

TECHNICAL MEMORANDUM

DATE: May 30, 2023
TO: Christopher Maurer
FROM: David Dinkuhn, P.E.
SUBJECT: Former Chevron Property Long Term Monitoring Event 14 (2022)
CC: Bill Davis, P.E.
PROJECT NUMBER: 233-1896-107
PROJECT NAME: Former Chevron Property Remediation

FORMER CHEVRON PROPERTY LONG TERM GROUNDWATER MONITORING EVENT 14

This technical memorandum presents a summary of the results of the annual long-term groundwater monitoring event conducted in August 2022 at the Former Chevron Property, located in Bremerton, Washington. Long-term monitoring is being performed under the site's Agreed Order Number DE-12TCPHQ-9509. Sampling during the event was conducted in accordance with the site's Long-Term Groundwater Monitoring Plan (LTGMP; Parametrix 2013). Data from these long-term monitoring events is intended to be used to evaluate groundwater quality trends at the site and confirm the continued occurrence of natural attenuation.

SAMPLING

Groundwater samples were collected on August 9, 10, and 12, 2022 using a peristaltic pump and low-flow sampling techniques. Samples were collected from ten designated long-term monitoring wells including MW-4R, -10R, -11, -13R, -20R, -21R, -22R, -25, -26R, and -27. Monitoring well MW-9R was damaged in 2015 and is no longer used. Figure 1 shows monitoring well locations.

Prior to the start of sampling, all wells were opened and allowed to equilibrate with atmospheric pressure. Time-synchronous water levels were then measured in each well to determine the groundwater gradient at the site. Water table elevations and groundwater surface contours are shown on Figure 1. The gradient observed at the site shows groundwater flows primarily westerly and northerly away from the contaminated groundwater plume.

Following measurement of groundwater levels, each of the wells was purged with a peristaltic pump with new polyethylene tubing until measured water quality parameters of pH, conductivity, dissolved oxygen (DO), temperature, turbidity, and oxidation-reduction potential (ORP) stabilized according to criteria specified in the LTGMP. Water levels were also measured during purging to record drawdown in accordance with low-flow sampling techniques. During the 2022 event, MW-4R, MW-13R, MW-22R, and MW-26R all went dry during purging prior to reaching stabilization. These wells were allowed to recover prior to sample collection.

Upon well stabilization, groundwater samples were collected in clean, laboratory supplied containers. Three volatile-organic analysis (VOA) containers preserved with hydrochloric acid were filled for gasoline-range total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene, and total xylenes (BTEX); two 500 milliliter (mL) glass amber containers preserved with hydrochloric acid were filled for diesel-range and oil-range TPH; two to three 500-mL polyethylene containers were filled for nitrate, sulfate, alkalinity, and chloride; three VOC containers preserved with hydrochloric acid were filled for dissolved methane; one 500 mL preserved with

hydrochloric acid was filled for total ferrous iron; and a 45-micron filter was placed on the tubing to fill one 500 mL polyethylene container for dissolved manganese. Wells MW-4R, MW-13R, and MW-22R produced insufficient water to fill all of the containers, and these wells were only analyzed for gasoline/BTEX and diesel/oil-range TPH.

The final set of measurements for water quality stabilization parameters are provided in Table 1. Field sampling forms related to the sample collection are attached.

Groundwater samples were submitted to Onsite Environmental of Redmond, Washington, for chemical analysis of gasoline-range TPH and BTEX, diesel- and lube oil-range TPH with and without silica gel treatment, and general chemistry parameters (including dissolved methane). Total ferrous iron analysis was subcontracted to Analytical Resources Incorporated of Tukwila, Washington. A summary of analytical results is presented in Table 1. An analytical data validation review memorandum for the monitoring event and laboratory reports are also attached.

RESULTS

Table 1 (attached) summarizes the results of the 2021 and 2022 events compared to Model Toxics Control Act (MTCA) Method A cleanup levels and MTCA Method B cleanup levels for protection of Marine Aquatic Life (Ecology 2018, 2020). Table 2 (attached) summarizes historical data for sampling conducted prior to 2021. Figure 1 displays the results of the gasoline, diesel, oil, and benzene analysis for each of the wells.

Gasoline-range TPH was found exceeding the MTCA Method A cleanup level in two wells: MW-10R and MW-21R. Analysis for diesel- and oil-range TPH was completed both with and without silica gel treatment. Previous events have utilized silica gel treatment for analysis of diesel- and oil-range TPH due to the prior remedial activities of injected compounds producing polar metabolites. This event was done both with and without silica gel treatment in response to the 2020 evaluation and updating the compliance evaluation for the groundwater to surface water pathway.

- Diesel-range TPH was found exceeding the MTCA Method A cleanup level in four wells: MW-4R, MW-10R, MW-13R, and MW-21R. Following silica gel cleanup, diesel-range TPH was found exceeding the MTCA Method A cleanup level in well MW-10R only.
- Oil range TPH was found exceeding the MTCA Method A cleanup level in MW-4R, MW-13R, and MW-21R. Following silica gel cleanup, oil-range TPH was not found exceeding the MTCA Method A cleanup level in any well.

Comparison of the diesel- and oil-range TPH concentrations with and without silica gel cleanup indicates the majority of the contaminants at the site are polar compounds from degraded, highly weathered diesel and oil, consistent with the historical cleanup actions.

DISCUSSION

Concentration trends versus time for benzene and gasoline data from 2016 to the present are presented graphically on Figures 2 and 3. Gasoline concentrations appear to continue to decrease with time as the plume attenuates. Benzene concentrations appear to have stabilized.

Concentration trends versus time for diesel and lube oil with and without silica gel cleanup are not presented graphically due to the limited number of data points.

Anaerobic respiration occurrence appears to be on-going as ferrous iron, dissolved manganese, and dissolved methane concentrations are associated with negative oxidation-reduction potential values across the site (Tables 1 & 2).

Overall, the plume appears to continue to attenuate with some seasonal variability. All concentrations of TPH found in groundwater were reported below the protection of aquatic marine life values except for total diesel and oil range TPH in two wells; MW-4R and MW 13R (Table 1).

The exceedances of MTCA Method A cleanup levels as well as cleanup levels for protection of aquatic marine life indicate continued requirements for annual monitoring in accordance with the LTGMP.

REFERENCES

- Parametrix. 2013. Former Chevron Property Long-Term Groundwater Monitoring Plan. Prepared for Washington State Department of Ecology on behalf of City of Bremerton. July 8. Seattle, WA.
- Washington State Department of Ecology. 2018. Environmental Effects-Based Concentrations for Total Petroleum Hydrocarbons (TPH). Publication No. 18-03-002. Olympia, WA.
- Washington State Department of Ecology. 2020. Environmental Effects-Based Concentrations for Weathered Diesel-Range Organics – Toxicity in Marine Water and Freshwater. Publication No. 20-03-008. Olympia, WA.

FIGURES:

- Figure 1 – Long Term Groundwater Monitoring Event 14 Sampling Results – August 2022
- Figure 2 – Benzene Results (2016 – present)
- Figure 3 – Gasoline Results (2016 – present)

TABLES:

- Table 1 – Event 14 Groundwater Results Summary
- Table 2 – Historical Groundwater Results Summary

ATTACHMENTS:

- Monitoring Well Logs
- Field Sampling Forms
- Data Validation Technical Memorandum
- Laboratory Reports

Figures



Figure 2. Event 14
Benzene Results (2016-present) - Former Chevron Property

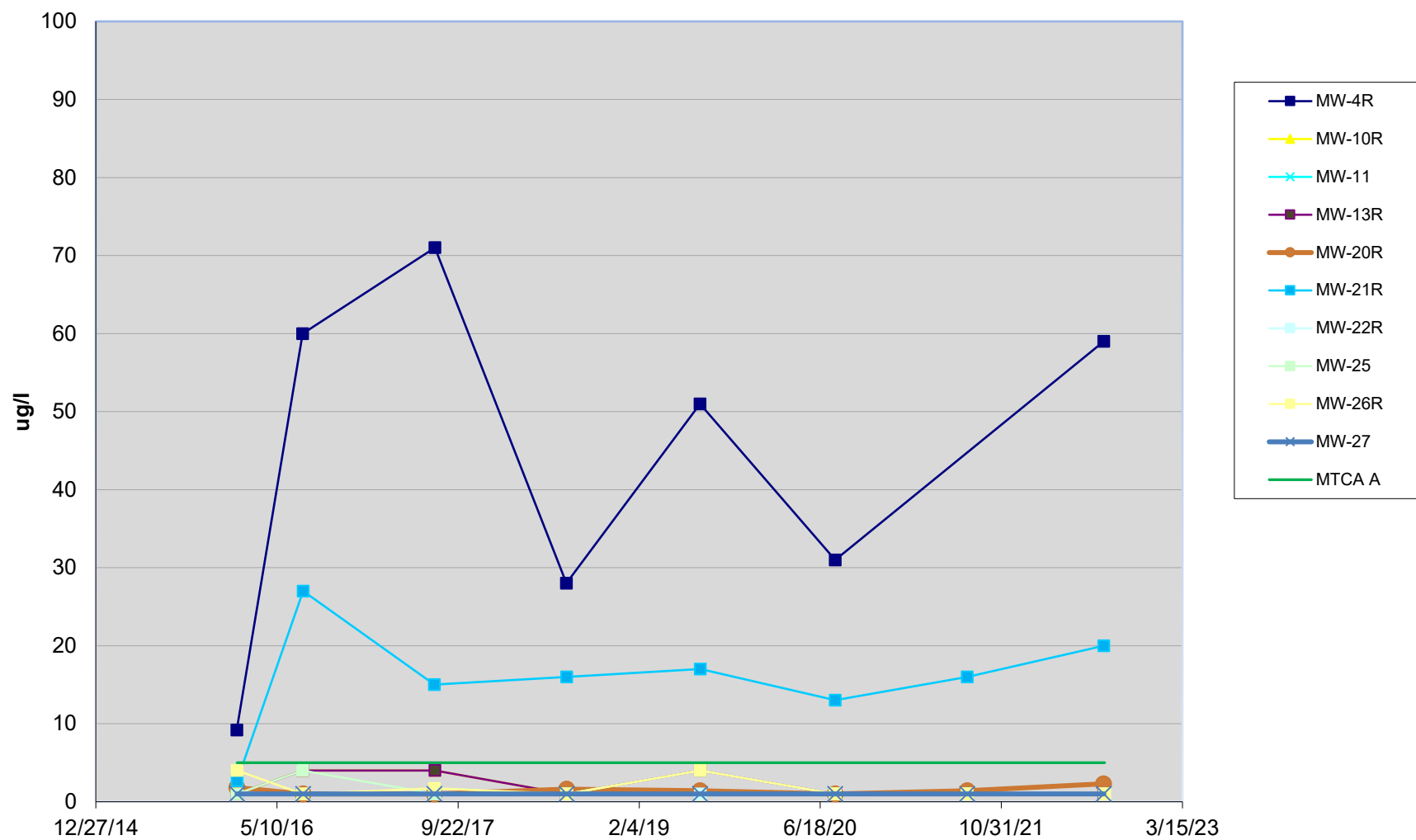
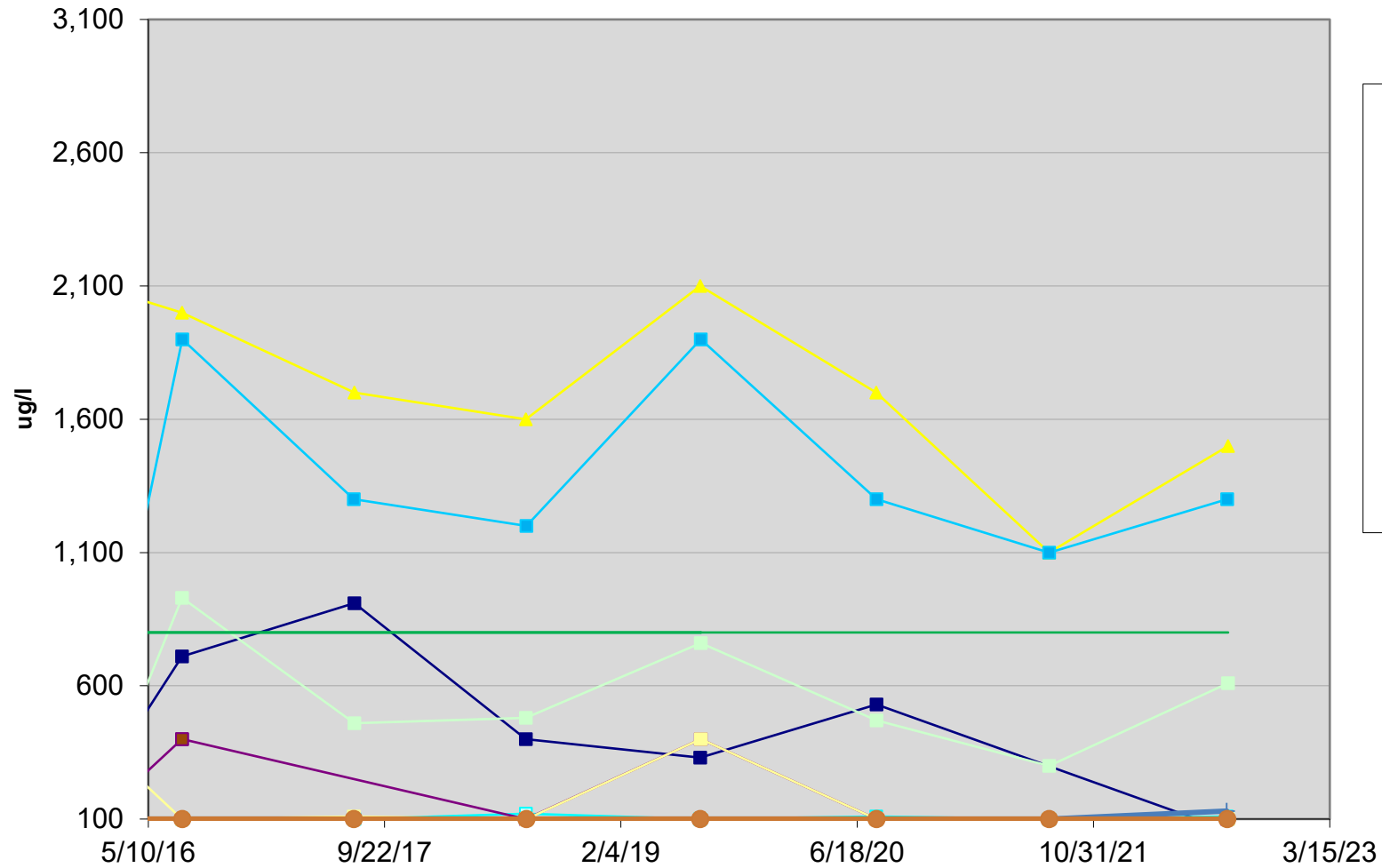


Figure 5. Event 14
Gasoline Results (2016 - present) - Former Chevron Property



Tables

Table 1 Groundwater Results (2021 to Present)

Monitoring Well No.		MTCA Method A	Protect Marine	MW-4R		MW-10R		MW-11		MW-13R		MW-20R		MW-21R		MW-21R*		MW-22R		MW-25		MW-26R		MW-27	
PARAMETERS	Units	Unrestricted	Aquatic Life^	7/28/21	8/10/22	7/29/21	8/12/22	7/28/21	8/9/22	7/28/21	8/10/22	7/28/21	8/9/22	7/29/21	8/10/22	Dup	8/10/22	7/29/20	8/12/22	7/29/21	8/12/22	7/29/21	8/12/22	7/29/20	8/10/22
TOTAL PETROLEUM HYDROCARBONS																									
Gasoline with Benzene	ug/L	800	1,700	100 UR	59	1,100 J	1500	100 U	110	100 U	100 U	100 U	130	1,100	1300	1,100	1400	100 U	100 U	300	610	100 U	100 U	100 U	100 U
No SG Weathered Diesel (Dx)	mg/L	0.5	2.1	0.24 UR	2.3	1.3	0.80	0.49	0.32	0.60	1.7	0.37	0.18	1.50	0.95	1.70	0.85	0.35	0.15	1.90	0.38	0.23	0.12 U	0.21 U	0.13
No SG Lube Oil	mg/L	0.5	2.1	0.48 R	2.4	0.29	0.34	0.32	0.27	1.30	2.1	0.70	0.29	0.77	0.72	0.94	0.65	0.40	0.29	0.56	0.31	0.30	0.20 U	0.52	0.33
No SG Total Weathered Dx + Oil	mg/L		2.1	0.70 R	4.7	1.59	1.14	0.81	0.59	1.90	3.8	1.07	0.47	2.27	1.67	2.64	1.50	0.75	0.44	2.46	0.69	0.53	0.32 U	0.63	0.46
SG Weathered Diesel (Dx)	mg/L	0.5	2.1	0.24 UR	0.18	0.77 U	0.58	0.21 U	0.13 U	0.23	0.29 U	0.21 U	0.13 U	0.4 U	0.43	0.45 U	0.42	0.23 U	0.13 U	1.5	0.21	0.2 U	0.12 U	0.21 U	0.13 U
SG Lube Oil	mg/L	0.5	2.1	0.24 UR	0.22	0.21 U	0.20 U	0.21 U	0.2 U	0.74	0.47 U	0.21	0.2 U	0.2 U	0.021 U	0.22 U	0.2 U	0.23 U	0.2 U	0.2 U	0.2 U	0.20 U	0.21 U	0.2 U	0.2 U
SG Total Weathered Dx + Oil	mg/L		2.1	0.24 UR	0.4	0.49 U	0.78	0.21 U	0.33 U	0.97	0.76 U	0.32		0.3 U		0.33 U	0.62	0.23 U	0.33 U	1.6	0.41	0.2 U	0.32 U	0.21 U	0.33 U
VOLATILE ORGANICS (BTEX)																									
Benzene	ug/L	5		1.0 UR	59.0	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.4	2.3	16.0	20.0	19.0	22.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	1000		1.0 UR	4.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	8.5	8.7	9.1	8.8	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	ug/L	700		1.0 UR	4.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	3.5	4.1	4.6	4.2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylene	ug/L	1000		1.0 UR	4.0 U	1.4	1.7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	13.0	13.0	13.0	14.0	1.0 U	1.0 U	1.4	2.5	1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	ug/L	1000		1.0 UR	4.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.3	1.7	1.4	1.7	1.0 U	1.0 U	1.0 U	3.4	1.0 U	1.0 U	1.0 U	1.0 U
METALS																									
Total Ferrous Iron	mg/L			--	--	13.3	11.20 J	24.5	21.4	--	--	20.3	17.20	5.68	5.02	6.28	4.84	--	--	1.76	1.80 J	0.156	0.040 J	24.9	23.00 J
Dissolved Manganese	ug/L			--	--	1000	1100	1800	1800	--	--	1500	1700	1200	1300	1200	1300	--	--	98	120	58	11 U	2700	2900
GENERAL CHEMISTRY																									
Alkalinity	mg/L			--	--	180	160	220	170	--	--	220	190	910	840	930	840	--	--	220	210	280	130	220	200
Nitrate (as Nitrogen)	mg/L			--	--	0.050 U	0.050 U	0.050 U	0.050 U	--	--	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	--	--	0.063	0.05 U	0.050 U	0.29	0.050 U	0.050 U
Sulfate	mg/L			--	--	5 U	5.0 U	5 U	5.0 U	--	--	5 U	5.0 U	5 U	5.0 U	5 U	5.0 U	--	--	5 U	5.0 U	1000	2100	5 U	5.0 U
Chloride	mg/L			--	--	6.1	4.2	8.1	6.3	--	--	8.8	5.6	18	15	16	16	--	--	68	8.4	7900	15000	8.2	7.2
Dissolved Methane	ug/L			--	--	450	2200	90	3300	--	--	2100	4100	2100	6100	1200	6000	--	--	67	930	0.61	0.55 U	2000	8200
FIELD PARAMETERS																									
Turbidity	Neth. Turbidity			44.3 R	--	0.63	8.1	2.05	0.02	42.7	--	7.63	7.8	9.02	9.51	--	9.51	--	--	6.01	9.66	0.02	--	165	105.6
pH	--			6 R	--	6.19	6.2	6.03	6.49	6.07	--	6.3	6.48	6.89	7.18	--	7.18	6.82	--	6.34	6.27	7.21	--	6.33	6.26
Specific Conductance	Millisiemens/cm			595 R	--	404.3	0.35	494.1	422	555.5	--	492	440	1540	1512	--	1512	16762	--	535.9	436	22959	--	516.5	488
Dissolved Oxygen	mg/L			3.81 R	--	0.22	0.07	0.26	-0.7	2.17	--	0.56	0.06	0.16	0.01	--	0.01	0.8	--	0.42	0.94	8.37	--	0.19	0.52
ORP	Millivolts			118.4 R	--	-25.2	-65.3	-36.4	-125.2	62.7	--	-54.6	-113.4	-72.6	-133.2	--	-133.2	47.4	--	-4.1	-36.2	47.1	--	-70.6	-105.5

Notes:

-- Not Analyzed

* Duplicate sample.

mg/L= Milligrams per liter.

µg/L = Micrograms per liter.

J = Reported value is an estimate

U = Analyte not detected

above practical

quantitation limit given.

Exceeds MTCA A cleanup level.

1 Exceeds protection of surface water aquatic marine life cleanup level

Notes: Non-detects quantitated at one-half the detection level for Total TPH Dx + Oil

Interference flags are not shown

^ Ecology Publication No. 18-03-002 and 20-03-008

R Reported value is rejected due to surface water interference, sample biased low

SG Silica Gel Treatment

Table 2 Historical Groundwater Results

Monitoring Well No.			MW-04R																				
PARAMETERS	Units		3/19/08	1/21/10	6/1/10	6/1/10*	8/11/10	8/11/10*	4/5/11	4/5/11*	9/29/11	1/24/13	7/30/13	1/21/14	8/6/14	1/21/15	7/29/15	1/20/16	7/20/16	7/20/17	7/18/18	7/22/19	7/29/20
MTCA A																							
VOLATILE ORGANICS (BTEX)																							
Benzene	ug/L	5	160	60 J	58	--	52	--	39	--	45	34	59	35	92	210	45	9.2	60 J	71	28	51	31
Toluene	ug/L	1,000	10 U	2.0 J	1.0 U	--	1.0 U	--	4.0 U	--	1.0 U	2.1 U	4.0 U	1.8 U	4.0 U	4.0 U	1.6	1.0 U	4.0 U	4.0	4.0 U	1.4	1.7
Ethylbenzene	ug/L	700	45	31 J	45	--	40	--	17	--	20	7.9	5.9	3.1	9.0	150	25	3.8	15 J	19	4.0 U	1.2	1.0
m,p-Xylene	ug/L	1,000	86	15 J	7.6	--	4.7	--	9.4	--	2.1	4.1	9.4	2.5	5.5	7.9	1.8	1.5	7.7 J	6.9	4.0 U	1.0 U	1.4
o-Xylene	ug/L	1,000	12	1.8 J	1.0 U	--	1.0 U	--	4.0	--	1.0 U	1.5	4.0 U	1.3 U	4.0 U	4.0 U	1.0 U	1.0 U	4.0 U	4.0	4.0 U	1.0 U	1.0 U
TOTAL PETROLEUM HYDROCARBONS																							
Gasoline	ug/L	800/1,000 ²	5,400	1,200 J	1,100	--	1,000	--	960	--	650	720	760	560	980	1,600	410	210	710 J	910	400 U	330	530
Diesel	mg/L	0.5																					
Diesel (silica gel)	mg/L	0.5	27	0.64 M	0.34 U	--	0.62 M	--	0.46	--	0.34 U	0.31 U	0.31 U	0.36 U	0.62	--	--	--	--	--	--	--	2.20
Lube Oil	mg/L	0.5																					
Lube Oil (silica gel)	mg/L	0.5	2.3	0.45 U	0.42 U	--	0.41 U	--	0.42 U	--	0.42 U	0.41 U	0.41 U	0.41 U	1.20	--	--	--	--	--	--	--	0.69 N1
METALS																							
Total Lead	ug/L	15	--	8.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Lead	ug/L	15	--	1.0 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Iron	ug/L		--	4,200	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Ferrous Iron	mg/L		--	--	7.36	--	9.75	--	5.4	--	--	7.35	9.70	9.64	11.5	--	--	--	--	--	--	--	--
Dissolved Manganese	ug/L		--	3,000	4,600	--	4,400	--	3,400	--	--	4,500	6,500	5,500	5,800	--	--	--	--	--	--	--	--
PAHs																							
Naphthalene	ug/L		--	1.4	--	--	--	--	1.0 U	1.0 U	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	ug/L		--	0.20	--	--	--	--	1.0 U	1.0 U	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Methylnapthalene	ug/L		--	3.2	--	--	--	--	4.7	4.9	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene	ug/L		--	0.23	--	--	--	--	1.0 U	1.0 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthene	ug/L		--	1.9	--	--	--	--	3.3	3.4	--	--	--	--	--	--	--	--	--	--	--	--	--
Flourene	ug/L		--	1.8	--	--	--	--	2.3	2.3	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	ug/L		--	0.15	--	--	--	--	1.0 U	1.0 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene	ug/L		--	0.44	--	--	--	--	1.0 U	1.0 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene	ug/L		--	0.39	--	--	--	--	1.0 U	1.0 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene	ug/L		--	0.26	--	--	--	--	1.0 U	1.0 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	ug/L		--	0.047	0.032	0.03	0.050 U	0.042	0.10 U	0.10 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	ug/L		--	0.033	0.010 U	0.010 U	0.050 U	0.023	0.10 U	0.10 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	ug/L		--	0.013	0.010 U	0.010 U	0.010 U	0.010 U	0.10 U	0.10 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	ug/L		--	0.028	0.010 U	0.010 U	0.010 U	0.010 U	0.10 U	0.10 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	ug/L	0.1	--	0.020	0.010 U	0.010 U	0.010 U	0.010 U	0.10 U	0.10 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	ug/L		--	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.10 U	0.10 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenz(a,h)anthracene	ug/L		--	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.10 U	0.10 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/L		--	0.010 U	--	--	--	--	0.10 U	0.10 U	--	--	--	--	--	--	--	--	--	--	--	--	--
GENERAL CHEMISTRY																							
Alkalinity	mg/L		--	190	1,900	--	2,100	--	2,300	--	--	7,100	3,300	3,300	3,300	--	--	--	--	--	--	--	--
Nitrate (as Nitrogen)	mg/L		--	0.050 U	0.050 U	--	0.050 U	--	0.050 U	--	--	0.05 U	0.05 U	0.04 U	0.05 U	--	--	--	--	--	--	--	--
Sulfate	mg/L		--	250	150	--	120	--	110	--	--	5 U	5 U	10 U	5 U	--	--	--	--	--	--	--	--
Chloride	mg/L		--	290	250	--	250	--	230	--	--	240	520	260	270	--	--	--	--	--	--	--	--
Dissolved Methane	ug/L		--	710	590	--	670	--	740	--	--	690	540	600	776	--	1,200	240	660	1,200	150	740	--
BOD5	mg/L		--	8.97	8.1	--	8.6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
FIELD PARAMETERS																							
Turbidity	Neth. Turbidity Units		--	333	5.3	5.3	106	106	9.0	9.0	116.0	NM	0.6	1.1	6.6	--	--	--	--	--	--	--	150.89
pH	--		--	6.63	6.90	6.90	7.01	7.01	7.09	7.09	7.11	7.07	7.24	6.96	6.56	--	--	--	--	--	--	--	7.05
Specific Conductance	Millisiemens/cm		--	3.50	3.42	3.42	32.6	32.6	35.1	35.1	5.48	5.41	5.43	5.73	5.68	--	--	--	--	--	--	--	4.24
Dissolved Oxygen	mg/L		--	4.91	4.55	4.55	0.0	0.0	4.02	4.02	0.06	0.00	1.01	0.43	3.56	--	--	--	--	--	--	--	1.62
Oxdat. Red. Potential	Millivolts		--	-136	-115	-115	-161	-161	-149	-149	-163	-247	-123	-140	-69.5	--	--	--	--	--	--	--	-21.0

Notes:
1 Sample collected from replaced well.
2 MTCA A cleanup level for gasoline is 800 µg/L in the presence of detectable benzene.
* Duplicate sample.
J = Reported concentration is an estimate.
M Hydrocarbons in the gasoline range are impacting the diesel range result.
N1 Hydrocarbons in the diesel range are impacting lube oil range results.
mg/L= Milligrams per liter.
NM = Not measured due to equipment malfunction.
µg/L = Micrograms per liter.
U = Analyte not detected above practical quantitation limit given.
U1 = The practical quantitation limit is elevated due to interferences present in the sample.
X Reported value is rejected due to surface water interference, sample biased low.
Exceeds MTCA A cleanup level.

Table 2 Historical Groundwater Results

Monitoring Well No.			MW-09R										
PARAMETERS	Units		1/20/10	5/25/10	5/25/10*	8/11/10	4/7/11	9/28/11	1/23/13	7/31/13	1/22/14	8/7/14	1/20/15
MTCA A													
VOLATILE ORGANICS (BTEX)													
Benzene	ug/L	5	120 J	160	170	360	280	310	68	370	87	340	25
Toluene	ug/L	1,000	4 U	3.2	3.6	11	11	13	4	7.4	3.4	6.5	1.0 U
Ethylbenzene	ug/L	700	89 J	89	97	230	220	150	20	25	13	19	2.8
m,p-Xylene	ug/L	1,000	170 J	120	140	400	300	190	12	6.9	6.4	8.2	1.7
o-Xylene	ug/L	1,000	4 U	3.5	3.9	8.1	11	10	4	2.5	2.4	4.0 U	1.0 U
TOTAL PETROLEUM HYDROCARBONS													
Gasoline	ug/L	800/1,000 ²	1,800 J	1,500	1,700	3,100	4,800	2,100	790	930	660	1,100	110
Diesel	mg/L	0.5											
Diesel (silica gel)	mg/L	0.5	0.31 U	0.29 U	0.69	0.45 M	0.82	0.33 U	0.26 U	0.54 U	0.30 U	0.26 U	0.67
Lube Oil	mg/L	0.5											
Lube Oil (silica gel)	mg/L	0.5	0.49 U	0.47 U	0.66	0.42 U	0.43 U	0.42 U	0.41 U	0.54	0.54 U	0.41 U	0.44
METALS													
Total Lead	ug/L	15	80	36 J	74 J	21 J	170	--	1.00 U	3.90	--	--	1.1 U
Dissolved Lead	ug/L	15	13	12	14	17	3.0	--	1.00 U	1.10 U	--	--	1 U
Dissolved Iron	ug/L		34,000	--	--	--	--	--	--	--	--	--	--
Total Ferrous Iron	mg/L		--	46.2	42.1	29.2	49.4	--	34.2	36.2	--	--	39.5 J
Dissolved Manganese	ug/L		5,000	3,600	3,900	4,200	4,500	--	4,000	4,500	--	--	4,400
PAHs													
Naphthalene	ug/L		6.4	--	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	ug/L		2.8	--	--	--	--	--	--	--	--	--	--
1-Methylnapthalene	ug/L		2.2	--	--	--	--	--	--	--	--	--	--
Acenaphthylene	ug/L		0.11 U	--	--	--	--	--	--	--	--	--	--
Acenaphthene	ug/L		0.18	--	--	--	--	--	--	--	--	--	--
Flourene	ug/L		0.14	--	--	--	--	--	--	--	--	--	--
Phenanthrene	ug/L		0.17	--	--	--	--	--	--	--	--	--	--
Anthracene	ug/L		0.11 U	--	--	--	--	--	--	--	--	--	--
Fluoranthene	ug/L		0.11 U	--	--	--	--	--	--	--	--	--	--
Pyrene	ug/L		0.11 U	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	ug/L		0.011 U	--	--	--	--	--	--	--	--	--	--
Chrysene	ug/L		0.011 U	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	ug/L		0.011 U	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	ug/L		0.011 U	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	ug/L	0.1	0.011 U	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	ug/L		0.011 U	--	--	--	--	--	--	--	--	--	--
Dibenz(a,h)anthracene	ug/L		0.011 U	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/L		0.011 U	--	--	--	--	--	--	--	--	--	--
GENERAL CHEMISTRY													
Alkalinity	mg/L		700	720	730	800	730	--	450	85	740	--	--
Nitrate (as Nitrogen)	mg/L		0.050 U	0.050 U	0.050 U	0.14	0.050 U	--	0.076	0.05 U	0.05 U	--	0.087
Sulfate	mg/L		30	7.5	7.4	5.0 U	5.0 U	--	25.00 U	5.00 U	5.00 U	--	10 U
Chloride	mg/L		77	120	120	78	91	--	32	35	31	--	32
Dissolved Methane	ug/L		2,100	8,600	7,800	6,600	9,900	--	11,000	7,100	11,000	--	7,200
BOD5	mg/L		5.46	3.0	4.3	12.3	--	--	--	--	--	--	--
FIELD PARAMETERS													
Turbidity	Neth. Turbidity Units		146	57.9	57.9	>1000	>1000	106.0	NM	60.0	5.1	--	6.20
pH	--		6.36	6.77	6.77	6.94	6.78	7.05	6.87	7.18	6.57	--	8.65
Specific Conductance	Millisiemens/cm		1.52	1.42	1.42	2.65	1.81	1.91	1.47	1.77	1.30	--	1.30
Dissolved Oxygen	mg/L		9.65	0.96	0.96	0.0	0.40	6.68	3.92	0.97	1.73	--	1.40
Oxdat. Red. Potential	Millivolts		-124	-136.8	-136.8	-169	-134	-152	-211	-139	-83	--	-132.00

Notes:

1 Sample collected from replaced well.

2 MTCA A cleanup level for gasoline is 800 µg/L in the presence of detectable benzene.

* Duplicate sample.

J = Reported concentration is an estimate.

M Hydrocarbons in the gasoline range are impacting the diesel range result.

N1 Hydrocarbons in the diesel range are impacting lube oil range results.

mg/L= Milligrams per liter.

NM = Not measured due to equipment malfunction.

µg/L = Micrograms per liter.

U = Analyte not detected above practical quantitation limit given.

U1 = The practical quantitation limit is elevated due to interferences present in the sample.

X Reported value is rejected due to surface water interference, sample biased low.

Exceeds MTCA A cleanup level.

Table 2 Historical Groundwater Results

Monitoring Well No.			MW-10R																
PARAMETERS	Units		3/17/08 ¹	1/20/10	5/25/10	8/10/10	4/5/11	9/30/11	1/23/13	7/30/13	1/22/14	8/7/14	1/21/15	1/20/16	7/20/16	7/20/17	7/18/18	7/22/19	7/28/20
MTCA A																			
VOLATILE ORGANICS (BTEX)																			
Benzene	ug/L	5	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	1,000	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.2	1.7	1.7	1.0 U	1.0 U	1.0 U	1.0 U	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	ug/L	700	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylene	ug/L	1,000	6.8	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	4.0 U	4.0 U	1.0 U	1.7	1.0 U
o-Xylene	ug/L	1,000	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U
TOTAL PETROLEUM HYDROCARBONS																			
Gasoline	ug/L	800/1,000 ²	400 U	400 U	1,100	780	830	1,200	1,400	360	100 U	160	1,600	2,100	2,000	1,700	1,600	2,100	1,700
Diesel	mg/L	0.5																	
Diesel (silica gel)	mg/L	0.5	160	0.27 U	0.61 U	0.42 U	0.45 U	0.81 U	0.76 U	--	0.26 U	0.32	0.76 U	1.1 U	0.98 U	1.4	1.3 U	1.1 U	1.3 M
Lube Oil	mg/L	0.5																	
Lube Oil (silica gel)	mg/L	0.5	8.8 U	0.44 U	0.42 U	0.45 U	0.43 U	0.43 U	0.41 U	--	0.41 U	0.58	0.41 U	0.42 U	0.41 U	0.42 U	0.44 U	0.41 U	0.21 U
METALS																			
Total Lead	ug/L	15	--	3.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Lead	ug/L	15	--	2.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Iron	ug/L		--	6,400	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Ferrous Iron	mg/L		--	--	25.2	34.4	12.4	--	40.8	--	2.14	30.4	21.6 J	14.6	17.4	14.4	14.9 J	12.2 J	15.4 J
Dissolved Manganese	ug/L		--	1,100	1,400	2,000	1,500	--	3,700	--	2,000	3,400	1,800	1,500	1,800	1,600	1,400	1,300	1,500
PAHs																			
Naphthalene	ug/L		--	0.14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	ug/L		--	0.12 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Methylnapthalene	ug/L		--	21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene	ug/L		--	0.12 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthene	ug/L		--	0.23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Flourene	ug/L		--	0.32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	ug/L		--	0.12 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene	ug/L		--	0.12 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene	ug/L		--	0.12 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene	ug/L		--	0.12 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	ug/L		--	0.014	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	ug/L		--	0.012 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	ug/L		--	0.012 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	ug/L		--	0.012 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	ug/L	0.1	--	0.012 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	ug/L		--	0.012 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenz(a,h)anthracene	ug/L		--	0.012 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/L		--	0.012 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GENERAL CHEMISTRY																			
Alkalinity	mg/L		220	190	200	210	230	--	250	--	280	290	--	210	250	210	220	190	230
Nitrate (as Nitrogen)	mg/L		0.050 U	0.77	0.094	0.050 U	0.050 U	--	0.05 U	--	0.58	0.50 U	0.24	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Sulfate	mg/L		5.0 U	10	10 U	5.0 U	5.0 U	--	25.00 U	--	43	5.00 U	10 U	10 U	10 U	5.0 U	10.0 U	5.0 U	5.0 U
Chloride	mg/L		2.5	10	10	14	6.8	--	14.00	--	16	7.8	8.8	7.2	6.1	5.4	4.3	6.8	5.4
Dissolved Methane	ug/L		--	170	510	260	590	--	2,900	--	37	279	420	340	1,100	1,100	1,200	1,200	2,000
BOD5	mg/L		--	3.06	2.0	12 U	--	--	--	--	--	--	--	--	--	--	--	--	--
FIELD PARAMETERS																			
Turbidity	Neth. Turbidity Units		208	54.7	3.0	235	2.7	6.5	NM	NM	0.1	3.8	5.9	3.0	9.2	1.4	0.46	1.11	39.27
pH	--		6.38	6.00	6.32	6.05	6.50	6.52	6.58	NM	6.38	6.29	NM	6.75	6.75	6.65	6.50	6.44	6.54
Specific Conductance	Millisiemens/cm		53.4	35.9	51.2	90	90	81.2	0.8	NM	0.68	0.605	0.44	0.41	0.44	0.41	0.38	0.38	0.49
Dissolved Oxygen	mg/L		0.0	5.38	6.31	2.38	2.20	6.16	0.20	NM	0.72	1.9	0.34	0.25	0.46	0.40	0.98	1.26	1.45
Oxdat. Red. Potential	Millivolts		-35	-64	-19.0	-79	-110	-96	-194	NM	-58.2	-32.6	-168.7	-38.6	-28.0	-100.8	-88.2	-79.4	-32.0

- Notes:
- 1 Sample collected from replaced well.
 - 2 MTCA A cleanup level for gasoline is 800 µg/L in the presence of detectable benzene.
 - * Duplicate sample.
 - J = Reported concentration is an estimate.
 - M Hydrocarbons in the gasoline range are impacting the diesel range result.
 - N1 Hydrocarbons in the diesel range are impacting lube oil range results.
 - mg/L= Milligrams per liter.
 - NM = Not measured due to equipment malfunction.
 - µg/L = Micrograms per liter.
 - U = Analyte not detected above practical quantitation limit given.
 - U1 = The practical quantitation limit is elevated due to interferences present in the sample.
 - X Reported value is rejected due to surface water interference, sample biased low.
 - Exceeds MTCA A cleanup level.

Table 2 Historical Groundwater Results

Monitoring Well No.			MW-11																				
PARAMETERS	Units		3/13/08	1/20/10	5/25/10	8/10/10	8/10/10*	4/5/11	4/5/11*	9/30/11	1/23/13	1/23/2013*	7/30/13	1/22/14	8/7/14	1/21/15	7/30/15	1/20/16	7/20/16	7/20/17	7/18/18	7/22/19	7/28/20
MTCA A																							
VOLATILE ORGANICS (BTEX)																							
Benzene	ug/L	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	1,000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	ug/L	700	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylene	ug/L	1,000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	ug/L	1,000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
TOTAL PETROLEUM HYDROCARBONS																							
Gasoline	ug/L	800/1,000 ²	100 U	100 U	100 U	140	130	100 U	100 U	320	100 U	100 U	400 U	100 U	100 U	100 U	100 U	100 U	100	100 U	120	100 U	110 U
Diesel	mg/L	0.5																					
Diesel (silica gel)	mg/L	0.5	0.27	0.17 U	0.26 U	0.25 U	0.25 U	0.26 U	0.26 U	0.37	0.26 U	0.26 U	0.27 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.25 U	0.30	0.28 U	0.29 U	0.22 U
Lube Oil	mg/L	0.5																					
Lube Oil (silica gel)	mg/L	0.5	0.40 U	0.27 U	0.42 U	0.41 U	0.41 U	0.42 U	0.42 U	0.42 U	0.41 U	0.41 U	0.44 U	0.41 U	0.41 U	0.41 U	0.42 U	0.42 U	0.40 U	0.46 U	0.44 U	0.47 U	0.22 U
METALS																							
Total Lead	ug/L	15	--	4.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Lead	ug/L	15	--	1.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Iron	ug/L		--	270	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Ferrous Iron	mg/L		--	--	19.0	30.4	30.0	2.66	2.74	--	0.67	0.88	35.90	6.88	36.80	0.35	1.16	0.832	36.0 J	8.4	16.9 J	8.4 J	25.1 J
Dissolved Manganese	ug/L		--	300	1,400	2,600	2,600	400	400	--	370	350	3,800	1,100	3,700	230	320	570	1,600	670	1,000	630	2000
PAHs																							
Naphthalene	ug/L		--	0.13 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	ug/L		--	0.13 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Methylnapthalene	ug/L		--	0.13 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene	ug/L		--	0.13 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthene	ug/L		--	0.13 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Flourene	ug/L		--	0.13 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	ug/L		--	0.13 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene	ug/L		--	0.13 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene	ug/L		--	0.13 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene	ug/L		--	0.13 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	ug/L		--	0.013 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	ug/L		--	0.013 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	ug/L		--	0.013 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	ug/L		--	0.013 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	ug/L	0.1	--	0.013 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	ug/L		--	0.013 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenz(a,h)anthracene	ug/L		--	0.013 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/L		--	0.013 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GENERAL CHEMISTRY																							
Alkalinity	mg/L		170	52	210	120	110	70	66	--	130	180	160	190	280	--	170	230	350	250	230	210	220
Nitrate (as Nitrogen)	mg/L		0.050 U	0.050 U	0.070	0.086	0.1	0.050 U	0.050 U	--	2.40	1.60	0.05 U	30.00	0.05	2.5	4.5	0.05 U	0.057	0.050 U	0.050 U	0.050 U	0.050 U
Sulfate	mg/L		5.0 U	8.8	10 U	25 U	25 U	5.0 U	5.0 U	--	56	47	5 U	45	5 U	24	24	12	10 U	5.3	5.0 U	5.0 U	5.0 U
Chloride	mg/L		5.2	3.1	7.9	8.8	9.4	6.0	5.5	--	2.7	3.6	9.7	25.0	10.0	4.2	6.7	8.1	7.9	8.1	5.6	9.1	5.9
Dissolved Methane	ug/L		--	15	1,200	870	730	310	340	220	53	68	390	190	805	220	220	150	760	240	1,700	3,100	2,600
BOD5	mg/L		--	3.36	3.1	12 U	12 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
FIELD PARAMETERS																							
Turbidity	Neth. Turbidity Units		12.6	165	1.5	32.9	32.9	3.4	3.4	21.1	NM	--	5.80	13.20	14.40	11.00	1.13	4.31	2.31	3.80	6.89	7.22	60.14
pH	--		6.20	5.27	6.20	6.27	6.27	6.17	6.17	6.41	6.19	--	6.72	6.15	6.07	8.30	7.17	6.46	7.00	6.56	6.36	6.28	6.64
Specific Conductance	Millisiemens/cm		63.5	10.3	32.0	90	90	64.3	64.3	89.0	0.4	--	0.61	0.78	0.65	0.35	0.38	0.44	0.62	0.54	0.44	0.42	0.49
Dissolved Oxygen	mg/L		0.0	5.87	0.90	0.0	0.0	2.67	2.67	0.00	0.91	--	0.59	0.71	0.27	0.46	0.55	0.31	0.47	0.28	1.21	2.39	1.35
Oxdat. Red. Potential	Millivolts		62	169	-49.3	-110	-110	-31	-31	-106	-221	--	-98.0	36.4	-27.1	61.0	45.8	51.6	-29.2	-83.6	-106.7	-26.5	-59.8

- Notes:
- 1 Sample collected from replaced well.
 - 2 MTCA A cleanup level for gasoline is 800 µg/L in the presence of detectable benzene.
 - * Duplicate sample.
 - J = Reported concentration is an estimate.
 - M Hydrocarbons in the gasoline range are impacting the diesel range result.
 - N1 Hydrocarbons in the diesel range are impacting lube oil range results.
 - mg/L= Milligrams per liter.
 - NM = Not measured due to equipment malfunction.
 - µg/L = Micrograms per liter.
 - U = Analyte not detected above practical quantitation limit given.
 - U1 = The practical quantitation limit is elevated due to interferences present in the sample.
 - X Reported value is rejected due to surface water interference, sample biased low.
 - Exceeds MTCA A cleanup level.

Table 2 Historical Groundwater Results

Monitoring Well No.			MW-13R																	
PARAMETERS	Units		2/15/10	5/26/10	8/11/10	4/6/11	9/29/11	1/24/13	7/30/13	7/30/13	1/21/14	8/6/14	1/21/15	7/29/15	1/20/16	7/20/16	7/20/17	7/18/18	7/23/19	7/29/20
MTCA A																				
VOLATILE ORGANICS (BTEX)																				
Benzene	ug/L	5	35 J	33	22	11	4	11	11	7.4	4.8	1 U	5.0	1.3	1 U	4.0 U	4.0 U	1 U	4.0 U	1.0 U
Toluene	ug/L	1,000	4.0 U	1.3	1.0 U	1.0 U	1.0 U	1 U	1 U	4 U	1 U	1 U	1 U	1 U	6.8	4.0 U	4.0 U	1 U	4.0 U	1.0 U
Ethylbenzene	ug/L	700	13 J	15	10	2.6	1.0 U	2	2	8.8	1	1	1 U	1 U	1 U	4.0 U	4.0 U	1 U	4.0 U	1.0 U
m,p-Xylene	ug/L	1,000	4.0 U	1.4	1.7	1.0 U	1.0 U	1 U	1 U	4 U	1 U	1 U	1 U	1 U	1 U	6.7	4.0 U	1 U	4.0 U	1.0 U
o-Xylene	ug/L	1,000	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	4 U	1 U	1 U	1 U	1 U	1 U	4.0 U	4.0 U	1 U	4.0 U	1.0 U
TOTAL PETROLEUM HYDROCARBONS																				
Gasoline	ug/L	800/1,000 ²	680 J	560	510	420	150	170	170	400 U	120 U	100 U	100 U	100 U	100 U	400 U	400 U	100 U	400 U	100 U
Diesel	mg/L	0.5																		
Diesel (silica gel)	mg/L	0.5	0.49 J1	0.43	0.39 U	0.41	0.26 U	0.26 U	0.26 U	0.35	0.27 U	0.27 U	--	--	--	--	--	--	--	0.23 U
Lube Oil	mg/L	0.5																		
Lube Oil (silica gel)	mg/L	0.5	0.70 J	0.45 U	0.43 U	0.42 U	0.42 U	0.42 U	0.42 U	0.64	0.43 U	0.43 U	--	--	--	--	--	--	--	0.23 U
METALS																				
Total Lead	ug/L	15	5.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Lead	ug/L	15	1.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Iron	ug/L		3,600	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Ferrous Iron	mg/L		--	15.2	9.31	7.94	--	4.51	4.51	--	0.286	--	--	--	--	--	--	--	--	--
Dissolved Manganese	ug/L		1,500	1,300	2,000	1,800	--	1,700	1,700	--	--	--	--	--	--	--	--	--	--	--
PAHs																				
Naphthalene	ug/L		15	--	--	0.35	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	ug/L		1.1	--	--	0.10 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Methylnappthalene	ug/L		4.7	--	--	0.38	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene	ug/L		1.1	--	--	0.40	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthene	ug/L		48	--	--	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Flourene	ug/L		21	--	--	7.6	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	ug/L		3.2	--	--	0.70	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene	ug/L		1.9	--	--	1.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene	ug/L		1.5	--	--	1.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene	ug/L		0.91	--	--	0.58	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	ug/L		0.15	0.057	0.061	0.058	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	ug/L		0.15	0.040	0.050 U	0.044	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	ug/L		0.093	0.010 U	0.010 U	0.018	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	ug/L		0.083	0.010 U	0.010 U	0.014	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	ug/L	0.1	0.092	0.010 U	0.010 U	0.017	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	ug/L		0.041	0.010 U	0.010 U	0.010 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenz(a,h)anthracene	ug/L		0.013	0.010 U	0.010 U	0.010 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/L		0.053	--	--	0.010 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GENERAL CHEMISTRY																				
Alkalinity	mg/L		1,300	1,400	1,600	1,500	--	1,900	1,900	--	--	--	--	--	--	--	--	--	--	--
Nitrate (as Nitrogen)	mg/L		0.050 U	0.050 U	0.050 U	0.050 U	--	0.05 U	0.05 U	--	--	--	--	--	--	--	--	--	--	--
Sulfate	mg/L		460	460	560	280	--	160.00	160.00	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/L		710	670	750	420	--	400.00	400.00	--	--	--	--	--	--	--	--	--	--	--
Dissolved Methane	ug/L		280	580	680	290	--	10	10	--	220	--	82	44	250	230	130	53	330	--
BOD5	mg/L		4.47	2.2	5.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
FIELD PARAMETERS																				
Turbidity	Neth. Turbidity Units		366	275.3	106	>1000	170.0	NM	NM	11.2	10.4	--	35.20	--	--	--	--	--	--	34.79
pH	--		6.96	6.81	6.89	6.99	7.42	7.20	7.20	7.31	7.01	--	NM	--	--	--	--	--	--	7.10
Specific Conductance	Millisiemens/cm		57.3	4.53	55.2	438	5.99	4.85	4.85	5.82	5.24	--	3.19	--	--	--	--	--	--	2.04
Dissolved Oxygen	mg/L		7.56	3.07	0.0	4.82	7.70	7.68	7.68	5.34	3.29	--	2.56	--	--	--	--	--	--	1.77
Oxdat. Red. Potential	Millivolts		-13	-96.3	-146	-103	-133	151	151	151	80	--	-40.70	--	--	--	--	--	--	-26.50

Notes:

1 Sample collected from replaced well.

2 MTCA A cleanup level for gasoline is 800 µg/L in the presence of detectable benzene.

* Duplicate sample.

J = Reported concentration is an estimate.

M Hydrocarbons in the gasoline range are impacting the diesel range result.

N1 Hydrocarbons in the diesel range are impacting lube oil range results.

mg/L= Milligrams per liter.

NM = Not measured due to equipment malfunction.

µg/L = Micrograms per liter.

U = Analyte not detected above practical quantitation limit given.

U1 = The practical quantitation limit is elevated due to interferences present in the sample.

X Reported value is rejected due to surface water interference, sample biased low.

Exceeds MTCA A cleanup level.

Table 2 Historical Groundwater Results

Monitoring Well No.			MW-20R												
PARAMETERS	Units		1/23/13	7/31/13	1/21/14*	1/21/14	8/7/14	1/20/15	7/30/15	1/20/16	7/21/16	7/19/17	7/19/18	7/22/19	7/29/20
MTCA A															
VOLATILE ORGANICS (BTEX)															
Benzene	ug/L	5	4.8	23	4.3	4.5	1.0 U	1.0 U	6.7	1.8	1 U	1.0	1.6	1.4	1.0 U
Toluene	ug/L	1,000	1.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	ug/L	700	2.7	40	4.9	5.0	1.0 U	1.0 U	16	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylene	ug/L	1,000	1.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	ug/L	1,000	1.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
TOTAL PETROLEUM HYDROCARBONS															
Gasoline	ug/L	800/1,000 ²	260	790	280	290	100 U	100 U	350	100 U	100 U	100 U	100 U	100 U	100 U
Diesel	mg/L	0.5													
Diesel (silica gel)	mg/L	0.5	0.26 U	0.27 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.28 U	0.26 U	0.25 U	0.21 U
Lube Oil	mg/L	0.5													
Lube Oil (silica gel)	mg/L	0.5	0.42 U	0.43 U	0.41 U	0.41 U	0.42 U	0.42 U	0.41 U	0.42 U	0.42 U	0.45 U	0.41 U	0.41 U	0.21 U
METALS															
Total Lead	ug/L	15	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Lead	ug/L	15	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Iron	ug/L		--	--	--	--	--	--	--	--	--	--	--	--	--
Total Ferrous Iron	mg/L		26.2	29.2	0.088	0.078	33.2	2.4	31.2	35.4	25.2	17.4 J	18.9	18.3 J	18.7 J
Dissolved Manganese	ug/L		1,900	2,600	390	390	2,500	740	1,900	1,900	1,400	1,300	1,600	1,600	1,600
PAHs															
Naphthalene	ug/L		--	--	--	--	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	ug/L		--	--	--	--	--	--	--	--	--	--	--	--	--
1-Methylnappthalene	ug/L		--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene	ug/L		--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthene	ug/L		--	--	--	--	--	--	--	--	--	--	--	--	--
Flourene	ug/L		--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	ug/L		--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene	ug/L		--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene	ug/L		--	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene	ug/L		--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	ug/L		--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	ug/L		--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	ug/L		--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	ug/L		--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	ug/L	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	ug/L		--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenz(a,h)anthracene	ug/L		--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/L		--	--	--	--	--	--	--	--	--	--	--	--	--
GENERAL CHEMISTRY															
Alkalinity	mg/L		220	270	250	270	300	--	350	330	270	240	220	230	230
Nitrate (as Nitrogen)	mg/L		0.05 U	0.05 U	6.40	6.30	0.05 U	3.2	0.06	0.05 U	0.05 U	0.051	0.050 U	0.050 U	0.050 U
Sulfate	mg/L		25 U	10 U	43	38	19	14	25 U	10 U	10 U	10 U	10 U	5.0 U	5.0 U
Chloride	mg/L		24	28	43	42	25	9.1	15	15	14	7.3	8.2	9.8	6.3
Dissolved Methane	ug/L		540	2,000	930	840	1,650	250	2,200	1,800	1,400	1,800	1,600	3,300	4,800
BOD5	mg/L		--	--	--	--	--	--	--	--	--	--	--	--	--
FIELD PARAMETERS															
Turbidity	Neth. Turbidity Units		NM	0.0	--	0.1	6.1	8.5	10.2	2.1	6.2	9.6	8.0	8.0	45.6
pH	--		6.67	6.62	--	5.98	6.11	8.16	7.83	6.74	7.00	6.69	6.95	6.95	6.74
Specific Conductance	Millisiemens/cm		0.64	0.70	--	0.724	0.72	0.46	0.64	0.68	0.50	0.50	0.42	0.42	0.48
Dissolved Oxygen	mg/L		0.00	3.79	--	0.56	0.25	1.48	0.44	0.32	0.32	0.36	3.79	3.79	1.47
Oxdat. Red. Potential	Millivolts		-243	-79	--	166	-30.1	72.1	-57.4	-33.1	-24.0	-60.6	-105.4	-105.4	29.1

- Notes:
- 1 Sample collected from replaced well.
 - 2 MTCA A cleanup level for gasoline is 800 µg/L in the presence of detectable benzene.
 - * Duplicate sample.
 - J = Reported concentration is an estimate.
 - M Hydrocarbons in the gasoline range are impacting the diesel range result.
 - N1 Hydrocarbons in the diesel range are impacting lube oil range results.
 - mg/L= Milligrams per liter.
 - NM = Not measured due to equipment malfunction.
 - µg/L = Micrograms per liter.
 - U = Analyte not detected above practical quantitation limit given.
 - U1 = The practical quantitation limit is elevated due to interferences present in the sample.
 - X Reported value is rejected due to surface water interference, sample biased low.
 - Exceeds MTCA A cleanup level.

Table 2 Historical Groundwater Results

Monitoring Well No.			MW-21R																										
PARAMETERS	Units		3/18/08	2/15/10	6/1/10	8/11/10	4/6/11	9/28/11	1/23/13	7/31/13	7/31/13*	1/21/14	8/6/14	8/6/14 *	1/21/15	7/29/15	7/29/15 *	1/21/16	7/21/16	7/21/16 *	7/19/17	7/19/17 *	7/19/18	7/19/18 *	7/23/19	7/23/19 *	7/29/20	7/29/20 *	
MTCA A																													
VOLATILE ORGANICS (BTEX)																													
Benzene	ug/L	5	15	46 J	34	27	45	19	32	39	33	29	33	36	32	16	17	2.7	27	26	15	16	16	14	17	17	13	14	
Toluene	ug/L	1,000	91	5.0 J	2.9	1.7	6.7	1.0 U	4.5	7.3	6.7	9.1	11.0	11.0	10.0	7.1	7.2	1.4	9.6	11	6.9	7.0	6.1	5.4	9.3	9.6	8.9	9.0	
Ethylbenzene	ug/L	700	620	230 J	240	120	340	34	160	98	82	95	58	58	49	26	26	17	42	42	29	27	10	8	12	12	3.9	4.9	
m,p-Xylene	ug/L	1,000	910	190 J	210	100	290	21	85	59	48	80	51	50	41	24	24	18	31	32	20	19	8.6	7.4	13	13	10	11	
o-Xylene	ug/L	1,000	110	8.9 J	2.3	1.9	4.0 U	1.0 U	2.3	4.0 U	4.0 U	4.1	5.2	5.2	4.0 U	2.0	1.9	1.0 U	4.0 U	4.0 U	4.0 U	4.0 U	1.0	1.0 U	4.0 U	4.0 U	1.2	1.2	
TOTAL PETROLEUM HYDROCARBONS																													
Gasoline	ug/L	800/1,000 ²	9,200	4,400 J	4,400	2,800	5,100	1,500	3,000	2,300	2,000	2,600	2,700	2,900	1,800	1,600	1,700	360	1,900	1,900	1,300	1,300	1,200	1,000	1,900	1,900	1,300	1,300	
Diesel	mg/L	0.5																											
Diesel (silica gel)	mg/L	0.5	1.7	0.89 1	0.79 U	0.87	0.68 U	0.42 U	0.47 U	0.59 U	0.65 U	0.77 U	0.67 U	0.76 U	0.61 U	0.45 U	0.45 U	0.25 U	0.48 U	0.48 U	0.36 U	0.38 U	0.54 U	0.61 U	0.52 U	0.56 U	0.59 M	0.54 M	
Lube Oil	mg/L	0.5																											
Lube Oil (silica gel)	mg/L	0.5	0.40 U	0.46 U	0.42 U	0.41 U	0.42 U	0.42 U	0.41 U	0.43 U	0.42 U	0.41 U	0.43 U	0.42 U	0.42 U	0.41 U	0.41 U	0.41 U	0.42 U	0.42 U	0.42 U	0.42 U	0.43 U	0.42 U	0.42 U	0.41 U	0.41 U	0.22 U	0.23 U
METALS																													
Total Lead	ug/L	15	10	15	2.8 J	10 J	1.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Dissolved Lead	ug/L	15	8.9	2.3	1.4	1.4	1.0 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Dissolved Iron	ug/L		--	18,000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Total Ferrous Iron	mg/L		--	--	16.2	17.9	10.1	--	6.45	7.10	--	7.42	8.18	7.62	8.42	9.66	10.3	0.408	6.92	7.37	7.64 J	7.70 J	7.52	7.19	3.80	4.10 J	10.30	7.85 J	
Dissolved Manganese	ug/L		--	4,100	4,500	3,500	4,200	--	2,800	3,400	--	3,300	3,700	3,700	2,600	2,300	2,400	66	2,000	1,900	1,600	1,800	1,800	1,800	1,600	1,600	1,400	1,500	
PAHs																													
Naphthalene	ug/L		18	18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
2-Methylnaphthalene	ug/L		32	7.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
1-Methylnapthalene	ug/L		20	18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Acenaphthylene	ug/L		0.099	1.1 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Acenaphthene	ug/L		1.1	1.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Flourene	ug/L		0.96	0.61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Phenanthrene	ug/L		0.65	0.44	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Anthracene	ug/L		0.095 U	0.26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Fluoranthene	ug/L		0.11	0.12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Pyrene	ug/L		0.095 U	0.11 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Benzo(a)anthracene	ug/L		0.012	0.011 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Chrysene	ug/L		0.011	0.011 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Benzo(b)fluoranthene	ug/L		0.010	0.011 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Benzo(k)fluoranthene	ug/L		0.011	0.011 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Benzo(a)pyrene	ug/L	0.1	0.012	0.011 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Indeno(1,2,3-cd)pyrene	ug/L		0.0099	0.011 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Dibenz(a,h)anthracene	ug/L		0.0095 U	0.011 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Benzo[g,h,i]perylene	ug/L		0.013	0.011 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
GENERAL CHEMISTRY																													
Alkalinity	mg/L		150	140	1,400	1,500	2,000	--	1,700	1,800	--	2,000	1,800	1,900	--	1,600	1,600	350	1,600	1,600	1,700	1,300	1,100	1,100	1,100	1,100	1,000	1,000	
Nitrate (as Nitrogen)	mg/L		0.050 U	0.050 J	0.050 U	0.057	0.27	--	0.05 U	0.05 U	--	0.062	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.051	0.051	0.05 U	0.05 U	0 U	0 U	0.050 U	0.050 U	0.050 U	0.050 U	
Sulfate	mg/L		5.0 U	230	170	120	110	--	5.0 U	5.0 U	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	
Chloride	mg/L		28	140	120	110	100	--	74	120	--	100	150	140	130	110	97	20	57	57	33	32	24	24	21	21	18	18	
Dissolved Methane	ug/L		--	5,700	4,200	4,800	3,200	--	1,300	2,200	--	4,200	5,130	6,190	4,100	4,400	2,700	970	4,200	3,300	4,900	5,200	5,700	4,600	5,600	6,300	4,800	7,700	
BOD5	mg/L		--	17	8.4	16.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
FIELD PARAMETERS																													
Turbidity	Neth. Turbidity Units		168	303	8.9	384	52.2	646.0	NM	NM	5.6	5.7	6.3	--	0.60	6.26	6.26	2.02	2.02	2.02	4.02	4.02	4.11	4.11	4.01	4.01	7.40	--	
pH	--		6.39	6.56	6.83	7.00	7.06	7.06	7.08	7.08	7.20	6.84	6.83	--	8.87	7.99	7.99	7.52	7.40	7.40	7.12	7.12	7.15	7.15	6.96	6.96	7.22	--	
Specific Conductance	Millisiemens/cm		44.4	33.3	2.50	4.47	430	3.33	3.22	3.22	3.09	3.60	3.27	--	2.86	2.85	2.85	0.62	2.33	2.33	2.16	2.16	1.70	1.70	1.74	1.74	1.81	--	
Dissolved Oxygen	mg/L		0.0	0.00	4.92	0.0	1.80	0.00	0.70	0.70	0.71	0.36	4.72	--	0.35	5.02	5.02	0.14	0.32	0.32	0.27	0.27	0.95	0.95	1.68	1.68	1.42	--	
Oxdat. Red. Potential	Millivolts		15	-107	-140.0	-162	-160	-195	-244	-244	-117	-32	-16	--	-182.7	-142.0	-142.0	85.4	-39.9	-39.9	-112.4	-112.4	-149.0	-149.0	-121.1	-121.1	-62.9	--	

Notes:

1 Sample collected from replaced well.

2 MTCA A cleanup level for gasoline is 800 µg/L in the presence of detectable benzene.

* Duplicate sample.

J= Reported concentration is an estimate.

M Hydrocarbons in the gasoline range are impacting the diesel range result.

N1 Hydrocarbons in the diesel range are impacting lube oil range results.

mg/L= Milligrams per liter.

NM = Not measured due to equipment malfunction.

µg/L = Micrograms per liter.

U = Analyte not detected above practical quantitation limit given.

U1 = The practical quantitation limit is elevated due to interferences present in the sample.

X Reported value is rejected due to surface water interference, sample biased low.

Exceeds MTCA A cleanup level.

Table 2 Historical Groundwater Results

Monitoring Well No.			MW-22R																
PARAMETERS	Units		3/17/08 ¹	1/20/10	5/26/10	8/12/10	4/6/11	9/29/11	1/24/13	7/31/13	1/21/14	8/6/14	1/21/15	7/29/15	7/20/16	7/20/16	7/19/18	7/23/19	7/29/20
MTCA A																			
VOLATILE ORGANICS (BTEX)																			
Benzene	ug/L	5	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	2.7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	1,000	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.7	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	ug/L	700	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylene	ug/L	1,000	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	ug/L	1,000	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
TOTAL PETROLEUM HYDROCARBONS																			
Gasoline	ug/L	800/1,000 ²	400 U	400 U	100 U	100 U	100 U	120	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U
Diesel	mg/L	0.5																	
Diesel (silica gel)	mg/L	0.5	0.26 U	0.26 U	0.27 U	0.25 U	0.27 U	0.26 U	0.26 U	0.27 U	0.26 U	0.26 U	0.26 U	0.26 U	--	0.26 U	0.31 U	--	0.29 U
Lube Oil	mg/L	0.5																	
Lube Oil (silica gel)	mg/L	0.5	0.41 U	0.41 U	0.43 U	0.41 U	0.43 U	0.41 U	0.41 U	0.44 U	0.41 U	0.42 U	0.41 U	0.41 U	--	0.41 U	0.49 U	--	0.60
METALS																			
Total Lead	ug/L	15	1.1 U	1.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Lead	ug/L	15	1.0 U	1.0 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Iron	ug/L		--	220	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Ferrous Iron	mg/L		--	--	0.295	1.29	0.043	--	0.06	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	--	0.11 J	3.15	--	--
Dissolved Manganese	ug/L		--	1,400	890	3,200	840	--	700	770	400	510	160	360	--	--	--	--	--
PAHs																			
Naphthalene	ug/L		0.098 U	0.10 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	ug/L		0.098 U	0.10 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Methylnapthalene	ug/L		0.098 U	0.10 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene	ug/L		0.098 U	0.10 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthene	ug/L		0.52	0.10 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Flourene	ug/L		0.098 U	0.10 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	ug/L		0.098 U	0.10 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene	ug/L		0.098 U	0.10 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene	ug/L		0.098 U	0.10 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene	ug/L		0.098 U	0.10 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	ug/L		0.0098 U	0.010 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	ug/L		0.0098 U	0.010 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	ug/L		0.0098 U	0.010 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	ug/L		0.0098 U	0.010 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	ug/L	0.1	0.0098 U	0.010 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	ug/L		0.0098 U	0.010 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenz(a,h)anthracene	ug/L		0.0098 U	0.010 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/L		0.0098 U	0.010 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GENERAL CHEMISTRY																			
Alkalinity	mg/L		340	160	320	240	310	--	250	200	280	280	--	300	--	--	--	--	--
Nitrate (as Nitrogen)	mg/L		0.050 U	0.50	0.050 U	0.17	0.41	--	0.31 U	0.22	0.50	0.50	0.72	0.56	--	--	--	--	--
Sulfate	mg/L		22	1,200	75	200	39	--	34	510	240	120	690	75	--	--	--	--	--
Chloride	mg/L		370	9,100	390	1,600	97	--	90	4,100	1,300	560	5,000	310	--	--	--	--	--
Dissolved Methane	ug/L		--	6.3	21	10	6.8	--	1.90	3.30	5.40	0.70 U	0.97	3.0	4.8	55	30	91	--
BOD5	mg/L		--	2.0 U	1.0 U	1.2 U	--	--	--	--	--	--	--	--	--	--	--	--	--
FIELD PARAMETERS																			
Turbidity	Neth. Turbidity Units		212	56.3	4.1	132	0.8	112.0	NM	0.0	0.2	0.5	1.4	--	--	--	--	--	55.8
pH	--		6.62	6.32	6.82	6.69	7.03	7.65	7.08	6.97	6.98	6.33	8.63	--	--	--	--	--	7.05
Specific Conductance	Millisiemens/cm		19.6	17.9	1.37	NM	128	6.04	0.85	11.00	5.13	2.34	18.49	--	--	--	--	--	29.03
Dissolved Oxygen	mg/L		0.0	7.55	4.90	0.01	1.75	8.48	8.69	7.10	0.97	4.76	4.46	--	--	--	--	--	4.02
Oxdat. Red. Potential	Millivolts		148	54	62.0	-36	32	-139	-161	35	41.3	83	70	--	--	--	--	--	147.4

Notes:

1 Sample collected from replaced well.

2 MTCA A cleanup level for gasoline is 800 µg/L in the presence of detectable benzene.

* Duplicate sample.

J = Reported concentration is an estimate.

M Hydrocarbons in the gasoline range are impacting the diesel range result.

N1 Hydrocarbons in the diesel range are impacting lube oil range results.

mg/L= Milligrams per liter.

NM = Not measured due to equipment malfunction.

µg/L = Micrograms per liter.

U = Analyte not detected above practical quantitation limit given.

U1 = The practical quantitation limit is elevated due to interferences present in the sample.

X Reported value is rejected due to surface water interference, sample biased low.

Exceeds MTCA A cleanup level.

Table 2 Historical Groundwater Results

Monitoring Well No.			MW-25																		
PARAMETERS	Units		3/18/08	3/18/08	1/21/10	5/27/10	8/12/10	4/6/11	9/29/11	1/24/13	7/30/13	1/22/14	8/7/14	1/21/15	7/29/15	1/20/16	7/20/16	7/20/17	7/18/18	7/23/19	7/29/20
MTCA A																					
VOLATILE ORGANICS (BTEX)																					
Benzene	ug/L	5	4.0 U	4.0	10 J	4.0 U	1.3	4.0 U	1.4	1.0	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	4.0 U	1.0 U	1.0 U	4.0 U	1.0 U
Toluene	ug/L	1,000	4.0 U	4.0	7.2 J	4.0 U	2.1	4.0 U	2.5	1.2	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	4.0 U	1.0 U	1.0 U	4.0 U	1.0 U
Ethylbenzene	ug/L	700	56	56	74 J	4.0 U	6.1	5.3	11	2.3	5.0	1.0 U	1.0 U	1.0 U	1.3	1.0 U	4.0 U	1.4	1.0 U	4.0 U	1.0 U
m,p-Xylene	ug/L	1,000	4.2	4.1	140 J	4.0 U	5.0 U	8.4	1.2	3.4	9.0	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.6	1.0 U	1.0 U	4.0 U	1.0 U
o-Xylene	ug/L	1,000	4.0 U	4.0	200 J1	4.0 U	1.0 U	4.0 U	1.0 U	1.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	4.0 U	1.0 U	1.0 U	4.0 U	1.0 U
TOTAL PETROLEUM HYDROCARBONS																					
Gasoline	ug/L	800/1,000 ²	1,600	1,700	2,000 U	1,400	1,300	1,500	1,500	1,000	1,200	420	1,400	100	440	130	930	460	480	760	470
Diesel	mg/L	0.5																			
Diesel (silica gel)	mg/L	0.5	1.2	1.0	0.49	0.92	2	7.0	1.3	0.7 U	2.0	0.7	4.9	0.26 U	0.36 U	0.26 U	0.49	0.91	0.64	0.41 U	0.94
Lube Oil	mg/L	0.5																			
Lube Oil (silica gel)	mg/L	0.5	0.48 U	0.46 U	0.42 U	0.42 U	0.41 U	0.42 U	0.41 U	0.44 U	0.48	0.41	0.41 U	0.42 U	0.42 U	0.41 U	0.42 U	0.43 U	0.41 U	0.41 U	0.22 U
METALS																					
Total Lead	ug/L	15	1.2	1.3	1.1 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Lead	ug/L	15	1.0 U	1.0 U	1.0 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Iron	ug/L		--	--	2,000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Ferrous Iron	mg/L		--	--	--	0.352	3.78	1.39	--	5.71	108	0.088	13.1	0.509	16.0	1.92	28.4 J	22.3 J	2.86 J	3.87 J	80.4 J
Dissolved Manganese	ug/L		--	--	120	220	130	170	--	670	2,700	250	96	20	520	110	2,100	2,300	230	290	8,600
PAHs																					
Naphthalene	ug/L		1.2	1.4	0.27	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	ug/L		0.11 U	0.11 U	0.10 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Methylnapthalene	ug/L		22	25	0.67	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene	ug/L		0.17	0.17	0.10 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthene	ug/L		0.98	0.96	0.15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Flourene	ug/L		1.6	1.7	0.18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	ug/L		0.11 U	0.11 U	0.10 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene	ug/L		0.11 U	0.11 U	0.10 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene	ug/L		0.11 U	0.11 U	0.10 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene	ug/L		0.11 U	0.11 U	0.10 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	ug/L		0.011 U	0.011 U	0.010 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	ug/L		0.011 U	0.011 U	0.010 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	ug/L		0.011 U	0.011 U	0.010 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	ug/L		0.011 U	0.011 U	0.010 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	ug/L	0.1	0.011 U	0.011 U	0.010 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	ug/L		0.011 U	0.011 U	0.010 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenz(a,h)anthracene	ug/L		0.011 U	0.011 U	0.010 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/L		0.011 U	0.11 U	0.010 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GENERAL CHEMISTRY																					
Alkalinity	mg/L		420	410	140	190	260	200	--	400	130	150	340	--	200	130	230	260	200	200	110
Nitrate (as Nitrogen)	mg/L		0.052	0.050 U	3.4	0.73	0.050 U	1.4	--	0.05 U	0.05 U	7.60	0.07	1.2	0.07	0.61	0.052	0.079	0.095	0.095	0.078
Sulfate	mg/L		36	36	13	8.0	26	5.0 U	--	18	1,100	140	40	11	48	10 U	18	5.8	5.0 U	5.0 U	510
Chloride	mg/L		980	910	38	31	610	24	--	120	8,000	1300	530	3.3	780	11	330	410	30	89	4,800
Dissolved Methane	ug/L		--	--	220	190	330	190	--	110	57	3.2	63	16	500	20	910	1200	190	700	1,000
BOD5	mg/L		--	--	2.0 U	1.9	4.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--
FIELD PARAMETERS																					
Turbidity	Neth. Turbidity Units		120	120	164	4.8	32.6	65.5	60.0	NM	49.0	8.1	6.7	14.9	9.7	7.4	1.92	3.26	8.01	8.62	40.63
pH	--		6.31	6.31	5.81	6.28	6.96	6.20	6.21	6.54	6.30	5.80	6.35	8.45	8.15	6.37	6.33	6.35	6.29	6.32	5.83
Specific Conductance	Millisiemens/cm		19.8	19.8	31.8	28.90	5.13	90.00	51.60	1.07	23.40	4.77	2.41	0.26	2.59	0.30	0.61	2.00	0.40	0.62	15.86
Dissolved Oxygen	mg/L		0.0	0.0	4.96	1.10	0.0	0.57	0.00	0.07	0.50	0.80	0.32	2.06	0.61	1.42	0.50	0.10	1.07	1.93	1.57
Oxdat. Red. Potential	Millivolts		-56	-56	-14	85.6	-120	-30	-99	-287	-32	179	-76.6	76.1	-181.2	106.1	81.9	-119.6	-104.2	-75.0	61.8

Notes:

1 Sample collected from replaced well.

2 MTCA A cleanup level for gasoline is 800 µg/L in the presence of detectable benzene.

* Duplicate sample.

J = Reported concentration is an estimate.

M Hydrocarbons in the gasoline range are impacting the diesel range result.

N1 Hydrocarbons in the diesel range are impacting lube oil range results.

mg/L= Milligrams per liter.

NM = Not measured due to equipment malfunction.

µg/L = Micrograms per liter.

U = Analyte not detected above practical quantitation limit given.

U1 = The practical quantitation limit is elevated due to interferences present in the sample.

X Reported value is rejected due to surface water interference, sample biased low.

Exceeds MTCA A cleanup level.

Table 2 Historical Groundwater Results

Monitoring Well No.			MW-26R																	
PARAMETERS	Units		3/18/08 ¹	1/20/10	5/26/10	8/11/10	4/6/11	9/28/11	1/24/13	7/31/13	1/21/14	8/6/14	1/21/15	7/29/15	1/21/16	7/20/16	7/19/17	7/19/18	7/23/19	7/29/20
MTCA A																				
VOLATILE ORGANICS (BTEX)																				
Benzene	ug/L	5	17	4.0 U	17	3.9	1.0 U	6.0	5.7	5.0	1.0 U	4.2 U	1.0 U	1.0 U	4.0 U	1.0 U	1.7	1.0 U	4.0 U	1.0 U
Toluene	ug/L	1,000	4.0 U	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	4.0 U	1.0 U	4.0 U	1.0 U	1.0 U	4.0 U	1.0 U	1.0 U	1.0 U	4.0 U	1.0 U
Ethylbenzene	ug/L	700	4.0 U	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	4.0 U	1.0 U	4.0 U	1.0 U	1.0 U	4.0 U	1.0 U	1.0 U	1.0 U	4.0 U	1.0 U
m,p-Xylene	ug/L	1,000	4.0 U	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.1	4.0	1.0 U	4.0 U	1.0 U	1.0 U	4.0 U	1.0 U	1.0 U	1.0 U	4.0 U	1.0 U
o-Xylene	ug/L	1,000	4.0 U	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	4.0 U	1.0 U	4.0 U	1.0 U	1.0 U	4.0 U	1.0 U	1.0 U	1.0 U	4.0 U	1.0 U
TOTAL PETROLEUM HYDROCARBONS																				
Gasoline	ug/L	800/1,000 ²	1,300	400 U	530	240	100 U	270	290	400 U	100 U	400 U	100 U	100 U	400 U	100 U	110	100 U	400 U	100 U
Diesel	mg/L	0.5																		
Diesel (silica gel)	mg/L	0.5	1.3	0.27 U	0.26 U	0.31 U	0.27 U	0.26 U	0.26 U	0.26 U	0.25 U	0.26 U	0.25 U	0.26 U	0.26 U	--	0.25 U	0.27 U	0.25 U	0.21 U
Lube Oil	mg/L	0.5																		
Lube Oil (silica gel)	mg/L	0.5	0.40 U	0.43 U	0.41 U	0.40 U	0.43 U	0.41 U	0.41 U	0.41 U	0.40 U	0.41 U	0.41 U	0.41 U	0.41 U	--	0.40 U	0.43 U	0.41 U	0.21 U
METALS																				
Total Lead	ug/L	15	3.3	1.1 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Lead	ug/L	15	1.0 U	1.0 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Iron	ug/L		--	56 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Ferrous Iron	mg/L		--	--	0.758	0.8	0.059	--	0.395	0.706	0.196	0.385	0.04 U	0.542	0.040 U	--	0.165 J	0.208	0.108 J	0.095 J
Dissolved Manganese	ug/L		--	11 U	66	560	10 U	--	4,000	260	77	150	10 U	89	10 U	--	250	79	150	150
PAHs																				
Naphthalene	ug/L		0.80	0.10 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	ug/L		0.10 U	0.10 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Methylnappthalene	ug/L		69	0.10 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene	ug/L		0.45	0.15 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthene	ug/L		23	0.17 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Flourene	ug/L		4.8	0.10 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	ug/L		10	0.10 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene	ug/L		2.4	0.17 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene	ug/L		0.88	0.10 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene	ug/L		1.2	0.10 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	ug/L		0.10	0.016 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	ug/L		0.098	0.010 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	ug/L		0.022	0.010 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	ug/L		0.027	0.010 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	ug/L	0.1	0.051	0.010 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	ug/L		0.017	0.010 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenz(a,h)anthracene	ug/L		0.010 U	0.010 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/L		0.020	0.010 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GENERAL CHEMISTRY																				
Alkalinity	mg/L		190	180	270	210	300	--	330	200	160	320	--	300	210	--	270	200	270	230
Nitrate (as Nitrogen)	mg/L		0.050 U	1.0	0.16	0.050 U	0.050 U	--	0.05 U	0.05 U	0.41	0.05 U	0.32	0.05 U	0.25	--	0.052	0.050 U	0.050 U	0.050 U
Sulfate	mg/L		1,400	1,200	1,400	2,200	1,300	--	1,100	1,100	2,400	1,600	1,500	1,300	1,200	--	1,500	1,800	1,100	1,700
Chloride	mg/L		9,400	9,100	10,000	20,000	8,400	--	7,200	14,000	11,000	9,400	24,000	7,800	9,000	--	9,200	13,000	8,900	11,000
Dissolved Methane	ug/L		--	3.0	68	5.0	29	--	270	16	1.0	12.1	0.5 U	18	3	45	130	150	490	1.3
BOD5	mg/L		--	2.00 U	1.7	1.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--
FIELD PARAMETERS																				
Turbidity	Neth. Turbidity Units		85.7	70.2	3.8	38.0	0.1	82.3	NM	0.0	4.9	16.0	0.4	8.3	7.1	--	1.8	5.2	4.3	25.3
pH	--		6.24	6.19	6.31	6.53	6.88	6.52	6.72	6.68	6.51	6.52	8.03	8.31	6.88	--	6.69	6.77	6.57	6.98
Specific Conductance	Millisiemens/cm		3.25	16.6	22.42	--	--	--	5.70	38.0	38.3	25.8	30.2	23.5	27.7	--	34.7	35.0	23.6	42.2
Dissolved Oxygen	mg/L		0.0	6.75	5.52	0.01	0.36	0.00	0.21	2.11	2.60	4.95	5.97	1.87	4.20	--	0.73	6.77	1.55	8.01
Oxdat. Red. Potential	Millivolts		48	58	-64.5	-98	-84	-275	-321	-88	-156.5	-192	89.2	-240.6	311	--	-155.9	-78.0	-53.8	318.6

Notes:

1 Sample collected from replaced well.

2 MTCA A cleanup level for gasoline is 800 µg/L in the presence of detectable benzene.

* Duplicate sample.

J = Reported concentration is an estimate.

M Hydrocarbons in the gasoline range are impacting the diesel range result.

N1 Hydrocarbons in the diesel range are impacting lube oil range results.

mg/L= Milligrams per liter.

NM = Not measured due to equipment malfunction.

µg/L = Micrograms per liter.

U = Analyte not detected above practical quantitation limit given.

U1 = The practical quantitation limit is elevated due to interferences present in the sample.

X Reported value is rejected due to surface water interference, sample biased low.

Exceeds MTCA A cleanup level.

Table 2 Historical Groundwater Results

Monitoring Well No.			MW-27															
PARAMETERS	Units		4/7/11	9/30/11	1/24/13	7/30/13	1/22/14	8/7/14	1/20/15	1/20/15 *	7/30/15	1/21/16	1/21/16 *	7/21/16	7/19/17	7/19/18	7/22/19	7/29/20
MTCA A																		
VOLATILE ORGANICS (BTEX)																		
Benzene	ug/L	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	1,000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	ug/L	700	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylene	ug/L	1,000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	ug/L	1,000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
TOTAL PETROLEUM HYDROCARBONS																		
Gasoline	ug/L	800/1,000 ²	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U
Diesel	mg/L	0.5																
Diesel (silica gel)	mg/L	0.5	0.26 U	0.26 U	0.26 U	0.27 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.21 U
Lube Oil	mg/L	0.5																
Lube Oil (silica gel)	mg/L	0.5	0.41 U	0.42 U	0.42 U	0.43 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.21 U
METALS																		
Total Lead	ug/L	15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Lead	ug/L	15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Iron	ug/L		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Ferrous Iron	mg/L		27.6	--	34.9	42.6	32.4	49.4	33.1	32.9	49.0	30.6	30.4	--	22.9 J	23.7	22.8 J	25.1 J
Dissolved Manganese	ug/L		3,900	--	4,300	6,500	5,400	6,800	4,100	4,000	5,200	3,200	3,200	3,000	2,800	2,800	3,100	3,500
PAHs																		
Naphthalene	ug/L		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	ug/L		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Methylnappthalene	ug/L		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene	ug/L		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthene	ug/L		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Flourene	ug/L		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	ug/L		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene	ug/L		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene	ug/L		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene	ug/L		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	ug/L		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	ug/L		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	ug/L		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	ug/L		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	ug/L	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	ug/L		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenz(a,h)anthracene	ug/L		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/L		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GENERAL CHEMISTRY																		
Alkalinity	mg/L		310	--	270	310	360	370	--	--	490	350	370	270	270	230	240	250
Nitrate (as Nitrogen)	mg/L		0.050 U	--	0.05 U	0.05 U	0.05 U	0.05 U	0.12 U	0.12 U	0.07	0.05 U	0.05 U	0.05 U	0.14	0.05 U	0.05 U	0.05 U
Sulfate	mg/L		25 U	--	25 U	10 U	25 U	5 U	25 U	25 U	25 U	25 U	25 U	25 U	10 U	10 U	5.0 U	5.0 U
Chloride	mg/L		9.8	--	10	20	34	12	14	13	19	16	17	10	7.4	7.2	11	6
Dissolved Methane	ug/L		8,600	--	6,900	5,200	5,900	10,900	14,000	9,900	5,000	5,800 J	8,700 J	4,200	6,200	4,600	6,100	8,900
BOD5	mg/L		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
FIELD PARAMETERS																		
Turbidity	Neth. Turbidity Units		49.2	>1000	NM	NM	9.2	35.80	15.30	15.30	1.11	2.04	2.04	4.92	4.29	6.01	4.81	38.97
pH	--		6.58	6.53	6.61	6.60	6.50	5.97	7.76	7.76	7.88	6.76	6.76	6.61	6.77	6.83	6.59	6.63
Specific Conductance	Millisiemens/cm		92	1.18	5.76	0.82	0.77	0.80	0.57	0.57	0.57	0.68	0.68	0.52	0.51	0.45	0.50	0.54
Dissolved Oxygen	mg/L		0.27	0.00	0.10	5.20	0.53	0.22	0.23	0.23	0.51	0.13	0.13	0.42	0.21	0.45	2.31	1.39
Oxdat. Red. Potential	Millivolts		-88	-111	-210	-99	-60.3	-38.8	-80.3	-80.3	-41.7	-46.2	-46.2	10.2	-90.5	-100.4	-102.2	-22.9

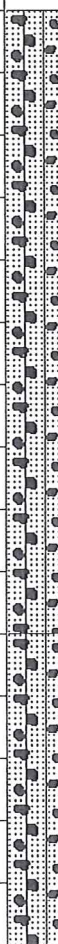
- Notes:
- 1 Sample collected from replaced well.
 - 2 MTCA A cleanup level for gasoline is 800 µg/L in the presence of detectable benzene.
 - * Duplicate sample.
 - J = Reported concentration is an estimate.
 - M Hydrocarbons in the gasoline range are impacting the diesel range result.
 - N1 Hydrocarbons in the diesel range are impacting lube oil range results.
 - mg/L= Milligrams per liter.
 - NM = Not measured due to equipment malfunction.
 - µg/L = Micrograms per liter.
 - U = Analyte not detected above practical quantitation limit given.
 - U1 = The practical quantitation limit is elevated due to interferences present in the sample.
 - X Reported value is rejected due to surface water interference, sample biased low.
 - Exceeds MTCA A cleanup level.

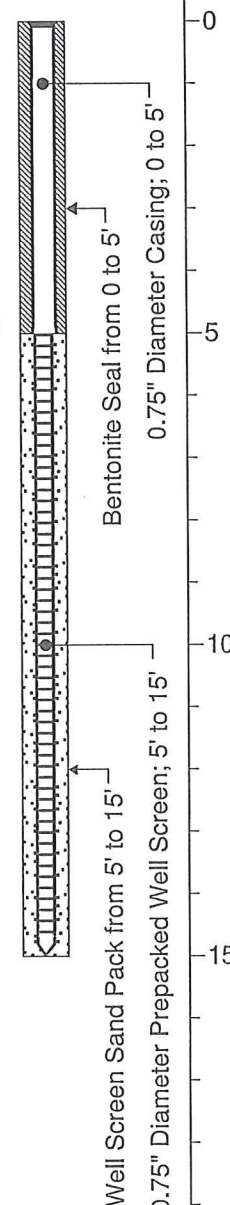
Attachments

- Monitoring Well Logs
 - Field Sampling Forms
 - Data Validation
- Technical Memorandum
- Laboratory Reports

Parametrix

Boring Log

Boring ID: MW-4R			Drilling Company:		Sheet 1 of 1	
Project Name: Chevron Interim Action			Drilling Method: Direct Push		Starting Date: 12/14/09	
Project #: 255-1896-063 / 04-1304			Logged by: Lily Vagelatos		Ending Date: 12/14/09	
Location: Bremerton, WA			Checked by: Ingmar Saul, L.G.		Boring Depth: 15 ft	
					Depth to Water: 5 ft	
Depth (ft)	Lithologic Symbol	Description/Classification of Materials	Sample		Boring Diagram	Depth (ft)
			Sample ID	Recovery		
0		Ground Surface				0
		MIXED TREATMENT ZONE Sandy silt with gravel, tan brown, very moist.		50"		5
5						55"
10		Silty sand and gravel, tan brown, saturated, starting at approximately 10 ft bgs.		40"		15
15		Bottom of boring at 15 feet bgs.				20



Parametrix

Boring Log

Boring ID: MW-9R

Drilling Company:

Project Name: Chevron Interim Action

Drilling Method: Direct Push

Project #: 255-1896-063 / 04-1304

Logged by: Lily Vagelatos

Location: Bremerton, WA

Checked by: Ingmar Saul, L.G.

Sheet 1 of 1

Starting Date: 12/15/09

Ending Date: 12/15/09

Boring Depth: 15 ft

Depth to Water: 9 ft

Depth (ft)	Lithologic Symbol	Description/Classification of Materials	Sample		Boring Diagram	Depth (ft)
			Sample ID	Recovery		
0		Ground Surface			 Bentonite Seal from 0 to 5' 0.75" Diameter Casing; 0 to 5' Well Screen Sand Pack from 5' to 15' 0.75" Diameter Prepacked Well Screen; 5' to 15' Ground Water at 9' bgs	0
		TOP SOIL with VEGETATION Silty sand		30"		
		MIXED TREATMENT ZONE Sandy silt with gravel, tan brown, very moist.		45"		
10		Silty sand and gravel, tan brown, saturated, starting at approximately 10 ft bgs.	CHEV-SO-MW9R-0090	24"		10
15		Bottom of boring at 15 feet bgs.				15
20						20

Parametrix

Boring Log

Boring ID: MW-10R

Drilling Company:

Project Name: Chevron Interim Action

Drilling Method: Direct Push

Project #: 255-1896-063 / 04-1304

Logged by: Lily Vagelatos

Location: Bremerton, WA

Checked by: Ingmar Saul, L.G.

Sheet 1 of 1

Starting Date: 12/29/09

Ending Date: 12/29/09

Boring Depth: 15 ft

Depth to Water: 7 ft

Depth (ft)	Lithologic Symbol	Description/Classification of Materials	Sample		Boring Diagram	Depth (ft)
			Sample ID	Recovery		
0		Ground Surface				0
		TILL and FILL MATERIAL Silty sand and gravel, brown tan.		12"		
5		Damp, starting at approximately 5 ft bgs.				5
		Saturated starting at approximately 7 ft bgs.	CHEV-SO-MW10R-0070	20"		
10				20"		10
15		Bottom of boring at 15 feet bgs.				15
20						20

Ground Water at 7' bgs

Bentonite Seal from 0 to 5'
0.75" Diameter Casing; 0 to 5'

Well Screen Sand Pack from 5' to 15'
0.75" Diameter Prepacked Well Screen; 5' to 15'

MONITOR WELL NO. M 11

WELL SCHEMATIC

Casing Elevation: 100.03
Casing Stickup: -0.3

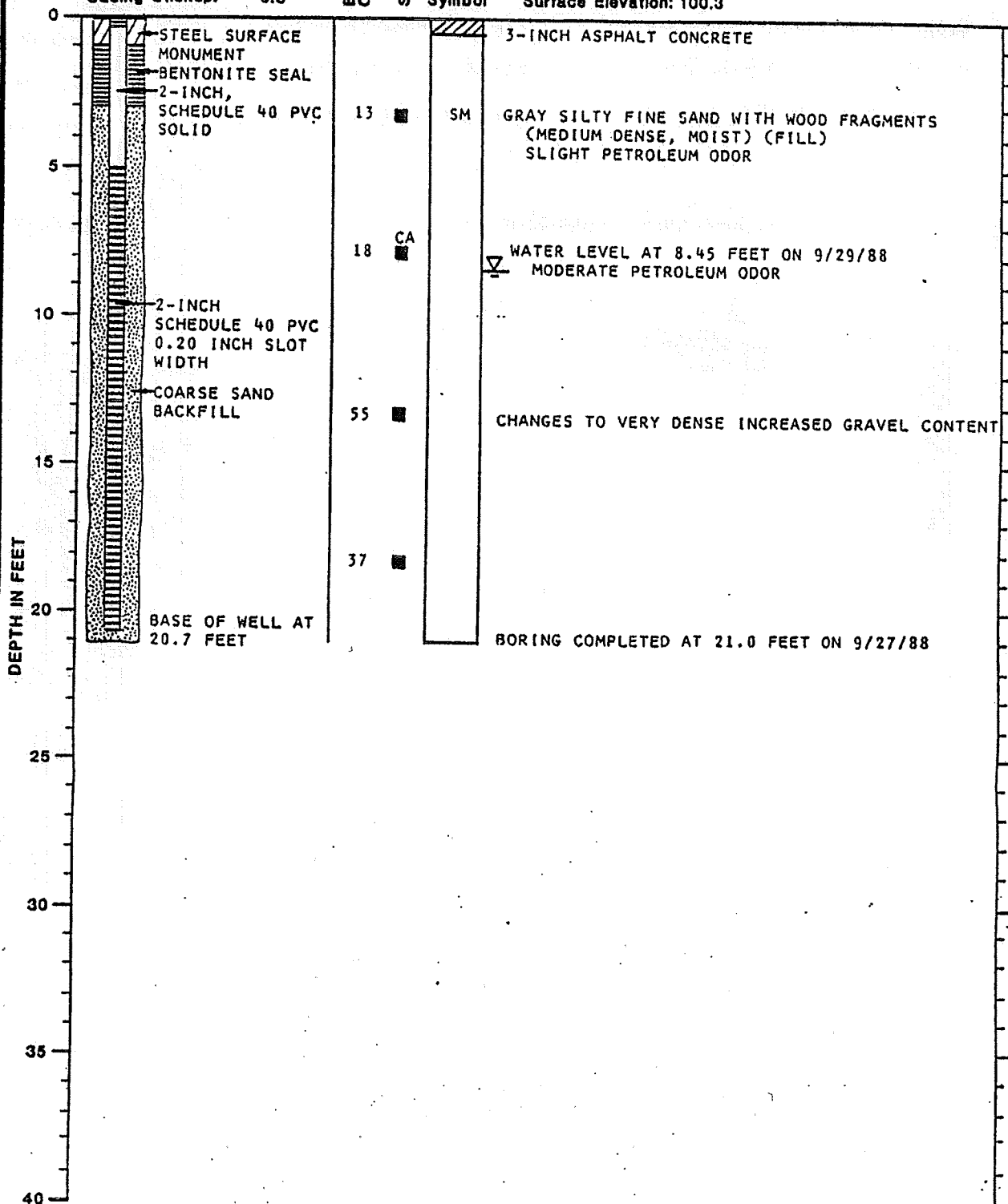
Blow-
Count

Samples

Group
Symbol

DESCRIPTION

Surface Elevation: 100.3



Note: See Figure A-2 for Explanation of Symbols

Geo  Engineers

LOG OF MONITOR WELL

FIGURE A-13

0372-34-4 KRF:DWA:GD 10/12/88

Parametrix

Boring Log

Boring ID: MW-13R

Drilling Company:

Project Name: Chevron Interim Action

Drilling Method: Direct Push

Project #: 255-1896-063 / 04-1304

Logged by: Lily Vagelatos

Location: Bremerton, WA

Checked by: Ingmar Saul, L.G.

Sheet 1 of 1

Starting Date: 12/14/09

Ending Date: 12/14/09

Boring Depth: 15 ft

Depth to Water: 7 ft

Depth (ft)	Lithologic Symbol	Description/Classification of Materials	Sample		Boring Diagram	Depth (ft)
			Sample ID	Recovery		
0		Ground Surface				0
		MIXED TREATMENT ZONE Sandy silt with gravel, tan brown, very moist.		45"		
5				50"		5
10		Silty sand and gravel, tan brown, saturated, at approximately 10 ft bgs.		30"		10
15		Bottom of boring at 15 feet bgs.				15
20						20

Ground Water at 7' bgs

Bentonite Seal from 0 to 5'
0.75" Diameter Casing; 0 to 5'

Well Screen Sand Pack from 5' to 15'
0.75" Diameter Prepacked Well Screen; 5' to 15'

Parametrix

Boring Log

Boring ID: MW-16R

Drilling Company:

Project Name: Chevron Interim Action

Drilling Method: Direct Push

Project #: 255-1896-063 / 04-1304

Logged by: Lily Vagelatos

Location: Bremerton, WA

Checked by: Ingmar Saul, L.G.

Sheet 1 of 1

Starting Date: 12/29/09

Ending Date: 12/29/09

Boring Depth: 15 ft

Depth to Water: 7 ft

Depth (ft)	Lithologic Symbol	Description/Classification of Materials	Sample		Boring Diagram	Depth (ft)
			Sample ID	Recovery		
0		Ground Surface				0
		SILTY GRAVELLY SAND Gray brown, damp, fill.				
5						5
10						10
15		Bottom of boring at 15 feet bgs.				15
20						20

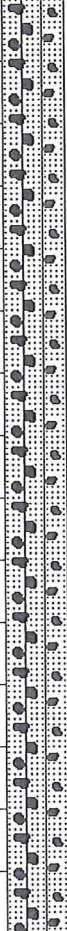
Ground Water at 7' bgs

Bentonite Seal from 0 to 5'
0.75" Diameter Casing; 0 to 5'

Well Screen Sand Pack from 5' to 15'
0.75" Diameter Prepacked Well Screen; 5' to 15'

Parametrix

Boring Log

Boring ID: MW-18R Project Name: Chevron Interim Action Project #: 255-1896-063 / 04-1304 Location: Bremerton, WA				Drilling Company: Drilling Method: Direct Push Logged by: Lily Vagelatos Checked by: Ingmar Saul, L.G.		Sheet 1 of 1 Starting Date: 12/29/09 Ending Date: 12/29/09 Boring Depth: 15 ft Depth to Water: 5 ft	
Depth (ft)	Lithologic Symbol	Description/Classification of Materials	Sample		Boring Diagram	Depth (ft)	
			Sample ID	Recovery			
0		Ground Surface			 Ground Water at 5' bgs Bentonite Seal from 0 to 5' Well Screen Sand Pack from 5' to 15' 0.75" Diameter Casing; 0 to 5' 0.75" Diameter Prepacked Well Screen; 5' to 15'	0	
		SILTY GRAVELLY SAND Gray brown, damp, fill.				5	
						10	
						15	
20						Bottom of boring at 15 feet bgs.	

Parametrix

Boring Log

Boring ID: MW-19R		Drilling Company:		Sheet 1 of 1	
Project Name: Chevron Interim Action		Drilling Method: Direct Push		Starting Date: 12/29/09	
Project #: 255-1896-063 / 04-1304		Logged by: Lily Vagelatos		Ending Date: 12/29/09	
Location: Bremerton, WA		Checked by: Ingmar Saul, L.G.		Boring Depth: 15 ft	
				Depth to Water: 4 ft	

Depth (ft)	Lithologic Symbol	Description/Classification of Materials	Sample		Boring Diagram	Depth (ft)
			Sample ID	Recovery		
0		Ground Surface				0
0 to 20		SILTY GRAVELLY SAND Gray brown, damp, fill.				0 to 20
20		Bottom of boring at 20 feet bgs.				20
25						25

Boring ID: MW-20R

Drilling Method: HSA

Sheet 1 of 1

Project Name: Chevron LTM

Sample Method: Sprit Spoon

Drilling Date: 1/10/13

Project #: 233-1896-107

Logged by: Lara Linde, L.G.

Boring Depth: 15 ft

Location: Bremerton, WA

Checked by: Ingmar Saul, L.G.

Depth to Water: 4.99 ft

Ecology Tag #: BHK 398

Elevation (ft)	Lithologic Symbol	U.S.C.S.	Description/Classification of Materials; Soil: Group name, group symbol, color, plasticity, grain size, moisture, density, misc.	PID (PPM)	Recovery (in)	Well Diagram	Depth (ft)
0.0			Ground Surface				0
	SM		SAND (SM) Brown-gray, nonplastic, medium to fine, moist, loose, trace of fine rounded gravel, no petroleum odor.		36"/60"		
-8.0			Increasing silt content starting at approx. 8 ft bgs.		30"/60"		
-9.0			Strong petroleum odor starting at approx. 9 ft bgs.				
-9.5							
	SP		SAND (SP) Gray, low plasticity, fine to medium grained, wet, loose, some fine rounded gravel, strong petroleum odor.		36"/60"		
-14.0							
-15.0	ML		SILT (ML) Brown-gray, high plasticity, moist, soft, some fine rounded gravel, slight petroleum odor.				
			Bottom of boring at 15 feet bgs.				15

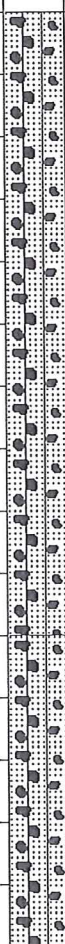
Parametrix

Boring Log

Boring ID: MW-21R Project Name: Chevron Interim Action Project #: 255-1896-063 / 04-1304 Location: Bremerton, WA		Drilling Company: Drilling Method: Direct Push Logged by: Lily Vagelatos Checked by: Ingmar Saul, L.G.		Sheet 1 of 1 Starting Date: 12/15/09 Ending Date: 12/15/09 Boring Depth: 15 ft Depth to Water: 7 ft		
Depth (ft)	Lithologic Symbol	Description/Classification of Materials	Sample		Boring Diagram	Depth (ft)
			Sample ID	Recovery		
0		Ground Surface				0
		MIXED TREATMENT ZONE Sandy silt with gravel, tan brown, very moist.		50"		5
10		Silty sand and gravel, tan brown, saturated, starting at approximately 10 ft bgs.	CHEV-SO-MW21R-0100	50"		10
15				40"	Well Screen Sand Pack from 5' to 15' 0.75" Diameter Prepacked Well Screen; 5' to 15'	15
20		Bottom of boring at 15 feet bgs.				20

Parametrix

Boring Log

Boring ID: MW-22R			Drilling Company:		Sheet 1 of 1	
Project Name: Chevron Interim Action			Drilling Method: Direct Push		Starting Date: 12/14/09	
Project #: 255-1896-063 / 04-1304			Logged by: Lily Vagelatos		Ending Date: 12/14/09	
Location: Bremerton, WA			Checked by: Ingmar Saul, L.G.		Boring Depth: 15 ft	
					Depth to Water: 10 ft	
Depth (ft)	Lithologic Symbol	Description/Classification of Materials	Sample		Boring Diagram	Depth (ft)
			Sample ID	Recovery		
0		Ground Surface				0
		MIXED TREATMENT ZONE Sandy silt with gravel, tan brown, very moist.		50"		5
5						55"
10		Silty sand and gravel, tan brown, saturated, starting at approximately 10 ft bgs.	CHEV-SO-MW22R-0100	45"		15
15		Bottom of boring at 15 feet bgs.				20



Boring ID: MW-25

Drilling Company: ESN

Sheet 1 of 1

Project Name: Chevron Prop RI/FS

Drilling Method: Auger

Drilling Date: 3/7/08

Project #: 255-1896-063

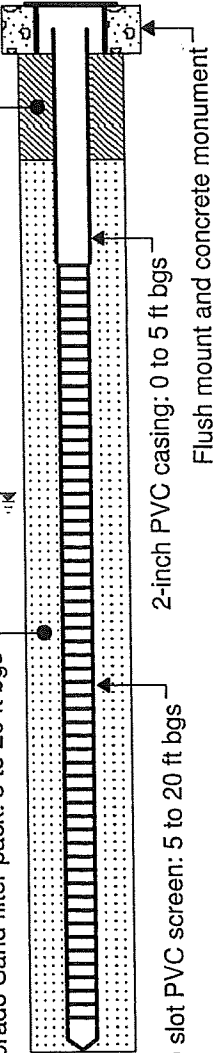
Logged by: David Dinkuhn, P.E.

Boring Depth: 20 ft

Location: SEE MAP

Checked by: David Dinkuhn, P.E.

Depth to Water: 9.5 ft

Depth (ft)	Sample Type	Lithologic Symbol	Description/Classification of Materials	Sample			Well Point Diagram	Depth (ft)
				PID Reading	Sample ID	Recovery (ft)		
0			Ground Surface				 Bentonite Anular Seal: 1 to 3 ft bgs 10/20 Colorado Sand filter pack: 3 to 20 ft bgs 2-inch 0.010 slot PVC screen: 5 to 20 ft bgs 2-inch PVC casing: 0 to 5 ft bgs Flush mount and concrete monument	0
			Silty Sandy Gravel Gray brown, damp, No petroleum hydrocarbon odor (FILL)	0		4		
5				0		3		
				0		3		
10			Silty Gravelly Sand Gray, wet, moderate petroleum hydrocarbon odor (FILL)	1400	CHEV-SO-MW25-0100	3		
			Silty Gravelly Sand Wet, No petroleum hydrocarbon odor (OUTWASH)			3		
15				4		3		
						1		
20			Bottom of boring at 20 feet bgs.					

Parametrix

Boring Log

Boring ID: MW-26R

Drilling Company:

Project Name: Chevron Interim Action

Drilling Method: Direct Push

Project #: 255-1896-063 / 04-1304

Logged by: Lily Vagelatos

Location: Bremerton, WA

Checked by: Ingmar Saul, L.G.

Sheet 1 of 1

Starting Date: 12/14/09

Ending Date: 12/14/09

Boring Depth: 15 ft

Depth to Water: 9.5 ft

Depth (ft)	Lithologic Symbol	Description/Classification of Materials	Sample		Boring Diagram	Depth (ft)
			Sample ID	Recovery		
0		Ground Surface				0
		MIXED TREATMENT ZONE Sandy silt with gravel, tan brown, very moist.		50"		
5				45"		5
10		Silty sand and gravel, tan brown, saturated, untreated fill in saturation zone, starting at approximately 10 ft bgs.	CHEV-SO-MW26R-0095	40"		10
15		Bottom of boring at 15 feet bgs.				15
20						20

Ground Water at 9.5' bgs

Bentonite Seal from 0 to 5'
0.75" Diameter Casing; 0 to 5'

Well Screen Sand Pack from 5' to 15'
0.75" Diameter Prepacked Well Screen; 5' to 15'

Boring ID: MW-27

Drilling Method: Probe/HSA Combo

Project Name: Former Chevron Prop. Remediation

Sample Method: Split Spoon

Project #: 233-1896-098 / 01-03

Logged by: Lara Linde

Location: 1310 Highland Drive, Bremerton

Checked by: Ingmar Saul, R.G.

Sheet 1 of 1

Drilling Date: 3/11/11

Boring Depth: 16 ft

Depth to Water: 6 ft

Ecology Tag #: BCN 891

Elevation (ft)	Lithologic Symbol	U.S.C.S.	Description/Classification of Materials; Soil: Group name, group symbol, color, plasticity, grain size, moisture, density, misc.	PID (PPM)	Recovery (in)	Well Diagram	Depth (ft)
12.0			Ground Surface				0
11.5	GW		RIP RAP Coarse gravel to cobbles (beach reinforcement)				
9.0	SP		SAND Brown, fine to medium grained, dry, loose, occassional fine gravel, no odor.	0	36/48		
6.0			Red, moist, iron staining starting at approximately 3 ft bgs.				
3.5			Moist to wet, few fine gravels, no odor, starting at approximately 6 ft bgs.	0	18/48		5
	SM		SAND Brown to gray, fine to medium grained, wet, loose, organic odor, no sheen.	0	40/48		10
-4.0			Gray, fine grained, wet to saturated, 5% shell fragments, moderate petroleum odor at approximately 16 ft bgs.	0	42/48		15
			Bottom of boring at 16 feet bgs.				

Field Report/Well Data

TO:

DATE <u>8/9/22</u>		JOB NO. 233-1896-107	
PROJECT Former Chevron Property Long-Term Monitoring			
LOCATION Bremerton, WA			
CONTRACTOR N/A		OWNER City of Bremerton	
WEATHER <u>Cloudy w/</u>	TEMP <u>67</u>	° at <u>1:00</u>	AM <u>PM</u>
PRESENT AT SITE <u>AARON THOM</u>			

THE FOLLOWING WAS NOTED:

WN (WELL NUMBER)	Time	DTW (DEPTH TO WATER)	MP (MEASURE POINT)	TD (TOTAL DEPTH OF WELL)	WD (WELL DIAMETER)	Notes
MW27	11:26	5.84	TOC (2")	14.09	3/4" in 2"	Orange Sludge
MW28R	11:37	7.67	TOC (2")	12.10	3/4" in 2"	
MW26R	11:50	6.44	TOC (2")	15.69	3/4" in 2"	missing 1 bolt
MW22R	11:58	5.77	TOC (2")	14.92	3/4" in 2"	
MW13R	12:05	7.89	TOC (2")	14.89	3/4" in 2"	
MW4R	~~12:10~~ 12:20	~~7.94~~ 6.12	TOC (2")	17.03	3/4" in 2"	TOC ~ 32" sub surface
MW25	12:30	8.93	TOC North cut at	18.78	2"	2" PVC cut at angle
MW11	12:50	8.76	TOC North	20.81	2"	marked North w/ Pen
MW10R	12:55	8.94	TOC North	16.26	2"	
MW20R	~~12:55~~ 13:07	6.80	TOC North	13.39	2"	

TOC (Top of PVC Well Casing)

COPIES _____

SIGNED _____



Parametrix, Inc.

Well #: MW 11
Sample #: _____

Groundwater Sampling Field Data Sheet

Project Number	236-2542-038	Date	8/9/22
Project Name	Former Chevron Property	Location	
Project Address	1310 Highland Drive, Bremerton	Sampled By	
Client Name	City of Bremerton	Purged By	A. Thompson

Casing Diameter: 2" ☒ 4" ☐ 6" ☐ Other ☐

Depth to Water (feet)	8.76	Purge Vol. Meas. Method	
Depth of Well (feet)	20.81	Date Purged	8/9/22
Reference Point (surveyors notch/etc)	TOL	Purge Time (from/to)	1605
Date/Time Sampled	8/9/22	Flow Rate (ml/min)	330 ^{ml} /min

Purge Volume Calculation: $(\pi r^2 h)(7.48 \text{ gal/ft}^3)(\# \text{ Casing volumes})$
Purge Volume (gallons) for 2" = $(0.16)(h)(\#Cv)$; 4" = $(0.653)(h)(\#Cv)$; 6" = $(1.48)(h)(\#Cv)$
Calculated Purge Volume (gallons) _____ Actual Purge Volume (gallons) _____

TIME (2400 hr)	WATER LEVEL (ft) ± 0.3	pH (units) ± 0.1	COND (mS/cm) ± 3%	DO (mg/L) ± 10%	TEMP °C	TURB. ± 10% if > 10 NTU	ORP (mV) ± 10 mV	CUM. VOL. (gal)
1613	9.80	7.82	408.8	1.8 96	15.9	7.44	-131.5	0.6
1617	9.85	7.24	413.9	0.5 70	15.8	2.6 33	-125.0	1.25
1621	10.09	7.02	416.8	0.2	15.9	0.39	-123.4	0.15
1625	10.35	6.85	419.5	-0.2	15.9	0.07	-123.2	1.7
1629	10.55	6.74	420.4	-0.4	15.8	0.02	-123.4	2.0
1633	10.76	6.63	420.2	-0.5	15.8	0.02	-124.2	2.25
1637	11.00	6.53	421.1	-0.6	15.7	0.02	-124.8	2.75
1641	11.23	6.49	422.0	-0.7	15.6	0.02	-125.2	3.0
1650	Sampled							

Purge Equipment	Peri	Sampling Equipment	Peri
Laboratory	Onsite/ARI	Date Sent to Lab	
Chain-of-Custody (yes/no)		Field QC Sample Number	
Shipment Method		Split with (name(s)/organization)	

Well Integrity	Good
Remarks	
Signature	Page _____ of _____

Parametrix, Inc.

Well #: MW20R
Sample #:

Groundwater Sampling Field Data Sheet

Project Number	236-2542-038	Date	8/9/22
Project Name	Former Chevron Property	Location	Brem
Project Address	1310 Highland Drive, Bremerton	Sampled By	ARON THOM
Client Name	City of Bremerton	Purged By	ARON THOM

Casing Diameter: 2" ☒ 4" ☐ 6" ☐ Other ☐

Depth to Water (feet)	6.80	Purge Vol. Meas. Method	Bucket
Depth of Well (feet)	13.39	Date Purged	8/9/22
Reference Point (surveyors notch/etc)	100	Purge Time (from/to)	1800 to
Date/Time Sampled		Flow Rate (ml/min)	290 ml/min

Purge Volume Calculation: $(\pi r^2 h)(7.48 \text{ gal/ft}^3)(\# \text{ Casing volumes})$
Purge Volume (gallons) for 2" = $(0.16)(h)(\#Cv)$; 4" = $(0.653)(h)(\#Cv)$; 6" = $(1.48)(h)(\#Cv)$
Calculated Purge Volume (gallons) _____ Actual Purge Volume (gallons) _____

TIME (2400 hr)	WATER LEVEL (ft) ± 0.3	pH (units) ± 0.1	COND (mS/m) $\pm 3\%$	DO (mg/L) $\pm 10\%$	TEMP °C	TURB. $\pm 10\%$ if > 10 NTU	ORP (mV) $\pm 10 \text{ mV}$	CUM. VOL. (gal)
1804	7.00	6.75	0.435	0.84	15.6	48.3	-75.8	0.6
1812	7.05	6.66	0.436	0.65	15.6	45.7	-84.2	1.0
1816	7.00	6.63	0.437	0.51	15.5	48.1	-92.2	1.25
1820	7.03	6.61	0.437	0.44	15.4	53.0	-98.5	1.6
1824	7.04	6.58	0.438	0.30	15.3	42.7	-102.3	2.0
1828	7.04	6.57	0.438	0.21	15.4	40.0	-104.0	2.4
1832	7.06	6.56	0.438	0.14	15.3	38.40	-106.2	2.75
1840	7.07	6.53	0.438	0.04	15.2	30.4	-109.1	3.6
1844	7.07	6.51	0.438	0.00	15.2	20.0	-110.4	4.0
1848	7.07	6.51	0.439	-0.01	15.3	16.1	-110.8	4.25
1852	7.02	6.51	0.439	-0.02	15.2	15.1	-111.4	4.5
1856	7.01	6.50	0.439	-0.04	15.3	14.2	-112.4	4.8
1900	7.00	6.49	0.440	-0.05	15.3	9.51	-112.7	5.25
1904	7.00	6.48	0.440	-0.06	15.3	7.89	-113.4	5.5
1910								

8/9/22
Sampled

Purge Equipment	Peri	Sampling Equipment	Peri
Laboratory	Onsite/ARI	Date Sent to Lab	
Chain-of-Custody (yes/no)		Field QC Sample Number	
Shipment Method		Split with (name(s)/organization)	

Well Integrity	
Remarks	
Signature	Page _____ of _____

Well #: MW 13 R
Sample #:

Project Number	236-2542-038	Date	8/9/22
Project Name	Former Chevron Property	Location	
Project Address	1310 Highland Drive, Bremerton	Sampled By	
Client Name	City of Bremerton	Purged By	

Casing Diameter: 2" ☐ 4" ☐ 6" ☐ Other 3 1/4

Depth to Water (feet)	7.89	Purge Vol. Meas.Method	
Depth of Well (feet)		Date Purged	8/9/72
Reference Point (surveyors notch/etc)		Purge Time (from/to)	1518 - 1522
Date/Time Sampled		Flow Rate (ml/min)	

Calculated Purge Volume (gallons)	Actual Purge Volume (gallons)
1000	1000
2000	2000
3000	3000
4000	4000
5000	5000
6000	6000
7000	7000
8000	8000
9000	9000
10000	10000
11000	11000
12000	12000
13000	13000
14000	14000
15000	15000
16000	16000
17000	17000
18000	18000
19000	19000
20000	20000
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96000	96000
97000	97000
98000	98000
99000	99000
100000	100000

[illegible]

Purge Equipment	<u>Peri</u>	Sampling Equipment	
Laboratory	<u>Onsite/ARI</u>	Date Sent to Lab	
Chain-of-Custody (yes/no)		Field QC Sample Number	
Shipment Method		Split with (name(s)/organization)	

Well Integrity _____
 Remarks _____
 Signature _____ Page _____ of _____

Parametrix, Inc.

Well #: MW 27
Sample #:

Groundwater Sampling Field Data Sheet

Project Number	236-2542-038	Date	8/10/27
Project Name	Former Chevron Property	Location	Brem
Project Address	1310 Highland Drive, Bremerton	Sampled By	Angela Thom
Client Name	City of Bremerton	Purged By	Angela Thom

Casing Diameter: 2" _____ 4" _____ 6" _____ Other 3/4"

Depth to Water (feet)	5.84	Purge Vol. Meas. Method	Bucket
Depth of Well (feet)	14.09	Date Purged	
Reference Point (surveyors notch/etc)	North	Purge Time (from/to)	1236
Date/Time Sampled		Flow Rate (ml/min)	250 ml/min

Purge Volume Calculation: $(\pi r^2 h)(7.48 \text{ gal/ft}^3)(\# \text{ Casing volumes})$
Purge Volume (gallons) for 2" = $(0.16)(h)(\#Cv)$; 4" = $(0.653)(h)(\#Cv)$; 6" = $(1.48)(h)(\#Cv)$
Calculated Purge Volume (gallons) _____ Actual Purge Volume (gallons) _____

TIME (2400 hr)	WATER LEVEL (ft) ± 0.3	pH (units) ± 0.1	COND (mS/m) ± 3%	DO (mg/L) ± 10%	TEMP °C	TURB. ± 10% if > 10 NTU Meter Dep	ORP (mV) ± 10 mV	CUM. VOL. (gal)
1244	6.17	6.16	0.488	1.74	16.2	127.60	-23.7	0.25
1244	6.35	6.18	0.504	1.53	16.1	"	-40.5	0.6
1252	6.47	6.2	0.503	1.46	15.9	127.60	-51.7	0.7
1256	6.59	6.23	0.503	1.41	15.6	"	-63.8	1.25
1300	6.65	6.24	0.503	1.29	15.8	89.68	-75.0	1.6
1304	6.61	6.25	0.502	1.17	16.0	102.66	-82.6	1.9
1308	6.66	6.25	0.495	1.06	16.0	102.53	-82.2	2.4
1312	6.73	6.26	0.492	1.01	15.9	102.57	-92.1	2.75
1316	6.77	6.26	0.492	0.91	15.9	104.21	-95.1	3.25
1320	6.80	6.26	0.494	0.85	16.2	101.42	-97.4	3.6
1324	6.82	6.27	0.493	0.71	15.9	100.69	-101.3	4.0
1328	6.86	6.27	0.490	0.69	15.5	102.45	-105.5	4.5
1332	6.92	6.26	0.486	0.57	15.4	105.64	-104.4	4.75
1336	6.95	6.28	0.488	0.52	15.4	105.60	-105.5	5.25
Sampled @ 1340								

Switched to
YSI Turb.
←

Water has lots of bubbles

Purge Equipment	Sampling Equipment
Laboratory	Onsite/ARI
Chain-of-Custody (yes/no)	Date Sent to Lab
Shipment Method	Field QC Sample Number
	Split with (name(s)/organization)

Well Integrity	
Remarks	
Signature	Page _____ of _____

Parametrix, Inc.

Well #: MW11R
Sample #: _____

Groundwater Sampling Field Data Sheet

Project Number	<u>236-2542-038</u>	Date	<u>8/10/22</u>
Project Name	<u>Former Chevron Property</u>	Location	<u>Brem</u>
Project Address	<u>1310 Highland Drive, Bremerton</u>	Sampled By	<u>Aaron Thon</u>
Client Name	<u>City of Bremerton</u>	Purged By	<u>Aaron Thon</u>

Casing Diameter: 2" _____ 4" _____ 6" _____ Other 3/4

Depth to Water (feet)	<u>7.67</u>	Purge Vol. Meas. Method	<u>5 gallon bucket</u>
Depth of Well (feet)	<u>12.10</u>	Date Purged	<u>8/10/22</u>
Reference Point (surveyors notch/etc)	<u>12th St</u>	Purge Time (from/to)	<u>1604</u>
Date/Time Sampled	<u>8/10/22</u>	Flow Rate (ml/min)	<u>210 ml/min</u>

Purge Volume Calculation: $(\pi r^2 h)(7.48 \text{ gal/ft}^3)(\# \text{ Casing volumes})$
Purge Volume (gallons) for 2" = $(0.16)(h)(\#Cv)$; 4" = $(0.653)(h)(\#Cv)$; 6" = $(1.48)(h)(\#Cv)$
Calculated Purge Volume (gallons) _____ Actual Purge Volume (gallons) _____

TIME (2400 hr)	WATER LEVEL (ft) ± 0.3	pH (units) ± 0.1	COND (mS/m) $\pm 3\%$	DO (mg/L) $\pm 10\%$	TEMP °C	TURB. $\pm 10\%$ if > 10 NTU	ORP (mV) $\pm 10 \text{ mV}$	CUM. VOL. (gal)
1610	9.75	7.31	1.306	0.36	15.1	9.55	-23.8	0.25
1613	9.87	7.22	1.357	0.30	15.1	7.63	-56.0	0.5
1616	10.10	7.19	1.441	0.15	14.8	9.54	-91.4	0.7
1619	10.24	7.18	1.485	0.10	14.9	9.90	-105.6	0.9
1622	10.20	7.18	1.469	0.05	14.6	9.82	-116.6	1.2
1625	10.15	7.18	1.498	0.02	14.6	9.99	-126.2	1.4
1627	10.21	7.18	1.504	0.00	14.5	7.83	-129.4	1.5
1630	10.21	7.18	1.512	-0.01	14.4	9.51	-133.2	1.7
<u>Sampled @ 1635</u>								

chemical
odor

very
bubbly
water

Purge Equipment	<u>Peri</u>	Sampling Equipment	<u>Peri</u>
Laboratory	<u>Onsite/ARI</u>	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	_____	Field QC Sample Number	<u>DNP</u>
Shipment Method	_____	Split with (name(s)/organization)	_____

Well Integrity	<u>Good</u>
Remarks	_____
Signature	_____
Page	_____ of _____

Parametrix, Inc.

Well #: MW 10R
Sample #: _____

Groundwater Sampling Field Data Sheet

Project Number	236-2542-038	Date	8/12/22
Project Name	Former Chevron Property	Location	Brem
Project Address	1310 Highland Drive, Bremerton	Sampled By	AAROTHAM
Client Name	City of Bremerton	Purged By	AAROTHAM

Casing Diameter: 2" _____ 4" _____ 6" _____ Other 3/4

Depth to Water (feet)	7.67	Purge Vol. Meas. Method	5 gallon Bucket
Depth of Well (feet)	12.10	Date Purged	8/12/22
Reference Point (surveyors notch/etc)	10 ft	Purge Time (from/to)	1245
Date/Time Sampled		Flow Rate (ml/min)	200

Purge Volume Calculation: $(\pi r^2 h)(7.48 \text{ gal/ft}^3)(\# \text{ Casing volumes})$
Purge Volume (gallons) for 2" = $(0.16)(h)(\#Cv)$; 4" = $(0.653)(h)(\#Cv)$; 6" = $(1.48)(h)(\#Cv)$
Calculated Purge Volume (gallons) _____ Actual Purge Volume (gallons) _____

TIME (2400 hr)	WATER LEVEL (ft) ± 0.3	pH (units) ± 0.1	COND (mS/m) $\pm 3\%$	DO (mg/L) $\pm 10\%$	TEMP °C	TURB. $\pm 10\%$ if > 10 NTU	ORP (mV) $\pm 10 \text{ mV}$	CUM. VOL. (gal)
1251	9.31	6.23	0.359	0.29	16.7	8.18	-32.5	0.112
1254	9.33	6.19	0.358	0.18	16.6	7.54	-45.0	0.25
1258	9.35	6.18	0.359	0.12	16.7	13.20	-55.1	0.5
1259	9.36	6.18	0.358	0.09	16.7	13.33	-61.0	0.7
1302	9.38	6.18	0.358	0.08	16.8	13.25	-62.3	0.75
1305	9.37	6.18	0.359	0.07	16.8	13.28	-65.3	0.8
Sampled @ 1310								

Purge Equipment	_____	Sampling Equipment	_____
Laboratory	Onsite/ARI	Date Sent to Lab	_____
Chain-of-Custody (yes/no)	_____	Field QC Sample Number	_____
Shipment Method	_____	Split with (name(s)/organization)	_____

Well Integrity	_____
Remarks	_____
Signature	_____ Page _____ of _____

Well #: MW 22R
Sample #:

Project Number	236-2542-038	Date	8/10
Project Name	Former Chevron Property	Location	
Project Address	1310 Highland Drive, Bremerton	Sampled By	
Client Name	City of Bremerton	Purged By	

Casing Diameter: 2" ☐ 4" ☐ 6" ☐ Other 3/4

Depth to Water (feet)	Purge Vol. Meas.Method
Depth of Well (feet)	Date Purged
Reference Point (surveyors notch/etc)	Purge Time (from/to)
Date/Time Sampled	Flow Rate (ml/min)

Purge Volume Calculation: $(\pi^2 h)(7.48 \text{ gal}/\text{ft}^3)(\# \text{ Casing volumes})$	
Purge Volume (gallons) for 2" = $(0.16)(h)(\#Cv)$; 4" = $(0.653)(h)(\#Cv)$; 6" = $(1.48)(h)(\#Cv)$	
Calculated Purge Volume (gallons)	Actual Purge Volume (gallons)

[illegible]

Purge Equipment _____	Sampling Equipment _____
Laboratory _____	Date Sent to Lab _____
Chain-of-Custody (yes/no) _____	Field QC Sample Number _____
Shipment Method _____	Split with (name(s)/organization) _____

Well Integrity _____
 Remarks _____
 Signature _____ Page _____ of _____

collected BTEX
3 vials & 3/4 of Amp^{DX}

Parametrix, Inc.

Well #:
Sample #:

MW-25

Groundwater Sampling Field Data Sheet

Project Number	236-2542-038	Date	8/12/22
Project Name	Former Chevron Property	Location	Brem
Project Address	1310 Highland Drive, Bremerton	Sampled By	ARON THOM
Client Name	City of Bremerton	Purged By	ARON THOM

Casing Diameter: 2" ☒ 4" ☐ 6" ☐ Other ☐

Depth to Water (feet)	8.93	Purge Vol. Meas. Method	5 gallon bucket
Depth of Well (feet)	18.78	Date Purged	8/12/22
Reference Point (surveyors notch/etc)	North Mark	Purge Time (from/to)	1059-
Date/Time Sampled	8/12/22	Flow Rate (ml/min)	180 ml/min

Purge Volume Calculation: $(\pi r^2 h)(7.48 \text{ gal/ft}^3)(\# \text{ Casing volumes})$

Purge Volume (gallons) for 2" = $(0.16)(h)(\#Cv)$; 4" = $(0.653)(h)(\#Cv)$; 6" = $(1.48)(h)(\#Cv)$

Calculated Purge Volume (gallons) Actual Purge Volume (gallons)

TIME (2400 hr)	WATER LEVEL (ft) ± 0.3	pH (units) ± 0.1	COND (mS/m) $\pm 3\%$	DO (mg/L) $\pm 10\%$	TEMP °C	TURB. $\pm 10\%$ if > 10 NTU	ORP (mV) $\pm 10 \text{ mV}$	CUM. VOL. (gal)
1048	8.33							0.4 gal
1105	8.98	6.11	0.316	3.38	14.9	15.75	85.2	
1108	9.05	6.11	0.333	3.48	14.8	15.78	71.6	0.5
1112	9.20	6.11	0.340	3.07	14.8	12.29	53.1	0.7
1115	9.31	6.13	0.351	2.68	14.8	11.43	42.3	0.8
1118	9.40	6.14	0.363	2.35	14.8	10.65	28.9	1.0
1121	9.50	6.18	0.378	1.88	14.8	8.01	14.1	1.12
1124	9.61	6.19	0.382	1.77	14.6	9.86	5.5	1.3
1127	9.8	6.20	0.388	1.60	14.6	7.99	-2.0	1.5
1130	9.94	6.21	0.392	1.41	14.8	8.47	-7.7	1.6
1133	10.16	6.23	0.409	1.37	14.7	9.60	-14.5	1.75
1136	10.31	6.25	0.416	1.03	14.7	Δ rapidly	-20.0	1.9
1139	10.40	6.26	0.422	1.18	14.7	"	-23.2	2.0
1141	10.70	6.26	0.418	1.15	14.7	"	-20.8	2.12
1144	10.89	6.27	0.431	0.97	14.5	"	-33.1	2.25
1147	11.10	6.27	0.436	0.94	14.5	"	-36.2	2.5

Purge Equipment	Rental Peri	Sampling Equipment	Rental Peri
Laboratory	Onsite/ARI	Date Sent to Lab	
Chain-of-Custody (yes/no)		Field QC Sample Number	
Shipment Method		Split with (name(s)/organization)	

Well Integrity	
Remarks	
Signature	Page <u> </u> of <u> </u>

Sampled @ 1155

Groundwater Sampling Field Data Sheet

Well #: MW-26R
Sample #:

Well Integrity Good
Remarks _____
Signature _____ Page _____ of _____

old Percipump may have caused issues on 8/10/22
8/12 or the tide is up ^{more likely}

Groundwater Sampling Field Data Sheet

Well #: MW 4R
Sample #:

Well Integrity
Remarks
Signature

very difficult to insert tubing @ 5 ft

Page _____ of _____

TECHNICAL MEMORANDUM

DATE: October 18, 2022
TO: David Dinkuhn
FROM: Lisa Gilbert
SUBJECT: Quality Assurance / Quality Control for Event 14
CC: Lisa Gilbert
PROJECT NUMBER: 233-1896-107
PROJECT NAME: Former Chevron Property Remediation Performance Monitoring August 2022

INTRODUCTION

This technical memorandum summarizes the results of an internal quality assurance/quality control (QA/QC) review of analytical results for groundwater samples collected on August 9, 10, and 12, 2022. Eleven groundwater samples, including one field duplicate (DUP), and one trip blank were submitted to OnSite Environmental, Inc. for analysis (Laboratory Reference No. 2208-142). Ferrous iron analyses were conducted by Analytical Resources, Inc. (ARI); the first two batches of samples were hand delivered to ARI (22H0146 and 22H0171) and the third batch (collected on August 12) was subcontracted through On-Site.

All samples were analyzed for gasoline using NWTPH-Gx and benzene, toluene, ethylbenzene, and xylenes (BTEX) using EPA 8021B, and diesel and oil using NWTPH-Dx Extended with and without silica gel treatment. Eight of the samples were also analyzed for dissolved methane (RSK 175), dissolved manganese (EPA 6010D), nitrate (EPA 353.2), sulfate (ASTM D516-11), alkalinity (SM 2320B), chloride (SM 4500-Cl E) and total ferrous iron (SM 3500-Fe B-97). Three monitoring wells did not produce enough water to perform these additional analyses (MW-4R, MW-13R, and MW-22R).

Wells MW-4R, MW-13R, MW-22R, and MW-26R were purged to dryness and were sampled the following day or two days later.

Final laboratory data were submitted to Parametrix via a Tier II-type data report and EIM EDDs. All data and analytical QC elements were reviewed against laboratory and method QC criteria, and qualifiers were applied where judged appropriate.

DATA REVIEW SUMMARY

All samples collected were prepared and analyzed using standard methods. All analyses requested on the COC were conducted. No laboratory method or trip blank contamination was reported.

On-Site Environmental, Inc. noted the following:

- “M”-flags (Diesel) – Hydrocarbons in the gasoline range are impacting the diesel range result in samples MW-10R, MW-21R (and DUP), and MW-25 (with and without sulfuric acid/silica gel cleanup).
- “X1” flags (Diesel and Oil) – Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

ARI noted the following for the ferrous iron results:

- “H” flags – Hold time violation. 24-hour hold times were exceeded in the Ferrous Iron analysis of samples MW-10R, MW-25, MW-26R, and MW-27
- “D” flags – The reported value is from a dilution.

A comparison of results between the original MW-21R sample and DUP duplicate results were within acceptable ranges of precision.

CONCLUSIONS

Appropriate standard methods were used. No laboratory method blank contamination was observed. Analytical accuracy and precision were determined to be generally acceptable based on this review.

The following qualifiers were added to the data:

- Results for total ferrous iron in samples MW-10R, MW-25, MW-26R, and MW-27 should be qualified “J” as estimated due to analysis beyond recommended holding time.

The petroleum hydrocarbon fractions for gasoline- and diesel-range TPH show some interference in the TPH analysis for individual components and flags were noted. To be consistent with prior results, these interference flags are not presented in Tables 1 or 2. The laboratory included copies of the chromatograms to further assist interpretations of interference and source chemicals.



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

September 6, 2022

David Dinkuhn
Parametrix, Inc.
60 Washington Avenue, #390
Bremerton, WA 98337

Re: Analytical Data for Project 233-1896-107
Laboratory Reference No. 2208-142

Dear David:

Enclosed are the analytical results and associated quality control data for samples submitted on August 12, 2022.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

A handwritten signature in black ink, appearing to read "DB", with a long horizontal flourish extending to the right.

David Baumeister
Project Manager

Enclosures



OnSite Environmental, Inc. 14648 NE 95th Street, Redmond, WA 98052 (425) 883-3881

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: September 6, 2022
Samples Submitted: August 12, 2022
Laboratory Reference: 2208-142
Project: 233-1896-107

Case Narrative

Samples were collected on August 9, 10 and 12, 2022 and received by the laboratory on August 12, 2022. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Nitrate (as Nitrogen) EPA 353.2 Analysis

Samples were analyzed out of holding time.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.



Date of Report: September 6, 2022
 Samples Submitted: August 12, 2022
 Laboratory Reference: 2208-142
 Project: 233-1896-107

**GASOLINE RANGE ORGANICS/BTEX
 NWTPH-Gx/EPA 8021B**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID: MW-4R						
Laboratory ID:	08-142-01					
Benzene	59	4.0	EPA 8021B	8-16-22	8-16-22	
Toluene	ND	4.0	EPA 8021B	8-16-22	8-16-22	
Ethylbenzene	ND	4.0	EPA 8021B	8-16-22	8-16-22	
m,p-Xylene	ND	4.0	EPA 8021B	8-16-22	8-16-22	
o-Xylene	ND	4.0	EPA 8021B	8-16-22	8-16-22	
Gasoline	ND	400	NWTPH-Gx	8-16-22	8-16-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	82	65-122				
Client ID: MW-10R						
Laboratory ID:	08-142-02					
Benzene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
Toluene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
Ethylbenzene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
m,p-Xylene	1.7	1.0	EPA 8021B	8-16-22	8-16-22	
o-Xylene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
Gasoline	1500	100	NWTPH-Gx	8-16-22	8-16-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	97	65-122				
Client ID: MW-11						
Laboratory ID:	08-142-03					
Benzene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
Toluene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
Ethylbenzene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
m,p-Xylene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
o-Xylene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
Gasoline	110	100	NWTPH-Gx	8-16-22	8-16-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	99	65-122				



Date of Report: September 6, 2022
 Samples Submitted: August 12, 2022
 Laboratory Reference: 2208-142
 Project: 233-1896-107

**GASOLINE RANGE ORGANICS/BTEX
 NWTPH-Gx/EPA 8021B**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-13R					
Laboratory ID:	08-142-04					
Benzene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
Toluene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
Ethylbenzene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
m,p-Xylene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
o-Xylene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
Gasoline	ND	100	NWTPH-Gx	8-16-22	8-16-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	79	65-122				
Client ID:	MW-20R					
Laboratory ID:	08-142-05					
Benzene	2.3	1.0	EPA 8021B	8-16-22	8-16-22	
Toluene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
Ethylbenzene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
m,p-Xylene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
o-Xylene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
Gasoline	130	100	NWTPH-Gx	8-16-22	8-16-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	105	65-122				
Client ID:	MW-21R					
Laboratory ID:	08-142-06					
Benzene	20	1.0	EPA 8021B	8-16-22	8-16-22	
Toluene	8.7	1.0	EPA 8021B	8-16-22	8-16-22	
Ethylbenzene	4.1	1.0	EPA 8021B	8-16-22	8-16-22	
m,p-Xylene	13	1.0	EPA 8021B	8-16-22	8-16-22	
o-Xylene	1.7	1.0	EPA 8021B	8-16-22	8-16-22	
Gasoline	1300	100	NWTPH-Gx	8-16-22	8-16-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	106	65-122				



Date of Report: September 6, 2022
 Samples Submitted: August 12, 2022
 Laboratory Reference: 2208-142
 Project: 233-1896-107

**GASOLINE RANGE ORGANICS/BTEX
 NWTPH-Gx/EPA 8021B**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-22R					
Laboratory ID:	08-142-07					
Benzene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
Toluene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
Ethylbenzene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
m,p-Xylene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
o-Xylene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
Gasoline	ND	100	NWTPH-Gx	8-16-22	8-16-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	96	65-122				
Client ID:	MW-25					
Laboratory ID:	08-142-08					
Benzene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
Toluene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
Ethylbenzene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
m,p-Xylene	2.5	1.0	EPA 8021B	8-16-22	8-16-22	
o-Xylene	3.4	1.0	EPA 8021B	8-16-22	8-16-22	
Gasoline	610	100	NWTPH-Gx	8-16-22	8-16-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	98	65-122				
Client ID:	MW-26R					
Laboratory ID:	08-142-09					
Benzene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
Toluene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
Ethylbenzene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
m,p-Xylene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
o-Xylene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
Gasoline	ND	100	NWTPH-Gx	8-16-22	8-16-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	99	65-122				



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**GASOLINE RANGE ORGANICS/BTEX
 NWTPH-Gx/EPA 8021B**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-27					
Laboratory ID:	08-142-10					
Benzene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
Toluene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
Ethylbenzene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
m,p-Xylene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
o-Xylene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
Gasoline	ND	100	NWTPH-Gx	8-16-22	8-16-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	95	65-122				
Client ID:	Dup					
Laboratory ID:	08-142-11					
Benzene	22	1.0	EPA 8021B	8-16-22	8-16-22	
Toluene	8.8	1.0	EPA 8021B	8-16-22	8-16-22	
Ethylbenzene	4.2	1.0	EPA 8021B	8-16-22	8-16-22	
m,p-Xylene	14	1.0	EPA 8021B	8-16-22	8-16-22	
o-Xylene	1.7	1.0	EPA 8021B	8-16-22	8-16-22	
Gasoline	1400	100	NWTPH-Gx	8-16-22	8-16-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	102	65-122				
Client ID:	Trip Blank					
Laboratory ID:	08-142-12					
Benzene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
Toluene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
Ethylbenzene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
m,p-Xylene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
o-Xylene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
Gasoline	ND	100	NWTPH-Gx	8-16-22	8-16-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	95	65-122				



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**GASOLINE RANGE ORGANICS/BTEX
 NWTPH-Gx/EPA 8021B
 QUALITY CONTROL**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0816W1					
Benzene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
Toluene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
Ethylbenzene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
m,p-Xylene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
o-Xylene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
Gasoline	ND	100	NWTPH-Gx	8-16-22	8-16-22	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	81	65-122				
Laboratory ID:	MB0816W2					
Benzene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
Toluene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
Ethylbenzene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
m,p-Xylene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
o-Xylene	ND	1.0	EPA 8021B	8-16-22	8-16-22	
Gasoline	ND	100	NWTPH-Gx	8-16-22	8-16-22	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	78	65-122				



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**GASOLINE RANGE ORGANICS/BTEX
 NWTPH-Gx/EPA 8021B
 QUALITY CONTROL**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	08-142-01							
	ORIG	DUP						
Benzene	58.5	55.5	NA	NA	NA	NA	5	30
Toluene	ND	ND	NA	NA	NA	NA	NA	30
Ethylbenzene	ND	ND	NA	NA	NA	NA	NA	30
m,p-Xylene	ND	ND	NA	NA	NA	NA	NA	30
o-Xylene	ND	ND	NA	NA	NA	NA	NA	30
Gasoline	ND	ND	NA	NA	NA	NA	NA	30
<i>Surrogate:</i>								
Fluorobenzene				82	82	65-122		
Laboratory ID:	08-142-04							
	ORIG	DUP						
Benzene	ND	ND	NA	NA	NA	NA	NA	30
Toluene	ND	ND	NA	NA	NA	NA	NA	30
Ethylbenzene	ND	ND	NA	NA	NA	NA	NA	30
m,p-Xylene	ND	ND	NA	NA	NA	NA	NA	30
o-Xylene	ND	ND	NA	NA	NA	NA	NA	30
Gasoline	ND	ND	NA	NA	NA	NA	NA	30
<i>Surrogate:</i>								
Fluorobenzene				79	77	65-122		
SPIKE BLANKS								
Laboratory ID:	SB0816W1							
	SB	SBD	SB	SBD	SB	SBD		
Benzene	51.7	48.9	50.0	50.0	103	98	80-116	6 12
Toluene	51.3	48.3	50.0	50.0	103	97	82-118	6 12
Ethylbenzene	50.3	47.3	50.0	50.0	101	95	82-118	6 12
m,p-Xylene	51.4	48.2	50.0	50.0	103	96	81-118	6 12
o-Xylene	51.2	48.4	50.0	50.0	102	97	81-116	6 11
<i>Surrogate:</i>								
Fluorobenzene					85	84	65-122	



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**DIESEL AND HEAVY OIL RANGE ORGANICS
 NWTPH-Dx**

Matrix: Water
 Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-4R					
Laboratory ID:	08-142-01					
Diesel Range Organics	2.3	0.13	NWTPH-Dx	8-16-22	8-22-22	
Lube Oil Range Organics	2.4	0.21	NWTPH-Dx	8-16-22	8-22-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	58	50-150				

Client ID:	MW-4R					
Laboratory ID:	08-142-01					
Diesel Range Organics	0.18	0.13	NWTPH-Dx	8-16-22	8-19-22	X1
Lube Oil Range Organics	0.22	0.21	NWTPH-Dx	8-16-22	8-19-22	X1
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	57	50-150				

Client ID:	MW-10R					
Laboratory ID:	08-142-02					
Diesel Range Organics	0.80	0.13	NWTPH-Dx	8-16-22	8-19-22	M
Lube Oil Range Organics	0.34	0.20	NWTPH-Dx	8-16-22	8-19-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	58	50-150				

Client ID:	MW-10R					
Laboratory ID:	08-142-02					
Diesel Range Organics	0.58	0.13	NWTPH-Dx	8-16-22	8-19-22	M,X1
Lube Oil Range Organics	ND	0.20	NWTPH-Dx	8-16-22	8-19-22	X1
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	69	50-150				

Client ID:	MW-11					
Laboratory ID:	08-142-03					
Diesel Range Organics	0.32	0.13	NWTPH-Dx	8-16-22	8-20-22	
Lube Oil Range Organics	0.27	0.20	NWTPH-Dx	8-16-22	8-20-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	66	50-150				

Client ID:	MW-11					
Laboratory ID:	08-142-03					
Diesel Range Organics	ND	0.13	NWTPH-Dx	8-16-22	8-20-22	X1
Lube Oil Range Organics	ND	0.20	NWTPH-Dx	8-16-22	8-20-22	X1
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	76	50-150				



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**DIESEL AND HEAVY OIL RANGE ORGANICS
 NWTPH-Dx**

Matrix: Water
 Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-13R					
Laboratory ID:	08-142-04					
Diesel Range Organics	1.7	0.29	NWTPH-Dx	8-16-22	8-20-22	
Lube Oil Range Organics	2.1	0.47	NWTPH-Dx	8-16-22	8-20-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	62	50-150				

Client ID:	MW-13R					
Laboratory ID:	08-142-04					
Diesel Range Organics	ND	0.29	NWTPH-Dx	8-16-22	8-20-22	X1
Lube Oil Range Organics	ND	0.47	NWTPH-Dx	8-16-22	8-20-22	X1
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	78	50-150				

Client ID:	MW-20R					
Laboratory ID:	08-142-05					
Diesel Range Organics	0.18	0.13	NWTPH-Dx	8-16-22	8-20-22	
Lube Oil Range Organics	0.29	0.20	NWTPH-Dx	8-16-22	8-20-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	55	50-150				

Client ID:	MW-20R					
Laboratory ID:	08-142-05					
Diesel Range Organics	ND	0.13	NWTPH-Dx	8-16-22	8-19-22	X1
Lube Oil Range Organics	ND	0.20	NWTPH-Dx	8-16-22	8-19-22	X1
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	70	50-150				

Client ID:	MW-21R					
Laboratory ID:	08-142-06					
Diesel Range Organics	0.95	0.13	NWTPH-Dx	8-16-22	8-20-22	M
Lube Oil Range Organics	0.72	0.21	NWTPH-Dx	8-16-22	8-20-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	66	50-150				

Client ID:	MW-21R					
Laboratory ID:	08-142-06					
Diesel Range Organics	0.43	0.13	NWTPH-Dx	8-16-22	8-20-22	M,X1
Lube Oil Range Organics	ND	0.21	NWTPH-Dx	8-16-22	8-20-22	X1
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	75	50-150				



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**DIESEL AND HEAVY OIL RANGE ORGANICS
 NWTPH-Dx**

Matrix: Water
 Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-22R					
Laboratory ID:	08-142-07					
Diesel Range Organics	0.15	0.13	NWTPH-Dx	8-16-22	8-20-22	
Lube Oil Range Organics	0.29	0.20	NWTPH-Dx	8-16-22	8-20-22	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	63	50-150				

Client ID:	MW-22R					
Laboratory ID:	08-142-07					
Diesel Range Organics	ND	0.13	NWTPH-Dx	8-16-22	8-20-22	X1
Lube Oil Range Organics	ND	0.20	NWTPH-Dx	8-16-22	8-20-22	X1
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	64	50-150				

Client ID:	MW-25					
Laboratory ID:	08-142-08					
Diesel Range Organics	0.38	0.13	NWTPH-Dx	8-16-22	8-20-22	M
Lube Oil Range Organics	0.31	0.20	NWTPH-Dx	8-16-22	8-20-22	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	66	50-150				

Client ID:	MW-25					
Laboratory ID:	08-142-08					
Diesel Range Organics	0.21	0.13	NWTPH-Dx	8-16-22	8-20-22	M,X1
Lube Oil Range Organics	ND	0.20	NWTPH-Dx	8-16-22	8-20-22	X1
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	81	50-150				

Client ID:	MW-26R					
Laboratory ID:	08-142-09					
Diesel Range Organics	ND	0.12	NWTPH-Dx	8-16-22	8-20-22	
Lube Oil Range Organics	ND	0.20	NWTPH-Dx	8-16-22	8-20-22	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	78	50-150				

Client ID:	MW-26R					
Laboratory ID:	08-142-09					
Diesel Range Organics	ND	0.12	NWTPH-Dx	8-16-22	8-20-22	X1
Lube Oil Range Organics	ND	0.20	NWTPH-Dx	8-16-22	8-20-22	X1
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	91	50-150				



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DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Water
 Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-27					
Laboratory ID:	08-142-10					
Diesel Range Organics	0.13	0.13	NWTPH-Dx	8-16-22	8-20-22	
Lube Oil Range Organics	0.33	0.20	NWTPH-Dx	8-16-22	8-20-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	64	50-150				

Client ID:	MW-27					
Laboratory ID:	08-142-10					
Diesel Range Organics	ND	0.13	NWTPH-Dx	8-16-22	8-20-22	X1
Lube Oil Range Organics	ND	0.20	NWTPH-Dx	8-16-22	8-20-22	X1
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	68	50-150				

Client ID:	Dup					
Laboratory ID:	08-142-11					
Diesel Range Organics	0.85	0.13	NWTPH-Dx	8-16-22	8-20-22	M
Lube Oil Range Organics	0.65	0.20	NWTPH-Dx	8-16-22	8-20-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	59	50-150				

Client ID:	Dup					
Laboratory ID:	08-142-11					
Diesel Range Organics	0.42	0.13	NWTPH-Dx	8-16-22	8-20-22	M,X1
Lube Oil Range Organics	ND	0.20	NWTPH-Dx	8-16-22	8-20-22	X1
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	77	50-150				



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**DIESEL AND HEAVY OIL RANGE ORGANICS
 NWTPH-Dx
 QUALITY CONTROL**

Matrix: Water
 Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0816W1					
Diesel Range Organics	ND	0.050	NWTPH-Dx	8-16-22	8-16-22	
Lube Oil Range Organics	ND	0.080	NWTPH-Dx	8-16-22	8-16-22	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	99	50-150				

Laboratory ID:	MB0816W1					
Diesel Range Organics	ND	0.050	NWTPH-Dx	8-16-22	8-16-22	X1
Lube Oil Range Organics	ND	0.080	NWTPH-Dx	8-16-22	8-16-22	X1
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	89	50-150				

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	08-142-02							
	ORIG	DUP						
Diesel Range Organics	0.802	0.699	NA	NA	NA	NA	14	NA
Lube Oil Range Organics	0.340	0.298	NA	NA	NA	NA	13	NA
Surrogate:								
<i>o</i> -Terphenyl				58	50	50-150		

Laboratory ID:	08-142-02							
	ORIG	DUP						
Diesel Range Organics	0.583	0.581	NA	NA	NA	NA	0	NA
Lube Oil Range	ND	ND	NA	NA	NA	NA	NA	X1
Surrogate:								
<i>o</i> -Terphenyl				69	69	50-150		

Laboratory ID:	SB0816W1							
	ORIG	DUP						
Diesel Fuel #2	0.341	0.323	NA	NA	NA	NA	5	NA
Surrogate:								
<i>o</i> -Terphenyl				74	65	50-150		

Laboratory ID:	SB0816W1							
	ORIG	DUP						
Diesel Fuel #2	0.415	0.370	NA	NA	NA	NA	11	NA
Surrogate:								
<i>o</i> -Terphenyl				93	78	50-150		



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NITRATE (as Nitrogen)
EPA 353.2

Matrix: Water
 Units: mg/L-N

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-10R					
Laboratory ID:	08-142-02					
Nitrate	ND	0.050	EPA 353.2	8-14-22	8-14-22	

Client ID:	MW-11					
Laboratory ID:	08-142-03					
Nitrate	ND	0.050	EPA 353.2	8-14-22	8-14-22	

Client ID:	MW-20R					
Laboratory ID:	08-142-05					
Nitrate	ND	0.050	EPA 353.2	8-14-22	8-14-22	

Client ID:	MW-21R					
Laboratory ID:	08-142-06					
Nitrate	ND	0.050	EPA 353.2	8-14-22	8-14-22	

Client ID:	MW-25					
Laboratory ID:	08-142-08					
Nitrate	ND	0.050	EPA 353.2	8-14-22	8-14-22	

Client ID:	MW-26R					
Laboratory ID:	08-142-09					
Nitrate	0.29	0.050	EPA 353.2	8-14-22	8-14-22	

Client ID:	MW-27					
Laboratory ID:	08-142-10					
Nitrate	ND	0.050	EPA 353.2	8-14-22	8-14-22	

Client ID:	Dup					
Laboratory ID:	08-142-11					
Nitrate	ND	0.050	EPA 353.2	8-14-22	8-14-22	



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NITRATE (as Nitrogen)
EPA 353.2
QUALITY CONTROL

Matrix: Water
 Units: mg/L-N

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0814W1					
Nitrate	ND	0.050	EPA 353.2	8-14-22	8-14-22	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	08-142-02							
	ORIG	DUP						
Nitrate	ND	ND	NA	NA	NA	NA	10	

MATRIX SPIKE

Laboratory ID:	08-142-02							
	MS	MS		MS				
Nitrate	2.01	2.00	ND	101	88-125	NA	NA	

SPIKE BLANK

Laboratory ID:	SB0814W1							
	SB	SB		SB				
Nitrate	1.96	2.00	NA	98	90-120	NA	NA	



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SULFATE
ASTM D516-11

Matrix: Water
 Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-10R					
Laboratory ID:	08-142-02					
Sulfate	ND	5.0	ASTM D516-11	8-11-22	8-11-22	

Client ID:	MW-11					
Laboratory ID:	08-142-03					
Sulfate	ND	5.0	ASTM D516-11	8-11-22	8-11-22	

Client ID:	MW-20R					
Laboratory ID:	08-142-05					
Sulfate	ND	5.0	ASTM D516-11	8-11-22	8-11-22	

Client ID:	MW-21R					
Laboratory ID:	08-142-06					
Sulfate	ND	5.0	ASTM D516-11	8-11-22	8-11-22	

Client ID:	MW-25					
Laboratory ID:	08-142-08					
Sulfate	ND	5.0	ASTM D516-11	8-11-22	8-11-22	

Client ID:	MW-26R					
Laboratory ID:	08-142-09					
Sulfate	2100	500	ASTM D516-11	8-11-22	8-11-22	

Client ID:	MW-27					
Laboratory ID:	08-142-10					
Sulfate	ND	5.0	ASTM D516-11	8-11-22	8-11-22	

Client ID:	Dup					
Laboratory ID:	08-142-11					
Sulfate	ND	5.0	ASTM D516-11	8-11-22	8-11-22	



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**SULFATE
 ASTM D516-11
 QUALITY CONTROL**

Matrix: Water

Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0817W1					
Sulfate	ND	5.0	ASTM D516-11	8-11-22	8-11-22	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	08-132-01							
	ORIG	DUP						
Sulfate	ND	ND	NA	NA	NA	NA	10	

MATRIX SPIKE

Laboratory ID:	08-132-01							
	MS	MS		MS				
Sulfate	12.4	10.0	ND	124	72-128	NA	NA	

SPIKE BLANK

Laboratory ID:	SB0817W1							
	SB	SB		SB				
Sulfate	9.93	10.0	NA	99	85-114	NA	NA	



Date of Report: September 6, 2022
 Samples Submitted: August 12, 2022
 Laboratory Reference: 2208-142
 Project: 233-1896-107

**TOTAL ALKALINITY
 SM 2320B**

Matrix: Water
 Units: mg CaCO₃/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-10R					
Laboratory ID:	08-142-02					
Total Alkalinity	160	2.0	SM 2320B	8-22-22	8-22-22	
Client ID:	MW-11					
Laboratory ID:	08-142-03					
Total Alkalinity	170	2.0	SM 2320B	8-22-22	8-22-22	
Client ID:	MW-20R					
Laboratory ID:	08-142-05					
Total Alkalinity	190	2.0	SM 2320B	8-22-22	8-22-22	
Client ID:	MW-21R					
Laboratory ID:	08-142-06					
Total Alkalinity	840	2.0	SM 2320B	8-22-22	8-22-22	
Client ID:	MW-25					
Laboratory ID:	08-142-08					
Total Alkalinity	210	2.0	SM 2320B	8-22-22	8-22-22	
Client ID:	MW-26R					
Laboratory ID:	08-142-09					
Total Alkalinity	130	2.0	SM 2320B	8-22-22	8-22-22	
Client ID:	MW-27					
Laboratory ID:	08-142-10					
Total Alkalinity	200	2.0	SM 2320B	8-22-22	8-22-22	
Client ID:	Dup					
Laboratory ID:	08-142-11					
Total Alkalinity	840	2.0	SM 2320B	8-22-22	8-22-22	



Date of Report: September 6, 2022
 Samples Submitted: August 12, 2022
 Laboratory Reference: 2208-142
 Project: 233-1896-107

**TOTAL ALKALINITY
 SM 2320B
 QUALITY CONTROL**

Matrix: Water
 Units: mg CaCO₃/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0822W1					
Total Alkalinity	ND	2.0	SM 2320B	8-22-22	8-22-22	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	08-163-01							
	ORIG	DUP						
Total Alkalinity	28.0	28.0	NA	NA	NA	NA	0	10

SPIKE BLANK

Laboratory ID:	SB0822W1							
	SB	SB		SB				
Total Alkalinity	94.0	100	NA	94	89-110	NA	NA	



Date of Report: September 6, 2022
 Samples Submitted: August 12, 2022
 Laboratory Reference: 2208-142
 Project: 233-1896-107

CHLORIDE
SM 4500-Cl E

Matrix: Water
 Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-10R					
Laboratory ID:	08-142-02					
Chloride	4.2	2.0	SM 4500-Cl E	8-17-22	8-17-22	

Client ID:	MW-11					
Laboratory ID:	08-142-03					
Chloride	6.3	2.0	SM 4500-Cl E	8-17-22	8-17-22	

Client ID:	MW-20R					
Laboratory ID:	08-142-05					
Chloride	5.6	2.0	SM 4500-Cl E	8-17-22	8-17-22	

Client ID:	MW-21R					
Laboratory ID:	08-142-06					
Chloride	15	2.0	SM 4500-Cl E	8-17-22	8-17-22	

Client ID:	MW-25					
Laboratory ID:	08-142-08					
Chloride	8.4	2.0	SM 4500-Cl E	8-17-22	8-17-22	

Client ID:	MW-26R					
Laboratory ID:	08-142-09					
Chloride	15000	500	SM 4500-Cl E	8-17-22	8-17-22	

Client ID:	MW-27					
Laboratory ID:	08-142-10					
Chloride	7.2	2.0	SM 4500-Cl E	8-17-22	8-17-22	

Client ID:	Dup					
Laboratory ID:	08-142-11					
Chloride	16	2.0	SM 4500-Cl E	8-17-22	8-17-22	



Date of Report: September 6, 2022
 Samples Submitted: August 12, 2022
 Laboratory Reference: 2208-142
 Project: 233-1896-107

**CHLORIDE
 SM 4500-Cl E
 QUALITY CONTROL**

Matrix: Water

Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0817W1					
Chloride	ND	2.0	SM 4500-Cl E	8-17-22	8-17-22	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	08-142-02							
	ORIG	DUP						
Chloride	4.20	4.13	NA	NA	NA	2	11	

MATRIX SPIKE

Laboratory ID:	08-142-02							
	MS	MS		MS				
Chloride	58.8	50.0	4.20	109	90-121	NA	NA	

SPIKE BLANK

Laboratory ID:	SB0817W1							
	SB	SB		SB				
Chloride	49.8	50.0	NA	100	90-119	NA	NA	



Date of Report: September 6, 2022
 Samples Submitted: August 12, 2022
 Laboratory Reference: 2208-142
 Project: 233-1896-107

**DISSOLVED MANGANESE
EPA 6010D**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-10R					
Laboratory ID:	08-142-02					
Manganese	1100	11	EPA 6010D		8-15-22	
Client ID:	MW-11					
Laboratory ID:	08-142-03					
Manganese	1800	11	EPA 6010D		8-15-22	
Client ID:	MW-20R					
Laboratory ID:	08-142-05					
Manganese	1700	11	EPA 6010D		8-15-22	
Client ID:	MW-21R					
Laboratory ID:	08-142-06					
Manganese	1300	11	EPA 6010D		8-15-22	
Client ID:	MW-25					
Laboratory ID:	08-142-08					
Manganese	120	11	EPA 6010D		8-15-22	
Client ID:	MW-26R					
Laboratory ID:	08-142-09					
Manganese	ND	11	EPA 6010D		8-15-22	
Client ID:	MW-27					
Laboratory ID:	08-142-10					
Manganese	2900	11	EPA 6010D		8-15-22	
Client ID:	Dup					
Laboratory ID:	08-142-11					
Manganese	1300	11	EPA 6010D		8-15-22	



Date of Report: September 6, 2022
 Samples Submitted: August 12, 2022
 Laboratory Reference: 2208-142
 Project: 233-1896-107

**DISSOLVED MANGANESE
 EPA 6010D
 QUALITY CONTROL**

Matrix: Water

Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0811F1					
Manganese	ND	11	EPA 6010D		8-15-22	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	08-108-01							
	ORIG	DUP						
Manganese	112	113	NA	NA	NA	NA	1	20

MATRIX SPIKES

Laboratory ID:	08-108-01							
	MS	MSD	MS	MSD		MS	MSD	
Manganese	647	640	556	556	112	96	95	75-125
								1
								20



Date of Report: September 6, 2022
 Samples Submitted: August 12, 2022
 Laboratory Reference: 2208-142
 Project: 233-1896-107

**DISSOLVED GASES
RSK 175**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-10R					
Laboratory ID:	08-142-02					
Methane	2200	28	RSK 175	8-18-22	8-18-22	
Surrogate:	<i>Percent Recovery</i>	<i>Control Limits</i>				
1-Butene	66	50-150				
Client ID:	MW-11					
Laboratory ID:	08-142-03					
Methane	3300	28	RSK 175	8-18-22	8-18-22	
Surrogate:	<i>Percent Recovery</i>	<i>Control Limits</i>				
1-Butene	62	50-150				
Client ID:	MW-20R					
Laboratory ID:	08-142-05					
Methane	4100	28	RSK 175	8-18-22	8-18-22	
Surrogate:	<i>Percent Recovery</i>	<i>Control Limits</i>				
1-Butene	66	50-150				
Client ID:	MW-21R					
Laboratory ID:	08-142-06					
Methane	6100	55	RSK 175	8-18-22	8-18-22	
Surrogate:	<i>Percent Recovery</i>	<i>Control Limits</i>				
1-Butene	60	50-150				
Client ID:	MW-25					
Laboratory ID:	08-142-08					
Methane	930	5.5	RSK 175	8-18-22	8-18-22	
Surrogate:	<i>Percent Recovery</i>	<i>Control Limits</i>				
1-Butene	66	50-150				
Client ID:	MW-26R					
Laboratory ID:	08-142-09					
Methane	ND	0.55	RSK 175	8-18-22	8-18-22	
Surrogate:	<i>Percent Recovery</i>	<i>Control Limits</i>				
1-Butene	77	50-150				



Date of Report: September 6, 2022
 Samples Submitted: August 12, 2022
 Laboratory Reference: 2208-142
 Project: 233-1896-107

DISSOLVED GASES
RSK 175

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-27					
Laboratory ID:	08-142-10					
Methane	8200	55	RSK 175	8-18-22	8-18-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>1-Butene</i>	68	50-150				
Client ID:	Dup					
Laboratory ID:	08-142-11					
Methane	6000	42	RSK 175	8-18-22	8-18-22	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>1-Butene</i>	58	50-150				



Date of Report: September 6, 2022
 Samples Submitted: August 12, 2022
 Laboratory Reference: 2208-142
 Project: 233-1896-107

**DISSOLVED GASES
 RSK 175
 QUALITY CONTROL**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0818W1					
Methane	ND	0.55	RSK 175	8-18-22	8-18-22	
Surrogate:	Percent Recovery	Control Limits				
1-Butene	82	50-150				

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANK										
Laboratory ID:	SB0818W1									
	SB	SBD	SB	SBD	SB	SBD				
Methane	38.3	39.1	44.2	44.2	87	89	75-125	2	25	
Surrogate:										
1-Butene					81	83	50-150			





Data Qualifiers and Abbreviations

- A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.
- B - The analyte indicated was also found in the blank sample.
- C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.
- E - The value reported exceeds the quantitation range and is an estimate.
- F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.
- H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.
- I - Compound recovery is outside of the control limits.
- J - The value reported was below the practical quantitation limit. The value is an estimate.
- K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.
- L - The RPD is outside of the control limits.
- M - Hydrocarbons in the gasoline range are impacting the diesel range result.
- M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.
- N - Hydrocarbons in the lube oil range are impacting the diesel range result.
- N1 - Hydrocarbons in diesel range are impacting lube oil range results.
- O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.
- P - The RPD of the detected concentrations between the two columns is greater than 40.
- Q - Surrogate recovery is outside of the control limits.
- S - Surrogate recovery data is not available due to the necessary dilution of the sample.
- T - The sample chromatogram is not similar to a typical _____.
- U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- U1 - The practical quantitation limit is elevated due to interferences present in the sample.
- V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.
- W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.
- X - Sample extract treated with a mercury cleanup procedure.
- X1 - Sample extract treated with a sulfuric acid/silica gel cleanup procedure.
- X2 - Sample extract treated with a silica gel cleanup procedure.
- Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.
- Y1 - Negative effects of the matrix from this sample on the instrument caused values for this analyte in the bracketing continuing calibration verification standard (CCVs) to be outside of 20% acceptance criteria. Because of this, quantitation limits and sample concentrations should be considered estimates.
- Z -
- ND - Not Detected at PQL
- PQL - Practical Quantitation Limit
- RPD - Relative Percent Difference





Analytical Resources, LLC
Analytical Chemists and Consultants

03 September 2022

David Baumeister
OnSite Environmental, Inc.
14648 NE 95th Street
Redmond, WA 98052

RE: Parametrix 233-1896-107 (08-142)

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)
22H0250

Associated SDG ID(s)
N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, LLC

Shelly Fishel, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



22H0250


**OnSite
Environmental Inc.**

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

Laboratory: Analytical Resources, Inc.

Attention: Amanda Volgardsen

Address: 4611 S 134th Pl, Ste. 100 Tukwila, WA 98168

Phone Number: (206) 695-6200

Turnaround Request

1 Day 2 Day 3 Day

Standard

Other: _____

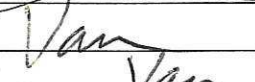
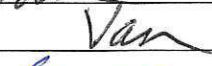
Laboratory Reference #: 08-142

Project Manager: David Baumeister

email: dbaumeister@onsite-env.com

Project Number: 233-1896-107

Project Name: _____

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analyses
	MW-10R	8/12/22	13:10	W	1	Total Ferrous Iron
	MW-25	8/12/22	11:55	W	1	Total Ferrous Iron
	MW-26R	8/12/22	13:40	W	1	Total Ferrous Iron
Signature		Company		Date	Time	Comments/Special Instructions
Relinquished by: 		COSE		8/15/22	1220	
Received by: 		J. Dy		8/15/22	1220	
Relinquished by: 		J. Dy		8/15/22	1307	
Received by: 		ART		8/15/22	1307	
Relinquished by:						
Received by:						



OnSite Environmental, Inc.
14648 NE 95th Street
Redmond WA, 98052

Project: Parametrix 233-1896-107
Project Number: 08-142
Project Manager: David Baumeister

Reported:
03-Sep-2022 11:22

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-10R	22H0250-01	Water	12-Aug-2022 13:10	15-Aug-2022 13:07
MW-25	22H0250-02	Water	12-Aug-2022 11:55	15-Aug-2022 13:07
MW-26R	22H0250-03	Water	12-Aug-2022 13:40	15-Aug-2022 13:07



OnSite Environmental, Inc.
14648 NE 95th Street
Redmond WA, 98052

Project: Parametrix 233-1896-107
Project Number: 08-142
Project Manager: David Baumeister

Reported:
03-Sep-2022 11:22

Work Order Case Narrative

Client: OnSite Environmental, Inc.

Project: Parametrix 233-1896-107

Project Number: 08-142

Work Order: 22H0250

Sample receipt

Sample(s) as listed on the preceding page were received 15-Aug-2022 13:07 under ARI work order 22H0250. For details regarding sample receipt, please refer to the Cooler Receipt Form.

Wet Chemistry

The sample(s) were prepared and analyzed outside the recommended holding times. The hold time had expired upon sample receipt.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

The matrix spike (MS) percent recoveries and the duplicate (DUP) relative percent difference (RPD) were within advisory control limits.



Analytical Resources, LLC
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: on-site Environmental

Project Name: 233-1896-107

COC No(s): _____ NA

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 22H0250

Tracking No: _____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler? YES NO

Were custody papers included with the cooler? YES NO

Were custody papers properly filled out (ink, signed, etc.) YES NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 1307 3.3

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: 2565

Cooler Accepted by: R Date: 8/15/22 Time: 1307

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES NO

What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other:

Was sufficient ice used (if appropriate)? NA YES NO

How were bottles sealed in plastic bags? Individually Grouped Not

Did all bottles arrive in good condition (unbroken)? YES NO

Were all bottle labels complete and legible? YES NO

Did the number of containers listed on COC match with the number of containers received? YES NO

Did all bottle labels and tags agree with custody papers? YES NO

Were all bottles used correct for the requested analyses? YES NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ... NA YES NO

Were all VOC vials free of air bubbles? NA YES NO

Was sufficient amount of sample sent in each bottle? YES NO

Date VOC Trip Blank was made at ARI: NA

Were the sample(s) split by ARI? NA YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: HN Date: 08/16/22 Time: 8:37 Labels checked by: _____

**** Notify Project Manager of discrepancies or concerns ****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: _____ Date: _____



WORK ORDER

22H0250

Samples will be discarded 90 days after submission of a final report unless other instructions are received.

Client: OnSite Environmental, Inc.

Project Manager: Shelly Fishel

Project: Parametrix 233-1896-107

Project Number: 233-1896-107

Report To:

OnSite Environmental, Inc.
David Baumeister
14648 NE 95th Street
Redmond, WA 98052
Phone: 425-883-3881
Fax: -

Invoice To:

OnSite Environmental, Inc.
David Baumeister
14648 NE 95th Street
Redmond, WA 98052
Phone: 425-883-3881
Fax: -

Date Due: 29-Aug-2022 18:00 (10 day TAT)

Received By: Rowan Miller

Date Received: 15-Aug-2022 13:07

Logged In By: Hannah Neuberger

Date Logged In: 16-Aug-2022 08:37

Samples Received at 3.3°C

Intact, properly signed and dated custody seals attached to outside of cooler(s).....No
Custody papers properly filled out (in, signed, analyses requested, etc).....Yes
Was sufficient ice used (if appropriate).....Yes
All bottles arrived in good condition (unbroken).....Yes
Number of containers listed on COC match number received.....Yes
Correct bottles used for the requested analyses.....Yes
Analyses/bottles require preservation (attach preservation sheet excluding VOC).....Yes
Sample split at ARL.....No

Custody papers included with the cooler..... Yes
Was a temperature blank included in the cooler..... No
All bottles sealed in individual plastic bags..... No
All bottle labels complete and legible..... Yes
Bottle labels and tags agree with COC..... Yes
All VOC vials free of air bubbles..... No
Sufficient amount of sample sent in each bottle..... Yes

22H0250-01 MW-10R [Water] Sampled 12-Aug-2022 13:10

Iron, Ferrous SM 3500-Fe B-97 08/29/2022 10 8/13/2022

22H0250-02 MW-25 [Water] Sampled 12-Aug-2022 11:55

Iron, Ferrous SM 3500-Fe B-97 08/29/2022 10 8/13/2022

22H0250-03 MW-26R [Water] Sampled 12-Aug-2022 13:40

Iron, Ferrous SM 3500-Fe B-97 08/29/2022 10 8/13/2022

Preservation Confirmation

Container ID	Container Type	pH
22H0250-01 A	Glass NM, Amber, 500 mL, HCl	lab to check preservation
22H0250-02 A	Glass NM, Amber, 500 mL, HCl	↓
22H0250-03 A	Glass NM, Amber, 500 mL, HCl	

HN
Preservation Confirmed By

08/16/22
Date



WORK ORDER

22H0250

Samples will be discarded 90 days after submission of a final report unless other instructions are received.

Client: OnSite Environmental, Inc. Project Manager: Shelly Fishel Project Number: 233-1896-107

Report To: Invoice To:

OnSite Environmental, Inc. David Baumeister
14648 NE 95th Street
Redmond, WA 98052
Phone: 425-883-3881
Fax: -

Date Due: 29-Aug-2022 18:00 (10 day TAT)

Received By: Rowan Miller Date Received: 15-Aug-2022 13:07
Logged In By: Hannah Neuburger Date Logged In: 16-Aug-2022 08:37

Samples Received at 3.9°C

Intact, properly signed and dated custody seals attached to outside of cooler(s). No
Custody papers properly filled out (in signed, analyses requested, etc). Yes
Was sufficient ice used (if appropriate). Yes
All bottles arrived in good condition (unbroken). Yes
Number of containers listed on C/C match number received. Yes
Correct bottles used for the requested analyses. Yes
Analyses/bottles require preservation sheet excluding VOC). Yes
Sample split at ARI. No

Custody papers included with the cooler. Yes
Was a temperature blank included in the cooler. No
All bottles sealed in individual plastic bags. No
All bottle labels complete and legible. Yes
Bottle labels and tags agree with C/C. Yes
All VOC vials free of air bubbles. No
Sufficient amount of sample sent in each bottle. Yes

22H0250-01 MW-10R [Water] Sampled 12-Aug-2022 13:10

from: Ferrous SMI 3500-Fe B-97

08/29/2022 10

08/29/2022 10

from: Ferrous SMI 3500-Fe B-97

22H0250-02 MW-25 [Water] Sampled 12-Aug-2022 11:55

22H0250-03 MW-26R [Water] Sampled 12-Aug-2022 13:40

from: Ferrous SMI 3500-Fe B-97

08/29/2022 10

Preservation Confirmation

Container ID	Container Type	pH
22H0250-01 A	Glass NM, Amber, 500 mL, HCl	lab to check preservation
22H0250-02 A	Glass NM, Amber, 500 mL, HCl	lab to check preservation
22H0250-03 A	Glass NM, Amber, 500 mL, HCl	lab to check preservation

Preservation Confirmed By: HNV

Date: 08/16/22

① pH < 2, w/ headspace
BF 8/16/22 13:00

Reviewed By:

Date:



OnSite Environmental, Inc.
14648 NE 95th Street
Redmond WA, 98052

Project: Parametrix 233-1896-107
Project Number: 08-142
Project Manager: David Baumeister

Reported:
03-Sep-2022 11:22

MW-10R
22H0250-01 (Water)

Wet Chemistry

Method: SM 3500-Fe B-97

Sampled: 08/12/2022 13:10

Instrument: UV1800-1 Analyst: BF

Analyzed: 08/16/2022 13:21

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 22H0250-01 A

Preparation Batch: BKH0370

Sample Size: 5 mL

Prepared: 08/16/2022

Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ferrous Iron		20	0.800	0.800	11.2	mg/L	H, D



OnSite Environmental, Inc.
14648 NE 95th Street
Redmond WA, 98052

Project: Parametrix 233-1896-107
Project Number: 08-142
Project Manager: David Baumeister

Reported:
03-Sep-2022 11:22

MW-25
22H0250-02 (Water)

Wet Chemistry

Method: SM 3500-Fe B-97

Sampled: 08/12/2022 11:55

Instrument: UV1800-1 Analyst: BF

Analyzed: 08/16/2022 13:23

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 22H0250-02 A

Preparation Batch: BKH0370

Sample Size: 5 mL

Prepared: 08/16/2022

Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ferrous Iron		1	0.040	0.040	1.80	mg/L	H



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Redmond WA, 98052

Project: Parametrix 233-1896-107
Project Number: 08-142
Project Manager: David Baumeister

Reported:
03-Sep-2022 11:22

MW-26R
22H0250-03 (Water)

Wet Chemistry

Method: SM 3500-Fe B-97

Sampled: 08/12/2022 13:40

Instrument: UV1800-1 Analyst: BF

Analyzed: 08/16/2022 13:24

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 22H0250-03 A

Preparation Batch: BKH0370

Sample Size: 5 mL

Prepared: 08/16/2022

Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ferrous Iron		1	0.040	0.040	ND	mg/L	H, U



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Project: Parametrix 233-1896-107
Project Number: 08-142
Project Manager: David Baumeister

Reported:
03-Sep-2022 11:22

Analysis by: Analytical Resources, LLC

Wet Chemistry - Quality Control

Batch BKH0370 - No Prep Wet Chem

Instrument: UV1800-1 Analyst: BF

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKH0370-BLK1)					Prepared: 16-Aug-2022 Analyzed: 16-Aug-2022 13:20						
Ferrous Iron	ND	0.040	0.040	mg/L							U
LCS (BKH0370-BS1)					Prepared: 16-Aug-2022 Analyzed: 16-Aug-2022 13:21						
Ferrous Iron	0.476	0.040	0.040	mg/L	0.500		95.3	90-110			
Duplicate (BKH0370-DUP1)					Source: 22H0250-01 Prepared: 16-Aug-2022 Analyzed: 16-Aug-2022 13:22						
Ferrous Iron	11.4	0.800	0.800	mg/L		11.2			1.24	20	H, D
Matrix Spike (BKH0370-MS1)					Source: 22H0250-01 Prepared: 16-Aug-2022 Analyzed: 16-Aug-2022 13:23						
Ferrous Iron	29.8	0.800	0.800	mg/L	20.0	11.2	92.7	75-125			H, D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



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Project Number: 08-142
Project Manager: David Baumeister

Reported:
03-Sep-2022 11:22

Certified Analyses included in this Report

Analyte

Certifications

SM 3500-Fe B-97 in Water

Ferrous Iron

WADOE,NELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2023
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2023



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Project: Parametrix 233-1896-107
Project Number: 08-142
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Reported:
03-Sep-2022 11:22

Notes and Definitions

D	The reported value is from a dilution
H	Hold time violation - Hold time was exceeded.
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.



14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3981 • www.onsite-env.com

Onsite Environmental Inc.

Chain of Custody

Page 1 of 2

Turnaround Request
(in working days)

(Check One)

☐ Same Day ☐ 1 Day

☐ 2 Days ☐ 3 Days

☒ Standard (7 Days)
(TPH analysis 5 Days)

☐ (other)

Laboratory Number

X: Hand delivered and included

Will not meet hold time

08-142

** Sample not hand delivered and included*

Cleanup

Number of Containers

NWTPH-Gx / BTEX **8021**

NWTPH-Dx Extended

Nitrate, Sulfate, Alkalinity, Chloride

Dissolved Manganese (Field Filtered)

Dissolved Methane

Total Ferrous Iron (sub to ARI)

NWTPH-Dx Extended w/sg

% Moisture

Company:
Parametrix

Project Number:
233-1896-107

Project Name:

City of Bremerton - Former Chevron Bulk

Project Manager:

David Dinkuh

Sampled by:

Michael Brady Aaron Thon

Lab ID Sample Identification

1 MW-4R

2 MW-10R

3 MW-11

4 MW-13R

5 MW-20R

6 MW-21R

7 MW-22R

8 MW-25

9 MW-26R

10 MW-27

Date Sampled Time Sampled Matrix

8/10/22 1120 1120Z

8/12/22 1310 1310

8/9/22 1650 1650

8/10/22 1140 1140

8/9/22 1910 1910

8/10/22 1635 1635

8/12/22 0925 + 1350 0925 + 1350

8/12/22 1155 1155

8/12/22 0945 0945

8/10/22 1340 1340

Signature

Company

Date

Time

Comments/Special Instructions

Relinquished

Received

Relinquished

Received

Relinquished

Received

Reviewed/Date

Parametrix PMX

OSE

8/12/22

1700

PMX will deliver Total Ferrous Iron Samples to ARI, Number of containers includes these Samples

Reviewed/Date

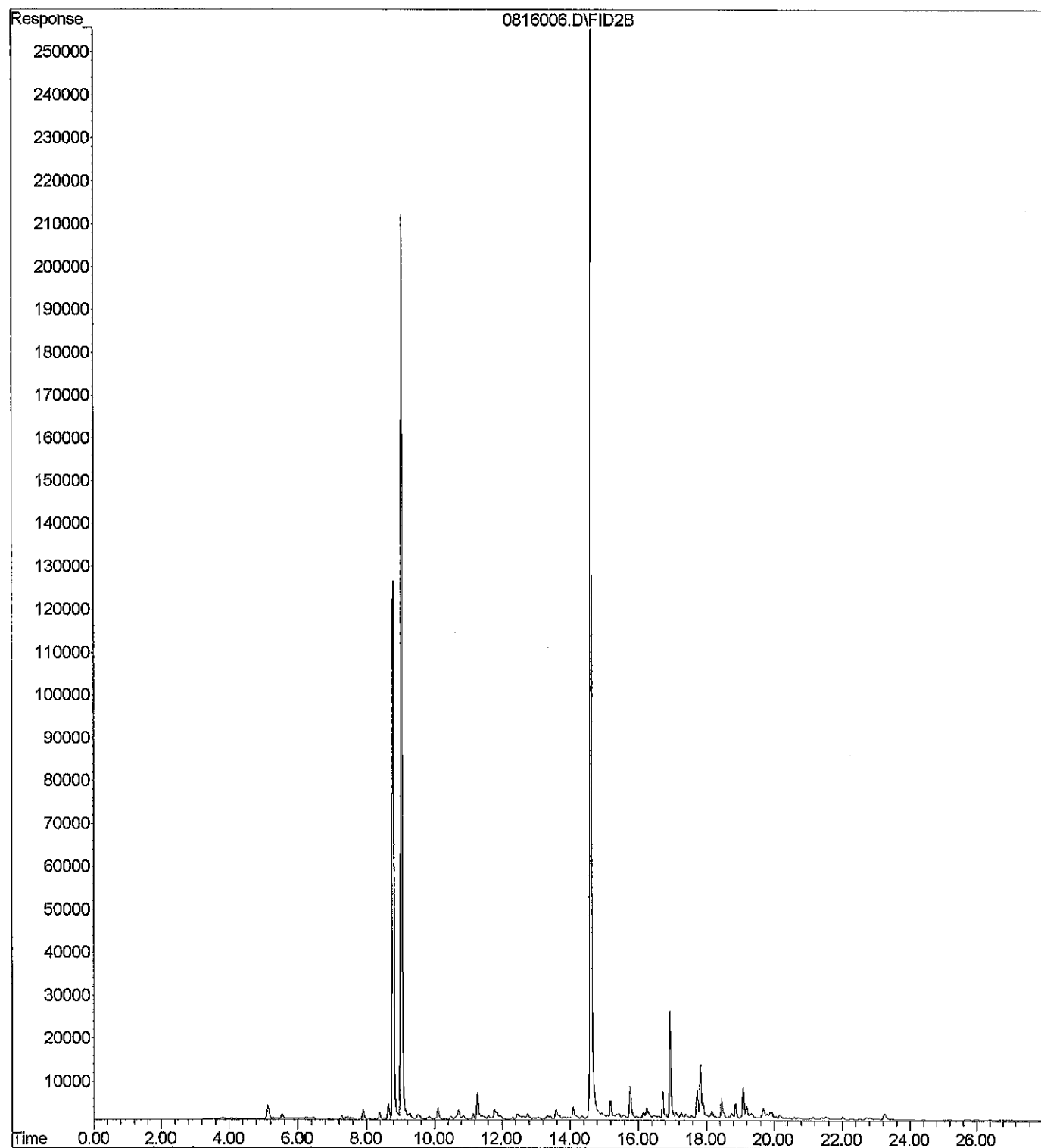
Chromatograms with final report ☐



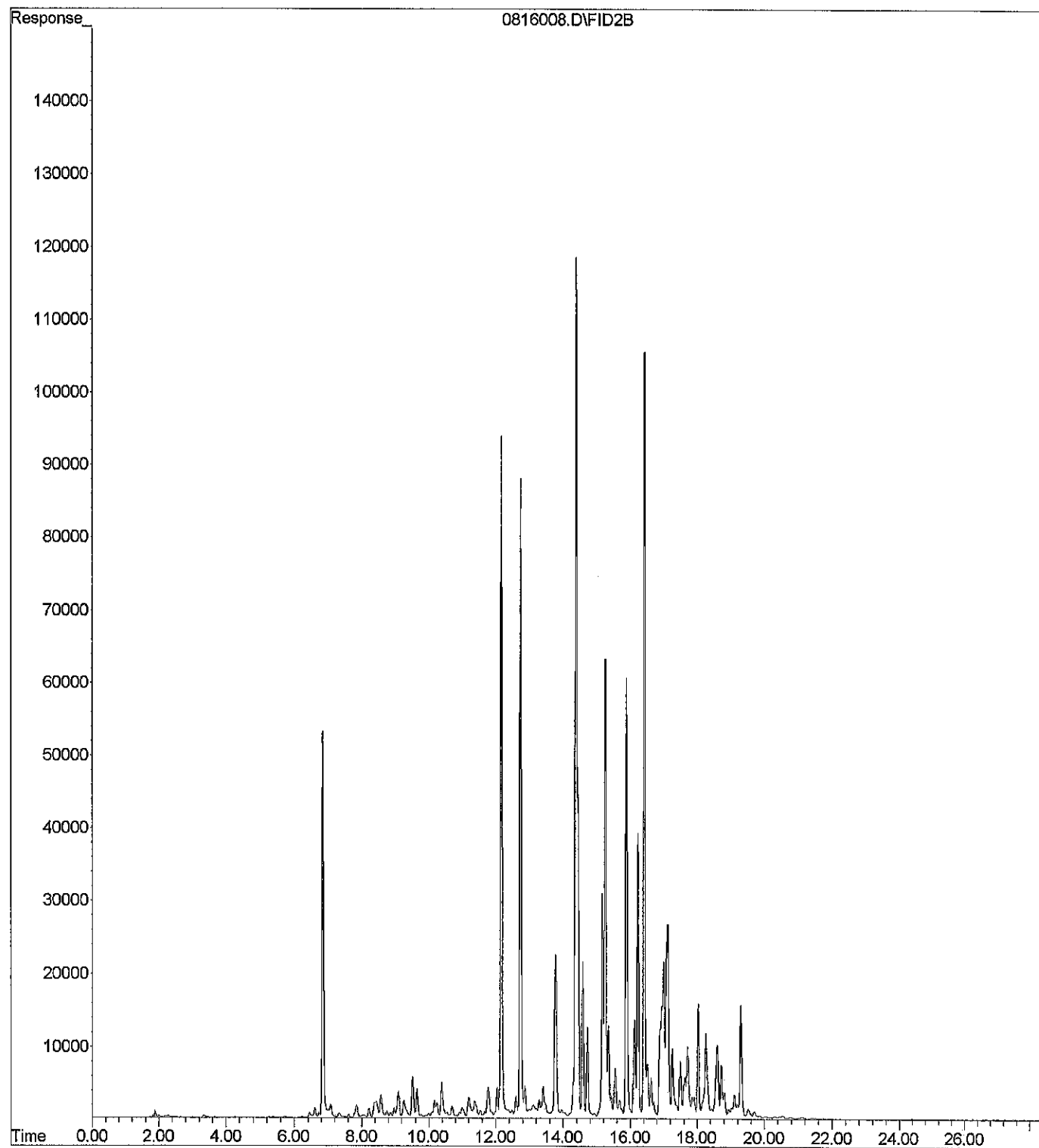
Page 2 of 2

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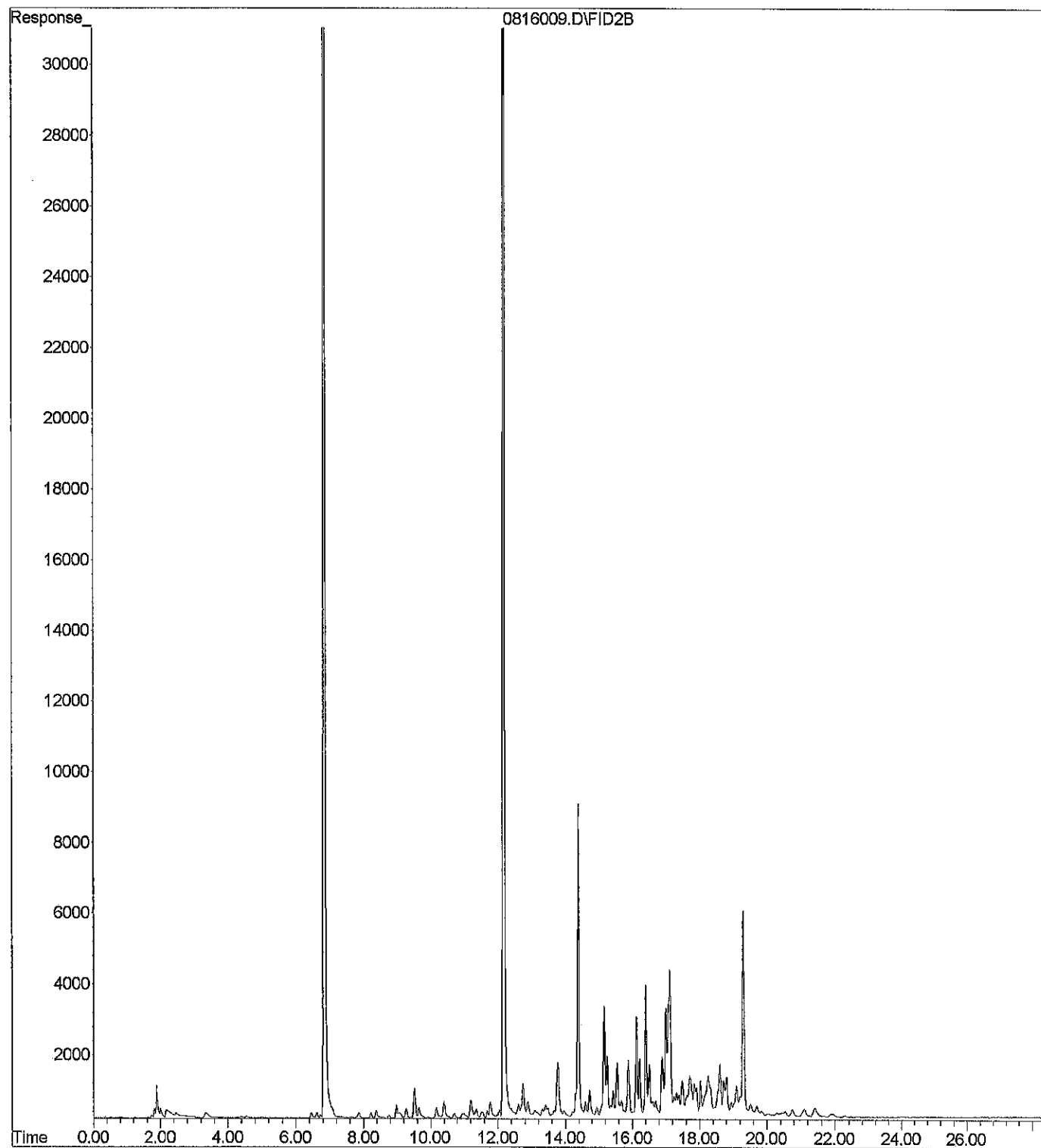
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Instrument : Hope
Sample Name: 08-142-01b RR 1:4
Misc Info : FOAMY
Vial Number: 6



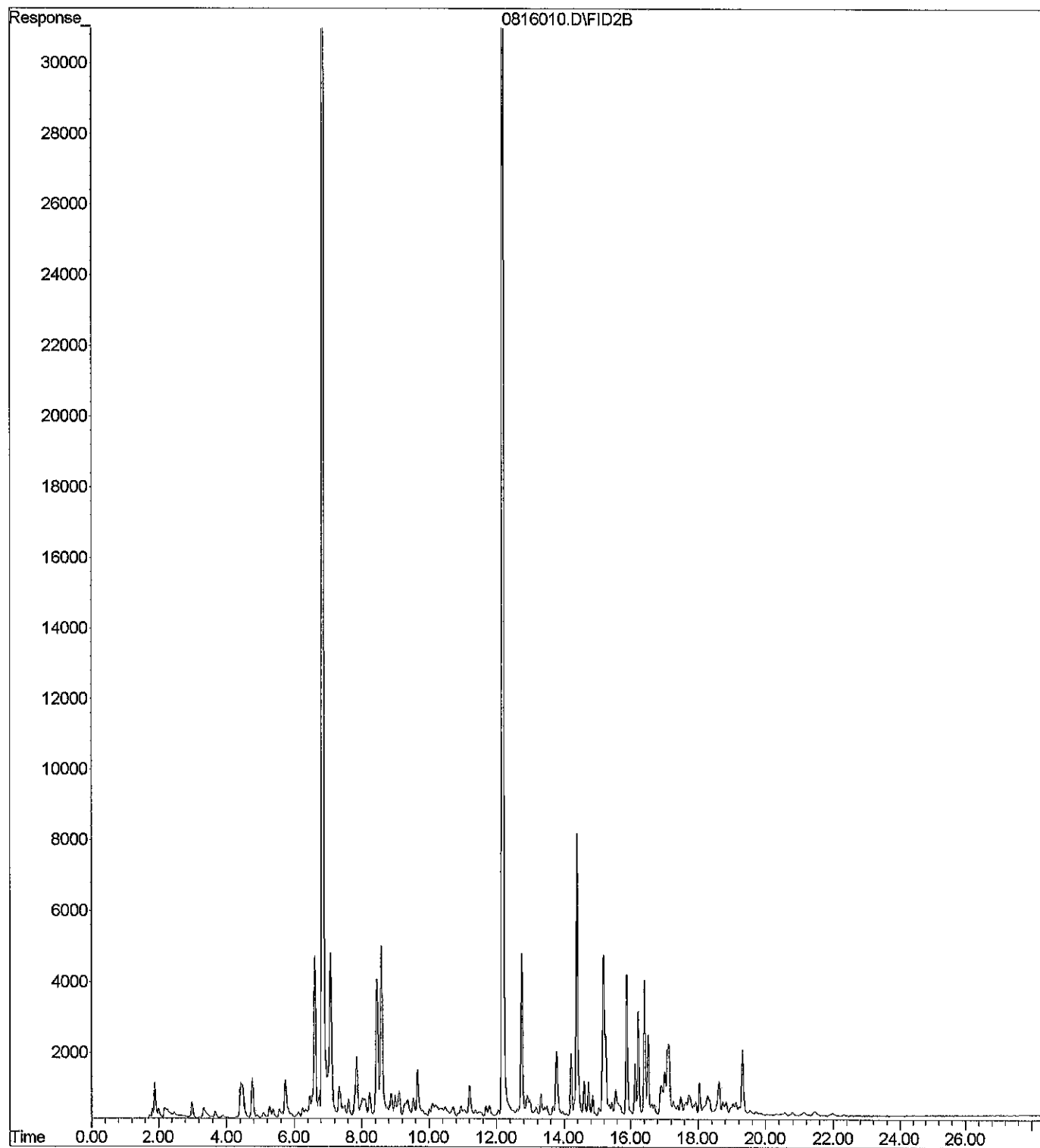
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Instrument : Daryl
Sample Name: 08-142-02g
Misc Info :
Vial Number: 8



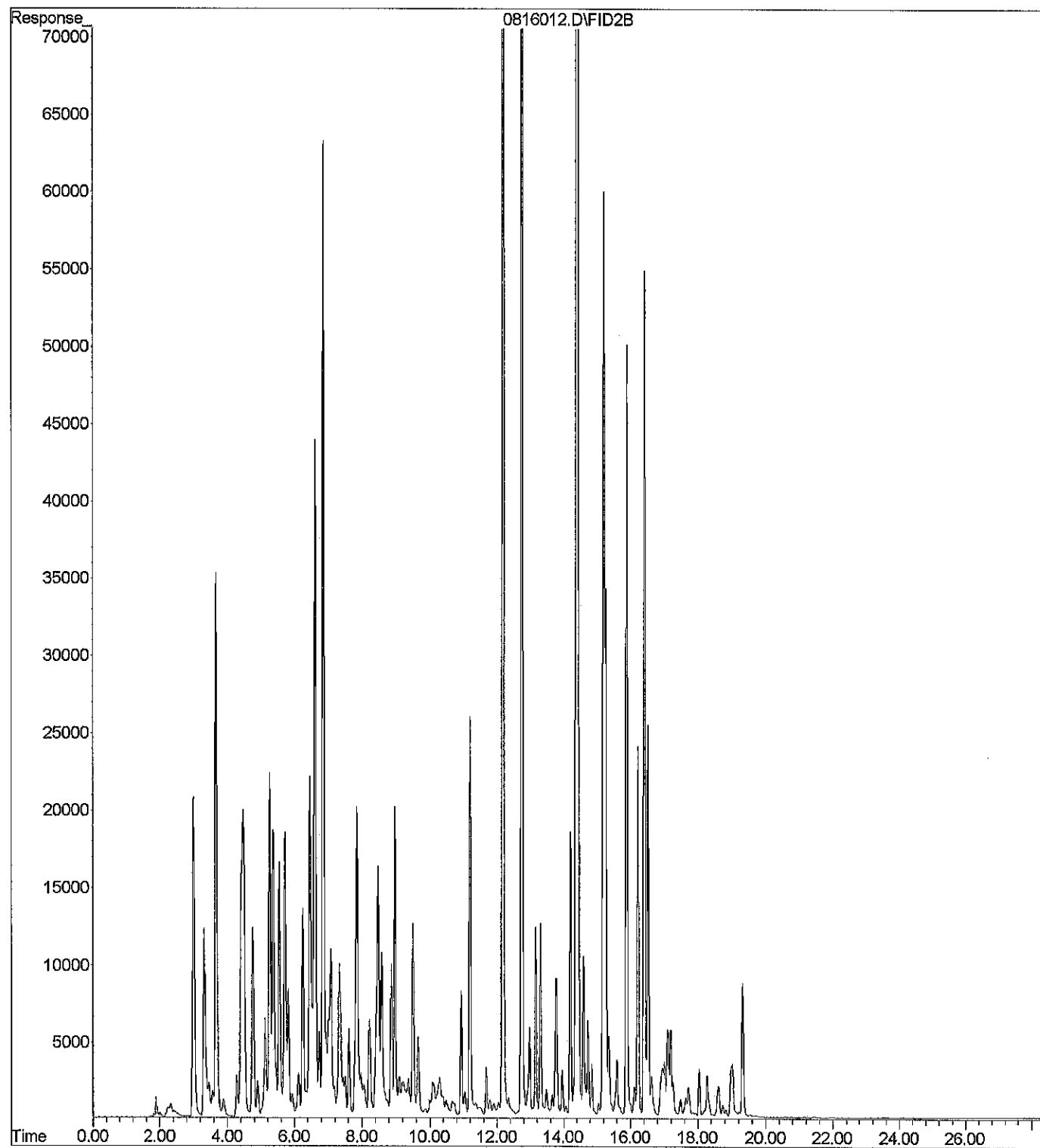
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Instrument : Daryl
Sample Name: 08-142-03f
Misc Info :
Vial Number: 9



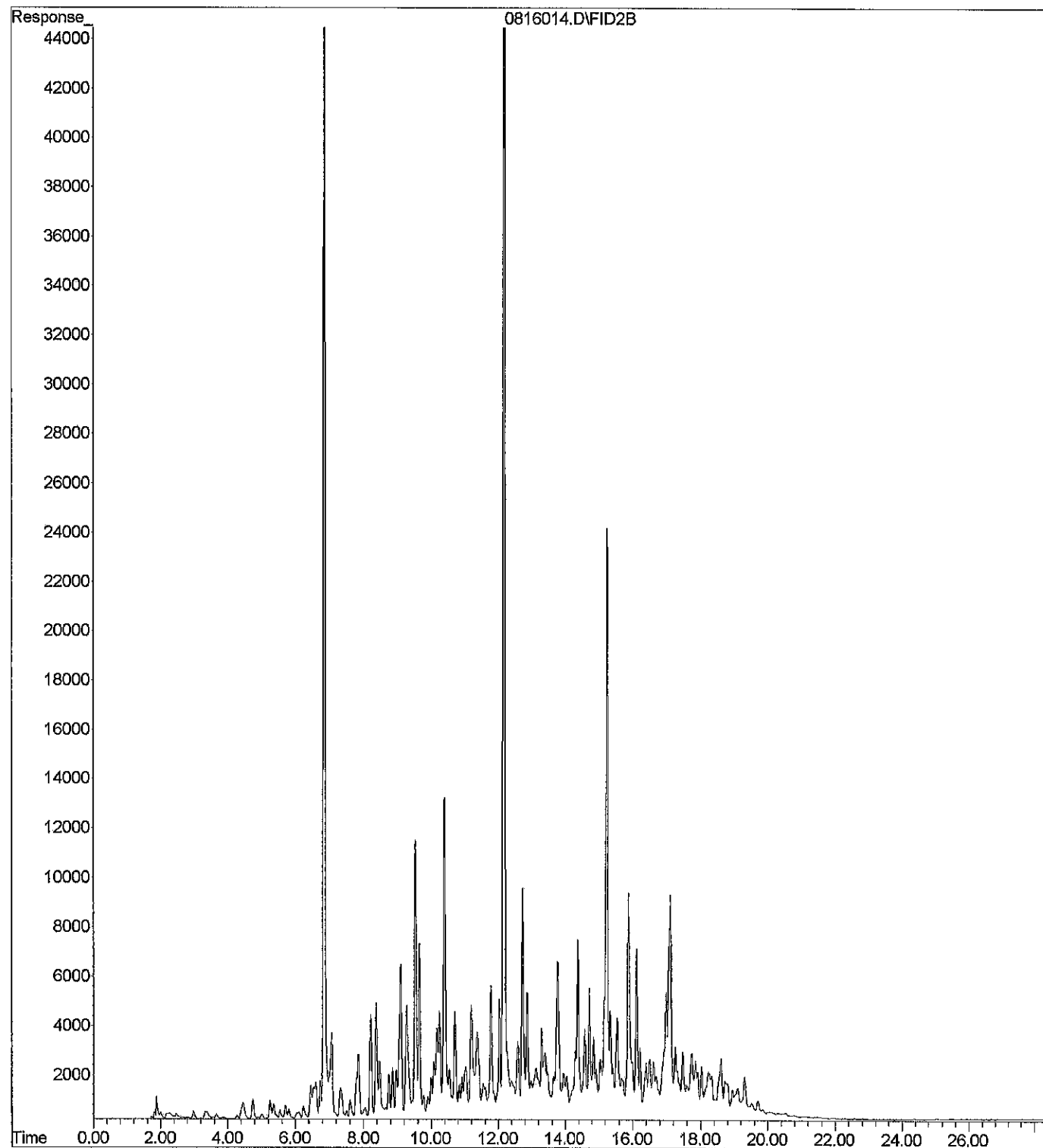
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Instrument : Daryl
Sample Name: 08-142-05f
Misc Info :
Vial Number: 10



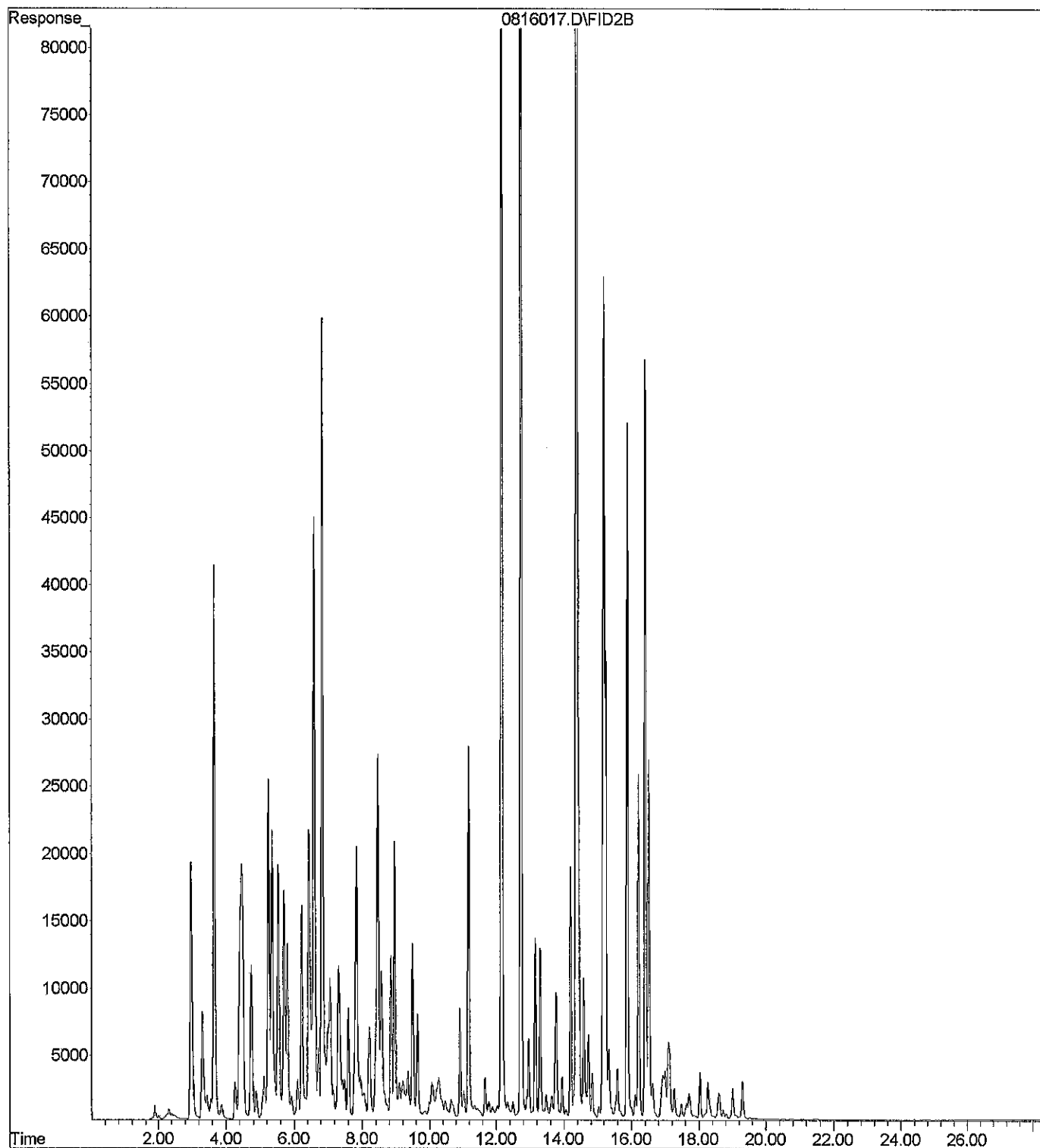
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Instrument : Daryl
Sample Name: 08-142-06f
Misc Info :
Vial Number: 12



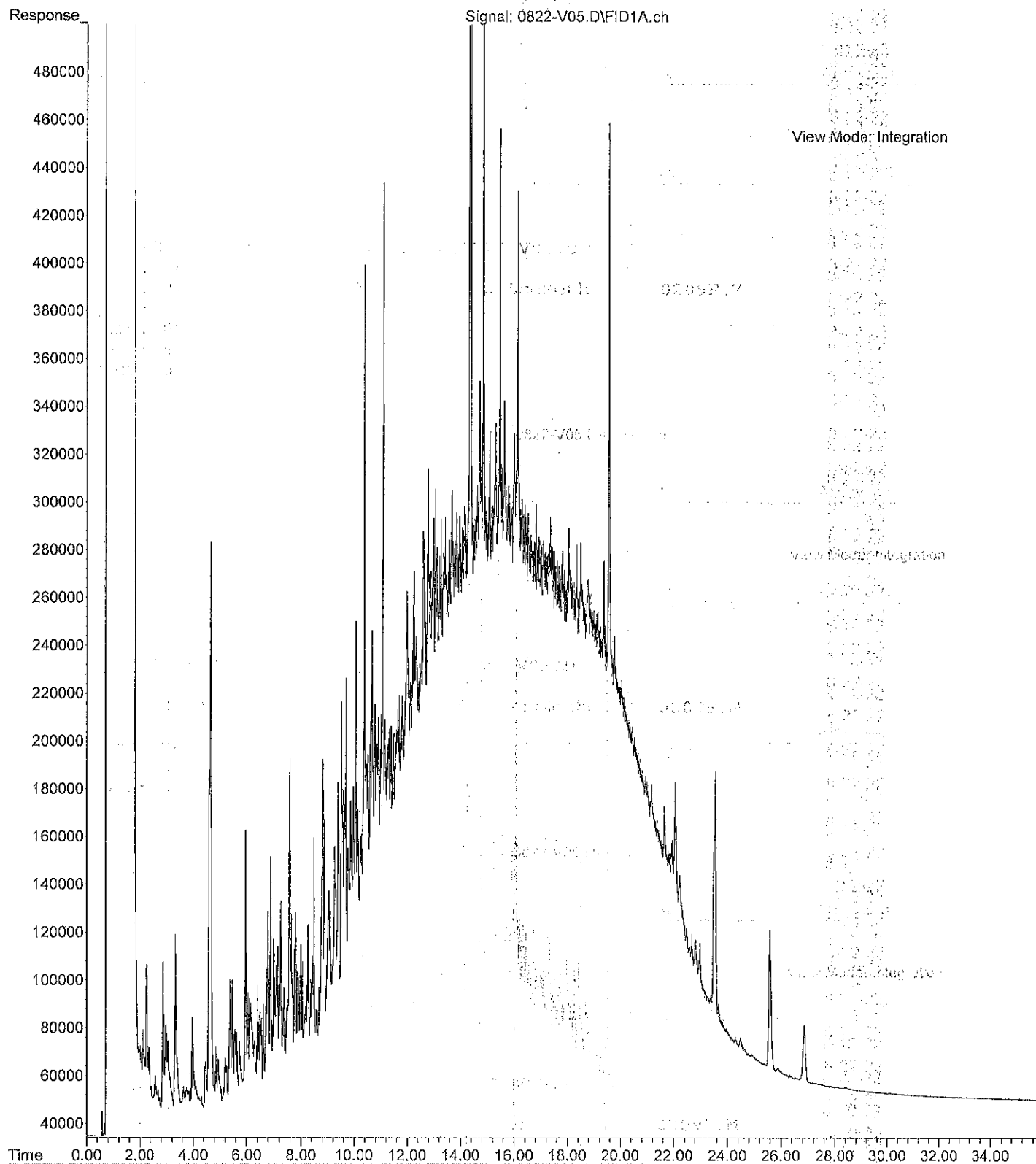
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Instrument : Daryl
Sample Name: 08-142-08g
Misc Info :
Vial Number: 14



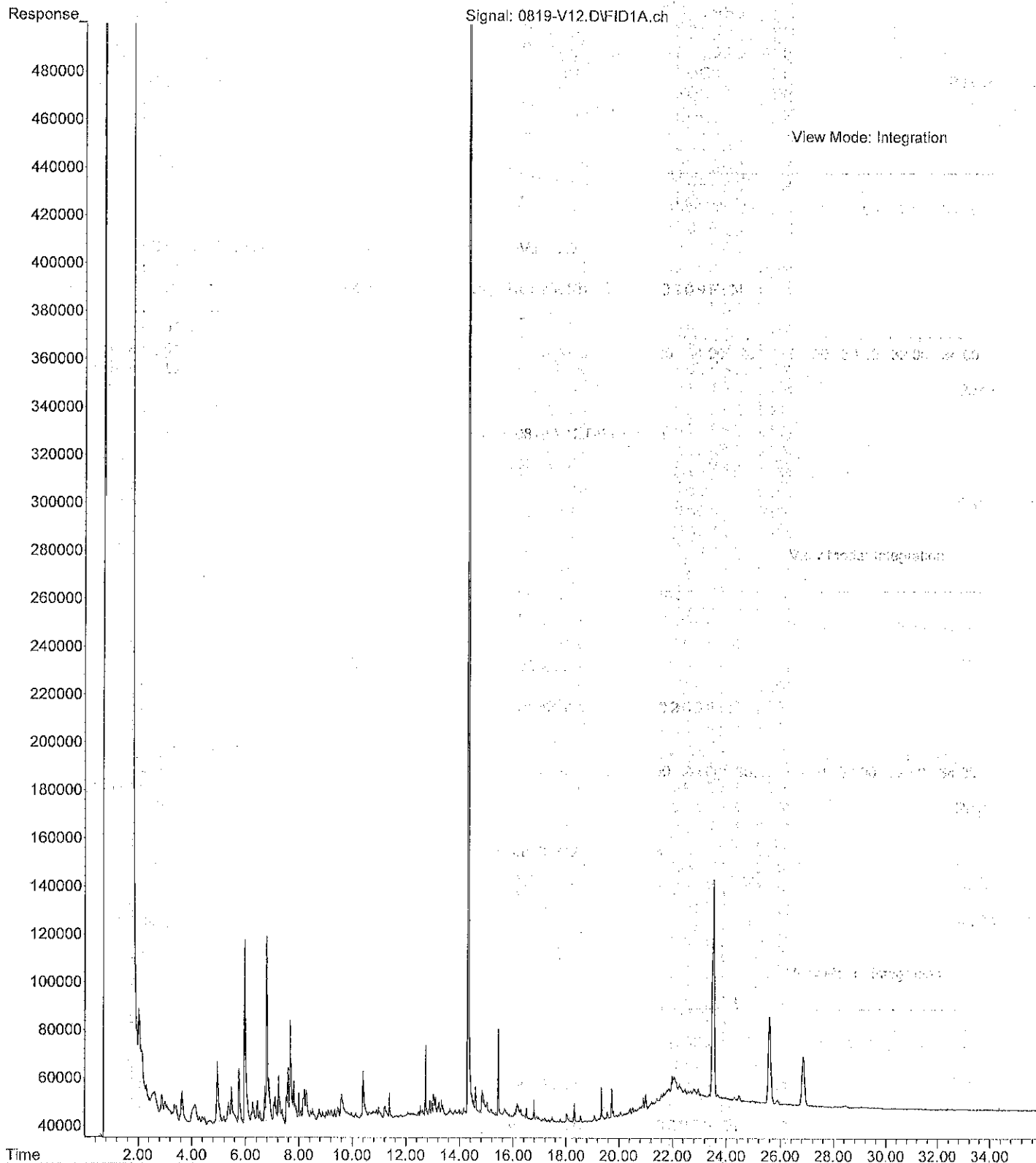
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Instrument : Daryl
Sample Name: 08-142-11f
Misc Info :
Vial Number: 17



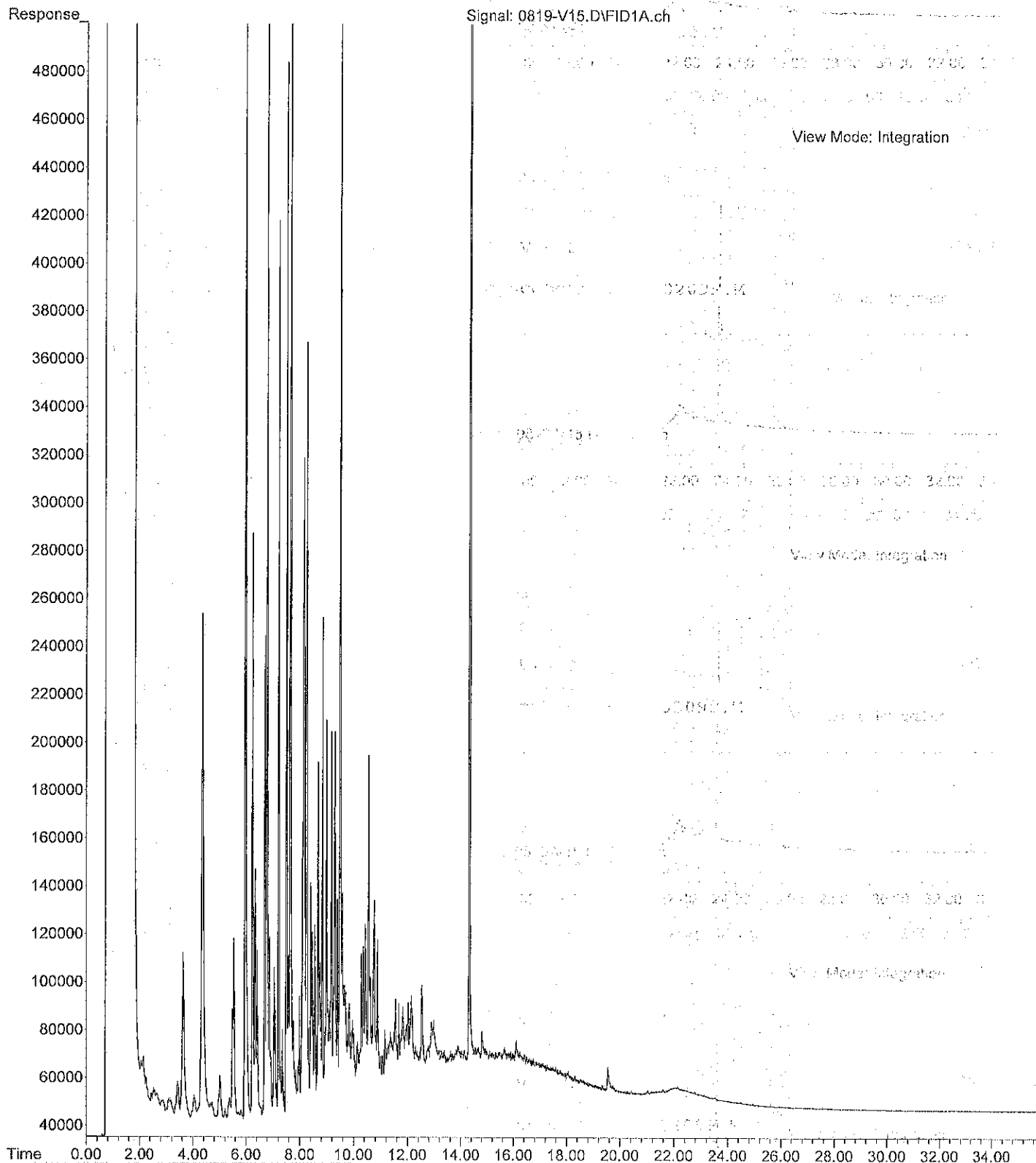
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Instrument : Vigo
Sample Name: 08-142-01 RC
Misc Info : Sample
Vial Number: 5



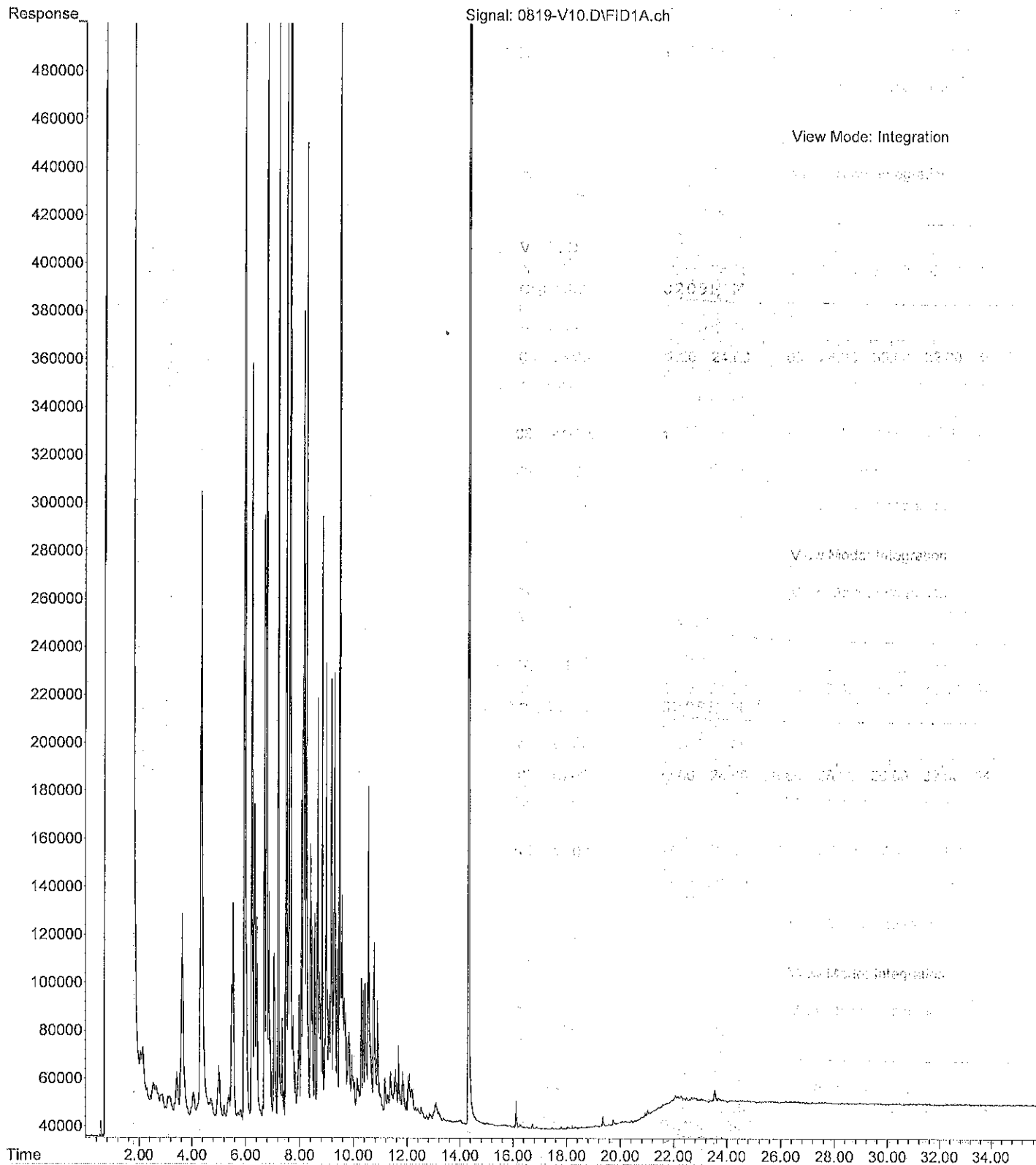
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Instrument : Vigo
Sample Name: 08-142-01 ACU
Misc Info : Sample
Vial Number: 12



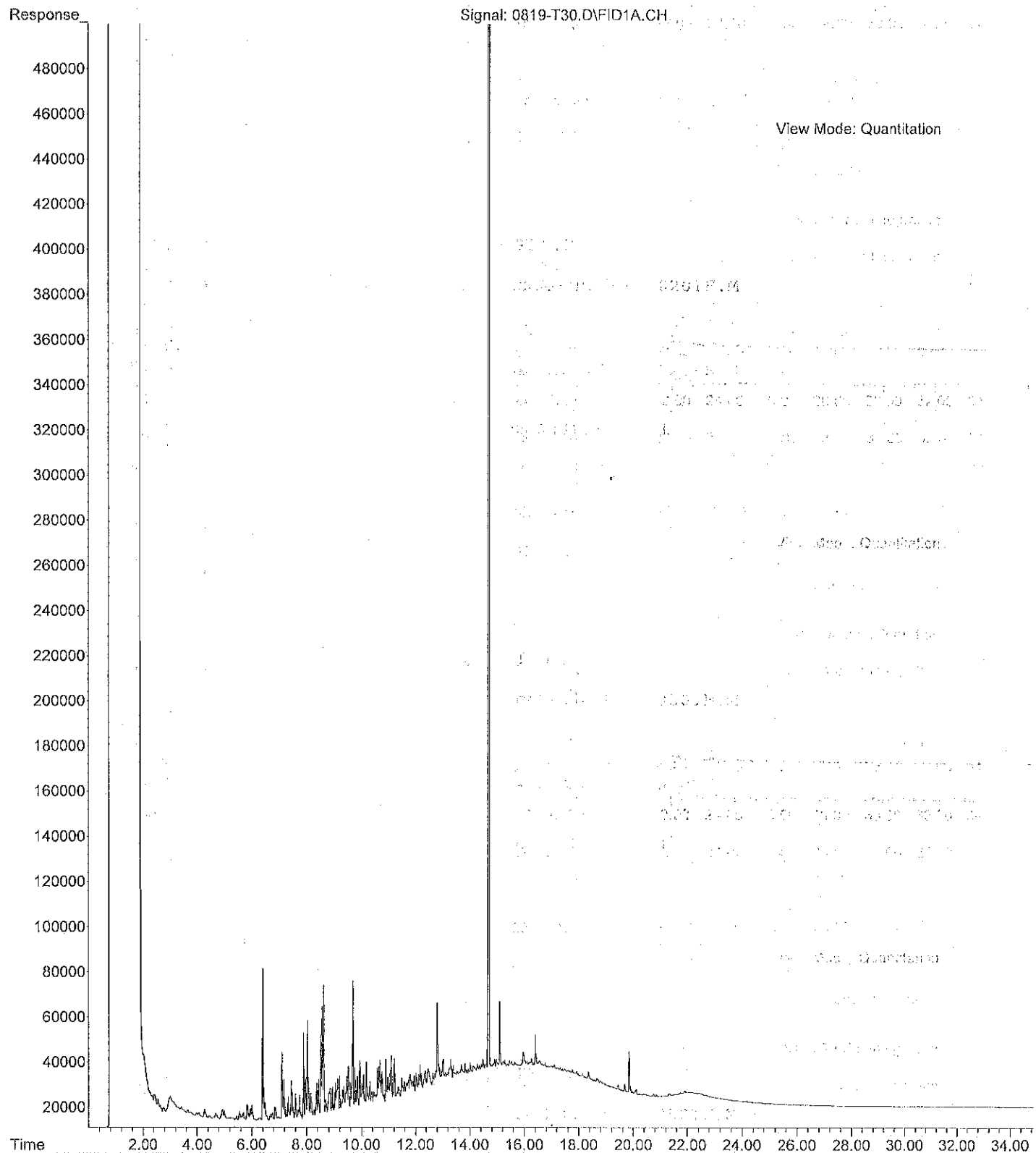
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Misc Info : Sample
Vial Number: 15



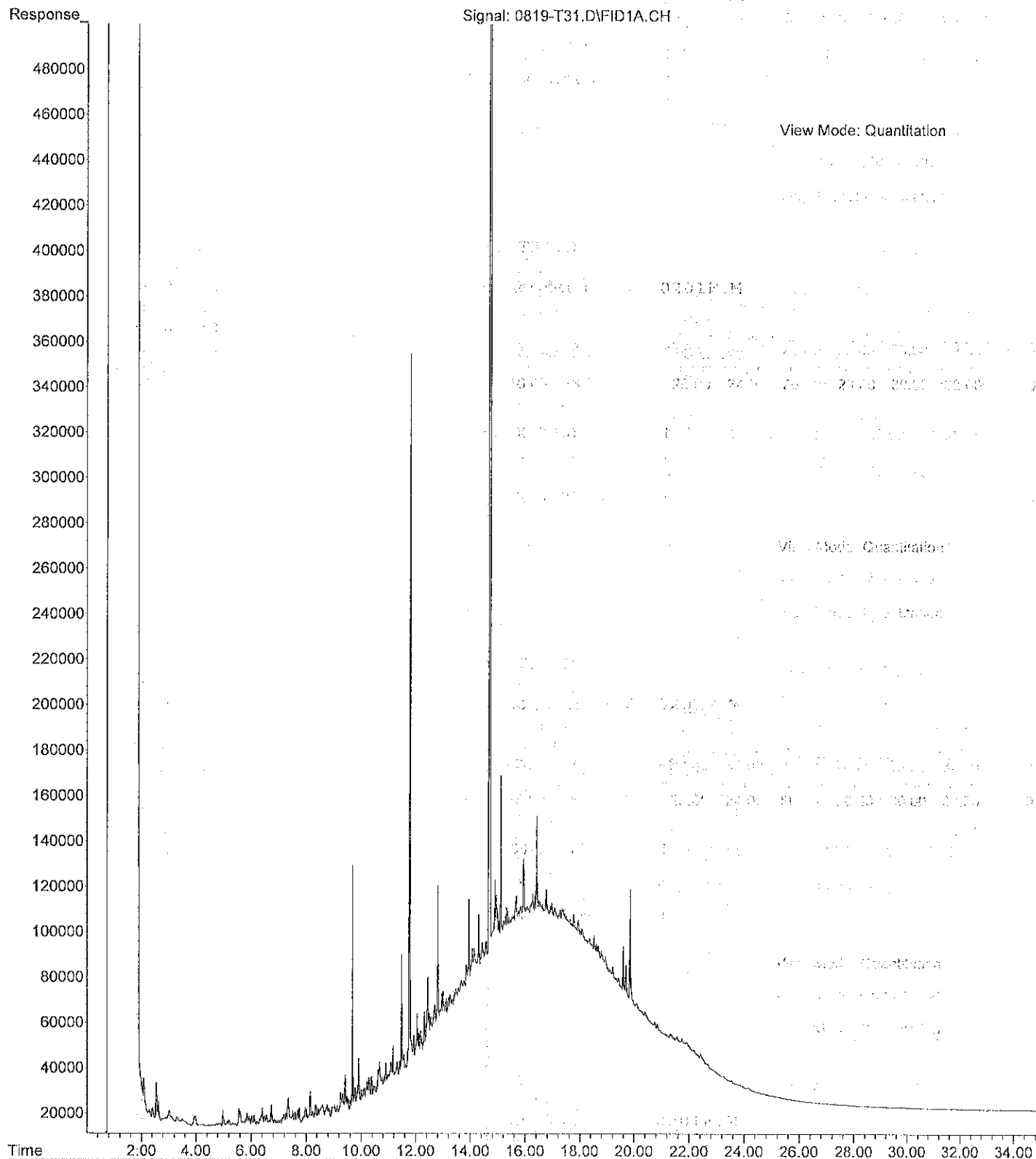
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Instrument : Vigo
Sample Name: 08-142-02 ACU
Misc Info : Sample
Vial Number: 10



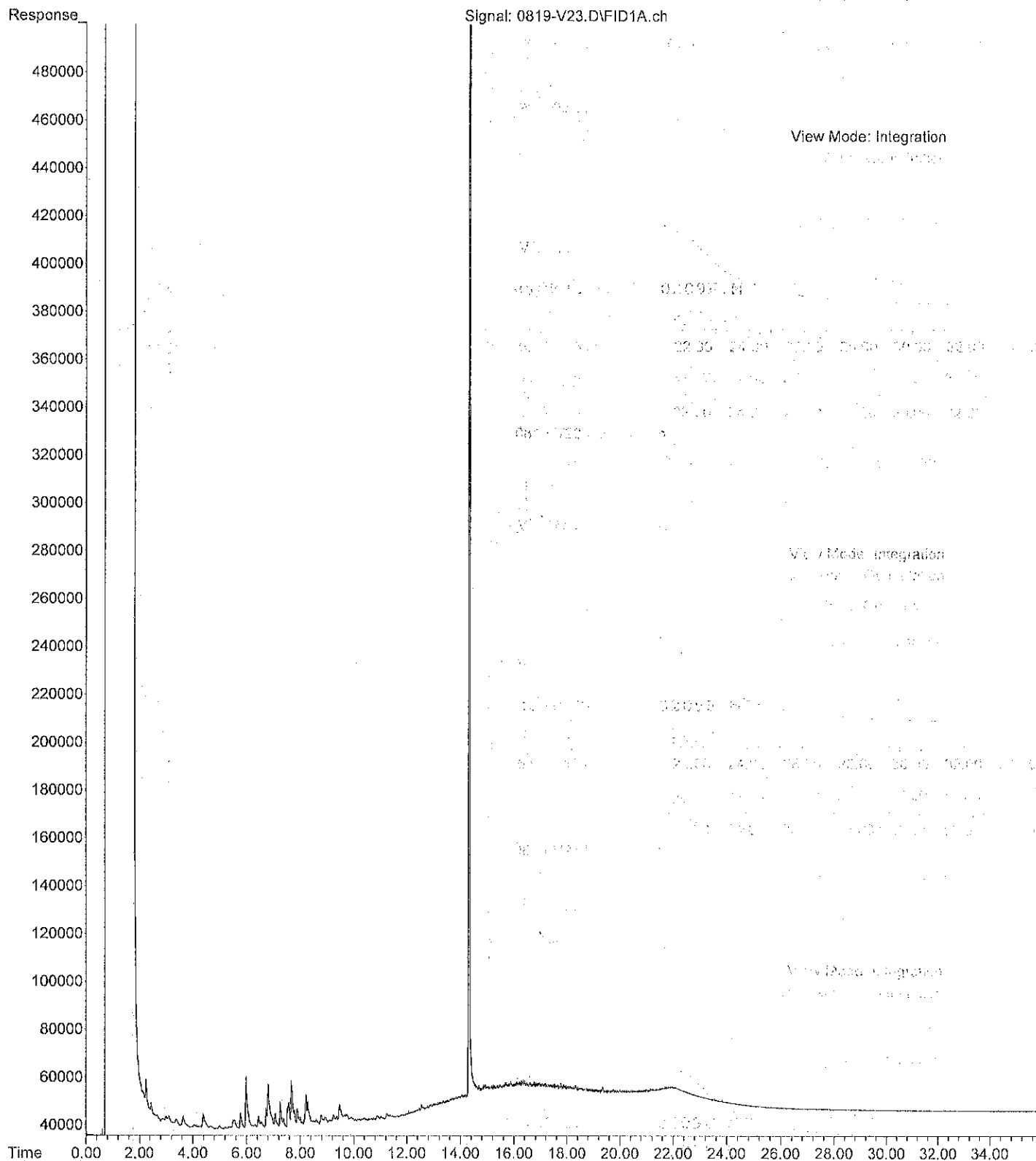
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Instrument : Teri
Sample Name: 08-142-03
Misc Info : Sample
Vial Number: 30



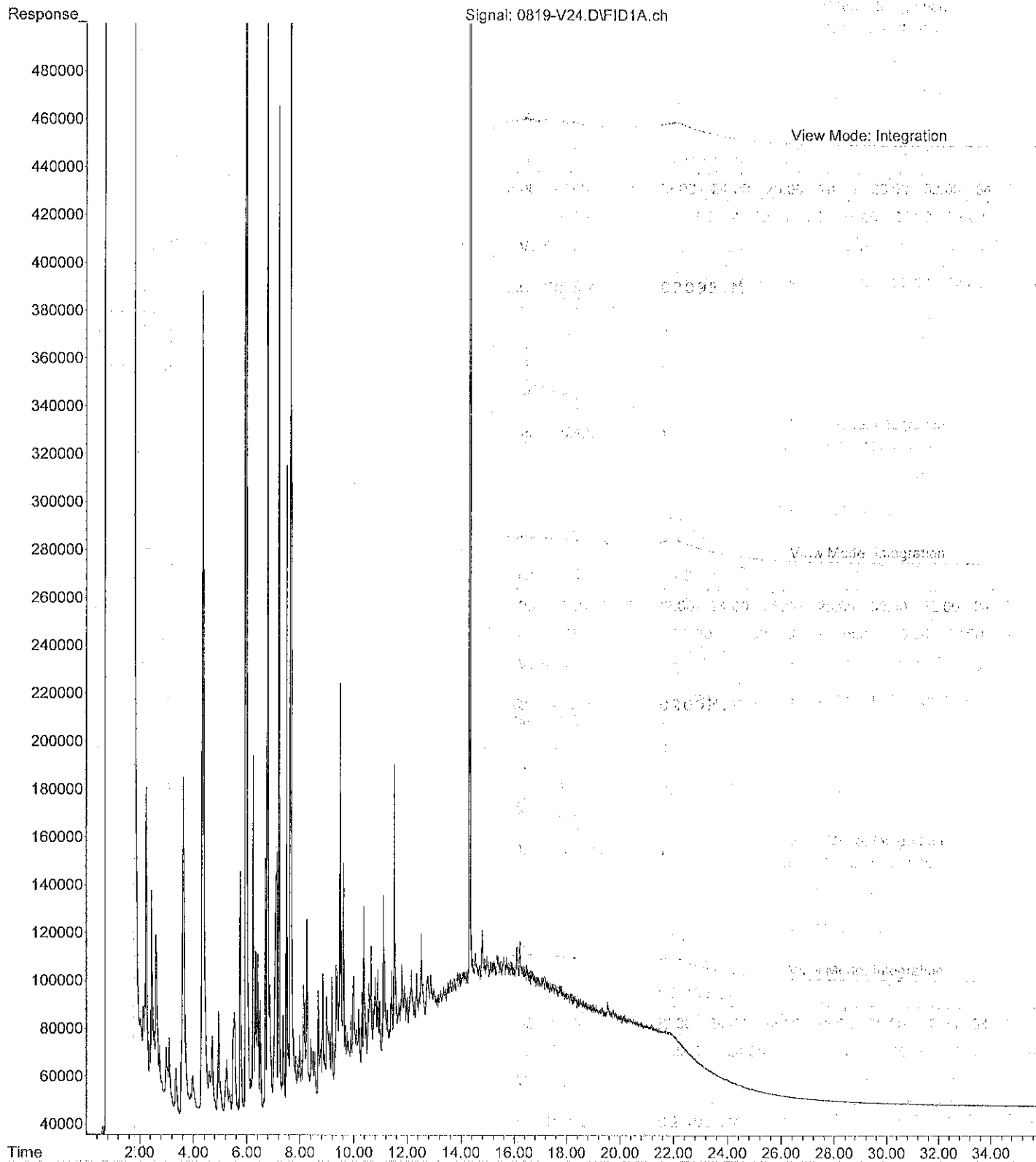
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Instrument : Teri
Sample Name: 08-142-04
Misc Info : Sample
Vial Number: 31



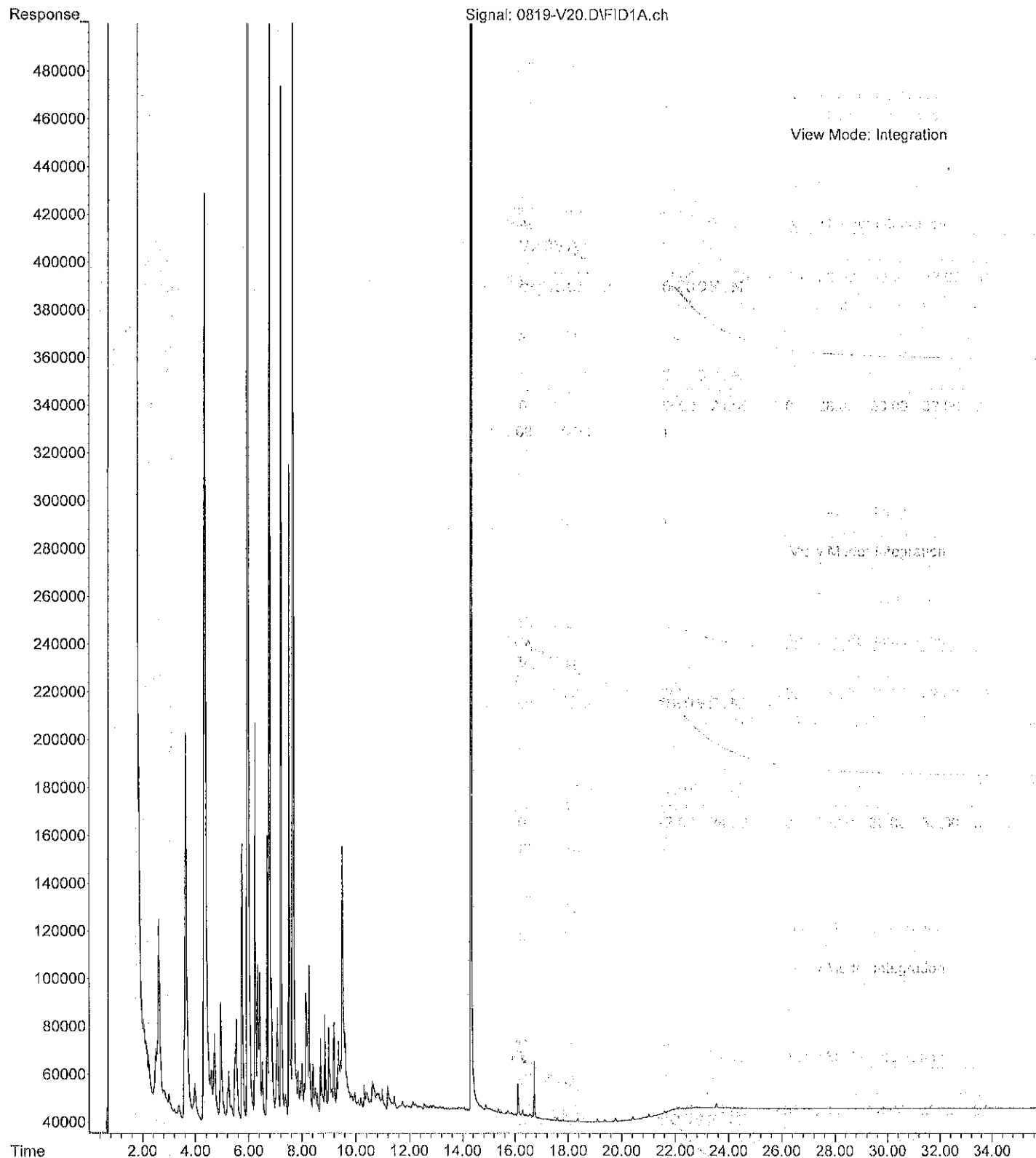
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Instrument : Vigo
Sample Name: 08-142-05
Misc Info : Sample
Vial Number: 23



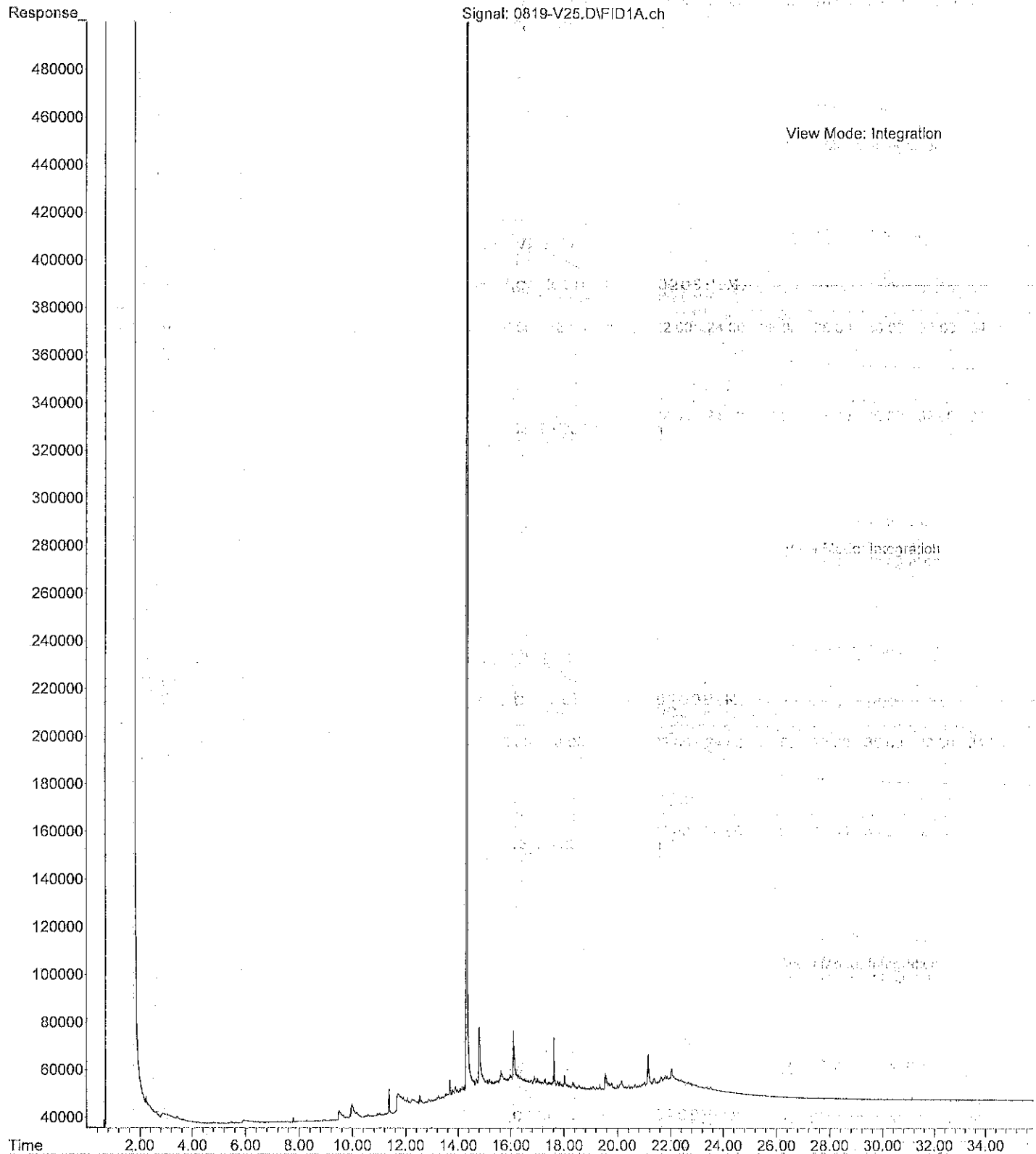
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Sample Name: 08-142-06
Misc Info : Sample
Vial Number: 24



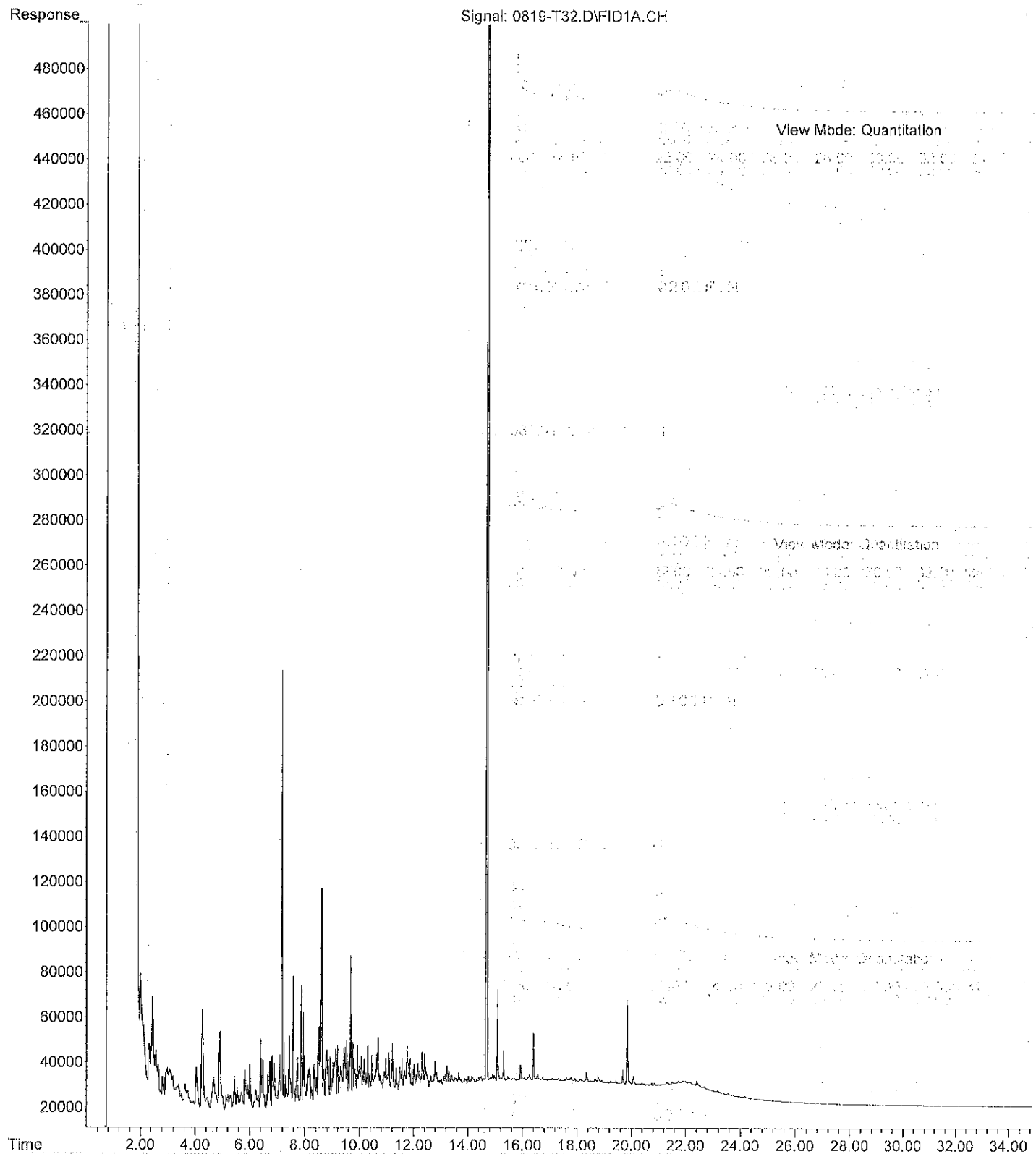
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Sample Name: 08-142-06 ACU
Misc Info : Sample
Vial Number: 20



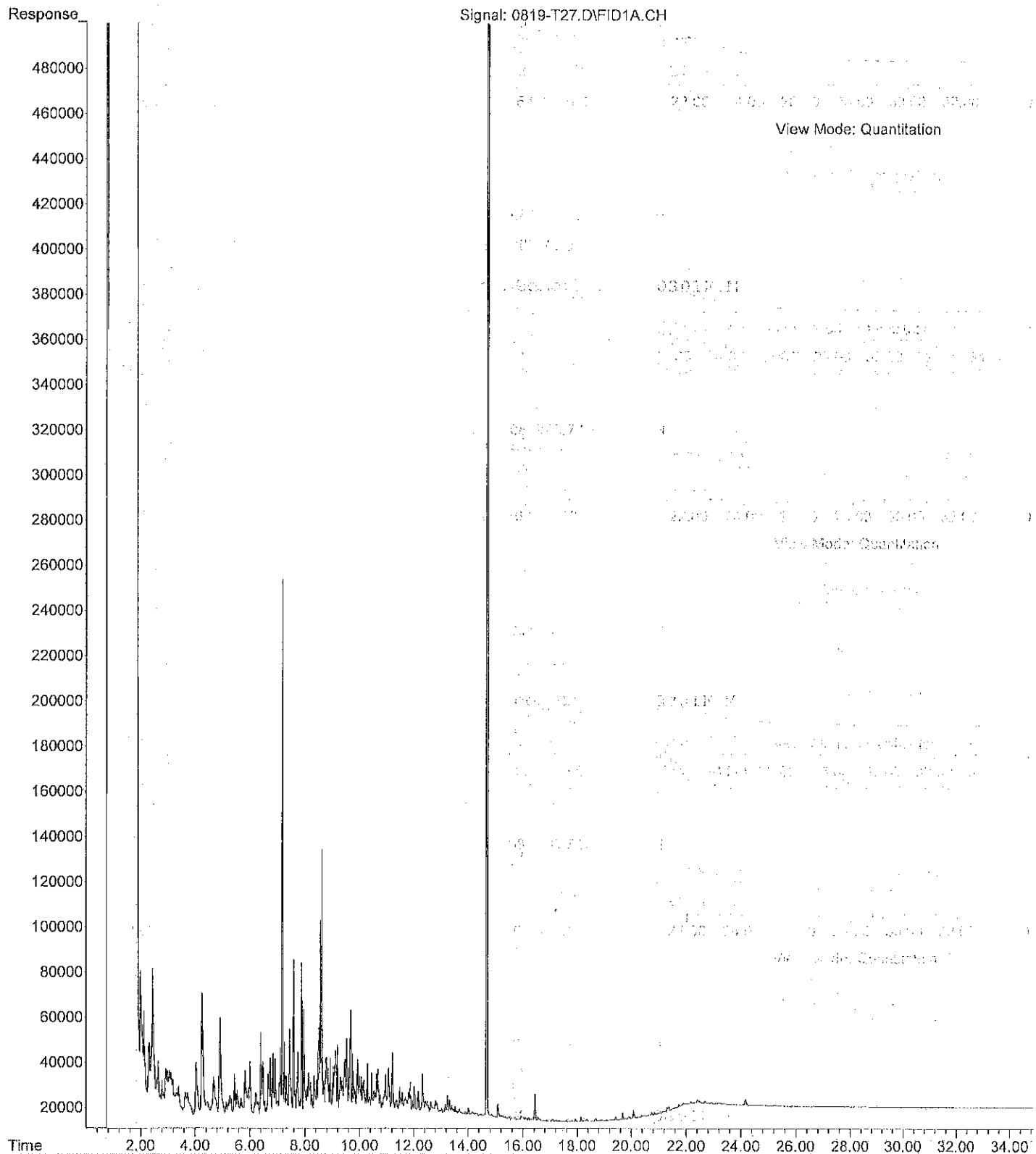
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Misc Info : Sample
Vial Number: 25



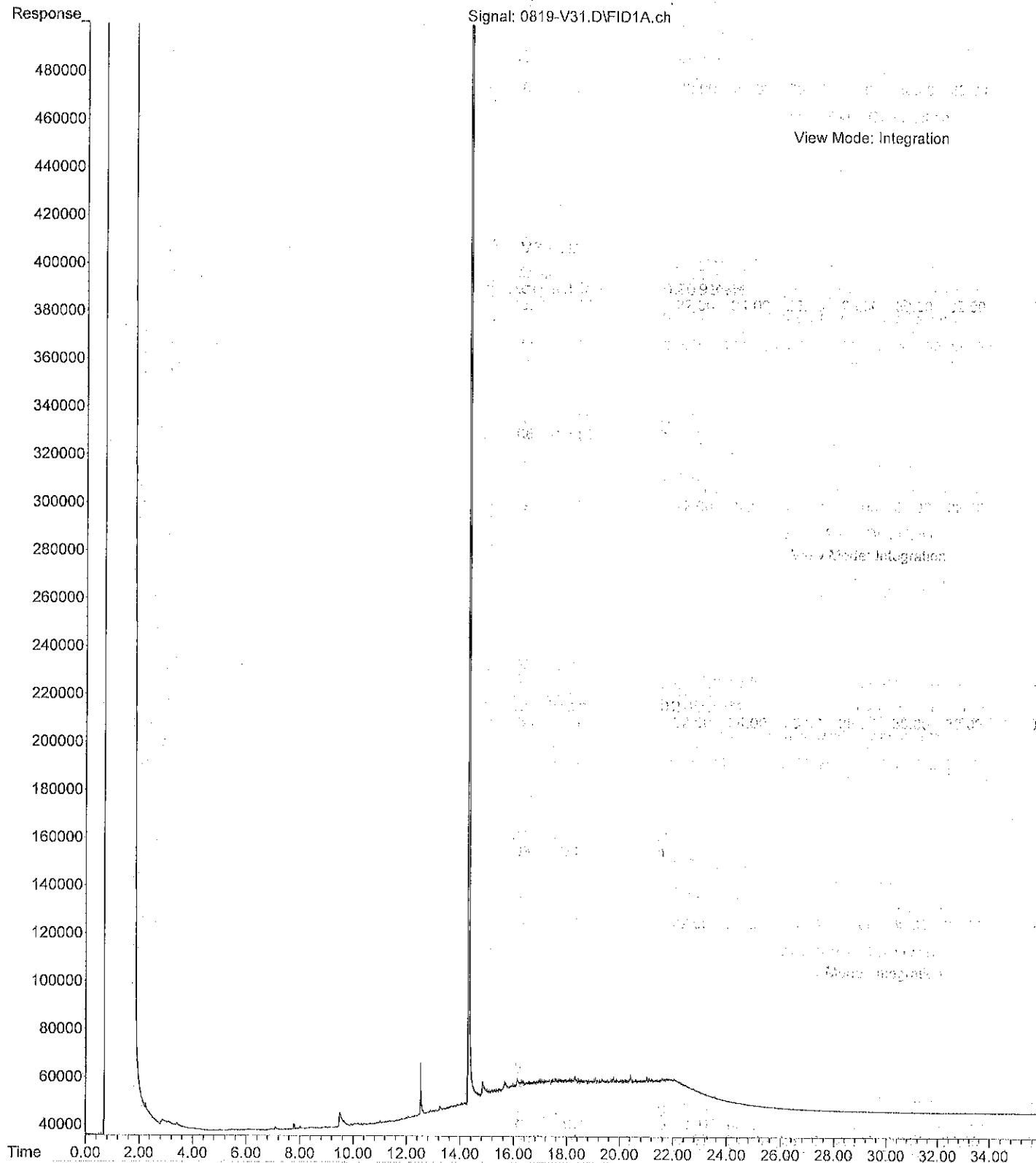
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Instrument : Teri
Sample Name: 08-142-08
Misc Info : Sample
Vial Number: 32



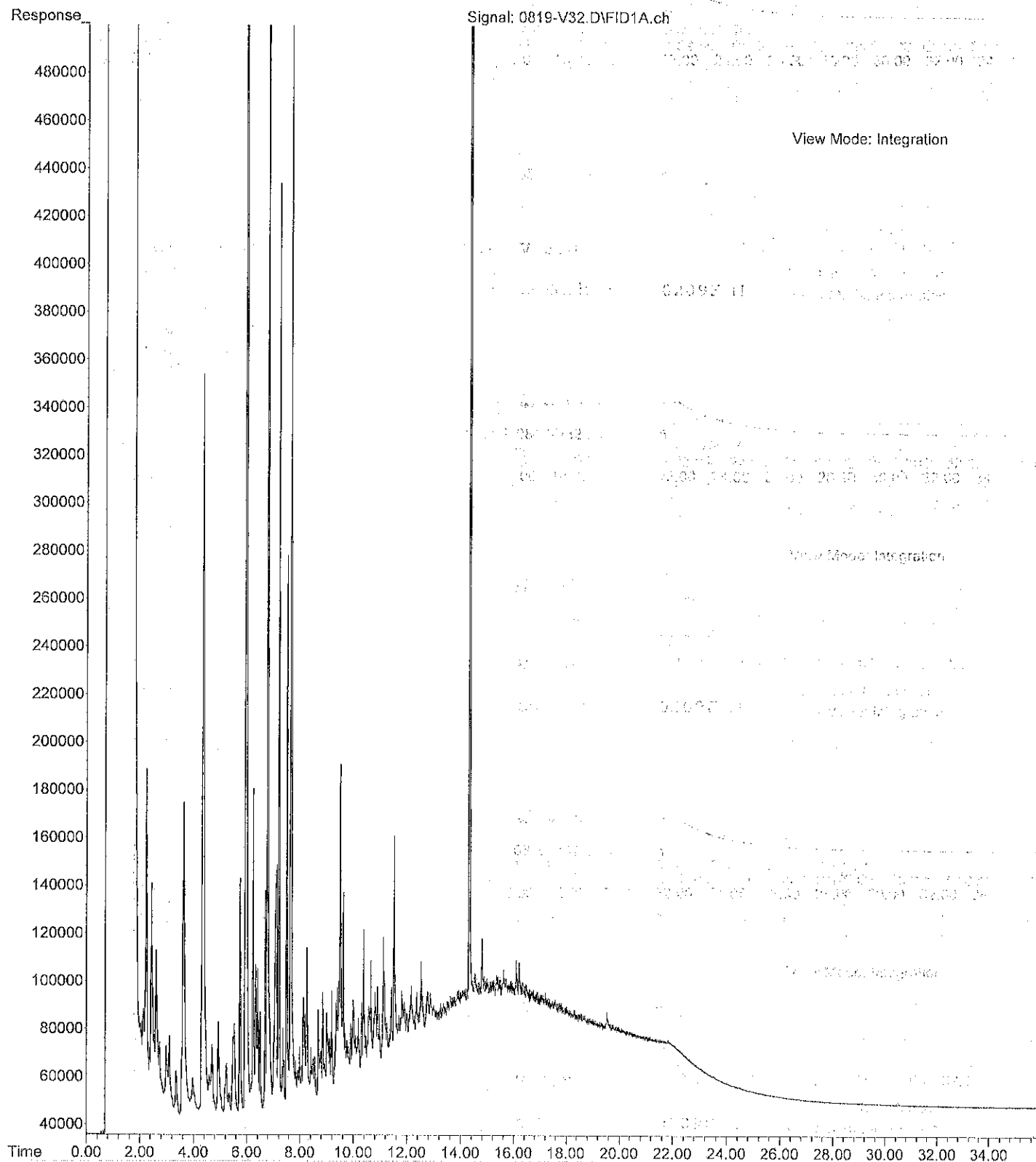
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Sample Name: 08-142-08 ACU
Misc Info : Sample
Vial Number: 27



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Operator : LAD
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Instrument : Vigo
Sample Name: 08-142-10
Misc Info : Sample
Vial Number: 31



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Operator : LAD
Acquired : 20 Aug 2022 8:24 using AcqMethod V220209F.M
Instrument : Vigo
Sample Name: 08-142-11
Misc Info : Sample
Vial Number: 32



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Instrument : Vigo
Sample Name: 08-142-11 ACU
Misc Info : Sample
Vial Number: 29

