



**TESORO**

**Speedway Store 5315**

Formerly Tesoro 2 Go Mart #111

**ADEC File #100.26.026**

**August 2020  
Monitoring Event Report**

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Prepared For



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## ACRONYMS AND ABBREVIATIONS

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

## 1.0 EXECUTIVE SUMMARY

This third quarter 2020 semi-annual Monitoring Event Report was prepared by Stantec Consulting Services Inc. (Stantec) on behalf of Speedway LLC for Store #5315 (formally known as Tesoro 2 Go Mart #111), located at 3679 College Road, Fairbanks, Alaska (**Figure 1**). Field work activities from two quarters in 2019 and 2020 are summarized below. The methods that were used for these monitoring events were conducted in accordance with the 2019 and the 2020 Alaska Department of Environmental Conservation (ADEC) approved Work Plans for this site.

On October 24, 2019, the Stantec team which consisted of Project Engineer Bob Gilfilian, Environmental Scientist John Marshal, and Engineer in Training (EIT) Leslie Petre conducted a high dose injection of a chemical oxidation (chemox) solution. The solution consisted of 605 pounds of Klozur<sup>®</sup> One combined with 450 gallons of water from RM-2 into four subsurface injection lines (former SVE lines). The well was then flushed with an additional 900 gallons of water from RM-2. The subsurface soil formation and groundwater table accepted the large dose of Klozur<sup>®</sup> One without issue, i.e., no backup of flow was detected. A groundwater sampling event conducted on the same date for RM-1 and RM-2 documented analyte levels in exceedance of ADEC GCLs: RM-1 exceeded for Ethylbenzene, Xylenes, and GRO; RM-2 exceeded for Benzene, Ethylbenzene, and Xylenes.

On July 15, 2020, Stantec personnel Geologic Project Specialist Eli Fredrickson, Leslie Petre, and John Marshall conducted a chemox injection event with a solution of Klozur<sup>®</sup> One. The chemox solution was injected into the same four treatment points treated October 2019 and consisted of 440 lbs. of Klozur<sup>®</sup> One mixed with 440 gallons of water, followed by an additional 600+ gallons of water from RM-2 well to “hydraulically push” the chemox solution into the subsurface formation.

The semi-annual groundwater monitoring event was conducted in the 3<sup>rd</sup> quarter of 2020 on August 3 and 4, 2020 by Eli Fredrickson and Leslie Petre, and included measuring the depth to groundwater, measuring field intrinsic water quality parameters, and collecting and analyzing groundwater samples from Monitoring Wells G-1, G-5, MW-10, MW-11, MW-12, MW-13, MW-16, MW17-1, and MW17-2, as well as Remediation Well RM-1 and RM-2 (**Figure 2**). Results of the analytical sampling showed analytes were present at concentrations exceeding ADEC groundwater cleanup levels (GCLs) in Monitoring Wells G-5, MW-10, MW-11, MW-12, MW-13, MW 17-1, MW 17-2, as well as Remediation Wells RM-1 and RM-2. Analytes in exceedance included: benzene, toluene, ethylbenzene, and xylenes (BTEX); gasoline range organics (GRO); diesel range organics (DRO).

The groundwater depth measurements indicate the average hydraulic gradient was approximately 0.023 feet per foot directed toward the northwest at 301 degrees. Characteristics of the groundwater direction and gradient for this monitoring event were higher than the typical values for this site, as shown in the groundwater flow summary presented on the “rose diagram” on **Figure 2**. The period of August 2019 through July 2020 was documented as the rainiest 12-month period on record for the Fairbanks area, with a total rain fall of 26.20”; see Rainfall Record in Appendix C.

The on-site soil vapor extraction (SVE) system and the air sparging (AS) system were deactivated several years ago since the treatment systems were determined to be ineffective. The SVE and AS systems are located in the western portion of the site beneath the existing fuel dispenser islands as shown in **Figure 3**. After the August 2020 sampling event, a low profile equipment shed was installed over remediation well RM-2. Subsequently plumbing was installed to facilitate recirculated groundwater flow pumped from RM-2 to discharge on a full time and year round basis into the former SVE horizontal wells located beneath and adjacent to the fuel dispenser islands.

## **2.0 SITE BACKGROUND**

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

## **3.0 FIELD ACTIVITIES**

The following field activities were conducted during the October 24, 2019 treatment event:

- Mix and inject 605 gallons of Klozur<sup>®</sup> One solution (11 - 55-pound bags mixed with 450 gallons of water) into 4 injection points and flushed with 900 gallons of water from remediation well RM-2. Injection the three western SVE horizontal lines: SVE-1, SVE-2, and SVE-3; injection of two bags into the horizontal groundwater injection well (former SVE line) located along the eastern edge of the underground storage tank (UST) system. Conducted field measurements of the following intrinsic water quality parameters from the groundwater monitoring wells and remediation wells RM-1 and RM-2: pH, temperature, oxidation-reduction potential, and conductivity.
- Collected groundwater samples from remediation well RM-1 and RM-2. The samples were submitted for laboratory analysis of: GRO by Alaska Test Method (AK)101, DRO by AK102, and volatile organic compounds (VOCs) by U.S. Environmental Protection Agency (EPA) Test Method 8260C. A sample from RM-2 was also submitted for sodium. A duplicate sample was not collected during this monitoring event.

The following field activities were conducted July 15, 2020 treatment, maintenance and monitoring event:

- Mix and inject 440 gallons of Klozur<sup>®</sup> One solution (8 - 55-pound bags mixed with 440 gallons of water) into 4 injection points and flushed with 750 gallons of water from RM-2 into the three former western SVE lines beneath the fueling islands and the former eastern SVE line on the eastern edge of the UST.
- Repair plumbing located in the vault on the water circulation line from RM-1.

The following field activities were conducted during the August 3<sup>rd</sup> -4<sup>th</sup>, 2020 sampling event:

- Measured the depth to groundwater in Monitoring Wells G-1, G-5, MW-10, MW-11, MW-12, MW-13, MW 17-1, and MW 17-2.
- Conducted field measurements of the following intrinsic water quality parameters from Monitoring Wells G-1, G-5, MW-10, MW-11, MW-12, MW-13, MW 17-1, and MW 17-2 and RM-1: pH, temperature, dissolved oxygen, oxidation-reduction potential, and conductivity.
- Collected groundwater samples from Monitoring Wells G-1, G-5, MW-10, MW-11, MW-12, MW-13, MW 17-1, MW 17-2, RM-1, and RM-2. The samples were submitted for laboratory analysis of: GRO by Alaska Test Method AK101, DRO by Alaska Test Method AK102, volatile organic compounds (VOCs) by U.S. Environmental Protection Agency (EPA) Test Method 8260C and Metals Method 6010C for sodium.

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

#### 4.0 GROUNDWATER MONITORING RESULTS

**Groundwater Levels.** Table 1 presents groundwater elevations at this site based on the depths to static groundwater levels measured during the August 2020 monitoring event.

**Table 1 Groundwater Elevations**

Measured on August 3-4, 2020

Monitoring Well Identification	Top of Casing Elevation (feet) <sup>1</sup>	Depth to Groundwater (feet)	Groundwater Elevation (amsl feet)
G-1	430.14	10.48	419.66
G-5	430.02	10.45	419.57
MW-10	430.11	10.37	419.74
MW-11	430.49	10.85	419.64
MW-12	427.84	5.26	422.58
MW-13	429.77	10.20	419.57
MW-16	429.27	NM	NM
MW17-1	430.55	10.92	419.63
MW17-2	430.17	10.50	419.67
RM-1	428.21	11.21	417.00
RM-2	NM	10.56	NM
RM-2 <sup>2019</sup>	NM	12.92	NM

Key:

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

amsl above mean sea level  
 NM Not measured  
 RM Highlighted cells measured Oct. 2019

The groundwater depth measurements indicate the average hydraulic gradient was approximately 0.023 feet per foot directed toward the northwest at 301 degrees.

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

**Table 2 Field Measured Intrinsic Water Quality Parameters**

Measured on August 3-4, 2020

Monitoring Well Identification	Volume Purged (gallons)	Temperature (°C)	pH	Dissolved Oxygen (mg/L)	ORP (mV)	SC (µs/cm °C)
G-1	15.0	5.8	5.95	1.75	155.3	1470
G-5	4.0	6.6	6.34	1.81	267.3	1310
MW-10	14.8	5.9	6.68	2.16	119.8	1820
MW-11	7.0	5.6	6.68	1.91	142.5	1370
MW-12	9.0	10.6	6.52	5.64	398.0	1040
MW-13	7.5	12.0	6.51	2.04	375.8	910
MW17-1	4.5	9.6	6.67	0.61	126.7	1120
MW17-2	5.0	8.6	6.50	1.62	163.3	1590
RM-1	PR	6.8	6.30	1.92	147.7	930
RM-2	17.0	6.1	6.41	2.38	155.2	704
RM-1 <sup>2019</sup>	PR	4.6	6.76	NM	98	934
RM-2 <sup>2019</sup>	PR	4.99	6.58	NM	97	534

Key:  
 °C degrees Celsius  
 µs/cm°C microSiemens per centimeter degrees Celsius  
 mg/L milligrams per liter  
 mV millivolts  
 DO Dissolved Oxygen  
 NM Not measured  
 ORP oxidation-reduction potential  
 pH log [H<sup>+</sup>]  
 PR Pump running, purging not necessary  
 RM Highlighted cells measured Oct. 2019  
 SC specific conductance corrected to 25 °C

**Water Sample Analytical Results.** All wells were sampled in accordance with the 2019 and 2020 Work Plans. All historical monitoring data for this site are tabulated in **Appendix D**. Laboratory analytical results for compounds detected in groundwater samples collected during these events are summarized in **Table 3**. The laboratory analytical reports are provided in **Appendix E**.

**Table 3 Groundwater Analytical Results**

Samples Collected on August 3-4, 2020

Sample ID	Benzene <sup>1</sup> (mg/L)	Toluene <sup>1</sup> (mg/L)	Ethylbenzene <sup>1</sup> (mg/L)	Xylenes <sup>1</sup> (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium (mg/L)
G-1	0.000817 J	U (0.001)	U (0.001)	U (0.003)	0.0109 J	U (0.800)	66.4
G-5	<b>0.114</b>	0.000683 J	<b>0.123</b>	0.124	0.712	1.07	77.0
MW-10	<b>0.0577</b>	0.142	<b>0.597</b>	<b>1.89</b>	<b>4.2</b>	<b>1.9</b>	60.0
MW-11	<b>0.057</b>	0.00403	<b>0.434</b>	<b>1.75</b>	<b>5.63</b>	<b>3.51</b>	90.6
MW-12	0.000353 J	0.0364	<b>0.0538</b>	<b>0.487</b>	1.23	0.852	48.7
MW-13	0.000323 J	0.0351	<b>0.0439</b>	<b>0.454</b>	1.01	0.554 J	49.6
MW 17-1	<b>0.126</b>	<b>22.5</b>	<b>3.47</b>	<b>13.8</b>	<b>61.1</b>	<b>2.78</b>	56.0
DUP 17-1	<b>0.114</b>	<b>22.2</b>	<b>3.82</b>	<b>14.7</b>	<b>61.5</b>	<b>4.94</b>	55.9
MW 17-2	<b>0.0505</b>	0.477	<b>0.236</b>	<b>1.91</b>	<b>5.03</b>	<b>20.5</b>	91.4
RM-1	0.000539 J	0.0922	<b>0.131</b>	<b>1.32</b>	<b>2.81</b>	1.23	47.2
RM-2	U (0.001)	U (0.001)	0.000505 J	0.000565 J	0.0135 J	U (0.800)	24.2
Trip Blank	U (0.001)	U (0.001)	U (0.001)	U (0.003)	U (0.100)	U (0.800)	U(3.00)
RM-1 <sup>2019</sup>	U (0.003)	0.038	<b>0.15</b>	<b>1.49</b>	<b>4.3</b>	1.4	-----
RM-2 <sup>2019</sup>	<b>0.0046</b>	0.058	<b>0.089</b>	<b>0.342</b>	2.00	0.45	32.0
GCLs	<b>0.0046</b>	<b>1.1</b>	<b>0.015</b>	<b>0.19</b>	<b>2.2</b>	<b>1.5</b>	<b>NA</b>

Key:

1	Analyzed by U.S. Environmental Protection Agency Method 8260C.	J	The identification of the analyte is acceptable; the reported value is an estimate.
AK	Alaska test method	mg/L	milligrams per liter
BTEX	benzene, toluene, ethylbenzene, and xylenes	NA	Not Applicable
DRO	Diesel range organics, analyzed by AK102.	U	Undetected above practical quantitation limits shown in parentheses.
GCLs	Groundwater cleanup levels, 18 AAC75.345, Table C, (9/18/2019)	<b>Bold</b>	indicates the concentration exceeds the GCL or the estimated quantitation limit exceeds the GCL
GRO	Gasoline range organics, analyzed by AK101.	<b>RM</b>	Highlighted cells measured Oct. 2019

**Quality Assurance (QA)/Quality Control (QC) Review.** Test America ran the October 2019 limited analysis for RM-1 and RM-2 that was submitted with the samples from Tesoro Store 112 on 10/22/2019. A duplicate sample for RM-1 and RM-2 was not pulled for QC. The issues with hold times for the Tesoro Store 112 samples documented in the QA/QC Review did not affect the results for this report.

Pace Analytical performed all analysis of groundwater samples for the August 2020 sampling event. Pace Analytical met all laboratory QA/QC criteria during the analysis of groundwater samples for this sampling event with the exception of duplicate precision (described below). Laboratory QC data and the ADEC Laboratory Data Review Checklists are included in **Appendix E**. The ADEC Laboratory Data Review Checklist only evaluates the groundwater data included with the August laboratory analytical report.



**Table 4 Laboratory Quality Control Objectives**

Samples Collected on August 3-4, 2020

Quality Control Designation	Tolerance	Results for This Event
<b>Holding Times</b>		
DRO/Water/to analyze	40 days	11 to 15 days
DRO/Water/to extract	14 days	9 to 12 days
GRO/Water/to analyze	14 days	5 to 7 days
VOCs/Water/to analyze	14 days	6 to 9 days
<b>Field Duplicate – Precision</b>		
Benzene/Water	± 30%	+10.00%
Toluene/Water	± 30%	+1.34%
Ethylbenzene/Water	± 30%	-9.60%
Xylenes/Water	± 30%	-6.32
GRO/Water	± 30%	-0.65%
DRO/Water	± 30%	<b>-55.96%</b>
Sodium	NR	+0.18 %

Key:

%	Percentage of variance	GRO	gasoline range organics
±	plus or minus	NR	Not regulated, site treatment by-product
BTEX	benzene, toluene, ethylbenzene, and xylenes	VOC	volatile organic compound
DRO	diesel range organics		

Sample TNS 111 Dup is a duplicate of sample MW 17-1. The duplicate sample set was collected to determine the precision of the field collection and laboratory analysis for this sampling event. Data presented in **Table 4** show that the precision for the duplicate sample set (analytes that were detected above the PQLs and exceeded GCLs) was within the established QA criteria tolerances for benzene, toluene, ethylbenzene, xylenes, and GRO. DRO exceeded the precision criteria, with the duplicate sample having a markedly higher DRO than the MW 17-1 sample. Sodium was duplicated and analysis shows a high level of precision in the results.

## 5.0 REMEDIATION SYSTEM OPERATION AND MONITORING 2020

Monitoring of the submersible pump operation in RM-1 using iMonnit<sup>®</sup> surveillance equipment during the month of December 2019 revealed that the pump was running at pressures above 100 psi. There was concern that freezing of the pump discharge line had possibly occurred; as a result, the RM-1 pump was turned off in early January 2020 to prevent possible damage to the pump from overheating. The electrical heat trace on the piping system was left on to avoid freeze damage to the buried discharge lines. The iMonnit<sup>®</sup> system continued to show high pressure readings until the system pressure dropped to 60.7 psi on April 6, 2020 and the pressure bled off until the system reached 0 psi on April 14, 2020.

On July 1-2, 2020, the RM-1 pump system was turned back on, the heat trace was turned off, the pressure gauge was replaced, and the pump system was set to 68 psi for continuous operation. Site inspection on

July 15, 2020, found a union at the mid-point of the system had apparent freeze damage from the previous winter and was leaking. The piping system was repaired and then brought back on-line and set to operate at a line pressure of 66-68 psi.

On July 15, 2020, an injection of chemox solution into 4 injection points and flushing of water from RM-2 was completed. A total of 440 pounds of Klozur<sup>®</sup> One was mixed into 400 gallons of water and gravity fed into the four horizontal injection lines (former SVE lines). Following the injection of the chemox solution, an additional 600 gallons of water from RM-2 was discharged into the injection lines in order to “hydraulically push” the chemox solution into the subsurface formation.

## **6.0 CONCLUSIONS**

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

The October 2019 limited sampling event showed analytes were present at concentrations exceeding ADEC GCLs for RM-1 for ethylbenzene, xylenes, and GRO. RM-2 had concentrations exceeding GCLs for benzene, ethylbenzene, and xylene.

The August 2020 results of the analytical sampling showed analytes were present at concentrations exceeding ADEC GCLs in Monitoring Wells G-5, MW-10, MW-11, MW-12, MW-13, MW 17-1, MW 17-2, and remediation well RM-1. Analytes in exceedance included: BTEX, GRO, and DRO. However, it is worth noting that the concentration of petroleum related contaminants in remediation well RM-2 had decreased when compared to the test results collected in 2019 following the chemox injection. These findings suggest that the injection of Klozur<sup>®</sup> One coupled with the in-situ groundwater recirculation system may be achieving remediation of the groundwater table; future monitoring events will further assess this trend.

Results from the groundwater depth measurements indicate the average hydraulic gradient was approximately 0.023 feet per foot directed toward the northwest at 301 degrees. Characteristics of the groundwater direction and gradient for this monitoring event were generally consistent with the historical groundwater flow results for this site as shown on the “rose diagram” provided on **Figure 2**.

## **7.0 RECOMMENDATIONS AND PROPOSED ACTIVITIES**

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

## 8.0 LIMITATIONS

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

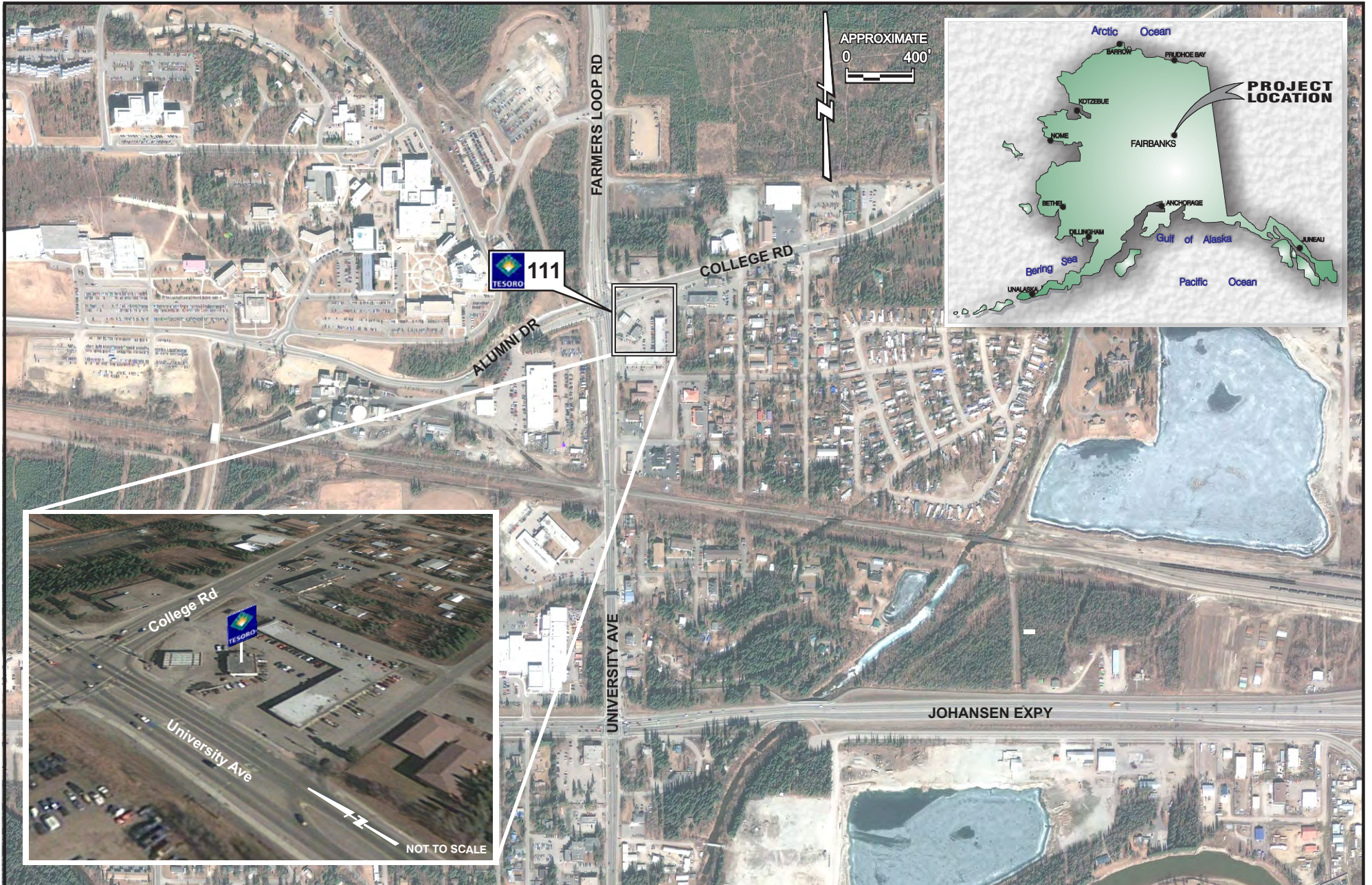
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## **FIGURES**

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|----------|---|
| Figure 1 | Location and Vicinity Map   |
| Figure 2 | Site Plan with Groundwater Levels<br>and Analytical Results           |
| Figure 3 | Remediation System Layout   |
| Figure 4 | Graphs of Contaminant<br>Concentrations and Groundwater<br>Elevations |
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RM-2 (OCT. 2019)		RM-2 (AUG. 2020)	
Benzene	0.0046	Benzene	U (0.001)
Toluene	0.058	Toluene	U (0.001)
Ethylbenzene	0.089	Ethylbenzene	0.000505 J
Xylenes	0.342	Xylenes	0.000565 J
GRO	2.00	GRO	0.0135 J
DRO	0.45	DRO	U (0.800)
SODIUM	32.0	SODIUM	24.2
GW Elev.	NM	GW Elev.	NM

RM-1 (OCT. 2019)		RM-1 (AUG. 2020)	
Benzene	U (0.003)	Benzene	0.000539 J
Toluene	0.038	Toluene	0.0922
Ethylbenzene	0.15	Ethylbenzene	0.131
Xylenes	1.49	Xylenes	1.32
GRO	4.3	GRO	2.81
DRO	1.4	DRO	1.23
SODIUM	NM	SODIUM	47.2
GW Elev.	NM	GW Elev.	417.00'

MW 17-2	
Benzene	0.0505
Toluene	0.477
Ethylbenzene	0.236
Xylenes	1.91
GRO	5.03
DRO	20.5
SODIUM	91.4
GW Elev.	419.67'

MW-11	
Benzene	0.057
Toluene	0.00403
Ethylbenzene	0.434
Xylenes	1.75
GRO	5.63
DRO	3.51
SODIUM	90.6
GW Elev.	419.64'

MW-10	
Benzene	0.0577
Toluene	0.142
Ethylbenzene	0.597
Xylenes	1.89
GRO	4.2
DRO	1.9
SODIUM	60.0
GW Elev.	419.74'

MW 17-1	
Benzene	0.126
Toluene	22.5
Ethylbenzene	3.47
Xylenes	13.8
GRO	61.1
DRO	2.78
SODIUM	56.0
GW Elev.	419.63'

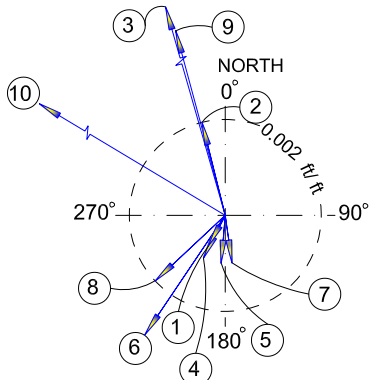
MW 17-1 (Duplicate)	
Benzene	0.114
Toluene	22.2
Ethylbenzene	3.82
Xylenes	14.7
GRO	61.5
DRO	4.94
SODIUM	55.9
GW Elev.	419.63'

G-5	
Benzene	0.114
Toluene	0.000683 J
Ethylbenzene	0.123
Xylenes	0.124
GRO	0.712
DRO	1.07
SODIUM	77.0
GW Elev.	419.57'

G-1	
Benzene	0.000817 J
Toluene	U (0.001)
Ethylbenzene	U(0.001)
Xylenes	U(0.003)
GRO	0.0109 J
DRO	U (0.800)
SODIUM	66.4
GW Elev.	419.66'

MW-13	
Benzene	0.000323 J
Toluene	0.0351
Ethylbenzene	0.0439
Xylenes	0.454
GRO	1.01
DRO	0.554 J
SODIUM	49.6
GW Elev.	419.57'

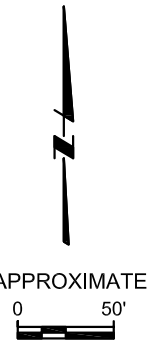
MW-12	
Benzene	0.000353 J
Toluene	0.0364
Ethylbenzene	0.0538
Xylenes	0.487
GRO	1.23
DRO	0.852
SODIUM	48.7
GW Elev.	422.58'



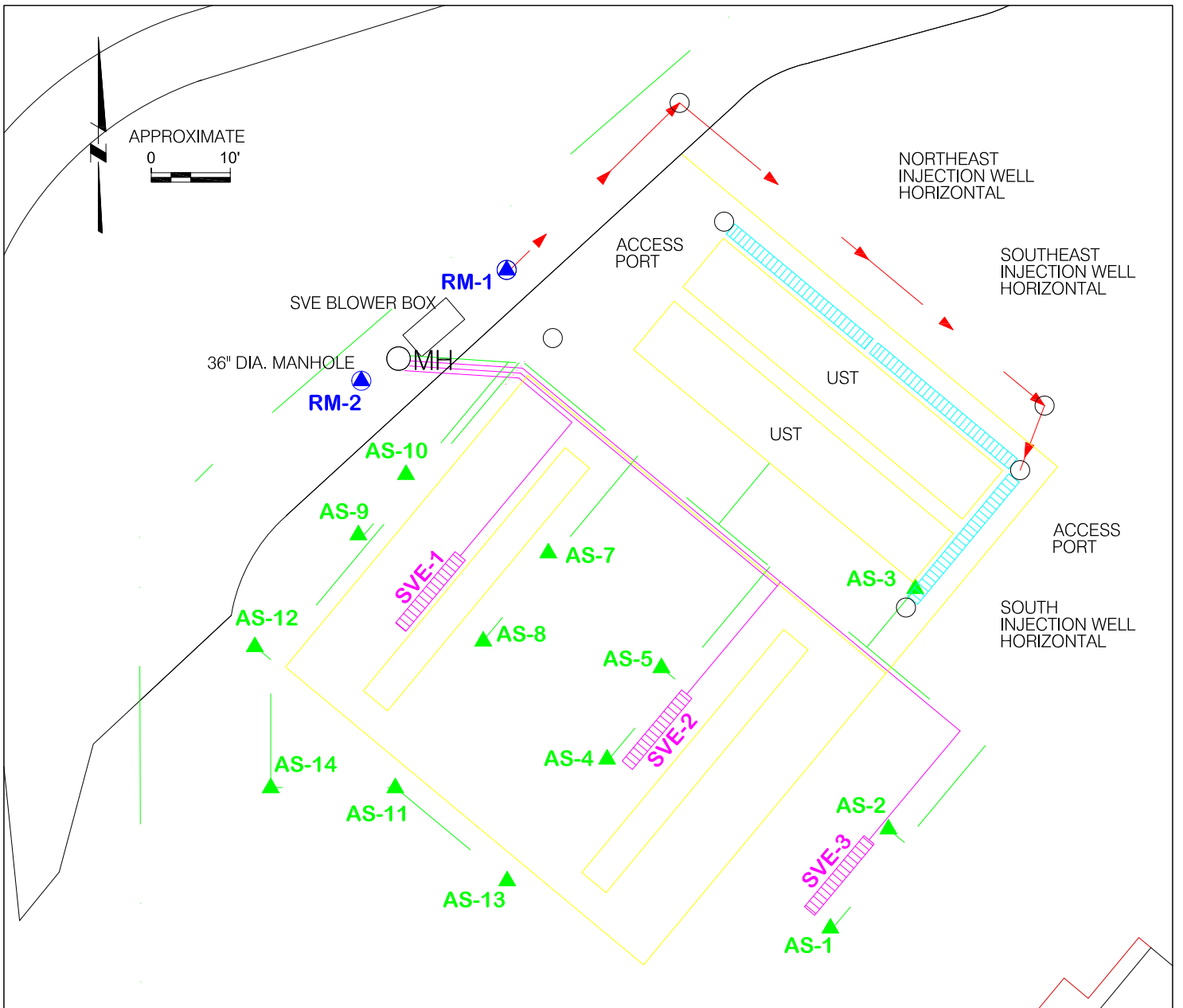
GROUNDWATER FLOW SUMMARY		
DATE	BEARING	GRADIENT (ft/ft)
① JULY 27, 2015	209°	0.000
② FEB. 23, 2016	346°	0.002
③ OCT. 6, 2016	344°	0.023
④ MARCH 16, 2017	207°	0.001
⑤ JULY 7, 2017	185°	0.001
⑥ MARCH 29, 2018	214°	0.003
⑦ SEPT. 4, 2018	177°	0.001
⑧ MARCH 13, 2019	227°	0.002
⑨ JULY 29, 2019	345°	0.004
⑩ AUG. 4, 2020	301°	0.023

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

- NOTES:**
1. RESULTS SHOWN ARE FOR WELLS SAMPLED ON OCTOBER 24, 2019 AND AUGUST 3 AND 4, 2020.
  2. RESULTS ARE IN MILLIGRAMS PER LITER.
  3. BOLD/RED TEXT INDICATES CONTAMINANT CONCENTRATIONS ABOVE CLEANUP LEVELS FOR THIS SITE.
  4. RM-1 OPERATING DURING GAUGING.



