August 2020 3Q GWM Event For Speedway Store 5314 (Formerly Tesoro 2 Go Mart #76)

ADEC File #2265.26.006

Prepared For

Speedway

Stantec

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ACRONYMS AND ABBREVIATIONS

ADEC	Alaska Department of Environmental Conservation
AK	Alaska Test Method
BTEX	benzene, toluene, ethylbenzene, xylenes
DO	dissolved oxygen
DRO	diesel range organics
EPA	U.S. Environmental Protection Agency
GCL	groundwater cleanup level
GRO	gasoline range organics
mg/L	milligrams per liter
mV	millivolts
ORP	oxidation-reduction potential
PID	photoionization detector
ppmv	parts per million by volume
QA	quality assurance
QC	quality control
Stantec	Stantec Consulting Services Inc.
SVE	soil vapor extraction

1.0 EXECUTIVE SUMMARY

This third quarter 2020 monitoring event report was prepared by Stantec Consulting Services Inc. (Stantec), on behalf of Speedway, LLC for Speedway Store 5314 (former Tesoro 2 Go Mart #76), located at 3600 Palmer-Wasilla Highway, Wasilla, Alaska (**Figure 1**). The methods used for this monitoring event were conducted in accordance with the Alaska Department of Environmental Conservation (ADEC) approved 2020 Corrective Action Work Plan for this site.

This monitoring event was conducted on August 11, 2020 by Austin Badger, Environmental Scientist, Eli Fredrickson, Geologic Project Specialist, and Bob Gilfilian, Principal Civil Engineer, 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.

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 northeast 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 in Figure 2.

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 (chemox) injection of Klozur One® product directly into the 3 vertical injection wells was conducted during this monitoring event.

2.0 SITE BACKGROUND

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

3.0 FIELD ACTIVITIES

The following field activities were conducted at the site during this monitoring event:

- Measured the depth to groundwater in Monitoring Wells MW-1, MW-2, MW-3, MW-4, and Remediation Well RW19-1. Groundwater depth measurements were used to calculate the hydraulic gradient and direction of flow for the groundwater table.

- Measured the following field intrinsic water quality parameters in the samples collected from the five wells: pH, temperature, dissolved oxygen (DO), oxidation-reduction potential (ORP), and specific conductance.
- Collected groundwater samples from the five monitoring/remediation wells and submitted them for laboratory analysis of: U.S. Environmental Protection Agency (EPA) Method 8260C for benzene, toluene, ethylbenzene, and xylenes (BTEX); Alaska Test Method (AK)101 for gasoline range organics (GRO); AK102 for diesel range organics (DRO) and sodium.
- Injected chemox solution of Klozur One® into the remediation wells RW-1, RW-2, and RW-3.

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

4.0 GROUNDWATER MONITORING RESULTS

4.1 Groundwater Levels

Table 1 presents groundwater elevations at this site based on the depths to static groundwater levels measured during this monitoring event. The average hydraulic gradient across the site was found to be approximately 0.025 feet per foot directed toward the northeast at 47 degrees. Groundwater gradients and bearings from past 10 monitoring events are presented in the "rose diagram" on **Figure 2**.

Table 1 Groundwater Elevations

Measured on August 11, 2020

Monitoring Well Identification	Top of Casing Elevation (feet above datum)[1]	Depth to Groundwater (feet btoc)	Groundwater Elevation (feet above datum)[1]
MW-1	94.74	21.46	73.28
MW-2	95.08	20.58	74.50
MW-3	94.52	18.92	75.60
MW-4	95.02	19.27	75.75
RW19-1	TBD	22.61	TBD

Key:
1 – Based on a vertical control survey of October 18, 2019, using an elevation datum of 100.00 feet established on the bench mark on the concrete base of the existing on-site drinking water well.
feet btoc – feet below top of monitoring well casing
TBD – To Be Determined in future elevation survey

4.2 Water Sample Intrinsic Field Parameters

The results of intrinsic water quality parameter testing of the water samples collected during this monitoring event are presented in **Table 2**. The ORP measurements ranged from 32.8 millivolts (mV) in Monitoring Well RW-19 to 162.0 mV in Monitoring Well MW-1, which indicates a limited potential for oxidation of petroleum compounds. The pH values were consistent between monitoring wells and within an expected range at slightly below or near neutral. Conductance readings ranged from 343 micro-Siemens per centimeter (µs/cm) to 682 µs/cm. DO measurements ranged from 0.25 milligrams per liter (mg/L) in Remediation Well RW19-1 to 0.68 mg/L in Monitoring Well MW-2 which indicated anoxic groundwater conditions.

Table 2 Field Measured Intrinsic Water Quality Parameters
Measurements taken on August 11, 2020

Well ID	Volume Purged (gallons)	Sheen/ Odor	Temp. (˚C)	pH	Dissolved Oxygen (mg/L)	ORP (mV)	Specific Conductance (µs/cm °C)
MW-1	1.5	N/N	8.0	5.72	0.56	162.0	682
MW-2	3.5	N/Y	5.9	6.55	0.68	53.8	364
MW-3	3.5	N/N	5.9	6.63	0.30	35.2	560
MW-4	4.5	N/N	5.5	6.42	0.31	51.3	647
RW19-1	15.0	N/N	6.4	6.69	0.25	32.8	343

Key:
°C – degrees Celsius
µS/cm°C – microSiemens per centimeter °C
mg/L – milligrams per liter
mV – millivolts
N – no
ORP – oxidation-reduction potential
pH – -log [H+]
SC – specific conductance at 25°C
Temp. – temperature
Y - yes

4.3 Water Sample Laboratory Analytical Results

Historical monitoring data for this site are tabulated in **Appendix D**. Laboratory analytical results for BTEX, GRO, and DRO detected in groundwater samples collected during this monitoring event are summarized in **Table 3.** The laboratory analytical report is provided in **Appendix E**.

Table 3 Groundwater Analytical Results for BTEX, GRO, and DRO
Samples collected on August 11, 2020

Sample Identification	Benzene[1] (mg/L)	Toluene[1] (mg/L)	Ethylbenzene[1] (mg/L)	Xylenes[1] (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium (mg/L)
MW-1	0.00262	U (0.001)	U (0.001)	U (0.003)	U (0.1)	U (0.808)	35.8
MW-2	**0.0599**	0.0107	**0.0759**	**0.465**	0.921	0.553	33.2
MW-3	**0.737**	1.05	**2.99**	**17.0**	**32.8**	**4.89**	52.4
MW-4	**0.054**	U (0.001)	0.000455	0.00933	0.0840	U (0.800)	58.4
RW 19-1	0.00126	U (0.001)	U (0.001)	0.000489	U (0.1)	U (0.848)	28.8
TNS 76 (DUP RW19-1)	0.00120	U (0.001)	U (0.001)	0.000302	U (0.1)	U (0.840)	28.9
Trip Blank	U (0.001)	U (0.001)	U (0.001)	U (0.003)	U (0.1)	U (0.800)	U (3.00)
GCLs	**0.0046**	**1.1**	**0.015**	**0.19**	**2.2**	**1.5**	**N/A**

Key:
1 – Analyzed by U.S. Environmental Protection Agency Method 8260C
AK – Alaska Test Method
BTEX – benzene, toluene, ethylbenzene, and xylenes
DRO – Diesel range organics, analyzed by AK102
GCLs – Groundwater cleanup levels, per Alaska Department of Environmental Conservation 18 Alaska Administrative Code 75.345, Table C, updated September 29, 2018.
GRO – Gasoline range organics, analyzed by AK101
mg/L – milligrams per liter
NT – Not tested
U – Undetected above laboratory reporting limits shown in parentheses
N/A – Not applicable

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 Laboratory performed the analysis of groundwater samples for this sampling event. **Table 4** 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**.

Table 4 Laboratory Quality Control Objectives

Quality Control Designation	Tolerance	Results for this Event
Holding Times		
DRO/Water/to analyze	40 days	7-14 days
DRO/Water/to extract	14 days	5-10 days
GRO/Water/to analyze	14 days	6-10 days
BTEX/Water/to analyze	14 days	5-8 days
Field Duplicates – Precision		
Benzene/Water	± 30%	4.88%
Toluene/Water	± 30%	NC
Ethylbenzene/Water	± 30%	NC
Xylenes/Water	± 30%	47.28%
GRO/Water	± 30%	NC
DRO/Water	± 30%	NC

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

A duplicate sample set was collected to calculate the precision of the field collection and laboratory analyses for this sampling event. Sample TNS 76 is a duplicate of sample RW19-1. Data presented in **Table 4** show that the precision for the duplicate sample set (analytes that were detected above the practical quantitation limit [PQL] and exceeded GCLs) was within the established QA criteria tolerances for benzene but not xylenes. Precision could not be calculated for toluene, ethylbenzene, GRO, and DRO because they were not detected above the PQL in one or more sample.

5.0 REMEDIATION SYSTEM

In 2020, Stantec staff re-purposed the current bio-sparge system and converted it into a groundwater recirculation (pump and treat) system to allow for recirculation of groundwater coupled with injection of chemical oxidation products. The implementation of this change in the remediation system was accomplished during this third quarter monitoring event. 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 directed 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.

6.0 DISCUSSION OF FINDINGS

Historical graphs of contaminant concentrations for Monitoring Wells MW-1, MW-2, MW-3, MW-4, and RW19-1 are presented on **Figure 3**. Results for previous monitoring events are presented in **Appendix D**.

Results of the groundwater analytical sampling showed that analytes detected above ADEC GCL's 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 northeast at 47 degrees. The groundwater flow direction and gradient are consistent with past monitoring events.

7.0 CONCLUSIONS AND RECOMMENDATIONS

No anomalies were found during the August 2020 monitoring event at this site that would require additional corrective action or changes to the ADEC-approved year 2020 Corrective Action Work Plan for this site.

8.0 LIMITATIONS

Stantec conducted this monitoring event in accordance with the Corrective Action Work Plan approved by ADEC, and in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practicing under similar conditions. All sampling activities were in accordance with the ADEC *Underground Storage Tanks Procedures Manual – Standard Sampling Procedures* (March 22, 2017). No other warranty, expressed or implied, is made. Data and recommendations made herein were prepared for Speedway Store 5314 (former Tesoro 2 Go Mart #76) and Speedway, LLC. Information herein is for use at this site in accordance with the purpose of the report described.

FIGURES

Figure 1 Location and Vicinity Map
Figure 2 Site Plan with Groundwater Analytical Results
Figure 3 Graphs of Contaminant Concentrations and Groundwater Elevations

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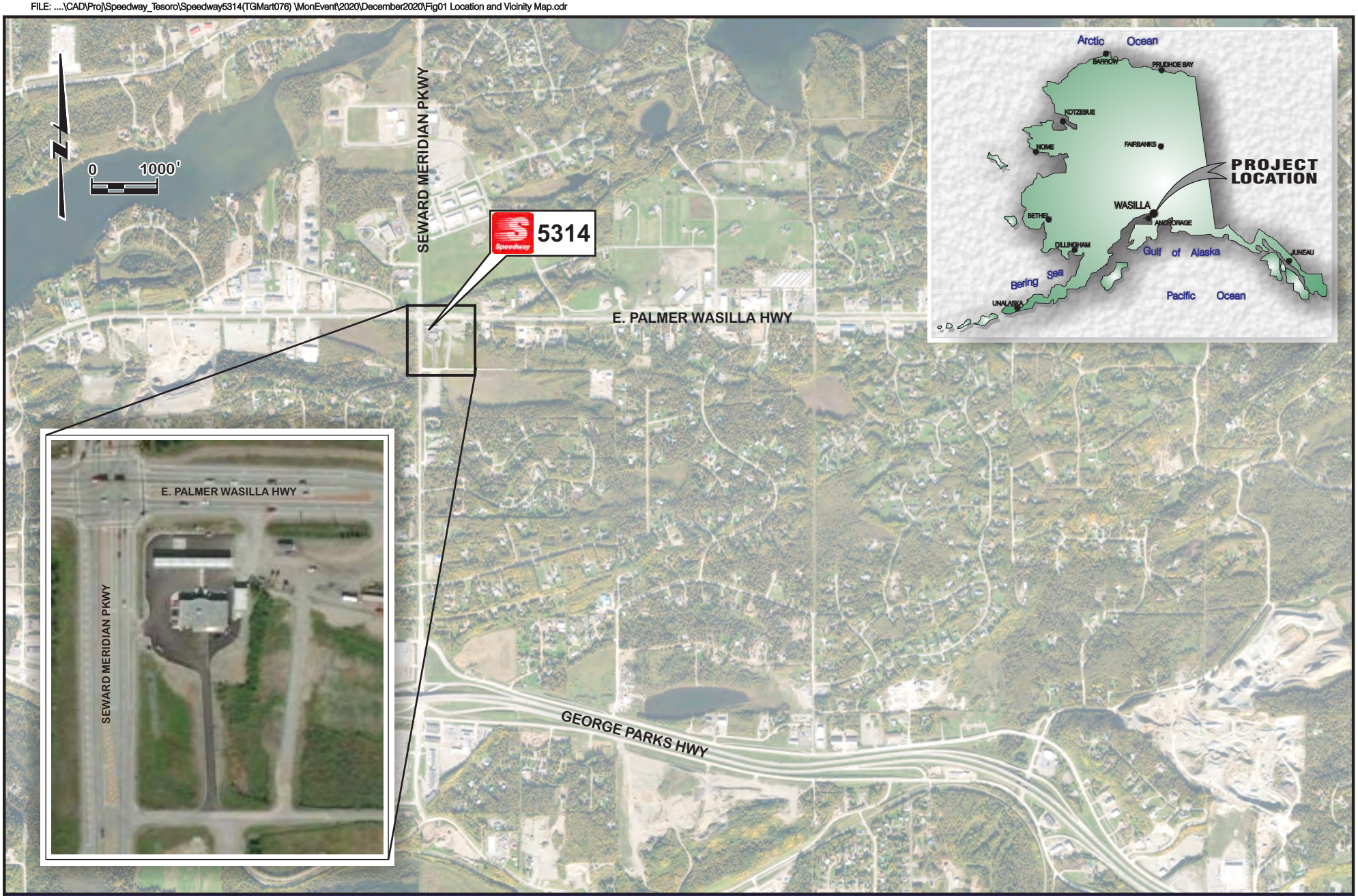

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AUGUST 2020 3Q GWM EVENT
FOR SPEEDWAY STORE 5314
(FORMERLY TESORO 2 GO MART #76)

LOCATION AND VICINITY MAP

FIGURE
1

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E. PALMER WASILLA HWY

APPROXIMATE LOCATION OF PROPERTY LINE
3600 PALMER-WASILLA HWY

WATER SUPPLY WELL LOCATION Ⓦ

APPROXIMATE
0 20'

UNDERGROUND STORAGE TANK

CANOPY

FUEL DISPENSER (TYP)

SEPTIC SYSTEM

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

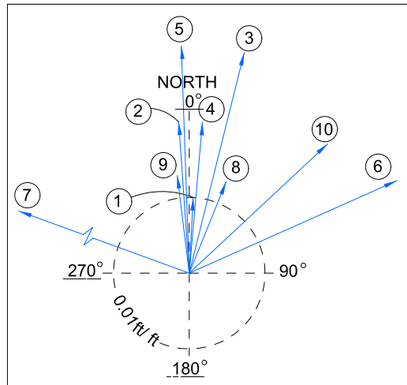
RW19-1

MW-4

MW-3

SEWARD MERIDIAN PKWY

CAMERON ACRES
BLOCK 1
LOT 7



GROUNDWATER FLOW SUMMARY

	DATE	BEARING	GRADIENT (ft/ft)
1	SEP. 1, 2017	3°	0.01
2	FEB. 15, 2018	356°	0.02
3	JUNE 29, 2018	14°	0.03
4	SEP. 11, 2018	5°	0.02
5	OCT. 26, 2018	358°	0.03
6	FEB. 25, 2019	66°	0.03
7	APRIL 25, 2019	290°	0.04
8	JULY 25, 2019	22°	0.013
9	OCT. 18, 2019	353°	0.013
10	AUG. 11, 2020	47°	0.025

MW-1

Benzene	0.00262
Toluene	U (0.001)
Ethylbenzene	U (0.001)
Xylenes	U (0.003)
GRO	U (0.1)
DRO	U (0.808)
Sodium	35.8
GW Elev	73.28

MW-2

Benzene	**0.0599**
Toluene	0.0107
Ethylbenzene	**0.0759**
Xylenes	**0.465**
GRO	0.921
DRO	0.553
Sodium	33.2
GW Elev	74.50

RW19-1		RW19-1 (Duplicate)	
Benzene	0.00126	Benzene	0.00120
Toluene	U (0.001)	Toluene	U (0.001)
Ethylbenzene	U (0.001)	Ethylbenzene	U (0.001)
Xylenes	0.000489	Xylenes	0.000302
GRO	U (0.1)	GRO	U (0.1)
DRO	U (0.848)	DRO	U (0.840)
Sodium	28.8	Sodium	28.9
GW Elev	TBD	GW Elev	TBD

MW-3

Benzene	**0.737**
Toluene	1.05
Ethylbenzene	**2.99**
Xylenes	**17.0**
GRO	**32.8**
DRO	**4.89**
Sodium	52.4
GW Elev	75.60

MW-4

Benzene	**0.054**
Toluene	U (0.001)
Ethylbenzene	0.000455
Xylenes	0.00933
GRO	0.0840
DRO	U (0.800)
Sodium	58.4
GW Elev	75.75

LEGEND:

F-UST	FORMER UNDERGROUND STORAGE TANK
▲	MONITORING WELL LOCATION
●	REMEDIATION WELL LOCATION
DRO	DIESEL RANGE ORGANICS
GRO	GASOLINE RANGE ORGANICS
H	SAMPLE WAS PREPPED OR ANALYZED BEYOND THE SPECIFIED HOLDING TIME
RW	REMEDIATION WELL
U	UNDETECTED ABOVE PRACTICAL QUANTITATION LIMITS SHOWN IN PARENTHESES
Ⓦ	DRINKING WATER WELL

NOTES:

1. RESULTS SHOWN ARE FOR WELLS SAMPLED ON AUGUST 11, 2020.
2. RESULTS ARE IN MILLIGRAMS PER LITER
3. BOLD/ RED TEXT INDICATES CONTAMINANT CONCENTRATIONS ABOVE CLEANUP LEVELS FOR THIS SITE

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AUGUST 2020 3Q GWM EVENT
FOR SPEEDWAY STORE 5314
(FORMERLY TESORO 2 GO MART #76)

SITE PLAN
WITH GROUNDWATER
ANALYTICAL RESULTS

FIGURE
2
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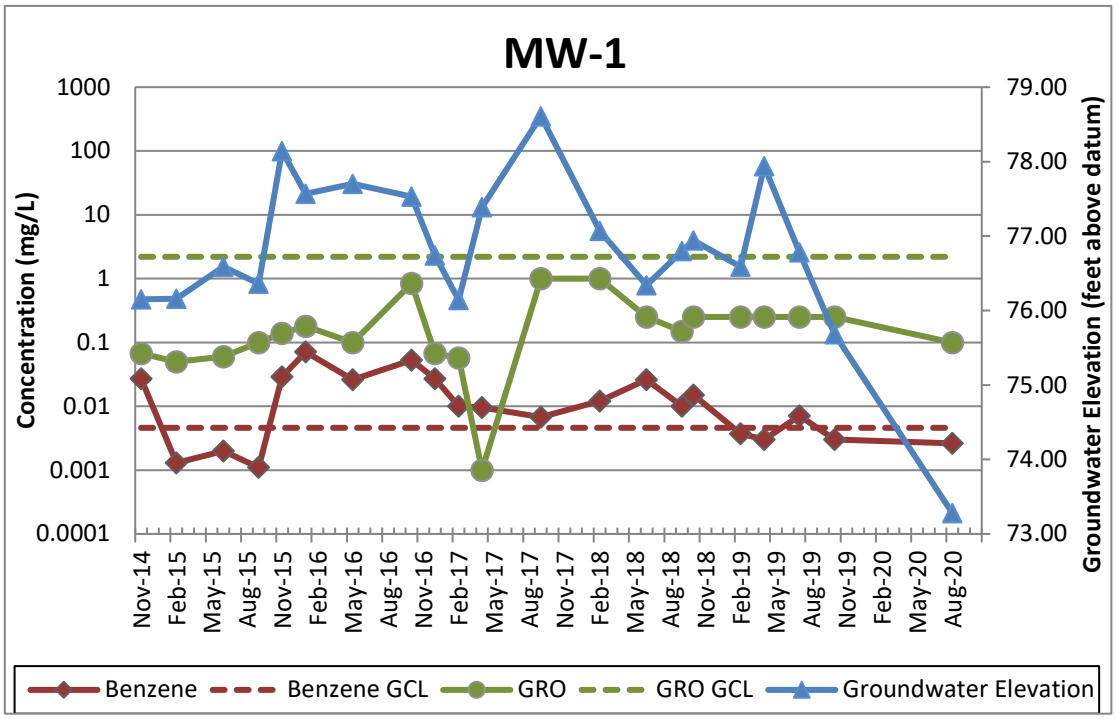
Figure 3
Graphs of Contaminant Concentrations and Groundwater Elevations



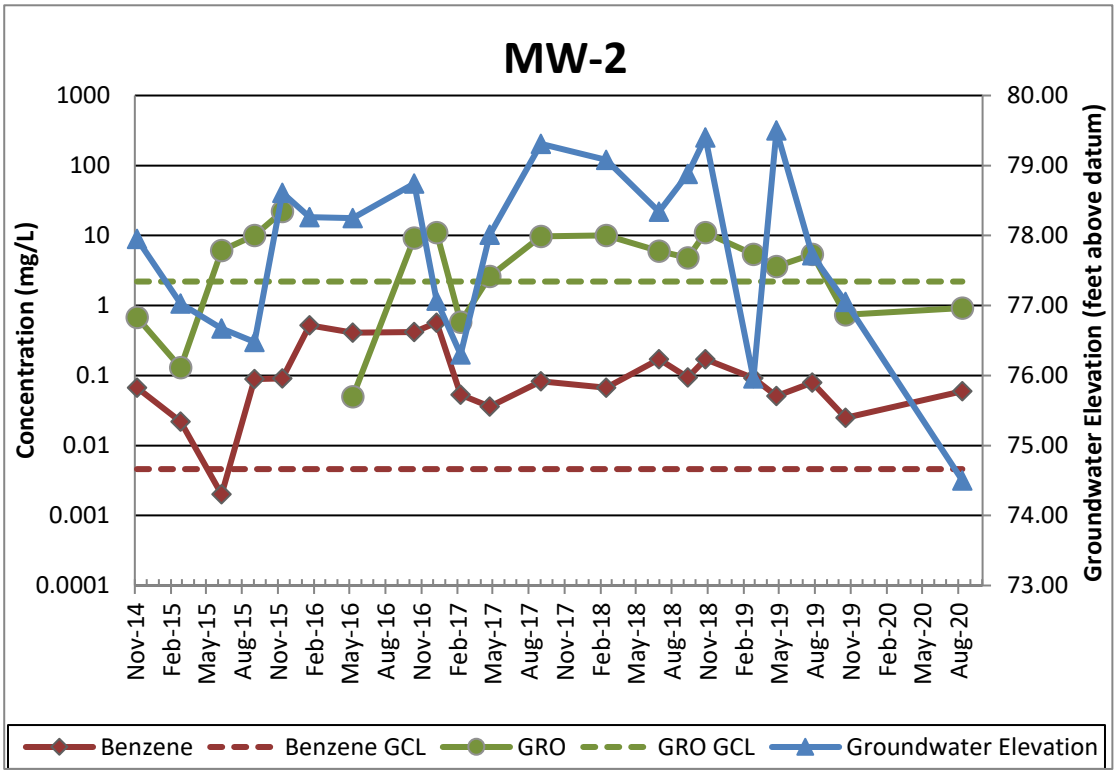
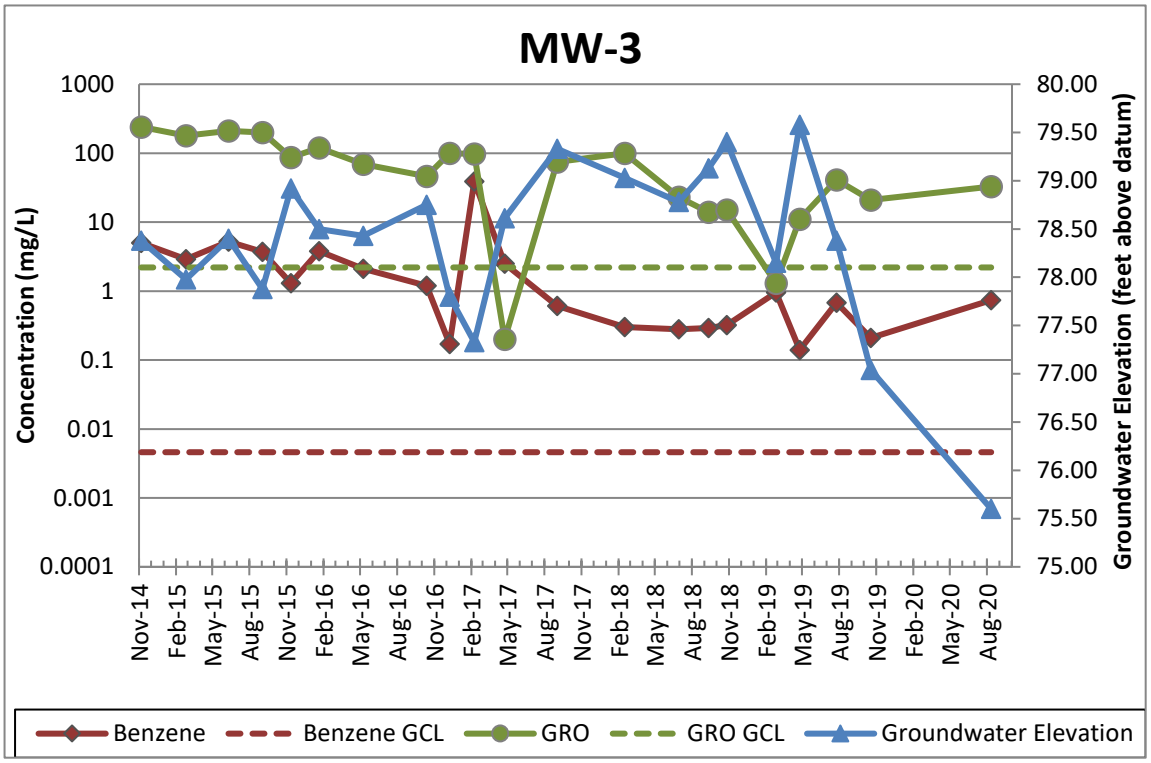
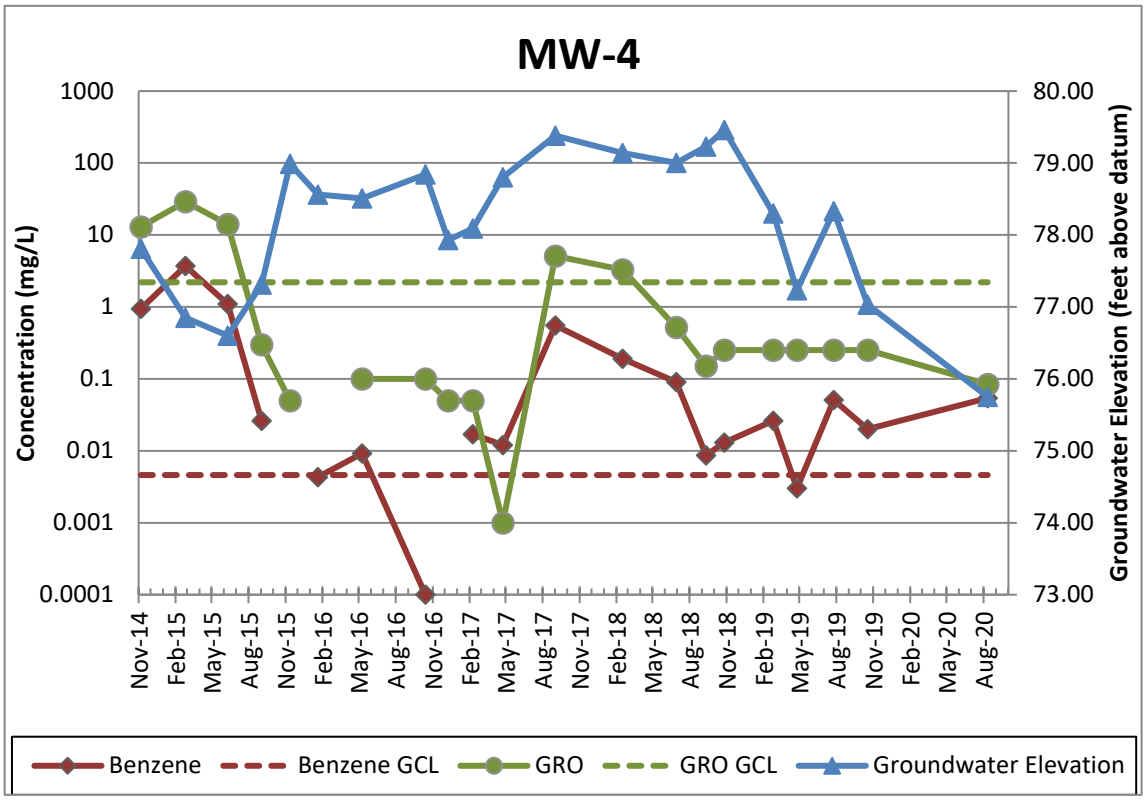


Figure 3
Graphs of Contaminant Concentrations and Groundwater Elevations





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.

APPENDIX B

Field Methods and 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 2020 Corrective Action Work Plan. The scope of these tasks is based on the results and findings of the monitoring and remediation completed to date at the site.

2020 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 RW-1	V, G, D, I	G, D, V, P, I	V, G, D, I	V, G, D, I
	On-site Domestic Drinking Water Well		D, E		
Task 2	Complete the Installation of the RW 19-1 Recirculation Groundwater Treatment System	✓	✓		
Task 3	Operate the Chemical Oxidation Treatment System	O&M	O&M	O&M	O&M

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
P – Polynuclear aromatic hydrocarbons (PAHs), i.e., semi-volatile organic compounds, by EPA Test Method 8260C.

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

- The static water levels in the monitoring wells will be measured with respect to the top of each well casing. The elevation of the static water level will be based on an arbitrary datum established on-site during a vertical control survey that will be completed by Stantec on an annual basis. The survey will be performed during the summer after the seasonal frost layer thaws.

- The monitoring wells will be purged of a minimum of three well bore volumes prior to collecting the water samples. A new, disposable, Teflon® bailer will be used to sample each well. The first bail of water removed from each well will be examined for petroleum odor, sheen, and any other unique physical features.
- Water and vapor samples will be collected in laboratory-supplied sample containers. The samples will be delivered to an ADEC-approved laboratory in accordance with standard chain-of-custody procedures.
- Additional water samples will be collected from the monitoring wells after the well has been purged, as described above, and tested in the field for chemical and physical intrinsic parameters listed in the 2020 n Schedule shown above.

APPENDIX C

Field Measurements and Hydraulic Gradient Plot

Appendix C
Field Measurements and Notes

Project: Tesoro 2 Go Mart #76 **Date:** 8/11/2020
Project number: 185704923 **Samplers:** EF/AB
Temperature: *Wind:* *Humidity:* *Pressure:* *wx source:*

Well ID	Volume Purged (gallons)	Sheen/ Odor	Temp. (˚C)	pH	Dissolved Oxygen (mg/L)	ORP (mV)	Specific Conductance (µs/cm °c)	Top of Casing* (feet)	Depth to GW (feet btoc)	GW Elev.* (feet)	Total Depth (feet btoc)
MW-1	1.50	N/N	8.0	5.72	0.56	162.0	682	94.74	21.46	73.28	24.12
MW-2	3.5	N/Y	5.9	6.55	0.68	53.8	364	95.08	20.58	74.50	26.95
MW-3	3.5	N/N	5.9	6.63	0.3	35.2	560	94.52	18.92	75.60	25.48
MW-4	4.5	N/N	5.5	6.42	0.31	51.3	647	95.02	19.27	75.75	28.03
RW19-1	15.0	N/N	6.4	6.69	0.25	32.8	343	TBD	22.61	TBD	31.31

˚C - degree Celsius
µs/cm - microsiemens per centimeter
btoc - below top of casing
elev. - elevation
GW - groundwater
mg/L - milligrams per liter
N - no
NM - Not measured
ORP - oxidation reduction potential
Y - yes
TBD - to be determined

Instruments/methods used for above measurements		Model
Static water level	Heron	H01L
Conductivity	YSI	Pro Plus
Dissolved Oxygen	YSI	Pro Solo ODO
Temperature	YSI	Pro Solo ODO
ORP	YSI	Pro Plus
pH	YSI	Pro Plus

* Based on a vertical control survey of October 18, 2019.

Notes:

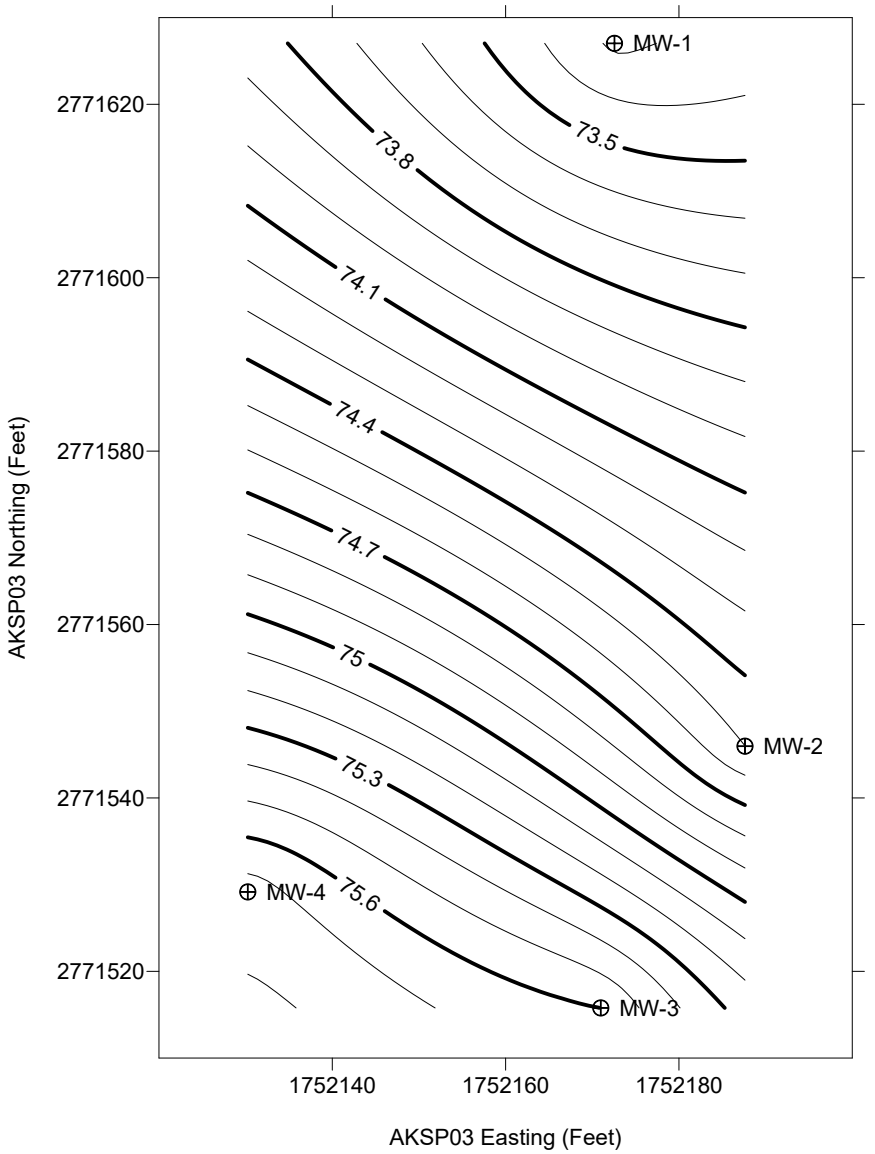
Well	Observations	Well Dia.	Time	8260C	AK101	AK102	EPA 524.2	Sodium
MW-1		2"	11:00	X	X	X	--	X
MW-2		2"	14:00	X	X	X	--	X
MW-3		2"	14:30	X	X	X	--	X
MW-4		2"	12:00	X	X	X	--	X
RW19-1	Duplicate collected	4"	12:30	X	X	X	--	X
Dup01			12:35	X	X	X		X

Extraction SVE Well RM-3	
Discharge (cfs)	NA
Vacuum (IWC)	NA
PID (ppmv)	NA

Speedway Store #5314 (Former Tesoro
2 Go Mart #76 - Groundwater Elevations
August 11, 2020

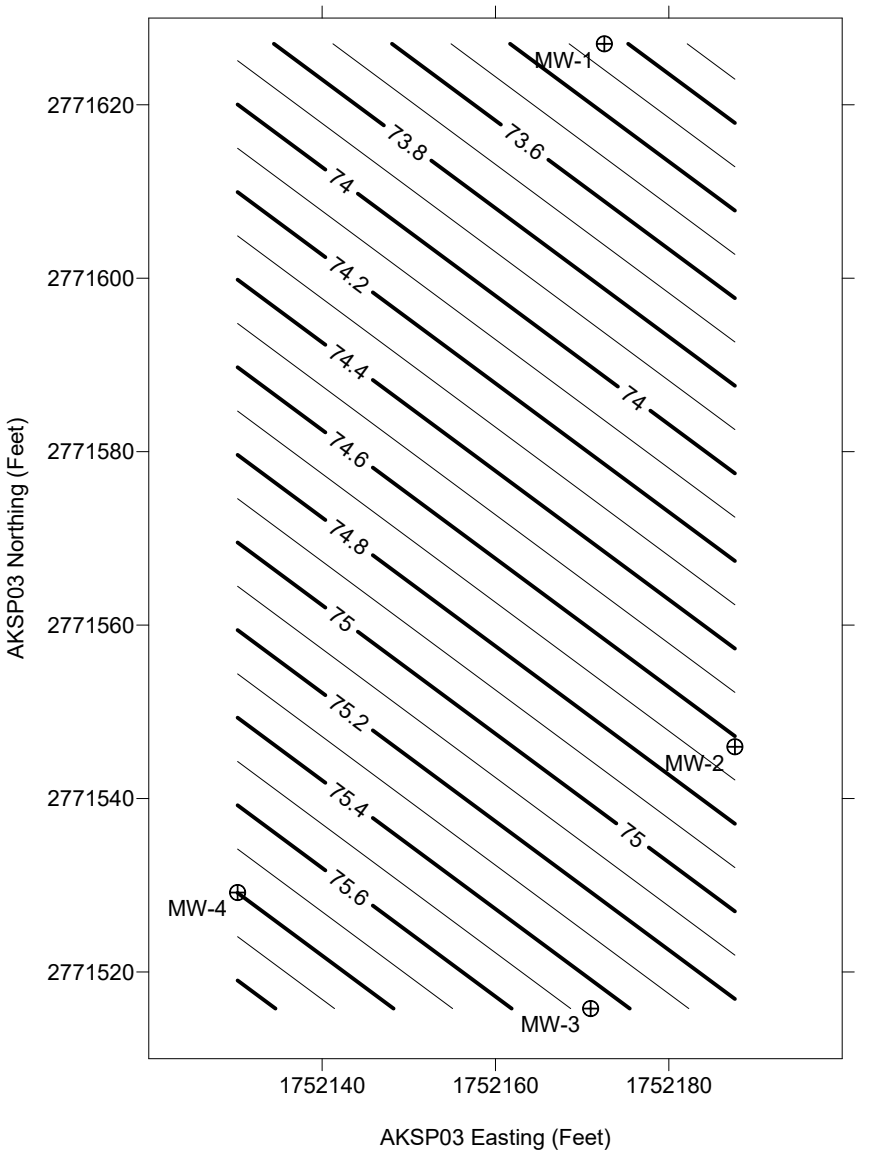
Linear Interpolation

Major Contour 0.3 feet
Minor Contour 0.1 feet



Polynomial Regression

Major Contour 0.2 feet
Minor Contour 0.1 feet



APPENDIX D

Tables of Historical Monitoring Data

Appendix D
Tables of Historical Monitoring Data

Monitoring Well MW-1

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	GW Elev (feet)
06-Nov-14	**0.027**	U (0.0005)	U (0.0005)	U (0.0015)	0.067	0.36	76.15
25-Feb-15	0.0013	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.41)	76.16
10-Jun-15	U (0.002)	U (0.002)	U (0.003)	U (0.002)	U (0.060)	0.50	76.59
02-Sep-15	0.0011	U (0.001)	U (0.001)	U (0.003)	U (0.1)	U (0.40)	76.36
12-Nov-15	**0.029**	U (0.002)	U (0.003)	U (0.002)	0.14	U (0.21)	78.14
20-Jan-16	**0.071**	U (0.002)	U (0.003)	U (0.002)	0.18	0.22	77.57
09-May-16	**0.026**	U (0.001)	U (0.001)	U (0.003)	0.1	U (0.45)	77.70
13-Oct-16	**0.053**	U (0.001)	U (0.001)	U (0.003)	0.84	0.36	77.53
09-Dec-16	**0.027**	U (0.002)	U (0.002)	U (0.003)	0.067	0.67	76.74
08-Feb-17	**0.010**	U (0.002)	U (0.003)	U (0.002)	0.057	0.27	76.14
24-Apr-17	**0.0096**	U (0.002)	U (0.003)	U (0.003)	U (0.001)	U (0.0003)	77.39
01-Sep-17	**0.0068**	U (0.002)	U (0.003)	U (0.002)	U (1.0)	0.250	78.61
15-Feb-18	**0.012**	U (0.002)	U (0.003)	U (0.003)	U (1.0)	U (0.13)	77.07
29-Jun-18	**0.026**	U (0.002)	U (0.003)	U (0.003)	U (0.25) H	0.30	76.34
11-Sep-18	**0.01**	U (0.001)	U (0.001)	U (0.002)	U (0.15)	U (0.27)	76.80
26-Oct-18	**0.015**	U (0.002)	U (0.003)	U (0.003)	U (0.25)	0.31	76.94
25-Feb-19	**0.0037**	U (0.002)	U (0.003)	U (0.003)	U (0.25)	0.19	76.59
25-Apr-19	U (0.003)	U (0.002)	U (0.003)	U (0.003)	U (0.25)	U (0.27)	77.94
25-Jul-19	**0.0071**	U (0.002)	U (0.003)	U (0.003)	U (0.25)	0.27	76.78
18-Oct-19	U (0.003)	U (0.002)	U (0.003)	U (0.003)	U (0.25)	0.16	75.68
11-Aug-20	0.00262	U (0.001)	U (0.001)	U (0.003)	U (0.1)	U (0.808)	73.28
GCLs	**0.0046**	**1.1**	**0.015**	**0.19**	**2.2**	**1.5**	NA

Monitoring Well MW-2

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	GW Elev (feet)
06-Nov-14	**0.067**	0.026	**0.016**	0.130	0.68	0.19	77.95
25-Feb-15	**0.022**	0.0045	0.0034	0.020	0.130	U (0.41)	77.03
10-Jun-15	U (0.002)	U (0.002)	U (0.003)	**1.8**	**6.1**	1.1	76.67
02-Sep-15	**0.089**	0.056	**0.065**	**1.4**	**U (10)**	**1.8**	76.48
12-Nov-15	**0.091**	0.11	**0.13**	0.179	**22**	**1.8**	78.61
20-Jan-16	**0.520**	**1.5**	**0.83**	**5.1**	NL	**1.6**	78.28
09-May-16	**0.41**	0.37	**0.35**	**2.8**	U (10)	0.95	78.25
13-Oct-16	**0.42**	0.63	**0.48**	**2.62**	**9.2**	0.98	78.74
09-Dec-16	**0.57**	0.17	**0.50**	**1.01**	**11**	**1.7**	77.07
08-Feb-17	**0.053**	U (0.002)	**0.02**	0.096	0.58	0.20	77.32
24-Apr-17	**0.036**	0.012	**0.035**	**0.66**	**2.6**	0.94	78.01
01-Sep-17	**0.083**	0.026	**0.450**	**2.330**	**9.7**	1.3	79.31
15-Feb-18	**0.067**	0.02	**0.14**	**0.97**	**U (10)**	0.98	79.08
29-Jun-18	**0.17**	0.25	**0.59**	**3.3**	**6.0 H**	1.2	78.34
11-Sep-18	**0.094**	0.13	**0.18**	**1.08**	**4.8**	0.74	78.88
26-Oct-18	**0.17**	0.28	**0.48**	**3.01**	**11**	1.0	79.40
25-Feb-19	**0.092**	0.22	**0.18**	**1.41**	**5.4**	1.2	75.96
25-Apr-19	**0.051**	0.13	U (0.003)	**1.28**	**3.6**	0.93	79.50
25-Jul-19	**0.079**	0.13	**0.2**	**1.47**	**5.4**	0.89	77.72
18-Oct-19	**0.025**	0.0065	**0.022**	0.101	0.74	0.24	77.05
11-Aug-20	**0.0599**	0.0107	**0.0759**	**0.465**	0.921	0.553	74.50
GCLs	**0.0046**	**1.1**	**0.015**	**0.19**	**2.2**	**1.5**	NA

Appendix D
Tables of Historical Monitoring Data

Monitoring Well MW-3

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	GW Elev (feet)
06-Nov-14	**5.0**	**7.4**	**37**	**39**	**240**	**3.5**	78.38
25-Feb-15	**2.9**	**34**	**6.7**	**37**	**180**	**8.6**	77.98
10-Jun-15	**5.2**	**38**	**8.2**	**48**	**210**	**9.5**	78.40
02-Sep-15	**3.7**	**24**	**4.4**	**28**	**U (200)**	**5.1**	77.88
12-Nov-15	**1.3**	**2.1**	**0.21**	**1.69**	**87**	**3.6**	78.92
20-Jan-16	**3.8**	**13**	**4.2**	**25.3**	**120**	**4.1**	78.50
09-May-16	**2.1**	**21**	**2.2**	**33**	**69**	**1.5**	78.43
13-Oct-16	**1.2**	**4.2**	**2.9**	**14.6**	**46**	**2**	78.75
09-Dec-16	**0.17 (E)**	NL	NL	**0.54 (E)**	**100**	**3.3**	77.80
08-Feb-17	**39**	**99**	**53**	**103**	**98**	**3.9**	77.61
24-Apr-17	**2.5**	**14**	**5.2**	**28.9**	U (200)	**6.7**	78.61
01-Sep-17	**0.610**	**9.300**	**3.700**	**21.400**	**75**	**1.9**	79.33
15-Feb-18	**0.3**	**3.8**	**2.9**	**15.6**	**U (100)**	1.3	79.03
29-Jun-18	**0.28**	1.1	**1.7**	**8.2 H**	**23 H**	1.1	78.78
11-Sep-18	**0.29**	0.53	**1**	**5.6**	**14**	0.91	79.13
26-Oct-18	**0.32**	0.36	**0.89**	**4.3**	**15**	0.93	79.40
25-Feb-19	**0.95**	0.69	**2.3**	**11.4**	U (1.3)	**4.6**	78.15
25-Apr-19	**0.14**	0.13	**U (1.5)**	**U (1.5)**	**11**	0.64	79.58
25-Jul-19	**0.68**	**1.2**	**2.4**	**11.6**	**41**	**1.9**	78.38
18-Oct-19	**0.21**	0.66	**1.7**	**9.7**	**21**	1.2	77.04
11-Aug-20	**0.737**	1.05	**2.99**	**17**	**32.8**	**4.89**	75.60
GCLs	**0.0046**	**1.1**	**0.015**	**0.19**	**2.2**	**1.5**	NA

Monitoring Well MW-4

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	GW Elev (feet)
06-Nov-14	**0.940**	**1.9**	**0.3**	**1.5**	**13**	0.45	77.81
25-Feb-15	**3.7**	**6.6**	**0.56**	**2.7**	**29**	1.0	76.85
10-Jun-15	**1.1**	**2.3**	**0.54**	**2.7**	**14**	1.0	76.60
02-Sep-15	**0.026**	U (0.001)	0.007	0.03	0.3	U (0.40)	77.31
12-Nov-15	NL	NL	NL	NL	U (0.050)	U (0.21)	78.99
20-Jan-16	0.0043	U (0.002)	U (0.003)	U (0.002)	NL	0.15	78.56
09-May-16	**0.0092**	U (0.001)	U (0.001)	U (0.003)	U (0.1)	U (0.42)	78.51
13-Oct-16	U (0.00020)	U (0.001)	U (0.001)	U (0.003)	U (0.1)	0.18	78.84
09-Dec-16	NL	NL	NL	NL	U (0.05)	0.18	77.93
08-Feb-17	**0.017**	U (0.002)	U (0.003)	U (0.002)	U (0.05)	0.18	78.81
24-Apr-17	**0.012**	U (0.002)	0.0049	U (0.003)	U (0.001)	U (0.0003)	78.8
01-Sep-17	**0.550**	U (0.050)	**0.380**	**0.740**	**5.1**	0.48	79.38
15-Feb-18	**0.19**	U (0.10)	**0.26**	**0.438**	**3.3**	0.29	79.14
29-Jun-18	**0.09**	U (0.002)	**0.022**	0.027	0.52	0.19	79.00
11-Sep-18	**0.0086**	U (0.001)	0.0052	0.0062	U (0.15)	U (0.28)	79.23
26-Oct-18	**0.013**	U (0.002)	0.0045	0.0089	U (0.25)	0.15	79.46
25-Feb-19	**0.026**	U (0.002)	0.0034	0.0089	U (0.25)	0.20	78.30
25-Apr-19	U (0.003)	U (0.002)	U (0.003)	U (0.003)	U (0.25)	U (0.27)	77.23
25-Jul-19	**0.051**	U (0.002)	U (0.003)	0.0078	U (0.25)	0.16	78.33
18-Oct-19	**0.020**	0.015	0.0059	0.0277	U (0.25)	U (0.12)	77.03
11-Aug-20	**0.054**	U (0.001)	0.000455	0.00933	0.084	U (0.800)	75.75
GCLs	**0.0046**	**1.1**	**0.015**	**0.19**	**2.2**	**1.5**	NA

Appendix D
Tables of Historical Monitoring Data

Monitoring Well RW19-1

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	GW Elev (feet)
18-Oct-19							
11-Aug-20	0.001	U (0.001)	U (0.001)	0.000489	U (0.1)	U (0.848)	TBD
GCLs	**0.0046**	**1.1**	**0.015**	**0.19**	**2.2**	**1.5**	NA

TBD - to be determined

APPENDIX E

Laboratory Analytical Report and ADEC Laboratory Data Review Checklist

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

August 25, 2020

Stantec - Anchorage, AK - Speedway

Sample Delivery Group:	L1250383
Samples Received:	08/13/2020
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

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MW-01 L1250383-01 GW

Collected by: Eli Fredrickson | Collected date/time: 08/11/20 11:00 | Received date/time: 08/13/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1527069	1	08/18/20 16:39	08/19/20 03:20	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8021/AK101	WG1527479	1	08/17/20 15:48	08/17/20 15:48	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1526563	1	08/15/20 22:34	08/15/20 22:34	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1526958	1.01	08/16/20 15:28	08/17/20 23:55	CAG	Mt. Juliet, TN

MW-02 L1250383-02 GW

Collected by: Eli Fredrickson | Collected date/time: 08/11/20 14:00 | Received date/time: 08/13/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1527069	1	08/18/20 16:39	08/19/20 03:23	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8021/AK101	WG1527479	1	08/17/20 16:12	08/17/20 16:12	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1526563	1	08/15/20 22:55	08/15/20 22:55	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1526958	1.09	08/16/20 15:28	08/18/20 00:15	CAG	Mt. Juliet, TN

MW-03 L1250383-03 GW

Collected by: Eli Fredrickson | Collected date/time: 08/11/20 14:30 | Received date/time: 08/13/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1527069	1	08/18/20 16:39	08/19/20 03:26	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8021/AK101	WG1528979	100	08/20/20 05:03	08/20/20 05:03	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1526563	25	08/16/20 04:24	08/16/20 04:24	JCP	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1528019	200	08/18/20 19:03	08/18/20 19:03	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1526958	1.08	08/16/20 15:28	08/18/20 02:36	CAG	Mt. Juliet, TN

MW-04 L1250383-04 GW

Collected by: Eli Fredrickson | Collected date/time: 08/11/20 12:00 | Received date/time: 08/13/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1527069	1	08/18/20 16:39	08/19/20 03:29	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8021/AK101	WG1527479	1	08/17/20 16:36	08/17/20 16:36	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1526563	1	08/15/20 23:15	08/15/20 23:15	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1529096	1	08/21/20 01:47	08/24/20 10:31	KME	Mt. Juliet, TN

RW19-01 L1250383-05 GW

Collected by: Eli Fredrickson | Collected date/time: 08/11/20 12:30 | Received date/time: 08/13/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1527069	1	08/18/20 16:39	08/19/20 03:36	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8021/AK101	WG1527479	1	08/17/20 17:00	08/17/20 17:00	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1526563	1	08/15/20 23:36	08/15/20 23:36	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1526958	1.06	08/16/20 15:28	08/18/20 00:35	CAG	Mt. Juliet, TN

DUP1 L1250383-06 GW

Collected by: Eli Fredrickson | Collected date/time: 08/11/20 00:00 | Received date/time: 08/13/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1527069	1	08/18/20 16:39	08/19/20 03:39	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8021/AK101	WG1527479	1	08/17/20 17:24	08/17/20 17:24	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1526563	1	08/15/20 23:56	08/15/20 23:56	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1526958	1.05	08/16/20 15:28	08/18/20 00:56	CAG	Mt. Juliet, TN

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	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Sodium	35.8		1.40	3.00	1	08/19/2020 03:20	WG1527069

Volatile Organic Compounds (GC) by Method 8021/AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
TPHGAK C6 to C10	U		0.0100	0.100	1	08/17/2020 15:48	WG1527479
Methyl tert-butyl ether	U		0.000340	0.00500	1	08/17/2020 15:48	WG1527479
(S) a,a,a-Trifluorotoluene(FID)	*99.4*			*50.0-150*		*08/17/2020 15:48*	WG1527479
(S) a,a,a-Trifluorotoluene(PID)	*101*			*79.0-125*		*08/17/2020 15:48*	WG1527479

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Benzene	0.00262		0.0000941	0.00100	1	08/15/2020 22:34	WG1526563
Toluene	U		0.000278	0.00100	1	08/15/2020 22:34	WG1526563
Ethylbenzene	U		0.000137	0.00100	1	08/15/2020 22:34	WG1526563
Total Xylenes	U		0.000174	0.00300	1	08/15/2020 22:34	WG1526563
(S) Toluene-d8	*104*			*80.0-120*		*08/15/2020 22:34*	WG1526563
(S) 4-Bromofluorobenzene	*89.3*			*77.0-126*		*08/15/2020 22:34*	WG1526563
(S) 1,2-Dichloroethane-d4	*111*			*70.0-130*		*08/15/2020 22:34*	WG1526563

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
AK102 DRO C10-C25	U		0.231	0.808	1.01	08/17/2020 23:55	WG1526958
(S) o-Terphenyl	*109*			*50.0-150*		*08/17/2020 23:55*	WG1526958

Sample Narrative:

L1250383-01 WG1526958: Dilution due to sample volume.

Metals (ICP) by Method 6010C

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Sodium	33.2		1.40	3.00	1	08/19/2020 03:23	WG1527069

Volatile Organic Compounds (GC) by Method 8021/AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
TPHGAK C6 to C10	0.921		0.0100	0.100	1	08/17/2020 16:12	WG1527479
Methyl tert-butyl ether	U		0.000340	0.00500	1	08/17/2020 16:12	WG1527479
(S) a,a,a-Trifluorotoluene(FID)	*97.9*			*50.0-150*		*08/17/2020 16:12*	WG1527479
(S) a,a,a-Trifluorotoluene(PID)	*99.1*			*79.0-125*		*08/17/2020 16:12*	WG1527479

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Benzene	0.0599		0.0000941	0.00100	1	08/15/2020 22:55	WG1526563
Toluene	0.0107		0.000278	0.00100	1	08/15/2020 22:55	WG1526563
Ethylbenzene	0.0759		0.000137	0.00100	1	08/15/2020 22:55	WG1526563
Total Xylenes	0.465		0.000174	0.00300	1	08/15/2020 22:55	WG1526563
(S) Toluene-d8	*97.2*			*80.0-120*		*08/15/2020 22:55*	WG1526563
(S) 4-Bromofluorobenzene	*91.9*			*77.0-126*		*08/15/2020 22:55*	WG1526563
(S) 1,2-Dichloroethane-d4	*108*			*70.0-130*		*08/15/2020 22:55*	WG1526563

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
AK102 DRO C10-C25	0.553	J	0.250	0.872	1.09	08/18/2020 00:15	WG1526958
(S) o-Terphenyl	*103*			*50.0-150*		*08/18/2020 00:15*	WG1526958

Sample Narrative:

L1250383-02 WG1526958: Dilution due to sample volume.

Metals (ICP) by Method 6010C

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Sodium	52.4		1.40	3.00	1	08/19/2020 03:26	WG1527069

Volatile Organic Compounds (GC) by Method 8021/AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
TPHGAK C6 to C10	32.8		1.00	10.0	100	08/20/2020 05:03	WG1528979
Ethylbenzene	3.66		0.0160	0.0500	100	08/20/2020 05:03	WG1528979
Total Xylene	20.3		0.0510	0.150	100	08/20/2020 05:03	WG1528979
(S) a,a,a-Trifluorotoluene(FID)	*103*			*50.0-150*		*08/20/2020 05:03*	WG1528979
(S) a,a,a-Trifluorotoluene(PID)	*101*			*79.0-125*		*08/20/2020 05:03*	WG1528979

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Benzene	0.737		0.00235	0.0250	25	08/16/2020 04:24	WG1526563
Toluene	1.05		0.00695	0.0250	25	08/16/2020 04:24	WG1526563
Ethylbenzene	2.99		0.00343	0.0250	25	08/16/2020 04:24	WG1526563
Total Xylenes	17.0		0.0348	0.600	200	08/18/2020 19:03	WG1528019
(S) Toluene-d8	*95.3*			*80.0-120*		*08/16/2020 04:24*	WG1526563
(S) Toluene-d8	*97.9*			*80.0-120*		*08/18/2020 19:03*	WG1528019
(S) 4-Bromofluorobenzene	*89.1*			*77.0-126*		*08/16/2020 04:24*	WG1526563
(S) 4-Bromofluorobenzene	*106*			*77.0-126*		*08/18/2020 19:03*	WG1528019
(S) 1,2-Dichloroethane-d4	*108*			*70.0-130*		*08/16/2020 04:24*	WG1526563
(S) 1,2-Dichloroethane-d4	*97.1*			*70.0-130*		*08/18/2020 19:03*	WG1528019

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
AK102 DRO C10-C25	4.89		0.247	0.864	1.08	08/18/2020 02:36	WG1526958
(S) o-Terphenyl	*111*			*50.0-150*		*08/18/2020 02:36*	WG1526958

Metals (ICP) by Method 6010C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Sodium	58.4		1.40	3.00	1	08/19/2020 03:29	WG1527069

Volatile Organic Compounds (GC) by Method 8021/AK101

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
TPHGAK C6 to C10	0.0840	J	0.0100	0.100	1	08/17/2020 16:36	WG1527479
Methyl tert-butyl ether	U		0.000340	0.00500	1	08/17/2020 16:36	WG1527479
(S) a,a,a-Trifluorotoluene(FID)	*99.0*			*50.0-150*		*08/17/2020 16:36*	WG1527479
(S) a,a,a-Trifluorotoluene(PID)	*99.4*			*79.0-125*		*08/17/2020 16:36*	WG1527479

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	0.0540		0.0000941	0.00100	1	08/15/2020 23:15	WG1526563
Toluene	U		0.000278	0.00100	1	08/15/2020 23:15	WG1526563
Ethylbenzene	0.000455	J	0.000137	0.00100	1	08/15/2020 23:15	WG1526563
Total Xylenes	0.00933		0.000174	0.00300	1	08/15/2020 23:15	WG1526563
(S) Toluene-d8	*106*			*80.0-120*		*08/15/2020 23:15*	WG1526563
(S) 4-Bromofluorobenzene	*89.1*			*77.0-126*		*08/15/2020 23:15*	WG1526563
(S) 1,2-Dichloroethane-d4	*109*			*70.0-130*		*08/15/2020 23:15*	WG1526563

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		0.229	0.800	1	08/24/2020 10:31	WG1529096
(S) o-Terphenyl	*104*			*50.0-150*		*08/24/2020 10:31*	WG1529096

Metals (ICP) by Method 6010C

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Sodium	28.8		1.40	3.00	1	08/19/2020 03:36	WG1527069

Volatile Organic Compounds (GC) by Method 8021/AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
TPHGAK C6 to C10	U		0.0100	0.100	1	08/17/2020 17:00	WG1527479
Methyl tert-butyl ether	U		0.000340	0.00500	1	08/17/2020 17:00	WG1527479
(S) a,a,a-Trifluorotoluene(FID)	*101*			*50.0-150*		*08/17/2020 17:00*	WG1527479
(S) a,a,a-Trifluorotoluene(PID)	*100*			*79.0-125*		*08/17/2020 17:00*	WG1527479

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Benzene	0.00126		0.0000941	0.00100	1	08/15/2020 23:36	WG1526563
Toluene	U		0.000278	0.00100	1	08/15/2020 23:36	WG1526563
Ethylbenzene	U		0.000137	0.00100	1	08/15/2020 23:36	WG1526563
Total Xylenes	0.000489	J	0.000174	0.00300	1	08/15/2020 23:36	WG1526563
(S) Toluene-d8	*103*			*80.0-120*		*08/15/2020 23:36*	WG1526563
(S) 4-Bromofluorobenzene	*90.4*			*77.0-126*		*08/15/2020 23:36*	WG1526563
(S) 1,2-Dichloroethane-d4	*112*			*70.0-130*		*08/15/2020 23:36*	WG1526563

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
AK102 DRO C10-C25	U		0.243	0.848	1.06	08/18/2020 00:35	WG1526958
(S) o-Terphenyl	*119*			*50.0-150*		*08/18/2020 00:35*	WG1526958

Sample Narrative:

L1250383-05 WG1526958: Dilution due to sample volume.

Metals (ICP) by Method 6010C

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Sodium	28.9		1.40	3.00	1	08/19/2020 03:39	WG1527069

Volatile Organic Compounds (GC) by Method 8021/AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
TPHGAK C6 to C10	U		0.0100	0.100	1	08/17/2020 17:24	WG1527479
Methyl tert-butyl ether	U		0.000340	0.00500	1	08/17/2020 17:24	WG1527479
(S) a,a,a-Trifluorotoluene(FID)	*102*			*50.0-150*		*08/17/2020 17:24*	WG1527479
(S) a,a,a-Trifluorotoluene(PID)	*104*			*79.0-125*		*08/17/2020 17:24*	WG1527479

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Benzene	0.00120		0.0000941	0.00100	1	08/15/2020 23:56	WG1526563
Toluene	U		0.000278	0.00100	1	08/15/2020 23:56	WG1526563
Ethylbenzene	U		0.000137	0.00100	1	08/15/2020 23:56	WG1526563
Total Xylenes	0.000302	J	0.000174	0.00300	1	08/15/2020 23:56	WG1526563
(S) Toluene-d8	*101*			*80.0-120*		*08/15/2020 23:56*	WG1526563
(S) 4-Bromofluorobenzene	*87.8*			*77.0-126*		*08/15/2020 23:56*	WG1526563
(S) 1,2-Dichloroethane-d4	*109*			*70.0-130*		*08/15/2020 23:56*	WG1526563

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
AK102 DRO C10-C25	U		0.240	0.840	1.05	08/18/2020 00:56	WG1526958
(S) o-Terphenyl	*121*			*50.0-150*		*08/18/2020 00:56*	WG1526958

Sample Narrative:

L1250383-06 WG1526958: Dilution due to sample volume.

Method Blank (MB)

(MB) R3561290-1 08/19/20 02:33

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Sodium	U		1.40	3.00

Laboratory Control Sample (LCS)

(LCS) R3561290-2 08/19/20 02:35

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Sodium	10.0	9.11	91.1	80.0-120	

L1250224-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1250224-06 08/19/20 02:38 • (MS) R3561290-4 08/19/20 02:43 • (MSD) R3561290-5 08/19/20 02:46

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	17.8	26.8	27.0	90.4	92.8	1	75.0-125			0.894	20

Method Blank (MB)

(MB) R3561651-3 08/17/20 15:00

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Methyl tert-butyl ether	U		0.000340	0.00500
TPHGAK C6 to C10	U		0.0100	0.100
(S) a,a,a-Trifluorotoluene(PID)	*99.5*			*79.0-125*
(S) a,a,a-Trifluorotoluene(FID)	*101*			*60.0-120*

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

(LCS) R3561651-1 08/17/20 13:40 • (LCSD) R3561651-4 08/17/20 21:49

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 %
Methyl tert-butyl ether	0.0500	0.0500	0.0579	100	116	63.0-126			14.6	21
(S) a,a,a-Trifluorotoluene(PID)				*100*	*100*	*79.0-125*				
(S) a,a,a-Trifluorotoluene(FID)				*101*	*103*	*60.0-120*				

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

(LCS) R3561651-2 08/17/20 13:40 • (LCSD) R3561651-5 08/17/20 21:49

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPHGAK C6 to C10	0.400	0.358	0.424	89.5	106	60.0-120			16.9	20
(S) a,a,a-Trifluorotoluene(PID)				*100*	*100*	*79.0-125*				
(S) a,a,a-Trifluorotoluene(FID)				*101*	*103*	*60.0-120*				

Method Blank (MB)

(MB) R3561891-3 08/20/20 03:50

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Ethylbenzene	U		0.000160	0.000500
Total Xylene	U		0.000510	0.00150
TPHGAK C6 to C10	U		0.0100	0.100
(S) a,a,a-Trifluorotoluene(PID)	*101*			*79.0-125*
(S) a,a,a-Trifluorotoluene(FID)	*102*			*60.0-120*

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

(LCS) R3561891-1 08/20/20 03:02 • (LCSD) R3561891-4 08/20/20 05:51

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPHGAK C6 to C10	0.400	0.389	0.398	97.3	99.5	60.0-120			2.29	20
(S) a,a,a-Trifluorotoluene(PID)				*100*	*98.4*	*79.0-125*				
(S) a,a,a-Trifluorotoluene(FID)				*103*	*103*	*60.0-120*				

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

(LCS) R3561891-2 08/20/20 03:02 • (LCSD) R3561891-5 08/20/20 05:51

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 %
Ethylbenzene	0.0500	0.0548	0.0563	110	113	75.0-122			2.70	20
Total Xylene	0.150	0.160	0.165	107	110	74.0-124			3.08	20
(S) a,a,a-Trifluorotoluene(PID)				*100*	*98.4*	*79.0-125*				
(S) a,a,a-Trifluorotoluene(FID)				*103*	*103*	*60.0-120*				

Method Blank (MB)

(MB) R3561087-2 08/15/20 22:14

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.0000941	0.00100
Ethylbenzene	U		0.000137	0.00100
Toluene	U		0.000278	0.00100
Xylenes, Total	U		0.000174	0.00300
(S) Toluene-d8	*103*			*80.0-120*
(S) 4-Bromofluorobenzene	*88.7*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*107*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3561087-1 08/15/20 21:32

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.00500	0.00475	95.0	70.0-123	
Ethylbenzene	0.00500	0.00451	90.2	79.0-123	
Toluene	0.00500	0.00454	90.8	79.0-120	
Xylenes, Total	0.0150	0.0135	90.0	79.0-123	
(S) Toluene-d8			*98.8*	*80.0-120*	
(S) 4-Bromofluorobenzene			*91.6*	*77.0-126*	
(S) 1,2-Dichloroethane-d4			*112*	*70.0-130*	

Method Blank (MB)

(MB) R3561403-2 08/18/20 15:57

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Xylenes, Total	U		0.000174	0.00300
(S) Toluene-d8	*101*			*80.0-120*
(S) 4-Bromofluorobenzene	*107*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*95.0*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3561403-1 08/18/20 14:38

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Xylenes, Total	0.0150	0.0135	90.0	79.0-123	
(S) Toluene-d8			*98.9*	*80.0-120*	
(S) 4-Bromofluorobenzene			*107*	*77.0-126*	
(S) 1,2-Dichloroethane-d4			*97.8*	*70.0-130*	

Method Blank (MB)

(MB) R3560944-1 08/17/20 22:53

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
AK102 DRO C10-C25	U		0.229	0.800
(S) o-Terphenyl	*108*			*60.0-120*

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

(LCS) R3560944-2 08/17/20 23:13 • (LCSD) R3560944-3 08/17/20 23:35

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
AK102 DRO C10-C25	3.00	3.24	3.23	108	108	75.0-125			0.309	20
(S) o-Terphenyl				*123*	*119*	*60.0-120*	J1			

Method Blank (MB)

(MB) R3563094-1 08/24/20 09:10

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	*119*			*60.0-120*

Laboratory Control Sample (LCS)

(LCS) R3563094-2 08/24/20 09:30

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
AK102 DRO C10-C25	3.00	3.14	105	75.0-125	
(S) o-Terphenyl			*108*	*60.0-120*	

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
J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

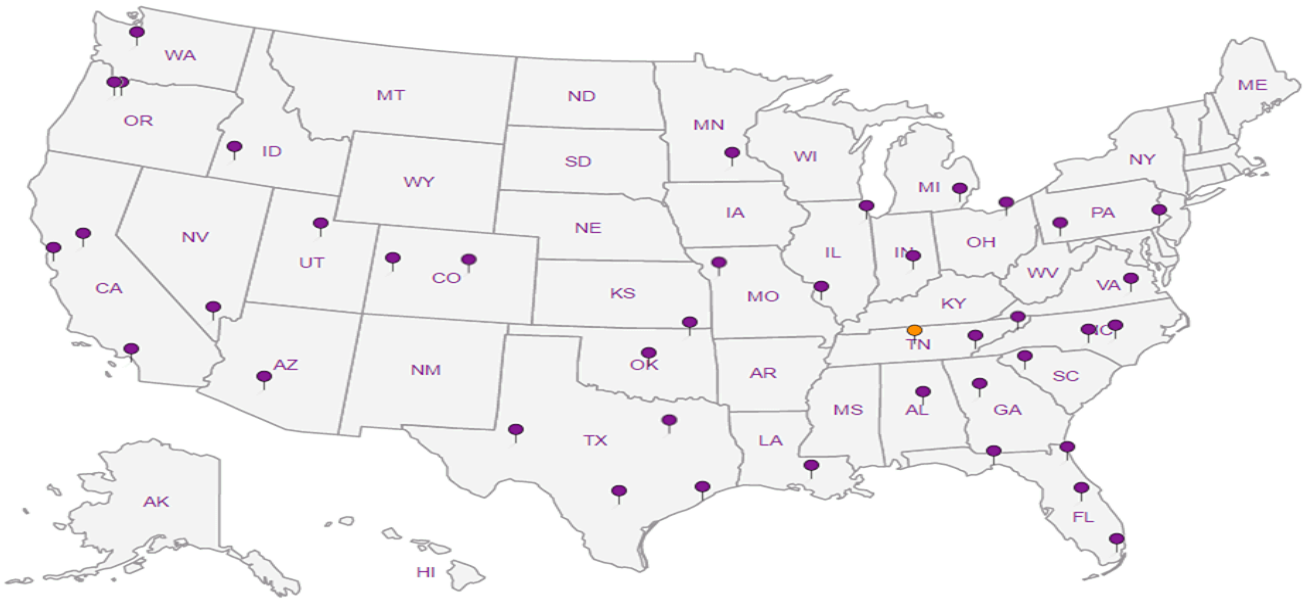
Third Party Federal Accreditations

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

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

Our Locations

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



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: john.marshall@stantec.com

Project Description: Speedway 5314

City/State Collected: Wasilla, AK

Please Circle: PT MT CT ET

Phone: 907-266-1108
Fax:

Client Project #

Lab Project # STAAAKSSA-5314

Collected by (print): Eli Fredrickson

Site/Facility ID # 0005314

P.O. #

Collected by (signature): Eli

Immediately Packed on Ice N ___ Y X

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

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	AK101 40mlAmb HCl	AK102 100ml Amb HCl	NAICP 250mlHDPE-HNO3	V8260BTEXC 40mlAmb-HCl	Remarks	Sample # (lab only)
MW-01		GW	23 ft BS	8/11/20	1100	9	X	X	X	X		-01
MW-02		GW		8/11/20	1400	9	X	X	X	X		-02
MW-03		GW		8/11/20	1430	9	X	X	X	X		-03
MW-04		GW		8/11/20	1200	9	X	X	X	X		-04
RW19-01		GW		8/11/20	1230	9	X	X	X	X		-05
DUP1		GW		8/11/20	1235	9	X	X	X	X		-06

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

Pace Analytical®
National Center for Testing & Innovation

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

SDG # L1250583

F160

Acctnum: STAAAKSSA

Template: T165472

Prelogin: P764559

PM: 034 - Craig Cothron

PB: 3/26/20 MW

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 # 166357597147

Sample Receipt Checklist

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

	Date:	Time:		
Relinquished by : (Signature) Eli	8/12/20	8:00	Received by: (Signature)	Trip Blank Received: Yes / No HCl / MeoH TBR
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 1.7, 1.6 °C Bottles Received: 54
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 081320 Time: 0900

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

Laboratory Data Review Checklist

Completed By:

Austin Badger

Title:

Environmental Scientist

Date:

11/18/2020

Consultant Firm:

Stantec Consulting Services Inc.

Laboratory Name:

Pace Analytical

Laboratory Report Number:

L1250383

Laboratory Report Date:

08/25/2020

CS Site Name:

Speedway 0005314

ADEC File Number:

2265.56.037

Hazard Identification Number:

2986

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

1. Laboratory

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

   Yes☒ No☐ N/A☐ Comments:

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

   Yes☒ No☐ N/A☐ Comments:

2. Chain of Custody (CoC)

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

   Yes☒ No☐ N/A☐ Comments:

   b. Correct analyses requested?

   Yes☒ No☐ N/A☐ Comments:

3. Laboratory Sample Receipt Documentation

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

   Yes☒ No☐ N/A☐ Comments:

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

   Yes☒ No☐ N/A☐ Comments:

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

   Yes☒ No☐ N/A☐ Comments:

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

   Yes☐ No☐ N/A☐ Comments:

e. Data quality or usability affected?

Comments:

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:

c. Were all corrective actions documented?

Yes☒ No☐ N/A☐ Comments:

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

Comments:

None.

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 collected.

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:

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

Comments:

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

Yes☐ No☐ N/A☒ Comments:

No affected samples.

v. Data quality or usability affected?

Comments:

No.

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

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

Yes☒ No☐ N/A☐ Comments:

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

Yes☒ No☐ N/A☐ Comments:

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

Yes☒ No☐ N/A☐ Comments:

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

Yes☒ No☐ N/A☐ Comments:

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

Comments:

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

Yes☐ No☐ N/A☒ Comments:

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:

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

Yes☐ No☐ N/A☐ Comments:

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

Comments:

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

Yes☐ No☐ N/A☐ Comments:

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

Comments:

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

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

Yes☒ No☐ N/A☐ Comments:

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

Yes☐ No☒ N/A☐ Comments:

AK 102 DRO, 0-Terphenyl surrogate recovery limits have been exceeded; values are outside upper control limits.

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:

Data flags have been marked by alpha-numeric code “J1”.

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:

v. Data quality or usability affected?

Comments:

No.

f. Field Duplicate

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

Yes☒ No☐ N/A☐ Comments:

ii. Submitted blind to lab?

Yes☒ No☐ N/A☐ Comments:

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

RPD (%) = 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 met the DQOs for all detected samples except Xylenes/Water.

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

Comments:

No. Reported concentrations were well below the GCL for both primary and duplicate samples.

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

Yes☐ No☐ N/A☒ Comments:

No decontamination or equipment blank were required as only disposable equipment was used.

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

Yes☐ No☐ N/A☒ Comments:

No decontamination or equipment blank were required as only disposable equipment was used.

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

Comments:

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:
