 12:15:00 P Matrix: Water					
Analyses	Result	RL Qual	Units	DF	Date Analyzed			
Dissolved Gases by RSK-175			Batch	ID: R9	1756 Analyst: CO			
Methane	0.108	0.00500	mg/L	1	5/15/2024 1:32:00 PM			
Ion Chromatography by EPA 300.0			Batch	ID: 43	820 Analyst: FG			
Nitrate (as N)	ND	0.200	mg/L	1	5/8/2024 9:36:00 PM			
Sulfate	19.5	1.00	mg/L	1	5/13/2024 8:57:00 PM			
Total Organic Carbon by SM 5310C			Batch	ID: R9	1575 Analyst: FG			
Total Organic Carbon	4.61	0.700	mg/L	1	5/9/2024 7:54:00 PM			

Lab ID: 2405153-002 Collection Date: 5/7/2024 12:30:00 PM Client Sample ID: MW-101-050724 Matrix: Water Analyses **RL** Qual Units DF **Date Analyzed** Result Batch ID: R91756 Analyst: CO **Dissolved Gases by RSK-175** Methane 0.107 0.00500 mg/L 1 5/15/2024 1:37:00 PM Batch ID: 43820 Analyst: FG Ion Chromatography by EPA 300.0 ND 5/8/2024 10:02:00 PM Nitrate (as N) 0.200 mg/L 1 Sulfate 20.1 1.00 mg/L 1 5/13/2024 8:34:00 PM Batch ID: R91575 Analyst: FG Total Organic Carbon by SM 5310C Total Organic Carbon 4.61 0.700 5/9/2024 8:16:00 PM mg/L 1



# **Analytical Report**

 Work Order:
 2405153

 Date Reported:
 5/16/2024

CLIENT:	Friedman & Bruya
Project:	405132

Lab ID: 2405153-003 Client Sample ID: MW-3-050724					ection Date: 5/7/2024 1:45:00 PM rix: Water				
Analyses	Result	RL	Qual	Units	DF	Date Analyzed			
Dissolved Gases by RSK-175				Batch	ID: R	91756 Analyst: CO			
Methane	0.00526	0.00500		mg/L	1	5/15/2024 1:41:00 PM			
Ion Chromatography by EPA 300.0				Batch	1D: 4	3864 Analyst: FG			
Nitrate (as N)	2.73	0.200	н	mg/L	1	5/9/2024 4:00:00 PM			
Sulfate	23.0	1.00		mg/L	1	5/15/2024 7:20:00 PM			
Total Organic Carbon by SM 5310C				Batch	ID: R	91575 Analyst: FG			
Total Organic Carbon	2.55	0.700		mg/L	1	5/9/2024 8:37:00 PM			

Lab ID: 2405153-004							24 1:45:00 PM	
Client Sample ID: MW-1A-050724				Matrix: V	vater			
Analyses	Result	RL	Qual	Units	DI	- Date	Analyzed	
Dissolved Gases by RSK-175				Batcl	h ID:	R91756	Analyst: CO	
Methane	0.00610	0.00500		mg/L	1	5/15/2	2024 1:44:00 PM	
Ion Chromatography by EPA 300.0				Batcl	h ID:	43905	Analyst: FG	
Nitrate (as N)	6.50	1.00	DH	mg/L	5	5/13/2	2024 9:44:00 PM	
Sulfate	20.4	5.00	D	mg/L	5	5/13/2	2024 9:44:00 PM	
Total Organic Carbon by SM 5310C				Batcl	h ID:	R91575	Analyst: FG	
Total Organic Carbon	3.34	0.700		mg/L	1	5/9/2	024 8:59:00 PM	



# **Analytical Report**

 Work Order:
 2405153

 Date Reported:
 5/16/2024

CLIENT:	Friedman & Bruya
Project:	405132

Lab ID: 2405153-005 Client Sample ID: MW-4B-050724				Collection Date: 5/7/2024 2:45:00 PM Matrix: Water					
Analyses	Result	RL Qı	lal	Units	DF	Date Analyzed			
Dissolved Gases by RSK-175				Batch	ID: R9	1756 Analyst: CO			
Methane	1.49	0.0500	D	mg/L	10	5/15/2024 2:06:00 PM			
Ion Chromatography by EPA 300.0				Batch	n ID: 43	864 Analyst: FG			
Nitrate (as N)	ND	0.200	Н	mg/L	1	5/9/2024 4:53:00 PM			
Sulfate	2.21	1.00		mg/L	1	5/15/2024 7:43:00 PM			
Total Organic Carbon by SM 5310C				Batch	ID: R9	1575 Analyst: FG			
Total Organic Carbon	8.85	0.700		mg/L	1	5/9/2024 9:33:00 PM			

Lab ID: 2405153-006		Collection Date: 5/7/2024 2								
Client Sample ID: MW-2A-050724										
Analyses	Result	RL	Qual	Units	D	F Date Analyzed				
Dissolved Gases by RSK-175				Batch	n ID:	R91756 Analyst: CO				
Methane	0.489	0.0100	D	mg/L	2	5/15/2024 2:09:00 PM				
Ion Chromatography by EPA 300.0				Batch	n ID:	43864 Analyst: FG				
Nitrate (as N)	ND	0.200	н	mg/L	1	5/9/2024 5:20:00 PM				
Sulfate	24.2	1.00		mg/L	1	5/14/2024 12:49:00 AM				
Total Organic Carbon by SM 5310C				Batch	n ID:	R91575 Analyst: FG				
Total Organic Carbon	4.91	0.700		mg/L	1	5/9/2024 10:56:00 PM				



Work Order: CLIENT: Project:	2405153 Friedman & E 405132	Bruya								•	SUMMA matograph		-
Sample ID: MB-438	320	SampType	e: MBLK			Units: mg/L		Prep Dat	te: 5/8/202	24	RunNo: 91	595	
Client ID: MBLKW	V	Batch ID:	43820					Analysis Dat	te: <b>5/8/202</b>	24	SeqNo: 19	10504	
Analyte			Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as N)			ND	0.200									
Sample ID: LCS-43	820	SampType	e: LCS			Units: <b>mg/L</b>		Prep Dat	te: <b>5/8/20</b> 2	24	RunNo: 91	595	
Client ID: LCSW		Batch ID:	43820					Analysis Dat	te: <b>5/8/202</b>	24	SeqNo: 19	10505	
Analyte			Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as N)			0.720	0.200	0.7500	0	96.0	90	110				
Sample ID: 240511	8-001BDUP	SampType	e: DUP			Units: <b>mg/L</b>		Prep Dat	te: <b>5/8/20</b> 2	24	RunNo: 91	595	
Client ID: BATCH	l	Batch ID:	43820					Analysis Dat	te: <b>5/8/20</b> 2	24	SeqNo: 19	10507	
Analyte			Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as N)			ND	0.200						0		20	
Sample ID: 240511	8-001BMS	SampType	e: <b>MS</b>			Units: <b>mg/L</b>		Prep Dat	te: <b>5/8/20</b> 2	24	RunNo: 91	595	
Client ID: BATCH		Batch ID:	43820					Analysis Dat	te: 5/8/202	24	SeqNo: 19	10508	
Analyte			Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as N)			0.736	0.200	0.7500	0	98.1	80	120				
Sample ID: 240511	8-001BMSD	SampType	e: MSD			Units: <b>mg/L</b>		Prep Dat	te: <b>5/8/20</b> 2	24	RunNo: 91	595	
Client ID: BATCH	I	Batch ID:	43820					Analysis Dat	te: <b>5/8/202</b>	24	SeqNo: 19	10509	
Analyte			Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as N)			0.734	0.200	0.7500	0	97.9	80	120	0.7360	0.272	20	



Work Order: CLIENT: Project:	2405153 Friedman & 405132	Bruya								• - ·	SUMMAF matograph		-
Sample ID: MB-43	864	SampType	MBLK			Units: mg/L		Prep Da	te: <b>5/9/20</b> 2	24	RunNo: 915	97	
Client ID: MBLK	w	Batch ID:	43864					Analysis Da	te: <b>5/9/20</b> 2	24	SeqNo: 191	0534	
Analyte		F	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as N)			ND	0.200									
Sample ID: 24051	60-001ADUP	SampType	DUP			Units: <b>mg/L</b>		Prep Da	ie: <b>5/9/20</b> 2	24	RunNo: 915	97	
Client ID: BATC	Н	Batch ID:	43864					Analysis Da	te: <b>5/9/20</b> 2	24	SeqNo: 191	0541	
Analyte		F	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as N)			22.4	0.200						22.36	0.143	20	E
Sample ID: 24051	60-001AMS	SampType	MS			Units: <b>mg/L</b>		Prep Da	ie: <b>5/9/20</b> 2	24	RunNo: 915	97	
Client ID: BATC	Η	Batch ID:	43864					Analysis Da	te: <b>5/9/20</b> 2	24	SeqNo: 191	0542	
Analyte		F	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as N) NOTES:	int was low relati	ve to sample o	22.6	0.200	0.7500	22.36 es may be expected	38.0	80	120				ES
Sample ID: 24051		SampType				Units: mg/L		Prep Da	te: <b>5/9/20</b> 2	24	RunNo: 915	97	
Client ID: BATC	Н	Batch ID:	43864			-		Analysis Da	te: <b>5/9/20</b> 2	24	SeqNo: 191	0543	
Analyte		F	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as N) <b>NOTES:</b> S - Spiked amou	unt was low relati	ve to sample c	22.7	0.200	0.7500 spike recoveri	22.36 es may be expected	40.4 I.	80	120	22.65	0.0795	20	ES
Sample ID: LCS-4		SampType			-	Units: mg/L		Prep Da	te: <b>5/9/20</b> 2	24	RunNo: 915	97	
Client ID: LCSW	,	Batch ID:	43864					Analysis Da	te: <b>5/9/20</b> 2	24	SeqNo: 191	0544	
Analyte		F	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
				0.200									



	2405153									QC S	SUMMAI	RY REF	POR <sup>.</sup>
CLIENT:	Friedman & I	Bruya								-			
Project: 4	405132									Ion Chron	natograph		4 300
Sample ID: LCS-439	05	SampType	LCS			Units: <b>mg/L</b>		Prep Date	: 5/13/20	24	RunNo: 91	669	
Client ID: LCSW		Batch ID:	43905					Analysis Date	5/13/20	24	SeqNo: 19	12049	
Analyte		F	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as N)			0.725	0.200	0.7500	0	96.7	90	110				
Sulfate			3.54	1.00	3.750	0	94.4	90	110				
Sample ID: MB-4390	)5	SampType	BLK			Units: mg/L		Prep Date	5/13/20	24	RunNo: 91	669	
Client ID: MBLKW		Batch ID:	43905					Analysis Date	5/13/20	24	SeqNo: 19	12051	
Analyte		F	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as N)			ND	0.200									
Sulfate			ND	1.00									
Sample ID: 2405118	-001BDUP	SampType	: DUP			Units: mg/L		Prep Date	: 5/13/20	24	RunNo: 91	669	
Client ID: BATCH		Batch ID:	43905					Analysis Date	: 5/13/20	24	SeqNo: 19	12057	
Analyte		F	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qua
Nitrate (as N)			ND	0.200						0		20	
Sulfate			13.1	1.00						13.28	1.14	20	
Sample ID: 2405118	-001BMS	SampType	MS			Units: mg/L		Prep Date	: 5/13/20	24	RunNo: 91	69	
Client ID: BATCH		Batch ID:	43905					Analysis Date	5/13/20	24	SeqNo: 19	12058	
Analyte		F	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as N)			0.725	0.200	0.7500	0	96.7	80	120				
Sulfate			17.1	1.00	3.750	13.28	102	80	120				
Sample ID: 2405118	-001BMSD	SampType	MSD			Units: mg/L		Prep Date	: 5/13/20	24	RunNo: 910	69	
Client ID: BATCH		Batch ID:	43905					Analysis Date	5/13/20	24	SeqNo: 19	12059	
Analyte		F	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as N)			0.727	0.200	0.7500	0	96.9	80	120	0.7250	0.275	20	
Sulfate			16.9	1.00	3.750	13.28	95.2	80	120	17.10	1.46	20	



CLIENT:	2405153 Friedman & 405132	Bruya								SUMMAI matograph		
Sample ID: 240511	8-001BMSD	SampType: MSD			Units: mg/L		Prep Date	e: <b>5/13/20</b>	24	RunNo: 91	69	
Client ID: BATCH		Batch ID: 4390	5				Analysis Date	e: <b>5/13/20</b>	24	SeqNo: 19	12059	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sample ID: 240520	0-002CDUP	SampType: DUP			Units: <b>mg/L</b>		Prep Date	e: <b>5/13/20</b>	24	RunNo: <b>91</b>	69	
Client ID: BATCH		Batch ID: 4390	5				Analysis Date	e: <b>5/14/20</b>	24	SeqNo: 19	12068	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as N)		0.977	0.200						0.9910	1.42	20	
Sulfate		5.69	1.00						5.716	0.456	20	
Sample ID: 240520	0-002CMS	SampType: <b>MS</b>			Units: mg/L		Prep Date	e: <b>5/13/20</b>	24	RunNo: 91	69	
Client ID: BATCH		Batch ID: 4390	5				Analysis Date	e: <b>5/14/20</b>	24	SeqNo: 19	2069	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as N)		1.73	0.200	0.7500	0.9910	98.7	80	120				
Sulfate		9.26	1.00	3.750	5.716	94.5	80	120				
Sample ID: LCS-43	920	SampType: LCS			Units: mg/L		Prep Date	e: <b>5/15/20</b>	24	RunNo: 917	753	
Client ID: LCSW		Batch ID: 4392	20				Analysis Date	e: <b>5/15/20</b>	24	SeqNo: 19	13864	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate		3.55	1.00	3.750	0	94.7	90	110				
Sample ID: MB-439	20	SampType: MBL	к		Units: <b>mg/L</b>		Prep Date	e: <b>5/15/20</b>	24	RunNo: 917	753	
Client ID: MBLKW	v	Batch ID: 4392	:0				Analysis Date	e: <b>5/15/20</b>	24	SeqNo: 19	13866	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate		ND	1.00									



CLIENT:	2405153 Friedman & 405132	dman & Bruya											PORT A 300.0
Sample ID: 2405239	9-001BDUP	SampType	DUP			Units: mg/L		Prep Dat	e: 5/15/20	)24	RunNo: 91	753	
Client ID: BATCH		Batch ID:	43920					Analysis Dat	e: 5/16/20	)24	SeqNo: 19	13894	
Analyte		F	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate			22.3	1.00						22.20	0.274	20	
Sample ID: 240523	9-001BMS	SampType	: MS			Units: mg/L		Prep Dat	e: 5/15/20	)24	RunNo: 91	753	
Client ID: BATCH		Batch ID:	43920					Analysis Dat	e: 5/16/20	)24	SeqNo: 19	13895	
Analyte		F	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	89.4	80	120				
Sample ID: 240523	9-001BMSD	SampType	: MSD			Units: mg/L		Prep Dat	e: 5/15/20	)24	RunNo: 91	753	
Client ID: BATCH		Batch ID:	43920					Analysis Dat	e: <b>5/16/20</b>	)24	SeqNo: 19	13896	
Analyte		F	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	



Work Order:         2405153           CLIENT:         Friedman &           Project:         405132	Bruya								SUMMAR anic Carbo		
Sample ID: MB-R91575	SampType: <b>MBLK</b>			Units: mg/L		Prep Dat	e: <b>5/9/202</b>	24	RunNo: 915	575	
Client ID: MBLKW	Batch ID: R91575					Analysis Dat	e: <b>5/9/202</b>	24	SeqNo: 191	0780	
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-R91575	SampType: LCS			Units: <b>mg/L</b>		Prep Dat	e: <b>5/9/20</b> 2	24	RunNo: 915	575	
Client ID: LCSW	Batch ID: R91575					Analysis Dat	e: <b>5/9/202</b>	24	SeqNo: 191	10781	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	5.10	0.700	5.000	0	102	90.6	119				
Sample ID: 2405072-001ADUP	SampType: <b>DUP</b>			Units: <b>mg/L</b>		Prep Dat	e: <b>5/9/202</b>	24	RunNo: 915	575	
Client ID: BATCH	Batch ID: R91575					Analysis Dat	e: <b>5/9/202</b>	24	SeqNo: 191	0783	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	3.97	0.700						3.930	0.987	20	
Sample ID: 2405072-001AMS	SampType: <b>MS</b>			Units: mg/L		Prep Dat	e: <b>5/9/20</b> 2	24	RunNo: 915	575	
Client ID: BATCH	Batch ID: R91575					Analysis Dat	e: <b>5/9/202</b>	24	SeqNo: 191	0784	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	8.90	0.700	5.000	3.930	99.4	74.4	117				
Sample ID: 2405072-001AMSD	SampType: <b>MSD</b>			Units: <b>mg/L</b>		Prep Dat	e: <b>5/9/20</b> 2	24	RunNo: 915	575	
Client ID: BATCH	Batch ID: R91575					Analysis Dat	e: <b>5/9/202</b>	24	SeqNo: 191	10785	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	9.05	0.700	5.000	3.930	102	74.4	117	8.901	1.65	30	



Work Order: CLIENT: Project:	2405153 Friedman & E 405132	Bruya							C SUMMA		-
Sample ID: LCS-R	91756	SampType: LCS			Units: <b>ppmv</b>		Prep Date:	5/15/2024	RunNo: 91	756	
Client ID: LCSW		Batch ID: R9175	6				Analysis Date:	5/15/2024	SeqNo: 19	14022	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit H	lighLimit RPD Ref	/al %RPD	RPDLimit	Qual
Methane		991	0.00500	1,000	0	99.1	73.6	124			
Sample ID: MB-R9	1756	SampType: MBLK			Units: mg/L		Prep Date:	5/15/2024	RunNo: 91	756	
Client ID: MBLK	W	Batch ID: R9175	6				Analysis Date:	5/15/2024	SeqNo: 19	14021	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit H	lighLimit RPD Ref	/al %RPD	RPDLimit	Qual
Methane		ND	0.00500								
Sample ID: 240515	53-001CREP	SampType: REP			Units: mg/L		Prep Date:	5/15/2024	RunNo: 91	756	
Client ID: MW-1-	050724	Batch ID: R9175	6				Analysis Date:	5/15/2024	SeqNo: 19	14008	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit H	lighLimit RPD Ref	/al %RPD	RPDLimit	Qual
Methane		0.109	0.00500					0.10	85 0.796	30	



## Sample Log-In Check List

Client Name:	FB	Work Order Numl	ber: 2405153	
Logged by:	Clare Griggs	Date Received:	5/8/2024 1	10:28:00 AM
Chain of Cust	tody			
	Custody complete?	Yes 🗸	No 🗌	Not Present
	e sample delivered?	Client		
Z. How was are				
<u>Log In</u>				
	ls present on shipping container/cooler? nments for Custody Seals not intact)	Yes	No 🗌	Not Present
4. Was an atter	mpt made to cool the samples?	Yes 🖌	No 🗌	
5. Were all item	ns received at a temperature of >2°C to 6°C *	Yes 🖌	No 🗌	
6. Sample(s) in	proper container(s)?	Yes 🖌	No 🗌	
7. Sufficient sar	mple volume for indicated test(s)?	Yes 🖌	No 🗌	
8. Are samples	properly preserved?	Yes 🗹	No 🗌	
9. Was preserv	ative added to bottles?	Yes	No 🔽	NA 🗌
10. Is there head	Ispace in the VOA vials?	Yes	No 🔽	
11. Did all sampl	les containers arrive in good condition(unbroken)?	Yes 🖌	No 🗌	
12. Does paperw	vork match bottle labels?	Yes 🗹	No 🗌	
13. Are matrices	correctly identified on Chain of Custody?	Yes 🖌	No 🗌	
14. Is it clear what	at analyses were requested?	Yes 🗹	No 🗌	
15. Were all hold be met?	d times (except field parameters, pH e.g.) able to	Yes 🗹	No 🗌	
<u>Special Hand</u>	<u>lling (if applicable)</u>			
16. Was client	notified of all discrepancies with this order?	Yes	No 🗌	NA 🗹
Persor	n Notified: Date			
By Wh	nom: Via:	eMail Pł	none 🗌 Fax	In Person
Regar	ding:			
Client	Instructions:			
17. Additional re	emarks:			

#### Item Information

Item #	Temp ⁰C
Sample	4.4

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

Seattle, WA 98119-2029 Ph. (206) 285-8282 Fax (206) 283-5044	Friedman & Bruya, Inc. 3012 16th Avenue West				MW-2A-050724	MW-4B-050724	MW-1A-050724	MW-3-050724	MW-101-050724	MW-1-050724	Sample ID		Phone # (206) 285-8:	City, State, ZIP <u>Sea</u>	Address 550	Company Frie	Send Report To Mic	
[]			_								Lab ID		282 m	Seattle, WA	5500 4 <sup>th</sup> Ave S	edman	Michael Erdahl	
Received by: Relinquished by: Received by:	Relinguestied by:				5/7/2024	5/7/2024	5/7/2024	5/7/2024	5/7/2024	5/7/2024	Date Sampled		erdahl@friedr	A 98108	ve S	Friedman and Bruya, Inc	rdahl	
S	SIGNATURE				1450	1445	1348	1345	123(	1215	Time Sampled		(206) 285-8282 merdahl@friedmanandbruya.com			nc.		SUBCO)
	N				) water	1445 water	1345 water	water	1230 water	water	Matrix		com	REMARKS		PROJ	SUBC	SUBCONTRACT SAMPLE CHAIN OF
20	PRIN Michael Erdahl				51	5	G	10	01	01	# of jars		Floyd	ARKS		PROJECT NAME/NO.	SUBCONTRACTER Fremont	SAMI
Bhahata	PR I Erda				х	х	х	х	Х	х	TOC		Floyd Snider EDD		405132	AME/	'RACTEF Fremont	PLE
5	F				x	х	x	×	×	x	Nitrate		r EDD		2	NO.	C R	CHAI
llard	NAME	 ++		_	x	x	×	×	×	×	Sulfate							IO N
à		 ++		_	х	х	×	x	×	×	RSK Methane	ANAL						
12	Fri	 ++	+				_	_	-	_		ALYSES RE			E-187	PO #		CUSTODY
¥	COMF Friedman &											REQUESTED						
	COMPANY nan & Bruy											STED					]	
	PANY Bruya						_						Retur Will c	Dispo	lush ch	⊠ Stand RUSH	T	2
	DATE										z		Return samples Will call with instructions	SAMPLE DISPOSAL Dispose after 30 days	Rush charges authorized by:	⊠ Standard TAT RUSH	Page # of TURNAROUND TIME	240515
10-28A	TIME										Notes		tions	OSAL	ed by:			3

#### ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Michael Erdahl, B.S. Vineta Mills, M.S. Eric Young, B.S. September 20, 2024 5500 4th Ave South Seattle, WA 98108-2419 (206) 285-8282 office@friedmanandbruya.com www.friedmanandbruya.com

Gabriel Cisneros, Project Manager Floyd-Snider Two Union Square 601 Union St, Suite 600 Seattle, WA 98101

Dear Mr Cisneros:

Included are the results from the testing of material submitted on September 10, 2024 from the Big B Ellensburg, F&BI 409113 project. There are 24 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 should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures c: Floyd Snider Lab Data, Manique Talaia-Murray FDS0920R.DOC

#### ENVIRONMENTAL CHEMISTS

#### CASE NARRATIVE

This case narrative encompasses samples received on September 10, 2024 by Friedman & Bruya, Inc. from the Floyd-Snider Big B Ellensburg, F&BI 409113 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Floyd-Snider</u>
409113 -01	MW-1A-091024
409113 -02	MW-3-091024
409113 -03	MW-2A-091024
409113 -04	MW-4B-091024
409113 -05	MW-9A-091024
409113 -06	MW-1-091024
409113 -07	MW-101-091024
409113 -08	MW-2-091024
409113 -09	TB-091024

The requested samples were sent to Alliance Technical Group for TOC, nitrate, sulfate, and RSK methane analyses. The report is enclosed.

All quality control requirements were acceptable.

#### ENVIRONMENTAL CHEMISTS

Date of Report: 09/20/24 Date Received: 09/10/24 Project: Big B Ellensburg, F&BI 409113 Date Extracted: 09/16/24 Date Analyzed: 09/16/24

### RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Results Reported as ug/L (ppb)

<u>Sample ID</u> Laboratory ID	<u>Gasoline Range</u>	Surrogate ( <u>% Recovery)</u> (Limit 50-150)
MW-2A-091024 409113-03	440	102
MW-4B-091024 409113-04	550	117
MW-9A-091024 409113-05	<100	103
MW-1-091024 409113-06	210	108
MW-101-091024 409113-07	280	109
MW-2-091024 409113-08	<100	103
Method Blank 04-1999 MB	<100	105

#### ENVIRONMENTAL CHEMISTS

Date of Report: 09/20/24 Date Received: 09/10/24 Project: Big B Ellensburg, F&BI 409113 Date Extracted: 09/11/24 Date Analyzed: 09/16/24

#### RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx Sample Extracts Passed Through a Silica Gel Column Prior to Analysis Results Reported as ug/L (ppb)

<u>Sample ID</u> Laboratory ID	Diesel Range (C10-C25)	Motor Oil Range (C25-C36)	Surrogate <u>(% Recovery)</u> (Limit 41-152)
MW-1A-091024 409113-01	<50	<250	76
MW-3-091024 409113-02	<50	<250	62
MW-2A-091024 409113-03	79 x	<250	77
MW-4B-091024 409113-04	390 x	<250	70
MW-9A-091024 409113-05	<50	<250	76
MW-1-091024 409113-06	540	530	80
MW-101-091024 409113-07	1,400	1,200	90
MW-2-091024 409113-08	780	<280	87
Method Blank 04-2185 MB	<50	<250	74

#### ENVIRONMENTAL CHEMISTS

Date of Report: 09/20/24 Date Received: 09/10/24 Project: Big B Ellensburg, F&BI 409113 Date Extracted: 09/11/241329 Date Analyzed: 09/11/241329

#### RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported as ug/L (ppb)

<u>Sample ID</u> Laboratory ID	Diesel Range (C10-C25)	Motor Oil Range (C25-C36)	Surrogate <u>(% Recovery)</u> (Limit 50-150)
MW-1A-091024 409113-01	<50	<250	84
MW-3-091024 409113-02	64 x	<250	75
MW-2A-091024 409113-03	490 x	<250	88
MW-4B-091024 409113-04	3,300 x	300 x	89
MW-9A-091024 409113-05	160 x	<250	86
MW-1-091024 409113-06	1,200 x	700	85
MW-101-091024 409113-07	2,200 x	1,500	98
MW-2-091024 409113-08	3,600 x	450 x	101
Method Blank 04-2185 MB	<50	<250	75

## ENVIRONMENTAL CHEMISTS

Client Sample ID: Date Received: Date Extracted: Date Analyzed: Matrix: Units:	MW-2A-091 09/10/24 09/11/24 09/11/24 Water ug/L (ppb)	1024	Client: Project: Lab ID: Data File: Instrument: Operator:	Floyd-Snider Big B Ellensburg 409113-03 091122.D GCMS13 IJL	
			Lower	Upper	
Surrogates:		% Recovery:	Limit:	Limit:	
1,2-Dichloroethane-d4		106	71	132	
Toluene-d8		107	68	139	
4-Bromofluorobenz	zene	104	62	136	
Compounds:		Concentration ug/L (ppb)			
Benzene		< 0.35			
Toluene		<1			
Ethylbenzene		<1			
m,p-Xylene		<2			
o-Xylene		<1			
Naphthalene		<1			

### ENVIRONMENTAL CHEMISTS

Client Sample ID: Date Received: Date Extracted: Date Analyzed: Matrix: Units:	MW-4B-091 09/10/24 09/11/24 09/11/24 Water ug/L (ppb)	1024	Client: Project: Lab ID: Data File: Instrument: Operator:	Floyd-Snid Big B Elle 409113-04 091123.D GCMS13 IJL	nsburg
			Lower		Upper
Surrogates:		% Recovery:	Limit:		Limit:
1,2-Dichloroethane-d4		92	71		132
Toluene-d8		99	68		139
4-Bromofluorobenz	ene	99	62		136
Compounds:		Concentration ug/L (ppb)			
Benzene		< 0.35			
Toluene		<1			
Ethylbenzene		<1			
m,p-Xylene		<2			
o-Xylene		<1			
Naphthalene		<1			

### ENVIRONMENTAL CHEMISTS

Client Sample ID: Date Received: Date Extracted: Date Analyzed: Matrix: Units:	MW-9A-091 09/10/24 09/11/24 09/11/24 Water ug/L (ppb)	1024	Client: Project: Lab ID: Data File: Instrument: Operator:	Floyd-Snider Big B Ellensburg 409113-05 091124.D GCMS13 IJL
			Lower	Upper
Surrogates:		% Recovery:	Limit:	Limit:
1,2-Dichloroethane-d4		103	71	132
Toluene-d8		106	68	139
4-Bromofluorobenz	ene	108	62	136
Compounds:		Concentration ug/L (ppb)		
Benzene		< 0.35		
Toluene		<1		
Ethylbenzene		<1		
m,p-Xylene		<2		
o-Xylene		<1		
Naphthalene		<1		

### ENVIRONMENTAL CHEMISTS

Client Sample ID: Date Received: Date Extracted: Date Analyzed: Matrix: Units:	MW-1-0910 09/10/24 09/11/24 09/11/24 Water ug/L (ppb)	24	Client: Project: Lab ID: Data File: Instrument: Operator:	Floyd-Snider Big B Ellensburg 409113-06 091125.D GCMS13 IJL
			Lower	Upper
Surrogates:		% Recovery:	Limit:	Limit:
1,2-Dichloroethane	-d4	98	71	132
Toluene-d8		96	68	139
4-Bromofluorobenz	ene	103	62	136
Compounds:		Concentration ug/L (ppb)		
Benzene		< 0.35		
Toluene		<1		
Ethylbenzene		<1		
m,p-Xylene		<2		
o-Xylene		<1		
Naphthalene		<1		

## ENVIRONMENTAL CHEMISTS

Client Sample ID: Date Received: Date Extracted: Date Analyzed: Matrix: Units:	MW-101-09 09/10/24 09/11/24 09/11/24 Water ug/L (ppb)	01024	Client: Project: Lab ID: Data File: Instrument: Operator:	Floyd-Snid Big B Elle 409113-07 091126.D GCMS13 IJL	nsburg
			Lower		Upper
Surrogates:		% Recovery:	Limit:		Limit:
1,2-Dichloroethane	e-d4	93	71		132
Toluene-d8		96	68		139
4-Bromofluorobenz	ene	99	62		136
Compounds:		Concentration ug/L (ppb)			
Benzene		< 0.35			
Toluene		<1			
Ethylbenzene		<1			
m,p-Xylene		<2			
o-Xylene		<1			
Naphthalene		<1			

### ENVIRONMENTAL CHEMISTS

Client Sample ID: Date Received: Date Extracted: Date Analyzed: Matrix: Units:	MW-2-0910 09/10/24 09/11/24 09/11/24 Water ug/L (ppb)	024	Client: Project: Lab ID: Data File: Instrument: Operator:	Floyd-Snid Big B Elle 409113-08 091127.D GCMS13 IJL	nsburg
			Lower		Upper
Surrogates:		% Recovery:	Limit:		Limit:
1,2-Dichloroethane	e-d4	97	71		132
Toluene-d8		97	68		139
4-Bromofluorobenz	ene	101	62		136
Compounds:		Concentration ug/L (ppb)			
Benzene		< 0.35			
Toluene		<1			
Ethylbenzene		<1			
m,p-Xylene		<2			
o-Xylene		<1			
Naphthalene		<1			

### ENVIRONMENTAL CHEMISTS

Client Sample ID: Date Received: Date Extracted: Date Analyzed: Matrix: Units:	Method Bla Not Applica 09/11/24 09/11/24 Water ug/L (ppb)		Client: Project: Lab ID: Data File: Instrument: Operator:	Floyd-Snider Big B Ellensburg 04-2130 mb 091109.D GCMS11 MD	
			Lower	Upper	
Surrogates:		% Recovery:	Limit:	Limit:	
1,2-Dichloroethane	-d4	104	78	126	
Toluene-d8		99	84	115	
4-Bromofluorobenz	ene	100	72	130	
Compounds:		Concentration ug/L (ppb)			
Benzene		< 0.35			
Toluene		<1			
Ethylbenzene		<1			
m,p-Xylene		<2			
o-Xylene		<1			
Naphthalene		<1			

#### ENVIRONMENTAL CHEMISTS

## Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	MW-1A-091024	Client:	Floyd-Snider
Date Received:	09/10/24	Project:	Big B Ellensburg
Date Extracted:	09/13/24	Lab ID:	409113-01
Date Analyzed:	09/13/24	Data File:	409113-01.132
Matrix:	Water	Instrument:	ICPMS3
Units:	ug/L (ppb)	Operator:	SP
	Concentration		
Analyte:	ug/L (ppb)		
Manganese	2.0		

#### ENVIRONMENTAL CHEMISTS

## Analysis For Dissolved Metals By EPA Method 6020

Client ID:	MW-3-091024	Client:	Floyd-Snider
Date Received:	09/10/24	Project:	Big B Ellensburg
Date Extracted:	09/13/24	Lab ID:	409113-02 x100
Date Analyzed:	09/18/24	Data File:	409113-02 x100.101
Matrix:	Water	Instrument:	ICPMS3
Units:	ug/L (ppb)	Operator:	SP
	Concentration		
Analyte:	ug/L (ppb)		

Manganese

#### ENVIRONMENTAL CHEMISTS

## Analysis For Dissolved Metals By EPA Method 6020

Client ID:	MW-2A-091024	Client:	Floyd-Snider
Date Received:	09/10/24	Project:	Big B Ellensburg
Date Extracted:	09/13/24	Lab ID:	409113-03 x100
Date Analyzed:	09/18/24	Data File:	409113-03 x100.102
Matrix:	Water	Instrument:	ICPMS3
Units:	ug/L (ppb)	Operator:	SP
	Concentration		
Analyte:	ug/L (ppb)		

Manganese

#### ENVIRONMENTAL CHEMISTS

## Analysis For Dissolved Metals By EPA Method 6020

Client ID: Date Received: Date Extracted: Date Analyzed: Matrix:	MW-4B-091024 09/10/24 09/13/24 09/18/24 Water	Client: Project: Lab ID: Data File: Instrument:	Floyd-Snider Big B Ellensburg 409113-04 x500 409113-04 x500.119 ICPMS3
Units:	ug/L (ppb)	Operator:	SP
Analyte:	Concentration ug/L (ppb)	-	
Manganese	1,000		

#### ENVIRONMENTAL CHEMISTS

## Analysis For Dissolved Metals By EPA Method 6020

Client ID: Date Received:	MW-1-091024 09/10/24	Client: Project:	Floyd-Snider Big B Ellensburg
		v	0 0
Date Extracted:	09/13/24	Lab ID:	409113-06 x100
Date Analyzed:	09/18/24	Data File:	409113-06 x100.104
Matrix:	Water	Instrument:	ICPMS3
Units:	ug/L (ppb)	Operator:	SP
	Concentration		
Analyte:	ug/L (ppb)		

Manganese

#### ENVIRONMENTAL CHEMISTS

## Analysis For Dissolved Metals By EPA Method 6020

Client ID:	MW-101-091024	Client:	Floyd-Snider
Date Received:	09/10/24	Project:	Big B Ellensburg
Date Extracted:	09/13/24	Lab ID:	409113-07 x100
Date Analyzed:	09/18/24	Data File:	409113-07 x100.105
Matrix:	Water	Instrument:	ICPMS3
Units:	ug/L (ppb)	Operator:	SP
	Concentration		
Analyte:	ug/L (ppb)		

Manganese

#### ENVIRONMENTAL CHEMISTS

## Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Floyd-Snider
Date Received:	NA	Project:	Big B Ellensburg
Date Extracted:	09/13/24	Lab ID:	I4-755 mb
Date Analyzed:	09/13/24	Data File:	I4-755 mb.121
Matrix:	Water	Instrument:	ICPMS3
Units:	ug/L (ppb)	Operator:	SP
	Concentration		
Analyte:	ug/L (ppb)		
Manganese	<1		

#### ENVIRONMENTAL CHEMISTS

Date of Report: 09/20/24 Date Received: 09/10/24 Project: Big B Ellensburg, F&BI 409113

#### QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

137-01 (Duplie	cate)			
Reporting	Samp	le Dur	olicate	$\operatorname{RPD}$
Units	Resul	lt Re	esult	(Limit 20)
ug/L (ppb)	<100	) <	100	nm
oratory Contr	ol Sampl	e Percent		
Reporting	Spike	Recovery	Acceptance	
Units	Level	LCS	Criteria	_
ug/L (ppb)	1,000	110	70-130	_
	Reporting Units ug/L (ppb) poratory Contr Reporting Units	UnitsResultug/L (ppb)<100	ReportingSampleDupUnitsResultReug/L (ppb)<100	ReportingSampleDuplicateUnitsResultResultug/L (ppb)<100

#### ENVIRONMENTAL CHEMISTS

Date of Report: 09/20/24 Date Received: 09/10/24 Project: Big B Ellensburg, F&BI 409113

#### QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: Laboratory Control Sample Silica Gel								
			Percent	Percent				
	Reporting	Spike	Recovery	Recovery	Acceptance	$\operatorname{RPD}$		
Analyte	Units	Level	LCS	LCSD	Criteria	(Limit 20)		
Diesel Extended	ug/L (ppb)	2,500	72	80	65 - 151	11		

#### ENVIRONMENTAL CHEMISTS

Date of Report: 09/20/24 Date Received: 09/10/24 Project: Big B Ellensburg, F&BI 409113

#### QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: Laboratory Control Sample

			Percent	Percent		
	Reporting	Spike	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	LCS	LCSD	Criteria	(Limit 20)
Diesel Extended	ug/L (ppb)	2,500	80	84	65 - 151	5

#### ENVIRONMENTAL CHEMISTS

Date of Report: 09/20/24 Date Received: 09/10/24 Project: Big B Ellensburg, F&BI 409113

#### QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: 409071-05 (Matrix Spike)

· · · · · · · · · · · · · · · · · · ·	1 /		Percent		
	Reporting	Spike	Sample	Recovery	Acceptance
Analyte	Units	Level	Result	MS	Criteria
Benzene	ug/L (ppb)	10	< 0.35	97	50 - 150
Toluene	ug/L (ppb)	10	<1	98	50 - 150
Ethylbenzene	ug/L (ppb)	10	<1	100	50 - 150
m,p-Xylene	ug/L (ppb)	20	<2	99	50 - 150
o-Xylene	ug/L (ppb)	10	<1	98	50 - 150
Naphthalene	ug/L (ppb)	10	<1	89	50 - 150

Laboratory Code: Laboratory Control Sample

Lasoratory Couc. Lasoratory	• • • • • • • • • • • • • • • • • • •		Percent	Percent		
	Reporting	Spike	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	LCS	LCSD	Criteria	(Limit 20)
Benzene	ug/L (ppb)	10	93	93	70-130	0
Toluene	ug/L (ppb)	10	91	95	70-130	4
Ethylbenzene	ug/L (ppb)	10	94	96	70-130	2
m,p-Xylene	ug/L (ppb)	20	93	95	70-130	2
o-Xylene	ug/L (ppb)	10	94	93	70-130	1
Naphthalene	ug/L (ppb)	10	98	91	70-130	7

#### ENVIRONMENTAL CHEMISTS

Date of Report: 09/20/24 Date Received: 09/10/24 Project: Big B Ellensburg, F&BI 409113

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

Laboratory Cod	e: 409137-01 (	(Matrix Sp	oike)	Percent	Percent		
Analyte	Reporting Units	Spike Level	Sample Result	Recovery MS	Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Manganese	ug/L (ppb)	20	<1	97	98	75-125	1

Laboratory Code: Laboratory Control Sample

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

# FRIEDMAN & BRUYA, INC.

# ENVIRONMENTAL CHEMISTS

# **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.

 ${\rm J}$  - 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.

 $k-\mbox{The calibration results}$  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.

		19		SAMPLE CHAIN OF CUSTODY	CHAIN	OF C	TSU(	OD	Y	0	1	42 01 01 60	h	H	5   L.	I2   L2 / VW5		
1	404113 able Cisheron Report To Manigue Tabio	io Musray	R	SAMPLI	LERS (signature)	ture)				[					Page #	Page # of	_ of _ / D TIME	
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	City, State, ZIP Sentle WA 98101	WA 9810.	1	REMARKS	KS				·	NVO	INVOICE TO	ľO		A D	SA	SAMPLE DISPOSAI	POSAL	
	Phone 206 33 2076 Email	il.	R	Project s	Project specific RLs?	s? - Yes	s / No	0						D of Def	□ Other_	□ Other Default: Dispose after 30 days	fter 30 da	Ås
										ANAI	YSE	S RE(	ANALYSES REQUESSED	DED				П
	Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	⊖ <sub>x</sub> d-hqtwn	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	201	HINS/ ZOLLIN	SU 28206001	olimut hu	Notes	
•	460190-A1-WM	01 A - G	RIGH	10:35	GW	2	X	-					X		X	OD with	1+5	0
	HEO160-E-MW	02 1	410/04	04:01	GW	7	×					×		×	$\times$	9 Freld	1999	<u>.</u>
•	HEO/60-HE-MW	03 A-M	03 A-M 9/10/24 11:35	11:35	GW	G	XX	~		$\times$			$\overline{\times}$	$\overline{}$	$\times$	Budy B	LATEXHA	RHALCE
6	MW-4B -091024	OH J	ACIO116	11:40	6W	ũ	$\times$			$\times$		~	X	$\widehat{}$	X			
	40 0160 - 46 - MM	05 A-G		13.10	GW	7	X			$\times$								
•	HR 0160-1- M	06 A - M		13:10	6W	6	×	~		$\times$		X		$\times$	X			
	420140-101-MM	07 1	46/C11P	13:20	CW,	3	XX	~		$\times$			X	×	×			•
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SA	MPLE CONDI	TION UPON RECI	EIPT CH	ECKLIS	r	
PROJECT # 409/13	CLIENT	FDS	*	INITIAL DATE:	si Em	3 9/10
If custody seals are	present on co	oler, are they intac	et?	ø na	D YES	□ NO
Cooler/Sample temp	oerature			Ther	mometer ID: Flu	°C uke 96312917
Were samples receiv	ved on ice/cold	l packs?			ø yes	□ NO
How did samples ar	rive? ne Counter	□ Picked up by F&	BI	FedE:	x/UPS/GSC	)
Is there a Chain-of-( *or other representative do			S 🗆 NO	Init Dat	cials/ AP .e: 09/1	11 12/24
Number of days san	ples have bee	en sitting prior to r	eceipt a	t laborat	ory 🖉	_ days
Are the samples clea	arly identified	1? (explain "no" answer b	oelow)		Ø YES	D NO
Were all sample con leaking etc.)? (explain			broken,		ø yes	D NO
Were appropriate sa	ample contain	ers used?	Ø YE	S 🗆 N	10 D U	Jnknown
If custody seals are	present on sa	mples, are they int	tact?	Ø NA	D YES	D NO
Are samples requiri	ng no headsp	ace, headspace fre	e?	🗆 NA	Ø YES	D NO
Is the following info (explain "no" answer below	ormation prov	ided on the COC, a	and does	it match	the samp	le label?
Sample ID's	Yes 🗆 No		11		□ Not on C	OC/label
Date Sampled	🛱 Yes 🗆 No	19			□ Not on C	OC/label
Time Sampled	🛱 Yes 🗆 No				□ Not on C	OC/label
# of Containers	🖞 Yes 🗆 No					
Relinquished	🛱 Yes 🗆 No					
Requested analysis	🛱 Yes 🗆 On 🗄	Hold				
Other comments (us						
Air Samples: Were a Number of unused '	any additiona	s Numbe	eceived? er of unu	₽ NA sed TO17	□ YES	D NO
		<u>`</u>			Rey	

FRIEDMAN & BRUYA, INC./FORMS/CHECKIN/SAMPLECONDITION.doc



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: 409113, Work Order Number: 2409134

September 16, 2024

## **Attention Michael Erdahl:**

Fremont Analytical, Inc, an Alliance Technical Group company, received 6 sample(s) on 9/11/2024 for the analyses presented in the following report.

# Dissolved Gases by RSK-175 Ion Chromatography by EPA 300.0 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

www.fremontanalytical.com



CLIENT: Project: Work Order:	Friedman & Bruya 409113 2409134	Work Order S	Sample Summary
Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2409134-001	MW-1A-091024	09/10/2024 10:35 AM	09/11/2024 1:55 PM
2409134-002	MW-3-091024	09/10/2024 10:40 AM	09/11/2024 1:55 PM
2409134-003	MW-2A-091024	09/10/2024 11:35 AM	09/11/2024 1:55 PM
2409134-004	MW-4B-091024	09/10/2024 11:40 AM	09/11/2024 1:55 PM
2409134-005	MW-1-091024	09/10/2024 1:10 PM	09/11/2024 1:55 PM
2409134-006	MW-101-091024	09/10/2024 1:20 PM	09/11/2024 1:55 PM



**Case Narrative** 

WO#: **2409134** Date: **9/16/2024** 

CLIENT:Friedman & BruyaProject:409113

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 & Acronyms**



WO#: **2409134** Date Reported: **9/16/2024** 

## 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 Recoverv **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: 2409134 Date Reported: 9/16/2024

**CLIENT:** Friedman & Bruya **Project:** 409113

Lab ID: 2409134-001 Client Sample ID: MW-1A-091024				Collection Matrix: W			024 10:35:00 AM
Analyses	Result	RL	Qual	Units	D	F Date	e Analyzed
Dissolved Gases by RSK-175				Batch	ID:	R94303	Analyst: CO
Methane	ND	0.00500		mg/L	1	9/12	/2024 3:53:00 PM
Ion Chromatography by EPA 300.0				Batch	ID:	45142	Analyst: OP
Nitrate (as N)	3.76	0.400	D	mg/L	2	9/11	/2024 4:35:00 PM
Sulfate	16.4	2.00	D	mg/L	2	9/11	/2024 4:35:00 PM
Total Organic Carbon by SM 5310C				Batch	ID:	R94337	Analyst: OP
Total Organic Carbon	1.96	0.700		mg/L-dry	1	9/12	/2024 10:23:00 PM

Lab ID: 2409134-002 Client Sample ID: MW-3-091024			Collection Matrix: W		9/10/2024 10:40:00 AM
Analyses	Result	RL Qual	Units	DF	Date Analyzed
Dissolved Gases by RSK-175			Batch	ID: R9	4303 Analyst: CO
Methane	0.00889	0.00500	mg/L	1	9/12/2024 3:57:00 PM
Ion Chromatography by EPA 300.0			Batch	ID: 45′	142 Analyst: OP

Nitrate (as N)	1.42	0.400	D	mg/L	2	9/11/	2024 5:44:00 PM
Sulfate	13.4	2.00	D	mg/L	2	9/11/	2024 5:44:00 PM
Total Organic Carbon by SM 531	<u>0C</u>			Batc	h ID: R	94337	Analyst: OP
Total Organic Carbon	1.88	0.700		mg/L	1	9/12/	2024 10:45:00 PM



# **Analytical Report**

 Work Order:
 2409134

 Date Reported:
 9/16/2024

CLIENT:	Friedman & Bruya
Project:	409113

Lab ID: 2409134-003 Client Sample ID: MW-2A-091024				Collection Matrix: W		9/10/2024 11:35:00 AM
Analyses	Result	RL Qua	al	Units	DF	Date Analyzed
Dissolved Gases by RSK-175				Batch	ID: R9	4303 Analyst: CO
Methane	0.614	0.0250	D	mg/L	5	9/12/2024 4:07:00 PM
lon Chromatography by EPA 300.0				Batch	ID: 45	142 Analyst: OP
Nitrate (as N)	ND	0.400	D	mg/L	2	9/11/2024 6:08:00 PM
Sulfate <b>NOTES:</b> Diluted due to high levels of non-target analytes	16.7 s.	2.00	D	mg/L	2	9/11/2024 6:08:00 PM
Total Organic Carbon by SM 5310C				Batch	ID: R9	4337 Analyst: OP
Total Organic Carbon	3.89	0.700		mg/L	1	9/12/2024 11:07:00 PM

Client Sample ID: MW-4B-091024

Collection Date: 9/10/2024 11:40:00 AM Matrix: Water

Analyses	Result	RL Q	ual	Units	DF	Date Analyzed
Dissolved Gases by RSK-175				Batch	n ID: R9	4303 Analyst: CO
Methane	1.31	0.0500	D	mg/L	10	9/12/2024 4:09:00 PM
Ion Chromatography by EPA 300.0				Batch	n ID: 45	142 Analyst: OP
Nitrate (as N)	ND	0.400	D	mg/L	2	9/11/2024 6:31:00 PM
Sulfate <b>NOTES:</b> Diluted due to high levels of non-target analyte	ND s.	2.00	D	mg/L	2	9/11/2024 6:31:00 PM
Total Organic Carbon by SM 5310C				Batch	n ID: R9	4337 Analyst: OP
Total Organic Carbon	11.3	0.700		mg/L	1	9/12/2024 11:41:00 PM



# **Analytical Report**

 Work Order:
 2409134

 Date Reported:
 9/16/2024

CLIENT:	Friedman & Bruya
Project:	409113

Lab ID: 2409134-005 Client Sample ID: MW-1-091024				Collection Matrix: W		9/10/2024 1:10:00 PM
Analyses	Result	RL Qu	al	Units	DF	Date Analyzed
Dissolved Gases by RSK-175				Batch	ID: R9	4303 Analyst: CO
Methane	0.210	0.00500		mg/L	1	9/12/2024 4:02:00 PM
Ion Chromatography by EPA 300.0				Batch	ID: 45	142 Analyst: OP
Nitrate (as N)	ND	0.400	D	mg/L	2	9/11/2024 6:54:00 PM
Sulfate <b>NOTES:</b> Diluted due to high levels of non-target analytes	11.5 S.	2.00	D	mg/L	2	9/11/2024 6:54:00 PM
<u>Total Organic Carbon by SM 5310C</u>				Batch	ID: R9	4337 Analyst: OP
Total Organic Carbon	4.58	0.700		mg/L	1	9/13/2024 12:12:00 AM

Lab ID: 2409134-006
---------------------

Collection Date: 9/10/2024 1:20:00 PM Matrix: Water

Client Sample ID: MW-101-091024				Matrix: W	/ater	
Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Dissolved Gases by RSK-175				Batch	ID: R9	04303 Analyst: CO
Methane	0.148	0.00500		mg/L	1	9/12/2024 4:05:00 PM
Ion Chromatography by EPA 300.0				Batch	n ID: 45	142 Analyst: OP
Nitrate (as N)	ND	0.400	D	mg/L	2	9/11/2024 7:17:00 PM
Sulfate	11.9	2.00	D	mg/L	2	9/11/2024 7:17:00 PM
<b>NOTES:</b> Diluted due to high levels of non-target analytes						
Total Organic Carbon by SM 5310C				Batch	ID: R9	94337 Analyst: OP
Total Organic Carbon	4.50	0.700		mg/L	1	9/13/2024 1:27:00 AM



CLIENT:	2409134 Friedman & Bi 409113	ruya							• -	SUMMA omatograph		-
Sample ID: MB-4514	42	SampType: ME	BLK		Units: mg/L		Prep Dat	te: 9/10/2	024	RunNo: <b>94</b> 3	230	
Client ID: MBLKW	1	Batch ID: 45	142				Analysis Da	te: 9/10/2	024	SeqNo: 19	68788	
Analyte		Resu	t RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as N) Sulfate		NE NE										
Sample ID: LCS-451	142	SampType: LC	S		Units: mg/L		Prep Dat	te: 9/10/2	024	RunNo: <b>94</b>	230	
Client ID: LCSW		Batch ID: 45	142				Analysis Da	te: 9/10/2	024	SeqNo: 19	68791	
Analyte		Resu	t RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as N)		0.75	3 0.200	0.7500	0	100	90	110				
Sulfate		3.79	9 1.00	3.750	0	101	90	110				
Sample ID: 2409039	-001ADUP	SampType: DU	Р		Units: <b>mg/L</b>		Prep Dat	te: 9/10/2	024	RunNo: 94	230	
Client ID: BATCH		Batch ID: 45	142				Analysis Da	te: <b>9/10/2</b>	024	SeqNo: 19	68793	
Analyte		Resu	t RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as N)		NE	0.200						0		20	н
Sulfate		NE	0 1.00						0		20	
Sample ID: 2409039	-001AMS	SampType: MS	;		Units: mg/L		Prep Da	te: 9/10/2	024	RunNo: <b>94</b>	230	
Client ID: BATCH		Batch ID: 45	142				Analysis Da	te: 9/10/2	024	SeqNo: 19	68794	
Analyte		Resu	t RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as N)		0.75	5 0.200	0.7500	0	101	80	120				Н
Sulfate		4.44	4 1.00	3.750	0.6350	102	80	120				
Sample ID: 2409039	-001AMSD	SampType: MS	D		Units: mg/L		Prep Dat	te: 9/10/2	024	RunNo: <b>94</b> 2	230	
Client ID: BATCH		Batch ID: 45	142				Analysis Da	te: 9/10/2	024	SeqNo: 19	68795	
Analyte		Resu	t RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as N)		0.80	6 0.200	0.7500	0	107	80	120	0.7550	6.53	20	Н
Sulfate		4.7	7 1.00	3.750	0.6350	110	80	120	4.445	7.10	20	



Work Order:	2409134								00.9	SUMMAI		ORT
CLIENT:	Friedman &	Bruya										
Project:	409113								Ion Chror	natograph	iy by EPA	4 300.0
Sample ID: 24090	39-001AMSD	SampType: MSD			Units: <b>mg/L</b>		Prep Da	te: 9/10/20	024	RunNo: 942	230	
Client ID: BATC	н	Batch ID: 45142					Analysis Da	te: 9/10/20	024	SeqNo: 196	68795	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sample ID: 24091	34-001ADUP	SampType: <b>DUP</b>			Units: <b>mg/L</b>		Prep Da	te: 9/11/20	024	RunNo: 942	230	
Client ID: MW-1	A-091024	Batch ID: 45142					Analysis Da	te: 9/11/2	024	SeqNo: 196	68812	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as N)		3.78	0.400						3.764	0.477	20	D
Sulfate		16.5	2.00						16.40	0.777	20	D
Sample ID: 24091	34-001AMS	SampType: MS			Units: <b>mg/L</b>		Prep Da	te: 9/11/2	024	RunNo: 942	230	
Client ID: MW-1	A-091024	Batch ID: 45142					Analysis Da	te: <b>9/11/2</b>	024	SeqNo: 196	68813	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as N)		5.40	0.400	1.500	3.764	109	80	120				D
Sulfate		24.8	2.00	7.500	16.40	111	80	120				D



Work Order:         2409134           CLIENT:         Friedman 8           Project:         409113	a Bruya							QC S	SUMMAI anic Carbo		
Sample ID: MB-94337	SampType: MBLK			Units: mg/L		Prep Date	e: <b>9/12/20</b>	24	RunNo: 943	337	
Client ID: MBLKW	Batch ID: R94337					Analysis Date	e: <b>9/12/20</b>	24	SeqNo: 197	70049	
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-94337	SampType: LCS			Units: <b>mg/L</b>		Prep Date	e: 9/12/20	24	RunNo: 943	337	
Client ID: LCSW	Batch ID: R94337					Analysis Date	e: <b>9/12/20</b>	24	SeqNo: 197	70025	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	25.1	0.700	25.00	0	100	87.6	109				
Sample ID: 2409095-001CDUP	SampType: <b>DUP</b>			Units: <b>mg/L</b>		Prep Date	e: <b>9/12/20</b> 2	24	RunNo: 943	337	
Client ID: BATCH	Batch ID: R94337					Analysis Date	e: <b>9/12/20</b> 2	24	SeqNo: 197	70027	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	12.3	0.700						12.34	0.154	20	
Sample ID: 2409095-001CMS	SampType: <b>MS</b>			Units: <b>mg/L</b>		Prep Date	e: <b>9/12/20</b> 2	24	RunNo: 943	337	
Client ID: BATCH	Batch ID: R94337					Analysis Date	e: <b>9/12/20</b> 2	24	SeqNo: 197	70028	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	37.3	0.700	25.00	12.34	99.8	73.1	113.1				
Sample ID: 2409095-001CMSD	SampType: MSD			Units: <b>mg/L</b>		Prep Date	e: 9/12/20	24	RunNo: 943	337	
Client ID: BATCH	Batch ID: R94337					Analysis Date	e: <b>9/12/20</b>	24	SeqNo: 197	70029	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	37.6	0.700	25.00	12.34	101	73.1	113.1	37.29	0.897	30	



Work Order: CLIENT: Project:	2409134 Friedman & 409113	Bruya							QC S	SUMMAI anic Carbo		
Sample ID: 24091: Client ID: MW-1- Analyte	34-005BDUP •091024	SampType: <b>DUP</b> Batch ID: <b>R94337</b> Result	RL	SPK value	Units: <b>mg/L</b> SPK Ref Val	%REC	Prep Da Analysis Da LowLimit	ite: 9/13/20		RunNo: 943 SeqNo: 197 %RPD		Qual
Total Organic Carb	oon	4.45	0.700						4.576	2.86	20	
	34-005BMS •091024	SampType: <b>MS</b> Batch ID: <b>R94337</b>	DI		Units: mg/L		Analysis Da		)24	RunNo: 943 SeqNo: 197	70044	Qual
Analyte Total Organic Carb	oon	Result 29.9	RL 0.700	SPK value 25.00	SPK Ref Val 4.576	%REC 101	LowLimit 73.1	HignLimit 113.1	RPD Ref Val	%RPD	RPDLimit	Qual



CLIENT: Fi	409134 riedman & Bruya 09113								• -	SUMMA		-
Sample ID: LCS-R943	03 SampType	LCS			Units: <b>ppmv</b>		Prep Da	te: 9/12/20	)24	RunNo: 94	303	
Client ID: LCSW	Batch ID:	R94303					Analysis Da	te: <b>9/12/20</b>	)24	SeqNo: 19	69572	
Analyte	F	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methane		901	0.00500	1,000	0	90.1	73.6	124				
Sample ID: MB-R9430	3 SampType	BLK			Units: <b>mg/L</b>		Prep Da	te: 9/12/20	)24	RunNo: <b>94</b> :	303	
Client ID: MBLKW	Batch ID:	R94303					Analysis Da	te: 9/12/20	)24	SeqNo: 19	69530	
Analyte	F	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methane		ND	0.00500									
Sample ID: 2409127-0	01AREP SampType	: REP			Units: mg/L		Prep Da	te: <b>9/12/2(</b>	)24	RunNo: <b>94</b> :	303	
Client ID: BATCH	Batch ID:	R94303					Analysis Da	te: 9/12/20	)24	SeqNo: 19	69506	
Analyte	F	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methane	0	.0159	0.00500						0.01504	5.45	30	
Sample ID: 2409134-0	01CREP SampType	: REP			Units: mg/L		Prep Da	te: 9/12/20	)24	RunNo: <b>94</b> :	303	
Client ID: MW-1A-09	Batch ID:	R94303					Analysis Da	te: 9/12/20	)24	SeqNo: 19	69517	
Analyte	F	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methane		ND	0.00500						0		30	



# Sample Log-In Check List

Client Name:	FB	Work Order Numl	ber: 2409134	
Logged by:	Clare Griggs	Date Received:	9/11/2024	1:55:00 PM
Chain of Cust	tody			
	Custody complete?	Yes 🗸	No 🗌	Not Present
••	e sample delivered?	Client		
Z. 110W Wd5 110				
<u>Log In</u>				
	ls present on shipping container/cooler? nments for Custody Seals not intact)	Yes	No 🗌	Not Present 🗹
4. Was an atter	mpt made to cool the samples?	Yes 🖌	No 🗌	
5. Were all item	ns received at a temperature of >2°C to 6°C *	Yes 🖌	No 🗌	
6. Sample(s) in	proper container(s)?	Yes 🖌	No 🗌	
7. Sufficient sar	mple volume for indicated test(s)?	Yes 🖌	No 🗌	
8. Are samples	properly preserved?	Yes 🗹	No 🗌	
9. Was preserve	ative added to bottles?	Yes	No 🗹	NA 🗌
10. Is there head	Ispace in the VOA vials?	Yes	No 🔽	
11. Did all sampl	les containers arrive in good condition(unbroken)?	Yes 🗹	No 🗌	
12. Does paperw	vork match bottle labels?	Yes 🗹	No 🗌	
13. Are matrices	correctly identified on Chain of Custody?	Yes 🖌	No 🗌	
14. Is it clear what	at analyses were requested?	Yes 🖌	No 🗌	
15. Were all hold be met?	times (except field parameters, pH e.g.) able to	Yes 🖌	No 🗌	
<u>Special Hand</u>	lling (if applicable)			
16. Was client r	notified of all discrepancies with this order?	Yes	No 🗌	NA 🗹
Persor	n Notified: Date	:		
By Wh	nom: Via:	eMail Pł	none 🗌 Fax	In Person
Regard	ding:			
Client	Instructions:			
17. Additional re	emarks:			

### Item Information

Item #	Temp ⁰C
Sample	4.1

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

Silva Silvas	ATG-	5	Re	la	ruam	Manaer Erram	/ MIC			Received by: Received by:		Seattle, WA 98119-2029 Ph. (206) 285-8282 Fax (206) 283-5044
ANY	COMPANY		ME	T NAME	PRINT			7	SIGNATURE	SI		Friedman & Bruya, Inc.
				_								
			++	++	$\left  \right $	++	$\left  \right $					
						+						
						$\vdash$						
			×	x	×	1 x	+	1320 water	1320	9/10/2024		MW-101-091024
			x	×	×	1 x		1310 water	1310	9/10/2024		MW-1-091024
			x	×	×	1 x		water	1140	9/10/2024		MW-4B-091024
			x	×	×	1 x		water	1135	9/10/2024		MW-2A-091024
			×	×	x	1 x		1040 water	1040	9/10/2024		MW-3-091024
			х	x	x	1 x		1035 water	1035	9/10/2024		MW-1A-091024
		hor methane	Sulfate RSK Methane	Nitrate	TOC		# of jars	Matrix	Time Sampled	Date Sampled	Lab ID	Sample ID
	ANALYSES REQUESTED	ALYSES	AN			Η	$\parallel$					
Dispose after 30 days Return samples Will call with instructions				DD	Floyd Snider EDD	yd Sni	Flo	om	anandbruya.c	2, ZIP <u>Seattle, WA 98108</u> (206) 285-8282 merdahl@friedmanandbruya.com	<u>Seattle, WA 98108</u> 85-8282 merdahl@f	City, State, ZIP Phone #(206) 28
SAMPLE DISPOSAL						S	REMARKS	REN				
su	E-397	E-			113	409113				ve S	5500 4th Ave S	Address
Standard TAT	PO#	P			PROJECT NAME/NO.	NAM	JECT	PRC	C	Friedman and Bruva Inc	Friedman	
Page # _1 of			ġ.	Grouj	3CONTRACTER Alliance Technical Group	Ce Tec	SUBCONTRACTER Alliance Technic	SUE		Grdahl	Michael Erdahl	Send Report To
2409134		USTO	OFC	AIN	CH7	<b>IPLI</b>	SAN	TRACT	SUBCONTRACT SAMPLE CHAIN OF CUSTODY			

# SUBCONTRACT SAMPLE CHAIN OF CUSTODY

	h	R SURFA	CE WATI	ER SAMPI			M	M9 CI-	T.n.l
Project:_					Date of Colle	ction:	DARANY	19 5/	124
Task:	GW Moni	<b>†</b>			Field Perso	nnel: 💋	6 HB		
urge Dat	а								
Well ID: 📶	N-9A Se	cure: 🖓 Yes 🛛	] No Eco	ology Tag #:	Casing	J Type/Dlamet	er/Screened	Interval <u>PVC</u> ;	<i>ζ″</i>
Replacement	t Required: 📋 Me	onument 🔲 Li	d 🗋 Lock 🕻	Bolts: Missing	(#) Stripped (#	) 0	ther Damage	:	<u> </u>
	ler decontaminate	d Prior to Placer			One Casing Vo	lume (gal):			
•				10:26		Volun	ne of Sch	edule 40 PVC P	ipe
	(from log or field m				Diameter		I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Lineal Ft.)
	es of purging (from			Lau	1 ¼" 2"	1.660" 2.375"	1.380" 2.067"	0.08 0.17	0.64 1.45
	(time): <u>19:5</u>				- 3" 4"	3.500" 4.500"	3.068" 4.026"	0.38	3.2 5.51
	ed: 5L	Purge water dis			6"	6.625"	6.065"	1.5	12.5
Time	Depth to Water (ft)	Vol. Purged	рН (s.u.)	DO (mg/L)	Specific Conductivity (µs/cm)	Turbidity (NTU)	Temp (°C)	ORP (mV)	Comments
10:38	4.92	0.5	6.34	1.25	269.0	8.66	13.5		
0:42	4.94	1.0	6.45	0.64	269.3	7.44	19.3	175.1	
0.46	495	2.5	6.5%	0.46	7.66.5	5.10	13.2		
0:50	4.95		4.56	6.39	265.1	3.28	13.2	and the state of t	
10:52	4.95	<u>3.0</u> 3,5	2,61	0.36	264.4	7.58	<u>v3.2</u> 13.2		
							<u></u>		··································
ampling	Data								
Sample No:	MW-9A-0	50724			Location and Dep	oth: Mw-	940	~71	
	ed (mo/dy/yr):	,	Tim	e Collected:					day
/						Filtered		Filter Type:	
					: 🗹 Peristaltic 🔲 Bla				
•					idity Meter 🔲 Other:				
						1	ated silicon ar	od poly tubing: 🗖 de	dicated tubing replaced
-					e porter	1.00			
		rbialty, Odor, Ot			a parta				
70	nalyses	Analysis			Oratalaan	0		Al-4	
Analyte		Analysis	Method	Sample	Container	Quantity Pr	eservative	Notes	
						1			
_			_	_					
								Fe - 3.0mg	1/2
C samp	les								
	Sample No:	-		Duplicate	Time: 💟	MS/MSD	: 🗆 Yes 🕅		
Signatur	-	11. 4	111.	Duplicate		wowod		SITM	
Signatur	e	which the	then				Date:		
Documents/Fie	der.sharepoint.com/D ald Resources/Field F /Groundwater Sample	forms/Groundwater							Page 1 of 1

	OR SURFACE WATE	R SAMP			and share a second		
Project: 601	T		Date of Colle	ction:	511 1	4	
Task: 64 Mon	it.		Field Perso	nnel:	43		
Purge Data							
Well ID: MV-2 Se	ecure: 🖞 Yes 🗆 No 🛛 Ecolo	ogy Tag #:	Casing	g Type/Diamo	eter/Screened	Interval PVC	: R"
	fonument 🗋 Lid 🗍 Lock 🗍						
	ed Prior to Placement in Well: 🗖	Yes 🗌 No	One Casing Vo	lume (gal):			
Depth of water (from TOC):		:30		Mala	a of Coh		
Total Depth (from log or field I	measurement): 17.20		- Diameter	O.D.	I.D.	edule 40 PVC P Volume	Weight of Water
After 5 minutes of purging (fro	orm top of casing): 4,55	1.00	- 1 ¼"	1.660"	1.380"	(Gal/Linear Ft.) 0.08	(Lbs/Lineal Ft.) 0.64
Begin purge (time):	End purge (time):	1:20	- 2"	2.375" 3.500"	2.067" 3.068"	0.17 0.38	1.45 3.2
Volume purged: 74	_ Purge water disposal method_	drum	4" 6"	4.500" 6.625"	4.026" 6.065"	0.66 1.5	5.51 12.5
Time Depth to Water (ft)	Vol. pH Purged (s.u.)	DO (mg/L)	Specific Conductivity (µs/cm)	Turbidity (NTU)	Temp (°C)		Comments
4:45 4.55	2 6.44	0.86	377.8	6.09	126	<u>; -30.</u>	2
11:50 4.56	3 6.48	0.66	374.7	3.99	12.	3 -41.4	
11:55 4.56	4 6.54	0.55	272.2	5.14	12.0	<u>L -CN9</u>	
12:05 4.56	<u> </u>	0.45	369.5	1.73	12,	2 67.4	7
				<del></del>	-		
							5
Sampling Data							
	2-050724		Location and De		v-2	Toads	14
	77724 Time					45° wm	19
	Surface Water Other:						
Sample Collected with:  Bai	iler Pump Other:	Туре	ə: 🖸 🖓 eristaltic 🔲 Bla	adder 🔲 Su	bmersible C	ther:	
Water Quality Instrument Data	a Collected with: Type: XYSI Pri	oDSS 🕵 Turt	bidity Meter D Other:				
Sample Decon Procedure:	Sample collected with:  decontain	aminated <u>all</u> tu	ıbing; 🖄 disposable tul				
Sample Description (Color, Tu	urbidity, Odor, Other):				Ferrol	SIM	23
Sample Analyses							
Analyte	Analysis Method	Sample	e Container	Quantity P	reservative	Notes	
7 ulaye	, margolo motriou	Gumpa	o oontainor	duditety			
		_					
	-						
QC samples							
	_	Durling	T	Monto		Нис	
Duplicate Sample No:	1 1000/	Uuplicate	Time:	MS/MS	D: 🗆 Yes 🧯	91712 91712	4
Signature:	~ ent				Date:	5///0	• 1
https://floydsnider.sharepoint.com/ Documents/Field Resources/Field Surface Water/Groundwater Samp	Forms/Groundwater or						Page 1 of

GROUNI	OWATER O	R SURFA	CE WATI	ER SAMPL	E COLLECT	ION FOR	М		
Project:_					Date of Colle	ction: $5/$	7/24		
Task:	W Monito	ri)z			Field Perso	nnel: D	67		
Purge Dat									
Well ID: M	√-) Sec	cure: 🛛 Yes 🛛	]No Eco	ology Tag #:	Casing	g Type/Diamet	er/Screened	Interval	
Replacemen	t Required: 🗖 Ma	nument 🗖 Li	d 🗖 Lock 🛙	Bolts: Missing	(#) Stripped (#	:) O	ther Damage	ə:	
Depth of wat	ter (from TOC):	4.62	Time:	11:36					
Total Depth	(from log or field m	easurement):	13,40	)				edule 40 PVC P Volume	Vipe Weight of Water
After 5 minut	tes of purging (from	n top of casing):	4.62	1	Diameter	O.D. 1.660"	1.D. 1.380"	(Gal/Linear Ft.) 0.08	(Lbs/Lineal Ft.) 0.64
Begin purge	(time):11:4そ	End pur	rge (time):	2:42	2" 3"	2.375" 3.500"	2.067" 3.068"	0.17 0.38	1.45 3.2
Volume purg	1ed: 112	Purge water di	sposal method	Drom	4" 6"	4.500" 6.625"	4.026" 6.065"	0.66 1.5	5.51 12.5
Time	Depth to Water (ft)	Vol. Purged	рН (s.u.)	DO (mg/L)	Specific Conductivity (µs/cm)	Turbidity (NTU)	Temį (°C)		Comments
1050	4,64	0.25	6.84	2.22	279,0	6.56	17.1	3 124,3	
11:54	4.65	1/5	6.77	0.69	275,7	6:75	12.7		
11:58	4.64	2.5	6.77	0,46	273.0	4.52			
12:02	4.64	3,5	6.77	0,38	269,4	3,10			
12:10	4.64	5,5	6.76	0,33	267.7	3.16	1217		
10/10			12: 1						
	·								2
Sampling	Data								
Sample No:	MW-1-05	0724			Location and De	oth: MW-	-10~2	81	
Date Collect	ed (mo/dy/yr):0	5/07/24		ne Collected:				ler + wind	/
Type: 🗹 Gro	ound Water 🔲 Su	urface Water C	)ther:		Sample	Filtered	] Unfiltered	Filter Type:	
Sample Colle	ected with: 🛛 Baile	er 🛛 Pump C	other:	Туре:	🛱 Peristaltic 🛛 Bl	adder 🛛 Sub	mersible C	)ther:	
Water Qualit	y Instrument Data	Collected with:	Type: 🗹 YSI P	roDSS 🙇 Turbi	idity Meter 🔲 Other:				
Sample Dec	on Procedure: S	ample collected	i with: 🗖 decor	ntaminated <u>all</u> tub	ing; 🗆 disposable tul	oing 🗹 dedica	ited silicon a	nd poly tubing; 🔲 de	edicated tubing replaced
Sample Des	cription (Color, Tur	bidity, Odor, Ot	her): (10-0	~					
Sample A	nalvses								
Analyte		Analysis	s Method	Sample	Container	Quantity Pro	eservative	Notes	
, and y to		/ undigitie		Campio	Containor				
	91								
					-				
								Fe - 4.5 mg.	12
QC samp	les					f.		J. J.	
		LUNI-1EX	1711		17:30			-/	
	Sample No: <u>M</u>	W 101-030	91	Duplicate 1	Fime: 12:30	MS/MSD	:□Yes [		
Signatu	re: <u>Xh</u>	mille	Kall	the			Date: _	5/7/24	
								and the second sec	

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After 5 minutes of purging (from top of casing):       5.07       1.0.       (Gal/Linear Ft.)       (Lbs.)         Begin purge (time):       1320       End purge (time):       1355       2.375"       2.067"       0.17         Volume purged:       91       Purge water disposal method       0.04       0.08       0.08         6"       6.625"       6.065"       1.5	ht of Water /Lineal Ft.) 0.64 1.45 3.2 5.51 12.5 Comments
Purge Data         Weil ID:	ht of Water /Lineal Ft.) 0.64 1.45 3.2 5.51 12.5
Weil ID:       MV-3       Secure: [] Yes [] No       Ecology Tag #:	ht of Water /Lineal Ft.) 0.64 1.45 3.2 5.51 12.5
Replacement Required:       Monument       Lid       Lock       Botts: Missing (#)       Stripped (#)       Other Damage:	ht of Water /Lineal Ft.) 0.64 1.45 3.2 5.51 12.5
Depth Sounder decontaminated Prior to Pjacement in Well: []] Yes [] No       One Casing Volume (gal):         Depth of water (from TOC): 5,0 b       Time: 15:114         Total Depth (from log or field measurement): 10.995       0.907         Begin purge (time): 13:0       End purge (time): 13:0         Begin purge (time): 13:0       End purge (time): 13:0         Volume purged: 14       Purge water disposel method Jr.MM         Time       Depth to Vol.         Vature (time): 5,07       1         6:70       2:79         3:25       5:07         1:3:5       3:25:14         1:3:5       0.08         Volume purged: 15       Purge water disposel method Jr.MM         Nater (ft)       Purge water disposel method Jr.MM         1:3:5       5:07         1:5       Conductivity (INT)         (INC)       Conductivity (INT)         (INC)       Conductivity (INT)         (INC)       Conductivity (INT)         (INC)       Specific         1:3:5       5:07         1:5:5:5       5:07         1:5:5:5       5:07         1:5:5:5       5:07         1:5:5:5       5:07         1:5:5:5       5:07         1:5:5:5 </th <th>ht of Water /Lineal Ft.) 0.64 1.45 3.2 5.51 12.5</th>	ht of Water /Lineal Ft.) 0.64 1.45 3.2 5.51 12.5
Depth of water (from ToC): 5,05       Time: 13:14         Volume of Schedule 40 PVC Pipe         Volume of Schedule 40 PVC Pipe         Diameter 0.D.       LD.       Colume of Schedule 40 PVC Pipe         Diameter 0.D.       LD.       Colume of Schedule 40 PVC Pipe         Diameter 0.D.       LD.       Colume of Schedule 40 PVC Pipe         Diameter 0.D.       LD.       Colume of Schedule 40 PVC Pipe         Diameter 0.D.       LD.       Colume of Schedule 40 PVC Pipe         Diameter 0.D.       LD.       Colspan="2">Colspan="2"         Time Depth I       Colspan="2"       Colspan="2"	ht of Water /Lineal Ft.) 0.64 1.45 3.2 5.51 12.5
Total Depth (from log or field measurement):       10.49         After 5 minutes of purging (from top of casing):       5.07       10.10.       ID.       Volume       Weig         Begin purge (time):       13.00       End purge (time):       13.50       0.08       0.08       0.08       0.08         Volume purged:       Purge water disposal method       0.000       1.300       0.08       0.38       4       4.500*       4.202*       0.666       0.38       4       4.500*       4.202*       0.666       0.665*       1.5       0.666       0.655*       1.5       0.666       0.665*       1.5       0.666       0.665*       1.5       0.666       0.665*       0.665*       1.5       0.666       0.665*       1.5       0.666       0.665*       1.5       0.666       0.665*       1.5       0.666       0.666       0.665*       1.5       0.666       0.665*       1.5       0.666       0.666       0.666       0.666       0.666       0.666       1.5       0.666       1.5       0.666       0.666       0.655*       1.5       0.666       1.5       1.5       1.5       1.5       1.5       1.5       1.5       1.5       1.5       1.5       1.5       1.5       1.5	/Lineal Ft.) 0.64 1.45 3.2 5.51 12.5
Total Depth (from log or field measurement):	/Lineal Ft.) 0.64 1.45 3.2 5.51 12.5
Begin purge (time):       135       135       136       1.380       0.08         Begin purge (time):       137       2.375       2.375       0.07       0.17         3: 0000       0.080       0.88       0.88       0.88       0.88         Volume purged:       14       Purge water disposel method       1744       1.860       1.380       0.88         Time       Depth to       Vol.       pH       DO       Spacific       Turbidity       Temp       0.86         1325       5.07       1       6.70       2.79       326.3       0.82       12.2       45.9         1330       5.07       1       6.70       2.79       326.3       0.87       12.1       46.9         1330       5.07       2       6.64       0.45       325.4       0.66       12.1       45.9         1340       5.07       3       6.64       0.45       325.1       0.66       12.1       45.9         1340       5.07       4       6.64       0.45       325.1       0.66       12.1       45.9         1340       5.07       4       6.64       0.45       325.1       0.66       12.1       45.7	0.64 1.45 3.2 5.51 12.5
Volume purged:       Purge water disposal method       jrum       4*       6.026*       6.026*       0.66         Time       Depth to Water (ft)       Vol.       pH       DO       Specific       Turbidity       Temp       ORP         /1325       5.07       1       6.70       2.79       326.3       0.82       12.2       46.9         /1325       5.07       1       6.70       2.79       326.3       0.82       12.2       46.9         /1325       5.07       1       6.64       0.96       325.4       0.66       12.1       15.9         /1325       5.07       2       6.64       0.97       325.4       0.66       12.1       15.9         /1325       5.07       3       6.64       0.417       325.2       0.56       12.1       15.9         /1345       5.06       5       6.64       0.412       325.1       0.66       12.1       15.9         /1345       5.06       5       6.64       0.412       325.1       0.66       12.1       15.9         /1345       5.06       5       6.64       0.415       325.1       0.66       12.1       15.9         /1345	3.2 5.51 12.5
Volume purged:       Purge water disposal method       Image: Conductivity (NTU)       6"       6.625"       6.065"       1.5         Time       Depth to Water (ft)       Purged       (s.u.)       (mg/L)       Specific Conductivity       Turbidity       Temp       ORP (mV)         /332       5.07       1       6.70       2.79       326.3       0.82       12.0       46.9         /330       5.07       2       6.64       0.96       336.3       0.82       12.0       46.9         /330       5.07       3       6.64       0.96       336.3       0.82       12.0       46.9         /330       5.07       4       6.64       0.447       325.0       0.56       12.1       45.9         /340       5.07       4       6.64       0.447       325.0       0.56       12.1       45.9         /343       5.08       5       6.64       0.447       325.0       0.56       12.1       45.9         /343       5.08       5       6.64       0.447       325.1       0.66       12.1       45.9         /345       5.08       5       6.64       0.447       325.1       0.66       12.1       46.1	12.5
Time       Depth to Water (ft)       Vol. Purged (s.u.)       pH (s.u.)       DO (mg/L)       Specific Conductivity (us/cm)       Turbidity (NTU)       Temp (°C)       ORP (mV)         1335       5.07       1       6.70       2.79       326.3       0.82       12.0       46.9         1335       5.07       2       6.64       0.98       326.3       0.82       12.1       46.5         1335       5.07       2       6.64       0.58       335.4       0.664       12.1       45.9         1340       5.07       4       6.64       0.447       325.2       0.56       12.1       45.4         1349       5.07       4       6.64       0.447       325.2       0.56       12.1       45.4         1349       5.08       5       6.64       0.447       325.1       0.64       12.1       45.4         1349       5.08       5       6.64       0.447       325.1       0.64       12.1       46.7         1349       5.08       5       6.64       0.447       325.1       0.44       12.1       46.7         Date collected (mo/dy/yr):       5/7/244       Time collected:       13:45       Weather:       50° MinO4	Comments
1325       5.07       1       6.70       2.79       326.3       0.82       12.0       48.9         1335       5.07       2       6.64       0.96       326.2       0.87       12.1       16.5         1335       5.07       2       6.64       0.96       326.2       0.87       12.1       16.5         1335       5.07       2       6.64       0.49       325.1       0.66       12.1       15.9         1345       5.06       5       6.61       0.45       325.1       0.66       12.1       45.9         1345       5.06       5       6.61       0.45       325.1       0.66       12.1       46.1         1345       5.06       5       6.61       0.45       325.1       0.66       12.1       46.1         1345       5.06       5       6.61       0.45       325.1       0.66       12.1       46.1         1345       5.06       5       6.61       0.45       325.1       0.66       12.1       46.1         1345       5.06       5       1.31       1.41       1.41       1.41       1.41         Date Collected (moldylyr):       5/77/24       T	
1335       5.07       3       4.64       0.58       325.4       0.66       12.1       45.9         1349       5.07       4       6.64       0.447       325.0       0.56       12.1       45.9         1343       5.08       5       6.64       0.447       325.0       0.56       12.1       45.9         1343       5.08       5       6.64       0.415       325.1       0.66       12.1       45.9         1343       5.08       5       6.64       0.415       325.1       0.66       12.1       45.9         1343       5.08       5       6.64       0.415       325.1       0.66       12.1       45.9         1343       5.08       5       6.64       0.415       325.1       0.66       12.1       45.9         1343       5.08       5       6.64       0.415       325.1       0.66       12.1       45.7         Sample No:       MW-3       Sample Solot 14       12.1       46.7       12.1       46.7         Type:       Ground Water       Surface Water Other:       13:45       Location and Depth:       MW-3         Sample Collected with:       Bailer       Pump Other:	
1349       5.07       4       6.64       0.447       3325.2       0.56       12.1       45.9         1343       5.08       5       6.64       0.495       325.1       0.46       12.1       46.7         Sampling Data         Sample No:	
Sampling Data         Sample No:       MW-3-0507244         Date Collected (mo/dy/yr):       5/7/244         Time Collected:       13:43         Weather:       50°         Weather:       50°         Weather:       50°         Weather:       0.45 J:         Sample Collected with:       Bailer         Pump Other:       Type:         Year Quality Instrument Data Collected with:       Type:         Sample Decon Procedure:       Sample collected with:         Water Quality Instrument Data Collected with:       decontaminated all tubing;         Sample Decon Procedure:       Sample collected with:         Sample Decon Procedure:       Sample collected with:         Materia       all tubing;       disposable tubing         Materia       dedicated all tubing;         Materia       dedicated all tubing;	
Sampling Data         Sample No:       MW-3-050724         Date Collected (mo/dy/yr):       5/7/24         Time Collected:       /3:45         Weather:       50° Wndy         Type:       Ground Water         Surface Water Other:       Sample:         Sample Collected with:       Bailer         Pump       Other:         Type:       Peristaltic         Bladder       Submersible         Water Quality Instrument Data Collected with:       Type:         Sample Decon Procedure:       Sample collected with:       decontaminated all tubing;         Sample Decon Procedure:       Sample collected with:       decontaminated all tubing;       disposable tubing	
Sample No:       MW-3-050724         Date Collected (mo/dy/yr):       5/7/24         Time Collected:       13:45         Weather:       50°         Water       Surface Water         Other:       Type:         Sample Collected with:       Bailer         Pump       Other:         Type:       Peristaltic         Bladder       Submersible         Other:	
Sample No:       MW-3-050724         Date Collected (mo/dy/yr):       5/7/24         Time Collected:       13:45         Weather:       50°         Wather:       50°         Weather:       0.45         Sample Collected with:       Bailer         Pump       Other:         Type:       Peristaltic         Bladder       Submersible         Water Quality Instrument Data Collected with:       Type:         YSI ProDSS       Prurbidity Meter         Sample Decon Procedure:       Sample collected with:         Type:       decontaminated all tubing;         disposable tubing       dedicated silicon and poly tubing;	
Sample No:       MW-3-050724         Date Collected (mo/dy/yr):       5/7/24         Time Collected:       13:45         Weather:       50°         Water       Surface Water         Other:       Type:         Sample Collected with:       Bailer         Pump       Other:         Type:       Peristaltic         Bladder       Submersible         Other:	_
Date Collected (mo/dy/yr):       5/7/24       Time Collected:       13:45       Weather:       50° Windy         Type:       Ground Water       Surface Water Other:       Sample:       Sample:       Filtered       Unfiltered       Filter Type:       0.45 J:         Sample Collected with:       Bailer       Pump       Other:       Type:       Peristaltic       Bladder       Submersible       Other:	
Date Collected (mo/dy/yr):       5/7/24       Time Collected:       13:45       Weather:       30 Whdy         Type:       Ground Water       Surface Water Other:       Sample:       Sample:       Filtered       Unfiltered       Filter Type:       0.45 J:         Sample Collected with:       Bailer       Pump       Other:       Type:       Peristaltic       Bladder       Submersible       Other:       Image: Sample Collected with:       Sample Collected with:       Type:       Peristaltic       Bladder       Submersible       Other:       Image: Sample Collected with:       Image: Sample Collected with: <th></th>	
Sample Collected with:       Bailer       Pump       Other:       Type:       Peristaltic       Bladder       Submersible       Other:         Water Quality Instrument Data Collected with:       Type:       ProDSS       Turbidity Meter       Other:       Sample Decon Procedure:       Sample collected with:       decontaminated all tubing;       disposable tubing       dedicated silicon and poly tubing;       dedicated to	
Sample Collected with:       Bailer       Pump       Other:       Type:       Peristaltic       Bladder       Submersible       Other:         Water Quality Instrument Data Collected with:       Type:       ProDSS       Turbidity Meter       Other:       Sample Decon Procedure:       Sample collected with:       decontaminated all tubing;       disposable tubing       dedicated silicon and poly tubing;       dedicated to	smeto/6
Sample Decon Procedure: Sample collected with: 🗋 decontaminated all tubing; 🗋 disposable tubing 📋 dedicated silicon and poly tubing; 💭 dedicated t	
Sample Decon Procedure: Sample collected with: 🗋 decontaminated all tubing; 🗋 disposable tubing 📋 dedicated silicon and poly tubing; 💭 dedicated t	
	ubing replaced
Sample Description (Color, Turbidity, Odor, Other).	
Sample Analyses	
Analyte Analysis Method Sample Container Quantity Preservative Notes	
QC samples	
Duplicate Sample No: Duplicate Time: MS/MSD:  Yes  No	
Signature: Date:	
https://floydsnider.sharepoint.com/Dept/Field/Shared	

Filed Personnel:       D/g         Purge Data       Filed Personnel:       D/g         Purge Data       Stroped ()       Other Demoge:         Depth Sounder Securitarihidad Phor to Placement In Web ()       Stroped ()       Other Demoge:         Depth Sounder decontaminated Phor to Placement In Web ()       Stroped ()       Other Demoge:         Depth Sounder decontaminated Phor to Placement In Web ()       Yolume (g):       Other Demoge:         Depth Asset (monoc)       H, Purge web ()       1, 10       Other Demoge:       Other Demoge:         Depth Asset (monoc)       H, Purge web ()       Yolume (g):       Other Demoge:       Other Demoge:         Depth Asset (monoc)       H, Purge web ()       Yolume (g):       Other Demoge:       Other Demoge:         Trade 3: 11/T       Toropie (mon)       J, S (S)       Sounder (M)       Other Demoge:       Other Demoge:         Time       Depth (D)       Purge web (en)       M(L)       Demote (C)       Demote (C)       Other Demoge:         13:22       H, 40       0.25       L 87       1.76       Z 57,4       2.08       13.6       U 82.6         13:24       H, 40       0.25       L 47       1.76       Z 57,4       2.08       13.6       U 82.6       12.6	GROUND	Sec. 251				LE COLLECT Date of Colle		RM 5.17/24		
Purge Data										
Weil D. M.UI.A.       Secure: Eff Yes No. Ecology Tag # Centing Type/Diameter/Screened Interval			D							
Replacement Required:       Monument       Lick       Both: Masing (#) Other Damage:										
Deph owner door of a product of Placement in Welt (2 Yes □ No       One Casing Victure (gal):         Deph of water (from TOC):       (1, 10)         Adder Similars of add measurement;       (1, 12)         Begin purge (tren):       (13): 157         Time       Deph to may (tren):       (13): 157         Time       Deph to (tren):       (13): 177         End purge (tren):       (13): 17       End purge (tren):       (13): 177         Time       Deph to (tren):       (13): 177       End purge (tren):       (13): 177         Time       Deph to (tren):       (14): 170       2: 657.4       2: 087       0.88       3: 2         13:22       4.90       0.25       4: 87       1: 7: 0       2: 657.4       2: 0.8       13: 6       11: 0       13: 6       13: 6       11: 0       13: 5       13: 6       13: 6       11: 0       13: 5       13: 6       13: 6       14: 6       13: 5       14: 4       13: 5       13: 6       14: 6       13: 5       10: 1       10: 1       13: 5       10: 1       10: 1       10: 1       10: 1       10: 1       10: 1										
Depth of water (from TOC):       4 /40       Time:       13:75         Tetal Depth (from tog or flatil measurament):       13:75       Image: Table of purge (from top of casing):       4.70         After S mitules of purge (from top of casing):       4.70       Image: Table of purge (from top of casing):       13:75         Mate S mitules of purge (from top of casing):       4.70       Image: Table of purge (from top of casing):       14:60         Time       Depth for Type:       Fill purge (from top of casing):       13:75       14:60       14:60         Time       Depth for Type:       Fill purge (from top of casing):       10:00       Statistics:       14:60         13:72       4:90       0:25       6:87       1:70       Ceff.44       13:60       USA:6       13:6       USA:6       10:72         13:72       4:90       0:25       6:87       0:48       2:67.1       13:6       USA:6       10:74       11:60       11:76       13:55       10:74       13:55       10:74       13:55       10:74       13:55       10:74       13:55       10:74       13:55       10:74       13:55       10:74       13:55       10:74       13:55       10:74       13:55       10:74       14:85       10:55       10:74       10:55       10:					7					
Total Depth (from log of field measurement):       13.55         After 5 minutes of purging (from log of casing):       1.9.7         After 5 minutes of purging (from log of casing):       1.9.7         Begin purge (from):       13:17         End purge (from):       13:17         End purge (from):       13:17         End purge (from):       13:152         Time       Depth lo         Volume points       Volume of Schedule 40 PVC Pige         13:20       1.90         13:21       Time         Water (ff)       Purge water disposit method       Dr.cvm         13:22       4.90         13:24       4.90         13:25       6.62       9000/176         13:24       4.90       4.00         13:27       4.90       4.00         13:27       4.90       4.00       6.00         13:32       4.90       4.90       6.02       90.75         13:32       4.90       4.00       6.00       2.56       6.02         13:32       4.90       4.90       6.00       2.56       1.90       1.90       1.95       10.1       11.0       11.0       11.0       11.0       11.0       11.0 <t< td=""><td></td><td></td><td></td><td></td><td></td><td>One Casing Vo</td><td>olume (gal): <sub>&lt;-</sub></td><td></td><td></td><td></td></t<>						One Casing Vo	olume (gal): <sub>&lt;-</sub>			
Total Depth from kg or hidd measurement :       1.3 - 5 - 3         After 5 minutes of purget (mer):       1.3 : 1/7         End purget (mer):       1.3 : 1/7         Diametar:       0.0         1.3 : 1/7       End purget (mer):         1.3 : 1/7       End purget (mer):         1.3 : 1/7       2.6 : 1/7         1.3 : 2/2       4.9 : 0.0 : 0.5 : 0.6 : 0.6 : 0.5 : 0.6 : 0.6 : 0.5 : 0.6 : 0.6 : 0.5 : 0.6 : 0.6 : 0.5 : 0.6 : 0.6 : 0.5 : 0.6 : 0.6 : 0.5 : 0.6 : 0.6 : 0.5 : 0.6 : 0.6 : 0.5 : 0.6 : 0.6 : 0.5 : 0.6 : 0.6 : 0.5 : 0.6 : 0.6 : 0.5 : 0.6						-	Volu	me of Sch	edule 40 PVC P	ine
After 3 multiples of purging (rune) by of calengy       1/12       1/12       1/12       1/12       0.66         Begin purging (rune):       1/12       1/12       1/12       0.67       0.17       1.45         Segin purging (rune):       1/12       1/12       0.67       0.17       1.45         Volume purging:       1/12       1/12       0.66       1.45       3.000       0.080       1.45         Volume purging:       1/12       1/12       0.64       0.23       3.000       0.080       1.45         Volume purging:       1/14       0.000       Specific       Turking (WTU)       0.000       0.080       1.45       3.000       0.080       1.45         13/20       1/140       0.020       0.51       1/14       1.25       1.16						Diamete		1	Volume	Weight of Water
Volume purged:       9L       Purge water disposal method       D(W)       6428       6428       6455       1.5       1.2.5         Time       Depth to       Vol.       pH       DO       Standing       Turbetily       Turbetily<									0.08	0.64
Volume purget:         9/12         Purge water disposal method         Dr.(vn)         6*         6.825*         6.825*         1.5         1.25           Time         Depth to         viget         (isu)         (ingl)         constructivity         Time         Order         (ingl)         constructivity         (ingl)         (ingl)         constructivity         (ingl)         (ingl) <t< td=""><td></td><td></td><td>End put</td><td>rge (time):</td><td>0128</td><td>- 3"</td><td>3.500"</td><td>3.068"</td><td>0.38</td><td>3.2</td></t<>			End put	rge (time):	0128	- 3"	3.500"	3.068"	0.38	3.2
Waier (h)       Purged       (su)       (mgrl)       Conductivity       (NTU)       (°C)       (mV)         13:20       41.90       6.25       6.87       1.70       2.65,4       20.8       13.6       108.4         13:21       41.90       1.55       6.64       0.83       2.57.3       13.6       111.6         13:22       4.40       2.5       6.62       0.87.1       2.65.4       20.8       13.6       111.6         13:23       4.40       4.0       6.60       0.51       2.64.4       -       15.5       110.1         13:35       4.40       4.75       6.54       0.48       2.64.4       -       13.5       107.6         13:40       14.0       6.0       6.57       0.48       2.64.4       -       13.5       107.6         13:40       14.0       6.57       0.48       2.64.4       -       14.0       13.5       107.6         13:40       14.0       6.57       0.48       2.64.4       -       13.5       107.4         Debt collected (moletylyly)       0.5/07/2.4       Location and pepts:       Mw/-1.4.6.7.8'       Debt       Debt       Debt       Debt       Debt       Debt	Volume purgeo	d:9L	Purge water di	isposal method	Drum					
13:24       4:90       7.5       6:64       0:83       257.3       13.6       13.6       11.6         13:28       4:40       2.5       6:62       0:76       2.6.6       4.22       13.4       11.6         13:32       4:40       4.0       6.60       0.51       2.6.7       4.22       13.4       11.6         13:32       4:40       4.0       6.60       0.51       2.64.4       -       13.5       10.1         13:32       4:40       6.0       0.51       2.64.4       -       13.5       10.4         13:40       11.40       6.0       0.51       2.64.4       -       13.5       107.6         13:40       11.40       6.0       4.57       0.445       2.64.6       1.90       13.5       107.7         13:40       11.40       6.0       4.57       0.445       2.64.6       1.90       13.5       107.7         Sample Data       5.077.74       Locaston and Dept:       14.90       13.5       107.4       109.7         Date collected (moldy/yr):       5.1077.74       Time Collected:       13.54       10.44       118.6       118.7         Sample Ocollected with:       Baliler		Water (ft)	Purged			Conductivity	(NTU)	(°C)	(mV)	Comments
13:23       4.90       2.5       6x62       98260.7%       2.6x.0       4.22       13.4       11.8         13:32       4.40       4.0       6.60       0.51       2.64.2							-			
13:3.2       4.40       4.0       6.60       0.51       264.2       -       13.5       18.5       18.4         13:40       4.40       4.75       6.54       0.48       264.4       -       13.5       18.4         13:40       4.40       6.0       6.51       0.48       264.4       -       13.5       18.4         Sample No:       MM-1A-050724       Location and Depth:       MW-1A-074       74.4       -										<u></u>
13:36       4.40       4.75       6.54       0.48       7.64.6       -       13.5       109.4         13:40       1.40       6.0       8.54       0.48       7.64.6       1.40       13.5       109.4         13:40       1.40       6.0       8.54       0.48       7.64.6       1.40       13.5       109.4         Sample No:       M.M1.A.05.07.7.4       Location and Deptit:       M.M1.A.07.4       0.48       7.44       7.44         Sample No:       M.M1.A.05.07.7.4       Time Collected:       13.45       Weather:       C1.27.4 ± M.44       7.44         Type:       Quantity instrument Data Collected with::::::::::::::::::::::::::::::::::::	()						9.66			
13:40       4.0       6.0       6.59       0.45       16.46       1.90       13.5       10.7.6         Sampling Data								13.5	109.4	
Sample No:       MW-1A-050724       Location and Depth:       MW-1A @~8'         Date Collected (mo/dylyr):       05/07/24       Time Collected:       13:45       Weather:       Clerxt tw th dy         Type:       Øround Water       Burface Water Other:	13:40	4.90	6.0	0.59	0.45	269.6	1.90	13.5	107.6	
Sample No:       MW-1A-050724       Location and Depth:       MW-1A @ ~8'         Date Collected (mo/dylyr):       05/07/24       Time Collected:       13:45       Weather:       Clerxt tw th dy         Type:       Qround Water       Burface Water Other:	3					:: <u></u>				
Sample No:       MW-1A-050724       Location and Depth:       MW-1A @ ~8'         Date Collected (mo/dylyr):       05/07/24       Time Collected:       13:45       Weather:       Clerxt tw 1/dy         Type:       © Ground Water       © Surface Water Other:									-	
Date Collected (moldy)yr): 0.5/07/24 Time Collected: i.3:45 Weather: Cleary & widy   Type: Ground Water Surface Water Other: Sample: Filtered Unfiltered Filtered Unfiltered   Sample Collected with: Bailer Apump Other: Type: Yeristaltic Bladder Submersible Other:										
Type: X Ground Water   Surface Water Other:						Location and De	pth: <u>M</u> V	V-140	~8'	
Sample Collected with: Bailer   Water Quality Instrument Data Collected with: Type:   YSI ProDSS Turbidity Meter   Other:	Date Collected	l (mo/dy/yr):0	5/07/24	Tin	ne Collected:	3:45	,	Weather: <u>C</u>	leartwind	dy
Water Quality Instrument Data Collected with: Type: XIYSI ProDSS X Turbidity Meter          Other:	Type: 🕅 Grou	nd Water 🔲 S	urface Water C	Other:		Sample	: 🛛 Filtered		Filter Type:	-
Sample Decon Procedure:       Sample collected with::::::::::::::::::::::::::::::::::::	Sample Collec	ted with: 🗖 Bail	er 🛱 Pump C	Other:	Туре	: 🛒 Peristaltic 🗆 B	ladder 🗖 Su	bmersible O	ther:	
Sample Description (Color, Turbidity, Odor, Other):       Clerv         Sample Analyses       Notes         Analyte       Analysis Method       Sample Container       Quantity Preservative       Notes         Analyte       Analysis Method       Sample Container       Quantity Preservative       Notes         Analyte       Analysis Method       Sample Container       Quantity Preservative       Notes         Quantity       Preservative       Notes       Image: Container       Quantity Preservative       Notes         Quantity       Preservative       Notes       Image: Container       Quantity Preservative       Notes         Quantity       Preservative       Notes       Image: Container       Image: Container       Image: Container         Quantity       Container       Image: Container       Image: Container       Image: Container       Image: Container         Duplicate       Sample Container       Image: Container       Image: Container       Image: Container       Image: Container         Duplicate       Image: Container       Image: Container       Image: Container       Image: Container         Duplicate       Image: Container       Image: Container       Image: Container       Image: Container         Date:       Container       Image:	Water Quality	Instrument Data	Collected with:	Type: YSI F	ProDSS ATurb	idity Meter 🛛 Other				
Sample Description (Color, Turbidity, Odor, Other):       Clerv         Sample Analyses       Notes         Analyte       Analysis Method       Sample Container       Quantity Preservative       Notes         Analyte       Analysis Method       Sample Container       Quantity Preservative       Notes         Analyte       Analysis Method       Sample Container       Quantity Preservative       Notes         Quantity       Preservative       Notes       Image: Container       Quantity Preservative       Notes         Quantity       Preservative       Notes       Image: Container       Quantity Preservative       Notes         Quantity       Preservative       Notes       Image: Container       Image: Container       Image: Container         Quantity       Container       Image: Container       Image: Container       Image: Container       Image: Container         Duplicate       Sample Container       Image: Container       Image: Container       Image: Container       Image: Container         Duplicate       Image: Container       Image: Container       Image: Container       Image: Container         Duplicate       Image: Container       Image: Container       Image: Container       Image: Container         Date:       Container       Image:	Sample Decon	Procedure: S	Sample collected	d with: 🗖 decor	ntaminated <u>all</u> tut	bing; 🔲 disposable tu	bing 🗹 dedic	ated silicon ar	nd poly tubing; 🔲 de	dicated tubing replac
Sample Analyses         Analyte       Analysis Method       Sample Container       Quantity       Preservative       Notes         Analyte       Image: Sample Sample No:       Image: Signature:       Ms/MSD:       Yes       No         Signature:       Image: Shift       Ms/MSD       Date:       5/17/24				21						
Analyte       Analysis Method       Sample Container       Quantity Preservative       Notes         Image: Second and the			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,							
And Add to the second seco	sample An	alyses								
QC samples         Duplicate Sample No:            Duplicate Time:            MS/MSD:         Pres         MS/MSD:         Type         Diplicate Time:            MS/MSD:         Date:         5/17/74	Analyte		Analysis	s Method	Sample	Container	Quantity P	reservative	Notes	
QC samples         Duplicate Sample No:            Duplicate Time:            MS/MSD:         Pres         MS/MSD:         Type         Diplicate Time:            MS/MSD:         Date:         5/17/74										
QC samples         Duplicate Sample No:            Duplicate Time:            MS/MSD:         Pres         MS/MSD:         Type         Diplicate Time:            MS/MSD:         Date:         5/17/74										
QC samples         Duplicate Sample No:            Duplicate Time:            MS/MSD:         Pres         MS/MSD:         Type         Diplicate Time:            MS/MSD:         Date:         5/17/74	c.									
QC samples         Duplicate Sample No:										
QC samples         Duplicate Sample No:            Duplicate Time:            MS/MSD:         Pres         MS/MSD:         Type         Diplicate Time:            MS/MSD:         Date:         5/17/74										
QC samples         Duplicate Sample No:									FA = A /	}
Duplicate Sample No: Duplicate Time: MS/MSD: □ Yes X No Signature: Date: 5/17/24			1						ie ung/	
Signature: Date: 5/17/24	QC sample	)S								
	Duplicate Sa	mple No:	1	<u></u>	Duplicate	Time:	MS/MSI	D: 🗆 Yes 这	No	
	Signature	: Dn	ulla	Adler	10			Date:	5/7/24	
	-									

18 miles

				ER SAMP						
Project:	BISB				Date of Co	llectio	on:	5/17/2	4	
Task:(	S W Mont	mz			Field Per	rsonn	iel: P	G		
Purge Da										
Well ID: _/	1W-4B se	ecure: 🕅 Yes [	No E	cology Tag #:	Ca	ising Ty	/pe/Diamete	er/Screened	Interval	
Replaceme	nt Required: 🔲 M	lonument 🔲 L	id 🔲 Lock	Bolts: Missin	g (#) Strippe	d (#)	Ot	her Damage	ə:	8
	nder decontaminate									
	ater (from TOC):				-i					
Total Depth	(from log or field r	neasurement):					Volum	ne of Sch	edule 40 PVC F Volume	Veight of Water
After 5 minu	utes of purging (fro	m top of casing)	· 4.1	24			O.D. 1.660"	I.D. 1.380"	(Gal/Linear Ft.) 0.08	(Lbs/Lineal Ft.)
	e (time): 14:19				2"		2.375"	2.067"	0.17	0.64
					4"		3.500" 4.500"	3.068" 4.026"	0.38 0.66	3.2 5.51
	ged:				6"		6.625"	6.065"	1.5	12.5
Time	Depth to Water (ft)	Vol. Purged ()	рН (s.u.)	DO (mg/L)	Specific Conductivity (µs/cm)		Turbidity (NTU) I-Sj	Temp (°C)	(mV)	Comments
14:23	9,24	0.25	6.75	1.10	273.8	1	·	12.7	7 119.6	
14:31	4,25	1.5	6.75	0,43	272.2	-	1.34	· · ·		
	4.05			0.34	268.5	_	1.23	12,5	-4.7	
<u>14:35</u> 14:39	4.25	<u>3,5</u> 4,5	6.79 6.79	0.31 0.29	261.1	3	1.45	12.4		
	1000		•/ · 1			-		10 1	- 21.3	
	33				2	_		8 a		
Sampling	g Data								. N	
	MW-4B-05				Location and					
Date Collec	ted (mo/dy/yr):0	5/07/24	Ti	me Collected:	14.45		w	eather: Cl	low twind	/
Туре: 👿 G	round Water 🔲 S	Surface Water (	Other:		Sam	ple: 🗋	Filtered	] Unfiltered	Filter Type:	
Sample Col	llected with: 🔲 Bai	ler 🗹 Pump (	Other:	Тур	e: 🛛 Peristaltic 🛛	) Bladd	er 🗆 Subr	mersible C	ther:	
Water Qual	ity Instrument Data	Collected with:	Type: XX YSI	ProDSS X	bidity Meter 🛛 Oth	ner:				
Sample De	con Procedure:	Sample collecte	d with: 🗇 deco	ntaminated all tu	ubing; 🔲 disposable	ə tubing	A dedica	ted silicon a	nd poly tubing; 🗖 de	edicated tubing replaced
					re black p		,			
Sample /	Analyses				Я.					
Analyte	8	Analysi	s Method	Samp	le Container	Qu	antity Pre	eservative	Notes	
						_				
		1								
12									FE-Ziome	12
QC samp	oles									
Duplicate	Sample No:			Duplicate	Time:		MS/MSD:	🗆 Yes 🛛	No	
Signatu		mille of	Salle	h					5/1/24	
	nider.sharepoint.com/l									Page 1 of 1

Documents/Field Resources/Field Forms/Groundwater or Surface Water/Groundwater Sample Collection Form.doc

oject: <u>Big B</u>	+II	Date	of Collectio	n: 🔮	5/710	24	
ask: GW M	onit	Fie	eld Personne		HB.		
urge Data			-				
Well ID: MW-2A Se	ecure: 🗗 Yes 🗋 No Ecol	pgy Tag #: BMM6	58 Casing Typ	oe/Diamete	r/Screened I	nterval PVC	2"
	Ionument 🗌 Lid 🔲 Lock 🗋						
Depth Sounder decontaminate	ed Prior to Placement in Well: 🗖	Yes 🗌 No 👘 Or	e Casing Volume	e (gal):			
Depth of water (from TOC):		4:16				*	
Total Depth (from log or field r			Diameter	Volum O.D.	l.D.	dule 40 PVC P Volume	ipe Weight of Water
After 5 minutes of purging (fro	m top of casing): 5.12		1 1/4"	1.660"	1.380*	(Gal/Linear Ft.) 0.08	(Lbs/Lineal Ft.) 0.64
Begin purge (time):	20End purge (time):	:05	2" 3"	2.375" 3.500"	2.067" 3.068"	0.17 0.38	1.45 3.2
/olume purged: 10 L	_ Purge water disposal method	dium	4* 6*	4.500" 6.625"	4.026" 6.065"	0.66 1.5	5.51 12.5
Time Depth to Water (ft)	Vol. pH	DO Spe			Temp	ORP	Comments
14.75 Ela	Purged (s.u.)		uctivity /cm)	(NTU)	(°C)	(mV)	class 1
14:30 5.12	2 6.74	$\frac{2.51}{0.69}$ $\frac{900}{395}$	2.1 0	74	19.0	-322	clear no od
14:30 5.12	3 6.69	0.47 390	2.3	13	12.7	-425	
14:40 - 5.12	4 6.68	0.43 398	6	1.24	12,3	-47.3	
14:45 5.12	5 6.68	0.40 38	9.4	2.30	12,3	-50.5	
i , <u></u>			<u> </u>				
							·
		<u> </u>			· · · · · · · · · · · · · · · · · · ·		-
ampling Data							
Sample No: <u>MW-2</u>	A-050724	Loca	ation and Depth:				
Date Collected (mo/dy/yr):	5/7/24 Time	Collected: M:50	)	We	eather:	0° wind	y
Type: 🗹 Ground Water 🚛 S	Surface Water Other:	-	Sample: 🗹 F	iltered	Unfiltered	Filter Type: <u>0.4</u>	5 dismetal
Sample Collected with: 🗆 Bai		Type: Ӣ Peris				•	
Nater Quality Instrument Data	a Collected with: Type: 🛍 YSI Pro						
	Sample collected with:  decontain	1			ad alliana an	d maha kabinan 🗖 🚽	
				dedicati		NG For	
Sample Description (Color, Tu	urbidity, Odor, Other):	4 1,0	VUU		Fern	10) +00	
ample Analyses							
Analyte	Analysis Method	Sample Contair	ner Qua	antity Pre	servative	Notes	1
	/	1		1			
/				/			
					/		
C samples							
C samples Duplicate Sample No:		_ Duplicate Time:			□ Yes Date:		

# **GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM**

Project:					Date	of Collec	tion:			
Task:					Fie	eld Persor	nel:			
Purge Dat	a									
Well ID:	Se	cure: 🗌 Yes 🔲 N	lo Ec	ology Tag #:		Casing	Type/Diamete	er/Screened	Interval	
Replacement	t Required: 🔲 Mo	onument 🔲 Lid	Lock [	Bolts: Missing	(#)	_ Stripped (#)	Ot	ther Damage		
		d Prior to Placeme						· · · · ·		
Depth of wate	er (from TOC):		Time:							
Total Depth (	from log or field m	neasurement):			2	Diamatas			edule 40 PVC P Volume	ipe Weight of Water
After 5 minut	es of purging (fror	n top of casing):				Diameter	O.D. 1.660"	I.D. 1.380"	(Gal/Linear Ft.) 0.08	(Lbs/Lineal Ft.) 0.64
Begin purge	(time):	End purge	(time):			2" 3"	2.375" 3.500"	2.067" 3.068"	0.17 0.38	1.45 3.2
Volume pura	ed:	Purge water dispo	sal method			4" 6"	4.500" 6.625"	4.026" 6.065"	0.66 1.5	5.51 12.5
Time	Depth to Water (ft)	Vol. Purged ()	рН (s.u.)	DO (mg/L)	Spe Condi	ecific uctivity (cm)	Turbidity (NTU)	Temp (°C)		Comments
								· · · · · · · · · · · · · · · · · · ·		
					2		<u>.</u>	<u> </u>		
	5 <u> </u>	·			5. <u></u>					· · · · · · · · · · · ·
		·								
							•			
Sampling	Data									
Sample No:					Loca	ition and Dept	h:			
Date Collecte	ed (mo/dy/yr):		Tin	ne Collected:			W	/eather:		
Type: 🗖 Gro	ound Water 🔲 Si	urface Water Othe	ər:			Sample: [	Filtered	Unfiltered	Filter Type:	
Sample Colle	ected with: 🛛 Baile	er 🛛 Pump Othe	ər:	Туре:	: 🔲 Peris	staltic 🔲 Blac	der 🗆 Subi	mersible Of	ther:	
Water Quality	y Instrument Data	Collected with: Ty	pe: 🗆 YSI f	ProDSS 🗖 Turb	idity Mete	r 🗋 Other:				
Sample Deco	on Procedure: S	Sample collected wi	ith: 🗖 deco	ntaminated <u>all</u> tub	oing; 🗖 di	isposable tubi	ng 🗖 dedica	ted silicon ar	nd poly tubing; 🔲 de	dicated tubing replaced
Sample Desc	cription (Color, Tu	rbidity, Odor, Other	):							
Sample A	nalvses		_					-		
Analyte		Analysis M	lethod	Sample	Contair	ner C	Quantity Pre	eservative	Notes	
, and yie				Campio	ounui				10100	
QC samp	les									
Duplicate S	ample No:			Duplicate	Time:		MS/MSD:	∵⊡ Yes [	] No	
									]	
Signatur	¢							Date.		

#### ST INTESTATA DOAMDI COLLECTION FORM

Project:	Date of Collect	ion:			
Task:	Field Person	nel:			
Purge Data					
Well ID: Secure: 🗌 Yes 🗌 No Ecology Tag #:	Casing T	Type/Diamete	er/Screened	Interval	
Replacement Required: Monument Lid Lick Bolts: Missing (#)	) Stripped (#) _	Ot	her Damage	:	
Depth Sounder decontaminated Prior to Placement in Well: Yes Do					
Depth of water (from TOC):Time:					
Total Depth (from log or field measurement):				edule 40 PVC P Volume	ipe Weight of Water
After 5 minutes of purging (from top of casing):	Diameter	O.D. 1.660"	I.D. 1.380"	(Gal/Linear Ft.) 0.08	(Lbs/Lineal Ft.) 0.64
Begin purge (time):End purge (time):	2" 3"	2.375" 3.500"	2.067" 3.068"	0.17 0.38	1.45 3.2
Volume purged: Purge water disposal method	4" 6"	4.500" 6.625"	4.026" 6.065"	0.66 1.5	5.51 12.5
Time Depth to Vol. pH DO Water (ft) Purged (s.u.) (mg/L) ()	Specific Conductivity (µs/cm)	Turbidity (NTU)	Temp (°C)		Comments
			6		,
			n		
					<u></u>
			20 		
Sampling Data					
Sample No:	Location and Depth	n:			
Date Collected (mo/dy/yr): Time Collected:					
Type:  Ground Water  Surface Water Other:	Sample:	Filtered	] Unfiltered	Filter Type:	
Sample Collected with: Bailer Pump Other: Type: D	] Peristaltic 🔲 Blad	der 🗆 Subi	mersible O	ther:	
Water Quality Instrument Data Collected with: Type: YSI ProDSS Turbidit	y Meter 🛛 Other:				
Sample Decon Procedure: Sample collected with:  decontaminated all tubing	a: 🗂 disposable tubin	a 🗖 dedica	ted silicon ar	nolv tubing: 🗖 de	dicated tubing replaced
Sample Description (Color, Turbidity, Odor, Other):					
Sample Analyses					
Analyte Analysis Method Sample C	ontainer Q	uantity Pre	eservative	Notes	
QC samples					

Duplicate \$	ample No:
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\_\_\_\_\_ Duplicate Time: \_\_\_\_\_ MS/MSD: 
Yes No

Date: \_

## Signature: \_

# **GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM**

						ion:			
Task:				Field P	erson	nel:			
urge Data									
Veli ID:	Secure: 🗌 Yes 🔲	No Eco	ology Tag #:		Casing 1	Type/Diamete	er/Screened	interval	
Replacement Required: 🛛	Monument 🔲 Lid	Lock	Bolts: Missing	a (#) Strip	oed (#)	Ot	her Damage	ə:	
Depth Sounder decontamin									
Depth of water (from TOC):		Time:							
otal Depth (from log or fiel	d measurement):			-		r		edule 40 PVC P Volume	Veight of Wate
After 5 minutes of purging (	from top of casing):				meter 1/4"	O.D. 1.660"	I.D. 1.380"	(Gal/Linear Ft.) 0.08	(Lbs/Lineal Ft. 0.64
Begin purge (time):	End purg	e (time):			2" 3"	2.375" 3.500"	2.067" 3.068"	0.17 0.38	1.45
/olume purged:	Purce water dist	oosal method			4" 6"	4.500" 6.625"	4.026" 6.065"	0.66	5.51 12.5
Time Depth to Water (ft)	Vol. Purged ()	pH (s.u.)	DO (mg/L)	Specific Conductivity (µs/cm)		Turbidity (NTU)	Temj (°C)	ORP	Comment
				·			·		
5							5 <b>.</b>		
ampling Data				1					
				Location a	nd Depti	וי:	_		
Sample No:					nd Depth				
Sample No: Date Collected (mo/dy/yr):_		Tin	ne Collected:			W	eather:		
Sample No: Date Collected (mo/dy/yr):_ Type:	] Surface Water Ot	Tin	ne Collected:	Sa	ample: [	W	eather:	Filter Type:	
Sample No: Date Collected (mo/dy/yr):_ Type:	] Surface Water Oti 3ailer          Pump   Oti	Tin her: her:	ne Collected:	Sa Beristaltic	ample: [ ] Biad	W Filtered [ Ider [] Suba	eather: ] Unfiltered mersible C	Filter Type:	
Sample No: Date Collected (mo/dy/yr):_ Fype:	] Surface Water Ot Bailer □ Pump Ot ata Collected with: T	Tim her: her: Гуре: [] YSI F	ne Collected:	Section 2 Sectio	ample: [ Blad Dther:	W Filtered [ Ider [] Suba	eather: ] Unfiltered mersible C	Filter Type:	
Sample No: Date Collected (mo/dy/yr): Type:	Surface Water Ot Bailer Pump Ot ata Collected with: T Sample collected	her: her: her: fype: D YSI F with: D decor	ProDSS I Turn		ample: [ Blad Dther:	W Filtered [ Ider [] Suba	eather: ] Unfiltered mersible C	Filter Type:	
Sample No: Date Collected (mo/dy/yr): Fype:	Surface Water Ot Bailer Pump Ot ata Collected with: T Sample collected	her: her: her: fype: D YSI F with: D decor	ProDSS I Turn		ample: [ Blad Dther:	W Filtered [ Ider [] Suba	eather: ] Unfiltered mersible C	Filter Type:	
Sample No: Date Collected (mo/dy/yr): Type: Ground Water Sample Collected with: E Water Quality Instrument D Sample Decon Procedure: Sample Description (Color, ample Analyses	Surface Water Ot Bailer Pump Ot ata Collected with: T Sample collected t Turbidity, Odor, Oth	Tim her: her: fype: [] YSI P with: [] decor er):	ne Collected: Type ProDSS Turl ntaminated <u>all</u> tu		ample: [ Blad Other: ble tubir	W ] Filtered [  der [] Subr ng [] dedica	'eather: ] Unfiltered mersible C ted silicon a	Filter Type:	
Sample No: Date Collected (mo/dy/yr): Type:  Ground Water Sample Collected with: E Water Quality Instrument D Sample Decon Procedure: Sample Description (Color, ample Analyses Analyte	Surface Water Ot Bailer Pump Ot ata Collected with: T Sample collected	Tim her: her: fype: [] YSI P with: [] decor er):	ne Collected: Type ProDSS Turl ntaminated <u>all</u> tu	c _ Peristaltic bidity Meter ☐ C bing; ☐ disposa	ample: [ Blad Other: ble tubir	W Filtered [ Ider [] Suba	'eather: ] Unfiltered mersible C ted silicon a	Filter Type:	
Sample No: Date Collected (mo/dy/yr): Type: Ground Water Sample Collected with: E Water Quality Instrument D Sample Decon Procedure: Sample Description (Color, ample Analyses	Surface Water Ot Bailer Pump Ot ata Collected with: T Sample collected t Turbidity, Odor, Oth	Tim her: her: fype: [] YSI P with: [] decor er):	ne Collected: Type ProDSS Turl ntaminated <u>all</u> tu	c _ Peristaltic bidity Meter ☐ C bing; ☐ disposa	ample: [ Blad Other: ble tubir	W ] Filtered [  der [] Subr ng [] dedica	'eather: ] Unfiltered mersible C ted silicon a	Filter Type:	
Sample No: Date Collected (mo/dy/yr): Fype: Ground Water Sample Collected with: E Water Quality Instrument D Sample Decon Procedure: Sample Description (Color, ample Analyses	Surface Water Ot Bailer Pump Ot ata Collected with: T Sample collected t Turbidity, Odor, Oth	Tim her: her: fype: [] YSI P with: [] decor er):	ne Collected: Type ProDSS Turl ntaminated <u>all</u> tu	c _ Peristaltic bidity Meter ☐ C bing; ☐ disposa	ample: [ Blad Other: ble tubir	W ] Filtered [  der [] Subr ng [] dedica	'eather: ] Unfiltered mersible C ted silicon a	Filter Type:	
Sample No: Date Collected (mo/dy/yr): Fype: Ground Water Sample Collected with: E Water Quality Instrument D Sample Decon Procedure: Sample Description (Color, ample Analyses	Surface Water Ot Bailer Pump Ot ata Collected with: T Sample collected t Turbidity, Odor, Oth	Tim her: her: fype: [] YSI P with: [] decor er):	ne Collected: Type ProDSS Turl ntaminated <u>all</u> tu	c _ Peristaltic bidity Meter ☐ C bing; ☐ disposa	ample: [ Blad Other: ble tubir	W ] Filtered [  der [] Subr ng [] dedica	'eather: ] Unfiltered mersible C ted silicon a	Filter Type:	
Sample No: Date Collected (mo/dy/yr): Fype: Ground Water Sample Collected with: E Water Quality Instrument D Sample Decon Procedure: Sample Description (Color, ample Analyses	Surface Water Ot Bailer Pump Ot ata Collected with: T Sample collected t Turbidity, Odor, Oth	Tim her: her: fype: [] YSI P with: [] decor er):	ne Collected: Type ProDSS Turl ntaminated <u>all</u> tu	c _ Peristaltic bidity Meter ☐ C bing; ☐ disposa	ample: [ Blad Other: ble tubir	W ] Filtered [  der [] Subr ng [] dedica	'eather: ] Unfiltered mersible C ted silicon a	Filter Type:	
Sample No: Date Collected (mo/dy/yr): Fype: Ground Water Sample Collected with: E Water Quality Instrument D Sample Decon Procedure: Sample Description (Color, ample Analyses	Surface Water Ot Bailer Pump Ot ata Collected with: T Sample collected t Turbidity, Odor, Oth	Tim her: her: fype: [] YSI P with: [] decor er):	ne Collected: Type ProDSS Turl ntaminated <u>all</u> tu	c _ Peristaltic bidity Meter ☐ C bing; ☐ disposa	ample: [ Blad Other: ble tubir	W ] Filtered [  der [] Subr ng [] dedica	'eather: ] Unfiltered mersible C ted silicon a	Filter Type:	
Sample No: Date Collected (mo/dy/yr): Type: Ground Water Sample Collected with: E Vater Quality Instrument D Sample Decon Procedure: Sample Description (Color, ample Analyses	Surface Water Ot Bailer Pump Ot ata Collected with: T Sample collected t Turbidity, Odor, Oth	Tim her: her: fype: [] YSI P with: [] decor er):	ne Collected: Type ProDSS Turl ntaminated <u>all</u> tu	c _ Peristaltic bidity Meter ☐ C bing; ☐ disposa	ample: [ Blad Other: ble tubir	W ] Filtered [  der [] Subr ng [] dedica	'eather: ] Unfiltered mersible C ted silicon a	Filter Type:	

Signature:

https://floydsnider.sharepoint.com/Dept/Field/Shared Documents/Field Resources/Field Forms/Groundwater or Surface Water/Groundwater Sample Collection Form.doc Date:

	DR SURFACE WATE					14-	
Project: <u>CL-FILE</u> ask: <u>Sept 202</u>	inspure		e of Collect		1010	(9)	
ask: <u>Sept 200</u>	J GW	F	ield Person	nel:	1710		
irge Data						11 12	1
Vell ID: MW-1A se	ecure: 🛛 Yes 🗋 No Ecolo	ogy Tag #:	Casing	Type/Diamete	er/Screened	Interval 2" PV	$\mathcal{U}_{$
eplacement Required: 🔲 M	Nonument 🔲 Lid 🗌 Lock 🔲	Bolts: Missing (#)	Stripped (#)	Ot	her Damage		
epth Sounder decontaminat	ed Prior to Placement in Well:	Yes No C	ne Casing Volu	me (gal):			
epth of water (from TOC):	5.52Time: //	:05		Malum	a of Coh	edule 40 PVC P	Inc
	measurement):		Diameter	O.D.	I.D.	Volume	Weight of Water
fter 5 minutes of purging (fro	om top of casing): $5.5/$		1 1/4"	1.660"	1.380″	(Gal/Linear Ft.) 0.08	(Lbs/Lineal Ft.) 0.64 1.45
egin purge (time):///``O``	5End purge (time): $/L$	14-5	2" 3"	2.375" 3.500"	2.067" 3.068"	0.17 0.38 0.66	3.2 5.51
olume purged 6.9	_ Purge water disposal method	drum	4" 6"	4.500" 6.625"	4.026" 6.065"	1.5	12.5
Time Depth to Water (ft)	Vol. pH Purged (s.u.)		becific ductivity	Turbidity (NTU)	Temp (°C)		Comments
	(	· · · ·	s/cm), 24	23.6		7 1364	
0/0 55/	$\frac{1.0}{2.0}$ $\frac{6.30}{6.33}$	1.37 6	24	12.3	$\frac{21}{21}$	7 129.8	
0:15 5.51 0:20 5.51	2.5 6.37	1,27 60	28	468	21.4	F 122.0	
D'25 5.51	3.0 6.40	1.23 62	7	1.42	21.9	t 112.0	
0:30 5.51	4.0 6.42	1.21 60	(5	1.32	21.	<u> </u>	
	·						
La Data							
mpling Data	1-091024	Lo		N	111-11	4	
ate Collected (mo/dy/yr):	9110124 Time	Collected: <u>19: 3</u>	<u>5</u>	W	leather: <u>6</u>	5" 5UMDV,	
ype: 😡 Ground Water 🛛 S	Surface Water Other:		Sample:	Filtered	Unfiltered	Filter Type: 0,40	o dis neta
ample Collected with: 🛛 Ba	iler 🗹 Pump Other:	Type: 🗹 Per	ristaltic 🛛 Blac	lder 🗆 Subi	mersible C	)ther:	
ater Quality Instrument Data	a Collected with: Type: YSI Pro	oDSS GTurbidity Me	ter D Other:_				
	Sample collected with:  deconta	/			ted silicon a	nd poly tubing; 🔲 de	dicated tubing replaced
ample Description (Color, Tu	-10	ar no	0700			Fe: 0.	Omg/L
mple Analyses							
Analyte	Analysis Method	Sample Conta	iner C	uantity Pre	eservative	Notes	
		e					
					1		
		p					
C samples							
uplicate Sample No:		Duplicate Time:		MS/MSD:	⊡Yes [	Ź No	
Signature:	WM/ BAAK	-			Date:	2100 9119/2	t
	y min					1	
ttps://floydsnider.sharepoint.com/ ocuments/Field Resources/Field urface Water/Groundwater Samp	Forms/Groundwater or						Page 1 of 1

Project: <u>Bry 13</u> Task: <u>Gw Mo</u>			te of Collect	ion:	9/10	124	
LASK. CAMV MU	ini Joing		Field Person	-	RA+H)		
urge Data	/						
Vell ID: MIN/ - 3 S	ecure: 🗌 Yes 🗌 No Ecol	ogy Tag #:	Casing 1	Type/Diam	eter/Screened	Interval NC	2"
	Monument 🗋 Lid 🔲 Lock 🛄						
	ted Prior to Placement in Well:						
	5 79						
	measurement): 10.45			1		edule 40 PVC P Volume	ipe Weight of Water
After 5 minutes of purging (fro	om top of casing):		Diameter	O.D. 1,660"	I.D. 1.380"	(Gal/Linear Ft.) 0.08	(Lbs/Lineal Ft.) 0.64
Begin purge (time):	End purge (time):	45	2" 3"	2.375" 3.500"	2.067" 3.068"	0.17 0.38	1.45 3.2
Johnme nurged: 8L	Purge water disposal method	Down	4" 6"	4.500" 6.625"	4.026" 6.065"	0.66 1.5	5.51 12.5
Time Depth to Water (ft)	Vol. pH Purged (s.u.)	DO S (mg/L) Cor	ipecific nductivity µs/cm)	Turbidity (NTU)	/ Tem; (°C)		Comments
008 5.79	0.5 6.36		3 <b>7</b>	4.35	18.2	152.1	
013 5.79	î.0 G.13		79	3.17		140.6	
018 571				2.52	18.2	134.3	Y
023 5.79	3.5 6.41	0.40 67		1.91	18,8	130.7	•
033 5.79	G.5 0.50	0.37 67		1.57	18.0	124.0	
		·					
ampling Data							
ample No: MW-3-4	091024	Lc	cation and Depth	. MW	-3 @	8.5	
	9/10/24 Time					inny , clear	
ype: 🔟 Ground Water 🔲 🤅	Surface Water Other:				,		
	ailer 🖸 Pump Other:						
	a Collected with: Type: 🗹 YSI Pr						
	Sample collected with:  decont			a 🖌 dedi	cated silicon a	nd polv tubina: 🗖 de	dicated tubing replace
ample Decon Procedure.				<u>у</u> сос,		, , , , , , , , , , , , , , , , , , ,	
	urbidity, Odor, Other).	(*					
ample Description (Color, T		~					
ample Description (Color, T	Analysis Method	Sample Conta	ainer Q	uantity F	Preservative	Notes	
ample Description (Color, Trample Analyses			ainer Q	uantity F	Preservative	Notes	
ample Description (Color, Trample Analyses			ainer Q	uantity F	Preservative	Notes	
ample Description (Color, Transle Analyses			ainer Q	uantity F	Preservative	Notes	
ample Description (Color, Transle Analyses			ainer Q	uantity F	Preservative	Notes	
ample Description (Color, Transle Analyses			ainer Q	uantity F	Preservative	Notes	
ample Description (Color, Transle Analyses			ainer Q	uantity F	Preservative		0
ample Description (Color, Trample Analyses			ainer Q	uantity F	Preservative		ngl
ample Description (Color, Transle Analyses			ainer Q	uantity F	Preservative		nyll
ample Description (Color, Translet Analyses Analyte C samples	Analysis Method				Preservative	Fe - 0 1	ngl
ample Description (Color, Tr ample Analyses Analyte	Analysis Method	Sample Conta			D: 🗆 Yes [	Fe - 0 1	ngll

GROUN	DWATER C	R SURFA	CE WATI	ER SAMPI	LE CO	LLECTI	ON FOR	м		
Project:	BigB				Date	of Collec	tion: 9 //	0124		
Task: <u>6</u>	iw Monitor	7			Fie	eld Perso	nnel: R/	+HT	B	
Purge Da	ta									
Well ID: M	W-21 Se	cure: 🗌 Yes [	No Eco	ology Tag #:		Casing	Type/Diamet	er/Screened	Interval NC	2"
	der decontaminate									
Depth of wa	iter (from TOC):	5.75	Time:	100	- a					
Total Depth	(from log or field n	neasurement):	12.09		-	Diameter	O.D.	I.D.	edule 40 PVC P Volume	Weight of Water
After 5 minu	ites of purging (from	m top of casing)	V		-	1 ¼"	1.660"	1.380"	(Gal/Linear Ft.) 0.08	(Lbs/Lineal Ft.) 0.64
Begin purge	e (time): 1000	End pu	rge (time):	1145	e l	2" 3"	2.375" 3.500"	2.067" 3.068"	0.17 0.38	1.45 3.2
Volume pur	ged: 📆	_Purge water di	sposal method	Drum		4″ 6"	4.500" 6.625"	4.026" 6.065"	0.66 1.5	5.51 12.5
Time	Depth to Water (ft)	Vol. Purged	рН (s.u.)	DO (mg/L)	Cond	ecific uctivity /cm)	Turbidity (NTU)	Temp (°C)	ORP (mV)	Comments
1105	5.75	0.5	6.86	1.74	76	4	2.71	20 7		s
1110	5.76	1.0	6.56	0.54	-76	3	2.71	$\frac{2 . }{2 . }$	- 86.6	
1115	5.76	1.5	<u>C.57</u> 6.57	0 -13	75		2.43	21.1	- 39.7 - 90.0	) —
1120	5 77	2.5	6.50	6.37	74		2.92	21.2	-21.1	
1120	5.77	3.0	6.57	0.35	745		2.69	21. 6	-16.5	
					6					/
Sampling										
Sample No:	MW.2A	-091024			Loca	ition and Dep	th: <u>MW</u> -	2A	@ II'	
	ted (mo/dy/yr):						w	eather: Cl	encywindy	
Type: 🔲 Gr	round Water 🛛 S	urface Water C	Other:	<u> </u>						
Sample Col	lected with: 🗖 Bail	ler 🗂 Pump C	Other:	Туре	e: 🗖 Peris	staltic 🛛 Bla	dder 🛛 Subi	mersible O	ther:	
Water Quali	ity Instrument Data	Collected with:	Type: YSI P	roDSS	bidity Mete	er 🛛 Other:_				
Sample Dec	con Procedure:	Sample collected	l with: 🛛 decon	taminated <u>all</u> tul	bing; 🗖 di	isposable tub	ing 🗖 dedica	ted silicon ar	nd poly tubing; 🔲 de	edicated tubing replaced
	scription (Color, Tu		- 1	241		11	/			
										5
Sample /				0	Oratela		Quantity Pre		Notes	
Analyte	9	Analysis	s Method	Sample	e Contair			servative	10165	
	-									
									Fe=3.5 m	5 /L
QC samp	les									
	Sample No:			Duplicate	Time:	-	MS/MSD.	🗆 Yes [	No	
Signatu	1	- 4	a.	Bapiloato				Date:	9/10/24	
Signatu					_					
https://floydsn	ider.sharepoint.com/D	Dept/Field/Shared								Page 1 of 1

Documents/Field Resources/Field Forms/Groundwater or Surface Water/Groundwater Sample Collection Form.doc

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GROUNDWATER O	R SURFACE WATE	R SAMPLE CO	OLLECTIO	~			
Project: CL-FI		Date	e of Collect	tion: $\frac{\varphi}{2}$	1212	4	*
Task: 2024 50	ept GW	Fi	eld Person	inel: _/	43		
Purge Data							
Well ID: MW-4B Sec	cure: 🖸 Yes 🗆 No Ecolo	gy Tag #: <u>BNM6</u>	59 Casing	Type/Diamete	r/Screened Int	erval <u>2" P</u>	VL
Replacement Required: 🗌 Mo	onument 🔲 Lid 🗌 Lock 🔲	Bolts: Missing (#)	Stripped (#)	Oth	er Damage: _		
	d Prior to Placement in Well:	-	ne Casing Volu	me (gal):			
Depth of water (from TOC):	7.80	1.00		Volum	e of Scher	lule 40 PVC Pi	pe
Total Depth (from log or field m		1	Diameter	O.D.		Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Lineal Ft.)
After 5 minutes of purging (from	n top of casing): $4,8$	0	1 ¼ <sup>*</sup> 2"	1.660" 2.375"	1.380" 2.067"	0.08 0.17	0.64 1.45
1 1	DD_End purge (time):	1	3" 4"	3.500" 4.500"	3.068" 4.026"	0.38 0.66	3.2 5.51
Volume purged: 6,0 L	Purge water disposal method <u>C</u>		6"	6.625"	6.065"	1.5	12.5
Time Depth to Water (ft)	Vol. pH Pyrged (s.u.)	(mg/L) Cond	ecific luctivity	Turbidity (NTU)	Temp (°C)	ORP (mV)	Comments
11:05 4.81	0.5 6.65	2,42 6	s/cm) 84	1.35	21,0	44.1	
12:10 4.50	1.0 6.66	0,33 64	34	2.94	$\frac{21.7}{21.7}$	0.1	
18.15 4.80	1.57 6.67	0.26 68 0.23 68	3	0.94	21,0	-76,4	
12:20 4.80	3,0 6,64	0.22 63	F	0.94	21.2	- 88,6	
11:30 4.80	4.0 6.64	0.21 68	<u>}</u>	8,98	21.1	-94.6	
		s					
Sampling Data				4			
Sample No: MW-4	B-09/024	Loc	ation and Dept	h:MU	V-4B	700 00	
Date Collected (mo/dy/yr):	<u>1/0/24</u> Time	Collected: _/2V/V	140			70° 54	
Type: 🗹 Ground Water 🛛 Su	urface Water Other:		Sample:	a Filtered □	Unfiltered Fi	ilter Type: 0.95	13 METERS
Sample Collected with: D Baile	er Pump Other:	Type: D'Peri	istaltic 🛛 Blac	lder 🛛 Subm	nersible Othe	ər:	
	Collected with: Type:/ TYSI Pro						
Sample Decon Procedure: S	ample collected with: 🗋 deconta	minated <u>all</u> tubing; D	disposable tubi	ng 🗗 dedicati	ed silicon and	poly tubing; 🗆 dec	licated tubing replaced
Sample Description (Color, Tur	bidity, Odor, Other):					Fe:	2.1/mg/2
Sample Analyses							
Analyte	Analysis Method	Sample Contai	ner G	Quantity Pre	servative	Notes	
			1				
		<u> </u>					
QC samples							
Duplicate Sample No:	A /	_ Duplicate Time: _		MŞ/MSD:	🗆 Yes 💋	No 9/10/2	all
Signature:	and and				Date:	110 10	27
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Documents/Field Resources/Field Forms/Groundwater or Surface Water/Groundwater Sample Collection Form.doc

GROUNDWATER O	R SURFACE WATE	ER SAMPI			1		
Project: Bi 13			Date of Collec		10/21		
Task: <u>GW M</u>	anitoring		Field Persor	nnel: <u>R</u>	4+ 1+7	B	
Purge Data							
Well ID:MW-9A Sec	cure: Yes No Eco	logy Tag #:	Casing	Type/Diamete	er/Screened	Interval <u>2" 191</u>	10
Replacement Required: 🔲 Mo	onument 🗌 Lid 🔲 Lock 🗍	Bolts: Missing	(#) Stripped (#)	Ot	her Damage:		
Depth Sounder decontaminate	and the second sec		One Casing Volu	ume (gal):			
Depth of water (from TOC):	4.01	235		Volum	e of Sche	edule 40 PVC P	ine
Total Depth (from log or field m	neasurement):	6	Diameter	O.D.	I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Lineal Ft.)
After 5 minutes of purging (from top of casing):		- 1 ¼" 2°	1.660" 2,375"	1.380" 2.067"	0.08 0.17	0.64 1.45	
Begin purge (time): 1235 End purge (time): 1300		- 3" 4"	3.500" 4.500"	3.068" 4.026"	0.38 0.66	3.2 5.51	
Volume purged:	Purge water disposal method_	Dam	6"	6.625"	6.065"	1.5	12.5
Time Depth to Water (ft)	Vol. pH Purged (s.u.)	DO (mg/L)	Specific Conductivity (µs/cm)	Turbidity (NTU)	Temp (°C)	ORP (mV)	Comments
1240 4.94	10 6.69	6.61	605	6.72	19.6	33.2	
1245 4.94	2.0 6.65	0.46	642	<u>5.04</u> 4.67	<u>19.5</u> 19.9	42.2	· · · · · · · · · · · · · · · · · · ·
1250 4,94	4.0 6.61	0.38	626	4.91	A.9	36 5	
1300 4.94	50 661	6.36	622	5.78	19.1	36.8	
1305 4.94	6.0 6.60	0.34	626	5.61	19.8	30.0	
			5				
Sampling Data							
Sample No: MW-94-	day d 24		Location and Dept	th: 1010/	Λ Δ.	1)	
Date Collected (mo/dy/yr):	//0/24 Time	e Collected:	3/0	W	eather:		
Type: 🔟 Ground Water 🛛 Su	urface Water Other:		Sample:	🗆 Filtered 🔽	Unfiltered	Filter Type:	
Sample Collected with:  Baile							
Water Quality Instrument Data	Collected with: Type: YSI Pr	oDSS 🗖 Turb	idity Meter D Other:				
Sample Decon Procedure: S				ng 🗹 dedicat	ed silicon an	id poly tubing; 📋 de	dicated tubing replaced
Sample Description (Color, Tur							
Sample Analyses							
Analyte	Analysis Method	Sample	Container C	Quantity Pre	servative	Notes	
							4
						Fe=0.2 mg	π
QC samples							
Duplicate Sample No:	1	Duplicate 1	Time:	MS/MSD:	🗆 Yes 📈	No	
Signature:	, pl					9/10/24	
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Surface Water/Groundwater Sample Collection Form.doc

Project: CL-Ellensburg	Date of Collection: 4/10/24
Task: 2024 Sept GW	Field Personnel: HB
urge Data	
Well ID: MW- ) Secure: D Yes □ No Ecology Tag #:	Casing Type/Diameter/Screened Interval // PV C
	ssing (#) Stripped (#) Other Damage:
Depth Sounder decontaminated Prior to Placement in Well: Ves D No	
Depth of water (from TOC): 5.35 Time: 235	
Total Depth (from log or field measurement):	Volume of Schedule 40 PVC Pipe           Diameter         O.D.         I.D.         Volume         Weight of Water
After 5 minutes of purging (from top of casing): 5.39	1 ¼" 1.660" 1.380" 0.08 0.64
Begin purge (time): $1335$ End purge (time): $1330$	2" 2.375" 2.067" 0.17 1.45 3" 3.500" 3.068" 0.38 3.2
Volume purged: Purge water disposal method drum	4"         4.500"         4.026"         0.66         5.51           6"         6.625"         6.065"         1.5         12.5
Time Depth to Vol. pH DO	Specific Turbidity Temp ORP Comments Conductivity (NTU) (°C) (mV)
Water (ft) Purged (s.u.) (mg/L) $(\underline{L})$ (76.047	2 (us(cm))
$\frac{1240}{1245} = \frac{5.39}{5.39} = \frac{0.5}{1.0} = \frac{6.76}{6.28} = \frac{0.47}{0.29}$	$\frac{1}{673}  \frac{1.06}{1.94}  \frac{20.8}{206}  \frac{43.8}{-20.7}  \frac{517009}{0207}  \frac{90}{2007}$
1260 5 39 1 5 6.78 0.24	1 665 1.21 20.7 -50.5
1255 5.40 2.0 6.78 0.21	659 1.16 20.6 -69.7
1300 5,40 3.9 6.78 0,19	656 1.44 20.5 -74.4
1305 5.14 4.0 6.78 0.19	659 0.4 20.5 -26.6
ampling Data	1414/ 2
Sample No:	Location and Depth: TP MW-1
Date Collected (mo/dy/yr): 9//0/24 Time Collected:	13/0 Weather: 75° SUMP
Type: Ground Water 🔲 Surface Water Other:	Location and Depth:MW-1 : 13/0 Weather:Sample: Ø Filtered □ Unfiltered Filter Type:O, 45 J, 5 MC
Type: 🖉 Ground Water 🔲 Surface Water Other:	Sample: Difiltered Difiltered Filter Type: 0.40 J.5 MC
Type; Ground Water Gurface Water Other:	Sample: Ø Filtered □ Unfiltered Filter Type: <u>0,99 J,3 m</u> Type: Ø Peristaltic □ Bladder □ Submersible Other:
Type;  Ground Water  Surface Water Other: Sample Collected with:  Bailer  Pump Other: T Water Quality Instrument Data Collected with: Type:  YSI ProDSS  1	Sample: Ø Filtered 🗆 Unfiltered Filter Type: <u>0,99 J.3 MC</u> Type: Ø Peristaltic 🗆 Bladder 📄 Submersible Other:
Type:       Ground Water       Surface Water       Other:	Sample: Ø Filtered □ Unfiltered Filter Type: <u>0,99 J,3 m</u> Type: Ø Peristaltic □ Bladder □ Submersible Other:
Type:       Ground Water       Surface Water       Other:	Sample: I Filtered I Unfiltered Filter Type: 0.90 d.3 MC
Type:       Ground Water       Surface Water       Other:	Sample: I Filtered I Unfiltered Filter Type: 0.90 d.3 MC
Type: Ground Water Surface Water Other: Type: Ground Water Sample Collected with: Bailer Pump Other: T Water Quality Instrument Data Collected with: Type: GYSI ProDSS DT Sample Decon Procedure: Sample collected with: decontaminated al Sample Description (Color, Turbidity, Odor, Other):	Sample: I Filtered I Unfiltered Filter Type: 0.90 d.3 MC
Type: Ground Water Surface Water Other: Type: Ground Water Sample Collected with: Bailer Pump Other: T Water Quality Instrument Data Collected with: Type: YSI ProDSS In T Sample Decon Procedure: Sample collected with: decontaminated al Sample Description (Color, Turbidity, Odor, Other):	Sample: Siltered Unfiltered Filter Type: 0,90 2,3 mC Type: Peristaltic Bladder Submersible Other: Turbidity Meter Other: Turbidity Meter Other: All tubing: disposable tubing dedicated silicon and poly tubing: dedicated tubing replaced V SHONG 205000 Fe : 2,5 mg/L
Type: Ground Water Surface Water Other: Type: Ground Water Bailer Pump Other: T Sample Collected with: Bailer Pump Other: T Water Quality Instrument Data Collected with: Type: YSI ProDSS In Sample Decon Procedure: Sample collected with: decontaminated al Sample Description (Color, Turbidity, Odor, Other): ample Analyses	Sample: Siltered Unfiltered Filter Type: 0,90 2,3 mC Type: Peristaltic Bladder Submersible Other: Turbidity Meter Other: Turbidity Meter Other: All tubing: disposable tubing dedicated silicon and poly tubing: dedicated tubing replaced V SHONG 205000 Fe : 2,5 mg/L
Type: Ground Water Surface Water Other: Type: Ground Water Sample Collected with: Bailer Pump Other: T Water Quality Instrument Data Collected with: Type: YSI ProDSS In T Sample Decon Procedure: Sample collected with: decontaminated al Sample Description (Color, Turbidity, Odor, Other):	Sample: Siltered Unfiltered Filter Type: 0,90 2,3 mC Type: Peristaltic Bladder Submersible Other: Turbidity Meter Other: Turbidity Meter Other: All tubing: disposable tubing dedicated silicon and poly tubing: dedicated tubing replaced V SHONG 205000 Fe : 2,5 mg/L
Type: Ground Water Surface Water Other: T Sample Collected with: Bailer Pump Other: T Water Quality Instrument Data Collected with: Type: YSI ProDSS In Sample Decon Procedure: Sample collected with: decontaminated al Sample Description (Color, Turbidity, Odor, Other): C	Sample: Siltered Unfiltered Filter Type: 0,90 2,3 mC Type: Peristaltic Bladder Submersible Other: Turbidity Meter Other: Turbidity Meter Other: All tubing: disposable tubing dedicated silicon and poly tubing: dedicated tubing replaced V SHONG 205000 Fe : 2,5 mg/L
Type: Ground Water Surface Water Other: T Sample Collected with: Bailer Pump Other: T Water Quality Instrument Data Collected with: Type: YSI ProDSS In Sample Decon Procedure: Sample collected with: decontaminated al Sample Description (Color, Turbidity, Odor, Other): C	Sample: Siltered Unfiltered Filter Type: 0,90 2,3 mC Type: Peristaltic Bladder Submersible Other: Turbidity Meter Other: Turbidity Meter Other: All tubing: disposable tubing dedicated silicon and poly tubing: dedicated tubing replaced V SHONG 205000 Fe : 2,5 mg/L
Type: Ground Water Surface Water Other: T Sample Collected with: Bailer Pump Other: T Water Quality Instrument Data Collected with: Type: YSI ProDSS In Sample Decon Procedure: Sample collected with: decontaminated al Sample Description (Color, Turbidity, Odor, Other): C	Sample: Siltered Unfiltered Filter Type: 0,90 2,3 mC Type: Peristaltic Bladder Submersible Other: Turbidity Meter Other: Turbidity Meter Other: All tubing: disposable tubing dedicated silicon and poly tubing: dedicated tubing replaced V SHONG 205000 Fe : 2,5 mg/L
Type: Ground Water Surface Water Other: T Sample Collected with: Bailer Pump Other: T Water Quality Instrument Data Collected with: Type: YSI ProDSS In Sample Decon Procedure: Sample collected with: decontaminated al Sample Description (Color, Turbidity, Odor, Other): C	Sample: Siltered Unfiltered Filter Type: 0,90 2,3 mC Type: Peristaltic Bladder Submersible Other: Turbidity Meter Other: Turbidity Meter Other: All tubing: disposable tubing dedicated silicon and poly tubing: dedicated tubing replaced V SHONG 205000 Fe : 2,5 mg/L
Type: Ground Water Surface Water Other: T	Sample: Siltered Unfiltered Filter Type: 0,90 2,3 mC Type: Peristaltic Bladder Submersible Other: Turbidity Meter Other: Turbidity Meter Other: All tubing: disposable tubing dedicated silicon and poly tubing: dedicated tubing replaced V SHONG 205000 Fe : 2,5 mg/L
Type: Ground Water Surface Water Other: T Sample Collected with: Bailer Pump Other: T Water Quality Instrument Data Collected with: Type: YSI ProDSS IT Sample Decon Procedure: Sample collected with: decontaminated al Sample Description (Color, Turbidity, Odor, Other):  Sample Analyses Analyte Analysis Method Sam C samples	Sample: Ø Filtered 🗆 Unfiltered Filter Type: O.92 J.3 MC
Type: Ground Water Surface Water Other: T Sample Collected with: Bailer Pump Other: T Water Quality Instrument Data Collected with: Type: YSI ProDSS IT Sample Decon Procedure: Sample collected with: decontaminated al Sample Description (Color, Turbidity, Odor, Other):  Sample Analyses Analyte Analysis Method Sam C samples	Sample: Ø Filtered □ Unfiltered Filter Type:       0.90 d.3 m/c         Type: Ø Peristaltic □ Bladder □ Submersible Other:
Type: Ground Water Surface Water Other: T Sample Collected with: Bailer Pump Other: T Water Quality Instrument Data Collected with: Type: YSI ProDSS DT Sample Decon Procedure: Sample collected with: decontaminated al Sample Description (Color, Turbidity, Odor, Other): Sample Analyses Analyte Analysis Method Sam	Sample: Ø Filtered 🗆 Unfiltered Filter Type: O.92 J.3 MC
Type: Ground Water Surface Water Other:   Sample Collected with: Bailer Pump Other:   T   Water Quality Instrument Data Collected with: Type: Sample Decon Procedure: Sample Collected with: Generation (Color, Turbidity, Odor, Other): Sample Analyses Analyte Analyte Analysis Method Sample Samples Duplicate Sample No: MW - 101 - 091024 Mutps://floydsnider.sharepoint.com/Dept/Field/Shared	Sample: Ø Filtered □ Unfiltered Filter Type:       0.90 J.3 MC         Type: Ø Peristaltic □ Bladder □ Submersible Other:
Type: Ground Water Surface Water Other:   Sample Collected with: Bailer Pump Other:   T     Water Quality Instrument Data Collected with: Type:   Sample Decon Procedure: Sample collected with: decontaminated all   Sample Description (Color, Turbidity, Odor, Other): Image: Collected with:     Sample Analyses     Analyte Analysis Method     Samples   Duplicate Sample No:     MW - 101 - 091024 Duplicate	Sample: Ø Filtered □ Unfiltered Filter Type: 0.43 d.3 mg         Type: Ø Peristattic □ Bladder □ Submersible Other:         Turbidity Meter □ Other:         Itubing: ☐ disposable tubing □ dedicated silicon and poly tubing: □ dedicated tubing replaced         V SHM ØSDH FE: Q . 5 mg/L         mple Container         Quantity Preservative         Notes         ate Time:         MS/MSD: □ Yes ፬No            Q132.0

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Project: Big B	OR SURFACE WATE		Date of Collect	0	10/2	4			
	Monitoring		Field Person						
Irge Data	)				1/.J				
	ecure: 🗌 Yes 🗋 No Ecolo	gy Tag #:	Casing T	ype/Diamete	er/Screened	Interval 2			
	fonument 🛄 Lid 🔲 Lock 📑								
	ed Prior to Placement in Well:								
	5.17		¢	(344)					
	measurement):[4.] L		Volume of Schedule 40 PVC Pipe						
After 5 minutes of purging (from top of casing): Begin purge (time):B45End purge (time):			Diameter	O.D. 1.660" 2.375" 3.500" 4.500" 6.625"	I.D. 1.380" 2.067" 3.068" 4.026" 6.065"	(Gal/Linear Ft.) 0.08	(Lbs/Lineal Ft.) 0.64		
			2" 3"			0.00 0.17 0.38 0.66 1.5	1.45 3.2 5.51 12.5		
Volume purged: <u>5L</u> Purge water disposal method <u>Drvm</u>			4" 6"						
Time Depth to Water (ft)	Vol. pH Purged (s.u.)	DO (mg/L)	Specific Conductivity	Turbidity (NTU)	Temp (°C)		Comments		
356 5-22	( <u>L</u> )   6.72	G. 88	(μs/cm) 766	3.10	22.5	-100.5			
1355 5.22		0.35	70)	3.02	22.2				
1900 522		0.31		2.74	22.2		) — — — — — — — — — — — — — — — — — — —		
<u>405 5.27</u> 410 5.27		0.28 -	759	2:30	$\frac{21.9}{21.9}$	-112.7			
410 5.22	5 0.00		<u></u>	×. 43	- ( - 0				
							(		
mpling Data									
ample No:	091024		Location and Depth	i:					
ate Collected (mo/dy/yr):	Q110124 Time	Collected: 141	5	w	eather: <u>5</u>	my, Windy	•		
	Surface Water Other:			] Filtered	Unfiltered	Filter Type:			
ample Collected with: 🛛 Ba	iler 🗖 Pump Other:	Туре: 🛛	Peristaltic 🛛 Blade	der 🗆 Subr	nersible Ot	her:			
ater Quality Instrument Data	a Collected with: Type: 🔽 YSI Pro		y Meter						
	Sample collected with:  deconta			g 🔲 dedica	ed silicon an	d poly tubing; 🔲 de	dicated tubing repla		
ample Description (Color, Tu				-					
mple Analyses									
Analyte	Analysis Method	Sample C	ontainer Q	uantity Pre	servative	Notes			
						A and a second	21		
						Fe = 4.0 m	<i>11</i>		
) samples						Fe = 4.0 m	y/L		
C samples		Duplicate Tirr	1e:	MS/MSD:	□ Yes □		<i>, /L</i>		
C samples		Duplicate Tirr	ne:		□ Yes □		<i>11.</i>		

Attachment 2 Monitored Natural Attenuation at Big B Mini Mart Site

# Attachment 2 Monitored Natural Attenuation at Big B Mini Mart Site

## INTRODUCTION AND PURPOSE

Monitored natural attenuation (MNA) is the observed, unaided reduction of contaminant concentration and mass by using the natural assimilative capacity of a groundwater/soil system in situ. This ubiquitous process includes a variety of physical, chemical, or biological attributes under favorable conditions to reduce the toxicity, mobility, and concentration of contaminants without human intervention. The reduction in concentrations is due primarily to several fate and transport processes including destructive processes, such as biodegradation, and nondestructive mechanisms, such as dilution, sorption, volatilization, and dispersion (USEPA 1999).

Natural attenuation processes typically occur at all contaminated sites but to varying degrees of effectiveness depending on the types and concentrations of contaminants present and the physical, chemical, and biological characteristics of the soil and groundwater. One of the most important components of natural attenuation at a petroleum-contaminated site is biodegradation. Contaminant biodegradation is largely based upon microbial respiration. In respiration, microbes gain energy from the consumption or oxidation of electron donors coupled to the utilization or reduction of electron acceptors. Contaminants will either serve as electron donors or electron acceptors. For example, during the aerobic metabolism of petroleum hydrocarbons in the biodegradation process, oxygen is the electron acceptor, while hydrocarbons are the electron acceptors, such as nitrate and sulfate, may be utilized in contaminant oxidation in the absence of oxygen. In general, biodegradation processes follow an order of favorable electron acceptor availability:  $O_2 \rightarrow Mn^{4+} \rightarrow NO^{3-} \rightarrow Fe^{3+} \rightarrow SO_4^{2-} \rightarrow CH_4 \rightarrow CO_2$ . The microbes will utilize the next available electron acceptor in the above order when one acceptor is scarce or absent.

The occurrence of biodegradation can be determined from site analytical monitoring of the changes in groundwater bulk geochemistry, the presence of metabolic by-products, and the depletion of electron acceptors and donors. As a result, several chemical compounds in groundwater, including nitrate, manganese, ferrous iron, sulfate, methane, and total alkalinity can be measured and used as indicators of natural attenuation. Their presence or absence in comparison to background levels and dissolved oxygen (DO) levels can therefore be used to infer biodegradative processes. DO levels and oxidation–reduction potential (ORP) are used to assess whether biodegradation is aerobic or anaerobic.

Typically, these parameters are measured in monitoring well locations throughout light non-aqueous phase liquid (LNAPL) source area and dissolved groundwater contaminant plume as well as upgradient and downgradient locations that are not impacted by contaminants. Parameters are compared to the approximate distances of monitoring locations from the former LNAPL plume boundary and/or source area as well as measured concentrations of diesel-range organics (DRO), oil-range organics (ORO), and/or gasoline-range organics (GRO; Ecology 2005). MNA is indicated by a depletion in DO, nitrate, and sulfate and increases in manganese (MN<sup>2+</sup>), ferrous iron (Fe<sup>3+</sup>), methane (CH<sub>4</sub>), and total alkalinity within the contaminant plume.

## GROUNDWATER MONITORED NATURAL ATTENUATION AT THE BIG B MINI MART SITE

Multiple electron acceptors or metabolic by-products were measured in groundwater to determine if natural attenuation is occurring at the Site. Groundwater samples were collected from 7 monitoring wells between May 2023 and September 2024 in four semiannual monitoring events designed to capture seasonal variations of Site groundwater conditions. Samples were collected using the methodologies described in the Cleanup Action Plan (CAP; Ecology 2020) and analyzed for the following MNA parameters:

- DO and ORP by YSI DSS Pro field meter (measured during sampling)
- Nitrate and sulfate by USEPA Method 300.0
- Manganese (soluble) by USEPA Method 200.8
- Methane by RSK-175
- Ferrous Iron (soluble) by Hach Field Test Kit

All groundwater samples were additionally analyzed for Site contaminants of concern: GRO by NWTPH-Gx and DRO and ORO by NWTPH-Dx (with and without silica gel cleanup [SGC]). Per Ecology's November 2023 *Guidance for Silica Gel Cleanup in Washington State*, samples were analyzed with SGC to quantify the proportion of petroleum hydrocarbons to non-petroleum organics, which include polar metabolites. Polar metabolites are produced in groundwater when dissolved petroleum is weathered over time through a variety of processes, including biodegradation, which results in polar non-petroleum compounds. Naturally occurring organic compounds in groundwater (i.e., peat, bark, leaf litter) can also contribute to the amount of polar, non-petroleum compounds. As petroleum weathers in groundwater, the percentage of polar metabolites typically increases, while the toxicity of the overall mixture subsequently decreases (Ecology 2023).

To document and assess MNA, Ecology recommends including at least one upgradient location with uncontaminated groundwater, one location within the source (most impacted) area, two wells near the contaminated plume center line, and one downgradient "sentinel" well with uncontaminated groundwater in the sampling plan (Ecology 2005). At the Big B Mini Mart Site, MW-1A and MW-3 are considered upgradient/background monitoring locations that are unimpacted by petroleum releases, while MW-2A and MW-4B are located closest to the two source areas. The remaining monitoring wells, MW-9A, T-MW-1, and T-MW-2, are located downgradient of the source area and represent contaminant concentrations throughout the dissolved phase plume. Due to the proximity of another cleanup site (Toads Express Mart & Deli 113; Ecology Cleanup Site ID: 12418) located directly south and downgradient from the Site, a clean, downgradient monitoring well was not available for sampling.

# MONITORED NATURAL ATTENUATION RESULTS

MNA analytical results and field parameters for the seven monitoring locations are shown in Table 2 of the 2024 Data Summary Memorandum. The parameters were interpreted by plotting their concentration in two different approaches: (1) MNA parameters of upgradient/background monitoring locations versus monitoring locations within the dissolved-phase petroleum plume and (2) MNA parameters versus the sum of DRO, ORO, and GRO concentrations (total petroleum hydrocarbons (TPH). These plots were constructed to document varying levels and stages of biodegradation within the dissolved-phase plumes

and the distinct difference between parameters in upgradient well versus the dissolved-phase plume. The MNA parameters were plotted against TPH due to there being two separate releases, which is evidenced by overlapping DRO/ORO and GRO detections in some Site monitoring wells.

MNA parameter results from Site monitoring wells are shown in Figures 1 through 2, which follow the order of favorable electron acceptor availability, while MNA parameters versus TPH are shown in Figures 3 and 4. DO results are shown in Figure 1 and indicate that DO concentrations are generally lower at monitoring locations within the dissolved phase plume relative to background, suggesting that natural attenuation due to aerobic respiration is occurring in Site groundwater. Similarly, nitrate and sulfate concentrations are overall lower within the dissolved phase plume relative to background (Figure 1), which provides evidence that anaerobic biodegradation in the form of denitrification and sulfate reduction is occurring in Site groundwater. Figure 3 shows that groundwater with low or no detectable TPH contains DO, nitrate, and sulfate at higher concentrations relative to monitoring wells with higher TPH concentrations, providing further evidence for aerobic respiration and anaerobic biodegradation.

Dissolved manganese, ferrous iron, and methane data show opposite trends to the DO, nitrate, and sulfate data: dissolved manganese, ferrous iron, and methane concentrations increase within the dissolved phase groundwater plume and correspond with monitoring well locations with high TPH concentrations (Figures 2 and 4). These data indicate that anaerobic biodegradation via manganese and iron reduction and methanogenesis is likely occurring within the dissolved phase groundwater plume at the Site. The presence of elevated methane levels within the groundwater plume are indicative of reducing conditions, which are confirmed by negative ORP measurements and low DO concentrations at monitoring locations within the dissolved phase plume.

## **Polar Metabolic By-Products**

Table 2 of the 2024 Data Summary Memorandum shows NWTPH-Dx results with and without SGC as well as the concentrations of non-polar hydrocarbons, polar metabolites, and naturally occurring organics, which were calculated per Section 3.2.1 of the *Guidance for Silica Gel Cleanup in Washington State* (Ecology 2023). Results show that a substantial portion of the NWTPH-Dx results (without SGC) at monitoring locations within the dissolved phase plume can be accounted for by polar metabolites, which account for between 60 to 90% of the NWTPH-Dx result in all samples except for the fall sample collected from MW-1 (Toad's), which had an elevated post-SGC NWTPH-Dx concentration. The presence of substantial polar metabolites within the dissolved-phase plume suggest that petroleum hydrocarbons have and are actively weathering via biodegradation, which provides further evidence that MNA is occurring at the Site.

# CONCLUSIONS

Analytical groundwater results collected between 2023 and 2024 at the Site provide strong evidence that natural attenuation of groundwater contaminants by aerobic and anaerobic biodegradation is occurring in Site groundwater, particularly at the monitoring locations with the greatest mass of dissolved phase TPH in groundwater. Because these monitoring results were successful in establishing MNA as an ongoing process at the Site, Site groundwater will not be analyzed for the full-suite MNA parameters in future monitoring events. Field parameters, such as DO and ORP, will continue to be collected as part of the low-

flow sampling procedure, and groundwater samples for NWTPH-Dx analyses will be analyzed with and without SGC to assess the concentration of polar metabolites in Site groundwater. These parameters will provide necessary lines of evidence for assessing ongoing MNA at the Site.

## REFERENCES

- U.S. Environmental Protection Agency (USEPA). 1999. Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites. OSWER Directive 9200.4-17P. April.
- Washington State Department of Ecology (Ecology). 2005. *Guidance on Remediation of Petroleum-Contaminated Ground Water by Natural Attenuation*. Publication No. 05-09-091. July.
- \_\_\_\_\_. 2020. Cleanup Action Plan: Big B Mini Mart Site, Ellensburg, WA. Prepared by Floyd|Snider. November.

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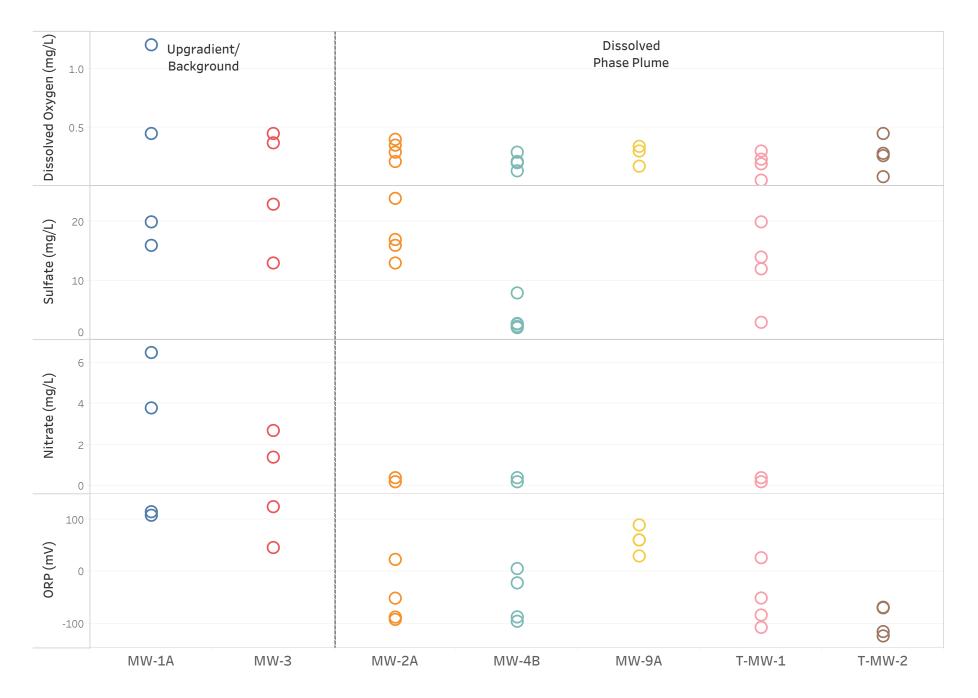
## LIST OF ATTACHMENTS

- Figure 1 DO, Sulfate, Nitrate, and ORP Concentrations
- Figure 2 Dissolved Manganese, Ferrous Iron, and Methane Concentrations
- Figure 3 DO, Nitrate, Sulfate, and ORP vs. Total TPH
- Figure 4 Dissolved Manganese, Ferrous Iron, and Methane vs. Total TPH

Attachment 2

Figures

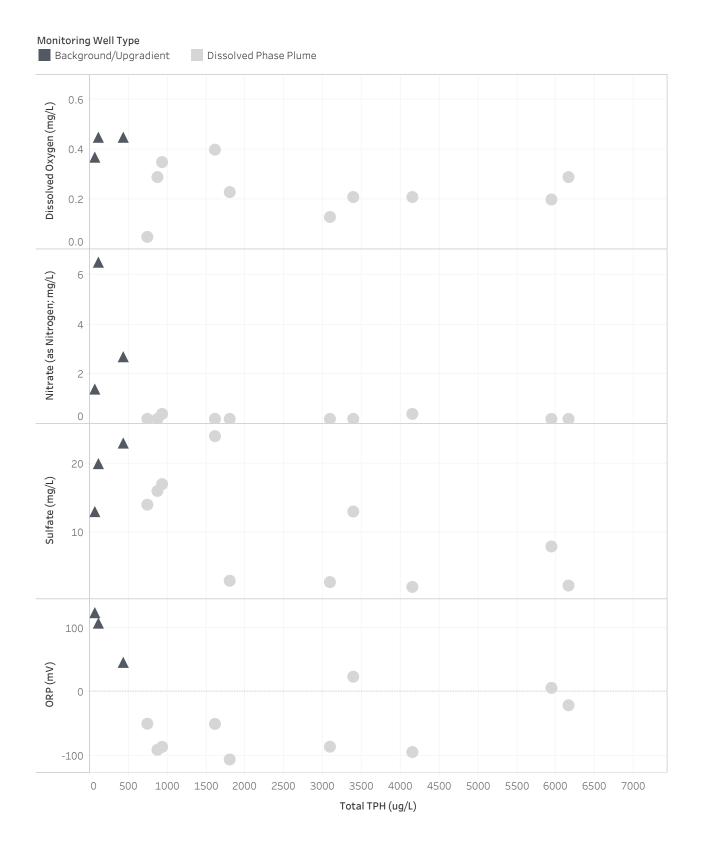






# Figure 2. Dissolved Manganese, Ferrous Iron, and Methane Concentrations

# Figure 3. DO, Nitrate, Sulfate, and ORP vs. Total TPH



# Figure 4. Dissolved Manganese, Ferrous Iron, and Methane vs. Total TPH