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**LEGEND:**

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

**NOTES:**

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

TESORO  
#111



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

REMEDATION SYSTEM LAYOUT

FIGURE

3

185751325

**Figure 4**  
**Graphs of Contaminant Concentrations and Groundwater Elevations**

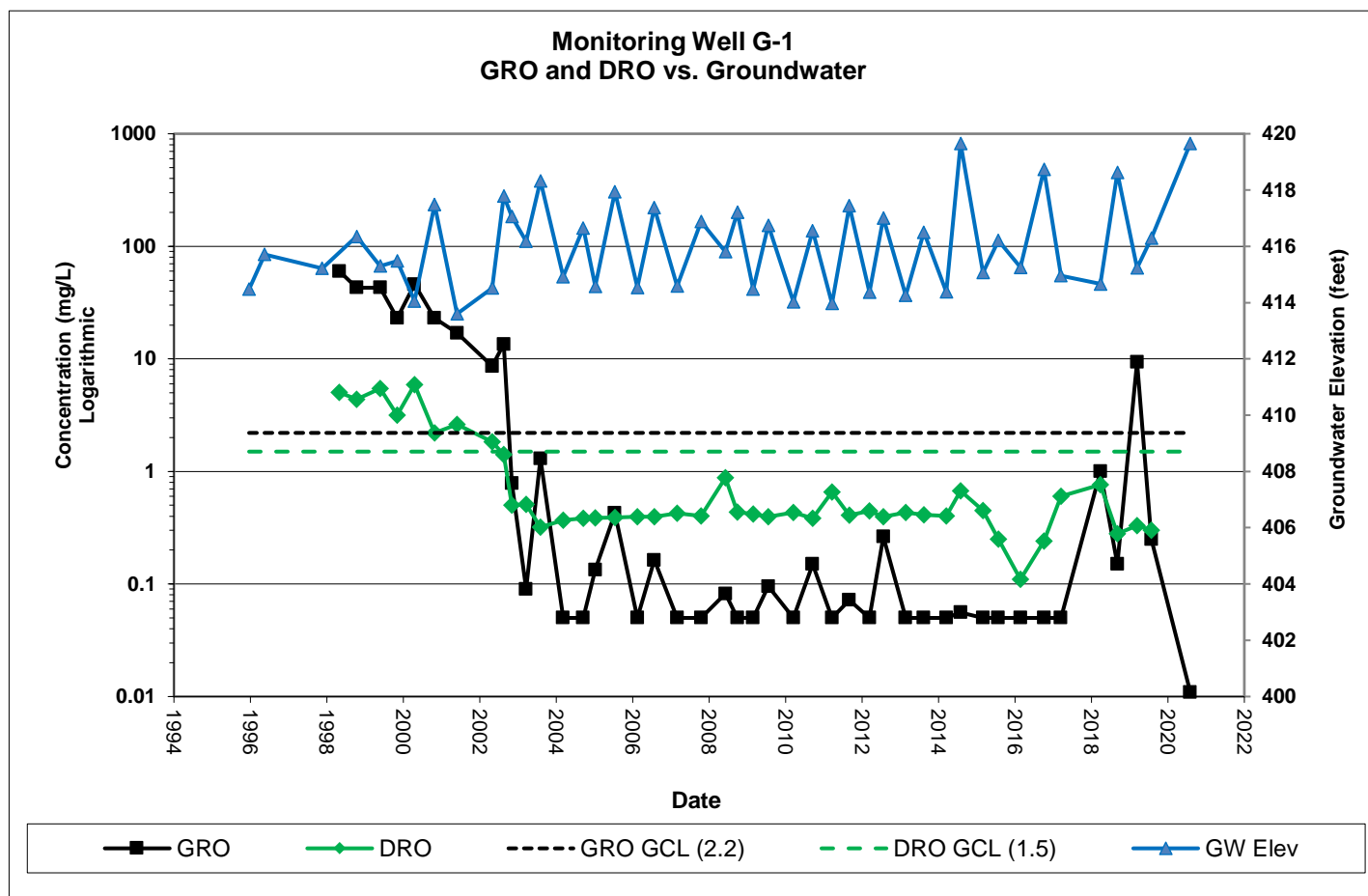
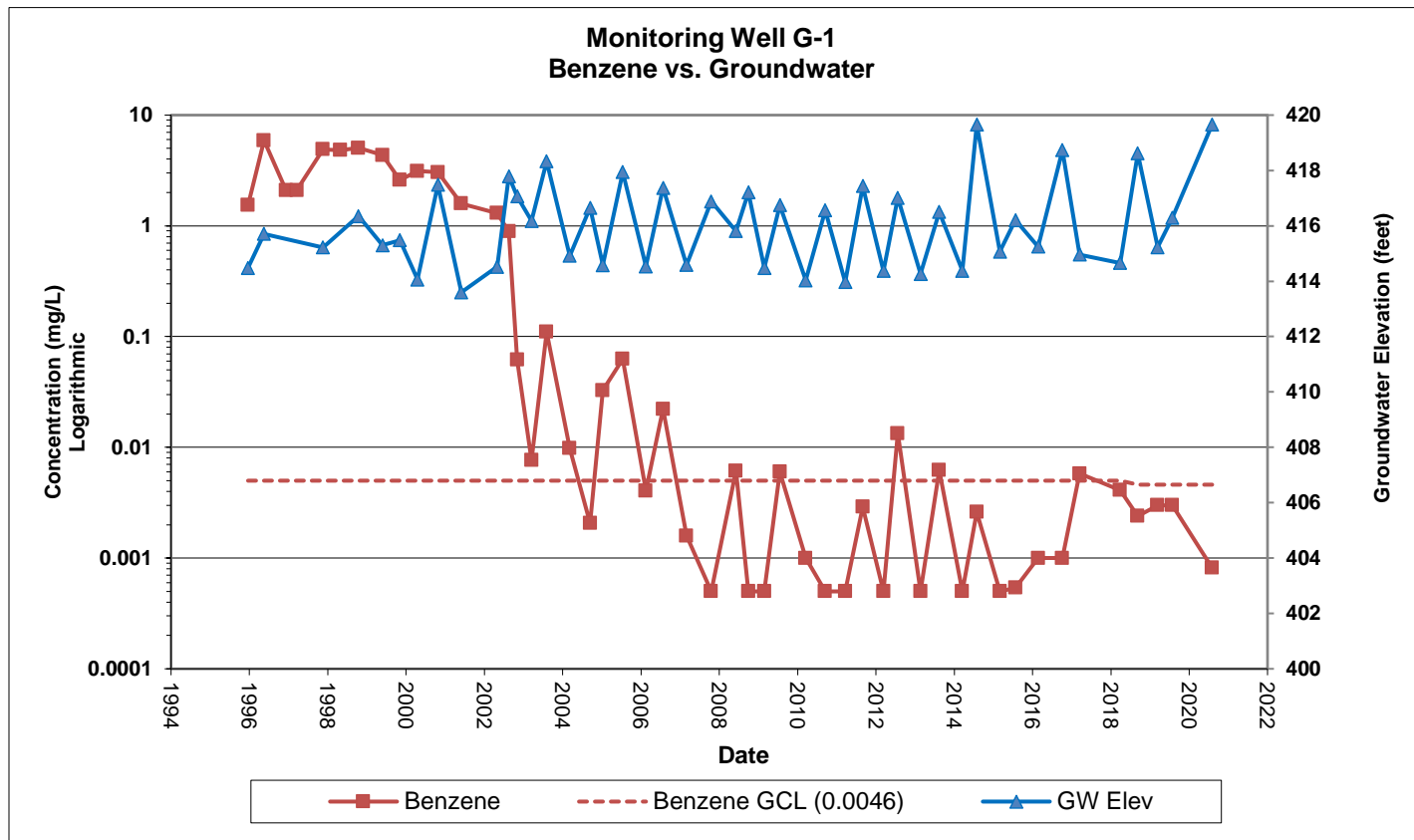
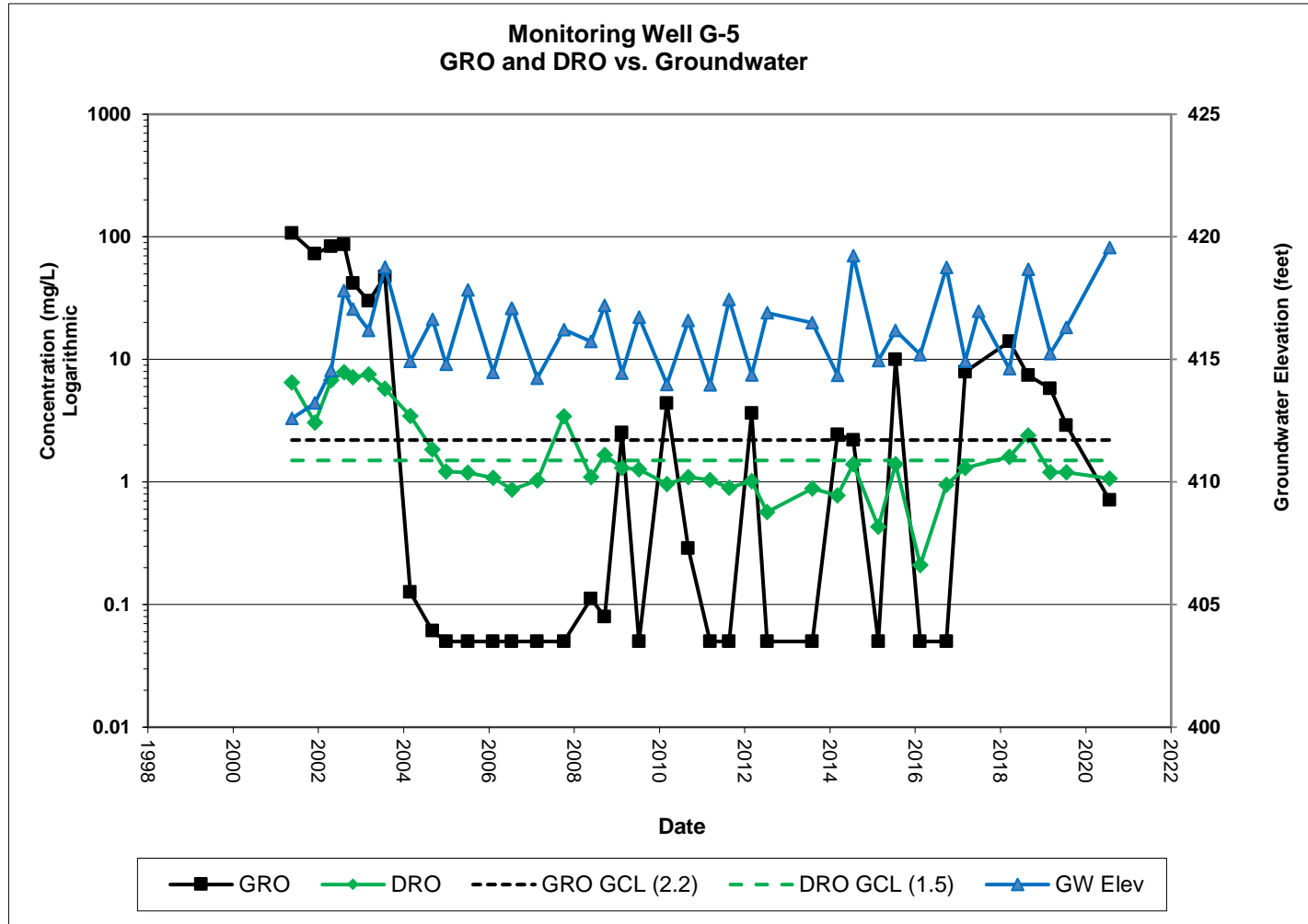
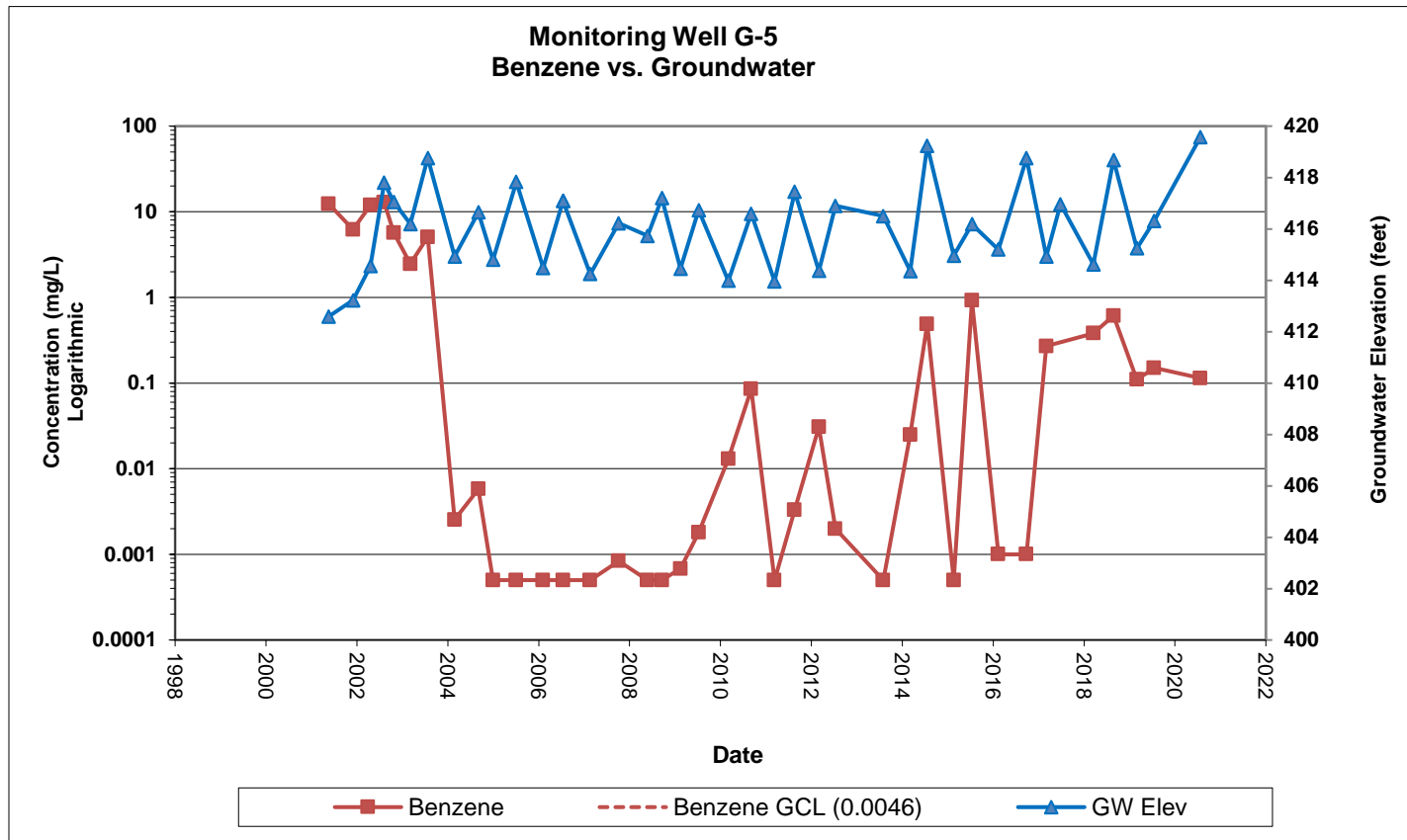
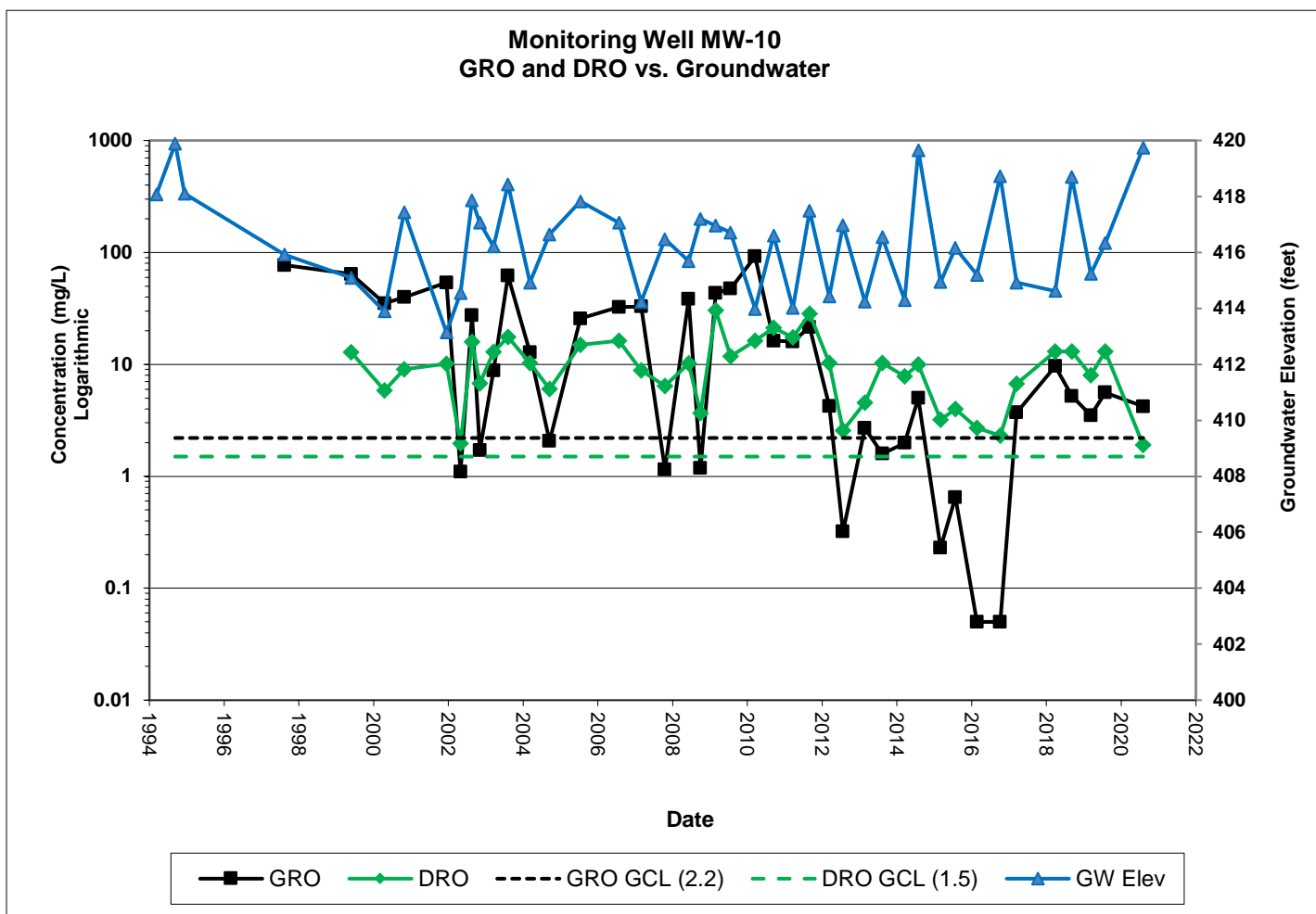
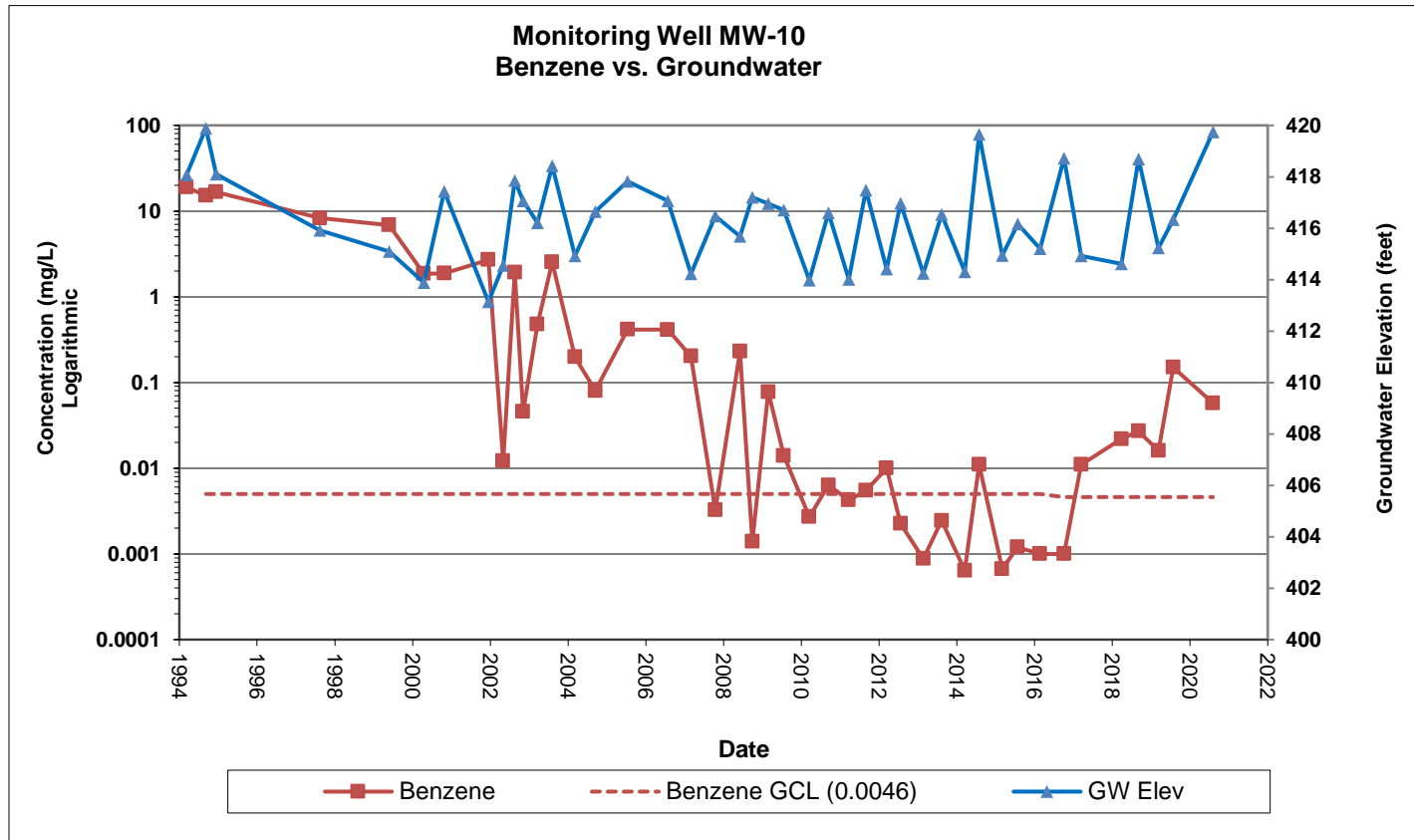




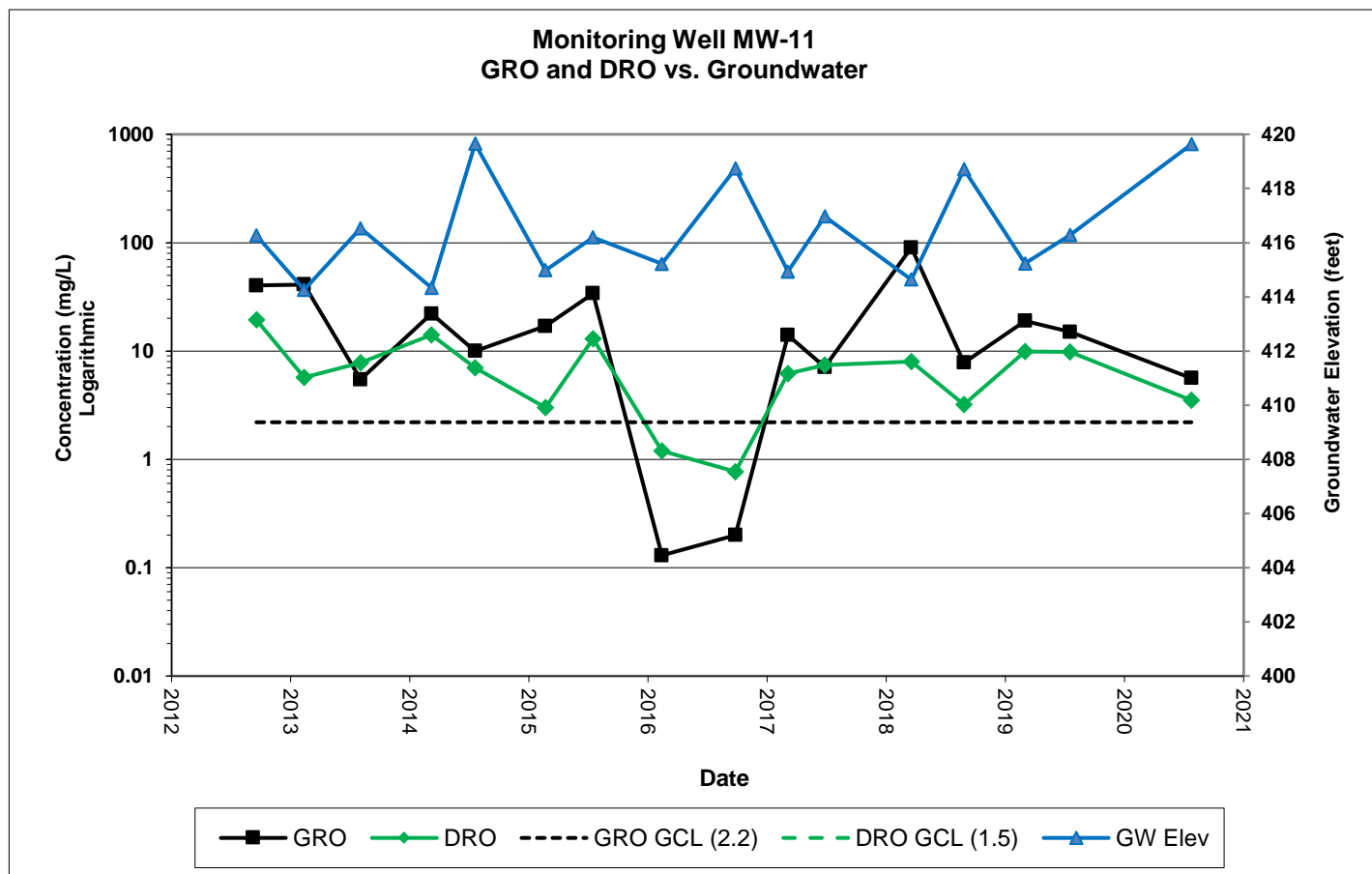
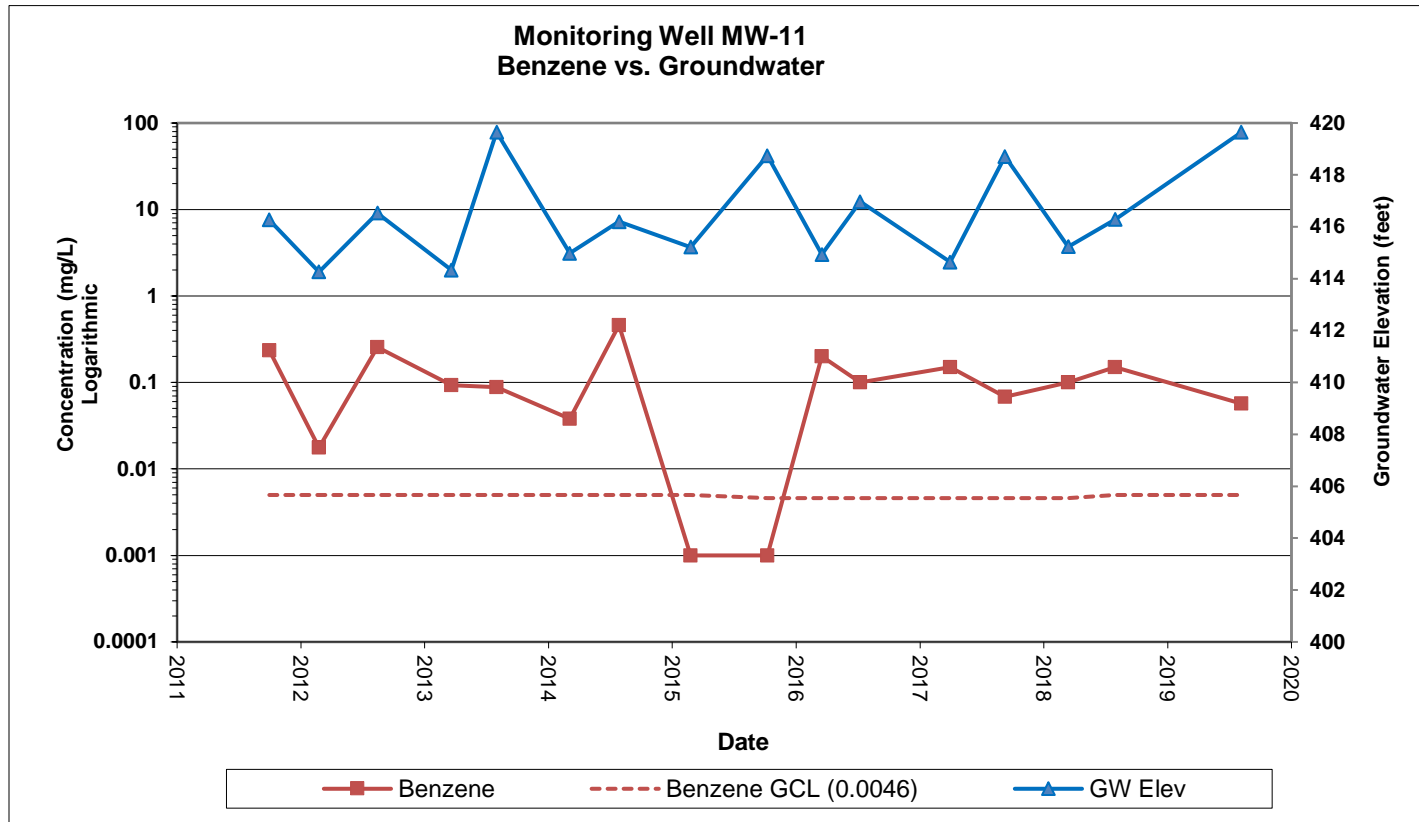
Figure 4  
 Graphs of Contaminant Concentrations and Groundwater Elevations



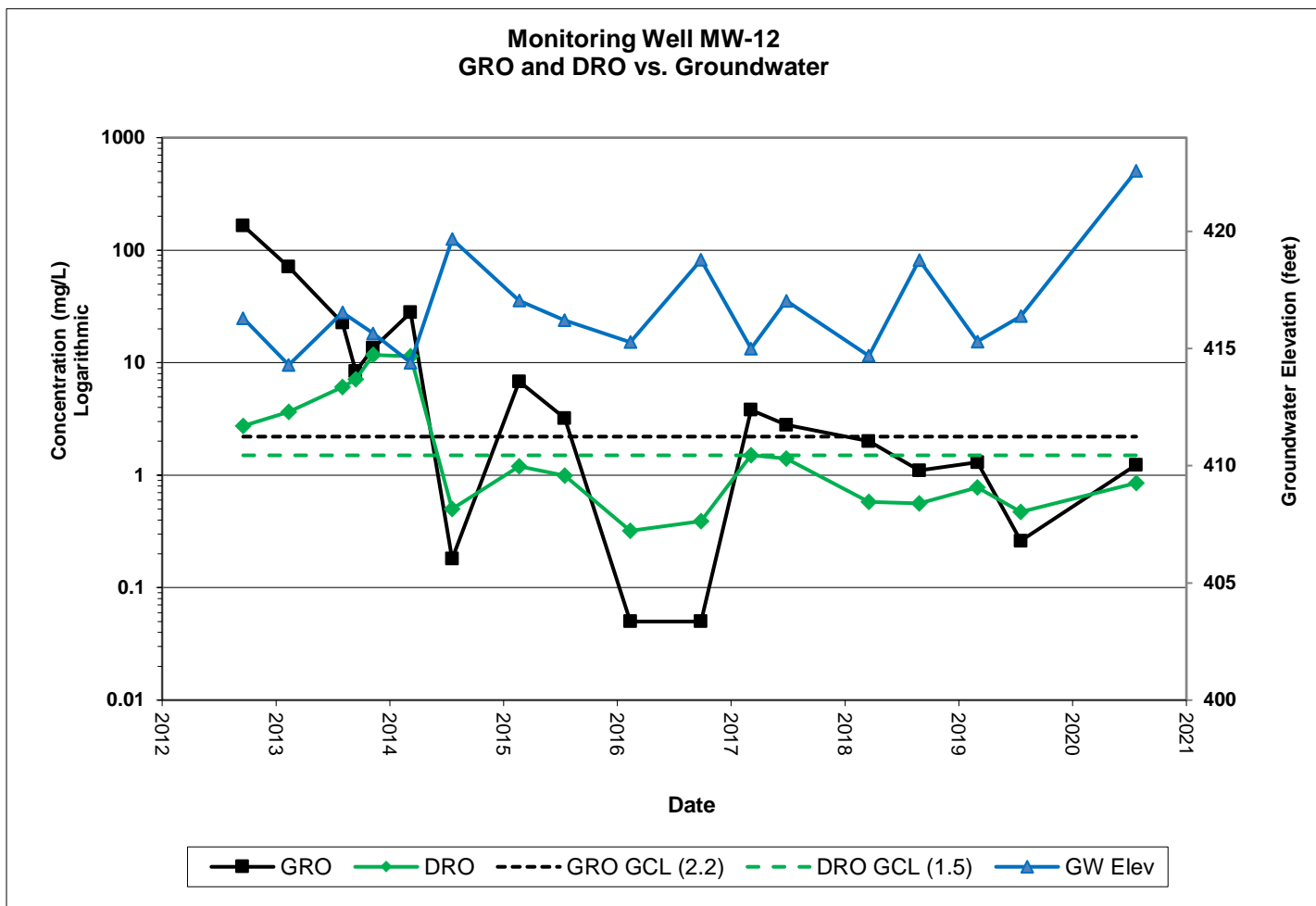
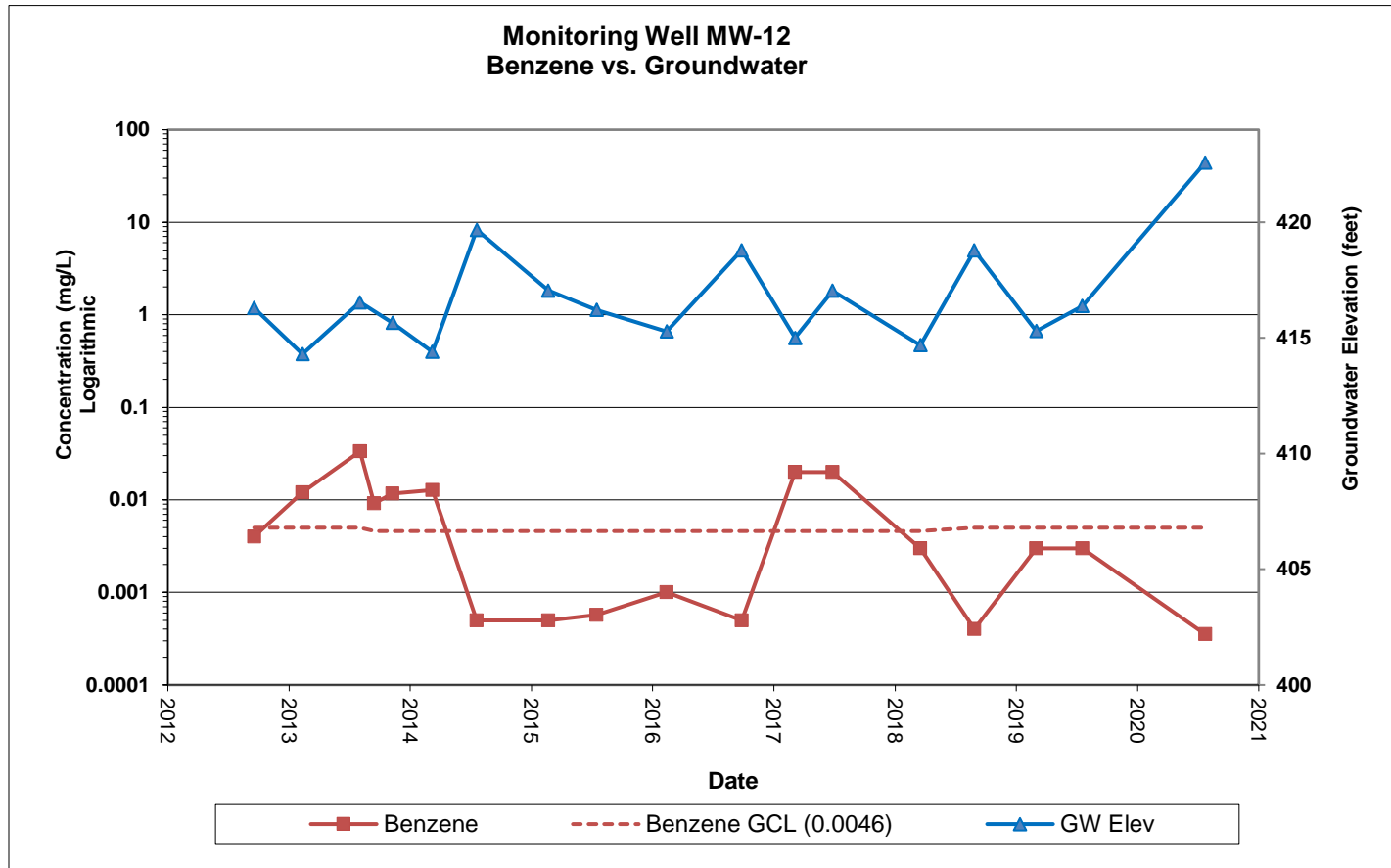
**Figure 4**  
**Graphs of Contaminant Concentrations and Groundwater Elevations**



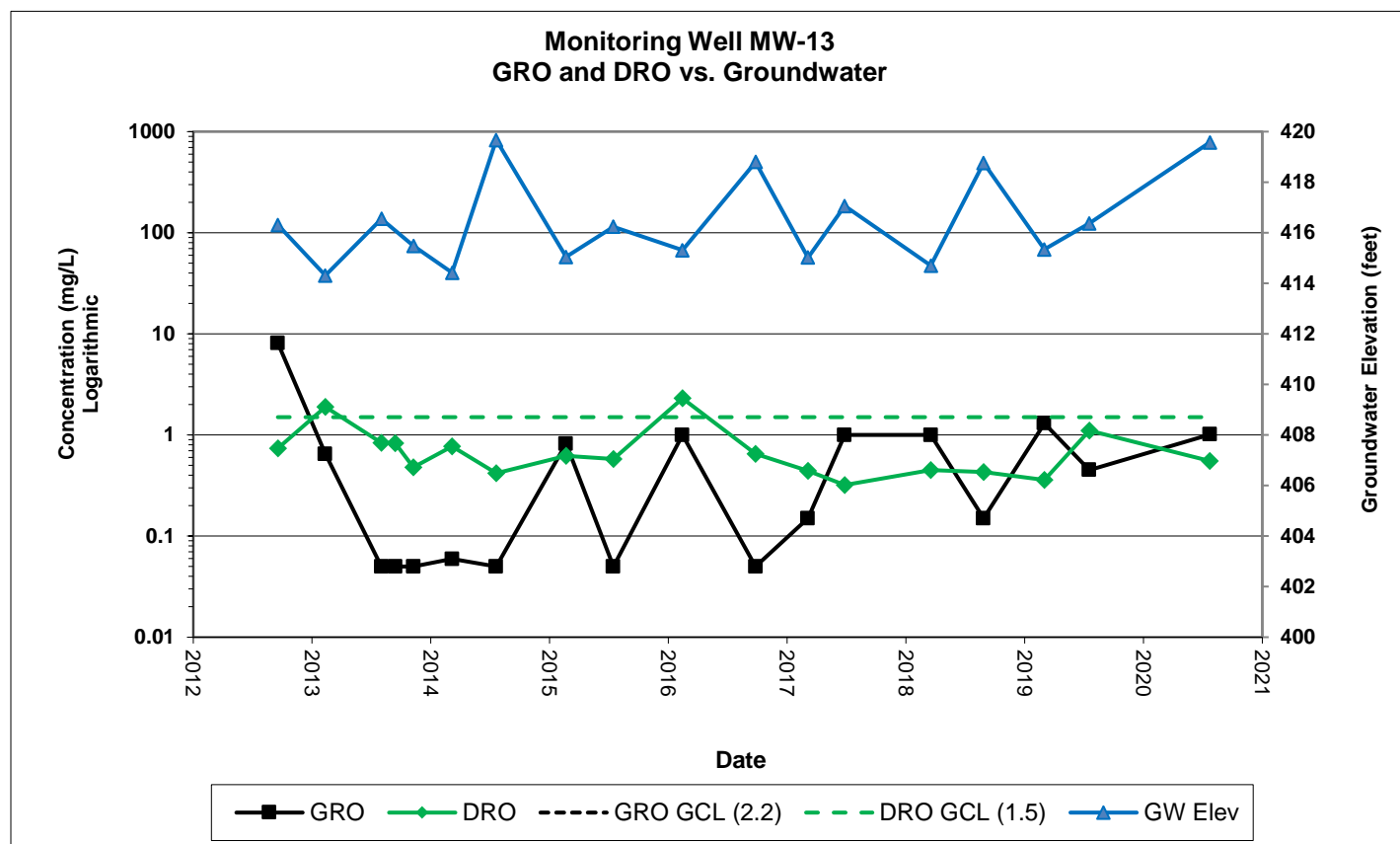
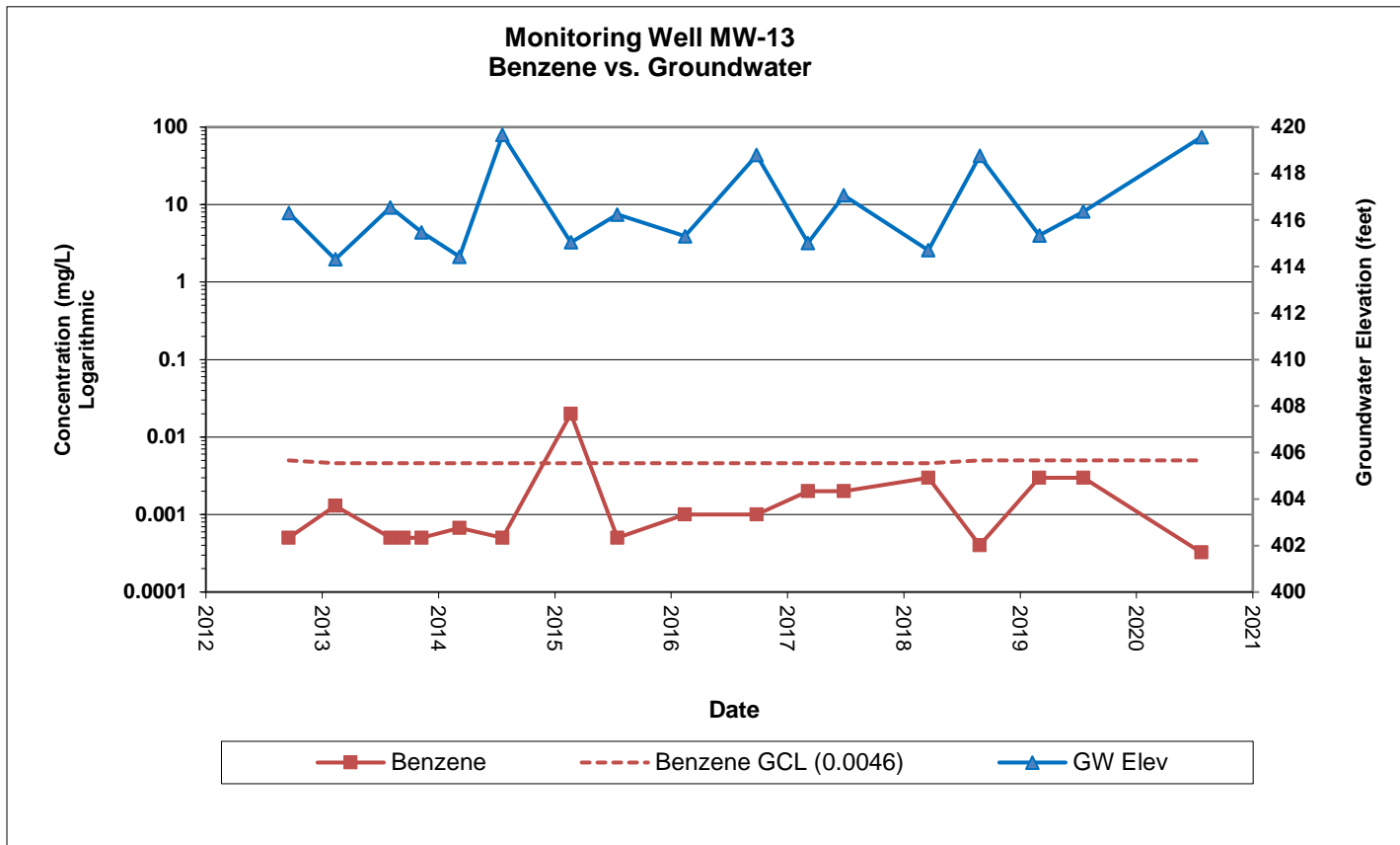
**Figure 4**  
**Graphs of Contaminant Concentrations and Groundwater Elevations**



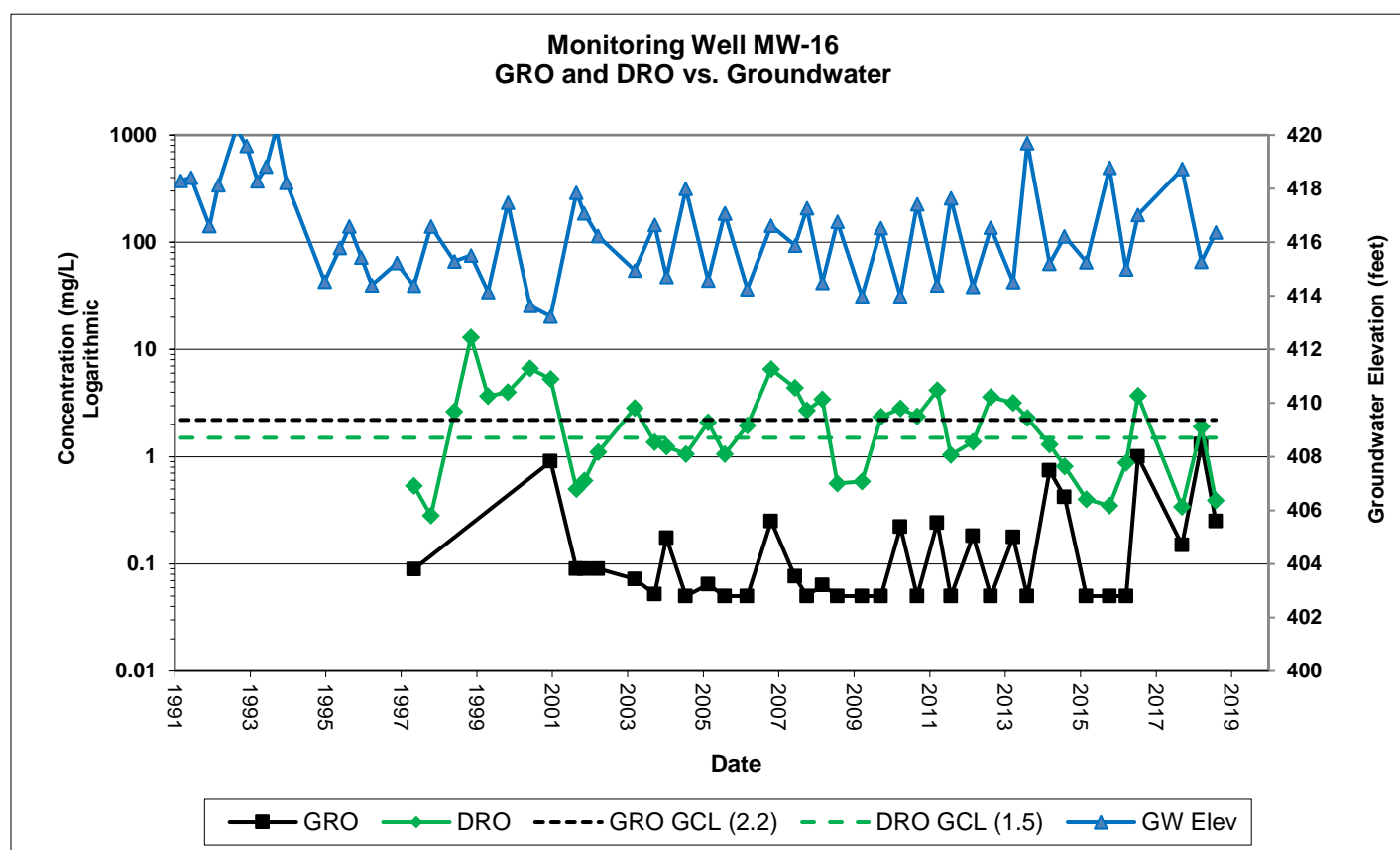
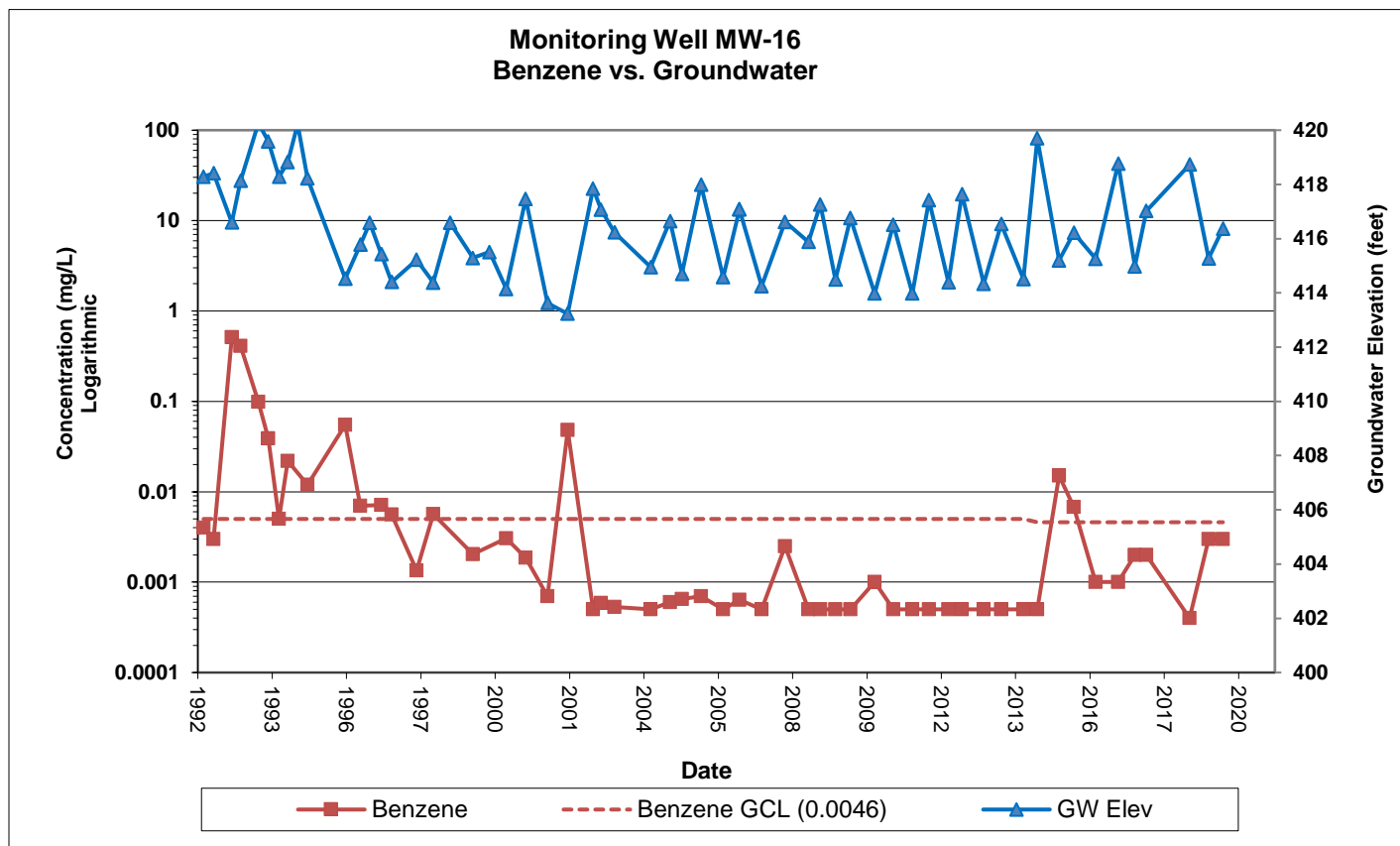
**Figure 4**  
**Graphs of Contaminant Concentrations and Groundwater Elevations**



**Figure 4**  
**Graphs of Contaminant Concentrations and Groundwater Elevations**



**Figure 4**  
**Graphs of Contaminant Concentrations and Groundwater Elevations**



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## **APPENDIX A**

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### *Site Background*

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## APPENDIX A – SITE BACKGROUND

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

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

Gilfilian Engineering & Environmental Testing (GE<sup>2</sup>T), MWH Americas, Inc. (MWH), and Stantec Consulting Services Inc. (Stantec) have performed numerous site investigations and monitoring events at this site since 1995.

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

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

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

**July 1995.** GE<sup>2</sup>T installed two new monitoring wells (G-1 and G-2). Petroleum hydrocarbons were not detected above SCLs but were above the ADEC groundwater cleanup levels (GCLs) in both monitoring wells.

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



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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**October 2019.** A high dose chemox solution of 165 lbs of Klozur® One to 150 gallons of water was injected into each of the three SVE injection lines (SVE-1, SVE-2, and SVE-3) while 110 lbs of Klozur® One was injected into the horizontal groundwater injection well on the eastern edge of the UST. The Klozur® One treatments were then pushed into the formation with 1100 gallons of water from RM-2. In summary, Stantec injected a total of 605 lbs of Klozur® One.

Analytical sampling of RM-1 and RM-2 was conducted. Analyte levels exceeding ADEC GCLs in RM-2 were Benzene, Ethylbenzene, and Xylene. Analyte levels exceeding ADEC GCLs in RM-1 were Ethylbenzene, Xylene, and GRO. The October 2019 limited sampling event showed analytes were present at concentrations exceeding ADEC GCLs for RM-1 for ethylbenzene, toluene, and GRO. RM-2 had concentrations exceeding GCLs for benzene, ethylbenzene, and xylene.

**July and August 2020.** On July 15, 2020, an injection of chemox solution into 4 injection points and flushing of water from remediation well RM-2 was completed. A total of 440 pounds of Klozur<sup>®</sup> One was mixed into 400 gallons of water and gravity fed into the four horizontal injection lines (former SVE lines). Following the injection of the chemox solution, an additional 600 gallons of water from RM-1 was discharged into the injection lines as a means to “hydraulically push” the chemox solution into the subsurface formation.

The August 2020 results of the analytical sampling showed analytes were present at concentrations exceeding ADEC GCLs in Monitoring Wells G-5, MW-10, MW-11, MW-12, MW-13, MW 17-1, MW 17-2, and remediation well RM-1. Analytes in exceedance included: BTEX, GRO, and DRO. However, it is worth noting that the concentration of petroleum related contaminants in remediation well RM-2 had decreased when compared to the test results collected in 2019 following the chemox injection. These findings indicate the injection of Klozur<sup>®</sup> One coupled with the in-situ groundwater recirculation system may be achieving remediation of the groundwater table – future monitoring events will be evaluated to assess this apparent promising result.

Results from the groundwater depth measurements for the August groundwater monitoring event indicate the average hydraulic gradient was approximately 0.023 feet per foot directed toward the northwest at 301 degrees. Characteristics of the groundwater direction and gradient for this monitoring event were generally consistent with the historical groundwater flow results for this site.

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## **APPENDIX B**

### *Field Methods and Procedures*

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## APPENDIX B – FIELD METHODS AND PROCEDURES

(This Appendix Provides Work Plans for 2019 and 2010)

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

The following table presents the proposed tasks for the Alaska Department of Environmental Conservation (ADEC)-approved 2019 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 Tesoro 2 Go Mart #111 (ADEC Facility ID #1112; ADEC File #100.26.026).

#### 2019 Work Plan Schedule

Work Plan Task		1 <sup>st</sup> Quarter	2 <sup>nd</sup> Quarter	3 <sup>rd</sup> Quarter	4 <sup>th</sup> Quarter
Task 1	Monitoring Wells: MW-11, MW-12, MW-13, MW-16, MW-10, G-1, G-5, MW-17-1, and MW-17-2.	V, D, G, I		D, G, V, P, I	
	RM-1 and New Fueling Island Recirculation Well (see Task 4)	V, D, G, I	V, D, G, I	D, G, V, P, I	V, D, G, I
Task 2	Remediation System O&M	✓	✓	✓	✓
Task 3	Chemical Oxidation Treatment		✓	✓	✓
Task 4	Install New Groundwater Recirculation Well located north of fueling islands		✓		

Key:

AK – Alaska Test Method

D – Diesel range organics by AK102.

EPA – U.S. Environmental Protection Agency

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 8270D Selective Ion Monitoring.

V – Soil vapor extraction system vapors by EPA Method 8020/8015.

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<sup>®</sup> 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 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 2019 Work Plan Schedule shown above.

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

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

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

Key:

D – Diesel range organics by AK102.

G – Gasoline range organics by AK101.

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

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

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

S – Sodium

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



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

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

- Task 3 – Recirculation Well Remediation Systems O&M

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

- Task 4 – Chemical Oxidation Treatment

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

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

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

- Additional water samples will be collected from the monitoring wells after the well has been purged, as described above, and tested in the field for chemical and physical intrinsic parameters listed in the 2020 Work Plan Schedule shown above.

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## **APPENDIX C**

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*Field Measurements, Notes, Hydraulic  
Gradient Plot, and Rainfall Table*

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**Appendix C  
Field Measurements and Notes**

**Project:** Store 5315 (TNS 111)  
**Project Phase:** 2020 1st Quarter Delayed Monitoring  
**Project number:** 185751325

**Date:** 8/3-8/4/2020

**Sampler:** Leslie Petre and Eli Fredrickson

Well I.D.	Volume Purged (gallons)	Sheen/Odor	Temp. (°C)	pH	Dissolved Oxygen (mg/L)	ORP (mv)	Specific Conductance (µs/cm)	Top of Casing <sup>1</sup> (feet)	Depth to GW (feet)	GW Elevation (feet)	Total Depth (feet btoc)
G-1	15.0	N/N	5.8	5.95	1.75	155.3	1470	430.14	10.48	419.66	18.51
G-5	4.0	N/N	6.6	6.34	1.81	267.3	1210	430.02	10.45	419.57	18.08
MW-10	14.8	Y/Y	5.9	6.68	2.16	119.8	1820	430.11	10.51	419.60	17.60
MW-11	7.0	Y/Y	5.6	6.68	1.91	142.5	1370	430.49	10.85	419.64	24.87
MW-12	9.0	N/N	10.6	6.52	5.64	398.0	1040	427.84	5.26	422.58	24.24
MW-13	7.5	N/N	12.0	6.51	2.04	375.8	910	429.77	10.20	419.57	24.91
MW-16								429.27			
MW 17-1	4.5	N/Y	9.6	6.67	0.61	126.7	1,120	430.55	10.92	419.63	19.30
MW 17-2	5.0	Y/Y	8.6	6.50	1.62	163.3	1,590	430.17	10.50	419.67	19.21
RM-1	NP	N/N*	6.8	6.3	1.92	147.7	930	428.21	11.21	417.00	NM (pump running)
RM-2	17.0	N/N*	6.1	6.41	2.38	155.2	704	NM	10.56		Bailed with installed pump

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

\* Organic to metallic odor, non-fuel

GW - groundwater

NP - not purged

**Air Temp:** 54°-65°F

mv - millivolts

ORP -- oxidation-reduction potential

**Wind:** under 5 mph

mg/L - milligrams per liter

Y - yes

**Humidity:** High

N - no

µS/cm - microsiemens per centimeter

**Precip:** Rain on 8/3, clear 8/4

NM - not measured

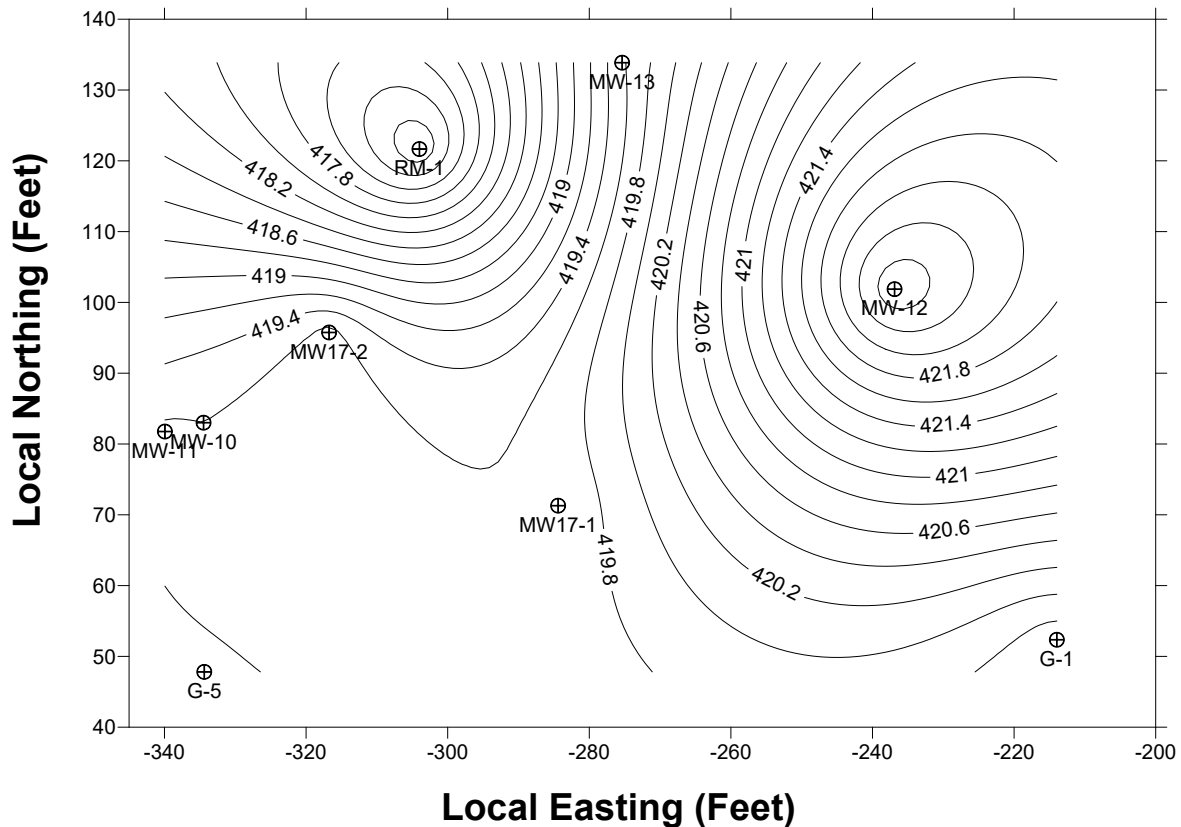
Samples analyzed for AK101, AK102, 8260 (BTEX), sodium

NOTES:	Well Dia.	Sample Date and Time
G-1	4"	8/3/2020 12:48
G-5 impacted with soil within well housing but outside of well.	2"	8/4/2020 10:20
MW-10	4"	8/4/2020 11:25
MW-11	2"	8/4/2020 11:15
MW-12 Temp pulled after sampling	2"	8/3/2020 13:55
MW-13	2"	8/3/2020 16:39
MW-16 Under water, could not be cleared to sample	4"	
MW 17-1 Found plug off well on 8/3/2020; measured temp after sampling complete	2"	8/4/2020 16:46
MW 17-2	2"	8/4/2020 15:35
RM-1	4"	8/4/2020 12:05
RM-2	4"	8/4/2020 12:35
TNS 111 Dup. 17-1	N/A	8/4/2020 16:53

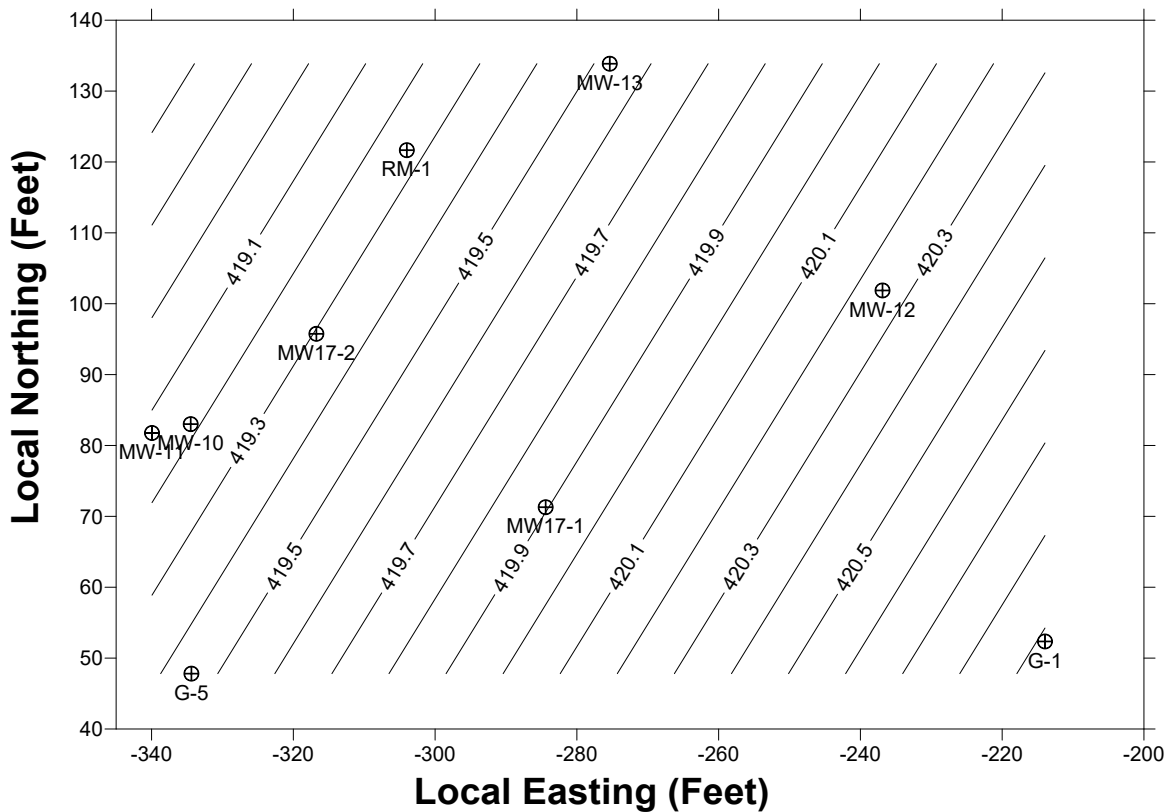
Instruments / methods used for above measurements:	Model
Static water level	Solinst 122
pH	YSI Pro Plus
Conductivity	YSI Pro Plus
Dissolved Oxygen	YSI Pro Plus
ORP	YSI Pro Plus
Temperature	YSI Pro Plus

**Notes on Remediation System Operation:**

# Speedway Store #5315 (Former Tesoro 2 Go Mart #111)- Groundwater Elevation Contours August 3, 2020



Linear Interpolation Method - Contour Interval 0.2 feet

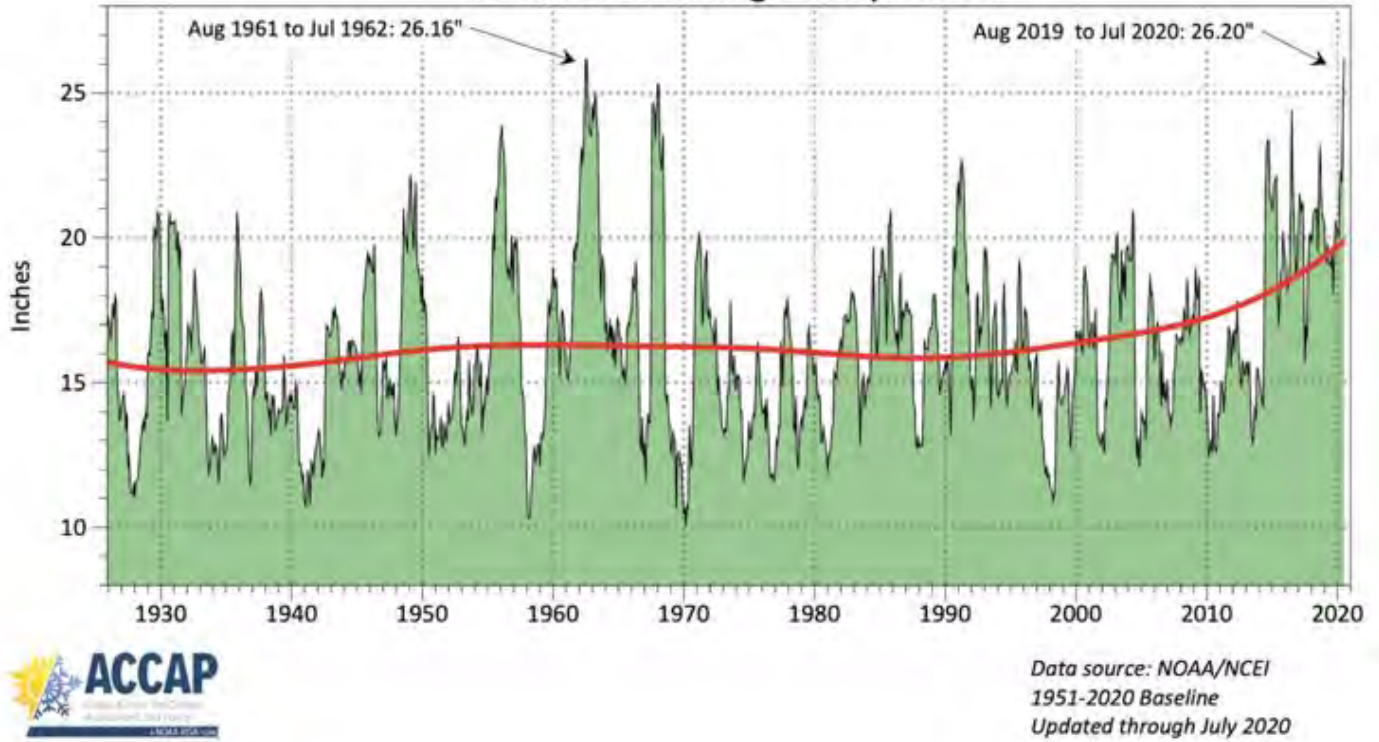


Polynomial Regression Method - Contour Interval 0.1 feet  
Elevation Datum is Locally established at 432.00 feet.

# 2020 rain graph

Aug 8, 2020

## Fairbanks North Star Borough, 1926-2020 12-Month Running Precipitation



A graph created by Rick Thoman, using data from NOAA's National Centers for Environmental Information, illustrates that August 2019 to July 2020 was the rainiest 12-month period on record.

Courtesy Rick Thoman

As featured on



### Fairbanks North Star Borough sees rainiest 12-month period on record

That it's been a rainy spring and summer is news to no one. But just how wet have the past 1...

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## **APPENDIX D**

### *Tables of Historical Monitoring Data*

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**Appendix D  
Tables of Historical Monitoring Data**

**Monitoring Well MW-10**

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

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



Appendix D  
Tables of Historical Monitoring Data

Monitoring Well MW-11

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

Monitoring Well MW-12

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

Appendix D  
Tables of Historical Monitoring Data

Monitoring Well MW-13

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

**Appendix D**  
**Tables of Historical Monitoring Data**

**Monitoring Well MW-16**

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

**Appendix D**  
**Tables of Historical Monitoring Data**

06-Oct-16	U (0.001)	U (0.001)	U (0.001)	0.0024	U (0.05)	0.35	NM	418.77
16-Mar-17	U (0.002)	U (0.002)	U (0.003)	U (0.002)	U (0.05)	0.88	NM	414.98
07-Jul-17	U (0.002)	U (0.002)	U (0.003)	U (0.003)	U (1.0)	<b>3.7</b>	NM	417.02
07-Sep-18	U (0.0004)	U (0.001)	U (0.001)	U (0.002)	U (0.15)	0.34	NM	418.73
13-Mar-19	U (0.003)	U (0.002)	U (0.003)	U (0.003)	U (1.3)	<b>1.9</b>	NM	415.27
30-Jul-19	U (0.003)	U (0.002)	U (0.003)	0.003	U (0.25)	0.39	NM	416.37
<b>GCLs</b>	<b>0.0046</b>	<b>1.1</b>	<b>0.015</b>	<b>0.19</b>	<b>2.2</b>	<b>1.5</b>	NA	NA

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

**Appendix D**  
**Tables of Historical Monitoring Data**

**Monitoring Well G-1**

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

**Appendix D  
Tables of Historical Monitoring Data**

**Monitoring Well G-2**

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

\*Ground Water monitoring did not occurred between March 19, 2003 to August 04, 2020

**Monitoring Well G-3**

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

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

**Appendix D**  
**Tables of Historical Monitoring Data**

**Monitoring Well G-4**

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

\*Ground Water monitoring did not occurred between November 05, 2002 to August 03, 2020

**Appendix D  
Tables of Historical Monitoring Data**

**Monitoring Well G-5**

<b>Date</b>	<b>Benzene (mg/L)</b>	<b>Toluene (mg/L)</b>	<b>Ethylbenzene (mg/L)</b>	<b>Xylenes (mg/L)</b>	<b>GRO (mg/L)</b>	<b>DRO (mg/L)</b>	<b>Sodium mg/L</b>	<b>GW Elev (feet)</b>
30-May-01	12.4	11.5	2.1	9.9	107	6.47	NM	412.59
13-Dec-01	6.21	8.71	1.71	12.74	72.8	3.05	NM	413.22
01-May-02	11.9	7.7	1.95	15.1	83.4	6.75	NM	414.55
19-Aug-02	12.9	7.31	2	8.53	86.6	7.85	NM	417.8
05-Nov-02	5.7	4.37	1.38	6.7	41.9	7.17	NM	417.05
19-Mar-03	2.46	1.75	0.741	5.25	30	7.55	NM	416.19
05-Aug-03	5.07	2.99	0.943	6.41	47.5	5.78	NM	418.76
08-Mar-04	0.00254	0.00495	0.00104	0.0327	0.126	3.45	NM	414.93
15-Sep-04	0.00577	0.00126	0.000506	0.00467	0.061	1.84	NM	416.64
10-Jan-05	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	1.22	NM	414.80
15-Jul-05	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	1.19	NM	417.83
16-Feb-06	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	1.08	NM	414.48
27-Jul-06	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	0.865	NM	417.09
02-Mar-07	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	1.03	NM	414.24
17-Oct-07	0.000837	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	3.44	NM	416.22
05-Jun-08	U (0.0005)	U (0.0005)	0.00452	0.0316	0.112	1.1	NM	415.73
29-Sep-08	U (0.0005)	U (0.0005)	0.00458	0.0103	0.0794	1.66	NM	417.20
25-Feb-09	0.00068	0.00053	0.0579	0.174	2.53	1.3	NM	414.45
21-Jul-09	0.0018	U (0.0010)	U (0.001)	U (0.003)	U (0.05)	1.27	NM	416.73
17-Mar-10	0.013	0.0014	0.19	0.37	4.4	0.961	NM	413.98
15-Sep-10	0.0849	0.000886	0.00279	0.0149	0.287	1.10	NM	416.59
22-Mar-11	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	1.04	NM	413.96
01-Sep-11	0.00331	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	0.898	NM	417.44
13-Mar-12	0.0307	0.00346	0.113	0.23	3.63	1.02	NM	414.37
23-Jul-12	0.00199	U (0.0010)	U (0.0010)	U (0.0030)	U (0.05)	0.57	NM	416.90
13-Aug-13	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	0.884	NM	416.50
18-Mar-14	0.025	0.00612	0.0739	0.161	2.44	0.778	NM	414.36
31-Jul-14	0.49	0.0064	0.071	0.21	2.2	1.40	NM	419.24
03-Mar-15	U (0.0005)	U (0.0005)	U (0.0005)	0.0015	U (0.05)	0.430	NM	414.58
27-Jul-15	0.92	0.57	0.59	1.1	10	1.40	NM	416.18
23-Feb-16	U (0.001)	U (0.001)	U (0.001)	U (0.001)	U (0.05)	0.21	NM	415.19
06-Oct-16	U (0.001)	U (0.001)	U (0.001)	U (0.001)	U (0.05)	0.95	NM	418.75
16-Mar-17	0.27	0.36	0.56	1.91	7.9	1.3	NM	414.93
07-Jul-17	NT	NT	NT	NT	NT	NT	NM	416.96
29-Mar-18	0.38	0.3	0.72	2.27	14	1.6	NM	414.68
07-Sep-18	0.61	0.91	0.51	1.92	7.4	2.4	NM	418.68
13-Mar-19	0.11	0.011	0.39	1.05	5.8	1.2	NM	415.24
30-Jul-19	U (0.15)	U (0.1)	0.18	0.71	2.9	1.2	NM	416.31
04-Aug-20	0.114	0.000683	0.123	0.124	0.712	1.07	77	419.57
<b>GCLs</b>	<b>0.0046</b>	<b>1.1</b>	<b>0.015</b>	<b>0.19</b>	<b>2.2</b>	<b>1.5</b>	<b>NA</b>	<b>NA</b>

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



**Appendix D**  
**Tables of Historical Monitoring Data**

**Monitoring Well G-6**

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

\*Ground Water monitoring did not occurred between November 05, 2002 to August 03, 2020

**Monitoring Well G-9**

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium mg/L	GW Elev (feet)
07-Nov-03	U (0.0005)	U (0.0005)	U (0.0005)	U (0.001)	U (0.08)	U (0.32)	NM	NM
08-Mar-04	U (0.0005)	U (0.0005)	U (0.0005)	U (0.001)	U (0.05)	U (0.37)	NM	414.96
15-Sep-04	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.385)	NM	416.62
10-Jan-05	NT	NT	NT	NT	NT	NT	NM	NM
04-Aug-20	NT	NT	NT	NT	NT	NT	NM	NM
<b>GCLs</b>	<b>0.0046</b>	<b>1.1</b>	<b>0.015</b>	<b>0.19</b>	<b>2.2</b>	<b>1.5</b>	NA	NA

\*Ground Water monitoring did not occurred between January 10, 2005 to August 04, 2020

**Remediation Well RM-1**

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

Appendix D  
Tables of Historical Monitoring Data

Remediation Well RM-2

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

Monitoring Well MW 17-1

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

Monitoring Well MW 17-2

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

Key:

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

DRO - diesel range organics

GCLs - ground water cleanup levels

GRO - gasoline range organics

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

mg/L - milligram per liter

NA - not applicable

NT - not tested

NM - not measured

U - Undetected above practical quantitation limit.

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

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## **APPENDIX E**

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*Laboratory Analytical Report and  
ADEC Laboratory Data Review  
Checklist*

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August 26, 2020

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

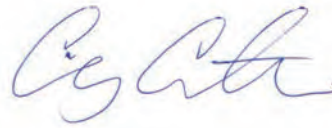
<sup>8</sup> Al

<sup>9</sup> Sc

## Stantec - Anchorage, AK - Speedway

Sample Delivery Group: L1247400  
Samples Received: 08/06/2020  
Project Number:  
Description: Speedway 5315  
Site: 0005315  
Report To: Mr. John Marshall  
725 E Fireweed Lane  
Suite 200  
Anchorage, AK 99503

Entire Report Reviewed By:



Craig Cothron  
Project Manager

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





<b>Cp: Cover Page</b>	<b>1</b>	<b><sup>1</sup>Cp</b>
<b>Tc: Table of Contents</b>	<b>2</b>	<b><sup>2</sup>Tc</b>
<b>Ss: Sample Summary</b>	<b>3</b>	<b><sup>3</sup>Ss</b>
<b>Cn: Case Narrative</b>	<b>5</b>	<b><sup>4</sup>Cn</b>
<b>Sr: Sample Results</b>	<b>6</b>	<b><sup>5</sup>Sr</b>
G-01 L1247400-01	6	
G-05 L1247400-02	7	
MW-10 L1247400-03	8	
MW-11 L1247400-04	9	
MW-12 L1247400-05	10	<b><sup>6</sup>Qc</b>
MW-13 L1247400-06	11	
MW17-01 L1247400-07	12	<b><sup>7</sup>Gl</b>
MW17-02 L1247400-08	13	<b><sup>8</sup>Al</b>
RM-01 L1247400-09	14	
RM-02 L1247400-10	15	
DUP1 L1247400-11	16	<b><sup>9</sup>Sc</b>
<b>Qc: Quality Control Summary</b>	<b>17</b>	
Metals (ICP) by Method 6010C	17	
Volatile Organic Compounds (GC) by Method AK101	18	
Volatile Organic Compounds (GC/MS) by Method 8260C	20	
Semi-Volatile Organic Compounds (GC) by Method AK102	27	
<b>Gl: Glossary of Terms</b>	<b>29</b>	
<b>Al: Accreditations &amp; Locations</b>	<b>30</b>	
<b>Sc: Sample Chain of Custody</b>	<b>31</b>	

# SAMPLE SUMMARY



## G-01 L1247400-01 GW

			Collected by EF/LP	Collected date/time 08/03/20 12:48	Received date/time 08/06/20 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst Location
Metals (ICP) by Method 6010C	WG1522254	1	08/09/20 11:50	08/10/20 19:54	EL Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1522625	1	08/08/20 12:21	08/08/20 12:21	BMB Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1523090	1	08/09/20 19:39	08/09/20 19:39	JHH Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1523441	1	08/13/20 09:08	08/14/20 07:25	KME Mt. Juliet, TN

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

## G-05 L1247400-02 GW

			Collected by EF/LP	Collected date/time 08/04/20 10:20	Received date/time 08/06/20 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst Location
Metals (ICP) by Method 6010C	WG1522254	1	08/09/20 11:50	08/10/20 19:57	EL Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1522625	1	08/08/20 12:45	08/08/20 12:45	BMB Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1523161	1	08/10/20 05:42	08/10/20 05:42	JCP Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1523441	1	08/13/20 09:08	08/14/20 07:45	KME Mt. Juliet, TN

## MW-10 L1247400-03 GW

			Collected by EF/LP	Collected date/time 08/04/20 11:25	Received date/time 08/06/20 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst Location
Metals (ICP) by Method 6010C	WG1522254	1	08/09/20 11:50	08/10/20 19:59	EL Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1522933	20	08/10/20 18:24	08/10/20 18:24	ACG Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1523161	1	08/10/20 06:02	08/10/20 06:02	JCP Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1524680	20	08/12/20 17:16	08/12/20 17:16	JHH Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1523441	1	08/13/20 09:08	08/14/20 08:05	KME Mt. Juliet, TN

## MW-11 L1247400-04 GW

			Collected by EF/LP	Collected date/time 08/04/20 11:15	Received date/time 08/06/20 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst Location
Metals (ICP) by Method 6010C	WG1522254	1	08/09/20 11:50	08/10/20 20:02	EL Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1522933	20	08/10/20 18:48	08/10/20 18:48	ACG Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1523161	1	08/10/20 06:22	08/10/20 06:22	JCP Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1524680	20	08/12/20 17:35	08/12/20 17:35	JHH Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1523441	1.05	08/13/20 09:08	08/14/20 08:25	KME Mt. Juliet, TN

## MW-12 L1247400-05 GW

			Collected by EF/LP	Collected date/time 08/03/20 13:55	Received date/time 08/06/20 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst Location
Metals (ICP) by Method 6010C	WG1522254	1	08/09/20 11:50	08/10/20 20:05	EL Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1522625	1	08/08/20 13:58	08/08/20 13:58	BMB Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1523161	1	08/10/20 06:42	08/10/20 06:42	JCP Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1523441	1	08/13/20 09:08	08/14/20 08:45	KME Mt. Juliet, TN

## MW-13 L1247400-06 GW

			Collected by EF/LP	Collected date/time 08/03/20 16:39	Received date/time 08/06/20 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst Location
Metals (ICP) by Method 6010C	WG1522254	1	08/09/20 11:50	08/10/20 20:07	EL Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1522625	1	08/08/20 14:22	08/08/20 14:22	BMB Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1523167	1	08/10/20 04:43	08/10/20 04:43	JCP Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1523441	1	08/13/20 09:08	08/14/20 09:05	KME Mt. Juliet, TN

# SAMPLE SUMMARY

## MW17-01 L1247400-07 GW

Collected by EF/LP      Collected date/time 08/04/20 16:46      Received date/time 08/06/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1522254	1	08/09/20 11:50	08/10/20 20:15	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1522933	250	08/10/20 19:13	08/10/20 19:13	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1523167	25	08/10/20 09:34	08/10/20 09:34	JCP	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1524930	1000	08/12/20 23:35	08/12/20 23:35	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1523441	1	08/13/20 09:08	08/14/20 09:26	KME	Mt. Juliet, TN

1  
Cp

2  
Tc

3  
Ss

4  
Cn

5  
Sr

6  
Qc

7  
Gl

8  
Al

9  
Sc

## MW17-02 L1247400-08 GW

Collected by EF/LP      Collected date/time 08/04/20 15:35      Received date/time 08/06/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1522254	1	08/09/20 11:50	08/10/20 20:18	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1522933	20	08/10/20 19:37	08/10/20 19:37	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1523318	1	08/10/20 11:26	08/10/20 11:26	JCP	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1524247	25	08/12/20 00:23	08/12/20 00:23	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1523441	5	08/13/20 09:08	08/14/20 17:59	KME	Mt. Juliet, TN

## RM-01 L1247400-09 GW

Collected by EF/LP      Collected date/time 08/04/20 12:05      Received date/time 08/06/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1522254	1	08/09/20 11:50	08/10/20 20:21	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1522933	10	08/10/20 20:01	08/10/20 20:01	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1523318	1	08/10/20 11:46	08/10/20 11:46	JCP	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1524247	20	08/12/20 00:03	08/12/20 00:03	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1526958	1	08/16/20 15:28	08/18/20 01:56	CAG	Mt. Juliet, TN

## RM-02 L1247400-10 GW

Collected by EF/LP      Collected date/time 08/04/20 12:35      Received date/time 08/06/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1522254	1	08/09/20 11:50	08/10/20 20:23	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1522933	1	08/10/20 18:00	08/10/20 18:00	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1523318	1	08/10/20 12:06	08/10/20 12:06	JCP	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1524247	1	08/11/20 23:23	08/11/20 23:23	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1523441	1	08/13/20 09:08	08/14/20 10:26	KME	Mt. Juliet, TN

## DUP1 L1247400-11 GW

Collected by EF/LP      Collected date/time 08/04/20 00:00      Received date/time 08/06/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1522254	1	08/09/20 11:50	08/10/20 20:26	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1522933	250	08/10/20 20:25	08/10/20 20:25	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1523318	25	08/10/20 16:31	08/10/20 16:31	JCP	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1524247	500	08/12/20 00:43	08/12/20 00:43	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1523441	1	08/13/20 09:08	08/14/20 10:46	KME	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

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





Collected date/time: 08/03/20 12:48

L1247400

## Metals (ICP) by Method 6010C

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Sodium	66.4		1.40	3.00	1	08/10/2020 19:54	<a href="#">WG1522254</a>

1 Cp

2 Tc

## Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
TPHGAK C6 to C10	0.0109	J	0.0100	0.100	1	08/08/2020 12:21	<a href="#">WG1522625</a>
(S) a,a,a-Trifluorotoluene(FID)	102			50.0-150		08/08/2020 12:21	<a href="#">WG1522625</a>
(S) a,a,a-Trifluorotoluene(PID)	100			79.0-125		08/08/2020 12:21	<a href="#">WG1522625</a>

3 Ss

4 Cn

5 Sr

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Benzene	0.000817	J	0.0000941	0.00100	1	08/09/2020 19:39	<a href="#">WG1523090</a>
Toluene	U		0.000278	0.00100	1	08/09/2020 19:39	<a href="#">WG1523090</a>
Ethylbenzene	U		0.000137	0.00100	1	08/09/2020 19:39	<a href="#">WG1523090</a>
Total Xylenes	U		0.000174	0.00300	1	08/09/2020 19:39	<a href="#">WG1523090</a>
(S) Toluene-d8	97.6			80.0-120		08/09/2020 19:39	<a href="#">WG1523090</a>
(S) 4-Bromofluorobenzene	95.9			77.0-126		08/09/2020 19:39	<a href="#">WG1523090</a>
(S) 1,2-Dichloroethane-d4	99.0			70.0-130		08/09/2020 19:39	<a href="#">WG1523090</a>

6 Qc

7 Gl

8 Al

9 Sc

## Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
AK102 DRO C10-C25	U		0.229	0.800	1	08/14/2020 07:25	<a href="#">WG1523441</a>
(S) o-Terphenyl	70.7			50.0-150		08/14/2020 07:25	<a href="#">WG1523441</a>



## Metals (ICP) by Method 6010C

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Sodium	77.0		1.40	3.00	1	08/10/2020 19:57	<a href="#">WG1522254</a>

1 Cp

2 Tc

## Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
TPHGAK C6 to C10	0.712		0.0100	0.100	1	08/08/2020 12:45	<a href="#">WG1522625</a>
(S) a,a,a-Trifluorotoluene(FID)	95.4			50.0-150		08/08/2020 12:45	<a href="#">WG1522625</a>
(S) a,a,a-Trifluorotoluene(PID)	103			79.0-125		08/08/2020 12:45	<a href="#">WG1522625</a>

3 Ss

4 Cn

5 Sr

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Benzene	0.114		0.0000941	0.00100	1	08/10/2020 05:42	<a href="#">WG1523161</a>
Toluene	0.000683	J	0.000278	0.00100	1	08/10/2020 05:42	<a href="#">WG1523161</a>
Ethylbenzene	0.123		0.000137	0.00100	1	08/10/2020 05:42	<a href="#">WG1523161</a>
Total Xylenes	0.124		0.000174	0.00300	1	08/10/2020 05:42	<a href="#">WG1523161</a>
(S) Toluene-d8	87.3			80.0-120		08/10/2020 05:42	<a href="#">WG1523161</a>
(S) 4-Bromofluorobenzene	93.3			77.0-126		08/10/2020 05:42	<a href="#">WG1523161</a>
(S) 1,2-Dichloroethane-d4	89.7			70.0-130		08/10/2020 05:42	<a href="#">WG1523161</a>

6 Qc

7 Gl

8 Al

9 Sc

## Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
AK102 DRO C10-C25	1.07		0.229	0.800	1	08/14/2020 07:45	<a href="#">WG1523441</a>
(S) o-Terphenyl	71.3			50.0-150		08/14/2020 07:45	<a href="#">WG1523441</a>



Metals (ICP) by Method 6010C

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Sodium	60.0		1.40	3.00	1	08/10/2020 19:59	<a href="#">WG1522254</a>

1 Cp

2 Tc

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
TPHGAK C6 to C10	4.20		0.200	2.00	20	08/10/2020 18:24	<a href="#">WG1522933</a>
(S) a,a,a-Trifluorotoluene(FID)	101			50.0-150		08/10/2020 18:24	<a href="#">WG1522933</a>
(S) a,a,a-Trifluorotoluene(PID)	97.6			79.0-125		08/10/2020 18:24	<a href="#">WG1522933</a>

3 Ss

4 Cn

5 Sr

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Benzene	0.0577		0.0000941	0.00100	1	08/10/2020 06:02	<a href="#">WG1523161</a>
Toluene	0.142		0.000278	0.00100	1	08/10/2020 06:02	<a href="#">WG1523161</a>
Ethylbenzene	0.597		0.00274	0.0200	20	08/12/2020 17:16	<a href="#">WG1524680</a>
Total Xylenes	1.89		0.00348	0.0600	20	08/12/2020 17:16	<a href="#">WG1524680</a>
(S) Toluene-d8	87.3			80.0-120		08/10/2020 06:02	<a href="#">WG1523161</a>
(S) Toluene-d8	108			80.0-120		08/12/2020 17:16	<a href="#">WG1524680</a>
(S) 4-Bromofluorobenzene	96.4			77.0-126		08/10/2020 06:02	<a href="#">WG1523161</a>
(S) 4-Bromofluorobenzene	101			77.0-126		08/12/2020 17:16	<a href="#">WG1524680</a>
(S) 1,2-Dichloroethane-d4	91.5			70.0-130		08/10/2020 06:02	<a href="#">WG1523161</a>
(S) 1,2-Dichloroethane-d4	107			70.0-130		08/12/2020 17:16	<a href="#">WG1524680</a>

6 Qc

7 Gl

8 Al

9 Sc

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
AK102 DRO C10-C25	1.90		0.229	0.800	1	08/14/2020 08:05	<a href="#">WG1523441</a>
(S) o-Terphenyl	71.5			50.0-150		08/14/2020 08:05	<a href="#">WG1523441</a>



Metals (ICP) by Method 6010C

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Sodium	90.6		1.40	3.00	1	08/10/2020 20:02	<a href="#">WG1522254</a>

1 Cp

2 Tc

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
TPHGAK C6 to C10	5.63		0.200	2.00	20	08/10/2020 18:48	<a href="#">WG1522933</a>
(S) a,a,a-Trifluorotoluene(FID)	97.7			50.0-150		08/10/2020 18:48	<a href="#">WG1522933</a>
(S) a,a,a-Trifluorotoluene(PID)	99.7			79.0-125		08/10/2020 18:48	<a href="#">WG1522933</a>

3 Ss

4 Cn

5 Sr

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Benzene	0.0570		0.0000941	0.00100	1	08/10/2020 06:22	<a href="#">WG1523161</a>
Toluene	0.00403		0.000278	0.00100	1	08/10/2020 06:22	<a href="#">WG1523161</a>
Ethylbenzene	0.434		0.00274	0.0200	20	08/12/2020 17:35	<a href="#">WG1524680</a>
Total Xylenes	1.75		0.00348	0.0600	20	08/12/2020 17:35	<a href="#">WG1524680</a>
(S) Toluene-d8	91.3			80.0-120		08/10/2020 06:22	<a href="#">WG1523161</a>
(S) Toluene-d8	107			80.0-120		08/12/2020 17:35	<a href="#">WG1524680</a>
(S) 4-Bromofluorobenzene	95.4			77.0-126		08/10/2020 06:22	<a href="#">WG1523161</a>
(S) 4-Bromofluorobenzene	101			77.0-126		08/12/2020 17:35	<a href="#">WG1524680</a>
(S) 1,2-Dichloroethane-d4	89.2			70.0-130		08/10/2020 06:22	<a href="#">WG1523161</a>
(S) 1,2-Dichloroethane-d4	106			70.0-130		08/12/2020 17:35	<a href="#">WG1524680</a>

6 Qc

7 Gl

8 Al

9 Sc

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
AK102 DRO C10-C25	3.51		0.240	0.840	1.05	08/14/2020 08:25	<a href="#">WG1523441</a>
(S) o-Terphenyl	75.1			50.0-150		08/14/2020 08:25	<a href="#">WG1523441</a>



Metals (ICP) by Method 6010C

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Sodium	48.7		1.40	3.00	1	08/10/2020 20:05	<a href="#">WG1522254</a>

1 Cp

2 Tc

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
TPHGAK C6 to C10	1.23		0.0100	0.100	1	08/08/2020 13:58	<a href="#">WG1522625</a>
(S) a,a,a-Trifluorotoluene(FID)	100			50.0-150		08/08/2020 13:58	<a href="#">WG1522625</a>
(S) a,a,a-Trifluorotoluene(PID)	100			79.0-125		08/08/2020 13:58	<a href="#">WG1522625</a>

3 Ss

4 Cn

5 Sr

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Benzene	0.000353	J	0.0000941	0.00100	1	08/10/2020 06:42	<a href="#">WG1523161</a>
Toluene	0.0364		0.000278	0.00100	1	08/10/2020 06:42	<a href="#">WG1523161</a>
Ethylbenzene	0.0538		0.000137	0.00100	1	08/10/2020 06:42	<a href="#">WG1523161</a>
Total Xylenes	0.487		0.000174	0.00300	1	08/10/2020 06:42	<a href="#">WG1523161</a>
(S) Toluene-d8	83.0			80.0-120		08/10/2020 06:42	<a href="#">WG1523161</a>
(S) 4-Bromofluorobenzene	87.2			77.0-126		08/10/2020 06:42	<a href="#">WG1523161</a>
(S) 1,2-Dichloroethane-d4	86.6			70.0-130		08/10/2020 06:42	<a href="#">WG1523161</a>

6 Qc

7 Gl

8 Al

9 Sc

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
AK102 DRO C10-C25	0.852		0.229	0.800	1	08/14/2020 08:45	<a href="#">WG1523441</a>
(S) o-Terphenyl	72.2			50.0-150		08/14/2020 08:45	<a href="#">WG1523441</a>



Metals (ICP) by Method 6010C

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Sodium	49.6		1.40	3.00	1	08/10/2020 20:07	<a href="#">WG1522254</a>

1 Cp

2 Tc

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
TPHGAK C6 to C10	1.01		0.0100	0.100	1	08/08/2020 14:22	<a href="#">WG1522625</a>
(S) a,a,a-Trifluorotoluene(FID)	101			50.0-150		08/08/2020 14:22	<a href="#">WG1522625</a>
(S) a,a,a-Trifluorotoluene(PID)	102			79.0-125		08/08/2020 14:22	<a href="#">WG1522625</a>

3 Ss

4 Cn

5 Sr

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Benzene	0.000323	J	0.0000941	0.00100	1	08/10/2020 04:43	<a href="#">WG1523167</a>
Toluene	0.0351		0.000278	0.00100	1	08/10/2020 04:43	<a href="#">WG1523167</a>
Ethylbenzene	0.0439		0.000137	0.00100	1	08/10/2020 04:43	<a href="#">WG1523167</a>
Total Xylenes	0.454		0.000174	0.00300	1	08/10/2020 04:43	<a href="#">WG1523167</a>
(S) Toluene-d8	97.3			80.0-120		08/10/2020 04:43	<a href="#">WG1523167</a>
(S) 4-Bromofluorobenzene	94.9			77.0-126		08/10/2020 04:43	<a href="#">WG1523167</a>
(S) 1,2-Dichloroethane-d4	97.0			70.0-130		08/10/2020 04:43	<a href="#">WG1523167</a>

6 Qc

7 Gl

8 Al

9 Sc

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
AK102 DRO C10-C25	0.554	J	0.229	0.800	1	08/14/2020 09:05	<a href="#">WG1523441</a>
(S) o-Terphenyl	63.7			50.0-150		08/14/2020 09:05	<a href="#">WG1523441</a>



Metals (ICP) by Method 6010C

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Sodium	56.0		1.40	3.00	1	08/10/2020 20:15	<a href="#">WG1522254</a>

1 Cp

2 Tc

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
TPHGAK C6 to C10	61.1		2.50	25.0	250	08/10/2020 19:13	<a href="#">WG1522933</a>
(S) a,a,a-Trifluorotoluene(FID)	102			50.0-150		08/10/2020 19:13	<a href="#">WG1522933</a>
(S) a,a,a-Trifluorotoluene(PID)	99.3			79.0-125		08/10/2020 19:13	<a href="#">WG1522933</a>

3 Ss

4 Cn

5 Sr

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Benzene	0.126		0.00235	0.0250	25	08/10/2020 09:34	<a href="#">WG1523167</a>
Toluene	22.5		0.278	1.00	1000	08/12/2020 23:35	<a href="#">WG1524930</a>
Ethylbenzene	3.47		0.00343	0.0250	25	08/10/2020 09:34	<a href="#">WG1523167</a>
Total Xylenes	13.8		0.00435	0.0750	25	08/10/2020 09:34	<a href="#">WG1523167</a>
(S) Toluene-d8	99.1			80.0-120		08/10/2020 09:34	<a href="#">WG1523167</a>
(S) Toluene-d8	93.9			80.0-120		08/12/2020 23:35	<a href="#">WG1524930</a>
(S) 4-Bromofluorobenzene	100			77.0-126		08/10/2020 09:34	<a href="#">WG1523167</a>
(S) 4-Bromofluorobenzene	95.2			77.0-126		08/12/2020 23:35	<a href="#">WG1524930</a>
(S) 1,2-Dichloroethane-d4	97.8			70.0-130		08/10/2020 09:34	<a href="#">WG1523167</a>
(S) 1,2-Dichloroethane-d4	94.1			70.0-130		08/12/2020 23:35	<a href="#">WG1524930</a>

6 Qc

7 Gl

8 Al

9 Sc

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
AK102 DRO C10-C25	2.78		0.229	0.800	1	08/14/2020 09:26	<a href="#">WG1523441</a>
(S) o-Terphenyl	60.0			50.0-150		08/14/2020 09:26	<a href="#">WG1523441</a>



Metals (ICP) by Method 6010C

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Sodium	91.4		1.40	3.00	1	08/10/2020 20:18	<a href="#">WG1522254</a>

1 Cp

2 Tc

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
TPHGAK C6 to C10	5.03		0.200	2.00	20	08/10/2020 19:37	<a href="#">WG1522933</a>
(S) a,a,a-Trifluorotoluene(FID)	102			50.0-150		08/10/2020 19:37	<a href="#">WG1522933</a>
(S) a,a,a-Trifluorotoluene(PID)	98.9			79.0-125		08/10/2020 19:37	<a href="#">WG1522933</a>

3 Ss

4 Cn

5 Sr

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Benzene	0.0505		0.0000941	0.00100	1	08/10/2020 11:26	<a href="#">WG1523318</a>
Toluene	0.477		0.00695	0.0250	25	08/12/2020 00:23	<a href="#">WG1524247</a>
Ethylbenzene	0.236		0.00343	0.0250	25	08/12/2020 00:23	<a href="#">WG1524247</a>
Total Xylenes	1.91		0.00435	0.0750	25	08/12/2020 00:23	<a href="#">WG1524247</a>
(S) Toluene-d8	109			80.0-120		08/10/2020 11:26	<a href="#">WG1523318</a>
(S) Toluene-d8	107			80.0-120		08/12/2020 00:23	<a href="#">WG1524247</a>
(S) 4-Bromofluorobenzene	106			77.0-126		08/10/2020 11:26	<a href="#">WG1523318</a>
(S) 4-Bromofluorobenzene	105			77.0-126		08/12/2020 00:23	<a href="#">WG1524247</a>
(S) 1,2-Dichloroethane-d4	88.0			70.0-130		08/10/2020 11:26	<a href="#">WG1523318</a>
(S) 1,2-Dichloroethane-d4	119			70.0-130		08/12/2020 00:23	<a href="#">WG1524247</a>

6 Qc

7 Gl

8 Al

9 Sc

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
AK102 DRO C10-C25	20.5		1.15	4.00	5	08/14/2020 17:59	<a href="#">WG1523441</a>
(S) o-Terphenyl	63.8			50.0-150		08/14/2020 17:59	<a href="#">WG1523441</a>





Metals (ICP) by Method 6010C

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Sodium	47.2		1.40	3.00	1	08/10/2020 20:21	<a href="#">WG1522254</a>

1 Cp

2 Tc

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
TPHGAK C6 to C10	2.81		0.100	1.00	10	08/10/2020 20:01	<a href="#">WG1522933</a>
(S) a,a,a-Trifluorotoluene(FID)	102			50.0-150		08/10/2020 20:01	<a href="#">WG1522933</a>
(S) a,a,a-Trifluorotoluene(PID)	98.5			79.0-125		08/10/2020 20:01	<a href="#">WG1522933</a>

3 Ss

4 Cn

5 Sr

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Benzene	0.000539	J	0.0000941	0.00100	1	08/10/2020 11:46	<a href="#">WG1523318</a>
Toluene	0.0922		0.000278	0.00100	1	08/10/2020 11:46	<a href="#">WG1523318</a>
Ethylbenzene	0.131		0.000137	0.00100	1	08/10/2020 11:46	<a href="#">WG1523318</a>
Total Xylenes	1.32		0.00348	0.0600	20	08/12/2020 00:03	<a href="#">WG1524247</a>
(S) Toluene-d8	106			80.0-120		08/10/2020 11:46	<a href="#">WG1523318</a>
(S) Toluene-d8	112			80.0-120		08/12/2020 00:03	<a href="#">WG1524247</a>
(S) 4-Bromofluorobenzene	103			77.0-126		08/10/2020 11:46	<a href="#">WG1523318</a>
(S) 4-Bromofluorobenzene	106			77.0-126		08/12/2020 00:03	<a href="#">WG1524247</a>
(S) 1,2-Dichloroethane-d4	86.4			70.0-130		08/10/2020 11:46	<a href="#">WG1523318</a>
(S) 1,2-Dichloroethane-d4	116			70.0-130		08/12/2020 00:03	<a href="#">WG1524247</a>

6 Qc

7 Gl

8 Al

9 Sc

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
AK102 DRO C10-C25	1.23		0.229	0.800	1	08/18/2020 01:56	<a href="#">WG1526958</a>
(S) o-Terphenyl	117			50.0-150		08/18/2020 01:56	<a href="#">WG1526958</a>



Metals (ICP) by Method 6010C

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Sodium	24.2		1.40	3.00	1	08/10/2020 20:23	<a href="#">WG1522254</a>

1 Cp

2 Tc

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
TPHGAK C6 to C10	0.0135	J	0.0100	0.100	1	08/10/2020 18:00	<a href="#">WG1522933</a>
(S) a,a,a-Trifluorotoluene(FID)	98.8			50.0-150		08/10/2020 18:00	<a href="#">WG1522933</a>
(S) a,a,a-Trifluorotoluene(PID)	99.7			79.0-125		08/10/2020 18:00	<a href="#">WG1522933</a>

3 Ss

4 Cn

5 Sr

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Benzene	U		0.0000941	0.00100	1	08/10/2020 12:06	<a href="#">WG1523318</a>
Toluene	U		0.000278	0.00100	1	08/11/2020 23:23	<a href="#">WG1524247</a>
Ethylbenzene	0.000505	J	0.000137	0.00100	1	08/11/2020 23:23	<a href="#">WG1524247</a>
Total Xylenes	0.000565	J	0.000174	0.00300	1	08/11/2020 23:23	<a href="#">WG1524247</a>
(S) Toluene-d8	105			80.0-120		08/10/2020 12:06	<a href="#">WG1523318</a>
(S) Toluene-d8	111			80.0-120		08/11/2020 23:23	<a href="#">WG1524247</a>
(S) 4-Bromofluorobenzene	102			77.0-126		08/10/2020 12:06	<a href="#">WG1523318</a>
(S) 4-Bromofluorobenzene	103			77.0-126		08/11/2020 23:23	<a href="#">WG1524247</a>
(S) 1,2-Dichloroethane-d4	86.0			70.0-130		08/10/2020 12:06	<a href="#">WG1523318</a>
(S) 1,2-Dichloroethane-d4	115			70.0-130		08/11/2020 23:23	<a href="#">WG1524247</a>

6 Qc

7 Gl

8 Al

9 Sc

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
AK102 DRO C10-C25	U		0.229	0.800	1	08/14/2020 10:26	<a href="#">WG1523441</a>
(S) o-Terphenyl	74.5			50.0-150		08/14/2020 10:26	<a href="#">WG1523441</a>



Collected date/time: 08/04/20 00:00

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Metals (ICP) by Method 6010C

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Sodium	55.9		1.40	3.00	1	08/10/2020 20:26	<a href="#">WG1522254</a>

1 Cp

2 Tc

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
TPHGAK C6 to C10	61.5		2.50	25.0	250	08/10/2020 20:25	<a href="#">WG1522933</a>
(S) a,a,a-Trifluorotoluene(FID)	101			50.0-150		08/10/2020 20:25	<a href="#">WG1522933</a>
(S) a,a,a-Trifluorotoluene(PID)	98.9			79.0-125		08/10/2020 20:25	<a href="#">WG1522933</a>

3 Ss

4 Cn

5 Sr

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Benzene	0.114		0.00235	0.0250	25	08/10/2020 16:31	<a href="#">WG1523318</a>
Toluene	22.2		0.139	0.500	500	08/12/2020 00:43	<a href="#">WG1524247</a>
Ethylbenzene	3.82		0.00343	0.0250	25	08/10/2020 16:31	<a href="#">WG1523318</a>
Total Xylenes	14.7		0.0870	1.50	500	08/12/2020 00:43	<a href="#">WG1524247</a>
(S) Toluene-d8	106			80.0-120		08/10/2020 16:31	<a href="#">WG1523318</a>
(S) Toluene-d8	115			80.0-120		08/12/2020 00:43	<a href="#">WG1524247</a>
(S) 4-Bromofluorobenzene	102			77.0-126		08/10/2020 16:31	<a href="#">WG1523318</a>
(S) 4-Bromofluorobenzene	106			77.0-126		08/12/2020 00:43	<a href="#">WG1524247</a>
(S) 1,2-Dichloroethane-d4	88.4			70.0-130		08/10/2020 16:31	<a href="#">WG1523318</a>
(S) 1,2-Dichloroethane-d4	113			70.0-130		08/12/2020 00:43	<a href="#">WG1524247</a>

6 Qc

7 Gl

8 Al

9 Sc

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
AK102 DRO C10-C25	4.94		0.229	0.800	1	08/14/2020 10:46	<a href="#">WG1523441</a>
(S) o-Terphenyl	78.3			50.0-150		08/14/2020 10:46	<a href="#">WG1523441</a>



Method Blank (MB)

(MB) R3558398-1 08/10/20 19:11

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

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

Laboratory Control Sample (LCS)

(LCS) R3558398-2 08/10/20 19:14

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Sodium	10.0	10.0	100	80.0-120	

<sup>6</sup>Qc

L1247212-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1247212-01 08/10/20 19:16 • (MS) R3558398-4 08/10/20 19:21 • (MSD) R3558398-5 08/10/20 19:24

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	23.7	33.6	33.6	98.4	98.6	1	75.0-125			0.0627	20

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc



Method Blank (MB)

(MB) R3557805-3 08/08/20 09:09

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPHGAK C6 to C10	U		0.0100	0.100
(S) a,a,a-Trifluorotoluene(PID)	99.9			79.0-125
(S) a,a,a-Trifluorotoluene(FID)	102			60.0-120

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

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

(LCS) R3557805-2 08/08/20 08:00 • (LCSD) R3557805-5 08/08/20 18:25

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	0.375	0.387	93.8	96.8	60.0-120			3.15	20
(S) a,a,a-Trifluorotoluene(PID)				100	101	79.0-125				
(S) a,a,a-Trifluorotoluene(FID)				104	104	60.0-120				



Method Blank (MB)

(MB) R3559572-3 08/10/20 15:42

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPHGAK C6 to C10	U		0.0100	0.100
(S) a,a,a-Trifluorotoluene(PID)	100			79.0-125
(S) a,a,a-Trifluorotoluene(FID)	100			60.0-120

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

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

(LCS) R3559572-1 08/10/20 14:35 • (LCSD) R3559572-5 08/10/20 21:13

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	0.401	0.408	100	102	60.0-120			1.73	20
(S) a,a,a-Trifluorotoluene(PID)				98.2	97.1	79.0-125				
(S) a,a,a-Trifluorotoluene(FID)				101	100	60.0-120				

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3558654-4 08/09/20 18:21

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	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	99.2			80.0-120
(S) 4-Bromofluorobenzene	102			77.0-126
(S) 1,2-Dichloroethane-d4	99.1			70.0-130

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

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

(LCS) R3558654-1 08/09/20 17:02 • (LCSD) R3558654-2 08/09/20 17:22

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Benzene	0.00500	0.00469	0.00480	93.8	96.0	70.0-123			2.32	20
Ethylbenzene	0.00500	0.00487	0.00491	97.4	98.2	79.0-123			0.818	20
Toluene	0.00500	0.00441	0.00466	88.2	93.2	79.0-120			5.51	20
Xylenes, Total	0.0150	0.0145	0.0153	96.7	102	79.0-123			5.37	20
(S) Toluene-d8				95.5	97.9	80.0-120				
(S) 4-Bromofluorobenzene				98.7	101	77.0-126				
(S) 1,2-Dichloroethane-d4				102	101	70.0-130				



Method Blank (MB)

(MB) R3558992-3 08/10/20 00:34

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
<i>(S) Toluene-d8</i>	93.8			80.0-120
<i>(S) 4-Bromofluorobenzene</i>	91.7			77.0-126
<i>(S) 1,2-Dichloroethane-d4</i>	96.0			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3558992-1 08/09/20 23:33

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.00500	0.00540	108	70.0-123	
Ethylbenzene	0.00500	0.00492	98.4	79.0-123	
Toluene	0.00500	0.00475	95.0	79.0-120	
Xylenes, Total	0.0150	0.0139	92.7	79.0-123	
<i>(S) Toluene-d8</i>			90.8	80.0-120	
<i>(S) 4-Bromofluorobenzene</i>			93.3	77.0-126	
<i>(S) 1,2-Dichloroethane-d4</i>			90.3	70.0-130	

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc





Method Blank (MB)

(MB) R3559162-3 08/10/20 03:16

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
<i>(S) Toluene-d8</i>	98.5			80.0-120
<i>(S) 4-Bromofluorobenzene</i>	97.4			77.0-126
<i>(S) 1,2-Dichloroethane-d4</i>	98.0			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3559162-1 08/10/20 02:18

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.00500	0.00434	86.8	70.0-123	
Ethylbenzene	0.00500	0.00444	88.8	79.0-123	
Toluene	0.00500	0.00425	85.0	79.0-120	
Xylenes, Total	0.0150	0.0136	90.7	79.0-123	
<i>(S) Toluene-d8</i>			97.7	80.0-120	
<i>(S) 4-Bromofluorobenzene</i>			100	77.0-126	
<i>(S) 1,2-Dichloroethane-d4</i>			101	70.0-130	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3558750-2 08/10/20 08:41

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
<i>(S) Toluene-d8</i>	106			80.0-120
<i>(S) 4-Bromofluorobenzene</i>	99.6			77.0-126
<i>(S) 1,2-Dichloroethane-d4</i>	90.2			70.0-130

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

Laboratory Control Sample (LCS)

(LCS) R3558750-1 08/10/20 08:00

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.00500	0.00471	94.2	70.0-123	
Ethylbenzene	0.00500	0.00541	108	79.0-123	
Toluene	0.00500	0.00515	103	79.0-120	
<i>(S) Toluene-d8</i>			108	80.0-120	
<i>(S) 4-Bromofluorobenzene</i>			104	77.0-126	
<i>(S) 1,2-Dichloroethane-d4</i>			88.1	70.0-130	

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3559158-2 08/11/20 18:13

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Ethylbenzene	U		0.000137	0.00100
Toluene	U		0.000278	0.00100
Xylenes, Total	U		0.000174	0.00300
<i>(S) Toluene-d8</i>	107			80.0-120
<i>(S) 4-Bromofluorobenzene</i>	98.2			77.0-126
<i>(S) 1,2-Dichloroethane-d4</i>	108			70.0-130

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

Laboratory Control Sample (LCS)

(LCS) R3559158-1 08/11/20 17:32

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Ethylbenzene	0.00500	0.00429	85.8	79.0-123	
Toluene	0.00500	0.00460	92.0	79.0-120	
Xylenes, Total	0.0150	0.0135	90.0	79.0-123	
<i>(S) Toluene-d8</i>			109	80.0-120	
<i>(S) 4-Bromofluorobenzene</i>			109	77.0-126	
<i>(S) 1,2-Dichloroethane-d4</i>			124	70.0-130	

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc



Method Blank (MB)

(MB) R3559507-3 08/12/20 14:12

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Ethylbenzene	U		0.000137	0.00100
Xylenes, Total	U		0.000174	0.00300
(S) Toluene-d8	110			80.0-120
(S) 4-Bromofluorobenzene	101			77.0-126
(S) 1,2-Dichloroethane-d4	105			70.0-130

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

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

(LCS) R3559507-1 08/12/20 12:54 • (LCSD) R3559507-2 08/12/20 13:14

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	%	%	%			%	%
Ethylbenzene	0.00500	0.00545	0.00526	109	105	79.0-123			3.55	20
Xylenes, Total	0.0150	0.0164	0.0162	109	108	79.0-123			1.23	20
(S) Toluene-d8				110	108	80.0-120				
(S) 4-Bromofluorobenzene				99.0	99.1	77.0-126				
(S) 1,2-Dichloroethane-d4				105	106	70.0-130				

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3559589-3 08/12/20 19:32

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Toluene	U		0.000278	0.00100
(S) Toluene-d8	92.9			80.0-120
(S) 4-Bromofluorobenzene	91.6			77.0-126
(S) 1,2-Dichloroethane-d4	96.4			70.0-130

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

(LCS) R3559589-1 08/12/20 18:11 • (LCSD) R3559589-2 08/12/20 18:31

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 %
Toluene	0.00500	0.00467	0.00485	93.4	97.0	79.0-120			3.78	20
(S) Toluene-d8				93.1	94.1	80.0-120				
(S) 4-Bromofluorobenzene				98.1	97.6	77.0-126				
(S) 1,2-Dichloroethane-d4				92.8	90.1	70.0-130				

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



Method Blank (MB)

(MB) R3559793-1 08/14/20 03:23

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	72.8			60.0-120

Laboratory Control Sample (LCS)

(LCS) R3559793-6 08/14/20 14:30

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
AK102 DRO C10-C25	3.00	2.34	78.0	75.0-125	
(S) o-Terphenyl			78.5	60.0-120	

L1245975-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1245975-01 08/14/20 04:43 • (MS) R3559793-4 08/14/20 05:03 • (MSD) R3559793-5 08/14/20 05:24

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
AK102 DRO C10-C25	3.34	0.689	2.81	3.09	63.5	71.9	1.11	75.0-125	J6	J6	9.49	20
(S) o-Terphenyl					69.0	76.9		50.0-150				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) 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
<i>(S) o-Terphenyl</i>	108			60.0-120

1 Cp

2 Tc

3 Ss

4 Cn

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
<i>(S) o-Terphenyl</i>				123	119	60.0-120	J1			

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

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

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.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 GI

8 AI

9 Sc





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 <sup>1</sup>	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina <sup>1</sup>	DW21704
Georgia	NELAP	North Carolina <sup>3</sup>	41
Georgia <sup>1</sup>	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 <sup>1,6</sup>	90010	South Carolina	84004
Kentucky <sup>2</sup>	16	South Dakota	n/a
Louisiana	AI30792	Tennessee <sup>1,4</sup>	2006
Louisiana <sup>1</sup>	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas <sup>5</sup>	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

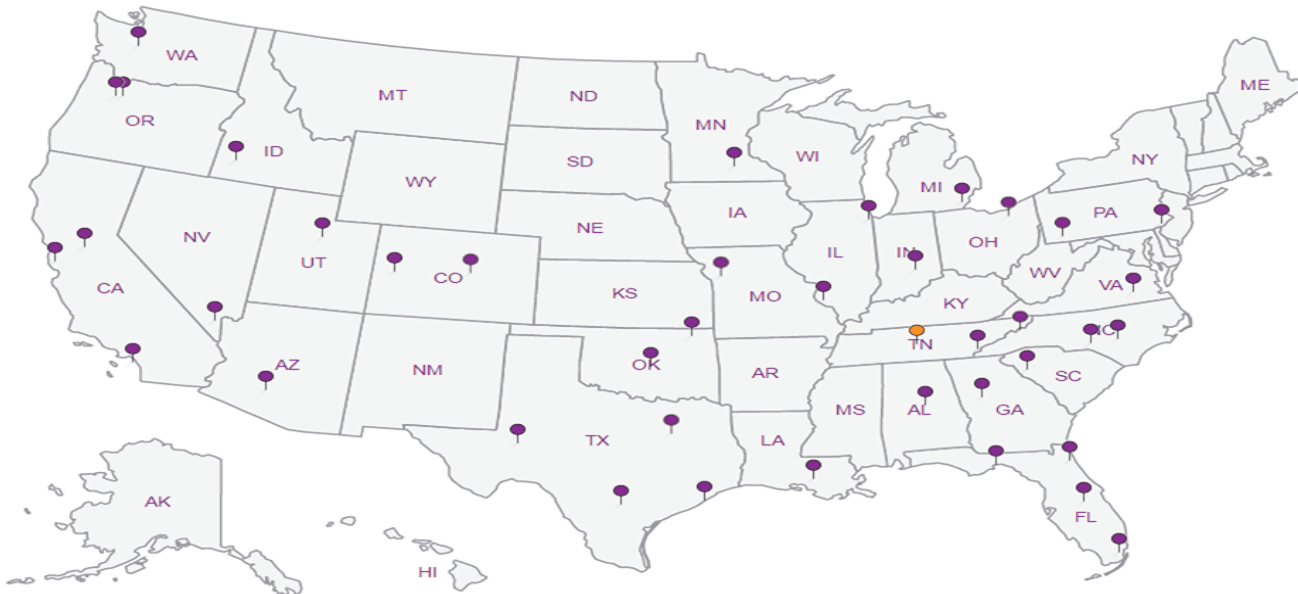
## Third Party Federal Accreditations

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

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

## Our Locations

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



1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

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

Pres  
 Chk

Analysis / Container / Preservative

Chain of Custody Page \_\_\_ of \_\_\_



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



Report to:  
**Mr. John Marshall**

Email To: john.marshall@stantec.com

Project  
 Description: **Speedway 5315**

City/State  
 Collected: **Fairbanks/AK**

Please Circle:  
 PT  MT  CT  ET

Phone: **907-266-1108**

Client Project #

Lab Project #  
**STAAAKSSA-5315**

Fax:

Collected by (print):  
**Eli Fredrickson**

Site/Facility ID #  
**0005315**

P.O. #

Collected by (signature):

**Rush?** (Lab MUST Be Notified)

Quote #

Immediately  
 Packed on Ice N  Y

Same Day  Five Day   
 Next Day  5 Day (Rad Only)   
 Two Day  10 Day (Rad Only)   
 Three Day

Date Results Needed

No.  
 of  
 Cntrs

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	AK101 40mlAmb HCl	AK102 100ml Amb HCl	NAICP 250mlHDPE-HNO3	V8260BTEXC 40mlAmb-HCl
G-01		GW	10.48'	8/3/2020	12:48	9	X	X	X	X
G-05		GW	10.45'	8/4/2020	10:20	9	X	X	X	X
MW-10		GW	10.51'	8/4/2020	11:25	9	X	X	X	X
MW-11		GW	10.85'	8/4/2020	11:15	9	X	X	X	X
MW-12		GW	5.26'	8/3/2020	13:55	9	X	X	X	X
MW-13		GW	10.20'	8/3/2020	16:39	9	X	X	X	X
<del>MW-16</del>		<del>GW</del>				9	X	X	X	X
MW-17-01		GW	10.92'	8/4/2020	16:46	9	X	X	X	X
MW-17-02		GW	10.50'	8/4/2020	15:35	9	X	X	X	X
RM-01		GW	11.21'	8/4/2020	12:05	9	X	X	X	X

**D114**

Table # **L124740**

Acctnum: **STAAAKSSA**

Template: **T165474**

Prelogin: **P764565**

PM: **034 Craig Cothron**

PB: **3/26/20**

Shipped/Via: **FedEX 2nd Day**

Remarks Sample # (lab only)

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

Remarks:

pH \_\_\_\_\_ Temp \_\_\_\_\_  
 Flow \_\_\_\_\_ Other \_\_\_\_\_

Samples returned via:  
 UPS  FedEx  Courier

Tracking # **1663 5759 7261**

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 Headpace:		Y	N
Preservation Correct/Checked:		Y	N
RAD Screen <0.5 mR/hr:		Y	N

Relinquished by: (Signature)  
**Eli**

Date: **08/05/20**  
 Time: **12:00**

Received by: (Signature)

Trip Blank Received: Yes/No  
 Yes  No  
 HCl/MeOH  
 TBR

Relinquished by: (Signature)

Date: \_\_\_\_\_  
 Time: \_\_\_\_\_

Received by: (Signature)

Temp: **10.1°C**  
 Bottles Received: **99**

If preservation required by Login: Date/Time

Relinquished by: (Signature)

Date: \_\_\_\_\_  
 Time: \_\_\_\_\_

Received for lab by: (Signature)

Date: **8-6-20**  
 Time: **09:20**

Hold: \_\_\_\_\_  
 Condition: **NCF / 100**



# Stantec - Anchorage, AK - Speedway

725 E Fireweed Lane  
Suite 200

Anchorage AK 99503

Report to:  
Mr. John Marshall

Project Description: **Speedway 5315**

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

Phone: 907-266-1108  
Fax:

Client Project #

Lab Project #  
**STAAAKSSA-5315**

Collected by (print):  
**Eli Fredrickson**

Site/Facility ID #  
**0005315**

P.O. #

Collected by (signature):

**Rush?** (Lab MUST Be Notified)

Quote #

Same Day  Five Day  
 Next Day  5 Day (Rad Only)  
 Two Day  10 Day (Rad Only)  
 Three Day

Date Results Needed

Immediately Packed on Ice N  Y

No. of Cntrs

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	AK101 40mlAmb HCl	AK102 100ml Amb HCl	NAICP 250mlHDPE-HNO3	V8260BTEXC 40mlAmb-HCl
RM-02		GW	10.56'	8/4/2020	12:35	9	X	X	X	X
DUP1		GW	11.21'	8/4/2020	16:53	9	X	X	X	X
Trip_080520						1				

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

Remarks:

Samples returned via:  
 UPS  FedEx  Courier

Tracking #

pH \_\_\_\_\_ Temp \_\_\_\_\_  
Flow \_\_\_\_\_ Other \_\_\_\_\_

Sample Receipt Checklist	
COC Seal Present/Intact:	<input checked="" type="checkbox"/> NP <input type="checkbox"/> Y <input type="checkbox"/> N
COC Signed/Accurate:	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
Bottles arrive intact:	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
Correct bottles used:	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
Sufficient volume sent:	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
If Applicable	
VOA Zero Headspace:	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
Preservation Correct/Checked:	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
RAD Screen <0.5 mR/hr:	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Trip Blank Received: Yes/No  
 Yes  No  
HCl/MeOH  
TBR

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Temp: **1.0-1.1°C**  
Bottles Received: **19**

Relinquished by: (Signature)

Date:

Time:

Received for lab by: (Signature)

Date: **8-6-20** Time: **0520**

If preservation required by Login: Date/Time

Hold: Condition: **NCF / OK**

Billing Information:

Accounts Payable  
PO Box 1510  
Springfield, OH 45501

Pres Chk

Analysis / Container / Preservative

Chain of Custody Page \_\_\_ of \_\_\_



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



SDG # **6247400**

Table #

Acctnum: **STAAAKSSA**

Template: **T165474**

Prelogin: **P764565**

PM: **034 - Craig Cothron**

PB: **3/26/20 NY**

Shipped Via: **FedEX 2nd Day**

Remarks Sample # (lab only)

-10  
-11  
-12

**Laboratory Data Review Checklist**

Completed By:

Eli Fredrickson

Title:

Geologic Project Specialist

Date:

11/23/20

Consultant Firm:

Stantec Consulting Services

Laboratory Name:

Pace Analytical

Laboratory Report Number:

L1247400

Laboratory Report Date:

08/26/2020

CS Site Name:

Speedway 0005315

ADEC File Number:

100.26.026

Hazard Identification Number:

1112

L1247400

Laboratory Report Date:

08/26/2020

CS Site Name:

Speedway 0005315

**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:

L1247400

Laboratory Report Date:

08/26/2020

CS Site Name:

Speedway 0005315

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:

See below sections.

L1247400

Laboratory Report Date:

08/26/2020

CS Site Name:

Speedway 0005315

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 analyzed.

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

Yes  No  N/A  Comments:

e. Data quality or usability affected?

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:

L1247400

Laboratory Report Date:

08/26/2020

CS Site Name:

Speedway 0005315

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

Comments:

No affected samples

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:

AK102 DRO C10-C25 sample matrix interfered with the ability to make any accurate determination; spike value is low.



L1247400

Laboratory Report Date:

08/26/2020

CS Site Name:

Speedway 0005315

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:

Samples affected are Matrix Spike and Matrix Spike Duplicate (MS/MSD).

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

Yes  No  N/A  Comments:

The flags are marked by alpha-numeric symbol "J6".

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

Comments:

No. This is not indicative of a systematic control problem because these were random marginal exceedances.

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:

L1247400

Laboratory Report Date:

08/26/2020

CS Site Name:

Speedway 0005315

- 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:

AK102 DRO, o-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:

Flags are marked by alpha-numeric symbol “J1”

L1247400

Laboratory Report Date:

08/26/2020

CS Site Name:

Speedway 0005315

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.

f. Field Duplicate

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

Yes  No  N/A  Comments:

L1247400

Laboratory Report Date:

08/26/2020

CS Site Name:

Speedway 0005315

ii. Submitted blind to lab?

Yes  No  N/A  Comments:

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

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

Where R<sub>1</sub> = Sample Concentration  
R<sub>2</sub> = Field Duplicate Concentration

Yes  No  N/A  Comments:

RPD met the DQOs for all detected analytes except DRO/Water

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

Comments:

No. This is not indicative of a systematic control problem because these were random marginal exceedances.

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 blanks were required for this project because no reusable (only disposable) equipment was used.

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

Yes  No  N/A  Comments:

No decontamination or equipment blanks submitted.

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

Comments:

No decontamination or equipment blanks submitted.

iii. Data quality or usability affected?

Comments:

No decontamination or equipment blanks submitted.

L1247400

Laboratory Report Date:

08/26/2020

CS Site Name:

Speedway 0005315

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

a. Defined and appropriate?

Yes  No  N/A

Comments:

## ANALYTICAL REPORT

Eurofins TestAmerica, Seattle  
5755 8th Street East  
Tacoma, WA 98424  
Tel: (253)922-2310

Laboratory Job ID: 580-90398-1  
Client Project/Site: Tesoro - 2Go Mart 112

For:  
Stantec Consulting Services Inc  
1835 S. Bragraw  
Suite 350  
Anchorage, Alaska 99508

Attn: Mike Zidek

*M. Elaine Walker*

Authorized for release by:  
11/14/2019 3:48:50 PM

Elaine Walker, Project Manager II  
(253)248-4972  
[elaine.walker@testamericainc.com](mailto:elaine.walker@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*



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Chronicle . . . . .	24
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Sample Summary . . . . .	28
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Receipt Checklists . . . . .	30

# Case Narrative

Client: Stantec Consulting Services Inc  
Project/Site: Tesoro - 2Go Mart 112

Job ID: 580-90398-1

## Job ID: 580-90398-1

### Laboratory: Eurofins TestAmerica, Seattle

#### Narrative

#### (LCS out of Job Narrative 580-90398-1)

#### Receipt

Ten samples were received on 10/28/2019 1:25 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.8° C.

#### Receipt Exceptions

The following sample was crossed off on the COC with a note in the special instructions that it was included. We have logged in all analysis pending client verification. RM-1 (580-90398-8)

#### GC/MS VOA

Method 8260C: The following samples were diluted to bring the concentration of target analytes within the calibration range: MW-3 (580-90398-2), MW17-2 (580-90398-5), MW17-5 (580-90398-6), 2GM112 DUP (580-90398-7), RM-1 (580-90398-8) and RM-2 (580-90398-9). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### GC VOA

Method AK101: The Gasoline Range Organics (GRO) concentration reported for the following samples is due to the presence of discrete peaks: MW17-2 (580-90398-5), MW17-5 (580-90398-6), RM-1 (580-90398-8) and RM-2 (580-90398-9). Gasoline Range Organics (GRO) -C6-C10

Method AK101: Detections were seen outside the AK101 range for samples MW17-2 (580-90398-5) and MW17-5 (580-90398-6).

Method AK101: The following sample required anti-foam:(MB 580-315586/9). Anti-foam was added to the associated MB.

Method AK101: Surrogate 4-Bromofluorobenzene (Surr) recovery for the following samples were outside control limits: MW-3 (580-90398-2) and 2GM112 DUP (580-90398-7). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### GC Semi VOA

Method AK102 & 103: Surrogate recovery for the following sample was outside control limits: 2GM112 DUP (580-90398-7). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method AK102 & 103: The following sample contained a hydrocarbon pattern in the diesel range; however, the elution pattern was later than the typical diesel fuel pattern used by the laboratory for quantitative purposes: RM-2 (580-90398-9).

Method AK102 & 103: Samples were re-extracted outside of holding time and re-analyzed due to QC failure in the initial extraction (LCS/LCSD outside control limits). Both sets of data for these samples are reported. Affected samples: MW-2 (580-90398-1), MW-3 (580-90398-2), MW-6 (580-90398-3), MW-10 (580-90398-4), MW17-2 (580-90398-5), MW17-5 (580-90398-6) and 2GM112 DUP (580-90398-7).

Method AK102 & 103: The following samples were diluted to bring the concentration of target analytes within the calibration range: MW-2 (580-90398-1) and MW-3 (580-90398-2) at 5.0 and 5.0. Elevated reporting limits (RLs) are provided.

Method AK102 & 103: The laboratory control sample (LCS) for preparation batch 580-315972 and analytical batch 580-316161 recovered outside control limits for the following analytes: DRO (nC10-<nC25). The associated sample(s) was re-prepared and/or re-analyzed outside holding time. Both sets of data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.



# Case Narrative

Client: Stantec Consulting Services Inc  
Project/Site: Tesoro - 2Go Mart 112

Job ID: 580-90398-1

---

## Job ID: 580-90398-1 (Continued)

---

### Laboratory: Eurofins TestAmerica, Seattle (Continued)

#### Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11

# Definitions/Glossary

Client: Stantec Consulting Services Inc  
Project/Site: Tesoro - 2Go Mart 112

Job ID: 580-90398-1

## Qualifiers

### GC VOA

Qualifier	Qualifier Description
X	Surrogate is outside control limits

### GC Semi VOA

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
H	Sample was prepped or analyzed beyond the specified holding time
X	Surrogate is outside control limits

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Client Sample Results

Client: Stantec Consulting Services Inc  
Project/Site: Tesoro - 2Go Mart 112

Job ID: 580-90398-1

**Client Sample ID: MW-2**

**Lab Sample ID: 580-90398-1**

Date Collected: 10/22/19 15:55

Matrix: Water

Date Received: 10/28/19 13:25

### Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		3.0	0.53	ug/L			10/30/19 14:04	1
Toluene	ND		2.0	0.39	ug/L			10/30/19 14:04	1
Ethylbenzene	17		3.0	0.50	ug/L			10/30/19 14:04	1
m-Xylene & p-Xylene	29		3.0	0.75	ug/L			10/30/19 14:04	1
o-Xylene	ND		2.0	0.39	ug/L			10/30/19 14:04	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	106		80 - 120		10/30/19 14:04	1
Trifluorotoluene (Surr)	92		80 - 120		10/30/19 14:04	1
4-Bromofluorobenzene (Surr)	92		80 - 120		10/30/19 14:04	1
Dibromofluoromethane (Surr)	94		80 - 120		10/30/19 14:04	1
1,2-Dichloroethane-d4 (Surr)	98		80 - 126		10/30/19 14:04	1

### Method: AK101 - Alaska - Gasoline Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	0.36		0.25	0.10	mg/L			10/31/19 01:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	94		50 - 150		10/31/19 01:08	1
4-Bromofluorobenzene (Surr)	111		50 - 150		10/31/19 01:08	1

### Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
DRO (nC10-<nC25)	0.72	*	0.61	0.42	mg/L		11/05/19 09:25	11/06/19 20:58	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	77		50 - 150	11/05/19 09:25	11/06/19 20:58	5

### Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC) - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
DRO (nC10-<nC25)	0.64	H	0.61	0.42	mg/L		11/08/19 08:56	11/10/19 05:08	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	75		50 - 150	11/08/19 08:56	11/10/19 05:08	5

# Client Sample Results

Client: Stantec Consulting Services Inc  
Project/Site: Tesoro - 2Go Mart 112

Job ID: 580-90398-1

**Client Sample ID: MW-3**

**Lab Sample ID: 580-90398-2**

Date Collected: 10/22/19 16:55

Matrix: Water

Date Received: 10/28/19 13:25

### Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Benzene</b>	<b>28</b>		3.0	0.53	ug/L			10/30/19 14:29	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	106		80 - 120					10/30/19 14:29	1
Trifluorotoluene (Surr)	90		80 - 120					10/30/19 14:29	1
4-Bromofluorobenzene (Surr)	107		80 - 120					10/30/19 14:29	1
Dibromofluoromethane (Surr)	94		80 - 120					10/30/19 14:29	1
1,2-Dichloroethane-d4 (Surr)	97		80 - 126					10/30/19 14:29	1

### Method: 8260C - Volatile Organic Compounds by GC/MS - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Toluene</b>	<b>150</b>		100	20	ug/L			10/31/19 21:53	50
<b>Ethylbenzene</b>	<b>750</b>		150	25	ug/L			10/31/19 21:53	50
<b>m-Xylene &amp; p-Xylene</b>	<b>4500</b>		150	38	ug/L			10/31/19 21:53	50
<b>o-Xylene</b>	<b>1000</b>		100	20	ug/L			10/31/19 21:53	50
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	105		80 - 120					10/31/19 21:53	50
Trifluorotoluene (Surr)	91		80 - 120					10/31/19 21:53	50
4-Bromofluorobenzene (Surr)	92		80 - 120					10/31/19 21:53	50
Dibromofluoromethane (Surr)	93		80 - 120					10/31/19 21:53	50
1,2-Dichloroethane-d4 (Surr)	101		80 - 126					10/31/19 21:53	50

### Method: AK101 - Alaska - Gasoline Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Gasoline Range Organics (GRO) -C6-C10</b>	<b>17</b>		0.25	0.10	mg/L			10/31/19 18:35	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	89		50 - 150					10/31/19 18:35	1
4-Bromofluorobenzene (Surr)	205	X	50 - 150					10/31/19 18:35	1

### Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>DRO (nC10-&lt;nC25)</b>	<b>2.2</b>	*	0.61	0.41	mg/L		11/05/19 09:25	11/06/19 21:18	5
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl	84		50 - 150				11/05/19 09:25	11/06/19 21:18	5

### Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC) - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>DRO (nC10-&lt;nC25)</b>	<b>3.7</b>	H	0.64	0.44	mg/L		11/08/19 08:56	11/10/19 05:30	5
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl	81		50 - 150				11/08/19 08:56	11/10/19 05:30	5

### Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Sodium</b>	<b>28</b>		2.0	0.33	mg/L		11/11/19 07:58	11/11/19 17:50	1

Eurofins TestAmerica, Seattle

# Client Sample Results

Client: Stantec Consulting Services Inc  
Project/Site: Tesoro - 2Go Mart 112

Job ID: 580-90398-1

**Client Sample ID: MW-6**

**Lab Sample ID: 580-90398-3**

Date Collected: 10/22/19 14:05

Matrix: Water

Date Received: 10/28/19 13:25

### Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		3.0	0.53	ug/L	-		10/30/19 14:54	1
Toluene	ND		2.0	0.39	ug/L	-		10/30/19 14:54	1
Ethylbenzene	ND		3.0	0.50	ug/L	-		10/30/19 14:54	1
o-Xylene	ND		2.0	0.39	ug/L	-		10/30/19 14:54	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	103		80 - 120		10/30/19 14:54	1
Trifluorotoluene (Surr)	90		80 - 120		10/30/19 14:54	1
4-Bromofluorobenzene (Surr)	92		80 - 120		10/30/19 14:54	1
Dibromofluoromethane (Surr)	97		80 - 120		10/30/19 14:54	1
1,2-Dichloroethane-d4 (Surr)	96		80 - 126		10/30/19 14:54	1

### Method: 8260C - Volatile Organic Compounds by GC/MS - RA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
m-Xylene & p-Xylene	ND		3.0	0.75	ug/L	-		10/31/19 21:28	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	105		80 - 120		10/31/19 21:28	1
Trifluorotoluene (Surr)	91		80 - 120		10/31/19 21:28	1
4-Bromofluorobenzene (Surr)	92		80 - 120		10/31/19 21:28	1
Dibromofluoromethane (Surr)	99		80 - 120		10/31/19 21:28	1
1,2-Dichloroethane-d4 (Surr)	98		80 - 126		10/31/19 21:28	1

### Method: AK101 - Alaska - Gasoline Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	ND		0.25	0.10	mg/L	-		10/31/19 02:45	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	95		50 - 150		10/31/19 02:45	1
4-Bromofluorobenzene (Surr)	102		50 - 150		10/31/19 02:45	1

### Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
DRO (nC10-<nC25)	ND	*	0.12	0.084	mg/L	-	11/05/19 09:25	11/06/19 21:38	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	62		50 - 150	11/05/19 09:25	11/06/19 21:38	1

### Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC) - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
DRO (nC10-<nC25)	ND	H	0.13	0.086	mg/L	-	11/08/19 08:56	11/10/19 06:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	65		50 - 150	11/08/19 08:56	11/10/19 06:14	1

# Client Sample Results

Client: Stantec Consulting Services Inc  
 Project/Site: Tesoro - 2Go Mart 112

Job ID: 580-90398-1

**Client Sample ID: MW-10**

**Lab Sample ID: 580-90398-4**

**Date Collected: 10/22/19 13:35**

**Matrix: Water**

**Date Received: 10/28/19 13:25**

### Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		3.0	0.53	ug/L			10/30/19 15:20	1
Toluene	ND		2.0	0.39	ug/L			10/30/19 15:20	1
Ethylbenzene	ND		3.0	0.50	ug/L			10/30/19 15:20	1
m-Xylene & p-Xylene	ND		3.0	0.75	ug/L			10/30/19 15:20	1
o-Xylene	ND		2.0	0.39	ug/L			10/30/19 15:20	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	105		80 - 120		10/30/19 15:20	1
Trifluorotoluene (Surr)	93		80 - 120		10/30/19 15:20	1
4-Bromofluorobenzene (Surr)	91		80 - 120		10/30/19 15:20	1
Dibromofluoromethane (Surr)	94		80 - 120		10/30/19 15:20	1
1,2-Dichloroethane-d4 (Surr)	98		80 - 126		10/30/19 15:20	1

### Method: AK101 - Alaska - Gasoline Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	ND		0.25	0.10	mg/L			10/31/19 03:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	92		50 - 150		10/31/19 03:08	1
4-Bromofluorobenzene (Surr)	101		50 - 150		10/31/19 03:08	1

### Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
DRO (nC10-<nC25)	ND	*	0.12	0.082	mg/L		11/05/19 09:25	11/06/19 21:58	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	64		50 - 150	11/05/19 09:25	11/06/19 21:58	1

### Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC) - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
DRO (nC10-<nC25)	ND	H	0.12	0.080	mg/L		11/08/19 08:56	11/10/19 06:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	70		50 - 150	11/08/19 08:56	11/10/19 06:36	1

# Client Sample Results

Client: Stantec Consulting Services Inc  
Project/Site: Tesoro - 2Go Mart 112

Job ID: 580-90398-1

**Client Sample ID: MW17-2**

**Lab Sample ID: 580-90398-5**

Date Collected: 10/22/19 18:18

Matrix: Water

Date Received: 10/28/19 13:25

## Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		3.0	0.53	ug/L			10/30/19 15:46	1
Toluene	ND		2.0	0.39	ug/L			10/30/19 15:46	1
<b>o-Xylene</b>	<b>140</b>		2.0	0.39	ug/L			10/30/19 15:46	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	106		80 - 120		10/30/19 15:46	1
Trifluorotoluene (Surr)	90		80 - 120		10/30/19 15:46	1
4-Bromofluorobenzene (Surr)	100		80 - 120		10/30/19 15:46	1
Dibromofluoromethane (Surr)	94		80 - 120		10/30/19 15:46	1
1,2-Dichloroethane-d4 (Surr)	96		80 - 126		10/30/19 15:46	1

## Method: 8260C - Volatile Organic Compounds by GC/MS - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Ethylbenzene</b>	<b>210</b>		30	5.0	ug/L			10/31/19 22:43	10
<b>m-Xylene &amp; p-Xylene</b>	<b>650</b>		30	7.5	ug/L			10/31/19 22:43	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	103		80 - 120		10/31/19 22:43	10
Trifluorotoluene (Surr)	91		80 - 120		10/31/19 22:43	10
4-Bromofluorobenzene (Surr)	95		80 - 120		10/31/19 22:43	10
Dibromofluoromethane (Surr)	94		80 - 120		10/31/19 22:43	10
1,2-Dichloroethane-d4 (Surr)	99		80 - 126		10/31/19 22:43	10

## Method: AK101 - Alaska - Gasoline Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Gasoline Range Organics (GRO) -C6-C10</b>	<b>3.5</b>		0.25	0.10	mg/L			10/31/19 03:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	106		50 - 150		10/31/19 03:33	1
4-Bromofluorobenzene (Surr)	131		50 - 150		10/31/19 03:33	1

## Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>DRO (nC10-&lt;nC25)</b>	<b>0.62</b>	*	0.13	0.086	mg/L		11/05/19 09:25	11/06/19 22:19	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	67		50 - 150	11/05/19 09:25	11/06/19 22:19	1

## Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC) - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>DRO (nC10-&lt;nC25)</b>	<b>1.4</b>	H	0.12	0.083	mg/L		11/08/19 08:56	11/10/19 06:57	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	78		50 - 150	11/08/19 08:56	11/10/19 06:57	1

## Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Sodium</b>	<b>31</b>		2.0	0.33	mg/L		11/11/19 07:58	11/11/19 18:16	1

Eurofins TestAmerica, Seattle

# Client Sample Results

Client: Stantec Consulting Services Inc  
Project/Site: Tesoro - 2Go Mart 112

Job ID: 580-90398-1

**Client Sample ID: MW17-5**

**Lab Sample ID: 580-90398-6**

Date Collected: 10/22/19 17:50

Matrix: Water

Date Received: 10/28/19 13:25

### Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	22		3.0	0.53	ug/L			10/30/19 16:11	1
o-Xylene	61		2.0	0.39	ug/L			10/30/19 16:11	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	104		80 - 120					10/30/19 16:11	1
Trifluorotoluene (Surr)	90		80 - 120					10/30/19 16:11	1
4-Bromofluorobenzene (Surr)	98		80 - 120					10/30/19 16:11	1
Dibromofluoromethane (Surr)	94		80 - 120					10/30/19 16:11	1
1,2-Dichloroethane-d4 (Surr)	97		80 - 126					10/30/19 16:11	1

### Method: 8260C - Volatile Organic Compounds by GC/MS - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Toluene	360		20	3.9	ug/L			10/31/19 23:09	10
Ethylbenzene	230		30	5.0	ug/L			10/31/19 23:09	10
m-Xylene & p-Xylene	660		30	7.5	ug/L			10/31/19 23:09	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	105		80 - 120					10/31/19 23:09	10
Trifluorotoluene (Surr)	89		80 - 120					10/31/19 23:09	10
4-Bromofluorobenzene (Surr)	93		80 - 120					10/31/19 23:09	10
Dibromofluoromethane (Surr)	94		80 - 120					10/31/19 23:09	10
1,2-Dichloroethane-d4 (Surr)	96		80 - 126					10/31/19 23:09	10

### Method: AK101 - Alaska - Gasoline Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	3.7		0.25	0.10	mg/L			10/31/19 03:57	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	99		50 - 150					10/31/19 03:57	1
4-Bromofluorobenzene (Surr)	131		50 - 150					10/31/19 03:57	1

### Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
DRO (nC10-<nC25)	0.31	*	0.12	0.081	mg/L		11/05/19 09:25	11/06/19 22:59	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl	76		50 - 150				11/05/19 09:25	11/06/19 22:59	1

### Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC) - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
DRO (nC10-<nC25)	0.47	H	0.12	0.081	mg/L		11/08/19 08:56	11/10/19 07:19	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl	73		50 - 150				11/08/19 08:56	11/10/19 07:19	1

### Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	15		2.0	0.33	mg/L		11/11/19 07:58	11/11/19 18:19	1

Eurofins TestAmerica, Seattle



# Client Sample Results

Client: Stantec Consulting Services Inc  
Project/Site: Tesoro - 2Go Mart 112

Job ID: 580-90398-1

**Client Sample ID: 2GM112 DUP**

**Lab Sample ID: 580-90398-7**

Date Collected: 10/22/19 16:57

Matrix: Water

Date Received: 10/28/19 13:25

### Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	27		3.0	0.53	ug/L			10/30/19 16:37	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	109		80 - 120		10/30/19 16:37	1
Trifluorotoluene (Surr)	92		80 - 120		10/30/19 16:37	1
4-Bromofluorobenzene (Surr)	105		80 - 120		10/30/19 16:37	1
Dibromofluoromethane (Surr)	96		80 - 120		10/30/19 16:37	1
1,2-Dichloroethane-d4 (Surr)	96		80 - 126		10/30/19 16:37	1

### Method: 8260C - Volatile Organic Compounds by GC/MS - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Toluene	170		100	20	ug/L			10/31/19 22:18	50
Ethylbenzene	800		150	25	ug/L			10/31/19 22:18	50
m-Xylene & p-Xylene	5000		150	38	ug/L			10/31/19 22:18	50
o-Xylene	1200		100	20	ug/L			10/31/19 22:18	50

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	105		80 - 120		10/31/19 22:18	50
Trifluorotoluene (Surr)	92		80 - 120		10/31/19 22:18	50
4-Bromofluorobenzene (Surr)	92		80 - 120		10/31/19 22:18	50
Dibromofluoromethane (Surr)	96		80 - 120		10/31/19 22:18	50
1,2-Dichloroethane-d4 (Surr)	100		80 - 126		10/31/19 22:18	50

### Method: AK101 - Alaska - Gasoline Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	18		0.25	0.10	mg/L			10/31/19 18:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	86		50 - 150		10/31/19 18:59	1
4-Bromofluorobenzene (Surr)	209	X	50 - 150		10/31/19 18:59	1

### Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
DRO (nC10-<nC25)	0.61	*	0.12	0.079	mg/L		11/05/19 09:25	11/06/19 23:19	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	24	X	50 - 150	11/05/19 09:25	11/06/19 23:19	1

### Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC) - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
DRO (nC10-<nC25)	4.2	H	0.61	0.41	mg/L		11/08/19 08:56	11/10/19 07:41	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	75		50 - 150	11/08/19 08:56	11/10/19 07:41	5

Eurofins TestAmerica, Seattle

# Client Sample Results

Client: Stantec Consulting Services Inc  
Project/Site: Tesoro - 2Go Mart 112

Job ID: 580-90398-1

**Client Sample ID: RM-1**

**Lab Sample ID: 580-90398-8**

Date Collected: 10/24/19 14:45

Matrix: Water

Date Received: 10/28/19 13:25

### Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		3.0	0.53	ug/L			10/30/19 17:03	1
<b>Toluene</b>	<b>38</b>		2.0	0.39	ug/L			10/30/19 17:03	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	106		80 - 120		10/30/19 17:03	1
Trifluorotoluene (Surr)	94		80 - 120		10/30/19 17:03	1
4-Bromofluorobenzene (Surr)	99		80 - 120		10/30/19 17:03	1
Dibromofluoromethane (Surr)	94		80 - 120		10/30/19 17:03	1
1,2-Dichloroethane-d4 (Surr)	100		80 - 126		10/30/19 17:03	1

### Method: 8260C - Volatile Organic Compounds by GC/MS - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	150		30	5.0	ug/L			11/02/19 09:08	10
m-Xylene & p-Xylene	1300		30	7.5	ug/L			11/02/19 09:08	10
o-Xylene	190		20	3.9	ug/L			11/02/19 09:08	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	102		80 - 120		11/02/19 09:08	10
Trifluorotoluene (Surr)	90		80 - 120		11/02/19 09:08	10
4-Bromofluorobenzene (Surr)	95		80 - 120		11/02/19 09:08	10
Dibromofluoromethane (Surr)	96		80 - 120		11/02/19 09:08	10
1,2-Dichloroethane-d4 (Surr)	96		80 - 126		11/02/19 09:08	10

### Method: AK101 - Alaska - Gasoline Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	4.3		0.25	0.10	mg/L			10/31/19 04:45	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	97		50 - 150		10/31/19 04:45	1
4-Bromofluorobenzene (Surr)	124		50 - 150		10/31/19 04:45	1

### Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
DRO (nC10-<nC25)	1.4		0.12	0.080	mg/L		11/07/19 09:54	11/09/19 22:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	72		50 - 150	11/07/19 09:54	11/09/19 22:36	1

# Client Sample Results

Client: Stantec Consulting Services Inc  
 Project/Site: Tesoro - 2Go Mart 112

Job ID: 580-90398-1

**Client Sample ID: RM-2**

**Lab Sample ID: 580-90398-9**

Date Collected: 10/24/19 16:05

Matrix: Water

Date Received: 10/28/19 13:25

### Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	4.6		3.0	0.53	ug/L	-		10/30/19 17:27	1
Toluene	58		2.0	0.39	ug/L	-		10/30/19 17:27	1
Ethylbenzene	89		3.0	0.50	ug/L	-		10/30/19 17:27	1
o-Xylene	62		2.0	0.39	ug/L	-		10/30/19 17:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	105		80 - 120		10/30/19 17:27	1
Trifluorotoluene (Surr)	92		80 - 120		10/30/19 17:27	1
4-Bromofluorobenzene (Surr)	98		80 - 120		10/30/19 17:27	1
Dibromofluoromethane (Surr)	92		80 - 120		10/30/19 17:27	1
1,2-Dichloroethane-d4 (Surr)	95		80 - 126		10/30/19 17:27	1

### Method: 8260C - Volatile Organic Compounds by GC/MS - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
m-Xylene & p-Xylene	280		30	7.5	ug/L	-		11/02/19 09:33	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	105		80 - 120		11/02/19 09:33	10
Trifluorotoluene (Surr)	90		80 - 120		11/02/19 09:33	10
4-Bromofluorobenzene (Surr)	95		80 - 120		11/02/19 09:33	10
Dibromofluoromethane (Surr)	95		80 - 120		11/02/19 09:33	10
1,2-Dichloroethane-d4 (Surr)	99		80 - 126		11/02/19 09:33	10

### Method: AK101 - Alaska - Gasoline Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	2.0		0.25	0.10	mg/L	-		10/31/19 05:09	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	100		50 - 150		10/31/19 05:09	1
4-Bromofluorobenzene (Surr)	113		50 - 150		10/31/19 05:09	1

### Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
DRO (nC10-<nC25)	0.45		0.11	0.076	mg/L	-	11/07/19 09:54	11/09/19 22:58	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	76		50 - 150		11/07/19 09:54	1

### Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	32		2.0	0.33	mg/L	-	11/11/19 07:58	11/11/19 18:22	1

# Client Sample Results

Client: Stantec Consulting Services Inc  
 Project/Site: Tesoro - 2Go Mart 112

Job ID: 580-90398-1

**Client Sample ID: TRIP BLANK**

**Lab Sample ID: 580-90398-10**

**Date Collected: 10/22/19 12:00**

**Matrix: Water**

**Date Received: 10/28/19 13:25**

**Method: 8260C - Volatile Organic Compounds by GC/MS**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		3.0	0.53	ug/L			10/30/19 13:12	1
Toluene	ND		2.0	0.39	ug/L			10/30/19 13:12	1
Ethylbenzene	ND		3.0	0.50	ug/L			10/30/19 13:12	1
m-Xylene & p-Xylene	ND		3.0	0.75	ug/L			10/30/19 13:12	1
o-Xylene	ND		2.0	0.39	ug/L			10/30/19 13:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	109		80 - 120		10/30/19 13:12	1
Trifluorotoluene (Surr)	89		80 - 120		10/30/19 13:12	1
4-Bromofluorobenzene (Surr)	90		80 - 120		10/30/19 13:12	1
Dibromofluoromethane (Surr)	96		80 - 120		10/30/19 13:12	1
1,2-Dichloroethane-d4 (Surr)	99		80 - 126		10/30/19 13:12	1

**Method: AK101 - Alaska - Gasoline Range Organics (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	ND		0.25	0.10	mg/L			10/31/19 02:21	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	103		50 - 150		10/31/19 02:21	1
4-Bromofluorobenzene (Surr)	103		50 - 150		10/31/19 02:21	1

# QC Sample Results

Client: Stantec Consulting Services Inc  
Project/Site: Tesoro - 2Go Mart 112

Job ID: 580-90398-1

## Method: 8260C - Volatile Organic Compounds by GC/MS

**Lab Sample ID: MB 580-315538/7**  
**Matrix: Water**  
**Analysis Batch: 315538**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		3.0	0.53	ug/L			10/30/19 12:37	1
Toluene	ND		2.0	0.39	ug/L			10/30/19 12:37	1
Ethylbenzene	ND		3.0	0.50	ug/L			10/30/19 12:37	1
m-Xylene & p-Xylene	ND		3.0	0.75	ug/L			10/30/19 12:37	1
o-Xylene	ND		2.0	0.39	ug/L			10/30/19 12:37	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	109		80 - 120		10/30/19 12:37	1
Trifluorotoluene (Surr)	92		80 - 120		10/30/19 12:37	1
4-Bromofluorobenzene (Surr)	92		80 - 120		10/30/19 12:37	1
Dibromofluoromethane (Surr)	94		80 - 120		10/30/19 12:37	1
1,2-Dichloroethane-d4 (Surr)	98		80 - 126		10/30/19 12:37	1

**Lab Sample ID: LCS 580-315538/4**  
**Matrix: Water**  
**Analysis Batch: 315538**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	10.0	9.74		ug/L		97	75 - 121
Toluene	10.0	11.1		ug/L		111	80 - 120
Ethylbenzene	10.0	10.9		ug/L		109	80 - 120
m-Xylene & p-Xylene	10.0	10.4		ug/L		104	80 - 120
o-Xylene	10.0	10.5		ug/L		105	80 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	105		80 - 120
Trifluorotoluene (Surr)	91		80 - 120
4-Bromofluorobenzene (Surr)	94		80 - 120
Dibromofluoromethane (Surr)	93		80 - 120
1,2-Dichloroethane-d4 (Surr)	97		80 - 126

**Lab Sample ID: LCSD 580-315538/5**  
**Matrix: Water**  
**Analysis Batch: 315538**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	10.0	9.54		ug/L		95	75 - 121	2	14
Toluene	10.0	10.3		ug/L		103	80 - 120	8	19
Ethylbenzene	10.0	10.1		ug/L		101	80 - 120	7	14
m-Xylene & p-Xylene	10.0	9.81		ug/L		98	80 - 120	6	14
o-Xylene	10.0	9.82		ug/L		98	80 - 120	7	16

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Toluene-d8 (Surr)	104		80 - 120
Trifluorotoluene (Surr)	92		80 - 120
4-Bromofluorobenzene (Surr)	94		80 - 120
Dibromofluoromethane (Surr)	97		80 - 120

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# QC Sample Results

Client: Stantec Consulting Services Inc  
 Project/Site: Tesoro - 2Go Mart 112

Job ID: 580-90398-1

## Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

**Lab Sample ID: LCSD 580-315538/5**  
**Matrix: Water**  
**Analysis Batch: 315538**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**

Surrogate	LCS D %Recovery	LCS D Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	100		80 - 126

**Lab Sample ID: MB 580-315621/7**  
**Matrix: Water**  
**Analysis Batch: 315621**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		3.0	0.53	ug/L			10/31/19 14:43	1
Toluene	ND		2.0	0.39	ug/L			10/31/19 14:43	1
Ethylbenzene	ND		3.0	0.50	ug/L			10/31/19 14:43	1
m-Xylene & p-Xylene	ND		3.0	0.75	ug/L			10/31/19 14:43	1
o-Xylene	ND		2.0	0.39	ug/L			10/31/19 14:43	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	105		80 - 120		10/31/19 14:43	1
Trifluorotoluene (Surr)	90		80 - 120		10/31/19 14:43	1
4-Bromofluorobenzene (Surr)	91		80 - 120		10/31/19 14:43	1
Dibromofluoromethane (Surr)	98		80 - 120		10/31/19 14:43	1
1,2-Dichloroethane-d4 (Surr)	100		80 - 126		10/31/19 14:43	1

**Lab Sample ID: LCS 580-315621/4**  
**Matrix: Water**  
**Analysis Batch: 315621**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	10.0	10.0		ug/L		100	75 - 121
Toluene	10.0	11.7		ug/L		117	80 - 120
Ethylbenzene	10.0	11.4		ug/L		114	80 - 120
m-Xylene & p-Xylene	10.0	10.9		ug/L		109	80 - 120
o-Xylene	10.0	10.9		ug/L		109	80 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	108		80 - 120
Trifluorotoluene (Surr)	93		80 - 120
4-Bromofluorobenzene (Surr)	91		80 - 120
Dibromofluoromethane (Surr)	96		80 - 120
1,2-Dichloroethane-d4 (Surr)	97		80 - 126

**Lab Sample ID: LCSD 580-315621/5**  
**Matrix: Water**  
**Analysis Batch: 315621**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	10.0	9.64		ug/L		96	75 - 121	4	14
Toluene	10.0	10.7		ug/L		107	80 - 120	9	19
Ethylbenzene	10.0	10.8		ug/L		108	80 - 120	6	14
m-Xylene & p-Xylene	10.0	10.3		ug/L		103	80 - 120	5	14
o-Xylene	10.0	10.2		ug/L		102	80 - 120	7	16

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# QC Sample Results

Client: Stantec Consulting Services Inc  
Project/Site: Tesoro - 2Go Mart 112

Job ID: 580-90398-1

## Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
Toluene-d8 (Surr)	105		80 - 120
Trifluorotoluene (Surr)	90		80 - 120
4-Bromofluorobenzene (Surr)	95		80 - 120
Dibromofluoromethane (Surr)	97		80 - 120
1,2-Dichloroethane-d4 (Surr)	97		80 - 126

Lab Sample ID: MB 580-315794/7  
Matrix: Water  
Analysis Batch: 315794

Client Sample ID: Method Blank  
Prep Type: Total/NA

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Benzene	ND		3.0	0.53	ug/L			11/02/19 00:26	1
Toluene	ND		2.0	0.39	ug/L			11/02/19 00:26	1
Ethylbenzene	ND		3.0	0.50	ug/L			11/02/19 00:26	1
m-Xylene & p-Xylene	ND		3.0	0.75	ug/L			11/02/19 00:26	1
o-Xylene	ND		2.0	0.39	ug/L			11/02/19 00:26	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Toluene-d8 (Surr)	107		80 - 120		11/02/19 00:26	1
Trifluorotoluene (Surr)	91		80 - 120		11/02/19 00:26	1
4-Bromofluorobenzene (Surr)	91		80 - 120		11/02/19 00:26	1
Dibromofluoromethane (Surr)	97		80 - 120		11/02/19 00:26	1
1,2-Dichloroethane-d4 (Surr)	99		80 - 126		11/02/19 00:26	1

Lab Sample ID: LCS 580-315794/4  
Matrix: Water  
Analysis Batch: 315794

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	%Rec. Limits
		Result	Qualifier				
Benzene	10.0	9.02		ug/L		90	75 - 121
Toluene	10.0	10.2		ug/L		102	80 - 120
Ethylbenzene	10.0	10.0		ug/L		100	80 - 120
m-Xylene & p-Xylene	10.0	9.51		ug/L		95	80 - 120
o-Xylene	10.0	9.60		ug/L		96	80 - 120

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
Toluene-d8 (Surr)	104		80 - 120
Trifluorotoluene (Surr)	91		80 - 120
4-Bromofluorobenzene (Surr)	93		80 - 120
Dibromofluoromethane (Surr)	93		80 - 120
1,2-Dichloroethane-d4 (Surr)	96		80 - 126

Lab Sample ID: LCSD 580-315794/5  
Matrix: Water  
Analysis Batch: 315794

Client Sample ID: Lab Control Sample Dup  
Prep Type: Total/NA

Analyte	Spike Added	LCSD LCSD		Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
		Result	Qualifier						
Benzene	10.0	8.81		ug/L		88	75 - 121	2	14
Toluene	10.0	9.87		ug/L		99	80 - 120	4	19
Ethylbenzene	10.0	9.86		ug/L		99	80 - 120	2	14
m-Xylene & p-Xylene	10.0	9.40		ug/L		94	80 - 120	1	14

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# QC Sample Results

Client: Stantec Consulting Services Inc  
 Project/Site: Tesoro - 2Go Mart 112

Job ID: 580-90398-1

## Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

**Lab Sample ID: LCSD 580-315794/5**  
**Matrix: Water**  
**Analysis Batch: 315794**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
o-Xylene	10.0	9.54		ug/L		95	80 - 120	1	16
<b>Surrogate</b>	<b>LCSD %Recovery</b>	<b>LCSD Qualifier</b>	<b>Limits</b>						
Toluene-d8 (Surr)	104		80 - 120						
Trifluorotoluene (Surr)	91		80 - 120						
4-Bromofluorobenzene (Surr)	94		80 - 120						
Dibromofluoromethane (Surr)	94		80 - 120						
1,2-Dichloroethane-d4 (Surr)	97		80 - 126						

## Method: AK101 - Alaska - Gasoline Range Organics (GC)

**Lab Sample ID: MB 580-315497/33**  
**Matrix: Water**  
**Analysis Batch: 315497**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	ND		0.25	0.10	mg/L			10/30/19 21:55	1
<b>Surrogate</b>	<b>MB %Recovery</b>	<b>MB Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Trifluorotoluene (Surr)	88		50 - 150					10/30/19 21:55	1
4-Bromofluorobenzene (Surr)	100		50 - 150					10/30/19 21:55	1

**Lab Sample ID: LCS 580-315497/34**  
**Matrix: Water**  
**Analysis Batch: 315497**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Gasoline Range Organics (GRO) -C6-C10	1.00	0.893		mg/L		89	77 - 123		
<b>Surrogate</b>	<b>LCS %Recovery</b>	<b>LCS Qualifier</b>	<b>Limits</b>						
Trifluorotoluene (Surr)	90		50 - 150						
4-Bromofluorobenzene (Surr)	105		50 - 150						

**Lab Sample ID: LCSD 580-315497/35**  
**Matrix: Water**  
**Analysis Batch: 315497**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Gasoline Range Organics (GRO) -C6-C10	1.00	0.874		mg/L		87	77 - 123	2	20
<b>Surrogate</b>	<b>LCSD %Recovery</b>	<b>LCSD Qualifier</b>	<b>Limits</b>						
Trifluorotoluene (Surr)	89		50 - 150						
4-Bromofluorobenzene (Surr)	105		50 - 150						



# QC Sample Results

Client: Stantec Consulting Services Inc  
 Project/Site: Tesoro - 2Go Mart 112

Job ID: 580-90398-1

## Method: AK101 - Alaska - Gasoline Range Organics (GC) (Continued)

**Lab Sample ID: MB 580-315586/9**  
**Matrix: Water**  
**Analysis Batch: 315586**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	ND		0.25	0.10	mg/L			10/31/19 12:10	1
Surrogate	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	86		50 - 150					10/31/19 12:10	1
4-Bromofluorobenzene (Surr)	104		50 - 150					10/31/19 12:10	1

**Lab Sample ID: LCS 580-315586/10**  
**Matrix: Water**  
**Analysis Batch: 315586**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Gasoline Range Organics (GRO) -C6-C10	1.00	1.00		mg/L		100	77 - 123
Surrogate	%Recovery	LCS Qualifier	Limits				
Trifluorotoluene (Surr)	95		50 - 150				
4-Bromofluorobenzene (Surr)	108		50 - 150				

**Lab Sample ID: LCSD 580-315586/11**  
**Matrix: Water**  
**Analysis Batch: 315586**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Gasoline Range Organics (GRO) -C6-C10	1.00	1.02		mg/L		102	77 - 123	2	20
Surrogate	%Recovery	LCSD Qualifier	Limits						
Trifluorotoluene (Surr)	99		50 - 150						
4-Bromofluorobenzene (Surr)	103		50 - 150						

## Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC)

**Lab Sample ID: MB 580-315972/1-A**  
**Matrix: Water**  
**Analysis Batch: 316161**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 315972**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
DRO (nC10-<nC25)	ND		0.11	0.075	mg/L		11/05/19 09:25	11/06/19 15:35	1
Surrogate	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl	83		50 - 150				11/05/19 09:25	11/06/19 15:35	1

# QC Sample Results

Client: Stantec Consulting Services Inc  
 Project/Site: Tesoro - 2Go Mart 112

Job ID: 580-90398-1

## Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC) (Continued)

**Lab Sample ID: LCS 580-315972/2-A**  
**Matrix: Water**  
**Analysis Batch: 316161**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 315972**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
DRO (nC10-<nC25)	2.00	1.41	*	mg/L		70	75 - 125
<b>Surrogate</b>	<b>%Recovery</b>	<b>LCS Qualifier</b>	<b>Limits</b>				
<i>o-Terphenyl</i>	68		50 - 150				

**Lab Sample ID: LCSD 580-315972/3-A**  
**Matrix: Water**  
**Analysis Batch: 316161**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 315972**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
DRO (nC10-<nC25)	2.00	1.28	*	mg/L		64	75 - 125	9	20
<b>Surrogate</b>	<b>%Recovery</b>	<b>LCSD Qualifier</b>	<b>Limits</b>						
<i>o-Terphenyl</i>	65		50 - 150						

**Lab Sample ID: MB 580-316216/1-A**  
**Matrix: Water**  
**Analysis Batch: 316419**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 316216**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
DRO (nC10-<nC25)	ND		0.11	0.075	mg/L		11/07/19 09:53	11/09/19 14:14	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>MB Qualifier</b>	<b>Limits</b>	<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>			
<i>o-Terphenyl</i>	71		50 - 150	11/07/19 09:53	11/09/19 14:14	1			

**Lab Sample ID: LCS 580-316216/2-A**  
**Matrix: Water**  
**Analysis Batch: 316419**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 316216**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
DRO (nC10-<nC25)	2.00	1.87		mg/L		94	75 - 125
<b>Surrogate</b>	<b>%Recovery</b>	<b>LCS Qualifier</b>	<b>Limits</b>				
<i>o-Terphenyl</i>	121		50 - 150				

**Lab Sample ID: LCSD 580-316216/3-A**  
**Matrix: Water**  
**Analysis Batch: 316419**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 316216**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
DRO (nC10-<nC25)	2.00	1.81		mg/L		91	75 - 125	3	20
<b>Surrogate</b>	<b>%Recovery</b>	<b>LCSD Qualifier</b>	<b>Limits</b>						
<i>o-Terphenyl</i>	95		50 - 150						

Eurofins TestAmerica, Seattle

# QC Sample Results

Client: Stantec Consulting Services Inc  
 Project/Site: Tesoro - 2Go Mart 112

Job ID: 580-90398-1

## Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC) (Continued)

**Lab Sample ID: MB 580-316340/1-A**  
**Matrix: Water**  
**Analysis Batch: 316419**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 316340**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
DRO (nC10-<nC25)	ND		0.11	0.075	mg/L		11/08/19 08:56	11/09/19 23:19	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl	89		50 - 150				11/08/19 08:56	11/09/19 23:19	1

**Lab Sample ID: LCS 580-316340/2-A**  
**Matrix: Water**  
**Analysis Batch: 316419**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 316340**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
DRO (nC10-<nC25)	2.00	1.82		mg/L		91	75 - 125
Surrogate	LCS %Recovery	LCS Qualifier	Limits				%Rec. Limits
<i>o</i> -Terphenyl	104		50 - 150				

**Lab Sample ID: LCSD 580-316340/3-A**  
**Matrix: Water**  
**Analysis Batch: 316419**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 316340**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
DRO (nC10-<nC25)	2.00	1.79		mg/L		90	75 - 125	2	20
Surrogate	LCSD %Recovery	LCSD Qualifier	Limits				%Rec. Limits	RPD	Limit
<i>o</i> -Terphenyl	105		50 - 150						

## Method: 6010C - Metals (ICP)

**Lab Sample ID: MB 580-316453/11-A**  
**Matrix: Water**  
**Analysis Batch: 316544**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 316453**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	ND		2.0	0.33	mg/L		11/11/19 07:58	11/11/19 17:41	1

**Lab Sample ID: LCS 580-316453/12-A**  
**Matrix: Water**  
**Analysis Batch: 316544**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 316453**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Sodium	20.0	20.0		mg/L		100	80 - 120

**Lab Sample ID: LCSD 580-316453/13-A**  
**Matrix: Water**  
**Analysis Batch: 316544**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 316453**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Sodium	20.0	20.2		mg/L		101	80 - 120	1	20

Eurofins TestAmerica, Seattle

# QC Sample Results

Client: Stantec Consulting Services Inc  
 Project/Site: Tesoro - 2Go Mart 112

Job ID: 580-90398-1

## Method: 6010C - Metals (ICP) (Continued)

**Lab Sample ID: 580-90398-2 MS**  
**Matrix: Water**  
**Analysis Batch: 316544**

**Client Sample ID: MW-3**  
**Prep Type: Total/NA**  
**Prep Batch: 316453**  
 %Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Sodium	28		20.0	49.0		mg/L		104	75 - 125

**Lab Sample ID: 580-90398-2 MSD**  
**Matrix: Water**  
**Analysis Batch: 316544**

**Client Sample ID: MW-3**  
**Prep Type: Total/NA**  
**Prep Batch: 316453**  
 %Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Sodium	28		20.0	49.5		mg/L		107	75 - 125	1	20

**Lab Sample ID: 580-90398-2 DU**  
**Matrix: Water**  
**Analysis Batch: 316544**

**Client Sample ID: MW-3**  
**Prep Type: Total/NA**  
**Prep Batch: 316453**  
 RPD

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Sodium	28		29.3		mg/L		4	20

# Lab Chronicle

Client: Stantec Consulting Services Inc  
 Project/Site: Tesoro - 2Go Mart 112

Job ID: 580-90398-1

## Client Sample ID: MW-2

Date Collected: 10/22/19 15:55

Date Received: 10/28/19 13:25

## Lab Sample ID: 580-90398-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	315538	10/30/19 14:04	TL1	TAL SEA
Total/NA	Analysis	AK101		1	315497	10/31/19 01:08	EML	TAL SEA
Total/NA	Prep	3510C	RE		316340	11/08/19 08:56	NRF	TAL SEA
Total/NA	Analysis	AK102 & 103	RE	5	316419	11/10/19 05:08	TL1	TAL SEA
Total/NA	Prep	3510C			315972	11/05/19 09:25	NRF	TAL SEA
Total/NA	Analysis	AK102 & 103		5	316161	11/06/19 20:58	T1W	TAL SEA

## Client Sample ID: MW-3

Date Collected: 10/22/19 16:55

Date Received: 10/28/19 13:25

## Lab Sample ID: 580-90398-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	315538	10/30/19 14:29	TL1	TAL SEA
Total/NA	Analysis	8260C	DL	50	315621	10/31/19 21:53	TL1	TAL SEA
Total/NA	Analysis	AK101		1	315586	10/31/19 18:35	DCV	TAL SEA
Total/NA	Prep	3510C	RE		316340	11/08/19 08:56	NRF	TAL SEA
Total/NA	Analysis	AK102 & 103	RE	5	316419	11/10/19 05:30	TL1	TAL SEA
Total/NA	Prep	3510C			315972	11/05/19 09:25	NRF	TAL SEA
Total/NA	Analysis	AK102 & 103		5	316161	11/06/19 21:18	T1W	TAL SEA
Total/NA	Prep	3010A			316453	11/11/19 07:58	A1B	TAL SEA
Total/NA	Analysis	6010C		1	316544	11/11/19 17:50	T1H	TAL SEA

## Client Sample ID: MW-6

Date Collected: 10/22/19 14:05

Date Received: 10/28/19 13:25

## Lab Sample ID: 580-90398-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	315538	10/30/19 14:54	TL1	TAL SEA
Total/NA	Analysis	8260C	RA	1	315621	10/31/19 21:28	TL1	TAL SEA
Total/NA	Analysis	AK101		1	315497	10/31/19 02:45	EML	TAL SEA
Total/NA	Prep	3510C	RE		316340	11/08/19 08:56	NRF	TAL SEA
Total/NA	Analysis	AK102 & 103	RE	1	316419	11/10/19 06:14	TL1	TAL SEA
Total/NA	Prep	3510C			315972	11/05/19 09:25	NRF	TAL SEA
Total/NA	Analysis	AK102 & 103		1	316161	11/06/19 21:38	T1W	TAL SEA

## Client Sample ID: MW-10

Date Collected: 10/22/19 13:35

Date Received: 10/28/19 13:25

## Lab Sample ID: 580-90398-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	315538	10/30/19 15:20	TL1	TAL SEA
Total/NA	Analysis	AK101		1	315497	10/31/19 03:08	EML	TAL SEA
Total/NA	Prep	3510C	RE		316340	11/08/19 08:56	NRF	TAL SEA
Total/NA	Analysis	AK102 & 103	RE	1	316419	11/10/19 06:36	TL1	TAL SEA

Eurofins TestAmerica, Seattle

# Lab Chronicle

Client: Stantec Consulting Services Inc  
 Project/Site: Tesoro - 2Go Mart 112

Job ID: 580-90398-1

**Client Sample ID: MW-10**

**Lab Sample ID: 580-90398-4**

**Date Collected: 10/22/19 13:35**

**Matrix: Water**

**Date Received: 10/28/19 13:25**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			315972	11/05/19 09:25	NRF	TAL SEA
Total/NA	Analysis	AK102 & 103		1	316161	11/06/19 21:58	T1W	TAL SEA

**Client Sample ID: MW17-2**

**Lab Sample ID: 580-90398-5**

**Date Collected: 10/22/19 18:18**

**Matrix: Water**

**Date Received: 10/28/19 13:25**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	315538	10/30/19 15:46	TL1	TAL SEA
Total/NA	Analysis	8260C	DL	10	315621	10/31/19 22:43	TL1	TAL SEA
Total/NA	Analysis	AK101		1	315497	10/31/19 03:33	EML	TAL SEA
Total/NA	Prep	3510C	RE		316340	11/08/19 08:56	NRF	TAL SEA
Total/NA	Analysis	AK102 & 103	RE	1	316419	11/10/19 06:57	TL1	TAL SEA
Total/NA	Prep	3510C			315972	11/05/19 09:25	NRF	TAL SEA
Total/NA	Analysis	AK102 & 103		1	316161	11/06/19 22:19	T1W	TAL SEA
Total/NA	Prep	3010A			316453	11/11/19 07:58	A1B	TAL SEA
Total/NA	Analysis	6010C		1	316544	11/11/19 18:16	T1H	TAL SEA

**Client Sample ID: MW17-5**

**Lab Sample ID: 580-90398-6**

**Date Collected: 10/22/19 17:50**

**Matrix: Water**

**Date Received: 10/28/19 13:25**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	315538	10/30/19 16:11	TL1	TAL SEA
Total/NA	Analysis	8260C	DL	10	315621	10/31/19 23:09	TL1	TAL SEA
Total/NA	Analysis	AK101		1	315497	10/31/19 03:57	EML	TAL SEA
Total/NA	Prep	3510C	RE		316340	11/08/19 08:56	NRF	TAL SEA
Total/NA	Analysis	AK102 & 103	RE	1	316419	11/10/19 07:19	TL1	TAL SEA
Total/NA	Prep	3510C			315972	11/05/19 09:25	NRF	TAL SEA
Total/NA	Analysis	AK102 & 103		1	316161	11/06/19 22:59	T1W	TAL SEA
Total/NA	Prep	3010A			316453	11/11/19 07:58	A1B	TAL SEA
Total/NA	Analysis	6010C		1	316544	11/11/19 18:19	T1H	TAL SEA

**Client Sample ID: 2GM112 DUP**

**Lab Sample ID: 580-90398-7**

**Date Collected: 10/22/19 16:57**

**Matrix: Water**

**Date Received: 10/28/19 13:25**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	315538	10/30/19 16:37	TL1	TAL SEA
Total/NA	Analysis	8260C	DL	50	315621	10/31/19 22:18	TL1	TAL SEA
Total/NA	Analysis	AK101		1	315586	10/31/19 18:59	DCV	TAL SEA
Total/NA	Prep	3510C	RE		316340	11/08/19 08:56	NRF	TAL SEA
Total/NA	Analysis	AK102 & 103	RE	5	316419	11/10/19 07:41	TL1	TAL SEA

# Lab Chronicle

Client: Stantec Consulting Services Inc  
 Project/Site: Tesoro - 2Go Mart 112

Job ID: 580-90398-1

## Client Sample ID: 2GM112 DUP

Date Collected: 10/22/19 16:57

Date Received: 10/28/19 13:25

## Lab Sample ID: 580-90398-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			315972	11/05/19 09:25	NRF	TAL SEA
Total/NA	Analysis	AK102 & 103		1	316161	11/06/19 23:19	T1W	TAL SEA

## Client Sample ID: RM-1

Date Collected: 10/24/19 14:45

Date Received: 10/28/19 13:25

## Lab Sample ID: 580-90398-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	315538	10/30/19 17:03	TL1	TAL SEA
Total/NA	Analysis	8260C	DL	10	315794	11/02/19 09:08	TL1	TAL SEA
Total/NA	Analysis	AK101		1	315497	10/31/19 04:45	EML	TAL SEA
Total/NA	Prep	3510C			316216	11/07/19 09:54	NRF	TAL SEA
Total/NA	Analysis	AK102 & 103		1	316419	11/09/19 22:36	TL1	TAL SEA

## Client Sample ID: RM-2

Date Collected: 10/24/19 16:05

Date Received: 10/28/19 13:25

## Lab Sample ID: 580-90398-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	315538	10/30/19 17:27	TL1	TAL SEA
Total/NA	Analysis	8260C	DL	10	315794	11/02/19 09:33	TL1	TAL SEA
Total/NA	Analysis	AK101		1	315497	10/31/19 05:09	EML	TAL SEA
Total/NA	Prep	3510C			316216	11/07/19 09:54	NRF	TAL SEA
Total/NA	Analysis	AK102 & 103		1	316419	11/09/19 22:58	TL1	TAL SEA
Total/NA	Prep	3010A			316453	11/11/19 07:58	A1B	TAL SEA
Total/NA	Analysis	6010C		1	316544	11/11/19 18:22	T1H	TAL SEA

## Client Sample ID: TRIP BLANK

Date Collected: 10/22/19 12:00

Date Received: 10/28/19 13:25

## Lab Sample ID: 580-90398-10

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	315538	10/30/19 13:12	TL1	TAL SEA
Total/NA	Analysis	AK101		1	315497	10/31/19 02:21	EML	TAL SEA

### Laboratory References:

TAL SEA = Eurofins TestAmerica, Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

# Accreditation/Certification Summary

Client: Stantec Consulting Services Inc  
Project/Site: Tesoro - 2Go Mart 112

Job ID: 580-90398-1

## Laboratory: Eurofins TestAmerica, Seattle

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-024	01-19-22
ANAB	Dept. of Defense ELAP	L2236	01-19-22
ANAB	ISO/IEC 17025	L2236	01-19-22
Montana (UST)	State	NA	04-13-21
Oregon	NELAP	WA100007	11-06-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-17-00039	02-10-20
Washington	State	C553	02-17-20



# Sample Summary

Client: Stantec Consulting Services Inc  
Project/Site: Tesoro - 2Go Mart 112

Job ID: 580-90398-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
580-90398-1	MW-2	Water	10/22/19 15:55	10/28/19 13:25	
580-90398-2	MW-3	Water	10/22/19 16:55	10/28/19 13:25	
580-90398-3	MW-6	Water	10/22/19 14:05	10/28/19 13:25	
580-90398-4	MW-10	Water	10/22/19 13:35	10/28/19 13:25	
580-90398-5	MW17-2	Water	10/22/19 18:18	10/28/19 13:25	
580-90398-6	MW17-5	Water	10/22/19 17:50	10/28/19 13:25	
580-90398-7	2GM112 DUP	Water	10/22/19 16:57	10/28/19 13:25	
580-90398-8	RM-1	Water	10/24/19 14:45	10/28/19 13:25	
580-90398-9	RM-2	Water	10/24/19 16:05	10/28/19 13:25	
580-90398-10	TRIP BLANK	Water	10/22/19 12:00	10/28/19 13:25	

Regulatory Program:  DW  NPDES  RCRA  Other:

Client Contact	Project Manager: <u>Mike Zubeck</u>	Site Contact:	Date: <u>10/24/19</u>	COC No:
Company Name: <u>Stantec</u>	Tel/Fax:	Lab Contact:	Carrier:	<u>1</u> of <u>1</u> COCs
Address: <u>725 E Firwood Ln Suite 200</u>	Analysis Turnaround Time		Sampler: <u>JM</u>	
City/State/Zip: <u>Anchorage AK 99503</u>	<input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS		For Lab Use Only:	
Phone: <u>907-266-1108</u>	TAT if different from Below		Walk-in Client: <input type="checkbox"/>	
Fax:	<input checked="" type="checkbox"/> 2 weeks		Lab Sampling: <input type="checkbox"/>	
Project Name: <u>TNS 112</u>	<input type="checkbox"/> 1 week		Job / SDG No.:	
Site:	<input type="checkbox"/> 2 days			
# Sed to Anne Duart @ Speedway	<input type="checkbox"/> 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	AK101 / SD60 BTEX	AK102	Sodium	Sample Specific Notes
MW-2	10/22/19	1555	G	W	8			X	X		
MW-3	10/22/19	1655			9			X	X	X	
MW-6	10/22/19	1405			8			X	X		
MW-10	10/22/19	1335			8			X	X		
MW17-2	10/22/19	1818			9			X	X	X	
MW17-5	10/22/19	1750			9			X	X	X	
2BM 112 Dup	10/22/19	1657			8			X	X		
<del>RM-1</del>	<del>10/21/19</del>	<del>1745</del>			8			X	X		
RM-2	10/24/19	1605			9			X	X	X	RM-1 was included, PMS III
Trip Blank	10/23/19	1200			6			X			TNS III

Preservation Used: 1= Ice, 2= HCl, 3= H2SO4, 4= HNO3, 5= NaOH, 6= Other

Possible Hazard Identification: Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown



530-90398 Chain of Custody

Therm. ID: 41 Cor: 1.8 Unc: 1.9

Cooler Desc: In Blue

Packing: Bub FedEx: \_\_\_\_\_

Cust. Seal: Yes  No  UPS: \_\_\_\_\_

Blue Ice  Wet, Dry, None  Lab Cour: \_\_\_\_\_ Other: 6.5.

Special Instructions/QC Requirements & Comments:  
Please Report DRO, GRO, BTEX only

Custody Seals Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Custody Seal No.:	Cooler Temp. (°C): Obs'd: _____ Cor'd: _____	Therm ID No.:
Relinquished by: <u>John Marshall</u>	Company: <u>Stantec</u>	Date/Time: <u>10/24/19 2218</u>	Received by: _____
Relinquished by: _____	Company: _____	Date/Time: _____	Received by: _____
Relinquished by: _____	Company: _____	Date/Time: _____	Received in Laboratory by: <u>B. Jell</u>
			Company: <u>SEH RA</u>
			Date/Time: <u>10-28-19 1325</u>

# Login Sample Receipt Checklist

Client: Stantec Consulting Services Inc

Job Number: 580-90398-1

**Login Number: 90398**

**List Number: 1**

**Creator: Vallelunga, Diana L**

**List Source: Eurofins TestAmerica, Seattle**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

## Laboratory Data Review Checklist

Completed By:

Erin O'Malley

Title:

Environmental Engineer

Date:

9/10/2019

CS Report Name:

July 2019 2Go Mart 111 Monitoring Event

Report Date:

August 22, 2019

Consultant Firm:

Stantec Consulting Services Inc.

Laboratory Name:

TestAmerica Seattle

Laboratory Report Number:

580-88121-1 (GW Samples  
Only)

ADEC File Number:

100.26.026

Hazard Identification Number:

24247

1. Laboratory

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

Yes  No

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

Comments:

2. Chain of Custody (CoC)

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

Yes  No

Comments:

b. Correct Analyses requested?

Yes  No

Comments:

3. Laboratory Sample Receipt Documentation

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

Yes  No

Comments:

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

Yes  No

Comments:

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

Yes  No

Comments:

Samples received in good condition and preservation status.

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

Comments:

e. Data quality or usability affected?

Comments:

No.

4. Case Narrative

a. Present and understandable?

Yes  No

Comments:

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

Yes  No

Comments:

c. Were all corrective actions documented?

Yes  No

Comments:

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

Comments:

See below sections.

5. Samples Results

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

Yes  No

Comments:

b. All applicable holding times met?

Yes  No

Comments:

c. All soils reported on a dry weight basis?

Yes  No

Comments:

No soil samples.

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

Yes  No

Comments:

There are a number of LOQs that exceed the GCLs for all samples.

e. Data quality or usability affected?

Yes  No

Comments:

All non-detect results where the LOQ exceeds the GCL are affected.

6. QC Samples

a. Method Blank

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

Yes  No

Comments:

ii. All method blank results less than limit of quantitation (LOQ)?

Yes  No

Comments:

iii. If above LOQ, what samples are affected?

Comments:

Not applicable.

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

Yes  No

Comments:

No data flags present.

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

Comments:

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

Yes  No

Comments:

No metals or inorganics analyzed.

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

Yes  No

Comments:

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

Yes  No

Comments:

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

Comments:

Not applicable.

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

Yes  No

Comments:

Not applicable.

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

Comments:

No.



## c. Surrogates – Organics Only

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

 Yes  No

Comments:

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

 Yes  No

Comments:

Method 8260C: The following samples failed quality control limits for the surrogates Trifluorotoluene (Surr), Trifluorotoluene (Surr), and/or 1,2-Dichloroethane-d4 (Surr): MW-10 (580-88121-4), MW-11 (580-88121-5), MW-111 DUP (580-88121-6), MW-16 (580-88121-8), MW-12 (580-88121-9), RM-1 (580-88121-10), MW 17-1 (580-88121-11), G-5 (580-88121-12), RM-2 (15-15.5) (580-88121-13), RM-2 (30-30.5) (580-88121-14), RM-2 (39.5-40) (580-88121-15), DUP-01 (580-88121-16), TB-01 (580-88121-17), (CCVIS 580-307639/3), (CCVL 580-307639/6), (LCS 580-307639/4), (LCSD 580-307639/5) and (MB 580-307639/7).

Method 8260C: The following samples were re-analyzed due to surrogate failure in the initial analysis: MW-13 (580-88121-2), TB-01 (580-88121-7), MW-16 (580-88121-8) and MW-12 (580-88121-9).

Method 8270D SIM: Surrogate recovery for the following samples were outside control limits: MW-13 (580-88121-2) and MW-12 (580-88121-9). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

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

 Yes  No

Comments:

iv. Data quality or usability affected?

Comments:

Yes. The samples where surrogate recovery exceeded criteria and evidence of matrix interference was present MW-13 (580-88121-2) and MW-12 (580-88121-9) are affected. The other samples MW-10 (580-88121-4), MW-11 (580-88121-5), MW-111 DUP (580-88121-6), MW-16 (580-88121-8), MW-12 (580-88121-9), RM-1 (580-88121-10), MW 17-1 (580-88121-11), G-5 (580-88121-12), RM-2 (15-15.5) (580-88121-13), RM-2 (30-30.5) (580-88121-14), RM-2 (39.5-40) (580-88121-15), DUP-01 (580-88121-16), TB-01 (580-88121-17), (CCVIS 580-307639/3), (CCVL 580-307639/6), (LCS 580-307639/4), (LCSD 580-307639/5) and (MB 580-307639/7) are not affected because the reporting analytes are not chemically associated with the surrogates and the data have been reported.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples?

(If not, enter explanation below.)

Yes  No

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

Comments:

iii. All results less than LOQ?

Yes  No

Comments:

iv. If above LOQ, what samples are affected?

Comments:

Not applicable.

v. Data quality or usability affected?

Comments:

No.

e. Field Duplicate

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

Yes  No

Comments:

ii. Submitted blind to lab?

Yes  No

Comments:

MW-111 DUP and MW 17-2

iii. Precision – All relative percent differences (RPD) less than specified DQOs?  
(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

Comments:

RPD for 1,2,4-Trimethylbenzene outside the recommended 30% for water. (56.41%)

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

Comments:

No. Reported concentrations were consistently above the GCL for 1,2,4-Trimethylbenzene in both primary and duplicate samples.

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

Yes  No  Not Applicable

i. All results less than LOQ?

Yes  No

Comments:

No decontamination or equipment blanks submitted.

ii. If above LOQ, what samples are affected?

Comments:

No decontamination or equipment blanks submitted.

iii. Data quality or usability affected?

Comments:

No decontamination or equipment blanks submitted.

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

a. Defined and appropriate?

Yes  No

Comments: