



SEMI-ANNUAL STATUS REPORT

**Second Half 2022
December 22, 2022**

Facility No:	<u>Former Standard Oil Bulk Plant No. 302095</u>	Address:	<u>149 and 167 Main Street, Morton, Washington</u>
Arcadis Contact Person / Phone No.:	<u>Carl Donovan / 503-785-9470</u>		
Arcadis Project No.:	<u>30063832</u>		
Primary Agency/Regulatory ID No.:	<u>Washington State Department of Ecology Southwest Regional Office, Toxics Cleanup Program Andrew Smith / Agreed Order No. DE 03TCPSR-5715</u>		

WORK CONDUCTED THIS PERIOD [Second Half 2022]:

1. Conducted semi-annual groundwater monitoring and sampling on July 20, 2022.
2. Prepared the *Semi-Annual Status Report, Second Half 2022*.
3. Met with the Washington State Department of Ecology on August 30, 2022 to discuss site status and path forward to support a no further action determination.

WORK PROPOSED NEXT PERIOD [First Half 2023]:

1. Conduct semi-annual groundwater monitoring and sampling during the first quarter of 2023.
2. Prepare the *Semi-Annual Status Report, First Half 2023*.

Current Phase of Project:	<u>Monitoring</u>	
Frequency of Monitoring / Sampling:	<u>Semi-Annual (Q1/Q3)</u>	
Is Light Non-Aqueous Phase Liquid (LNAPL) Present On-site:	<u>None</u>	
Cumulative LNAPL Recovered to Date:	<u>None</u>	(gallons)
Approximate Depth to Groundwater:	<u>2.65 to 5.18</u>	(feet below top of casing)
Approximate Groundwater Elevation:	<u>945.87 to 947.01</u>	(feet above NAVD 88)
Groundwater Flow Direction	<u>South-southeast</u>	

Groundwater Gradient	0.009	(feet per foot)
Current Remediation Techniques:	None	
Permits for Discharge:	Not Applicable	
Summary of Unusual Activity:	Wells MW-11 and MW-12 were unable to be located	
Agency Directive Requirements:	See Attachment A	

DISCUSSION

Arcadis U.S. Inc's (Arcadis), subcontractor Blaine Tech Services conducted semi-annual groundwater monitoring activities on July 20, 2022. Groundwater monitoring activities were conducted in general accordance with the regulatory directive dated April 24, 2017 (Attachment A). The groundwater monitoring program includes gauging and sampling monitoring wells MW-7, MW-11, MW-12, MW-13, MW-15, MW-16 and MW-17. During the July 2022 sampling event, monitoring wells MW-11 and MW-12 were covered by gravel and unable to be accessed for routine gauging and sampling.

Wells were samples via low-flow purge using a peristaltic pump and dedicated disposable tubing prior to collection of the samples. Field parameters including pH, temperature, electrical conductivity, turbidity, dissolved oxygen, and oxidation reduction potential were collected during the purging process with a multiparameter water quality meter and flow-through cell. Field parameters were allowed to stabilize prior to collecting samples. The groundwater monitoring field data sheets are included as Attachment B.

Following stabilization, samples were collected in pre-preserved laboratory-provided bottles and placed in a cooler with ice. Groundwater samples were submitted to Pace Analytical, located in Mount Juliet, Tennessee, an Ecology-accredited laboratory, under standard chain-of-custody protocols. Groundwater samples were analyzed for the following:

- Total petroleum hydrocarbons as gasoline range organics (GRO) by Northwest Method NWTPH-Gx
- Total petroleum hydrocarbons as diesel range organics (DRO) and total petroleum hydrocarbons as heavy oil range organics (HRO) by Northwest NWTPH-Dx
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX) by United States Environmental Protection Agency Method 8260

A blind duplicate groundwater sample was collected from MW-17 for data quality assurance.

A site location map and a site plan are shown on Figures 1 and 2, respectively. Groundwater gauging data and analytical results are presented in Table 1. The calculated groundwater flow direction is to the south-southeast with a hydraulic gradient of 0.009 feet/foot. Historically, groundwater flow direction at the

site has been predominately to the south-southeast. Groundwater elevation contours summarizing the July 2022 event and a rose diagram of historical flow direction are presented on Figure 3.

Light non-aqueous phase liquid (LNAPL) was not observed in site monitoring wells during the sampling event. Groundwater analytical results for samples collected from monitoring wells were either less than the Model Toxics Control Act (MTCA) Method A Cleanup Level (CULs) or were not detected at concentrations greater than the laboratory reporting limit, with the exception of the following locations:

- Monitoring well MW-7 and MW-16 exceeded the MTCA Method A CUL (500 micrograms per liter [$\mu\text{g/L}$]) for DRO at detected concentrations of 1,440 and 731 $\mu\text{g/L}$, respectively.
- Monitoring well MW-7 exceeded the MTCA Method A CUL (500 micrograms per liter $\mu\text{g/L}$) for HRO at a detected of 513 $\mu\text{g/L}$.

Groundwater analytical results map summarizing the second semi-annual sampling event of 2022 is shown on Figure 4. The analytical laboratory report and chain-of-custody documentation are provided in Attachment C.

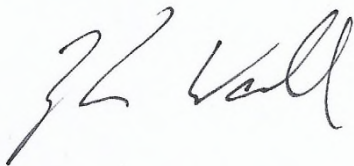
LIMITATIONS

This report was prepared in accordance with the scope of work outlined in Arcadis' contract and with generally accepted professional engineering and environmental consulting practices existing at the time this report was prepared and applicable to the location of the site. It was prepared for the exclusive use of Chevron Environmental Management Company for the express purpose stated above. Any re-use of this report for a different purpose or by others not identified above shall be at the user's sole risk without liability to Arcadis. To the extent that this report is based on information provided to Arcadis by third parties, Arcadis may have made efforts to verify this third-party information, but Arcadis cannot guarantee the completeness or accuracy of this information. The opinions expressed and data collected are based on the conditions of the site existing at the time of the field investigation. No other warranties expressed or implied are made by Arcadis.



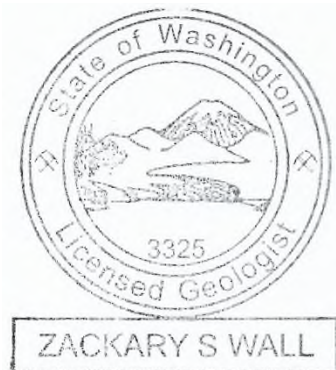
Date: December 22, 2022

Carl Donovan
Project Manager



Date: December 22, 2022

Zackary S. Wall
Licensed Geologist



ATTACHMENTS:

Table 1	Groundwater Gauging and Analytical Results Fourth Quarter 2004 to Current
Figure 1	Site Location Map
Figure 2	Site Plan
Figure 3	Groundwater Elevation Contour Map, July 20, 2022
Figure 4	Groundwater Analytical Map, July 20, 2022
Attachment A	Regulatory Directive, April 24, 2017
Attachment B	Field Data Sheets
Attachment C	Laboratory Report and Chain-of-Custody Documentation

TABLE



Table 1
Groundwater Gauging Data and Analytical Results Fourth Quarter 2004 to Current
 Former Standard Oil Bulk Plant No. 302095
 149 and 167 Main Street
 Morton, Washington



Well	Date	Screen Interval (ft. bTOC)	Top of Casing (ft. above NAVD 88)	Depth to Water (ft. bTOC)	Groundwater Elevation (ft. above NAVD 88)	GRO	DRO	DRO w/ Si Gel	HRO	HRO w/ Si Gel	Benzene	Toluene	Ethylbenzene	Total Xylenes	Methyl tert-butyl ether	Dissolved Lead	Total Lead	Naphthalene	Comments
MTCA Method A CULs						800/1,000	500	500	500	500	5	1000	700	1000	20	15	15	160	
MW-20	11/21/2012	3-18	98.92	1.93	96.99	<50	<28	--	<66	--	<0.5	<0.5	<0.5	<1.5	--	--	--	--	
MW-20	2/7/2013	3-18	98.92	2.40	96.52	<50	<28	--	<66	--	<0.5	<0.5	<0.5	<1.5	--	--	--	--	
MW-20	5/10/2013	3-18	98.92	4.06	94.86	<50	<29	--	<68	--	<0.5	<0.5	<0.5	<1.5	--	--	--	--	
MW-20	8/8/2013	3-18	98.92	6.18	92.74	<50	<29	--	<67	--	<0.5	<0.5	<0.5	<1.5	--	--	--	--	
MW-20	10/22/2013	3-18	98.92	3.81	95.11	<50	<30	--	<70	--	<0.5	<0.5	<0.5	<1.5	--	--	--	--	
MW-20	2/25/2014	3-18	98.92	2.26	96.66	<50	<29	--	<67	--	<0.5	<0.5	<0.5	<1.5	--	--	--	--	
MW-20	5/29/2014	3-18	98.92	2.76	96.16	<50	<29	--	<67	--	<0.5	<0.5	<0.5	<1.5	--	--	--	--	
MW-20	8/26/2014	3-18	98.92	6.08	92.84	<50	30	--	<66	--	<0.5	<0.5	<0.5	<1.5	--	--	--	--	
MW-20	11/3/2014	3-18	98.92	1.90	97.02	<50	<28	--	<66	--	<0.5	<0.5	<0.5	<1.5	--	--	--	--	
MW-20	3/23-24/2015	3-18	98.92	1.98	96.94	<50	<29	--	<68	--	<0.5	<0.5	<0.5	<1.5	--	--	--	--	
MW-20	5/26-27/2015	3-18	98.92	4.88	94.04	<50	<29	--	<68	--	<0.5	<0.5	<0.5	<1.5	--	--	--	--	
MW-20	8/13/2015	3-18	98.92	7.81	91.11	<50	89	--	<100	--	<0.5	<0.5	<0.5	<1.5	--	--	--	--	
MW-20	11/16-17/2015	3-18	98.92	2.20	96.72	<50	<45	--	<100	--	<0.5	<0.5	<0.5	<1.5	--	--	--	--	
MW-20	2/21-22/2016	3-18	98.92	1.94	96.98	<50	<46	--	<100	--	<0.5	<0.5	<0.5	<1.5	--	--	--	--	
MW-20	5/15-16/2016	3-18	98.92	3.89	95.03	<50	<47	--	<100	--	<0.5	<0.5	<0.5	<1.5	--	--	--	--	
MW-20	8/15-16/2016	3-18	98.92	5.76	93.16	<50	300	--	<100	--	<0.2	<0.2	<0.2	<0.2	--	--	--	--	
MW-20	11/15/2016	3-18	98.92	1.84	97.08	<50	<45	--	<100	--	<0.2	<0.2	<0.2	<0.2	--	--	--	--	
MW-20	1/10/2019	3-18	98.92	--	--						NOT PART OF MONITORING PROGRAM								

WELL ABANDONED MARCH 2018

Notes:

Results reported in micrograms per liter (µg/L)

BOLD and highlighted values are greater than their respective MTCA Method A cleanup level

BOLD values are non-detect below the laboratory reporting limit (RL), but the RL is greater than the MTCA Method A cleanup level

Laboratory analytical methods for historical data may not be consistent with current analytical methods. Consult laboratory reports for historical analytical methods used.

Top of Casing data prior to first quarter of 2020 was measured relative to arbitrary 100-foot elevation.

Top of Casing data after the first quarter of 2020 (02/12/20) measured relative to North American Vertical Datum of 1988 (NAVD 88).

¹ = The requirement for no headspace at the time of analysis was not met. The container used for the testing had headspace at the time of analysis.

800/1,000 = GRO MTCA Method A CUL with benzene present is 800 µg/L and without is 1,000 µg/L.

Abbreviations:

-- = Not applicable, not available, or not analyzed

BTEX = benzene, toluene, ethylbenzene, and xylenes

CUL = Cleanup Level

DUP = Blind duplicate sample results

ft. bTOC = feet below top of casing

ft. above NAVD 88 = feet above North American Vertical Datum of 1988

MTCA = Model Toxics Control Act

MW = groundwater monitoring well

DRO = Total Petroleum Hydrocarbon as Diesel Range Organics

DRO w/ SGT = Total Petroleum Hydrocarbon as Diesel Range Organics w/ Silica Gel Treatment

GRO = Total Petroleum Hydrocarbons as Gasoline-Range Organics

HRO = Total Petroleum Hydrocarbons as Heavy Oil Range Organics

Laboratory Qualifiers:

< = Not detected at or above the laboratory RL

J = The associated numerical value is an estimated concentration only

B = The same analyte is found in the associated blank

Current Analytical Methods:

GRO analyzed by Method NWTPH-Gx

BTEX analyzed by the United States Environmental Protection Agency Method 8260D

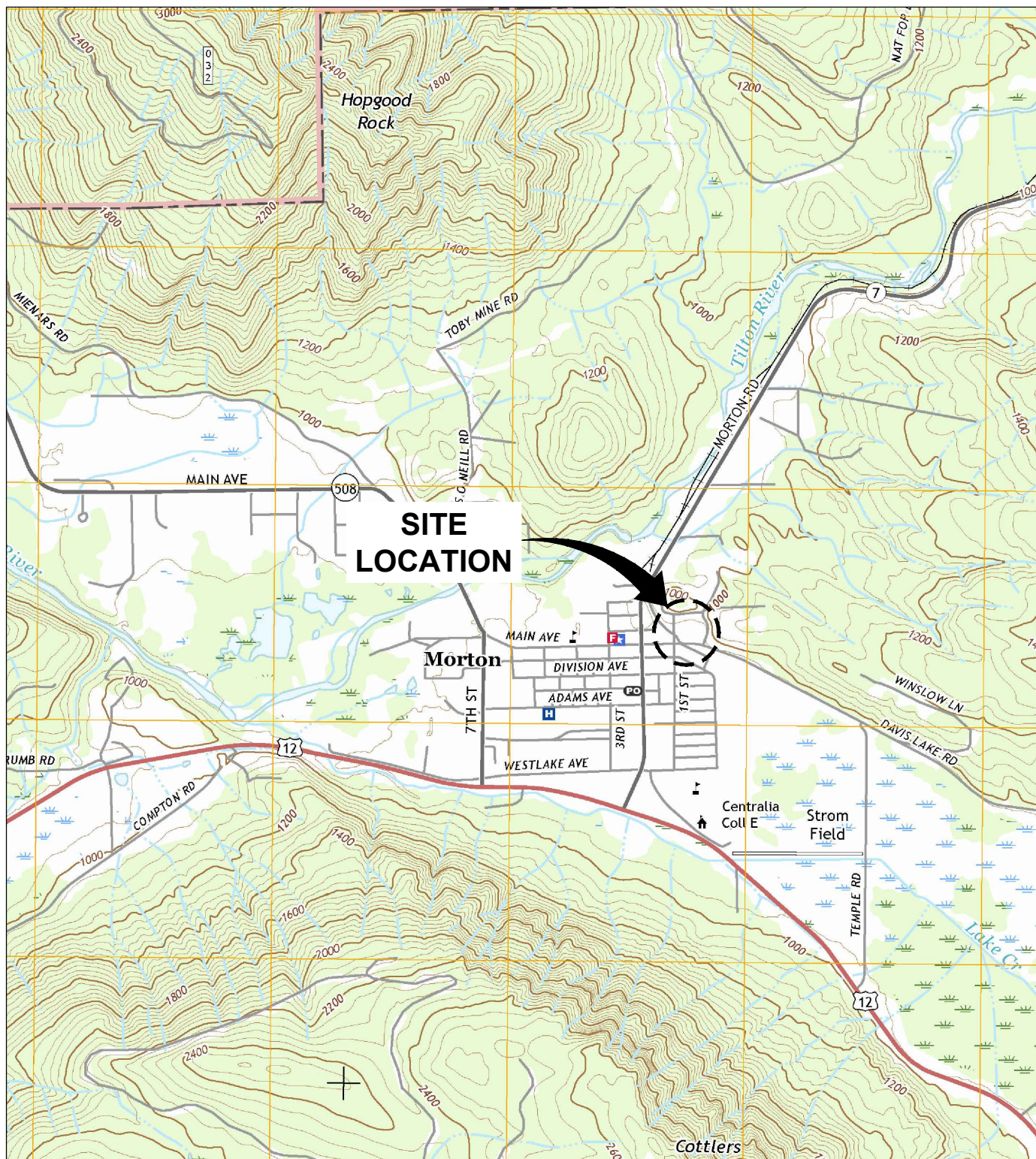
DRO analyzed by NWTPH-Dx

DRO w/ Si Gel analyzed by NWTPHDx-SGT

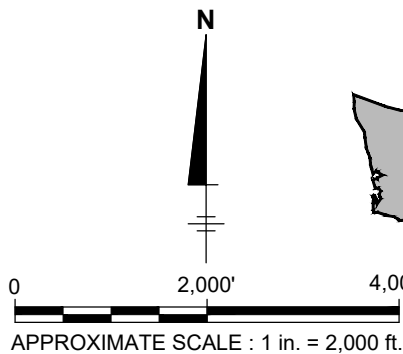
HRO analyzed by NWTPH-Dx-NO SGT

FIGURES





SOURCE: BASE MAP USGS 7.5. MIN. TOPO. QUAD., MORTON, WA 2017.



WASHINGTON

FORMER STANDARD OIL BULK PLANT NO. 302095
 149 & 167 MAIN STREET
 MORTON, WASHINGTON

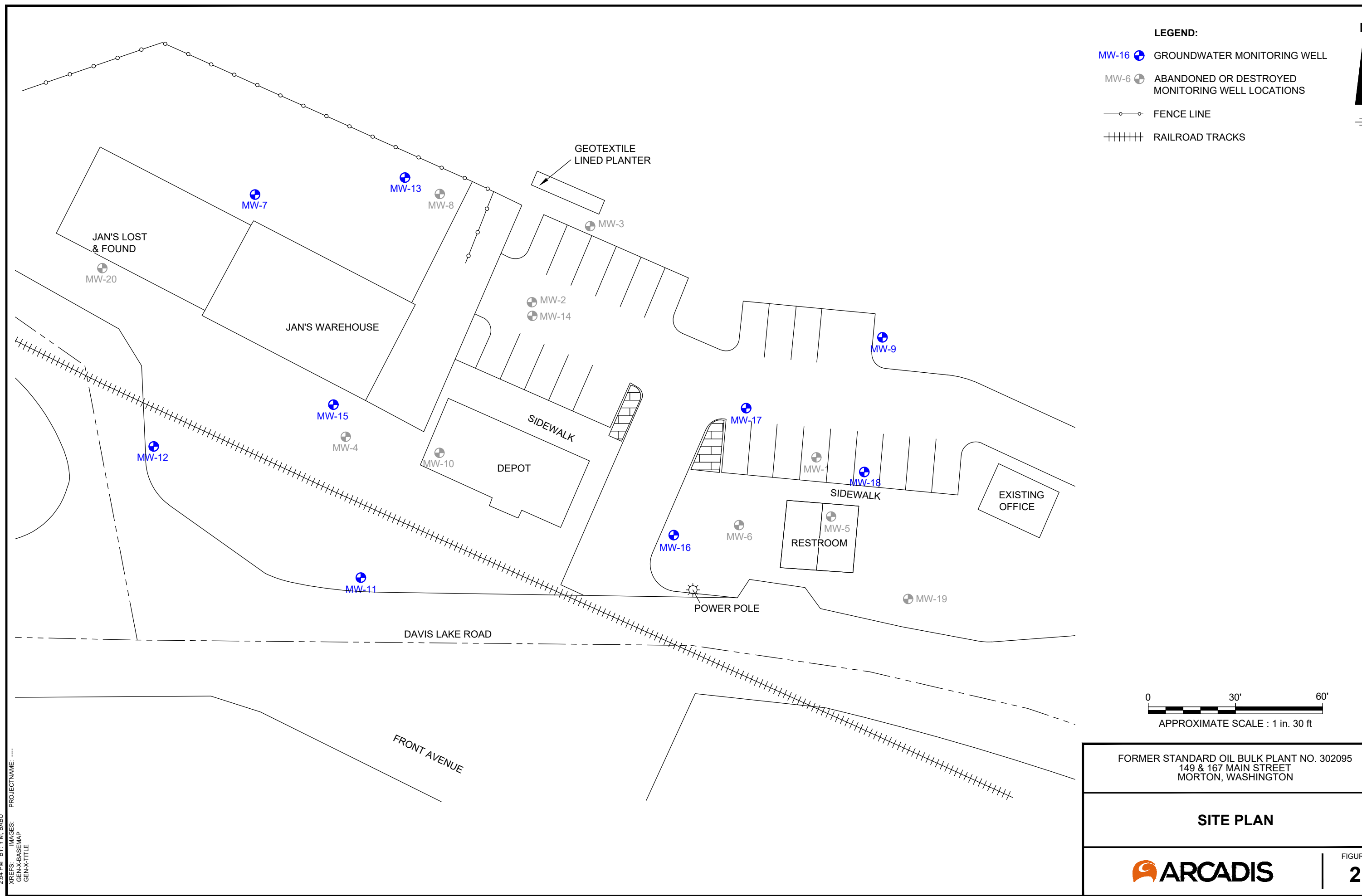
SITE LOCATION MAP



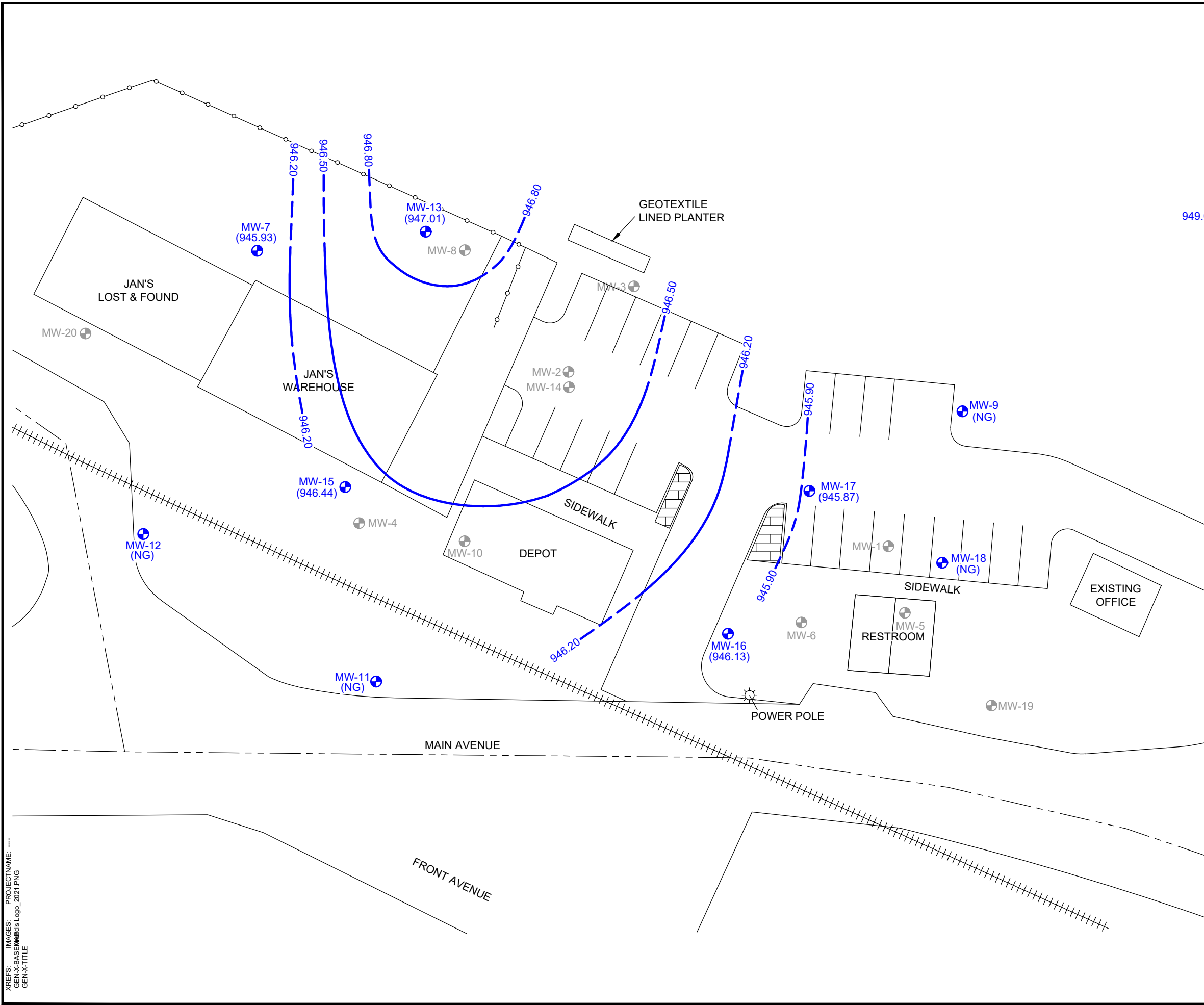
FIGURE

1

C:\Users\YMB2640\ACCD\os\ARCAD\IAUS-CHEVRON-302095-MORTON WASHINGTON\PROJECT FILES\2021\01-1N PROGRESS\01-DWG\GEN-F02-SITE PLAN.dwg LAYOUT: 2. SAVED: 7/30/2021 12:16 PM ACADVER: 23.1S (LMS TECH) PAGES: 23. PLOTTED: 7/30/2021 2:54 PM BY: Y.M. BABU
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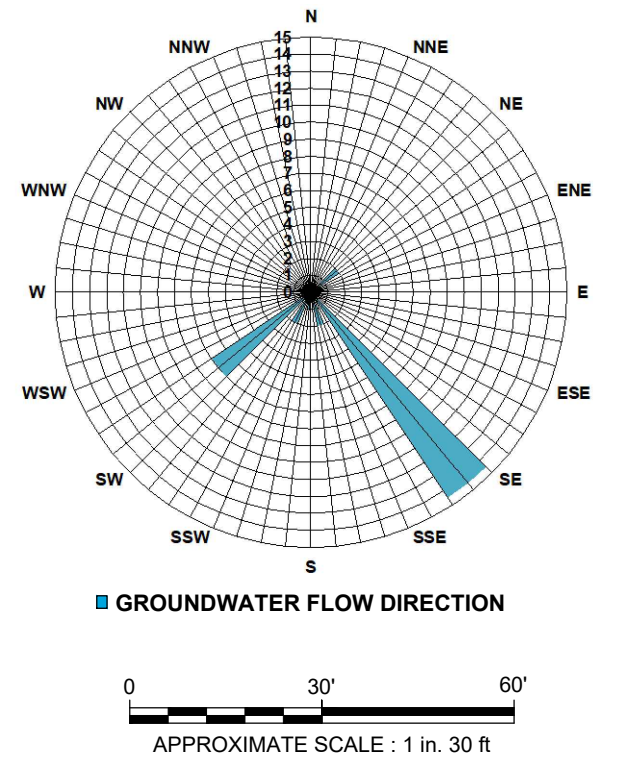


FORMER STANDARD OIL BULK PLANT NO. 302095 149 & 167 MAIN STREET MORTON, WASHINGTON	
SITE PLAN	
	FIGURE 2



LEGEND:

- MW-16 GROUNDWATER MONITORING WELL
- MW-6 ABANDONED OR DESTROYED MONITORING WELL LOCATIONS
- FENCE LINE
- RAILROAD TRACKS
- (947.01) GROUNDWATER ELEVATION (FEET ABOVE NAVD 88)
- 949.00 GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
- (NG) NOT GAUGED
- NAVD 88 NORTH AMERICAN VERTICAL DATUM OF 1988

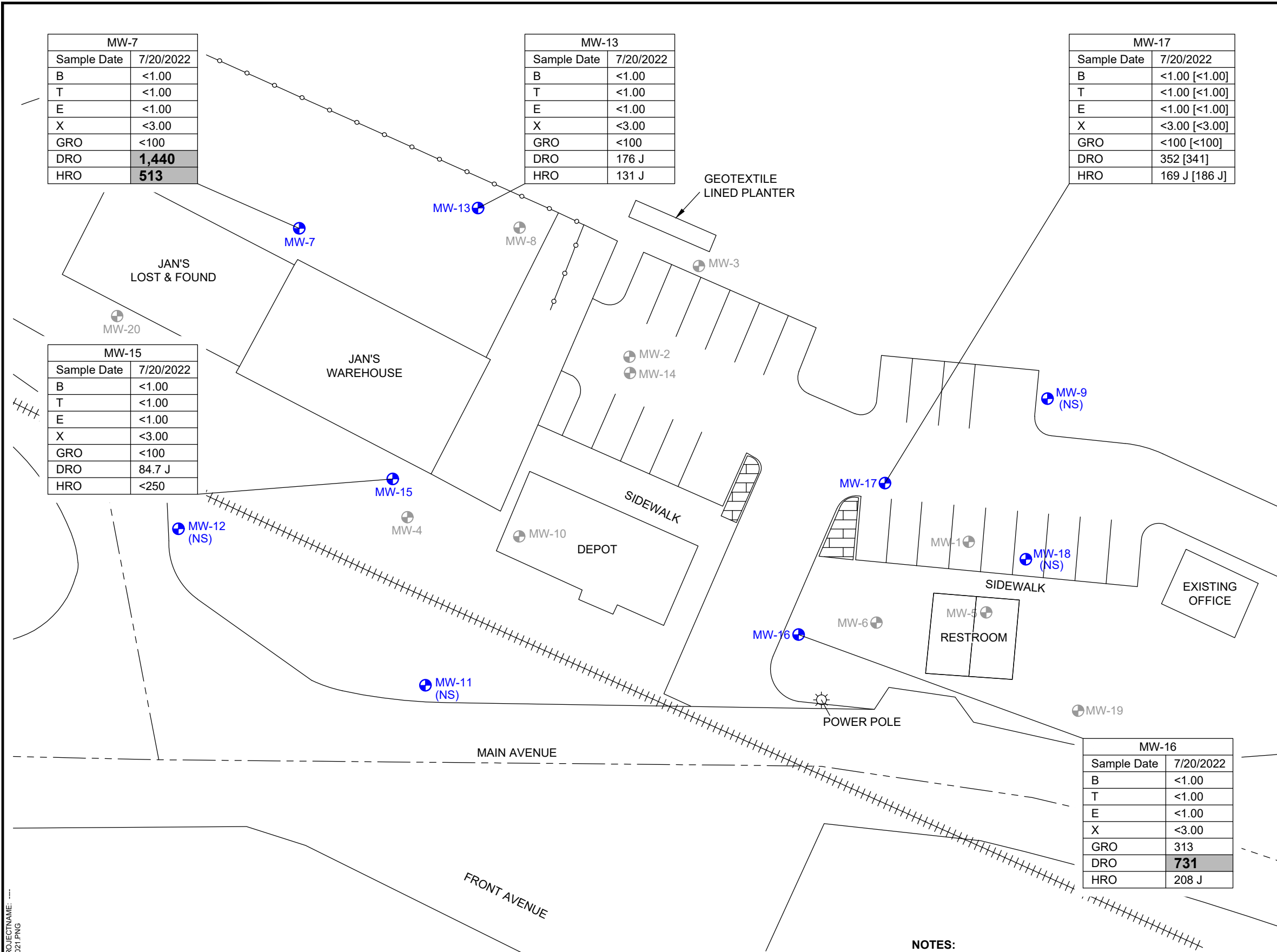


FORMER STANDARD OIL BULK PLANT NO. 302095
149 & 167 MAIN STREET
MORTON, WASHINGTON

**GROUNDWATER ELEVATION
CONTOUR MAP
JULY 20, 2022**

ARCADIS

FIGURE
3



LEGEND:

MW-16 GROUNDWATER MONITORING WELL

MW-6 ABANDONED OR DESTROYED MONITORING WELL LOCATIONS

FENCE LINE

RAILROAD TRACKS

BOLD BOLD AND HIGHLIGHTED VALUES ARE GREATER THAN THEIR RESPECTIVE MODEL TOXIC CONTROL ACT (MTCA) METHOD A CLEANUP LEVEL

<1.00 NOT DETECTED AT OR ABOVE THE LABORATORY REPORTED DETECTION LIMIT

J THE ASSOCIATED NUMERICAL VALUE IS AN ESTIMATED CONCENTRATION ONLY

[] DUPLICATE SAMPLE RESULTS

(NS) NOT SAMPLED

MTCA METHOD A CLEANUP LEVELS		
ABBREVIATION	CONSTITUENT	MTCA METHOD A CLEANUP LEVEL
B	BENZENE	5
T	TOLUENE	1,000
E	ETHYLBENZENE	700
X	TOTAL XYLENES	1,000
GRO	TOTAL PETROLEUM HYDROCARBONS AS GASOLINE RANGE ORGANICS	800/1,000
DRO	TOTAL PETROLEUM HYDROCARBONS AS DIESEL RANGE ORGANICS	500
HRO	TOTAL PETROLEUM HYDROCARBONS AS HEAVY OIL RANGE ORGANICS	500



- NOTES:**
- ALL CONCENTRATIONS REPORTED IN MICROGRAMS PER LITER (µg/L).
 - TPH-GRO MTCA METHOD A CLEANUP LEVEL IS 800 (µg/L) IF BENZENE PRESENT IN GROUNDWATER AND 1,000 (µg/L) IF NO DETECTABLE BENZENE IN GROUNDWATER.

FORMER STANDARD OIL BULK PLANT NO. 302095
149 & 167 MAIN STREET
MORTON, WASHINGTON

GROUNDWATER ANALYTICAL MAP
JULY 20, 2022

FIGURE
4

ATTACHMENT A

Regulatory Directive, April 24, 2017





STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

PO Box 47775 • Olympia, Washington 98504-7775 • (360) 407-6300
711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

April 24, 2017

Electronic Copy

Mr. Don Wyll
Principal Project Manager
Leidos
18912 North Creek Parkway, Suite 101
Bothell, WA 98011

Re: Former Chevron Bulk Plant (Wolfe and Parks Property), Morton, Washington.
Compliance Groundwater Monitoring Modifications Approval Letter.

Dear Mr. Wyll:

I reviewed your proposed modifications to the Compliance Groundwater Monitoring Plan (copy enclosed) for the Former Chevron Bulk Plant (Wolfe and Parks Property) Site located at 149 and 167 Main Street, Morton, Washington. I also reviewed the results of the groundwater monitoring conducted at this Site from 2004 through 2016.

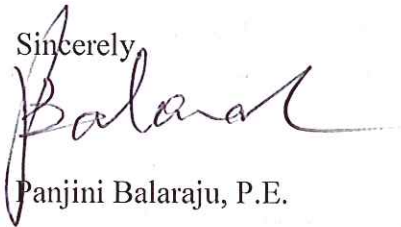
Based on my review of the above information, Ecology is here by approving your request except the abandonment of monitoring wells MW-13 and MW-17. Ecology's approval include the following:

- Reduction in the sampling frequency from quarterly to semi-annual.
- Reduction in the number of monitoring wells from twelve to five (MW-7, MW-11, MW-12, MW-15 and MW-16) for chemical analysis.
- Abandonment of four monitoring wells (MW-14, MW-18, MW-19 and MW-2). Based on the results of groundwater monitoring, Ecology understands that the contaminant concentrations in these wells were either below the laboratory detection limits or below the Model Toxics Control Act (MTCA) Method A cleanup levels since December 2008 (30 rounds of monitoring). Since continued monitoring of these wells will not provide any valuable information, it is Ecology's opinion that it is appropriate to discontinue the monitoring and abandon these wells.

- Ecology would like to retain the monitoring wells MW-13 and MW-17 just for water level measurements. Ecology believes that measurement of water level elevations in seven wells (MW-7, MW-11, MW-12, MW-13, MW-15, MW-16 and MW-17) will aid to develop a more accurate groundwater flow direction at the site.
- The two rounds of semi-annual groundwater monitoring must reflect the lowest and highest water level elevations (seasons). Please review the existing water level elevation data and select two rounds (seasons) for reflecting the lowest and highest water level conditions at the Site. These two rounds may coincide with the summer and winter seasons.

If you have any questions, regarding this approval, please call me at (360) 407-6335.

Sincerely,

A handwritten signature in black ink, appearing to read "Balaraju", with a stylized flourish extending to the right.

Panjini Balaraju, P.E.

By Certified Mail: [91 7199 9991 7037 0279 7772]

Enclosure: (1)

cc: Central File

ATTACHMENT B

Field Data Sheets



Project Number	30063832	Well ID	MW-7	Date	7/20/2022	
Site Location	Morton, Washington	Site ID	302095	Weather (°F)	Clear	Sampled by Lee Bures
Measuring Point Description	Top of Casing	Screen Depth Interval (ft-bmp)	5 to 19	Casing Diameter (in.)	2	Well Casing Material --
Static Water Level (ft-bmp)	5.18	Total Depth (ft-bmp)	18.98	Water Column (ft)	13.80	Gallons in Well 2.24
Water Quality Meter Make/Model	Hach 2100Q, YSI 556 MP5	Purge Method	Low-Flow	Sample Method	Grab	
Sample Time	11:51	Well Volumes Purged	0.35	Sample ID	MW-7-W-20220720	Evacuation Equipment Peristaltic
Purge Start	11:33	Gallons Purged	0.79	Duplicate ID	--	
Purge End	11:48	Total Purge Time (h:m)	0:15			

Time	Rate (ml/min)	Depth to Water (ft)	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
									Color	Odor
11:36	200	5.18	8.47	0.150	50.0	0.90	14.94	171.7	Clear	--
11:39	200	5.18	8.96	0.149	56.0	0.77	14.94	172.9	Clear	--
11:42	200	5.18	8.94	0.145	55.0	0.76	15.00	169.3	Clear	--
11:45	200	5.18	8.92	0.141	57.0	0.74	15.06	166.7	Clear	--
11:48	200	5.18	8.90	0.141	56.0	0.73	15.05	163.6	Clear	--

Comments: None

Well Casing Volume Conversion

Well diameter (in.) = 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
 gallons per foot 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Sample Information

Sample ID: MW-7-W-20220720 Sample Time: 11:51 Sample Depth (ft-bmp): 12
 Analytes and Methods: See Chain-of-Custody.

ft-bmp = feet below measuring point
 in. = inches
 ft = feet
 mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 mg/L = milligrams per liter
 PVC = Polyvinyl Chloride

mV = millivolts
 °F = degrees Fahrenheit
 °C = degrees Celsius
 -- = Not Recorded

Project Number	30063832	Well ID	MW-13	Date	7/20/2022	
Site Location	Morton, Washington	Site ID	302095	Weather (°F)	Clear	Sampled by Lee Bures
Measuring Point Description	Top of Casing	Screen Depth Interval (ft-bmp)	3 to 18	Casing Diameter (in.)	2	Well Casing Material --
Static Water Level (ft-bmp)	4.31	Total Depth (ft-bmp)	16.54	Water Column (ft)	12.23	Gallons in Well 1.99
Water Quality Meter Make/Model	Hach 2100Q, YSI 556 MP5	Purge Method	Low-Flow	Sample Method	Grab	
Sample Time	11:21	Well Volumes Purged	0.40	Sample ID	MW-13-W-20220720	Evacuation Equipment Peristaltic
Purge Start	11:03	Gallons Purged	0.79	Duplicate ID	--	
Purge End	11:18	Total Purge Time (h:m)	0:15			

Time	Rate (ml/min)	Depth to Water (ft)	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
									Color	Odor
11:06	200	4.31	8.96	0.224	169	0.71	17.26	181.7	Clear	--
11:09	200	4.31	9.99	0.223	168	0.61	17.03	181.2	Clear	--
11:12	200	4.31	9.53	0.223	170	0.56	17.07	178.7	Clear	--
11:15	200	4.31	9.49	0.222	171	0.54	17.11	175.5	Clear	--
11:18	200	4.31	9.45	0.222	174	0.53	17.14	172.1	Clear	--

Comments: None

Well Casing Volume Conversion

Well diameter (in.) = 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
gallons per foot 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Sample Information

Sample ID: MW-13-W-20220720 Sample Time: 11:21 Sample Depth (ft-bmp): 10.25
Analytes and Methods: See Chain-of-Custody.

ft-bmp = feet below measuring point
in. = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
PVC = Polyvinyl Chloride

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius
-- = Not Recorded

Project Number	30063832	Well ID	MW-15	Date	7/20/2022	
Site Location	Morton, Washington	Site ID	302095	Weather (°F)	Clear	Sampled by Lee Bures
Measuring Point Description	Top of Casing	Screen Depth Interval (ft-bmp)	3 to 18	Casing Diameter (in.)	2	Well Casing Material --
Static Water Level (ft-bmp)	2.65	Total Depth (ft-bmp)	17.48	Water Column (ft)	14.83	Gallons in Well 2.41
Water Quality Meter Make/Model	Hach 2100Q, YSI 556 MP5	Purge Method	Low-Flow	Sample Method	Grab	
Sample Time	10:49	Well Volumes Purged	0.33	Sample ID	MW-15-W-20220720	Evacuation Equipment Peristaltic
Purge Start	10:31	Gallons Purged	0.79	Duplicate ID	--	
Purge End	10:46	Total Purge Time (h:m)	0:15			

Time	Rate (ml/min)	Depth to Water (ft)	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
									Color	Odor
10:34	200	3.14	8.77	0.176	39.0	1.05	20.31	175.4	Clear	--
10:37	200	3.14	8.61	0.176	23.0	1.06	20.34	171.1	Clear	--
10:40	200	3.14	8.68	0.180	21.0	1.02	20.40	167.8	Clear	--
10:43	200	3.14	8.72	0.182	21.0	1.00	20.48	164	Clear	--
10:46	200	3.14	8.73	0.184	22.0	0.99	20.46	161.6	Clear	--

Comments: None

Well Casing Volume Conversion

Well diameter (in.) = 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
gallons per foot 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Sample Information

Sample ID: MW-15-W-20220720 Sample Time: 10:49 Sample Depth (ft-bmp): 10
Analytes and Methods: See Chain-of-Custody.

ft-bmp = feet below measuring point
in. = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
PVC = Polyvinyl Chloride

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius
-- = Not Recorded

Project Number	30063832	Well ID	MW-16	Date	7/20/2022	
Site Location	Morton, Washington	Site ID	302095	Weather (°F)	Clear	Sampled by Lee Bures
Measuring Point Description	Top of Casing	Screen Depth Interval (ft-bmp)	3 to 18	Casing Diameter (in.)	2	Well Casing Material --
Static Water Level (ft-bmp)	3.76	Total Depth (ft-bmp)	18.57	Water Column (ft)	14.81	Gallons in Well 2.41
Water Quality Meter Make/Model	Hach 2100Q, YSI 556 MP5	Purge Method	Low-Flow	Sample Method	Grab	
Sample Time	09:43	Well Volumes Purged	0.33	Sample ID	MW-16-W-20220720	Evacuation Equipment Peristaltic
Purge Start	09:25	Gallons Purged	0.79	Duplicate ID	--	
Purge End	09:40	Total Purge Time (h:m)	0:15			

Time	Rate (ml/min)	Depth to Water (ft)	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
									Color	Odor
09:28	200	4.31	10.71	0.227	36.0	0.79	16.93	258.4	Clear	--
09:31	200	4.31	10.68	0.227	29.0	0.75	17.05	246.3	Clear	--
09:34	200	4.31	10.65	0.238	27.0	0.70	18.32	241.3	Clear	--
09:37	200	4.31	10.63	0.237	27.0	0.67	18.56	236.7	Clear	--
09:40	200	4.31	10.60	0.239	26.0	0.66	18.51	231.9	Clear	--

Comments: None

Well Casing Volume Conversion

Well diameter (in.) = 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
gallons per foot 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Sample Information

Sample ID: MW-16-W-20220720 Sample Time: 09:43 Sample Depth (ft-bmp): 11.25
Analytes and Methods: See Chain-of-Custody.

ft-bmp = feet below measuring point
in. = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
PVC = Polyvinyl Chloride

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius
-- = Not Recorded

Project Number	30063832	Well ID	MW-17	Date	7/20/2022	
Site Location	Morton, Washington	Site ID	302095	Weather (°F)	Clear	Sampled by Lee Bures
Measuring Point Description	Top of Casing	Screen Depth Interval (ft-bmp)	3 to 18	Casing Diameter (in.)	2	Well Casing Material --
Static Water Level (ft-bmp)	3.98	Total Depth (ft-bmp)	17.87	Water Column (ft)	13.89	Gallons in Well 2.26
Water Quality Meter Make/Model	Hach 2100Q, YSI 556 MP5	Purge Method	Low-Flow	Sample Method	Grab	
Sample Time	10:11	Well Volumes Purged	0.35	Sample ID	MW-17-W-20220720	Evacuation Equipment Peristaltic
Purge Start	09:53	Gallons Purged	0.79	Duplicate ID	BD-W-20220720	
Purge End	10:08	Total Purge Time (h:m)	0:15			

Time	Rate (ml/min)	Depth to Water (ft)	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
									Color	Odor
09:56	200	4.16	10.53	0.291	108	1.03	17.24	192.9	Clear	--
09:59	200	4.16	8.30	0.289	68.0	0.95	17.26	180.6	Clear	--
10:02	200	4.16	8.69	0.291	58.0	0.94	18.10	175.2	Clear	--
10:05	200	4.16	8.72	0.294	55.0	0.92	18.15	170.7	Clear	--
10:08	200	4.16	8.75	0.297	53.0	0.90	18.21	166	Clear	--

Comments: None

Well Casing Volume Conversion

Well diameter (in.) = 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
gallons per foot 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Sample Information

Sample ID: MW-17-W-20220720 Sample Time: 10:11 Sample Depth (ft-bmp): 11
Analytes and Methods: See Chain-of-Custody.

ft-bmp = feet below measuring point
in. = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
PVC = Polyvinyl Chloride

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius
-- = Not Recorded



Groundwater Gauging Log

Project Number		30063832						
Client:		Chevron						
Site ID:		302095						
Site Location:		Morton, Washington						
Measuring Point:		Top of Casing						
Date(s):		07/20/2022						
Sampler(s):		Lee Bures						
Gauging Equipment:		Water Level Meter						
Well ID	Date	Gauging Time	Static Water Level (ft bmp)	Depth to Product (ft bmp)	Total Depth (ft bmp)	PID Reading (ppm)	LNAPL Removed (gal)	Comments
MW-7	07/20/2022	09:09	5.18	ND	18.98	--	--	--
MW-13	07/20/2022	09:11	4.31	ND	16.54	--	--	--
MW-15	07/20/2022	09:05	2.65	ND	17.48	--	--	--
MW-16	07/20/2022	08:57	3.76	ND	18.57	--	--	--
MW-17	07/20/2022	09:00	3.98	ND	17.87	--	--	--

ft-bmp = feet below measuring point

ppm = parts per million

ND = Not Detected

-- = Not Recorded

PID = Photoionization Detector Reading

ATTACHMENT C

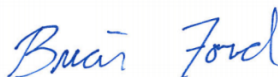
Laboratory Report and Chain-of-Custody Documentation



Arcadis - Chevron - WA

Sample Delivery Group: L1517403
Samples Received: 07/21/2022
Project Number: 30063832
Description: 302095
Site: MAIN AVE, MORTON, WA 98356
Report To: Sydney Clark
1100 Olive Way
Suite 800
Seattle, WA 98101

Entire Report Reviewed By:



Brian Ford
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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¹ Cp
² Tc
³ Ss
⁴ Cn
⁵ Sr
⁶ Qc
⁷ Gl
⁸ Al
⁹ Sc

SAMPLE SUMMARY

MW-7-W-20220720 L1517403-01 GW

Collected by
Christina Mroz

Collected date/time
07/20/22 11:51

Received date/time
07/21/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1900795	1	07/26/22 13:22	07/26/22 13:22	MGF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1899588	1	07/23/22 03:30	07/23/22 03:30	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1901347	1	07/27/22 09:20	07/28/22 19:58	DMG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1901347	1	07/27/22 09:20	08/01/22 21:19	DMG	Mt. Juliet, TN

MW-13-W-20220720 L1517403-02 GW

Collected by
Christina Mroz

Collected date/time
07/20/22 11:21

Received date/time
07/21/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1900795	1	07/26/22 13:45	07/26/22 13:45	MGF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1899588	1	07/23/22 03:51	07/23/22 03:51	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1901347	1	07/27/22 09:20	07/28/22 20:18	DMG	Mt. Juliet, TN

MW-15-W-20220720 L1517403-03 GW

Collected by
Christina Mroz

Collected date/time
07/20/22 10:49

Received date/time
07/21/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1900795	1	07/26/22 14:08	07/26/22 14:08	MGF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1899588	1	07/23/22 04:11	07/23/22 04:11	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1901347	1	07/27/22 09:20	07/28/22 20:39	DMG	Mt. Juliet, TN

MW-16-W-20220720 L1517403-04 GW

Collected by
Christina Mroz

Collected date/time
07/20/22 09:43

Received date/time
07/21/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1901091	1	07/26/22 21:09	07/26/22 21:09	MGF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1899588	1	07/23/22 04:32	07/23/22 04:32	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1901347	1	07/27/22 09:20	07/28/22 20:59	DMG	Mt. Juliet, TN

MW-17-W-20220720 L1517403-05 GW

Collected by
Christina Mroz

Collected date/time
07/20/22 10:11

Received date/time
07/21/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1901091	1	07/26/22 21:31	07/26/22 21:31	MGF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1899588	1	07/23/22 04:53	07/23/22 04:53	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1901347	1	07/27/22 09:20	07/28/22 21:19	DMG	Mt. Juliet, TN

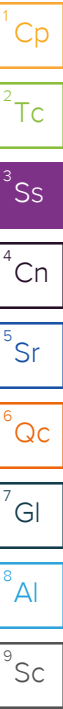
BD-W-20220720 L1517403-06 GW

Collected by
Christina Mroz

Collected date/time
07/20/22 12:00

Received date/time
07/21/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1901091	1	07/26/22 21:53	07/26/22 21:53	MGF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1899588	1	07/23/22 05:13	07/23/22 05:13	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1901347	1	07/27/22 09:20	07/28/22 21:39	DMG	Mt. Juliet, TN



SAMPLE SUMMARY

TB-W-20220720 L1517403-07 GW

Collected by
Christina Mroz

Collected date/time
07/20/22 08:00

Received date/time
07/21/22 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1901091	1	07/26/22 20:48	07/26/22 20:48	MGF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1899588	1	07/23/22 03:09	07/23/22 03:09	DWR	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Brian Ford
Project Manager

- ¹ Cp
- ² Tc
- ³ Ss
- ⁴ Cn
- ⁵ Sr
- ⁶ Qc
- ⁷ Gl
- ⁸ Al
- ⁹ Sc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	U		31.6	100	1	07/26/2022 13:22	WG1900795
(S) a,a,a-Trifluorotoluene(FID)	94.2			78.0-120		07/26/2022 13:22	WG1900795

Volatile Organic Compounds (GC/MS) by Method 8260D

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	U		0.0941	1.00	1	07/23/2022 03:30	WG1899588
Toluene	U		0.278	1.00	1	07/23/2022 03:30	WG1899588
Ethylbenzene	U		0.137	1.00	1	07/23/2022 03:30	WG1899588
Total Xylenes	U		0.174	3.00	1	07/23/2022 03:30	WG1899588
(S) Toluene-d8	106			80.0-120		07/23/2022 03:30	WG1899588
(S) 4-Bromofluorobenzene	97.8			77.0-126		07/23/2022 03:30	WG1899588
(S) 1,2-Dichloroethane-d4	84.4			70.0-130		07/23/2022 03:30	WG1899588

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	1440		66.7	200	1	07/28/2022 19:58	WG1901347
Residual Range Organics (RRO)	513		83.3	250	1	08/01/2022 21:19	WG1901347
(S) o-Terphenyl	75.3			52.0-156		08/01/2022 21:19	WG1901347
(S) o-Terphenyl	116			52.0-156		07/28/2022 19:58	WG1901347

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	U		31.6	100	1	07/26/2022 13:45	WG1900795
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	93.5			78.0-120		07/26/2022 13:45	WG1900795

Volatile Organic Compounds (GC/MS) by Method 8260D

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	U		0.0941	1.00	1	07/23/2022 03:51	WG1899588
Toluene	U		0.278	1.00	1	07/23/2022 03:51	WG1899588
Ethylbenzene	U		0.137	1.00	1	07/23/2022 03:51	WG1899588
Total Xylenes	U		0.174	3.00	1	07/23/2022 03:51	WG1899588
(S) Toluene-d8	104			80.0-120		07/23/2022 03:51	WG1899588
(S) 4-Bromofluorobenzene	98.1			77.0-126		07/23/2022 03:51	WG1899588
(S) 1,2-Dichloroethane-d4	86.6			70.0-130		07/23/2022 03:51	WG1899588

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	176	<u>J</u>	66.7	200	1	07/28/2022 20:18	WG1901347
Residual Range Organics (RRO)	131	<u>J</u>	83.3	250	1	07/28/2022 20:18	WG1901347
(S) <i>o</i> -Terphenyl	124			52.0-156		07/28/2022 20:18	WG1901347

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	U		31.6	100	1	07/26/2022 14:08	WG1900795
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	93.5			78.0-120		07/26/2022 14:08	WG1900795

Volatile Organic Compounds (GC/MS) by Method 8260D

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	U		0.0941	1.00	1	07/23/2022 04:11	WG1899588
Toluene	U		0.278	1.00	1	07/23/2022 04:11	WG1899588
Ethylbenzene	U		0.137	1.00	1	07/23/2022 04:11	WG1899588
Total Xylenes	U		0.174	3.00	1	07/23/2022 04:11	WG1899588
(S) Toluene-d8	111			80.0-120		07/23/2022 04:11	WG1899588
(S) 4-Bromofluorobenzene	95.8			77.0-126		07/23/2022 04:11	WG1899588
(S) 1,2-Dichloroethane-d4	86.3			70.0-130		07/23/2022 04:11	WG1899588

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	84.7	J	66.7	200	1	07/28/2022 20:39	WG1901347
Residual Range Organics (RRO)	U		83.3	250	1	07/28/2022 20:39	WG1901347
(S) <i>o</i> -Terphenyl	119			52.0-156		07/28/2022 20:39	WG1901347

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (GC) by Method NWTPHGX

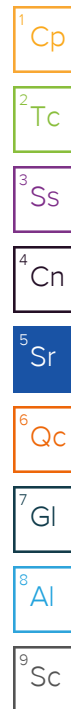
Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	313		31.6	100	1	07/26/2022 21:09	WG1901091
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	110			78.0-120		07/26/2022 21:09	WG1901091

Volatile Organic Compounds (GC/MS) by Method 8260D

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	U		0.0941	1.00	1	07/23/2022 04:32	WG1899588
Toluene	U		0.278	1.00	1	07/23/2022 04:32	WG1899588
Ethylbenzene	U		0.137	1.00	1	07/23/2022 04:32	WG1899588
Total Xylenes	U		0.174	3.00	1	07/23/2022 04:32	WG1899588
(S) Toluene-d8	106			80.0-120		07/23/2022 04:32	WG1899588
(S) 4-Bromofluorobenzene	97.4			77.0-126		07/23/2022 04:32	WG1899588
(S) 1,2-Dichloroethane-d4	83.1			70.0-130		07/23/2022 04:32	WG1899588

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	731		66.7	200	1	07/28/2022 20:59	WG1901347
Residual Range Organics (RRO)	208	J	83.3	250	1	07/28/2022 20:59	WG1901347
(S) <i>o</i> -Terphenyl	135			52.0-156		07/28/2022 20:59	WG1901347



Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	U		31.6	100	1	07/26/2022 21:31	WG1901091
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	113			78.0-120		07/26/2022 21:31	WG1901091

Volatile Organic Compounds (GC/MS) by Method 8260D

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	U		0.0941	1.00	1	07/23/2022 04:53	WG1899588
Toluene	U		0.278	1.00	1	07/23/2022 04:53	WG1899588
Ethylbenzene	U		0.137	1.00	1	07/23/2022 04:53	WG1899588
Total Xylenes	U		0.174	3.00	1	07/23/2022 04:53	WG1899588
(S) Toluene-d8	103			80.0-120		07/23/2022 04:53	WG1899588
(S) 4-Bromofluorobenzene	96.4			77.0-126		07/23/2022 04:53	WG1899588
(S) 1,2-Dichloroethane-d4	85.8			70.0-130		07/23/2022 04:53	WG1899588

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	352		66.7	200	1	07/28/2022 21:19	WG1901347
Residual Range Organics (RRO)	169	J	83.3	250	1	07/28/2022 21:19	WG1901347
(S) <i>o</i> -Terphenyl	126			52.0-156		07/28/2022 21:19	WG1901347

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (GC) by Method NWTPHGX

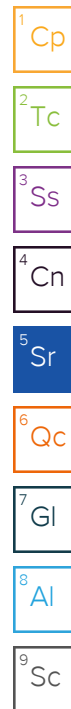
Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	U		31.6	100	1	07/26/2022 21:53	WG1901091
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	113			78.0-120		07/26/2022 21:53	WG1901091

Volatile Organic Compounds (GC/MS) by Method 8260D

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	U		0.0941	1.00	1	07/23/2022 05:13	WG1899588
Toluene	U		0.278	1.00	1	07/23/2022 05:13	WG1899588
Ethylbenzene	U		0.137	1.00	1	07/23/2022 05:13	WG1899588
Total Xylenes	U		0.174	3.00	1	07/23/2022 05:13	WG1899588
(S) Toluene-d8	105			80.0-120		07/23/2022 05:13	WG1899588
(S) 4-Bromofluorobenzene	97.1			77.0-126		07/23/2022 05:13	WG1899588
(S) 1,2-Dichloroethane-d4	85.0			70.0-130		07/23/2022 05:13	WG1899588

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	341		66.7	200	1	07/28/2022 21:39	WG1901347
Residual Range Organics (RRO)	186	J	83.3	250	1	07/28/2022 21:39	WG1901347
(S) <i>o</i> -Terphenyl	127			52.0-156		07/28/2022 21:39	WG1901347



Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	U		31.6	100	1	07/26/2022 20:48	WG1901091
(S) a,a,a-Trifluorotoluene(FID)	114			78.0-120		07/26/2022 20:48	WG1901091

Volatile Organic Compounds (GC/MS) by Method 8260D

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	U		0.0941	1.00	1	07/23/2022 03:09	WG1899588
Toluene	U		0.278	1.00	1	07/23/2022 03:09	WG1899588
Ethylbenzene	U		0.137	1.00	1	07/23/2022 03:09	WG1899588
Total Xylenes	U		0.174	3.00	1	07/23/2022 03:09	WG1899588
(S) Toluene-d8	108			80.0-120		07/23/2022 03:09	WG1899588
(S) 4-Bromofluorobenzene	96.3			77.0-126		07/23/2022 03:09	WG1899588
(S) 1,2-Dichloroethane-d4	88.0			70.0-130		07/23/2022 03:09	WG1899588

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3821867-2 07/26/22 06:54

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Gasoline Range Organics-NWTPH	U		31.6	100
(S) a,a,a-Trifluorotoluene(FID)	93.8			78.0-120

Laboratory Control Sample (LCS)

(LCS) R3821867-1 07/26/22 06:08

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Gasoline Range Organics-NWTPH	5500	4320	78.5	70.0-124	
(S) a,a,a-Trifluorotoluene(FID)			102	78.0-120	

L1516988-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1516988-02 07/26/22 08:03 • (MS) R3821867-3 07/26/22 14:53 • (MSD) R3821867-4 07/26/22 15:16

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Gasoline Range Organics-NWTPH	5500	U	5550	6590	101	120	1	10.0-155			17.1	21
(S) a,a,a-Trifluorotoluene(FID)					103	104		78.0-120				

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3819738-3 07/26/22 20:08

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Gasoline Range Organics-NWTPH	U		31.6	100
(S) a,a,a-Trifluorotoluene(FID)	115			78.0-120

Laboratory Control Sample (LCS)

(LCS) R3819738-1 07/26/22 18:42

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Gasoline Range Organics-NWTPH	5500	4780	86.9	70.0-124	
(S) a,a,a-Trifluorotoluene(FID)			102	78.0-120	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3821953-3 07/23/22 02:48

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Benzene	U		0.0941	1.00
Toluene	U		0.278	1.00
Ethylbenzene	U		0.137	1.00
Xylenes, Total	U		0.174	3.00
(S) Toluene-d8	106			80.0-120
(S) 4-Bromofluorobenzene	93.7			77.0-126
(S) 1,2-Dichloroethane-d4	84.1			70.0-130

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3821953-1 07/23/22 01:46 • (LCSD) R3821953-2 07/23/22 02:07

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	5.00	4.33	4.52	86.6	90.4	70.0-123			4.29	20
Toluene	5.00	4.35	4.56	87.0	91.2	79.0-120			4.71	20
Ethylbenzene	5.00	4.25	4.55	85.0	91.0	79.0-123			6.82	20
Xylenes, Total	15.0	12.7	13.1	84.7	87.3	79.0-123			3.10	20
(S) Toluene-d8				105	108	80.0-120				
(S) 4-Bromofluorobenzene				94.8	94.8	77.0-126				
(S) 1,2-Dichloroethane-d4				83.8	85.4	70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3820270-1 07/28/22 04:30

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Diesel Range Organics (DRO)	U		66.7	200
Residual Range Organics (RRO)	U		83.3	250
(S) o-Terphenyl	113			52.0-156

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3820270-2 07/28/22 04:51 • (LCSD) R3820270-3 07/28/22 05:17

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Diesel Range Organics (DRO)	1500	1720	1740	115	116	50.0-150			1.16	20
(S) o-Terphenyl				115	119	52.0-156				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.
Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

ACCREDITATIONS & LOCATIONS

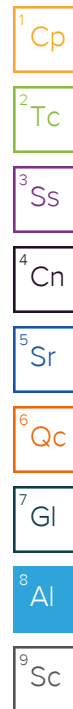
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA -- ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA -- ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA--Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.



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