

 **TESORO**

Speedway Store 5315

Formerly Tesoro 2 Go Mart #111

ADEC File #100.26.026

**March 2021 Monitoring
Event Report**

Prepared For



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ACRONYMS AND ABBREVIATIONS

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

1.0 EXECUTIVE SUMMARY

This first quarter 2021 (semi-annual) Groundwater Monitoring Event Report was prepared by Stantec Consulting Services Inc. (Stantec) on behalf of Speedway LLC for Store #5315 (formally known as Tesoro 2 Go Mart #111), located at 3679 College Road, Fairbanks, Alaska (**Figure 1**). The methods used for this monitoring event were conducted in accordance with the 2021 Alaska Department of Environmental Conservation (ADEC) approved Work Plans for this site.

On March 30, 2021, the Stantec team of Engineer in Training (EIT) Austin Badger and EIT Leslie Petre conducted a first quarter (semi-annual) analytical sampling event of Monitoring Wells MW-12, MW-13, MW-16, MW 17-1, MW 17-2, G-1, and Remediation Well RM-2. Site conditions caused by on site hard pack snow storage and thick ice cover from a fire suppression event in February 2021 prevented sampling of G-5, MW-10, and MW-11 while an inoperable pump prevented sampling of RM-1.

Hydraulic gradient and direction of groundwater flow was not calculated for this monitoring event since the pumping level in remediation well RM-2 was not measured to determine the radius of influence. A second quarter sampling event will sample G-5, MW-10, MW-11, RM-1, and RM-2, and will include measurements of the groundwater depths in all monitoring and remediation wells currently being monitored in the 2021 work plan to calculate the hydraulic gradient and direction of groundwater flow across the site.

Results of the analytical sampling showed analytes were present at concentrations exceeding ADEC groundwater cleanup levels (GCLs) as listed in Alaska Administrative Code (AAC) 18AAC 75.345 Table C (9/18/2019) for all wells tested. Analytes in exceedance included: benzene, ethylbenzene, xylenes, gasoline range organics (GRO); diesel range organics (DRO), 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and naphthalene.

Results of the groundwater analytical sampling showed that analytes detected above ADEC groundwater cleanup levels (GCLs) as listed in Alaska Administrative Code (AAC) 18AAC 75.345 Table C (9/18/2019) for all wells tested in the primary groundwater samples were:

- Monitoring well MW 12: Ethylbenzene.
- Monitoring well MW 17-1: Ethylbenzene, xylenes, gasoline range organics (GRO), diesel range organics (DRO), 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and naphthalene.
- Monitoring well MW 17-2: DRO, and naphthalene (non-detect lab reporting level exceeded ADEC GCL).
- Remediation well RM-2: Benzene, ethylbenzene, xylenes, GRO, DRO, 1,2,4-trimethylbenzene, and naphthalene.

It is noted that analytes levels for RM-2 are comparable to the October 2020 levels and notably higher concentrations than the August 2020 monitoring event which is interpreted as an indication that the

the petroleum contaminant levels have decreased appreciably in MWs 17-1 and 17-2 which may be a positive indication of in-situ treatment with the chemox injection.

2.0 SITE BACKGROUND

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

3.0 FIELD ACTIVITIES

The following field activities were conducted during the March 30, 2021 monitoring and treatment event:

- Collected groundwater samples and field measurements of the following intrinsic water quality parameters from Monitoring and Remediation Wells MW-12, MW-13, MW-16, MW 17-1, duplicate of MW 17-1, MW 17-2, G-1 and RM-2: pH, temperature, oxidation-reduction potential, and conductivity. The samples were submitted for laboratory analysis of: GRO by Alaska Test Method (AK)101, DRO by AK102, volatile organic compounds (VOCs) by U.S. Environmental Protection Agency (EPA) Test Method 8260C, naphthalene with EPA Test Method 8270 D SIM (with the exception of MW 17-2), and Metals 6010 for sodium.
- Measured static groundwater levels in all of the monitoring wells listed above.

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

4.0 GROUNDWATER MONITORING RESULTS

Groundwater Levels. **Table 1** presents groundwater elevations at this site based on the depths to groundwater levels measured during the March 2021 monitoring event. Static and pumping groundwater levels for RM-1 and RM-2 were not measured during this event. Hydraulic gradient and direction of groundwater flow was not calculated for this monitoring event since the pumping level in remediation well RM-2 was not measured to determine the radius of influence.

Table 1 Groundwater Elevations

Measured on March 30, 2021

Monitoring Well Identification	Top of Casing Elevation (feet) ¹	Depth to Groundwater (feet)	Groundwater Elevation (amsl feet)
G-1	430.14	14.6	415.54
MW-12	427.84	12.48	415.36
MW-13	429.77	14.36	415.41
MW-16	429.27	13.89	415.38
MW17-1	430.55	14.69	415.86
MW17-2	430.17	14.82	415.35
RM-2	NM	NM	NM

Key:

¹ Based on a vertical control survey of July 28, 2015 and September 5, 2018, using an elevation datum of 432.00 feet located next to the front entrance of the store.

amsl above mean sea level

NM Not measured

Field Parameters. The results of water quality parameter testing of the water samples collected during this monitoring event are presented in **Table 2**. Dissolved oxygen (DO) levels for G-1, MW-12, and MW-16 were notable higher than other samples from the site. The reported values were abnormally high for DO in groundwater and may be caused by the chemox treatment or erroneous due to possible field equipment issues. The wells will be retested in the 2nd quarter to check the validity of the test results.

Table 2 Field Measured Intrinsic Water Quality Parameters

Measured on March 30, 2021

Monitoring Well Identification	Volume Purged (gallons)	Temperature (°C)	pH	Dissolved Oxygen (mg/L)	ORP (mV)	SC (µs/cm °C)
G-1	7.7	1.60	6.43	25.30	128.9	1,794
MW-12	5.8	2.88	11.85	31.70	98.6	950
MW-13	5.2	2.81	6.44	2.52	77.4	668
MW-16	8.6	3.23	6.44	38.60	64.6	672
MW17-1	2.3	3.37	6.53	2.46	29.4	542
MW17-2	2.2	2.48	6.51	2.47	21.5	636
RM-2	PR	3.56	6.70	8.51	-1.5	518

Key:

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

ORP oxidation-reduction potential
pH log [H⁺]
PR Pump running
SC specific conductance corrected to 25 °C

Water Sample Analytical Results. All wells were sampled in accordance with the 2021 Work Plan. All historical monitoring data for this site are tabulated in **Appendix D**. Laboratory analytical results for compounds detected in groundwater samples collected during these events are summarized in **Table 3 and Table 4**. The laboratory analytical reports are provided in **Appendix E**.

Table 3 Groundwater Analytical Results

Samples Collected on March 30, 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
G-01	0.00141	(0.001)	(0.001)	(0.003)	<i>0.0194 B</i>	0.256	(0.001)	0.000111	0.00145	70.1
MW-12	<i>0.000395</i>	<i>0.000853</i>	0.0221	0.0676	2.3	1.26	0.174	0.0586	0.0104	57.9
MW-13	<i>0.00019</i>	(0.001)	0.00361	0.00705	0.139	0.341	(0.001)	0.0057	0.000474	40.6
MW-16	(0.001)	(0.001)	(0.001)	<i>0.000994</i>	<i>0.0233 B</i>	0.97	(0.001)	<i>0.000273</i>	<i>0.000122</i>	36.1
MW 17-01	<i>0.000535</i>	(0.005)	0.0401	0.178	2.59	2.66	0.291	0.120	0.00984	42.4
DUP1	<i>0.000425</i>	<i>0.000704</i>	0.0422	0.196	2.9	2.81	0.255	0.108	0.0123	42.3
MW 17-02	<i>0.000952</i>	(0.005)	0.0132	0.0264	0.309	7.78	0.0131	<i>0.00375</i>	<u>(0.025)</u>	83.9
RM-02	0.0297	0.0541	0.352	0.74	4.16	1.21	0.143	0.0552	0.00271	41.1
BLANK	(0.001)	(0.001)	(0.001)	(0.003)	(<i>0.0185</i>)	(0.800)	(0.001)	(0.001)	(0.000250)	(3.000)
GCLS	0.0046	1.1	0.015	0.19	2.2	1.5	0.056	0.06	0.0017	NA

Key:

- | | | | |
|----------------|---|-------------|--|
| 1 | Results from VOC Method 8270 D | GCLs | Groundwater cleanup levels, 18 AAC 75.345, Table C, (9/18/2019) |
| Bold | indicates the concentration exceeds the GCL or the estimated quantitation limit exceeds the GCL | GRO | Gasoline range organics analyzed by AK101. |
| <i>italics</i> | The identification of the analyte is acceptable; the reported value is an estimate. | mg/L | milligrams per liter |
| DUP | Duplicate sample of the preceding sample. | NA | Not Applicable |
| DRO | Diesel range organics analyzed by AK102. | <i>B</i> | Analyte found in associated blank |
| | | () | Undetected above practical quantitation limits shown in parentheses. |
| | | <u> </u> | Underlined, Naphthalene value is a VOC Method 8260 C |

Quality Assurance (QA)/Quality Control (QC) Review. Pace Analytical performed all analysis of groundwater samples for the March 2021 sampling event. Pace Analytical did meet all laboratory QA/QC criteria during the analysis of groundwater samples for this sampling event. Laboratory QC data and the ADEC Laboratory Data Review Checklists are included in **Appendix E**.

Table 4 Laboratory Quality Control Objectives

Samples Collected on March 30, 2021

Quality Control Designation	Tolerance	Results for This Event
Holding Times		
DRO/Water/to analyze	40 days	14 days
DRO/Water/to extract	14 days	14 days
GRO/Water/to analyze	14 days	8 days
VOCs/Water/to analyze	14 days	7 to 10 days
Field Duplicate – Precision		
Benzene/Water	± 30%	22.91%
Toluene/Water	± 30%	265.5%
Ethylbenzene/Water	± 30%	5.1%
Xylenes/Water	± 30%	9.6%
GRO/Water	± 30%	11.3%
DRO/Water	± 30%	5.5%
1,2,4-Trimethylbenzene	± 30%	13.0
1,3,5-Trimethylbenzene	± 30%	12.2%
Naphthalene	± 30%	22.2%
Sodium	NR	0.2%

Key:

%	Percentage of variance	NC	Not Calculated, undetected in duplicate
±	Absolute Value	NR	Not regulated, site treatment by-product
DRO	diesel range organics	VOC	volatile organic compound
GRO	gasoline range organics	<i>Italics</i>	Lab estimated values used

DUP1 is a duplicate of sample of MW 17-1. The duplicate sample sets were collected to determine the precision of the field collection and laboratory analysis for this sampling event.

Data presented in **Table 4** show a high level of precision for the duplicate sample set except for Toluene. The exceedance for toluene is attributed to the low levels estimated in the sample and the even lower levels that were measurable in the duplicate sample. Sodium analysis shows a high level of precision in the results.

5.0 REMEDIATION SYSTEM OPERATION AND MONITORING 2021

In 1st quarter of 2021, groundwater pumped from RM-2 well has been continuously circulated into the three former horizontal SVE lines located in the vicinity of fuel dispenser islands. RM-1 was turned off in November of 2020 to prevent iron precipitate clogging of the two horizontal SVE lines located along the eastern base of the underground storage tank (UST). During the water line flushing, sampling, and operation of the well, the discharged water was noted to have very high levels of iron (rust) precipitates.

For this 1st quarter sampling event, RM-1 well pump was turned on but no flow was observed to sample from, further site investigation will be needed to determine why water was not being pumped through the RM-1 lines. The 2021 Work Plan proposes to install a water line discharge from RM-2 well that will bypass RM-1 discharge line and thereby provide year round continuous flow to the two former horizontal SVE lines along the eastern base of the UST.

6.0 CONCLUSIONS

Results of the March 2021 groundwater analytical sampling showed that analytes detected above ADEC groundwater cleanup levels (GCLs) as listed in Alaska Administrative Code (AAC) 18AAC 75.345 Table C (9/18/2019) for all wells tested in the primary groundwater samples were:

- Monitoring well MW 12: Ethylbenzene.
- Monitoring well MW 17-1: Ethylbenzene, xylenes, gasoline range organics (GRO), diesel range organics (DRO), 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and naphthalene.
- Monitoring well MW 17-2: DRO, and naphthalene (non-detect lab reporting level exceeded ADEC GCL).
- Remediation well RM-2: Benzene, ethylbenzene, xylenes, GRO, DRO, 1,2,4-trimethylbenzene, and naphthalene.

It is noted that analytes levels for RM-2 measurable increased since the August 2020 monitoring event which is interpreted as an indication that the remediation well is capturing the contaminated groundwater plume. Equally important is the finding that the petroleum contaminant levels have decreased appreciably in MWs 17-1 and 17-2 which may be a positive indication of in-situ treatment with the chemox injection.

Hydraulic gradient and direction of groundwater flow was not calculated for this monitoring event since the pumping level in remediation well RM-2 was not measured to determine the radius of influence.

7.0 RECOMMENDATIONS AND PROPOSED ACTIVITIES

No anomalies were found during the March 2021 (semi-annual) groundwater monitoring that would require additional corrective action or changes to the approved year 2021 Corrective Action Work Plan for this site.

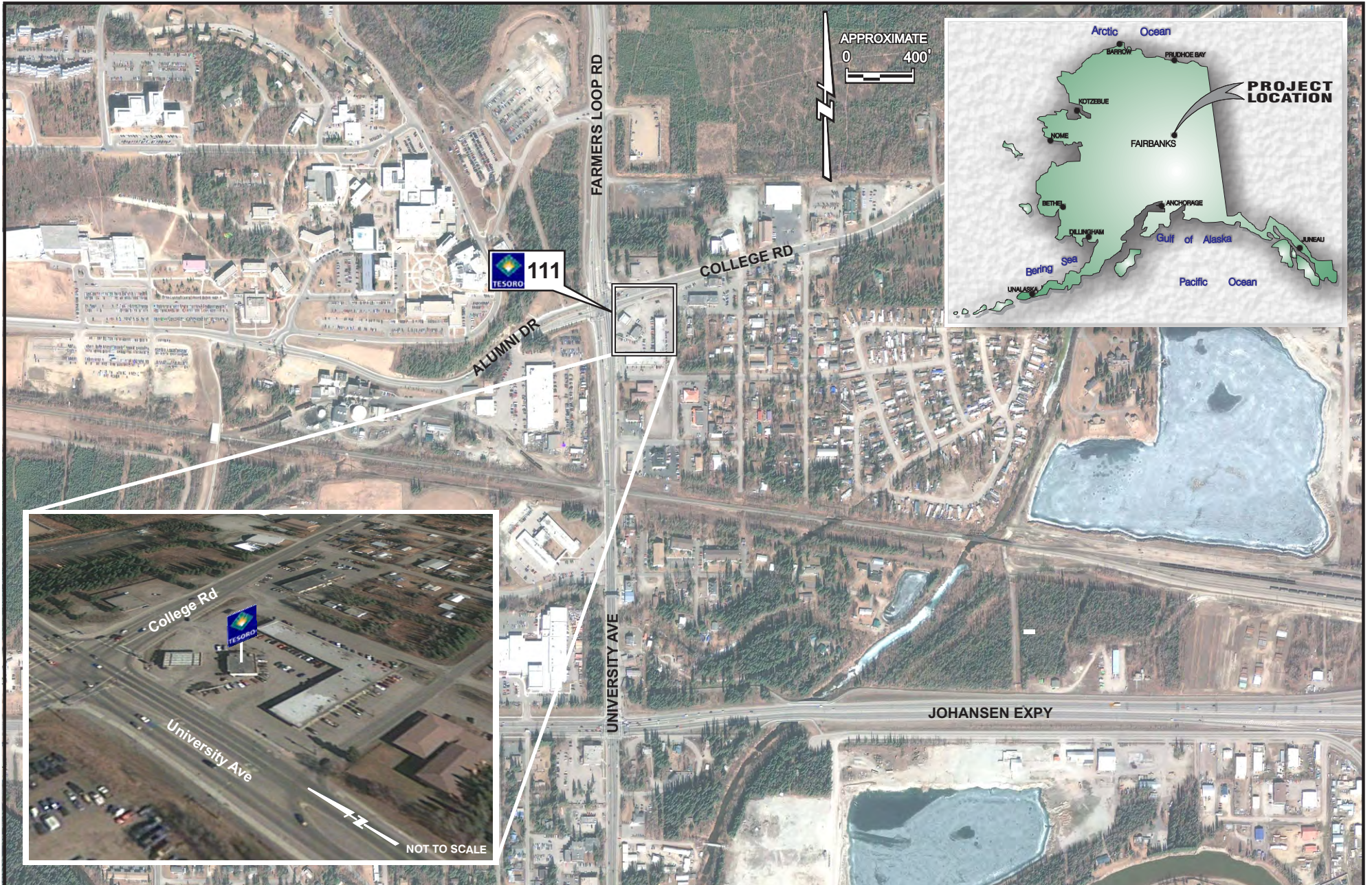
8.0 LIMITATIONS

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 *Underground Storage Tanks Procedures Manual – Standard Sampling Procedures* (March 22, 2017). No other warranty, expressed or implied, is made. Data and recommendations made herein were prepared for Speedway, LLC Store 5315 (the former Tesoro 2 Go

Mart #111). Information herein is for use at this site in accordance with the purpose of the report described.

FIGURES

- | | |
|----------|---|
| Figure 1 | Location and Vicinity Map |
| Figure 2 | Site Plan with Groundwater Levels
and Analytical Results |
| Figure 3 | Remediation System Layout |
-



MW 17-2	
Benzene	0.000952
Toluene	(0.005)
Ethylbenzene	0.0132
Xylenes	0.0264
GRO	0.309
DRO	7.78
Naphthalene	(0.025)
1,2,4-Trimethylbenzene	0.0131
1,3,5-Trimethylbenzene	0.00375
Sodium	83.9
GW Elev.	415.35'

RM-2	
Benzene	0.0297
Toluene	0.0541
Ethylbenzene	0.352
Xylenes	0.74
GRO	4.16
DRO	1.21
Naphthalene	0.00271
1,2,4-Trimethylbenzene	0.143
1,3,5-Trimethylbenzene	0.0552
Sodium	41.1
GW Elev.	NM

MW 17-1	
Benzene	0.000535
Toluene	(0.005)
Ethylbenzene	0.0401
Xylenes	0.178
GRO	2.59
DRO	2.66
Naphthalene	0.00984
1,2,4-Trimethylbenzene	0.291
1,3,5-Trimethylbenzene	0.120
Sodium	42.4
GW Elev.	415.86'

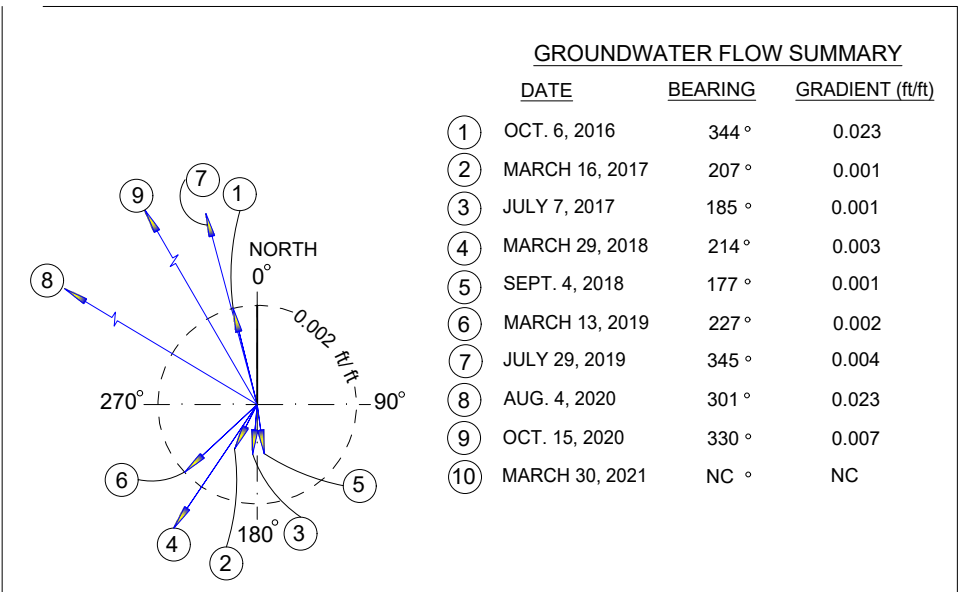
Duplicate MW 17-1	
Benzene	0.000425
Toluene	0.000704
Ethylbenzene	0.0422
Xylenes	0.196
GRO	2.9
DRO	2.81
Naphthalene	0.0123
1,2,4-Trimethylbenzene	0.255
1,3,5-Trimethylbenzene	0.108
Sodium	42.3
GW Elev.	415.86'

G-1	
Benzene	0.00141
Toluene	(0.001)
Ethylbenzene	(0.001)
Xylenes	(0.003)
GRO	0.0194
DRO	0.256
Naphthalene	0.00145
1,2,4-Trimethylbenzene	(0.001)
1,3,5-Trimethylbenzene	0.000111
Sodium	70.1
GW Elev.	415.54'

MW-16	
Benzene	(0.001)
Toluene	(0.001)
Ethylbenzene	(0.001)
Xylenes	0.000994
GRO	0.0233
DRO	0.97
Naphthalene	0.000122
1,2,4-Trimethylbenzene	(0.001)
1,3,5-Trimethylbenzene	0.000273
Sodium	36.1
GW Elev.	415.38'

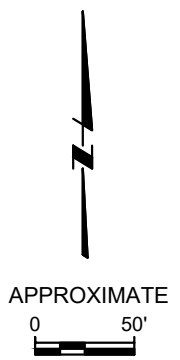
MW-13	
Benzene	0.00019
Toluene	(0.001)
Ethylbenzene	0.00361
Xylenes	0.00705
GRO	0.139
DRO	0.341
Naphthalene	0.000474
1,2,4-Trimethylbenzene	(0.001)
1,3,5-Trimethylbenzene	0.0057
Sodium	40.6
GW Elev.	415.41'

MW-12	
Benzene	0.000395
Toluene	0.000853
Ethylbenzene	0.0221
Xylenes	0.0676
GRO	2.3
DRO	1.26
Naphthalene	0.0104
1,2,4-Trimethylbenzene	0.174
1,3,5-Trimethylbenzene	0.0586
Sodium	57.9
GW Elev.	415.36'

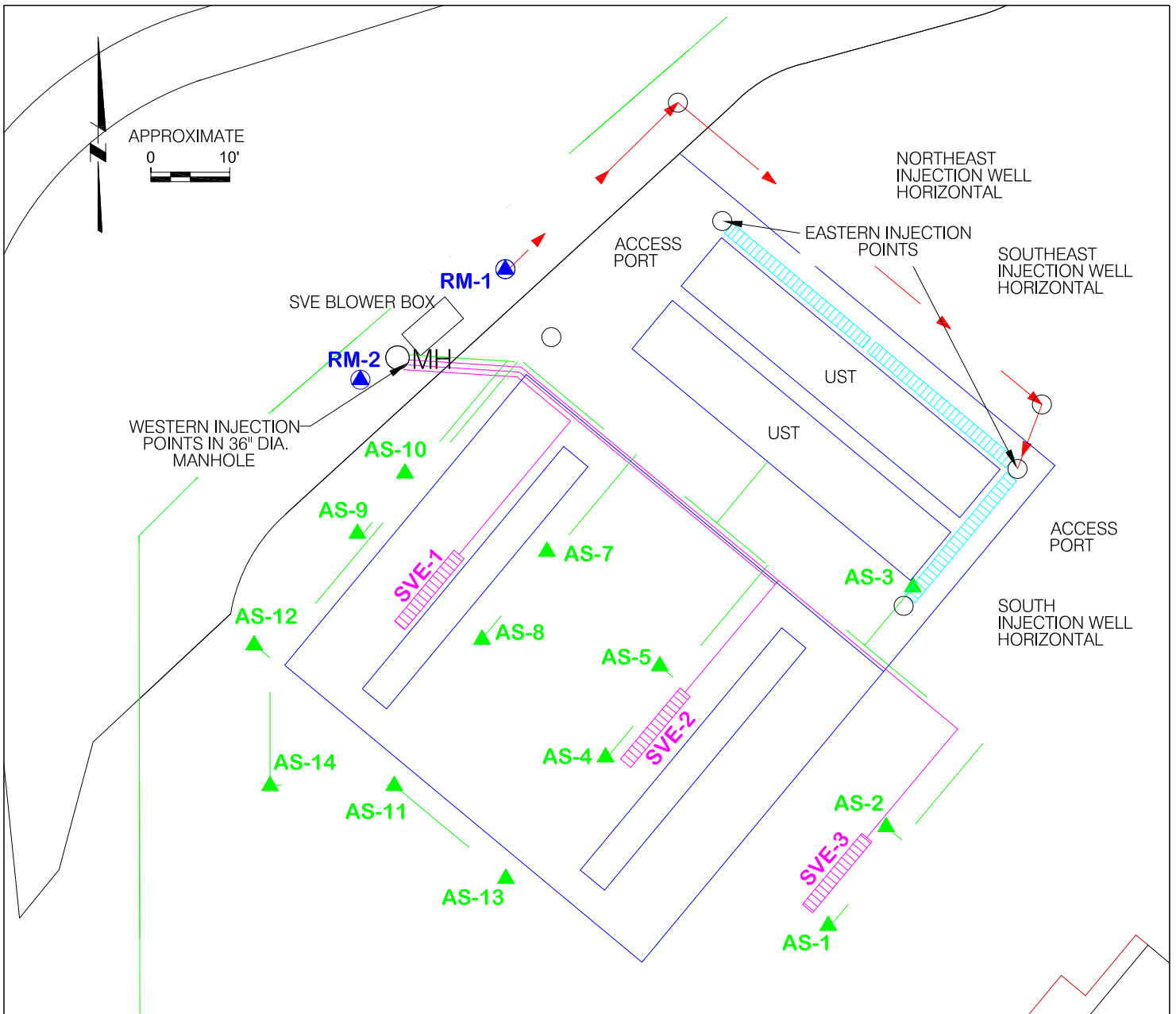


- LEGEND:**
- PROPERTY LINE
 - ▲ MONITORING WELL LOCATION
 - DRO DIESEL RANGE ORGANICS
 - ft/ft FEET PER FOOT
 - GRO GASOLINE RANGE ORGANICS
 - GW Elev. GROUNDWATER ELEVATION IN FEET
 - Italicized* ESTIMATED VALUE
 - NC NOT CALCULATED
 - NM NOT MEASURED
 - () UNDETECTED ABOVE PRACTICAL QUANTITATIVE LIMIT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

- NOTES:**
- RESULTS SHOWN ARE FOR WELLS SAMPLED ON MARCH 30, 2021.
 - RESULTS ARE IN MILLIGRAMS PER LITER.
 - RED TEXT INDICATES CONTAMINANT CONCENTRATIONS ABOVE CLEANUP LEVELS FOR THIS SITE.
 - RM-2 OPERATING DURING SAMPLING BUT WAS NOT GAUGED. RM-1 WAS OFFLINE.



V:\185705364\185705364_03_data\cadd\cadd_2021\fig02.dwg plot - groundwater results.dwg
 2021.05.24 1:01:51 PM



LEGEND:

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

NOTES:

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

TESORO
#111



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

REMEDIATION SYSTEM LAYOUT

FIGURE

3

185751325

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APPENDIX A

Site Background

APPENDIX A – SITE BACKGROUND

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

March 2021. Stantec conducted a first quarter (semi-annual) analytical sampling event of Monitoring Wells MW-12, MW-13, MW 17-1, MW 17-2, and G-1, as well as Remediation Well RM-1. Results of the March 2021 groundwater analytical sampling showed that analytes detected above ADEC groundwater cleanup levels (GCLs) as listed in Alaska Administrative Code (AAC) 18AAC 75.345 Table C (9/18/2019) for all wells tested in the primary groundwater samples were:

- Monitoring well MW 12: Ethylbenzene.
- Monitoring well MW 17-1: Ethylbenzene, xylenes, gasoline range organics (GRO), diesel range organics (DRO), 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and naphthalene.
- Monitoring well MW 17-2: DRO, and naphthalene (non-detect lab reporting level exceeded ADEC GCL).
- Remediation well RM-2: Benzene, ethylbenzene, xylenes, GRO, DRO, 1,2,4-trimethylbenzene, and naphthalene.

It is noted that analytes levels for RM-2 measurable increased since the August 2020 monitoring event which is interpreted as an indication that the remediation well is capturing the contaminated groundwater plume. Equally important is the finding that the petroleum contaminant levels have decreased appreciably in MWs 17-1 and 17-2 which may be a positive indication of in-situ treatment with the chemox injection.

Hydraulic gradient and direction of groundwater flow was not calculated for this monitoring event since the pumping level in remediation well RM-2 was not measured to determine the radius of influence.

APPENDIX B

Field Methods and Procedures

APPENDIX B – FIELD METHODS AND PROCEDURES

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

The following table presents the proposed tasks for the Alaska Department of Environmental Conservation (ADEC)-approved 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 5315 (former Tesoro 2 Go Mart #111), ADEC Facility ID #1112; ADEC File #100.26.026.

2021 Work Plan Schedule for Speedway Store 5315 (former Tesoro 2Go Mart 111)

- Task 1 –Groundwater Monitoring

This task consists of semi-annual monitoring of the groundwater wells and quarterly monitoring of the remediation/recirculation wells (RM-1 and RM-2). Sampling locations and analyses for the groundwater monitoring wells and remediation wells are listed on the 2021 Work Plan Schedule below.

Work Plan Tasks for 2021		1 st Quarter	2 nd Quarter	3 rd Quarter	4 th Quarter
Task 1	Monitoring Wells: MW-11, MW-12, MW-13, MW-16, MW-10, G-1, G-5, MW 17-1, and MW 17-2	V, G, D, I & S		V, G, D, P, I & S	
	Recirculation/Remediation Wells: RM-1 and RM-2	V, G, D, I & S	V, G, D, I & S	V, G, D, P, I & S	V, G, D, I & S
Task 2	Install a buried insulated water discharge line from recirculation well RM-2 to connect to water discharge line from RM-1.		✓	✓	
Task 3	O&M Groundwater Recirculation Wells RM-1 & RM-2	✓	✓	✓	✓
Task 4	Chemical Oxidation Treatment		✓	✓	✓

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 2 – Install a buried insulated water discharge line from recirculation well RM-2 to connect to water discharge line from RM-1.

The plumbing system for the discharge of flow from recirculation well RM-2 will be extended to connect via a buried insulated water line from RM-2 to the existing discharge water line from recirculation well RM-1. The plumbing addition will allow the winter shut down of RM-1 pump when the groundwater table drops below the feasible pumping level in the well casing. When RM-1 is seasonally shut down then a portion of the flow from RM-2 will be discharged into the groundwater injection line (former SVE line) located on the southeast edge of the UST.

- Task 3 – O&M Groundwater Recirculation Wells RM-1 & RM-2

Perform quarterly maintenance to operate the remediation system, consisting of the existing 4-inch diameter well RM-1 and 4-inch diameter well RM-2 groundwater recirculation systems for treating the vadose zone soil and groundwater beneath the existing USTs and fuel dispenser islands. The in-situ remediation system provides treatment of the contaminated groundwater with the injection of chemical oxidation (see Task 3). The operation of the submersible pumps for the two treatment systems will run continuously (24-hours per day). The pumping system will be monitored daily for electrical usage, water pressure and water line temperature with iMonnit® wireless sensors and the equipment checked monthly with maintenance provided on an as needed basis.

- Task 4 – Chemical Oxidation Treatment

Stantec proposes to provide chemical oxidation treatment of the petroleum contaminated soil and groundwater three times a year into the three existing horizontal injection lines located beneath the fuel dispenser islands and the two injection lines located on the east side of the USTs. The injection of chemox will occur in the 2nd, 3rd and 4th quarters of the year. The first annual injection will occur in the spring of the year after the winter frost dissipates, and the second and third injections will take place several months later just prior to winter freeze-up. Five hundred (500) gallons of a prepared solution of the chemical oxidant Klozur One® (a chemical mixture consisting primarily of sodium persulfate) will be injected into the five existing horizontal injection lines with a dose of 100 gallons per injection well. The chemox mixture for each well will consist of 110 pounds Klozur One® mixed with approximately 100 gallons of clear water. The horizontal injection well located along the northeast edge of the USTs will receive an additional 200 gallons of clear water to provide a “hydraulic push” to distribute the chemox solution into the surrounding formation. The other four injection lines are continuously dosed with recirculated groundwater discharged from remediation/recirculation wells RM-1 & RM-2. The on-site monitoring wells will be sampled semi-annually as outlined in Task 1 to assess treatment impact on the groundwater table. The remediation/recirculation wells will be sampled on

a quarterly basis. In addition, the groundwater monitoring wells will be sampled for sodium to check on the distribution/migration of the oxidant.

The Corrective Action Plan for the year 2021 will be implemented by Stantec on behalf of Speedway. Groundwater monitoring will be conducted to track migration and trends of contaminants that are present at the site. All sampling activities will be completed in accordance with ADEC's Underground Storage Tanks Procedures Manual– Standard Sampling Procedures (March 22, 2017). The methods that will be used for conducting a monitoring event, unless otherwise noted in the monitoring report, will include:

- The static water levels in the monitoring wells will be measured with respect to the top of each well casing. The elevation of the static water level will be based on an arbitrary datum established on-site during a vertical control survey that will be completed by Stantec on an annual basis. The survey will be performed during the summer after the seasonal frost layer thaws.
- The monitoring wells will be purged of a minimum of three well bore volumes prior to collecting the water samples. A new, disposable, Teflon[®] bailer will be used to sample each well. The first bail of water removed from each well will be examined for petroleum odor, sheen, and any other unique physical features.
- Water 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 and Notes

Project: Store 5315 (TNS 111)
 Project Phase: 2021 1st Quarter Monitoring
 Project number: 185705364

Date: March 30, 2021

Sampler: Leslie Petre and Austin Badger

Well I.D.	Volume Purged (gallons)	Sheen/Odor	Temp. (°C)	pH	Dissolved Oxygen (mg/L)	ORP (mv)	Specific Conductance (µs/cm)	Top of Casing ¹	Depth to GW feet	GW Elevation	Total Depth (feet btoc)
G-1	7.7	N/N	1.60	6.43	25.30	128.9	1,794	430.14	14.6	415.54	18.61
G-5								430.02			
MW-10								430.11			
MW-11								430.49			
MW-12 1st draw	5.8	N/N	2.88	11.85	31.70	98.6	950	427.84	12.48	415.36	24.32
MW-12 last draw	2 bailers	N/N	2.04	8.23	24.86	127.5	467	427.84	NA	NA	NA
MW-13	5.2	N/N	2.81	6.44	2.52	77.4	668	429.77	14.36	415.41	24.91
MW-16	8.6	N/N	3.23	6.44	38.60	64.6	672	429.27	13.89	415.38	18.25
MW 17-1	2.3	Y/N	3.37	6.53	2.46	29.4	542	430.55	14.69	415.86	19.27
MW 17-2	2.2	Y/Y	2.48	6.51	2.47	21.5	636	430.17	14.82	415.35	19.21
RM-1								428.21			
RM-2	NA	N/N	3.56	6.70	8.51	-1.5	518	NM	15.62	NM	NM (pump running)

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

GW - groundwater

NP - not purged

Y - yes

Air Temp: 32 to 41F

mv - millivolts

ORP -- oxidation-reduction potential

µS/cm - microsiemens per centimeter

Wind: still to multi-directional 3-5 mph

mg/L - milligrams per liter

Samples analyzed for AK101, AK102, 8260 (BTEX), Sodium, Nathphalene by 8270 D

Humidity: NA

N - no

Purge volumes calculated in field with hydro-terra.com

Pressure: NA

NA - not applicable

* MW -12 was bright orange when purged, noted 2nd bailer during sampling cleared. Took

Precip: clear to light snow

NM - not measured

second set of field intrinsic field measurements after final sample.

Source: observation on site

Sample Date and Time

NOTES:

		Well Dia.	Time
G-1	Yellow color, metal sample cup touching ground	4"	3/30/2021 11:56
G-5		2"	
MW-10		4"	
MW-11		2"	
MW-12	very orange, 2nd sample bailer almost clear*	2"	3/30/2021 13:53
MW-13	clear	2"	3/30/2021 15:10
MW-16	brown/murky/silty	4"	3/30/2021 13:00
MW 17-1	grey, ice from fire suppression in manhole, sheen	2"	3/30/2021 15:50
MW 17-2	grey to clear, sheen and odor	2"	3/30/2021 16:39
RM-1		4"	
RM-2	dark to light amber, most likely fittings reaction	4"	3/30/2021 17:25
TNS 111 Dup.	Duplicated of 17-1	N/A	

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

Additional Notes

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

G-5, MW-10, and MW-11 were inaccessible due to a large amount of hard pack plowed to NW corner of site as well as extreme icing caused by suppression of a vehicle fire that occurred at the other pumps in Feb. 2021. Winter 2020-2021 had an high snow fall occurrence.

Could not get water from RM-1, was able to operate and pull 5 gallons on 3/26/21

APPENDIX D

Tables of Historical Monitoring Data

Appendix D: Tables of Historical Monitoring Data

Monitoring Well MW-10

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

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

Appendix D: Tables of Historical Monitoring Data

Monitoring Well MW-11

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

Monitoring Well MW-12

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium mg/L	GW Elev (feet)
28-Sep-12	0.00438	13.9	3.51	19.5	165	2.74	NM	416.30
21-Feb-13	0.012	7.69	2.69	12.8	71.1	3.66	NM	414.30
13-Aug-13	0.0334	7.30	1.00	6.21	22.6	6.05	NM	416.54
24-Sep-13	0.00913	1.65	0.344	1.72	8.35	7.11	NM	NM
19-Nov-13	0.0117	1.83	0.527	2.19	13.5	11.7	NM	415.65
19-Mar-14	0.0128	2.24	0.663	5.34	27.9	11.4	NM	414.40
31-Jul-14	U (0.0005)	0.01	0.003	0.015	0.18	0.5	NM	419.67
03-Mar-15	U (0.0005)	0.01	0.022	0.240	6.8	1.2	NM	416.05
27-Jul-15	0.00057	0.011	0.026	0.190	3.2	0.99	NM	416.21
23-Feb-16	U (0.001)	U (0.001)	U (0.001)	U (0.001)	U (0.05)	0.32	NM	415.28
06-Oct-16	U (0.001)	U (0.001)	U (0.001)	U (0.001)	U (0.05)	0.39	NM	418.79
16-Mar-17	U (0.02)	U (0.02)	0.3	0.52	3.8	1.5	NM	415.00
07-Jul-17	U (0.002)	U (0.04)	0.13	0.38	2.8	1.4	NM	417.04
29-Mar-18	U (0.003)	U (0.002)	U (0.003)	U (0.002)	2.0	0.58	NM	414.69
07-Sep-18	U (0.0004)	U (0.001)	0.019	0.063	1.1	0.56	NM	418.78
13-Mar-19	U (0.003)	U (0.002)	0.01	0.055	1.3	0.78	NM	415.30
30-Jul-19	U (0.003)	U (0.002)	U (0.003)	0.0039	0.26	0.47	NM	416.38
03-Aug-20	0.000353	0.0364	0.054	0.487	1.23	0.852	48.7	422.58
14-Oct-20	0.0192	0.000817 J	0.123	0.425	1.08	0.658 J	56.8	418.68
30-Mar-21	0.000395 J	0.000853 J	0.0221	0.0676	2.3	1.26	57.9	415.36
GCLs	0.0046	1.1	0.015	0.19	2.2	1.5	NA	NA

Appendix D: Tables of Historical Monitoring Data

Monitoring Well MW-13

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium mg/L	GW Elev (feet)
28-Sep-12	U (0.0005)	0.0316	0.0263	0.609	8.11	0.738	NM	416.31
21-Feb-13	0.00130	U (0.0005)	0.0125	0.167	0.649	1.90	NM	414.31
13-Aug-13	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	0.839	NM	416.55
24-Sep-13	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	0.736	NM	NM
19-Nov-13	U (0.0005)	0.000751	U (0.0005)	0.00168	U (0.05)	0.478	NM	415.48
18-Mar-14	0.00067	0.000846	U (0.0005)	0.00208	0.0593	1.13	NM	414.42
31-Jul-14	U (0.0005)	U (0.001)	U (0.001)	U (0.001)	U (0.05)	U (0.42)	NM	419.67
03-Mar-15	0.02	U (0.0005)	0.028	0.130	0.820	0.62	NM	415.04
27-Jul-15	U (0.0005)	U (0.0005)	0.0014	0.0046	U (0.05)	0.58	NM	416.24
23-Feb-16	U (0.001)	U (0.001)	0.0096	0.073	1.0	2.3	NM	415.31
06-Oct-16	U (0.001)	U (0.001)	U (0.001)	0.0058	U (0.05)	0.65	NM	418.8
16-Mar-17	U (0.002)	U (0.002)	U (0.0053)	0.013	0.150	0.44	NM	415.02
07-Jul-17	U (0.002)	U (0.002)	U (0.003)	U (0.002)	U (1.0)	0.32	NM	417.06
29-Mar-18	U (0.003)	U (0.002)	U (0.003)	U (0.002)	U (1)	0.45	NM	414.70
07-Sep-18	U (0.0004)	U (0.001)	U (0.001)	U (0.002)	U (0.15)	0.43	NM	418.76
13-Mar-19	U (0.003)	U (0.002)	0.0072	0.0094	U (1.3)	0.36	NM	415.34
29-Jul-19	U (0.003)	U (0.002)	0.0085	0.0214	0.45	1.1	NM	416.37
03-Aug-20	0.000323	0.0351	0.0439	0.454	1.01	0.6	49.6	419.57
14-Oct-20	0.018	0.0108	0.155	0.63	1.86	1.3	140.0	418.67
30-Mar-21	0.00019 J	U (0.001)	0.00361	0.00705	0.139 B	0.341 J	40.6	415.41
GCLs	0.0046	1.1	0.015	0.19	2.2	1.5	NA	NA

Monitoring Well MW-16

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium mg/L	GW Elev (feet)
26-Feb-92	0.004	U	U	U	NT	NT	NM	418.29
04-Jun-92	0.003	U	U	0.007	NT	NT	NM	418.41
30-Nov-92	0.51	0.094	0.056	0.15	NT	NT	NM	416.6
24-Feb-93	0.41	0.033	0.036	0.084	NT	NT	NM	418.13
18-Aug-93	0.099	U	U	0.014	NT	NT	NM	420.26
23-Nov-93	0.039	U	U	0.004	NT	NT	NM	419.59
10-Mar-94	0.005	0.001	U	U	NT	NT	NM	418.28
01-Jun-94	0.022	U	0.003	0.003	NT	NT	NM	418.82
14-Dec-94	0.012	U	0.001	U	NT	NT	NM	418.22
20-Dec-95	0.055	U	U	0.003	NT	NT	NM	414.53
16-May-96	0.007	U	U	U	NT	NT	NM	415.78
09-Dec-96	0.0071	U	U	U	NT	NT	NM	415.43
20-Mar-97	0.0056	U	U	U	NT	NT	NM	414.4
18-Nov-97	0.00134	0.00101	U	0.00135	U	NT	NM	415.22
01-May-98	0.00567	0.00308	0.00193	0.00739	0.089	0.534	NM	414.38
14-Oct-98	U	U	U	0.00222	U	0.281	NM	416.59
27-May-99	0.00203	U	U	U	U	2.64	NM	415.29
05-Nov-99	U	U	U	U	U	13	NM	415.51
17-Apr-00	0.00305	U	U	U	U	3.66	NM	414.15
26-Oct-00	0.00186	0.00261	U	0.003	U	3.98	NM	417.47
30-May-01	0.0007	U	U	U	U	6.65	NM	413.63
13-Dec-01	0.0480	0.302	0.0109	0.0554	0.9	5.29	NM	413.23
19-Aug-02	U (0.0005)	U (0.002)	U (0.002)	0.00896	U (0.09)	U (0.5)	NM	417.85
05-Nov-02	0.000589	U (0.002)	U (0.002)	0.00234	U (0.09)	0.595	NM	417.07
19-Mar-03	0.000531	0.00653	U (0.002)	0.00469	U (0.09)	1.1	NM	416.23
08-Mar-04	U (0.0005)	0.0288	U (0.0005)	U (0.001)	0.072	2.85	NM	414.95

Appendix D: Tables of Historical Monitoring Data

Monitoring Well MW-16, continued

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium mg/L	GW Elev (feet)
15-Sep-04	0.0006	0.0143	U (0.0005)	U (0.0015)	0.0521	1.36	NM	416.65
15-Jul-05	0.0007	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	1.06	NM	417.99
16-Feb-06	U (0.0005)	0.0225	U (0.0005)	U (0.0015)	0.0641	2.09	NM	414.58
27-Jul-06	0.000638	0.0108	U (0.0005)	U (0.0015)	U (0.05)	1.06	NM	417.08
02-Mar-07	U (0.0005)	0.00206	U (0.0005)	U (0.0015)	U (0.05)	1.95	NM	414.25
17-Oct-07	U (0.0025)	0.00318	U (0.0025)	U (0.0075)	U (0.25)	6.53	NM	416.62
05-Jun-08	U (0.0005)	0.0117	U (0.0005)	U (0.0015)	0.0761	4.4	NM	415.88*
29-Sep-08	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	2.69	NM	417.26
25-Feb-09	U (0.0005)	0.0135	U (0.0005)	U (0.0015)	0.0633	3.44	NM	414.49
21-Jul-09	U (0.0005)	U (0.001)	U (0.001)	U (0.003)	U (0.05)	0.564	NM	416.76
17-Mar-10	U (0.001)	U (0.001)	U (0.001)	U (0.002)	U (0.05)	0.586	NM	413.98
15-Sep-10	U (0.0005)	U (0.0005)	0.000796	0.00508	U (0.05)	2.35	NM	416.52
22-Mar-11	U (0.0005)	0.0852	U (0.0005)	U (0.0015)	0.221	2.82	NM	413.98
01-Sep-11	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	2.38	NM	417.42
13-Mar-12	U (0.0005)	0.0845	U (0.0005)	U (0.0015)	0.241	4.18	NM	414.39
23-Jul-12	U (0.0005)	U (0.0010)	U (0.0010)	U (0.0030)	U (0.05)	1.04	NM	417.64
21-Feb-13	U (0.0005)	0.066	U (0.0005)	U (0.0015)	0.182	1.38	NM	414.34
13-Aug-13	U (0.0005)	0.00143	U (0.0005)	U (0.0015)	U (0.05)	3.61	NM	416.56
18-Mar-14	U (0.0005)	0.0694	U (0.0005)	U (0.0015)	0.178	3.17	NM	414.51
31-Jul-14	U (0.0005)	U (0.001)	U (0.001)	U (0.001)	U (0.05)	2.3	NM	419.7
03-Mar-15	0.015	0.039	0.0073	0.130	0.740	1.3	NM	415.2
27-Jul-15	0.0068	0.0016	0.0057	0.071	0.420	0.81	NM	416.22
23-Feb-16	U (0.001)	U (0.001)	U (0.001)	0.0058	U (0.05)	0.40	NM	415.26
16-Mar-17	U (0.002)	U (0.002)	U (0.003)	U (0.002)	U (0.05)	0.88	NM	414.98
07-Jul-17	U (0.002)	U (0.002)	U (0.003)	U (0.003)	U (1.0)	3.7	NM	417.02
13-Mar-19	U (0.003)	U (0.002)	U (0.003)	U (0.003)	U (1.3)	1.9	NM	415.27
30-Jul-19	U (0.003)	U (0.002)	U (0.003)	0.003	U (0.25)	0.39	NM	415.37
14-Oct-20	0.0144	0.000556 J	0.000399 J	0.0241	0.0468 J	0.918	49.60	418.63
30-Mar-21	U (0.001)	U (0.001)	U (0.001)	0.000994 J	0.0233 BJ	0.97	36.10	415.38
GCLs	0.0046	1.1	0.015	0.19	2.2	1.5	NA	NA

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

Appendix D: Tables of Historical Monitoring Data

Monitoring Well G-1

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium mg/L	GW Elev (feet)
20-Dec-95	1.54	1.26	0.56	2.53	NT	NT	NM	414.48
16-May-96	5.9	3.9	1.8	8.2	NT	NT	NM	415.71
09-Dec-96	2.1	2.1	0.73	3.1	NT	NT	NM	NM
20-Mar-97	2.1	2.5	0.81	4.3	NT	NT	NM	NM
01-May-98	4.83	6.67	2.18	10.13	60	5.03	NM	NM
14-Oct-98	5.04	3.81	1.8	7.47	43	4.37	NM	416.35
27-May-99	4.34	5.02	1.94	8.89	43	5.46	NM	415.3
05-Nov-99	2.59	1.74	1.01	3.89	23	3.16	NM	415.48
17-Apr-00	3.12	3.77	1.64	7.14	46	5.9	NM	414.06
30-May-01	1.59	0.158	0.727	1.87	17	2.61	NM	413.6
01-May-02	1.3	0.0371	0.683	1.51	8.6	1.84	NM	414.52
19-Aug-02	0.89	0.0588	0.774	1.465	13.5	1.41	NM	417.79
05-Nov-02	0.0616	U (0.002)	0.00845	0.0666	0.787	U (0.5)	NM	417.06
19-Mar-03	0.00765	U (0.002)	U (0.002)	0.00242	U (0.09)	0.509	NM	416.18**
05-Aug-03	0.11	0.00209	0.101	0.062	1.3	U (0.32)	NM	418.33
08-Mar-04	0.00979	U (0.0005)	U (0.0005)	U (0.001)	U (0.05)	U (0.37)	NM	414.92
15-Sep-04	0.00206	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.385)	NM	416.65
10-Jan-05	0.0327	U (0.0005)	0.000623	U (0.0015)	0.134	U (0.388)	NM	414.58
15-Jul-05	0.0626	U (0.0005)	0.0445	0.00354	0.426	U (0.391)	NM	417.94
16-Feb-06	0.00406	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.397)	NM	414.54
27-Jul-06	0.0222	0.000805	0.0104	0.00217	0.163	U (0.397)	NM	417.37
02-Mar-07	0.00159	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.424)	NM	414.59
17-Oct-07	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.403)	NM	416.88
05-Jun-08	0.00614	U (0.0005)	U (0.0005)	0.00379	0.082	0.877	NM	415.81*
29-Sep-08	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.435)	NM	417.21
25-Feb-09	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.417)	NM	414.48
21-Jul-09	0.00601	U (0.001)	U (0.001)	0.00363	0.0954	U (0.397)	NM	416.75
17-Mar-10	U (0.001)	U (0.001)	U (0.001)	U (0.002)	U (0.05)	U (0.431)	NM	414.03
15-Sep-10	U (0.0005)	U (0.0005)	0.00926	0.0619	0.15	U (0.385)	NM	416.56
22-Mar-11	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	0.657	NM	413.97
01-Sep-11	0.0029	0.000601	U (0.0005)	U (0.0015)	0.0719	U (0.410)	NM	417.44
13-Mar-12	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.446)	NM	414.37
23-Jul-12	0.0134	U (0.0010)	U (0.0010)	U (0.0030)	0.263	U (0.397)	NM	417.01
21-Feb-13	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.431)	NM	414.26
18-Mar-14	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.403)	NM	414.38
31-Jul-14	0.0026	U (0.001)	0.0022	U (0.001)	0.056	0.67	NM	419.66
03-Mar-15	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.45)	NM	415.09
27-Jul-15	U (0.00054)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	0.25	NM	416.21
23-Feb-16	U (0.001)	U (0.001)	U (0.001)	U (0.001)	U (0.05)	U (0.11)	NM	415.25
06-Oct-16	U (0.001)	U (0.001)	U (0.001)	U (0.001)	U (0.05)	0.24	NM	418.73
16-Mar-17	0.0058	U (0.002)	U (0.003)	U (0.002)	U (0.05)	0.60	NM	414.96
29-Mar-18	0.0041	U (0.002)	U (0.003)	U (0.002)	U (1)	0.76	NM	414.63
07-Sep-18	0.0024	U (0.001)	U (0.001)	U (0.002)	U (0.15)	0.28	NM	418.62
12-Mar-19	U (0.003)	U (0.002)	U (0.003)	U (0.003)	9.4	0.33	NM	415.23
29-Jul-19	U (0.003)	U (0.002)	U (0.003)	U (0.003)	U (0.25)	0.30	NM	416.29
03-Aug-20	0.000817	U (0.001)	U (0.001)	U (0.003)	0.0109	U (0.800)	66.40	419.66
14-Oct-20	0.0134	0.000615	0.000186	0.000653	U (0.10)	0.362	76.4	418.84
30-Mar-21	0.00141	U (0.001)	U (0.001)	U (0.003)	0.0194 BJ	0.256	70.1	415.54
GCLs	0.0046	1.1	0.015	0.19	2.2	1.5	NA	NA

Appendix D: Tables of Historical Monitoring Data

Monitoring Well G-2

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium mg/L	GW Elev (feet)
20-Dec-95	0.069	U	U	U	NT	NT	NM	414.49
16-May-96	0.2	U	U	U	NT	NT	NM	415.74
15-Aug-96	0.32	U	U	U	NT	NT	NM	416.57
09-Dec-96	0.14	U	U	U	NT	NT	NM	415.42
20-Mar-97	0.002	U	U	U	NT	NT	NM	414.4
15-Aug-97	0.0253	U	U	U	0.077	NT	NM	415.88
18-Nov-97	U	U	U	0.00169	U	NT	NM	415.2
01-May-98	0.00523	U	U	0.00139	U	0.221	NM	414.35
14-Oct-98	0.0318	U	U	0.00135	0.076	0.248	NM	416.55
05-Nov-99	0.0514	U	U	U	0.13	U	NM	415.47
GCLs	0.0046	1.1	0.015	0.19	2.2	1.5	NA	NA

*Ground Water monitoring did not occurred between March 19, 2003 to March 30,2021

Monitoring Well G-3

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

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

Monitoring Well G-4

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium mg/L	GW Elev (feet)
01-Apr-99	U	U	U	U	U	U	NM	NM
30-May-01	U	U	U	0.001	U	U	NM	413.59
13-Dec-01	U	U	U	U	U	U	NM	413.19
01-May-02	NT	NT	NT	NT	NT	NT	NM	NM
19-Aug-02	0.000545	U (0.002)	U (0.002)	0.00366	U (0.09)	U (0.5)	NM	418.13
05-Nov-02	NT	NT	NT	NT	NT	NT	NM	NM
30-Mar-21	NT	NT	NT	NT	NT	NT	NM	NM
GCLs	0.0046	1.1	0.015	0.19	2.2	1.5	NA	NA

*Ground Water monitoring did not occurred between November 05, 2002 to March 30,2021

Appendix D: Tables of Historical Monitoring Data

Monitoring Well G-5

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium mg/L	GW Elev (feet)
30-May-01	12.4	11.5	2.1	9.9	107	6.47	NM	412.59
13-Dec-01	6.21	8.71	1.71	12.74	72.8	3.05	NM	413.22
19-Aug-02	12.9	7.31	2	8.53	86.6	7.85	NM	417.8
05-Nov-02	5.7	4.37	1.38	6.7	41.9	7.17	NM	417.05
19-Mar-03	2.46	1.75	0.741	5.25	30	7.55	NM	416.19
05-Aug-03	5.07	2.99	0.943	6.41	47.5	5.78	NM	418.76
07-Nov-03	NT	NT	NT	NT	NT	NT	NM	NM
08-Mar-04	0.00254	0.00495	0.00104	0.0327	0.126	3.45	NM	414.93
15-Sep-04	0.00577	0.00126	0.000506	0.00467	0.061	1.84	NM	416.64
10-Jan-05	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	1.22	NM	414.80
15-Jul-05	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	1.19	NM	417.83
16-Feb-06	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	1.08	NM	414.48
27-Jul-06	NT	NT	NT	NT	NT	NT	NM	417.09
27-Jul-06	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	0.865	NM	417.09
02-Mar-07	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	1.03	NM	414.24
05-Jun-08	U (0.0005)	U (0.0005)	0.00452	0.0316	0.112	1.1	NM	415.73
29-Sep-08	U (0.0005)	U (0.0005)	0.00458	0.0103	0.0794	1.66	NM	417.20
25-Feb-09	0.00068	0.00053	0.0579	0.174	2.53	1.3	NM	414.45
21-Jul-09	0.0018	U (0.0010)	U (0.001)	U (0.003)	U (0.05)	1.27	NM	416.73
17-Mar-10	0.013	0.0014	0.19	0.37	4.4	0.961	NM	413.98
15-Sep-10	0.0849	0.000886	0.00279	0.0149	0.287	1.10	NM	416.59
22-Mar-11	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	1.04	NM	413.96
01-Sep-11	0.00331	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	0.898	NM	417.44
13-Mar-12	0.0307	0.00346	0.113	0.23	3.63	1.02	NM	414.37
23-Jul-12	0.00199	U (0.0010)	U (0.0010)	U (0.0030)	U (0.05)	0.57	NM	416.90
21-Feb-13	NT	NT	NT	NT	NT	NT	NM	NM
13-Aug-13	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	0.884	NM	416.50
18-Mar-14	0.025	0.00612	0.0739	0.161	2.44	0.778	NM	414.36
31-Jul-14	0.49	0.0064	0.071	0.21	2.2	1.40	NM	419.24
03-Mar-15	U (0.0005)	U (0.0005)	U (0.0005)	0.0015	U (0.05)	0.430	NM	414.58
27-Jul-15	0.92	0.57	0.59	1.1	10	1.40	NM	416.18
23-Feb-16	U (0.001)	U (0.001)	U (0.001)	U (0.001)	U (0.05)	0.21	NM	415.19
06-Oct-16	U (0.001)	U (0.001)	U (0.001)	U (0.001)	U (0.05)	0.95	NM	418.75
16-Mar-17	0.27	0.36	0.56	1.91	7.9	1.3	NM	414.93
07-Jul-17	NT	NT	NT	NT	NT	NT	NM	416.96
29-Mar-18	0.38	0.3	0.72	2.27	14	1.6	NM	414.68
07-Sep-18	0.61	0.91	0.51	1.92	7.4	2.4	NM	418.68
13-Mar-19	0.11	0.011	0.39	1.05	5.8	1.2	NM	415.24
30-Jul-19	U (0.15)	U (0.1)	0.18	0.71	2.9	1.2	NM	416.31
04-Aug-20	0.114	0.000683	0.123	0.124	0.712	1.07	77	419.57
14-Oct-20	0.0016	0.00513	0.0148	0.079	0.251	2.16	56.7	418.67
30-Mar-21	NT	NT	NT	NT	NT	NT	NT	NM
GCLs	0.0046	1.1	0.015	0.19	2.2	1.5	NA	NA

Appendix D: Tables of Historical Monitoring Data

Monitoring Well G-6

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium mg/L	GW Elev (feet)
30-May-01	U	U	U	U	U	U	NM	413.54
13-Dec-01	U	U	U	U	U	U	NM	413.26
01-May-02	NT	NT	NT	NT	NT	NT	NM	NM
19-Aug-02	U (0.0005)	U (0.002)	U (0.002)	U (0.002)	U (0.09)	U (0.505)	NM	417.93
05-Nov-02	NT	NT	NT	NT	NT	NT	NM	NM
30-Mar-21	NT	NT	NT	NT	NT	NT	NM	NM
GCLs	0.0046	1.1	0.015	0.19	2.2	1.5	NA	NA

*Ground Water monitoring did not occurred between November 05, 2002 to March 30, 2021

Monitoring Well G-9

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium mg/L	GW Elev (feet)
07-Nov-03	U (0.0005)	U (0.0005)	U (0.0005)	U (0.001)	U (0.08)	U (0.32)	NM	NM
08-Mar-04	U (0.0005)	U (0.0005)	U (0.0005)	U (0.001)	U (0.05)	U (0.37)	NM	414.96
15-Sep-04	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.385)	NM	416.62
15-Oct-20	NT	NT	NT	NT	NT	NT	NM	NM
30-Mar-21	NT	NT	NT	NT	NT	NT	NM	NM
GCLs	0.0046	1.1	0.015	0.19	2.2	1.5	NA	NA

*Ground Water monitoring did not occurred between January 10, 2005 to March 30, 2021

Remediation Well RM-1

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

Appendix D: Tables of Historical Monitoring Data

Remediation Well RM-2

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium mg/L	GW Elev (feet)
29-Aug-19	0.00179	0.00209	0.0157	0.0666	0.479	0.384 J	22.9	NM
24-Oct-19	0.0046	0.058	0.089	0.342	2.00	0.45	32.0	NM
04-Aug-20	U (0.001)	U (0.001)	0.000505	0.000565	0.0135	U (0.800)	24.2	NM
15-Oct-20	0.0226	0.413	0.274	1.24	3.98	1.49	48.7	NM
30-Mar-21	0.0297	0.0541	0.352	0.74	4.16	1.21	41.1	NM
GCLs	0.0046	1.1	0.015	0.19	2.2	1.5	NA	NA

Monitoring Well MW 17-1

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium mg/L	GW Elev (feet)
29-Mar-18	2.9	6.6	1.2	8.5	U (100)	6	NM	NM
07-Sep-18	0.18	26	3.3	18	80	4.8	NM	NM
14-Mar-19	3	7.4	1.7	7.4	47	3.3	NM	415.28
30-Jul-19	0.36	9.2	3.4	14.9	88	3.9	NM	416.35
04-Aug-20	0.126	22.5	3.47	13.8	61.1	2.78	56	419.63
15-Oct-20	0.0231 J	0.254 J	0.305	2.1	5.9	4.03	58.1	418.92
30-Mar-21	0.000535 J	U (0.001)	0.0401	0.178	2.59	2.66	42.4	415.86
GCLs	0.0046	1.1	0.015	0.19	2.2	1.5	NA	NA

Monitoring Well MW 17-2

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium mg/L	GW Elev (feet)
29-Mar-18	U (0.30)	2.7	U (0.30)	2.11	22	12	NM	NM
07-Sep-18	0.18	3.2	0.66	4.5	17	15	NM	NM
14-Mar-19	0.047	0.94	0.094	1.49	4.2	10	NM	415.28
29-Jul-19	U (0.15)	1.8	0.5	3.9	16	8.5	NM	416.35
04-Aug-20	0.0505	0.477	0.2	415	5.03	20.5	91.4	419.67
15-Oct-20	0.00395 J	0.0235	0.0508	0.218	0.601	8.25	69.3	418.62
30-Mar-21	0.000952 J	U (0.001)	0.0132	0.0264	0.309	7.78	83.9	415.35
GCLs	0.0046	1.1	0.015	0.19	2.2	1.5	NA	NA

Key:

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

DRO - diesel range organics

GCLs - ground water cleanup levels

GRO - gasoline range organics

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

mg/L - milligram per liter

NA - not applicable

NT - not tested

NM - not measured

U - Undetected above practical quantitation limit.

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

APPENDIX E

*Laboratory Analytical Report and
ADEC Laboratory Data Review
Checklist*

Stantec - Anchorage, AK - Speedway

Sample Delivery Group: L1333810
Samples Received: 04/02/2021
Project Number:
Description: Speedway 5315 TNS 111
Site: 0005315
Report To: Ms. Leslie Petre
725 E Fireweed Lane
Suite 200
Anchorage, AK 99503

Entire Report Reviewed By:

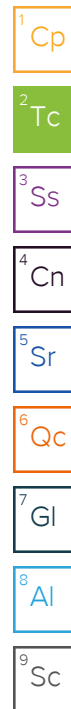


Craig Cothron
Project Manager

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

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SAMPLE SUMMARY

DUP1 L1333810-01 GW

Collected by
AB/LP Collected date/time
03/30/21 00:00 Received date/time
04/02/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1647829	1	04/08/21 23:18	04/09/21 08:37	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1646993	1	04/07/21 14:27	04/07/21 14:27	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1648231	1	04/08/21 22:57	04/08/21 22:57	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1648620	10	04/09/21 14:09	04/09/21 14:09	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1650077	1.05	04/13/21 07:58	04/13/21 16:35	WCR	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1645588	1	04/05/21 23:05	04/06/21 16:48	LEA	Mt. Juliet, TN

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

MW-12 L1333810-02 GW

Collected by
AB/LP Collected date/time
03/30/21 13:53 Received date/time
04/02/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1647829	1	04/08/21 23:18	04/09/21 08:40	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1646993	1	04/07/21 14:49	04/07/21 14:49	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1648231	1	04/08/21 23:17	04/08/21 23:17	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1648620	10	04/09/21 14:29	04/09/21 14:29	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1650077	1.05	04/13/21 07:58	04/13/21 16:55	WCR	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1645588	1	04/05/21 23:05	04/06/21 17:02	LEA	Mt. Juliet, TN

MW-13 L1333810-03 GW

Collected by
AB/LP Collected date/time
03/30/21 15:10 Received date/time
04/02/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1647829	1	04/08/21 23:18	04/09/21 08:43	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1646993	1	04/07/21 15:11	04/07/21 15:11	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1648231	1	04/08/21 23:38	04/08/21 23:38	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1648620	1	04/09/21 14:49	04/09/21 14:49	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1650077	1.05	04/13/21 07:58	04/13/21 17:15	WCR	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1645588	1	04/05/21 23:05	04/06/21 17:16	LEA	Mt. Juliet, TN

MW-16 L1333810-04 GW

Collected by
AB/LP Collected date/time
03/30/21 13:00 Received date/time
04/02/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1647829	1	04/08/21 23:18	04/09/21 08:45	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1646993	1	04/07/21 15:32	04/07/21 15:32	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1648231	1	04/08/21 23:58	04/08/21 23:58	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1648620	1	04/09/21 15:10	04/09/21 15:10	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1650077	1.05	04/13/21 07:58	04/13/21 17:35	WCR	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1645588	1	04/05/21 23:05	04/06/21 17:43	LEA	Mt. Juliet, TN

G-01 L1333810-05 GW

Collected by
AB/LP Collected date/time
03/30/21 11:56 Received date/time
04/02/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1647829	1	04/08/21 23:18	04/09/21 08:48	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1646993	1	04/07/21 15:54	04/07/21 15:54	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1648231	1	04/09/21 00:19	04/09/21 00:19	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1648620	1	04/09/21 15:30	04/09/21 15:30	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1650077	1	04/13/21 07:58	04/13/21 17:55	WCR	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1645588	1	04/05/21 23:05	04/06/21 17:29	LEA	Mt. Juliet, TN

SAMPLE SUMMARY

MW-17-01 L1333810-06 GW

Collected by
AB/LP Collected date/time
03/30/21 15:50 Received date/time
04/02/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1647829	1	04/08/21 23:18	04/09/21 08:51	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1647701	5	04/08/21 10:44	04/08/21 10:44	TPR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1648620	5	04/09/21 15:50	04/09/21 15:50	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1650077	1	04/13/21 07:58	04/13/21 18:16	WCR	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1645589	1	04/05/21 23:01	04/06/21 12:21	LEA	Mt. Juliet, TN



MW-17-02 L1333810-07 GW

Collected by
AB/LP Collected date/time
03/30/21 16:39 Received date/time
04/02/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1647829	1	04/08/21 23:18	04/09/21 08:53	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1647701	1	04/08/21 11:06	04/08/21 11:06	TPR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1648231	5	04/09/21 04:05	04/09/21 04:05	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1650077	1.05	04/13/21 07:58	04/13/21 18:36	WCR	Mt. Juliet, TN



RM-02 L1333810-08 GW

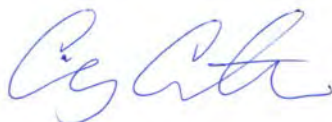
Collected by
AB/LP Collected date/time
03/30/21 17:25 Received date/time
04/02/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1647829	1	04/08/21 23:18	04/09/21 09:01	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1646993	1	04/07/21 16:16	04/07/21 16:16	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1648231	1	04/09/21 00:39	04/09/21 00:39	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1648620	10	04/09/21 16:11	04/09/21 16:11	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1650077	1.05	04/13/21 07:58	04/13/21 18:56	WCR	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1645589	1	04/05/21 23:01	04/06/21 12:39	LEA	Mt. Juliet, TN



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.



Craig Cothron
Project Manager

- 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	42.3		0.504	3.00	1	04/09/2021 08:37	WG1647829

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

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	2.90		0.0100	0.100	1	04/07/2021 14:27	WG1646993
(S) a,a,a-Trifluorotoluene(FID)	92.2			50.0-150		04/07/2021 14:27	WG1646993
(S) a,a,a-Trifluorotoluene(PID)	107			79.0-125		04/07/2021 14:27	WG1646993

6 Qc

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	0.000425	J	0.0000941	0.00100	1	04/08/2021 22:57	WG1648231
n-Butylbenzene	U		0.000157	0.00100	1	04/08/2021 22:57	WG1648231
sec-Butylbenzene	0.00333		0.000125	0.00100	1	04/08/2021 22:57	WG1648231
tert-Butylbenzene	U		0.000127	0.00100	1	04/08/2021 22:57	WG1648231
Ethylbenzene	0.0422		0.000137	0.00100	1	04/08/2021 22:57	WG1648231
Isopropylbenzene	0.00879		0.000105	0.00100	1	04/08/2021 22:57	WG1648231
Naphthalene	0.0257		0.00100	0.00500	1	04/08/2021 22:57	WG1648231
Toluene	0.000704	J	0.000278	0.00100	1	04/08/2021 22:57	WG1648231
1,2,4-Trimethylbenzene	0.255		0.00322	0.0100	10	04/09/2021 14:09	WG1648620
1,3,5-Trimethylbenzene	0.108		0.000104	0.00100	1	04/08/2021 22:57	WG1648231
Total Xylenes	0.196		0.000174	0.00300	1	04/08/2021 22:57	WG1648231
(S) Toluene-d8	102			80.0-120		04/08/2021 22:57	WG1648231
(S) Toluene-d8	101			80.0-120		04/09/2021 14:09	WG1648620
(S) 4-Bromofluorobenzene	95.3			77.0-126		04/08/2021 22:57	WG1648231
(S) 4-Bromofluorobenzene	94.3			77.0-126		04/09/2021 14:09	WG1648620
(S) 1,2-Dichloroethane-d4	97.2			70.0-130		04/08/2021 22:57	WG1648231
(S) 1,2-Dichloroethane-d4	98.5			70.0-130		04/09/2021 14:09	WG1648620

7 Gl

8 Al

9 Sc

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
AK102 DRO C10-C25	2.81		0.240	0.840	1.05	04/13/2021 16:35	WG1650077
(S) o-Terphenyl	84.3			50.0-150		04/13/2021 16:35	WG1650077

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	
Naphthalene	0.0123		0.0000917	0.000250	1	04/06/2021 16:48	WG1645588
(S) Nitrobenzene-d5	127			31.0-160		04/06/2021 16:48	WG1645588
(S) 2-Fluorobiphenyl	84.0			48.0-148		04/06/2021 16:48	WG1645588
(S) p-Terphenyl-d14	90.0			37.0-146		04/06/2021 16:48	WG1645588

Metals (ICP) by Method 6010C

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Sodium	57.9		0.504	3.00	1	04/09/2021 08:40	WG1647829

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	2.30		0.0100	0.100	1	04/07/2021 14:49	WG1646993
(S) a,a,a-Trifluorotoluene(FID)	93.2			50.0-150		04/07/2021 14:49	WG1646993
(S) a,a,a-Trifluorotoluene(PID)	106			79.0-125		04/07/2021 14:49	WG1646993

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	0.000395	J	0.0000941	0.00100	1	04/08/2021 23:17	WG1648231
n-Butylbenzene	U		0.000157	0.00100	1	04/08/2021 23:17	WG1648231
sec-Butylbenzene	0.00295		0.000125	0.00100	1	04/08/2021 23:17	WG1648231
tert-Butylbenzene	U		0.000127	0.00100	1	04/08/2021 23:17	WG1648231
Ethylbenzene	0.0221		0.000137	0.00100	1	04/08/2021 23:17	WG1648231
Isopropylbenzene	0.0160		0.000105	0.00100	1	04/08/2021 23:17	WG1648231
Naphthalene	0.00954		0.00100	0.00500	1	04/08/2021 23:17	WG1648231
Toluene	0.000853	J	0.000278	0.00100	1	04/08/2021 23:17	WG1648231
1,2,4-Trimethylbenzene	0.174		0.00322	0.0100	10	04/09/2021 14:29	WG1648620
1,3,5-Trimethylbenzene	0.0586		0.000104	0.00100	1	04/08/2021 23:17	WG1648231
Total Xylenes	0.0676		0.000174	0.00300	1	04/08/2021 23:17	WG1648231
(S) Toluene-d8	99.8			80.0-120		04/08/2021 23:17	WG1648231
(S) Toluene-d8	102			80.0-120		04/09/2021 14:29	WG1648620
(S) 4-Bromofluorobenzene	92.8			77.0-126		04/08/2021 23:17	WG1648231
(S) 4-Bromofluorobenzene	93.1			77.0-126		04/09/2021 14:29	WG1648620
(S) 1,2-Dichloroethane-d4	100			70.0-130		04/08/2021 23:17	WG1648231
(S) 1,2-Dichloroethane-d4	98.3			70.0-130		04/09/2021 14:29	WG1648620

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
AK102 DRO C10-C25	1.26		0.240	0.840	1.05	04/13/2021 16:55	WG1650077
(S) o-Terphenyl	79.6			50.0-150		04/13/2021 16:55	WG1650077

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	
Naphthalene	0.0104		0.0000917	0.000250	1	04/06/2021 17:02	WG1645588
(S) Nitrobenzene-d5	132			31.0-160		04/06/2021 17:02	WG1645588
(S) 2-Fluorobiphenyl	103			48.0-148		04/06/2021 17:02	WG1645588
(S) p-Terphenyl-d14	117			37.0-146		04/06/2021 17:02	WG1645588

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	40.6		0.504	3.00	1	04/09/2021 08:43	WG1647829

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	0.139	<u>B</u>	0.0100	0.100	1	04/07/2021 15:11	WG1646993
(S) a,a,a-Trifluorotoluene(FID)	92.5			50.0-150		04/07/2021 15:11	WG1646993
(S) a,a,a-Trifluorotoluene(PID)	101			79.0-125		04/07/2021 15:11	WG1646993

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	0.000190	<u>J</u>	0.0000941	0.00100	1	04/08/2021 23:38	WG1648231
n-Butylbenzene	U		0.000157	0.00100	1	04/08/2021 23:38	WG1648231
sec-Butylbenzene	0.00135		0.000125	0.00100	1	04/08/2021 23:38	WG1648231
tert-Butylbenzene	U		0.000127	0.00100	1	04/08/2021 23:38	WG1648231
Ethylbenzene	0.00361		0.000137	0.00100	1	04/08/2021 23:38	WG1648231
Isopropylbenzene	0.00184		0.000105	0.00100	1	04/08/2021 23:38	WG1648231
Naphthalene	0.00385	<u>J</u>	0.00100	0.00500	1	04/08/2021 23:38	WG1648231
Toluene	U		0.000278	0.00100	1	04/08/2021 23:38	WG1648231
1,2,4-Trimethylbenzene	U		0.000322	0.00100	1	04/09/2021 14:49	WG1648620
1,3,5-Trimethylbenzene	0.00570		0.000104	0.00100	1	04/08/2021 23:38	WG1648231
Total Xylenes	0.00705		0.000174	0.00300	1	04/08/2021 23:38	WG1648231
(S) Toluene-d8	103			80.0-120		04/08/2021 23:38	WG1648231
(S) Toluene-d8	105			80.0-120		04/09/2021 14:49	WG1648620
(S) 4-Bromofluorobenzene	97.1			77.0-126		04/08/2021 23:38	WG1648231
(S) 4-Bromofluorobenzene	92.8			77.0-126		04/09/2021 14:49	WG1648620
(S) 1,2-Dichloroethane-d4	104			70.0-130		04/08/2021 23:38	WG1648231
(S) 1,2-Dichloroethane-d4	106			70.0-130		04/09/2021 14:49	WG1648620

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	0.341	<u>J</u>	0.240	0.840	1.05	04/13/2021 17:15	WG1650077
(S) o-Terphenyl	77.7			50.0-150		04/13/2021 17:15	WG1650077

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	
Naphthalene	0.000474		0.0000917	0.000250	1	04/06/2021 17:16	WG1645588
(S) Nitrobenzene-d5	122			31.0-160		04/06/2021 17:16	WG1645588
(S) 2-Fluorobiphenyl	80.5			48.0-148		04/06/2021 17:16	WG1645588
(S) p-Terphenyl-d14	79.0			37.0-146		04/06/2021 17:16	WG1645588

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	36.1		0.504	3.00	1	04/09/2021 08:45	WG1647829

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	0.0233	<u>B J</u>	0.0100	0.100	1	04/07/2021 15:32	WG1646993
(S) a,a,a-Trifluorotoluene(FID)	91.1			50.0-150		04/07/2021 15:32	WG1646993
(S) a,a,a-Trifluorotoluene(PID)	101			79.0-125		04/07/2021 15:32	WG1646993

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	U		0.0000941	0.00100	1	04/08/2021 23:58	WG1648231
n-Butylbenzene	U		0.000157	0.00100	1	04/08/2021 23:58	WG1648231
sec-Butylbenzene	U		0.000125	0.00100	1	04/08/2021 23:58	WG1648231
tert-Butylbenzene	U		0.000127	0.00100	1	04/08/2021 23:58	WG1648231
Ethylbenzene	U		0.000137	0.00100	1	04/08/2021 23:58	WG1648231
Isopropylbenzene	U		0.000105	0.00100	1	04/08/2021 23:58	WG1648231
Naphthalene	U		0.00100	0.00500	1	04/08/2021 23:58	WG1648231
Toluene	U		0.000278	0.00100	1	04/08/2021 23:58	WG1648231
1,2,4-Trimethylbenzene	U		0.000322	0.00100	1	04/09/2021 15:10	WG1648620
1,3,5-Trimethylbenzene	0.000273	<u>J</u>	0.000104	0.00100	1	04/08/2021 23:58	WG1648231
Total Xylenes	0.000994	<u>J</u>	0.000174	0.00300	1	04/08/2021 23:58	WG1648231
(S) Toluene-d8	104			80.0-120		04/08/2021 23:58	WG1648231
(S) Toluene-d8	103			80.0-120		04/09/2021 15:10	WG1648620
(S) 4-Bromofluorobenzene	96.4			77.0-126		04/08/2021 23:58	WG1648231
(S) 4-Bromofluorobenzene	92.4			77.0-126		04/09/2021 15:10	WG1648620
(S) 1,2-Dichloroethane-d4	98.8			70.0-130		04/08/2021 23:58	WG1648231
(S) 1,2-Dichloroethane-d4	98.8			70.0-130		04/09/2021 15:10	WG1648620

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	0.970		0.240	0.840	1.05	04/13/2021 17:35	WG1650077
(S) o-Terphenyl	84.1			50.0-150		04/13/2021 17:35	WG1650077

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	
Naphthalene	0.000122	<u>J</u>	0.0000917	0.000250	1	04/06/2021 17:43	WG1645588
(S) Nitrobenzene-d5	131			31.0-160		04/06/2021 17:43	WG1645588
(S) 2-Fluorobiphenyl	103			48.0-148		04/06/2021 17:43	WG1645588
(S) p-Terphenyl-d14	115			37.0-146		04/06/2021 17:43	WG1645588

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	70.1		0.504	3.00	1	04/09/2021 08:48	WG1647829

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	0.0194	<u>B</u> <u>J</u>	0.0100	0.100	1	04/07/2021 15:54	WG1646993
(S) a,a,a-Trifluorotoluene(FID)	90.8			50.0-150		04/07/2021 15:54	WG1646993
(S) a,a,a-Trifluorotoluene(PID)	102			79.0-125		04/07/2021 15:54	WG1646993

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	0.00141		0.0000941	0.00100	1	04/09/2021 00:19	WG1648231
n-Butylbenzene	U		0.000157	0.00100	1	04/09/2021 00:19	WG1648231
sec-Butylbenzene	0.000396	<u>J</u>	0.000125	0.00100	1	04/09/2021 00:19	WG1648231
tert-Butylbenzene	U		0.000127	0.00100	1	04/09/2021 00:19	WG1648231
Ethylbenzene	U		0.000137	0.00100	1	04/09/2021 00:19	WG1648231
Isopropylbenzene	0.000981	<u>J</u>	0.000105	0.00100	1	04/09/2021 00:19	WG1648231
Naphthalene	0.00246	<u>J</u>	0.00100	0.00500	1	04/09/2021 00:19	WG1648231
Toluene	U		0.000278	0.00100	1	04/09/2021 00:19	WG1648231
1,2,4-Trimethylbenzene	U		0.000322	0.00100	1	04/09/2021 15:30	WG1648620
1,3,5-Trimethylbenzene	0.000111	<u>J</u>	0.000104	0.00100	1	04/09/2021 00:19	WG1648231
Total Xylenes	U		0.000174	0.00300	1	04/09/2021 00:19	WG1648231
(S) Toluene-d8	103			80.0-120		04/09/2021 00:19	WG1648231
(S) Toluene-d8	105			80.0-120		04/09/2021 15:30	WG1648620
(S) 4-Bromofluorobenzene	96.7			77.0-126		04/09/2021 00:19	WG1648231
(S) 4-Bromofluorobenzene	90.6			77.0-126		04/09/2021 15:30	WG1648620
(S) 1,2-Dichloroethane-d4	102			70.0-130		04/09/2021 00:19	WG1648231
(S) 1,2-Dichloroethane-d4	98.0			70.0-130		04/09/2021 15:30	WG1648620

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	0.256	<u>J</u>	0.229	0.800	1	04/13/2021 17:55	WG1650077
(S) o-Terphenyl	84.3			50.0-150		04/13/2021 17:55	WG1650077

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	
Naphthalene	0.00145		0.0000917	0.000250	1	04/06/2021 17:29	WG1645588
(S) Nitrobenzene-d5	128			31.0-160		04/06/2021 17:29	WG1645588
(S) 2-Fluorobiphenyl	102			48.0-148		04/06/2021 17:29	WG1645588
(S) p-Terphenyl-d14	119			37.0-146		04/06/2021 17:29	WG1645588

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	42.4		0.504	3.00	1	04/09/2021 08:51	WG1647829

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	2.59		0.0500	0.500	5	04/08/2021 10:44	WG1647701
(S) a,a,a-Trifluorotoluene(FID)	90.6			50.0-150		04/08/2021 10:44	WG1647701
(S) a,a,a-Trifluorotoluene(PID)	104			79.0-125		04/08/2021 10:44	WG1647701

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	0.000535	J	0.000471	0.00500	5	04/09/2021 15:50	WG1648620
n-Butylbenzene	0.0254		0.000785	0.00500	5	04/09/2021 15:50	WG1648620
sec-Butylbenzene	U		0.000625	0.00500	5	04/09/2021 15:50	WG1648620
tert-Butylbenzene	U		0.000635	0.00500	5	04/09/2021 15:50	WG1648620
Ethylbenzene	0.0401		0.000685	0.00500	5	04/09/2021 15:50	WG1648620
Isopropylbenzene	0.00739		0.000525	0.00500	5	04/09/2021 15:50	WG1648620
Naphthalene	0.0205	J	0.00500	0.0250	5	04/09/2021 15:50	WG1648620
Toluene	U		0.00139	0.00500	5	04/09/2021 15:50	WG1648620
1,2,4-Trimethylbenzene	0.291		0.00161	0.00500	5	04/09/2021 15:50	WG1648620
1,3,5-Trimethylbenzene	0.120		0.000520	0.00500	5	04/09/2021 15:50	WG1648620
Total Xylenes	0.178		0.000870	0.0150	5	04/09/2021 15:50	WG1648620
(S) Toluene-d8	102			80.0-120		04/09/2021 15:50	WG1648620
(S) 4-Bromofluorobenzene	92.9			77.0-126		04/09/2021 15:50	WG1648620
(S) 1,2-Dichloroethane-d4	97.1			70.0-130		04/09/2021 15:50	WG1648620

Sample Narrative:

L1333810-06 WG1648620: 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	2.66		0.229	0.800	1	04/13/2021 18:16	WG1650077
(S) o-Terphenyl	88.8			50.0-150		04/13/2021 18:16	WG1650077

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	
Naphthalene	0.00984		0.0000917	0.000250	1	04/06/2021 12:21	WG1645589
(S) Nitrobenzene-d5	92.0			31.0-160		04/06/2021 12:21	WG1645589
(S) 2-Fluorobiphenyl	84.0			48.0-148		04/06/2021 12:21	WG1645589
(S) p-Terphenyl-d14	101			37.0-146		04/06/2021 12:21	WG1645589

Metals (ICP) by Method 6010C

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Sodium	83.9		0.504	3.00	1	04/09/2021 08:53	WG1647829

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
TPHGAK C6 to C10	0.309		0.0100	0.100	1	04/08/2021 11:06	WG1647701
(S) a,a,a-Trifluorotoluene(FID)	90.8			50.0-150		04/08/2021 11:06	WG1647701
(S) a,a,a-Trifluorotoluene(PID)	103			79.0-125		04/08/2021 11:06	WG1647701

- 5 Sr
- 6 Qc

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Benzene	0.000952	J	0.000471	0.00500	5	04/09/2021 04:05	WG1648231
n-Butylbenzene	U		0.000785	0.00500	5	04/09/2021 04:05	WG1648231
sec-Butylbenzene	U		0.000625	0.00500	5	04/09/2021 04:05	WG1648231
tert-Butylbenzene	U		0.000635	0.00500	5	04/09/2021 04:05	WG1648231
Ethylbenzene	0.0132		0.000685	0.00500	5	04/09/2021 04:05	WG1648231
Isopropylbenzene	0.00123	J	0.000525	0.00500	5	04/09/2021 04:05	WG1648231
Naphthalene	U		0.00500	0.0250	5	04/09/2021 04:05	WG1648231
Toluene	U		0.00139	0.00500	5	04/09/2021 04:05	WG1648231
1,2,4-Trimethylbenzene	0.0131		0.00161	0.00500	5	04/09/2021 04:05	WG1648231
1,3,5-Trimethylbenzene	0.00375	J	0.000520	0.00500	5	04/09/2021 04:05	WG1648231
Total Xylenes	0.0264		0.000870	0.0150	5	04/09/2021 04:05	WG1648231
(S) Toluene-d8	107			80.0-120		04/09/2021 04:05	WG1648231
(S) 4-Bromofluorobenzene	98.3			77.0-126		04/09/2021 04:05	WG1648231
(S) 1,2-Dichloroethane-d4	109			70.0-130		04/09/2021 04:05	WG1648231

- 7 Gl
- 8 Al
- 9 Sc

Sample Narrative:

L1333810-07 WG1648231: Lowest possible dilution due to sample foaming.

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
AK102 DRO C10-C25	7.78		0.240	0.840	1.05	04/13/2021 18:36	WG1650077
(S) o-Terphenyl	109			50.0-150		04/13/2021 18:36	WG1650077

Metals (ICP) by Method 6010C

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Sodium	41.1		0.504	3.00	1	04/09/2021 09:01	WG1647829

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
TPHGAK C6 to C10	4.16		0.0100	0.100	1	04/07/2021 16:16	WG1646993
(S) a,a,a-Trifluorotoluene(FID)	91.5			50.0-150		04/07/2021 16:16	WG1646993
(S) a,a,a-Trifluorotoluene(PID)	103			79.0-125		04/07/2021 16:16	WG1646993

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	0.0297		0.0000941	0.00100	1	04/09/2021 00:39	WG1648231
n-Butylbenzene	0.00289		0.000157	0.00100	1	04/09/2021 00:39	WG1648231
sec-Butylbenzene	0.00436		0.000125	0.00100	1	04/09/2021 00:39	WG1648231
tert-Butylbenzene	U		0.000127	0.00100	1	04/09/2021 00:39	WG1648231
Ethylbenzene	0.352		0.00137	0.0100	10	04/09/2021 16:11	WG1648620
Isopropylbenzene	0.0230		0.000105	0.00100	1	04/09/2021 00:39	WG1648231
Naphthalene	0.0486		0.00100	0.00500	1	04/09/2021 00:39	WG1648231
Toluene	0.0541		0.000278	0.00100	1	04/09/2021 00:39	WG1648231
1,2,4-Trimethylbenzene	0.143		0.000322	0.00100	1	04/09/2021 00:39	WG1648231
1,3,5-Trimethylbenzene	0.0552		0.000104	0.00100	1	04/09/2021 00:39	WG1648231
Total Xylenes	0.740		0.00174	0.0300	10	04/09/2021 16:11	WG1648620
(S) Toluene-d8	96.5			80.0-120		04/09/2021 00:39	WG1648231
(S) Toluene-d8	101			80.0-120		04/09/2021 16:11	WG1648620
(S) 4-Bromofluorobenzene	95.9			77.0-126		04/09/2021 00:39	WG1648231
(S) 4-Bromofluorobenzene	92.2			77.0-126		04/09/2021 16:11	WG1648620
(S) 1,2-Dichloroethane-d4	101			70.0-130		04/09/2021 00:39	WG1648231
(S) 1,2-Dichloroethane-d4	95.6			70.0-130		04/09/2021 16:11	WG1648620

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
AK102 DRO C10-C25	1.21		0.240	0.840	1.05	04/13/2021 18:56	WG1650077
(S) o-Terphenyl	76.0			50.0-150		04/13/2021 18:56	WG1650077

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	
Naphthalene	0.00271		0.0000917	0.000250	1	04/06/2021 12:39	WG1645589
(S) Nitrobenzene-d5	99.5			31.0-160		04/06/2021 12:39	WG1645589
(S) 2-Fluorobiphenyl	90.0			48.0-148		04/06/2021 12:39	WG1645589
(S) p-Terphenyl-d14	103			37.0-146		04/06/2021 12:39	WG1645589



Method Blank (MB)

(MB) R3640008-1 04/09/21 07:57

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Sodium	U		0.504	3.00

¹Cp

²Tc

³Ss

Laboratory Control Sample (LCS)

(LCS) R3640008-2 04/09/21 08:00

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Sodium	10.0	9.40	94.0	80.0-120	

⁴Cn

⁵Sr

L1333873-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1333873-01 04/09/21 08:02 • (MS) R3640008-4 04/09/21 08:08 • (MSD) R3640008-5 04/09/21 08:10

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Sodium	10.0	2.02	11.0	11.2	90.2	91.3	1	75.0-125			0.999	20

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3639364-2 04/07/21 11:52

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPHGAK C6 to C10	0.0185	<u>J</u>	0.0100	0.100
(S) a,a,a-Trifluorotoluene(PID)	102			79.0-125
(S) a,a,a-Trifluorotoluene(FID)	92.0			60.0-120

Laboratory Control Sample (LCS)

(LCS) R3639364-1 04/07/21 10:54

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPHGAK C6 to C10	5.00	5.25	105	60.0-120	
(S) a,a,a-Trifluorotoluene(PID)			132	79.0-125	<u>J1</u>
(S) a,a,a-Trifluorotoluene(FID)			110	60.0-120	

L1335007-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1335007-02 04/07/21 17:20 • (MS) R3639364-3 04/07/21 19:52 • (MSD) R3639364-4 04/07/21 20:13

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 %
TPHGAK C6 to C10	5.00	0.0259	4.44	4.46	88.3	88.7	1	70.0-130			0.449	20
(S) a,a,a-Trifluorotoluene(PID)					127	127		79.0-125	<u>J1</u>	<u>J1</u>		
(S) a,a,a-Trifluorotoluene(FID)					107	105		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) R3641155-2 04/08/21 08:05

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPHGAK C6 to C10	0.0236	<u>J</u>	0.0100	0.100
(S) a,a,a-Trifluorotoluene(PID)	102			79.0-125
(S) a,a,a-Trifluorotoluene(FID)	90.3			60.0-120

Laboratory Control Sample (LCS)

(LCS) R3641155-1 04/08/21 07:22

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPHGAK C6 to C10	5.00	5.14	103	60.0-120	
(S) a,a,a-Trifluorotoluene(PID)			132	79.0-125	<u>J1</u>
(S) a,a,a-Trifluorotoluene(FID)			109	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) R3639948-3 04/08/21 18:46

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	104			80.0-120
(S) 4-Bromofluorobenzene	93.9			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) R3639948-1 04/08/21 17:45 • (LCSD) R3639948-2 04/08/21 18:05

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	0.00497	0.00469	99.4	93.8	70.0-123			5.80	20
n-Butylbenzene	0.00500	0.00493	0.00495	98.6	99.0	73.0-125			0.405	20
sec-Butylbenzene	0.00500	0.00507	0.00481	101	96.2	75.0-125			5.26	20
tert-Butylbenzene	0.00500	0.00459	0.00448	91.8	89.6	76.0-124			2.43	20
Ethylbenzene	0.00500	0.00529	0.00450	106	90.0	79.0-123			16.1	20
Isopropylbenzene	0.00500	0.00502	0.00466	100	93.2	76.0-127			7.44	20
Naphthalene	0.00500	0.00472	0.00472	94.4	94.4	54.0-135			0.000	20
Toluene	0.00500	0.00487	0.00450	97.4	90.0	79.0-120			7.90	20
1,2,4-Trimethylbenzene	0.00500	0.00483	0.00466	96.6	93.2	76.0-121			3.58	20
1,3,5-Trimethylbenzene	0.00500	0.00460	0.00463	92.0	92.6	76.0-122			0.650	20
Xylenes, Total	0.0150	0.0150	0.0136	100	90.7	79.0-123			9.79	20
(S) Toluene-d8				104	98.3	80.0-120				
(S) 4-Bromofluorobenzene				101	94.9	77.0-126				
(S) 1,2-Dichloroethane-d4				102	100	70.0-130				

Method Blank (MB)

(MB) R3640480-2 04/09/21 13:36

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	103			80.0-120
(S) 4-Bromofluorobenzene	95.4			77.0-126
(S) 1,2-Dichloroethane-d4	98.2			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) R3640480-1 04/09/21 12:55

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.00500	0.00497	99.4	70.0-123	
n-Butylbenzene	0.00500	0.00460	92.0	73.0-125	
sec-Butylbenzene	0.00500	0.00460	92.0	75.0-125	
tert-Butylbenzene	0.00500	0.00442	88.4	76.0-124	
Ethylbenzene	0.00500	0.00485	97.0	79.0-123	
Isopropylbenzene	0.00500	0.00427	85.4	76.0-127	
Naphthalene	0.00500	0.00407	81.4	54.0-135	
Toluene	0.00500	0.00499	99.8	79.0-120	
1,2,4-Trimethylbenzene	0.00500	0.00477	95.4	76.0-121	
1,3,5-Trimethylbenzene	0.00500	0.00520	104	76.0-122	
Xylenes, Total	0.0150	0.0141	94.0	79.0-123	
(S) Toluene-d8			99.4	80.0-120	
(S) 4-Bromofluorobenzene			95.3	77.0-126	
(S) 1,2-Dichloroethane-d4			102	70.0-130	

Method Blank (MB)

(MB) R3641450-1 04/13/21 14:34

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
AK102 DRO C10-C25	U		0.229	0.800
(S) o-Terphenyl	69.3			60.0-120

Laboratory Control Sample (LCS)

(LCS) R3641450-2 04/13/21 14:55

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
AK102 DRO C10-C25	3.00	2.32	77.3	75.0-125	
(S) o-Terphenyl			94.5	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) R3638641-3 04/06/21 08:40

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Naphthalene	U		0.0000917	0.000250
(S) Nitrobenzene-d5	122			31.0-160
(S) 2-Fluorobiphenyl	97.5			48.0-148
(S) p-Terphenyl-d14	117			37.0-146

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

(LCS) R3638641-1 04/06/21 08:14 • (LCSD) R3638641-2 04/06/21 08:27

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 %
Naphthalene	0.00200	0.00215	0.00219	107	109	61.0-137			1.84	20
(S) Nitrobenzene-d5				128	127	31.0-160				
(S) 2-Fluorobiphenyl				98.5	101	48.0-148				
(S) p-Terphenyl-d14				113	118	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) R3638745-3 04/06/21 09:42

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Naphthalene	U		0.0000917	0.000250
(S) Nitrobenzene-d5	105			31.0-160
(S) 2-Fluorobiphenyl	97.5			48.0-148
(S) p-Terphenyl-d14	135			37.0-146

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

(LCS) R3638745-1 04/06/21 09:07 • (LCSD) R3638745-2 04/06/21 09:24

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 %
Naphthalene	0.00200	0.00209	0.00205	105	102	61.0-137			1.93	20
(S) Nitrobenzene-d5				117	109	31.0-160				
(S) 2-Fluorobiphenyl				95.0	94.5	48.0-148				
(S) p-Terphenyl-d14				127	130	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.

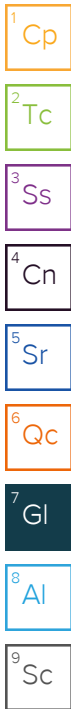
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

B	The same analyte is found in the associated blank.
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.



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

Pres Chk

Chain of Custody Page ___ of ___

 Pace Analytical
 National Center for Testing & Innovation

Report to:
Ms. Leslie Petre *leslie.petre@stantec.com*

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

Project Description:
Speedway 5315 TNS 111

City/State Collected: **Fairbanks, AK** AK PT MT CT ET

Phone: **907-266-1108**
251-6153

Client Project #

Lab Project #
STAAAKSSA-5315

Collected by (print):
Austin Badger/Leslie Petre

Site/Facility ID #
0005315

P.O. #

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

Quote #

Immediately Packed on Ice N Y

Date Results Needed

No. of Cntrs

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs
MW-10 Duplicate		GW		3/30/21		11
MW-11		GW				11
MW-12		GW		3/30/21	13:53	11
MW-13		GW		3/30/21	15:10	11
MW-16		GW		3/30/21	13:00	11
G-1		GW		3/30/21	11:56	11
G-5		GW				11
MW-17-1		GW		3/30/21	15:50	11
MW-17-2		GW		3/30/21	16:39	11
RW-2 RW-2		GW		3/30/21	17:25	11

Analysis / Container / Preservative				
AK101 40mlAmb HCl	AK102 100ml Amb HCl	NAICP 250mlHDPE-HNO3	PAHSIMLVID 40mlAmb-NoPres-WT	V82260C 40mlAmb-HCl

12065 Lebanon Road Mt Juliet, TN 37122
 Phone: 615-758-5858 Alt: 800-767-5859
 Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: <https://info.pacelabs.com/hubs/pas-standard-terms.pdf>

SDG # **L1333810**
C038

Acctnum: **STAAAKSSA**
 Template: **T175450**
 Prelogin: **P836136**
 PM: **034 - Craig Cothron**
 PB: *03/23/21*

Shipped Via: **FedEX 2nd Day**

Remarks	Sample # (lab only)
	01
	02
	03
	04
	05
	06
	07
	08
	09

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

Remarks:
 pH _____ Temp _____
 Flow _____ Other _____
 Samples returned via:
 UPS FedEx Courier
 Tracking # **9517 5771 4098**

Sample Receipt Checklist
 COC Seal Present/Intact: NP 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: **3/31/2021** Time: **12:45pm**

Received by: (Signature)
Fed Ex

Trip Blank Received: Yes No
 Hcl / MeOH TBR
 Temp: **+1.1 °C** Bottles Received: **85**

Relinquished by: (Signature)

Date: Time:

Received by: (Signature)

Date: **4/2/21** Time: **9:15**

If preservation required by Login: Date/Time

Relinquished by: (Signature)

Date: Time:

Received for lab by: (Signature)
[Signature]

Date: **4/2/21** Time: **9:15**

Hold: Condition: **NCF / OK**

Laboratory Report Number L1333810 CS Site Name Speedway 0005315 (TNS111)
Laboratory Report Date 04/14/2021 ADEC File Number 100.26.026

Laboratory Data Review Checklist

Completed By:

Leslie Petre

Title:

Engineer in Training

Date:

May 20, 2021

Consultant Firm:

Stantec Consulting Service, Inc.

Laboratory Name:

Pace Analytical

Laboratory Report Number:

L1333810

Laboratory Report Date:

April 14, 2021

CS Site Name:

Speedway 0005315

ADEC File Number:

100.26.026

Hazard Identification Number:

1112

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

1. Laboratory

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

Yes No N/A Comments:

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

Yes No N/A Comments:

2. Chain of Custody (CoC)

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

Yes No N/A Comments:

b. Correct analyses requested?

Yes No N/A Comments:

3. Laboratory Sample Receipt Documentation

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

Yes No N/A Comments:

4.9°C + 0.1

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

Yes No N/A Comments:

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

Yes No N/A Comments:

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

Yes No N/A Comments:

e. Data quality or usability affected?

Comments:

4. Case Narrative

a. Present and understandable?

Yes No N/A Comments:

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

Yes No N/A Comments:

c. Were all corrective actions documented?

Yes No N/A Comments:

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

Comments:

No

5. Samples Results

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

Yes No N/A Comments:

b. All applicable holding times met?

Yes No N/A Comments:

c. All soils reported on a dry weight basis?

Yes No N/A Comments:

No Soils

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

Yes No N/A Comments:

e. Data quality or usability affected?

6. QC Samples

a. Method Blank

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

Yes No N/A Comments:

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

Yes No N/A Comments:

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

Comments:

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

Yes No N/A Comments:

v. Data quality or usability affected?

Comments:

No.

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:

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

Comments:

No

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

Note: Leave blank if not required for project

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

Yes No N/A Comments:

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

Yes No N/A Comments:

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

Yes No N/A Comments:

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

Yes No N/A Comments:

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

Comments:

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

Yes No N/A Comments:

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

Comments:

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

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

Yes No N/A Comments:

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

Yes No N/A Comments:

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

Yes No N/A Comments:

iv. Data quality or usability affected?

Comments:

e. Trip Blanks

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

Yes No N/A Comments:

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

Yes No N/A Comments:

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

Yes No N/A Comments:

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

Comments:

v. Data quality or usability affected?

Comments:

f. Field Duplicate

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

Yes No N/A Comments:

ii. Submitted blind to lab?

Yes No N/A Comments:

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

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

Where R_1 = Sample Concentration
 R_2 = Field Duplicate Concentration

Yes No N/A Comments:

MW 17-1: Toluene 265.5%

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

Comments:

No, identification of the analyte is acceptable value was given for sample while actual measured in field duplicate was notably lower than the standard estimate value. All other analytes were actual values and meet precision criteria.

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

Yes No N/A Comments:

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

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

Yes No N/A Comments:

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

Comments:

Laboratory Report Number L1333810 CS Site Name Speedway 0005315 (TNS111)
Laboratory Report Date 04/14/2021 ADEC File Number 100.26.026

iii. Data quality or usability affected?

Comments:

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

a. Defined and appropriate?

Yes No N/A

Comments: