Speedway Store 5314
(Former Tesoro 2 Go Mart #76)
ADEC File #2265.26.037

1Q - March 2022 GWM Event Report

Prepared For

Stantec

AUTHORIZATION TO SUBMIT REPORT

Stantec has been authorized by the client, Speedway/7-Eleven (representative Anne Duarte, EHS/RS, Environmental Specialist) to submit this report to the Alaska Department of Environmental Conservation. If you have any questions or need additional information concerning this groundwater monitoring report, please contact me at (907) 227-9883.

Regards,

STANTEC CONSULTING SERVICES INC.

Bob Gilfilian, P.E.
Project Technical Lead

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ACRONYMS AND ABBREVIATIONS

AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
AK	Alaska Test Method
amsl	above mean sea level
BTEX	benzene, toluene, ethylbenzene, and xylenes
Chemox	chemical oxidation
DO	dissolved oxygen
DRO	diesel range organics
EPA	U.S. Environmental Protection Agency
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
RW	remediation well
Speedway	Speedway, LLC
Stantec	Stantec Consulting Services, Inc.
Tesoro	Tesoro Refining and Marketing Company
TMB	Trimethylbenzene
UST	underground storage tank
VOC	Volatile Organic Compounds

1.0 EXECUTIVE SUMMARY

This first quarter 2022 monitoring event report was prepared by Stantec Consulting Services, Inc. (Stantec), on behalf of Speedway, LLC for Speedway Store 5314 (Tesoro 2 Go Mart #76), located at 3600 Palmer-Wasilla Highway, Wasilla, Alaska (**Figure 1**). Background information for this site is summarized in **Appendix A**. The methods used for this monitoring event were conducted in accordance with the Alaska Department of Environmental Conservation (ADEC) approved 2022 Corrective Action Plan (CAP) for this site, Summarized in **Appendix B**.

This monitoring event was conducted on March 17, 2022, by John Marshall, Environmental Scientist; Luke Simms, Environmental Scientist; and Jeremiah Malenfant, Geologist-in-Training, all with Stantec. The monitoring event included the following field activities: measuring the depth to groundwater; measuring water quality parameters; and collecting and analyzing groundwater samples from Monitoring Wells MW-1, MW-2, MW-3, MW-4, and Remediation Well RW19-1.

The laboratory analytical sample results showed petroleum associated 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 the following monitoring wells:

- Monitoring Well MW-2: Benzene.
- Monitoring well MW-3: Benzene, ethylbenzene, xylenes, gasoline range organics (GRO), diesel range organics (DRO), naphthalene, 1,2,4-trimethylbenzene (TMB), and 1,3,5-TMB.
- Monitoring well MW-4: Benzene, ethylbenzene, xylenes, GRO, DRO, naphthalene, 1,2,4-TMB, and 1,3,5-TMB.
- Remediation Well RW19-1: Benzene.

The hydraulic gradient across the site was found to be approximately 0.019 feet per foot directed northwest at 312 degrees. The calculation of groundwater hydraulic flow was based on the static water levels in the five on-site wells measured during the monitoring event on March 17. The groundwater gradient and flow direction are generally consistent with past monitoring events. A plot of groundwater elevation contours generated by the Surfer® software program is included in **Figure 3.**

Upon arrival to the site on March 17, 2022, the well pump in the on-site recirculation well RW 19-1 was discharging at an estimated flow rate of 2 gallons per minute (gpm). The flow from well RW 19-1 was pumped into the on-site treatment/remediation (injection) well RW-2 that is located within the footprint of the former underground storage tank (UST). The submersible pump in the recirculation well runs on a continuous basis (24 hours each day). The pumped groundwater is treated in-situ with a chemical oxidation (chemox) injection process that is injected in batches on a quarterly basis.

On March 25, 2022, Stantec completed groundwater remediation event that included the injection of chemical oxidation (chemox) solution into the three treatment/remediation wells. The injection process involved the manual injection of a mixture of two 55-pound bags of Klozur One® product

and 50 gallons of tap water into each of the three remediation wells (RW-1, RW-2 and RW-3) for a total of 100 gallons per well and 300 gallons of chemox solution total. Following the injection of the chemox solution, Stantec injected an additional 100 gallons of tap water into each remediation well to hydraulically push the chemox mixture into the subsurface formation. Upon completion of the chemox injection process, the flow from the on-site recirculation well (RW 19-1) was reconnected to discharge constant flow into RW-2.

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 this March 17, 2022 monitoring event:

- Measured the depth to groundwater in Monitoring Wells MW-1, MW-2, MW-3, and MW-4. In addition, the pumping water level in the remediation well RW 19-1 was measured. Groundwater depth measurements were used by the SampleServe™ program to calculate the hydraulic gradient and direction of flow of the groundwater table.
- Measured the following intrinsic water quality parameters in all five monitoring/remediation wells: pH, temperature, dissolved oxygen (DO), oxidation-reduction potential (ORP), and specific conductance.
- Collected groundwater samples from all five monitoring/remediation wells and submitted them for laboratory analysis of: U.S. Environmental Protection Agency (EPA) Method 8260C for petroleum fuel associated volatile organic compounds including benzene, toluene, ethylbenzene, and xylenes (BTEX); Alaska Test Method (AK)101 for GRO; AK102 for DRO, and metals (ICP) by Method 6010C for sodium.
- Subsequent to the quarterly monitoring event, on March 25 Stantec completed a dose of chemox treatment into the 3 remediation wells (RW-1, RW-2 and RW-3) located in the footprint of the former UST.

Field methods and procedures are provided in **Appendix B**. Field measurements and notes are provided in **Appendix C**.

4.0 GROUNDWATER MONITORING RESULTS

4.1 GROUNDWATER ELEVATIONS

Table 1 presents groundwater elevations at this site based on the depths to static groundwater levels measured during this monitoring event. The pump was operating, with the regulator valve adjusted to provide a water head pressure of 75 pounds per square inch (psi). Water is discharged into injection well RW-2 located in the "footprint" of the former underground storage tank (UST) shown on the site plan presented on **Figure 2**. The water from the well's sampling port was noted to be warm - approximately 15 degrees C higher than the temperature of the groundwater in the surrounding monitoring wells - indicating that the head pressure on the pump was causing it to work harder than necessary.

Table 1 Groundwater Elevations

Measured on March 17, 2022

Monitoring Well Identification	Top of Casing Elevation (feet relative to datum)[1]	Depth to Groundwater (feet btoc)	Groundwater Elevation (feet relative to datum)[1]
MW-1	94.72	18.80	75.92
MW-2	95.08	18.09	76.99
MW-3	94.53	17.53	77.00
MW-4	95.02	18.09	76.93
RW19-1	95.72	20.05	75.67

Key:
1 – Based on a vertical control survey of July 28, 2021, using an elevation datum of 100.00 feet established on the benchmark on the concrete base of the existing on-site drinking water well.
feet btoc – feet below top of monitoring well casing

The well pump in the on-site recirculation well RW 19-1 was discharging at an estimated flow rate of 2 gallons per minute (gpm). The flow from well RW 19-1 was pumped into the on-site treatment/remediation (injection) well RW-2.

The hydraulic gradient across the site was found to be approximately 0.019 feet per foot directed northwest at 312 degrees. The calculation of groundwater hydraulic flow was based on the static water levels in the five on-site wells measured during the monitoring event on March 17. The groundwater gradient and flow direction are generally consistent with past monitoring events. A plot of groundwater elevation contours generated by the Surfer® software program is included in **Figure 3.**

Table 2 Historical Groundwater Direction of Flow and Gradient

Date	Groundwater Flow Direction (azimuth)	Gradient (ft/ft)
10/26/2018	358°	0.03
2/25/2019	66°	0.03
4/25/2019	290°	0.04
7/25/2019	22°	0.013
10/18/2019	353°	0.013
8/11/2020	47°	0.025
3/23/2021	340°	0.024
5/19/2021	59°	0.027
7/14/2021	59°	0.027
10/14/2021	105°	0.04
3/17/2021	312°	0.019

4.2 INTRINSIC WATER QUALITY PARAMETERS

Intrinsic water quality data collected during this monitoring event is presented in **Table 3**. The ORP measurements ranged from 162.3 millivolts (mV) in Remediation well RW19-1 to 199.4 mV in Monitoring Well MW-2. The ORP Measurement from MW-1 was not recorded due to a mistake in the implementation of the SampleServe™ program. The pH values in all the wells were noted to be slightly acidic. Specific conductance readings ranged from 728 micro-Siemens per centimeter (µs/cm) to 4921 µs/cm which are notably higher than the previous monitoring event. DO measurements in all the wells took a very long time to stabilize, and dropped into negative values in well MW-3, so readings were taken approximately 10-20 minutes after the YSI probe was dropped into the well, and should be treated as maximum values.

Table 3 Intrinsic Water Quality Parameters
Measurements taken on March 17, 2022

Well ID	Volume Purged (gallons)	Sheen/ Odor	Temp. (°C)	pH	Dissolved Oxygen[1] (mg/L)	ORP (mV)	Specific Conductance (µs/cm °C)
MW-1	2.8	N/N	6.2	5.32	1.07	NA	4921
MW-2	4.5	N/N	4.5	6.14	7.83	199.4	2105
MW-3	4	N/N	3.8	5.74	0	184.1	1557
MW-4	5	N/N	4.2	6.21	1.27	177.7	1116
RW19-1	NA	N/N	20.8	6.27	5.68	162.3	728

Key:
ºC – degrees Celsius
µS/cm°C – microSiemens per centimeter ºC
mg/L – milligrams per liter
mV – millivolts
N – no
NA – not applicable
1 – Dissolved oxygen sensor settling rate was slow. DO measurements should be considered maximum values.
ORP – oxidation-reduction potential
pH – -log [H+]
SC – specific conductance at 25ºC
Temp. – temperature
Y – yes
NM – Not Measured

4.3 ANALYTICAL WATER QUALITY DATA

Historical monitoring data for this site are tabulated in **Appendix D**. Laboratory analytical results for BTEX, GRO, DRO, sodium, naphthalene, 1,2,4-TMB and 1,3,5-TMB detected in groundwater samples collected during this monitoring event are summarized in **Tables 4a and 4b.** The complete laboratory analytical report and laboratory data review checklist is provided in **Appendix E**.

Table 4a Groundwater Analytical Results for BTEX, GRO, and DRO

Samples collected on March 17, 2022

Sample Identification	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)
MW-1	0.000111 J	U (0.00100)	U (0.00100)	U (0.00300)	U (0.100)	0.263 J
MW-2	**0.0189**	0.000395 J	0.00723	0.02313	0.249	0.288 J
MW-3	**0.0642 J**	0.103 J	**0.745**	**4.214**	**6.83**	**3.44**
MW-4	**0.214**	0.168	**0.186**	**0.857**	**2.80**	0.683 J
RW 19-1	**0.00488**	U (0.00100)	0.00311	0.02812	0.147	U (0.888)
DUP01 (dup. of MW-3)	**0.0636**	0.104	**0.764**	**4.351**	**13.9**	**3.13**
Trip Blank	U (0.00100)	U (0.00100)	U (0.00100)	U (0.00300)	NM	NM
GCLs	**0.0046**	**1.1**	**0.015**	**0.19**	**2.2**	**1.5**

Table 4b Groundwater Analytical Results for Naphthalene, Trimethylbenzene (TMB) and Sodium

Samples collected on March 17, 2022

Sample Identification	Naphthalene[1] (mg/L)	1,2,4-TMB (mg/L)	1,3,5-TMB (mg/L)	Sodium (mg/L)
MW-1	U (0.000250)	U (0.00100)	U (0.00100)	133
MW-2	U (0.000250)	0.0113	0.00335 B	180
MW-3	**0.0238**	**1.49**	**0.460 B**	110
MW-4	**0.00334**	**0.273**	**0.106**	41.6
RW 19-1	0.000108 J	0.00702	0.00388	48.2
DUP01 (dup. of MW-3)	**0.0294**	**1.54**	**0.433**	110
Trip Blank	NM	U (0.00100)	U (0.00100)	NM
GCLs	**0.0017**	**0.056**	**0.060**	**NA**

Key:
1 – Analyzed by EPA Method 8270D-SIM
AK – Alaska Test Method
B – The same analyte is found in the associated blank.
BTEX – benzene, toluene, ethylbenzene, and xylenes
DRO – Diesel range organics, analyzed by AK102
Dup. – Duplicate
GCLs – Groundwater cleanup levels, per ADEC 18 AAC 75.345, Table C, updated September 29, 2018.
GRO – Gasoline range organics, analyzed by AK101
mg/L – milligrams per liter
J – The identification of the analyte is acceptable; the reported value is an estimate.
NA – Not applicable.
NM – Not measured.
TMB - Trimethylbenzene
U – Undetected above laboratory reporting limits shown in parentheses.
Bold indicates the concentration exceeds the GCL or, if not detected, the practical quantitation limit exceeds the GCL.

4.4 QUALITY ASSURANCE (QA)/ QUALITY CONTROL (QC) REVIEW

Pace analytical performed all analysis of groundwater samples for this sampling event. **Table 5** provides a summary of the laboratory QC objectives and outcomes for this monitoring event. Laboratory QC data and the ADEC Laboratory Data Review Checklist are included with the laboratory report in **Appendix E**.

A duplicate sample set was collected to determine the precision of the field collection and laboratory analyses for this sampling event. Sample DUP01 is a duplicate of sample MW-3. The data presented in **Table 5** shows that the precision for the duplicate sample set (analytes that were detected above the practical quantitation limit [PQL] and exceeded GCLs) was outside the established QA criteria for GRO.

Table 5 Laboratory Quality Control Objectives

Quality Control Designation	Tolerance	Results for this Event
Holding Times		
DRO/Water/to analyze	40 days	6-7 days
DRO/Water/to extract	14 days	6 days
GRO/Water/to analyze	14 days	5 days
BTEX/Water/to analyze	14 days	9-10 days
Field Duplicates – Precision		
Benzene/Water	± 30%	0.94%
Toluene/Water	± 30%	0.97%
Ethylbenzene/Water	± 30%	2.5%
Xylenes/Water	± 30%	3.2%
GRO/Water	± 30%	**68%**
DRO/Water	± 30%	9.4%

Key:
% – percent
± – plus or minus
BTEX – benzene, toluene, ethylbenzene, and xylenes
DRO – diesel range organics
GRO – gasoline range organics
NC – Not computed due to non-detectable levels in original and/or duplicate samples

5.0 REMEDIATION SYSTEM

The "Pump and Treat" groundwater remediation system uses the submersible pump in RW 19-1 for the continuous (24-hours per day) recirculation of groundwater. Currently, the pump is discharging at a constant rate of approximately 2 gpm into remediation well RW-2 located under the store building in the center of the footprint of the former UST (**Figure 2**).

The re-circulation of pumped groundwater from RM 19-1 is coupled with periodic injection (typically on a quarterly basis and a monthly basis during the non-freeze time of year) of a chemical oxidization (chemox) product that is injected into the three remediation wells. On March 25, 2022, Stantec completed groundwater remediation event that included the injection of chemox solution into the three treatment/remediation wells. The injection process involved the manual injection of a mixture of two 55-pound bags of Klozur One® product and 50 gallons of tap water into each of the three remediation wells (RW-1, RW-2 and RW-3) for a total of 100 gallons per well and 300 gallons of chemox solution total. Following the injection of the chemox solution, Stantec injected an additional 100 gallons of tap water into each remediation well to hydraulically push the chemox mixture into the subsurface formation. Upon completion of the chemox injection process, the flow from the on-site recirculation well (RW 19-1) was reconnected to discharge constant flow into RW-2. The next scheduled injection of chemox into the treatment wells is planned for May 2022.

6.0 DISCUSSION OF FINDINGS

Historical results for the current and previous monitoring events are presented in **Appendix D**. The laboratory analytical sample results showed petroleum associated 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 the following monitoring wells:

- Monitoring Well MW-2: Benzene.
- Monitoring well MW-3: Benzene, ethylbenzene, xylenes, gasoline range organics (GRO), diesel range organics (DRO), naphthalene, 1,2,4-trimethylbenzene (TMB), and 1,3,5-TMB.
- Monitoring well MW-4: Benzene, ethylbenzene, xylenes, gasoline range organics (GRO), diesel range organics (DRO), naphthalene, 1,2,4-trimethylbenzene (TMB), and 1,3,5-TMB.
- Remediation Well RW19-1: Benzene.

The hydraulic gradient across the site was found to be approximately 0.019 feet per foot directed northwest at 312 degrees. The calculation of groundwater hydraulic flow was based on the static water levels in the five on-site wells measured during the monitoring event on March 17. The groundwater gradient and flow direction are generally consistent with past monitoring events. A plot of groundwater elevation contours generated by the Surfer® software program is included in **Figure 3.**

7.0 CONCLUSIONS AND RECOMMENDATIONS

No anomalies were found during the 1Q March 2022 monitoring event at this site that would require additional corrective action or changes to the ADEC-approved year 2022 Corrective Action Work Plan for this site.

8.0 LIMITATIONS

Stantec conducted this monitoring event in accordance with the 2022 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). The conclusions in this report are Stantec's professional opinion, as of the time of the report, and concerning the scope described in the report. The opinions in the document are based on conditions and information existing at the time the scope of work was conducted and do not take into account any subsequent changes. This report relates solely to the specific project for which Stantec was retained and the stated purpose for which the report was prepared. The report is not to be used or relied on for any variation or extension of the project, or for any other project or purpose, and any unauthorized use or reliance is at the recipient's own risk.

This Report is intended solely for use by the Client in accordance with Stantec's contract with the Client. While the Report may be provided to applicable authorities having jurisdiction and others for whom the Client is responsible, Stantec does not warrant the services to any third party. The report may not be relied upon by any other party without the express written consent of Stantec, which may be withheld at Stantec's discretion.

FIGURES

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SPEEDWAY STORE 5314
(FORMER TESORO 2 GO MART #76)

4Q - OCTOBER 2021 GWM EVENT REPORT

LOCATION AND VICINITY MAP

FIGURE

1

185705377.
200.0002-200

E. PALMER WASILLA HWY

APPROXIMATE LOCATION OF PROPERTY LINE
3600 PALMER-WASILLA HWY

APPROXIMATE
0 20'

WATER SUPPLY WELL LOCATION (W)

UNDERGROUND STORAGE TANK

CANOPY

FUEL DISPENSER (TYP)

SEPTIC SYSTEM

SEWARD MERIDIAN PKWY

MW-1

RW1

CAR WASH

F-UST

TESORO
2 GO MART #76

RW2

F-UST

UNDERGROUND PIPING

RW3

F-UST

REMEDIATION WELL ACCESS POINT

MW-2

RW19-1

MW-4

MW-3

CAMERON ACRES
BLOCK 1
LOT 7

SITE DATA COMPARED TO ADEC Groundwater Cleanup Levels (GCLs)

ND	NOT DETECTED
--	NOT SAMPLED
50	SAMPLED & UNDER GCL
100	SAMPLED & OVER GCL
FP	FREE PRODUCT

DISPLAYED IN mg/L

124-TMB	0.015	mg/L
135-TMB	0.12	mg/L
BENZENE	0.0046	mg/L
DRO	1.5	mg/L
ETHYLBENZENE	0.015	mg/L
GRO	2.2	mg/L
NAPHTHALENE	0.0017	mg/L
SODIUM		
TOLUENE	1.1	mg/L
XYLENES	0.19	mg/L

MW-1	3/17/22
124-TMB	U(0.00100)
135-TMB	U(0.00100)
BENZENE	0.000111
DRO	0.263
ETHYLBENZENE	U(0.00100)
GRO	U(0.100)
NAPHTHALENE	U(0.000250)
SODIUM	133
TOLUENE	U(0.00100)
XYLENES	U(0.00300)

MW-2	3/17/22
124-TMB	0.0113
135-TMB	0.00335
BENZENE	0.0189
DRO	0.288
ETHYLBENZENE	0.00723
GRO	0.249
NAPHTHALENE	U(0.000250)
SODIUM	180
TOLUENE	0.000395
XYLENES	0.02313

MW-3	3/17/22
124-TMB	1.49
135-TMB	0.46
BENZENE	0.0642
DRO	3.44
ETHYLBENZENE	0.0764
GRO	13.9
NAPHTHALENE	0.0238
SODIUM	110
TOLUENE	0.0104
XYLENES	4.351

MW-4	3/17/22
124-TMB	0.273
135-TMB	0.106
BENZENE	0.214
DRO	0.683
ETHYLBENZENE	0.186
GRO	2.8
NAPHTHALENE	0.00334
SODIUM	41.6
TOLUENE	0.168
XYLENES	0.857

RW19-1	3/17/22
124-TMB	0.00702
135-TMB	0.00388
BENZENE	0.00488
DRO	U(0.888)
ETHYLBENZENE	0.00311
GRO	0.147
NAPHTHALENE	0.000108
SODIUM	48.2
TOLUENE	U(0.00100)
XYLENES	0.02812

LEGEND:

F-UST	FORMER UNDERGROUND STORAGE TANK
▲	MONITORING WELL LOCATION
●	REMEDIATION WELL LOCATION
DRO	DIESEL RANGE ORGANICS
GRO	GASOLINE RANGE ORGANICS
GW Elev	GROUNDWATER ELEVATION IN FEET
RW	REMEDIATION WELL
TMB	TRIMETHYLBENZENE
U	UNDETECTED ABOVE PRACTICAL QUANTITATION LIMITS SHOWN IN PARENTHESES
(W)	DRINKING WATER WELL

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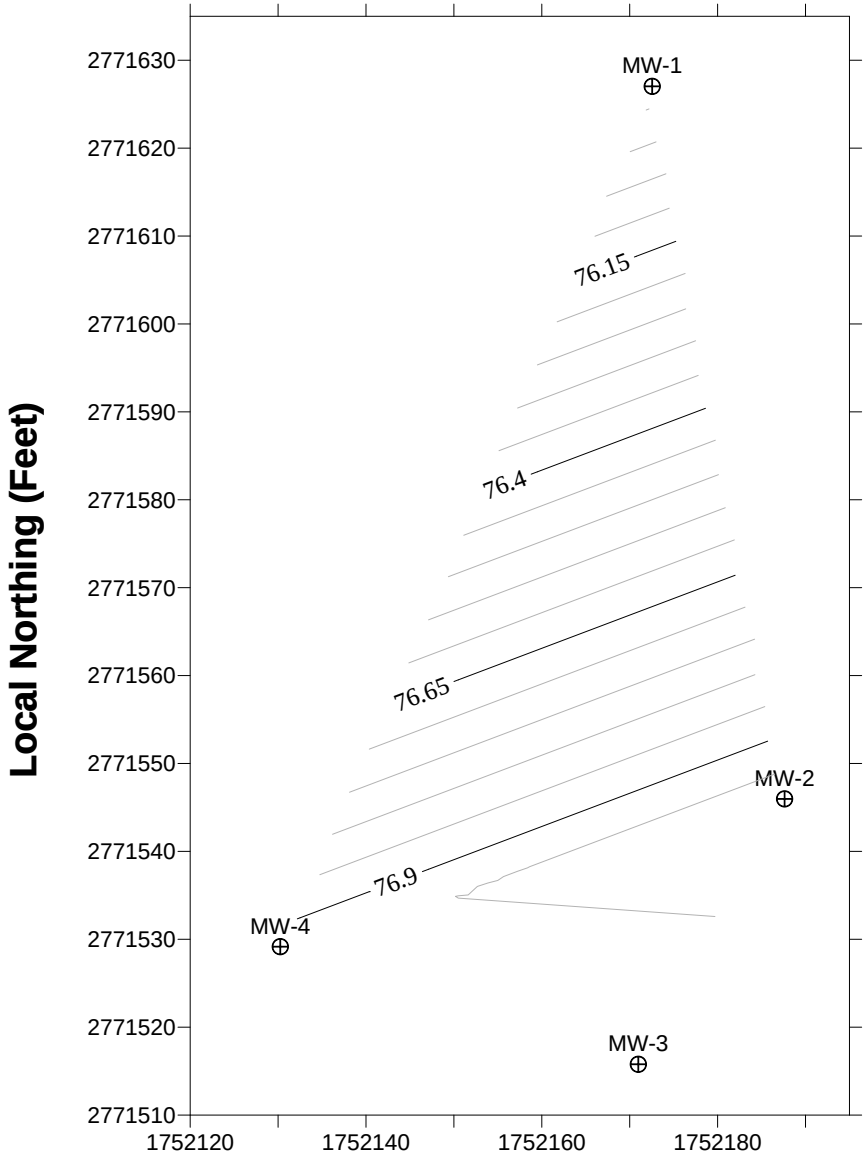
SPEEDWAY STORE 5314
(FORMER TESORO 2 GO MART #76)

SITE MAP WITH GROUNDWATER ELEVATION CONTOURS

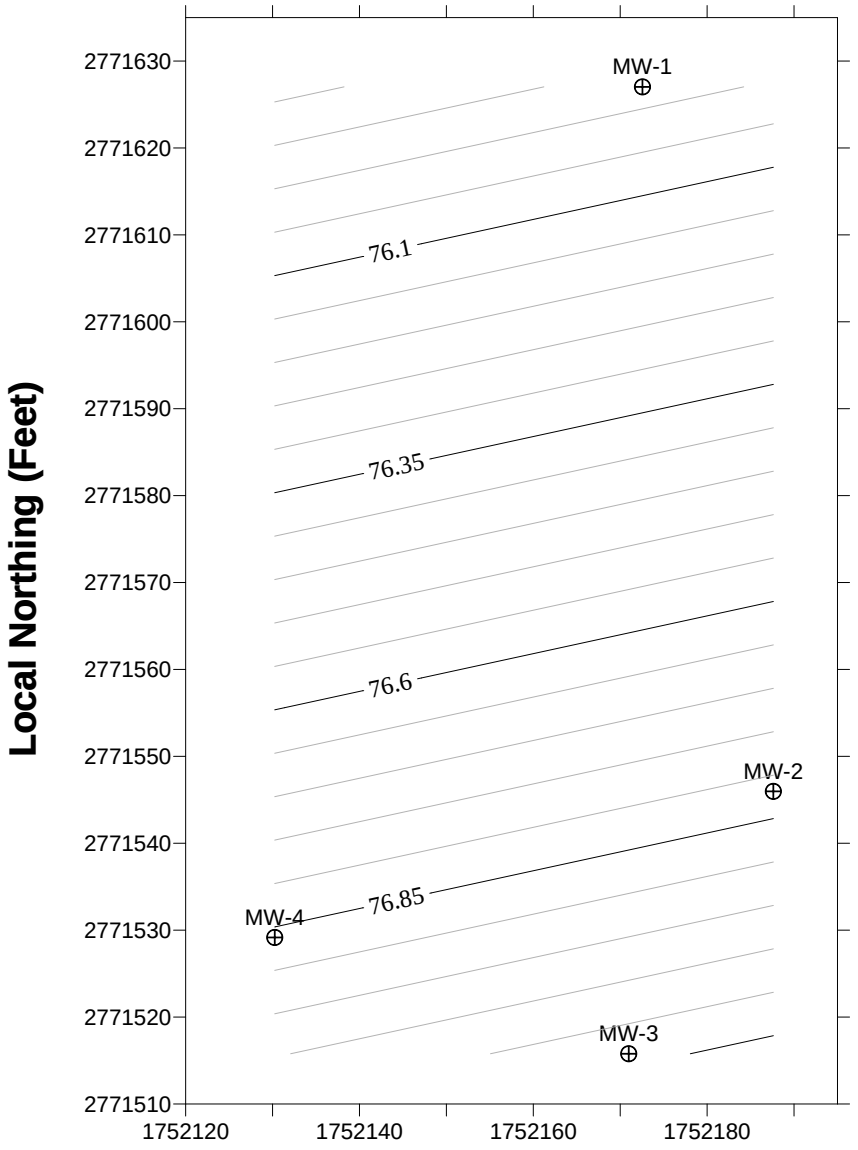
FIGURE
2

185705773

Figure 3
Speedway Store #5314 (Former Tesoro 2 Go Mart #76)-
Groundwater Elevation Contours March 17, 2022



Linear Interpolation Method
Contour Interval 0.2 feet



Polynomial Regression Interpolation Method
Contour Interval 0.2 feet

Elevation Datum is locally established at 100 feet.

APPENDIX A

Site Background

APPENDIX A – SITE BACKGROUND

Speedway Store 5314 (former Tesoro 2 Go Mart #76) located at 3600 Palmer-Wasilla Highway, Wasilla, Alaska
ADEC File #100.26.159

Speedway Store 5314 (former Tesoro 2 Go Mart #76) is a retail fuel and convenience store facility located at 3600 Palmer-Wasilla Highway, Wasilla, Alaska (Figure 1). The legal description for the property is Lot 7, Block 1, Cameron Acres Subdivision, Matanuska-Susitna Borough.

Two 15,000-gallon underground storage tanks (USTs) were installed at the site in 1995. Based on historical records, this is the first retail fuel convenience store to occupy this location. The site is covered with asphalt paving with concrete in the area over the USTs and fuel dispenser islands. The former UST system and dispensing components were removed from September to October 2014 and replaced with a new UST fueling system. The new UST fueling system consists of two 15,000-gallon fiberglass-reinforced plastic, double-walled USTs installed on January 29, 2015, and seven fuel dispensers (six gasoline and one diesel). Distribution piping consists of 2-inch fiberglass primary and 3-inch fiberglass secondary.

In addition, the former convenience store was demolished and replaced with a new convenience store that was constructed at a different location on the property. The property is over 1 acre in size and is served with an on-site drinking water well and on-site septic tank and drainfield system.

October 2014. During the 2014 Site Assessment of the UST closure, a petroleum fuel release was discovered in the subsurface soils partially surrounding and underlying the USTs. At that time, a very deep test pit was excavated beneath the former USTs to the groundwater table. Field screening with a photoionization detector (PID) indicated that petroleum contamination was present throughout the vadose zone and extended to the underlying groundwater table. Due to site safety concerns with sloughing soils, it was not feasible to excavate all of the contaminated soil below the former USTs.

A Release Investigation (RI) was conducted by MWH Americas, Inc. (MWH) subsequent to the closure of the former USTs. The RI included the installation of a soil vapor extraction (SVE) remediation well and several groundwater monitoring wells. MWH completed a groundwater monitoring event after the monitoring wells were installed. Follow-up water samples were collected from the onsite drinking water well for appropriate laboratory analyses.

The findings of the RI indicated a significant amount of petroleum contamination had impacted the subsurface soils and shallow groundwater table at the site. The soil samples collected indicate higher concentrations of gasoline range organics (GRO) and benzene, toluene, ethylbenzene, and xylenes (BTEX) constituents directly below the location occupied by the former USTs at Remediation Wells RW-2 and RW-3. Benzene was detected above Alaska Department of Environmental Conservation (ADEC) groundwater cleanup level (GCL) in groundwater at monitoring wells installed at the site. GRO contaminants have also impacted the groundwater table. The system has been monitored on a quarterly basis since the completion of the RI.

February 2015. Benzene exceeded the GCL in Monitoring Well MW-2. BTEX, GRO, and diesel range organics (DRO) exceeded GCLs in Monitoring Well MW-3. Benzene, toluene, and GRO exceeded GCLs in Monitoring Well MW-4.

June 2015. MWH installed and placed into operation a SVE system at the site. Early results indicate that the system is effectively removing petroleum-related vapors from the subsurface. Additionally, a surface water sample was collected from an on-site nearby wetland surface water area. Xylenes and DRO were detected in the water sample; however, the concentrations were below the ADEC groundwater and surface water cleanup levels.

September 2015. Benzene and DRO exceeded GCLs in Monitoring Well MW-2. BTEX and DRO exceeded GCLs in Monitoring Well MW-3. Benzene exceeded GCL in Monitoring Well MW-4. The SVE remediation system blower was offline, requiring maintenance.

November 2015. Benzene exceeded GCL in Monitoring Well MW-1. Benzene, GRO, and DRO exceeded the GCL in Monitoring Well MW-2. Benzene, toluene, and GRO all remained above their GCLs, consistent with the past five monitoring events, at Monitoring Well MW-3.

December 2015. Maintenance was performed on the SVE system on December 31, 2015. A replacement SVE system blower was installed. The system was brought back online on the date of the replacement blower installation. A PID was used to monitor the system effluent after the initial 15 minutes of operation and indicated that 424 parts per million by volume were being removed by the system.

January 2016. Benzene exceeded the GCL in Monitoring Well MW-1. Benzene, toluene, ethylbenzene, and DRO exceeded their GCLs in Monitoring Well MW-2; and benzene, toluene, ethylbenzene, xylenes, GRO, and DRO exceeded their GCLs in Monitoring Well MW-3. The laboratory did not provide results for requested GRO analyses for samples from Monitoring Wells MW-2 and MW-4.

May 2016. In Monitoring Wells MW-1, MW-2, and MW-4, only benzene exceeded GCL. MW-3 exceeded GCLs for all analytes tested. There were no detections in the Carmen Lot 7 drinking water sample. An SVE effluent sample was collected to monitor SVE performance.

October 2016. In Monitoring Well MW-1, only benzene exceeded GCL. In Monitoring Well MW-2, all analytes but toluene and DRO exceeded GCLs. Monitoring Well MW-3 exceeded GCLs for all analytes tested. Monitoring Well MW-4 had no exceedances. There were no detections in the Carmen Lot 7 drinking water sample. An SVE effluent sample was collected to monitor SVE performance.

December 2016. In Monitoring Well MW-1, only benzene exceeded GCL. In Monitoring Well MW-2, all analytes but toluene exceeded GCLs. Monitoring Well MW-3 exceeded GCLs for benzene, GRO, and DRO. Monitoring Well MW-4 and the Carmen Lot 7 drinking water sample had no exceedances. Both Monitoring Wells MW-3 and MW-4 had insufficient sample volumes to complete all analytical testing. The SVE system observed for operation and performance.

February 2017. Benzene was the only analyte to exceed the GCL in Monitoring Wells MW-1 and MW-4. Benzene and ethylbenzene exceeded GCLs in Monitoring Well MW-2, and all analytes exceeded their GCLs in Monitoring Well MW-3. The SVE system was frozen due to record cold temperatures experienced during January 2017. A subsequent site visit on February 16, 2017, was made to thaw and restore the SVE system to normal operation.

April 2017. In addition to testing for BTEX, DRO, and GRO, expanded testing for volatile organic compounds (VOCs), and polynuclear aromatic hydrocarbons (PAHs) were conducted on all monitoring wells. Benzene was the only analyte to exceed the GCL in Monitoring Wells MW-1 and MW-4. BTEX (minus toluene) and GRO exceeded their GCLs in Monitoring Well MW-2, consistent with previous monitoring events. The expanded testing found 1,2,4-trimethlybenzene and naphthalene to also exceed GCLs. In Monitoring Well MW-3, BTEX and DRO exceeded their GCLs, also consistent with previous monitoring events. The expanded testing found 1,2,4-trimethlybenzene, 1,3,5-trimethlybenzene, and naphthalene to also exceed GCLs. Pilot Testing (conducted in May 2017) of air injection into remediation wells to volatize groundwater and smear zone contaminants indicated a slight increase of volatilization when air is injected into RW-2, and RW-3.

September 2017. Except for the following, all analytes were below GCLs in the wells sampled:

- Monitoring Well MW-1 – benzene exceeded the GCL.
- Monitoring Well MW-2 – benzene, ethylbenzene, xylenes and GRO exceeded their GCLs.
- Monitoring Well MW-3 – BTEX, GRO, and DRO were above their GCLs. The MW-3 duplicate sample provided results within established Quality Assurance/Quality Control (QA/QC) standards.
- Monitoring Well MW-4 – benzene, ethylbenzene, xylenes, and GRO exceeded their GCLs.

The SVE contaminant vapor mass removal was less than observed during pilot test in May 2017 and requires additional optimization.

February 2018. Except for the following, all analytes were below GCLs in the wells sampled:

- Monitoring Well MW-1 – benzene.
- Monitoring Well MW-2 – benzene, ethylbenzene, xylenes, and GRO (GRO was not detected, but the Reporting Limit exceeded the GCL).
- Monitoring Well MW-3 – BTEX and GRO (GRO was not detected, but the Reporting Limit exceeded the GCL). The MW-3 duplicate sample provided results within established QA/QC standards.
- Monitoring Well MW-4 – benzene, ethylbenzene, xylenes, and GRO.

The SVE contaminant vapor mass removal was less than previously observed on site. In addition, the field work included an assessment of the buried piping systems for the air sparging (AS) and SVE systems. The assessment was performed with a downhole camera capable of recording

photographs and video of the interior conditions of the piping system. The findings of the downhole camera assessment of the buried piping system was inconclusive.

June 2018. The results from the June 29, 2018, monitoring event supports the continued pattern that GRO contamination persists on site and is observed in Monitoring Wells MW-2 and MW-3. In addition, Monitoring Well MW-3 is consistently the most contaminated well. In summary, the results of the groundwater analytical sampling showed that analytes detected above the GCLs were:

- Monitoring Well MW-1: Benzene.
- Monitoring Well MW-2: Benzene, ethylbenzene, xylenes, GRO, and naphthalene.
- Monitoring Well MW-3: BTEX, GRO and naphthalene. Except for GRO, the duplicate sample provided results within established QA/QC standards.
- Monitoring Well MW-4: Benzene, ethylbenzene, and naphthalene.

A representative water sample from the on-site drinking water well serving the Tesoro 2 Go Mart was sampled and tested for VOCs. The water sample was found to have no detectable levels of contaminants of concern, except the laboratory reporting limits were over the GCLs for 1,1,2-trichloroethane (TCA) and vinyl chloride.

The SVE contaminant vapor mass removal is very low and based on the recent pattern of decline suggest that the SVE system performance requires additional optimization. Alternative treatment options are currently being evaluated and, if determine feasible, a new work plan will be presented to ADEC for review and approval prior to making any changes.

September 2018. Results of the groundwater analytical sampling showed that analytes detected above ADEC GCLs were:

- Monitoring Well MW-1: Benzene.
- Monitoring Well MW-2: Benzene, ethylbenzene, xylenes, GRO, naphthalene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene.
- Monitoring Well MW-3: Benzene, ethylbenzene, xylenes, GRO, naphthalene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene.
- Monitoring Well MW-4: Benzene, and 1,2,4-trimethylbenzene.

Several analytes for VOCs were reported as undetected but had laboratory reporting limits that equaled or exceeded their corresponding GCLs. The results from this monitoring event supports the continued pattern that GRO contamination persists at the site and is observed in Monitoring Wells MW-2 and MW-3. In addition, Monitoring Well MW-3 is consistently the most contaminated well.

The approximate hydraulic gradient across the site was found to be approximately 0.03 feet per foot directed toward the north-northeast at 14 degrees. The groundwater flow direction and gradient are consistent with past monitoring events.

The SVE contaminant vapor mass removal is very low and, based on the recent pattern of decline, suggests that the SVE system performance requires additional optimization. Alternative treatment options are currently being evaluated and, if determine feasible, a new work plan will be presented to ADEC for review and approval prior to making any changes.

October 2018. Results of the groundwater analytical sampling showed that analytes detected above ADEC GCLs were:

- Monitoring Well MW-1: Benzene.
- Monitoring Wells MW-2 and MW-3: Benzene, ethylbenzene, xylenes, GRO, naphthalene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene.
- Monitoring Well MW-4: Benzene.

Several VOCs were reported as undetected but had laboratory reporting limits that equaled or exceeded their corresponding GCLs. The results from this October 26, 2018, monitoring event supports the continued pattern that GRO contamination persists at the site and is observed in Monitoring Wells MW-2 and MW-3. In addition, Monitoring Well MW-3 is consistently the most contaminated on-site monitoring well.

The approximate hydraulic gradient across the site was found to be approximately 0.03 feet per foot directed toward the north at 358 degrees. The groundwater flow direction and gradient are consistent with past monitoring events.

The SVE contaminant vapor mass removal is very low and, based on the recent pattern of decline, suggests that the SVE system performance requires additional optimization. Alternative treatment options are currently being evaluated and, if determined to be feasible, a new work plan will be presented to ADEC in 2019 for review and approval prior to making any changes.

February 2019. Results of the groundwater analytical sampling showed that analytes detected above ADEC GCLs were:

- Monitoring Well MW-2: Benzene, ethylbenzene, xylenes, and GRO.
- Monitoring Well MW-3: Benzene, ethylbenzene, xylenes, and DRO.
- Monitoring Well MW-4: Benzene

The existing bio-sparge treatment system is not functional and will be replaced. In the 2nd quarter of 2019, Stantec plans to install a groundwater recirculation system based on pump and treat technology. The SVE contaminant vapor mass removal is very low and, based on the recent pattern of decline, suggests that the SVE system performance requires additional optimization. Alternative treatment options are currently being evaluated and, if determine feasible, a new work plan will be presented to ADEC for review and approval prior to making any changes.

April 2019. The monitoring event included: measuring the depth to groundwater; measuring water quality parameters; and collecting and analyzing groundwater samples from Monitoring Wells MW-1, MW-2, MW-3, and MW-4, as well as the on-site drinking water well.

Results of the groundwater analytical sampling showed that analytes detected above ADEC GCLs in the primary samples were:

- Monitoring Well MW-2: Benzene, xylenes, GRO, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and naphthalene.
- Monitoring Well MW-3: Benzene, GRO, and naphthalene.

A representative water sample from the on-site drinking water well serving the Tesoro 2Go Mart was sampled and tested for VOCs. The water sample was found to have no detectable levels of contaminants of concern, except the laboratory reporting limits were over the GCLs for 1,1,2-TCA, 1,2,3-trichloropropane, 1,2-dibromoethane, and vinyl chloride.

The groundwater hydraulic gradient across the site was found to be approximately 0.04 feet per foot directed toward the west-northwest at 290 degrees. The groundwater flow direction and gradient are inconsistent with past monitoring events in that the direction of flow is to the west rather than historically to the north with a slightly higher gradient.

July 2019. The monitoring event included: measuring the depth to groundwater; measuring water quality parameters; and collecting and analyzing groundwater samples from Monitoring Wells MW-1, MW-2, MW-3, and MW-4.

Results of the groundwater analytical sampling showed that analytes detected above ADEC GCLs in the primary samples were:

- Monitoring Well MW-1: Benzene.
- Monitoring Well MW-2: Benzene, ethylbenzene, xylenes, and GRO.
- Monitoring Well MW-3: BTEX, GRO, and DRO.
- Monitoring Well MW-4: Benzene.

The groundwater hydraulic gradient across the site was found to be approximately 0.013 feet per foot directed toward the north-northeast at 22 degrees. The groundwater flow direction and gradient are consistent with past monitoring events.

Stantec plans to drill a new 4" diameter remediation well and repurpose the current bio-sparge system. The new well and bio-sparge system will be converted into a groundwater recirculation system to allow injection of chemical oxidation products. The implementation of this change in the remediation system will occur in the 4th quarter of 2019.

October 2019. The monitoring event included: measuring the depth to groundwater; measuring water quality parameters; and collecting and analyzing groundwater samples from Monitoring Wells MW-1, MW-2, MW-3, and MW-4.

Results of the groundwater analytical sampling showed that analytes detected above ADEC GCLs in the primary samples were:

- Monitoring Well MW-2: Benzene and ethylbenzene.

- Monitoring Well MW-3: benzene, ethylbenzene, xylenes, and GRO.
- Monitoring Well MW-4: Benzene.

The groundwater hydraulic gradient across the site was found to be approximately 0.013 feet per foot directed toward the north at 350 degrees. The groundwater flow direction and gradient are consistent with past monitoring events.

Stantec plans to drill a new 4" diameter remediation well (RW 19-1) and repurpose the current bio-sparge system. The new well and bio-sparge system will be converted into a groundwater recirculation system to allow injection of chemical oxidation products. The implementation of this change in the remediation system will occur in the 2nd quarter of 2020.

August 2020. The 3rd quarter groundwater monitoring event included: measuring the depth to groundwater; measuring water quality parameters; and collecting and analyzing groundwater samples from Monitoring Wells MW-1, MW-2, MW-3, MW-4, and Remediation Well RW19-1.

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

- Monitoring Well MW-2: Benzene, ethylbenzene, and xylenes.
- Monitoring Well MW-3: Benzene, ethylbenzene, xylenes, gasoline range organics (GRO), and diesel range organics (DRO).
- Monitoring Well MW-4: Benzene.

The hydraulic gradient across the site was found to be approximately 0.025 feet per foot directed toward the north at 47 degrees. The groundwater flow direction and gradient are consistent with past monitoring events. A historical summary of the groundwater flow for the last 10 monitoring events is shown in the "rose diagram" presented on the Site Plan drawing.

In 2019 Stantec installed a groundwater recirculation system based on pump and treat technology. The 4" diameter remediation well (RW 19-1) that was installed in October 2019, is connected to the existing underground piping system (formerly used for the bio-sparge system) consisting of 3 vertical injection wells located under the northeast portion of the existing store building. Chemical oxidation injection of Klozur One® product directly into the 3 vertical injection wells was conducted during this monitoring event. A total of 330 pounds of Klozur One® and 750 gallons of water pumped from RW19-1 was injected into the in-situ groundwater treatment system.

October 2020. The 4th quarter groundwater monitoring event included: measuring the depth to groundwater; measuring intrinsic water quality parameters; and collecting and analyzing groundwater samples from monitoring wells MW-01, MW-02, MW-03, MW-04 and remediation well RW19-1.

Results of the groundwater analytical sampling showed that analytes detected above ADEC GCLs in the primary samples were:

- Monitoring well MW-1: Benzene

- Monitoring well MW-2: Benzene, ethylbenzene, and 1,2,4-trimethylbenzene.
- Monitoring well MW-3: Benzene, ethylbenzene, xylenes, gasoline range organics (GRO), diesel range organics (DRO), naphthalene, 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene.
- Monitoring well MW-4: Benzene.

No contaminants were detected in the drinking water sample collected from the water spigot in the store's utility sink.

The hydraulic gradient across the site was found to be approximately 0.032 feet per foot directed toward the north-east at 28 degrees. The groundwater flow direction and gradient are consistent with past monitoring events. A historical summary of the groundwater flow for the last 11 monitoring events is shown in the "rose diagram" presented on the Site Plan drawing.

On September 3, 2020 - prior to the 4th quarter groundwater monitoring event, Stantec completed an injection of chemox products. A chemox solution consisting of two 55-pound bags of Klozur One® product mixed with 50 gallons of water was injected into each of the three remediation wells of the former bio-sparge system (RW-1, RW-2, and RW-3). An additional 200 gallons of water from RW19-1 was injected directly into each remediation well (RW-1, RW-2, and RW-3) immediately after the injection of the chemox solution. In summary, a total of 330 pounds of Klozur One® and 750 gallons of water pumped from RW19-1 was injected into the in-situ groundwater treatment system.

March 2021. The 1st quarter 2021 groundwater monitoring event included: measuring the depth to groundwater; measuring intrinsic water quality parameters; and collecting and analyzing groundwater samples from monitoring wells MW-01, MW-02, MW-03, MW-04 and remediation well RW19-1.

Results of the groundwater analytical sampling showed that analytes detected above ADEC GCLs in the primary samples were:

- Monitoring well MW-2: Benzene.
- Monitoring well MW-3: Benzene, ethylbenzene, xylenes, toluene, gasoline range organics (GRO), and diesel range organics (DRO).
- Monitoring well MW-4: Benzene.

The hydraulic gradient across the site was found to be approximately 0.024 feet per foot directed toward the northwest at 340 degrees. The calculated groundwater gradient and flow direction do not account for the water table drawdown associated with remediation well RW19-1. The groundwater gradient and flow direction are consistent with past monitoring events.

The operation of the groundwater recirculation well (RW 19-1) was checked and noted to be operating within normal range. The submersible pump runs on a continuous basis and observed to discharge approximately a total flow rate of 1.5 gallons per minute into the three on-site injection wells (RW-1, RW-2 and RW-3) that are located within the "footprint" of the former underground storage tank (UST).

May 2021. The 2nd quarter 2021 groundwater monitoring event included: measuring the depth to groundwater; measuring intrinsic water quality parameters; and collecting and analyzing groundwater samples from monitoring wells MW-01, MW-02, MW-03, MW-04 and remediation well RW19-1.

Results of the groundwater analytical sampling showed that analytes detected above ADEC GCLs in the primary samples were:

- Monitoring well MW-2: Benzene.
- Monitoring well MW-3: Benzene, ethylbenzene, xylenes, toluene, GRO, DRO, naphthalene, 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene.
- Monitoring well MW-4: Benzene.

The approximate hydraulic gradient and direction of groundwater flow across the site was found to be approximately 0.027 feet per foot directed toward the northeast at 59 degrees. The calculated groundwater gradient and flow direction do not account for the water table drawdown associated with remediation well RW19-1. The groundwater gradient and flow direction are generally consistent with past monitoring events. The gradient and direction of flow was graphically calculated by triangulation method.

The operation of the groundwater recirculation well (RW 19-1) was checked and noted to be operating within normal range. The submersible pump runs on a continuous basis and observed to discharge approximately a total flow rate of 1 to 2 gallons per minute into the three on-site injection wells (RW-1, RW-2 and RW-3) that are located within the "footprint" of the former underground storage tank (UST).

Chemox injection via the three remediation wells took place on May 19, 2021, during the completion of the groundwater monitoring event. Stantec completed an injection of two 55-pound bags of Klozur One® product mixed with 50 gallons of water was injected into each of the three remediation wells of the former bio-sparge system (RW-1, RW-2, and RW-3) for a total 330 pounds of Klozur One® and 750 gallons of water pumped from RW19-1 was injected into the in-situ groundwater treatment system. The next scheduled injection of chemox into the treatment wells is planned for the third quarter of 2021.

July 2021. The 2nd quarter 2021 groundwater monitoring event included: measuring the depth to groundwater; measuring intrinsic water quality parameters; and collecting and analyzing groundwater samples from monitoring wells MW-01, MW-02, MW-03, MW-04 and remediation well RW19-1.

Results of the groundwater analytical sampling showed that analytes detected above ADEC GCLs in the samples were:

- Monitoring well MW-3: Benzene, ethylbenzene, xylenes, gasoline range organics (GRO), diesel range organics (DRO), 1,2,4-trimethylbenzene (TMB) and 1,3,5-TMB.

- Monitoring well MW-4: Benzene.

However, the laboratory reported the test results for naphthalene in all of the wells were non-detect but all of them were above the ADEC GCL for naphthalene. Consequently, are shown in this report as exceedance of the naphthalene GCL.

The hydraulic gradient across the site was found to be approximately 0.027 feet per foot directed toward the northeast at 59 degrees. The calculation by triangulation of groundwater hydraulic flow was based on the static water levels in the four on-site monitoring wells and the pumping water level in "pump and treat" well (RW 19-1). The groundwater gradient and flow direction are generally consistent with past monitoring events.

The operation of the groundwater recirculation "pump and treat" well (RW 19-1) was checked and noted to be operating within normal range. The well's submersible pump runs on a continuous basis (24 hours each day). Upon arrival to the site on July 28, 2021, the well pump was discharging approximately 1.4 gallons per minute (gpm) into the three on-site treatment/remediation (injection) wells (RW-1, RW-2 and RW-3) that are located within the "footprint" of the former underground storage tank (UST). The pumped groundwater is treated in-situ with a chemical oxidation (chemox) injection process.

On July 28, 2021, Stantec completed groundwater remediation event that included the injection of chemical oxidation (chemox) solution into the three treatment/remediation wells. The injection process involved the manual injection of a mixture of two 55-pound bags of Klozur One® product and 50 gallons of tap water into each of the three remediation wells. Following the injection of the chemox solution, Stantec injected additional 250 to 300 gallons of tap water to "hydraulically push" the chemox mixture into each remediation well.

October 2021: The fourth quarter 2021 monitoring event was conducted on October 14, 2021, and included the following field activities: measuring the depth to groundwater; measuring water quality parameters; and collecting and analyzing groundwater samples from Monitoring Wells MW-1, MW-2, MW-3, MW-4, and Remediation Well RW19-1. In addition, a representative water sample was collected for analysis for appropriate drinking water parameters from the store's on-site drinking water well. The laboratory analytical sample results showed petroleum associated analytes were present at concentrations exceeding ADEC groundwater cleanup levels (GCLs) for the following monitoring wells:

- Monitoring well MW-1: Benzene
- Monitoring well MW-2: Benzene and ethylbenzene.
- Monitoring well MW-3: Benzene, ethylbenzene, xylenes, gasoline range organics (GRO), diesel range organics (DRO), naphthalene, 1,2,4-trimethylbenzene (TMB) and 1,3,5-TMB.
- Monitoring well MW-4: Benzene.

No contaminants of concern were detected in the drinking water sample collected from the store.

The hydraulic gradient across the site was found to be approximately 0.04 feet per foot directed toward the west-northwest at 285 degrees. The calculation of groundwater hydraulic flow was performed by the "Surfer®" modeling software in conjunction with the static water levels in the four on-site monitoring wells and the pumping water level in "pump and treat" recirculation well (RW 19-1). Due to the operation of the recirculation well RW-19-1, the groundwater flow direction

was slightly altered to the west and the gradient was slightly higher compared to past monitoring events.

The well pump in RW-19-1 was discharging approximately 1.4 gallons per minute (gpm) into the three on-site treatment/remediation (injection) wells (RW-1, RW-2 and RW-3) that are located within the footprint of the former underground storage tank (UST). The well's submersible pump runs on a continuous basis (24 hours each day). The pumped groundwater is treated in-situ with the periodic dosing/injection of a chemical oxidant (chemox) product.

On October 1, 2021, Stantec completed groundwater remediation event that included the injection of chemox solution into the three treatment/remediation wells. The injection process involved the Speedway Store 5314 (former Tesoro 2 Go Mart #76) Page 2 October 2021 4Q Monitoring Event Report November 2021 manual injection of a mixture of two 55-pound bags of Klozur One® product and 50 gallons of tap water into each of the three remediation wells. Following the injection of the chemox solution, Stantec injected additional 250 to 300 gallons of tap water into each remediation well to hydraulically push the chemox mixture into the subsurface formation.

March 2022: This first quarter 2022 monitoring event report was conducted on March 17, 2022, and included the following field activities: measuring the depth to groundwater; measuring water quality parameters; and collecting and analyzing groundwater samples from Monitoring Wells MW-1, MW-2, MW-3, MW-4, and Remediation Well RW19-1.

The laboratory analytical sample results showed petroleum associated 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 the following monitoring wells:

- Monitoring Well MW-2: Benzene.
- Monitoring well MW-3: Benzene, ethylbenzene, xylenes, gasoline range organics (GRO), diesel range organics (DRO), naphthalene, 1,2,4-trimethylbenzene (TMB), and 1,3,5-TMB.
- Monitoring well MW-4: Benzene, ethylbenzene, xylenes, gasoline range organics (GRO), diesel range organics (DRO), naphthalene, 1,2,4-TMB, and 1,3,5-TMB.
- Remediation Well RW19-1: Benzene.

The hydraulic gradient across the site was found to be approximately 0.019 feet per foot directed northwest at 312 degrees. The calculation of groundwater hydraulic flow was based on the static water levels in the five on-site wells measured during the monitoring event on March 17. The groundwater gradient and flow direction are generally consistent with past monitoring events.

On March 25, 2022, Stantec completed groundwater remediation event that included the injection of chemical oxidation (chemox) solution into the three treatment/remediation wells. The injection process involved the manual injection of a mixture of two 55-pound bags of Klozur One® product and 50 gallons of tap water into each of the three remediation wells for a total of 100 gallons per well and 300 gallons of chemox solution total. Following the injection of the chemox solution,

Stantec injected an additional 100 gallons of tap water into each remediation well to hydraulically push the chemox mixture into the subsurface formation.

APPENDIX B

Field Methods & Procedures

APPENDIX B – FIELD METHODS AND PROCEDURES

Speedway Store 5314 (former Tesoro 2 Go Mart #76) located at 3600 Palmer-Wasilla Highway, Fairbanks, Alaska
Lot 7, Block 1, Cameron Acres Subdivision, Matanuska-Susitna Borough
ADEC File #2265.26.037

The following table presents the proposed tasks for the Alaska Department of Environmental Conservation (ADEC)-approved 2022 Corrective Action Plan (CAP). The scope of these tasks is based on the results and findings of the monitoring and remediation completed to date at the site.

2022 Work Plan Schedule for Speedway Store 5314 (Former T2GM 76)

Work Plan Task		1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Task 1	Monitoring Wells: MW-1, MW-2, MW-3, and MW-4 including Remediation/Recirculation Well RW 19-1	V, G, D, P, S & I	V, G, D, P, S & I	V, G, D, P, S & I	V, G, D, P, S & I
	On-site Domestic Drinking Water Well				D & E
Task 2	O&M Recirculation Groundwater Treatment System	✓	✓	✓	✓
Task 3	Chemical Oxidation Treatment	✓	✓	✓	✓

Key:
AK – Alaska Test Method
D – Diesel range organics by AK102.
EPA – U.S. Environmental Protection Agency
E – Drinking Water parameters by EPA Test Method 524.2.
G – Gasoline range organics by AK101.
I – Indicators, parameters tested include 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).

The CAP for the year 2022 will be implemented by Stantec on behalf of Speedway. Groundwater monitoring will be conducted to track migration and trends of contaminants that are present at the site. All sampling activities will be completed in accordance with ADEC's *Underground Storage Tanks Procedures Manual– Standard Sampling Procedures* (March 22, 2017). The methods that will be used for conducting a monitoring event, unless otherwise noted in the monitoring report, will include:

- The static water levels in the monitoring wells will be measured with respect to the top of each well casing. The elevation of the static water level will be based on an arbitrary datum established on-site during a vertical control survey that will be completed by Stantec on an annual basis. The survey will be performed during the summer after the seasonal frost layer thaws.
- The monitoring wells will be purged of a minimum of three well bore volumes prior to collecting the water samples. A new, disposable, Teflon® bailer will be used to sample each well. The first bail of water removed from each well will be examined for petroleum odor, sheen, and any other unique physical features.
- Water and vapor samples will be collected in laboratory-supplied sample containers. The samples will be delivered to an ADEC-approved laboratory in accordance with standard chain-of-custody procedures.
- Additional water samples will be collected from the monitoring wells after the well has been purged, as described above, and tested in the field for chemical and physical intrinsic parameters listed in the 2022 Schedule shown above.

APPENDIX C

Field Measurements

Speedway 5314 TNS Date: 03/17/2022, 11:47 AM Name(s): Remi Malenfant

Site Name: 76

Location ID	GPS Latitude (decimal)	GPS Longitude (decimal)
MW-1	61.5845298133	-149.358577633

Field Data	
Sampler Names: John, Luke, Remi	Sheen/Odor?:
pH: 5.32	Specific Conductance: 4921
DO: 1.07	Temperature (C): 6.2
ORP:	Purge Volume (gal):
Notes: Well head iced in, had to chip out, add description and ORP to this form	

Speedway 5314 TNS Date: 03/17/2022, 12:43 PM Name(s): Remi Malenfant

Site Name: 76

Location ID	GPS Latitude (decimal)	GPS Longitude (decimal)
MW-2	61.5843106137	-149.358489851

Field Data	
Sampler Names: Luke John Remi	Sheen/Odor?:
pH: 6.14	Specific Conductance: 2105
DO: 7.83	Temperature (C): 4.5
ORP:	Purge Volume (gal):
Notes: Need ORP in form, well cap iced in ORP 199.4	

Speedway 5314 TNS Date: 03/17/2022, 3:26 PM Name(s): Remi Malenfant

Site Name: 76

Location ID	GPS Latitude (decimal)	GPS Longitude (decimal)
MW-3	61.5842287396	-149.358589014

Field Data	
Sampler Names: Luke, Remi	Sheen/Odor?:
pH: 5.74	Specific Conductance: 1557
DO: 0	Temperature (C): 3.8
ORP:	Purge Volume (gal):
Notes: Blocked by ice inside well. Had to thaw with hot water. Orp 184.1. Dark grey, sheen and odor.	

Speedway 5314 TNS Date: 03/17/2022, 2:16 PM Name(s): Remi Malenfant

Site Name: 76

Location ID	GPS Latitude (decimal)	GPS Longitude (decimal)
MW-4	61.5842637859	-149.358822557

Field Data	
Sampler Names: Luke, John, Remi	Sheen/Odor?:
pH: 6.21	Specific Conductance: 1116
DO: 1.27	Temperature (C): 4.2
ORP:	Purge Volume (gal):
Notes: Tell Russell to implement a well volume calculator. Light orange turning to grey, springtails, slow recharge. ORP 177.7	

Speedway 5314 TNS Date: 03/17/2022 Name(s): _____

Site Name: 76

Well ID	Time of Day	Depth to Product	Depth to Water	Depth to Bottom	Product Thickness	Well Diameter	Well Material	Comment(s) on Condition of Well
MW-4	13:24		18.09	28.25		2.0	PVC	
MW-1	11:01		18.8	24.46		2.0	PVC	
MW-3	14:28		17.53	25.75		2.0	PVC	
MW-2	12:21		18.09	27.21		2.0	PVC	

Speedway 5314 TNS Date: 03/17/2022, 11:47 AM Name(s): Remi Malenfant

Site Name: 76

Well ID	Free Product (ft)	Water (ft)	Bottom (ft)
MW-1	N/A	18.8	24.46
TOC	Well Dia. (in)	Screen Length (ft)	Well Material
94.72	2.0		PVC
Latitude (decimal)	Longitude (decimal)	Weather	
61.5845298133	-149.358577633		

Type/Model Meter Used: _____

Calibrated: (date) _____ (time) _____

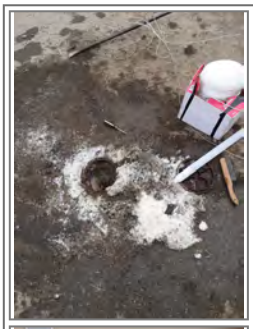
Cell Vol: _____

Type/Model Pump Used: _____

Pump Intake? _____ ft

Above / Below Bottom / TOC

Analytical Parameters	Bottles to be filled
GRO	3 X 40 mL Amber VOAs ✓
BTEX	3 X 40 mL Amber VOAs ✓
PAH	2 X 40 mL Amber VOAs ✓
DRO	2 X 100 mL Amber Glass ✓
Sodium	1 X 250 mL Poly ✓



Purge water disposal: Pour on ground

Time	Depth to Water (ft)	Flow Rate (ml/Min)	pH		Conductivity (ms/cm)		Turbidity (NTU)		Dissolved O2 (mg/l)		Temp. (Celsius)		Oxygen Reduction Potential (ORP) mv	
11:01	18.8	X	Reading	Change* (±0.1)	Reading	Change* (±3%)	Reading	Change* (±10% or <5)	Reading	Change* (±10% or <0.5)	Reading	Change* (±3%)	Reading	Change* (±10mv)

Sample Collected? Yes Time 11:47 Total Pumped from Well? 0 Gal

NOTES / COMMENTS:

*Minimum pumping time 15 Mins. - Collect data every 3 mins once flow through cell is full or once every volume of the flow through cell based on flow rate, which ever is longest. Indicator Parameters Have Stabilized When 3 Consecutive Readings Are Within: ± 0.1 for pH; ± 3% for Specific Conductivity and Temperature; ± 10 mv for ORP; and ± 10% for Turbidity (when Turbidity is above 5 NTUs) or 3 readings less than 5.0 NTUs; ± 10% mg/l Dissolved Oxygen (when Dissolved Oxygen is above 0.5mg/l) or 3 readings less than 0.5 mg/l.

Speedway 5314 TNS Date: 03/17/2022, 12:43 PM Name(s): Remi Malenfant

Site Name: 76

Well ID	Free Product (ft)	Water (ft)	Bottom (ft)
MW-2	N/A	18.09	27.21
TOC	Well Dia. (in)	Screen Length (ft)	Well Material
95.08	2.0		PVC
Latitude (decimal)	Longitude (decimal)	Weather	
61.5843106137	-149.358489851		

Type/Model Meter Used: _____

Calibrated: (date) _____ (time) _____

Cell Vol: _____

Type/Model Pump Used: _____

Pump Intake? _____ ft

Above / Below Bottom / TOC

Analytical Parameters	Bottles to be filled
PAH	2 X 40 mL Amber VOAs ✓
GRO	3 X 40 mL Amber VOAs ✓
DRO	2 X 100 mL Amber Glass ✓
BTEX	3 X 40 mL Amber VOAs ✓
Sodium	1 X 250 mL Poly ✓

Purge water disposal: Pour on ground

Time	Depth to Water (ft)	Flow Rate (ml/Min)	pH		Conductivity (ms/cm)		Turbidity (NTU)		Dissolved O2 (mg/l)		Temp. (Celsius)		Oxygen Reduction Potential (ORP) mv	
12:21	18.09	X	Reading	Change* (±0.1)	Reading	Change* (±3%)	Reading	Change* (±10% or <5)	Reading	Change* (±10% or <0.5)	Reading	Change* (±3%)	Reading	Change* (±10mv)

Sample Collected? Yes Time 12:43 Total Pumped from Well? 0 Gal

NOTES / COMMENTS:

*Minimum pumping time 15 Mins. - Collect data every 3 mins once flow through cell is full or once every volume of the flow through cell based on flow rate, which ever is longest. Indicator Parameters Have Stabilized When 3 Consecutive Readings Are Within: ± 0.1 for pH; ± 3% for Specific Conductivity and Temperature; ± 10 mv for ORP; and ± 10% for Turbidity (when Turbidity is above 5 NTUs) or 3 readings less than 5.0 NTUs; ± 10% mg/l Dissolved Oxygen (when Dissolved Oxygen is above 0.5mg/l) or 3 readings less than 0.5 mg/l.

Site Name: 76 Speedway 5314 TNS Date: 03/17/2022, 3:26 PM Name(s): Remi Malenfant

Well ID	Free Product (ft)	Water (ft)	Bottom (ft)
MW-3	N/A	17.53	25.75
TOC	Well Dia. (in)	Screen Length (ft)	Well Material
94.53	2.0		PVC
Latitude (decimal)		Longitude (decimal)	Weather
61.5842287396		-149.358589014	

Type/Model Meter Used: _____
Calibrated: (date) _____ (time) _____
Cell Vol: _____
Type/Model Pump Used: _____
Pump Intake? _____ ft
Above / Below Bottom / TOC

Analytical Parameters	Bottles to be filled
DRO	2 X 100 mL Amber Glass ✓
BTEX	3 X 40 mL Amber VOAs ✓
GRO	3 X 40 mL Amber VOAs ✓
Sodium	1 X 250 mL Poly ✓
PAH	2 X 40 mL Amber VOAs ✓

Purge water disposal: Pour on ground **QA/QC: Duplicate #1**

Time	Depth to Water (ft)	Flow Rate (ml/Min)	pH		Conductivity (ms/cm)		Turbidity (NTU)		Dissolved O2 (mg/l)		Temp. (Celsius)		Oxygen Reduction Potential (ORP) mv	
14:28	17.53		Reading	Change* (±0.1)	Reading	Change* (±3%)	Reading	Change* (±10% or <5)	Reading	Change* (±10% or <0.5)	Reading	Change* (±3%)	Reading	Change* (±10mv)

Sample Collected? Yes Time 15:26 Total Pumped from Well? 0 Gal

NOTES / COMMENTS:

*Minimum pumping time 15 Mins. - Collect data every 3 mins once flow through cell is full or once every volume of the flow through cell based on flow rate, which ever is longest. Indicator Parameters Have Stabilized When 3 Consecutive Readings Are Within: ± 0.1 for pH; ± 3% for Specific Conductivity and Temperature; ± 10 mv for ORP; and ± 10% for Turbidity (when Turbidity is above 5 NTUs) or 3 readings less than 5.0 NTUs; ± 10% mg/l Dissolved Oxygen (when Dissolved Oxygen is above 0.5mg/l) or 3 readings less than 0.5 mg/l.

Site Name: Speedway 5314 TNS 76 Date: 03/17/2022, 2:16 PM Name(s): Remi Malenfant

Well ID	Free Product (ft)	Water (ft)	Bottom (ft)
MW-4	N/A	18.09	28.25
TOC	Well Dia. (in)	Screen Length (ft)	Well Material
95.02	2.0		PVC
Latitude (decimal)	Longitude (decimal)	Weather	
61.5842637859	-149.358822557		

Type/Model Meter Used: _____
Calibrated: (date) _____ (time) _____
Cell Vol: _____
Type/Model Pump Used: _____
Pump Intake? _____ ft
Above / Below Bottom / TOC

Analytical Parameters	Bottles to be filled
PAH	2 X 40 mL Amber VOAs ✓
BTEX	3 X 40 mL Amber VOAs ✓
DRO	2 X 100 mL Amber Glass ✓
GRO	3 X 40 mL Amber VOAs ✓
Sodium	1 X 250 mL Poly ✓

Purge water disposal: Pour on ground

Time	Depth to Water (ft)	Flow Rate (ml/Min)	pH		Conductivity (ms/cm)		Turbidity (NTU)		Dissolved O2 (mg/l)		Temp. (Celsius)		Oxygen Reduction Potential (ORP) mv	
13:24	18.09	X	Reading	Change* (±0.1)	Reading	Change* (±3%)	Reading	Change* (±10% or <5)	Reading	Change* (±10% or <0.5)	Reading	Change* (±3%)	Reading	Change* (±10mv)

Sample Collected? No Time 14:16 Total Pumped from Well? 0 Gal

NOTES / COMMENTS:

*Minimum pumping time 15 Mins. - Collect data every 3 mins once flow through cell is full or once every volume of the flow through cell based on flow rate, which ever is longest. Indicator Parameters Have Stabilized When 3 Consecutive Readings Are Within: ± 0.1 for pH; ± 3% for Specific Conductivity and Temperature; ± 10 mv for ORP; and ± 10% for Turbidity (when Turbidity is above 5 NTUs) or 3 readings less than 5.0 NTUs; ± 10% mg/l Dissolved Oxygen (when Dissolved Oxygen is above 0.5mg/l) or 3 readings less than 0.5 mg/l.

APPENDIX D

Tables of Historical Monitoring Data

Analytical Data Results Table

Speedway 5314 TNS 76
Speedway - Anne Duarte
3600 E. Palmer Wasilla Highway
Wasilla, Alaska 99654

Unit	Well Screen Interval ft	Ground Water Elevation ft	Sodium ppm	Naphthalene ppm	Ethylbenzene ppm	135-TMB ppm	124-TMB ppm	Xylenes ppm	GRO ppm	Benzene ppm	DRO ppm	Toluene ppm
GW Human Health Cleanup				0.0017	0.015	0.060	0.056	0.19	2.2	0.0046	1.5	1.1
Cameron-7												
11/06/2014	--	--	—	—	—	—	—	—	—	—	—	—
02/25/2015	--	--	—	—	—	—	—	—	—	—	—	—
06/10/2015	--	--	—	—	—	—	—	—	—	—	—	—
09/02/2015	--	--	—	—	—	—	—	—	—	—	—	—
11/12/2015	--	--	—	—	—	—	—	—	—	—	—	—
01/20/2016	--	--	—	—	—	—	—	—	—	—	—	—
05/09/2016	--	--	—	—	U	—	—	U	—	U	U	U
10/13/2016	--	--	—	—	U	—	—	U	—	U	U	U
12/09/2016	--	--	—	—	U	—	—	U	—	U	U	U
02/08/2017	--	--	—	—	—	—	—	—	—	—	—	—
04/24/2017	--	--	—	—	—	—	—	—	—	—	—	—
09/01/2017	--	--	—	—	—	—	—	—	—	—	—	—
02/15/2018	--	--	—	—	—	—	—	—	—	—	—	—
06/29/2018	--	--	—	—	U	—	—	U	—	U	U	U
09/11/2018	--	--	—	—	—	—	—	—	—	—	—	—
10/26/2018	--	--	—	—	—	—	—	—	—	—	—	—
02/25/2019	--	--	—	—	—	—	—	—	—	—	—	—
04/25/2019	--	--	—	—	U	—	—	U	—	U	U(0.26)	U
07/25/2019	--	--	—	—	—	—	—	—	—	—	—	—
10/18/2019	--	--	—	—	—	—	—	—	—	—	—	—
08/11/2020	--	--	—	—	—	—	—	—	—	—	—	—
10/12/2020	--	--	—	—	U(0.000500)	—	—	U(0.000500)	—	U(0.000500)	U(0.186)	U(0.000100)
03/23/2021	--	--	—	—	—	—	—	—	—	—	—	—
05/19/2021	--	--	—	—	—	—	—	—	—	—	—	—
07/14/2021	--	--	—	—	—	—	—	—	—	—	—	—
10/14/2021	--	--	—	—	U (0.0005)	—	—	U (0.0005)	—	U (0.0005)	0.37	U (0.001)
03/17/2022	--	--	—	—	—	—	—	—	—	—	—	—
MW-1												
11/06/2014	--	--	—	—	U (0.0005)	—	—	U (0.0015)	0.067	0.027	0.36	U (0.0005)
02/25/2015	--	--	—	—	U (0.0005)	—	—	U (0.0015)	U (0.05)	0.0013	U (0.41)	U (0.0005)
06/10/2015	--	--	—	—	U (0.003)	—	—	U (0.002)	U (0.060)	U (0.002)	0.5	U (0.002)
09/02/2015	--	--	—	—	U (0.001)	—	—	U (0.003)	U (0.1)	0.0011	U (0.40)	U (0.001)
11/12/2015	--	--	—	—	U (0.003)	—	—	U (0.002)	0.14	0.029	U (0.21)	U (0.002)
01/20/2016	--	--	—	—	U (0.003)	—	—	U (0.002)	0.18	0.071	0.22	U (0.002)
05/09/2016	--	--	—	—	U (0.001)	—	—	U (0.003)	0.1	0.026	U (0.45)	U (0.001)
10/13/2016	--	--	—	—	U (0.001)	—	—	U (0.003)	0.84	0.053	0.36	U (0.001)
12/09/2016	--	--	—	—	U (0.002)	—	—	U (0.003)	0.067	0.027	0.67	U (0.002)
02/08/2017	--	--	—	—	U (0.003)	—	—	U (0.002)	0.057	0.01	0.27	U (0.002)
04/24/2017	--	--	—	—	U (0.003)	—	—	U (0.003)	U (0.001)	0.0096	U (0.0003)	U (0.002)

Analytical Data Results Table

Speedway 5314 TNS 76
Speedway - Anne Duarte
3600 E. Palmer Wasilla Highway
Wasilla, Alaska 99654

Unit	Well Screen Interval ft	Ground Water Elevation ft	Sodium ppm	Naphthalene ppm	Ethylbenzene ppm	135-TMB ppm	124-TMB ppm	Xylenes ppm	GRO ppm	Benzene ppm	DRO ppm	Toluene ppm
GW Human Health Cleanup				0.0017	0.015	0.060	0.056	0.19	2.2	0.0046	1.5	1.1
09/01/2017	--	--	—	—	U (0.003)	—	—	U (0.002)	U (1.0)	0.0068	0.25	U (0.002)
02/15/2018	--	--	—	—	U (0.003)	—	—	U (0.003)	U (1.0)	0.012	U (0.13)	U (0.002)
06/29/2018	--	--	—	—	U (0.003)	—	—	U (0.003)	U (0.25)	0.026	0.3	U (0.002)
09/11/2018	--	--	—	—	U (0.001)	—	—	U (0.002)	U (0.15)	0.01	U (0.27)	U (0.001)
10/26/2018	--	--	—	—	U (0.003)	—	—	U (0.003)	U (0.25)	0.015	0.31	U (0.002)
02/25/2019	--	--	—	—	U (0.003)	—	—	U (0.003)	U (0.25)	0.0037	0.19	U (0.002)
04/25/2019	--	--	—	—	U (0.003)	—	—	U (0.003)	U (0.25)	U (0.003)	U (0.27)	U (0.002)
07/25/2019	--	--	—	—	U (0.003)	—	—	U (0.003)	U (0.25)	0.0071	0.27	U (0.002)
10/18/2019	--	--	—	—	U (0.003)	—	—	U (0.003)	U (0.25)	U (0.003)	0.16	U (0.002)
08/11/2020	--	73.26	35.8	—	U (0.001)	—	—	U (0.003)	U (0.1)	0.00262	U (0.808)	U (0.001)
10/12/2020	--	72.87	43.6	U (0.000250)	U (0.001)	U (0.001)	U (0.001)	U (0.002)	0.011	0.00548	0.369	U (0.001)
03/23/2021	--	73.37	33.2	—	U (0.001)	—	—	U (0.001)	0.013	0.000526	U (0.840)	U (0.001)
05/19/2021	--	73.16	35	U(0.00500)	U (0.001)	U(0.00100)	U(0.00100)	U (0.002)	0.0302	0.00481	U (0.840)	U (0.001)
07/14/2021	--	72.92	32.2	U (0.00500)	U (0.001)	U (0.00100)	U (0.00100)	U (0.003)	U (0.1)	0.00177	0.317	U (0.001)
10/14/2021	--	75.23	59.7	U(0.000250)	U (0.001)	U(0.00100)	U(0.00100)	U (0.002)	0.0669	0.0167	0.427	U (0.001)
03/17/2022	--	75.92	133	U(0.000250)	U(0.00100)	U(0.00100)	U(0.00100)	U(0.00300)	U(0.100)	0.000111	0.263	U(0.00100)
MW-2												
11/06/2014	--	--	—	—	0.016	—	—	0.13	0.68	0.067	0.19	0.026
02/25/2015	--	--	—	—	0.0034	—	—	0.02	0.13	0.022	U (0.41)	0.0045
06/10/2015	--	--	—	—	U (0.003)	—	—	1.82	6.1	U (0.002)	1.1	U (0.002)
09/02/2015	--	--	—	—	0.065	—	—	1.4	U (10)	0.089	1.8	0.056
11/12/2015	--	--	—	—	0.13	—	—	0.179	22	0.091	1.8	0.11
01/20/2016	--	--	—	—	0.83	—	—	5.1	—	0.52	1.6	1.5
05/09/2016	--	--	—	—	0.35	—	—	2.8	U (10)	0.41	0.95	0.37
10/13/2016	--	--	—	—	0.48	—	—	2.62	9.2	0.42	0.98	0.63
12/09/2016	--	--	—	—	0.5	—	—	1.01	11	0.57	1.7	0.17
02/08/2017	--	--	—	—	0.021	—	—	0.096	0.58	0.053	0.2	U (0.002)
04/24/2017	--	--	—	—	0.035	—	—	0.66	2.6	0.036	0.94	0.012
09/01/2017	--	--	—	—	0.45	—	—	2.33	9.7	0.083	1.3	0.026
02/15/2018	--	--	—	—	0.14	—	—	0.97	U (10)	0.067	0.98	0.02
06/29/2018	--	--	—	—	0.59	—	—	3.3	6	0.17	1.2	0.25
09/11/2018	--	--	—	—	0.18	—	—	1.08	4.8	0.094	0.74	0.13
10/26/2018	--	--	—	—	0.48	—	—	3.01	11	0.17	1	0.28
02/25/2019	--	--	—	—	0.18	—	—	1.41	5.4	0.092	1.2	0.22
04/25/2019	--	--	—	—	U (0.003)	—	—	1.28	3.6	0.051	0.93	0.13
07/25/2019	--	--	—	—	0.2	—	—	1.47	5.4	0.079	0.89	0.13
10/18/2019	--	--	—	—	0.022	—	—	0.101	0.74	0.025	0.24	0.0065
08/11/2020	--	74.5	33.2	—	0.0759	—	—	0.465	0.921	0.0599	0.553	0.0107
10/12/2020	--	74.59	55.2	0.000405	0.0455	0.0329	0.109	0.168	0.755	0.16	0.409	U (0.001)
03/23/2021	--	73.54	48.1	—	U (0.001)	—	—	U (0.003)	0.0227	0.00542	U (0.840)	U (0.001)

Analytical Data Results Table

Speedway 5314 TNS 76
Speedway - Anne Duarte
3600 E. Palmer Wasilla Highway
Wasilla, Alaska 99654

Unit	Well Screen Interval ft	Ground Water Elevation ft	Sodium ppm	Naphthalene ppm	Ethylbenzene ppm	135-TMB ppm	124-TMB ppm	Xylenes ppm	GRO ppm	Benzene ppm	DRO ppm	Toluene ppm
GW Human Health Cleanup				0.0017	0.015	0.060	0.056	0.19	2.2	0.0046	1.5	1.1
05/19/2021	--	73.58	25.4	U(0.00500)	0.000461	0.0012	0.00278	0.00501	0.0374	0.00338	U (0.840)	U (0.001)
07/14/2021	--	73.98	32.8	U (0.00500)	0.00193	0.00107	0.00487	0.00465	0.0504	0.00399	0.272	U (0.001)
10/14/2021	--	76.79	50.3	0.000277	0.0176	0.0185	0.0706	0.1308	0.628	0.0292	0.589	0.0109
03/17/2022	--	76.99	180	U(0.000250)	0.00723	0.00335	0.0113	0.02313	0.249	0.0189	0.288	0.000395
MW-3												
11/06/2014	--	--	—	—	37	—	—	39	240	5	3.5	7.4
02/25/2015	--	--	—	—	6.7	—	—	37	180	2.9	8.6	34
06/10/2015	--	--	—	—	8.2	—	—	48	210	5.2	9.5	38
09/02/2015	--	--	—	—	4.4	—	—	28	U (200)	3.7	5.1	24
11/12/2015	--	--	—	—	0.21	—	—	1.69	87	1.3	3.6	2.1
01/20/2016	--	--	—	—	4.2	—	—	25.3	120	3.8	4.1	13
05/09/2016	--	--	—	—	2.2	—	—	33	69	2.1	1.5	21
10/13/2016	--	--	—	—	2.9	—	—	14.6	46	1.2	2	4.2
12/09/2016	--	--	—	—	—	—	—	0.54	100	0.17	3.3	—
02/08/2017	--	--	—	—	53	—	—	103	98	39	3.9	99
04/24/2017	--	--	—	—	5.2	—	—	28.9	U (200)	2.5	6.7	14
09/01/2017	--	--	—	—	3.7	—	—	21.4	75	0.61	1.9	9.3
02/15/2018	--	--	—	—	2.9	—	—	15.6	U (100)	0.3	1.3	3.8
06/29/2018	--	--	—	—	1.7	—	—	8.2	23	0.28	1.1	1.1
09/11/2018	--	--	—	—	1	—	—	5.6	14	0.29	0.91	0.53
10/26/2018	--	--	—	—	0.89	—	—	4.3	15	0.32	0.93	0.36
02/25/2019	--	--	—	—	2.3	—	—	11.4	U (1.3)	0.95	4.6	0.69
04/25/2019	--	--	—	—	U (1.5)	—	—	U (1.5)	11	0.14	0.64	0.13
07/25/2019	--	--	—	—	2.4	—	—	11.6	41	0.68	1.9	1.2
10/18/2019	--	--	—	—	1.7	—	—	9.7	21	0.21	1.2	0.66
08/11/2020	--	75.61	52.4	—	2.99	—	—	17	32.8	0.737	4.89	1.05
10/12/2020	--	76.21	66.1	0.0489	2.46	0.764	2.91	14.89	29.4	0.32	5.22	0.868
03/23/2021	--	75.13	U(3.00)	—	3.73	—	—	21.6	54.3	0.45	U (0.840)	1.21
05/19/2021	--	76.09	47	U(1.00)	2.04	0.631	2.24	11.1	31.1	0.473	5.08	0.186
07/14/2021	--	75.94	49.8	U (1.00)	2.65	0.594	2.16	12.87	30.3	0.581	3.87	0.156
10/14/2021	--	77.14	41.2	0.0109	0.741	0.33	1.31	4.147	15.8	0.084	2.11	0.13
03/17/2022	--	77.0	110	0.0238	0.0764	0.46	1.49	4.351	13.9	0.0642	3.44	0.0104
MW-4												
11/06/2014	--	--	—	—	0.3	—	—	1.5	13	0.94	0.45	1.9
02/25/2015	--	--	—	—	0.56	—	—	2.7	29	3.7	1	6.6
06/10/2015	--	--	—	—	0.54	—	—	2.7	14	1.1	0.99	2.3
09/02/2015	--	--	—	—	0.007	—	—	0.03	0.3	0.026	U (0.40)	U (0.001)
11/12/2015	--	--	—	—	—	—	—	—	U (0.050)	—	U (0.21)	—
01/20/2016	--	--	—	—	U (0.003)	—	—	U (0.002)	—	0.0043	0.15	U (0.002)
05/09/2016	--	--	—	—	U (0.001)	—	—	U (0.003)	U (0.1)	0.0092	U (0.42)	U (0.001)

Analytical Data Results Table

Speedway 5314 TNS 76
Speedway - Anne Duarte
3600 E. Palmer Wasilla Highway
Wasilla, Alaska 99654

Unit	Well Screen Interval ft	Ground Water Elevation ft	Sodium ppm	Naphthalene ppm	Ethylbenzene ppm	135-TMB ppm	124-TMB ppm	Xylenes ppm	GRO ppm	Benzene ppm	DRO ppm	Toluene ppm
GW Human Health Cleanup				0.0017	0.015	0.060	0.056	0.19	2.2	0.0046	1.5	1.1
10/13/2016	--	--	—	—	U (0.001)	—	—	U (0.003)	U (0.1)	U (0.00020)	0.18	U (0.001)
12/09/2016	--	--	—	—	—	—	—	—	U (0.05)	—	0.18	—
02/08/2017	--	--	—	—	U (0.003)	—	—	U (0.002)	U (0.05)	0.017	0.18	U (0.002)
04/24/2017	--	--	—	—	0.0049	—	—	U (0.003)	U (0.001)	0.012	U (0.0003)	U (0.002)
09/01/2017	--	--	—	—	0.38	—	—	0.74	5.1	0.55	0.48	U (0.050)
02/15/2018	--	--	—	—	0.26	—	—	0.438	3.3	0.19	0.29	U (0.10)
06/29/2018	--	--	—	—	0.022	—	—	0.027	0.52	0.09	0.19	U (0.002)
09/11/2018	--	--	—	—	0.0052	—	—	0.0062	U (0.15)	0.0086	U (0.28)	U (0.001)
10/26/2018	--	--	—	—	0.0045	—	—	0.0089	U (0.25)	0.013	0.15	U (0.002)
02/25/2019	--	--	—	—	0.0034	—	—	0.0089	U (0.25)	0.026	0.2	U (0.002)
04/25/2019	--	--	—	—	U (0.003)	—	—	U (0.003)	U (0.25)	U (0.003)	U (0.27)	U (0.002)
07/25/2019	--	--	—	—	U (0.003)	—	—	0.0078	U (0.25)	0.051	0.16	U (0.002)
10/18/2019	--	--	—	—	0.0059	—	—	0.0277	U (0.25)	0.02	U (0.12)	0.015
08/11/2020	--	75.75	58.4	—	0.000455	—	—	0.00933	0.084	0.054	U (0.800)	U (0.001)
10/12/2020	--	76.06	36.2	0.000465	0.00699	0.00174	0.0112	0.0264	0.313	0.129	U (0.800)	U (0.001)
03/23/2021	--	73.84	47.1	—	0.0178	—	—	0.0345	0.274	0.079	0.266	U (0.001)
05/19/2021	--	75.9	67.5	U(0.00500)	0.00328	0.00423	0.0171	0.0123	0.153	0.0307	U (0.840)	U (0.001)
07/14/2021	--	75.82	76.7	U (0.00500)	0.000375	0.000529	0.00374	0.00383	0.0682	0.0176	0.371	U (0.001)
10/14/2021	--	75.06	63.4	0.000209	0.00318	0.000233	0.00561	0.00788	0.105	0.00564	0.521	U (0.001)
03/17/2022	--	76.93	41.6	0.00334	0.186	0.106	0.273	0.857	2.8	0.214	0.683	0.168
RW19-1												
11/06/2014	--	--	—	—	—	—	—	—	—	—	—	—
02/25/2015	--	--	—	—	—	—	—	—	—	—	—	—
06/10/2015	--	--	—	—	—	—	—	—	—	—	—	—
09/02/2015	--	--	—	—	—	—	—	—	—	—	—	—
11/12/2015	--	--	—	—	—	—	—	—	—	—	—	—
01/20/2016	--	--	—	—	—	—	—	—	—	—	—	—
05/09/2016	--	--	—	—	—	—	—	—	—	—	—	—
10/13/2016	--	--	—	—	—	—	—	—	—	—	—	—
12/09/2016	--	--	—	—	—	—	—	—	—	—	—	—
02/08/2017	--	--	—	—	—	—	—	—	—	—	—	—
04/24/2017	--	--	—	—	—	—	—	—	—	—	—	—
09/01/2017	--	--	—	—	—	—	—	—	—	—	—	—
02/15/2018	--	--	—	—	—	—	—	—	—	—	—	—
06/29/2018	--	--	—	—	—	—	—	—	—	—	—	—
09/11/2018	--	--	—	—	—	—	—	—	—	—	—	—
10/26/2018	--	--	—	—	—	—	—	—	—	—	—	—
02/25/2019	--	--	—	—	—	—	—	—	—	—	—	—
04/25/2019	--	--	—	—	—	—	—	—	—	—	—	—
07/25/2019	--	--	—	—	—	—	—	—	—	—	—	—

Analytical Data Results Table

Speedway 5314 TNS 76
Speedway - Anne Duarte
3600 E. Palmer Wasilla Highway
Wasilla, Alaska 99654

Unit	Well Screen Interval ft	Ground Water Elevation ft	Sodium ppm	Naphthalene ppm	Ethylbenzene ppm	135-TMB ppm	124-TMB ppm	Xylenes ppm	GRO ppm	Benzene ppm	DRO ppm	Toluene ppm
GW Human Health Cleanup				0.0**017**	0.015	0.0**60**	0.0**56**	0.19	2.2	0.0046	1.5	1.1
10/18/2019	--	--	—	—	—	—	—	—	—	—	—	—
08/11/2020	--	73.11	28.8	—	U (0.001)	—	—	0.000489	U (0.100)	0.00126	U (0.848)	U (0.001)
10/12/2020	--	70.86	28.6	U (0.000250)	U (0.001)	U (0.001)	U (0.001)	U (0.002)	U (0.100)	0.000609	U (0.800)	U (0.001)
03/23/2021	--	--	25.9	—	U (0.001)	—	—	U (0.003)	0.0119	U (0.001)	U (0.840)	U (0.001)
05/19/2021	--	--	28.8	U(0.00500)	U (0.001)	U(0.00100)	U(0.00100)	U (0.002)	0.0158	U (0.001)	U (0.800)	U (0.001)
07/14/2021	--	70.47	28.8	U (0.00500)	U (0.001)	U (0.00100)	U (0.00100)	U (0.003)	U (0.100)	U (0.001)	0.297	U (0.001)
10/14/2021	--	72.82	32.3	U(0.000250)	U (0.001)	U(0.00100)	U(0.00100)	U (0.002)	0.0426	0.000506	0.387	U (0.001)
03/17/2022	--	75.67	48.2	0.000108	0.00311	0.00388	0.00702	0.02812	0.147	**0.00488**	U(0.888)	U(0.00100)

APPENDIX E

Laboratory Analytical Report and ADEC Laboratory Data Review Checklist

ANALYTICAL REPORT

April 08, 2022

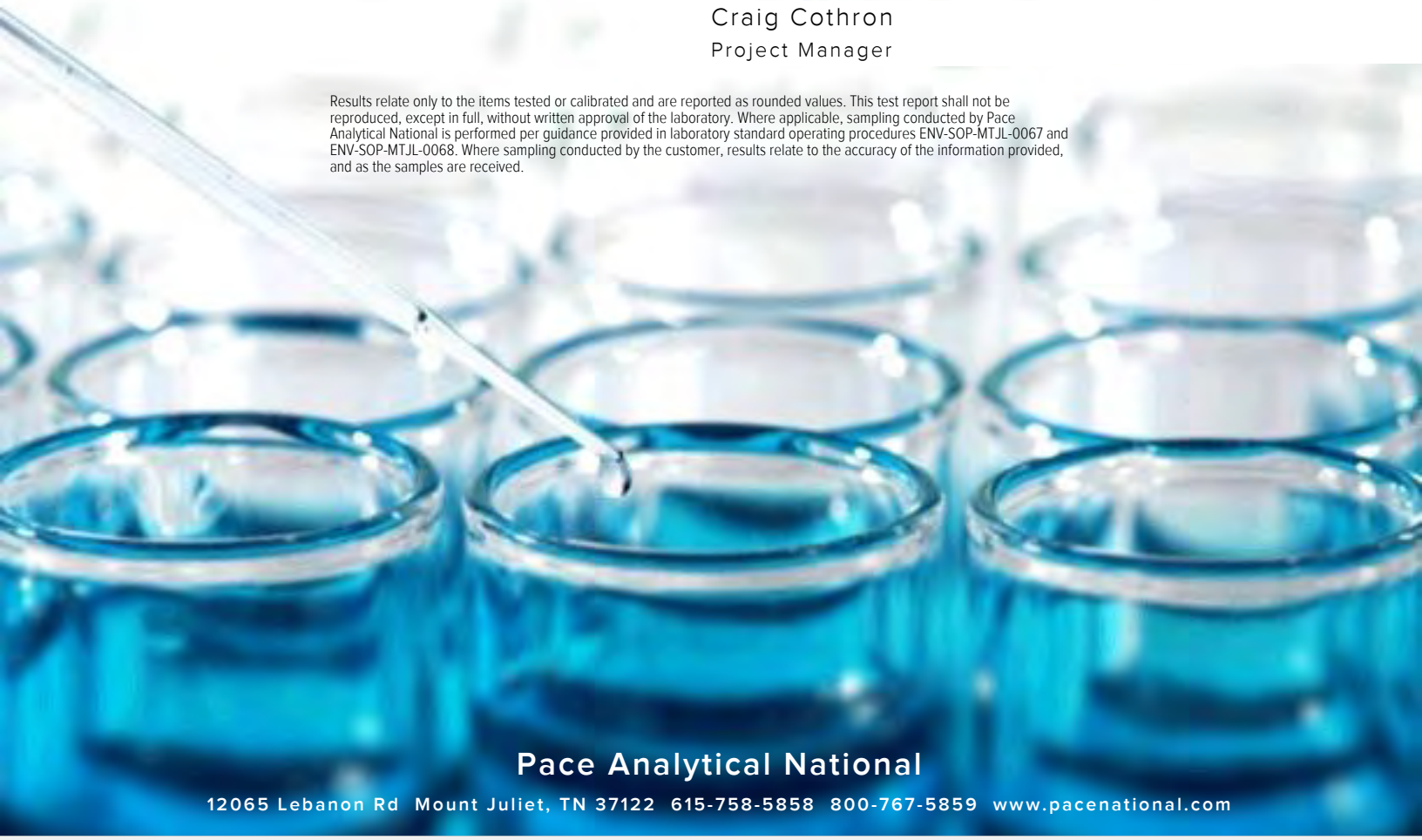
1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Stantec - Anchorage, AK - Speedway

Sample Delivery Group:	L1473466
Samples Received:	03/19/2022
Project Number:	
Description:	Speedway 5314
Site:	0005314
Report To:	Mr. John Marshall 725 E Fireweed Lane Suite 200 Anchorage, AK 99503

Entire Report Reviewed By:

Craig Cothron
Project Manager



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

TABLE OF CONTENTS

MW-01 L1473466-01 GW

Collected by: John Marshall | Collected date/time: 03/17/22 11:45 | Received date/time: 03/19/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1837241	1	03/23/22 18:37	03/24/22 22:51	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1836034	1	03/22/22 03:51	03/22/22 03:51	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1838213	1	03/26/22 00:09	03/26/22 00:09	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1835681	1.11	03/23/22 04:26	03/23/22 23:22	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1836262	1	03/23/22 16:20	03/24/22 15:43	LEA	Mt. Juliet, TN

MW-02 L1473466-02 GW

Collected by: John Marshall | Collected date/time: 03/17/22 13:00 | Received date/time: 03/19/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1837241	1	03/23/22 18:37	03/24/22 22:53	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1836034	1	03/22/22 04:17	03/22/22 04:17	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1838213	1	03/26/22 00:29	03/26/22 00:29	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1835681	1.11	03/23/22 04:26	03/23/22 23:43	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1836262	1	03/23/22 16:20	03/24/22 16:03	LEA	Mt. Juliet, TN

MW-03 L1473466-03 GW

Collected by: John Marshall | Collected date/time: 03/17/22 15:00 | Received date/time: 03/19/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1837241	1	03/23/22 18:37	03/24/22 23:01	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1836034	25	03/22/22 06:23	03/22/22 06:23	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1838213	200	03/26/22 03:34	03/26/22 03:34	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1835681	1	03/23/22 04:26	03/24/22 00:03	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1836262	1	03/23/22 16:20	03/24/22 16:23	LEA	Mt. Juliet, TN

MW-04 L1473466-04 GW

Collected by: John Marshall | Collected date/time: 03/17/22 14:10 | Received date/time: 03/19/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1838052	1	03/26/22 12:09	03/28/22 15:03	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1836034	1	03/22/22 05:04	03/22/22 05:04	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1838213	1	03/26/22 00:50	03/26/22 00:50	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1838915	50	03/27/22 20:35	03/27/22 20:35	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1835681	1.11	03/23/22 04:26	03/24/22 00:23	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1836262	1	03/23/22 16:20	03/24/22 16:43	LEA	Mt. Juliet, TN

RW19-01 L1473466-05 GW

Collected by: John Marshall | Collected date/time: 03/17/22 14:40 | Received date/time: 03/19/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1837241	1	03/23/22 18:37	03/24/22 23:07	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1836034	1	03/22/22 05:30	03/22/22 05:30	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1838915	1	03/27/22 20:15	03/27/22 20:15	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1835681	1.11	03/23/22 04:26	03/24/22 00:43	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1836262	1	03/23/22 16:20	03/24/22 17:03	LEA	Mt. Juliet, TN

SAMPLE SUMMARY

DUP1 L1473466-06 GW

Collected by: John Marshall
Collected date/time: 03/17/22 15:02
Received date/time: 03/19/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1837241	1	03/23/22 18:37	03/24/22 23:10	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1836034	10	03/22/22 05:57	03/22/22 05:57	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1838213	50	03/26/22 03:54	03/26/22 03:54	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1835681	1.11	03/23/22 04:26	03/24/22 01:03	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1836262	1	03/23/22 16:20	03/24/22 17:23	LEA	Mt. Juliet, TN

TRIP BLANK L1473466-07 GW

Collected by: John Marshall
Collected date/time: 03/17/22 12:00
Received date/time: 03/19/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1838213	1	03/25/22 20:03	03/25/22 20:03	BMB	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

Metals (ICP) by Method 6010C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Sodium	133		0.504	3.00	1	03/24/2022 22:51	WG1837241

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
TPHGAK C6 to C10	U		0.0287	0.100	1	03/22/2022 03:51	WG1836034
(S) a,a,a-Trifluorotoluene(FID)	*101*			*50.0-150*		*03/22/2022 03:51*	WG1836034
(S) a,a,a-Trifluorotoluene(PID)	*0.000*	J2		*79.0-125*		*03/22/2022 03:51*	WG1836034

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	0.000111	J	0.0000941	0.00100	1	03/26/2022 00:09	WG1838213
n-Butylbenzene	U		0.000157	0.00100	1	03/26/2022 00:09	WG1838213
sec-Butylbenzene	U		0.000125	0.00100	1	03/26/2022 00:09	WG1838213
tert-Butylbenzene	U		0.000127	0.00100	1	03/26/2022 00:09	WG1838213
Ethylbenzene	U		0.000137	0.00100	1	03/26/2022 00:09	WG1838213
Isopropylbenzene	U		0.000105	0.00100	1	03/26/2022 00:09	WG1838213
Naphthalene	U		0.00100	0.00500	1	03/26/2022 00:09	WG1838213
Toluene	U		0.000278	0.00100	1	03/26/2022 00:09	WG1838213
1,2,4-Trimethylbenzene	U		0.000322	0.00100	1	03/26/2022 00:09	WG1838213
1,3,5-Trimethylbenzene	U		0.000104	0.00100	1	03/26/2022 00:09	WG1838213
m&p-Xylene	U		0.000430	0.00200	1	03/26/2022 00:09	WG1838213
o-Xylene	U		0.000174	0.00100	1	03/26/2022 00:09	WG1838213
(S) Toluene-d8	*107*			*80.0-120*		*03/26/2022 00:09*	WG1838213
(S) 4-Bromofluorobenzene	*97.9*			*77.0-126*		*03/26/2022 00:09*	WG1838213
(S) 1,2-Dichloroethane-d4	*95.8*			*70.0-130*		*03/26/2022 00:09*	WG1838213

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
AK102 DRO C10-C25	0.263	J	0.254	0.888	1.11	03/23/2022 23:22	WG1835681
(S) o-Terphenyl	*76.6*			*50.0-150*		*03/23/2022 23:22*	WG1835681

Sample Narrative:

L1473466-01 WG1835681: Dilution due to sample volume.

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	U		0.0000190	0.0000500	1	03/24/2022 15:43	WG1836262
Acenaphthene	U		0.0000190	0.0000500	1	03/24/2022 15:43	WG1836262
Acenaphthylene	U		0.0000171	0.0000500	1	03/24/2022 15:43	WG1836262
Benzo(a)anthracene	U		0.0000203	0.0000500	1	03/24/2022 15:43	WG1836262
Benzo(a)pyrene	U		0.0000184	0.0000500	1	03/24/2022 15:43	WG1836262
Benzo(b)fluoranthene	U		0.0000168	0.0000500	1	03/24/2022 15:43	WG1836262
Benzo(g,h,i)perylene	U		0.0000184	0.0000500	1	03/24/2022 15:43	WG1836262
Benzo(k)fluoranthene	U		0.0000202	0.0000500	1	03/24/2022 15:43	WG1836262
Chrysene	U		0.0000179	0.0000500	1	03/24/2022 15:43	WG1836262
Dibenz(a,h)anthracene	U		0.0000160	0.0000500	1	03/24/2022 15:43	WG1836262
Fluoranthene	U		0.0000270	0.000100	1	03/24/2022 15:43	WG1836262
Fluorene	U		0.0000169	0.0000500	1	03/24/2022 15:43	WG1836262
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500	1	03/24/2022 15:43	WG1836262

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	U		0.0000917	0.000250	1	03/24/2022 15:43	WG1836262
Phenanthrene	U		0.0000180	0.0000500	1	03/24/2022 15:43	WG1836262
Pyrene	U		0.0000169	0.0000500	1	03/24/2022 15:43	WG1836262
1-Methylnaphthalene	U		0.0000687	0.000250	1	03/24/2022 15:43	WG1836262
2-Methylnaphthalene	U		0.0000674	0.000250	1	03/24/2022 15:43	WG1836262
(S) Nitrobenzene-d5	*105*			*31.0-160*		*03/24/2022 15:43*	WG1836262
(S) 2-Fluorobiphenyl	*93.0*			*48.0-148*		*03/24/2022 15:43*	WG1836262
(S) p-Terphenyl-d14	*98.5*			*37.0-146*		*03/24/2022 15:43*	WG1836262

Metals (ICP) by Method 6010C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Sodium	180		0.504	3.00	1	03/24/2022 22:53	WG1837241

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
TPHGAK C6 to C10	0.249		0.0287	0.100	1	03/22/2022 04:17	WG1836034
(S) a,a,a-Trifluorotoluene(FID)	*102*			*50.0-150*		*03/22/2022 04:17*	WG1836034
(S) a,a,a-Trifluorotoluene(PID)	*0.000*	J2		*79.0-125*		*03/22/2022 04:17*	WG1836034

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	0.0189		0.0000941	0.00100	1	03/26/2022 00:29	WG1838213
n-Butylbenzene	U		0.000157	0.00100	1	03/26/2022 00:29	WG1838213
sec-Butylbenzene	0.000556	J	0.000125	0.00100	1	03/26/2022 00:29	WG1838213
tert-Butylbenzene	U		0.000127	0.00100	1	03/26/2022 00:29	WG1838213
Ethylbenzene	0.00723		0.000137	0.00100	1	03/26/2022 00:29	WG1838213
Isopropylbenzene	0.000981	J	0.000105	0.00100	1	03/26/2022 00:29	WG1838213
Naphthalene	U		0.00100	0.00500	1	03/26/2022 00:29	WG1838213
Toluene	0.000395	J	0.000278	0.00100	1	03/26/2022 00:29	WG1838213
1,2,4-Trimethylbenzene	0.0113		0.000322	0.00100	1	03/26/2022 00:29	WG1838213
1,3,5-Trimethylbenzene	0.00335	B	0.000104	0.00100	1	03/26/2022 00:29	WG1838213
m&p-Xylene	0.0190		0.000430	0.00200	1	03/26/2022 00:29	WG1838213
o-Xylene	0.00413		0.000174	0.00100	1	03/26/2022 00:29	WG1838213
(S) Toluene-d8	*108*			*80.0-120*		*03/26/2022 00:29*	WG1838213
(S) 4-Bromofluorobenzene	*101*			*77.0-126*		*03/26/2022 00:29*	WG1838213
(S) 1,2-Dichloroethane-d4	*100*			*70.0-130*		*03/26/2022 00:29*	WG1838213

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
AK102 DRO C10-C25	0.288	J	0.254	0.888	1.11	03/23/2022 23:43	WG1835681
(S) o-Terphenyl	*76.6*			*50.0-150*		*03/23/2022 23:43*	WG1835681

Sample Narrative:

L1473466-02 WG1835681: Dilution due to sample volume.

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	U		0.0000190	0.0000500	1	03/24/2022 16:03	WG1836262
Acenaphthene	U		0.0000190	0.0000500	1	03/24/2022 16:03	WG1836262
Acenaphthylene	U		0.0000171	0.0000500	1	03/24/2022 16:03	WG1836262
Benzo(a)anthracene	U		0.0000203	0.0000500	1	03/24/2022 16:03	WG1836262
Benzo(a)pyrene	U		0.0000184	0.0000500	1	03/24/2022 16:03	WG1836262
Benzo(b)fluoranthene	U		0.0000168	0.0000500	1	03/24/2022 16:03	WG1836262
Benzo(g,h,i)perylene	U		0.0000184	0.0000500	1	03/24/2022 16:03	WG1836262
Benzo(k)fluoranthene	U		0.0000202	0.0000500	1	03/24/2022 16:03	WG1836262
Chrysene	U		0.0000179	0.0000500	1	03/24/2022 16:03	WG1836262
Dibenz(a,h)anthracene	U		0.0000160	0.0000500	1	03/24/2022 16:03	WG1836262
Fluoranthene	U		0.0000270	0.000100	1	03/24/2022 16:03	WG1836262
Fluorene	U		0.0000169	0.0000500	1	03/24/2022 16:03	WG1836262
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500	1	03/24/2022 16:03	WG1836262

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	U		0.0000917	0.000250	1	03/24/2022 16:03	WG1836262
Phenanthrene	U		0.0000180	0.0000500	1	03/24/2022 16:03	WG1836262
Pyrene	U		0.0000169	0.0000500	1	03/24/2022 16:03	WG1836262
1-Methylnaphthalene	U		0.0000687	0.000250	1	03/24/2022 16:03	WG1836262
2-Methylnaphthalene	U		0.0000674	0.000250	1	03/24/2022 16:03	WG1836262
(S) Nitrobenzene-d5	*106*			*31.0-160*		*03/24/2022 16:03*	WG1836262
(S) 2-Fluorobiphenyl	*94.0*			*48.0-148*		*03/24/2022 16:03*	WG1836262
(S) p-Terphenyl-d14	*95.5*			*37.0-146*		*03/24/2022 16:03*	WG1836262

Metals (ICP) by Method 6010C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Sodium	110		0.504	3.00	1	03/24/2022 23:01	WG1837241

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
TPHGAK C6 to C10	6.83		0.718	2.50	25	03/22/2022 06:23	WG1836034
(S) a,a,a-Trifluorotoluene(FID)	*106*			*50.0-150*		*03/22/2022 06:23*	WG1836034
(S) a,a,a-Trifluorotoluene(PID)	*0.000*	J2		*79.0-125*		*03/22/2022 06:23*	WG1836034

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	0.0642	J	0.0188	0.200	200	03/26/2022 03:34	WG1838213
n-Butylbenzene	U		0.0314	0.200	200	03/26/2022 03:34	WG1838213
sec-Butylbenzene	U		0.0250	0.200	200	03/26/2022 03:34	WG1838213
tert-Butylbenzene	U		0.0254	0.200	200	03/26/2022 03:34	WG1838213
Ethylbenzene	0.745		0.0274	0.200	200	03/26/2022 03:34	WG1838213
Isopropylbenzene	0.0722	J	0.0210	0.200	200	03/26/2022 03:34	WG1838213
Naphthalene	U		0.200	1.00	200	03/26/2022 03:34	WG1838213
Toluene	0.103	J	0.0556	0.200	200	03/26/2022 03:34	WG1838213
1,2,4-Trimethylbenzene	1.49		0.0644	0.200	200	03/26/2022 03:34	WG1838213
1,3,5-Trimethylbenzene	0.460	B	0.0208	0.200	200	03/26/2022 03:34	WG1838213
m&p-Xylene	3.28		0.0860	0.400	200	03/26/2022 03:34	WG1838213
o-Xylene	0.934		0.0348	0.200	200	03/26/2022 03:34	WG1838213
(S) Toluene-d8	*109*			*80.0-120*		*03/26/2022 03:34*	WG1838213
(S) 4-Bromofluorobenzene	*103*			*77.0-126*		*03/26/2022 03:34*	WG1838213
(S) 1,2-Dichloroethane-d4	*97.7*			*70.0-130*		*03/26/2022 03:34*	WG1838213

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
AK102 DRO C10-C25	3.44		0.229	0.800	1	03/24/2022 00:03	WG1835681
(S) o-Terphenyl	*75.2*			*50.0-150*		*03/24/2022 00:03*	WG1835681

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	U		0.0000190	0.0000500	1	03/24/2022 16:23	WG1836262
Acenaphthene	0.000182		0.0000190	0.0000500	1	03/24/2022 16:23	WG1836262
Acenaphthylene	U		0.0000171	0.0000500	1	03/24/2022 16:23	WG1836262
Benzo(a)anthracene	U		0.0000203	0.0000500	1	03/24/2022 16:23	WG1836262
Benzo(a)pyrene	U		0.0000184	0.0000500	1	03/24/2022 16:23	WG1836262
Benzo(b)fluoranthene	U		0.0000168	0.0000500	1	03/24/2022 16:23	WG1836262
Benzo(g,h,i)perylene	U		0.0000184	0.0000500	1	03/24/2022 16:23	WG1836262
Benzo(k)fluoranthene	U		0.0000202	0.0000500	1	03/24/2022 16:23	WG1836262
Chrysene	U		0.0000179	0.0000500	1	03/24/2022 16:23	WG1836262
Dibenz(a,h)anthracene	U		0.0000160	0.0000500	1	03/24/2022 16:23	WG1836262
Fluoranthene	U		0.0000270	0.000100	1	03/24/2022 16:23	WG1836262
Fluorene	0.000324		0.0000169	0.0000500	1	03/24/2022 16:23	WG1836262
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500	1	03/24/2022 16:23	WG1836262
Naphthalene	0.0238		0.0000917	0.000250	1	03/24/2022 16:23	WG1836262
Phenanthrene	0.000111		0.0000180	0.0000500	1	03/24/2022 16:23	WG1836262
Pyrene	U		0.0000169	0.0000500	1	03/24/2022 16:23	WG1836262

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	0.00579		0.0000687	0.000250	1	03/24/2022 16:23	WG1836262
2-Methylnaphthalene	0.00852		0.0000674	0.000250	1	03/24/2022 16:23	WG1836262
(S) Nitrobenzene-d5	*113*			*31.0-160*		*03/24/2022 16:23*	WG1836262
(S) 2-Fluorobiphenyl	*89.5*			*48.0-148*		*03/24/2022 16:23*	WG1836262
(S) p-Terphenyl-d14	*96.0*			*37.0-146*		*03/24/2022 16:23*	WG1836262

Metals (ICP) by Method 6010C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Sodium	41.6		0.504	3.00	1	03/28/2022 15:03	WG1838052

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
TPHGAK C6 to C10	2.80		0.0287	0.100	1	03/22/2022 05:04	WG1836034
(S) a,a,a-Trifluorotoluene(FID)	*102*			*50.0-150*		*03/22/2022 05:04*	WG1836034
(S) a,a,a-Trifluorotoluene(PID)	*0.000*	J2		*79.0-125*		*03/22/2022 05:04*	WG1836034

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	0.214		0.00471	0.0500	50	03/27/2022 20:35	WG1838915
n-Butylbenzene	0.00189		0.000157	0.00100	1	03/26/2022 00:50	WG1838213
sec-Butylbenzene	U		0.000125	0.00100	1	03/26/2022 00:50	WG1838213
tert-Butylbenzene	U		0.000127	0.00100	1	03/26/2022 00:50	WG1838213
Ethylbenzene	0.186		0.00685	0.0500	50	03/27/2022 20:35	WG1838915
Isopropylbenzene	0.0237		0.000105	0.00100	1	03/26/2022 00:50	WG1838213
Naphthalene	0.00692		0.00100	0.00500	1	03/26/2022 00:50	WG1838213
Toluene	0.168		0.000278	0.00100	1	03/26/2022 00:50	WG1838213
1,2,4-Trimethylbenzene	0.273		0.0161	0.0500	50	03/27/2022 20:35	WG1838915
1,3,5-Trimethylbenzene	0.106		0.000104	0.00100	1	03/26/2022 00:50	WG1838213
m&p-Xylene	0.665		0.0215	0.100	50	03/27/2022 20:35	WG1838915
o-Xylene	0.192		0.00870	0.0500	50	03/27/2022 20:35	WG1838915
(S) Toluene-d8	*109*			*80.0-120*		*03/26/2022 00:50*	WG1838213
(S) Toluene-d8	*106*			*80.0-120*		*03/27/2022 20:35*	WG1838915
(S) 4-Bromofluorobenzene	*99.8*			*77.0-126*		*03/26/2022 00:50*	WG1838213
(S) 4-Bromofluorobenzene	*94.9*			*77.0-126*		*03/27/2022 20:35*	WG1838915
(S) 1,2-Dichloroethane-d4	*95.1*			*70.0-130*		*03/26/2022 00:50*	WG1838213
(S) 1,2-Dichloroethane-d4	*99.6*			*70.0-130*		*03/27/2022 20:35*	WG1838915

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
AK102 DRO C10-C25	0.683	J	0.254	0.888	1.11	03/24/2022 00:23	WG1835681
(S) o-Terphenyl	*66.3*			*50.0-150*		*03/24/2022 00:23*	WG1835681

Sample Narrative:

L1473466-04 WG1835681: Dilution due to sample volume.

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	U		0.0000190	0.0000500	1	03/24/2022 16:43	WG1836262
Acenaphthene	0.0000275	J	0.0000190	0.0000500	1	03/24/2022 16:43	WG1836262
Acenaphthylene	U		0.0000171	0.0000500	1	03/24/2022 16:43	WG1836262
Benzo(a)anthracene	U		0.0000203	0.0000500	1	03/24/2022 16:43	WG1836262
Benzo(a)pyrene	U		0.0000184	0.0000500	1	03/24/2022 16:43	WG1836262
Benzo(b)fluoranthene	U		0.0000168	0.0000500	1	03/24/2022 16:43	WG1836262
Benzo(g,h,i)perylene	U		0.0000184	0.0000500	1	03/24/2022 16:43	WG1836262
Benzo(k)fluoranthene	U		0.0000202	0.0000500	1	03/24/2022 16:43	WG1836262
Chrysene	U		0.0000179	0.0000500	1	03/24/2022 16:43	WG1836262
Dibenz(a,h)anthracene	U		0.0000160	0.0000500	1	03/24/2022 16:43	WG1836262

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Fluoranthene	U		0.0000270	0.000100	1	03/24/2022 16:43	WG1836262
Fluorene	0.0000467	J	0.0000169	0.0000500	1	03/24/2022 16:43	WG1836262
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500	1	03/24/2022 16:43	WG1836262
Naphthalene	0.00334		0.0000917	0.000250	1	03/24/2022 16:43	WG1836262
Phenanthrene	0.0000261	J	0.0000180	0.0000500	1	03/24/2022 16:43	WG1836262
Pyrene	U		0.0000169	0.0000500	1	03/24/2022 16:43	WG1836262
1-Methylnaphthalene	0.000862		0.0000687	0.000250	1	03/24/2022 16:43	WG1836262
2-Methylnaphthalene	0.00128		0.0000674	0.000250	1	03/24/2022 16:43	WG1836262
(S) Nitrobenzene-d5	*103*			*31.0-160*		*03/24/2022 16:43*	WG1836262
(S) 2-Fluorobiphenyl	*94.0*			*48.0-148*		*03/24/2022 16:43*	WG1836262
(S) p-Terphenyl-d14	*98.0*			*37.0-146*		*03/24/2022 16:43*	WG1836262

Metals (ICP) by Method 6010C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Sodium	48.2		0.504	3.00	1	03/24/2022 23:07	WG1837241

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
TPHGAK C6 to C10	0.147		0.0287	0.100	1	03/22/2022 05:30	WG1836034
(S) a,a,a-Trifluorotoluene(FID)	*105*			*50.0-150*		*03/22/2022 05:30*	WG1836034
(S) a,a,a-Trifluorotoluene(PID)	*0.000*	J2		*79.0-125*		*03/22/2022 05:30*	WG1836034

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	0.00488		0.0000941	0.00100	1	03/27/2022 20:15	WG1838915
n-Butylbenzene	U		0.000157	0.00100	1	03/27/2022 20:15	WG1838915
sec-Butylbenzene	U		0.000125	0.00100	1	03/27/2022 20:15	WG1838915
tert-Butylbenzene	U		0.000127	0.00100	1	03/27/2022 20:15	WG1838915
Ethylbenzene	0.00311		0.000137	0.00100	1	03/27/2022 20:15	WG1838915
Isopropylbenzene	0.000463	J	0.000105	0.00100	1	03/27/2022 20:15	WG1838915
Naphthalene	U	C3	0.00100	0.00500	1	03/27/2022 20:15	WG1838915
Toluene	U		0.000278	0.00100	1	03/27/2022 20:15	WG1838915
1,2,4-Trimethylbenzene	0.00702		0.000322	0.00100	1	03/27/2022 20:15	WG1838915
1,3,5-Trimethylbenzene	0.00388		0.000104	0.00100	1	03/27/2022 20:15	WG1838915
m&p-Xylene	0.0223		0.000430	0.00200	1	03/27/2022 20:15	WG1838915
o-Xylene	0.00482		0.000174	0.00100	1	03/27/2022 20:15	WG1838915
(S) Toluene-d8	*110*			*80.0-120*		*03/27/2022 20:15*	WG1838915
(S) 4-Bromofluorobenzene	*99.2*			*77.0-126*		*03/27/2022 20:15*	WG1838915
(S) 1,2-Dichloroethane-d4	*98.6*			*70.0-130*		*03/27/2022 20:15*	WG1838915

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
AK102 DRO C10-C25	U		0.254	0.888	1.11	03/24/2022 00:43	WG1835681
(S) o-Terphenyl	*46.9*	J2		*50.0-150*		*03/24/2022 00:43*	WG1835681

Sample Narrative:

L1473466-05 WG1835681: Sample produced heavy emulsion during Extraction process, low surr/spike recoveries due to matrix

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	U		0.0000190	0.0000500	1	03/24/2022 17:03	WG1836262
Acenaphthene	U		0.0000190	0.0000500	1	03/24/2022 17:03	WG1836262
Acenaphthylene	U		0.0000171	0.0000500	1	03/24/2022 17:03	WG1836262
Benzo(a)anthracene	U		0.0000203	0.0000500	1	03/24/2022 17:03	WG1836262
Benzo(a)pyrene	U		0.0000184	0.0000500	1	03/24/2022 17:03	WG1836262
Benzo(b)fluoranthene	U		0.0000168	0.0000500	1	03/24/2022 17:03	WG1836262
Benzo(g,h,i)perylene	U		0.0000184	0.0000500	1	03/24/2022 17:03	WG1836262
Benzo(k)fluoranthene	U		0.0000202	0.0000500	1	03/24/2022 17:03	WG1836262
Chrysene	U		0.0000179	0.0000500	1	03/24/2022 17:03	WG1836262
Dibenz(a,h)anthracene	U		0.0000160	0.0000500	1	03/24/2022 17:03	WG1836262
Fluoranthene	U		0.0000270	0.000100	1	03/24/2022 17:03	WG1836262
Fluorene	U		0.0000169	0.0000500	1	03/24/2022 17:03	WG1836262
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500	1	03/24/2022 17:03	WG1836262

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	0.000108	J	0.0000917	0.000250	1	03/24/2022 17:03	WG1836262
Phenanthrene	U		0.0000180	0.0000500	1	03/24/2022 17:03	WG1836262
Pyrene	U		0.0000169	0.0000500	1	03/24/2022 17:03	WG1836262
1-Methylnaphthalene	U		0.0000687	0.000250	1	03/24/2022 17:03	WG1836262
2-Methylnaphthalene	0.0000731	J	0.0000674	0.000250	1	03/24/2022 17:03	WG1836262
(S) Nitrobenzene-d5	*101*			*31.0-160*		*03/24/2022 17:03*	WG1836262
(S) 2-Fluorobiphenyl	*96.0*			*48.0-148*		*03/24/2022 17:03*	WG1836262
(S) p-Terphenyl-d14	*102*			*37.0-146*		*03/24/2022 17:03*	WG1836262

Metals (ICP) by Method 6010C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Sodium	110		0.504	3.00	1	03/24/2022 23:10	WG1837241

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
TPHGAK C6 to C10	13.9		0.287	1.00	10	03/22/2022 05:57	WG1836034
(S) a,a,a-Trifluorotoluene(FID)	*105*			*50.0-150*		*03/22/2022 05:57*	WG1836034
(S) a,a,a-Trifluorotoluene(PID)	*0.000*	J2		*79.0-125*		*03/22/2022 05:57*	WG1836034

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	0.0636		0.00471	0.0500	50	03/26/2022 03:54	WG1838213
n-Butylbenzene	U		0.00785	0.0500	50	03/26/2022 03:54	WG1838213
sec-Butylbenzene	U		0.00625	0.0500	50	03/26/2022 03:54	WG1838213
tert-Butylbenzene	U		0.00635	0.0500	50	03/26/2022 03:54	WG1838213
Ethylbenzene	0.764		0.00685	0.0500	50	03/26/2022 03:54	WG1838213
Isopropylbenzene	0.0624		0.00525	0.0500	50	03/26/2022 03:54	WG1838213
Naphthalene	U		0.0500	0.250	50	03/26/2022 03:54	WG1838213
Toluene	0.104		0.0139	0.0500	50	03/26/2022 03:54	WG1838213
1,2,4-Trimethylbenzene	1.54		0.0161	0.0500	50	03/26/2022 03:54	WG1838213
1,3,5-Trimethylbenzene	0.433		0.00520	0.0500	50	03/26/2022 03:54	WG1838213
m&p-Xylene	3.42		0.0215	0.100	50	03/26/2022 03:54	WG1838213
o-Xylene	0.931		0.00870	0.0500	50	03/26/2022 03:54	WG1838213
(S) Toluene-d8	*108*			*80.0-120*		*03/26/2022 03:54*	WG1838213
(S) 4-Bromofluorobenzene	*102*			*77.0-126*		*03/26/2022 03:54*	WG1838213
(S) 1,2-Dichloroethane-d4	*97.2*			*70.0-130*		*03/26/2022 03:54*	WG1838213

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
AK102 DRO C10-C25	3.13		0.254	0.888	1.11	03/24/2022 01:03	WG1835681
(S) o-Terphenyl	*72.6*			*50.0-150*		*03/24/2022 01:03*	WG1835681

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	U		0.0000190	0.0000500	1	03/24/2022 17:23	WG1836262
Acenaphthene	0.000212		0.0000190	0.0000500	1	03/24/2022 17:23	WG1836262
Acenaphthylene	U		0.0000171	0.0000500	1	03/24/2022 17:23	WG1836262
Benzo(a)anthracene	U		0.0000203	0.0000500	1	03/24/2022 17:23	WG1836262
Benzo(a)pyrene	U		0.0000184	0.0000500	1	03/24/2022 17:23	WG1836262
Benzo(b)fluoranthene	U		0.0000168	0.0000500	1	03/24/2022 17:23	WG1836262
Benzo(g,h,i)perylene	U		0.0000184	0.0000500	1	03/24/2022 17:23	WG1836262
Benzo(k)fluoranthene	U		0.0000202	0.0000500	1	03/24/2022 17:23	WG1836262
Chrysene	U		0.0000179	0.0000500	1	03/24/2022 17:23	WG1836262
Dibenz(a,h)anthracene	U		0.0000160	0.0000500	1	03/24/2022 17:23	WG1836262
Fluoranthene	U		0.0000270	0.000100	1	03/24/2022 17:23	WG1836262
Fluorene	0.000384		0.0000169	0.0000500	1	03/24/2022 17:23	WG1836262
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500	1	03/24/2022 17:23	WG1836262
Naphthalene	0.0294		0.0000917	0.000250	1	03/24/2022 17:23	WG1836262
Phenanthrene	0.000134		0.0000180	0.0000500	1	03/24/2022 17:23	WG1836262
Pyrene	0.0000171	J	0.0000169	0.0000500	1	03/24/2022 17:23	WG1836262

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	0.00689		0.0000687	0.000250	1	03/24/2022 17:23	WG1836262
2-Methylnaphthalene	0.0107		0.0000674	0.000250	1	03/24/2022 17:23	WG1836262
(S) Nitrobenzene-d5	*122*			*31.0-160*		*03/24/2022 17:23*	WG1836262
(S) 2-Fluorobiphenyl	*96.5*			*48.0-148*		*03/24/2022 17:23*	WG1836262
(S) p-Terphenyl-d14	*105*			*37.0-146*		*03/24/2022 17:23*	WG1836262

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	03/25/2022 20:03	WG1838213
n-Butylbenzene	U		0.000157	0.00100	1	03/25/2022 20:03	WG1838213
sec-Butylbenzene	U		0.000125	0.00100	1	03/25/2022 20:03	WG1838213
tert-Butylbenzene	U		0.000127	0.00100	1	03/25/2022 20:03	WG1838213
Ethylbenzene	U		0.000137	0.00100	1	03/25/2022 20:03	WG1838213
Isopropylbenzene	U		0.000105	0.00100	1	03/25/2022 20:03	WG1838213
Naphthalene	U		0.00100	0.00500	1	03/25/2022 20:03	WG1838213
Toluene	U		0.000278	0.00100	1	03/25/2022 20:03	WG1838213
1,2,4-Trimethylbenzene	U		0.000322	0.00100	1	03/25/2022 20:03	WG1838213
1,3,5-Trimethylbenzene	U		0.000104	0.00100	1	03/25/2022 20:03	WG1838213
m&p-Xylene	U		0.000430	0.00200	1	03/25/2022 20:03	WG1838213
o-Xylene	U		0.000174	0.00100	1	03/25/2022 20:03	WG1838213
(S) Toluene-d8	*106*			*80.0-120*		*03/25/2022 20:03*	WG1838213
(S) 4-Bromofluorobenzene	*95.4*			*77.0-126*		*03/25/2022 20:03*	WG1838213
(S) 1,2-Dichloroethane-d4	*100*			*70.0-130*		*03/25/2022 20:03*	WG1838213

Method Blank (MB)

(MB) R3773887-1 03/24/22 21:57

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Sodium	4.72		0.504	3.00

Laboratory Control Sample (LCS)

(LCS) R3773887-2 03/24/22 21:59

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Sodium	10.0	9.93	99.3	80.0-120	

L1472852-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1472852-02 03/24/22 22:02 • (MS) R3773887-4 03/24/22 22:07 • (MSD) R3773887-5 03/24/22 22:09

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Sodium	10.0	103	111	111	73.1	73.2	1	75.0-125	V	V	0.00163	20

Method Blank (MB)

(MB) R3774955-1 03/28/22 14:47

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

Laboratory Control Sample (LCS)

(LCS) R3774955-2 03/28/22 14:49

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Sodium	10.0	9.92	99.2	80.0-120	

Method Blank (MB)

(MB) R3774496-3 03/21/22 23:51

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPHGAK C6 to C10	U		0.0287	0.100
(S) a,a,a-Trifluorotoluene(FID)	*105*			*60.0-120*
(S) a,a,a-Trifluorotoluene(PID)	*0.000*	J2		*79.0-125*

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

(LCS) R3774496-1 03/21/22 19:47 • (LCSD) R3774496-2 03/21/22 21:43

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPHGAK C6 to C10	5.00	5.69	4.93	114	98.6	60.0-120			14.3	20
(S) a,a,a-Trifluorotoluene(FID)				*117*	*116*	*60.0-120*				
(S) a,a,a-Trifluorotoluene(PID)				*0.000*	*0.000*	*79.0-125*	J2	J2		

L1472987-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1472987-02 03/22/22 02:05 • (MS) R3774496-4 03/22/22 06:50 • (MSD) R3774496-5 03/22/22 07:16

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	U	0.967	0.695	19.3	13.9	1	70.0-130	J6	J3 J6	32.7	20
(S) a,a,a-Trifluorotoluene(FID)					*106*	*104*		*50.0-150*				
(S) a,a,a-Trifluorotoluene(PID)					*0.000*	*0.000*		*79.0-125*	J2	J2		

Method Blank (MB)

(MB) R3774377-3 03/25/22 19:43

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	0.000346	J	0.000104	0.00100
m&p-Xylenes	U		0.000430	0.00200
o-Xylene	U		0.000174	0.00100
(S) Toluene-d8	*106*			*80.0-120*
(S) 4-Bromofluorobenzene	*102*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*105*			*70.0-130*

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

(LCS) R3774377-1 03/25/22 17:57 • (LCSD) R3774377-2 03/25/22 18:17

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	0.00521	0.00540	104	108	70.0-123			3.58	20
n-Butylbenzene	0.00500	0.00504	0.00510	101	102	73.0-125			1.18	20
sec-Butylbenzene	0.00500	0.00462	0.00499	92.4	99.8	75.0-125			7.70	20
tert-Butylbenzene	0.00500	0.00465	0.00491	93.0	98.2	76.0-124			5.44	20
Ethylbenzene	0.00500	0.00529	0.00518	106	104	79.0-123			2.10	20
Isopropylbenzene	0.00500	0.00481	0.00480	96.2	96.0	76.0-127			0.208	20
Naphthalene	0.00500	0.00486	0.00504	97.2	101	54.0-135			3.64	20
Toluene	0.00500	0.00529	0.00531	106	106	79.0-120			0.377	20
1,2,4-Trimethylbenzene	0.00500	0.00505	0.00533	101	107	76.0-121			5.39	20
1,3,5-Trimethylbenzene	0.00500	0.00520	0.00518	104	104	76.0-122			0.385	20
m&p-Xylenes	0.0100	0.0107	0.0104	107	104	80.0-122			2.84	20
o-Xylene	0.00500	0.00514	0.00531	103	106	80.0-122			3.25	20
(S) Toluene-d8				*109*	*104*	*80.0-120*				
(S) 4-Bromofluorobenzene				*105*	*98.3*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*103*	*102*	*70.0-130*				

Method Blank (MB)

(MB) R3774732-3 03/27/22 18:22

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
m&p-Xylenes	U		0.000430	0.00200
o-Xylene	U		0.000174	0.00100
(S) Toluene-d8	*106*			*80.0-120*
(S) 4-Bromofluorobenzene	*99.4*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*97.8*			*70.0-130*

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

(LCS) R3774732-1 03/27/22 17:20 • (LCSD) R3774732-2 03/27/22 17:40

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	0.00491	0.00490	98.2	98.0	70.0-123			0.204	20
n-Butylbenzene	0.00500	0.00448	0.00445	89.6	89.0	73.0-125			0.672	20
sec-Butylbenzene	0.00500	0.00441	0.00431	88.2	86.2	75.0-125			2.29	20
tert-Butylbenzene	0.00500	0.00457	0.00436	91.4	87.2	76.0-124			4.70	20
Ethylbenzene	0.00500	0.00480	0.00464	96.0	92.8	79.0-123			3.39	20
Isopropylbenzene	0.00500	0.00436	0.00410	87.2	82.0	76.0-127			6.15	20
Naphthalene	0.00500	0.00380	0.00386	76.0	77.2	54.0-135			1.57	20
Toluene	0.00500	0.00488	0.00492	97.6	98.4	79.0-120			0.816	20
1,2,4-Trimethylbenzene	0.00500	0.00481	0.00458	96.2	91.6	76.0-121			4.90	20
1,3,5-Trimethylbenzene	0.00500	0.00507	0.00502	101	100	76.0-122			0.991	20
m&p-Xylenes	0.0100	0.00971	0.00929	97.1	92.9	80.0-122			4.42	20
o-Xylene	0.00500	0.00485	0.00492	97.0	98.4	80.0-122			1.43	20
(S) Toluene-d8				*108*	*108*	*80.0-120*				
(S) 4-Bromofluorobenzene				*98.8*	*99.5*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*102*	*100*	*70.0-130*				

Method Blank (MB)

(MB) R3774637-1 03/23/22 21:40

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	*91.6*			*60.0-120*

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

(LCS) R3774637-2 03/23/22 22:01 • (LCSD) R3774637-3 03/23/22 22:21

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 %
AK102 DRO C10-C25	6.00	6.07	5.77	101	96.2	75.0-125			5.07	20
(S) o-Terphenyl				*118*	*114*	*60.0-120*				

Method Blank (MB)

(MB) R3773605-3 03/24/22 12:03

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Anthracene	U		0.0000190	0.0000500
Acenaphthene	U		0.0000190	0.0000500
Acenaphthylene	U		0.0000171	0.0000500
Benzo(a)anthracene	U		0.0000203	0.0000500
Benzo(a)pyrene	U		0.0000184	0.0000500
Benzo(b)fluoranthene	U		0.0000168	0.0000500
Benzo(g,h,i)perylene	U		0.0000184	0.0000500
Benzo(k)fluoranthene	U		0.0000202	0.0000500
Chrysene	U		0.0000179	0.0000500
Dibenz(a,h)anthracene	U		0.0000160	0.0000500
Fluoranthene	U		0.0000270	0.000100
Fluorene	U		0.0000169	0.0000500
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500
Naphthalene	U		0.0000917	0.000250
Phenanthrene	U		0.0000180	0.0000500
Pyrene	U		0.0000169	0.0000500
1-Methylnaphthalene	U		0.0000687	0.000250
2-Methylnaphthalene	U		0.0000674	0.000250
(S) Nitrobenzene-d5	*111*			*31.0-160*
(S) 2-Fluorobiphenyl	*94.5*			*48.0-148*
(S) p-Terphenyl-d14	*98.5*			*37.0-146*

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

(LCS) R3773605-1 03/24/22 11:24 • (LCSD) R3773605-2 03/24/22 11:43

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Anthracene	0.00200	0.00199	0.00199	99.5	99.5	67.0-150			0.000	20
Acenaphthene	0.00200	0.00191	0.00196	95.5	98.0	65.0-138			2.58	20
Acenaphthylene	0.00200	0.00201	0.00202	100	101	66.0-140			0.496	20
Benzo(a)anthracene	0.00200	0.00199	0.00194	99.5	97.0	61.0-140			2.54	20
Benzo(a)pyrene	0.00200	0.00208	0.00210	104	105	60.0-143			0.957	20
Benzo(b)fluoranthene	0.00200	0.00179	0.00181	89.5	90.5	58.0-141			1.11	20
Benzo(g,h,i)perylene	0.00200	0.00176	0.00184	88.0	92.0	52.0-153			4.44	20
Benzo(k)fluoranthene	0.00200	0.00188	0.00193	94.0	96.5	58.0-148			2.62	20
Chrysene	0.00200	0.00200	0.00202	100	101	64.0-144			0.995	20
Dibenz(a,h)anthracene	0.00200	0.00167	0.00170	83.5	85.0	52.0-155			1.78	20
Fluoranthene	0.00200	0.00199	0.00201	99.5	100	69.0-153			1.00	20
Fluorene	0.00200	0.00188	0.00191	94.0	95.5	64.0-136			1.58	20

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

(LCS) R3773605-1 03/24/22 11:24 • (LCSD) R3773605-2 03/24/22 11:43

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 %
Indeno(1,2,3-cd)pyrene	0.00200	0.00176	0.00183	88.0	91.5	54.0-153			3.90	20
Naphthalene	0.00200	0.00193	0.00200	96.5	100	61.0-137			3.56	20
Phenanthrene	0.00200	0.00188	0.00189	94.0	94.5	62.0-137			0.531	20
Pyrene	0.00200	0.00206	0.00210	103	105	60.0-142			1.92	20
1-Methylnaphthalene	0.00200	0.00189	0.00196	94.5	98.0	66.0-142			3.64	20
2-Methylnaphthalene	0.00200	0.00193	0.00198	96.5	99.0	62.0-136			2.56	20
(S) Nitrobenzene-d5				*114*	*114*	*31.0-160*				
(S) 2-Fluorobiphenyl				*91.0*	*95.0*	*48.0-148*				
(S) p-Terphenyl-d14				*91.5*	*95.5*	*37.0-146*				

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.
C3	The reported concentration is an estimate. The continuing calibration standard associated with this data responded low. Method sensitivity check is acceptable.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
V	The sample concentration is too high to evaluate accurate spike recoveries.

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.

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

Report to:
Mr. John Marshall

Email To: craig.cothron@pacelabs.com

Project Description:
Speedway 5314

City/State Collected: Wasilla AK

Please Circle: PT MT CT ET

Phone: 907-266-1108

Client Project #

Lab Project #
STAAAKSSA-5314

Collected by (print):
John Marshall

Site/Facility ID #
0005314

P.O. #

Collected by (signature):
[signature]

Immediately Packed on Ice N ___ Y ✓

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

Quote #

Date Results Needed
Standard

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	AK101 40mlAmb HCl	AK102 100ml Amb HCl	NAICP 250mlHDPE-HNO3	PAHSIMLVID 40mlAmb-NoPres-WT	V8260C 40mlAmb-HCl	V8260C 40mlAmb-HCl-Blk	Remarks	Sample # (lab only)
MW-01	G	GW	—	3/17/22	1145	11	X	X	X	X	X			-01
MW-02	G	GW	—	3/17/22	1300	11	X	X	X	X	X			-02
MW-03	G	GW	—	3/17/22	1500	11	X	X	X	X	X			-03
MW-04	G	GW	—	3/17/22	1410	11	X	X	X	X	X			-04
RW19-01	G	GW	—	3/17/22	1440	11	X	X	X	X	X			-05
DUP1	G	GW	—	3/17/22	1502	11	X	X	X	X	X			-06
TRIP BLANK	G	GW	—	3/17/22	1200	1						X		-07

Chain of Custody Page 1 of 1

Pace
PEOPLE ADVANCING SCIENCE

MT JULIET, TN

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

SDG # L1473466
A178

Acctnum: STAAAKSSA
Template: T175036
Prelogin: P909812
PM: 034 - Craig Cothron
PB: 3/3/22

Shipped Via: FedEX 2nd Day

* 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 # 548940296400

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/A __N
Preservation Correct/Checked: ✓Y __N
RAD Screen <0.5 mR/hr: ✓Y __N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR
[signature]	3/17/22	1640		1
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 1.2 °C Bottles Received: 1.2+0=1.2 66
				If preservation required by Login: Date/Time
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 3/19/22 Time: 0930
			Patricia Smith	Hold: Condition: NCF OK

L1473466

Laboratory Report Date:

4/8/2022

CS Site Name:

Speedway 5314 (Former Tesoro 2Go Mart 76)

Laboratory Data Review Checklist

Completed By:

Jeremiah Malenfant

Title:

Geologist-in-Training

Date:

4/20/2022

Consultant Firm:

Stantec Consulting Services, Inc

Laboratory Name:

Pace Analytical

Laboratory Report Number:

L1473466

Laboratory Report Date:

4/8/2022

CS Site Name:

Speedway 5314 (Former Tesoro 2Go Mart 76)

ADEC File Number:

2265.56.037

L1473466

Laboratory Report Date:

4/8/2022

CS Site Name:

Speedway 5314 (Former Tesoro 2Go Mart 76)

Hazard Identification Number:

2986

L1473466

Laboratory Report Date:

4/8/2022

CS Site Name:

Speedway 5314 (Former Tesoro 2Go Mart 76)

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:

   Samples not transferred.

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:

   1.2 °C

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

   Yes☒ No☐ N/A☐ Comments:

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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:

No discrepancies documented.

e. Data quality or usability affected?

Comments:

No.

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:

None identified in case narrative, “unless qualified or notated within the report.”

c. Were all corrective actions documented?

Yes☐ No☐ N/A☒ Comments:

No corrective actions taken.

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

Comments:

No effect on data quality/usability.

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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 soil samples submitted to lab.

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?

No.

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:

Sodium by Metals 6010C on 3/24 was detected in the method blank, redone on 3/28 with no detection. 1,3,5-TMB detected above MDL but below RDL.

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

Comments:

MW-2 and MW-3 flagged for 1,3,5-TMB. All samples except MW-4 analyzed for sodium on 3/24 when sodium was detected in the MB.

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

Yes☒ No☒ N/A☐ Comments:

1,3,5-TMB flagged, but sodium samples not.

v. Data quality or usability affected?

Comments:

No. Sodium is used only as a way to compare the relative impact of chemox treatment across the site.

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:

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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:

No affected samples.

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

Yes☐ No☐ N/A☒ Comments:

No affected samples.

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

Comments:

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:

Sodium by 6010C and GRO by AK101 recovered at less than the lower recovery limit.

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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:

GRO by AK101 had an RPD outside allowable limits.

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

Comments:

No samples flagged.

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

Yes☐ No☒ N/A☐ Comments:

No samples flagged, but affected MS/MSDs flagged to explain the discrepancy.

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

Comments:

MS/MSDs flagged: sodium concentrations were too high to accurately evaluate Matrix Spike Recoveries. GRO matrix interfered with recovery, but spike value is low. Sodium samples not affected (as discussed above) because sodium is used only as a marker for chemox. GRO exceedances were expected in wells that show exceedances, and GRO detections below GCLs are well below GCLs.

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:

Not required.

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:

Not required.

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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:

No affected samples.

iv. Data quality or usability affected?

Comments:

No.

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:

No affected samples.

v. Data quality or usability affected?

Comments:

No.

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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:

RPD for GRO exceeded 30%

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

Comments:

Both the duplicate and main sample showed GRO concentrations well above GCL; higher value reported.

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

Yes☐ No☒ N/A☐ Comments:

No reusable equipment used during sampling.

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

Yes☐ No☐ N/A☒ Comments:

No decontamination or equipment blank analyzed.

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

Comments:

No affected samples.

iii. Data quality or usability affected?

Comments:

No.

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

a. Defined and appropriate?

Yes☒ No☐ N/A☐ Comments: