FULCRUM
environmental consulting

Whitten Oil
Groundwater Monitoring
March 2022
Sampling Report

Whitty's Chevron
370 West 5th Avenue
Colville, Washington 99114

Project Number: 213162.00

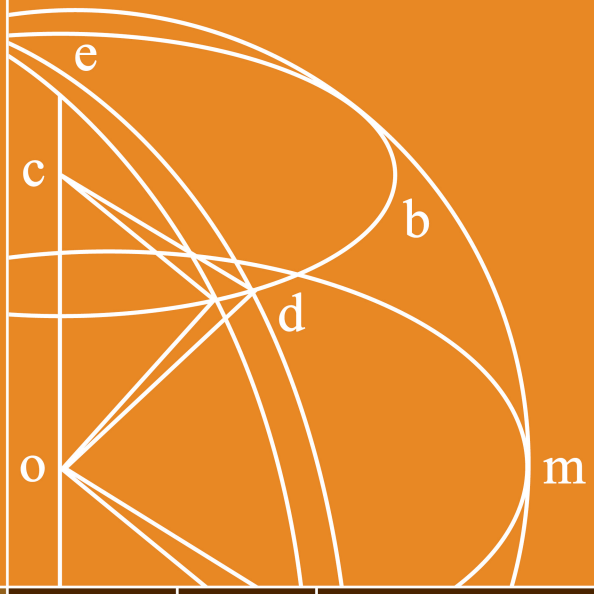
Date: April 20, 2022

Prepared for:

Jeff Whitten
1118 27th Avenue
Seattle, Washington 98122

Prepared by:

Fulcrum Environmental Consulting, Inc.
207 West Boone Avenue
Spokane, Washington 99201



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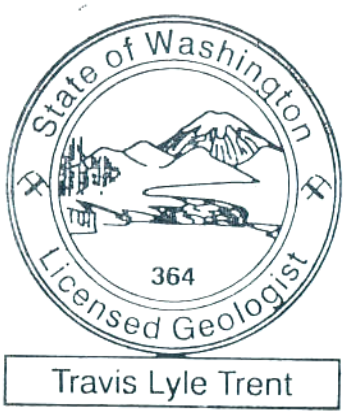
207 West Boone Avenue
Spokane, Washington 99201
509.459.9220

The professionals who completed site services and prepared and reviewed this report include, but are not limited to:

Authored by: _____ Date: 04/20/2022
Redmond Groves,
Senior Environmental Technician

Reviewed by: _____ Date: 04/20/2022
Scott Groat, GIT
Environmental Geologist

Reviewed by: _____ Date: 04/20/2022
Travis Trent, PG, CIH
Principal



Report Integrity

Fulcrum Environmental Consulting, Inc.'s scope of service for this project was limited to those services as established in the proposal, contract, verbal direction, and/or agreement. This report is subject to applicable federal, state, and local regulations governing project-specific conditions and was performed using recognized procedures and standards of the industry. Scientific data collected in situ may document conditions that may be specific to the time and day of service, and subject to change as a result of conditions beyond Fulcrum's control or knowledge. Fulcrum makes no warranties, expressed or implied, as to the accuracy or completeness of other's work included herein. Fulcrum has performed these services in accordance with generally accepted environmental science standards of care at the time of the inspection. No warranty, expressed or implied, is made.

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1.0 INTRODUCTION

On March 7, 2022, Fulcrum Environmental Consulting, Inc. (Fulcrum) Fulcrum conducted semi-annual groundwater monitoring for seven monitoring wells located at Whitty's Chevron in Colville, Washington. The purpose of the monitoring was to evaluate petroleum hydrocarbon impacts to site groundwater associated with a historical gasoline release identified in September 1989.

Whitty's Chevron
370 West 5th Avenue, Colville, Washington

Site services were completed by Scott Groat, a Washington State recognized Geologist-In-Training, and Redmond Groves, a Senior Environmental Technician, both with Fulcrum. Work was completed under the direction of Travis Trent, a Washington State Licensed Geologist/Hydrogeologist and Principal with Fulcrum. Relevant professional certifications are presented in Appendix A.

1.1 Scope of Services

Fulcrum has been retained by Whitten Oil (Whitten) to complete semi-annual groundwater sampling services utilizing existing onsite groundwater monitoring wells at Whitty's Chevron located at 370 West 5th Avenue in Colville, Washington. Each semi-annual sampling event consists of measurement of water depths in seven (7) onsite groundwater monitoring wells followed by collection of water samples from each well. Samples are collected in accordance with industry standard of care and submitted under chain of custody to a Washington State accredited laboratory to be analyzed for benzene, toluene, ethyl benzene, xylene (BTEX), gasoline-range organics, diesel-range organics, and heavy oil-range organics. Results of the investigation and testing from March 2022, are presented in this summary report.

1.2 Site Description

The site is located on the northeast corner of West Fifth Avenue (U.S. Highway 395) and North Lincoln Street in Colville, Washington. The subject facility functions as an active gasoline service station and car wash. One (1) refueling area containing one (1) dispenser island was observed to

be located south of the convenience store, while another gasoline/diesel refueling area with two (2) dispenser islands was observed to be located north of the convenience store. A more recently constructed dispensing island is located southeast of the convenience store. Four (4) operational underground storage tanks (UST) were reported to be located west of the convenience store within the southern portion of the property: two 10,000-gallon diesel tanks, one 6,000-gallon premium gasoline tank, and one 10,000-gallon unleaded gasoline tank. A six-bay carwash station is located northwest of the convenience store.

The entire surface of the property was observed to be covered by building footprint, concrete, or asphalt. Historical reports and observations from Fulcrum's September 2021 ground water monitoring well installation event indicates that beneath the paved surface are 3- to 8-feet (ft) of sandy fill material underlain by fine-grained alluvium down to 14.5 feet below ground surface (bgs).

1.3 Site Hydrogeology

The site sits approximately 1,586 feet (ft) above mean sea level (MSL). The inferred groundwater flow direction is to the northwest, generally following surface topography of the area, with a hydraulic gradient of 0.024. During Fulcrum's investigation, recorded site groundwater levels ranged from 4.41 to 5.48 ft bgs.

1.4 Background

The following information is summarized in part from prior project reporting provided by the owner. Fulcrum has made no independent investigation to verify accuracy of provided historical site information. A copy of select representative historical documentation is provided in Appendix B.

The subject facility has been in operation as a service station or bulk plant since the 1950s. Whitten Oil began operation around 1973, and the carwash was constructed around 1988. In September 1989, Petroleum Equipment Sales, Inc. (PES) was reportedly retained to decommission and replace onsite USTs during the construction of a new tank basin. Sunrise Environmental Services (SES) was reportedly retained by PES to observe the removal of the USTs and provide recommendations for corrective action. PES reportedly removed a total of six (6) USTs from the site with one (1) UST abandoned in place due to its location beneath the onsite office building. Three (3) of the USTs were reported to have been suspect for leakage. Approximately 1,200 cubic yards of petroleum-contaminated soil was removed along with the USTs.

Following removal of the USTs and associated contaminated soils, additional site investigation was conducted to evaluate the potential for residual soil and/or groundwater impact. In January 1990, Delta Environmental Consultants (Delta) supervised drilling activities performed by Budinger & Associates. Six (6) soil borings were drilled in suspected areas of petroleum hydrocarbon contamination to investigate for potential petroleum hydrocarbon impact to site soils/groundwater. The depth of soil borings ranged from 10 to 14.5 ft bgs. Soil samples were collected at 5-foot intervals during the advancement of soil borings. Soil samples that exhibited a petroleum hydrocarbon odor were submitted to Technology Laboratory, Inc. of Fort Collins, Colorado, for benzene, toluene, ethylbenzene, xylenes (BTEX) and total hydrocarbon analyses. Laboratory analysis identified petroleum hydrocarbons in only one (1) of the collected samples, SB-5. Concentrations were reportedly below Washington State Department of Ecology's specified guidelines at the time.

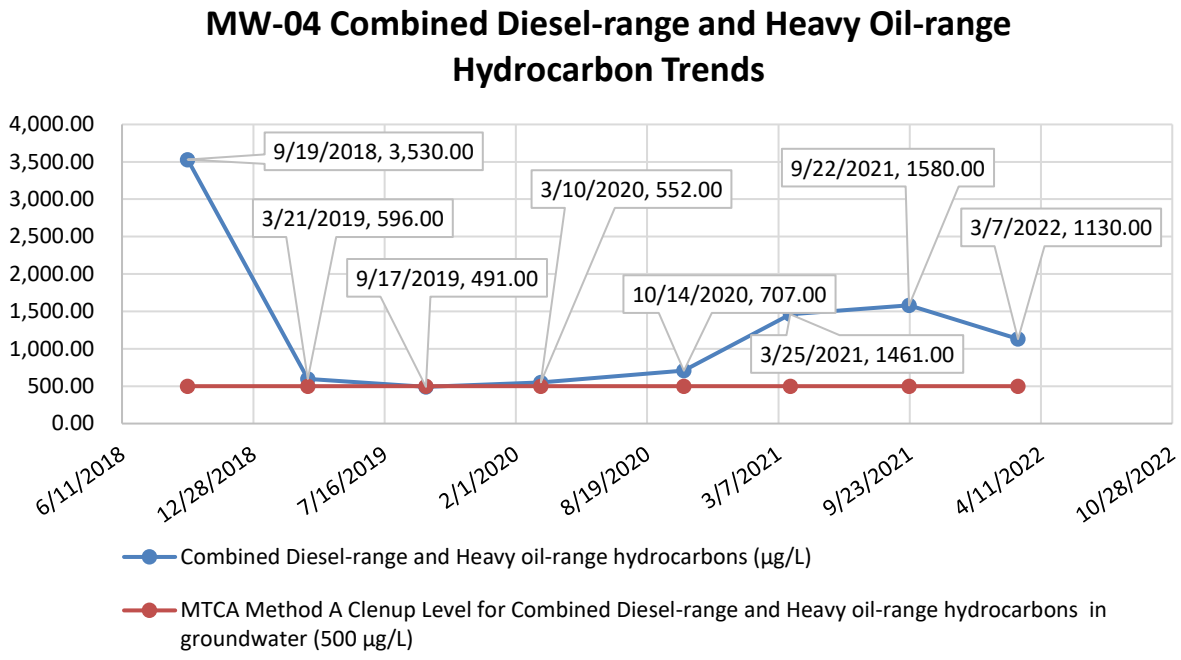
All soil borings, with the exception of SB-5, were completed as groundwater monitoring wells, and groundwater samples were collected and submitted to Technology Laboratory, Inc. of Fort Collins, Colorado, for BTEX and total hydrocarbon analyses. Laboratory analyses for BTEX and total hydrocarbons indicated that the groundwater had been impacted at the subject site. The highest hydrocarbon concentrations were detected in groundwater samples from monitoring wells MW-2 and MW-4, which were located in close proximity to the former UST basin. Detectable hydrocarbon concentrations were also found in downgradient monitoring well MW-6. It was Delta's professional opinion that site conditions posed little threat to humans or the environment due to tight soil conditions, thus preventing contamination from migrating off site. Therefore, no significant remedial action was recommended. Locations of the historical soil borings, monitoring wells, and approximate areas of excavation are presented as Figure 2. Historical soil boring and groundwater monitoring data is presented as Appendix B.

In December 2005, additional soil sampling was conducted by Northwest Environmental Solutions, Inc. to facilitate the change in ownership for the subject site. The investigation consisted of five (5) soil borings drilled in areas proximal to regions of historical soil work or current UST presence. The depth of the soil borings ranged from 5- to 15-ft bgs. One (1) soil sample was collected at the bottom of each soil boring. All five (5) soil samples were submitted to Spectra Laboratories of Tacoma, Washington, for lead, methyl tert-butyl ether (MTBE), BTEX, and for concentrations of diesel-range hydrocarbons by Northwest Total Petroleum Hydrocarbons as diesel (NWTPH-Dx), as oil (NWTPH-Oil), and as gasoline (NWTPH-Gx). Detectable analytes (gasoline range petroleum hydrocarbons, ethyl benzene, toluene, xylene, and lead) were reported in soil boring 2-A and (toluene and xylene) were detected in soil borings 2-C and 2-D; all below MTCA Method A cleanup levels for soil. The 2005 historical soil boring results and locations are presented as Appendix C.

On September 30, 2020, Fulcrum coordinated the decommissioning of two (2) historical monitoring wells and installation of four (4) new wells at Whitty's Chevron located at 370 West 5th Avenue in Colville, Washington. Historic monitoring wells MW-04 and MW-06 were decommissioned due to failing surface seals and poor recharge rates. These two (2) wells were replaced with new monitoring wells and two (2) additional wells were added to the site. Monitoring well MW-02 was installed upgradient behind the gas station where the former Leaking Underground Storage Tanks (LUSTs) were removed and monitoring well MW-07 was installed downgradient at the northwest corner of the property to act as a downgradient sentinel well.

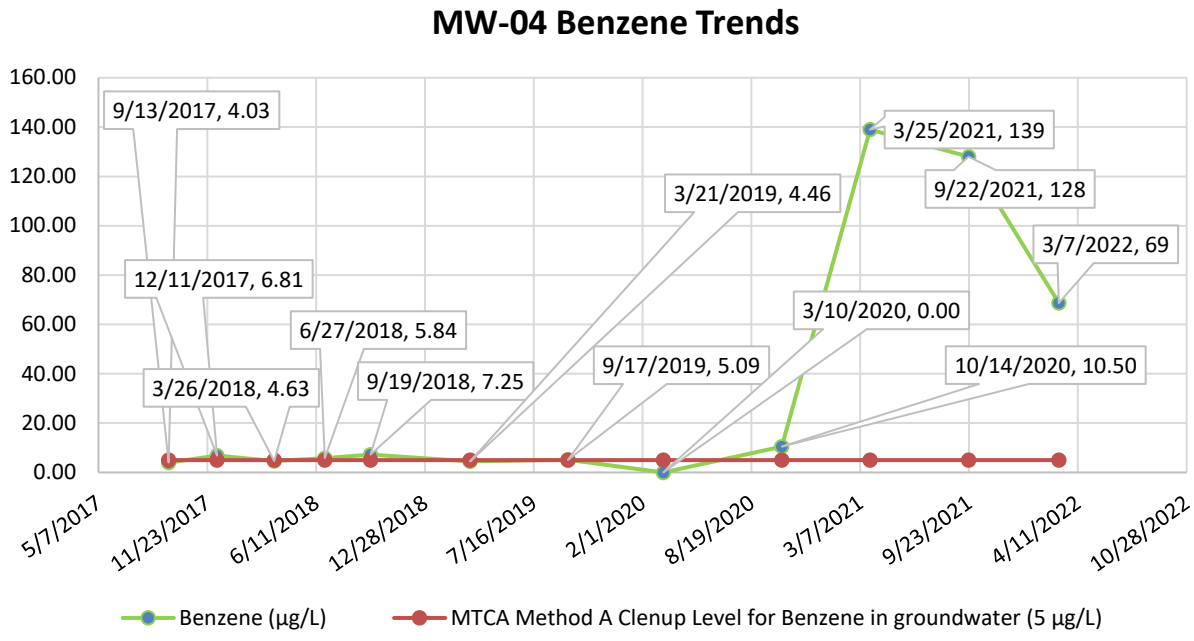
Whitty's Chevron
370 West 5th Avenue, Colville, Washington

General trending for combined diesel and heavy oil-range hydrocarbons concentrations from September of 2018 to March of 2022 in monitoring well MW-04, is presented in the following graph.



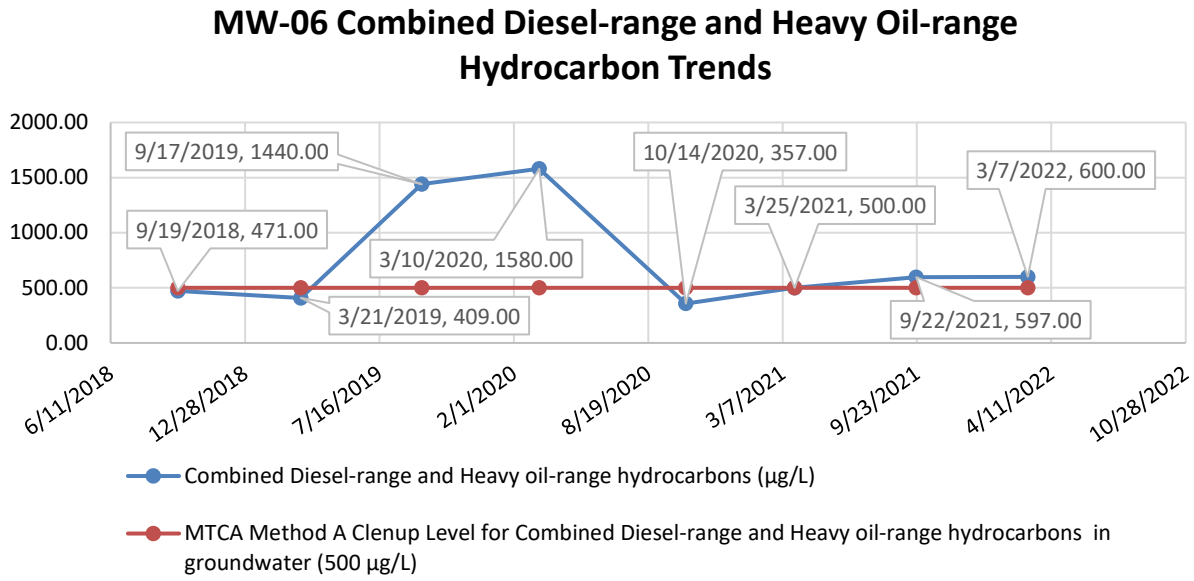
Results for MW-04 show a steep decrease in concentrations of combined diesel-range and heavy oil-range hydrocarbons in September of 2019, where concentrations stabilize around Method A Cleanup levels over the following four semi-annual sampling events before a significant increase in March of 2021. Results of March 2022 testing show a downward trend in diesel-range and heavy oil-range hydrocarbons concentrations in MW-04.

General trending of benzene concentrations observed in monitoring well MW-04, from September 2017 to March 2022, is presented in the graph below.



Benzene concentrations in MW-04 remained relatively stable while fluctuating above and below Method A Cleanup levels since monitoring began in September 2017, through October 2020, with concentrations ranging between non-detect and 10.50 µg/L. In March of 2021, benzene concentrations significantly increased to 139.00 µg/L. Sampling results for March 2022 for benzene concentrations in MW-04 decreased significantly to a most recent concentration of 69.00 µg/L.

General trending for combined diesel-range and heavy oil-range hydrocarbon concentrations from September of 2018 to March of 2022, in monitoring well MW-06, is presented in the following graph.



Analytical results show that diesel-range and heavy oil-range hydrocarbons concentrations were trending upwards since March of 2019 to March of 2020. Sampling conducted in October 2020, showed concentrations to have decrease significantly to 357.00 µg/L. Combined diesel-range and heavy oil-range concentrations have been fluctuating around the Method A Cleanup Level since October 2020, with the most recent sampling event conducted in March 2022, identifying combined diesel-range and heavy oil-range hydrocarbon concentrations at 600.00 µg/L.

2.0 DISCUSSION OF PERTINENT REGULATIONS AND GUIDANCE

2.1 MTCA Regulations

In Washington State, MTCA Cleanup Regulations became effective in March of 1989, with amended MTCA Cleanup Regulations effective in February of 2001. The MTCA Cleanup Regulations set standards to ensure quality of cleanup and protection of human health and the environment.

A major portion of the MTCA regulations are the development of numerical cleanup standards and requirements for cleanup actions. MTCA establishes three (3) options for site-specific cleanup levels: Method A, B, and C. Method A defines cleanup levels for 25-30 of the most common hazardous substances found in soil and groundwater. Method B cleanup levels are established using applicable state and federal laws, risk assessment equations, and other requirements

specified for each medium. Method C is similar to Method B, but cleanup levels are based on less stringent exposure assumptions, and the lifetime cancer risk is set at 1 in 100,000 rather than 1 in 1,000,000.

2.2 MTCA Cleanup Standards

Contaminants of concern at the subject site are gasoline-range hydrocarbons, diesel-range hydrocarbons, and BTEX, for which regulatory cleanup limits are provided under MTCA Method A. Based on the contaminants released at the subject site, the Method A Cleanup Levels are the most appropriate and conservative for determining site cleanup.

3.0 FIELD ACTIVITIES

3.1 Groundwater Sampling

On March 7, 2022, Fulcrum completed groundwater sampling of the following seven (7) monitoring wells: CW-01, CW-02, MW-02, MW-03, MW-04, MW-06, and MW-07. Seven (7) groundwater samples (WOS-030722-CW01, -CW02, -MW02, -MW03, -MW04, -MW06, -MW07) and one (1) field duplicate sample (WOS-030722-MW08) were collected for a total of eight (8) groundwater samples.

Prior to sample collection, Fulcrum measured the depth to groundwater (DTW) and depth to bottom (DTB) utilizing an electronic water level indicator accurate to ± 0.01 foot. Elevation corrections were made using wellhead elevation data from the subject site. Sampling activities were completed using a peristaltic pump or submersible pump and field water quality instruments. In each location the monitoring well was either pumped dry or for a minimum of three (3) well volumes, following the stabilization of field parameters. Field parameters were measured prior to, during, and following completion of, the monitoring well pumping to ensure that they stabilized, indicating a representative sample of groundwater.

Samples were placed in a pre-cooled ice chest and shipped under standard chain-of-custody for analysis to Fremont Analytical Inc. (Fremont); a Washington State certified laboratory located in Seattle, Washington. A site diagram map is presented as Figure 3.

4.0 RESULTS

4.1 Laboratory Analytical Results

All groundwater samples were analyzed for concentrations of gasoline-range hydrocarbons by Northwest Total Petroleum Hydrocarbons as Gasoline (NWTPH-Gx), diesel-range and heavy oil-range hydrocarbons by Northwest Total Petroleum Hydrocarbons as diesel (NWTPH-Dx), and benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8260c.

Table 1 summarizes sample identification, locations, and analyte concentrations, which are reported in micrograms per liter (µg/L). Copies of current groundwater sampling laboratory analytical results are presented in Appendix D.

Table 1: Whitty's Chevron Groundwater Analytical Results for March 07, 2022

Location	Sample Number	Groundwater Elevation	Results (µg/L)						
			NWTPH-Dx		NWTPH-Gx	Benzene	Toluene	Ethyl-benzene	Xylene
			Diesel–range hydrocarbons	Heavy oil-range hydrocarbons					
CW-01	WOS-030722-CW01	94.85	253.00	ND	ND	ND	ND	ND	ND
CW-02	WOS-030722-CW02	93.29	**703.00**	ND	141.00	0.947	ND	ND	ND
MW-02	WOS-030722-MW02	94.41	**1,175.00**	ND	**828.00**	2.95	ND	4.1	ND
MW-03	WOS-030722-MW03	94.15	**913.00**	ND	111.00	2.64	ND	0.936	ND
	WOS-030722-MW08		**919.00**	ND	133.00	2.85	ND	0.995	ND
MW-04	WOS-030722-MW04	93.72	**1,130.00**	**2,410.00**	**1,840.00**	**68.7**	2.48	33.0	5.93
MW-06	WOS-030722-MW06	91.79	**600.00**	ND	292.00	1.34	ND	ND	ND
MW-07	WOS-030722-MW07	90.82	244.00	ND	ND	ND	ND	ND	ND
MTCA Cleanup Levels[2]			500[+]		800[*]	5	1,000	700	1,000

Bold – MTCA Method A exceedance
ND – Nondetect
*Established cleanup level when benzene is present in groundwater
µg/L – Micrograms per liter (µg/L), equivalent to parts per billion (ppb)
[1]Model Toxic Cleanup Act Method A Cleanup Levels for groundwater in µg/L, as established by the Washington State Department of Ecology.
+ Diesel-range and heavy oil-range hydrocarbon concentrations are combined together per MTCA Method A cleanup standards for groundwater.

4.2 Diesel-Range and Heavy Oil-Range Extended Organics

Laboratory analytical results identified detectable concentrations for diesel-range hydrocarbons below MTCA Method A Cleanup Levels in monitoring wells CW-01 and MW-07.

Laboratory analytical results identified diesel-range hydrocarbons at 703.00 µg/L and heavy oil-range hydrocarbons to be non-detect in monitoring well CW-02, the combined concentration is above the MTCA Method A Cleanup Level of 500 µg/L.

Laboratory analytical results identified diesel-range hydrocarbons at 1,175.00 µg/L and heavy oil-range hydrocarbons to be non-detect in monitoring well MW-02, the combined concentration is above the MTCA Method A Cleanup Level of 500 µg/L.

Laboratory analytical results identified diesel-range hydrocarbons at 913.00 µg/L and heavy oil-range hydrocarbons to be non-detect in monitoring well MW-03, the combined concentration is above the MTCA Method A Cleanup Level of 500 µg/L.

Laboratory analytical results identified diesel-range hydrocarbons at 1,130.00 µg/L and heavy oil-range hydrocarbons at 2,410.00 in monitoring well MW-04, the combined concentration is above the MTCA Method A Cleanup Level of 500 µg/L.

Laboratory analytical results identified diesel-range hydrocarbons at 600.00 µg/L and heavy oil-range hydrocarbons to be non-detect in monitoring well MW-06, the combined concentration is above the MTCA Method A Cleanup Level of 500 µg/L.

4.3 Gasoline-Range Extended Organics

Laboratory analytical results identified non-detect concentrations of gasoline-range hydrocarbons for monitoring wells CW-01and MW-07.

Laboratory analytical results identified detectable concentrations of gasoline-range hydrocarbons for monitoring wells CW-02, MW-03, and MW-06 below the MTCA Method A cleanup level of 800 µg/L.

Laboratory analytical results identified gasoline-range hydrocarbons for monitoring well MW-02 at 828.00 µg/L, which is above the MTCA Method A Cleanup Level of 800 µg/L.

Laboratory analytical results identified gasoline-range hydrocarbons for monitoring well MW-04 at 1,840.00 µg/L, which is above the MTCA Method A Cleanup Level of 800 µg/L.

4.4 Benzene, Toluene, Ethylbenzene, and Xylenes

Laboratory analytical results identified detectable benzene concentrations in monitoring wells CW-02, MW-02, MW-03, and MW-06, below the MTCA Method A Cleanup Level of 5.00 µg/L.

Laboratory analytical results identified benzene concentrations in monitoring well MW-04 at 68.7 µg/L, which is above the MTCA Method A Cleanup Levels of 5.00 µg/L.

Laboratory analytical results identified detectable concentrations of toluene in monitoring well MW-04, below the MTCA Method A Cleanup Level of 1,000 µg/L.

Laboratory analytical results identified detectable concentrations of ethylbenzene in monitoring wells MW-02, MW-03, MW-04, and MW-06, all below the MTCA Method A Cleanup Level of 700 µg/L.

Laboratory analytical results identified detectable concentrations of xylene in monitoring well MW-04 below the MTCA Method A Cleanup Level of 1,000 µg/L.

Laboratory analytical results identified non-detect concentrations for BTEX in monitoring wells CW-01 and MW-07.

4.5 Hydraulic Results

The groundwater flow direction, as determined by this sampling and monitoring event, is northwest with a hydraulic gradient of 0.022 (2.3-ft change in groundwater elevation over 105-feet), which is consistent with site geomorphology. A groundwater elevation map is presented as Figure 4.

4.6 Data Quality

Samples were shown as received by the laboratory at an acceptable temperature. Qualifiers were not present in the laboratory quality control (QC) sample results report, with the exception of a D qualifier associated with sample WOS-030722-MW04. This qualifier signifies dilution was required to analyze the sample leading the sample concentrations being biased low. Based on reported analytical results, identified cleanup standards, and the quantity of lab data qualifiers, it

is Fulcrum's opinion that field and laboratory data quality results confirm acceptable accuracy of analytical data for all samples.

5.0 DISCUSSION

Fulcrum conducted a semi-annual groundwater monitoring event for seven onsite groundwater monitoring wells. A brief discussion of the groundwater monitoring results is provided below:

- **CW-01:** Analytical results for groundwater samples collected from CW-01 report detectable concentrations of diesel-range hydrocarbons below MTCA Method A Cleanup Levels and non-detectable concentrations for heavy oil-range hydrocarbons, gasoline-range hydrocarbons, benzene, toluene, ethylbenzene, and xylene at the laboratory method detection limit.
- **CW-02: Analytical results for groundwater samples collected from CW-02 reported detectable concentrations of diesel-range hydrocarbons above the MTCA Method A Cleanup Level.** Analytical results for groundwater samples collected from CW-02 reported detectable concentrations of gasoline-range hydrocarbons, and benzene below MTCA Method A Cleanup Levels. Analytical results for groundwater samples report non-detectable concentrations for heavy oil-range hydrocarbons, toluene, ethylbenzene, and xylene at the laboratory method detection limit.
- **MW-02: Analytical results for groundwater samples collected from MW-02 reported detectable concentrations of diesel-range hydrocarbons and gasoline-range hydrocarbons above their respective MTCA Method A Cleanup Levels.** Analytical results for groundwater samples report detectable concentrations of benzene and ethylbenzene below their respective MTCA Method A Cleanup Levels. Analytical results for groundwater samples report non-detectable concentrations for heavy oil-range hydrocarbons, toluene, and xylene at the laboratory method detection limit.
- **MW-03: Analytical results for groundwater samples collected from MW-03 reported detectable concentrations of diesel-range hydrocarbons above the MTCA Method A Cleanup Level.** Analytical results for groundwater samples collected from MW-03 reported detectable concentrations of gasoline-range hydrocarbons, benzene, and ethylbenzene below MTCA Method A Cleanup Levels. Analytical results for groundwater samples collected report non-detectable concentrations for heavy oil-range hydrocarbons, toluene, and xylene at the laboratory method detection limit.
- **MW-04: Analytical results for groundwater samples collected from MW-04 reported detectable concentrations of diesel-range hydrocarbons, gasoline-range**

hydrocarbons, and benzene above their respective MTCA Method A Cleanup Levels. Laboratory analytical results for groundwater samples report detectable concentrations for toluene, ethylbenzene, and xylene below their respective MTCA Method A Cleanup Levels. Analytical results for groundwater collected report non-detectable concentrations for heavy oil-range hydrocarbons at the laboratory method detection limit.

- **MW-06: Analytical results for groundwater samples collected from MW-06 reported detectable concentrations of diesel-range hydrocarbons above the MTCA Method A Cleanup Level.** Analytical results for groundwater samples reported detectable concentrations of gasoline-range hydrocarbons and benzene, all below MTCA Method A Cleanup Levels. Analytical results for groundwater samples report non-detectable concentrations for heavy oil-range hydrocarbons, toluene, ethylbenzene and xylene at the laboratory method detection limit.
- **MW-07:** Analytical results for groundwater samples collected from MW-07 reported detectable concentrations of heavy oil-range hydrocarbons below MTCA Method A Cleanup Levels. Analytical results for groundwater samples collected reported non-detect concentrations of diesel-range and gasoline-range hydrocarbons, benzene, toluene, ethylbenzene, and xylene at the laboratory method detection limit.

The March 2022 groundwater analytical data indicates contaminant concentrations in wells CW-01 and MW-07 to be below MTCA Method A Cleanup Levels. Groundwater analytical data indicates combined diesel-range and heavy oil-range hydrocarbon concentrations in wells CW-02, MW-02, MW-03, MW-04, and MW-06, to be above MTCA Method A Cleanup Levels. Analytical data indicates gasoline-range hydrocarbon concentrations in wells MW-02 and MW-04 to be above MTCA Method A Cleanup Levels. Analytical data indicates benzene concentrations in monitoring well MW-04 to be above MTCA Method A Cleanup Levels.

6.0 RECOMMENDATIONS

Based on the results of this investigation, Fulcrum recommends continuing semi-annual monitoring of the onsite monitoring wells.

FIGURES

Figure 1: General Site Location Map

First Semi-annual Groundwater Sampling Event March 2022
Whitty's Chevron
370 West 5th Avenue
Colville, Washington

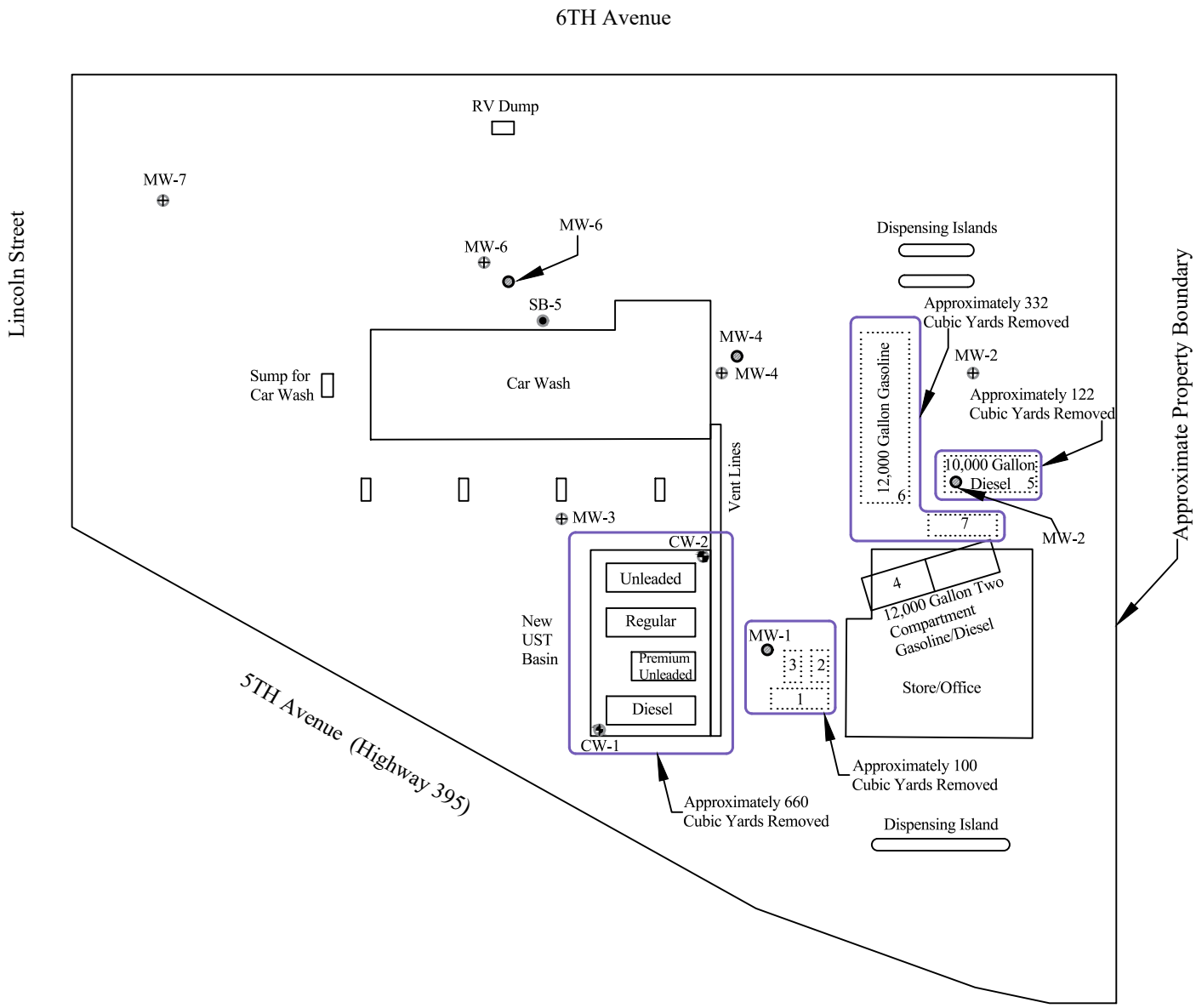
LEGEND

Map Location

N

FULCRUM ENVIRONMENTAL CONSULTING, INC.
207 W. BOONE AVENUE
SPOKANE, WASHINGTON 99201
(509) 459-9220 www.efulcrum.net

MAP BY: Redmond Groves	PROJECT NUMBER: 213162.00
DATE: April 11, 2022	REVIEWED BY: T. Trent



LEGEND

- Approximate extent of soil excavation
- Existing onsite UST
- Historical UST removed from site
- Historic Soil Boring
- Historical Monitoring Well
- Existing onsite Monitoring Well
- Existing onsite Compliance Well

N

0 30

Approximate Scale In Feet

Figure 2: Historical USTs, Soil Borings, and Monitoring Wells Site Diagram Map

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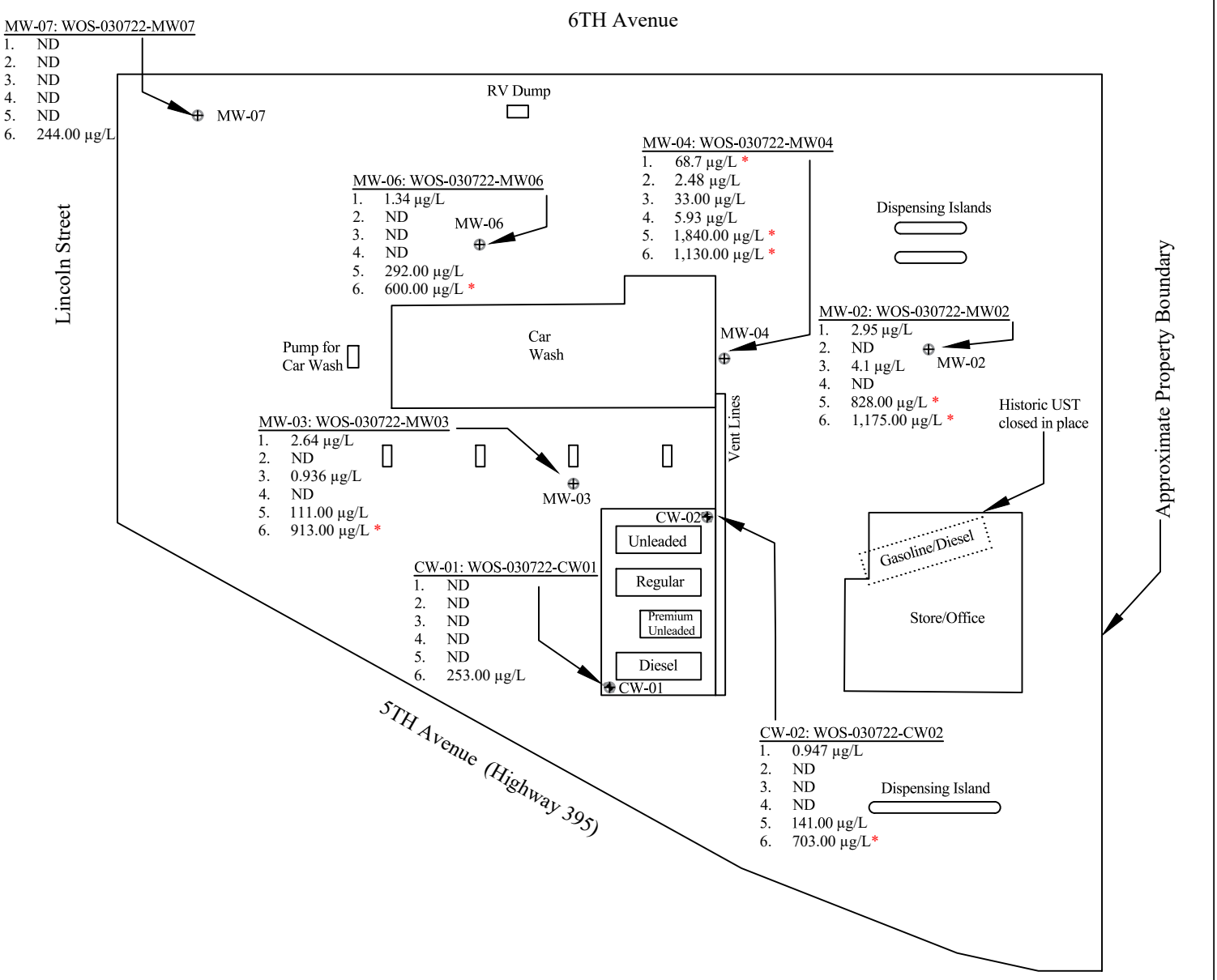

LEGEND

Parameters (µg/L)
1. Benzene
2. Toluene
3. Ethyl-benzene
4. Xylenes
5. NWTPH-GX
6. Combined Diesel-range and Heavy Oil-range Hydrocarbons

⊕ Monitoring Well

✦ Compliance Well

* Analyte Concentration Exceeds MTCA Method A Cleanup Level

N

0 30

Approximate Scale In Feet

Figure 3: Site Diagram Map

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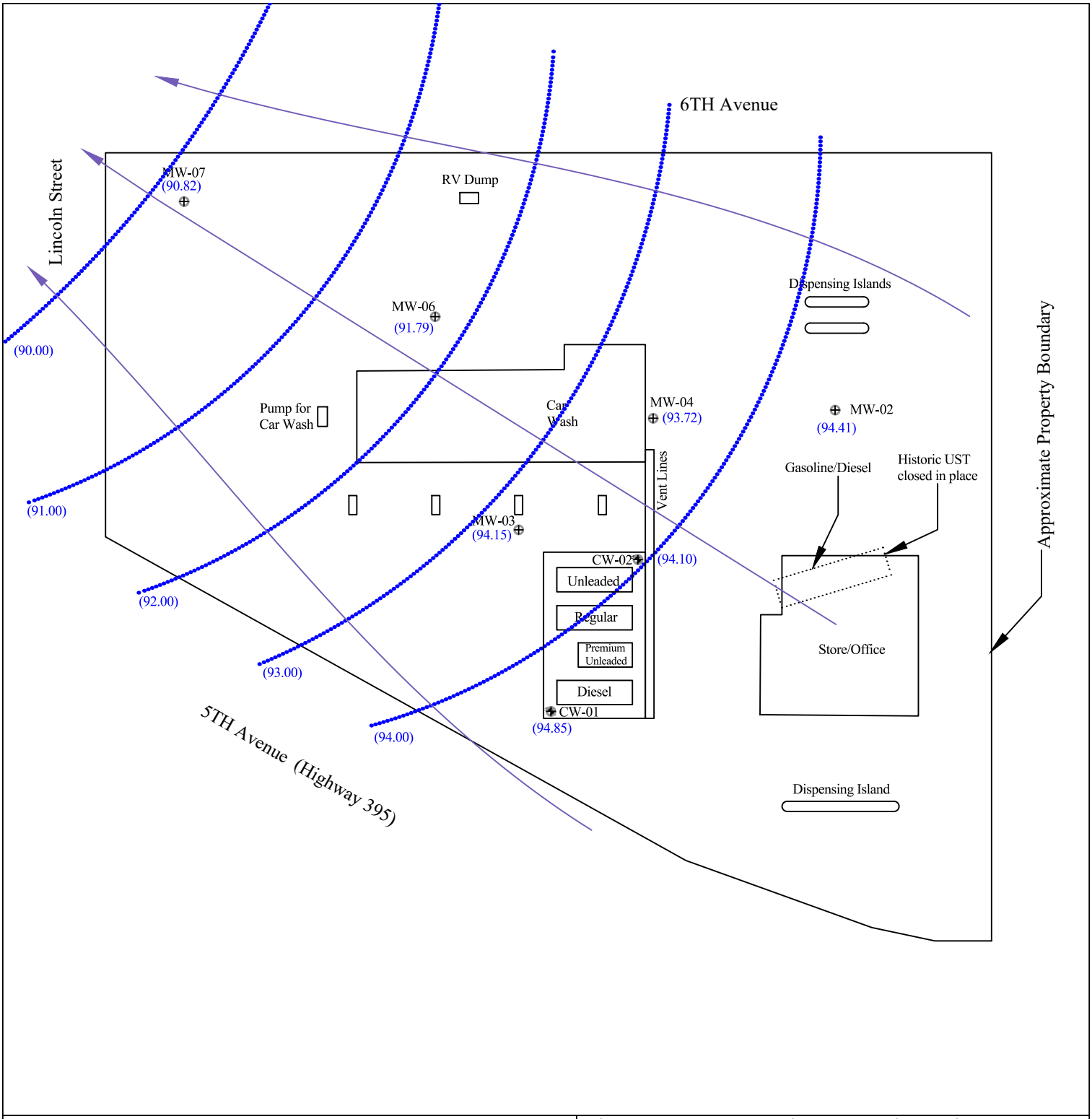

LEGEND

Approximate Groundwater Flow Direction & Gradient

93.00 — Groundwater Elevation Contour (In Feet)

(93.00) — Monitoring Well Groundwater Elevation (In Feet)

Monitoring Well

Compliance Well

N

0 30

Approximate Scale In Feet

Figure 4: Groundwater Elevation Map

First Semi-annual Groundwater Sampling Event March 2022
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MAP BY: Redmond Groves	PROJECT NUMBER: 213162.00
DATE: April 11, 2022	REVIEWED BY: T. Trent

APPENDIX A

Professional Certifications

STATE OF WASHINGTON

DEPARTMENT OF LICENSING – BUSINESS AND PROFESSIONS DIVISION

THIS CERTIFIES THAT THE PERSON OR BUSINESS NAMED BELOW IS AUTHORIZED AS A

WASHINGTON STATE DEPARTMENT OF LICENSING

GEOLOGIST
Hydrogeologist

TRAVIS L TRENT
1127 W 8th Ave
Spokane WA 99204-3107

364	01/08/2002	06/06/2022
License Number	**Issue Date**	**Expiration Date**

Teresa Berntsen

Teresa Berntsen, Director

(R/7/19)

STATE OF WASHINGTON
DEPARTMENT OF LICENSING
PO Box 9045 • Olympia, Washington 98507-9045

April 27, 2018

SCOTT M GROAT
4635 WEST IDEWILD LOOP APT C102
COEUR D'ALENE ID 83814

RE: National Association of Boards of Geology (ASBOG) examination results

Dear Scott:

The results of your March 2018 National Association of Boards of Geology (ASBOG) examination(s) are listed below:

Fundamentals of Geology: PASS
Practice of Geology: NOT TAKEN

Geologist-in-Training

Since you have passed the Fundamentals of Geology, you may use the title "Geologist-in-Training." You have met all the educational requirements outlined in WAC 308-15-040(2), have passed the ASBOG's Fundamentals of Geology exam and you are gaining the experience necessary to sit for the Practice of Geology exam.

Next Steps

Once you have met the experience requirements outlined in WAC 308-15-040, you may register for the Practice of Geology exam. Once you have met the required experience and passed both exams you will be issued your geologist license. Please check our website http://www.dol.wa.gov/business/geologist/geogetalicense.html for the exam application information and deadline.

Sincerely,

Starleen Boone

Starleen Boone
Licensing Specialist
Geologist Licensing Board

APPENDIX B

Summary of Historical Data

HISTORICAL GROUNDWATER ELEVATION AND ANALYTICAL DATA

Whitty's Chervon

370 West Fifth Avenue
Colville, Washington

Boring ID	Sampling Date	ERP (feet)	DS (feet)	TD (feet)	TPH (µg/L)	Diesel-range hydrocarbons (µg/L)	Heavy oil-range hydrocarbons (µg/L)	Combined Diesel-range and Heavy oil-range (µg/L)	NWTPH-Gx (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)
SB-1	1/8/1990	*100.20*	---	*15.00*	---	---	---	---	---	---	---	---	---
SB-2	1/8/1990	*99.39*	*10.00*	*15.00*	ND	---	---	---	ND	ND	ND	ND	ND
SB-3	1/9/1990	*99.30*	---	*15.00*	---	---	---	---	---	---	---	---	---
SB-4	1/9/1990	*98.96*	*5.00*	*15.00*	ND	---	---	---	ND	ND	ND	ND	ND
SB-5	1/9/1990	*99.29*	*5.00*	*15.00*	*1,220*	---	---	---	---	*0.476*	*1.38*	*5.62*	*50.2*
SB-6	1/9/1990	*97.87*	---	*15.00*	---	---	---	---	---	---	---	---	---

Well ID	Sampling Date	ERP (feet)	DTW (feet)	GWE (feet)	TPH (µg/L)	Diesel-range hydrocarbons (µg/L)	Heavy oil-range hydrocarbons (µg/L)	Combined Diesel-range and Heavy oil-range (µg/L)	NWTPH-Gx (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)
CW-01	1/10/1990	*99.50*	*5.82*	*93.68*	---	---	---	---	---	---	---	---	---
	9/13/2017	*99.50*	5.91	*93.59*	---	---	---	---	ND	ND	ND	ND	ND
	12/11/2017	*99.50*	4.96	*94.54*	---	---	---	---	ND	ND	ND	ND	ND
	3/26/2018	*99.50*	4.71	*94.79*	---	---	---	---	ND	ND	ND	ND	ND
	3/26/2018	*99.50*	4.71	*94.79*	---	---	---	---	ND	ND	ND	ND	ND
	6/27/2018	*99.50*	5.53	*93.97*	---	---	---	---	ND	ND	ND	ND	ND
	9/19/2018	*99.50*	5.86	*93.64*	---	214.00	ND	214.00	ND	ND	ND	ND	ND
	3/21/2019	*99.50*	4.84	*94.66*	---	ND	ND	ND	ND	ND	ND	ND	ND
	9/17/2019	*99.50*	5.85	*93.65*	---	63.30	ND	63.30	ND	ND	ND	ND	ND
	3/10/2020	*99.50*	4.89	*94.61*	---	ND	ND	ND	ND	ND	ND	ND	ND
	10/14/2020	*99.50*	5.81	*93.69*	---	212.00	ND	212.00	ND	ND	ND	ND	ND
	3/25/2021	*99.50*	5.81	*93.69*	---	ND	ND	ND	ND	ND	ND	ND	ND
	9/22/2021	*99.50*	6.03	*93.47*	---	441.00	ND	441.00	ND	ND	ND	ND	ND
	3/7/2022	*99.50*	4.65	*94.85*	---	253.00	ND	253.00	ND	ND	ND	ND	ND
CW-02	1/10/1990	*99.01*	*5.33*	*93.68*	---	---	---	---	---	---	---	---	---
	9/13/2017	*99.01*	5.64	*93.36*	---	---	---	---	ND	ND	ND	ND	ND
	12/11/2017	*99.01*	4.65	*94.36*	---	---	---	---	ND	ND	ND	ND	ND
	3/26/2018	*99.01*	4.39	*94.62*	---	---	---	---	ND	ND	ND	ND	ND
	6/27/2018	*99.01*	5.24	*93.77*	---	---	---	---	ND	ND	ND	ND	ND
	9/19/2018	*99.01*	5.56	*93.45*	---	ND	ND	ND	50.60	**10.60**	16.60	ND	ND
	9/19/2018	*99.01*	5.56	*93.45*	---	ND	188.00	188.00	56.80	**9.94**	15.90	ND	ND
	3/21/2019	*99.01*	4.53	*94.48*	---	ND	261.00	261.00	ND	ND	ND	ND	ND
2001 MTCA Method A Cleanup Levels for Groundwater					**NE**	**500**			**800**	**5**	**1000**	**700**	**1000**

Well ID	Sampling Date	ERP (feet)	DTW (feet)	GWE (feet)	TPH (µg/L)	Diesel-range hydrocarbons (µg/L)	Heavy oil-range hydrocarbons (µg/L)	Combined Diesel-range and Heavy oil-range (µg/L)	NWTPH-Gx (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)
CW-02	9/17/2019	*99.01*	5.54	*93.46*	---	ND	ND	ND	ND	ND	ND	ND	ND
	3/10/2020	*99.01*	5.20	*93.81*	---	ND	255.00	255.00	ND	ND	ND	ND	ND
	10/14/2020	*99.01*	5.54	*93.47*	---	ND	**777.00**	**777.00**	**864.00**	**7.58**	1.89	8.41	43.10
	10/14/2020	*99.01*	5.54	*93.47*	---	**4,570.00**	**ND**	**4570.00**	**818.00**	**7.45**	1.89	8.26	42.20
	3/25/2021	*99.01*	5.41	*93.60*	---	364.00	ND	364.00	180.00	**ND**	ND	0.49	0.94
	9/22/2021	*99.01*	5.72	*93.29*	---	354.00	ND	354.00	0.72	ND	ND	ND	ND
	3/7/2022	*99.01*	4.91	*94.10*	---	**703.00**	ND	**703.00**	**828.00**	0.95	ND	ND	ND
MW-1	1/10/1990	*100.00*	*5.59*	*94.41*	*ND*	---	---	---	---	ND	ND	ND	ND
Decommissioned													
MW-2	1/10/1990	*98.92*	*4.51*	*94.41*	*2,460*		---	---	---	***1,643.0***	*409.00*	*ND*	***2955.00***
Decommissioned													
New Well Installed	10/14/2020	*98.92*	5.83	93.09	---	249.00	ND	249.00	106.00	*ND*	*ND*	*ND*	*ND*
MW-03	1/10/1990	*98.56*	*5.77*	*92.79*	*ND*	---	---	---	---	*ND*	*ND*	*ND*	*ND*
	9/13/2017	*98.56*	5.55	93.02	---	---	---	---	131.00	ND	ND	ND	ND
	12/11/2017	*98.56*	5.05	93.51	---	---	---	---	ND	1.65	ND	ND	ND
	12/11/2017	*98.56*	5.05	93.51	---	---	---	---	ND	1.60	ND	ND	ND
	3/26/2018	*98.56*	4.44	94.12	---	---	---	---	ND	ND	ND	ND	ND
	6/27/2018	*98.56*	5.26	*93.30*	---	---	---	---	ND	ND	ND	ND	ND
	9/19/2018	*98.56*	5.56	*93.01*	---	ND	172.00	172.00	ND	ND	ND	ND	ND
	3/21/2019	*98.56*	4.80	*93.76*	---	273	ND	273	202.00	**24.40**	32.00	1.10	16.54
	9/17/2019	*98.56*	5.55	*93.01*	---	ND	ND	ND	67.30	ND	ND	ND	ND
	3/10/2020	*98.56*	5.57	*92.99*	---	ND	122.00	122.00	ND	ND	ND	ND	ND
	10/14/2020	*98.56*	5.86	*92.70*	---	ND	ND	ND	ND	ND	ND	ND	ND
	3/25/2021	*98.56*	6.11	*92.45*	---	ND	135.00	135.00	ND	ND	ND	ND	ND
	9/22/2021	*98.56*	5.58	*92.28*	---	159.00	ND	ND	ND	ND	ND	ND	ND
	3/7/2022	*98.56*	4.41	*94.15*	---	**913.00**	ND	ND	111.00	2.64	ND	0.94	ND
MW-04	1/10/1990	*98.27*	*4.06*	*94.21*	*3,050*	---	---	---	---	***118***	*23.00*	*ND*	*284.00*
	9/13/2017	*98.27*	5.32	92.96	---	---	---	---	558.00	4.03	ND	1.51	1.46
	9/13/2017	*98.27*	5.32	92.96	---	---	---	---	547.00	ND	ND	ND	ND
	12/11/2017	*98.27*	4.13	94.17	---	---	---	---	702.00	**6.81**	1.07	9.07	ND
	3/26/2018	*98.27*	3.75	94.52	---	---	---	---	302.00	4.63	1.34	15.70	ND
	6/27/2018	*98.27*	4.80	*93.47*	---	---	---	---	284.00	**5.84**	1.32	16.60	ND
	9/19/2018	*98.27*	4.83	*93.44*	---	**1,450.00**	**2,080.00**	**3,530.00**	644.00	**7.25**	2.61	25.80	2.72
	3/21/2019	*98.27*	3.60	*94.67*	---	220.00	376.00	**596.00**	718.00	4.46	1.78	18.10	2.70
	9/17/2019	*98.27*	4.92	*93.35*	---	181.00	310.00	491.00	780.00	**5.09**	ND	3.08	1.16
	3/10/2020	*98.27*	4.12	*94.15*	---	ND	**552.00**	**552.00**	96.00	ND	ND	2.60	ND
Lab Filtered	3/10/2020	*98.27*	4.12	*94.15*	---	ND	**602.00**	**602.00**	80.10	ND	ND	2.61	ND
New Well Installed	10/14/2020	*98.27*	4.80	*93.47*	---	**707.00**	ND	**707.00**	**818.00**	**10.50**	1.19	9.92	1.91
	3/25/2021	*98.27*	5.64	*92.63*	---	**497.00**	**964.00**	**1,461.00**	**1740.00**	**139.00**	3.84	56.20	12.02
	9/22/2021	*98.27*	4.64	*93.63*	---	**1,580.00**	ND	**1,580.00**	**2050.00**	**128.00**	3.10	36.50	6.07
	3/7/2022	*98.27*	4.55	*93.72*	---	**1,130.00**	ND	**1,130.00**	**1840.00**	**68.70**	2.48	33.00	5.93
MW-06	1/10/1990	*97.27*	*9.01*	*88.26*	*ND*	---	---	---	---	***9.00***	*5.00*	*15.00*	*80.00*
	9/13/2017	*97.27*	---	---	---	---	---	---	ND	ND	ND	ND	ND
2001 MTCA Method A Cleanup Levels for Groundwater					**NE**	**500**			**800**	**5**	**1,000**	**700**	**1,000**

Well ID	Sampling Date	ERP (feet)	DTW (feet)	GWE (feet)	TPH (µg/L)	Diesel-range hydrocarbons (µg/L)	Heavy oil-range hydrocarbons (µg/L)	Combined Diesel-range and Heavy oil-range (µg/L)	NWTPH-Gx (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)
MW-06	12/11/2017	*97.27*	---	---	---	---	---	---	---	---	---	---	---
	3/26/2018	*97.27*	5.24	*92.03*	---	---	---	---	404.00	ND	ND	ND	ND
	6/27/2018	*97.27*	5.31	*91.96*	---	---	---	---	101.00	ND	ND	ND	ND
	9/19/2018	*97.27*	6.36	*90.92*	---	102.00	369.00	471.00	119.00	ND	ND	ND	ND
	3/21/2019	*97.27*	5.08	*92.19*	---	ND	409.00	409.00	ND	ND	ND	ND	ND
	9/17/2019	*97.27*	4.95	*92.32*	---	ND	**1440.00**	**1440.00**	90.20	ND	ND	ND	ND
	3/10/2020	*97.27*	4.51	*92.76*	---	ND	**1580.00**	**1580.00**	ND	ND	ND	ND	ND
Lab Filtered	3/10/2020	*97.27*	4.51	*92.76*	---	ND	**1350.00**	**1350.00**	ND	ND	ND	ND	ND
New well installed	10/14/2020	*97.27*	*9.65*	*87.62*	---	357.00	ND	357.00	202	ND	ND	ND	ND
	3/25/2021	*97.27*	*5.91*	*91.36*	---	128.00	372.00	**500.00**	499	4.01	ND	1.70	1.33
	9/22/2021	*97.27*	*6.10*	*91.17*	---	597.00	ND	597.00	575	2.32	ND	0.75	ND
	3/7/2022	*97.27*	*5.48*	*91.79*	---	**600.00**	ND	**600.00**	292	1.34	ND	ND	ND
MW-07													
New well installed	10/14/2020	*95.27*	*8.72*	*86.55*	---	179.00	ND	179.00	ND	ND	ND	ND	ND
	3/25/2021	*95.27*	*5.95*	*89.32*	---	ND	105.00	105.00	ND	ND	ND	ND	ND
	9/22/2021	*95.27*	*5.47*	*89.80*	---	ND	112.00	ND	ND	ND	ND	ND	ND
	3/7/2022	*95.27*	*4.45*	*93.86*	---	244.00	ND	244.00	ND	ND	ND	ND	ND
2001 MTCA Method A Cleanup Levels for Groundwater					**NE**		**500**		**800**	**5**	**1000**	**700**	**1000**

Notes :

MTCA Method A exceedences shown in bold

Historic Data not collected by Fulcrum shown in italics

NE Not Established. Indvidual analyte thresholds for Total Petroleum Hydrocarbons (TPH) have not been established and are referenced as the appropriate regulatory values above

TPH Total Petroleum Hydrocarbons

TD Total Boring Depth

Notes :

DS Depth Sampled

ERP Elevation of riser pipe based on an arbitrary datum of 100.00 feet

DTW Depth to water

GWE Groundwater elevation based on an arbitrary datum of 100.00 feet

NWTPHGx Northwest total petroleum hydrocarbons as gasoline;

BTEX Benzene, toluene, ethylbenzene and total xylenes

µg/L micrograms per liter or parts per billion

ND Not detected in concentrations exceeding laboratory method detection limit

--- Not available, not tested, not measured

APPENDIX C

2005 Soil Sampling Results

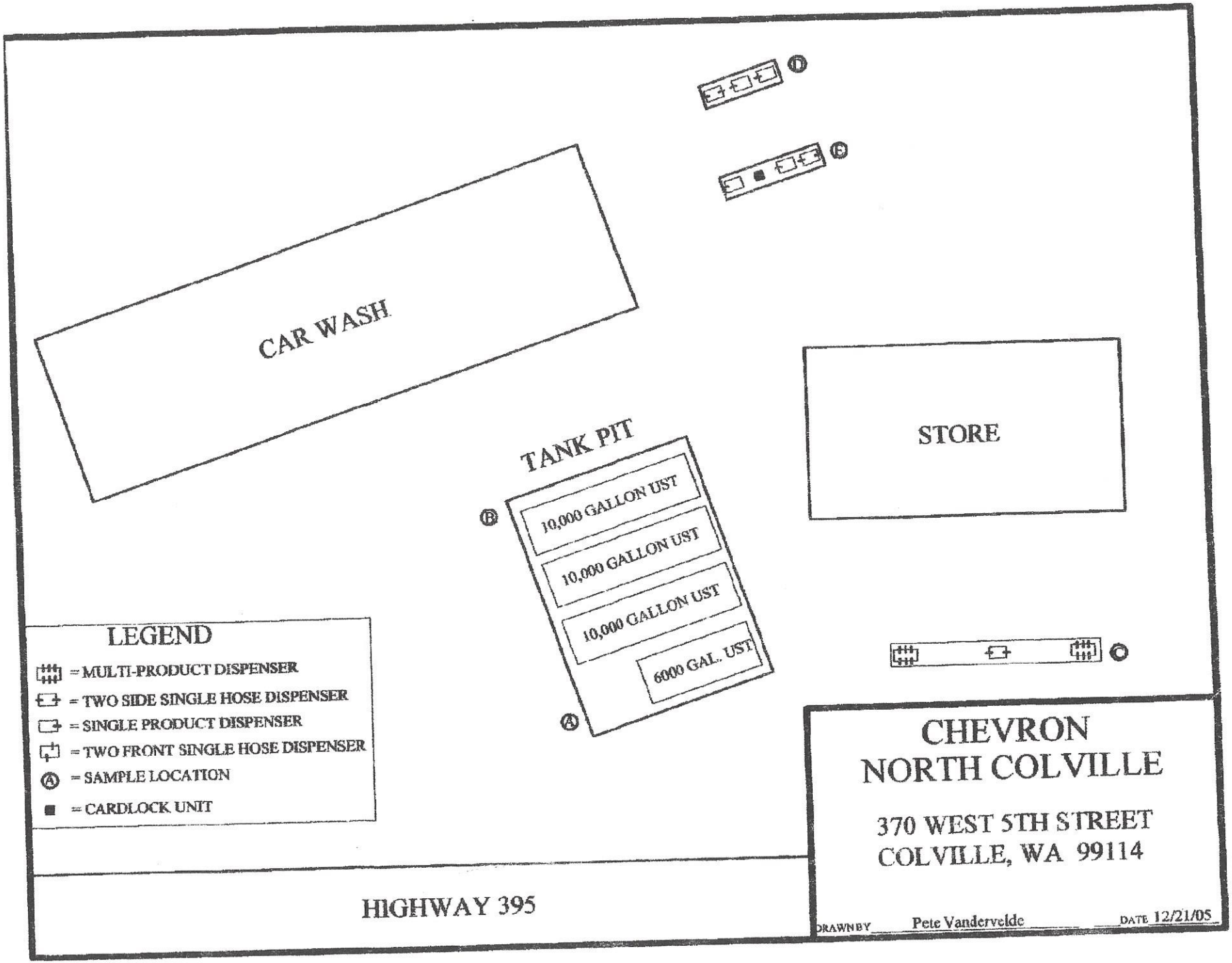

TABLE 1
SOIL SAMPLE RESULTS
CHEVRON
NORTH COLVILLE

DEPTH OF SAMPLE	15'	14	5'	5'	5'	*CLEANUP STANDARD*
ANALYSES	2-A	2-B	2-C	2-D	2-E	
NWTPH-OIL	<100	<100	<100	<100	<100	*2000 mg/Kg*
NWTPH-DIESEL	<10	<10	<10	<10	<10	*2000 mg/Kg*
NWTPH-GAS	8	<5.0	<5.0	<5.0	<5.0	*100 mg/Kg OR 30mg/Kg*
BENZENE	<0.025	<0.025	<0.025	<0.025	<0.025	*0.03 mg/Kg*
ETHYLBENZENE	0.12	<0.025	<0.025	<0.025	<0.025	*6.0 mg/Kg*
MTBE	<0.025	<0.025	<0.025	<0.025	<0.025	*0.1 mg/Kg*
TOLUENE	0.229	<0.05	0.111	0.066	<0.05	*7.0 mg/Kg*
XYLENE	0.69	<0.05	0.099	0.081	<0.05	*9.0 mg/Kg*
TOTAL LEAD	13	N/A	N/A	N/A	N/A	*250 mg/Kg*

N/A = NOT ANALYZED (verifys analyte is below cleanup standards for highest NWTPH-G concentration reported)

BOLDED RESULTS = ABOVE CLEANUP STANDARDS

ITALICIZED RESULTS = ESTIMATED CONCENTRATION. RESULT IS ABOVE NORMAL CALIBRATION RANGE. FINAL RESULT IS MOST LIKELY HIGHER

<1.25 ? = SAMPLE METHOD DETECTION LIMIT WAS DILUTED ABOVE CLEANUP STANDARD DUE TO HIGH CONCENTRATION OF OTHER ANALYTE DETECTED

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12/16/2005

Northwest Environmental Solutions, Inc
PO Box 1583
Sumner, WA 98390
Attn: Pete Vanderveide

P.O.#: Pd Ck #7160319036
Project: Whitton Oil
Client ID: 2-A
Sample Matrix: Soil
Date Sampled: 12/08/2005
Date Received: 12/12/2005
Spectra Project: 2005120166
Spectra Number: 1
Rush

Analyte	Result	Units	Method
Diesel	<10	mg/Kg	NWTPH-D
Oil	<100	mg/Kg	NWTPH-D
Gasoline	8	mg/Kg	NWTPH-G
Benzene	<0.025	mg/Kg	SW846 8260B
Ethylbenzene	0.12	mg/Kg	SW846 8260B
Methyl-tert-Butyl Ether	<0.025	mg/Kg	SW846 8260B
Toluene	0.229	mg/Kg	SW846 8260B
Total Xylenes	0.69	mg/Kg	SW846 8260B

Surrogate	Recovery	Method
Toluene-d8	111	NWTPH-G
4-Bromofluorobenzene	118	NWTPH-G
p-Terphenyl	98	NWTPH-D

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Page 1 of 3

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12/16/2005

Northwest Environmental Solutions, Inc
PO Box 1583
Sumner, WA 98390
Attn: Pete Vandervelde

P.O.#: Pd Ck #7160319036
Project: Whitton Oil
Client ID: 2-B
Sample Matrix: Soil
Date Sampled: 12/08/2005
Date Received: 12/12/2005
Spectra Project: 2005120166
Spectra Number: 2
Rush

Analyte	Result	Units	Method
Diesel	<10	mg/Kg	NWTPH-D
Oil	<100	mg/Kg	NWTPH-D
Gasoline	<5	mg/Kg	NWTPH-G
Benzene	<0.025	mg/Kg	SW846 8260B
Ethylbenzene	<0.025	mg/Kg	SW846 8260B
Methyl-tert-Butyl Ether	<0.025	mg/Kg	SW846 8260B
Toluene	<0.05	mg/Kg	SW846 8260B
Total Xylenes	<0.05	mg/Kg	SW846 8260B

Surrogate	Recovery	Method
Toluene-d8	118	NWTPH-G
4-Bromofluorobenzene	111	NWTPH-G
p-Terphenyl	60	NWTPH-D

SPECTRA LABORATORIES

Steve Hibbs, Laboratory Manager
sh/ish

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12/16/2005

Northwest Environmental Solutions, Inc
PO Box 1583
Sumner, WA 98390
Attn: Pete Vandervelde

P.O.#: Pd Ck #7160319036
Project: Whitton Oil
Client ID: 2-C
Sample Matrix: Soil
Date Sampled: 12/08/2005
Date Received: 12/12/2005
Spectra Project: 2005120166
Spectra Number: 3
Rush

Analyte	Result	Units	Method
Diesel	<10	mg/Kg	NWTPH-D
Oil	<100	mg/Kg	NWTPH-D
Gasoline	<5	mg/Kg	NWTPH-G
Benzene	<0.025	mg/Kg	SW846 8260B
Ethylbenzene	<0.025	mg/Kg	SW846 8260B
Methyl-tert-Butyl Ether	<0.025	mg/Kg	SW846 8260B
Toluene	0.111	mg/Kg	SW846 8260B
Total Xylenes	0.099	mg/Kg	SW846 8260B

Surrogate	Recovery	Method
Toluene-d8	111	NWTPH-G
4-Bromofluorobenzene	119	NWTPH-G
p-Terphenyl	62	NWTPH-D

SPECTRA LABORATORIES

Steve Hibbs, Laboratory Manager
nd/jjh

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12/16/2005

Northwest Environmental Solutions, Inc
PO Box 1583
Sumner, WA 98390
Attn: Pete Vandervelde

P.O.#: Pd Ck #7160319036
Project: Whitton Oil
Client ID: 2-D
Sample Matrix: Soil
Date Sampled: 12/08/2005
Date Received: 12/12/2005
Spectra Project: 2005120166
Spectra Number: 4
Rush

Analyte	Result	Units	Method
Diesel	<10	mg/Kg	NWTPH-D
Oil	<100	mg/Kg	NWTPH-D
Gasoline	<5	mg/Kg	NWTPH-G
Benzene	<0.025	mg/Kg	SW846 8260B
Ethylbenzene	<0.025	mg/Kg	SW846 8260B
Methyl-tert-Butyl Ether	<0.025	mg/Kg	SW846 8260B
Toluene	0.066	mg/Kg	SW846 8260B
Total Xylenes	0.081	mg/Kg	SW846 8260B

Surrogate	Recovery	Method
Toluene-d8	116	NWTPH-G
4-Bromofluorobenzene	112	NWTPH-G
p-Terphenyl	76	NWTPH-D

SPECTRA LABORATORIES

Steve Hibbs, Laboratory Manager
sG/jb

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12/16/2005

Northwest Environmental Solutions, Inc
PO Box 1583
Sumner, WA 98390
Attn: Pete Vandervelde

P.O.#: Pd Ck #7160319036
Project: Whitton Oil
Client ID: 2-E
Sample Matrix: Soil
Date Sampled: 12/08/2005
Date Received: 12/12/2005
Spectra Project: 2005120166
Spectra Number: 5
Rush

Analyte	Result	Units	Method
Diesel	<10	mg/Kg	NWTPH-D
Oil	<100	mg/Kg	NWTPH-D
Gasoline	<5	mg/Kg	NWTPH-G
Benzene	<0.025	mg/Kg	SW846 8260B
Ethylbenzene	<0.025	mg/Kg	SW846 8260B
Methyl-tert-Butyl Ether	<0.025	mg/Kg	SW846 8260B
Toluene	<0.05	mg/Kg	SW846 8260B
Total Xylenes	<0.05	mg/Kg	SW846 8260B

Surrogate	Recovery	Method
Toluene-d8	112	NWTPH-G
4-Bromofluorobenzene	113	NWTPH-G
p-Terphenyl	62	NWTPH-D

SPECTRA LABORATORIES

Steve Hibbs, Laboratory Manager

APPENDIX D

Laboratory Analytical Results

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Fulcrum Environmental
Scott Groat
207 W Boone Ave.
Spokane, WA 99201

RE: Whitten Groundwater
Work Order Number: 2203241

March 18, 2022

Attention Scott Groat:

Fremont Analytical, Inc. received 8 sample(s) on 3/9/2022 for the analyses presented in the following report.

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.
Gasoline by NWTPH-Gx
Volatile Organic Compounds by EPA Method 8260D

This report consists of the following:

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

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

Thank you for using Fremont Analytical.

Sincerely,

Brianna Barnes
Project Manager

Date: *03/18/2022*

CLIENT: Fulcrum Environmental
Project: Whitten Groundwater
Work Order: 2203241

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2203241-001	W05-030722-MW02	03/07/2022 12:01 PM	03/10/2022 9:39 AM
2203241-002	W05-030722-MW03	03/07/2022 2:58 PM	03/09/2022 11:09 AM
2203241-002	W05-030722-MW03	03/07/2022 2:58 PM	03/09/2022 11:09 AM
2203241-003	W05-030722-MW04	03/07/2022 10:48 AM	03/09/2022 11:09 AM
2203241-004	W05-030722-MW06	03/07/2022 2:46 PM	03/09/2022 11:09 AM
2203241-005	W05-030722-MW07	03/07/2022 1:37 PM	03/09/2022 11:09 AM
2203241-006	W05-030722-MW08	03/07/2022 1:01 PM	03/09/2022 11:09 AM
2203241-007	W05-030722-CW01	03/07/2022 11:57 AM	03/09/2022 11:09 AM
2203241-008	W05-030722-CW02	03/07/2022 9:46 AM	03/09/2022 11:09 AM

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

Original

Case Narrative

WO#: **2203241**
Date: **3/18/2022**

CLIENT: Fulcrum Environmental
Project: Whitten Groundwater

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

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

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

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

Qualifiers:

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

Acronyms:

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

Analytical Report

Work Order: **2203241**
Date Reported: **3/18/2022**

Client: Fulcrum Environmental
Collection Date: 3/7/2022 12:01:00 PM
Project: Whitten Groundwater
Lab ID: 2203241-001
Matrix: Groundwater
Client Sample ID: W05-030722-MW02

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 35691		Analyst: MM
Diesel (Fuel Oil)	1,750	116		µg/L	1	3/14/2022 5:17:53 PM
Heavy Oil	ND	116		µg/L	1	3/14/2022 5:17:53 PM
Total Petroleum Hydrocarbons	1,750	232		µg/L	1	3/14/2022 5:17:53 PM
Surr: 2-Fluorobiphenyl	93.6	50 - 150		%Rec	1	3/14/2022 5:17:53 PM
Surr: o-Terphenyl	105	50 - 150		%Rec	1	3/14/2022 5:17:53 PM
Gasoline by NWTPH-Gx				Batch ID: 35715		Analyst: MVB
Gasoline	ND	50.0		µg/L	1	3/15/2022 1:06:29 PM
Gasoline Range Organics (C6-C12)	828	50.0		µg/L	1	3/15/2022 1:06:29 PM
Surr: Toluene-d8	99.5	65 - 135		%Rec	1	3/15/2022 1:06:29 PM
Surr: 4-Bromofluorobenzene	112	65 - 135		%Rec	1	3/15/2022 1:06:29 PM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 35715		Analyst: MVB
Benzene	2.95	0.440		µg/L	1	3/15/2022 1:06:29 PM
Toluene	ND	0.750		µg/L	1	3/15/2022 1:06:29 PM
Ethylbenzene	4.10	0.400		µg/L	1	3/15/2022 1:06:29 PM
m,p-Xylene	ND	1.00		µg/L	1	3/15/2022 1:06:29 PM
o-Xylene	ND	0.500		µg/L	1	3/15/2022 1:06:29 PM
Surr: Dibromofluoromethane	97.4	80 - 120		%Rec	1	3/15/2022 1:06:29 PM
Surr: Toluene-d8	98.0	80 - 120		%Rec	1	3/15/2022 1:06:29 PM
Surr: 1-Bromo-4-fluorobenzene	102	80 - 120		%Rec	1	3/15/2022 1:06:29 PM

NOTES:
Gasoline Range Organics - Chromatographic pattern indicates that detection is due to a single non-target compound.

Analytical Report

Work Order: **2203241**
Date Reported: **3/18/2022**

Client: Fulcrum Environmental
Collection Date: 3/7/2022 2:58:00 PM
Project: Whitten Groundwater
Lab ID: 2203241-002
Matrix: Groundwater
Client Sample ID: W05-030722-MW03

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 35691		Analyst: MM
Diesel (Fuel Oil)	913	116		µg/L	1	3/14/2022 5:28:46 PM
Heavy Oil	ND	116		µg/L	1	3/14/2022 5:28:46 PM
Total Petroleum Hydrocarbons	913	232		µg/L	1	3/14/2022 5:28:46 PM
Surr: 2-Fluorobiphenyl	113	50 - 150		%Rec	1	3/14/2022 5:28:46 PM
Surr: o-Terphenyl	117	50 - 150		%Rec	1	3/14/2022 5:28:46 PM
Gasoline by NWTPH-Gx				Batch ID: 35715		Analyst: MVB
Gasoline	111	50.0		µg/L	1	3/15/2022 1:36:40 PM
Surr: Toluene-d8	100	65 - 135		%Rec	1	3/15/2022 1:36:40 PM
Surr: 4-Bromofluorobenzene	98.9	65 - 135		%Rec	1	3/15/2022 1:36:40 PM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 35715		Analyst: MVB
Benzene	2.64	0.440		µg/L	1	3/15/2022 1:36:40 PM
Toluene	ND	0.750		µg/L	1	3/15/2022 1:36:40 PM
Ethylbenzene	0.936	0.400		µg/L	1	3/15/2022 1:36:40 PM
m,p-Xylene	ND	1.00		µg/L	1	3/15/2022 1:36:40 PM
o-Xylene	0.973	0.500		µg/L	1	3/15/2022 1:36:40 PM
Surr: Dibromofluoromethane	92.5	80 - 120		%Rec	1	3/15/2022 1:36:40 PM
Surr: Toluene-d8	95.9	80 - 120		%Rec	1	3/15/2022 1:36:40 PM
Surr: 1-Bromo-4-fluorobenzene	96.9	80 - 120		%Rec	1	3/15/2022 1:36:40 PM

Analytical Report

Work Order: **2203241**
Date Reported: **3/18/2022**

Client: Fulcrum Environmental
Collection Date: 3/7/2022 10:48:00 AM
Project: Whitten Groundwater
Lab ID: 2203241-003
Matrix: Groundwater
Client Sample ID: W05-030722-MW04

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 35691		Analyst: MM
Diesel (Fuel Oil)	1,130	116		µg/L	1	3/14/2022 5:50:35 PM
Heavy Oil	2,410	116		µg/L	1	3/14/2022 5:50:35 PM
Total Petroleum Hydrocarbons	3,540	232		µg/L	1	3/14/2022 5:50:35 PM
Surr: 2-Fluorobiphenyl	95.4	50 - 150		%Rec	1	3/14/2022 5:50:35 PM
Surr: o-Terphenyl	99.2	50 - 150		%Rec	1	3/14/2022 5:50:35 PM
Gasoline by NWTPH-Gx				Batch ID: 35715		Analyst: MVB
Gasoline	1,840	50.0		µg/L	1	3/15/2022 2:06:46 PM
Surr: Toluene-d8	100	65 - 135		%Rec	1	3/15/2022 2:06:46 PM
Surr: 4-Bromofluorobenzene	116	65 - 135		%Rec	1	3/15/2022 2:06:46 PM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 35715		Analyst: MVB
Benzene	68.7	4.40	D	µg/L	10	3/18/2022 10:46:40 AM
Toluene	2.48	0.750		µg/L	1	3/15/2022 2:06:46 PM
Ethylbenzene	33.0	0.400		µg/L	1	3/15/2022 2:06:46 PM
m,p-Xylene	5.93	1.00		µg/L	1	3/15/2022 2:06:46 PM
o-Xylene	ND	0.500		µg/L	1	3/15/2022 2:06:46 PM
Surr: Dibromofluoromethane	104	80 - 120		%Rec	1	3/15/2022 2:06:46 PM
Surr: Toluene-d8	100	80 - 120		%Rec	1	3/15/2022 2:06:46 PM
Surr: 1-Bromo-4-fluorobenzene	103	80 - 120		%Rec	1	3/15/2022 2:06:46 PM

Analytical Report

Work Order: **2203241**
Date Reported: **3/18/2022**

Client: Fulcrum Environmental
Collection Date: 3/7/2022 2:46:00 PM
Project: Whitten Groundwater
Lab ID: 2203241-004
Matrix: Groundwater
Client Sample ID: W05-030722-MW06

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 35691		Analyst: MM
Diesel (Fuel Oil)	600	117		µg/L	1	3/14/2022 6:01:34 PM
Heavy Oil	ND	117		µg/L	1	3/14/2022 6:01:34 PM
Total Petroleum Hydrocarbons	600	234		µg/L	1	3/14/2022 6:01:34 PM
Surr: 2-Fluorobiphenyl	97.9	50 - 150		%Rec	1	3/14/2022 6:01:34 PM
Surr: o-Terphenyl	104	50 - 150		%Rec	1	3/14/2022 6:01:34 PM
Gasoline by NWTPH-Gx				Batch ID: 35715		Analyst: MVB
Gasoline	292	50.0		µg/L	1	3/15/2022 2:36:58 PM
Surr: Toluene-d8	98.7	65 - 135		%Rec	1	3/15/2022 2:36:58 PM
Surr: 4-Bromofluorobenzene	102	65 - 135		%Rec	1	3/15/2022 2:36:58 PM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 35715		Analyst: MVB
Benzene	1.34	0.440		µg/L	1	3/15/2022 2:36:58 PM
Toluene	ND	0.750		µg/L	1	3/15/2022 2:36:58 PM
Ethylbenzene	ND	0.400		µg/L	1	3/15/2022 2:36:58 PM
m,p-Xylene	ND	1.00		µg/L	1	3/15/2022 2:36:58 PM
o-Xylene	ND	0.500		µg/L	1	3/15/2022 2:36:58 PM
Surr: Dibromofluoromethane	94.5	80 - 120		%Rec	1	3/15/2022 2:36:58 PM
Surr: Toluene-d8	95.5	80 - 120		%Rec	1	3/15/2022 2:36:58 PM
Surr: 1-Bromo-4-fluorobenzene	96.0	80 - 120		%Rec	1	3/15/2022 2:36:58 PM

Analytical Report

Work Order: **2203241**
Date Reported: **3/18/2022**

Client: Fulcrum Environmental
Collection Date: 3/7/2022 1:37:00 PM
Project: Whitten Groundwater
Lab ID: 2203241-005
Matrix: Groundwater
Client Sample ID: W05-030722-MW07

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 35691		Analyst: MM
Diesel (Fuel Oil)	244	116		µg/L	1	3/14/2022 6:12:27 PM
Heavy Oil	ND	116		µg/L	1	3/14/2022 6:12:27 PM
Total Petroleum Hydrocarbons	244	232		µg/L	1	3/14/2022 6:12:27 PM
Surr: 2-Fluorobiphenyl	103	50 - 150		%Rec	1	3/14/2022 6:12:27 PM
Surr: o-Terphenyl	104	50 - 150		%Rec	1	3/14/2022 6:12:27 PM
Gasoline by NWTPH-Gx				Batch ID: 35715		Analyst: TN
Gasoline	ND	50.0		µg/L	1	3/16/2022 11:31:02 AM
Surr: Toluene-d8	99.1	65 - 135		%Rec	1	3/16/2022 11:31:02 AM
Surr: 4-Bromofluorobenzene	98.8	65 - 135		%Rec	1	3/16/2022 11:31:02 AM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 35715		Analyst: TN
Benzene	ND	0.440		µg/L	1	3/16/2022 11:31:02 AM
Toluene	ND	0.750		µg/L	1	3/16/2022 11:31:02 AM
Ethylbenzene	ND	0.400		µg/L	1	3/16/2022 11:31:02 AM
m,p-Xylene	ND	1.00		µg/L	1	3/16/2022 11:31:02 AM
o-Xylene	ND	0.500		µg/L	1	3/16/2022 11:31:02 AM
Surr: Dibromofluoromethane	99.2	80 - 120		%Rec	1	3/16/2022 11:31:02 AM
Surr: Toluene-d8	99.4	80 - 120		%Rec	1	3/16/2022 11:31:02 AM
Surr: 1-Bromo-4-fluorobenzene	98.3	80 - 120		%Rec	1	3/16/2022 11:31:02 AM

Analytical Report

Work Order: **2203241**
Date Reported: **3/18/2022**

Client: Fulcrum Environmental
Collection Date: 3/7/2022 1:01:00 PM
Project: Whitten Groundwater
Lab ID: 2203241-006
Matrix: Groundwater
Client Sample ID: W05-030722-MW08

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 35691		Analyst: MM
Diesel (Fuel Oil)	919	116		µg/L	1	3/14/2022 6:23:22 PM
Heavy Oil	ND	116		µg/L	1	3/14/2022 6:23:22 PM
Total Petroleum Hydrocarbons	919	231		µg/L	1	3/14/2022 6:23:22 PM
Surr: 2-Fluorobiphenyl	108	50 - 150		%Rec	1	3/14/2022 6:23:22 PM
Surr: o-Terphenyl	104	50 - 150		%Rec	1	3/14/2022 6:23:22 PM
Gasoline by NWTPH-Gx				Batch ID: 35715		Analyst: MVB
Gasoline	133	50.0		µg/L	1	3/15/2022 3:44:58 PM
Surr: Toluene-d8	101	65 - 135		%Rec	1	3/15/2022 3:44:58 PM
Surr: 4-Bromofluorobenzene	96.5	65 - 135		%Rec	1	3/15/2022 3:44:58 PM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 35715		Analyst: MVB
Benzene	2.85	0.440		µg/L	1	3/15/2022 3:44:58 PM
Toluene	ND	0.750		µg/L	1	3/15/2022 3:44:58 PM
Ethylbenzene	0.995	0.400		µg/L	1	3/15/2022 3:44:58 PM
m,p-Xylene	ND	1.00		µg/L	1	3/15/2022 3:44:58 PM
o-Xylene	1.11	0.500		µg/L	1	3/15/2022 3:44:58 PM
Surr: Dibromofluoromethane	91.1	80 - 120		%Rec	1	3/15/2022 3:44:58 PM
Surr: Toluene-d8	95.1	80 - 120		%Rec	1	3/15/2022 3:44:58 PM
Surr: 1-Bromo-4-fluorobenzene	94.9	80 - 120		%Rec	1	3/15/2022 3:44:58 PM

Analytical Report

Work Order: **2203241**
Date Reported: **3/18/2022**

Client: Fulcrum Environmental
Collection Date: 3/7/2022 11:57:00 AM
Project: Whitten Groundwater
Lab ID: 2203241-007
Matrix: Groundwater
Client Sample ID: W05-030722-CW01

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 35691		Analyst: MM
Diesel (Fuel Oil)	253	117		µg/L	1	3/14/2022 6:34:15 PM
Heavy Oil	ND	117		µg/L	1	3/14/2022 6:34:15 PM
Total Petroleum Hydrocarbons	253	235		µg/L	1	3/14/2022 6:34:15 PM
Surr: 2-Fluorobiphenyl	94.2	50 - 150		%Rec	1	3/14/2022 6:34:15 PM
Surr: o-Terphenyl	97.3	50 - 150		%Rec	1	3/14/2022 6:34:15 PM
Gasoline by NWTPH-Gx				Batch ID: 35715		Analyst: TN
Gasoline	ND	50.0		µg/L	1	3/16/2022 12:01:39 PM
Surr: Toluene-d8	98.6	65 - 135		%Rec	1	3/16/2022 12:01:39 PM
Surr: 4-Bromofluorobenzene	97.4	65 - 135		%Rec	1	3/16/2022 12:01:39 PM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 35715		Analyst: TN
Benzene	ND	0.440		µg/L	1	3/16/2022 12:01:39 PM
Toluene	ND	0.750		µg/L	1	3/16/2022 12:01:39 PM
Ethylbenzene	ND	0.400		µg/L	1	3/16/2022 12:01:39 PM
m,p-Xylene	ND	1.00		µg/L	1	3/16/2022 12:01:39 PM
o-Xylene	ND	0.500		µg/L	1	3/16/2022 12:01:39 PM
Surr: Dibromofluoromethane	98.8	80 - 120		%Rec	1	3/16/2022 12:01:39 PM
Surr: Toluene-d8	99.6	80 - 120		%Rec	1	3/16/2022 12:01:39 PM
Surr: 1-Bromo-4-fluorobenzene	96.8	80 - 120		%Rec	1	3/16/2022 12:01:39 PM

Analytical Report

Work Order: **2203241**
Date Reported: **3/18/2022**

Client: Fulcrum Environmental
Collection Date: 3/7/2022 9:46:00 AM
Project: Whitten Groundwater
Lab ID: 2203241-008
Matrix: Groundwater
Client Sample ID: W05-030722-CW02

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 35691		Analyst: MM
Diesel (Fuel Oil)	703	116		µg/L	1	3/14/2022 6:45:08 PM
Heavy Oil	ND	116		µg/L	1	3/14/2022 6:45:08 PM
Total Petroleum Hydrocarbons	703	232		µg/L	1	3/14/2022 6:45:08 PM
Surr: 2-Fluorobiphenyl	103	50 - 150		%Rec	1	3/14/2022 6:45:08 PM
Surr: o-Terphenyl	95.7	50 - 150		%Rec	1	3/14/2022 6:45:08 PM
Gasoline by NWTPH-Gx				Batch ID: 35715		Analyst: TN
Gasoline	141	50.0		µg/L	1	3/16/2022 12:32:20 PM
Surr: Toluene-d8	99.7	65 - 135		%Rec	1	3/16/2022 12:32:20 PM
Surr: 4-Bromofluorobenzene	98.7	65 - 135		%Rec	1	3/16/2022 12:32:20 PM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 35715		Analyst: TN
Benzene	0.947	0.440		µg/L	1	3/16/2022 12:32:20 PM
Toluene	ND	0.750		µg/L	1	3/16/2022 12:32:20 PM
Ethylbenzene	ND	0.400		µg/L	1	3/16/2022 12:32:20 PM
m,p-Xylene	ND	1.00		µg/L	1	3/16/2022 12:32:20 PM
o-Xylene	0.537	0.500		µg/L	1	3/16/2022 12:32:20 PM
Surr: Dibromofluoromethane	98.6	80 - 120		%Rec	1	3/16/2022 12:32:20 PM
Surr: Toluene-d8	99.4	80 - 120		%Rec	1	3/16/2022 12:32:20 PM
Surr: 1-Bromo-4-fluorobenzene	98.1	80 - 120		%Rec	1	3/16/2022 12:32:20 PM

Work Order: 2203241
CLIENT: Fulcrum Environmental
Project: Whitten Groundwater

QC SUMMARY REPORT

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID: **MB-35691** SampType: **MBLK** Units: **µg/L** Prep Date: **3/11/2022** RunNo: **73961**
Client ID: **MBLKW** Batch ID: **35691** Analysis Date: **3/14/2022** SeqNo: **1515395**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	100									
Heavy Oil	ND	100									
Total Petroleum Hydrocarbons	ND	200									
Surr: 2-Fluorobiphenyl	17.2		20.00		86.1	50	150				
Surr: o-Terphenyl	17.9		20.00		89.3	50	150				

Sample ID: **LCS-35691** SampType: **LCS** Units: **µg/L** Prep Date: **3/11/2022** RunNo: **73961**
Client ID: **LCSW** Batch ID: **35691** Analysis Date: **3/14/2022** SeqNo: **1515422**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	867	200	1,000	0	86.7	57.2	125				
Surr: 2-Fluorobiphenyl	19.3		20.00		96.5	50	150				
Surr: o-Terphenyl	22.3		20.00		111	50	150				

Sample ID: **2203241-002BMS** SampType: **MS** Units: **µg/L** Prep Date: **3/11/2022** RunNo: **73961**
Client ID: **W05-030722-MW03** Batch ID: **35691** Analysis Date: **3/14/2022** SeqNo: **1516111**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	1,780	232	1,160	913.3	75.1	40.5	128				
Surr: 2-Fluorobiphenyl	22.1		23.20		95.1	50	150				
Surr: o-Terphenyl	26.0		23.20		112	50	150				

Sample ID: **2203236-001BDUP** SampType: **DUP** Units: **µg/L** Prep Date: **3/11/2022** RunNo: **73961**
Client ID: **BATCH** Batch ID: **35691** Analysis Date: **3/15/2022** SeqNo: **1516120**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	116						0	10.5	30	
Diesel Range Organics (C12-C24)	667	116						600.4	10.5	30	
Heavy Oil	ND	116						0		30	

Work Order: 2203241
CLIENT: Fulcrum Environmental
Project: Whitten Groundwater

QC SUMMARY REPORT

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID: **2203236-001BDUP** SampType: **DUP** Units: **µg/L** Prep Date: **3/11/2022** RunNo: **73961**
Client ID: **BATCH** Batch ID: **35691** Analysis Date: **3/15/2022** SeqNo: **1516120**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	667	232						0	200	30	
Surr: 2-Fluorobiphenyl	24.6		23.22		106	50	150		0		
Surr: o-Terphenyl	25.5		23.22		110	50	150		0		

NOTES:
Diesel Range Organics - Indicates unresolved compounds in the Diesel range.

Sample ID: **2203236-002BDUP** SampType: **DUP** Units: **µg/L** Prep Date: **3/11/2022** RunNo: **73961**
Client ID: **BATCH** Batch ID: **35691** Analysis Date: **3/15/2022** SeqNo: **1516122**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	116						0	6.20	30	
Diesel Range Organics (C12-C24)	523	116						556.6	6.20	30	
Heavy Oil	ND	116						0		30	
Total Petroleum Hydrocarbons	523	233						0	200	30	
Surr: 2-Fluorobiphenyl	21.2		23.27		91.2	50	150		0		
Surr: o-Terphenyl	23.5		23.27		101	50	150		0		

NOTES:
Diesel Range Organics - Indicates unresolved compounds in the Diesel range.

Work Order: 2203241
CLIENT: Fulcrum Environmental
Project: Whitten Groundwater

QC SUMMARY REPORT

Gasoline by NWTPH-Gx

Sample ID: **LCS-35715**	SampType: **LCS**	Units: **µg/L**	Prep Date: **3/14/2022**	RunNo: **74018**
Client ID: **LCSW**	Batch ID: **35715**		Analysis Date: **3/15/2022**	SeqNo: **1516766**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	489	50.0	500.0	0	97.9	65	135				
Surr: Toluene-d8	24.7		25.00		98.7	65	135				
Surr: 4-Bromofluorobenzene	25.4		25.00		102	65	135				

Sample ID: **MB-35715**	SampType: **MBLK**	Units: **µg/L**	Prep Date: **3/14/2022**	RunNo: **74018**
Client ID: **MBLKW**	Batch ID: **35715**		Analysis Date: **3/15/2022**	SeqNo: **1516765**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	50.0									
Surr: Toluene-d8	25.0		25.00		100	65	135				
Surr: 4-Bromofluorobenzene	23.9		25.00		95.5	65	135				

Sample ID: **2203236-001ADUP**	SampType: **DUP**	Units: **µg/L**	Prep Date: **3/14/2022**	RunNo: **74018**
Client ID: **BATCH**	Batch ID: **35715**		Analysis Date: **3/15/2022**	SeqNo: **1516746**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	50.0						0		30	
Surr: Toluene-d8	25.1		25.00		100	65	135		0		
Surr: 4-Bromofluorobenzene	23.7		25.00		94.8	65	135		0		

Sample ID: **2203322-004AMS**	SampType: **MS**	Units: **µg/L**	Prep Date: **3/14/2022**	RunNo: **74018**
Client ID: **BATCH**	Batch ID: **35715**		Analysis Date: **3/15/2022**	SeqNo: **1516761**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	496	50.0	500.0	0	99.2	65	135				
Surr: Toluene-d8	24.6		25.00		98.6	65	135				
Surr: 4-Bromofluorobenzene	25.1		25.00		100	65	135				

Work Order: 2203241
CLIENT: Fulcrum Environmental
Project: Whitten Groundwater

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **LCS-35715** SampType: **LCS** Units: **µg/L** Prep Date: **3/14/2022** RunNo: **74015**
Client ID: **LCSW** Batch ID: **35715** Analysis Date: **3/15/2022** SeqNo: **1516719**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	20.4	0.440	20.00	0	102	80	120				
Toluene	20.7	0.750	20.00	0	104	80	120				
Ethylbenzene	21.6	0.400	20.00	0	108	80	120				
m,p-Xylene	43.2	1.00	40.00	0	108	80	120				
o-Xylene	21.6	0.500	20.00	0	108	80	120				
Surr: Dibromofluoromethane	25.9		25.00		104	80	120				
Surr: Toluene-d8	24.8		25.00		99.1	80	120				
Surr: 1-Bromo-4-fluorobenzene	25.4		25.00		102	80	120				

Sample ID: **MB-35715** SampType: **MBLK** Units: **µg/L** Prep Date: **3/14/2022** RunNo: **74015**
Client ID: **MBLKW** Batch ID: **35715** Analysis Date: **3/15/2022** SeqNo: **1516718**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.440									
Toluene	ND	0.750									
Ethylbenzene	ND	0.400									
m,p-Xylene	ND	1.00									
o-Xylene	ND	0.500									
Surr: Dibromofluoromethane	23.0		25.00		92.0	80	120				
Surr: Toluene-d8	24.1		25.00		96.2	80	120				
Surr: 1-Bromo-4-fluorobenzene	23.8		25.00		95.3	80	120				

Sample ID: **2203235-013ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **3/14/2022** RunNo: **74015**
Client ID: **BATCH** Batch ID: **35715** Analysis Date: **3/15/2022** SeqNo: **1516699**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.440						0		30	
Toluene	ND	0.750						0		30	
Ethylbenzene	ND	0.400						0		30	

Work Order: 2203241
CLIENT: Fulcrum Environmental
Project: Whitten Groundwater

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **2203235-013ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **3/14/2022** RunNo: **74015**
Client ID: **BATCH** Batch ID: **35715** Analysis Date: **3/15/2022** SeqNo: **1516699**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
m,p-Xylene	ND	1.00						0		30	
o-Xylene	ND	0.500						0		30	
Surr: Dibromofluoromethane	23.3		25.00		93.1	80	120		0		
Surr: Toluene-d8	24.1		25.00		96.4	80	120		0		
Surr: 1-Bromo-4-fluorobenzene	23.6		25.00		94.5	80	120		0		

Sample ID: **2203322-003AMS** SampType: **MS** Units: **µg/L** Prep Date: **3/14/2022** RunNo: **74015**
Client ID: **BATCH** Batch ID: **35715** Analysis Date: **3/15/2022** SeqNo: **1516714**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	20.3	0.440	20.00	0	102	80.1	128				
Toluene	19.5	0.750	20.00	0	97.3	83.3	125				
Ethylbenzene	19.0	0.400	20.00	0	94.9	85.5	124				
m,p-Xylene	36.7	1.00	40.00	0	91.8	86.8	122				
o-Xylene	18.7	0.500	20.00	0	93.7	86.4	121				
Surr: Dibromofluoromethane	26.0		25.00		104	80	120				
Surr: Toluene-d8	24.8		25.00		99.3	80	120				
Surr: 1-Bromo-4-fluorobenzene	25.1		25.00		100	80	120				

Sample Log-In Check List

Client Name:	**FES**	Work Order Number:	**2203241**
Logged by:	**Gabrielle Coeuille**	Date Received:	**3/9/2022 11:09:00 AM**

Chain of Custody

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

Log In

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

Special Handling (if applicable)

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

Person Notified:	Scott Groat	Date:	3/9/2022
By Whom:	Gabrielle Coeuille	Via:	☑ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:	No volume received for sample 1.		
Client Instructions:	Will provide volume.		

19. Additional remarks:

Item Information

Item #	Temp ºC
Sample 1	4.6

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

Sample Log-In Check List

Client Name:	**FES**	Work Order Number:	**2203241**
Logged by:	**Gabrielle Coeuille**	Date Received:	**3/9/2022 11:09:00 AM**

Chain of Custody

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

Log In

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

Special Handling (if applicable)

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

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

19. Additional remarks:

Item Information

Item #	Temp ºC
Sample 1	4.8

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

Chain of Custody Record & Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 3/7/22 Page: 1 of: 1

Laboratory Project No (internal): 2263241

Special Remarks:

Client: Fulcrum Environmental
Address: 207 W. Boone Ave.
City, State, Zip: Spokane, WA 99201
Telephone: 509-459-9220
Fax:

Project Name: Whitlow Groundwater
Project No: 21362.00
Collected by: S. Groat
Location:
Report To (PM): Scott Groat
PM Email: Sgroat@fulcrum.net

Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 30 days)

	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	# of Cont.	VOCs (EPA 8260 / 624)	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 608)	Metals** (EPA 6020 / 200.8)	Total (T)	Dissolved (D)	Anions (IC)***	EDB (8011)	Comments
1	WOS-030722-MW02	3/7/22	1201	GW	4		X	X	X										
2	-MW03		1458		7		X	X	X										
3	-MW04		1048		4		X	X	X										
4	-MW06		1446		4		X	X	X										
5	-MW07		1337		4		X	X	X										
6	-MW08		1301		4		X	X	X										
7	-CW01		1157		4		X	X	X										
8	-CW02		0946		4		X	X	X										
9																			
10																			

*Matrix: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

**Metals (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL *Individual:* Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl V Zn

***Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Turn-around Time:
☒ Standard ☐ Next Day
☐ 3 Day ☐ Same Day
☐ 2 Day ☐ (specify)

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above, that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished (Signature)	Print Name	Date/Time	Received (Signature)	Print Name	Date/Time
x Scott Groat	Scott Groat	3/07/22 @17	x Alex Trejo	Alex Trejo	3/9/22 11:09
Relinquished (Signature)	Print Name	Date/Time	Received (Signature)	Print Name	Date/Time
x			x		