

TESORO

Speedway Store 5315

Formerly Tesoro 2 Go Mart #111

ADEC File #100.26.026

October 2020
Monitoring Event Report

Prepared For



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ACRONYMS AND ABBREVIATIONS

AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
AK	Alaska Test Method
AS	air sparging
BTEX	benzene, toluene, ethylbenzene, and xylenes
Chemox	chemical oxidation
DO	dissolved oxygen
DRO	diesel range organics
EIT	Engineer in Training
EPA	U.S. Environmental Protection Agency
G	monitor well label
GCL	groundwater cleanup level
gpm	gallons per minute
GRO	gasoline range organics
Klozur [®] One	Trademarked chemical oxidizer developed by PeroxyChem
mg/L	milligrams per liter
MW	monitoring well
PAH	polycyclic aromatic hydrocarbon
PQL	practical quantitation limit
ORP	oxidation-reduction potential
QA	quality assurance
QC	quality control
RM	remediation well
SIM	selective ion monitoring
Speedway	Speedway, LLC
Stantec	Stantec Consulting Services Inc.
Tesoro	Tesoro Refining and Marketing Company
SVE	soil vapor extraction
VOC	volatile organic compound
UST	underground storage tank

1.0 EXECUTIVE SUMMARY

This fourth quarter 2020 (semi-annual) Groundwater Monitoring Event Report was prepared by Stantec Consulting Services Inc. (Stantec) on behalf of Speedway LLC for Store #5315 (formally known as Tesoro 2 Go Mart #111), located at 3679 College Road, Fairbanks, Alaska (**Figure 1**). The methods used for this monitoring event were conducted in accordance with the 2020 Alaska Department of Environmental Conservation (ADEC) approved Work Plans for this site.

On October 14 and 15, 2020, the Stantec team of Environmental Scientist Austin Badger and Engineer in Training (EIT) Leslie Petre conducted a fourth quarter (semi-annual) analytical sampling event of Monitoring Wells MW-10, MW-11, MW-12, MW-13, MW-16, MW 17-1, MW 17-2, G-1, and G-5 as well as Remediation Wells RM-1 and RM-2. The groundwater depth measurements indicate the average hydraulic gradient was approximately 0.007 feet per foot directed toward the northwest at 330 degrees. Characteristics of the groundwater direction and gradient for this monitoring event were typical values for this site, as shown in the groundwater flow summary presented on the “rose diagram” on **Figure 2**.

Results of the analytical sampling showed analytes were present at concentrations exceeding ADEC groundwater cleanup levels (GCLs) as listed in Alaska Administrative Code (AAC) 18AAC 75.345 Table C (9/18/2019) for all wells tested. Analytes in exceedance included: benzene, ethylbenzene, and xylenes (BTEX); gasoline range organics (GRO); diesel range organics (DRO), 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and naphthalene. It is noted that analytes levels for RM-2 measurable increased since the August 2020 monitoring event which is interpreted as an indication that the remediation well is capturing the contaminated groundwater plume. Equally important is the finding that the petroleum contaminant levels have decreased appreciably in MWs 17-1 and 17-2 which may be a positive indication of in-situ treatment with the chemox injection.

On October 15, 2020, a chemical oxidation (chemox) injection with 550 pounds of Klozur[®] One product combined with 350 gallons of water from RM-2 into five treatment points that was then pushed into the formation with flow from RM-1 and RM-2. The Klozur[®] One injections were into the three soil vapor extraction (SVE) system lines on the western portion of the site and into the two horizontal former SVE lines located along the eastern edge of the underground storage tanks (USTs) on the eastern portion of the site as shown in **Figure 3**. The formation accepted the dose of chemox without issue.

After the August 2020 sampling event, a low profile equipment shed was installed over remediation well RM-2. Subsequently plumbing was installed to facilitate recirculated groundwater flow pumped from RM-2 to discharge of approximately 5 to 7 gallons per minute (gpm) on a full time and year round basis into the three former SVE horizontal wells located beneath and adjacent to the fuel dispenser islands. Since September 3, 2020, RM-2 had recirculated more than 316,000 gallons of water into the SVE lines prior to the October 14, 2020 sampling event.

2.0 SITE BACKGROUND

Background information for this site is summarized in **Appendix A**.

3.0 FIELD ACTIVITIES

The following field activities were conducted during the October 14-15, 2020 monitoring and treatment event:

- Collected groundwater samples and field measurements of the following intrinsic water quality parameters from Monitoring and Remediation Wells MW-10, MW-11, MW-12, MW-13, MW-16, MW 17-1, MW 17-2, duplicate of MW 17-2, G-1, G-5, duplicate of G-5, RM-1 and RM-2: pH, temperature, oxidation-reduction potential, and conductivity. The samples were submitted for laboratory analysis of: GRO by Alaska Test Method (AK)101, DRO by AK102, volatile organic compounds (VOCs) by U.S. Environmental Protection Agency (EPA) Test Method 8260C, polycyclic aromatic hydrocarbon (PAH) EPA Test Method 8260 D SIM, and Metals 6010 for Sodium.
- After sampling, mixing and injection of 110 pounds Klozur[®] One mixed with 70 gallons of water into each of the 5 injection points for a total of 550 gallons of chemox solution (10 55-pound bags mixed with 350 gallons of water). Injection into the three western SVE lines labeled SVE-1, SVE-2, and SVE-3 was pushed into the formation with continuous recirculation through the SVE lines from RM-2; injection into the northeastern and southeastern access ports for the former horizontal SVE lines on the eastern edge of the UST was pushed into the formation with water from RM-1. A high level of flocculate was observed within the northern access port.

Field methods and procedures are provided in **Appendix B**, and field measurements, notes, and a hydraulic gradient plot are provided in **Appendix C**.

4.0 GROUNDWATER MONITORING RESULTS

Groundwater Levels. **Table 1** presents groundwater elevations at this site based on the depths to groundwater levels measured during the October 2020 monitoring event. Static and pumping groundwater levels for RM-1 and RM-2 were not measured during this event.

Table 1 Groundwater Elevations

Measured on October 14-15, 2020

Monitoring Well Identification	Top of Casing Elevation (feet) ¹	Depth to Groundwater (feet)	Groundwater Elevation (amsl feet)
G-1	430.14	10.48	418.84
G-5	430.02	10.45	418.67
MW-10	430.11	10.37	418.63
MW-11	430.49	10.85	418.60
MW-12	427.84	5.26	418.68
MW-13	429.77	10.20	418.67
MW-16	429.27	NM	418.63
MW17-1	430.55	10.92	418.92
MW17-2	430.17	10.50	418.62
RM-1	428.21	11.21	NM
RM-2	NM	12.00 ²	NM

Key:

- 1 Based on a vertical control survey of July 28, 2015 and September 5, 2018, using an elevation datum of 432.00 feet located next to the front entrance of the store.
- 2 Measured 9/25/2020. Static level 11.73', casing ~2 feet higher than RM-1. Excluded from gradient and flow calculations.

amsl above mean sea level

NM Not measured

Field Parameters. The results of water quality parameter testing of the water samples collected during this monitoring event are presented in **Table 2**.

Table 2 Field Measured Intrinsic Water Quality Parameters

Measured on October 14-15, 2020

Monitoring Well Identification	Volume Purged (gallons)	Temperature (°C)	pH	Dissolved Oxygen (mg/L)	ORP (mV)	SC (µs/cm °C)
G-1	15.0	4.12	6.46	5.32	207.2	1,053
G-5	3.3	3.83	6.73	4.27	114.6	1,106
MW-10	12.0	3.87	6.76	3.57	128.0	1,048
MW-11	6.4	3.96	6.82	3.39	118.7	585
MW-12	7.41	3.61	6.68	6.01	169.7	610
MW-13	6.78	3.78	6.68	2.02	113.1	935
MW-16	14.85	2.68	6.58	2.79	155.8	1,103
MW17-1	3.75	1.45	6.85	2.43	47.7	1,082
MW17-2	3.75	2.13	6.77	2.19	53.9	665
RM-1	PR	2.82	6.82	9.1	31.5	533
RM-2	PR	3.62	6.85	8.01	15.1	948

Key:

°C degrees Celsius
 µs/cm°C microSiemens per centimeter degrees Celsius
 mg/L milligrams per liter
 mV millivolts
 DO Dissolved Oxygen

NM Not measured
 ORP oxidation-reduction potential
 pH log [H⁺]
 PR Pump running
 SC specific conductance corrected to 25 °C

Water Sample Analytical Results. All wells were sampled in accordance with the 2020 Work Plan. All historical monitoring data for this site are tabulated in **Appendix D**. Laboratory analytical results for compounds detected in groundwater samples collected during these events are summarized in **Table 3 and Table 4**. The laboratory analytical reports are provided in **Appendix E**.

Table 3 Groundwater Analytical Results

Samples Collected on October 14-15, 2020

ID	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENE (TOTAL)	GRO	DRO	1,2,4-TRIMETHYL-BENZENE	1,3,5-TRIMETHYL-BENZENE	NAPH-THALENE ¹	SODIUM
UNITS	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
G-01	0.0134	0.000615	0.000186	0.000653	(0.10)	0.362	<i>0.000344</i>	(0.000104)	(0.001)	76.4
G-05	0.0016	0.00513	0.0148	0.079	0.251	2.16	0.0331	0.00696	0.00379	56.7
DUP1	<i>0.000496</i>	0.0112	0.00711	0.103	0.182	2.49	0.00789	0.00248	0.00282	57.4
MW-10	0.00506	0.0387	0.0649	0.198	1.12	1.74	0.0473	0.017	0.0128	50.9
MW-11	<i>0.000929</i>	0.00121	0.0106	0.081	<i>0.386</i>	<i>1.06</i>	0.0182	0.00776	0.00388	48.2
MW-12	0.0192	<i>0.000817</i>	0.123	0.425	1.08	<i>0.658</i>	0.12	0.0375	0.0174	56.8
MW-13	0.018	0.0108	0.155	0.63	1.86	1.3	0.183	0.0597	0.0212	140
MW-16	0.0144	<i>0.000556</i>	<i>0.000399</i>	0.0241	<i>0.0468</i>	0.918	<i>0.000829</i>	<i>0.000205</i>	<i>0.00244</i>	49.6
MW 17-01	0.0231	<i>0.254</i>	0.305	2.1	5.9	4.03	0.308	0.122	0.0516	58.1
MW 17-02	<i>0.00395</i>	0.0235	0.0508	0.218	0.601	8.25	0.0265	0.0159	(0.00500)	69.3
DUP2	0.00315	0.0237	0.0492	0.216	<i>0.8</i>	10.3	0.0252	0.0159	0.00251	70.7
RM-01	<i>0.00261</i>	0.137	0.246	1.89	4.26	2.31	0.267	0.101	0.048	52.3
RM-02	0.0226	0.413	0.274	1.24	3.98	1.49	0.188	0.0629	0.0517	48.7
BLANK	(0.001)	(0.001)	(0.001)	(0.003)	(0.100)	(0.800)	(0.001)	(0.001)	(0.005)	(3.000)
GCLS	0.0046	1.1	0.015	0.19	2.2	1.5	0.056	0.06	0.0017	NA

Key:

- | | | | |
|----------------|---|------|--|
| 1 | Results from VOC Method 8260 C | GCLs | Groundwater cleanup levels, 18 AAC 75.345, Table C, (9/18/2019) |
| Bold | indicates the concentration exceeds the GCL or the estimated quantitation limit exceeds the GCL | GRO | Gasoline range organics analyzed by AK101. |
| <i>italics</i> | The identification of the analyte is acceptable; the reported value is an estimate. | mg/L | milligrams per liter |
| DUP | Duplicate sample of the preceding sample. | NA | Not Applicable |
| DRO | Diesel range organics analyzed by AK102. | () | Undetected above practical quantitation limits shown in parentheses. |

Quality Assurance (QA)/Quality Control (QC) Review. Pace Analytical performed all analysis of groundwater samples for the October 2020 sampling event. Pace Analytical did not meet all laboratory QA/QC criteria during the analysis of groundwater samples for this sampling event. Laboratory QC data and the ADEC Laboratory Data Review Checklists are included in **Appendix E**.

Table 4 Laboratory Quality Control Objectives

Samples Collected on October 14-15, 2020

Quality Control Designation	Tolerance	Results for This Event	
Holding Times			
DRO/Water/to analyze	40 days	7 to 9 days	
DRO/Water/to extract	14 days	6 to 7 days	
GRO/Water/to analyze	14 days	4 to 13 days	
VOCs/Water/to analyze	14 days	7 to 14 days	
Field Duplicate – Precision		Duplicate 1	Duplicate 2
Benzene/Water	± 30%	+76.3%	+105.3%
Toluene/Water	± 30%	-74.3%	-2.4%
Ethylbenzene/Water	± 30%	+70.2%	+14.6%
Xylenes/Water	± 30%	-26.4%	+2.2%
GRO/Water	± 30%	+31.9%	-91.6%
DRO/Water	± 30%	-14.2%	-88.2%
1,2,4-Trimethylbenzene	± 30%	+123.0	+6.3%
1,3,5-Trimethylbenzene	± 30%	+94.9%	0%
Naphthalene	± 30%	+29.3%	NC
Sodium	NR	-1.2%	-2.5%

Key:

% Percentage of variance
 ± plus or minus
 DRO diesel range organics
 GRO gasoline range organics

NC Not Calculated, undetected in duplicate
 NR Not regulated, site treatment by-product
 VOC volatile organic compound

DUP1 is a duplicate of sample of G-5 (grabbed 10/14/2020) and DUP2 is a duplicate sample of MW 17-2 (grabbed 10/15/2020). The duplicate sample sets were collected to determine the precision of the field collection and laboratory analysis for this sampling event.

Data presented in **Table 4** show that the precision for the duplicate sample set:

DUP1 (analytes that were detected above the PQLs and exceeded GCLs) was within the established QA criteria tolerances for xylenes, DRO, and naphthalene. DUP1 exceeded the precision criteria for benzene, toluene, ethylbenzene, 1,2,4-Trimethylbenzene, and 1,3,5-Trimethylbenzene.

DUP2 (analytes that were detected above the PQLs and exceeded GCLs) was within the established QA criteria tolerances for toluene, ethylbenzene, xylenes, naphthalene, and 1,2,4-Trimethylbenzene. DUP2 exceeded the precision criteria for benzene, GRO, and DRO with a non-detect for 1,3,5-Trimethylbenzene.

Sodium analysis shows a high level of precision in the results.

The proximity of G-5 to the SVE lines being hydraulically recirculated by RM-2 and the proximity RM-2 to the location of MW17-2 may be a factor for the irregularities with precision.

5.0 REMEDIATION SYSTEM OPERATION AND MONITORING 2020

On October 15, 2020, an injection of Klozur[®] One solution into 5 chemox injection points and flushing of water from RM-1 and RM-2 was completed. A total of 550 pounds of Klozur was mixed into 350 gallons of water and gravity fed into five points then pushed into the formation by the continuous running of RM-1 and RM-2. Injection into the three western SVE lines (labeled SVE-1, SVE-2, and SVE-3) was pushed into the subsurface formation with continuous recirculation through the SVE lines from RM-2; injection into the northeastern and southeastern access ports on the eastern edge of the UST was pushed into the formation with water from RM-1. A high level of flocculate was seen within the northern access port.

In November of 2020, RM-1 was shut down for the winter to prevent the flocculate created by oxidation within RM-1 well screen from clogging up the eastern SVE horizontal lines adjacent to the UST. In 2021, circulation into the two eastern SVE lines will continue but will accept recirculated groundwater flow from remediation well RM-2.

6.0 CONCLUSIONS

Graphs of contaminant concentrations and groundwater elevations for Monitoring Wells G-1, G-5, MW-10, MW-11, MW-12, MW-13, and MW-16 and Remediation Well RM-1 are presented on **Figure 4**. Sampled and not graphed due to the limited historic data points available are Monitoring wells MW 17-1 and MW 17-2 and Remediation Well RM-2.

The October 2020 results of the analytical sampling showed analytes were present at concentrations exceeding ADEC GCLs in Monitoring Wells G-1, G-5, MW-10, MW-11, MW-12, MW-13, MW-16, MW 17-1, and MW 17-2 as well as Remediation Wells RM-1 and RM-2. Analytes in exceedance included: benzene, ethylbenzene, and xylenes (BTEX); gasoline range organics (GRO); diesel range organics (DRO), 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and naphthalene. It is noted that analytes levels for RM-2 measurable increased since the August 2020 monitoring event which is interpreted as an indication that the remediation well is capturing the contaminated groundwater plume. Equally important is the finding that the petroleum contaminant levels have decreased appreciably in MWs 17-1 and 17-2 which may be a positive indication of in-situ treatment with the chemox injection.

Results from the groundwater depth measurements indicate the average hydraulic gradient was approximately 0.007 feet per foot directed toward the northwest at 330 degrees. Characteristics of the groundwater direction and gradient for this monitoring event were consistent with the typical values for this site.

7.0 RECOMMENDATIONS AND PROPOSED ACTIVITIES

No anomalies were found during the October 2020 (semi-annual) groundwater monitoring and chemox injection event that would require additional corrective action or changes to the approved year 2020 Corrective Action Work Plan for this site.

8.0 LIMITATIONS

Stantec conducted this monitoring event in accordance with the Corrective Action Work Plan approved by ADEC, and in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practicing under similar conditions. All sampling activities were completed in accordance with the ADEC *Underground Storage Tanks Procedures Manual – Standard Sampling Procedures* (March 22, 2017). No other warranty, expressed or implied, is made. Data and recommendations made herein were prepared for Speedway, LLC Store 5315 (the former Tesoro 2 Go Mart #111). Information herein is for use at this site in accordance with the purpose of the report described.

FIGURES

- | | |
|----------|---|
| Figure 1 | Location and Vicinity Map |
| Figure 2 | Site Plan with Groundwater Levels
and Analytical Results |
| Figure 3 | Remediation System Layout |
| Figure 4 | Graphs of Contaminant
Concentrations and Groundwater
Elevations |
-



MW 17-2	
Benzene	0.00395
Toluene	0.0235
Ethylbenzene	0.0508
Xylenes	0.218
GRO	0.601
DRO	8.25
Naphthalene	(0.00500)
1,2,4-Trimethylbenzene	0.0265
1,3,5-Trimethylbenzene	0.0159
Sodium	69.3
GW Elev.	418.62'

RM-2	
Benzene	0.0226
Toluene	0.413
Ethylbenzene	0.274
Xylenes	1.24
GRO	3.98
DRO	1.49
Naphthalene	0.0517
1,2,4-Trimethylbenzene	0.188
1,3,5-Trimethylbenzene	0.0629
Sodium	48.7
GW Elev.	NM

RM-1	
Benzene	0.00261
Toluene	0.137
Ethylbenzene	0.246
Xylenes	1.89
GRO	4.26
DRO	2.31
Naphthalene	0.048
1,2,4-Trimethylbenzene	0.267
1,3,5-Trimethylbenzene	0.101
Sodium	52.3
GW Elev.	NM

Duplicate MW 17-2	
Benzene	0.00315
Toluene	0.0237
Ethylbenzene	0.0492
Xylenes	0.216
GRO	0.8
DRO	10.3
Naphthalene	0.0252
1,2,4-Trimethylbenzene	0.0159
1,3,5-Trimethylbenzene	0.00257
Sodium	70.7
GW Elev.	418.62'

MW-11	
Benzene	0.000929
Toluene	0.00121
Ethylbenzene	0.0106
Xylenes	0.081
GRO	0.386
DRO	1.06
Naphthalene	0.00388
1,2,4-Trimethylbenzene	0.0182
1,3,5-Trimethylbenzene	0.00776
Sodium	48.2
GW Elev.	418.60'

MW-10	
Benzene	0.00506
Toluene	0.0387
Ethylbenzene	0.0649
Xylenes	0.198
GRO	1.12
DRO	1.74
Naphthalene	0.0128
1,2,4-Trimethylbenzene	0.0473
1,3,5-Trimethylbenzene	0.017
Sodium	50.9
GW Elev.	418.63'

MW 17-1	
Benzene	0.0231
Toluene	0.254
Ethylbenzene	0.305
Xylenes	2.1
GRO	5.9
DRO	4.03
Naphthalene	0.0576
1,2,4-Trimethylbenzene	0.308
1,3,5-Trimethylbenzene	0.122
Sodium	58.1
GW Elev.	418.92'

Duplicate G-5	
Benzene	0.0016
Toluene	0.00513
Ethylbenzene	0.0148
Xylenes	0.079
GRO	0.251
DRO	2.16
Naphthalene	0.00379
1,2,4-Trimethylbenzene	0.0331
1,3,5-Trimethylbenzene	0.00696
Sodium	56.7
GW Elev.	418.67'

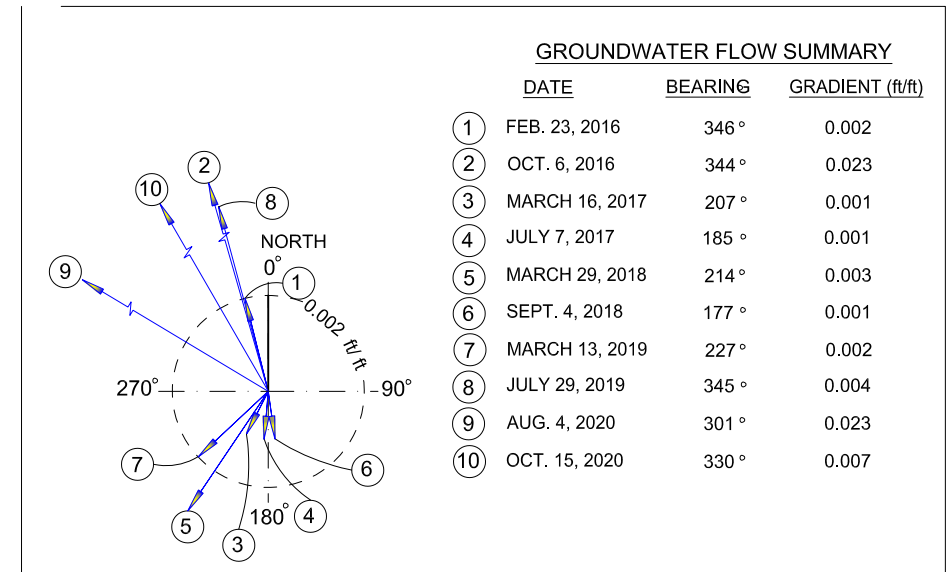
G-5	
Benzene	0.000496
Toluene	0.0112
Ethylbenzene	0.00711
Xylenes	0.103
GRO	0.182
DRO	2.49
Naphthalene	0.00789
1,2,4-Trimethylbenzene	0.00248
1,3,5-Trimethylbenzene	0.00282
Sodium	57.4
GW Elev.	418.67'

G-1	
Benzene	0.0134
Toluene	0.000615
Ethylbenzene	0.000186
Xylenes	0.000653
GRO	(0.10)
DRO	0.362
Naphthalene	(0.001)
1,2,4-Trimethylbenzene	0.000344
1,3,5-Trimethylbenzene	(0.000104)
Sodium	76.4
GW Elev.	418.84'

MW-16	
Benzene	0.0144
Toluene	0.000556
Ethylbenzene	0.000399
Xylenes	0.0241
GRO	0.0468
DRO	0.918
Naphthalene	0.00244
1,2,4-Trimethylbenzene	0.000829
1,3,5-Trimethylbenzene	0.000205
Sodium	49.6
GW Elev.	418.63'

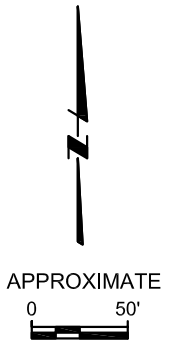
MW-13	
Benzene	0.018
Toluene	0.0108
Ethylbenzene	0.155
Xylenes	0.63
GRO	1.86
DRO	1.3
Naphthalene	0.0212
1,2,4-Trimethylbenzene	0.183
1,3,5-Trimethylbenzene	0.0597
Sodium	140
GW Elev.	418.67'

MW-12	
Benzene	0.0192
Toluene	0.000817
Ethylbenzene	0.123
Xylenes	0.425
GRO	1.08
DRO	0.658
Naphthalene	0.0174
1,2,4-Trimethylbenzene	0.12
1,3,5-Trimethylbenzene	0.0375
Sodium	56.8
GW Elev.	418.68'

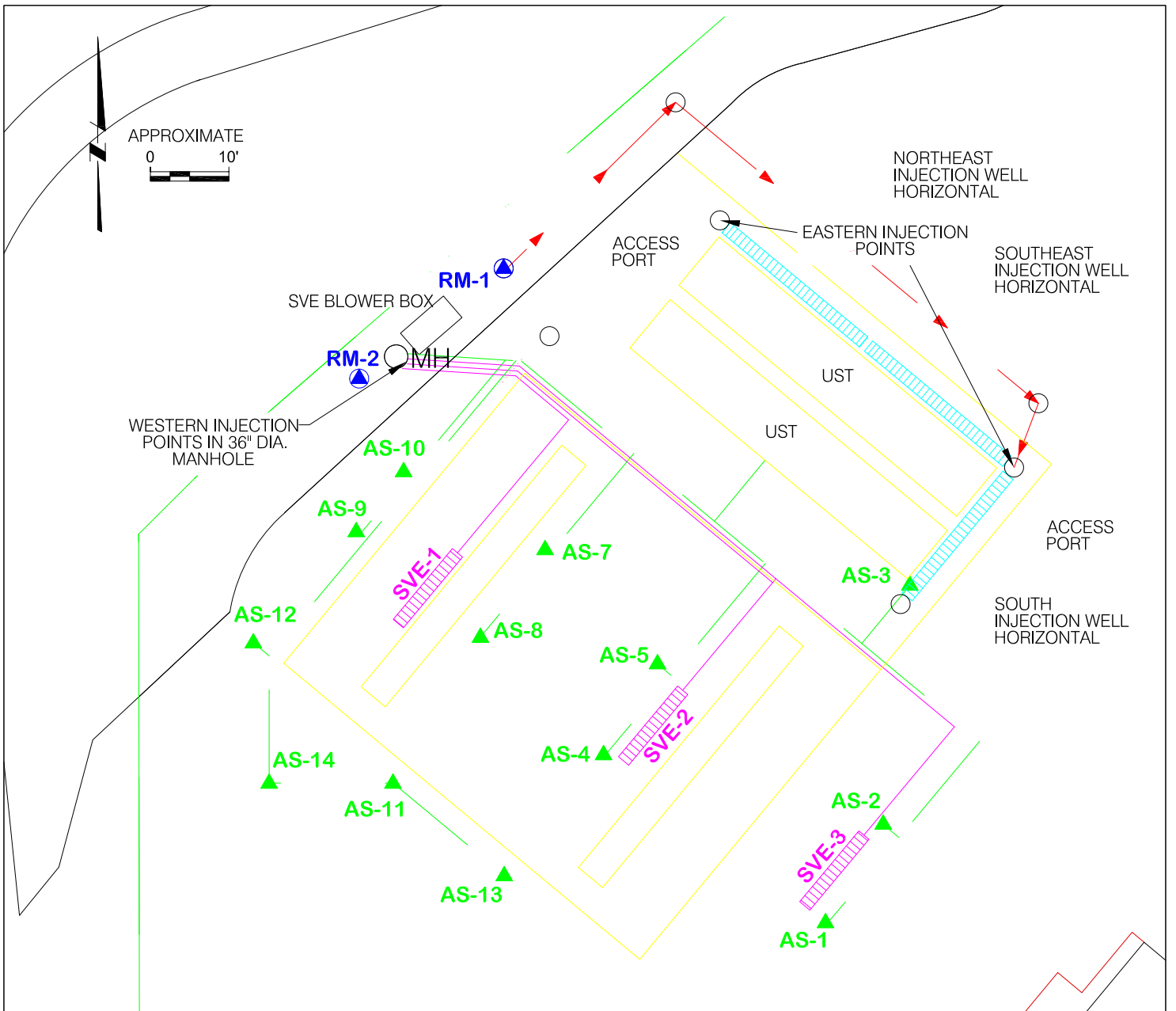


- LEGEND:**
- PROPERTY LINE
 - ▲ MONITORING WELL LOCATION
 - DRO DIESEL RANGE ORGANICS
 - ft/ft FEET PER FOOT
 - GRO GASOLINE RANGE ORGANICS
 - GW Elev. GROUNDWATER ELEVATION IN FEET
 - Italicized* ESTIMATED VALUE
 - NM NOT MEASURED
 - () UNDETECTED ABOVE PRACTICAL QUANTITATION LIMIT SHOWN IN PARENTHESES

- NOTES:**
- RESULTS SHOWN ARE FOR WELLS SAMPLED ON OCTOBER 14-15, 2020.
 - RESULTS ARE IN MILLIGRAMS PER LITER.
 - RED TEXT INDICATES CONTAMINANT CONCENTRATIONS ABOVE CLEANUP LEVELS FOR THIS SITE.
 - RM-1 and RM-2 OPERATING DURING GAUGING.



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LEGEND:

- PROPERTY LINE
- RIGHT OF WAY
- MONITORING WELL
- AIR SPARGE (AS) WELL AND PIPING
- CIRCULATION LINE WITH DIRECTION OF FLOW
- 2" SOIL VAPOR EXTRACTION (SVE) LINE POLYVINYL CHLORIDE PIPING
- SVE HORIZONTAL (20 SLOT WELL SCREENING) PIPING
- HORIZONTAL INJECTION WELL PIPING
- UST UNDERGROUND STORAGE TANK

NOTES:

- RM-1** OUTFITTED WITH SUBMERSIBLE PUMP
- RM-2** OUTFITTED WITH SUBMERSIBLE PUMP

TESORO
#111



SPEEDWAY 5315
TESORO 2 GO MART #111
OCTOBER 2020
MONITORING EVENT REPORT

REMEDATION SYSTEM LAYOUT

FIGURE

3

185751325

Figure 4
Graphs of Contaminant Concentrations and Groundwater Elevations

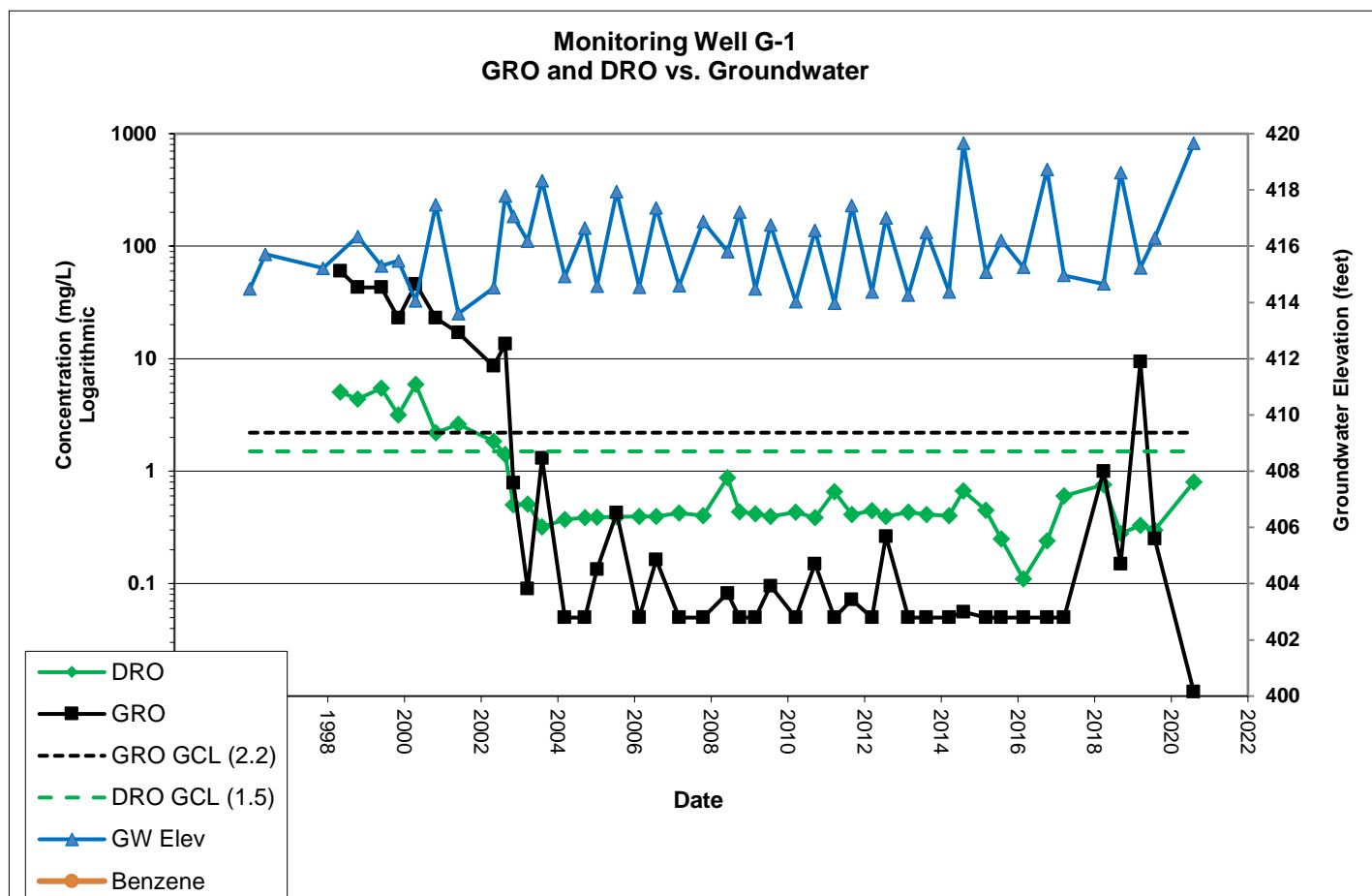
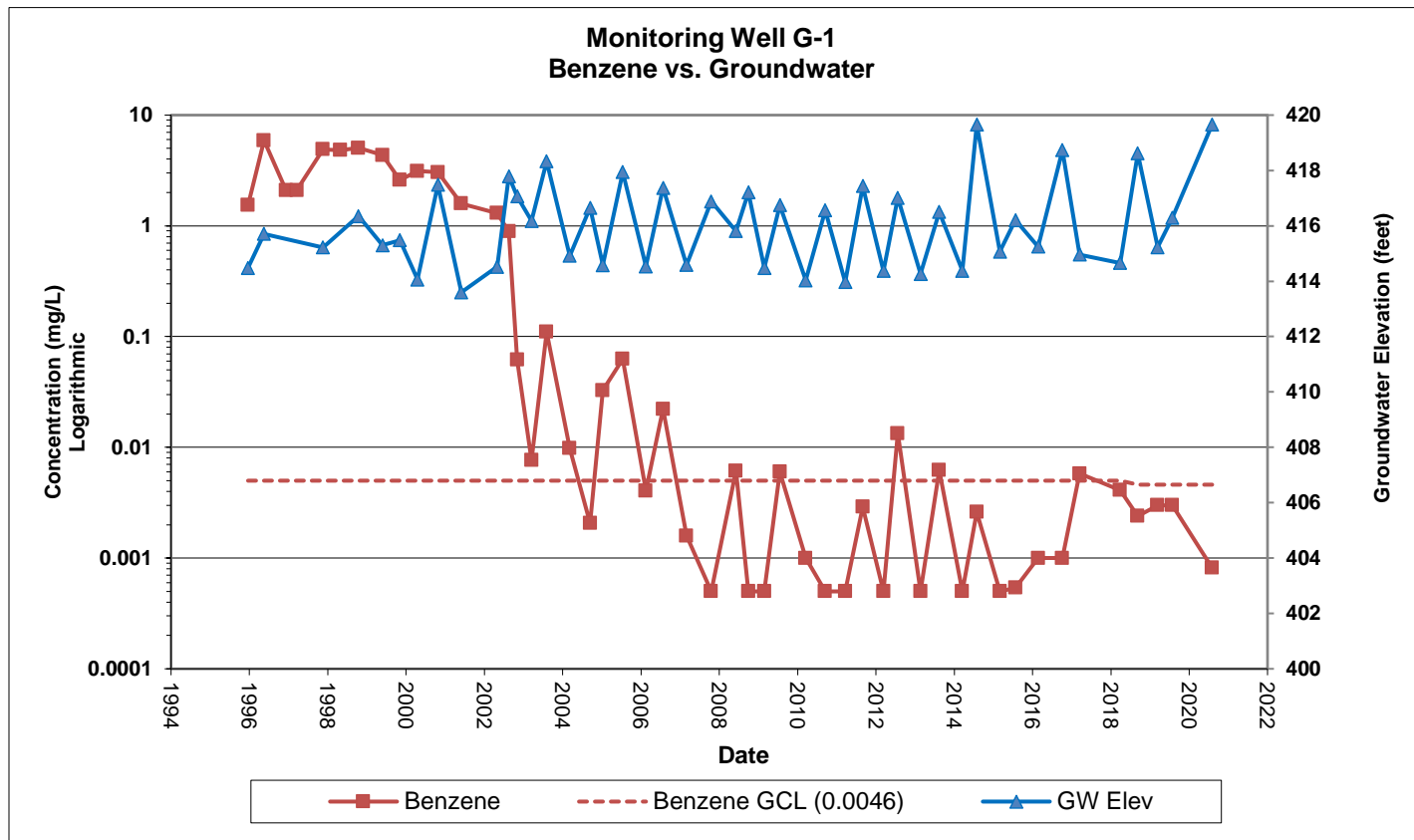


Figure 4
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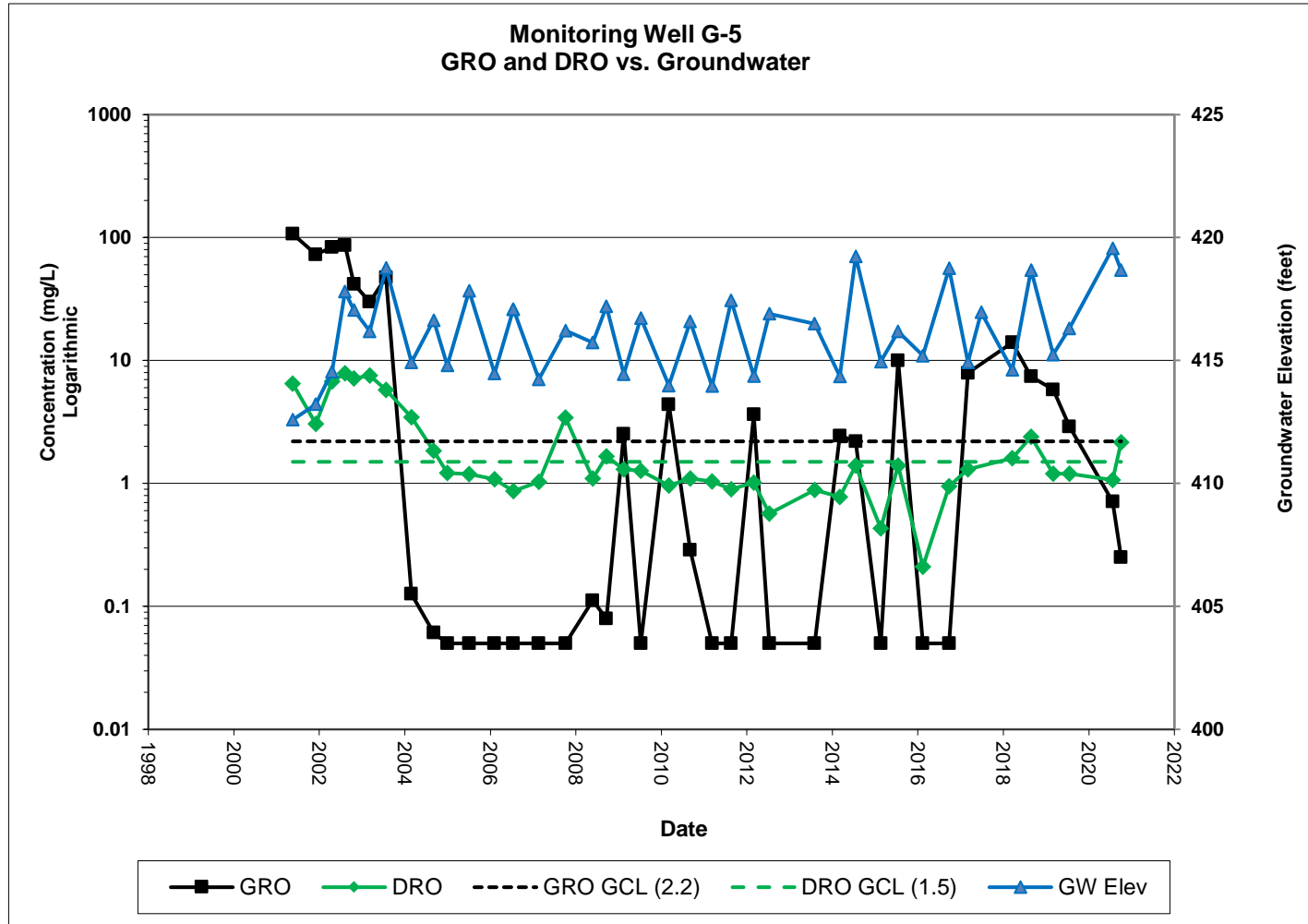
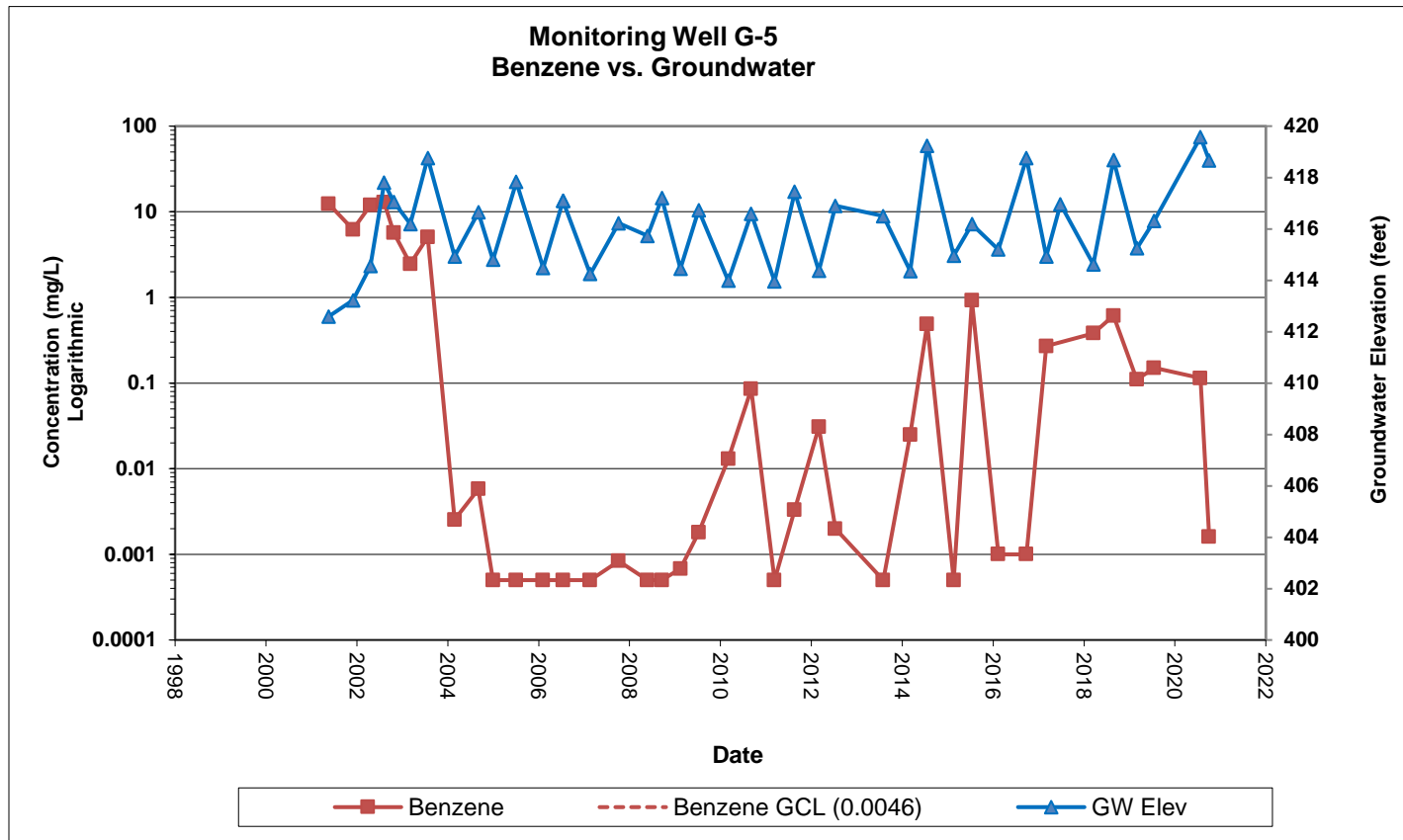


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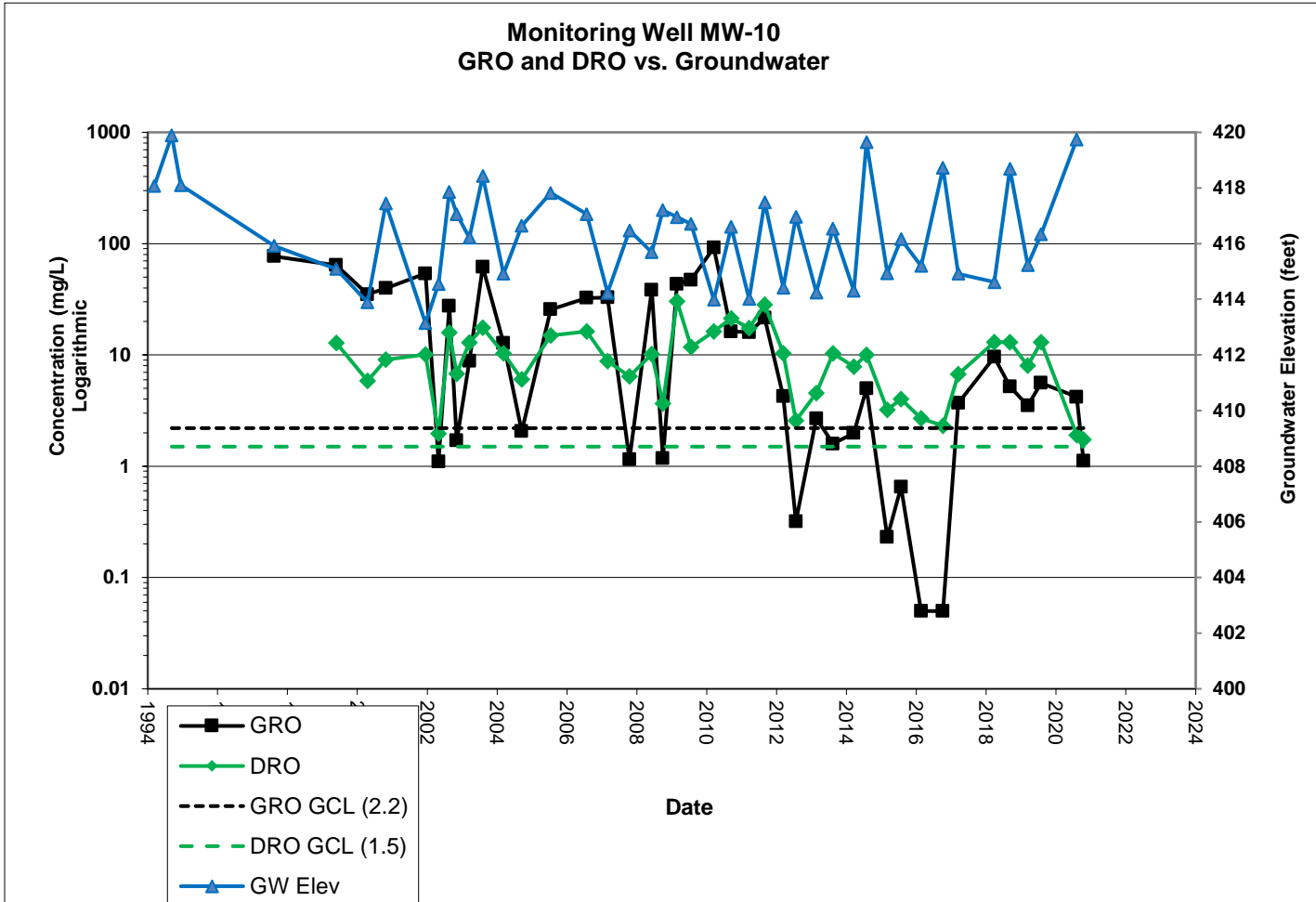
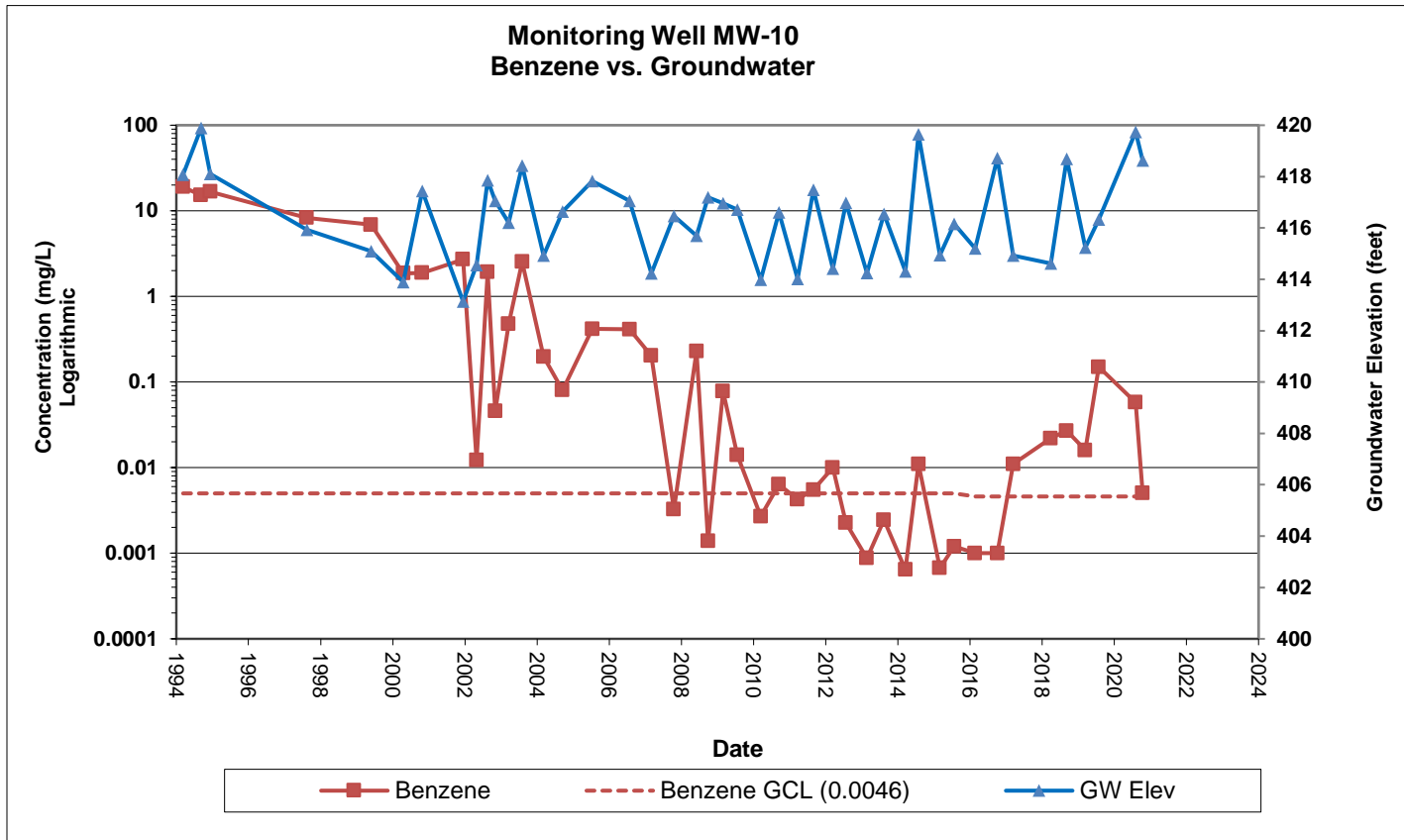


Figure 4
Graphs of Contaminant Concentrations and Groundwater Elevations

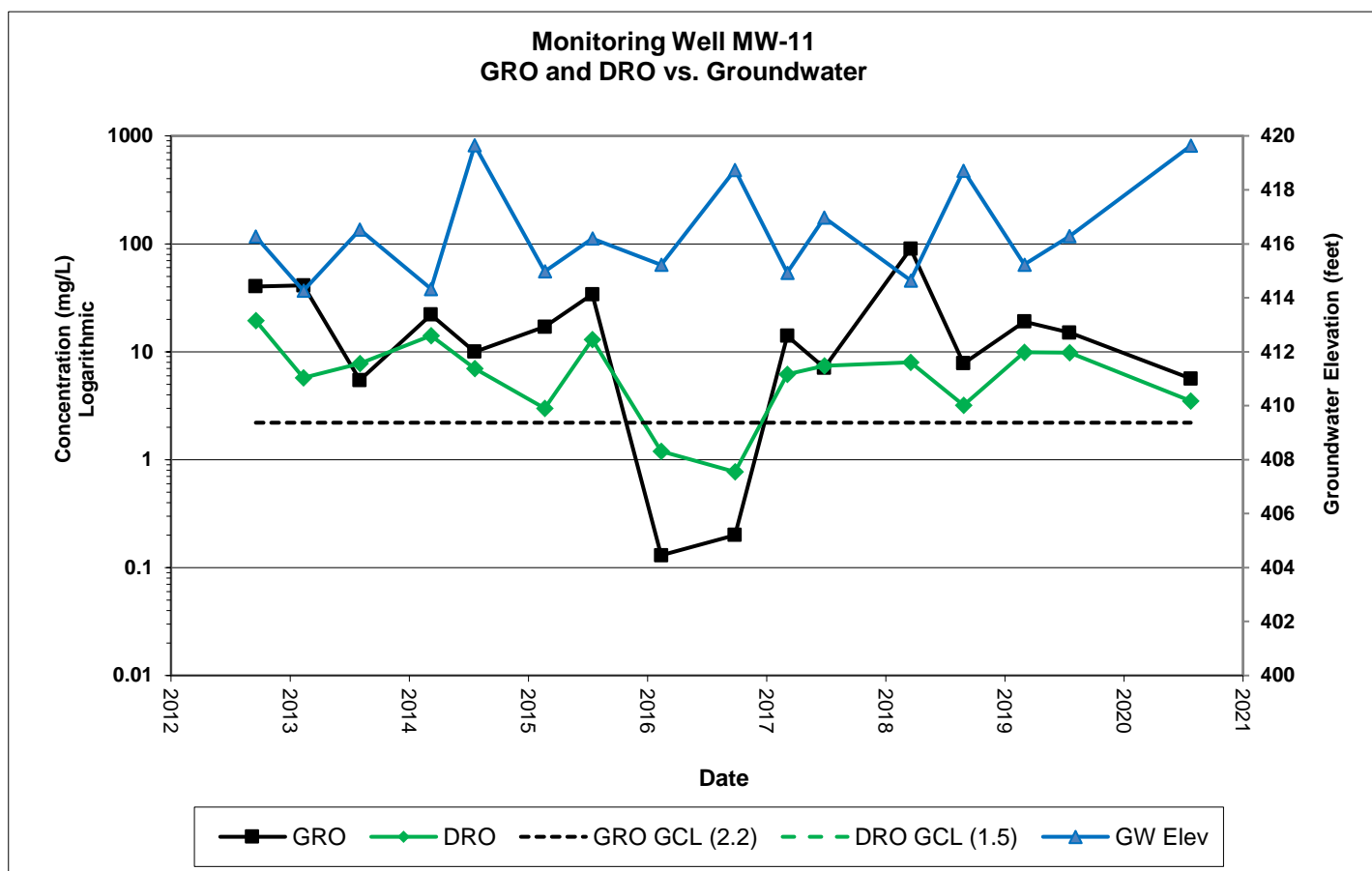
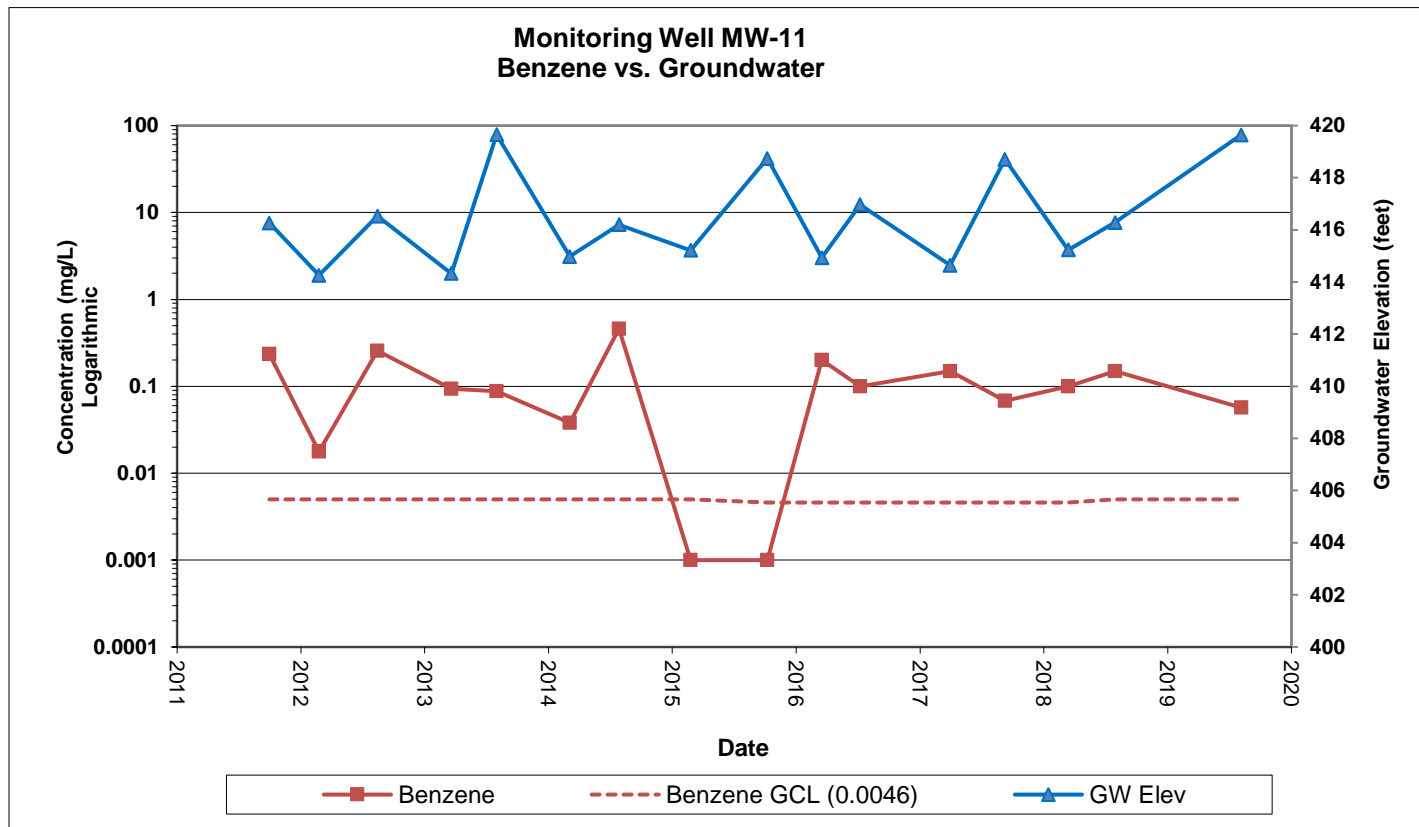


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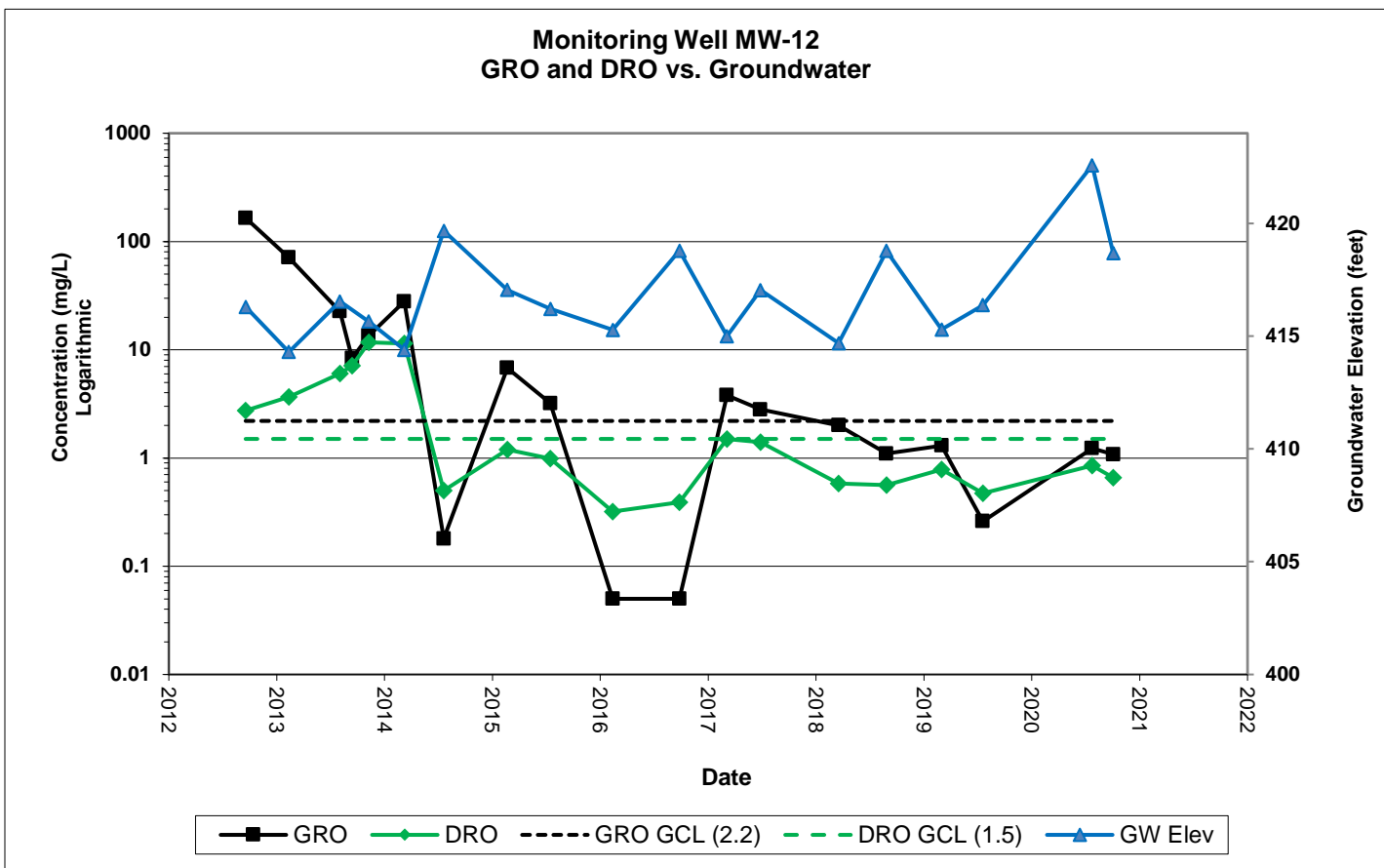
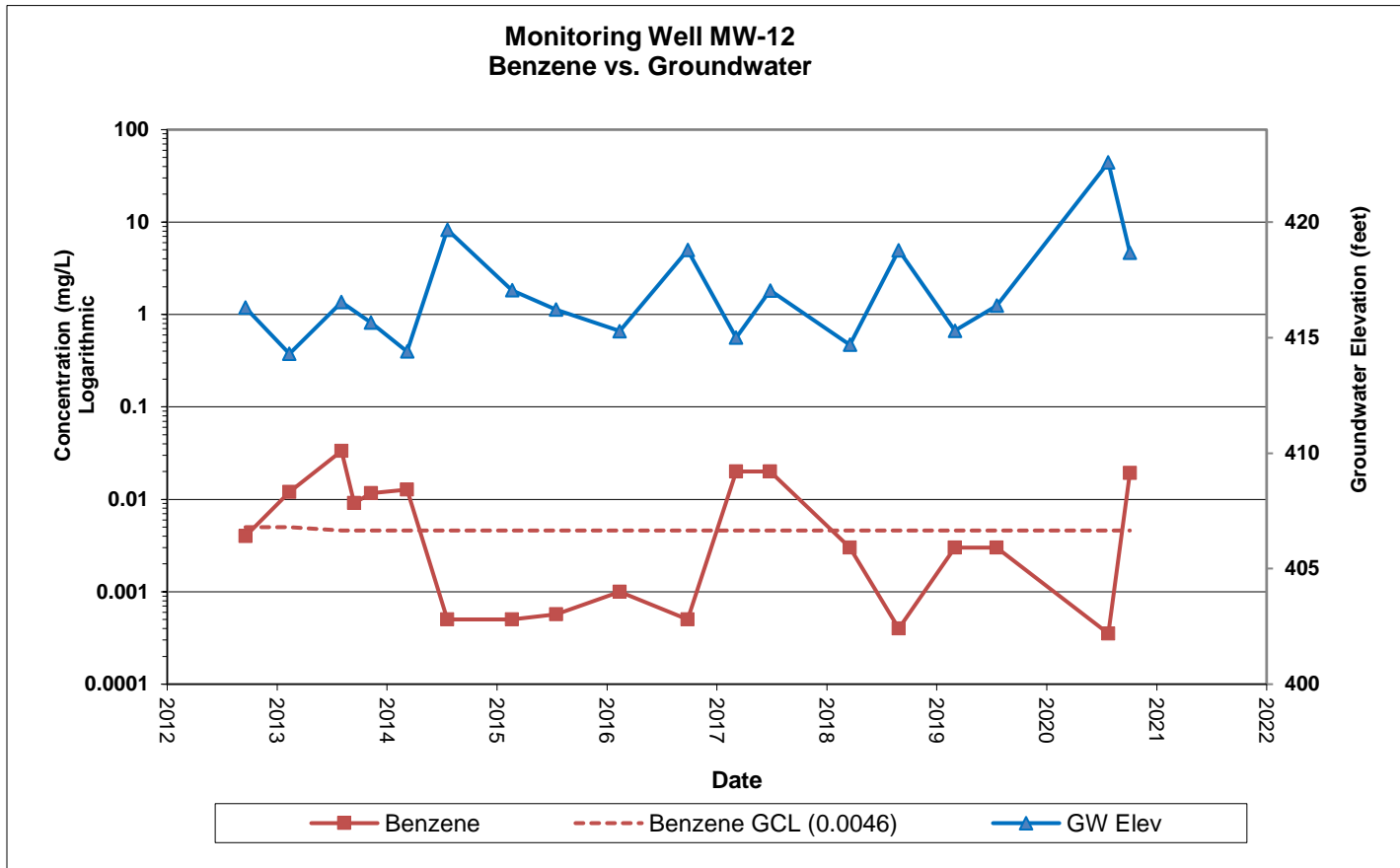


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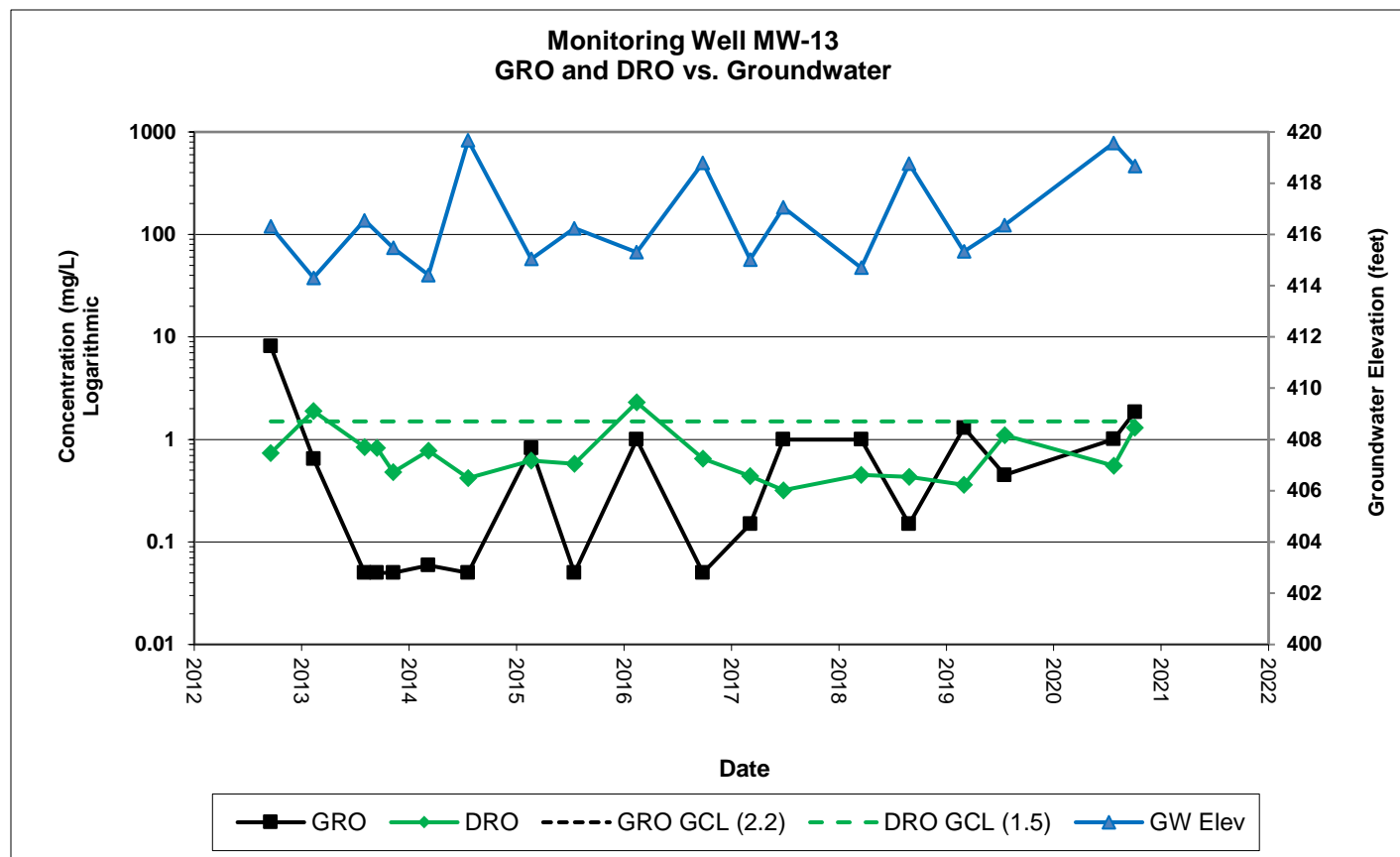
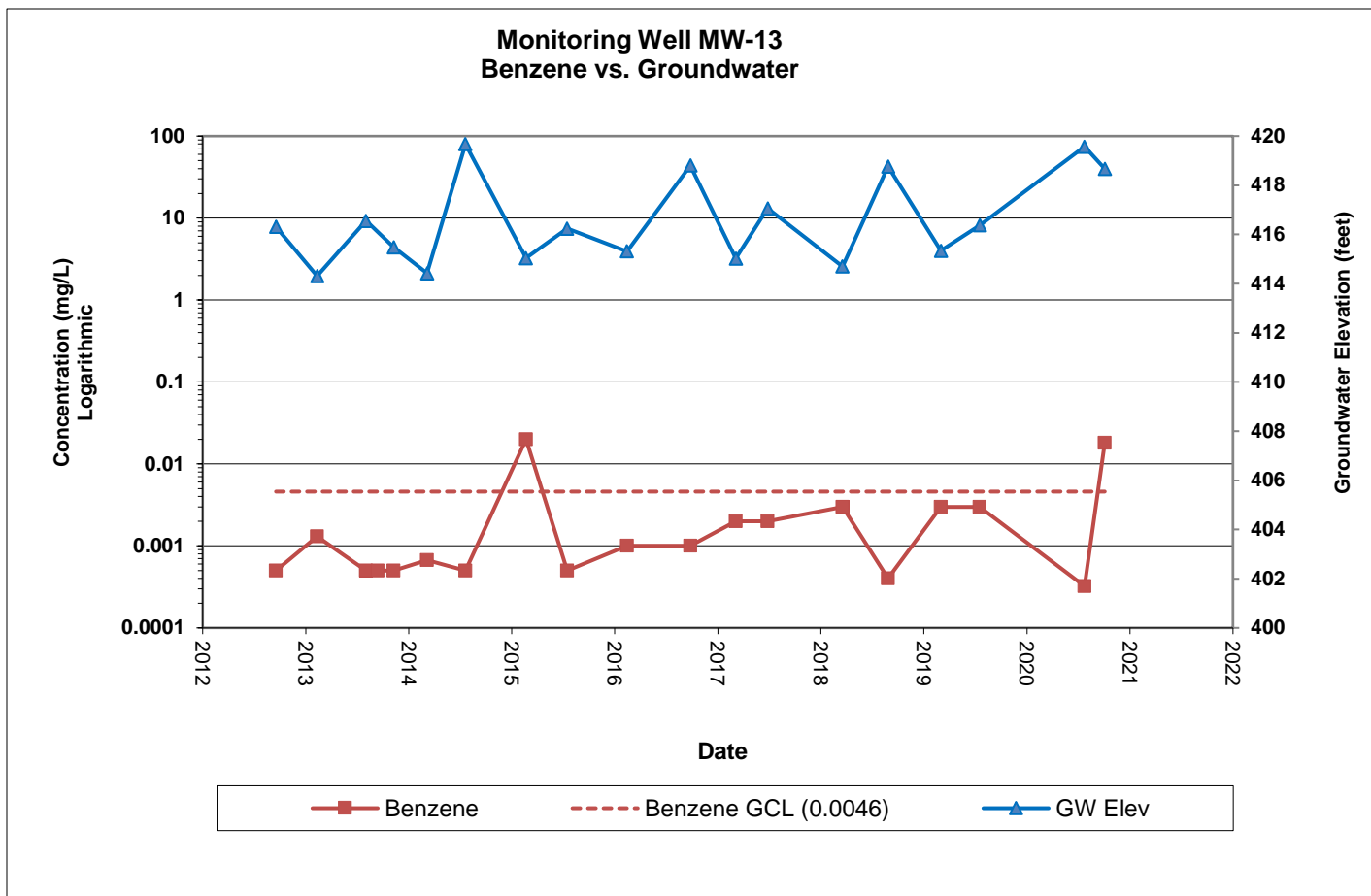


Figure 4
Graphs of Contaminant Concentrations and Groundwater Elevations

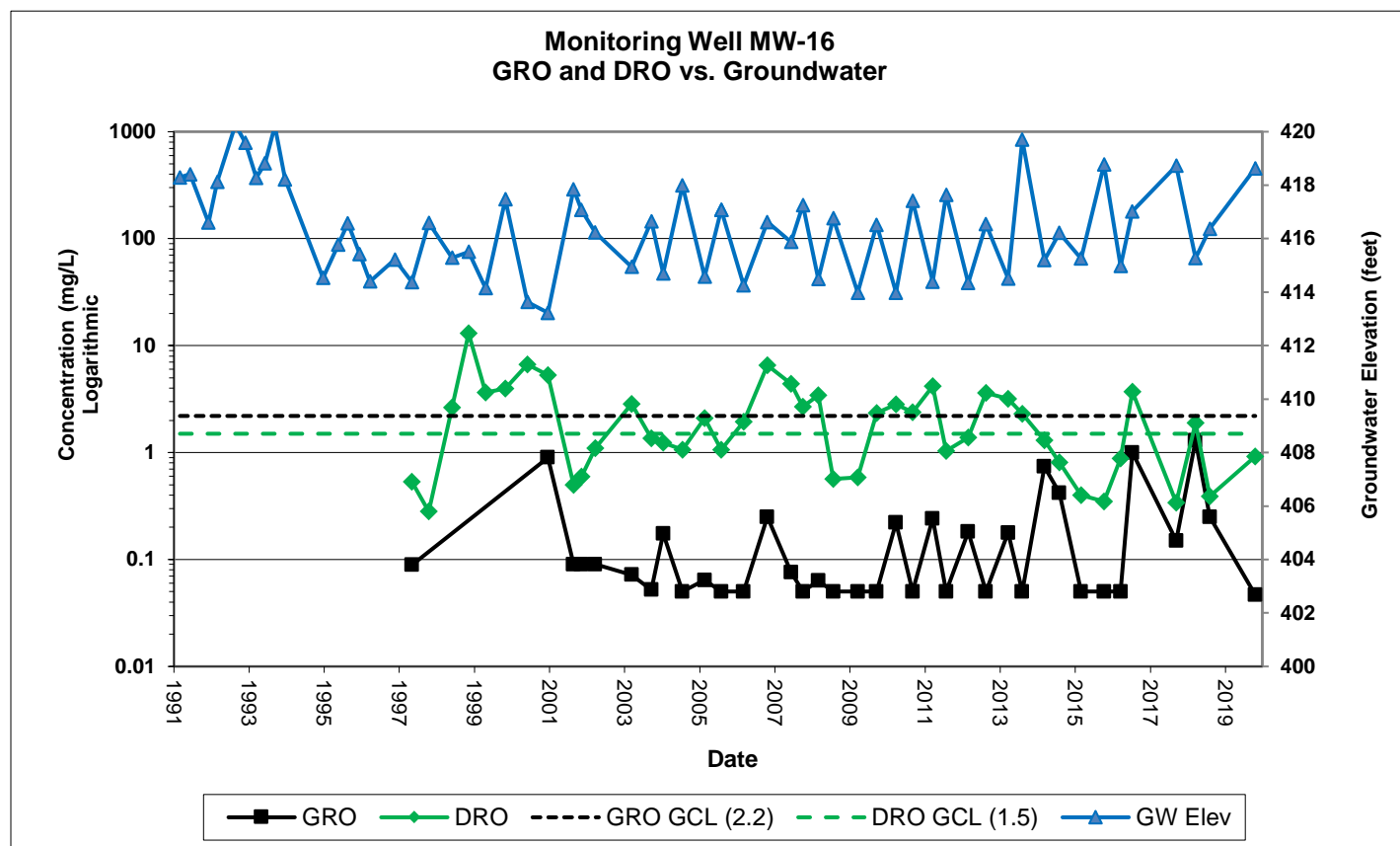
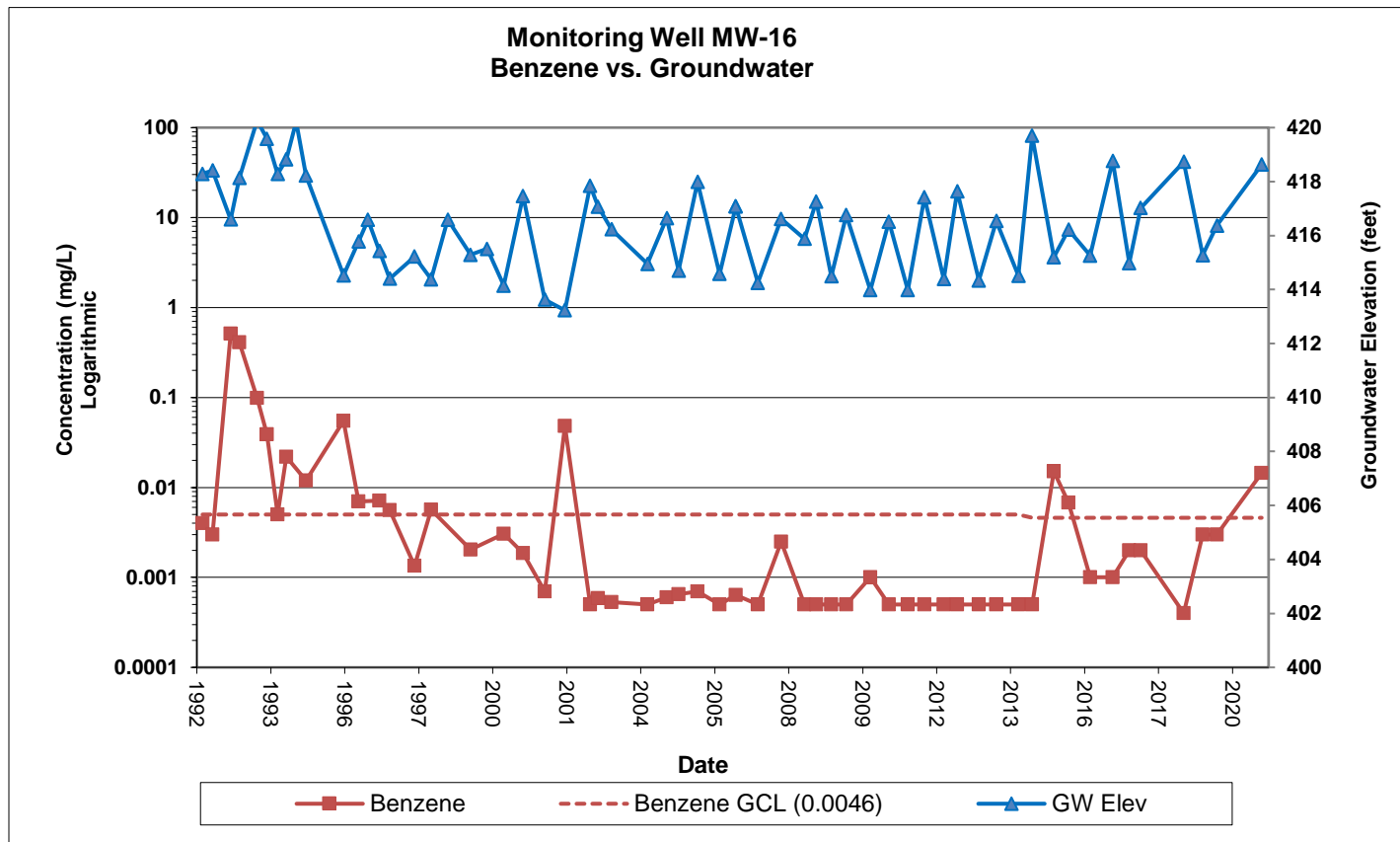
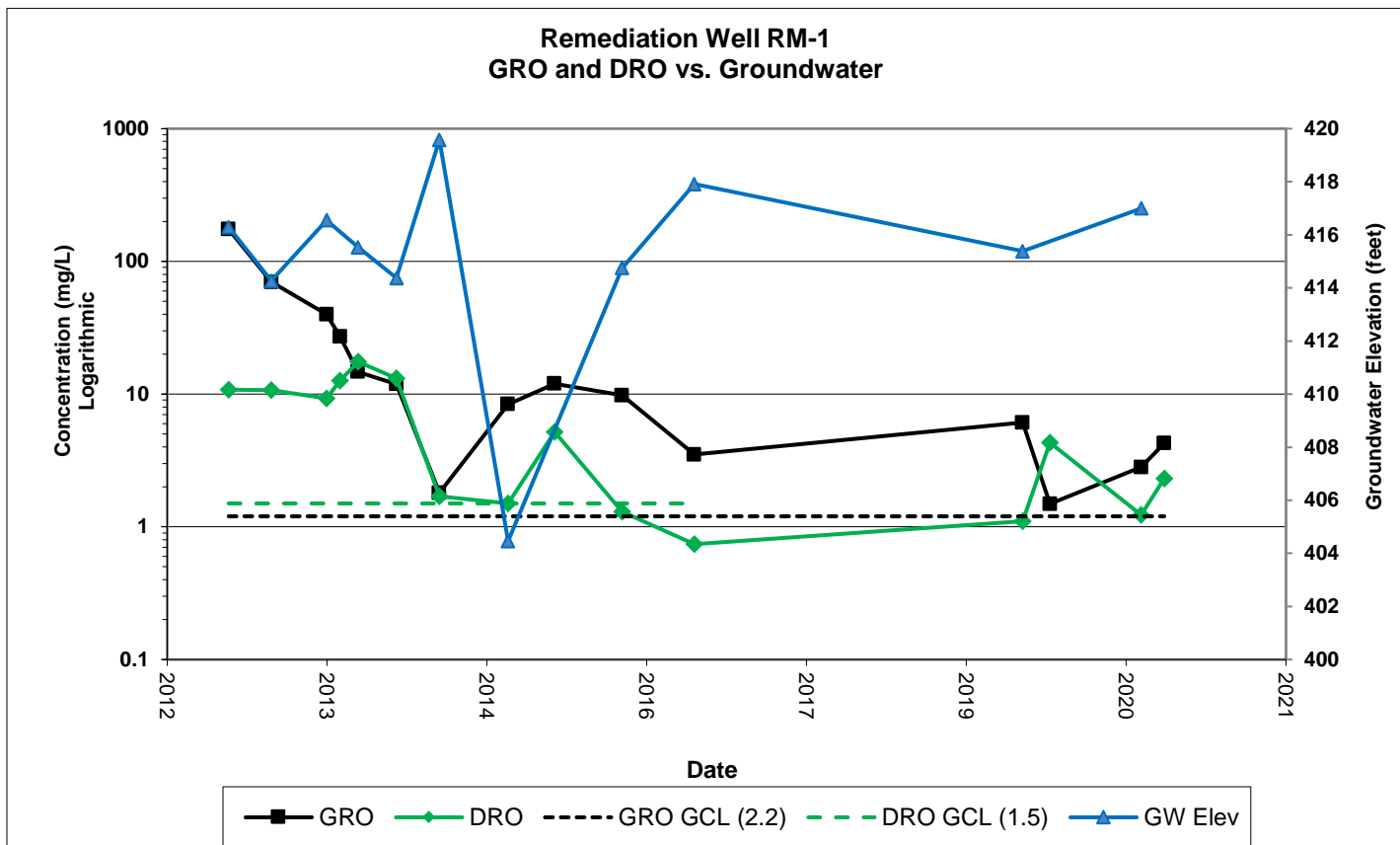
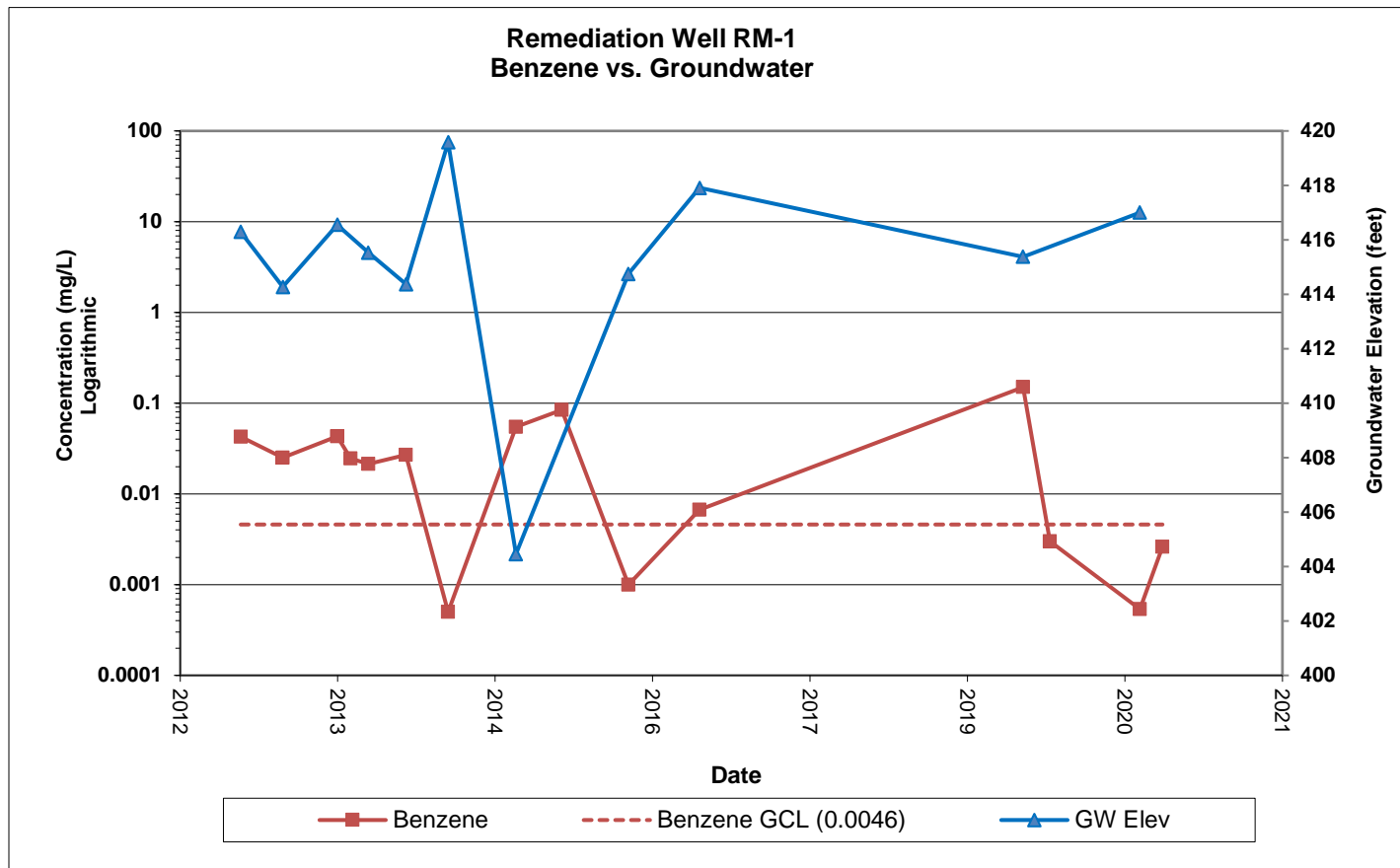


Figure 4
Graphs of Contaminant Concentrations and Groundwater Elevations



APPENDIX A

Site Background

APPENDIX A – SITE BACKGROUND

Tesoro 2 Go Mart #111 (3679 College Road, Fairbanks, Alaska)
ADEC Facility ID #1112; ADEC File #102.26.026

Tesoro 2 Go Mart #111 is a retail fuel service station located at the corner of University Drive and College Road in Fairbanks, Alaska. The service station is operated in conjunction with a Tesoro convenience store. A fuel dispensing service station is reported to have been operated at this site since 1971.

Gilfilian Engineering & Environmental Testing (GE²T), MWH Americas, Inc. (MWH), and Stantec Consulting Services Inc. (Stantec) have performed numerous site investigations and monitoring events at this site since 1995.

November 1990. Shannon & Wilson Inc. installed three groundwater monitoring wells (MW-1, MW-3, and MW-4) and drilled one soil boring (SB-2) at the site to evaluate potential for soil and groundwater contamination prior to right-of-way acquisition. Monitoring Well MW-1 and Boring SB-2 were drilled near the former underground storage tanks (USTs). Petroleum hydrocarbons were detected above Alaska Department of Environmental Conservation (ADEC) soil cleanup levels (SCLs) in MW-1 and Boring SB-2.

February 1991. A release investigation (RI) was conducted by Shannon & Wilson Inc., during which two monitoring wells (MW-10 and MW-16) and seven soil borings were installed. Petroleum hydrocarbons were detected above SCLs in six of the nine soil borings. Petroleum-related compounds were detected in all monitoring wells sampled. The highest concentrations were detected in MW-1 and MW-10.

September 1992. Two 12,000-gallon USTs, one 8,000-gallon UST, and one 1,000-gallon UST were removed and replaced with three 10,000-gallon STIP-3, single wall USTs. Petroleum hydrocarbons were detected above SCLs in the UST removal excavations. Due to a nearby high flow groundwater extraction process along the Chena River, operated by a non-Tesoro entity, the groundwater table was lowered by many feet in the surrounding area. Prior to the pumping operation, the groundwater table was typically 12 feet below the ground surface (bgs). When the USTs were replaced, the groundwater was found at 22 feet bgs. After the pumping operation along the Chena River was completed, the groundwater table returned to normal levels. The drop and rise of the groundwater resulted in spreading the smear zone of petroleum contamination over a 12-foot vertical range beneath the site.

July 1995. GE²T installed two new monitoring wells (G-1 and G-2). Petroleum hydrocarbons were not detected above SCLs but were above the ADEC groundwater cleanup levels (GCLs) in both monitoring wells.

August through October 1998. The canopy and fuel dispenser system were upgraded to include new fuel dispensers, a tank monitoring system, and a cathodic protection system. Soil samples collected from below the former dispensers and piping exceeded SCLs for hydrocarbons. As a

result, piping was laid in these excavations for expansion of the air sparge (AS) and soil vapor extraction (SVE) system. In addition, six vertical cathodic protection anodes were spaced around the USTs.

May 1991. A Phase III RI was conducted that involved drilling two soil borings off the site and installing two new monitoring wells (G-3 and G-4). Petroleum hydrocarbons were not detected above SCLs (borings) or GCLs (monitoring wells), indicating these wells are located beyond the extent of groundwater contamination at the site.

May 2001. A RI was conducted that involved drilling two soil borings and installing two new monitoring wells (on-site G-5 and off-site G-6). Samples collected from G-6 did not exceed SCLs or GCLs, but both were exceeded in samples from G-5 (on-site well)

May 2003. Four additional AS wells were installed at the site. Benzene was detected above the SCL in AS Wells AS-13 and AS-14, and diesel range organics (DRO) was detected slightly above the SCL in AS-14. No other compounds were detected above the SCLs.

November 2003. A RI was performed at the site. The RI involved drilling one soil boring that was completed as a 2-inch diameter monitoring well (G-9). No analytes of concern were detected at concentrations above the laboratory practical quantitation limits (PQLs) in soil or groundwater samples collected during the RI.

June 2010. A sampling event was conducted for sulfolane in Monitoring Well MW-10. Sample results were non-detect.

June 2012. MWH conducted an UST closure site assessment. The former UST system consisted of three 10,000-gallon capacity gasoline and diesel tanks, associated piping, and three dispenser islands with one overhead canopy. The three USTs were replaced with two, multi-compartment, 15,000-gallon capacity fiberglass USTs. Petroleum-contaminated soil was encountered during the UST removal. The contaminated soil was removed from the site for off-site thermal treatment. Soil contamination was found at 13 feet bgs, a couple of feet below the bottom of the new USTs. Due to the groundwater conditions, the saturated contaminated soil could not be removed and, therefore, was left in-place.

September 2012. A RI was performed at the site. The RI involved advancing four soil borings (three around the new USTs in the northern portion of the site and one along the west edge of the site) and collecting three soil samples from each soil boring. Three groundwater monitoring wells (MW-11, MW-12, and MW-13) and one air lift well (RM-1) were installed in the four soil borings and groundwater samples were collected. Petroleum hydrocarbons were detected above SCLs in the soil borings along the west edge of the site, the northern portion of the property line on the east side of the USTs, and the northern side of the dispenser island. Petroleum hydrocarbons were detected above the GCLs in all three monitoring wells.

June 2013. A first round of chemical oxidation application of Klozur CR[®] was injected into two on-site wells (Monitoring Well MW-10 and AS Well AS-9). Monitoring Well G-5 was used to measure the chemical oxidation impact to the groundwater table. The prior and post injection

results of intrinsic parameters clearly indicated the effectiveness of the chemical oxidant – in particular with respect to the sodium, pH, total organic carbon (TOC), and dissolved oxygen levels. The laboratory analytical results indicated significant reductions in the petroleum contaminants of concern.

July 2013. A pump test was conducted of Remediation Well RM-1, which was initially designed and constructed to serve as an air-lift well. Due to concerns about maintaining a continuous pumping air-lift well in the sub-Arctic climate found in the Fairbanks area, it was decided to pump the well with a submersible well pump. The field test data collected during the 2-day well pump test indicated that, by recirculating the water pumped from RM-1 into the upgradient horizontal wells that were installed along the bottom edge of the USTs, the contaminated groundwater flowing beneath the USTs would be captured in RM-1. Then the groundwater could be pumped (re-circulated) back into the upgradient horizontal wells. On a quarterly basis, the groundwater would undergo chemical oxidation with the injection of Klozur CR[®] into the horizontal wells. Also, it was initially planned to add air in the well pump discharge line via a venturi air injector.

August/September 2013. Two rounds of Klozur CR[®] were injected into one on-site well (Monitoring Well MW-12). Water samples were collected from Monitoring Wells MW-12 and MW-13, and Remediation Well RM-1 prior to and approximately 6 and 8 weeks after the first round of Klozur CR[®] application. Most analytes of concern showed a significant reduction in concentrations. In addition, the dissolved oxygen level in MW-12 was noted to be very high, which confirmed the claim that Klozur CR[®] provides an extended oxygen release for long-term remediation of contaminant plumes in groundwater. Given these positive preliminary pilot test findings, MWH recommended additional rounds of application of Klozur CR[®] chemical oxidant to treat the residual contamination found in the area beneath the USTs.

March 2014. Petroleum compounds were found to exceed GCLs in Monitoring Wells G-1, MW-10, MW-11, MW-12, MW-16, and Remediation Well RM-1. The SVE system remained in operation. The AS system operation was temporarily inactive pending system upgrades.

July 2014. Petroleum compounds were found to exceed GCLs in Monitoring Wells G-5, MW-10, MW-11, and MW-16, as well as Remediation Well RM-1. The SVE system remained in operation. The AS system operation was temporarily inactive pending system upgrades. During July, Remediation Well RM-1 was outfitted with a submersible pump and linked to a series of horizontal injection wells which were positioned at the water table interface along the east and southern periphery of the UST system upgrades at the site. An in-line venturi was installed to aerate water within the remediation system prior to injection.

March 2015. Petroleum compounds were found to exceed GCLs in Monitoring Wells MW-10, MW-11, MW-12, and MW-16, as well as Remediation Well RM-1. The SVE system remained in operation. The operation of the groundwater circulation system was suspended due to mineral deposits or biological growth (related to the abundance of aqueous iron in the system) that fouled the submersible pump and lowered the efficiency of the well screen at the remediation well (RM-1).

July 2015. Petroleum compounds were found to exceed GCLs in Monitoring Wells MW-10, MW-11, MW-12, and MW-16, as well as Remediation Well RM-1. The SVE system remained in operations. Well rehabilitation, by acid treatment, was performed in RM-1 and the south horizontal injection well. Chemical oxidation treatment with the manual injection of Klozur CR[®] product was performed at the southeast and northeast horizontal injection wells.

February 2016. Results of the analytical sampling showed the analytes detected above the GCLs included: DRO in Monitoring Wells MW-10 and MW-13, and gasoline range organics (GRO) in Remediation Well RM-1. Chemical oxidation treatment with the manual injection of Klozur CR[®] product was performed at the southeast and northeast horizontal injection wells.

October 2016. Results of the analytical sampling showed that DRO was detected above the GCL in Monitoring Well MW-10, and benzene and GRO were detected above the GCLs in Remediation Well RM-1. Remediation Well RM-1 was manually injected with NUWELL[™]. Chemical oxidation treatment with the manual injection of Klozur CR[®] product was performed at the southeast and northeast horizontal injection wells.

March 2017. Results of the analytical sampling showed analytes present above the GCLs in Monitoring Wells G-1, G-5, MW-10, MW-11, and MW-12. Analytes in exceedance included benzene, ethylbenzene, xylenes, GRO, and DRO. The SVE system continues to operate within normal parameters. Remediation Well RM-1 remains inactive, following the discovery of a frozen circulation line the last week of November 2016. The AS system is currently inactive pending evaluation of the system.

July 2017. Results of the analytical sampling showed analytes present above the GCLs in Monitoring Wells G-1, MW-11, MW-12, and MW-16. Monitoring Wells G-5 and MW-10 had ice plugs present. The expanded suite of volatile organic compounds (VOCs) and polynuclear aromatic hydrocarbons (PAHs) for Monitoring Wells MW-11, MW-12, and Remediation Well RM-1 also indicated GCL exceedances. Remediation Wells RM-1 was placed back in operation at 1.4 gallons per minute at 90 pounds per square inch (psi). SVE and AS systems currently inactive.

March 2018. Results of the analytical sampling showed analytes were present above the GCLs in Monitoring Wells G-5, MW-10, MW-11, MW17-1, and MW17-2. Remediation Well RM-1 was shut down during the winter because of the continued power failure of the newly installed heat trace. The SVE and AS systems remain inactive.

September 2018. Results of the analytical sampling showed analytes were present at concentrations exceeding ADEC GCLs in Monitoring Wells G-5, MW-10, MW-11, MW-12, MW17-1, and MW17-2, as well as Remediation Well RM-1. Analytes in exceedance included: BTEX, GRO, DRO, VOCs, and/or PAHs.

Upon arrival at the site, Remediation Well RM-1, for the groundwater recirculation chemox treatment system, was not operating due to freeze damage caused by heat trace failure. The RM-1 well pump was placed back into continuous operation after repairs were made to the water line located in RM-1 manhole.

A chemox solution consisting of 110 pounds of Klozur One, with approximately 800 gallons of clean water, was injected into the two horizontal groundwater injection wells located along the eastern edge of the UST.

March 2019. Results of the analytical sampling showed analytes were present at concentrations exceeding ADEC GCLs in Monitoring Wells G-1, G-5, MW-10, MW-11, MW-16, MW 17-1, and MW 17-2. Analytes in exceedance included: BTEX, GRO, and DRO. It is noted that GRO above the GCL was detected in Monitoring Well G-1, which was uncharacteristic since this well has not had an exceedance for GRO in past 17 years of monitoring. This well will be resampled during the semi-annual monitoring event to further assess the groundwater condition in this area of the site.

Upon arrival at the site, Remediation Well RM-1, for the groundwater recirculation chemox treatment system, was operating but was shut off due to debris entering the pump intake. It will be cleaned and restarted after daily air temperatures remain above freezing.

July 2019. Results of the analytical sampling showed analytes were present at concentrations exceeding ADEC GCLs in Monitoring Wells G-5, MW-10, MW-11, MW 17-1, and MW 17-2 and Remediation Well RM-1. Analytes in exceedance included: BTEX; GRO; DRO; 1,2,4-trimethylbenzene; 1,3,5-trimethylbenzene; naphthalene; and 1-methylnaphthalene. It was noted that GRO above the GCL was detected in Monitoring Well G-1 during March 2019 monitoring (an anomaly after 17 years of sampling), and this well was resampled during this semi-annual monitoring event and GRO was found to be under the PQL and the GCL.

October 2019. A high dose chemox solution of 165 lbs of Klozur One to 150 gallons of water was injected into three SVE access lines (SVE-1, SVE-2, and SVE-3) while 110 lbs of Klozur[®] One was injected into the horizontal groundwater injection well on the eastern edge of the UST. The Klozur[®] treatments were then pushed into the formation with more than 1000 gallons of water from RM-2. Analytical sampling of RM-1 and RM-2 was conducted. Analyte levels exceeding ADEC GCLs in RM-2 were Benzene, Ethylbenzene, and Xylene. Analyte levels exceeding ADEC GCLs in RM-1 were Ethylbenzene, Xylene, and GRO.

July and August 2020. RM-1 was turned off in January 2020 due to the system freezing. RM-1 was brought back online July 1, 2020. On July 15, 2020, a chemox solution of 110 lbs of Klozur[®] One to 100 gallons of water was injected into the three SVE access lines and into the horizontal groundwater injection well on the eastern edge of the UST, then pushed into the formation with 150 gallons of water from RM-2 at each point. In total the site was treated with 440 lbs of Klozur[®] One. A leaking fitting on the line feeding the eastern edge of the UST from the freeze up the previous winter was repaired.

Results of the analytical sampling showed analytes were present at concentrations exceeding ADEC GCLs in Monitoring Wells G-5, MW-10, MW-11, MW 17-1, and MW 17-2 and Remediation Well RM-1. Analytes in exceedance included: BTEX; GRO; DRO; 1,2,4-trimethylbenzene; 1,3,5-trimethylbenzene; naphthalene; and 1-methylnaphthalene. It was noted that sodium was detected for all locations sampled

After the August 2020 sampling event, a low profile equipment shed was installed over remediation well RM-2. Subsequently plumbing was installed to facilitate recirculated groundwater flow pumped from RM-2 to discharge on a full time and year round basis into the three former SVE horizontal wells located beneath and adjacent to the fuel dispenser islands. Since September 3, 2020, RM-2 had recirculated more than 316,000 gallons of water into the SVE lines prior to the October 14, 2020 sampling event.

October 2020. Stantec conducted a fourth quarter analytical sampling event of Monitoring Wells MW-10, MW-11, MW-12, MW-13, MW-16, MW 17-1, MW 17-2, G-1, and G-5 as well as Remediation Wells RM-1 and RM-2. The groundwater depth measurements indicate the average hydraulic gradient was approximately 0.007 feet per foot directed toward the northwest at 330 degrees. Analytes in exceedance included: benzene, ethylbenzene, and xylenes (BTEX); gasoline range organics (GRO); diesel range organics (DRO), 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and naphthalene. It is noted that analytes levels for RM-2 measurable increased since the August 2020 monitoring event which is interpreted as an indication that the remediation well is capturing the contaminated groundwater plume. Equally important is the finding that the petroleum contaminant levels have decreased appreciably in MWs 17-1 and 17-2 which may be a positive indication of in-situ treatment with the chemox injection.

On October 15, 2020, a chemical oxidation (chemox) injection with Klozur[®] One of 550 pounds of Klozur[®] combined with 350 gallons of water from RM-2 into five treatment points that was then pushed into the formation with flow from RM-1 and RM-2. The Klozur[®] One injections were into the three soil vapor extraction (SVE) system lines on the western portion of the site and into the two former SVE horizontal lines along the eastern edge of the UST located on the eastern portion of the site. In November 2020, RM-1 shutoff to prevent clogging of the eastern SVE injection lines from the high amount of iron oxide (precipitates and flocculation) noted during the O&M and sampling events in 2020.

APPENDIX B

Field Methods and Procedures

APPENDIX B – FIELD METHODS AND PROCEDURES

Tesoro 2 Go Mart #111 (3679 College Road, Fairbanks, Alaska)

The following table presents the proposed tasks for the Alaska Department of Environmental Conservation (ADEC)-approved 2020 Corrective Action Work Plan. The scope of these tasks is based on the results and findings of the monitoring and remediation completed to date at Speedway Store 5315 (former Tesoro 2 Go Mart #111), ADEC Facility ID #1112; ADEC File #100.26.026. Approval for changes in the proposed work schedule were granted by ADEC and Speedway due to unforeseen changes to the work flow as a result of Covid-19 Alaska State Mandates delaying 1st and 2nd quarter work.

2020 Work Plan Schedule for Speedway Store 5315 (former Tesoro 2Go Mart 111)

Work Plan Task		1 st Quarter	2 nd Quarter	3 rd Quarter	4 th * Quarter
Task 1	Monitoring Wells: MW-10, MW-11, MW-12, MW-13, MW-16, G-1, G-5, MW 17-1 and MW 17-2	V, D, G, I, S		D, G, V, P, I, S	
	RM-1 and RM-2	V, D, G, I, S	V, D, G, I, S	D, G, V, P, I, S	V, D, G, I, S
Task 2	Complete the Installation of the RM-2 Well Recirculation Groundwater Treatment System		✓	✓	
Task 3	Recirculation Well Remediation Systems O&M	✓	✓	✓	✓
Task 4	Chemical Oxidation Treatment		✓	✓	

Key:

D – Diesel range organics by AK102.

G – Gasoline range organics by AK101.

I – Indicators, parameters tested include dissolved oxygen, specific conductance, oxygen-reduction potential, pH, sodium and temperature.

P – Polynuclear aromatic hydrocarbons (PAHs), i.e., semi-volatile organic compounds, by EPA Test Method 8270D Selective Ion Monitoring.

V – Volatile organic compounds by EPA Test Method 8260C.

S – Sodium

* – Results were not issued to client or ADEC in 2019 reports for this site and included in the 3rd Quarter monitoring report.

- **Task 2 – Complete the Installation of the Groundwater Pump and Treat System**

During the 4th quarter of 2019, Stantec installed and developed the new 4-inch diameter remediation well (RM-2). As shown above in the 2020 Schedule, Stantec plans during the second quarter of 2020 to connect the submersible well pump via insulated piping to the three horizontal SVE lines that were originally used to extract soil vapor from the areas beneath the existing fuel dispenser islands. The piping system will be enclosed in a low profile shed. The new RM-2 well will be operated on a continuous basis similar to the existing RM-1 groundwater treatment system currently in operation at

this site. An iMonnit® sensor will be installed on the electrical wires on the submersible well pump in RM-2 well. A second iMonnit® sensor will be installed on the RM-2 plumbing system to monitor water pressure.

- Task 3 – Recirculation Well Remediation Systems O&M

This task proposed to perform quarterly maintenance to operate the remediation system, consisting of the existing RM-1 and RM-2 groundwater recirculation systems for treating the vadose zone soil and groundwater beneath the existing USTs and fuel dispenser islands. The operation of the submersible pumps for both treatment systems will be monitored daily via the internet with iMonnit® wireless sensors and the equipment physically inspected monthly and maintenance provided on an as need basis.

- Task 4 – Chemical Oxidation Treatment

Stantec proposes to provide chemical oxidation treatment of the petroleum contaminated soil and groundwater twice a year into the three existing horizontal injection lines located beneath the fuel dispenser islands and the two horizontal injection lines located on east side of the USTs. The first annual injection will occur in the spring of the year after the winter frost dissipates, and the second injection will take place several months later just prior to winter freeze-up. A minimum of 500 gallons of a prepared solution of 550 pounds of the chemical oxidant Klozur One® (a chemical mixture consisting primarily of sodium persulfate) will be injected equally (100 gallons per well) into the five horizontal injection lines. The on-site monitoring wells will be sampled semi-annually as outlined in Task 1 to assess treatment impact the groundwater table. In addition, the monitoring wells and the pumped wells RM-1 and RM-2 will be sampled for sodium to monitor the distribution/migration of the oxidant.

The Corrective Action Work Plan for the year 2020 will be implemented by Stantec on behalf of Speedway. Groundwater monitoring will be conducted to track migration and trends of contaminants that are present at the site. All sampling activities will be completed in accordance with ADEC's *Underground Storage Tanks Procedures Manual– Standard Sampling Procedures* (March 22, 2017). The methods that will be used for conducting a monitoring event, unless otherwise noted in the monitoring report, will include:

- The static water levels in the monitoring wells will be measured with respect to the top of each well casing. The elevation of the static water level will be based on an arbitrary datum established on-site during a vertical control survey that will be completed by Stantec on an annual basis. The survey will be performed during the summer after the seasonal frost layer thaws.
- The monitoring wells will be purged of a minimum of three well bore volumes prior to collecting the water samples. A new, disposable, Teflon® bailer will be used to sample each well. The first bail of water removed from each well will be examined for petroleum odor, sheen, and any other unique physical features.
- Water and vapor samples will be collected in laboratory-supplied sample containers. The samples will be delivered to an ADEC-approved laboratory in accordance with standard chain-of-custody procedures.
- Additional water samples will be collected from the monitoring wells after the well has been purged, as described above, and tested in the field for chemical and physical intrinsic parameters listed in the 2020 Work Plan Schedule shown above.

APPENDIX C

*Field Measurements, Notes, and
Hydraulic Gradient Plot*

**Appendix C
Field Measurements and Notes**

Project: Store 5315 (TNS 111)
Project Phase: 2020 4st Quarter Monitoring
Project number: 185751325

Date: 10/14 and 10/15/2020

Sampler: Leslie Petre and Austin Badger

as Well I.D.	Volume Purged (gallons)	Sheen/Odor	Temp. (°C)	pH	Dissolved Oxygen (mg/L)	ORP (mv)	Specific Conductance (µs/cm)	Top of Casing ¹	Depth to GW	GW Elevation	Total Depth (feet btoc)
G-1	15.00	N/N	4.12	6.46	5.32	207.2	1,053	430.14	11.3	418.84	18.53
G-5	3.30	N/N	3.83	6.73	4.27	114.6	1,106	430.02	11.35	418.67	18.10
MW-10	12.00	Y/N	3.87	6.76	3.57	128.0	1,048	430.11	11.48	418.63	17.62
MW-11	6.40	N/N	3.96	6.82	3.39	118.7	585	430.49	11.89	418.60	24.88
MW-12	7.41	N/N	3.61	6.68	6.01	169.7	610	427.84	9.16	418.68	24.32
MW-13	6.78	N/N	3.78	6.68	2.02	113.1	935	429.77	11.10	418.67	24.95
MW-16	14.85	N/N	2.68	6.58	2.79	155.8	1,103	429.27	10.64	418.63	18.32
MW 17-1	3.75	Y/N	1.45	6.85	2.43	47.7	1,082	430.55	11.63	418.92	19.30
MW 17-2	3.75	N/N	2.13	6.77	2.19	53.9	665	430.17	11.55	418.62	19.23
RM-1	14 flushed prior to sampling	N/Y	2.82	6.82	9.1	31.5	533	428.21	NM	NM	NM (pump running)
RM-2	Pump running	N/N	3.62	6.85	8.01	15.1	948	NM	NM	NM	NM (pump running)

1 - Based on vertical control survey completed September 06 2017, using an elevation datum of 432.00 feet

GW - groundwater

NP - not purged

Air Temp: 14-18 F

mv - millivolts

ORP -- oxidation-reduction potential

Wind: Sporadic

mg/L - milligrams per liter

Y - yes

Humidity: NA

N - no

µS/cm - microsiemens per centimeter

Pressure: NA

NM - not measured

Samples analyzed for AK101, AK102, 8260 (BTEX), Sodium, PAH

Precip: light snow

Source: field observation

NOTES:

Well Dia. and Time

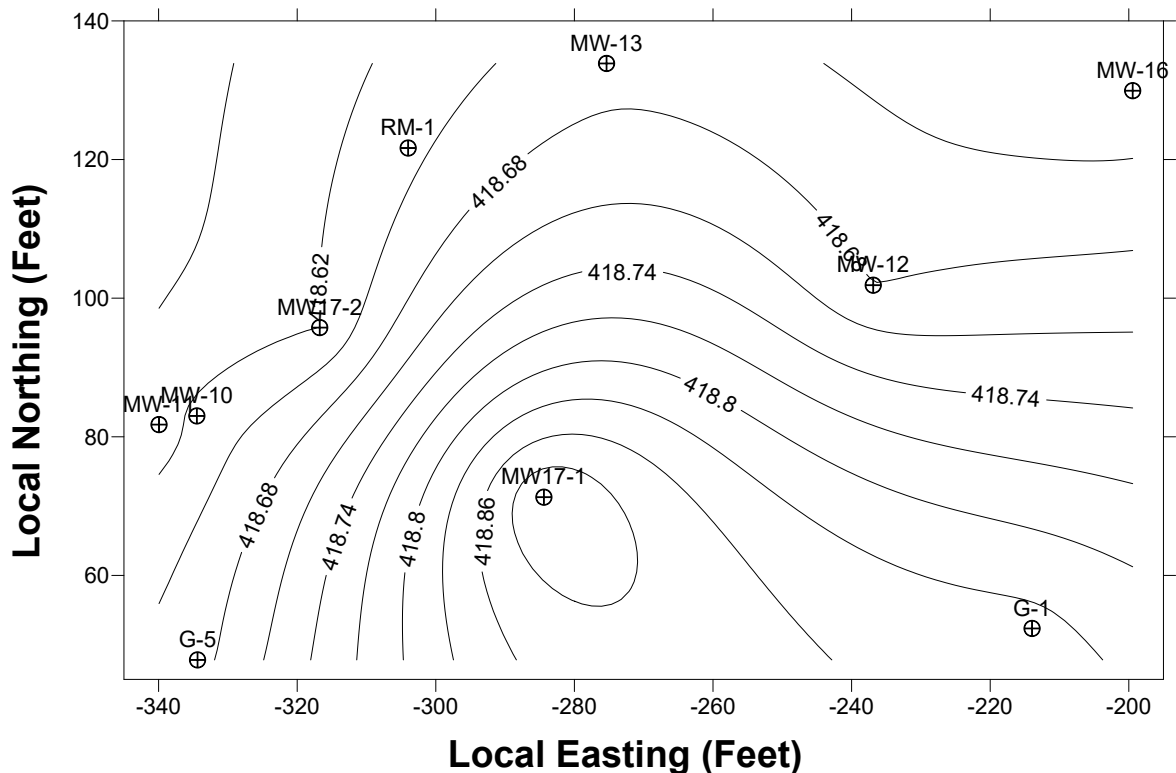
		Well Dia.	Sample Date and Time
G-1	very orange	4"	10/14/20 @ 10:20
G-5	cloudy orange	2"	10/14/20 @ 15:45
MW-10	clear, sheen present	4"	10/15/20 @ 09:20
MW-11	orange then clear, then orange	2"	10/15/20 @ 09:21
MW-12	nothing	2"	10/14/20 @ 11:10
MW-13	dark brown (murky)	2"	10/14/20 @ 14:48
MW-16	dark black/grey	4"	10/14/20 @ 13:36
MW 17-1	cloudy, slight sheen	2"	10/15/20 @ 12:40
MW 17-2	clea, foamy when sampled	2"	10/15/20 @ 10:35
RM-1	very orange, high amount of suspended solids	4"	10/15/20 @ 10:27
RM-2	D.O. wouldn't stabilize	4"	10/15/20 @ 10:35
TNS 111 Dup. 1	Dup of G-5	N/A	10/14/20 @ 15:48
TNS 111 Dup. 2	Dup of MW 17-2	N/A	10/15/20 @ 11:49

Instruments / methods used for above measurements:	Model
Static water level	Solinist 122
pH	YSI 556
Conductivity	YSI 556
Dissolved Oxygen	YSI 556
ORP	YSI 556
Temperature	YSI 556

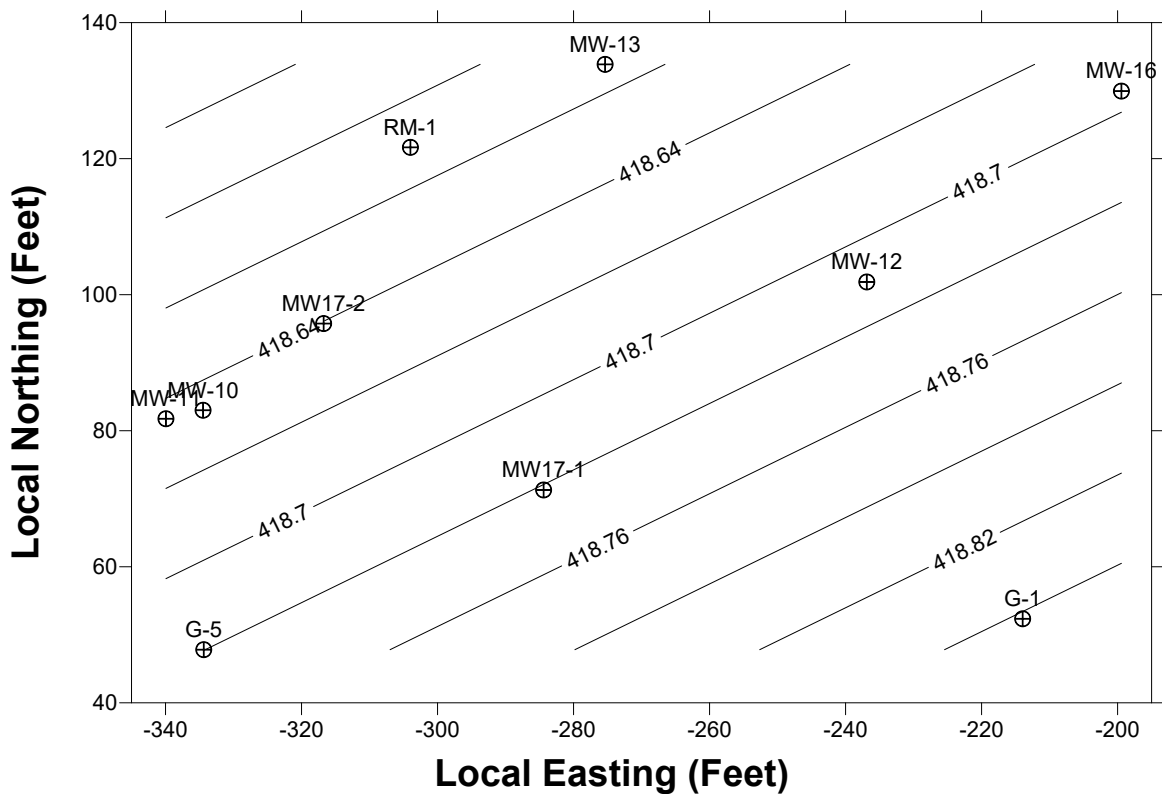
Notes on Remediation System Operation:

Two duplicates are to be pulled if more that 10 wells are sampled.

Speedway Store #5315 (Former Tesoro 2 Go Mart #111)- Groundwater Elevation Contours October 15, 2020



Linear Interpolation Method - Contour Interval 0.03 feet



Polynomial Regression Method - Contour Interval 0.03 feet
Elevation Datum is locally established at 432.00 feet

APPENDIX D

Tables of Historical Monitoring Data

Appendix D
Tables of Historical Monitoring Data

Monitoring Well MW-10

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium mg/L	GW Elev (feet)
10-Mar-94	19	24	2.3	19	NT	NT	NM	418.07
09-Sep-94	15.2	18	0.9	14.9	NT	NT	NM	419.89
12-Dec-94	16.7	20	2.1	15.5	NT	NT	NM	418.1
15-Aug-97	8.3	14.4	1.16	9.35	77	NT	NM	415.92
27-May-99	6.88	13.4	1.35	7.17	64	12.8	NM	415.09
17-Apr-00	1.86	7.06	0.887	3.47	35	5.84	NM	413.89
26-Oct-00	1.88	7.2	0.914	5.53	39.7	9.04	NM	417.44
13-Dec-01	2.7	9.6	1.59	7.73	53.8	10.1	NM	413.14
01-May-02	0.0122	0.0074	0.0137	0.117	1.1	1.96	NM	414.55
19-Aug-02	1.92	3.55	0.664	3.512	27.5	15.9	NM	417.86
05-Nov-02	0.0456	0.00533	0.0368	0.1189	1.7	6.78	NM	417.06
19-Mar-03	0.477	0.313	0.319	1.404	8.8	12.9	NM	416.21
05-Aug-03	2.54	8.79	0.876	7.09	61.8	17.6	NM	418.43
08-Mar-04	0.198	0.912	U (0.025)	2.89	12.8	10.3	NM	414.92
15-Sep-04	0.0802	0.00234	0.0497	0.446	2.06	6.01	NM	416.64
15-Jul-05	0.416	3.37	0.513	3.63	25.6	14.9	NM	417.82
27-Jul-06	0.413	5.3	0.714	4.88	32.5	16.3	NM	417.06
02-Mar-07	0.203	2.33	0.545	3.9	32.8	8.8	NM	414.23
17-Oct-07	0.00324	0.00102	0.0105	0.0406	1.15	6.43	NM	416.47
05-Jun-08	0.23	2.9	1.18	8.14	38.4	10.2	NM	415.69
29-Sep-08	0.00139	0.00403	0.012	0.0777	1.18	3.67	NM	417.20
25-Feb-09	0.0778	2.7	1.18	8.89	43.4	30.3	NM	NM
21-Jul-09	0.014	1.77	1.26	12.2	47.3	11.8	NM	416.71
17-Mar-10	0.0027	1.50	1.20	9.5	92	16.2	NM	413.98
15-Sep-10	0.00635	0.0902	0.776	4.06	16.2	21.3	NM	416.60
22-Mar-11	0.00425	0.0195	0.678	3.15	16.0	17.4	NM	414.01
01-Sep-11	0.00673	0.0908	0.498	3	22.5	30.5	NM	417.49
13-Mar-12	U (0.010)	U (0.010)	0.118	0.679	4.2	10.3	NM	414.42
23-Jul-12	0.00226	0.0012	0.00161	U (0.0030)	0.32	2.57	NM	416.97
21-Feb-13	0.000877	0.00156	0.00702	0.166	2.69	4.55	NM	414.24
13-Aug-13	0.00245	0.00455	0.022	0.0755	1.59	10.3	NM	416.54*
19-Mar-14	0.000642	0.00404	0.015	0.119	1.98	7.82	NM	414.30
31-Jul-14	0.011	0.00240	0.047	1.20	5.0	10.0	NM	419.65
03-Mar-15	0.00067	U (0.0005)	0.0020	0.0063	0.23	3.2	NM	414.98
27-Jul-15	0.0012	0.0020	0.0037	0.011	0.65	4.0	NM	416.16
23-Feb-16	U (0.001)	U (0.001)	U (0.001)	U (0.001)	U (0.05)	2.7	NM	415.20
06-Oct-16	U (0.001)	U (0.001)	U (0.001)	U (0.001)	U (0.05)	2.3	NM	418.72
16-Mar-17	0.011	0.0027	0.16	0.489	3.7	6.7	NM	414.92
29-Mar-18	0.022	0.01	0.35	1.3	9.6	13	NM	414.6
07-Sep-18	0.027	0.0052	0.27	1.283	5.2	13	NM	418.69
13-Mar-19	0.016	U (0.002)	0.21	0.726	3.5	8	NM	415.23
29-Jul-19	U (0.15)	U (0.1)	0.2	0.82	5.6	13	NM	416.33
04-Aug-20	0.0577	0.142	0.6	1.89	4.2	1.9	60	419.74
15-Oct-20	0.00506	0.0387	0.0649	0.198	1.12	1.74	50.9	418.63
GCLs	0.0046	1.1	0.015	0.19	2.2	1.5	NA	NA

* Event dates that sampling did not occur on have been removed from this chart.

Appendix D
Tables of Historical Monitoring Data

Monitoring Well MW-11

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium mg/L	GW Elev (feet)
28-Sep-12	0.235	0.594	0.873	5.52	40.3	19.4	NM	416.27
21-Feb-13	0.0177	0.00707	1.61	7.2	41.1	5.72	NM	414.26
13-Aug-13	0.257	0.0152	0.600	1.15	5.45	7.79	NM	416.53
19-Mar-14	0.0933	0.0548	0.915	3.28	22.1	14.1	NM	414.33
31-Jul-14	0.088	0.032	0.510	2.0	10.0	7.0	NM	419.65
03-Mar-15	0.038	0.071	0.600	2.9	17.0	3.0	NM	414.99
27-Jul-15	0.460	0.160	1.50	6.6	34.0	13.0	NM	416.20
23-Feb-16	U (0.001)	U (0.001)	U (0.001)	0.0025	0.13	1.2	NM	415.22
06-Oct-16	U (0.001)	U (0.001)	0.0068	0.0025	0.20	0.77	NM	418.74
16-Mar-17	U (0.2)	0.48	0.89	3.99	14	6.2	NM	414.93
07-Jul-17	0.110	0.260	0.400	1.76	7.10	7.40	NM	416.97
29-Mar-18	U (0.15)	0.71	0.92	6.1	U (90)	8.0	NM	414.62
07-Sep-18	0.068	0.066	0.57	2.29	7.8	3.2	NM	418.71
13-Mar-19	0.1	0.3	0.85	5	19	9.9	NM	415.23
29-Jul-19	U (0.15)	0.16	0.67	4.96	15	9.8	NM	416.28
04-Aug-20	0.057	0.00403	0.434	1.75	5.63	3.51	NM	419.64
15-Oct-20	0.000929 J	0.00121	0.0106	0.081	0.386 J	1.06 J	48.2	418.6
GCLs	0.0046	1.1	0.015	0.19	2.2	1.5	NA	NA

Monitoring Well MW-12

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium mg/L	GW Elev (feet)
28-Sep-12	0.00438	13.9	3.51	19.5	165	2.74	NM	416.30
21-Feb-13	0.012	7.69	2.69	12.8	71.1	3.66	NM	414.30
13-Aug-13	0.0334	7.30	1.00	6.21	22.6	6.05	NM	416.54
24-Sep-13	0.00913	1.65	0.344	1.72	8.35	7.11	NM	NM
19-Nov-13	0.0117	1.83	0.527	2.19	13.5	11.7	NM	415.65
19-Mar-14	0.0128	2.24	0.663	5.34	27.9	11.4	NM	414.40
31-Jul-14	U (0.0005)	0.01	0.003	0.015	0.18	0.5	NM	419.67
03-Mar-15	U (0.0005)	0.01	0.022	0.240	6.8	1.2	NM	416.05
27-Jul-15	0.00057	0.011	0.026	0.190	3.2	0.99	NM	416.21
23-Feb-16	U (0.001)	U (0.001)	U (0.001)	U (0.001)	U (0.05)	0.32	NM	415.28
06-Oct-16	U (0.001)	U (0.001)	U (0.001)	U (0.001)	U (0.05)	0.39	NM	418.79
16-Mar-17	U (0.02)	U (0.02)	0.3	0.52	3.8	1.5	NM	415.00
07-Jul-17	U (0.002)	U (0.04)	0.13	0.38	2.8	1.4	NM	417.04
29-Mar-18	U (0.003)	U (0.002)	U (0.003)	U (0.002)	2.0	0.58	NM	414.69
07-Sep-18	U (0.0004)	U (0.001)	0.019	0.063	1.1	0.56	NM	418.78
13-Mar-19	U (0.003)	U (0.002)	0.01	0.055	1.3	0.78	NM	415.30
30-Jul-19	U (0.003)	U (0.002)	U (0.003)	0.0039	0.26	0.47	NM	416.38
03-Aug-20	0.000353	0.0364	0.054	0.487	1.23	0.852	48.7	422.58
14-Oct-20	0.0192	0.000817 J	0.123	0.425	1.08	0.658 J	56.8	418.68
GCLs	0.0046	1.1	0.015	0.19	2.2	1.5	NA	NA

Appendix D
Tables of Historical Monitoring Data

Monitoring Well MW-13

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium mg/L	GW Elev (feet)
28-Sep-12	U (0.0005)	0.0316	0.0263	0.609	8.11	0.738	NM	416.31
21-Feb-13	0.00130	U (0.0005)	0.0125	0.167	0.649	1.90	NM	414.31
13-Aug-13	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	0.839	NM	416.55
24-Sep-13	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	0.736	NM	NM
19-Nov-13	U (0.0005)	0.000751	U (0.0005)	0.00168	U (0.05)	0.478	NM	415.48
18-Mar-14	0.00067	0.000846	U (0.0005)	0.00208	0.0593	1.13	NM	414.42
31-Jul-14	U (0.0005)	U (0.001)	U (0.001)	U (0.001)	U (0.05)	U (0.42)	NM	419.67
03-Mar-15	0.02	U (0.0005)	0.028	0.130	0.820	0.62	NM	415.04
27-Jul-15	U (0.0005)	U (0.0005)	0.0014	0.0046	U (0.05)	0.58	NM	416.24
23-Feb-16	U (0.001)	U (0.001)	0.0096	0.073	1.0	2.3	NM	415.31
06-Oct-16	U (0.001)	U (0.001)	U (0.001)	0.0058	U (0.05)	0.65	NM	418.8
16-Mar-17	U (0.002)	U (0.002)	U (0.0053)	0.013	0.150	0.44	NM	415.02
07-Jul-17	U (0.002)	U (0.002)	U (0.003)	U (0.002)	U (1.0)	0.32	NM	417.06
29-Mar-18	U (0.003)	U (0.002)	U (0.003)	U (0.002)	U (1)	0.45	NM	414.70
07-Sep-18	U (0.0004)	U (0.001)	U (0.001)	U (0.002)	U (0.15)	0.43	NM	418.76
13-Mar-19	U (0.003)	U (0.002)	0.0072	0.0094	U (1.3)	0.36	NM	415.34
29-Jul-19	U (0.003)	U (0.002)	0.0085	0.0214	0.45	1.1	NM	416.37
03-Aug-20	0.000323	0.0351	0.0439	0.454	1.01	0.6	49.6	419.57
14-Oct-20	0.018	0.0108	0.155	0.63	1.86	1.3	140.0	418.67
GCLs	0.0046	1.1	0.015	0.19	2.2	1.5	NA	NA

Appendix D
Tables of Historical Monitoring Data

Monitoring Well MW-16

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium mg/L	GW Elev (feet)
26-Feb-92	0.004	U	U	U	NT	NT	NM	418.29
04-Jun-92	0.003	U	U	0.007	NT	NT	NM	418.41
30-Nov-92	0.51	0.094	0.056	0.15	NT	NT	NM	416.6
24-Feb-93	0.41	0.033	0.036	0.084	NT	NT	NM	418.13
18-Aug-93	0.099	U	U	0.014	NT	NT	NM	420.26
23-Nov-93	0.039	U	U	0.004	NT	NT	NM	419.59
10-Mar-94	0.005	0.001	U	U	NT	NT	NM	418.28
01-Jun-94	0.022	U	0.003	0.003	NT	NT	NM	418.82
08-Sep-94	U	U	U	U	NT	NT	NM	420.22
14-Dec-94	0.012	U	0.001	U	NT	NT	NM	418.22
20-Dec-95	0.055	U	U	0.003	NT	NT	NM	414.53
16-May-96	0.007	U	U	U	NT	NT	NM	415.78
15-Aug-96	U	U	U	U	NT	NT	NM	416.58
09-Dec-96	0.0071	U	U	U	NT	NT	NM	415.43
20-Mar-97	0.0056	U	U	U	NT	NT	NM	414.4
18-Nov-97	0.00134	0.00101	U	0.00135	U	NT	NM	415.22
01-May-98	0.00567	0.00308	0.00193	0.00739	0.089	0.534	NM	414.38
14-Oct-98	U	U	U	0.00222	U	0.281	NM	416.59
27-May-99	0.00203	U	U	U	U	2.64	NM	415.29
05-Nov-99	U	U	U	U	U	13	NM	415.51
17-Apr-00	0.00305	U	U	U	U	3.66	NM	414.15
26-Oct-00	0.00186	0.00261	U	0.003	U	3.98	NM	417.47
30-May-01	0.0007	U	U	U	U	6.65	NM	413.63
13-Dec-01	0.0480	0.302	0.0109	0.0554	0.9	5.29	NM	413.23
19-Aug-02	U (0.0005)	U (0.002)	U (0.002)	0.00896	U (0.09)	U (0.5)	NM	417.85
05-Nov-02	0.000589	U (0.002)	U (0.002)	0.00234	U (0.09)	0.595	NM	417.07
19-Mar-03	0.000531	0.00653	U (0.002)	0.00469	U (0.09)	1.1	NM	416.23
08-Mar-04	U (0.0005)	0.0288	U (0.0005)	U (0.001)	0.072	2.85	NM	414.95
15-Sep-04	0.0006	0.0143	U (0.0005)	U (0.0015)	0.0521	1.36	NM	416.65
10-Jan-05	0.000648	0.0886	U (0.0005)	0.00221	0.175	1.24	NM	414.70
15-Jul-05	0.0007	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	1.06	NM	417.99
16-Feb-06	U (0.0005)	0.0225	U (0.0005)	U (0.0015)	0.0641	2.09	NM	414.58
27-Jul-06	0.000638	0.0108	U (0.0005)	U (0.0015)	U (0.05)	1.06	NM	417.08
02-Mar-07	U (0.0005)	0.00206	U (0.0005)	U (0.0015)	U (0.05)	1.95	NM	414.25
17-Oct-07	U (0.0025)	0.00318	U (0.0025)	U (0.0075)	U (0.25)	6.53	NM	416.62
05-Jun-08	U (0.0005)	0.0117	U (0.0005)	U (0.0015)	0.0761	4.4	NM	415.88*
29-Sep-08	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	2.69	NM	417.26
25-Feb-09	U (0.0005)	0.0135	U (0.0005)	U (0.0015)	0.0633	3.44	NM	414.49
21-Jul-09	U (0.0005)	U (0.001)	U (0.001)	U (0.003)	U (0.05)	0.564	NM	416.76
17-Mar-10	U (0.001)	U (0.001)	U (0.001)	U (0.002)	U (0.05)	0.586	NM	413.98
15-Sep-10	U (0.0005)	U (0.0005)	0.000796	0.00508	U (0.05)	2.35	NM	416.52
22-Mar-11	U (0.0005)	0.0852	U (0.0005)	U (0.0015)	0.221	2.82	NM	413.98
01-Sep-11	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	2.38	NM	417.42
13-Mar-12	U (0.0005)	0.0845	U (0.0005)	U (0.0015)	0.241	4.18	NM	414.39
23-Jul-12	U (0.0005)	U (0.0010)	U (0.0010)	U (0.0030)	U (0.05)	1.04	NM	417.64
21-Feb-13	U (0.0005)	0.066	U (0.0005)	U (0.0015)	0.182	1.38	NM	414.34
13-Aug-13	U (0.0005)	0.00143	U (0.0005)	U (0.0015)	U (0.05)	3.61	NM	416.56
18-Mar-14	U (0.0005)	0.0694	U (0.0005)	U (0.0015)	0.178	3.17	NM	414.51
31-Jul-14	U (0.0005)	U (0.001)	U (0.001)	U (0.001)	U (0.05)	2.3	NM	419.7
03-Mar-15	0.015	0.039	0.0073	0.130	0.740	1.3	NM	415.2
27-Jul-15	0.0068	0.0016	0.0057	0.071	0.420	0.81	NM	416.22
23-Feb-16	U (0.001)	U (0.001)	U (0.001)	0.0058	U (0.05)	0.40	NM	415.26

Appendix D
Tables of Historical Monitoring Data

06-Oct-16	U (0.001)	U (0.001)	U (0.001)	0.0024	U (0.05)	0.35	NM	418.77
16-Mar-17	U (0.002)	U (0.002)	U (0.003)	U (0.002)	U (0.05)	0.88	NM	414.98
07-Jul-17	U (0.002)	U (0.002)	U (0.003)	U (0.003)	U (1.0)	3.7	NM	417.02
07-Sep-18	U (0.0004)	U (0.001)	U (0.001)	U (0.002)	U (0.15)	0.34	NM	418.73
13-Mar-19	U (0.003)	U (0.002)	U (0.003)	U (0.003)	U (1.3)	1.9	NM	415.27
30-Jul-19	U (0.003)	U (0.002)	U (0.003)	0.003	U (0.25)	0.39	NM	415.37
14-Oct-20	0.0144	0.000556 J	0.000399 J	0.0241	0.0468 J	0.918	49.60	418.63
GCLs	0.0046	1.1	0.015	0.19	2.2	1.5	NA	NA

* Event dates that sampling did not occur on have been removed from this chart.

Appendix D
Tables of Historical Monitoring Data

Monitoring Well G-1

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium mg/L	GW Elev (feet)
20-Dec-95	1.54	1.26	0.56	2.53	NT	NT	NM	414.48
16-May-96	5.9	3.9	1.8	8.2	NT	NT	NM	415.71
09-Dec-96	2.1	2.1	0.73	3.1	NT	NT	NM	NM
20-Mar-97	2.1	2.5	0.81	4.3	NT	NT	NM	NM
18-Nov-97	4.91	4.21	1.89	8	NT	NT	NM	415.22
01-May-98	4.83	6.67	2.18	10.13	60	5.03	NM	NM
14-Oct-98	5.04	3.81	1.8	7.47	43	4.37	NM	416.35
27-May-99	4.34	5.02	1.94	8.89	43	5.46	NM	415.3
05-Nov-99	2.59	1.74	1.01	3.89	23	3.16	NM	415.48
17-Apr-00	3.12	3.77	1.64	7.14	46	5.9	NM	414.06
26-Oct-00	3.04	0.596	1.15	3.39	23	2.19	NM	417.48
30-May-01	1.59	0.158	0.727	1.87	17	2.61	NM	413.6
01-May-02	1.3	0.0371	0.683	1.51	8.6	1.84	NM	414.52
19-Aug-02	0.89	0.0588	0.774	1.465	13.5	1.41	NM	417.79
05-Nov-02	0.0616	U (0.002)	0.00845	0.0666	0.787	U (0.5)	NM	417.06
19-Mar-03	0.00765	U (0.002)	U (0.002)	0.00242	U (0.09)	0.509	NM	416.18**
05-Aug-03	0.11	0.00209	0.101	0.062	1.3	U (0.32)	NM	418.33
08-Mar-04	0.00979	U (0.0005)	U (0.0005)	U (0.001)	U (0.05)	U (0.37)	NM	414.92
15-Sep-04	0.00206	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.385)	NM	416.65
10-Jan-05	0.0327	U (0.0005)	0.000623	U (0.0015)	0.134	U (0.388)	NM	414.58
15-Jul-05	0.0626	U (0.0005)	0.0445	0.00354	0.426	U (0.391)	NM	417.94
16-Feb-06	0.00406	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.397)	NM	414.54
27-Jul-06	0.0222	0.000805	0.0104	0.00217	0.163	U (0.397)	NM	417.37
02-Mar-07	0.00159	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.424)	NM	414.59
17-Oct-07	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.403)	NM	416.88
05-Jun-08	0.00614	U (0.0005)	U (0.0005)	0.00379	0.082	0.877	NM	415.81*
29-Sep-08	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.435)	NM	417.21
25-Feb-09	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.417)	NM	414.48
21-Jul-09	0.00601	U (0.001)	U (0.001)	0.00363	0.0954	U (0.397)	NM	416.75
17-Mar-10	U (0.001)	U (0.001)	U (0.001)	U (0.002)	U (0.05)	U (0.431)	NM	414.03
15-Sep-10	U (0.0005)	U (0.0005)	0.00926	0.0619	0.15	U (0.385)	NM	416.56
22-Mar-11	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	0.657	NM	413.97
01-Sep-11	0.0029	0.000601	U (0.0005)	U (0.0015)	0.0719	U (0.410)	NM	417.44
13-Mar-12	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.446)	NM	414.37
23-Jul-12	0.0134	U (0.0010)	U (0.0010)	U (0.0030)	0.263	U (0.397)	NM	417.01
21-Feb-13	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.431)	NM	414.26
13-Aug-13	0.00621	0.000688	U (0.0005)	U (0.0015)	U (0.05)	U (0.413)	NM	416.50
18-Mar-14	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.403)	NM	414.38
31-Jul-14	0.0026	U (0.001)	0.0022	U (0.001)	0.056	0.67	NM	419.66
03-Mar-15	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.45)	NM	415.09
27-Jul-15	U (0.00054)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	0.25	NM	416.21
23-Feb-16	U (0.001)	U (0.001)	U (0.001)	U (0.001)	U (0.05)	U (0.11)	NM	415.25
06-Oct-16	U (0.001)	U (0.001)	U (0.001)	U (0.001)	U (0.05)	0.24	NM	418.73
16-Mar-17	0.0058	U (0.002)	U (0.003)	U (0.002)	U (0.05)	0.60	NM	414.96
29-Mar-18	0.0041	U (0.002)	U (0.003)	U (0.002)	U (1)	0.76	NM	414.63
07-Sep-18	0.0024	U (0.001)	U (0.001)	U (0.002)	U (0.15)	0.28	NM	418.62
12-Mar-19	U (0.003)	U (0.002)	U (0.003)	U (0.003)	9.4	0.33	NM	415.23
29-Jul-19	U (0.003)	U (0.002)	U (0.003)	U (0.003)	U (0.25)	0.30	NM	416.29
03-Aug-20	0.000817	U (0.001)	U (0.001)	U (0.003)	0.0109	U (0.800)	66.40	419.66
14-Oct-20	0.0134	0.000615	0.000186	0.000653	U (0.10)	0.362	76.4	418.84
GCLs	0.0046	1.1	0.015	0.19	2.2	1.5	NA	NA

**Appendix D
Tables of Historical Monitoring Data**

Monitoring Well G-2

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium mg/L	GW Elev (feet)
20-Dec-95	0.069	U	U	U	NT	NT	NM	414.49
16-May-96	0.2	U	U	U	NT	NT	NM	415.74
15-Aug-96	0.32	U	U	U	NT	NT	NM	416.57
09-Dec-96	0.14	U	U	U	NT	NT	NM	415.42
20-Mar-97	0.002	U	U	U	NT	NT	NM	414.4
15-Aug-97	0.0253	U	U	U	0.077	NT	NM	415.88
18-Nov-97	U	U	U	0.00169	U	NT	NM	415.2
01-May-98	0.00523	U	U	0.00139	U	0.221	NM	414.35
14-Oct-98	0.0318	U	U	0.00135	0.076	0.248	NM	416.55
27-May-99	U	0.00624	U	0.00326	U	0.345	NM	415.27
05-Nov-99	0.0514	U	U	U	0.13	U	NM	415.47
17-Apr-00	0.00749	U	U	U	U	U	NM	414.12
26-Oct-00	0.0051	0.0032	U	0.00759	U	U	NM	417.44
30-May-01	U	U	U	U	U	U	NM	413.58
13-Dec-01	U	U	U	U	U	U	NM	413.04
01-May-02	U	U	U	U	U	U	NM	414.52
19-Aug-02	0.000596	U (0.002)	U (0.002)	U (0.002)	U (0.09)	U (0.505)	NM	417.79
05-Nov-02	U (0.0005)	U (0.002)	U (0.002)	U (0.002)	U (0.09)	U (0.5)	NM	416.99
05-Aug-03	NT	NT	NT	NT	NT	NT	NM	NM
15-Oct-20	NT	NT	NT	NT	NT	NT	NM	NM
GCLs	0.0046	1.1	0.015	0.19	2.2	1.5	NA	NA

*Ground Water monitoring did not occurred between March 19, 2003 to October 15, 2020

Monitoring Well G-3

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium mg/L	GW Elev (feet)
01-Apr-99	U	0.001	U	U	U	U	NM	NT
27-May-99	U	U	U	U	U	0.413	NM	415.18
05-Nov-99	U	U	U	U	U	0.883	NM	415.41
17-Apr-00	U	U	U	U	U	U	NM	414.07
26-Oct-00	U	U	U	U	U	U	NM	418.18
30-May-01	0.00029	U	0.000718	0.001855	U	U	NM	413.49
13-Dec-01	0.00064	U	U	U	U	U	NM	413.07
01-May-02	NT	NT	NT	NT	NT	NT	NM	NM
19-Aug-02	U (0.0005)	U (0.002)	U (0.002)	0.00241	U (0.09)	U (0.505)	NM	417.74
05-Nov-02	NT	NT	NT	NT	NT	NT	NM	NM
19-Mar-03	NT	NT	NT	NT	NT	NT	NM	NM
05-Aug-03	Monitoring Well Destroyed							
GCLs	0.0046	1.1	0.015	0.19	2.2	1.5	NA	NA

*Ground Water monitoring did not occurred after November 05, 2002

Appendix D
Tables of Historical Monitoring Data

Monitoring Well G-4

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium mg/L	GW Elev (feet)
01-Apr-99	U	U	U	U	U	U	NM	NM
27-May-99	U	U	U	U	U	U	NM	415.26
05-Nov-99	U	U	U	U	U	U	NM	415.48
17-Apr-00	U	U	U	U	U	U	NM	414.04
26-Oct-00	U	U	U	U	U	U	NM	418.25
30-May-01	U	U	U	0.001	U	U	NM	413.59
13-Dec-01	U	U	U	U	U	U	NM	413.19
01-May-02	NT	NT	NT	NT	NT	NT	NM	NM
19-Aug-02	0.000545	U (0.002)	U (0.002)	0.00366	U (0.09)	U (0.5)	NM	418.13
05-Nov-02	NT	NT	NT	NT	NT	NT	NM	NM
15-Oct-20	NT	NT	NT	NT	NT	NT	NM	NM
GCLs	0.0046	1.1	0.015	0.19	2.2	1.5	NA	NA

*Ground Water monitoring did not occurred between November 05, 2002 to October 15, 2020

Appendix D
Tables of Historical Monitoring Data

Monitoring Well G-5

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium mg/L	GW Elev (feet)
30-May-01	12.4	11.5	2.1	9.9	107	6.47	NM	412.59
13-Dec-01	6.21	8.71	1.71	12.74	72.8	3.05	NM	413.22
01-May-02	11.9	7.7	1.95	15.1	83.4	6.75	NM	414.55
19-Aug-02	12.9	7.31	2	8.53	86.6	7.85	NM	417.8
05-Nov-02	5.7	4.37	1.38	6.7	41.9	7.17	NM	417.05
19-Mar-03	2.46	1.75	0.741	5.25	30	7.55	NM	416.19
07-Nov-03	NT	NT	NT	NT	NT	NT	NM	NM
08-Mar-04	0.00254	0.00495	0.00104	0.0327	0.126	3.45	NM	414.93
15-Sep-04	0.00577	0.00126	0.000506	0.00467	0.061	1.84	NM	416.64
10-Jan-05	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	1.22	NM	414.80
15-Jul-05	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	1.19	NM	417.83
27-Jul-06	NT	NT	NT	NT	NT	NT	NM	417.09
27-Jul-06	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	0.865	NM	417.09
02-Mar-07	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	1.03	NM	414.24
17-Oct-07	0.000837	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	3.44	NM	416.22
05-Jun-08	U (0.0005)	U (0.0005)	0.00452	0.0316	0.112	1.1	NM	415.73
29-Sep-08	U (0.0005)	U (0.0005)	0.00458	0.0103	0.0794	1.66	NM	417.20
25-Feb-09	0.00068	0.00053	0.0579	0.174	2.53	1.3	NM	414.45
21-Jul-09	0.0018	U (0.0010)	U (0.001)	U (0.003)	U (0.05)	1.27	NM	416.73
17-Mar-10	0.013	0.0014	0.19	0.37	4.4	0.961	NM	413.98
15-Sep-10	0.0849	0.000886	0.00279	0.0149	0.287	1.10	NM	416.59
22-Mar-11	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	1.04	NM	413.96
01-Sep-11	0.00331	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	0.898	NM	417.44
13-Mar-12	0.0307	0.00346	0.113	0.23	3.63	1.02	NM	414.37
21-Feb-13	NT	NT	NT	NT	NT	NT	NM	NM
13-Aug-13	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	0.884	NM	416.50
18-Mar-14	0.025	0.00612	0.0739	0.161	2.44	0.778	NM	414.36
31-Jul-14	0.49	0.0064	0.071	0.21	2.2	1.40	NM	419.24
03-Mar-15	U (0.0005)	U (0.0005)	U (0.0005)	0.0015	U (0.05)	0.430	NM	414.58
27-Jul-15	0.92	0.57	0.59	1.1	10	1.40	NM	416.18
23-Feb-16	U (0.001)	U (0.001)	U (0.001)	U (0.001)	U (0.05)	0.21	NM	415.19
06-Oct-16	U (0.001)	U (0.001)	U (0.001)	U (0.001)	U (0.05)	0.95	NM	418.75
16-Mar-17	0.27	0.36	0.56	1.91	7.9	1.3	NM	414.93
07-Jul-17	NT	NT	NT	NT	NT	NT	NM	416.96
29-Mar-18	0.38	0.3	0.72	2.27	14	1.6	NM	414.68
07-Sep-18	0.61	0.91	0.51	1.92	7.4	2.4	NM	418.68
13-Mar-19	0.11	0.011	0.39	1.05	5.8	1.2	NM	415.24
30-Jul-19	U (0.15)	U (0.1)	0.18	0.71	2.9	1.2	NM	416.31
04-Aug-20	0.114	0.000683	0.123	0.124	0.712	1.07	77	419.57
14-Oct-20	0.0016	0.00513	0.0148	0.079	0.251	2.16	56.7	418.67
GCLs	0.0046	1.1	0.015	0.19	2.2	1.5	NA	NA

* Event dates that sampling did not occur on have been removed from this chart.

**Appendix D
Tables of Historical Monitoring Data**

Monitoring Well G-6

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium mg/L	GW Elev (feet)
30-May-01	U	U	U	U	U	U	NM	413.54
13-Dec-01	U	U	U	U	U	U	NM	413.26
01-May-02	NT	NT	NT	NT	NT	NT	NM	NM
19-Aug-02	U (0.0005)	U (0.002)	U (0.002)	U (0.002)	U (0.09)	U (0.505)	NM	417.93
29-Jul-19	NT	NT	NT	NT	NT	NT	NM	NM
04-Aug-20	NT	NT	NT	NT	NT	NT	NM	NM
15-Oct-20	NT	NT	NT	NT	NT	NT	NM	NM
GCLs	0.0046	1.1	0.015	0.19	2.2	1.5	NA	NA

*Ground Water monitoring did not occurred between November 05, 2002 to October 15, 2020

Monitoring Well G-9

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium mg/L	GW Elev (feet)
07-Nov-03	U (0.0005)	U (0.0005)	U (0.0005)	U (0.001)	U (0.08)	U (0.32)	NM	NM
08-Mar-04	U (0.0005)	U (0.0005)	U (0.0005)	U (0.001)	U (0.05)	U (0.37)	NM	414.96
15-Sep-04	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.385)	NM	416.62
29-Jul-19	NT	NT	NT	NT	NT	NT		NM
04-Aug-20	NT	NT	NT	NT	NT	NT	NM	NM
15-Oct-20	NT	NT	NT	NT	NT	NT	NM	NM
GCLs	0.0046	1.1	0.015	0.19	2.2	1.5	NA	NA

*Ground Water monitoring did not occurred between January 10, 2005 to October 15, 2020

Remediation Well RM-1

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium mg/L	GW Elev (feet)
10-Oct-12	0.0425	15.4	3.08	16.7	175	10.8	NM	416.29
21-Feb-13	0.0251	7.25	2.14	11.3	69.9	10.7	NM	414.27
13-Aug-13	0.0432	12.2	1.80	10.4	39.9	9.27	NM	416.55
24-Sep-13	0.0246	6.09	0.942	6.83	27.2	12.6	NM	NM
19-Nov-13	0.0213	2.83	0.593	5.09	14.7	17.5	NM	415.53
19-Mar-14	0.0268	0.201	0.568	2.55	11.9	13.2	NM	414.37
31-Jul-14	U (0.0005)	0.15	0.084	0.51	1.8	1.7	NM	419.58
03-Mar-15	0.055	0.68	0.096	1.6	8.4	1.5	NM	402.63
27-Jul-15	0.084	0.770	0.360	2.9	12.0	5.2	NM	
23-Feb-16	U (0.001)	0.93	0.2	1.80	9.8	1.3	NM	414.75
06-Oct-16	0.0067	0.33	U (0.001)	0.71	3.5	0.74	NM	417.91
16-Mar-17	NT	NT	NT	NT	NT	NT	NM	NM
07-Jul-17	0.0087	0.69	0.45	2.73	12	3.3	NM	417.04
06-Sep-17	0.0050	0.74	0.270	2.000	7.6	0.92	NM	NM
07-Jul-17	NT	NT	NT	NT	NT	NT	NM	NM
29-Mar-18	NT	NT	NT	NT	NT	NT	NM	NM
07-Sep-18	0.00072	0.23	0.2	2.06	4.7	1.2	NM	413.04
13-Mar-19	NT	NT	NT	NT	NT	NT	NM	415.16
30-Jul-19	U (0.15)	0.4	0.23	1.55	6.1	1.1	NM	415.38
24-Oct-19	(0.003) U	0.038	0.15	1.49	4.3	1.4	NM	NM
04-Aug-20	0.000539	0.1	0.131	1.32	2.81	1.23	47.2	417
15-Oct-20	0.00261 J	0.137	0.246	1.89	4.26	2.31	52.3	NM
GCLs	0.0046	1.1	0.015	0.19	2.2	1.5	NA	NA

Appendix D
Tables of Historical Monitoring Data

Remediation Well RM-2

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium mg/L	GW Elev (feet)
29-Aug-19	0.00179	0.00209	0.0157	0.0666	0.479	0.384 J	22.9	NM
24-Oct-19	0.0046	0.058	0.089	0.342	2.00	0.45	32.0	NM
04-Aug-20	U (0.001)	U (0.001)	0.000505	0.000565	0.0135	U (0.800)	24.2	NM
15-Oct-20	0.0226	0.413	0.274	1.24	3.98	1.49	48.7	NM
GCLs	0.0046	1.1	0.015	0.19	2.2	1.5	NA	NA

Monitoring Well MW 17-1

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium mg/L	GW Elev (feet)
29-Mar-18	2.9	6.6	1.2	8.5	U (100)	6	NM	NM
07-Sep-18	0.18	26	3.3	18	80	4.8	NM	NM
14-Mar-19	3	7.4	1.7	7.4	47	3.3	NM	415.28
30-Jul-19	0.36	9.2	3.4	14.9	88	3.9	NM	416.35
04-Aug-20	0.126	22.5	3.47	13.8	61.1	2.78	56	419.63
15-Oct-20	0.0231 J	0.254 J	0.305	2.1	5.9	4.03	58.1	418.92
GCLs	0.0046	1.1	0.015	0.19	2.2	1.5	NA	NA

Monitoring Well MW 17-2

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium mg/L	GW Elev (feet)
29-Mar-18	U (0.30)	2.7	U (0.30)	2.11	22	12	NM	NM
07-Sep-18	0.18	3.2	0.66	4.5	17	15	NM	NM
14-Mar-19	0.047	0.94	0.094	1.49	4.2	10	NM	415.28
29-Jul-19	U (0.15)	1.8	0.5	3.9	16	8.5	NM	416.35
04-Aug-20	0.0505	0.477	0.2	1.91	5.03	20.5	91.4	419.67
15-Oct-20	0.00395 J	0.0235	0.0508	0.218	0.601	8.25	69.3	418.62
GCLs	0.0046	1.1	0.015	0.19	2.2	1.5	NA	NA

Key:

* - Elevation may be biased due to presence of ice plug.

DRO - diesel range organics

GCLs - ground water cleanup levels

GRO - gasoline range organics

J - The identification of the analyte is acceptable; the reported value is an estimate.

mg/L - milligram per liter

NA - not applicable

NT - not tested

NM - not measured

U - Undetected above practical quantitation limit.

Bold, shade indicates concentration exceeds the GCL or, if not detected, the practical quantitation limit exceeds the GCL

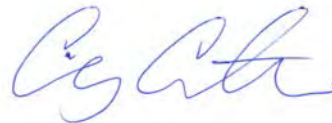
APPENDIX E

*Laboratory Analytical Report and
ADEC Laboratory Data Review
Checklist*

Stantec - Anchorage, AK - Speedway

Sample Delivery Group: L1274905
Samples Received: 10/17/2020
Project Number: 185751325
Description: Speedway 5315 TNS 111
Site: 0005315
Report To: Ms. Leslie Petre
725 E Fireweed Lane
Suite 200
Anchorage, AK 99503

Entire Report Reviewed By:



Craig Cothron
Project Manager

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





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SAMPLE SUMMARY



MW-10 L1274905-01 GW

Collected by
Austin Badger

Collected date/time
10/15/20 09:20

Received date/time
10/17/20 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1561417	1	10/20/20 11:27	10/20/20 22:04	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1561682	5	10/19/20 18:24	10/19/20 18:24	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1567034	5	10/29/20 02:23	10/29/20 02:23	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1561708	1	10/21/20 06:44	10/22/20 00:53	AEG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1562998	1	10/21/20 18:10	10/22/20 13:39	JNJ	Mt. Juliet, TN

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MW-11 L1274905-02 GW

Collected by
Austin Badger

Collected date/time
10/15/20 09:21

Received date/time
10/17/20 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1561417	1	10/20/20 11:27	10/20/20 22:12	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1561682	5	10/19/20 18:48	10/19/20 18:48	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1567034	1	10/29/20 03:24	10/29/20 03:24	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1561708	1.33	10/21/20 06:44	10/22/20 01:13	AEG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1562998	1	10/21/20 18:10	10/22/20 13:59	JNJ	Mt. Juliet, TN

MW-12 L1274905-03 GW

Collected by
Austin Badger

Collected date/time
10/14/20 11:10

Received date/time
10/17/20 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1561417	1	10/20/20 11:27	10/20/20 22:15	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1561682	1	10/19/20 14:41	10/19/20 14:41	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1565537	1	10/26/20 22:30	10/26/20 22:30	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1561708	1	10/21/20 06:44	10/23/20 00:50	AEG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1561697	1	10/20/20 17:04	10/21/20 00:41	AO	Mt. Juliet, TN

MW-13 L1274905-04 GW

Collected by
Austin Badger

Collected date/time
10/14/20 14:48

Received date/time
10/17/20 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1561417	1	10/20/20 11:27	10/20/20 22:17	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1561682	1	10/19/20 15:05	10/19/20 15:05	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1565537	1	10/26/20 22:51	10/26/20 22:51	JCP	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1566379	10	10/27/20 22:30	10/27/20 22:30	AV	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1561708	1	10/21/20 06:44	10/22/20 01:54	AEG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1563253	1	10/21/20 19:21	10/22/20 03:35	SHG	Mt. Juliet, TN

MW-16 L1274905-05 GW

Collected by
Austin Badger

Collected date/time
10/14/20 13:36

Received date/time
10/17/20 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1561417	1	10/20/20 11:27	10/20/20 22:20	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1561682	1	10/19/20 15:29	10/19/20 15:29	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1565537	1	10/26/20 23:11	10/26/20 23:11	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1561708	1	10/21/20 06:44	10/22/20 04:55	AEG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1561697	1	10/20/20 17:04	10/21/20 01:15	AO	Mt. Juliet, TN

SAMPLE SUMMARY



G-01 L1274905-06 GW

Collected by
Austin Badger
Collected date/time
10/14/20 10:20
Received date/time
10/17/20 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1561417	1	10/20/20 11:27	10/20/20 22:23	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1561682	1	10/19/20 15:53	10/19/20 15:53	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1565537	1	10/26/20 23:32	10/26/20 23:32	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1561708	1	10/21/20 06:44	10/22/20 02:14	AEG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1561697	1	10/20/20 17:04	10/21/20 01:32	AO	Mt. Juliet, TN

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Cp

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Sr

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Qc

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Gl

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G-05 L1274905-07 GW

Collected by
Austin Badger
Collected date/time
10/14/20 15:45
Received date/time
10/17/20 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1561417	1	10/20/20 11:27	10/20/20 22:25	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1561682	1	10/19/20 16:18	10/19/20 16:18	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1566609	1	10/28/20 01:43	10/28/20 01:43	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1561708	1.12	10/21/20 06:44	10/22/20 02:34	AEG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1561697	1	10/20/20 17:04	10/21/20 01:50	AO	Mt. Juliet, TN

MW17-01 L1274905-08 GW

Collected by
Austin Badger
Collected date/time
10/15/20 12:40
Received date/time
10/17/20 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1561417	1	10/20/20 11:27	10/20/20 22:28	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1561682	50	10/19/20 19:12	10/19/20 19:12	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1567034	50	10/29/20 02:43	10/29/20 02:43	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1561708	1	10/21/20 06:44	10/22/20 02:54	AEG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1562998	1	10/21/20 18:10	10/22/20 14:19	JNJ	Mt. Juliet, TN

MW17-02 L1274905-09 GW

Collected by
Austin Badger
Collected date/time
10/15/20 11:28
Received date/time
10/17/20 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1561417	1	10/20/20 11:27	10/20/20 22:30	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1561682	5	10/19/20 19:37	10/19/20 19:37	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1567034	5	10/29/20 03:04	10/29/20 03:04	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1561708	1	10/21/20 06:44	10/22/20 03:14	AEG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1562998	1	10/21/20 18:10	10/22/20 14:39	JNJ	Mt. Juliet, TN

RM-01 L1274905-10 GW

Collected by
Austin Badger
Collected date/time
10/15/20 10:27
Received date/time
10/17/20 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1561417	1	10/20/20 11:27	10/20/20 22:33	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1561682	5	10/19/20 20:01	10/19/20 20:01	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1566609	20	10/28/20 07:51	10/28/20 07:51	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1561708	1	10/21/20 06:44	10/23/20 01:30	KLM	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1562998	1	10/21/20 18:10	10/22/20 14:59	JNJ	Mt. Juliet, TN

SAMPLE SUMMARY



RM-02 L1274905-11 GW

Collected by
Austin Badger

Collected date/time
10/15/20 10:35

Received date/time
10/17/20 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1561417	1	10/20/20 11:27	10/20/20 22:36	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1566491	10	10/27/20 22:26	10/27/20 22:26	AV	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1566609	1	10/28/20 02:04	10/28/20 02:04	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1567034	20	10/29/20 02:02	10/29/20 02:02	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1561708	1.27	10/21/20 06:44	10/23/20 01:10	KLM	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1562998	1	10/21/20 18:10	10/22/20 15:19	JNJ	Mt. Juliet, TN

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Cp

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Tc

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Ss

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Cn

DUP1 L1274905-12 GW

Collected by
Austin Badger

Collected date/time
10/14/20 00:00

Received date/time
10/17/20 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1561417	1	10/20/20 11:27	10/20/20 22:44	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1566491	1	10/27/20 22:02	10/27/20 22:02	AV	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1566609	1	10/28/20 02:24	10/28/20 02:24	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1561708	1	10/21/20 06:44	10/22/20 04:15	AEG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1561697	1	10/20/20 17:04	10/21/20 02:07	AO	Mt. Juliet, TN

5
Sr

6
Qc

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Gl

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Al

DUP2 L1274905-13 GW

Collected by
Austin Badger

Collected date/time
10/15/20 00:00

Received date/time
10/17/20 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1561417	1	10/20/20 11:27	10/20/20 22:46	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1561682	50	10/19/20 20:25	10/19/20 20:25	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1566609	1	10/28/20 02:45	10/28/20 02:45	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1561708	2	10/21/20 06:44	10/23/20 01:50	KLM	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1562998	1	10/21/20 18:10	10/22/20 15:39	SHG	Mt. Juliet, TN

9
Sc



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

Craig Cothron
Project Manager

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



Collected date/time: 10/15/20 09:20

L1274905

Metals (ICP) by Method 6010C

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Sodium	50.9		1.40	3.00	1	10/20/2020 22:04	WG1561417

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

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
TPHGAK C6 to C10	1.12		0.0500	0.500	5	10/19/2020 18:24	WG1561682
(S) a,a,a-Trifluorotoluene(FID)	100			50.0-150		10/19/2020 18:24	WG1561682
(S) a,a,a-Trifluorotoluene(PID)	97.2			79.0-125		10/19/2020 18:24	WG1561682

Sample Narrative:

L1274905-01 WG1561682: Dilution due to foam.

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Benzene	0.00506		0.000471	0.00500	5	10/29/2020 02:23	WG1567034
n-Butylbenzene	U		0.000785	0.00500	5	10/29/2020 02:23	WG1567034
sec-Butylbenzene	0.000989	J	0.000625	0.00500	5	10/29/2020 02:23	WG1567034
tert-Butylbenzene	U		0.000635	0.00500	5	10/29/2020 02:23	WG1567034
Ethylbenzene	0.0649		0.000685	0.00500	5	10/29/2020 02:23	WG1567034
Isopropylbenzene	0.00387	J	0.000525	0.00500	5	10/29/2020 02:23	WG1567034
Naphthalene	0.0128	J	0.00500	0.0250	5	10/29/2020 02:23	WG1567034
Toluene	0.0387		0.00139	0.00500	5	10/29/2020 02:23	WG1567034
1,2,4-Trimethylbenzene	0.0473		0.00161	0.00500	5	10/29/2020 02:23	WG1567034
1,3,5-Trimethylbenzene	0.0170		0.000520	0.00500	5	10/29/2020 02:23	WG1567034
Total Xylenes	0.198		0.000870	0.0150	5	10/29/2020 02:23	WG1567034
(S) Toluene-d8	106			80.0-120		10/29/2020 02:23	WG1567034
(S) 4-Bromofluorobenzene	101			77.0-126		10/29/2020 02:23	WG1567034
(S) 1,2-Dichloroethane-d4	103			70.0-130		10/29/2020 02:23	WG1567034

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
AK102 DRO C10-C25	1.74		0.229	0.800	1	10/22/2020 00:53	WG1561708
(S) o-Terphenyl	84.0			50.0-150		10/22/2020 00:53	WG1561708

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Anthracene	U		0.0000190	0.0000500	1	10/22/2020 13:39	WG1562998
Acenaphthene	0.0000549	J3	0.0000190	0.0000500	1	10/22/2020 13:39	WG1562998
Acenaphthylene	U		0.0000171	0.0000500	1	10/22/2020 13:39	WG1562998
Benzo(a)anthracene	U	J3	0.0000203	0.0000500	1	10/22/2020 13:39	WG1562998
Benzo(a)pyrene	U	J3 J4	0.0000184	0.0000500	1	10/22/2020 13:39	WG1562998
Benzo(b)fluoranthene	U	J3 J4	0.0000168	0.0000500	1	10/22/2020 13:39	WG1562998
Benzo(g,h,i)perylene	U	J3	0.0000184	0.0000500	1	10/22/2020 13:39	WG1562998
Benzo(k)fluoranthene	U	J3 J4	0.0000202	0.0000500	1	10/22/2020 13:39	WG1562998
Chrysene	U	J3	0.0000179	0.0000500	1	10/22/2020 13:39	WG1562998
Dibenz(a,h)anthracene	U	J3	0.0000160	0.0000500	1	10/22/2020 13:39	WG1562998
Fluoranthene	U		0.0000270	0.000100	1	10/22/2020 13:39	WG1562998
Fluorene	0.000239	J3	0.0000169	0.0000500	1	10/22/2020 13:39	WG1562998
Indeno(1,2,3-cd)pyrene	U	J3	0.0000158	0.0000500	1	10/22/2020 13:39	WG1562998
Naphthalene	0.00425	J3	0.0000917	0.000250	1	10/22/2020 13:39	WG1562998



Collected date/time: 10/15/20 09:20

L1274905

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Phenanthrene	0.0000795		0.0000180	0.0000500	1	10/22/2020 13:39	WG1562998
Pyrene	U	J3	0.0000169	0.0000500	1	10/22/2020 13:39	WG1562998
1-Methylnaphthalene	0.00147	J3	0.0000687	0.000250	1	10/22/2020 13:39	WG1562998
2-Methylnaphthalene	0.000772	J3	0.0000674	0.000250	1	10/22/2020 13:39	WG1562998
(S) Nitrobenzene-d5	85.3			31.0-160		10/22/2020 13:39	WG1562998
(S) 2-Fluorobiphenyl	78.4			48.0-148		10/22/2020 13:39	WG1562998
(S) p-Terphenyl-d14	80.0			37.0-146		10/22/2020 13:39	WG1562998

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



Metals (ICP) by Method 6010C

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Sodium	48.2		1.40	3.00	1	10/20/2020 22:12	WG1561417

1 Cp

2 Tc

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
TPHGAK C6 to C10	0.386	J	0.0500	0.500	5	10/19/2020 18:48	WG1561682
(S) a,a,a-Trifluorotoluene(FID)	102			50.0-150		10/19/2020 18:48	WG1561682
(S) a,a,a-Trifluorotoluene(PID)	98.8			79.0-125		10/19/2020 18:48	WG1561682

3 Ss

4 Cn

5 Sr

Sample Narrative:

L1274905-02 WG1561682: Dilution due to foam.

6 Qc

7 Gl

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Benzene	0.000929	J	0.0000941	0.00100	1	10/29/2020 03:24	WG1567034
n-Butylbenzene	U		0.000157	0.00100	1	10/29/2020 03:24	WG1567034
sec-Butylbenzene	0.000235	J	0.000125	0.00100	1	10/29/2020 03:24	WG1567034
tert-Butylbenzene	U		0.000127	0.00100	1	10/29/2020 03:24	WG1567034
Ethylbenzene	0.0106		0.000137	0.00100	1	10/29/2020 03:24	WG1567034
Isopropylbenzene	0.00158		0.000105	0.00100	1	10/29/2020 03:24	WG1567034
Naphthalene	0.00388	J	0.00100	0.00500	1	10/29/2020 03:24	WG1567034
Toluene	0.00121		0.000278	0.00100	1	10/29/2020 03:24	WG1567034
1,2,4-Trimethylbenzene	0.0182		0.000322	0.00100	1	10/29/2020 03:24	WG1567034
1,3,5-Trimethylbenzene	0.00776		0.000104	0.00100	1	10/29/2020 03:24	WG1567034
Total Xylenes	0.0810		0.000174	0.00300	1	10/29/2020 03:24	WG1567034
(S) Toluene-d8	102			80.0-120		10/29/2020 03:24	WG1567034
(S) 4-Bromofluorobenzene	101			77.0-126		10/29/2020 03:24	WG1567034
(S) 1,2-Dichloroethane-d4	108			70.0-130		10/29/2020 03:24	WG1567034

8 Al

9 Sc

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
AK102 DRO C10-C25	1.06	J	0.305	1.06	1.33	10/22/2020 01:13	WG1561708
(S) o-Terphenyl	92.7			50.0-150		10/22/2020 01:13	WG1561708

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Anthracene	U		0.0000190	0.0000500	1	10/22/2020 13:59	WG1562998
Acenaphthene	U	J3	0.0000190	0.0000500	1	10/22/2020 13:59	WG1562998
Acenaphthylene	U		0.0000171	0.0000500	1	10/22/2020 13:59	WG1562998
Benzo(a)anthracene	U	J3	0.0000203	0.0000500	1	10/22/2020 13:59	WG1562998
Benzo(a)pyrene	U	J3 J4	0.0000184	0.0000500	1	10/22/2020 13:59	WG1562998
Benzo(b)fluoranthene	U	J3 J4	0.0000168	0.0000500	1	10/22/2020 13:59	WG1562998
Benzo(g,h,i)perylene	U	J3	0.0000184	0.0000500	1	10/22/2020 13:59	WG1562998
Benzo(k)fluoranthene	U	J3 J4	0.0000202	0.0000500	1	10/22/2020 13:59	WG1562998
Chrysene	U	J3	0.0000179	0.0000500	1	10/22/2020 13:59	WG1562998
Dibenz(a,h)anthracene	U	J3	0.0000160	0.0000500	1	10/22/2020 13:59	WG1562998
Fluoranthene	U		0.0000270	0.000100	1	10/22/2020 13:59	WG1562998
Fluorene	U	J3	0.0000169	0.0000500	1	10/22/2020 13:59	WG1562998
Indeno(1,2,3-cd)pyrene	U	J3	0.0000158	0.0000500	1	10/22/2020 13:59	WG1562998
Naphthalene	0.000794	J3	0.0000917	0.000250	1	10/22/2020 13:59	WG1562998



Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Phenanthrene	U		0.0000180	0.0000500	1	10/22/2020 13:59	WG1562998
Pyrene	U	<u>J3</u>	0.0000169	0.0000500	1	10/22/2020 13:59	WG1562998
1-Methylnaphthalene	0.000185	<u>JJ3</u>	0.0000687	0.000250	1	10/22/2020 13:59	WG1562998
2-Methylnaphthalene	U	<u>J3</u>	0.0000674	0.000250	1	10/22/2020 13:59	WG1562998
<i>(S)</i> Nitrobenzene-d5	78.9			31.0-160		10/22/2020 13:59	WG1562998
<i>(S)</i> 2-Fluorobiphenyl	79.5			48.0-148		10/22/2020 13:59	WG1562998
<i>(S)</i> p-Terphenyl-d14	82.1			37.0-146		10/22/2020 13:59	WG1562998

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Collected date/time: 10/14/20 11:10

L1274905

Metals (ICP) by Method 6010C

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Sodium	56.8		1.40	3.00	1	10/20/2020 22:15	WG1561417

1 Cp

2 Tc

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
TPHGAK C6 to C10	1.08		0.0100	0.100	1	10/19/2020 14:41	WG1561682
(S) a,a,a-Trifluorotoluene(FID)	96.4			50.0-150		10/19/2020 14:41	WG1561682
(S) a,a,a-Trifluorotoluene(PID)	103			79.0-125		10/19/2020 14:41	WG1561682

3 Ss

4 Cn

5 Sr

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Benzene	0.0192		0.0000941	0.00100	1	10/26/2020 22:30	WG1565537
n-Butylbenzene	U		0.000157	0.00100	1	10/26/2020 22:30	WG1565537
sec-Butylbenzene	U		0.000125	0.00100	1	10/26/2020 22:30	WG1565537
tert-Butylbenzene	U		0.000127	0.00100	1	10/26/2020 22:30	WG1565537
Ethylbenzene	0.123		0.000137	0.00100	1	10/26/2020 22:30	WG1565537
Isopropylbenzene	0.0134		0.000105	0.00100	1	10/26/2020 22:30	WG1565537
Naphthalene	0.0174		0.00100	0.00500	1	10/26/2020 22:30	WG1565537
Toluene	0.000817	J	0.000278	0.00100	1	10/26/2020 22:30	WG1565537
1,2,4-Trimethylbenzene	0.120		0.000322	0.00100	1	10/26/2020 22:30	WG1565537
1,3,5-Trimethylbenzene	0.0375		0.000104	0.00100	1	10/26/2020 22:30	WG1565537
Total Xylenes	0.425		0.000174	0.00300	1	10/26/2020 22:30	WG1565537
(S) Toluene-d8	102			80.0-120		10/26/2020 22:30	WG1565537
(S) 4-Bromofluorobenzene	93.1			77.0-126		10/26/2020 22:30	WG1565537
(S) 1,2-Dichloroethane-d4	96.1			70.0-130		10/26/2020 22:30	WG1565537

6 Qc

7 Gl

8 Al

9 Sc

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
AK102 DRO C10-C25	0.658	J	0.229	0.800	1	10/23/2020 00:50	WG1561708
(S) o-Terphenyl	45.4	J2		50.0-150		10/23/2020 00:50	WG1561708

Sample Narrative:

L1274905-03 WG1561708: Duplicate Analysis performed due to surrogate failure. Results confirm;

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Anthracene	U		0.0000190	0.0000500	1	10/21/2020 00:41	WG1561697
Acenaphthene	0.0000390	J	0.0000190	0.0000500	1	10/21/2020 00:41	WG1561697
Acenaphthylene	U		0.0000171	0.0000500	1	10/21/2020 00:41	WG1561697
Benzo(a)anthracene	U		0.0000203	0.0000500	1	10/21/2020 00:41	WG1561697
Benzo(a)pyrene	U		0.0000184	0.0000500	1	10/21/2020 00:41	WG1561697
Benzo(b)fluoranthene	U		0.0000168	0.0000500	1	10/21/2020 00:41	WG1561697
Benzo(g,h,i)perylene	U		0.0000184	0.0000500	1	10/21/2020 00:41	WG1561697
Benzo(k)fluoranthene	U		0.0000202	0.0000500	1	10/21/2020 00:41	WG1561697
Chrysene	U		0.0000179	0.0000500	1	10/21/2020 00:41	WG1561697
Dibenz(a,h)anthracene	U		0.0000160	0.0000500	1	10/21/2020 00:41	WG1561697
Fluoranthene	U		0.0000270	0.000100	1	10/21/2020 00:41	WG1561697
Fluorene	0.0000611		0.0000169	0.0000500	1	10/21/2020 00:41	WG1561697
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500	1	10/21/2020 00:41	WG1561697
Naphthalene	0.00633		0.0000917	0.000250	1	10/21/2020 00:41	WG1561697



Collected date/time: 10/14/20 11:10

L1274905

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Phenanthrene	U		0.0000180	0.0000500	1	10/21/2020 00:41	WG1561697
Pyrene	U		0.0000169	0.0000500	1	10/21/2020 00:41	WG1561697
1-Methylnaphthalene	0.00331		0.0000687	0.000250	1	10/21/2020 00:41	WG1561697
2-Methylnaphthalene	0.00280		0.0000674	0.000250	1	10/21/2020 00:41	WG1561697
<i>(S)</i> Nitrobenzene-d5	75.3			31.0-160		10/21/2020 00:41	WG1561697
<i>(S)</i> 2-Fluorobiphenyl	72.1			48.0-148		10/21/2020 00:41	WG1561697
<i>(S)</i> p-Terphenyl-d14	42.3			37.0-146		10/21/2020 00:41	WG1561697

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



Collected date/time: 10/14/20 14:48

L1274905

Metals (ICP) by Method 6010C

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Sodium	140		1.40	3.00	1	10/20/2020 22:17	WG1561417

1 Cp

2 Tc

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
TPHGAK C6 to C10	1.86		0.0100	0.100	1	10/19/2020 15:05	WG1561682
(S) a,a,a-Trifluorotoluene(FID)	93.6			50.0-150		10/19/2020 15:05	WG1561682
(S) a,a,a-Trifluorotoluene(PID)	95.5			79.0-125		10/19/2020 15:05	WG1561682

3 Ss

4 Cn

5 Sr

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Benzene	0.0180		0.0000941	0.00100	1	10/26/2020 22:51	WG1565537
n-Butylbenzene	U		0.000157	0.00100	1	10/26/2020 22:51	WG1565537
sec-Butylbenzene	0.00350		0.000125	0.00100	1	10/26/2020 22:51	WG1565537
tert-Butylbenzene	U		0.000127	0.00100	1	10/26/2020 22:51	WG1565537
Ethylbenzene	0.155		0.000137	0.00100	1	10/26/2020 22:51	WG1565537
Isopropylbenzene	0.0167		0.000105	0.00100	1	10/26/2020 22:51	WG1565537
Naphthalene	0.0212		0.00100	0.00500	1	10/26/2020 22:51	WG1565537
Toluene	0.0108		0.000278	0.00100	1	10/26/2020 22:51	WG1565537
1,2,4-Trimethylbenzene	0.183		0.000322	0.00100	1	10/26/2020 22:51	WG1565537
1,3,5-Trimethylbenzene	0.0597		0.000104	0.00100	1	10/26/2020 22:51	WG1565537
Total Xylenes	0.630		0.00174	0.0300	10	10/27/2020 22:30	WG1566379
(S) Toluene-d8	97.2			80.0-120		10/26/2020 22:51	WG1565537
(S) Toluene-d8	104			80.0-120		10/27/2020 22:30	WG1566379
(S) 4-Bromofluorobenzene	96.6			77.0-126		10/26/2020 22:51	WG1565537
(S) 4-Bromofluorobenzene	102			77.0-126		10/27/2020 22:30	WG1566379
(S) 1,2-Dichloroethane-d4	96.6			70.0-130		10/26/2020 22:51	WG1565537
(S) 1,2-Dichloroethane-d4	106			70.0-130		10/27/2020 22:30	WG1566379

6 Qc

7 Gl

8 Al

9 Sc

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
AK102 DRO C10-C25	1.30		0.229	0.800	1	10/22/2020 01:54	WG1561708
(S) o-Terphenyl	77.0			50.0-150		10/22/2020 01:54	WG1561708

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Anthracene	U		0.0000190	0.0000500	1	10/22/2020 03:35	WG1563253
Acenaphthene	0.0000576		0.0000190	0.0000500	1	10/22/2020 03:35	WG1563253
Acenaphthylene	U		0.0000171	0.0000500	1	10/22/2020 03:35	WG1563253
Benzo(a)anthracene	U		0.0000203	0.0000500	1	10/22/2020 03:35	WG1563253
Benzo(a)pyrene	U		0.0000184	0.0000500	1	10/22/2020 03:35	WG1563253
Benzo(b)fluoranthene	U		0.0000168	0.0000500	1	10/22/2020 03:35	WG1563253
Benzo(g,h,i)perylene	U		0.0000184	0.0000500	1	10/22/2020 03:35	WG1563253
Benzo(k)fluoranthene	U		0.0000202	0.0000500	1	10/22/2020 03:35	WG1563253
Chrysene	U		0.0000179	0.0000500	1	10/22/2020 03:35	WG1563253
Dibenz(a,h)anthracene	U		0.0000160	0.0000500	1	10/22/2020 03:35	WG1563253
Fluoranthene	U		0.0000270	0.000100	1	10/22/2020 03:35	WG1563253
Fluorene	0.000126		0.0000169	0.0000500	1	10/22/2020 03:35	WG1563253
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500	1	10/22/2020 03:35	WG1563253
Naphthalene	0.00420		0.0000917	0.000250	1	10/22/2020 03:35	WG1563253



Collected date/time: 10/14/20 14:48

L1274905

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Phenanthrene	U		0.0000180	0.0000500	1	10/22/2020 03:35	WG1563253
Pyrene	U		0.0000169	0.0000500	1	10/22/2020 03:35	WG1563253
1-Methylnaphthalene	0.00417		0.0000687	0.000250	1	10/22/2020 03:35	WG1563253
2-Methylnaphthalene	0.00347		0.0000674	0.000250	1	10/22/2020 03:35	WG1563253
(S) Nitrobenzene-d5	78.9			31.0-160		10/22/2020 03:35	WG1563253
(S) 2-Fluorobiphenyl	47.5	<u>J2</u>		48.0-148		10/22/2020 03:35	WG1563253
(S) p-Terphenyl-d14	39.3			37.0-146		10/22/2020 03:35	WG1563253

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

Sample Narrative:

L1274905-04 WG1563253: Surrogate failure due to matrix interference



Metals (ICP) by Method 6010C

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Sodium	49.6		1.40	3.00	1	10/20/2020 22:20	WG1561417

1 Cp

2 Tc

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
TPHGAK C6 to C10	0.0468	J	0.0100	0.100	1	10/19/2020 15:29	WG1561682
(S) a,a,a-Trifluorotoluene(FID)	101			50.0-150		10/19/2020 15:29	WG1561682
(S) a,a,a-Trifluorotoluene(PID)	98.8			79.0-125		10/19/2020 15:29	WG1561682

3 Ss

4 Cn

5 Sr

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Benzene	0.0144		0.0000941	0.00100	1	10/26/2020 23:11	WG1565537
n-Butylbenzene	U		0.000157	0.00100	1	10/26/2020 23:11	WG1565537
sec-Butylbenzene	U		0.000125	0.00100	1	10/26/2020 23:11	WG1565537
tert-Butylbenzene	U		0.000127	0.00100	1	10/26/2020 23:11	WG1565537
Ethylbenzene	0.000399	J	0.000137	0.00100	1	10/26/2020 23:11	WG1565537
Isopropylbenzene	0.000426	J	0.000105	0.00100	1	10/26/2020 23:11	WG1565537
Naphthalene	0.00244	J	0.00100	0.00500	1	10/26/2020 23:11	WG1565537
Toluene	0.000556	J	0.000278	0.00100	1	10/26/2020 23:11	WG1565537
1,2,4-Trimethylbenzene	0.000829	J	0.000322	0.00100	1	10/26/2020 23:11	WG1565537
1,3,5-Trimethylbenzene	0.000205	J	0.000104	0.00100	1	10/26/2020 23:11	WG1565537
Total Xylenes	0.0241		0.000174	0.00300	1	10/26/2020 23:11	WG1565537
(S) Toluene-d8	111			80.0-120		10/26/2020 23:11	WG1565537
(S) 4-Bromofluorobenzene	103			77.0-126		10/26/2020 23:11	WG1565537
(S) 1,2-Dichloroethane-d4	94.8			70.0-130		10/26/2020 23:11	WG1565537

6 Qc

7 Gl

8 Al

9 Sc

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
AK102 DRO C10-C25	0.918		0.229	0.800	1	10/22/2020 04:55	WG1561708
(S) o-Terphenyl	90.9			50.0-150		10/22/2020 04:55	WG1561708

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Anthracene	U		0.0000190	0.0000500	1	10/21/2020 01:15	WG1561697
Acenaphthene	U		0.0000190	0.0000500	1	10/21/2020 01:15	WG1561697
Acenaphthylene	U		0.0000171	0.0000500	1	10/21/2020 01:15	WG1561697
Benzo(a)anthracene	U		0.0000203	0.0000500	1	10/21/2020 01:15	WG1561697
Benzo(a)pyrene	U		0.0000184	0.0000500	1	10/21/2020 01:15	WG1561697
Benzo(b)fluoranthene	U		0.0000168	0.0000500	1	10/21/2020 01:15	WG1561697
Benzo(g,h,i)perylene	U		0.0000184	0.0000500	1	10/21/2020 01:15	WG1561697
Benzo(k)fluoranthene	U		0.0000202	0.0000500	1	10/21/2020 01:15	WG1561697
Chrysene	U		0.0000179	0.0000500	1	10/21/2020 01:15	WG1561697
Dibenz(a,h)anthracene	U		0.0000160	0.0000500	1	10/21/2020 01:15	WG1561697
Fluoranthene	U		0.0000270	0.000100	1	10/21/2020 01:15	WG1561697
Fluorene	U		0.0000169	0.0000500	1	10/21/2020 01:15	WG1561697
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500	1	10/21/2020 01:15	WG1561697
Naphthalene	0.000195	J	0.0000917	0.000250	1	10/21/2020 01:15	WG1561697
Phenanthrene	U		0.0000180	0.0000500	1	10/21/2020 01:15	WG1561697
Pyrene	0.0000251	J	0.0000169	0.0000500	1	10/21/2020 01:15	WG1561697
1-Methylnaphthalene	U		0.0000687	0.000250	1	10/21/2020 01:15	WG1561697



Collected date/time: 10/14/20 13:36

L1274905

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
2-Methylnaphthalene	U		0.0000674	0.000250	1	10/21/2020 01:15	WG1561697
(S) Nitrobenzene-d5	112			31.0-160		10/21/2020 01:15	WG1561697
(S) 2-Fluorobiphenyl	100			48.0-148		10/21/2020 01:15	WG1561697
(S) p-Terphenyl-d14	81.6			37.0-146		10/21/2020 01:15	WG1561697

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



Collected date/time: 10/14/20 10:20

L1274905

Metals (ICP) by Method 6010C

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Sodium	76.4		1.40	3.00	1	10/20/2020 22:23	WG1561417

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
TPHGAK C6 to C10	U		0.0100	0.100	1	10/19/2020 15:53	WG1561682
(S) a,a,a-Trifluorotoluene(FID)	101			50.0-150		10/19/2020 15:53	WG1561682
(S) a,a,a-Trifluorotoluene(PID)	99.1			79.0-125		10/19/2020 15:53	WG1561682

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Benzene	0.0134		0.0000941	0.00100	1	10/26/2020 23:32	WG1565537
n-Butylbenzene	U		0.000157	0.00100	1	10/26/2020 23:32	WG1565537
sec-Butylbenzene	U		0.000125	0.00100	1	10/26/2020 23:32	WG1565537
tert-Butylbenzene	U		0.000127	0.00100	1	10/26/2020 23:32	WG1565537
Ethylbenzene	0.000186	J	0.000137	0.00100	1	10/26/2020 23:32	WG1565537
Isopropylbenzene	U		0.000105	0.00100	1	10/26/2020 23:32	WG1565537
Naphthalene	U		0.00100	0.00500	1	10/26/2020 23:32	WG1565537
Toluene	0.000615	J	0.000278	0.00100	1	10/26/2020 23:32	WG1565537
1,2,4-Trimethylbenzene	0.000344	J	0.000322	0.00100	1	10/26/2020 23:32	WG1565537
1,3,5-Trimethylbenzene	U		0.000104	0.00100	1	10/26/2020 23:32	WG1565537
Total Xylenes	0.000653	J	0.000174	0.00300	1	10/26/2020 23:32	WG1565537
(S) Toluene-d8	106			80.0-120		10/26/2020 23:32	WG1565537
(S) 4-Bromofluorobenzene	94.1			77.0-126		10/26/2020 23:32	WG1565537
(S) 1,2-Dichloroethane-d4	96.8			70.0-130		10/26/2020 23:32	WG1565537

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
AK102 DRO C10-C25	0.362	J	0.229	0.800	1	10/22/2020 02:14	WG1561708
(S) o-Terphenyl	92.6			50.0-150		10/22/2020 02:14	WG1561708

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Anthracene	U		0.0000190	0.0000500	1	10/21/2020 01:32	WG1561697
Acenaphthene	U		0.0000190	0.0000500	1	10/21/2020 01:32	WG1561697
Acenaphthylene	U		0.0000171	0.0000500	1	10/21/2020 01:32	WG1561697
Benzo(a)anthracene	U		0.0000203	0.0000500	1	10/21/2020 01:32	WG1561697
Benzo(a)pyrene	U		0.0000184	0.0000500	1	10/21/2020 01:32	WG1561697
Benzo(b)fluoranthene	U		0.0000168	0.0000500	1	10/21/2020 01:32	WG1561697
Benzo(g,h,i)perylene	U		0.0000184	0.0000500	1	10/21/2020 01:32	WG1561697
Benzo(k)fluoranthene	U		0.0000202	0.0000500	1	10/21/2020 01:32	WG1561697
Chrysene	U		0.0000179	0.0000500	1	10/21/2020 01:32	WG1561697
Dibenz(a,h)anthracene	U		0.0000160	0.0000500	1	10/21/2020 01:32	WG1561697
Fluoranthene	U		0.0000270	0.000100	1	10/21/2020 01:32	WG1561697
Fluorene	U		0.0000169	0.0000500	1	10/21/2020 01:32	WG1561697
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500	1	10/21/2020 01:32	WG1561697
Naphthalene	U		0.0000917	0.000250	1	10/21/2020 01:32	WG1561697
Phenanthrene	U		0.0000180	0.0000500	1	10/21/2020 01:32	WG1561697
Pyrene	U		0.0000169	0.0000500	1	10/21/2020 01:32	WG1561697
1-Methylnaphthalene	U		0.0000687	0.000250	1	10/21/2020 01:32	WG1561697



Collected date/time: 10/14/20 10:20

L1274905

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
2-Methylnaphthalene	U		0.0000674	0.000250	1	10/21/2020 01:32	WG1561697
(S) Nitrobenzene-d5	103			31.0-160		10/21/2020 01:32	WG1561697
(S) 2-Fluorobiphenyl	104			48.0-148		10/21/2020 01:32	WG1561697
(S) p-Terphenyl-d14	85.8			37.0-146		10/21/2020 01:32	WG1561697

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Collected date/time: 10/14/20 15:45

L1274905

Metals (ICP) by Method 6010C

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Sodium	56.7		1.40	3.00	1	10/20/2020 22:25	WG1561417

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
TPHGAK C6 to C10	0.251		0.0100	0.100	1	10/19/2020 16:18	WG1561682
(S) a,a,a-Trifluorotoluene(FID)	107			50.0-150		10/19/2020 16:18	WG1561682
(S) a,a,a-Trifluorotoluene(PID)	101			79.0-125		10/19/2020 16:18	WG1561682

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Benzene	0.00160		0.0000941	0.00100	1	10/28/2020 01:43	WG1566609
n-Butylbenzene	0.000329	J	0.000157	0.00100	1	10/28/2020 01:43	WG1566609
sec-Butylbenzene	0.000396	J	0.000125	0.00100	1	10/28/2020 01:43	WG1566609
tert-Butylbenzene	U		0.000127	0.00100	1	10/28/2020 01:43	WG1566609
Ethylbenzene	0.0148		0.000137	0.00100	1	10/28/2020 01:43	WG1566609
Isopropylbenzene	0.00186		0.000105	0.00100	1	10/28/2020 01:43	WG1566609
Naphthalene	0.00379	J	0.00100	0.00500	1	10/28/2020 01:43	WG1566609
Toluene	0.00513		0.000278	0.00100	1	10/28/2020 01:43	WG1566609
1,2,4-Trimethylbenzene	0.0331		0.000322	0.00100	1	10/28/2020 01:43	WG1566609
1,3,5-Trimethylbenzene	0.00696		0.000104	0.00100	1	10/28/2020 01:43	WG1566609
Total Xylenes	0.0790		0.000174	0.00300	1	10/28/2020 01:43	WG1566609
(S) Toluene-d8	105			80.0-120		10/28/2020 01:43	WG1566609
(S) 4-Bromofluorobenzene	101			77.0-126		10/28/2020 01:43	WG1566609
(S) 1,2-Dichloroethane-d4	103			70.0-130		10/28/2020 01:43	WG1566609

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
AK102 DRO C10-C25	2.16		0.256	0.896	1.12	10/22/2020 02:34	WG1561708
(S) o-Terphenyl	92.2			50.0-150		10/22/2020 02:34	WG1561708

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Anthracene	U		0.0000190	0.0000500	1	10/21/2020 01:50	WG1561697
Acenaphthene	U		0.0000190	0.0000500	1	10/21/2020 01:50	WG1561697
Acenaphthylene	U		0.0000171	0.0000500	1	10/21/2020 01:50	WG1561697
Benzo(a)anthracene	U		0.0000203	0.0000500	1	10/21/2020 01:50	WG1561697
Benzo(a)pyrene	U		0.0000184	0.0000500	1	10/21/2020 01:50	WG1561697
Benzo(b)fluoranthene	U		0.0000168	0.0000500	1	10/21/2020 01:50	WG1561697
Benzo(g,h,i)perylene	U		0.0000184	0.0000500	1	10/21/2020 01:50	WG1561697
Benzo(k)fluoranthene	U		0.0000202	0.0000500	1	10/21/2020 01:50	WG1561697
Chrysene	U		0.0000179	0.0000500	1	10/21/2020 01:50	WG1561697
Dibenz(a,h)anthracene	U		0.0000160	0.0000500	1	10/21/2020 01:50	WG1561697
Fluoranthene	U		0.0000270	0.000100	1	10/21/2020 01:50	WG1561697
Fluorene	U		0.0000169	0.0000500	1	10/21/2020 01:50	WG1561697
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500	1	10/21/2020 01:50	WG1561697
Naphthalene	U		0.0000917	0.000250	1	10/21/2020 01:50	WG1561697
Phenanthrene	U		0.0000180	0.0000500	1	10/21/2020 01:50	WG1561697
Pyrene	U		0.0000169	0.0000500	1	10/21/2020 01:50	WG1561697
1-Methylnaphthalene	U		0.0000687	0.000250	1	10/21/2020 01:50	WG1561697



Collected date/time: 10/14/20 15:45

L1274905

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
2-Methylnaphthalene	U		0.0000674	0.000250	1	10/21/2020 01:50	WG1561697
(S) Nitrobenzene-d5	86.8			31.0-160		10/21/2020 01:50	WG1561697
(S) 2-Fluorobiphenyl	62.6			48.0-148		10/21/2020 01:50	WG1561697
(S) p-Terphenyl-d14	32.6	<u>J2</u>		37.0-146		10/21/2020 01:50	WG1561697

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Metals (ICP) by Method 6010C

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Sodium	58.1		1.40	3.00	1	10/20/2020 22:28	WG1561417

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

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
TPHGAK C6 to C10	5.90		0.500	5.00	50	10/19/2020 19:12	WG1561682
(S) a,a,a-Trifluorotoluene(FID)	103			50.0-150		10/19/2020 19:12	WG1561682
(S) a,a,a-Trifluorotoluene(PID)	100			79.0-125		10/19/2020 19:12	WG1561682

Sample Narrative:

L1274905-08 WG1561682: Dilution due to foam.

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Benzene	0.0231	J	0.00471	0.0500	50	10/29/2020 02:43	WG1567034
n-Butylbenzene	U		0.00785	0.0500	50	10/29/2020 02:43	WG1567034
sec-Butylbenzene	U		0.00625	0.0500	50	10/29/2020 02:43	WG1567034
tert-Butylbenzene	U		0.00635	0.0500	50	10/29/2020 02:43	WG1567034
Ethylbenzene	0.305		0.00685	0.0500	50	10/29/2020 02:43	WG1567034
Isopropylbenzene	0.0135	J	0.00525	0.0500	50	10/29/2020 02:43	WG1567034
Naphthalene	0.0516	J	0.0500	0.250	50	10/29/2020 02:43	WG1567034
Toluene	0.254		0.0139	0.0500	50	10/29/2020 02:43	WG1567034
1,2,4-Trimethylbenzene	0.308		0.0161	0.0500	50	10/29/2020 02:43	WG1567034
1,3,5-Trimethylbenzene	0.122		0.00520	0.0500	50	10/29/2020 02:43	WG1567034
Total Xylenes	2.10		0.00870	0.150	50	10/29/2020 02:43	WG1567034
(S) Toluene-d8	107			80.0-120		10/29/2020 02:43	WG1567034
(S) 4-Bromofluorobenzene	100			77.0-126		10/29/2020 02:43	WG1567034
(S) 1,2-Dichloroethane-d4	108			70.0-130		10/29/2020 02:43	WG1567034

Sample Narrative:

L1274905-08 WG1567034: Non-target compounds too high to run at a lower dilution.

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
AK102 DRO C10-C25	4.03		0.229	0.800	1	10/22/2020 02:54	WG1561708
(S) o-Terphenyl	80.3			50.0-150		10/22/2020 02:54	WG1561708

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Anthracene	U		0.0000190	0.0000500	1	10/22/2020 14:19	WG1562998
Acenaphthene	0.000122	J3	0.0000190	0.0000500	1	10/22/2020 14:19	WG1562998
Acenaphthylene	U		0.0000171	0.0000500	1	10/22/2020 14:19	WG1562998
Benzo(a)anthracene	U	J3	0.0000203	0.0000500	1	10/22/2020 14:19	WG1562998
Benzo(a)pyrene	U	J3 J4	0.0000184	0.0000500	1	10/22/2020 14:19	WG1562998
Benzo(b)fluoranthene	U	J3 J4	0.0000168	0.0000500	1	10/22/2020 14:19	WG1562998
Benzo(g,h,i)perylene	U	J3	0.0000184	0.0000500	1	10/22/2020 14:19	WG1562998
Benzo(k)fluoranthene	U	J3 J4	0.0000202	0.0000500	1	10/22/2020 14:19	WG1562998
Chrysene	U	J3	0.0000179	0.0000500	1	10/22/2020 14:19	WG1562998
Dibenz(a,h)anthracene	U	J3	0.0000160	0.0000500	1	10/22/2020 14:19	WG1562998
Fluoranthene	U		0.0000270	0.000100	1	10/22/2020 14:19	WG1562998



Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Fluorene	0.000170	<u>J3</u>	0.0000169	0.0000500	1	10/22/2020 14:19	WG1562998
Indeno(1,2,3-cd)pyrene	U	<u>J3</u>	0.0000158	0.0000500	1	10/22/2020 14:19	WG1562998
Naphthalene	0.00413	<u>J3</u>	0.0000917	0.000250	1	10/22/2020 14:19	WG1562998
Phenanthrene	U		0.0000180	0.0000500	1	10/22/2020 14:19	WG1562998
Pyrene	U	<u>J3</u>	0.0000169	0.0000500	1	10/22/2020 14:19	WG1562998
1-Methylnaphthalene	0.00205	<u>J3</u>	0.0000687	0.000250	1	10/22/2020 14:19	WG1562998
2-Methylnaphthalene	0.000158	<u>JJ3</u>	0.0000674	0.000250	1	10/22/2020 14:19	WG1562998
<i>(S)</i> Nitrobenzene-d5	74.2			31.0-160		10/22/2020 14:19	WG1562998
<i>(S)</i> 2-Fluorobiphenyl	48.7			48.0-148		10/22/2020 14:19	WG1562998
<i>(S)</i> p-Terphenyl-d14	45.5			37.0-146		10/22/2020 14:19	WG1562998

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Metals (ICP) by Method 6010C

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Sodium	69.3		1.40	3.00	1	10/20/2020 22:30	WG1561417

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

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
TPHGAK C6 to C10	0.601		0.0500	0.500	5	10/19/2020 19:37	WG1561682
(S) a,a,a-Trifluorotoluene(FID)	103			50.0-150		10/19/2020 19:37	WG1561682
(S) a,a,a-Trifluorotoluene(PID)	101			79.0-125		10/19/2020 19:37	WG1561682

Sample Narrative:

L1274905-09 WG1561682: Dilution due to foam.

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Benzene	0.00395	J	0.000471	0.00500	5	10/29/2020 03:04	WG1567034
n-Butylbenzene	U		0.000785	0.00500	5	10/29/2020 03:04	WG1567034
sec-Butylbenzene	U		0.000625	0.00500	5	10/29/2020 03:04	WG1567034
tert-Butylbenzene	U		0.000635	0.00500	5	10/29/2020 03:04	WG1567034
Ethylbenzene	0.0508		0.000685	0.00500	5	10/29/2020 03:04	WG1567034
Isopropylbenzene	0.00146	J	0.000525	0.00500	5	10/29/2020 03:04	WG1567034
Naphthalene	U		0.00500	0.0250	5	10/29/2020 03:04	WG1567034
Toluene	0.0235		0.00139	0.00500	5	10/29/2020 03:04	WG1567034
1,2,4-Trimethylbenzene	0.0265		0.00161	0.00500	5	10/29/2020 03:04	WG1567034
1,3,5-Trimethylbenzene	0.0159		0.000520	0.00500	5	10/29/2020 03:04	WG1567034
Total Xylenes	0.218		0.000870	0.0150	5	10/29/2020 03:04	WG1567034
(S) Toluene-d8	102			80.0-120		10/29/2020 03:04	WG1567034
(S) 4-Bromofluorobenzene	95.4			77.0-126		10/29/2020 03:04	WG1567034
(S) 1,2-Dichloroethane-d4	108			70.0-130		10/29/2020 03:04	WG1567034

Sample Narrative:

L1274905-09 WG1567034: Non-target compounds too high to run at a lower dilution.

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
AK102 DRO C10-C25	8.25		0.229	0.800	1	10/22/2020 03:14	WG1561708
(S) o-Terphenyl	73.0			50.0-150		10/22/2020 03:14	WG1561708

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Anthracene	U		0.0000190	0.0000500	1	10/22/2020 14:39	WG1562998
Acenaphthene	U	J3	0.0000190	0.0000500	1	10/22/2020 14:39	WG1562998
Acenaphthylene	U		0.0000171	0.0000500	1	10/22/2020 14:39	WG1562998
Benzo(a)anthracene	U	J3	0.0000203	0.0000500	1	10/22/2020 14:39	WG1562998
Benzo(a)pyrene	U	J3 J4	0.0000184	0.0000500	1	10/22/2020 14:39	WG1562998
Benzo(b)fluoranthene	U	J3 J4	0.0000168	0.0000500	1	10/22/2020 14:39	WG1562998
Benzo(g,h,i)perylene	U	J3	0.0000184	0.0000500	1	10/22/2020 14:39	WG1562998
Benzo(k)fluoranthene	U	J3 J4	0.0000202	0.0000500	1	10/22/2020 14:39	WG1562998
Chrysene	U	J3	0.0000179	0.0000500	1	10/22/2020 14:39	WG1562998
Dibenz(a,h)anthracene	U	J3	0.0000160	0.0000500	1	10/22/2020 14:39	WG1562998
Fluoranthene	U		0.0000270	0.000100	1	10/22/2020 14:39	WG1562998



Collected date/time: 10/15/20 11:28

L1274905

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Fluorene	U	<u>J3</u>	0.0000169	0.0000500	1	10/22/2020 14:39	WG1562998
Indeno(1,2,3-cd)pyrene	U	<u>J3</u>	0.0000158	0.0000500	1	10/22/2020 14:39	WG1562998
Naphthalene	0.000196	<u>JJ3</u>	0.0000917	0.000250	1	10/22/2020 14:39	WG1562998
Phenanthrene	U		0.0000180	0.0000500	1	10/22/2020 14:39	WG1562998
Pyrene	U	<u>J3</u>	0.0000169	0.0000500	1	10/22/2020 14:39	WG1562998
1-Methylnaphthalene	U	<u>J3</u>	0.0000687	0.000250	1	10/22/2020 14:39	WG1562998
2-Methylnaphthalene	U	<u>J3</u>	0.0000674	0.000250	1	10/22/2020 14:39	WG1562998
(S) Nitrobenzene-d5	53.2			31.0-160		10/22/2020 14:39	WG1562998
(S) 2-Fluorobiphenyl	44.4	<u>J2</u>		48.0-148		10/22/2020 14:39	WG1562998
(S) p-Terphenyl-d14	43.3			37.0-146		10/22/2020 14:39	WG1562998

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Collected date/time: 10/15/20 10:27

L1274905

Metals (ICP) by Method 6010C

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Sodium	52.3		1.40	3.00	1	10/20/2020 22:33	WG1561417

1 Cp

2 Tc

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
TPHGAK C6 to C10	4.26		0.0500	0.500	5	10/19/2020 20:01	WG1561682
(S) a,a,a-Trifluorotoluene(FID)	101			50.0-150		10/19/2020 20:01	WG1561682
(S) a,a,a-Trifluorotoluene(PID)	100			79.0-125		10/19/2020 20:01	WG1561682

3 Ss

4 Cn

5 Sr

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Benzene	0.00261	J	0.00188	0.0200	20	10/28/2020 07:51	WG1566609
n-Butylbenzene	0.00583	J	0.00314	0.0200	20	10/28/2020 07:51	WG1566609
sec-Butylbenzene	0.00828	J	0.00250	0.0200	20	10/28/2020 07:51	WG1566609
tert-Butylbenzene	U		0.00254	0.0200	20	10/28/2020 07:51	WG1566609
Ethylbenzene	0.246		0.00274	0.0200	20	10/28/2020 07:51	WG1566609
Isopropylbenzene	0.0281		0.00210	0.0200	20	10/28/2020 07:51	WG1566609
Naphthalene	0.0480	J	0.0200	0.100	20	10/28/2020 07:51	WG1566609
Toluene	0.137		0.00556	0.0200	20	10/28/2020 07:51	WG1566609
1,2,4-Trimethylbenzene	0.267		0.00644	0.0200	20	10/28/2020 07:51	WG1566609
1,3,5-Trimethylbenzene	0.101		0.00208	0.0200	20	10/28/2020 07:51	WG1566609
Total Xylenes	1.89		0.00348	0.0600	20	10/28/2020 07:51	WG1566609
(S) Toluene-d8	106			80.0-120		10/28/2020 07:51	WG1566609
(S) 4-Bromofluorobenzene	100			77.0-126		10/28/2020 07:51	WG1566609
(S) 1,2-Dichloroethane-d4	106			70.0-130		10/28/2020 07:51	WG1566609

6 Qc

7 Gl

8 Al

9 Sc

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
AK102 DRO C10-C25	2.31		0.229	0.800	1	10/23/2020 01:30	WG1561708
(S) o-Terphenyl	80.5			50.0-150		10/23/2020 01:30	WG1561708

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Anthracene	U		0.0000190	0.0000500	1	10/22/2020 14:59	WG1562998
Acenaphthene	0.000305	J3	0.0000190	0.0000500	1	10/22/2020 14:59	WG1562998
Acenaphthylene	U		0.0000171	0.0000500	1	10/22/2020 14:59	WG1562998
Benzo(a)anthracene	U	J3	0.0000203	0.0000500	1	10/22/2020 14:59	WG1562998
Benzo(a)pyrene	U	J3 J4	0.0000184	0.0000500	1	10/22/2020 14:59	WG1562998
Benzo(b)fluoranthene	U	J3 J4	0.0000168	0.0000500	1	10/22/2020 14:59	WG1562998
Benzo(g,h,i)perylene	U	J3	0.0000184	0.0000500	1	10/22/2020 14:59	WG1562998
Benzo(k)fluoranthene	U	J3 J4	0.0000202	0.0000500	1	10/22/2020 14:59	WG1562998
Chrysene	U	J3	0.0000179	0.0000500	1	10/22/2020 14:59	WG1562998
Dibenz(a,h)anthracene	U	J3	0.0000160	0.0000500	1	10/22/2020 14:59	WG1562998
Fluoranthene	U		0.0000270	0.000100	1	10/22/2020 14:59	WG1562998
Fluorene	0.00113	J3	0.0000169	0.0000500	1	10/22/2020 14:59	WG1562998
Indeno(1,2,3-cd)pyrene	U	J3	0.0000158	0.0000500	1	10/22/2020 14:59	WG1562998
Naphthalene	0.0361	J3	0.0000917	0.000250	1	10/22/2020 14:59	WG1562998
Phenanthrene	0.000496		0.0000180	0.0000500	1	10/22/2020 14:59	WG1562998
Pyrene	U	J3	0.0000169	0.0000500	1	10/22/2020 14:59	WG1562998
1-Methylnaphthalene	0.0272	J3	0.0000687	0.000250	1	10/22/2020 14:59	WG1562998



Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
2-Methylnaphthalene	0.0282	<u>J3</u>	0.0000674	0.000250	1	10/22/2020 14:59	WG1562998
(S) Nitrobenzene-d5	86.8			31.0-160		10/22/2020 14:59	WG1562998
(S) 2-Fluorobiphenyl	75.3			48.0-148		10/22/2020 14:59	WG1562998
(S) p-Terphenyl-d14	79.5			37.0-146		10/22/2020 14:59	WG1562998

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



Collected date/time: 10/15/20 10:35

L1274905

Metals (ICP) by Method 6010C

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Sodium	48.7		1.40	3.00	1	10/20/2020 22:36	WG1561417

1 Cp

2 Tc

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
TPHGAK C6 to C10	3.98		0.100	1.00	10	10/27/2020 22:26	WG1566491
(S) a,a,a-Trifluorotoluene(FID)	102			50.0-150		10/27/2020 22:26	WG1566491
(S) a,a,a-Trifluorotoluene(PID)	99.0			79.0-125		10/27/2020 22:26	WG1566491

3 Ss

4 Cn

5 Sr

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Benzene	0.0226		0.0000941	0.00100	1	10/28/2020 02:04	WG1566609
n-Butylbenzene	0.00303		0.000157	0.00100	1	10/28/2020 02:04	WG1566609
sec-Butylbenzene	0.00429		0.000125	0.00100	1	10/28/2020 02:04	WG1566609
tert-Butylbenzene	0.000358	J	0.000127	0.00100	1	10/28/2020 02:04	WG1566609
Ethylbenzene	0.274		0.00274	0.0200	20	10/29/2020 02:02	WG1567034
Isopropylbenzene	0.0227		0.000105	0.00100	1	10/28/2020 02:04	WG1566609
Naphthalene	0.0517		0.00100	0.00500	1	10/28/2020 02:04	WG1566609
Toluene	0.413		0.00556	0.0200	20	10/29/2020 02:02	WG1567034
1,2,4-Trimethylbenzene	0.188		0.00644	0.0200	20	10/29/2020 02:02	WG1567034
1,3,5-Trimethylbenzene	0.0629		0.000104	0.00100	1	10/28/2020 02:04	WG1566609
Total Xylenes	1.24		0.00348	0.0600	20	10/29/2020 02:02	WG1567034
(S) Toluene-d8	104			80.0-120		10/28/2020 02:04	WG1566609
(S) Toluene-d8	107			80.0-120		10/29/2020 02:02	WG1567034
(S) 4-Bromofluorobenzene	99.5			77.0-126		10/28/2020 02:04	WG1566609
(S) 4-Bromofluorobenzene	102			77.0-126		10/29/2020 02:02	WG1567034
(S) 1,2-Dichloroethane-d4	105			70.0-130		10/28/2020 02:04	WG1566609
(S) 1,2-Dichloroethane-d4	107			70.0-130		10/29/2020 02:02	WG1567034

6 Qc

7 Gl

8 Al

9 Sc

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
AK102 DRO C10-C25	1.49		0.291	1.02	1.27	10/23/2020 01:10	WG1561708
(S) o-Terphenyl	84.0			50.0-150		10/23/2020 01:10	WG1561708

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Anthracene	U		0.0000190	0.0000500	1	10/22/2020 15:19	WG1562998
Acenaphthene	0.000102	J3	0.0000190	0.0000500	1	10/22/2020 15:19	WG1562998
Acenaphthylene	U		0.0000171	0.0000500	1	10/22/2020 15:19	WG1562998
Benzo(a)anthracene	U	J3	0.0000203	0.0000500	1	10/22/2020 15:19	WG1562998
Benzo(a)pyrene	U	J3 J4	0.0000184	0.0000500	1	10/22/2020 15:19	WG1562998
Benzo(b)fluoranthene	U	J3 J4	0.0000168	0.0000500	1	10/22/2020 15:19	WG1562998
Benzo(g,h,i)perylene	U	J3	0.0000184	0.0000500	1	10/22/2020 15:19	WG1562998
Benzo(k)fluoranthene	U	J3 J4	0.0000202	0.0000500	1	10/22/2020 15:19	WG1562998
Chrysene	U	J3	0.0000179	0.0000500	1	10/22/2020 15:19	WG1562998
Dibenz(a,h)anthracene	U	J3	0.0000160	0.0000500	1	10/22/2020 15:19	WG1562998
Fluoranthene	U		0.0000270	0.000100	1	10/22/2020 15:19	WG1562998
Fluorene	0.000336	J3	0.0000169	0.0000500	1	10/22/2020 15:19	WG1562998
Indeno(1,2,3-cd)pyrene	U	J3	0.0000158	0.0000500	1	10/22/2020 15:19	WG1562998
Naphthalene	0.0407	J3	0.0000917	0.000250	1	10/22/2020 15:19	WG1562998



Collected date/time: 10/15/20 10:35

L1274905

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Phenanthrene	0.000169		0.0000180	0.0000500	1	10/22/2020 15:19	WG1562998
Pyrene	U	J3	0.0000169	0.0000500	1	10/22/2020 15:19	WG1562998
1-Methylnaphthalene	0.0105	J3	0.0000687	0.000250	1	10/22/2020 15:19	WG1562998
2-Methylnaphthalene	0.00908	J3	0.0000674	0.000250	1	10/22/2020 15:19	WG1562998
(S) Nitrobenzene-d5	88.4			31.0-160		10/22/2020 15:19	WG1562998
(S) 2-Fluorobiphenyl	81.6			48.0-148		10/22/2020 15:19	WG1562998
(S) p-Terphenyl-d14	83.2			37.0-146		10/22/2020 15:19	WG1562998

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



Metals (ICP) by Method 6010C

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Sodium	57.4		1.40	3.00	1	10/20/2020 22:44	WG1561417

1 Cp

2 Tc

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
TPHGAK C6 to C10	0.182		0.0100	0.100	1	10/27/2020 22:02	WG1566491
(S) a,a,a-Trifluorotoluene(FID)	99.0			50.0-150		10/27/2020 22:02	WG1566491
(S) a,a,a-Trifluorotoluene(PID)	97.5			79.0-125		10/27/2020 22:02	WG1566491

3 Ss

4 Cn

5 Sr

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Benzene	0.000496	J	0.0000941	0.00100	1	10/28/2020 02:24	WG1566609
n-Butylbenzene	U		0.000157	0.00100	1	10/28/2020 02:24	WG1566609
sec-Butylbenzene	0.000144	J	0.000125	0.00100	1	10/28/2020 02:24	WG1566609
tert-Butylbenzene	U		0.000127	0.00100	1	10/28/2020 02:24	WG1566609
Ethylbenzene	0.00711		0.000137	0.00100	1	10/28/2020 02:24	WG1566609
Isopropylbenzene	0.000491	J	0.000105	0.00100	1	10/28/2020 02:24	WG1566609
Naphthalene	0.00282	J	0.00100	0.00500	1	10/28/2020 02:24	WG1566609
Toluene	0.0112		0.000278	0.00100	1	10/28/2020 02:24	WG1566609
1,2,4-Trimethylbenzene	0.00789		0.000322	0.00100	1	10/28/2020 02:24	WG1566609
1,3,5-Trimethylbenzene	0.00248		0.000104	0.00100	1	10/28/2020 02:24	WG1566609
Total Xylenes	0.103		0.000174	0.00300	1	10/28/2020 02:24	WG1566609
(S) Toluene-d8	106			80.0-120		10/28/2020 02:24	WG1566609
(S) 4-Bromofluorobenzene	103			77.0-126		10/28/2020 02:24	WG1566609
(S) 1,2-Dichloroethane-d4	105			70.0-130		10/28/2020 02:24	WG1566609

6 Qc

7 Gl

8 Al

9 Sc

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
AK102 DRO C10-C25	2.49		0.229	0.800	1	10/22/2020 04:15	WG1561708
(S) o-Terphenyl	90.3			50.0-150		10/22/2020 04:15	WG1561708

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Anthracene	U		0.0000190	0.0000500	1	10/21/2020 02:07	WG1561697
Acenaphthene	U		0.0000190	0.0000500	1	10/21/2020 02:07	WG1561697
Acenaphthylene	U		0.0000171	0.0000500	1	10/21/2020 02:07	WG1561697
Benzo(a)anthracene	U		0.0000203	0.0000500	1	10/21/2020 02:07	WG1561697
Benzo(a)pyrene	U		0.0000184	0.0000500	1	10/21/2020 02:07	WG1561697
Benzo(b)fluoranthene	U		0.0000168	0.0000500	1	10/21/2020 02:07	WG1561697
Benzo(g,h,i)perylene	U		0.0000184	0.0000500	1	10/21/2020 02:07	WG1561697
Benzo(k)fluoranthene	U		0.0000202	0.0000500	1	10/21/2020 02:07	WG1561697
Chrysene	U		0.0000179	0.0000500	1	10/21/2020 02:07	WG1561697
Dibenz(a,h)anthracene	U		0.0000160	0.0000500	1	10/21/2020 02:07	WG1561697
Fluoranthene	U		0.0000270	0.000100	1	10/21/2020 02:07	WG1561697
Fluorene	U		0.0000169	0.0000500	1	10/21/2020 02:07	WG1561697
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500	1	10/21/2020 02:07	WG1561697
Naphthalene	U		0.0000917	0.000250	1	10/21/2020 02:07	WG1561697
Phenanthrene	U		0.0000180	0.0000500	1	10/21/2020 02:07	WG1561697
Pyrene	U		0.0000169	0.0000500	1	10/21/2020 02:07	WG1561697
1-Methylnaphthalene	U		0.0000687	0.000250	1	10/21/2020 02:07	WG1561697



Collected date/time: 10/14/20 00:00

L1274905

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
2-Methylnaphthalene	U		0.0000674	0.000250	1	10/21/2020 02:07	WG1561697
(S) Nitrobenzene-d5	83.7			31.0-160		10/21/2020 02:07	WG1561697
(S) 2-Fluorobiphenyl	71.1			48.0-148		10/21/2020 02:07	WG1561697
(S) p-Terphenyl-d14	61.1			37.0-146		10/21/2020 02:07	WG1561697

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



Metals (ICP) by Method 6010C

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Sodium	70.7		1.40	3.00	1	10/20/2020 22:46	WG1561417

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

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
TPHGAK C6 to C10	0.800	J	0.500	5.00	50	10/19/2020 20:25	WG1561682
(S) a,a,a-Trifluorotoluene(FID)	102			50.0-150		10/19/2020 20:25	WG1561682
(S) a,a,a-Trifluorotoluene(PID)	99.7			79.0-125		10/19/2020 20:25	WG1561682

Sample Narrative:

L1274905-13 WG1561682: Dilution due to foam.

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Benzene	0.00315		0.0000941	0.00100	1	10/28/2020 02:45	WG1566609
n-Butylbenzene	U		0.000157	0.00100	1	10/28/2020 02:45	WG1566609
sec-Butylbenzene	U		0.000125	0.00100	1	10/28/2020 02:45	WG1566609
tert-Butylbenzene	U		0.000127	0.00100	1	10/28/2020 02:45	WG1566609
Ethylbenzene	0.0492		0.000137	0.00100	1	10/28/2020 02:45	WG1566609
Isopropylbenzene	0.00136		0.000105	0.00100	1	10/28/2020 02:45	WG1566609
Naphthalene	0.00251	J	0.00100	0.00500	1	10/28/2020 02:45	WG1566609
Toluene	0.0237		0.000278	0.00100	1	10/28/2020 02:45	WG1566609
1,2,4-Trimethylbenzene	0.0252		0.000322	0.00100	1	10/28/2020 02:45	WG1566609
1,3,5-Trimethylbenzene	0.0159		0.000104	0.00100	1	10/28/2020 02:45	WG1566609
Total Xylenes	0.216		0.000174	0.00300	1	10/28/2020 02:45	WG1566609
(S) Toluene-d8	108			80.0-120		10/28/2020 02:45	WG1566609
(S) 4-Bromofluorobenzene	108			77.0-126		10/28/2020 02:45	WG1566609
(S) 1,2-Dichloroethane-d4	106			70.0-130		10/28/2020 02:45	WG1566609

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
AK102 DRO C10-C25	10.3		0.458	1.60	2	10/23/2020 01:50	WG1561708
(S) o-Terphenyl	90.5			50.0-150		10/23/2020 01:50	WG1561708

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Anthracene	U		0.0000190	0.0000500	1	10/22/2020 15:39	WG1562998
Acenaphthene	U	J3	0.0000190	0.0000500	1	10/22/2020 15:39	WG1562998
Acenaphthylene	U		0.0000171	0.0000500	1	10/22/2020 15:39	WG1562998
Benzo(a)anthracene	U	J3	0.0000203	0.0000500	1	10/22/2020 15:39	WG1562998
Benzo(a)pyrene	U	J3 J4	0.0000184	0.0000500	1	10/22/2020 15:39	WG1562998
Benzo(b)fluoranthene	U	J3 J4	0.0000168	0.0000500	1	10/22/2020 15:39	WG1562998
Benzo(g,h,i)perylene	U	J3	0.0000184	0.0000500	1	10/22/2020 15:39	WG1562998
Benzo(k)fluoranthene	U	J3 J4	0.0000202	0.0000500	1	10/22/2020 15:39	WG1562998
Chrysene	U	J3	0.0000179	0.0000500	1	10/22/2020 15:39	WG1562998
Dibenz(a,h)anthracene	U	J3	0.0000160	0.0000500	1	10/22/2020 15:39	WG1562998
Fluoranthene	U		0.0000270	0.000100	1	10/22/2020 15:39	WG1562998
Fluorene	U	J3	0.0000169	0.0000500	1	10/22/2020 15:39	WG1562998
Indeno(1,2,3-cd)pyrene	U	J3	0.0000158	0.0000500	1	10/22/2020 15:39	WG1562998
Naphthalene	0.0000932	J J3	0.0000917	0.000250	1	10/22/2020 15:39	WG1562998



Collected date/time: 10/15/20 00:00

L1274905

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Phenanthrene	U		0.0000180	0.0000500	1	10/22/2020 15:39	WG1562998
Pyrene	U	<u>J3</u>	0.0000169	0.0000500	1	10/22/2020 15:39	WG1562998
1-Methylnaphthalene	U	<u>J3</u>	0.0000687	0.000250	1	10/22/2020 15:39	WG1562998
2-Methylnaphthalene	U	<u>J3</u>	0.0000674	0.000250	1	10/22/2020 15:39	WG1562998
<i>(S)</i> Nitrobenzene-d5	46.1			31.0-160		10/22/2020 15:39	WG1562998
<i>(S)</i> 2-Fluorobiphenyl	32.6	<u>J2</u>		48.0-148		10/22/2020 15:39	WG1562998
<i>(S)</i> p-Terphenyl-d14	35.5	<u>J2</u>		37.0-146		10/22/2020 15:39	WG1562998

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

Sample Narrative:

L1274905-13 WG1562998: Duplicate Analysis performed due to QC failure. Results confirm; reporting in hold data



Method Blank (MB)

(MB) R3583700-1 10/20/20 21:39

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Sodium	U		1.40	3.00

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

Laboratory Control Sample (LCS)

(LCS) R3583700-2 10/20/20 21:41

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Sodium	10.0	9.78	97.8	80.0-120	

L1274763-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1274763-01 10/20/20 21:44 • (MS) R3583700-4 10/20/20 21:50 • (MSD) R3583700-5 10/20/20 21:53

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Sodium	10.0	281	288	288	70.0	68.3	1	75.0-125	<u>V</u>	<u>V</u>	0.0572	20

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3586214-2 10/19/20 14:17

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPHGAK C6 to C10	U		0.0100	0.100
(S) a,a,a-Trifluorotoluene(PID)	105			79.0-125
(S) a,a,a-Trifluorotoluene(FID)	101			60.0-120

Laboratory Control Sample (LCS)

(LCS) R3586214-1 10/19/20 13:29

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPHGAK C6 to C10	0.400	0.412	103	60.0-120	
(S) a,a,a-Trifluorotoluene(PID)			102	79.0-125	
(S) a,a,a-Trifluorotoluene(FID)			102	60.0-120	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3586533-2 10/27/20 13:49

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPHGAK C6 to C10	U		0.0100	0.100
(S) a,a,a-Trifluorotoluene(PID)	97.4			79.0-125
(S) a,a,a-Trifluorotoluene(FID)	98.8			60.0-120

1 Cp

2 Tc

3 Ss

4 Cn

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

(LCS) R3586533-1 10/27/20 11:37 • (LCSD) R3586533-3 10/28/20 02:29

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPHGAK C6 to C10	0.400	0.402	0.429	101	107	60.0-120			6.50	20
(S) a,a,a-Trifluorotoluene(PID)				97.2	99.9	79.0-125				
(S) a,a,a-Trifluorotoluene(FID)				99.6	100	60.0-120				

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3586105-3 10/26/20 19:26

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.0000941	0.00100
n-Butylbenzene	U		0.000157	0.00100
sec-Butylbenzene	U		0.000125	0.00100
tert-Butylbenzene	U		0.000127	0.00100
Ethylbenzene	U		0.000137	0.00100
Isopropylbenzene	U		0.000105	0.00100
Naphthalene	U		0.00100	0.00500
Toluene	U		0.000278	0.00100
1,2,4-Trimethylbenzene	U		0.000322	0.00100
1,3,5-Trimethylbenzene	U		0.000104	0.00100
Xylenes, Total	U		0.000174	0.00300
(S) Toluene-d8	108			80.0-120
(S) 4-Bromofluorobenzene	92.1			77.0-126
(S) 1,2-Dichloroethane-d4	96.5			70.0-130

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Laboratory Control Sample (LCS)

(LCS) R3586105-1 10/26/20 18:25

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.00500	0.00475	95.0	70.0-123	
n-Butylbenzene	0.00500	0.00475	95.0	73.0-125	
sec-Butylbenzene	0.00500	0.00451	90.2	75.0-125	
tert-Butylbenzene	0.00500	0.00442	88.4	76.0-124	
Ethylbenzene	0.00500	0.00504	101	79.0-123	
Isopropylbenzene	0.00500	0.00511	102	76.0-127	
Naphthalene	0.00500	0.00431	86.2	54.0-135	
Toluene	0.00500	0.00523	105	79.0-120	
1,2,4-Trimethylbenzene	0.00500	0.00467	93.4	76.0-121	
1,3,5-Trimethylbenzene	0.00500	0.00404	80.8	76.0-122	
Xylenes, Total	0.0150	0.0151	101	79.0-123	
(S) Toluene-d8			107	80.0-120	
(S) 4-Bromofluorobenzene			95.1	77.0-126	
(S) 1,2-Dichloroethane-d4			96.4	70.0-130	



Method Blank (MB)

(MB) R3586458-2 10/27/20 18:07

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Xylenes, Total	U		0.000174	0.00300
(S) Toluene-d8	105			80.0-120
(S) 4-Bromofluorobenzene	93.7			77.0-126
(S) 1,2-Dichloroethane-d4	108			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3586458-1 10/27/20 17:28

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Xylenes, Total	0.0150	0.0134	89.3	79.0-123	
(S) Toluene-d8			105	80.0-120	
(S) 4-Bromofluorobenzene			96.0	77.0-126	
(S) 1,2-Dichloroethane-d4			110	70.0-130	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3586553-2 10/27/20 21:35

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.0000941	0.00100
n-Butylbenzene	U		0.000157	0.00100
sec-Butylbenzene	U		0.000125	0.00100
tert-Butylbenzene	U		0.000127	0.00100
Ethylbenzene	U		0.000137	0.00100
Isopropylbenzene	U		0.000105	0.00100
Naphthalene	U		0.00100	0.00500
Toluene	U		0.000278	0.00100
1,2,4-Trimethylbenzene	U		0.000322	0.00100
1,3,5-Trimethylbenzene	U		0.000104	0.00100
Xylenes, Total	U		0.000174	0.00300
(S) Toluene-d8	108			80.0-120
(S) 4-Bromofluorobenzene	99.3			77.0-126
(S) 1,2-Dichloroethane-d4	105			70.0-130

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Laboratory Control Sample (LCS)

(LCS) R3586553-1 10/27/20 20:54

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.00500	0.00423	84.6	70.0-123	
n-Butylbenzene	0.00500	0.00449	89.8	73.0-125	
sec-Butylbenzene	0.00500	0.00459	91.8	75.0-125	
tert-Butylbenzene	0.00500	0.00453	90.6	76.0-124	
Ethylbenzene	0.00500	0.00438	87.6	79.0-123	
Isopropylbenzene	0.00500	0.00437	87.4	76.0-127	
Naphthalene	0.00500	0.00453	90.6	54.0-135	
Toluene	0.00500	0.00463	92.6	79.0-120	
1,2,4-Trimethylbenzene	0.00500	0.00444	88.8	76.0-121	
1,3,5-Trimethylbenzene	0.00500	0.00455	91.0	76.0-122	
Xylenes, Total	0.0150	0.0137	91.3	79.0-123	
(S) Toluene-d8			109	80.0-120	
(S) 4-Bromofluorobenzene			102	77.0-126	
(S) 1,2-Dichloroethane-d4			108	70.0-130	



Method Blank (MB)

(MB) R3586944-2 10/28/20 18:53

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.0000941	0.00100
n-Butylbenzene	U		0.000157	0.00100
sec-Butylbenzene	U		0.000125	0.00100
tert-Butylbenzene	U		0.000127	0.00100
Ethylbenzene	U		0.000137	0.00100
Isopropylbenzene	U		0.000105	0.00100
Naphthalene	U		0.00100	0.00500
Toluene	U		0.000278	0.00100
1,2,4-Trimethylbenzene	U		0.000322	0.00100
1,3,5-Trimethylbenzene	U		0.000104	0.00100
Xylenes, Total	U		0.000174	0.00300
(S) Toluene-d8	107			80.0-120
(S) 4-Bromofluorobenzene	96.0			77.0-126
(S) 1,2-Dichloroethane-d4	102			70.0-130

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Laboratory Control Sample (LCS)

(LCS) R3586944-1 10/28/20 18:12

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.00500	0.00490	98.0	70.0-123	
n-Butylbenzene	0.00500	0.00502	100	73.0-125	
sec-Butylbenzene	0.00500	0.00514	103	75.0-125	
tert-Butylbenzene	0.00500	0.00506	101	76.0-124	
Ethylbenzene	0.00500	0.00496	99.2	79.0-123	
Isopropylbenzene	0.00500	0.00499	99.8	76.0-127	
Naphthalene	0.00500	0.00454	90.8	54.0-135	
Toluene	0.00500	0.00509	102	79.0-120	
1,2,4-Trimethylbenzene	0.00500	0.00471	94.2	76.0-121	
1,3,5-Trimethylbenzene	0.00500	0.00496	99.2	76.0-122	
Xylenes, Total	0.0150	0.0151	101	79.0-123	
(S) Toluene-d8			108	80.0-120	
(S) 4-Bromofluorobenzene			100	77.0-126	
(S) 1,2-Dichloroethane-d4			110	70.0-130	



Method Blank (MB)

(MB) R3584219-1 10/21/20 20:31

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
AK102 DRO C10-C25	U		0.229	0.800
<i>(S) o-Terphenyl</i>	85.0			60.0-120

1 Cp

2 Tc

3 Ss

4 Cn

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

(LCS) R3584219-2 10/21/20 20:51 • (LCSD) R3584219-3 10/21/20 21:11

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
AK102 DRO C10-C25	3.00	2.92	2.83	97.3	94.3	75.0-125			3.13	20
<i>(S) o-Terphenyl</i>				83.3	81.5	60.0-120				

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3583932-3 10/20/20 22:05

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Anthracene	U		0.0000190	0.0000500
Acenaphthene	U		0.0000190	0.0000500
Acenaphthylene	U		0.0000171	0.0000500
Benzo(a)anthracene	U		0.0000203	0.0000500
Benzo(a)pyrene	U		0.0000184	0.0000500
Benzo(b)fluoranthene	U		0.0000168	0.0000500
Benzo(g,h,i)perylene	U		0.0000184	0.0000500
Benzo(k)fluoranthene	U		0.0000202	0.0000500
Chrysene	U		0.0000179	0.0000500
Dibenz(a,h)anthracene	U		0.0000160	0.0000500
Fluoranthene	U		0.0000270	0.000100
Fluorene	U		0.0000169	0.0000500
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500
Naphthalene	U		0.0000917	0.000250
Phenanthrene	U		0.0000180	0.0000500
Pyrene	U		0.0000169	0.0000500
1-Methylnaphthalene	U		0.0000687	0.000250
2-Methylnaphthalene	U		0.0000674	0.000250
(S) Nitrobenzene-d5	113			31.0-160
(S) 2-Fluorobiphenyl	119			48.0-148
(S) p-Terphenyl-d14	115			37.0-146

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

(LCS) R3583932-1 10/20/20 21:31 • (LCSD) R3583932-2 10/20/20 21:48

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Anthracene	0.00200	0.00219	0.00219	109	109	67.0-150			0.000	20
Acenaphthene	0.00200	0.00217	0.00218	108	109	65.0-138			0.460	20
Acenaphthylene	0.00200	0.00232	0.00233	116	117	66.0-140			0.430	20
Benzo(a)anthracene	0.00200	0.00215	0.00206	107	103	61.0-140			4.28	20
Benzo(a)pyrene	0.00200	0.00214	0.00192	107	96.0	60.0-143			10.8	20
Benzo(b)fluoranthene	0.00200	0.00220	0.00195	110	97.5	58.0-141			12.0	20
Benzo(g,h,i)perylene	0.00200	0.00203	0.00178	102	89.0	52.0-153			13.1	20
Benzo(k)fluoranthene	0.00200	0.00219	0.00200	109	100	58.0-148			9.07	20
Chrysene	0.00200	0.00225	0.00213	112	106	64.0-144			5.48	20
Dibenz(a,h)anthracene	0.00200	0.00198	0.00180	99.0	90.0	52.0-155			9.52	20
Fluoranthene	0.00200	0.00214	0.00219	107	109	69.0-153			2.31	20
Fluorene	0.00200	0.00220	0.00226	110	113	64.0-136			2.69	20



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

(LCS) R3583932-1 10/20/20 21:31 • (LCSD) R3583932-2 10/20/20 21:48

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
Indeno(1,2,3-cd)pyrene	0.00200	0.00198	0.00176	99.0	88.0	54.0-153			11.8	20
Naphthalene	0.00200	0.00221	0.00222	111	111	61.0-137			0.451	20
Phenanthrene	0.00200	0.00215	0.00218	107	109	62.0-137			1.39	20
Pyrene	0.00200	0.00218	0.00212	109	106	60.0-142			2.79	20
1-Methylnaphthalene	0.00200	0.00221	0.00219	111	109	66.0-142			0.909	20
2-Methylnaphthalene	0.00200	0.00208	0.00211	104	105	62.0-136			1.43	20
<i>(S) Nitrobenzene-d5</i>				111	115	31.0-160				
<i>(S) 2-Fluorobiphenyl</i>				112	112	48.0-148				
<i>(S) p-Terphenyl-d14</i>				108	98.5	37.0-146				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3584969-3 10/22/20 11:40

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Anthracene	U		0.0000190	0.0000500
Acenaphthene	U		0.0000190	0.0000500
Acenaphthylene	U		0.0000171	0.0000500
Benzo(a)anthracene	U		0.0000203	0.0000500
Benzo(a)pyrene	U		0.0000184	0.0000500
Benzo(b)fluoranthene	U		0.0000168	0.0000500
Benzo(g,h,i)perylene	U		0.0000184	0.0000500
Benzo(k)fluoranthene	U		0.0000202	0.0000500
Chrysene	U		0.0000179	0.0000500
Dibenz(a,h)anthracene	U		0.0000160	0.0000500
Fluoranthene	U		0.0000270	0.000100
Fluorene	U		0.0000169	0.0000500
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500
Naphthalene	U		0.0000917	0.000250
Phenanthrene	U		0.0000180	0.0000500
Pyrene	U		0.0000169	0.0000500
1-Methylnaphthalene	U		0.0000687	0.000250
2-Methylnaphthalene	U		0.0000674	0.000250
(S) Nitrobenzene-d5	67.0			31.0-160
(S) 2-Fluorobiphenyl	79.0			48.0-148
(S) p-Terphenyl-d14	76.0			37.0-146

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

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

(LCS) R3584969-1 10/22/20 11:00 • (LCSD) R3584969-2 10/22/20 11:20

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Anthracene	0.00200	0.00149	0.00179	74.5	89.5	67.0-150			18.3	20
Acenaphthene	0.00200	0.00146	0.00179	73.0	89.5	65.0-138		J3	20.3	20
Acenaphthylene	0.00200	0.00156	0.00190	78.0	95.0	66.0-140			19.7	20
Benzo(a)anthracene	0.00200	0.00139	0.00179	69.5	89.5	61.0-140		J3	25.2	20
Benzo(a)pyrene	0.00200	0.00113	0.00149	56.5	74.5	60.0-143	J4	J3	27.5	20
Benzo(b)fluoranthene	0.00200	0.00114	0.00149	57.0	74.5	58.0-141	J4	J3	26.6	20
Benzo(g,h,i)perylene	0.00200	0.00105	0.00151	52.5	75.5	52.0-153		J3	35.9	20
Benzo(k)fluoranthene	0.00200	0.00113	0.00152	56.5	76.0	58.0-148	J4	J3	29.4	20
Chrysene	0.00200	0.00137	0.00177	68.5	88.5	64.0-144		J3	25.5	20
Dibenz(a,h)anthracene	0.00200	0.00109	0.00154	54.5	77.0	52.0-155		J3	34.2	20
Fluoranthene	0.00200	0.00148	0.00180	74.0	90.0	69.0-153			19.5	20
Fluorene	0.00200	0.00144	0.00177	72.0	88.5	64.0-136		J3	20.6	20



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

(LCS) R3584969-1 10/22/20 11:00 • (LCSD) R3584969-2 10/22/20 11:20

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
Indeno(1,2,3-cd)pyrene	0.00200	0.00109	0.00153	54.5	76.5	54.0-153		J3	33.6	20
Naphthalene	0.00200	0.00147	0.00180	73.5	90.0	61.0-137		J3	20.2	20
Phenanthrene	0.00200	0.00148	0.00179	74.0	89.5	62.0-137			19.0	20
Pyrene	0.00200	0.00146	0.00181	73.0	90.5	60.0-142		J3	21.4	20
1-Methylnaphthalene	0.00200	0.00143	0.00176	71.5	88.0	66.0-142		J3	20.7	20
2-Methylnaphthalene	0.00200	0.00139	0.00170	69.5	85.0	62.0-136		J3	20.1	20
(S) Nitrobenzene-d5				70.5	85.5	31.0-160				
(S) 2-Fluorobiphenyl				72.5	90.0	48.0-148				
(S) p-Terphenyl-d14				68.5	89.5	37.0-146				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3584596-3 10/22/20 02:09

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Anthracene	U		0.0000190	0.0000500
Acenaphthene	U		0.0000190	0.0000500
Acenaphthylene	U		0.0000171	0.0000500
Benzo(a)anthracene	U		0.0000203	0.0000500
Benzo(a)pyrene	U		0.0000184	0.0000500
Benzo(b)fluoranthene	U		0.0000168	0.0000500
Benzo(g,h,i)perylene	U		0.0000184	0.0000500
Benzo(k)fluoranthene	U		0.0000202	0.0000500
Chrysene	U		0.0000179	0.0000500
Dibenz(a,h)anthracene	U		0.0000160	0.0000500
Fluoranthene	U		0.0000270	0.000100
Fluorene	U		0.0000169	0.0000500
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500
Naphthalene	U		0.0000917	0.000250
Phenanthrene	U		0.0000180	0.0000500
Pyrene	U		0.0000169	0.0000500
1-Methylnaphthalene	U		0.0000687	0.000250
2-Methylnaphthalene	U		0.0000674	0.000250
(S) Nitrobenzene-d5	117			31.0-160
(S) 2-Fluorobiphenyl	83.5			48.0-148
(S) p-Terphenyl-d14	94.5			37.0-146

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

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

(LCS) R3584596-1 10/22/20 01:27 • (LCSD) R3584596-2 10/22/20 01:48

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Anthracene	0.00200	0.00188	0.00176	94.0	88.0	67.0-150			6.59	20
Acenaphthene	0.00200	0.00178	0.00170	89.0	85.0	65.0-138			4.60	20
Acenaphthylene	0.00200	0.00187	0.00179	93.5	89.5	66.0-140			4.37	20
Benzo(a)anthracene	0.00200	0.00212	0.00196	106	98.0	61.0-140			7.84	20
Benzo(a)pyrene	0.00200	0.00172	0.00158	86.0	79.0	60.0-143			8.48	20
Benzo(b)fluoranthene	0.00200	0.00155	0.00143	77.5	71.5	58.0-141			8.05	20
Benzo(g,h,i)perylene	0.00200	0.00155	0.00140	77.5	70.0	52.0-153			10.2	20
Benzo(k)fluoranthene	0.00200	0.00161	0.00144	80.5	72.0	58.0-148			11.1	20
Chrysene	0.00200	0.00183	0.00171	91.5	85.5	64.0-144			6.78	20
Dibenz(a,h)anthracene	0.00200	0.00167	0.00149	83.5	74.5	52.0-155			11.4	20
Fluoranthene	0.00200	0.00184	0.00172	92.0	86.0	69.0-153			6.74	20
Fluorene	0.00200	0.00184	0.00174	92.0	87.0	64.0-136			5.59	20



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

(LCS) R3584596-1 10/22/20 01:27 • (LCSD) R3584596-2 10/22/20 01:48

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
Indeno(1,2,3-cd)pyrene	0.00200	0.00172	0.00153	86.0	76.5	54.0-153			11.7	20
Naphthalene	0.00200	0.00184	0.00179	92.0	89.5	61.0-137			2.75	20
Phenanthrene	0.00200	0.00171	0.00161	85.5	80.5	62.0-137			6.02	20
Pyrene	0.00200	0.00187	0.00176	93.5	88.0	60.0-142			6.06	20
1-Methylnaphthalene	0.00200	0.00187	0.00180	93.5	90.0	66.0-142			3.81	20
2-Methylnaphthalene	0.00200	0.00180	0.00173	90.0	86.5	62.0-136			3.97	20
<i>(S) Nitrobenzene-d5</i>				114	109	31.0-160				
<i>(S) 2-Fluorobiphenyl</i>				84.5	84.0	48.0-148				
<i>(S) p-Terphenyl-d14</i>				92.5	88.0	37.0-146				

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



Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

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

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

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.
J3	The associated batch QC was outside the established quality control range for precision.
J4	The associated batch QC was outside the established quality control range for accuracy.
V	The sample concentration is too high to evaluate accurate spike recoveries.



Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
 * Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico ¹	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio-VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana ¹	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		

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

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

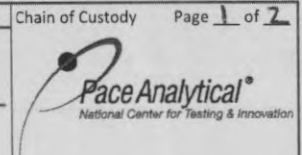
8 Al

9 Sc

Stantec - Anchorage, AK - Speedway
 725 E Fireweed Lane
 Suite 200
 Anchorage AK 99503

Billing Information:
 Accounts Payable
 PO Box 1510
 Springfield, OH 45501

Pres Chk
 Analysis / Container / Preservative



Report to:
Ms. Leslie Petre

Email To: ccothron@pacenational.com

Project Description:
Speedway 5315 TNS 111

City/State Collected: **Fairbanks, Alaska (AK)** Please Circle: PT MT CT ET

Phone: **907-266-1108**

Client Project #
135751325

Lab Project #
STAAAKSSA-5315

Collected by (print):
Austin Badger

Site/Facility ID #
0005315

P.O. #

Collected by (signature):
Austin Badger

Rush? (Lab MUST Be Notified)
 ___ Same Day ___ Five Day
 ___ Next Day ___ 5 Day (Rad Only)
 ___ Two Day ___ 10 Day (Rad Only)
 ___ Three Day

Quote #
 Date Results Needed

Immediately Packed on Ice N Y

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	Analysis / Container / Preservative					Remarks	Sample # (lab only)
							AK101 40mlAmb HCl	AK102 100ml Amb HCl	NAICP 250mlHDPE-HNO3	PAHSIMLVID 40mlAmb-NoPres-WT	V82260C 40mlAmb-HCl		
MW-10	G	GW		10-15-20	09:20	11	X	X	X	X	X		01
MW-11	G	GW		10-15-20	09:21	11	X	X	X	X	X		02
MW-12	G	GW		10-14-20	11:10	11	X	X	X	X	X		03
MW-13	G	GW		10-14-20	14:48	11	X	X	X	X	X		04
MW-16	G	GW		10-14-20	13:36	11	X	X	X	X	X		05
G-1	G	GW		10-14-20	10:20	11	X	X	X	X	X		06
G-5	G	GW		10-14-20	15:45	11	X	X	X	X	X		07
MW-17-1	G	GW		10-15-20	12:40	11	X	X	X	X	X		08
MW-17-2	G	GW		10-15-20	11:28	11	X	X	X	X	X		09
RW-1	G	GW		10-15-20	10:27	11	X	X	X	X	X		10

* Matrix:
 SS - Soil AIR - Air F - Filter
 GW - Groundwater B - Bioassay
 WW - WasteWater
 DW - Drinking Water
 OT - Other

Remarks:
 pH _____ Temp _____
 Flow _____ Other _____
 Samples returned via: ___ UPS ___ FedEx ___ Courier
 Tracking # **9186 2505 8252-8263**

Sample Receipt Checklist
 COC Seal Present/Intact: Y ___ N
 COC Signed/Accurate: Y ___ N
 Bottles arrive intact: Y ___ N
 Correct bottles used: Y ___ N
 Sufficient volume sent: Y ___ N
 if Applicable
 VOA Zero Headspace: ___ Y ___ N
 Preservation Correct/Checked: ___ Y ___ N
 RAD Screen <0.5 mR/hr: ___ Y ___ N

Relinquished by: (Signature)
Austin Badger

Date: **10-16-20** Time: **10:00**

Received by: (Signature)

Trip Blank Received: Yes No
 HCL MeOH TBR

Relinquished by: (Signature)

Date: Time:

Received by: (Signature)

Temp: **6.50 = 6** °C Bottles Received: **143**

If preservation required by Login: Date/Time

Relinquished by: (Signature)

Date: Time:

Received for lab by: (Signature)
Oliver

Date: **10/17/20** Time: **845**

Hold: Condition: NCF / **OK**

Laboratory Report Number L1274905 CS Site Name Speedway 0005315 (TNS111)
Laboratory Report Date 11/10/2020 ADEC File Number 100.26.026

Laboratory Data Review Checklist

Completed By:

Leslie Petre

Title:

Engineer in Training

Date:

December 23, 2020

Consultant Firm:

Stantec Consulting Service, Inc.

Laboratory Name:

Pace Analytical

Laboratory Report Number:

L1274905

Laboratory Report Date:

November 10, 2020

CS Site Name:

Speedway 0005315

ADEC File Number:

100.26.026

Hazard Identification Number:

1112

Note: Any N/A or No box checked must have an explanation in the comments box.

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes No N/A Comments:

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes No N/A Comments:

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes No N/A Comments:

b. Correct analyses requested?

Yes No N/A Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes No N/A Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes No N/A Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes No N/A Comments:

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes No N/A Comments:

e. Data quality or usability affected?

Comments:

4. Case Narrative

a. Present and understandable?

Yes No N/A Comments:

b. Discrepancies, errors, or QC failures identified by the lab?

Yes No N/A Comments:

c. Were all corrective actions documented?

Yes No N/A Comments:

d. What is the effect on data quality/usability according to the case narrative?

Comments:

No

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes No N/A Comments:

b. All applicable holding times met?

Yes No N/A Comments:

c. All soils reported on a dry weight basis?

Yes No N/A Comments:

No Soils

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes No N/A Comments:

e. Data quality or usability affected?

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes No N/A Comments:

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

J3 for outside of precision

v. Data quality or usability affected?

Comments:

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes No N/A Comments:

- ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

- iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

- iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

The associated batch QC was outside the established quality control range for precision: Acenaphthene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Benzo(k) fluoranthene, Chrysene, Dibenz(a,h)anthracene, Fluorene, Indeno(1,2,3-cd)pyrene, Naphthalene, 1-Methylnaphthalene, and 2-Methylnaphthalene.
The associated batch QC was outside the established quality control range for accuracy: Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k) fluoranthene

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

See **iv** list

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

J3 for out precision range, J4 for out of accuracy range

- vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

No, the AK101, AK102, and other compounds of the 8260D series did meet Lab QC

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Note: Leave blank if not required for project

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes No N/A Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes No N/A Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes No N/A Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes No N/A Comments:

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

iv. Data quality or usability affected?

Comments:

e. Trip Blanks

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes No N/A Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes No N/A Comments:

iii. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

v. Data quality or usability affected?

Comments:

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No N/A Comments:

ii. Submitted blind to lab?

Yes No N/A Comments:

iii. Precision – All relative percent differences (RPD) less than specified project objectives?
 (Recommended: 30% water, 50% soil)

$$RPD (\%) = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2) / 2)} \times 100$$

Where R_1 = Sample Concentration
 R_2 = Field Duplicate Concentration

Yes No N/A Comments:

DUP1: Benzene (105%),Toulene(74%),Ethylbenzene(70%),1-2-4 Trimethylbenzene (123%),1-3-5 Trimethylbenzene(94%)
 DUP2: Benzene (76%),GRO(92%),DRO(88%)

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Data quality and usability is not affected as the results for event results for both sets are lower than previous sampling trends. High groundwater levels in 2020 and the drawdown with site recirculation from RM-2 could be contributing to the range of variation.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes No N/A Comments:

New Disposable bailers are used for bailing and sampling of each well that does not have a permanently installed pump. All used bailers are disposed of immediately after the sampling for a well is complete.

i. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

Laboratory Report Number L1274905 CS Site Name Speedway 0005315 (TNS111)
Laboratory Report Date 11/10/2020 ADEC File Number 100.26.026

iii. Data quality or usability affected?

Comments:

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes No N/A

Comments: