

**Speedway Store 5313,
formerly Tesoro 2 Go Mart
#101/IFC ADEC File
#100.26.022**

**September 2021 Annual
Groundwater Monitoring
Event Report**



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ACRONYMS AND ABBREVIATIONS

AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
AK	Alaska Test Method
amsl	above mean sea level
BTEX	benzene, toluene, ethylbenzene, and xylenes
DO	dissolved oxygen
DRO	diesel range organics
DUP	duplicate
EIT	Engineer in Training
EPA	U.S. Environmental Protection Agency
GCL	groundwater cleanup level
GRO	gasoline range organics
hp	horsepower
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
RW	remediation well
SIM	selective ion monitoring
Speedway	Speedway, LLC
Stantec	Stantec Consulting Services, Inc.
Tesoro	Tesoro Refining and Marketing Company
TMB	Trimethylbenzene
UST	underground storage tank
VOC	Volatile Organic Compounds

1.0 EXECUTIVE SUMMARY

This 2021 annual groundwater monitoring event report was prepared by Stantec Consulting Services Inc. (Stantec) on behalf of Tesoro Refining & Marketing Company (Tesoro) for Speedway Store #5313 (formerly known as Tesoro 2 Go Mart #101 and IFC), located at the northeast corner of the intersection of South Cushman Street and Van Horn Road at 3569 South Cushman Street, Fairbanks, Alaska (**Figure 1**). The methods that were used for this monitoring event were conducted in accordance with the Alaska Department of Environmental Conservation (ADEC) approved 2021 Corrective Action Work Plan for this site.

The groundwater monitoring event was conducted on September 27, 2021, by Stantec personnel Engineer-In-Training (EIT) staff members Leslie Petre and Geoff Moorhead. This monitoring event included: measurement of the depth to groundwater; measurement of water quality intrinsic parameters; collection and analyses of groundwater samples from Monitoring Wells MW-3, MW-4, MW-8, MW-14, MW-17, and MW-19-1, as well as treated effluent from the Aeration Treatment Tank and both free product recovery wells CRW-2 and WRW-2020 (**Figure 2**). Monitoring Well MW 19-2 was not sampled due to the presence of a thin layer (0.01-feet thick) of free product in the well. In response to a verbal request from the ADEC, a representative sample was collected and analyzed from MW-30.

Results of the analytical sampling showed the analytes detected above the ADEC groundwater cleanup levels (GCLs) were:

- MW-3: ethylbenzene, diesel range organics (DRO), 1-2-4 trimethylbenzene (TMB) and naphthalene.
- MW-14, and MW 19-1: benzene, ethylbenzene, xylenes, gasoline range organics (GRO), DRO, naphthalene, 1-2-4 TMB, and 1-3-5 TMB.
- MW-17: benzene, ethylbenzene, xylenes, GRO, DRO, naphthalene, and 1-2-4 TMB
- MW-8: DRO and naphthalene.
- Free Product Recovery Well CRW-2: ethylbenzene.
- Free Product Recovery Well WRW-2020: ethylbenzene, xylenes, naphthalene, and 1-2-4 TMB.

A peristaltic pump is used to remove/extract free product from the wells. No measurable free product was detected in the wells except for a thin layer (0.01-feet thick) in MW 19-2.

An aeration system is currently used for treating groundwater that is pumped from the groundwater drawdown pumps in Free Product Recovery Wells CRW-2 and WRW-2020. The drawdown pumps discharge at a combined rate of 3-4 gpm. The aerated effluent from the 1,500 gallon, double compartment Aeration Treatment Tank discharges to an on-site drainfield (Infiltrator System) that is located upgradient of the groundwater interceptor trench. Following the completion of the annual groundwater monitoring event, Stantec increased the size of the drainfield by adding a 450-square foot bottom area drainfield. **Figure 2** shows the layout of the site improvements consisting of the 100-foot long (600-square foot) drainfield installed in 2006, 450-square foot drainfield installed in 2021 and the groundwater interceptor trench installed in 2001.

2.0 SITE BACKGROUND

Background information is summarized in **Appendix A**.

3.0 FIELD ACTIVITIES

The following field activities were conducted during this monitoring event:

- Measured the depth to groundwater in Monitoring Wells MW-3, MW-4, MW-8, MW-14, MW-17 and MW-30.
- Collected water samples from the following wells: MW-3, MW-4, MW-8, MW-14, MW-17, MW-19-1, CRW-2 and WRW-2020 as well as the treated effluent discharged from the aeration treatment tank. The samples were measured in the field for the following intrinsic water quality parameters: temperature, pH, dissolved oxygen (DO), oxidation-reduction potential (ORP), and conductivity.
- Collected groundwater samples were submitted for laboratory analysis of the following test parameters:
 - GRO by Alaska Test Method (AK)101.
 - DRO by AK102.
 - Alaska expanded list of Volatile Organic Compounds (VOCs) by U.S. Environmental Protection Agency Method (EPA) 8260C.
 - Polynuclear Aromatic Hydrocarbons (PAHs) by EPA Method 8270D Selective Ion Monitoring (SIM)
 - EPA Test Method 200.8 metals for sodium for the onsite test locations of MW-8, CRW-2, WRW-2020, and the effluent line to establish a baseline for sodium levels.

4.0 GROUNDWATER MONITORING RESULTS

Groundwater Levels. In July 2021, Stantec conducted a comprehensive site survey to re-establish the elevations of all wells reported herein. **Table 1** presents groundwater elevations at this site based on the depths to static water levels measured during this monitoring event on September 27, 2021. Based on a polynomial regression, fitted to the water level observations measured, the average hydraulic gradient was approximately 0.0006 feet per foot with flow direction to the southeast at 160 degrees.

The groundwater flow direction and gradient measured on September 27 indicated the flow was affected by the operation of the drawdown pump in well CRW-2. The operation of this well serves two purposes: 1. Control the flow of groundwater as a means to minimize plume migration to the north; 2. Capture free product within the zone of influence from the drawdown pump. The groundwater flow characteristics over the past 10 monitoring events are shown in the groundwater flow summary (“Rose Diagram”) presented on **Figure 2**. Recently the historic direction of the flow of groundwater has been altered to flow towards the southeast.

Table 1 Groundwater Elevations
Measurements collected on September 27, 2021

Monitoring Well Identification	Top of Casing Elevation (feet) ¹	Depth to Groundwater (feet)	Groundwater Elevation (feet)
MW-3	436.54	6.29	430.25
MW-4	439.73	10.15	429.58
MW-8	442.25	12.59	429.66
MW-14	440.43	10.84	429.59
MW-17	438.71	9.14	429.57
MW-19-1	439.46	9.85	429.61
MW-19-2	438.92	9.34	429.58
MW-30	438.72	9.26	429.46
CRW-2	442.46	16.43	426.03
WRW-2020	440.46	11.0	429.46
2006 Drainfield - OBW Northeast Pipe	441.91	5.75	436.16

Key:

- 1 Based on a vertical control survey completed on July 20, 2021 - used datum of 441.11 feet above mean sea level (amsl).

OBW Observation Well

Water Sample Intrinsic Field Parameters. The results of intrinsic water quality parameter testing of the water samples collected during this monitoring event are presented in **Table 2**. The dissolved oxygen (DO) levels indicates typical levels found in groundwater. The effluent from the aeration treatment tank had an elevated DO level which is expected from the aeration process. Conductivity and pH were comparable at all locations within expected natural ranges for groundwater.

Table 2 Field Measured Intrinsic Water Quality Parameters
Measured on September 27, 2021

Monitoring Well Identification	Temperature (°C)	pH	Dissolved Oxygen (mg/L)	ORP (mV)	SC (µs/cm°C)
MW-3	6.1	6.54	1.27	61.2	7.42
MW-4	5.1	6.64	3.58	57.2	3.93
MW-8	6.9	6.31	1.42	31.2	5.74
MW-14	7.0	6.63	0.91	49.2	7.31
MW-17	6.1	6.66	2.33	31.1	4.85
MW-19-1	6.2	6.71	1.97	26.5	8.00
MW-30	6.1	6.50	1.61	59.9	9.70
CRW-2	7.3	6.85	1.91	29.3	5.21
WRW-2020	8.2	6.52	1.30	98.4	5.11
IFC Aeration Tank Effluent	7.7	7.69	7.72	44.3	4.92

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⁺]
 SC specific conductance corrected to 25 °C

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

Water Sample Laboratory Analytical Results. Historical monitoring data for this site are presented in **Appendix D**. Laboratory analytical results for benzene, toluene, ethylbenzene, and xylenes (BTEX), GRO, DRO, naphthalene, 1-2-4 TMB, 1-3-5 TMB and sodium are summarized in **Table 3**. The other analytical results for petroleum associated VOCs and PAHs that are below the ADEC GCLs are provided in the laboratory analytical report (see **Appendix E**).

Table 3 Groundwater Analytical Results for BTEX, GRO, DRO, VOCs, and Sodium
Samples collected on September 27, 2021

ID	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENE (TOTAL)	GRO	DRO	1,2,4-TRIMETHYL-BENZENE	1,3,5-TRIMETHYL-BENZENE	NAPHTHALENE ¹	SODIUM
UNITS	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
MW-03	0.00136	0.0112	0.0164	0.188	1.19	3.81	0.0602	0.0306	0.0314	NM
MW-04	(0.001)	0.00782	(0.001)	(0.003)	0.0498	0.834	(0.001)	(0.001)	(0.000790)	NM
MW-08	0.000740	0.00166	0.00502	0.0411	0.462	20.5	0.0221	0.0116	0.00258	NM
MW-14	0.0251	0.0151	0.687	4.45	11.9	3.17	0.568	0.124	0.381	NM
MW-17	0.0328	0.00740	0.213	1.21	3.45	3.91	0.182	0.0481	0.0929	NM
MW-19-1	0.0659	0.105	0.328	2.36	7.02²	29.6	0.470	0.149	0.254	NM
DUPLICATE 2	0.0670	0.110	0.361	2.50	7.61²	24.5	0.515	0.167	0.263	NM
CRW-2_AERATION TREATMENT TANK (INFLUENT)	0.00287	0.00136	0.0181	0.133	0.548	0.627	0.0295	0.0100	0.000375	NM
WRW-2020_AERATION TREATMENT TANK (INFLUENT)	0.00183	0.000567	0.0433	0.243	0.929	0.973	0.0723	0.0238	0.00260	NM
EFFLUENT	0.000175	(0.001)	0.00214	0.0165	0.0889	0.700	0.00414	0.00133	(0.000250)	9.67
DUPLICATE 1	0.000160	(0.001)	0.00224	0.0173	0.0817	0.674	0.00401	0.00125	(0.000250)	9.62
MW-30	0.00122	(0.001)	(0.001)	(0.003)	0.0345	0.415	(0.001)	(0.001)	0.000182	NM
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 8270D-SIM
 - 2 Sample was prepared and/or analyzed past holding time as defined in the method. Concentrations should be considered minimum values.
 - Blank Trip Blank
 - Bold** indicates the concentration exceeds the GCL or the estimated quantitation limit exceeds the GCL
 - italics* The identification of the analyte is acceptable; the reported value is an estimate.
 - DUP 1 Duplicate sample of Effluent to Drainfield.
 - DRO Diesel range organics analyzed by AK102.
 - DUP 2 Duplicate sample of MW 19-1
 - GCLS Groundwater cleanup levels, 18 AAC 75.345, Table C, (9/18/2019)
 - GRO Gasoline range organics analyzed by AK101.
 - mg/L milligrams per liter
 - NM Not Measured
 - () Undetected above practical quantitation limits shown in parentheses.

Quality Assurance (QA)/Quality Control (QC) Review. Pace Analytical, Inc. met all laboratory QA/QC criteria during the analysis of groundwater samples for this sampling event, as described in **Table 4**, which provides a summary of the laboratory QC objectives and outcomes for this monitoring event. Laboratory QC data and the ADEC Laboratory Data Review Checklist are included with the laboratory report in **Appendix F**.

Sample DUP 1 is a duplicate of the “Effluent” Sample (drainfield) and DUP 2 is a duplicate sample from MW 19-1. The duplicate samples were collected to determine the precision of the field collection and laboratory analysis for this monitoring event.

Data presented in **Table 4** show that the precision for the duplicate samples were within the established QA criteria tolerances for all of the tested analytes. The holding times for VOCs, PAHs, GRO and DRO were within established criteria, however, the holding time for the GRO sample collected from MW 19-1 and its duplicate were exceeded.

Table 4 Laboratory Quality Control Objectives

Quality Control Designation	Tolerance	Results for This Event	
Holding Times			
DRO/Water/to analyze ¹⁰²	40 days	14 days	
DRO/Water/to extract	14 days	14 days	
GRO/Water/to analyze	14 days	7 to 21 days	
VOCs/Water/to analyze	14 days	11 to 15 days	
PAHs/Water/to extract	7 days	6 days	
PAHs/Water/to analyze	40 days	7 to 8 days	
Field Duplicates – Precision			
Benzene/Water	30%	DUPLICATE 1	8.96 %
		DUPLICATE 2	1.66 %
Toluene/Water	30%	DUPLICATE 1	0.00 %
		DUPLICATE 2	4.65 %
Ethylbenzene/Water	30%	DUPLICATE 1	4.57 %
		DUPLICATE 2	9.58 %
Xylenes/Water	30%	DUPLICATE 1	4.73 %
		DUPLICATE 2	5.76 %
GRO/Water	30%	DUPLICATE 1	8.44 %
		DUPLICATE 2	8.07 %
DRO/Water	30%	DUPLICATE 1	3.78 %
		DUPLICATE 2	18.85 %
1,2,4-Trimethylbenzene	30%	DUPLICATE 1	3.19 %
		DUPLICATE 2	9.14 %
1,3,5-Trimethylbenzene	30%	DUPLICATE 1	6.20 %
		DUPLICATE 2	11.39 %
Naphthalene	30%	DUPLICATE 1	0.00 %
		DUPLICATE 2	3.48 %

Key:

% Percentage of variance in absolute value
BOLD Exceeds precision tolerance
 BTEX benzene, toluene, ethylbenzene, and xylenes
 DRO diesel range organics

GRO gasoline range organics
 NA Not Applicable
 PAH polynuclear aromatic hydrocarbon
 VOC volatile organic compound

5.0 REMEDIATION SYSTEM OPERATION AND PERFORMANCE MONITORING

Free Product Recovery. The free product recovery system involves the removal of free product from the following wells: MW 19-1, MW 19-2, CRW-2 and WRW 2020. The accumulated free product is removed periodically from the wells with a peristaltic pump. A water level meter is used in conjunction with the peristaltic pump to measure the depth to the water interface. The collected free product is stored on-site in a 55-gallon drum that is contained in an over-pack drum (secondary containment).

Well CRW-2 Groundwater Drawdown Pump System. The 1.0-horsepower (hp) submersible pump is used to drawdown the water level in CRW-2. The pump runs continuously at an average rate of 1.7 gallons per minute (gpm). The pump discharges its flow into an insulated/heat traced water line that flows to the first compartment of the 1,500 gallon, two compartment Aeration Treatment Tank.

Well WRW 2020 Groundwater Drawdown Pump System. A 0.5-hp submersible pump is used to drawdown the water level in WRW 2020. The pump runs continuously at an average rate that ranges from 1.5 to 2 gpm. The pump discharges its flow into an insulated/heat traced water line that flows to the Aeration Treatment Tank.

On-Site Groundwater Treatment System. A 1,500-gallon, double compartment Aeration Treatment Tank treats the influent from wells CRW-2 and WRW 2020. The aerated, treated effluent from the tank discharges by gravity to on-site drainfields consisting of Infiltrators. The drainfields are located upgradient of the groundwater interceptor trench (see **Figure 3**). The quality of the treated effluent is below the ADEC groundwater cleanup levels (GCLs).

6.0 CONCLUSIONS

Results of the analytical sampling (lab report provided in **Appendix E**) showed that the following analytes were detected above ADEC GCLs:

- MW-3: ethylbenzene, diesel range organics (DRO), 1-2-4 trimethylbenzene (TMB) and naphthalene.
- MW-14 and MW 19-1: benzene, ethylbenzene, xylenes, gasoline range organics (GRO), DRO, naphthalene, 1-2-4 TMB, and 1-3-5 TMB.
- MW-17: benzene, ethylbenzene, xylenes, GRO, DRO, naphthalene, and 1-2-4 TMB
- MW-8: DRO and naphthalene.
- Free Product Recovery Well CRW-2: ethylbenzene.
- Free Product Recovery Well WRW-2020: ethylbenzene, xylenes, naphthalene, and 1-2-4 TMB.

The analytical results for the monitoring wells sampled during the September 2021 monitoring event were relatively consistent with some noted improvement compared to last year's groundwater monitoring event completed in October 2020. The most significant improvement

was noted in the decrease or lack of free product in wells MW 19-1, MW 19-2, CRW-2 and WRW 2020.

During the past year, Stantec maintained the operation of the free product recovery system described above. In addition, Stantec maintained the iMonnit telemetry equipment that remotely monitors the operation of the following on-site equipment: ambient air temperatures, well drawdown pump discharge lines, and the aeration treatment tank compressor.

7.0 RECOMMENDATIONS AND PROPOSED ACTIVITIES

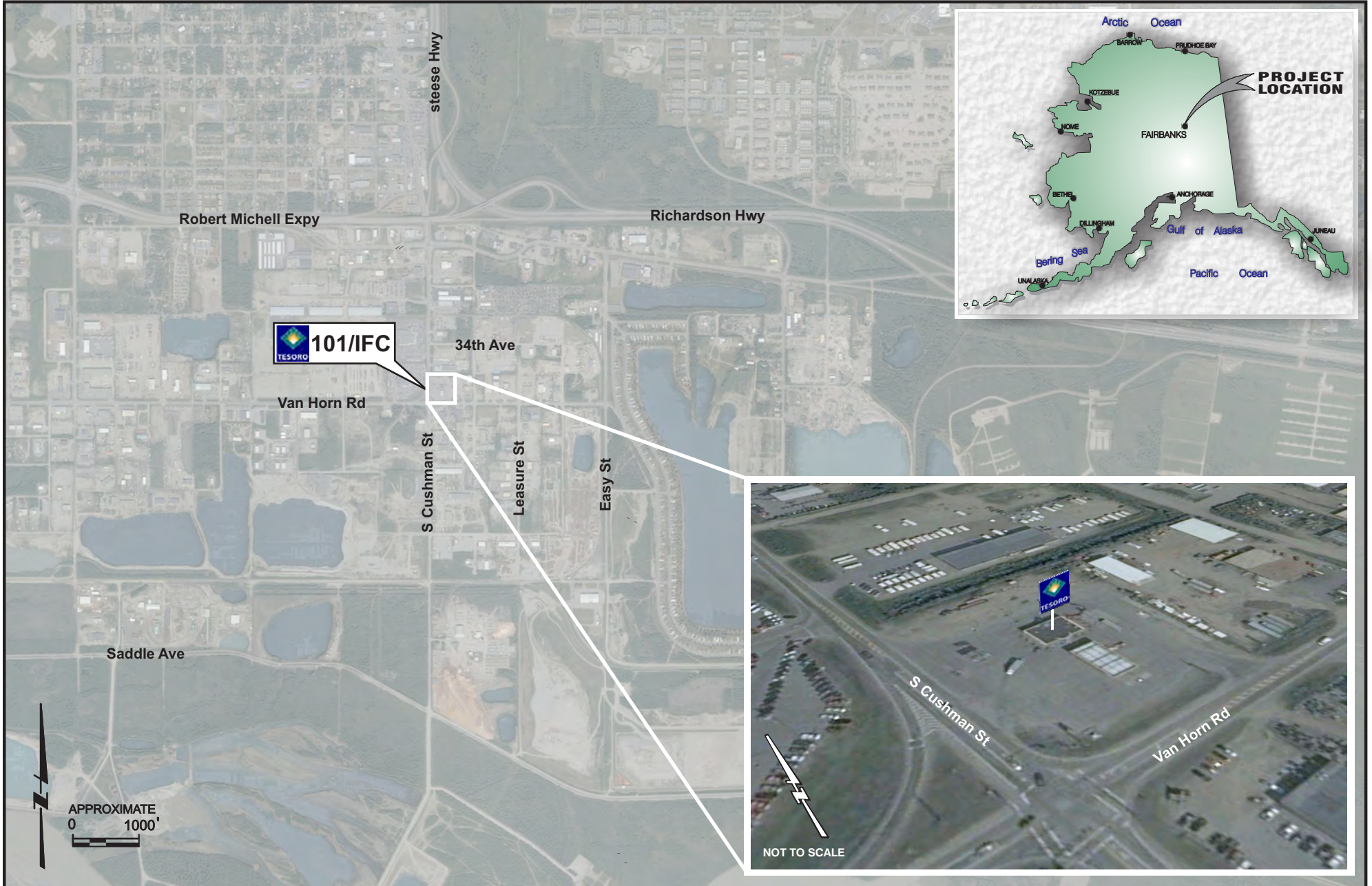
No anomalies were found during the September 2021 annual monitoring event that would require additional corrective action or changes to the approved year 2021 Corrective Action Work Plan for this site.

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's *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 Store 5313, formally known as Tesoro 2 Go Mart #101/IFC and Tesoro Refining and Marketing Company (Tesoro). 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
Elevations and Analytical Results
- Figure 3 On-Site Groundwater Treatment
System Layout
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MW-30

Benzene	0.00122 mg/L
Toluene	(0.001) mg/L
Ethylbenzene	(0.001) mg/L
Xylenes	(0.003) mg/L
GRO	0.0345 mg/L
DRO	0.415 mg/L
1,2,4-Trimethylbenzene	(0.001) mg/L
1,3,5-Trimethylbenzene	(0.001) mg/L
Naphthalene	0.000182 mg/L
Sodium	NA
Gw Elev.	429.46 feet

MW-17

Benzene	0.0328 mg/L
Toluene	0.00740 mg/L
Ethylbenzene	0.213 mg/L
Xylenes	1.21 mg/L
GRO	3.45 mg/L
DRO	3.91 mg/L
1,2,4-Trimethylbenzene	0.182 mg/L
1,3,5-Trimethylbenzene	0.0481 mg/L
Naphthalene	0.0929 mg/L
Sodium	NA
Gw Elev.	429.57 feet

MW-4

Benzene	(0.001) mg/L
Toluene	0.00782 mg/L
Ethylbenzene	(0.001) mg/L
Xylenes	(0.003) mg/L
GRO	0.0498 mg/L
DRO	0.834 mg/L
1,2,4-Trimethylbenzene	(0.001) mg/L
1,3,5-Trimethylbenzene	(0.001) mg/L
Naphthalene	(0.000790) mg/L
Sodium	NA
Gw Elev.	429.58 feet

WRW-2020

Benzene	0.00183 mg/L
Toluene	0.000567 mg/L
Ethylbenzene	0.0433 mg/L
Xylenes	0.243 mg/L
GRO	0.929 mg/L
DRO	0.973 mg/L
1,2,4-Trimethylbenzene	0.0723 mg/L
1,3,5-Trimethylbenzene	0.0238 mg/L
Naphthalene	0.00260 mg/L
Sodium	NA
Gw Elev.	429.46 feet

CRW-2

Benzene	0.00287 mg/L
Toluene	0.00136 mg/L
Ethylbenzene	0.0181 mg/L
Xylenes	0.133 mg/L
GRO	0.548 mg/L
DRO	0.627 mg/L
1,2,4-Trimethylbenzene	0.0295 mg/L
1,3,5-Trimethylbenzene	0.0100 mg/L
Naphthalene	0.000375 mg/L
Sodium	NA
Gw Elev.	426.03 feet

MW-8

Benzene	0.000740 mg/L
Toluene	0.00166 mg/L
Ethylbenzene	0.00502 mg/L
Xylenes	0.0411 mg/L
GRO	0.462 mg/L
DRO	20.5 mg/L
1,2,4-Trimethylbenzene	0.0221 mg/L
1,3,5-Trimethylbenzene	0.0116 mg/L
Naphthalene	0.00258 mg/L
Sodium	NA
Gw Elev.	429.66 feet

MW-14

Benzene	0.0251 mg/L
Toluene	0.0151 mg/L
Ethylbenzene	0.687 mg/L
Xylenes	4.45 mg/L
GRO	11.9 mg/L
DRO	3.17 mg/L
1,2,4-Trimethylbenzene	0.568 mg/L
1,3,5-Trimethylbenzene	0.124 mg/L
Naphthalene	0.381 mg/L
Sodium	NA
Gw Elev.	429.59 feet

MW19-2

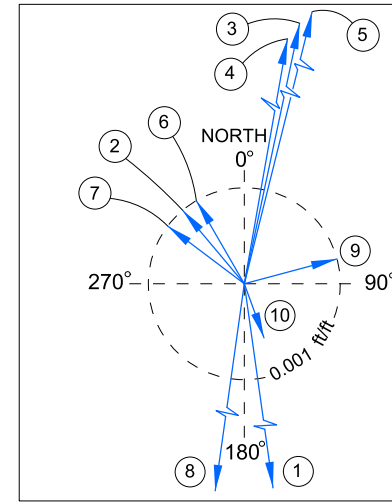
Gw Elev.	429.58 feet
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MW19-1

Benzene	0.0659 mg/L
Toluene	0.105 mg/L
Ethylbenzene	0.328 mg/L
Xylenes	2.36 mg/L
GRO	7.02 mg/L
DRO	29.6 mg/L
1,2,4-Trimethylbenzene	0.470 mg/L
1,3,5-Trimethylbenzene	0.149 mg/L
Naphthalene	0.254 mg/L
Sodium	NA
Gw Elev.	429.61 feet

MW19-1 (Duplicate)

Benzene	0.0670 mg/L
Toluene	0.110 mg/L
Ethylbenzene	0.361 mg/L
Xylenes	2.50 mg/L
GRO	7.61 mg/L
DRO	24.5 mg/L
1,2,4-Trimethylbenzene	0.515 mg/L
1,3,5-Trimethylbenzene	0.167 mg/L
Naphthalene	0.263 mg/L
Sodium	NA



GROUNDWATER FLOW SUMMARY

DATE	BEARING	GRADIENT (ft/ft)
1 MAY 24, 2012	172°	0.036
2 SEP. 24, 2013	320°	0.001
3 MAY 7, 2014	12°	0.037
4 MAY 26, 2015	10°	0.035
5 MAY 12, 2016	14°	0.119
6 JULY 18, 2017	330°	0.001
7 SEP. 7, 2018	307°	0.001
8 OCT.23, 2019	188°	0.045
9 OCT.22, 2020	75°	0.001
10 SEP. 27, 2021	160°	0.0006

MW-3

Benzene	0.0136 mg/L
Toluene	0.0112 mg/L
Ethylbenzene	0.0164 mg/L
Xylenes	0.188 mg/L
GRO	1.19 mg/L
DRO	3.81 mg/L
1,2,4-Trimethylbenzene	0.0602 mg/L
1,3,5-Trimethylbenzene	0.0306 mg/L
Naphthalene	0.0314 mg/L
Sodium	NA
Gw Elev.	430.25 feet

Drainfield

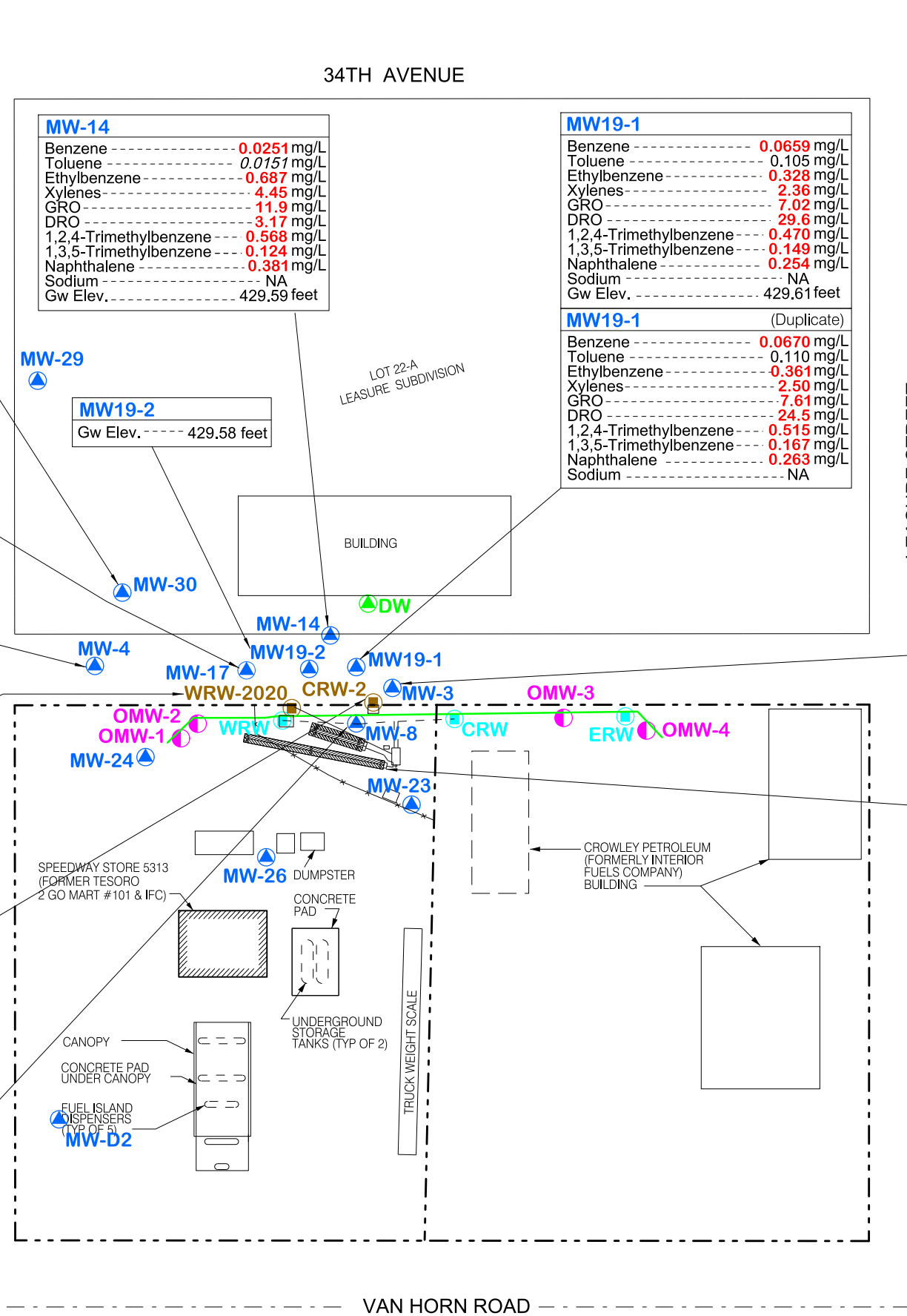
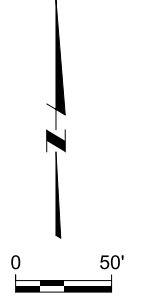
Benzene	0.000175 mg/L
Toluene	(0.001) mg/L
Ethylbenzene	0.00214 mg/L
Xylenes	0.0165 mg/L
GRO	0.0889 mg/L
DRO	0.700 mg/L
1,2,4-Trimethylbenzene	0.00414 mg/L
1,3,5-Trimethylbenzene	0.00133 mg/L
Naphthalene	(0.000250) mg/L
Sodium	9.67 mg/L
Gw Elev.	436.16 feet

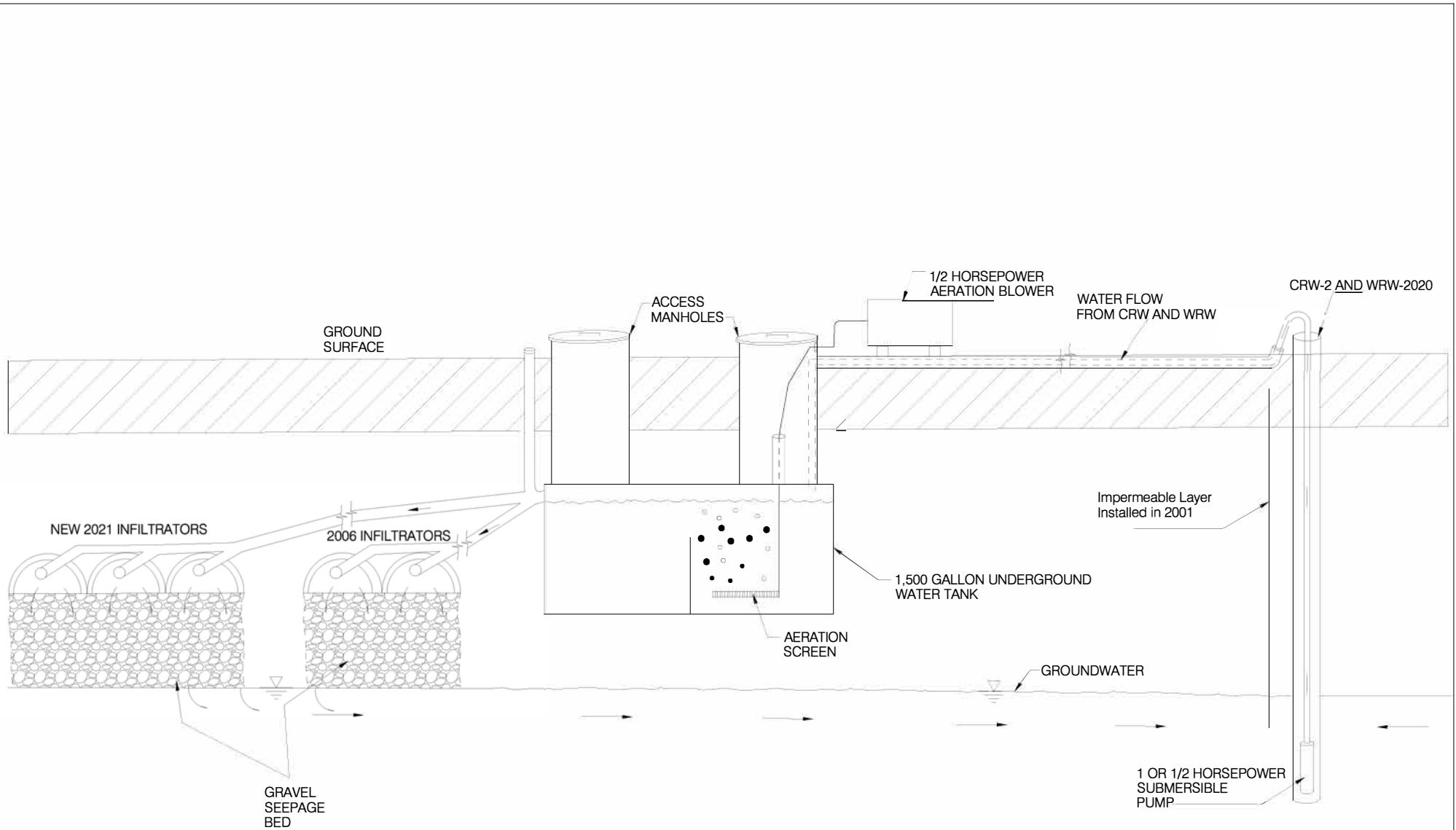
Drainfield (Duplicate)

Benzene	0.000160 mg/L
Toluene	(0.001) mg/L
Ethylbenzene	0.00224 mg/L
Xylenes	0.0173 mg/L
GRO	0.0817 mg/L
DRO	0.674 mg/L
1,2,4-Trimethylbenzene	0.00401 mg/L
1,3,5-Trimethylbenzene	0.00125 mg/L
Naphthalene	(0.000250) mg/L
Sodium	9.62 mg/L

- LEGEND:**
- PROPERTY LINE
 - INTERCEPTOR TRENCH
 - ROAD CENTERLINE
 - FENCE
 - GROUNDWATER CONTOUR
 - OBSERVATION WELL
 - 10" RECOVERY WELL
 - 6" RECOVERY WELL
 - ▲ PRIVATE INDUSTRIAL WELL
 - ▲ MONITORING WELL
 - CRW CENTRAL RECOVERY WELL
 - DRO DIESEL RANGE ORGANICS
 - DW DRINKING WATER WELL
 - EFF EFFLUENT SAMPLING WELL
 - ERW EAST RECOVERY WELL
 - GRO GASOLINE RANGE ORGANICS
 - Gw Elev. GROUNDWATER ELEVATION IN FEET
 - MW MONITORING WELL
 - NA NOT APPLICABLE
 - mg/L MILLIGRAMS PER LITER
 - OMW OBSERVATION WELL
 - WRW WEST RECOVERY WELL

- NOTES:**
- RESULTS ARE FOR SAMPLES COLLECTED ON SEPTEMBER 27, 2021.
 - BOLD / RED RESULTS INDICATE CONCENTRATION EXCEEDS THE CLEANUP LEVEL FOR THE SITE.
 - ITALICS RESULTS IDENTIFICATION OF THE ANALYTE IS ACCEPTABLE; THE REPORTED VALUE IS AN ESTIMATE.





NOTE:

- 1) Not to scale
- 2) Drawdown wells CRW-2 and WRW-2020 are north of the impermeable layer



SPEEDWAY STORE 5313
 FORMERLY TESORO 2 GO MART #101 & IFC
 GROUNDWATER PUMP DRAWDOWN WELLS, AERATION
 TREATMENT TANK, 2006 DRAINFIELD AND 2021 DRAINFIELD

ON-SITE GROUND WATER TREATMENT
 SYSTEM LAYOUT

FIGURE

3

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APPENDIX A

Site Background

APPENDIX A – SITE BACKGROUND

Tesoro 2 Go Mart #101/ Interior Fuels Company ADEC Facility ID #2960; ADEC File #100.26.022

The Tesoro 2 Go Mart #101 is a retail gas service/convenience store and the former Interior Fuels Company (IFC) are located at the intersection of South Cushman Street and Van Horn Road in Fairbanks, Alaska. The site has a combined address of 170 East Van Horn Road and 3569 South Cushman Street.

The Tesoro 2 Go Mart #101 was formerly called the Tesoro Discount Truck Stop (DTS) Facility. The IFC was a former heating fuel distribution service company that was located on an adjacent lot next to the Tesoro 2 Go Mart #101 site. Due to their common history of ownership by Tesoro and their shared property lines, both sites are being managed as a single contaminated site. The legal description for these properties is Lot 3 and Lot 4, Block 26, Leisure Subdivision.

July 1991. A former underground storage tank (UST) system and a tanker truck loading rack was removed from the IFC site in July 1991. The UST system contained heating fuel oil and consisted of three 20,000-gallon tanks and a 15,000-gallon tank with a diesel fuel pump station connected the truck loading rack. A Site Assessment (SA) of the closure of the heating oil UST system and the loading rack was conducted by Dames & Moore. A significant amount of petroleum contamination was encountered. The excavation was lined with a reinforced polyethylene liner, and the excavated soil was placed within the liner subject to approval from the Alaska Department of Environmental Conservation (ADEC).

April 1992. Dames and Moore conducted a Release Investigation at IFC to assess the extent of contamination that was associated with the former heating oil USTs and truck loading rack facility. Seven soil borings were drilled and seven groundwater monitoring wells were installed on the IFC property. Extensive subsurface contamination was discovered and free phase petroleum product was found in three of the monitoring wells. The free product thickness ranged from 1.24 feet to 2.95 feet. A well search for domestic drinking water wells was completed around the IFC site.

August 1993. A release of petroleum contamination was discovered during the upgrade of the UST system serving the former DTS facility.

August 1994. Dames and Moore conducted a Release Assessment at the former DTS facility. The Release Assessment included installing three on-site groundwater monitoring wells. Contamination was detected in all three wells and the source of the contamination was assumed to be another off-site facility located upgradient (south of Van Horn Road) of the Tesoro site. A well search of domestic wells located within 0.5 miles of the site was completed.

April 1995. Gilfilian Engineering & Environmental Services, Inc. (GE2T) conducted a groundwater monitoring event of 10 monitoring wells associated with the combined IFC and DTS sites. Free product was found in three of the monitoring wells, with thickness that ranged from

2.68 feet to 5.97 feet. Delineation of the free phase contaminants and dissolved phase contaminants in the groundwater table was estimated and noted to extend downgradient of the Tesoro site to surrounding private property.

July 1995. GE2T conducted a groundwater monitoring event and installed a new off-site, downgradient monitoring well (G-1). A total of 12 wells were surveyed and sampled. The new well was found to be free of contamination. The 6-inch diameter free product recovery well (MW-3) was found to be producing an average of 2.7 gallons of free product on a daily basis.

February 1998. GE2T completed a SA of the abandonment of two floor drain pits located inside the IFC garage. Contamination was discovered in the underlying soil and determined not to warrant clean up or removal. The floor drain system was upgraded by the installation of an aboveground oil/water separator.

March 1998. GE2T completed a well search of drinking water wells located within 0.25 miles of the IFC/DTS properties. A total of 24 wells were identified, of which the majority were located downgradient of the subject site.

June 1999. GE2T conducted a SA of the removal of a 1,000-gallon gasoline UST that served the IFC garage facility. No contamination was detected during the removal of the UST.

June 2001. The former UST system serving the DTS (renamed to Tesoro 2 Go Mart #101) was removed and replaced with a new UST fueling system. A SA for the UST System Closure was completed by GE2T. The former UST system consisted of two 20,000-gallon gasoline tanks and two 20,000-gallon diesel tanks. A 1,000-gallon heating oil tank was also removed during the upgrade of the convenience store. Approximately 1,500 tons of contaminated soil was excavated and shipped off-site for thermal remediation. The new UST system consisted of two 20,000-gallon USTs. An undetermined, small amount of contaminated soil was left in-place at the base of the new USTs and a soil vapor extraction (SVE) piping system was installed for future treatment of the in-situ contaminated soil.

September 2001. A fuel recovery system for the removal of floating fuel product from groundwater on the property of the Tesoro 2 Go Mart #101 and IFC was designed and installed under the direction of GE2T. The fuel recovery system consisted of a 12-foot deep by 350-foot long groundwater interceptor trench and three 12-inch diameter free product recovery wells. The recovery wells were equipped with Spillbuster™ pump systems that were connected to free product storage drums and underground piping to discharge dewatered groundwater to a 1,500-gallon treatment aeration and settling tank, with discharge to the upgradient groundwater via a subsurface infiltration (seepage) bed.

November 2001. GE2T drilled two soil borings and installed five new groundwater monitoring wells (MW-24, MW-25, MW-26, MW-27, and MW-28). Several of these wells were installed for the purpose of assessing the groundwater impact associated with the former seepage pits that served the IFC garage floors. The impact to the groundwater quality from the seepage pits was determined not to be contaminated above ADEC groundwater cleanup levels.

May 2002. GE2T conducted a SA during the removal of a log crib seepage pit that was previously used for the on-site disposal of floor drain waste collected in the IFC garage. A total of 23 tons of contaminated soil was excavated and taken off-site for thermal treatment. The underlying soil was found to have contamination concentration below the soil clean up levels.

August 2002. MWH Americas, Inc. (MWH) performed a SA at IFC for an excavation for the foundation of a new building (garage) located in the northwest corner of the IFC property. The building foundation covered an area that was 40 feet wide and 100 feet long and to a depth of 10 feet. The excavation area included former bulk fuel loading racks. A total of 3,999 tons of contaminated soil was excavated and transported for thermal remediation. A SVE system was installed at the base of the excavation to address the potential threat of hydrocarbon vapor migration into the new garage building.

October 2003. MWH conducted a Release Investigation (RI) that included replacing two downgradient monitoring wells and a seepage bed for the recirculation of groundwater that was pumped from the groundwater treatment recovery system. The purpose of the RI was to investigate the extent of soil contamination and to evaluate groundwater quality at the site. The RI involved drilling two soil borings downgradient and off-site of the Tesoro 2 Go Mart #101 property. These wells were completed as 2-inch diameter monitoring wells (MW-29 and MW-30). Petroleum hydrocarbon contamination was not detected in either soil or groundwater in the two, new off-site groundwater monitoring wells. The fuel recovery system was re-started on October 16, 2003, immediately following the installation of a replacement, expanded infiltration (seepage) bed that is used for the discharge of aerated and settled water pumped from the free product recovery wells. The free product recovery system recovered approximately 1,200 gallons of fuel, from November 2001 to 2003.

May 2007. The free product recovery system remains in operation, as does the dissolved phase groundwater treatment system. Free product is still present in several recovery wells and monitoring wells. Groundwater contaminant plume is stable. Twice yearly monitoring well sampling and quarterly treatment system operation and maintenance continue.

November 2011. MWH decommissioned eight groundwater monitoring wells (MW-2, MW-5, MW-9, MW-16, MW-18, MW-25, MW-27, and MW-28) and two observation wells (OWW and OWE).

July 2013. MWH conducted a SA for purpose of evaluating the characterization and extent of petroleum contamination in the shallow soil strata located on the Tesoro 2 Go Mart #101 and former IFC properties. Three shallow test pits were excavated on the #101 property and one soil test pit excavated on the former IFC property. All of the test holes were located in close proximity to the upgradient edge of the Interceptor Trench. Nearly all of the soil samples had a significant amount of petroleum contamination remaining in the soil strata. The extent of contamination was greatest at the groundwater table. Based on the relatively tight (fine grained) soil found in the test pits, it was recommended not to use chemical oxidation treatment methods, but to continue use of the existing Interceptor Trench. This trench has proven to be an effective means of controlling the

flow of the contaminated groundwater and associated free product from moving downgradient (off-site) of the sites.

August 2013. Well CRW (Central Recovery Well) was added to the monitoring event sampling due to the recent findings during the excavation of test pits on July 23, 2013.

May 2015. MWH conducted a second quarter groundwater monitoring event on May 26, 2015. Monitoring Well MW-3 contained ice and could not be sampled. Monitoring Wells MW-8, MW-14, and MW-17 all exceeded the ADEC groundwater cleanup levels (GCLs) for GRO and DRO, with MW-14 also for benzene. The Aeration Tank exceeded the GCLs for both benzene and DRO. The product recovery system in Recovery Well WRW was not operational.

May 2016. MWH conducted a second quarter groundwater monitoring event on May 12, 2016. Free product was observed in Monitoring Well MW-3 (0.2124 feet thick) and CRW-2 (1.60185 feet thick). Monitoring Well MW-14 was not sampled because of the presence of an ice plug. The GCL was exceeded for DRO in Monitoring Well MW-8, GRO and DRO in MW-17, and benzene in the Aeration Tank. The product recovery system in Recovery Well WRW and CRW-2 were not operational, although the drawdown pump was operating as normal in CRW-2.

September 2017. Stantec conducted the annual groundwater monitoring event during the month of September 2017. Results of the analytical sampling found analytes detected above the ADEC GCLs in the following wells:

- Monitoring Well MW-3: benzene, xylene, ethylbenzene, GRO, DRO, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene.
- Monitoring Well MW-8: benzene, ethylbenzene, and DRO.
- Monitoring Well MW-14: benzene, xylene, ethylbenzene, GRO, and DRO.
- Monitoring Well MW-17: benzene, xylene, ethylbenzene, GRO, DRO, naphthalene, 1,2,4-trimethylbenzene, and vinyl chloride.
- Remediation Well CRW-2: benzene, ethylbenzene, naphthalene, 1,2,4-trimethylbenzene, and vinyl chloride.

Analytes were detected above practical quantitation limits (PQLs), but below the GCLs, in all of the monitoring wells and effluent from the Aeration Treatment Tank. A new free product skimmer pump was installed in Recovery/Remediation Well CRW-2. Upgrades were also made to the aeration treatment tank including the water discharge line from the groundwater drawdown pump in CRW-2 and the aeration line from the blower to the treatment tank.

September 2018. The analytical results for the monitoring wells sampled during the September 2018 monitoring event were relatively consistent with the last groundwater monitoring event (September 2017). The effluent from the remediation aeration tank was found to have no contaminants of concern that exceeded the GCLs, which is an indication that effective treatment is being provided by the aeration tank.

Results of the analytical sampling showed the analytes detected above the ADEC GCLs were:

-
- Monitoring Well MW-3: ethylbenzene, xylenes, DRO, 1-methylnaphthalene, 2-methylnaphthalene, 1,2,4 trimethylbenzene, 1,3,5 trimethylbenzene, and naphthalene.
 - Monitoring Well MW-8: DRO.
 - Monitoring Well MW-14: benzene, ethylbenzene, xylenes, GRO, DRO, 1-methylnaphthalene, naphthalene, 2-methylnaphthalene, 1,2,4 trimethylbenzene, and 1,3,5-trimethylbenzene.
 - Monitoring Well MW-17: benzene, ethylbenzene, xylenes, GRO, DRO, naphthalene, and 1,2,4-trimethylbenzene.
 - Remediation Well CRW-2: benzene, ethylbenzene, xylenes, DRO, naphthalene, 1,2,4-trimethylbenzene, and 1-methylnaphthalene.

Several VOCs and PAHs were reported as undetected but had PQLs that equaled or exceeded their corresponding GCLs.

The free product skimmer and groundwater drawdown pump in CRW-2 are operating on a year-round basis. Stantec installed telemetry components to monitor the operation of the following equipment: free product skimmer, drawdown pump discharge line, and the blower aeration line to the aeration remediation tank.

October 2019. The analytical results for the monitoring wells sampled during the October 2019 monitoring event were relatively consistent with the last groundwater monitoring event (September 2018). The effluent from the remediation aeration tank was found to have no contaminants of concern that exceeded the GCLs, which is an indication that effective treatment is being provided by the aeration tank.

Results of the analytical sampling showed the analytes detected above the ADEC GCLs were:

- Monitoring Well MW-3: benzene, ethylbenzene, xylenes, GRO, DRO, naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene.
- Monitoring Well MW-8: DRO.
- Monitoring Well MW-14: benzene, ethylbenzene, xylenes, GRO, DRO, naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene.
- Monitoring Well MW-17: benzene, ethylbenzene, and DRO.
- Monitoring Well MW 19-1: benzene, ethylbenzene, xylenes, GRO, DRO, naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene.
- Remediation Well CRW-2: benzene, ethylbenzene, xylenes, naphthalene, and 1,2,4-trimethylbenzene.

Several VOCs and PAHs were reported as undetected but had PQLs that exceeded their corresponding GCLs. The free product skimmer and groundwater drawdown pump in CRW-2 are operating on a year-round basis.

January thru July 2020. The free product skimmer and groundwater drawdown pump in CRW-2 were initially operating on a year-round basis. When large particulates of iron oxide blocked the skimmer screen, the skimmer was taken offline until maintenance could be completed. The site blower stopped working between April and June of 2020. Once the depth of free product in the well exceeded 4' at the end of June, the drawdown pump was shut off until the skimmer could be pulled and completely cleaned.

Installation of WRW-2020 occurred on July 14, 2020, and has been previously document in November 24, 2020 Technical Memo "Speedway Store 5313 (Former Tesoro 2Go Mart 101/IFC) - Installation of 6" Diameter Product Recovery Well WRW 2020". Skimmer was turned off when the system was once again obstructed with iron oxide.

August and September 2020. The free product skimmer was removed from well CRC-2 in August. Free product was found in CRW-2, MW 19-1 and MW 19-2, and was removed periodically with a peristaltic pump. A blower for the aeration tank was installed in a Knack box next to the aeration remediation tank in September 2020. The blower stopped working and new replacement blower was installed. A temporary pump discharge line was installed from well WRW-2020 to the 1,500 galloon aeration treatment tank.

October 2020. The annual groundwater monitoring event included: measuring the depth to groundwater; measuring water quality intrinsic parameters; collecting and analyzing groundwater samples from Monitoring Wells MW-3, MW-4, MW-8, MW-14, and MW-17, as well as Drainfield (Aeration Tank effluent) and both Remediation Wells CRW-2 and WRW-2020(**Figure 2**). Monitoring Well MW 19-1 and 19-2 was not sampled due to the presence of free product in the well.

Results of the analytical sampling showed the analytes detected above the ADEC groundwater cleanup levels (GCLs) were:

- Monitoring Wells MW-3, MW-14, and MW-17: benzene, ethylbenzene, xylenes, diesel range organics (DRO), naphthalene, 1-2-4 trimethylbenzene, and 1-3-5 trimethylbenzene.
- Monitoring Well MW-8: DRO and naphthalene.
- Remediation Well CRW-2: benzene, ethylbenzene, naphthalene, and DRO.
- Remediation Well WRW-2020: ethylbenzene, total xylenes, naphthalene, and 1-2-4 trimethylbenzene.
- Drainfield: naphthalene. Sampling occurred last, with purge water from all other sampled wells having been disposed of in the aeration tank that discharges to the effluent line.
- Monitoring Wells MW 19-1 and 19-2 was not sampled due to the presence of free product which was actively measured and removed using a peristaltic pump on more than one occasion prior to this sampling event.

September 2021. The groundwater monitoring event was conducted on September 27, 2021. The monitoring event included: measurement of the depth to groundwater; measurement of water quality intrinsic parameters; collection and analyses of groundwater samples from Monitoring Wells MW-3, MW-4, MW-8, MW-14, and MW-17, MW-19-1, as well as treated effluent from the Aeration Treatment Tank and both free product recovery wells CRW-2 and WRW-2020. Monitoring Well MW 19-2 was not sampled due to the presence of a thin layer (0.01-feet thick) of free product in the well. In addition, a representative sample was collected and analyzed from MW-30. The sample from MW-30 was made in a response to a verbal request from the ADEC.

Results of the analytical sampling showed that the following analytes were detected above ADEC GCLs:

- MW-3: ethylbenzene, diesel range organics (DRO), 1-2-4 trimethylbenzene (TMB) and naphthalene.
- MW-14 and MW 19-1: benzene, ethylbenzene, xylenes, gasoline range organics (GRO), DRO, naphthalene, 1-2-4 TMB, and 1-3-5 TMB.
- MW-17: benzene, ethylbenzene, xylenes, GRO, DRO, naphthalene, and 1-2-4 TMB
- MW-8: DRO and naphthalene.
- Free Product Recovery Well CRW-2: ethylbenzene.
- Free Product Recovery Well WRW-2020: ethylbenzene, xylenes, naphthalene, and 1-2-4 TMB.

The analytical results for the monitoring wells sampled during the September 2021 monitoring event were relatively consistent with some noted improvement compared to last year's groundwater monitoring event completed in October 2020. The most significant improvement was noted in the decrease or lack of free product in wells MW 19-1, MW 19-2, CRW-2 and WRW 2020.

APPENDIX B

Field Methods and Procedures

APPENDIX B – FIELD METHODS AND PROCEDURES

The following table presents the tasks for the Alaska Department of Environmental Conservation (ADEC)-approved 2021 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 5313 [formally Tesoro 2 Go Mart #101/Interior Fuels Company (ADEC Facility ID #2960; ADEC File #100.26.022)]

2021 Work Plan Schedule

2021 Work Plan Schedule for Speedway Store 5313 (former T2GM 101/IFC)

Work Plan Task		1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Task 1	Monitoring Wells: MW-3, MW-4, MW-8, MW-14, MW-17, MW-19-1, MW-19-2, and Aeration Treatment Tank (influent from wells CRW-2 and WRW 2020 and effluent discharged to the drainfield)			V, G, D, P & I	
Task 2	O&M Free Product Recovery Systems in wells CRW-2 and WRW 2020	✓	✓	✓	✓
Task 3	Install Additional 100-foot long Drainfield to handle increased flow from wells CRW-2 & WRW 2020.		✓	✓	

Key:

- AK – Alaska Test Method
- D – Diesel range organics by AK102.
- E – Drinking water parameters by EPA Method 524.1.
- G – Gasoline range organics by AK101.
- I – Intrinsic indicators consisting of dissolved oxygen, specific conductance, oxygen-reduction potential, pH, and temperature.
- O&M – Operation and Maintenance
- V – Volatile organic compounds by EPA Test Method 8260C.
- S – Sodium analyzed by Metals (ICP) Method 6010C.
- P – Polynuclear aromatic hydrocarbons (PAHs), i.e., semi-volatile organic compounds, by EPA Test Method 8270D Selective Ion Monitoring (SIM).

- Task 1 – Groundwater Monitoring

Annual monitoring of the groundwater wells and the remediation free product recovery well will be conducted. Sampling locations and analyses for the groundwater monitoring wells and free product recovery wells are listed above on the 2021 Work Plan Schedule.

- Task 2 – O&M Remediation System

Perform quarterly maintenance on the free product recovery wells CRW-2 and WRW 2020. The O&M work will include quarterly maintenance on the free product recovery pumps, the groundwater drawdown pump, the aeration blower, the iMonnit sensors and extraction of free product with a peristaltic pump as necessary. The submersible drawdown pumps are operated on a continuous basis (24 hours per day). The groundwater pumped with the two remediation wells' drawdown submersible pumps are operated on a continuous basis (24 hour per day). The drawdown water from both wells discharges to the on-site 1,500 gallon, 2 compartment aeration tank that flows into the drainfield Infiltrator[®] system for additional treatment. The free product recovered from remediation wells CRW-2 and WRW 2020 will be collected and temporarily stored on-site in a double-walled drum that is equipped with an over-fill shut-off device. The volume of the stored free product will be measured and properly disposed of on an as needed basis.

- Task 3 – Install additional 100-foot long drainfield to handle increased flow from wells CRW-2 and WRW 2020

The proposed drainfield will be located parallel to the existing 100-foot long drainfield that was installed by Stantec (formerly MWH) in 2006. The new 100-foot long drainfield will be connected to a header pipe from the outlet of the aeration treatment tank. Treated effluent from the aeration tank will be split between the existing drainfield and the proposed drainfield. The proposed 100-foot long drainfield will be constructed with an Infiltrator[®] drainage system similar in design used for the existing 100-foot drainfield.

The Corrective Action Work Plan for the year 2021 will be implemented by Stantec on behalf of Speedway LLC. 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 2021 Work Plan Schedule shown above.

APPENDIX C

*Field Measurements, Notes, and
Hydraulic Gradient Plot*

**Speedway Store 5313
3rd Quarter Sampling Event**

Project: TNS #101

Date: 9/27/2021

Project number: 185751324

Samplers: Leslie Petre and Geoff Moorhead

Weather: 30-35F, Overcast with winds 3-10mph

Well ID	Volume Purged (gallons)	Sheen/Odor	Temp. (°C)	pH	Dissolved Oxygen (mg/l)	ORP (mV)	Specific Conductance (µs/cm)	Top of Casing ¹ (feet)	Depth to Groundwater (feet btoc)	Well Depth (feet)
MW-3	2.64	y/y	6.1	6.54	1.27	61.2	7.42	95.45	6.29	12.3
MW-4	2.2	n/n	5.1	6.64	3.58	57.2	3.93	98.64	10.15	14.55
MW-8	33.1	y/y	6.9	6.31	1.42	31.2	5.74	101.16	12.59	20.09
MW-14	0.1	n/slight	7	6.63	0.91	49.2	7.31	99.34	10.84	15.26
MW-17	1.8		6.1	6.66	2.33	31.1	4.85	97.62	9.14	12.78
MW 19-1	3.8	y/y	6.2	6.71	1.97	26.5	8.00	98.37	9.85	17.57
MW 19-2	NP	NM	NM	NM	NM	NM	NM	97.83	9.34	18.01
MW-30	1.3	n/n	6.1	6.5	1.61	59.9	9.70	97.63	9.26	11.85
CRW-2	pump running	n/n	7.3	6.85	1.91	29.3	5.21	101.37	16.43	27.23
WRW-2020	pump running	n/n	8.2	6.52	1.30	98.4	5.11	99.37	11.00	27.88
Drainfield	NP	n/n	7.7	7.69	7.72	44.3	4.92	97.16	5.75	8.92

1 - Based on a vertical control survey completed on July 20, 2021, using a BM1 with a beginning elevation of 100 feet and actual topographic datum of 441.11 feet marked previously

NC - Not Calculated

NM - Not Measured

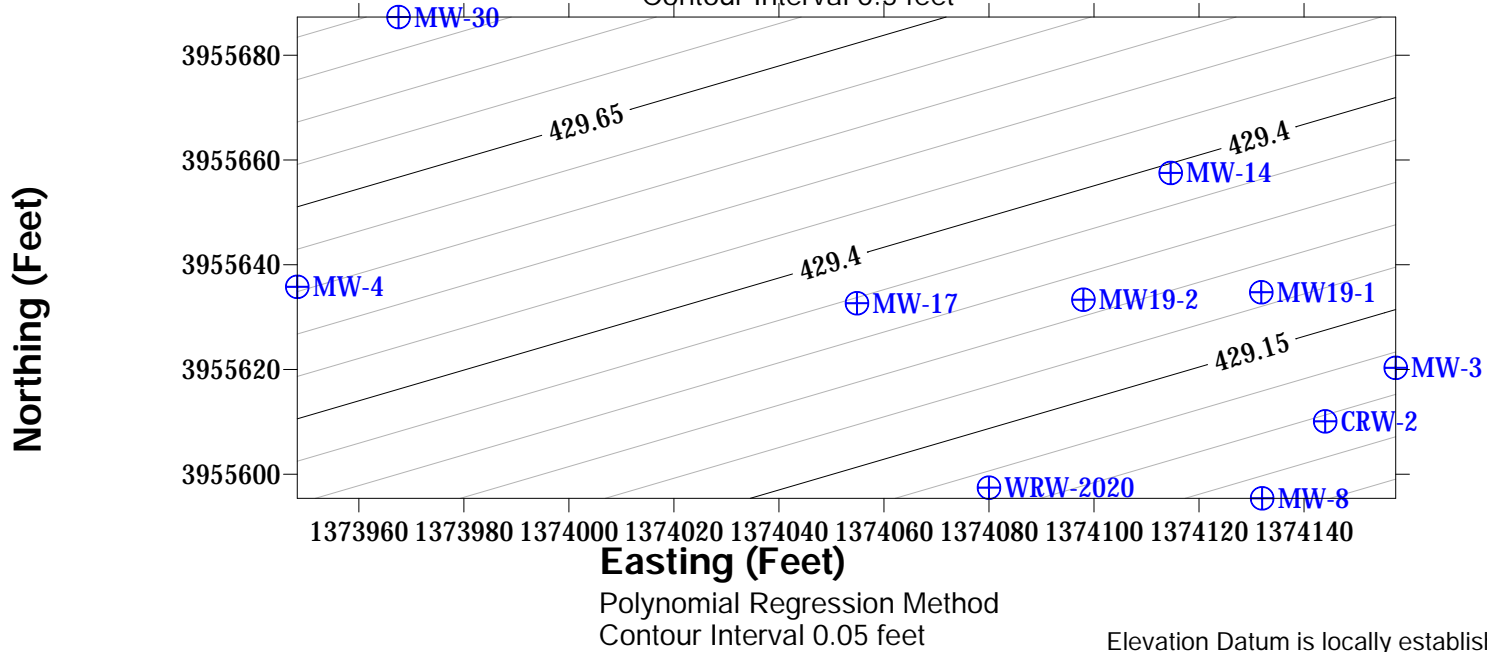
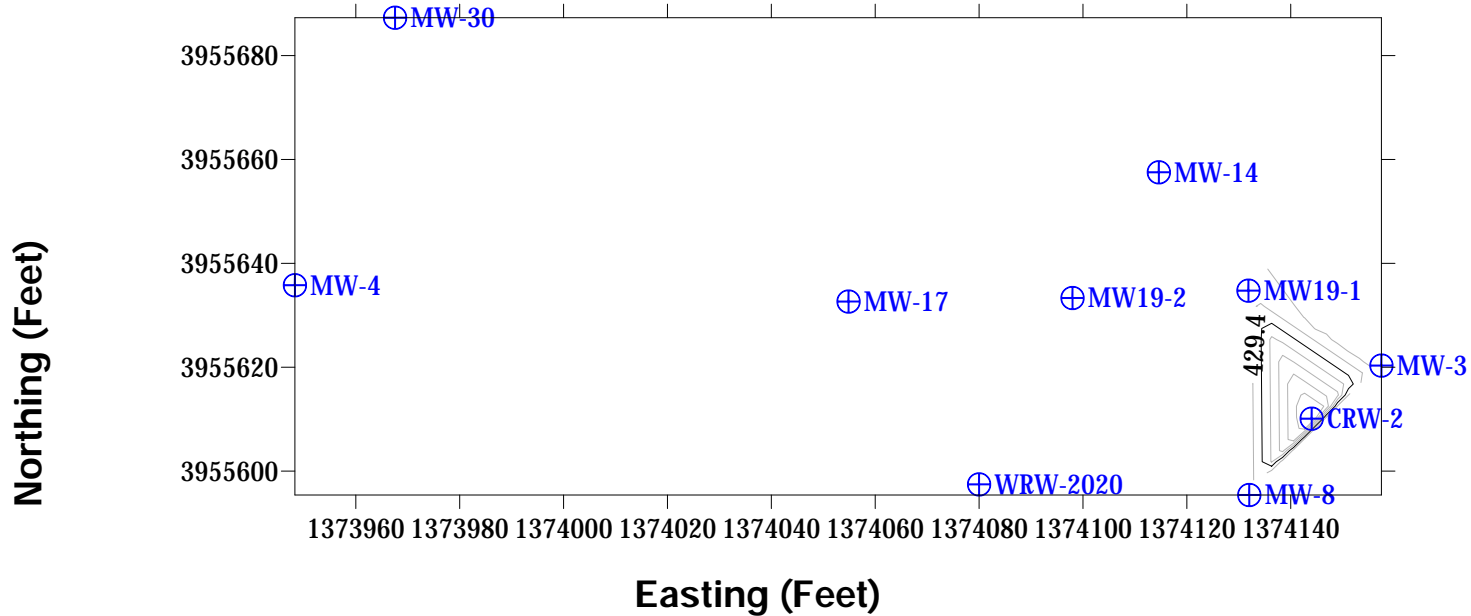
NP - Not Purged

Well ID	Notes	Well Dia.	Sample Date/Time
MW-3	Used peripump with dedicated sample line. Dark, sheen, strong fuel smell	2"	9/27/21 1530
MW-4	Bailed until dry, let refresh before finishing bailing. Organic smell with active microbes	2"	9/27/21 1440
MW-8	Used Peripump with dedicated sample line. Sheen noted in sample containers	6"	9/27/21 1745
MW-14	Used peripump with dedicated sample line. sheen, strong fuel smell	1.25"	9/27/21 1415
MW-17	Bailed until dry, let refresh before finishing.	2"	9/27/21 1710
MW 19-1		2"	9/27/21 1640
MW 19-2	Free Product measured 0.01'	2"	NM
MW 30	silty and dark	2"	9/27/21 1525
CRW-2	free product measured, sampled from sample tap	6"	9/27/21 1145
WRW-2020	sampled from end of line	6"	9/27/21 1110
Drainfield	Bailed 2 gallons to clear sludge prior to sampling, sampled at viewpoint south of tank	4"	9/27/21 1210
TNS 101 Dup 1	Drainfield		9/27/21 1210

Instruments / methods used	Model
Static water level	
pH	
Conductivity	
Dissolved Oxygen	
Temperature	
ORP	

Lab Analytical Methods:	
VOCs (8060)	ALL
GRO (AK101)	ALL
DRO (AK102)	ALL
PAHs (8270SIM)	ALL

Speedway Store #5313 (Former Tesoro 2 Go Mart #101)- Groundwater Elevation Contours September 27, 2021



APPENDIX D

Tables of Historical Monitoring Data

Appendix D Tables of Historical Groundwater Monitoring Data

Monitoring Well MW-1

Date	Benzene (mg/L)	GRO (mg/L)	DRO (mg/L)	Product Elevation (feet)	Measured GW Elevation (feet)	Corrected GW Elevation (feet)
04-Nov-91	0.016	NS	NS	431.01	430.91	430.99
29-Jan-92	NS	NS	NS	432.03	430.34	431.69
12-Apr-95	NS	NS	NS	432.17	426.20	430.98
19-Jul-95	0.278	NS	NS	NA	432.84	NA
22-May-96	NS	NS	NS	NA	NM	NA
06-Nov-96	NS	NS	NS	NA	NM	NA
29-Apr-98	NS	NS	NS	NA	NM	NA
13-Oct-98	0.149	10	47.8	NA	431.47	NA
28-Jan-00	NS	NS	NS	429.52	427.88	429.19
24-Apr-02	NS	NS	NS	NA	NM	NA
20-Aug-02	Well Destroyed					
GCL	0.0046	2.2	1.5	NA	NA	NA

Not sampled Jan. 29, 1992- April 12, 1995
Not Sampled Jan. 28, 2000 to April 24, 2002

Monitoring Well MW-2

Date	Benzene (mg/L)	GRO (mg/L)	DRO (mg/L)	Product Elevation (feet)	Measured GW Elevation (feet)	Corrected GW Elevation (feet)
04-Nov-91	U	NS	NS	NA	431.31	NA
17-Nov-97	U	U	NS	NA	431.01	NA
29-Apr-98	U	U	0.203	NA	428.85	NA
13-Oct-98	U	U	0.278	NA	431.18	NA
27-Jul-00	U	U	0.314	NA	431.71	NA
08-Mar-01	NS	NS	NS	NA	431.08	NA
04-Jun-01	U	U	U	NA	431.32	NA
30-Nov-01	NS	NS	NS	NA	NM	NA
04-Jun-08	NS	NS	NS	NA	NM	NA
13-May-09	U (0.0005)	U (0.05)	U (0.467)	NA	NM	NA
15-Jun-10	NS	NS	NS	NA	NM	NA
04-Oct-11	Well Decommissioned					
GCL	0.0046	2.2	1.5	NA	NA	NA

Analytes undetected/Not Sampled Nov. 04, 1991 to Nov. 17, 1997
No activity involving well Nov. 30, 2001- June 04, 2008

Appendix D
Tables of Historical Groundwater Monitoring Data
Monitoring Well MW-3

Date	Benzene (mg/L)	GRO (mg/L)	DRO (mg/L)	Product Elevation (feet)	Measured GW Elevation (feet)	Corrected GW Elevation (feet)
6-Nov-91	NS	NS	NS	431.53	428.98	431.02
12-Mar-95	NS	NS	NS	430.86	427.70	430.23
13-Apr-95	0.090	NS	NS	432.05	429.12	431.46
19-Jul-95	NS	NS	NS	432.76	430.53	432.31
25-Oct-95	0.480	NS	200	432.11	430.18	431.72
22-May-96	0.050	NS	NS	431.27	429.80	430.98
06-Nov-96	NS	NS	NS	430.86	427.68	430.22
19-Mar-97	0.095	NS	NS	430.22	426.72	429.52
17-Nov-97	0.0421	2.2	NS	432.89	430.96	432.50
29-Apr-98	0.0273	2.3	118	430.62	428.17	430.13
13-Oct-98	NS	NS	NS	432.25	431.07	432.01
08-Nov-04	NA	NA	NA	430.45	429.45	430.25
01-Apr-05	NS	NS	NS	NA	NM	NA
27-Sep-05	NS	NS	NS	432.46	431.08	432.18
16-May-06	NS	NS	NS	0.5 feet thick	NM	NA
14-Sep-06	NS	NS	NS	Several inches	NM	NA
14-May-07	NS	NS	NS	430.10	429.70	430.02
04-Jun-08	NS	NS	NS	NM	NM	NA
24-May-12	NS	NS	NS	NA	NM	NA
12-Aug-13	NS	NS	NS	0.6 feet thick	NM	NA
06-May-14	U (0.0005)	0.072	1.1	NA	NM	NA
26-May-15	NS	NS	NS	NA	Frozen	NA
12-May-16	NS	NS	NS	428.32	428.08	428.27
07-Sep-17	0.024	3.7	160	429.65	429.64	429.65
07-Sep-18	0.0033	1.3	60	NA	430.78	NA
23-Oct-19	0.0047	3.1	210	NA	429.33	NA
21-Oct-20	0.00735	1.37	2.67	NA	429.26	NA
27-Sep-21	0.00136	1.19	3.81	NA	433.27	NA
GCL	0.0046	2.2	1.5	NA	NA	NA

Free product evident, Not sampled Nov. 6, 1991 to March 12, 1995

Not monitored June 4, 2008 to May 24, 2012

Appendix D
Tables of Historical Groundwater Monitoring Data
Monitoring Well MW-4

Date	Benzene (mg/L)	GRO (mg/L)	DRO (mg/L)	Product Elevation (feet)	Measured GW Elevation (feet)	Corrected GW Elevation (feet)
04-Nov-91	0.17	NS	NS	NA	430.94	NA
03-Jan-92	NS	NS	NS	NA	430.70	NA
28-Jan-92	0.16	NS	NS	NA	430.83	NA
09-Mar-92	NS	NS	NS	NA	430.61	NA
23-Apr-92	0.11	NS	NS	NA	431.00	NA
16-Jul-92	U	NS	NS	NA	433.04	NA
11-Aug-92	0.13	NS	NS	NA	432.88	NA
10-Sep-92	0.15	NS	NS	NA	432.08	NA
07-Oct-92	0.11	NS	NS	NA	431.43	NA
21-Dec-92	0.11	NS	NS	NA	430.31	NA
09-Mar-93	0.093	NS	NS	NA	430.36	NA
23-Sep-94	U	NS	NS	NA	431.72	NA
17-Nov-97	U	U	NS	NA	430.61	NA
29-Apr-98	U	U	0.405	NA	428.37	NA
13-Oct-98	U	U	0.511	NA	430.78	NA
05-Nov-99	U	U	0.688	NA	430.16	NA
27-Jul-00	NS	NS	NS	NA	NM	NA
08-Mar-01	NS	NS	NS	NA	430.58	NA
04-Jun-01	U	U	0.915	NA	430.81	NA
30-Nov-01	U	U	0.955	NA	430.56	NA
24-Apr-02	NS	NS	NS	NA	430.28	NA
20-Aug-02	U	U	3.31	NA	432.83	NA
06-Nov-02	NS	NS	NS	NA	431.14	NA
27-Sep-05	NS	NS	NS	NA	NM	NA
16-May-06	U (0.0005)	U (0.050)	0.616	NA	430.29	NA
14-Sep-06	U (0.0005)	2.17	1.38	NA	431.37	NA
14-May-07	U (0.0005)	U	U	NA	431.86	NA
04-Jun-08	U (0.0005)	0.308	0.581	NA	430.46	NA
13-May-09	U (0.0005)	U (0.05)	U (0.417)	NA	431.46	NA
15-Jun-10	U (0.0005)	U (0.05)	U (0.455)	NA	429.00	NA
26-May-11	U (0.0005)	U (0.05)	0.439	NA	430.81	NA
24-May-12	U (0.0005)	U (0.05)	0.565	NA	428.69	NA
12-Aug-13	U (0.0005)	U (0.05)	U (0.400)	NA	428.95	NA
06-May-14	U (0.0005)	U (0.05)	U (0.41)	NA	428.80	NA
26-May-15	U (0.001)	U (0.05)	U (0.21)	NA	428.60	NA
12-May-16	U (0.0020)	U (0.1)	0.78	NA	428.17	NA
07-Sep-17	U (0.00040)	U (0.150)	0.59	NA	429.50	NA
07-Sep-18	U (0.00040)	U (0.150)	U (0.28)	NA	430.61	NA
23-Oct-19	U (0.003)	U (0.25)	0.33 H	NA	431.53	NA
21-Oct-20	U (0.001)	0.595	0.95	NA	NA	NA
27-Sep-21	U (0.001)	0.0498	0.834	NA	432.6	NA
GCL	0.0046	2.2	1.5	NA	NA	NA

Undetected levels of Analytes September 23, 1994 to Nov. 17, 1997
Undetected levels of Analytes or Not Sampled Nov. 6, 2002 to Sept. 27, 2005

Appendix D Tables of Historical Groundwater Monitoring Data

Monitoring Well MW-5

Date	Benzene (mg/L)	GRO (mg/L)	DRO (mg/L)	Product Elevation (feet)	Measured GW Elevation (feet)	Corrected GW Elevation (feet)
04-Nov-91	U	NS	NS	NA	431.47	NA
17-Nov-97	U	U	NS	NA	431.22	NA
29-Apr-98	U	U	0.106	NA	429.11	NA
13-Oct-98	U	U	0.129	NA	431.41	NA
04-Nov-99	U	U	U	NA	430.95	NA
26-May-11	NS	NS	NS	NA	NM	NA
04-Oct-11	Well Decommissioned					
GCL	0.0046	2.2	1.5	NA	NA	NA

Analytes Undetected/Not Sampled Nov. 4, 1991- Nov. 17, 1997

Analytes Undetected/Not Sampled Nov. 4, 1999- May. 26, 2011

Monitoring Well MW-6

Date	Benzene (mg/L)	GRO (mg/L)	DRO (mg/L)	Product Elevation (feet)	Measured GW Elevation (feet)	Corrected GW Elevation (feet)
28-Jan-92	U	NS	NS	NA	430.59	NA
17-Nov-97	U	U	NS	NA	430.37	NA
29-Apr-98	U	U	0.119	NA	427.95	NA
13-Oct-98	U	U	0.151	NA	430.33	NA
27-Jul-00	U	U	0.331	NA	431.15	NA
08-Mar-01	NS	NS	NS	NA	NM	NA
04-Jun-01	NS	NS	NS	NA	NM	NA
30-Nov-01	U	U	1.61	NA	430.13	NA
14-May-07	Well Destroyed					
GCL	0.0046	2.2	1.5	NA	NA	NA

Analytes Undetected/Not Sampled Jan. 28, 1992 to Nov. 17, 1997

Monitoring Well MW-7

Date	Benzene (mg/L)	GRO (mg/L)	DRO (mg/L)	Product Elevation (feet)	Measured GW Elevation (feet)	Corrected GW Elevation (feet)
28-Jan-92	U	NS	NS	NA	430.59	NA
17-Nov-97	U	U	NS	NA	430.43	NA
29-Apr-98	0.00223	U	0.132	NA	428.18	NA
13-Oct-98	NS	NS	NS	NA	NM	NA
07-Jun-00	Well Destroyed					
GCL	0.0046	2.2	1.5	NA	NA	NA

Analytes Undetected/Not Sampled Jan. 28, 1992 to Nov. 17, 1997

Appendix D
Tables of Historical Groundwater Monitoring Data

Monitoring Well MW-8

Date	Benzene (mg/L)	GRO (mg/L)	DRO (mg/L)	Product Elevation (feet)	Measured GW Elevation (feet)	Corrected GW Elevation (feet)
29-Jan-92	NS	NS	NS	431.54	428.79	430.99
18-Aug-04	NS	NS	NS	NA	431.86	NA
30-Aug-04	0.00516	0.329	1.69	NA	NM	NA
08-Nov-04	NS	NS	NS	NA	430.70	NA
01-Apr-05	NS	NS	NS	NA	NM	NA
27-Sep-05	U (0.0005)	U (0.05)	U (0.4)	NA	430.21	NA
16-May-06	0.000695	0.0766	4.12	NA	430.59	NA
14-Sep-06	0.00645	0.284	0.956	NA	431.52	NA
14-May-07	NS	NS	NS	430.04	430.00	430.03
04-Jun-08	0.00188	0.450	5.81	430.61	430.60	430.61
13-May-09	0.00238	0.740	12.6	NA	430.98	NA
15-Jun-10	0.00467	1.390	2.45	NA	428.96	NA
26-May-11	0.00188	1.10	13.1	NA	431.01	NA
24-May-12	0.00134	0.524	1.88	NA	428.91	NA
12-Aug-13	NS	NS	NS	428.42	428.40	428.42
07-May-14	0.00067	2.2	43	NA	428.42	NA
26-May-15	0.0025	2.8	65	NA	428.87	NA
12-May-16	0.00087	0.86	12	NA	428.34	NA
07-Sep-17	0.016	0.390	27	NA	429.69	NA
07-Sep-18	0.00067	0.280	20	NA	430.79	NA
23-Oct-19	U (0.003)	0.45	12	NA	429.39	NA
21-Oct-20	0.000695	0.126	8.97	NA	429.3	NA
27-Sep-21	0.00074	0.462	20.5	NA	429.66	NA
GCL	0.0046	2.2	1.5	NA	NA	NA

Analytes undetected/Not Sampled Jan. 29, 1992 to Aug. 18, 2004

Monitoring Well MW-9

Date	Benzene (mg/L)	GRO (mg/L)	DRO (mg/L)	Product Elevation (feet)	Measured GW Elevation (feet)	Corrected GW Elevation (feet)
16-May-03	NS	NS	NS	431.36	431.16	431.32
04-Aug-03	NS	NS	NS	NA	NM	NA
24-Nov-03	NS	NS	NS	NA	NM	NA
10-Feb-04	NS	NS	NS	NA	NM	NA
03-May-04	NS	NS	NS	430.87	429.21	430.54
18-Aug-04	NS	NS	NS	432.19	430.59	431.87
08-Nov-04	NS	NS	NS	430.09	430.04	430.08
01-Apr-05	NS	NS	NS	NA	NM	NA
26-May-11	NS	NS	NS	NA	NM	NA
04-Oct-11	Well Decommissioned					
GCL	0.0046	2.2	1.5	NA	NA	NA

Monitoring Wells MW-10, MW-11, and MW-12 consist of steel pipe casings, and are typically frozen. Monitoring Well MW-12 has been destroyed. Data for Monitoring Wells MW-10, MW-11, and MW-12 is not included.

Appendix D Tables of Historical Groundwater Monitoring Data

Monitoring Well MW-13

Date	Benzene (mg/L)	GRO (mg/L)	DRO (mg/L)	Product Elevation (feet)	Measured GW Elevation (feet)	Corrected GW Elevation (feet)
04-Nov-99	0.00468	0.096	1.26	NA	NM	NA
27-Jul-00	0.012	0.32	0.848	NA	NM	NA
08-Mar-01	NS	NS	NS	NA	430.69	430.69
04-Jun-01	0.00276	U	0.831	NA	430.93	430.93
04-Oct-11	Well Decommissioned					
GCL	0.0046	2.2	1.5	NA	NA	NA

Monitoring Well MW-14

Date	Benzene (mg/L)	GRO (mg/L)	DRO (mg/L)	Product Elevation (feet)	Measured GW Elevation (feet)	Corrected GW Elevation (feet)
10-Apr-00	NS	NS	NS	NA	428.72	NA
08-Nov-04	NS	NS	NS	NA	428.18	NA
01-Apr-05	0.0162	2.16	22	NA	429.39	NA
27-Sep-05	0.0194	1.07	4.34	NA	429.31	NA
16-May-06	NS	NS	NS	NA	NM	NA
14-Sep-06	0.00323	0.457	1.51	NA	NR	NA
14-May-07	NS	NS	NS	NA	NM	NA
04-Jun-08	0.0128	0.964	3.02	NA	430.57	NA
13-May-09	0.0267	2.18	1.77	NA	430.88	NA
15-Jun-10	0.0119	1.15	1.89	NA	429.05	NA
26-May-11	0.0103	1.23	3.78	NA	430.92	NA
24-May-12	0.00271	0.284	2.72	NA	428.79	NA
12-Aug-13	0.0442	3.77	120	NA	429.18	NA
06-May-14	0.027	12	67	NA	426.53	NA
26-May-15	0.020	3.6	6.4	NA	426.47	NA
Ice Plug	Ice Plug					
07-Sep-17	0.050	6.5	14	NA	429.60	NA
07-Sep-18	0.074	U (7.5)	26	NA	430.73	NA
23-Oct-19	0.054	12	15 H	NA	429.64	NA
21-Oct-20	0.0585	6.68	4.75	NA	429.21	NA
27-Sep-21	0.0251	11.9	3.17	NA	432.61	NA
GCL	0.0046	2.2	1.5	NA	NA	NA

Not sampled April 10, 2000 to Nov. 8, 2004

Monitoring Well MW-15

Date	Benzene (mg/L)	GRO (mg/L)	DRO (mg/L)	Product Elevation (feet)	Measured GW Elevation (feet)	Corrected GW Elevation (feet)
04-Nov-99	0.106	12.0	8.51	NA	NM	NA
28-Jan-00	NS	NS	NS	NA	429.29	NA
27-Jul-00	NS	NS	NS	431.69	431.03	431.56
08-Mar-01	NS	NS	NS	431.04	430.44	430.88
04-Jun-01	NS	NS	NS	NA	Frozen	NA
30-Nov-01	Well Destroyed					
GCL	0.0046	2.2	1.5	NA	NA	NA

Appendix D
Tables of Historical Groundwater Monitoring Data
Monitoring Well MW-16

Date	Benzene (mg/L)	GRO (mg/L)	DRO (mg/L)	Product Elevation (feet)	Measured GW Elevation (feet)	Corrected GW Elevation (feet)
04-Nov-99	U	2.4	1.83	NA	NS	NA
10-Apr-00	NS	NS	NS	429.23	428.88	429.16
27-Jul-00	NS	NS	NS	431.64	431.65	431.64
08-Mar-01	NS	NS	NS	431.03	430.62	430.92
04-Jun-01	U	U	1.61	NA	431.29	NA
30-Nov-01	NS	NS	NS	NA	430.98	NA
24-Apr-02	NS	NS	NS	NA	NM	NA
20-Aug-02	0.0006	1.63	1.22	NA	433.03	NA
06-Nov-02	NS	NS	NS	NA	431.36	NA
27-Sep-05	NS	NS	NS	NA	NM	NA
16-May-06	U (0.0005)	U (0.050)	1.06	NA	430.08	NA
14-Sep-06	U (0.0005)	0.237	0.908	NA	431.63	NA
14-May-07	U (0.0005)	U (0.050)	1.12	429.56	429.20	429.24
04-Jun-08	U (0.0005)	U (0.050)	U (0.4)	NA	430.74	NA
13-May-09	NS	NS	NS	NA	NM	NA
15-Jun-10	NS	NS	NS	NA	NM	NA
04-Oct-11	Well Decommissioned					
GCL	0.0046	2.2	1.5	NA	NA	NA

Not Sampled Nov. 6, 2002 to Sept. 27, 2005

Appendix D
Tables of Historical Groundwater Monitoring Data

Monitoring Well MW-17

Date	Benzene (mg/L)	GRO (mg/L)	DRO (mg/L)	Product Elevation (feet)	Measured GW Elevation (feet)	Corrected GW Elevation (feet)
04-Nov-99	NS	NS	NS	NA	NM	NA
28-Jan-00	NS	NS	NS	NA	429.08	NA
10-Apr-00	NS	NS	NS	429.97	427.06	429.39
27-Jul-00	0.07	6.8	57.6	431.45	431.44	431.45
08-Mar-01	NS	NS	NS	NA	430.41	NA
16-May-03	NS	NS	NS	NA	431.76	NA
04-Aug-03	0.0016	0.535	4.5	NA	433.63	NA
24-Nov-03	NS	NS	NS	NA	431.29	NA
10-Feb-04	NS	NS	NS	NA	430.53	NA
03-May-04	0.0823	1.14	65.2	NA	431.26	NA
18-Aug-04	NS	NS	NS	NA	432.18	NA
08-Nov-04	NS	NS	NS	NA	430.40	NA
01-Apr-05	0.0148	5.37	118	NA	430.61	NA
27-Sep-05	0.00422	0.204	6.53	NA	432.54	NA
16-May-06	0.000652	0.633	51.2	NA	430.95	NA
14-Sep-06	0.00634	0.642	9.33	NA	431.46	NA
14-May-07	0.00182	0.467	74.1	NA	429.79	NA
04-Jun-08	0.00054	0.213	3.49	NA	430.54	NA
13-May-09	U (0.0005)	U (0.05)	1.11	NA	433.54	NA
15-Jun-10	0.00384	0.148	3.7	NA	428.82	NA
26-May-11	U (0.0005)	U (0.05)	0.963	NA	431.19	NA
24-May-12	U (0.0005)	0.122	1.05	NA	428.13	NA
12-Aug-13	U (0.0005)	1.68	114	NA	429.15	NA
06-May-14	U (0.0005)	1.2	28	NA	426.33	NA
26-May-15	U (0.0010)	3.9	32	NA	426.17	NA
12-May-16	U (0.00026)	3.3	74	NA	427.12	NA
07-Sep-17	0.0059	2.4	47	NA	429.61	NA
07-Sep-18	0.0064	2.9	24	NA	430.60	NA
23-Oct-19	0.0077	0.38	14	NA	429.31	NA
21-Oct-20	0.0732	3.2	17.7	NA	429.28	NA
27-Sep-21	0.0328	3.45	3.91	NA	432.59	NA
GCL	0.0046	2.2	1.5	NA	NA	NA

Not Sampled Jun. 04, 2001 to May 16, 2003

Monitoring Well MW-18

Date	Benzene (mg/L)	GRO (mg/L)	DRO (mg/L)	Product Elevation (feet)	Measured GW Elevation (feet)	Corrected GW Elevation (feet)
04-Nov-99	U	3.4	24.6	NA	NM	NA
10-Apr-00	NS	NS	NS	429.21	429.12	429.19
27-Jul-00	U	U	6.06	NA	432.73	NA
08-Mar-01	NS	NS	NS	NA	430.95	NA
04-Jun-01	U	1.42	11.6	NA	431.29	NA
30-Nov-01	NS	NS	NS	NA	430.81	NA
26-May-11	NS	NS	NS	NA	NM	NA
04-Oct-11	Well Decommissioned					
GCL	0.0046	2.2	1.5	NA	NA	NA

Not Sampled Nov. 30, 2001 to May 26, 2011

Appendix D Tables of Historical Groundwater Monitoring Data

Monitoring Well MW-19

Date	Benzene (mg/L)	GRO (mg/L)	DRO (mg/L)	Product Elevation (feet)	Measured GW Elevation (feet)	Corrected GW Elevation (feet)
27-Jul-00	0.044	U	1.14	NA	NST	NA
08-Mar-01	NS	NS	NS	NA	430.57	NA
04-Jun-01	0.0037	0.271	1.05	NA	430.82	NA
30-Nov-01	Well Destroyed					
GCL	0.0046	2.2	1.5	NA	NA	NA

Monitoring Well MW 19-1

Date	Benzene (mg/L)	GRO (mg/L)	DRO (mg/L)	Product Elevation (feet)	Measured GW Elevation (feet)	Corrected GW Elevation (feet)
26-Jun-19	0.048	5.2	2.0 H	NA	NM	NM
23-Oct-19	0.085	8.6	42 H	NA	NC	NA
22-Oct-20	NS	NS	NS	NM	NM	NM
27-Sep-21	0.0659	7.02	29.6	NA	432.63	NA
GCL	0.0046	2.2	1.5	NA	NA	NA

Monitoring Well MW 19-2

Date	Benzene (mg/L)	GRO (mg/L)	DRO (mg/L)	Product Elevation (feet)	Measured GW Elevation (feet)	Corrected GW Elevation (feet)
26-Jun-19	0.074	7.4	5.0 H	NA	NM	NM
23-Oct-19	NS	NS	NS	NC	NC	NC
22-Oct-20	NS	NS	NS	NM	NM	NM
27-Sep-21	NS	NS	NS	429.61	432.6	429.6
GCL	0.0046	2.2	1.5	NA	NA	NA

Monitoring Well MW-20

Date	Benzene (mg/L)	GRO (mg/L)	DRO (mg/L)	Product Elevation (feet)	Measured GW Elevation (feet)	Corrected GW Elevation (feet)
27-Jul-00	U	U	0.997	NA	NST	NA
08-Mar-01	NS	NS	NS	NA	NM	NA
04-Jun-01	NS	NS	NS	NA	NM	NA
30-Nov-01	Well Destroyed					
GCL	0.0046	2.2	1.5	NA	NA	NA

Monitoring Well MW-21

Date	Benzene (mg/L)	GRO (mg/L)	DRO (mg/L)	Product Elevation (feet)	Measured GW Elevation (feet)	Corrected GW Elevation (feet)
27-Jul-00	0.028	U	1.55	NA	NST	NA
08-Mar-01	NS	NS	NS	NA	NM	NA
04-Jun-01	NS	NS	NS	NA	NM	NA
30-Nov-01	Well Destroyed					
GCL	0.0046	2.2	1.5	NA	NA	NA

Appendix D Tables of Historical Groundwater Monitoring Data

Monitoring Well MW-22

Date	Benzene (mg/L)	GRO (mg/L)	DRO (mg/L)	Product Elevation (feet)	Measured GW Elevation (feet)	Corrected GW Elevation (feet)
27-Jul-00	U	U	0.008	NA	NST	NA
08-Mar-01	NS	NS	NS	NA	NM	NA
04-Jun-01	NS	NS	NS	NA	NM	NA
30-Nov-01	Well Destroyed					
GCL	0.0046	2.2	1.5	NA	NA	NA

Monitoring Well MW-23

Date	Benzene (mg/L)	GRO (mg/L)	DRO (mg/L)	Product Elevation (feet)	Measured GW Elevation (feet)	Corrected GW Elevation (feet)
30-Nov-01	NS	NS	NS	NA	NM	NA
24-Apr-02	NS	NS	NS	430.71	430.59	430.69
20-Aug-02	NS	NS	NS	NA	433.01	NA
06-Nov-02	NS	NS	NS	NA	431.59	NA
20-Mar-03	NS	NS	NS	NA	432.00	NA
16-May-03	NS	NS	NS	NA	432.06	NA
04-Aug-03	NS	NS	NS	NA	433.38	NA
16-Oct-03	Well damaged during site work and removed.					
GCL	0.0046	2.2	1.5	NA	NA	NA

Monitoring Well MW-24

Date	Benzene (mg/L)	GRO (mg/L)	DRO (mg/L)	Product Elevation (feet)	Measured GW Elevation (feet)	Corrected GW Elevation (feet)
30-Nov-01	0.0142	0.230	0.714	NA	NST	NA
24-Apr-02	0.0144	0.213	0.686	NA	430.35	NA
20-Aug-02	U	U	U	NA	433.01	NA
06-Nov-02	NS	NS	NS	NA	431.34	NA
20-Mar-03	NS	NS	NS	NA	430.92	NA
16-May-03	NS	NS	NS	NA	431.11	NA
04-Aug-03	0.0007	0.115	U	NA	432.99	NA
24-Nov-03	NS	NS	NS	NA	NM	NA
10-Feb-04	NS	NS	NS	NA	429.75	NA
03-May-04	0.0342	1.12	4.32	NA	430.11	NA
18-Aug-04	NS	NS	NS	NA	431.74	NA
08-Nov-04	NS	NS	NS	NA	429.94	NA
01-Apr-05	0.0147	2.0	17.6	NA	429.87	NA
27-Sep-05	U (0.0005)	U (0.05)	1.29	NA	431.88	NA
16-May-06	NS	NS	NS	NA	NM	NA
14-Sep-06	0.00270	0.0520	1.15	NA	431.46	NA
14-May-07	NS	NS	NS	NA	NM	NA
22-Oct-20	NS	NS	NS	NA	NM	NA
27-Sep-21	NS	NS	NS	NA	NM	NA
GCL	0.0046	2.2	1.5	NA	NA	NA

Not sampled May 14, 2007 to October 22, 2020

Appendix D Tables of Historical Groundwater Monitoring Data

Monitoring Well MW-25

Date	Benzene (mg/L)	GRO (mg/L)	DRO (mg/L)	Product Elevation (feet)	Measured GW Elevation (feet)	Corrected GW Elevation (feet)
30-Nov-01	U	U	U	NA	NST	NA
26-May-11	NS	NS	NS	NA	NM	NA
04-Oct-11	Well Decommissioned					
GCL	0.0046	2.2	1.5	NA	NA	NA

Historically frozen, not sampled since monitored since Nov. 30, 2001

Monitoring Well MW-26

Date	Benzene (mg/L)	GRO (mg/L)	DRO (mg/L)	Product Elevation (feet)	Measured GW Elevation (feet)	Corrected GW Elevation (feet)
30-Nov-01	NS	NS	NS	NA	NST	NA
24-Apr-02	0.0024	0.0909	1.42	NA	416.97	NA
01-Apr-05	NS	NS	NS	NA	NM	NA
GCL	0.0046	2.2	1.5	NA	NA	NA

Historically frozen, not sampled since monitored since April 24, 2002

Monitoring Well MW-27

Date	Benzene (mg/L)	GRO (mg/L)	DRO (mg/L)	Product Elevation (feet)	Measured GW Elevation (feet)	Corrected GW Elevation (feet)
30-Nov-01	U	U	U	NA	NST	NA
24-Apr-02	U	U	U	NA	431.69	NA
20-Aug-02	U	U	0.54	NA	433.58	NA
06-Nov-02	NS	NS	NS	NA	432.9	NA
20-Mar-03	NS	NS	NS	NA	432.43	NA
16-May-03	NS	NS	NS	NA	432.75	NA
04-Aug-03	U	U	0.589	NA	434.62	NA
24-Nov-03	NS	NS	NS	NA	432.28	NA
26-May-11	NS	NS	NS	NA	NM	NA
04-Oct-11	Well Decommissioned					
GCL	0.0046	2.2	1.5	NA	NA	NA

Not Sampled Nov.24, 2003 to May 26, 2011

Monitoring Well MW-28

Date	Benzene (mg/L)	GRO (mg/L)	DRO (mg/L)	Product Elevation (feet)	Measured GW Elevation (feet)	Corrected GW Elevation (feet)
30-Nov-01	0.003	U	0.747	NA	NST	NA
24-Apr-02	U	U	0.570	NA	430.89	NA
20-Aug-02	0.004	U	0.878	NA	433.31	NA
06-Nov-02	NS	NS	NS	NA	431.64	NA
26-May-11	NS	NS	NS	NA	NM	NA
04-Oct-11	Well Decommissioned					
GCL	0.0046	2.2	1.5	NA	NA	NA

Not Sampled Nov. 06, 2002 to May 26, 2011

Appendix D Tables of Historical Groundwater Monitoring Data

Monitoring Well G-1

Date	Benzene (mg/L)	GRO (mg/L)	DRO (mg/L)	Product Elevation (feet)	Measured GW Elevation (feet)	Corrected GW Elevation (feet)
Mar-01	NS	NS	NS	NA	NST	NA
May-01	U	U	U	NA	NST	NA
30-Nov-01	U	U	U	NA	429.16	NA
24-Apr-02	U	U	U	NA	430.30	NA
04-Jun-02	NS	NS	NS	NA	430.30	NA
20-Aug-02	U	U	U	NA	432.87	NA
06-Nov-02	NS	NS	NS	NA	431.12	NA
20-Mar-03	NS	NS	NS	NA	431.06	NA
16-May-03	NS	NS	NS	NA	431.26	NA
04-Aug-03	U	U	U	NA	433.22	NA
24-Nov-03	NS	NS	NS	NA	430.81	NA
22-Oct-20	NS	NS	NS	NA	NM	NA
22-Oct-20	NS	NS	NS	NA	NM	NA
GCL	0.0046	2.2	1.5	NA	NA	NA

Not sampled Nov. 24, 2003 to October 22, 2020

Monitoring Well MW-29

Date	Benzene (mg/L)	GRO (mg/L)	DRO (mg/L)	Product Elevation (feet)	Measured GW Elevation (feet)	Corrected GW Elevation (feet)
16-Oct-03	U	U	U	NA	431.56	NA
24-Nov-03	NS	NS	NS	NA	430.49	NA
10-Feb-04	NS	NS	NS	NA	429.66	NA
03-May-04	U	U	U	NA	430.01	NA
18-Aug-04	NS	NS	NS	NA	NM	NA
08-Nov-04	NS	NS	NS	NA	NM	NA
01-Apr-05	NS	NS	NS	NA	NM	NA
27-Sep-05	U (0.0005)	U (0.05)	U (0.403)	NA	431.49	NA
16-May-06	NS	NS	NS	NA	NM	NA
27-Sep-21	NS	NS	NS	NA	NM	NA
GCL	0.0046	2.2	1.5	NA	NA	NA

Not sampled May 16, 2006 to October 22, 2020

Monitoring Well MW-30

Date	Benzene (mg/L)	GRO (mg/L)	DRO (mg/L)	Product Elevation (feet)	Measured GW Elevation (feet)	Corrected GW Elevation (feet)
16-Oct-03	U	U	U	NA	431.98	NA
24-Nov-03	NS	NS	NS	NA	430.74	NA
10-Feb-04	NS	NS	NS	NA	429.98	NA
03-May-04	U	U	U	NA	430.31	NA
18-Aug-04	NS	NS	NS	NA	NM	NA
08-Nov-04	NS	NS	NS	NA	429.70	NA
01-Apr-05	NS	NS	NS	NA	428.69	NA
27-Sep-05	NS	NS	NS	NA	NM	NA
22-Oct-20	NS	NS	NS	NA	NM	NA
27-Sep-21	0.00122	0.0345	0.415	NA	432.48	NA
GCL	0.0046	2.2	1.5	NA	NA	NA

Not sampled Sept. 27, 2005 to October 22, 2020

Appendix D Tables of Historical Groundwater Monitoring Data

IFC Aeration Tank Effluent

Date	Benzene (mg/L)	GRO (mg/L)	DRO (mg/L)	Product Elevation (feet)	Measured GW Elevation (feet)	Corrected GW Elevation (feet)
24-May-12	0.00486	0.532	0.478	NA	NM	NA
12-Aug-13	NS	NS	NS	NA	NM	NA
06-May-14	NS	NS	NS	NA	NM	NA
26-May-15	0.0065	0.59	21	NA	NM	NA
12-May-16	0.005	0.21	U (0.43)	NA	NM	NA
07-Sep-17	U (0.00040)	U (0.150)	0.74	NA	430.91	NA
07-Sep-18	U (0.00040)	U (0.150)	0.28	NA	NM	NA
23-Oct-19	U (0.003)	U (0.25)	0.37	NA	NM	NA
22-Oct-20	0.000701	0.0861	0.988	NA	NM	NA
27-Sep-21	0.000175	0.0889	0.7	NA	NM	NA
GCL	0.0046	2.2	1.5	NA	NA	NA

CRW-2

Date	Benzene (mg/L)	GRO (mg/L)	DRO (mg/L)	Product Elevation (feet)	Measured GW Elevation (feet)	Corrected GW Elevation (feet)
24-Sep-13	U (0.0005)	U (0.05)	U (0.439)	NA	NM	NA
07-May-14	0.0014	0.05	1.2	NA	NM	NA
26-May-15	NS	NS	NS	NA	NM	NA
12-May-16	NS	NS	NS	426.91	425.10	426.55
07-Sep-17	0.016	0.350	0.96	429.60	423.60	428.40
07-Sep-18	0.013	0.910	2.8	430.70	NM	NM
23-Oct-19	0.011	0.99	1.4	NA	NM	NA
22-Oct-20	0.00739	0.385	1.51	NA	NM	NA
27-Sep-21	0.00287	0.548	0.627	NA	429.05	NA
GCL	0.0046	2.2	1.5	NA	NA	NA

WRW-2020

Date	Benzene (mg/L)	GRO (mg/L)	DRO (mg/L)	Product Elevation (feet)	Measured GW Elevation (feet)	Corrected GW Elevation (feet)
16-Jul-20	10.6	NS	NS	NA	NM	NA
22-Oct-20	0.00339	0.588	1.05	NA	NM	NA
27-Sep-21	0.00183	0.929	0.973	NA	432.48	NA
GCL	0.0046	2.2	1.5	NA	NA	NA

Appendix D

Tables of Historical Groundwater Monitoring Data

Key:

DRO - diesel range organics

GCL - groundwater cleanup levels

GRO - gasoline range organics

GW - groundwater

H - Sampled was prepped or analyzed beyond the specific holding time

mg/L - milligrams per liter

NA - not applicable

NC - not calculated

NM - not measured

NS - not sampled

NST - Not surveyed at time of monitoring.

U - Undetected above practical quantitation limits (PQLs).

Density of product assumed 800 kg/m³

Bold, shade indicates concentration exceeds the GCL or, if not detected, the PQL exceeds the GCL

italized cells indicate lab estimated values

APPENDIX E

*Laboratory Analytical Report and
ADEC Laboratory Data Review
Checklist*

Stantec - Anchorage, AK - Speedway

Sample Delivery Group: L1410914
Samples Received: 09/29/2021
Project Number:
Description: Speedway 5313 TNS 101
Site: 0005313
Report To: Ms. Leslie Petre
725 E Fireweed Lane
Suite 200
Anchorage, AK 99503

Entire Report Reviewed By:

[Preliminary Report]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.

Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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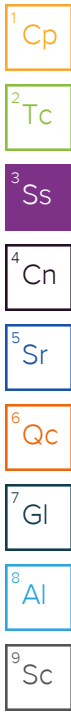
¹ Cp
² Tc
³ Ss
⁴ Cn
⁵ Sr
⁶ Qc
⁷ Gl
⁸ Al
⁹ Sc

SAMPLE SUMMARY

MW-3 L1410914-01 GW

Collected by Leslie Petre Collected date/time 09/27/21 15:30 Received date/time 09/29/21 14:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method AK101	WG1750882	1	10/04/21 12:46	10/04/21 12:46	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1753114	5	10/08/21 09:13	10/08/21 09:13	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1753834	1.11	10/11/21 03:54	10/11/21 12:43	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1750680	3	10/03/21 18:05	10/04/21 05:19	AAT	Mt. Juliet, TN



MW-4 L1410914-02 GW

Collected by Leslie Petre Collected date/time 09/27/21 14:40 Received date/time 09/29/21 14:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method AK101	WG1750882	1	10/04/21 13:08	10/04/21 13:08	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1753114	1	10/08/21 09:31	10/08/21 09:31	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1753834	1.05	10/11/21 03:54	10/11/21 13:04	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1750680	3.16	10/03/21 18:05	10/04/21 05:36	AAT	Mt. Juliet, TN

MW-8 L1410914-03 GW

Collected by Leslie Petre Collected date/time 09/27/21 17:45 Received date/time 09/29/21 14:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method AK101	WG1750882	1	10/04/21 13:30	10/04/21 13:30	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1753114	1	10/08/21 04:51	10/08/21 04:51	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1753834	1	10/11/21 03:54	10/11/21 13:25	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1750681	5	10/03/21 17:59	10/04/21 13:39	AAT	Mt. Juliet, TN

MW-14 L1410914-04 GW

Collected by Leslie Petre Collected date/time 09/27/21 14:15 Received date/time 09/29/21 14:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method AK101	WG1750882	10	10/04/21 18:20	10/04/21 18:20	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1753114	20	10/08/21 09:50	10/08/21 09:50	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1753834	1.05	10/11/21 03:54	10/11/21 13:46	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1750681	1	10/03/21 17:59	10/04/21 08:27	AAT	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1750681	10	10/03/21 17:59	10/05/21 18:39	AAT	Mt. Juliet, TN

MW-17 L1410914-05 GW

Collected by Leslie Petre Collected date/time 09/27/21 17:10 Received date/time 09/29/21 14:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method AK101	WG1750882	10	10/04/21 18:42	10/04/21 18:42	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1754839	20	10/12/21 02:00	10/12/21 02:00	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1753834	1.18	10/11/21 03:54	10/11/21 14:07	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1750681	1	10/03/21 17:59	10/04/21 08:44	AAT	Mt. Juliet, TN

MW-19-1 L1410914-06 GW

Collected by Leslie Petre Collected date/time 09/27/21 16:40 Received date/time 09/29/21 14:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method AK101	WG1756731	10	10/17/21 21:46	10/17/21 21:46	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1754839	20	10/12/21 02:19	10/12/21 02:19	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1753834	1.11	10/11/21 03:54	10/11/21 14:28	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1750681	2	10/03/21 17:59	10/04/21 09:01	AAT	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1750681	20	10/03/21 17:59	10/05/21 18:57	AAT	Mt. Juliet, TN

SAMPLE SUMMARY

CRW-2_AERATION TREATMENT TANK (INFLUENT) L1410914-07 GW

Collected by Leslie Petre Collected date/time 09/27/21 11:45 Received date/time 09/29/21 14:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method AK101	WG1750882	1	10/04/21 13:52	10/04/21 13:52	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1753114	1	10/08/21 05:09	10/08/21 05:09	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1753834	1	10/11/21 03:54	10/11/21 14:49	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1750681	1	10/03/21 17:59	10/04/21 09:19	AAT	Mt. Juliet, TN

WRW-2020_AERATION TREATMENT TANK (INFLUE L1410914-08 GW

Collected by Leslie Petre Collected date/time 09/27/21 11:10 Received date/time 09/29/21 14:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method AK101	WG1750882	1	10/04/21 14:14	10/04/21 14:14	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1753114	1	10/08/21 05:28	10/08/21 05:28	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1753834	1	10/11/21 03:54	10/11/21 15:10	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1750681	1	10/03/21 17:59	10/04/21 09:36	AAT	Mt. Juliet, TN

EFFLUENT L1410914-09 GW

Collected by Leslie Petre Collected date/time 09/27/21 12:10 Received date/time 09/29/21 14:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1751904	1	10/05/21 19:33	10/06/21 08:36	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1750882	1	10/04/21 14:36	10/04/21 14:36	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1753114	1	10/08/21 05:47	10/08/21 05:47	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1753834	1.11	10/11/21 03:54	10/11/21 15:31	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1750681	1	10/03/21 17:59	10/04/21 09:53	AAT	Mt. Juliet, TN

DUPLICATE 1 L1410914-10 GW

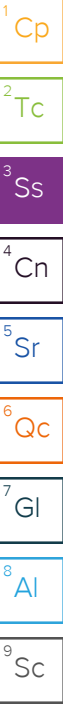
Collected by Leslie Petre Collected date/time 09/27/21 12:10 Received date/time 09/29/21 14:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1751904	1	10/05/21 19:33	10/06/21 08:39	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1750882	1	10/04/21 14:58	10/04/21 14:58	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1753114	1	10/08/21 06:06	10/08/21 06:06	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1753834	1.11	10/11/21 03:54	10/11/21 15:52	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1750681	1	10/03/21 17:59	10/04/21 10:11	AAT	Mt. Juliet, TN

DUPLICATE 2 L1410914-11 GW

Collected by Leslie Petre Collected date/time 09/27/21 16:40 Received date/time 09/29/21 14:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method AK101	WG1756731	10	10/17/21 22:08	10/17/21 22:08	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1754839	25	10/12/21 02:38	10/12/21 02:38	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1753834	1	10/11/21 03:54	10/11/21 16:13	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1750681	2	10/03/21 17:59	10/04/21 10:28	AAT	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1750681	40	10/03/21 17:59	10/05/21 20:23	AAT	Mt. Juliet, TN



SAMPLE SUMMARY

MW-30 L1410914-12 GW

Collected by: Leslie Petre
 Collected date/time: 09/27/21 15:25
 Received date/time: 09/29/21 14:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method AK101	WG1750882	1	10/04/21 15:20	10/04/21 15:20	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1753114	1	10/08/21 06:24	10/08/21 06:24	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1753834	1.11	10/11/21 03:54	10/11/21 16:34	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1750681	1	10/03/21 17:59	10/04/21 10:45	AAT	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

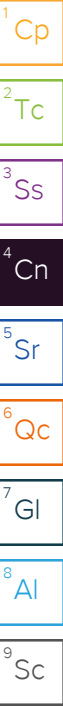
⁹Sc

CASE NARRATIVE

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

[Preliminary Report]

Craig Cothron
Project Manager



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	1.19		0.0287	0.100	1	10/04/2021 12:46	WG1750882
(S)							
a,a,a-Trifluorotoluene(FID)	97.6			50.0-150		10/04/2021 12:46	WG1750882
(S)							
a,a,a-Trifluorotoluene(PID)	99.4			79.0-125		10/04/2021 12:46	WG1750882

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	0.00136	J	0.000471	0.00500	5	10/08/2021 09:13	WG1753114
n-Butylbenzene	0.00297	J	0.000785	0.00500	5	10/08/2021 09:13	WG1753114
sec-Butylbenzene	0.00138	J	0.000625	0.00500	5	10/08/2021 09:13	WG1753114
tert-Butylbenzene	U		0.000635	0.00500	5	10/08/2021 09:13	WG1753114
Ethylbenzene	0.0164		0.000685	0.00500	5	10/08/2021 09:13	WG1753114
Isopropylbenzene	0.00405	J	0.000525	0.00500	5	10/08/2021 09:13	WG1753114
Naphthalene	0.0240	C3 J	0.00500	0.0250	5	10/08/2021 09:13	WG1753114
Toluene	0.0112		0.00139	0.00500	5	10/08/2021 09:13	WG1753114
1,2,4-Trimethylbenzene	0.0602		0.00161	0.00500	5	10/08/2021 09:13	WG1753114
1,3,5-Trimethylbenzene	0.0306		0.000520	0.00500	5	10/08/2021 09:13	WG1753114
Total Xylenes	0.188		0.000870	0.0150	5	10/08/2021 09:13	WG1753114
(S) Toluene-d8	109			80.0-120		10/08/2021 09:13	WG1753114
(S) 4-Bromofluorobenzene	108			77.0-126		10/08/2021 09:13	WG1753114
(S) 1,2-Dichloroethane-d4	89.6			70.0-130		10/08/2021 09:13	WG1753114

Sample Narrative:

L1410914-01 WG1753114: 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	3.81		0.254	0.888	1.11	10/11/2021 12:43	WG1753834
(S) o-Terphenyl	64.5			50.0-150		10/11/2021 12:43	WG1753834

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		0.0000570	0.000150	3	10/04/2021 05:19	WG1750680
Acenaphthene	0.000336		0.0000570	0.000150	3	10/04/2021 05:19	WG1750680
Acenaphthylene	U		0.0000513	0.000150	3	10/04/2021 05:19	WG1750680
Benzo(a)anthracene	U		0.0000609	0.000150	3	10/04/2021 05:19	WG1750680
Benzo(a)pyrene	U		0.0000552	0.000150	3	10/04/2021 05:19	WG1750680
Benzo(b)fluoranthene	U		0.0000504	0.000150	3	10/04/2021 05:19	WG1750680
Benzo(g,h,i)perylene	U		0.0000552	0.000150	3	10/04/2021 05:19	WG1750680
Benzo(k)fluoranthene	U		0.0000606	0.000150	3	10/04/2021 05:19	WG1750680
Chrysene	U		0.0000537	0.000150	3	10/04/2021 05:19	WG1750680
Dibenz(a,h)anthracene	U		0.0000480	0.000150	3	10/04/2021 05:19	WG1750680
Fluoranthene	U		0.0000810	0.000300	3	10/04/2021 05:19	WG1750680
Fluorene	0.000755		0.0000507	0.000150	3	10/04/2021 05:19	WG1750680
Indeno(1,2,3-cd)pyrene	U		0.0000474	0.000150	3	10/04/2021 05:19	WG1750680
Naphthalene	0.0314		0.000275	0.000750	3	10/04/2021 05:19	WG1750680
Phenanthrene	0.000371		0.0000540	0.000150	3	10/04/2021 05:19	WG1750680
Pyrene	U		0.0000507	0.000150	3	10/04/2021 05:19	WG1750680
1-Methylnaphthalene	0.0237		0.000206	0.000750	3	10/04/2021 05:19	WG1750680
2-Methylnaphthalene	0.0153		0.000202	0.000750	3	10/04/2021 05:19	WG1750680
(S) Nitrobenzene-d5	98.5			31.0-160		10/04/2021 05:19	WG1750680

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
(S) 2-Fluorobiphenyl	99.0			48.0-148		10/04/2021 05:19	WG1750680
(S) p-Terphenyl-d14	109			37.0-146		10/04/2021 05:19	WG1750680

Sample Narrative:

L1410914-01 WG1750680: Dilution due to matrix impact during extraction procedure

- 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 mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
TPHGAK C6 to C10	0.0498	<u>J</u>	0.0287	0.100	1	10/04/2021 13:08	WG1750882
(S) a,a,a-Trifluorotoluene(FID)	97.6			50.0-150		10/04/2021 13:08	WG1750882
(S) a,a,a-Trifluorotoluene(PID)	98.9			79.0-125		10/04/2021 13:08	WG1750882

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	U		0.0000941	0.00100	1	10/08/2021 09:31	WG1753114
n-Butylbenzene	U		0.000157	0.00100	1	10/08/2021 09:31	WG1753114
sec-Butylbenzene	U		0.000125	0.00100	1	10/08/2021 09:31	WG1753114
tert-Butylbenzene	U		0.000127	0.00100	1	10/08/2021 09:31	WG1753114
Ethylbenzene	U		0.000137	0.00100	1	10/08/2021 09:31	WG1753114
Isopropylbenzene	U		0.000105	0.00100	1	10/08/2021 09:31	WG1753114
Naphthalene	U	<u>C3</u>	0.00100	0.00500	1	10/08/2021 09:31	WG1753114
Toluene	0.00782		0.000278	0.00100	1	10/08/2021 09:31	WG1753114
1,2,4-Trimethylbenzene	U		0.000322	0.00100	1	10/08/2021 09:31	WG1753114
1,3,5-Trimethylbenzene	U		0.000104	0.00100	1	10/08/2021 09:31	WG1753114
Total Xylenes	U		0.000174	0.00300	1	10/08/2021 09:31	WG1753114
(S) Toluene-d8	108			80.0-120		10/08/2021 09:31	WG1753114
(S) 4-Bromofluorobenzene	108			77.0-126		10/08/2021 09:31	WG1753114
(S) 1,2-Dichloroethane-d4	91.6			70.0-130		10/08/2021 09:31	WG1753114

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
AK102 DRO C10-C25	0.834	<u>J</u>	0.240	0.840	1.05	10/11/2021 13:04	WG1753834
(S) o-Terphenyl	45.0	<u>J2</u>		50.0-150		10/11/2021 13:04	WG1753834

Sample Narrative:

L1410914-02 WG1753834: Sample produced heavy emulsion during Extraction process, low surr/spike recoveries due to matrix

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
Anthracene	U		0.0000600	0.000158	3.16	10/04/2021 05:36	WG1750680
Acenaphthene	U		0.0000600	0.000158	3.16	10/04/2021 05:36	WG1750680
Acenaphthylene	U		0.0000540	0.000158	3.16	10/04/2021 05:36	WG1750680
Benzo(a)anthracene	U		0.0000641	0.000158	3.16	10/04/2021 05:36	WG1750680
Benzo(a)pyrene	U		0.0000581	0.000158	3.16	10/04/2021 05:36	WG1750680
Benzo(b)fluoranthene	U		0.0000531	0.000158	3.16	10/04/2021 05:36	WG1750680
Benzo(g,h,i)perylene	U		0.0000581	0.000158	3.16	10/04/2021 05:36	WG1750680
Benzo(k)fluoranthene	U		0.0000638	0.000158	3.16	10/04/2021 05:36	WG1750680
Chrysene	U		0.0000566	0.000158	3.16	10/04/2021 05:36	WG1750680
Dibenz(a,h)anthracene	U		0.0000506	0.000158	3.16	10/04/2021 05:36	WG1750680
Fluoranthene	U		0.0000853	0.000316	3.16	10/04/2021 05:36	WG1750680
Fluorene	U		0.0000534	0.000158	3.16	10/04/2021 05:36	WG1750680
Indeno(1,2,3-cd)pyrene	U		0.0000499	0.000158	3.16	10/04/2021 05:36	WG1750680
Naphthalene	U		0.000290	0.000790	3.16	10/04/2021 05:36	WG1750680
Phenanthrene	U		0.0000569	0.000158	3.16	10/04/2021 05:36	WG1750680
Pyrene	U		0.0000534	0.000158	3.16	10/04/2021 05:36	WG1750680
1-Methylnaphthalene	U		0.000217	0.000790	3.16	10/04/2021 05:36	WG1750680
2-Methylnaphthalene	U		0.000213	0.000790	3.16	10/04/2021 05:36	WG1750680
(S) Nitrobenzene-d5	110			31.0-160		10/04/2021 05:36	WG1750680

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	
(S) 2-Fluorobiphenyl	106			48.0-148		10/04/2021 05:36	WG1750680
(S) p-Terphenyl-d14	114			37.0-146		10/04/2021 05:36	WG1750680

Sample Narrative:

L1410914-02 WG1750680: Dilution due to matrix impact during extraction procedure

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

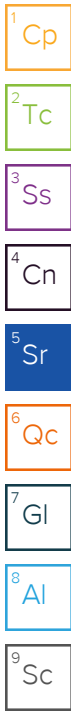
⁷ Gl

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	0.462		0.0287	0.100	1	10/04/2021 13:30	WG1750882
(S)							
a,a,a-Trifluorotoluene(FID)	98.1			50.0-150		10/04/2021 13:30	WG1750882
(S)							
a,a,a-Trifluorotoluene(PID)	99.1			79.0-125		10/04/2021 13:30	WG1750882



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	0.000740	<u>J</u>	0.0000941	0.00100	1	10/08/2021 04:51	WG1753114
n-Butylbenzene	0.00258		0.000157	0.00100	1	10/08/2021 04:51	WG1753114
sec-Butylbenzene	0.00116		0.000125	0.00100	1	10/08/2021 04:51	WG1753114
tert-Butylbenzene	0.000283	<u>J</u>	0.000127	0.00100	1	10/08/2021 04:51	WG1753114
Ethylbenzene	0.00502		0.000137	0.00100	1	10/08/2021 04:51	WG1753114
Isopropylbenzene	0.00236		0.000105	0.00100	1	10/08/2021 04:51	WG1753114
Naphthalene	0.00777	<u>C3</u>	0.00100	0.00500	1	10/08/2021 04:51	WG1753114
Toluene	0.00166		0.000278	0.00100	1	10/08/2021 04:51	WG1753114
1,2,4-Trimethylbenzene	0.0221		0.000322	0.00100	1	10/08/2021 04:51	WG1753114
1,3,5-Trimethylbenzene	0.0116		0.000104	0.00100	1	10/08/2021 04:51	WG1753114
Total Xylenes	0.0411		0.000174	0.00300	1	10/08/2021 04:51	WG1753114
(S) Toluene-d8	105			80.0-120		10/08/2021 04:51	WG1753114
(S) 4-Bromofluorobenzene	109			77.0-126		10/08/2021 04:51	WG1753114
(S) 1,2-Dichloroethane-d4	91.0			70.0-130		10/08/2021 04:51	WG1753114

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	20.5		0.229	0.800	1	10/11/2021 13:25	WG1753834
(S) o-Terphenyl	62.7			50.0-150		10/11/2021 13:25	WG1753834

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		0.0000950	0.000250	5	10/04/2021 13:39	WG1750681
Acenaphthene	U		0.0000950	0.000250	5	10/04/2021 13:39	WG1750681
Acenaphthylene	U		0.0000855	0.000250	5	10/04/2021 13:39	WG1750681
Benzo(a)anthracene	U		0.000102	0.000250	5	10/04/2021 13:39	WG1750681
Benzo(a)pyrene	U		0.0000920	0.000250	5	10/04/2021 13:39	WG1750681
Benzo(b)fluoranthene	U		0.0000840	0.000250	5	10/04/2021 13:39	WG1750681
Benzo(g,h,i)perylene	U		0.0000920	0.000250	5	10/04/2021 13:39	WG1750681
Benzo(k)fluoranthene	U		0.000101	0.000250	5	10/04/2021 13:39	WG1750681
Chrysene	U		0.0000895	0.000250	5	10/04/2021 13:39	WG1750681
Dibenz(a,h)anthracene	U		0.0000800	0.000250	5	10/04/2021 13:39	WG1750681
Fluoranthene	U		0.000135	0.000500	5	10/04/2021 13:39	WG1750681
Fluorene	U		0.0000845	0.000250	5	10/04/2021 13:39	WG1750681
Indeno(1,2,3-cd)pyrene	U		0.0000790	0.000250	5	10/04/2021 13:39	WG1750681
Naphthalene	0.00258		0.000459	0.00125	5	10/04/2021 13:39	WG1750681
Phenanthrene	U		0.0000900	0.000250	5	10/04/2021 13:39	WG1750681
Pyrene	U		0.0000845	0.000250	5	10/04/2021 13:39	WG1750681
1-Methylnaphthalene	0.00176		0.000343	0.00125	5	10/04/2021 13:39	WG1750681
2-Methylnaphthalene	0.000568	<u>J</u>	0.000337	0.00125	5	10/04/2021 13:39	WG1750681
(S) Nitrobenzene-d5	445	<u>J1</u>		31.0-160		10/04/2021 13:39	WG1750681
(S) 2-Fluorobiphenyl	92.5			48.0-148		10/04/2021 13:39	WG1750681
(S) p-Terphenyl-d14	139			37.0-146		10/04/2021 13:39	WG1750681

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

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
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Sample Narrative:

L1410914-03 WG1750681: Dilution due to matrix impact during extraction procedure

- 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	11.9		0.287	1.00	10	10/04/2021 18:20	WG1750882
(S)							
a,a,a-Trifluorotoluene(FID)	98.4			50.0-150		10/04/2021 18:20	WG1750882
(S)							
a,a,a-Trifluorotoluene(PID)	99.4			79.0-125		10/04/2021 18:20	WG1750882

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	0.0251		0.00188	0.0200	20	10/08/2021 09:50	WG1753114
n-Butylbenzene	0.0142	J	0.00314	0.0200	20	10/08/2021 09:50	WG1753114
sec-Butylbenzene	0.0134	J	0.00250	0.0200	20	10/08/2021 09:50	WG1753114
tert-Butylbenzene	U		0.00254	0.0200	20	10/08/2021 09:50	WG1753114
Ethylbenzene	0.687		0.00274	0.0200	20	10/08/2021 09:50	WG1753114
Isopropylbenzene	0.114		0.00210	0.0200	20	10/08/2021 09:50	WG1753114
Naphthalene	0.285	C3	0.0200	0.100	20	10/08/2021 09:50	WG1753114
Toluene	0.0151	J	0.00556	0.0200	20	10/08/2021 09:50	WG1753114
1,2,4-Trimethylbenzene	0.568		0.00644	0.0200	20	10/08/2021 09:50	WG1753114
1,3,5-Trimethylbenzene	0.124		0.00208	0.0200	20	10/08/2021 09:50	WG1753114
Total Xylenes	4.45		0.00348	0.0600	20	10/08/2021 09:50	WG1753114
(S) Toluene-d8	107			80.0-120		10/08/2021 09:50	WG1753114
(S) 4-Bromofluorobenzene	108			77.0-126		10/08/2021 09:50	WG1753114
(S) 1,2-Dichloroethane-d4	89.3			70.0-130		10/08/2021 09:50	WG1753114

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	3.17		0.240	0.840	1.05	10/11/2021 13:46	WG1753834
(S) o-Terphenyl	63.2			50.0-150		10/11/2021 13:46	WG1753834

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	10/04/2021 08:27	WG1750681
Acenaphthene	0.000574		0.0000190	0.0000500	1	10/04/2021 08:27	WG1750681
Acenaphthylene	U		0.0000171	0.0000500	1	10/04/2021 08:27	WG1750681
Benzo(a)anthracene	U		0.0000203	0.0000500	1	10/04/2021 08:27	WG1750681
Benzo(a)pyrene	U		0.0000184	0.0000500	1	10/04/2021 08:27	WG1750681
Benzo(b)fluoranthene	U		0.0000168	0.0000500	1	10/04/2021 08:27	WG1750681
Benzo(g,h,i)perylene	U		0.0000184	0.0000500	1	10/04/2021 08:27	WG1750681
Benzo(k)fluoranthene	U		0.0000202	0.0000500	1	10/04/2021 08:27	WG1750681
Chrysene	U		0.0000179	0.0000500	1	10/04/2021 08:27	WG1750681
Dibenz(a,h)anthracene	U		0.0000160	0.0000500	1	10/04/2021 08:27	WG1750681
Fluoranthene	U		0.0000270	0.000100	1	10/04/2021 08:27	WG1750681
Fluorene	0.000752		0.0000169	0.0000500	1	10/04/2021 08:27	WG1750681
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500	1	10/04/2021 08:27	WG1750681
Naphthalene	0.381		0.000917	0.00250	10	10/05/2021 18:39	WG1750681
Phenanthrene	0.000230		0.0000180	0.0000500	1	10/04/2021 08:27	WG1750681
Pyrene	U		0.0000169	0.0000500	1	10/04/2021 08:27	WG1750681
1-Methylnaphthalene	0.0934		0.0000687	0.000250	1	10/04/2021 08:27	WG1750681
2-Methylnaphthalene	0.0989		0.0000674	0.000250	1	10/04/2021 08:27	WG1750681
(S) Nitrobenzene-d5	94.0			31.0-160		10/04/2021 08:27	WG1750681
(S) Nitrobenzene-d5	126			31.0-160		10/05/2021 18:39	WG1750681
(S) 2-Fluorobiphenyl	117			48.0-148		10/05/2021 18:39	WG1750681
(S) 2-Fluorobiphenyl	96.5			48.0-148		10/04/2021 08:27	WG1750681

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
(S) p-Terphenyl-d14	143			37.0-146		10/05/2021 18:39	WG1750681
(S) p-Terphenyl-d14	131			37.0-146		10/04/2021 08:27	WG1750681

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	3.45		0.287	1.00	10	10/04/2021 18:42	WG1750882
(S)							
a,a,a-Trifluorotoluene(FID)	97.4			50.0-150		10/04/2021 18:42	WG1750882
(S)							
a,a,a-Trifluorotoluene(PID)	99.2			79.0-125		10/04/2021 18:42	WG1750882

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	0.0328		0.00188	0.0200	20	10/12/2021 02:00	WG1754839
n-Butylbenzene	U		0.00314	0.0200	20	10/12/2021 02:00	WG1754839
sec-Butylbenzene	U		0.00250	0.0200	20	10/12/2021 02:00	WG1754839
tert-Butylbenzene	U		0.00254	0.0200	20	10/12/2021 02:00	WG1754839
Ethylbenzene	0.213		0.00274	0.0200	20	10/12/2021 02:00	WG1754839
Isopropylbenzene	0.0388		0.00210	0.0200	20	10/12/2021 02:00	WG1754839
Naphthalene	0.130		0.0200	0.100	20	10/12/2021 02:00	WG1754839
Toluene	0.00740	J	0.00556	0.0200	20	10/12/2021 02:00	WG1754839
1,2,4-Trimethylbenzene	0.182		0.00644	0.0200	20	10/12/2021 02:00	WG1754839
1,3,5-Trimethylbenzene	0.0481		0.00208	0.0200	20	10/12/2021 02:00	WG1754839
Total Xylenes	1.21		0.00348	0.0600	20	10/12/2021 02:00	WG1754839
(S) Toluene-d8	105			80.0-120		10/12/2021 02:00	WG1754839
(S) 4-Bromofluorobenzene	108			77.0-126		10/12/2021 02:00	WG1754839
(S) 1,2-Dichloroethane-d4	101			70.0-130		10/12/2021 02:00	WG1754839

Semi-Volatile Organic Compounds (GC) by Method AK102

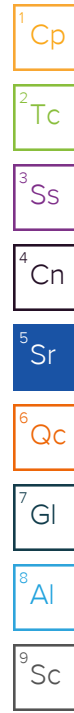
Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
AK102 DRO C10-C25	3.91		0.270	0.944	1.18	10/11/2021 14:07	WG1753834
(S) o-Terphenyl	62.2			50.0-150		10/11/2021 14:07	WG1753834

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	10/04/2021 08:44	WG1750681
Acenaphthene	U		0.0000190	0.0000500	1	10/04/2021 08:44	WG1750681
Acenaphthylene	U		0.0000171	0.0000500	1	10/04/2021 08:44	WG1750681
Benzo(a)anthracene	U		0.0000203	0.0000500	1	10/04/2021 08:44	WG1750681
Benzo(a)pyrene	U		0.0000184	0.0000500	1	10/04/2021 08:44	WG1750681
Benzo(b)fluoranthene	U		0.0000168	0.0000500	1	10/04/2021 08:44	WG1750681
Benzo(g,h,i)perylene	U		0.0000184	0.0000500	1	10/04/2021 08:44	WG1750681
Benzo(k)fluoranthene	U		0.0000202	0.0000500	1	10/04/2021 08:44	WG1750681
Chrysene	U		0.0000179	0.0000500	1	10/04/2021 08:44	WG1750681
Dibenz(a,h)anthracene	U		0.0000160	0.0000500	1	10/04/2021 08:44	WG1750681
Fluoranthene	U		0.0000270	0.000100	1	10/04/2021 08:44	WG1750681
Fluorene	0.0000668		0.0000169	0.0000500	1	10/04/2021 08:44	WG1750681
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500	1	10/04/2021 08:44	WG1750681
Naphthalene	0.0929		0.0000917	0.000250	1	10/04/2021 08:44	WG1750681
Phenanthrene	0.0000334	J	0.0000180	0.0000500	1	10/04/2021 08:44	WG1750681
Pyrene	U		0.0000169	0.0000500	1	10/04/2021 08:44	WG1750681
1-Methylnaphthalene	0.00630		0.0000687	0.000250	1	10/04/2021 08:44	WG1750681
2-Methylnaphthalene	0.00308		0.0000674	0.000250	1	10/04/2021 08:44	WG1750681
(S) Nitrobenzene-d5	117			31.0-160		10/04/2021 08:44	WG1750681
(S) 2-Fluorobiphenyl	96.5			48.0-148		10/04/2021 08:44	WG1750681
(S) p-Terphenyl-d14	124			37.0-146		10/04/2021 08:44	WG1750681

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
TPHGAK C6 to C10	7.02	Q	0.287	1.00	10	10/17/2021 21:46	WG1756731
(S) a,a,a-Trifluorotoluene(FID)	96.3			50.0-150		10/17/2021 21:46	WG1756731
(S) a,a,a-Trifluorotoluene(PID)	97.9			79.0-125		10/17/2021 21:46	WG1756731



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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Benzene	0.0659		0.00188	0.0200	20	10/12/2021 02:19	WG1754839
n-Butylbenzene	0.0204		0.00314	0.0200	20	10/12/2021 02:19	WG1754839
sec-Butylbenzene	0.0193	J	0.00250	0.0200	20	10/12/2021 02:19	WG1754839
tert-Butylbenzene	U		0.00254	0.0200	20	10/12/2021 02:19	WG1754839
Ethylbenzene	0.328		0.00274	0.0200	20	10/12/2021 02:19	WG1754839
Isopropylbenzene	0.0671		0.00210	0.0200	20	10/12/2021 02:19	WG1754839
Naphthalene	0.279		0.0200	0.100	20	10/12/2021 02:19	WG1754839
Toluene	0.105		0.00556	0.0200	20	10/12/2021 02:19	WG1754839
1,2,4-Trimethylbenzene	0.470		0.00644	0.0200	20	10/12/2021 02:19	WG1754839
1,3,5-Trimethylbenzene	0.149		0.00208	0.0200	20	10/12/2021 02:19	WG1754839
Total Xylenes	2.36		0.00348	0.0600	20	10/12/2021 02:19	WG1754839
(S) Toluene-d8	103			80.0-120		10/12/2021 02:19	WG1754839
(S) 4-Bromofluorobenzene	108			77.0-126		10/12/2021 02:19	WG1754839
(S) 1,2-Dichloroethane-d4	100			70.0-130		10/12/2021 02:19	WG1754839

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
AK102 DRO C10-C25	29.6		0.254	0.888	1.11	10/11/2021 14:28	WG1753834
(S) o-Terphenyl	62.4			50.0-150		10/11/2021 14:28	WG1753834

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Anthracene	U		0.0000380	0.000100	2	10/04/2021 09:01	WG1750681
Acenaphthene	0.00384		0.0000380	0.000100	2	10/04/2021 09:01	WG1750681
Acenaphthylene	U		0.0000342	0.000100	2	10/04/2021 09:01	WG1750681
Benzo(a)anthracene	U		0.0000406	0.000100	2	10/04/2021 09:01	WG1750681
Benzo(a)pyrene	U		0.0000368	0.000100	2	10/04/2021 09:01	WG1750681
Benzo(b)fluoranthene	U		0.0000336	0.000100	2	10/04/2021 09:01	WG1750681
Benzo(g,h,i)perylene	U		0.0000368	0.000100	2	10/04/2021 09:01	WG1750681
Benzo(k)fluoranthene	U		0.0000404	0.000100	2	10/04/2021 09:01	WG1750681
Chrysene	U		0.0000358	0.000100	2	10/04/2021 09:01	WG1750681
Dibenz(a,h)anthracene	U		0.0000320	0.000100	2	10/04/2021 09:01	WG1750681
Fluoranthene	U		0.0000540	0.000200	2	10/04/2021 09:01	WG1750681
Fluorene	0.00548		0.0000338	0.000100	2	10/04/2021 09:01	WG1750681
Indeno(1,2,3-cd)pyrene	U		0.0000316	0.000100	2	10/04/2021 09:01	WG1750681
Naphthalene	0.254		0.00183	0.00500	20	10/05/2021 18:57	WG1750681
Phenanthrene	0.00639		0.0000360	0.000100	2	10/04/2021 09:01	WG1750681
Pyrene	U		0.0000338	0.000100	2	10/04/2021 09:01	WG1750681
1-Methylnaphthalene	0.201		0.00137	0.00500	20	10/05/2021 18:57	WG1750681
2-Methylnaphthalene	0.219		0.00135	0.00500	20	10/05/2021 18:57	WG1750681
(S) Nitrobenzene-d5	0.000	J2		31.0-160		10/04/2021 09:01	WG1750681
(S) Nitrobenzene-d5	0.000	J7		31.0-160		10/05/2021 18:57	WG1750681
(S) 2-Fluorobiphenyl	125	J7		48.0-148		10/05/2021 18:57	WG1750681
(S) 2-Fluorobiphenyl	82.5			48.0-148		10/04/2021 09:01	WG1750681

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
(S) p-Terphenyl-d14	138			37.0-146		10/04/2021 09:01	WG1750681
(S) p-Terphenyl-d14	141	J7		37.0-146		10/05/2021 18:57	WG1750681

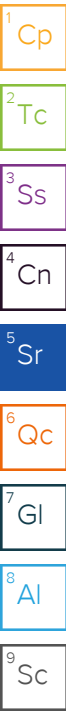
- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Sample Narrative:

L1410914-06 WG1750681: Dilution due to matrix impact during extraction procedure, surrogate impacted

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	0.548		0.0287	0.100	1	10/04/2021 13:52	WG1750882
(S)							
a,a,a-Trifluorotoluene(FID)	97.8			50.0-150		10/04/2021 13:52	WG1750882
(S)							
a,a,a-Trifluorotoluene(PID)	99.4			79.0-125		10/04/2021 13:52	WG1750882



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	0.00287		0.0000941	0.00100	1	10/08/2021 05:09	WG1753114
n-Butylbenzene	0.00129		0.000157	0.00100	1	10/08/2021 05:09	WG1753114
sec-Butylbenzene	0.00116		0.000125	0.00100	1	10/08/2021 05:09	WG1753114
tert-Butylbenzene	0.000390	J	0.000127	0.00100	1	10/08/2021 05:09	WG1753114
Ethylbenzene	0.0181		0.000137	0.00100	1	10/08/2021 05:09	WG1753114
Isopropylbenzene	0.00502		0.000105	0.00100	1	10/08/2021 05:09	WG1753114
Naphthalene	0.0132	C3	0.00100	0.00500	1	10/08/2021 05:09	WG1753114
Toluene	0.00136		0.000278	0.00100	1	10/08/2021 05:09	WG1753114
1,2,4-Trimethylbenzene	0.0295		0.000322	0.00100	1	10/08/2021 05:09	WG1753114
1,3,5-Trimethylbenzene	0.0100		0.000104	0.00100	1	10/08/2021 05:09	WG1753114
Total Xylenes	0.133		0.000174	0.00300	1	10/08/2021 05:09	WG1753114
(S) Toluene-d8	111			80.0-120		10/08/2021 05:09	WG1753114
(S) 4-Bromofluorobenzene	105			77.0-126		10/08/2021 05:09	WG1753114
(S) 1,2-Dichloroethane-d4	88.5			70.0-130		10/08/2021 05:09	WG1753114

Semi-Volatile Organic Compounds (GC) by Method AK102

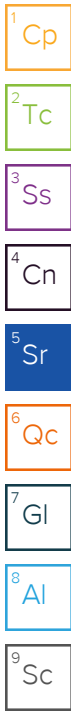
Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
AK102 DRO C10-C25	0.627	J	0.229	0.800	1	10/11/2021 14:49	WG1753834
(S) o-Terphenyl	61.7			50.0-150		10/11/2021 14:49	WG1753834

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	10/04/2021 09:19	WG1750681
Acenaphthene	0.000135		0.0000190	0.0000500	1	10/04/2021 09:19	WG1750681
Acenaphthylene	U		0.0000171	0.0000500	1	10/04/2021 09:19	WG1750681
Benzo(a)anthracene	U		0.0000203	0.0000500	1	10/04/2021 09:19	WG1750681
Benzo(a)pyrene	U		0.0000184	0.0000500	1	10/04/2021 09:19	WG1750681
Benzo(b)fluoranthene	U		0.0000168	0.0000500	1	10/04/2021 09:19	WG1750681
Benzo(g,h,i)perylene	U		0.0000184	0.0000500	1	10/04/2021 09:19	WG1750681
Benzo(k)fluoranthene	U		0.0000202	0.0000500	1	10/04/2021 09:19	WG1750681
Chrysene	U		0.0000179	0.0000500	1	10/04/2021 09:19	WG1750681
Dibenz(a,h)anthracene	U		0.0000160	0.0000500	1	10/04/2021 09:19	WG1750681
Fluoranthene	U		0.0000270	0.000100	1	10/04/2021 09:19	WG1750681
Fluorene	0.000266		0.0000169	0.0000500	1	10/04/2021 09:19	WG1750681
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500	1	10/04/2021 09:19	WG1750681
Naphthalene	0.000375		0.0000917	0.000250	1	10/04/2021 09:19	WG1750681
Phenanthrene	0.0000524		0.0000180	0.0000500	1	10/04/2021 09:19	WG1750681
Pyrene	U		0.0000169	0.0000500	1	10/04/2021 09:19	WG1750681
1-Methylnaphthalene	0.00386		0.0000687	0.000250	1	10/04/2021 09:19	WG1750681
2-Methylnaphthalene	0.000185	J	0.0000674	0.000250	1	10/04/2021 09:19	WG1750681
(S) Nitrobenzene-d5	95.5			31.0-160		10/04/2021 09:19	WG1750681
(S) 2-Fluorobiphenyl	109			48.0-148		10/04/2021 09:19	WG1750681
(S) p-Terphenyl-d14	144			37.0-146		10/04/2021 09:19	WG1750681

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	0.929		0.0287	0.100	1	10/04/2021 14:14	WG1750882
(S)							
a,a,a-Trifluorotoluene(FID)	97.1			50.0-150		10/04/2021 14:14	WG1750882
(S)							
a,a,a-Trifluorotoluene(PID)	99.6			79.0-125		10/04/2021 14:14	WG1750882



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	0.00183		0.0000941	0.00100	1	10/08/2021 05:28	WG1753114
n-Butylbenzene	0.00492		0.000157	0.00100	1	10/08/2021 05:28	WG1753114
sec-Butylbenzene	0.00422		0.000125	0.00100	1	10/08/2021 05:28	WG1753114
tert-Butylbenzene	0.000436	J	0.000127	0.00100	1	10/08/2021 05:28	WG1753114
Ethylbenzene	0.0433		0.000137	0.00100	1	10/08/2021 05:28	WG1753114
Isopropylbenzene	0.0127		0.000105	0.00100	1	10/08/2021 05:28	WG1753114
Naphthalene	0.0307	C3	0.00100	0.00500	1	10/08/2021 05:28	WG1753114
Toluene	0.000567	J	0.000278	0.00100	1	10/08/2021 05:28	WG1753114
1,2,4-Trimethylbenzene	0.0723		0.000322	0.00100	1	10/08/2021 05:28	WG1753114
1,3,5-Trimethylbenzene	0.0238		0.000104	0.00100	1	10/08/2021 05:28	WG1753114
Total Xylenes	0.243		0.000174	0.00300	1	10/08/2021 05:28	WG1753114
(S) Toluene-d8	109			80.0-120		10/08/2021 05:28	WG1753114
(S) 4-Bromofluorobenzene	106			77.0-126		10/08/2021 05:28	WG1753114
(S) 1,2-Dichloroethane-d4	90.8			70.0-130		10/08/2021 05:28	WG1753114

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	0.973		0.229	0.800	1	10/11/2021 15:10	WG1753834
(S) o-Terphenyl	64.9			50.0-150		10/11/2021 15:10	WG1753834

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	10/04/2021 09:36	WG1750681
Acenaphthene	0.000242		0.0000190	0.0000500	1	10/04/2021 09:36	WG1750681
Acenaphthylene	U		0.0000171	0.0000500	1	10/04/2021 09:36	WG1750681
Benzo(a)anthracene	U		0.0000203	0.0000500	1	10/04/2021 09:36	WG1750681
Benzo(a)pyrene	U		0.0000184	0.0000500	1	10/04/2021 09:36	WG1750681
Benzo(b)fluoranthene	U		0.0000168	0.0000500	1	10/04/2021 09:36	WG1750681
Benzo(g,h,i)perylene	U		0.0000184	0.0000500	1	10/04/2021 09:36	WG1750681
Benzo(k)fluoranthene	U		0.0000202	0.0000500	1	10/04/2021 09:36	WG1750681
Chrysene	U		0.0000179	0.0000500	1	10/04/2021 09:36	WG1750681
Dibenz(a,h)anthracene	U		0.0000160	0.0000500	1	10/04/2021 09:36	WG1750681
Fluoranthene	U		0.0000270	0.000100	1	10/04/2021 09:36	WG1750681
Fluorene	0.000506		0.0000169	0.0000500	1	10/04/2021 09:36	WG1750681
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500	1	10/04/2021 09:36	WG1750681
Naphthalene	0.00260		0.0000917	0.000250	1	10/04/2021 09:36	WG1750681
Phenanthrene	0.000102		0.0000180	0.0000500	1	10/04/2021 09:36	WG1750681
Pyrene	U		0.0000169	0.0000500	1	10/04/2021 09:36	WG1750681
1-Methylnaphthalene	0.0155		0.0000687	0.000250	1	10/04/2021 09:36	WG1750681
2-Methylnaphthalene	0.00551		0.0000674	0.000250	1	10/04/2021 09:36	WG1750681
(S) Nitrobenzene-d5	108			31.0-160		10/04/2021 09:36	WG1750681
(S) 2-Fluorobiphenyl	102			48.0-148		10/04/2021 09:36	WG1750681
(S) p-Terphenyl-d14	141			37.0-146		10/04/2021 09:36	WG1750681

EFFLUENT

Collected date/time: 09/27/21 12:10

SAMPLE RESULTS - 09

L1410914

Metals (ICP) by Method 6010C

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Sodium	9.67		0.504	3.00	1	10/06/2021 08:36	WG1751904

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	0.0889	J	0.0287	0.100	1	10/04/2021 14:36	WG1750882
(S) a,a,a-Trifluorotoluene(FID)	98.0			50.0-150		10/04/2021 14:36	WG1750882
(S) a,a,a-Trifluorotoluene(PID)	99.2			79.0-125		10/04/2021 14:36	WG1750882

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	0.000175	J	0.0000941	0.00100	1	10/08/2021 05:47	WG1753114
n-Butylbenzene	0.000225	J	0.000157	0.00100	1	10/08/2021 05:47	WG1753114
sec-Butylbenzene	0.000162	J	0.000125	0.00100	1	10/08/2021 05:47	WG1753114
tert-Butylbenzene	U		0.000127	0.00100	1	10/08/2021 05:47	WG1753114
Ethylbenzene	0.00214		0.000137	0.00100	1	10/08/2021 05:47	WG1753114
Isopropylbenzene	0.000590	J	0.000105	0.00100	1	10/08/2021 05:47	WG1753114
Naphthalene	0.00662	C3	0.00100	0.00500	1	10/08/2021 05:47	WG1753114
Toluene	U		0.000278	0.00100	1	10/08/2021 05:47	WG1753114
1,2,4-Trimethylbenzene	0.00414		0.000322	0.00100	1	10/08/2021 05:47	WG1753114
1,3,5-Trimethylbenzene	0.00133		0.000104	0.00100	1	10/08/2021 05:47	WG1753114
Total Xylenes	0.0165		0.000174	0.00300	1	10/08/2021 05:47	WG1753114
(S) Toluene-d8	112			80.0-120		10/08/2021 05:47	WG1753114
(S) 4-Bromofluorobenzene	106			77.0-126		10/08/2021 05:47	WG1753114
(S) 1,2-Dichloroethane-d4	88.1			70.0-130		10/08/2021 05:47	WG1753114

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	0.700	J	0.254	0.888	1.11	10/11/2021 15:31	WG1753834
(S) o-Terphenyl	68.3			50.0-150		10/11/2021 15:31	WG1753834

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	10/04/2021 09:53	WG1750681
Acenaphthene	U		0.0000190	0.0000500	1	10/04/2021 09:53	WG1750681
Acenaphthylene	U		0.0000171	0.0000500	1	10/04/2021 09:53	WG1750681
Benzo(a)anthracene	U		0.0000203	0.0000500	1	10/04/2021 09:53	WG1750681
Benzo(a)pyrene	U		0.0000184	0.0000500	1	10/04/2021 09:53	WG1750681
Benzo(b)fluoranthene	U		0.0000168	0.0000500	1	10/04/2021 09:53	WG1750681
Benzo(g,h,i)perylene	U		0.0000184	0.0000500	1	10/04/2021 09:53	WG1750681
Benzo(k)fluoranthene	U		0.0000202	0.0000500	1	10/04/2021 09:53	WG1750681
Chrysene	U		0.0000179	0.0000500	1	10/04/2021 09:53	WG1750681
Dibenz(a,h)anthracene	U		0.0000160	0.0000500	1	10/04/2021 09:53	WG1750681
Fluoranthene	U		0.0000270	0.000100	1	10/04/2021 09:53	WG1750681
Fluorene	U		0.0000169	0.0000500	1	10/04/2021 09:53	WG1750681
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500	1	10/04/2021 09:53	WG1750681
Naphthalene	U		0.0000917	0.000250	1	10/04/2021 09:53	WG1750681
Phenanthrene	U		0.0000180	0.0000500	1	10/04/2021 09:53	WG1750681
Pyrene	U		0.0000169	0.0000500	1	10/04/2021 09:53	WG1750681
1-Methylnaphthalene	U		0.0000687	0.000250	1	10/04/2021 09:53	WG1750681

ACCOUNT:

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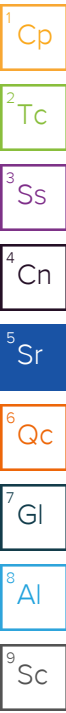
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
2-Methylnaphthalene	U		0.0000674	0.000250	1	10/04/2021 09:53	WG1750681
(S) Nitrobenzene-d5	95.0			31.0-160		10/04/2021 09:53	WG1750681
(S) 2-Fluorobiphenyl	105			48.0-148		10/04/2021 09:53	WG1750681
(S) p-Terphenyl-d14	145			37.0-146		10/04/2021 09:53	WG1750681

- 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	9.62		0.504	3.00	1	10/06/2021 08:39	WG1751904



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	0.0817	J	0.0287	0.100	1	10/04/2021 14:58	WG1750882
(S) a,a,a-Trifluorotoluene(FID)	97.6			50.0-150		10/04/2021 14:58	WG1750882
(S) a,a,a-Trifluorotoluene(PID)	99.3			79.0-125		10/04/2021 14:58	WG1750882

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	0.000160	J	0.0000941	0.00100	1	10/08/2021 06:06	WG1753114
n-Butylbenzene	U		0.000157	0.00100	1	10/08/2021 06:06	WG1753114
sec-Butylbenzene	0.000142	J	0.000125	0.00100	1	10/08/2021 06:06	WG1753114
tert-Butylbenzene	U		0.000127	0.00100	1	10/08/2021 06:06	WG1753114
Ethylbenzene	0.00224		0.000137	0.00100	1	10/08/2021 06:06	WG1753114
Isopropylbenzene	0.000560	J	0.000105	0.00100	1	10/08/2021 06:06	WG1753114
Naphthalene	0.00380	C3 J	0.00100	0.00500	1	10/08/2021 06:06	WG1753114
Toluene	U		0.000278	0.00100	1	10/08/2021 06:06	WG1753114
1,2,4-Trimethylbenzene	0.00401		0.000322	0.00100	1	10/08/2021 06:06	WG1753114
1,3,5-Trimethylbenzene	0.00125		0.000104	0.00100	1	10/08/2021 06:06	WG1753114
Total Xylenes	0.0173		0.000174	0.00300	1	10/08/2021 06:06	WG1753114
(S) Toluene-d8	109			80.0-120		10/08/2021 06:06	WG1753114
(S) 4-Bromofluorobenzene	106			77.0-126		10/08/2021 06:06	WG1753114
(S) 1,2-Dichloroethane-d4	89.1			70.0-130		10/08/2021 06:06	WG1753114

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	0.674	J	0.254	0.888	1.11	10/11/2021 15:52	WG1753834
(S) o-Terphenyl	65.2			50.0-150		10/11/2021 15:52	WG1753834

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	10/04/2021 10:11	WG1750681
Acenaphthene	U		0.0000190	0.0000500	1	10/04/2021 10:11	WG1750681
Acenaphthylene	U		0.0000171	0.0000500	1	10/04/2021 10:11	WG1750681
Benzo(a)anthracene	U		0.0000203	0.0000500	1	10/04/2021 10:11	WG1750681
Benzo(a)pyrene	U		0.0000184	0.0000500	1	10/04/2021 10:11	WG1750681
Benzo(b)fluoranthene	U		0.0000168	0.0000500	1	10/04/2021 10:11	WG1750681
Benzo(g,h,i)perylene	U		0.0000184	0.0000500	1	10/04/2021 10:11	WG1750681
Benzo(k)fluoranthene	U		0.0000202	0.0000500	1	10/04/2021 10:11	WG1750681
Chrysene	U		0.0000179	0.0000500	1	10/04/2021 10:11	WG1750681
Dibenz(a,h)anthracene	U		0.0000160	0.0000500	1	10/04/2021 10:11	WG1750681
Fluoranthene	U		0.0000270	0.000100	1	10/04/2021 10:11	WG1750681
Fluorene	U		0.0000169	0.0000500	1	10/04/2021 10:11	WG1750681
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500	1	10/04/2021 10:11	WG1750681
Naphthalene	U		0.0000917	0.000250	1	10/04/2021 10:11	WG1750681
Phenanthrene	U		0.0000180	0.0000500	1	10/04/2021 10:11	WG1750681
Pyrene	U		0.0000169	0.0000500	1	10/04/2021 10:11	WG1750681
1-Methylnaphthalene	U		0.0000687	0.000250	1	10/04/2021 10:11	WG1750681

DUPLICATE 1

SAMPLE RESULTS - 10

Collected date/time: 09/27/21 12:10

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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	10/04/2021 10:11	WG1750681
(S) Nitrobenzene-d5	92.0			31.0-160		10/04/2021 10:11	WG1750681
(S) 2-Fluorobiphenyl	99.5			48.0-148		10/04/2021 10:11	WG1750681
(S) p-Terphenyl-d14	144			37.0-146		10/04/2021 10:11	WG1750681

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

DUPLICATE 2

SAMPLE RESULTS - 11

Collected date/time: 09/27/21 16:40

L1410914

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
TPHGAK C6 to C10	7.61	Q	0.287	1.00	10	10/17/2021 22:08	WG1756731
(S) a,a,a-Trifluorotoluene(FID)	93.8			50.0-150		10/17/2021 22:08	WG1756731
(S) a,a,a-Trifluorotoluene(PID)	98.3			79.0-125		10/17/2021 22:08	WG1756731

1 Cp

2 Tc

3 Ss

4 Cn

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Benzene	0.0670		0.00235	0.0250	25	10/12/2021 02:38	WG1754839
n-Butylbenzene	0.0333		0.00393	0.0250	25	10/12/2021 02:38	WG1754839
sec-Butylbenzene	0.0288		0.00313	0.0250	25	10/12/2021 02:38	WG1754839
tert-Butylbenzene	U		0.00318	0.0250	25	10/12/2021 02:38	WG1754839
Ethylbenzene	0.361		0.00343	0.0250	25	10/12/2021 02:38	WG1754839
Isopropylbenzene	0.0796		0.00263	0.0250	25	10/12/2021 02:38	WG1754839
Naphthalene	0.289		0.0250	0.125	25	10/12/2021 02:38	WG1754839
Toluene	0.110		0.00695	0.0250	25	10/12/2021 02:38	WG1754839
1,2,4-Trimethylbenzene	0.515		0.00805	0.0250	25	10/12/2021 02:38	WG1754839
1,3,5-Trimethylbenzene	0.167		0.00260	0.0250	25	10/12/2021 02:38	WG1754839
Total Xylenes	2.50		0.00435	0.0750	25	10/12/2021 02:38	WG1754839
(S) Toluene-d8	103			80.0-120		10/12/2021 02:38	WG1754839
(S) 4-Bromofluorobenzene	105			77.0-126		10/12/2021 02:38	WG1754839
(S) 1,2-Dichloroethane-d4	102			70.0-130		10/12/2021 02:38	WG1754839

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
AK102 DRO C10-C25	24.5		0.229	0.800	1	10/11/2021 16:13	WG1753834
(S) o-Terphenyl	51.7			50.0-150		10/11/2021 16:13	WG1753834

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Anthracene	U		0.0000380	0.000100	2	10/04/2021 10:28	WG1750681
Acenaphthene	0.00300		0.0000380	0.000100	2	10/04/2021 10:28	WG1750681
Acenaphthylene	U		0.0000342	0.000100	2	10/04/2021 10:28	WG1750681
Benzo(a)anthracene	U		0.0000406	0.000100	2	10/04/2021 10:28	WG1750681
Benzo(a)pyrene	U		0.0000368	0.000100	2	10/04/2021 10:28	WG1750681
Benzo(b)fluoranthene	U		0.0000336	0.000100	2	10/04/2021 10:28	WG1750681
Benzo(g,h,i)perylene	U		0.0000368	0.000100	2	10/04/2021 10:28	WG1750681
Benzo(k)fluoranthene	U		0.0000404	0.000100	2	10/04/2021 10:28	WG1750681
Chrysene	U		0.0000358	0.000100	2	10/04/2021 10:28	WG1750681
Dibenz(a,h)anthracene	U		0.0000320	0.000100	2	10/04/2021 10:28	WG1750681
Fluoranthene	U		0.0000540	0.000200	2	10/04/2021 10:28	WG1750681
Fluorene	0.00432		0.0000338	0.000100	2	10/04/2021 10:28	WG1750681
Indeno(1,2,3-cd)pyrene	U		0.0000316	0.000100	2	10/04/2021 10:28	WG1750681
Naphthalene	0.263		0.00367	0.0100	40	10/05/2021 20:23	WG1750681
Phenanthrene	0.00425		0.0000360	0.000100	2	10/04/2021 10:28	WG1750681
Pyrene	U		0.0000338	0.000100	2	10/04/2021 10:28	WG1750681
1-Methylnaphthalene	0.181		0.000137	0.000500	2	10/04/2021 10:28	WG1750681
2-Methylnaphthalene	0.195		0.000135	0.000500	2	10/04/2021 10:28	WG1750681
(S) Nitrobenzene-d5	0.000	J7		31.0-160		10/05/2021 20:23	WG1750681
(S) Nitrobenzene-d5	0.000	J2		31.0-160		10/04/2021 10:28	WG1750681
(S) 2-Fluorobiphenyl	85.0			48.0-148		10/04/2021 10:28	WG1750681
(S) 2-Fluorobiphenyl	133	J7		48.0-148		10/05/2021 20:23	WG1750681

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DUPLICATE 2

SAMPLE RESULTS - 11

Collected date/time: 09/27/21 16:40

L1410914

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
(S) p-Terphenyl-d14	139			37.0-146		10/04/2021 10:28	WG1750681
(S) p-Terphenyl-d14	151	J7		37.0-146		10/05/2021 20:23	WG1750681

Sample Narrative:

L1410914-11 WG1750681: Dilution due to matrix impact during extraction procedure

- 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 mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
TPHGAK C6 to C10	0.0345	<u>J</u>	0.0287	0.100	1	10/04/2021 15:20	WG1750882
(S) a,a,a-Trifluorotoluene(FID)	96.6			50.0-150		10/04/2021 15:20	WG1750882
(S) a,a,a-Trifluorotoluene(PID)	99.0			79.0-125		10/04/2021 15:20	WG1750882

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	0.00122		0.0000941	0.00100	1	10/08/2021 06:24	WG1753114
n-Butylbenzene	U		0.000157	0.00100	1	10/08/2021 06:24	WG1753114
sec-Butylbenzene	0.000139	<u>J</u>	0.000125	0.00100	1	10/08/2021 06:24	WG1753114
tert-Butylbenzene	0.000251	<u>J</u>	0.000127	0.00100	1	10/08/2021 06:24	WG1753114
Ethylbenzene	U		0.000137	0.00100	1	10/08/2021 06:24	WG1753114
Isopropylbenzene	0.000669	<u>J</u>	0.000105	0.00100	1	10/08/2021 06:24	WG1753114
Naphthalene	U	<u>C3</u>	0.00100	0.00500	1	10/08/2021 06:24	WG1753114
Toluene	U		0.000278	0.00100	1	10/08/2021 06:24	WG1753114
1,2,4-Trimethylbenzene	U		0.000322	0.00100	1	10/08/2021 06:24	WG1753114
1,3,5-Trimethylbenzene	U		0.000104	0.00100	1	10/08/2021 06:24	WG1753114
Total Xylenes	U		0.000174	0.00300	1	10/08/2021 06:24	WG1753114
(S) Toluene-d8	107			80.0-120		10/08/2021 06:24	WG1753114
(S) 4-Bromofluorobenzene	108			77.0-126		10/08/2021 06:24	WG1753114
(S) 1,2-Dichloroethane-d4	89.2			70.0-130		10/08/2021 06:24	WG1753114

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
AK102 DRO C10-C25	0.415	<u>J</u>	0.254	0.888	1.11	10/11/2021 16:34	WG1753834
(S) o-Terphenyl	28.0	<u>J2</u>		50.0-150		10/11/2021 16:34	WG1753834

Sample Narrative:

L1410914-12 WG1753834: Sample produced total emulsion during Extraction process, low surr/spike recoveries due to matrix.

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
Anthracene	U		0.0000190	0.0000500	1	10/04/2021 10:45	WG1750681
Acenaphthene	U		0.0000190	0.0000500	1	10/04/2021 10:45	WG1750681
Acenaphthylene	U		0.0000171	0.0000500	1	10/04/2021 10:45	WG1750681
Benzo(a)anthracene	U		0.0000203	0.0000500	1	10/04/2021 10:45	WG1750681
Benzo(a)pyrene	U		0.0000184	0.0000500	1	10/04/2021 10:45	WG1750681
Benzo(b)fluoranthene	U		0.0000168	0.0000500	1	10/04/2021 10:45	WG1750681
Benzo(g,h,i)perylene	U		0.0000184	0.0000500	1	10/04/2021 10:45	WG1750681
Benzo(k)fluoranthene	U		0.0000202	0.0000500	1	10/04/2021 10:45	WG1750681
Chrysene	U		0.0000179	0.0000500	1	10/04/2021 10:45	WG1750681
Dibenz(a,h)anthracene	U		0.0000160	0.0000500	1	10/04/2021 10:45	WG1750681
Fluoranthene	U		0.0000270	0.000100	1	10/04/2021 10:45	WG1750681
Fluorene	U		0.0000169	0.0000500	1	10/04/2021 10:45	WG1750681
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500	1	10/04/2021 10:45	WG1750681
Naphthalene	0.000182	<u>J</u>	0.0000917	0.000250	1	10/04/2021 10:45	WG1750681
Phenanthrene	U		0.0000180	0.0000500	1	10/04/2021 10:45	WG1750681
Pyrene	U		0.0000169	0.0000500	1	10/04/2021 10:45	WG1750681
1-Methylnaphthalene	U		0.0000687	0.000250	1	10/04/2021 10:45	WG1750681
2-Methylnaphthalene	U		0.0000674	0.000250	1	10/04/2021 10:45	WG1750681
(S) Nitrobenzene-d5	91.0			31.0-160		10/04/2021 10:45	WG1750681

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
(S) 2-Fluorobiphenyl	103			48.0-148		10/04/2021 10:45	WG1750681
(S) p-Terphenyl-d14	130			37.0-146		10/04/2021 10:45	WG1750681

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

Method Blank (MB)

(MB) R3713077-1 10/06/21 08:17

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Sodium	U		0.504	3.00

¹Cp

²Tc

³Ss

Laboratory Control Sample (LCS)

(LCS) R3713077-2 10/06/21 08:20

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Sodium	10.0	9.66	96.6	80.0-120	

⁴Cn

⁵Sr

L1410842-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1410842-08 10/06/21 08:23 • (MS) R3713077-4 10/06/21 08:28 • (MSD) R3713077-5 10/06/21 08:30

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Sodium	10.0	13.1	22.7	22.8	96.0	96.7	1	75.0-125			0.311	20

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3716100-2 10/04/21 12:02

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPHGAK C6 to C10	U		0.0287	0.100
(S) a,a,a-Trifluorotoluene(PID)	99.7			79.0-125
(S) a,a,a-Trifluorotoluene(FID)	97.8			60.0-120

Laboratory Control Sample (LCS)

(LCS) R3716100-1 10/04/21 10:51

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPHGAK C6 to C10	5.00	5.43	109	60.0-120	
(S) a,a,a-Trifluorotoluene(PID)			112	79.0-125	
(S) a,a,a-Trifluorotoluene(FID)			103	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) R3717586-2 10/17/21 13:46

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPHGAK C6 to C10	U		0.0287	0.100
(S) a,a,a-Trifluorotoluene(PID)	98.1			79.0-125
(S) a,a,a-Trifluorotoluene(FID)	95.4			60.0-120

Laboratory Control Sample (LCS)

(LCS) R3717586-1 10/17/21 12:34

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPHGAK C6 to C10	5.00	3.86	77.2	60.0-120	
(S) a,a,a-Trifluorotoluene(PID)			116	79.0-125	
(S) a,a,a-Trifluorotoluene(FID)			105	60.0-120	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3714705-2 10/08/21 04:32

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
<i>(S) Toluene-d8</i>	109			80.0-120
<i>(S) 4-Bromofluorobenzene</i>	105			77.0-126
<i>(S) 1,2-Dichloroethane-d4</i>	91.1			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) R3714705-1 10/08/21 03:54

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.00500	0.00500	100	70.0-123	
n-Butylbenzene	0.00500	0.00430	86.0	73.0-125	
sec-Butylbenzene	0.00500	0.00449	89.8	75.0-125	
tert-Butylbenzene	0.00500	0.00467	93.4	76.0-124	
Ethylbenzene	0.00500	0.00534	107	79.0-123	
Isopropylbenzene	0.00500	0.00511	102	76.0-127	
Naphthalene	0.00500	0.00383	76.6	54.0-135	
Toluene	0.00500	0.00507	101	79.0-120	
1,2,4-Trimethylbenzene	0.00500	0.00455	91.0	76.0-121	
1,3,5-Trimethylbenzene	0.00500	0.00464	92.8	76.0-122	
Xylenes, Total	0.0150	0.0158	105	79.0-123	
<i>(S) Toluene-d8</i>			108	80.0-120	
<i>(S) 4-Bromofluorobenzene</i>			108	77.0-126	
<i>(S) 1,2-Dichloroethane-d4</i>			92.4	70.0-130	

Method Blank (MB)

(MB) R3715090-3 10/11/21 20:04

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	105			80.0-120
(S) 4-Bromofluorobenzene	108			77.0-126
(S) 1,2-Dichloroethane-d4	101			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) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3715090-1 10/11/21 19:07 • (LCSD) R3715090-2 10/11/21 19:26

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 %
Benzene	0.00500	0.00498	0.00478	99.6	95.6	70.0-123			4.10	20
n-Butylbenzene	0.00500	0.00536	0.00530	107	106	73.0-125			1.13	20
sec-Butylbenzene	0.00500	0.00500	0.00494	100	98.8	75.0-125			1.21	20
tert-Butylbenzene	0.00500	0.00488	0.00480	97.6	96.0	76.0-124			1.65	20
Ethylbenzene	0.00500	0.00509	0.00477	102	95.4	79.0-123			6.49	20
Isopropylbenzene	0.00500	0.00549	0.00497	110	99.4	76.0-127			9.94	20
Naphthalene	0.00500	0.00546	0.00473	109	94.6	54.0-135			14.3	20
Toluene	0.00500	0.00499	0.00463	99.8	92.6	79.0-120			7.48	20
1,2,4-Trimethylbenzene	0.00500	0.00507	0.00488	101	97.6	76.0-121			3.82	20
1,3,5-Trimethylbenzene	0.00500	0.00470	0.00461	94.0	92.2	76.0-122			1.93	20
Xylenes, Total	0.0150	0.0158	0.0144	105	96.0	79.0-123			9.27	20
(S) Toluene-d8				104	102	80.0-120				
(S) 4-Bromofluorobenzene				108	103	77.0-126				
(S) 1,2-Dichloroethane-d4				104	103	70.0-130				

Method Blank (MB)

(MB) R3715117-1 10/11/21 11:41

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>	68.9			60.0-120

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

(LCS) R3715117-2 10/11/21 12:02 • (LCSD) R3715117-3 10/11/21 12:22

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	6.00	5.31	5.25	88.5	87.5	75.0-125			1.14	20
<i>(S) o-Terphenyl</i>				80.0	78.3	60.0-120				

L1412126-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1412126-02 10/11/21 17:16 • (MS) R3715117-4 10/11/21 17:37 • (MSD) R3715117-5 10/11/21 17:58

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
AK102 DRO C10-C25	6.00	U	4.62	4.69	77.0	78.2	1	75.0-125			1.50	20
<i>(S) o-Terphenyl</i>					75.7	69.9		50.0-150				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3712551-3 10/03/21 23:50

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	114			48.0-148
(S) p-Terphenyl-d14	139			37.0-146

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

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

(LCS) R3712551-1 10/03/21 23:15 • (LCSD) R3712551-2 10/03/21 23:32

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	0.00221	0.00211	111	105	67.0-150			4.63	20
Acenaphthene	0.00200	0.00222	0.00216	111	108	65.0-138			2.74	20
Acenaphthylene	0.00200	0.00232	0.00222	116	111	66.0-140			4.41	20
Benzo(a)anthracene	0.00200	0.00221	0.00207	111	104	61.0-140			6.54	20
Benzo(a)pyrene	0.00200	0.00214	0.00202	107	101	60.0-143			5.77	20
Benzo(b)fluoranthene	0.00200	0.00211	0.00202	105	101	58.0-141			4.36	20
Benzo(g,h,i)perylene	0.00200	0.00209	0.00204	104	102	52.0-153			2.42	20
Benzo(k)fluoranthene	0.00200	0.00216	0.00206	108	103	58.0-148			4.74	20
Chrysene	0.00200	0.00219	0.00207	109	104	64.0-144			5.63	20
Dibenz(a,h)anthracene	0.00200	0.00198	0.00188	99.0	94.0	52.0-155			5.18	20
Fluoranthene	0.00200	0.00228	0.00220	114	110	69.0-153			3.57	20
Fluorene	0.00200	0.00222	0.00214	111	107	64.0-136			3.67	20

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

(LCS) R3712551-1 10/03/21 23:15 • (LCSD) R3712551-2 10/03/21 23:32

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	0.00203	0.00198	102	99.0	54.0-153			2.49	20
Naphthalene	0.00200	0.00215	0.00208	107	104	61.0-137			3.31	20
Phenanthrene	0.00200	0.00220	0.00212	110	106	62.0-137			3.70	20
Pyrene	0.00200	0.00226	0.00222	113	111	60.0-142			1.79	20
1-Methylnaphthalene	0.00200	0.00220	0.00212	110	106	66.0-142			3.70	20
2-Methylnaphthalene	0.00200	0.00207	0.00199	104	99.5	62.0-136			3.94	20
<i>(S) Nitrobenzene-d5</i>				119	115	31.0-160				
<i>(S) 2-Fluorobiphenyl</i>				114	111	48.0-148				
<i>(S) p-Terphenyl-d14</i>				138	133	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) R3712360-3 10/04/21 08:09

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	107			31.0-160
(S) 2-Fluorobiphenyl	111			48.0-148
(S) p-Terphenyl-d14	152	<u>U1</u>		37.0-146

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

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

(LCS) R3712360-1 10/04/21 07:35 • (LCSD) R3712360-2 10/04/21 07:52

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	0.00214	0.00207	107	104	67.0-150			3.33	20
Acenaphthene	0.00200	0.00219	0.00220	109	110	65.0-138			0.456	20
Acenaphthylene	0.00200	0.00250	0.00251	125	126	66.0-140			0.399	20
Benzo(a)anthracene	0.00200	0.00196	0.00192	98.0	96.0	61.0-140			2.06	20
Benzo(a)pyrene	0.00200	0.00199	0.00199	99.5	99.5	60.0-143			0.000	20
Benzo(b)fluoranthene	0.00200	0.00193	0.00198	96.5	99.0	58.0-141			2.56	20
Benzo(g,h,i)perylene	0.00200	0.00209	0.00207	104	104	52.0-153			0.962	20
Benzo(k)fluoranthene	0.00200	0.00195	0.00193	97.5	96.5	58.0-148			1.03	20
Chrysene	0.00200	0.00211	0.00212	105	106	64.0-144			0.473	20
Dibenz(a,h)anthracene	0.00200	0.00176	0.00176	88.0	88.0	52.0-155			0.000	20
Fluoranthene	0.00200	0.00197	0.00197	98.5	98.5	69.0-153			0.000	20
Fluorene	0.00200	0.00202	0.00205	101	103	64.0-136			1.47	20

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

(LCS) R3712360-1 10/04/21 07:35 • (LCSD) R3712360-2 10/04/21 07:52

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	0.00191	0.00185	95.5	92.5	54.0-153			3.19	20
Naphthalene	0.00200	0.00215	0.00214	107	107	61.0-137			0.466	20
Phenanthrene	0.00200	0.00220	0.00214	110	107	62.0-137			2.76	20
Pyrene	0.00200	0.00248	0.00248	124	124	60.0-142			0.000	20
1-Methylnaphthalene	0.00200	0.00192	0.00206	96.0	103	66.0-142			7.04	20
2-Methylnaphthalene	0.00200	0.00183	0.00196	91.5	98.0	62.0-136			6.86	20
<i>(S) Nitrobenzene-d5</i>				94.5	103	31.0-160				
<i>(S) 2-Fluorobiphenyl</i>				107	108	48.0-148				
<i>(S) p-Terphenyl-d14</i>				136	134	37.0-146				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

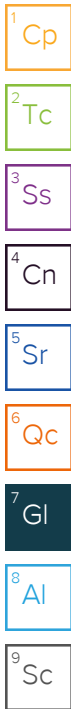
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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

Abbreviations and Definitions

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

Qualifier	Description
C3	The reported concentration is an estimate. The continuing calibration standard associated with this data responded low. Method sensitivity check is acceptable.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.
Q	Sample was prepared and/or analyzed past holding time as defined in the method. Concentrations should be considered minimum values.



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Company Name/Address:
Stantec - Anchorage, AK - Speedway
 725 E Fireweed Lane
 Suite 200
 Anchorage, AK 99503

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

Report to:
Ms. Leslie Petre

Email To: **craig.cothron@pacelabs.com**

Project Description:
Speedway 5313 TNS 101 MPC 157575

City/State Collected: **AK** Please Circle:
 PT MT CT ET

Phone: **907-266-1108**
450-1428

Client Project #
STAAAKSSA-5313

Collected by (print):
Leslie Petre & GM

Site/Facility ID #
0005313

Collected by (signature):
[Signature]

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

Immediately Packed on Ice N

Sample ID

Comp/Grab Matrix * Depth Date Time

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs
MW-3	G	GW		9/27/21	1530	10
MW-4	G	GW		9/27/21	1440	10
MW-8	G	GW		9/27/21	1745	10
MW-14	G	GW		9/27/21	1415	10
MW-17	G	GW		9/27/21	1710	10
MW-19-1	G	GW		9/27/21	1640	10
MW-19-2	G	GW		9/27/21	1640	10
CRW-2_AERATION TREATMENT TANK (INFLUENT)	G	GW		9/27/21	1145	10
WRW-2020_AERATION TREATMENT TANK (INFLUE EFFLUENT)	G	GW		9/27/21	1110	10
	G	GW		9/27/21	1210	11

Analysis / Container / Preservative										
AK101 40mlAmb HCl	AK102 100ml Amb HCl	NA1CP 250mlHDPE-HNO3	PAHSIMLVID 40mlAmb-NoPres-WT	V8260C 40mlAmb-HCl						

Chain of Custody Page ___ of ___

Pace Analytical

12065 Lebanon Rd Mount Juliet, TN 37122
 Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: <https://info.pacelabs.com/hubfs/pas-standard-terms.pdf>

SDG # **1410914**
L-094

Acctnum: **STAAAKSSA**
 Template: **T175449**
 Prelogin: **P875081**
 PM: **034 - Craig Cothron**
 PB: **9/20/21 ted**
 Shipped Via: **FedEX 2nd Day**

Remarks | Sample # (lab only)

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

Remarks:

Flow _____ Other _____

Samples returned via:
 ___ UPS ___ FedEx ___ Courier

Tracking # **53189945 9665**

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)
[Signature]

Date: **9/27/21**
12:00pm

Received by: (Signature)
[Signature]

Temp: **12.9** °C
 Trip Blank Received: Yes No
 HCl / MeOH TBR
 Bottles Received: **122**

If preservation required by Login: Date/Time
 Hold:
 Condition: **NCF / OK**

Laboratory Report Number L1410914 CS Site Name Speedway Store 5313
Laboratory Report Date 09/29/2021 ADEC File Number 100.26.022

Laboratory Data Review Checklist

Completed By:

Austin Badger

Title:

Engineer in Training

Date:

October 21, 2021

Consultant Firm:

Stantec Consulting Service, Inc.

Laboratory Name:

Pace Analytical

Laboratory Report Number:

L1277825

Laboratory Report Date:

November 20, 2020

CS Site Name:

Speedway Store 5313, formerly Tesoro 2Go Mart 101/IFC

ADEC File Number:

100.26.022

Hazard Identification Number:

26295

Commented [BA1]: Confirm

Laboratory Report Number L1410914 CS Site Name Speedway Store 5313
Laboratory Report Date 09/29/2021 ADEC File Number 100.26.022

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:

Laboratory Report Number L1410914 CS Site Name Speedway Store 5313
Laboratory Report Date 09/29/2021 ADEC File Number 100.26.022

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:

Data quality and usability not affected.

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 effect on data quality/usability according to the case narrative.

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:

MW-19-1 and DUPLICATE 2: GRO by Method AK101 flagged with qualifier Q indicating "Sample was prepared and/or analyzed past holding time as defined in the method. Concentrations should be considered minimum values."

Laboratory Report Number L1410914 CS Site Name Speedway Store 5313
Laboratory Report Date 09/29/2021 ADEC File Number 100.26.022

c. All soils reported on a dry weight basis?

Yes No N/A Comments:

No soils analyzed.

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?

Data quality and usability not affected.
MW-19-1 and DUPLICATE 2: GRO by Method AK101 results significantly exceeded GCLs therefore qualifier Q does not affect data usability.

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:

v. Data quality or usability affected?

Comments:

Data quality and usability is not affected.
Method Blank (MB) R3712360-3 (S) p-Terphenyl-d14 flagged with qualifier J1 indicating, "Surrogate recovery limits have been exceeded; values are outside upper control limits".

Laboratory Report Number L1410914 CS Site Name Speedway Store 5313
Laboratory Report Date 09/29/2021 ADEC File Number 100.26.022

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:

- 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:

No affected samples.

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

Comments:

Data quality and usability not affected.

Laboratory Report Number L1410914 CS Site Name Speedway Store 5313
Laboratory Report Date 09/29/2021 ADEC File Number 100.26.022

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:

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Laboratory Report Date 09/29/2021 ADEC File Number 100.26.022

- 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:

MW-4: (S) o-Terphenyl flagged with qualifier J2 indicating “Surrogate recovery limits have been exceeded; values are outside lower control limits”.

MW-8: (S) Nitrobenzene-d5 flagged with qualifier J1 indicating “Surrogate recovery limits have been exceeded; values are outside upper control limits”.

MW-19-1 and DUPLICATE 2: (S) Nitrobenzene-d5 flagged with qualifier J2 indicating “Surrogate recovery limits have been exceeded; values are outside lower control limits”. (S) Nitrobenzene-d5 flagged with qualifier J7 indicating “Surrogate recovery cannot be used for control limit evaluation due to dilution”. (S) 2-Fluorobiphenyl flagged with qualifier J7 indicating “Surrogate recovery cannot be used for control limit evaluation due to dilution”. (S) p-Terphenyl-d14 flagged with qualifier J7 indicating “Surrogate recovery cannot be used for control limit evaluation due to dilution”.

MW-30: (S) o-Terphenyl flagged with qualifier J2 indicating “Surrogate recovery limits have been exceeded; values are outside lower control limits”.

Method Blank: (S) p-Terphenyl-d14 flagged with qualifier J1 indicating “Surrogate recovery limits have been exceeded; values are outside upper control limits”.

- iv. Data quality or usability affected?

Comments:

Data quality and useability not affected.

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:

Laboratory Report Number L1410914 CS Site Name Speedway Store 5313
Laboratory Report Date 09/29/2021 ADEC File Number 100.26.022

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:

Data quality and usability not affected.

f. Field Duplicate

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

Yes No N/A Comments:

A field duplicate was not submitted for sodium as sodium analysis is not required to meet project specified objectives.

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)

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

Where R_1 = Sample Concentration
 R_2 = Field Duplicate Concentration

Yes No N/A Comments:

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

Comments:

Data quality and usability not affected.

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

Yes No N/A Comments:

All equipment used for each well sampling was either new and disposable or new and dedicated to the sampling of the well.

Laboratory Report Number L1410914 CS Site Name Speedway Store 5313
Laboratory Report Date 09/29/2021 ADEC File Number 100.26.022

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

Yes No N/A Comments:

No decontamination or equipment blanks required.

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

Comments:

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: