Motiva Enterprises, LLC

1st Half 2020 Semi-Annual Groundwater Monitoring Report and Request for Case Closure

Former Shell Station

9829 Georgetown Pike
Great Falls, Virginia
PC# 2003-3230

July 27, 2020

Version 1.0

1st Half 2020 Semi-Annual Groundwater Monitoring Report and Request for Case Closure

Former Shell Station
9829 Georgetown Pike
Great Falls, Virginia
PC# 2003-3230

Prepared for:
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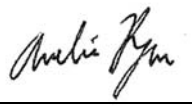
GES Project:
0403201

Date:
July 27, 2020



Amelia Ryan
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SITE NAME:	Former Shell Station
SITE LOCATION:	9829 Georgetown Pike, Great Falls, Virginia
VADEQ PC#	2003-3230
DATE OF REPORT:	July 27, 2020
LAND USE CLASSIFICATION:	Industrial/Commercial
CURRENT PROPERTY OWNER:	Motiva Enterprises, LLC 7765 Lake Worth Road #319 Lake Worth, FL 33467
CONSULTANT:	Groundwater & Environmental Services, Inc. 1350 Blair Drive, Suite A Odenton, Maryland 21113 (800) 220-3606
RELEASE INFORMATION:	Release from former underground storage tank basin and dispenser area

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Acronyms

BGS	Below Ground Surface
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
COC	Constituents of Concern
GES	Groundwater & Environmental Services, Inc.
EIP	Electronic Interface Probe
EPA	Environmental Protection Agency
ESA	Environmental Site Assessment
LNAPL	Light Non-Aqueous Phase Liquid
MDL	Method Detection Limit
MTBE	Methyl Tertiary Butyl Ether
MW	Monitoring Well
PC	Pollution Complaint
PVC	Polyvinyl Chloride
SCR	Site Characterization Report
TPH	Total Petroleum Hydrocarbons
TPH-GRO	Total Petroleum Hydrocarbons – Gasoline Range Organics
µg/L	Micrograms per Liter
UST	Underground Storage Tank
VOC	Volatile Organic Compound
VADEQ	Virginia Department of Environmental Quality

1 Introduction

Groundwater & Environmental Services, Inc. (GES) has prepared this 1st Half 2020 Semi-Annual Groundwater Monitoring and Request for Case Closure Report on behalf of Motiva Enterprises, LLC (Motiva), documenting environmental monitoring activities performed at the Former Shell Station located at 9829 Georgetown Pike, Great Falls, VA (Site) with associated Pollution Complaint (PC) #2003-3230. The semi-annual groundwater monitoring activities were performed as directed by the Virginia Department of Environmental Quality (VADEQ) in the *Site Characterization Report* (SCR) response directive dated September 19, 2018. The VADEQ directive requested the monitoring of select monitoring well locations be performed semi-annually for a minimum of four events to evaluate dissolved phase methyl tert-butyl ether (MTBE) concentration trends and to measure concentrations of other petroleum constituents. The Site is the location of an active retail gasoline and auto repair service station. A Site Location Map showing the general area is included as **Figure 1** and a Site Map depicting pertinent features of the Site and adjacent areas is provided as **Figure 2**.

This summary report documents the following monitoring activities during the 1st Half 2020 Semi-Annual period including:

- Gauging of 12 select Site monitoring wells (MWs) including: W-1, W-2, W-7, MW-20D(73-83), MW-20D(90-100), MW-20D(132-142), MW-21S/I, MW-22, MW-27S/I and MW-B3 to measure groundwater elevations; and
- Semi-annual sampling of groundwater from select MWs including: W-1, W-2, W-7, MW-20D(73-83), MW-20D(90-100), MW-20D(132-142), MW-21S/I, MW-22, and MW-27S/I to monitor MTBE concentration trends. MW-B3 could not be sampled as it had insufficient water volume.

1.1 Site History

On July 5, 1990, the VADEQ assigned PC #90-1792 to the former Shell facility located at the Site due to the discovery of petroleum hydrocarbon constituents in soil and groundwater during a pre-underground storage tank (UST) removal assessment. Subsequent soil and groundwater sampling identified concentrations of benzene, toluene, ethylbenzene, and xylenes (BTEX) in soil and groundwater. Upon further sampling and delineation, dissolved concentrations of MTBE and total petroleum hydrocarbons (TPH) were also identified in groundwater. Following six years of monitoring, PC#90-1972 was closed on July 9, 1996 by approval of the VADEQ.

After petroleum related constituents were identified at the Site as part of a site investigation performed by Equiva Services, LLC (Equiva) in April 2003, the VADEQ issued PC#2003-3230. Following the review of data documented in the Groundwater Assessment Report, it was determined that concentrations resembled historical concentrations for the Site and the VADEQ approved case closure in April 2003.

On January 12, 2009, Advanced Environmental, LLC submitted a Baseline Environmental Site Assessment Report to the VADEQ following the sampling of seven existing MWs on behalf of

DAG Petroleum Suppliers, LLC. BTEX, MTBE, naphthalene and TPH – Gasoline Range Organics (TPH-GRO) were detected in groundwater at concentrations consistent with historical reported concentrations.

On August 14, 2009 the VADEQ assigned PC #2010-3028 to the former Exxon station located up-gradient and across Walker Road from the Site at 9901 Georgetown Pike, following a Phase II Site Assessment identifying dissolved phase hydrocarbons and fuel oxygenates. An SCR conducted at the former Exxon station identified MTBE concentrations of up to 226,000 micrograms per liter (µg/L) in groundwater up-gradient of the former Shell station in September 2009. From 2009-2013, MTBE concentrations remained stable. Fairfax Petroleum Realty, LLC submitted a Corrective Action Plan for PC #2010-3028 on November 22, 2013. MTBE concentrations in W-1 and W-2 at the former Shell station rose to 26,000 µg/L and 14,000 µg/L, respectively, indicating likely plume migration from the former Exxon station. During 2014, Fairfax Petroleum Realty, LLC began operating soil vapor and groundwater extraction systems. MTBE concentrations at the former Shell station began to decrease following system operation, with concentrations in W-1 falling to 16,000 µg/L in 2015 and 7,600 µg/L in 2017.

On May 18, 2017, the Virginia Department of Environmental Quality (VADEQ) reopened PC #2003-3230 for the former Shell station based on Fairfax Petroleum Realty, LLC findings and requested the completion of a SCR. Three additional soil borings were installed near the source area, including one monitoring well (MW-B3) and groundwater sampling activities were conducted as documented within the SCR submitted to the VADEQ on August 31, 2018. On September 19, 2018, the VADEQ sent a directive letter requiring semi-annual monitoring for a minimum of four events in select MWs to evaluate MTBE concentration trends and to document groundwater concentrations of other petroleum constituents. The initial VADEQ directive requested groundwater samples to be analyzed for full suite volatile organic compounds (VOCs), but through email correspondence and VADEQ approval, the analyte list was reduced to BTEX, MTBE and TPH-GRO.

GES submitted the *2nd Half 2018 Semi-Annual Groundwater Monitoring Report* to VADEQ on January 31, 2019, documenting the activities completed during the 2nd Half 2018 reporting period including groundwater sampling activities conducted in December 2018. GES submitted the *1st Half 2019 Semi-Annual Groundwater Monitoring Report* to VADEQ on July 24, 2019, documenting the activities completed during the 1st Half 2019 reporting period including groundwater sampling activities conducted in May 2019. GES submitted the *2nd Half 2019 Semi-Annual Groundwater Monitoring Report* to VADEQ on January 16, 2020, documenting the activities completed during the 2nd Half 2019 reporting period including groundwater sampling activities conducted in November 2019. Groundwater samples collected in December 2018, May 2019, and November 2019 for MTBE and TPH-GRO showed decreases in most Site wells. The only other compound detected in these sampling events was total xylenes, which was detected in W-7 at an estimated concentration of 0.1 J µg/L on May 30, 2020. Otherwise, no BTEX compounds have been detected in the Site monitoring wells since 2016.

1.2 Surrounding Properties & Potential Receptors

The area surrounding the site consists primarily of commercial and residential properties and public spaces. To the north of the Site are commercial buildings, Leo Santabella Park, and a public library across Georgetown Pike. To the northeast of the Site are Great Falls Grange Park and residential properties across Georgetown Pike. To the east and southeast of the Site are the Great Falls Shopping Center followed by undeveloped land and residential properties. To the south of the Site are the Great Falls Shopping Center followed by commercial and residential properties. To the west of the Site are commercial properties across Walker Road followed by a post office and residential properties.

The nearest surface water bodies are a pond and intermittent stream located approximately 1,100 feet southwest of the Site. The Site and immediate area surrounding the Site are supplied by public water; however, a number of residents in the area have private potable wells. The closest private potable well to the Site is located approximately 790 feet east of well W-1 at 706 Innsbruck Avenue. Additional private potable wells are located to the southwest and southeast. A Local Area Map showing potable well locations in the area was completed by Kleinfelder in 2014 and is attached as **Appendix A**.

Modeling of MTBE concentrations at the closest cross-gradient and down-gradient offsite potable wells, completed as a part of the 2018 SCR, suggested that the maximum concentration of MTBE in these wells would be just above detection limits at 1.4 µg/L. This estimate was considered conservative as the model assumes a steady concentration of MTBE and no degradation of MTBE down-gradient of the site. The model used an initial concentration of 2,000 µg/L MTBE, the maximum concentration measured on site in July 2018. The current maximum MTBE concentration on site is now 360 µg/L, only 18% of the concentration used in the modeling.

For more information about the fate and transport modeling that was done please see the 2018 SCR.

2 Semi-Annual Monitoring Activities

The 1st Half 2020 Semi-Annual scope of work was directed by the VADEQ as defined in the September 19, 2018 directive letter and subsequent email correspondence. The following activities were conducted during this monitoring period:

- Gauging of 12 select Site MWs including: W-1, W-2, W-7, MW-20D(73-83), MW-20D(90-100), MW-20D(132-142), MW-21S/I, MW-22, MW-27S/I and MW-B3 to measure groundwater elevations; and
- Groundwater sample collection from select MWs including: W-1, W-2, W-7, MW-20D(73-83), MW-20D(90-100), MW-20D(132-142), MW-21S/I, MW-22, and MW-27S/I for analysis of BTEX and MTBE via Environmental Protection Agency (EPA) Method 8260C and TPH-GRO via EPA Method 8015C. MW-B3 could not be sampled as it had insufficient water volume.

Groundwater samples were collected in polyvinyl chloride (PVC) bailers following the purging of each location of three well volumes utilizing a decontaminated submersible pump and disposable polyethylene tubing. Groundwater samples were containerized in laboratory supplied bottleware, placed on ice within a cooler and couriered to Eurofins Lancaster Laboratories in Lancaster, Pennsylvania (Eurofins). The laboratory analytical report and chain-of-custody documentation are attached as **Appendix B**. As requested by the VADEQ, the monitoring event was coordinated with the consultant for Fairfax Petroleum Realty, with sample collection occurring on May 14, 2020.

2.1 Hydrogeology

An electronic interface probe (EIP) capable of measuring groundwater to the nearest 0.01 foot was used to gauge the selected MWs. The 1st Half 2020 Semi-Annual gauging data are presented in **Table 1**. Light non-aqueous phase liquids (LNAPL) were not detected during the 1st Half 2020 Semi-Annual activities.

Groundwater depths ranged from 27.86 feet below ground surface (bgs) in monitoring well MW-22 to 35.00 feet bgs in nested monitoring well MW-20D(90-100) during the 1st Half 2020 Semi-Annual sampling event. A Groundwater Monitoring Map depicting groundwater elevation data and analytical data from the May 14, 2020 event is included as **Figure 3**. The Groundwater Monitoring Map indicates groundwater flow to the southeast, which is consistent with the historical flow direction. The hydraulic gradient at the Site was calculated to be 0.0123 feet per foot between W-2 and MW-22.

3 Groundwater Analytical Results

On May 14, 2020, groundwater samples were collected from MWs: W-1, W-2, W-7, MW-20D(73-83), MW-20D(90-100), MW-20D(132-142), MW-21S/I, MW-22, and MW-27S/I. As detailed in sections above, groundwater samples were collected and submitted to Eurofins for analysis of BTEX and MTBE via EPA Method 8260C and TPH-GRO via EPA Method 8015C. During the May 14, 2020 sampling event, MTBE and TPH-GRO were the only constituents that met or exceeded their respective laboratory method detection limits (MDLs) at concentrations listed below:

- MTBE was detected in MWs W-1 (360 µg/L), W-2 (59 µg/L), MW-20D (73-83') (88 µg/L), MW-21S (0.6 J µg/L), MW-21I (0.5 J µg/L), MW-27S (0.4 J), and MW-27I (0.4 J) exceeding the laboratory MDL of 0.08 µg/L; and
- TPH-GRO was detected in MWs W-1 (390 µg/L), W-2 (62 µg/L), W-7 (82 µg/L), and MW-20D (73-83') (93 µg/L) exceeding the laboratory MDL of 11 µg/L.

As seen above and included within the laboratory analytical report, J qualifiers are used for estimated values where the detected concentration is greater than or equal to the MDL, but less than the reporting limit. The most recent MTBE analytical results were compared to historical concentrations within the attached Mann-Kendall Constituent Trend Analysis (**Appendix C**). The Mann-Kendall analysis exhibits continued decreasing concentration trends in all sampled

monitoring locations with the exceptions of MW-20D(73-83) and MW-21S, which it classifies as probably decreasing. It is apparent that even MW-20D(73-83) and MW-21S have decreased substantially since December 2016, with some fluctuations resulting in only a probably decreasing trend as a result of the Mann-Kendall equations. An MTBE iso-concentration Map showing MTBE concentrations from the May 14, 2020 sampling event is provided as **Figure 4**.

TPH-GRO has historically (prior to December 2018) not been analyzed at the Site. Four monitoring well locations had detectable concentrations of TPH-GRO with a maximum concentration of 390 µg/L in monitoring well W-1.

Groundwater analytical results are summarized in the Historical Groundwater Analytical Data Summary included as **Table 1.** The laboratory analytical reports and chain-of-custody documentation are provided in **Appendix B.**

4 Conclusions/Recommendations

GES, on behalf of Motiva, has completed this 1st Half 2020 Semi-Annual Groundwater Monitoring and Request for Case Closure Report for the former Shell station located at 9829 Georgetown Pike associated with PC #2003-3230. The case was re-opened in 2017 based upon elevated concentrations of MTBE in W-1 that appeared at the time to be non-decreasing.

A review of historical MTBE concentrations over time showed that MTBE at the Site had decreased by 60 percent in W-1 from the time PC #2003-3230 was opened in 2003 and the beginning of 2009. A release of MTBE at the up-gradient former Exxon station located at 9901 Georgetown Pike was discovered in August 2009, with MTBE concentrations in wells measured as high as 226,000 µg/L. Following the release and plume migration from the former Exxon station to the former Shell station, the MTBE concentration in W-1 increased to 26,000 µg/L in 2013. Since 2013, and with the subsequent remediation efforts at the former Exxon station, MTBE concentrations at the Site have been decreasing.

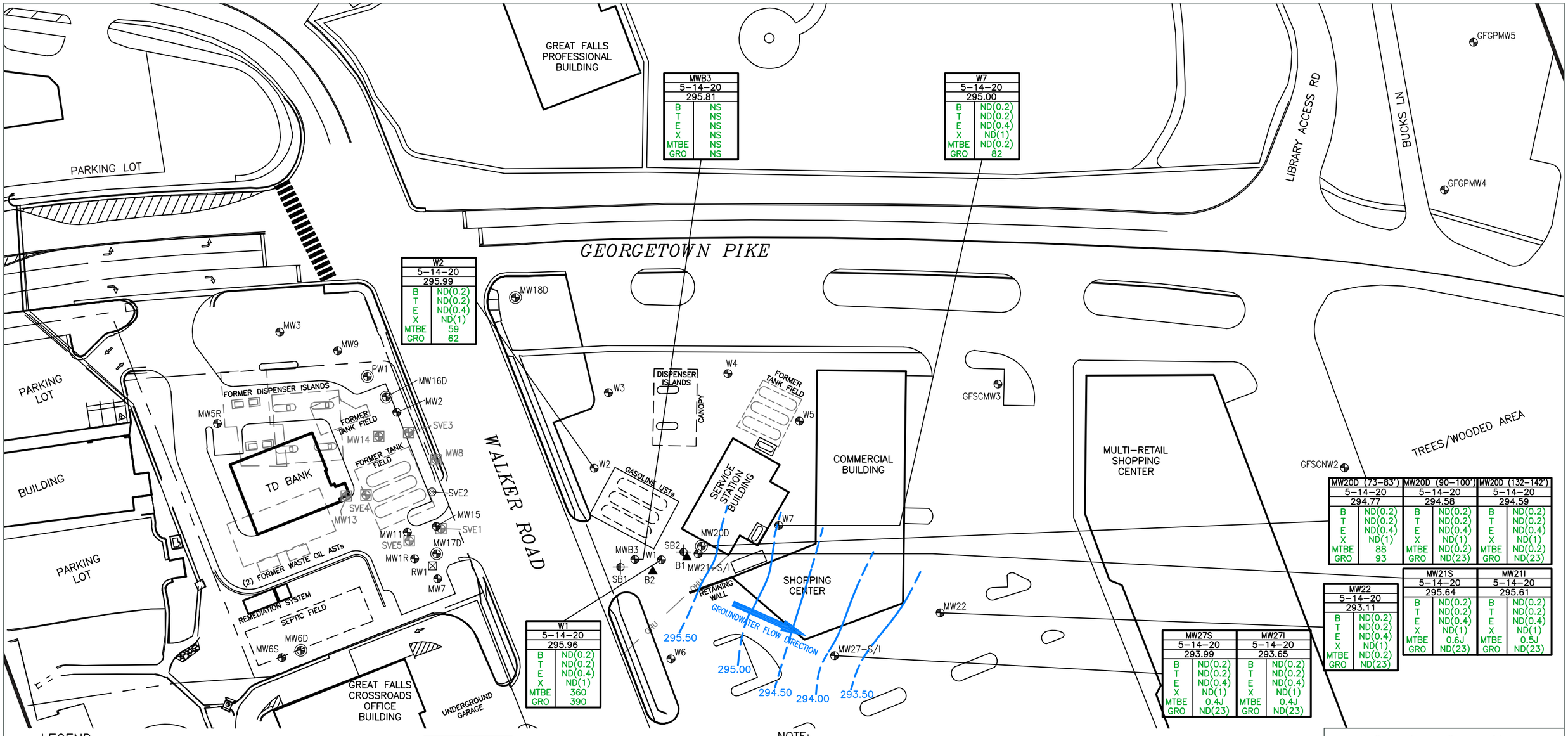
In 2018, as a part of the site characterization requested by the VADEQ, soil sampling was completed at the Site near W-1. No MTBE was detected in the unsaturated soil column and therefore, there is not an ongoing source of MTBE in the soil. By August 2018, when the SCR was submitted, groundwater sampling showed that MTBE concentrations in Site wells had continued to decline, with a 73.7 percent decline in MTBE in W-1 since the case was reopened in 2017 and a 92.3 percent decline since the maximum concentration recorded in 2013. With no continuing source, it was anticipated that MTBE concentrations in Site wells would continue to decrease with time.

In response to the SCR, the VADEQ requested an additional four rounds of semi-annual sampling be completed. During these four sampling events, the measured MTBE concentration has continued to decrease. During the last round of sampling, the MTBE concentration in W-1 was 360 µg/L, a 98.6 percent decrease from the peak concentration in 2013, a 95.3 percent decrease since the case was reopened in 2017, and an 82.0 percent decrease since the submittal of the SCR in 2018. In fact, in all wells where MTBE was detected in 2017, concentrations since then

have decreased between 75.4 (240 to 59 µg/L in W-2) and 99.9 percent (1100 to 0.6 J µg/L in MW-21S).

MTBE concentrations in groundwater at the Site are continuing to decline. Mann-Kendall Constituent Trend Analysis exhibits decreasing or probably decreasing concentration trends in all sampled monitoring locations. No MTBE was found to be present in unsaturated soils in the vicinity of W-1. Fate and transport modeling conducted as a part of the 2018 SCR suggested that there is no potential for MTBE to significantly impact down-gradient potable wells. Based on this information GES, on behalf of Motiva, respectfully requests closure of PC #2003-3230.

Figures



LEGEND

- MONITORING WELL
- DEEP MONITORING WELL
- ABANDONED/DESTROYED MONITORING WELL
- SOIL VAPOR EXTRACTION WELL
- OHU — OVERHEAD UTILITY LINE
- SOIL BORING LOCATION
- SOIL BORING LOCATION (06/27/18)

MW20D (73-83')
5-14-20
294.77
B ND(0.2)
T ND(0.2)
E ND(0.4)
X ND(1)
MTBE 88
GRO 93

- SAMPLE LOCATION
- SAMPLE DATE
- GROUNDWATER ELEVATION (feet)
- BENZENE CONCENTRATION (µg/L)
- TOLUENE CONCENTRATION (µg/L)
- ETHYLBENZENE CONCENTRATION (µg/L)
- TOTAL XYLENES CONCENTRATION (µg/L)
- MTBE CONCENTRATION (µg/L)
- TPH-GRO CONCENTRATION (µg/L)

µg/L	MICROGRAMS PER LITER
MTBE	METHYL *tert*-BUTYL ETHER
TPH	TOTAL PETROLEUM HYDROCARBONS
GRO	GASOLINE RANGE ORGANICS
ND(#)	NOT DETECTED AT OR ABOVE THE LABORATORY REPORTING LIMIT OR METHOD DETECTION LIMIT
J	ESTIMATED CONCENTRATION
NS	NOT SAMPLED

NOTE:

MONITORING WELLS MW20D, MW21-I, MW27-I, AND W7 WERE NOT INCLUDED IN GROUNDWATER CONTOURING.

Groundwater Contour Map
May 14, 2020

Former Shell Station
9829 Georgetown Pike
Great Falls, Virginia

Drawn W.G.S.
Designed A.R.
Approved A.A.B.

Date 7/14/20
Figure

Scale In Feet
0 (Approximate) 60

Groundwater & Environmental Services, Inc.

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LEGEND

- MONITORING WELL
- DEEP MONITORING WELL
- ABANDONED/DESTROYED MONITORING WELL
- SOIL VAPOR EXTRACTION WELL
- OHU — OVERHEAD UTILITY LINE
- SOIL BORING LOCATION
- SOIL BORING LOCATION (06/27/18)

(360)	MTBE ISOCONCENTRATION (µg/L)
10	MTBE ISOCONCENTRATION CONTOUR (µg/L) DASHED WHERE INFERRED
(µg/L)	MILLIGRAMS PER LITER
MTBE	METHYL *tert*–BUTYL ETHER
ND(0.2)	WHERE AN ANALYTE IS NOT DETECTED, A METHOD DETECTION LIMIT IS GIVEN
J	ESTIMATED VALUE
NS	NOT SAMPLED

NOTE:

DATA FOR MONITORING WELLS MW20D (90–100'), MW20D (132–142'), MW21–I, & MW27–I WERE NOT INCLUDED IN ISOCONTOURING.

MTBE Isoconcentration Map
May 14, 2020

Former Shell Station
9829 Georgetown Pike
Great Falls, Virginia

Drawn W.G.S.
Designed A.R.
Approved A.A.B.

Date 7/14/20
Figure

Scale In Feet
0 (Approximate) 60

GES
Groundwater & Environmental Services, Inc.

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Tables

Table 1

HISTORICAL GROUNDWATER ANALYTICAL DATA SUMMARY

Former Shell Station
9892 Georgetown Pike
Great Falls, Virginia

Well ID	Date	Top of Casing Elevation (feet)	Depth to Water (feet)	Depth to Hydrocarbon (feet)	Hydrocarbon Thickness (feet)	Corrected GW Elevation (feet)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TPH-GRO (µg/L)	Comments
MW-20D(73-83)	4/11/2014	329.57	NM	NM	NM	NM	ND(1)	ND(1)	ND(1)	ND(1)	72	NS	Screened from 73-83'
	7/10/2014	329.57	NM	NM	NM	NM	ND(1)	ND(1)	ND(1)	ND(1)	100	NS	
	8/26/2014	329.57	31.26	ND	ND	298.31	ND(1)	ND(1)	ND(1)	ND(1)	100	NS	
	9/2/2014	329.57	33.62	ND	ND	295.95	ND(1)	ND(1)	ND(1)	ND(1)	120	NS	
	12/9/2014	329.57	36.52	ND	ND	293.05	NS	NS	NS	NS	NS	NS	
	3/12/2015	329.57	38.02	ND	ND	291.55	ND(2)	ND(2)	ND(2)	ND(2)	740	NS	
	3/27/2015	329.57	37.51	ND	ND	292.06	ND(1)	ND(1)	ND(1)	ND(1)	1400	NS	
	5/6/2015	329.57	36.48	ND	ND	293.09	ND(1)	ND(1)	ND(1)	ND(1)	980	NS	
	6/1/2015	329.57	36.52	ND	ND	293.05	ND(2)	ND(2)	ND(2)	ND(2)	940	NS	
	9/1/2015	329.57	38.69	ND	ND	290.88	ND(1)	ND(1)	ND(1)	ND(1)	990	NS	
	12/1/2015	329.57	38.97	ND	ND	290.60	ND(1)	ND(1)	ND(1)	ND(1)	900	NS	
	3/17/2016	329.57	NM	NM	NM	NM	ND(1)	ND(1)	ND(1)	ND(1)	680	NS	
	4/29/2016	329.57	35.41	ND	ND	294.16	ND(1)	ND(1)	ND(1)	ND(1)	670	NS	
	8/19/2016	329.57	36.56	ND	ND	293.01	2	ND(1)	ND(1)	ND(1)	740	NS	
	12/13/2016	329.57	37.70	ND	ND	291.87	ND(1)	ND(1)	ND(1)	ND(1)	570	NS	
	3/13/2017	329.57	38.41	ND	ND	291.16	ND(1)	ND(1)	ND(1)	ND(1)	400	NS	
	6/22/2017	329.57	38.31	ND	ND	291.26	NS	NS	NS	NS	NS	NS	
	8/28/2017	329.57	38.85	ND	ND	290.72	NS	NS	NS	NS	NS	NS	
	11/30/2017	329.57	39.46	ND	ND	290.11	NS	NS	NS	NS	NS	NS	
	3/08/2018	329.57	39.90	ND	ND	289.67	NS	NS	NS	NS	NS	NS	
	6/04/2018	329.57	37.43	ND	ND	292.14	NS	NS	NS	NS	NS	NS	
	7/26/2018	329.57	36.34	ND	ND	293.23	NS	NS	NS	NS	300	NS	
	12/04/2018	329.57	32.57	ND	ND	297.00	ND(0.03)	ND(0.1)	ND(0.05)	ND(0.1)	220	230	
	5/30/2019	329.57	31.20	ND	ND	298.37	ND(0.03)	ND(0.1)	ND(0.05)	ND(0.1)	230	200	
	11/25/2019	329.57	35.53	ND	ND	294.04	ND(0.2)	ND(0.2)	ND(0.4)	ND(1)	ND(0.2)	ND(23)	
	5/14/2020	329.57	34.80	ND	ND	294.77	ND(0.2)	ND(0.2)	ND(0.4)	ND(1)	88	93	
MW-20D(90-100)	4/11/2014	329.58	NM	NM	NM	NM	ND(1)	ND(1)	ND(1)	ND(1)	55	NS	Screened from 90-100'
	7/10/2014	329.58	NM	NM	NM	NM	ND(1)	ND(1)	ND(1)	ND(1)	73	NS	
	8/26/2014	329.58	32.88	ND	ND	296.70	ND(1)	ND(1)	ND(1)	ND(1)	75	NS	
	9/2/2014	329.58	34.25	ND	ND	295.33	ND(1)	ND(1)	ND(1)	ND(1)	2	NS	
	12/9/2014	329.58	37.24	ND	ND	292.34	NS	NS	NS	NS	NS	NS	
	3/12/2015	329.58	38.22	ND	ND	291.36	ND(1)	ND(1)	ND(1)	ND(1)	1	NS	
	6/1/2015	329.58	36.72	ND	ND	292.86	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	9/1/2015	329.58	38.82	ND	ND	290.76	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	12/1/2015	329.58	39.42	ND	ND	290.16	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	3/17/2016	329.58	NM	NM	NM	NM	ND(1)	ND(1)	ND(1)	ND(1)	1	NS	
	4/29/2016	329.58	35.63	ND	ND	293.95	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	8/19/2016	329.58	37.30	ND	ND	292.28	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	

HISTORICAL GROUNDWATER ANALYTICAL DATA SUMMARY

Former Shell Station
9892 Georgetown Pike
Great Falls, Virginia

Well ID	Date	Top of Casing Elevation (feet)	Depth to Water (feet)	Depth to Hydrocarbon (feet)	Hydrocarbon Thickness (feet)	Corrected GW Elevation (feet)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TPH-GRO (µg/L)	Comments
MW-20D(90-100) (cont.)	12/13/2016	329.58	38.82	ND	ND	290.76	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	3/13/2017	329.58	39.03	ND	ND	290.55	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	6/22/2017	329.58	38.46	ND	ND	291.12	NS	NS	NS	NS	NS	NS	
	8/28/2017	329.58	39.40	ND	ND	290.18	NS	NS	NS	NS	NS	NS	
	11/30/2017	329.58	40.32	ND	ND	289.26	NS	NS	NS	NS	NS	NS	
	3/08/2018	329.58	10.00	ND	ND	289.58	NS	NS	NS	NS	NS	NS	
	6/04/2018	329.58	37.78	ND	ND	291.80	NS	NS	NS	NS	NS	NS	
	7/26/2018	329.58	36.64	ND	ND	292.94	NS	NS	NS	NS	ND(0.5)	NS	
	12/04/2018	329.58	32.60	ND	ND	296.98	ND(0.03)	ND(0.1)	ND(0.05)	ND(0.1)	0.2 J	ND(11)	
	5/30/2019	329.58	31.00	ND	ND	298.58	ND(0.03)	ND(0.1)	ND(0.05)	ND(0.1)	ND(0.08)	ND(11)	
	11/25/2019	329.58	36.02	ND	ND	293.56	ND(0.2)	ND(0.2)	ND(0.4)	ND(1)	ND(0.2)	ND(23)	
	5/14/2020	329.58	35.00	ND	ND	294.58	ND(0.2)	ND(0.2)	ND(0.4)	ND(1)	ND(0.2)	ND(23)	
MW-20D(132-142)	4/11/2014	329.56	NM	NM	NM	NM	ND(1)	ND(1)	ND(1)	ND(1)	32	NS	Screened from 132-142'
	7/10/2014	329.56	NM	NM	NM	NM	ND(1)	ND(1)	ND(1)	ND(1)	55	NS	
	8/26/2014	329.56	33.85	ND	ND	295.71	ND(1)	ND(1)	ND(1)	ND(1)	130	NS	
	9/2/2014	329.56	34.36	ND	ND	295.20	ND(1)	ND(1)	ND(1)	ND(1)	100	NS	
	12/9/2014	329.56	38.19	ND	ND	291.37	NS	NS	NS	NS	NS	NS	
	3/12/2015	329.56	38.26	ND	ND	291.30	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	6/1/2015	329.56	36.73	ND	ND	292.83	ND(1)	ND(1)	ND(1)	ND(1)	8	NS	
	9/1/2015	329.56	38.80	ND	ND	290.76	ND(1)	ND(1)	ND(1)	ND(1)	7	NS	
	12/1/2015	329.56	39.79	ND	ND	289.77	ND(1)	ND(1)	ND(1)	ND(1)	2	NS	
	3/17/2016	329.56	NM	NM	NM	NM	ND(1)	ND(1)	ND(1)	ND(1)	1	NS	
	4/29/2016	329.56	35.64	ND	ND	293.92	ND(1)	ND(1)	ND(1)	ND(1)	1	NS	
	8/19/2016	329.56	37.36	ND	ND	292.20	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	12/13/2016	329.56	38.78	ND	ND	290.78	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	3/13/2017	329.56	38.94	ND	ND	290.62	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	6/22/2017	329.56	38.38	ND	ND	291.18	NS	NS	NS	NS	NS	NS	
	8/28/2017	329.56	39.44	ND	ND	290.12	NS	NS	NS	NS	NS	NS	
	11/30/2017	329.56	40.30	ND	ND	289.26	NS	NS	NS	NS	NS	NS	
	3/08/2018	329.56	40.03	ND	ND	289.53	NS	NS	NS	NS	NS	NS	
	6/04/2018	329.56	37.77	ND	ND	291.79	NS	NS	NS	NS	NS	NS	
	7/16/2018	329.56	37.18	ND	ND	292.38	NS	NS	NS	NS	ND(0.5)	NS	
	12/04/2018	329.56	34.53	ND	ND	295.03	ND(0.03)	ND(0.1)	ND(0.05)	ND(0.1)	ND(0.08)	ND(11)	
	5/30/2019	329.56	31.05	ND	ND	298.51	ND(0.03)	ND(0.1)	ND(0.05)	ND(0.1)	ND(0.08)	ND(11)	
	11/25/2019	329.56	36.04	ND	ND	293.52	ND(0.2)	ND(0.2)	ND(0.4)	ND(1)	ND(0.2)	ND(23)	
	5/14/2020	329.56	34.97	ND	ND	294.59	ND(0.2)	ND(0.2)	ND(0.4)	ND(1)	ND(0.2)	ND(23)	

Table 1

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Well ID	Date	Top of Casing Elevation (feet)	Depth to Water (feet)	Depth to Hydrocarbon (feet)	Hydrocarbon Thickness (feet)	Corrected GW Elevation (feet)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TPH-GRO (µg/L)	Comments
MW-21S	4/11/2014	329.69	33.65	ND	ND	296.04	ND(10)	ND(10)	ND(10)	ND(10)	7500	NS	Screened from 26-46'
	6/18/2014	329.69	31.42	ND	ND	298.27	ND(1)	ND(1)	ND(1)	ND(1)	53	NS	
	9/16/2014	329.69	34.26	ND	ND	295.43	ND(1)	ND(1)	ND(1)	ND(1)	130	NS	
	12/10/2014	329.69	37.30	ND	ND	292.39	ND(1)	ND(1)	ND(1)	ND(1)	780	NS	
	3/11/2015	329.69	37.33	ND	ND	292.36	ND(2)	ND(2)	ND(2)	ND(2)	910	NS	
	6/3/2015	329.69	35.74	ND	ND	293.95	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	9/4/2015	329.69	37.78	ND	ND	291.91	ND(1)	ND(1)	ND(1)	ND(1)	32	NS	
	12/1/2015	329.69	38.98	ND	ND	290.71	ND(1)	ND(1)	ND(1)	ND(1)	1500	NS	
	3/17/2016	329.69	36.24	ND	ND	293.45	ND(1)	ND(1)	ND(1)	ND(1)	1400	NS	
	5/4/2016	329.69	34.54	ND	ND	295.15	ND(2)	ND(2)	ND(2)	ND(2)	2400	NS	
	8/19/2016	329.69	36.24	ND	ND	293.45	ND(1)	ND(1)	ND(1)	ND(1)	670	NS	
	12/15/2016	329.69	38.03	ND	ND	291.66	ND(2)	ND(2)	ND(2)	ND(2)	1400	NS	
	3/16/2017	329.69	38.24	ND	ND	291.45	ND(2)	ND(2)	ND(2)	ND(2)	1100	NS	
	6/22/2017	329.69	37.43	ND	ND	292.26	NS	NS	NS	NS	NS	NS	
	8/28/2017	329.69	38.52	ND	ND	291.17	NS	NS	NS	NS	NS	NS	
	11/30/2017	329.69	39.55	ND	ND	290.14	NS	NS	NS	NS	NS	NS	
	3/08/2018	329.69	39.10	ND	ND	290.59	NS	NS	NS	NS	NS	NS	
	6/04/2018	329.69	36.95	ND	ND	292.74	NS	NS	NS	NS	NS	NS	
	7/16/2018	329.69	36.23	ND	ND	293.46	NS	NS	NS	NS	220	NS	
	12/04/2018	329.69	31.43	ND	ND	298.26	ND(0.03)	ND(0.1)	ND(0.05)	ND(0.1)	0.2 J	ND(11)	
	5/30/2019	329.69	29.88	ND	ND	299.81	ND(0.03)	ND(0.1)	ND(0.05)	ND(0.1)	ND(0.08)	ND(11)	
	11/25/2019	329.69	35.08	ND	ND	294.61	ND(0.2)	ND(0.2)	ND(0.4)	ND(1)	1	ND(23)	
	5/14/2020	329.69	34.05	ND	ND	295.64	ND(0.2)	ND(0.2)	ND(0.4)	ND(1)	0.6 J	ND(23)	
MW-21I	4/11/2014	329.71	33.71	ND	ND	296.00	ND(2)	ND(2)	ND(2)	ND(2)	2500	NS	Screened from 56-66'
	6/18/2014	329.71	31.52	ND	ND	298.19	ND(1)	ND(1)	ND(1)	ND(1)	1700	NS	
	9/16/2014	329.71	34.35	ND	ND	295.36	ND(1)	ND(1)	ND(1)	ND(1)	2100	NS	
	12/10/2014	329.71	37.40	ND	ND	292.31	ND(1)	ND(1)	ND(1)	ND(1)	1900	NS	
	3/11/2015	329.71	37.40	ND	ND	292.31	ND(2)	ND(2)	ND(2)	ND(2)	1300	NS	
	5/6/2015	329.71	35.89	ND	ND	293.82	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	6/3/2015	329.71	35.81	ND	ND	293.90	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	9/4/2015	329.71	37.88	ND	ND	291.83	ND(2)	ND(2)	ND(2)	ND(2)	2300	NS	
	12/2/2015	329.71	39.04	ND	ND	290.67	ND(2)	ND(2)	ND(2)	ND(2)	2100	NS	
	3/17/2016	329.71	36.52	ND	ND	293.19	ND(1)	ND(1)	ND(1)	ND(1)	1300	NS	
	5/3/2016	329.71	34.75	ND	ND	294.96	ND(1)	ND(1)	ND(1)	ND(1)	630	NS	
	8/19/2016	329.71	36.37	ND	ND	293.34	ND(1)	ND(1)	ND(1)	ND(1)	1400	NS	
	12/15/2016	329.71	38.10	ND	ND	291.61	ND(1)	ND(1)	ND(1)	ND(1)	220	NS	
	3/16/2017	329.71	38.20	ND	ND	291.51	ND(1)	ND(1)	ND(1)	ND(1)	8	NS	
	6/22/2017	329.71	37.48	ND	ND	292.23	NS	NS	NS	NS	NS	NS	

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Well ID	Date	Top of Casing Elevation (feet)	Depth to Water (feet)	Depth to Hydrocarbon (feet)	Hydrocarbon Thickness (feet)	Corrected GW Elevation (feet)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TPH-GRO (µg/L)	Comments
MW-21I (cont.)	8/28/2017	329.71	38.60	ND	ND	291.11	NS	NS	NS	NS	NS	NS	
	11/30/2017	329.71	39.44	ND	ND	290.27	NS	NS	NS	NS	NS	NS	
	3/08/2018	329.71	39.25	ND	ND	290.46	NS	NS	NS	NS	NS	NS	
	6/04/2018	329.71	36.97	ND	ND	292.74	NS	NS	NS	NS	NS	NS	
	7/16/2018	329.71	36.32	ND	ND	293.39	NS	NS	NS	NS	1 J	NS	
	12/04/2018	329.71	31.53	ND	ND	298.18	ND(0.03)	ND(0.1)	ND(0.05)	ND(0.1)	ND(0.08)	ND(11)	
	5/30/2019	329.71	30.03	ND	ND	299.68	ND(0.03)	ND(0.1)	ND(0.05)	ND(0.1)	12	14 J	
	11/25/2019	329.71	35.18	ND	ND	294.53	ND(0.2)	ND(0.2)	ND(0.4)	ND(1)	0.9 J	ND(23)	
	5/14/2020	329.71	34.10	ND	ND	295.61	ND(0.2)	ND(0.2)	ND(0.4)	ND(1)	0.5 J	ND(23)	
MW-22	4/11/2014	320.97	28.55	ND	ND	292.42	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	Screened from 20-40'
	6/18/2014	320.97	25.75	ND	ND	295.22	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	9/2/2014	320.97	27.48	ND	ND	293.49	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	12/9/2014	320.97	30.54	ND	ND	290.43	NS	NS	NS	NS	NS	NS	
	3/12/2015	320.97	NM	NM	NM	NM	NS	NS	NS	NS	NS	NS	
	6/4/2015	320.97	28.49	ND	ND	292.48	NS	NS	NS	NS	NS	NS	
	9/2/2015	320.97	30.29	ND	ND	290.68	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	12/2/2015	320.97	31.76	ND	ND	289.21	NS	NS	NS	NS	NS	NS	
	3/16/2016	320.97	29.04	ND	ND	291.93	NS	NS	NS	NS	NS	NS	
	5/2/2016	320.97	28.32	ND	ND	292.65	NS	NS	NS	NS	NS	NS	
	8/18/2016	320.97	29.38	ND	ND	291.59	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	12/13/2016	320.97	32.49	ND	ND	288.48	NS	NS	NS	NS	NS	NS	
	3/13/2017	320.97	33.06	ND	ND	287.91	NS	NS	NS	NS	NS	NS	
	6/22/2017	320.97	31.59	ND	ND	289.38	NS	NS	NS	NS	NS	NS	
	8/29/2017	320.97	32.16	ND	ND	288.81	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	11/30/2017	320.97	33.47	ND	ND	287.50	NS	NS	NS	NS	NS	NS	
	3/08/2018	320.97	33.60	ND	ND	287.37	NS	NS	NS	NS	NS	NS	
	6/04/2018	320.97	30.85	ND	ND	290.12	NS	NS	NS	NS	NS	NS	
	7/16/2018	320.97	29.37	ND	ND	291.60	NS	NS	NS	NS	ND(0.5)	NS	
	12/04/2018	320.97	24.65	ND	ND	296.32	ND(0.03)	ND(0.1)	ND(0.05)	ND(0.1)	ND(0.08)	ND(11)	
	5/30/2019	320.97	22.63	ND	ND	298.34	ND(0.03)	ND(0.1)	ND(0.05)	ND(0.1)	ND(0.08)	ND(11)	
	11/25/2019	320.97	28.97	ND	ND	292.00	ND(0.2)	ND(0.2)	ND(0.4)	ND(1)	ND(0.2)	ND(23)	
	5/14/2020	320.97	27.86	ND	ND	293.11	ND(0.2)	ND(0.2)	ND(0.4)	ND(1)	ND(0.2)	ND(23)	
MW-27S	8/26/2014	323.40	28.42	ND	ND	294.98	ND(1)	ND(1)	ND(1)	ND(1)	1	NS	Screened from 20-40'
	9/2/2014	323.40	28.88	ND	ND	294.52	ND(1)	ND(1)	ND(1)	ND(1)	1	NS	
	12/9/2014	323.40	32.28	ND	ND	291.12	ND(1)	ND(1)	ND(1)	ND(1)	2	NS	
	3/11/2015	323.40	32.35	ND	ND	291.05	ND(1)	ND(1)	ND(1)	ND(1)	1	NS	
	6/3/2015	323.40	30.72	ND	ND	292.68	ND(1)	ND(1)	ND(1)	ND(1)	2	NS	
	9/3/2015	323.40	32.46	ND	ND	290.94	ND(1)	ND(1)	ND(1)	7	ND(1)	NS	

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Well ID	Date	Top of Casing Elevation (feet)	Depth to Water (feet)	Depth to Hydrocarbon (feet)	Hydrocarbon Thickness (feet)	Corrected GW Elevation (feet)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TPH-GRO (µg/L)	Comments
MW-27S (cont.)	12/1/2015	323.40	33.80	ND	ND	289.60	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	3/16/2016	323.40	30.99	ND	ND	292.41	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	5/2/2016	323.40	29.95	ND	ND	293.45	ND(1)	ND(1)	ND(1)	1	1	NS	
	8/18/2016	323.40	31.33	ND	ND	292.07	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	12/14/2016	323.40	32.42	ND	ND	290.98	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	3/16/2017	323.40	33.77	ND	ND	289.63	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	6/22/2017	323.40	32.77	ND	ND	290.63	NS	NS	NS	NS	NS	NS	
	8/29/2017	323.40	33.62	ND	ND	289.78	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	11/30/2017	323.40	34.64	ND	ND	288.76	NS	NS	NS	NS	NS	NS	
	3/08/2018	323.40	34.50	ND	ND	288.90	NS	NS	NS	NS	NS	NS	
	6/04/2018	323.40	32.13	ND	ND	291.17	NS	NS	NS	NS	NS	NS	
	7/16/2018	323.40	31.30	ND	ND	292.10	NS	NS	NS	NS	0.7 J	NS	
	12/04/2018	323.40	26.72	ND	ND	296.68	ND(0.03)	ND(0.1)	ND(0.05)	ND(0.1)	0.7 J	ND(11)	
	5/30/2019	323.40	24.92	ND	ND	298.48	ND(0.03)	ND(0.1)	ND(0.05)	ND(0.1)	ND(0.08)	ND(11)	
	11/25/2019	323.40	30.43	ND	ND	292.97	ND(0.2)	ND(0.2)	ND(0.4)	ND(1)	0.4 J	ND(23)	
	5/14/2020	323.40	29.41	ND	ND	293.99	ND(0.2)	ND(0.2)	ND(0.4)	ND(1)	0.4 J	ND(23)	
MW-27I	8/26/2014	323.35	28.26	ND	ND	295.09	ND(1)	ND(1)	ND(1)	ND(1)	1	NS	Screened from 55-65'
	9/2/2014	323.35	27.69	ND	ND	295.66	ND(1)	ND(1)	ND(1)	ND(1)	1	NS	
	12/9/2014	323.35	32.31	ND	ND	291.04	ND(1)	ND(1)	ND(1)	ND(1)	1	NS	
	3/11/2015	323.35	32.39	ND	ND	290.96	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	6/3/2015	323.35	30.75	ND	ND	292.60	ND(1)	ND(1)	ND(1)	ND(1)	2	NS	
	9/3/2015	323.35	32.41	ND	ND	290.94	ND(1)	ND(1)	3	38	ND(1)	NS	
	12/1/2015	323.35	33.42	ND	ND	289.93	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	3/16/2016	323.35	31.01	ND	ND	292.34	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	5/2/2016	323.35	29.86	ND	ND	293.49	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	8/18/2016	323.35	31.29	ND	ND	292.06	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	12/14/2016	323.35	33.39	ND	ND	289.96	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	3/16/2017	323.35	33.73	ND	ND	289.62	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	6/22/2017	323.35	32.78	ND	ND	290.57	NS	NS	NS	NS	NS	NS	
	8/29/2017	323.35	33.71	ND	ND	289.64	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	11/30/2017	323.35	34.30	ND	ND	289.05	NS	NS	NS	NS	NS	NS	
	3/08/2018	323.35	34.60	ND	ND	288.75	NS	NS	NS	NS	NS	NS	
	6/04/2018	323.35	32.23	ND	ND	291.12	NS	NS	NS	NS	NS	NS	
	7/16/2018	323.35	31.28	ND	ND	292.07	NS	NS	NS	NS	ND(0.5)	NS	
	12/04/2018	323.35	26.68	ND	ND	296.67	ND(0.03)	ND(0.1)	ND(0.05)	ND(0.1)	0.8 J	ND(11)	
	5/30/2019	323.35	24.83	ND	ND	298.52	ND(0.03)	ND(0.1)	ND(0.05)	ND(0.1)	ND(0.08)	ND(11)	
	11/25/2019	323.35	30.25	ND	ND	293.10	ND(0.2)	ND(0.2)	ND(0.4)	ND(1)	0.5 J	ND(23)	
	5/14/2020	323.35	29.70	ND	ND	293.65	ND(0.2)	ND(0.2)	ND(0.4)	ND(1)	0.4 J	ND(23)	

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Well ID	Date	Top of Casing Elevation (feet)	Depth to Water (feet)	Depth to Hydrocarbon (feet)	Hydrocarbon Thickness (feet)	Corrected GW Elevation (feet)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TPH-GRO (µg/L)	Comments
W-1	1/18/2003	328.53	33.83	ND	ND	294.70	ND(5)	ND(5)	ND(5)	ND(10)	13000	NS	Screened from 10-40'
	8/5/2008	328.53	34.81	ND	ND	293.72	9.60	ND(5)	ND(5)	ND(5)	5200	NS	
	6/7/2013	328.53	34.52	ND	ND	294.01	ND(10)	ND(14)	ND(16)	ND(16)	26000	NS	
	12/19/2013	328.53	36.11	ND	ND	292.42	ND(100)	ND(100)	ND(100)	ND(100)	13000	NS	
	3/25/2014	328.53	33.50	ND	ND	295.03	ND(25)	ND(25)	ND(25)	ND(25)	16000	NS	
	6/19/2014	328.53	29.91	ND	ND	298.62	ND(50)	ND(50)	ND(50)	ND(50)	15000	NS	
	9/3/2014	328.53	31.77	ND	ND	296.76	ND(20)	ND(20)	ND(20)	ND(20)	13000	NS	
	12/10/2014	328.53	36.07	ND	ND	292.46	ND(20)	ND(20)	ND(20)	ND(20)	18000	NS	
	3/12/2015	328.53	35.89	ND	ND	292.64	ND(20)	ND(20)	ND(20)	ND(20)	11000	NS	
	6/4/2015	328.53	34.34	ND	ND	294.19	ND(50)	ND(50)	ND(50)	ND(50)	8800	NS	
	9/4/2015	328.53	36.46	ND	ND	292.07	ND(10)	ND(10)	ND(10)	ND(10)	11000	NS	
	12/2/2015	328.53	37.57	ND	ND	290.96	ND(10)	ND(10)	ND(10)	ND(10)	16000	NS	
	2/12/2016	328.53	36.02	ND	ND	292.51	ND(10)	ND(10)	ND(10)	ND(10)	10000	NS	
	3/17/2016	328.53	34.72	ND	ND	293.81	ND(1)	ND(1)	ND(1)	ND(1)	9800	NS	
	5/4/2016	328.53	33.16	ND	ND	295.37	ND(10)	ND(10)	ND(10)	ND(10)	13000	NS	
	6/27/2016	328.53	34.09	ND	ND	294.44	ND(5)	ND(5)	ND(5)	ND(5)	6400	NS	
	8/19/2016	328.53	35.04	ND	ND	293.49	ND(10)	ND(10)	ND(10)	ND(10)	8400	NS	
	12/15/2016	328.53	36.54	ND	ND	291.99	ND(20)	ND(20)	ND(20)	ND(20)	9900	NS	
	3/16/2017	328.53	36.66	ND	ND	291.87	ND(5)	ND(5)	ND(5)	ND(5)	7600	NS	
	6/22/2017	328.53	35.97	ND	ND	292.56	NS	NS	NS	NS	NS	NS	
	8/28/2017	328.53	37.11	ND	ND	291.42	NS	NS	NS	NS	NS	NS	
	11/30/2017	328.53	37.99	ND	ND	290.54	NS	NS	NS	NS	NS	NS	
	3/08/2018	328.53	37.35	ND	ND	291.18	NS	NS	NS	NS	NS	NS	
	6/04/2018	328.53	35.50	ND	ND	293.03	NS	NS	NS	NS	NS	NS	
	7/16/2018	328.53	34.83	ND	ND	293.70	NS	NS	NS	NS	2000	NS	
	12/04/2018	328.53	30.05	ND	ND	298.48	ND(0.03)	ND(0.1)	ND(0.05)	ND(0.1)	240	240	
	5/30/2019	328.53	28.56	ND	ND	299.97	ND(0.03)	ND(0.1)	ND(0.05)	ND(0.1)	61	52	
	11/25/2019	328.53	33.62	ND	ND	294.91	ND(0.2)	ND(0.2)	ND(0.4)	ND(1)	160	150	
	5/14/2020	328.53	32.57	ND	ND	295.96	ND(0.2)	ND(0.2)	ND(0.4)	ND(1)	360	390	
W-2	1/18/2003	329.47	34.56	ND	ND	294.91	ND(5)	ND(5)	ND(5)	ND(10)	100	NS	Screened from 10-40'
	8/5/2008	329.47	35.53	ND	ND	293.94	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	320	NS	
	6/7/2013	329.47	35.30	ND	ND	294.17	ND(5)	ND(7)	ND(8)	ND(8)	14000	NS	
	12/19/2013	329.47	36.82	ND	ND	292.65	ND(50)	ND(50)	ND(50)	ND(50)	7700	NS	
	3/25/2014	329.47	34.26	ND	ND	295.21	ND(100)	ND(100)	ND(100)	ND(100)	7000	NS	
	6/19/2014	329.47	30.74	ND	ND	298.73	ND(10)	ND(10)	ND(10)	ND(10)	5000	NS	
	9/3/2014	329.47	32.64	ND	ND	296.83	ND(10)	ND(10)	ND(10)	ND(10)	3900	NS	
	12/10/2014	329.47	36.75	ND	ND	292.72	ND(2)	ND(2)	ND(2)	ND(2)	2100	NS	
	3/11/2015	329.47	36.74	ND	ND	292.73	ND(2)	ND(2)	ND(2)	ND(2)	1000	NS	

HISTORICAL GROUNDWATER ANALYTICAL DATA SUMMARY

Former Shell Station
9892 Georgetown Pike
Great Falls, Virginia

Well ID	Date	Top of Casing Elevation (feet)	Depth to Water (feet)	Depth to Hydrocarbon (feet)	Hydrocarbon Thickness (feet)	Corrected GW Elevation (feet)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TPH-GRO (µg/L)	Comments
W-2 (cont.)	6/3/2015	329.47	35.19	ND	ND	294.28	ND(5)	ND(5)	ND(5)	ND(5)	1400	NS	
	9/4/2015	329.47	DRY	DRY	DRY	DRY	ND(1)	ND(1)	ND(1)	ND(1)	1100	NS	
	12/2/2015	329.47	38.42	ND	ND	291.05	ND(1)	ND(1)	ND(1)	ND(1)	440	NS	
	3/17/2016	329.47	35.81	ND	ND	293.66	ND(1)	ND(1)	ND(1)	ND(1)	970	NS	
	5/3/2016	329.47	34.06	ND	ND	295.41	ND(1)	ND(1)	ND(1)	ND(1)	580	NS	
	8/18/2016	329.47	35.86	ND	ND	293.61	ND(1)	ND(1)	ND(1)	ND(1)	190	NS	
	12/15/2016	329.47	37.30	ND	ND	292.17	ND(1)	ND(1)	ND(1)	ND(1)	170	NS	
	3/16/2017	329.47	37.35	ND	ND	292.12	ND(1)	ND(1)	ND(1)	ND(1)	240	NS	
	6/22/2017	329.47	36.74	ND	ND	292.73	NS	NS	NS	NS	NS	NS	
	8/28/2017	329.47	37.90	ND	ND	291.57	NS	NS	NS	NS	NS	NS	
	11/30/2017	329.47	38.74	ND	ND	290.73	NS	NS	NS	NS	NS	NS	
	3/08/2018	329.47	38.21	ND	ND	291.26	NS	NS	NS	NS	NS	NS	
	6/04/2018	329.47	36.31	ND	ND	293.16	NS	NS	NS	NS	NS	NS	
	7/16/2018	329.47	35.69	ND	ND	293.78	NS	NS	NS	NS	160	NS	
	12/04/2018	329.47	30.83	ND	ND	298.64	ND(0.03)	ND(0.1)	ND(0.05)	ND(0.1)	51	50 J	
	5/30/2019	329.47	29.38	ND	ND	300.09	ND(0.03)	ND(0.1)	ND(0.05)	ND(0.1)	43	40 J	
	11/25/2019	329.47	34.42	ND	ND	295.05	ND(0.2)	ND(0.2)	ND(0.4)	ND(1)	71	76	
	5/14/2020	329.47	33.48	ND	ND	295.99	ND(0.2)	ND(0.2)	ND(0.4)	ND(1)	59	62	
W-7	8/5/2008	329.77	37.35	ND	ND	292.42	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	16	NS	Screened interval not available, total depth ~ 50'
	6/6/2013	329.77	37.04	ND	ND	292.73	ND(0.5)	ND(0.7)	ND(0.8)	ND(0.5)	ND(0.5)	NS	
	12/18/2013	329.77	38.24	ND	ND	291.53	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	NS	
	3/24/2014	329.77	35.60	ND	ND	294.17	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	NS	
	6/18/2014	329.77	32.49	ND	ND	297.28	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	9/3/2014	329.77	34.24	ND	ND	295.53	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	12/9/2014	329.77	37.70	ND	ND	292.07	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	3/10/2015	329.77	37.74	ND	ND	292.03	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	6/2/2015	329.77	34.60	ND	ND	295.17	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	9/3/2015	329.77	37.95	ND	ND	291.82	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	12/1/2015	329.77	39.19	ND	ND	290.58	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	3/16/2016	329.77	36.46	ND	ND	293.31	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	5/2/2016	329.77	34.42	ND	ND	295.35	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	8/17/2016	329.77	36.72	ND	ND	293.05	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	12/14/2016	329.77	39.05	ND	ND	290.72	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	3/16/2017	329.77	39.39	ND	ND	290.38	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	NS	
	6/22/2017	329.77	38.31	ND	ND	291.46	NS	NS	NS	NS	NS	NS	
	8/28/2017	329.77	39.14	ND	ND	290.63	NS	NS	NS	NS	NS	NS	
	11/30/2017	329.77	40.21	ND	ND	289.56	NS	NS	NS	NS	NS	NS	
	3/08/2018	329.77	40.09	ND	ND	289.68	NS	NS	NS	NS	NS	NS	

HISTORICAL GROUNDWATER ANALYTICAL DATA SUMMARY

Former Shell Station
9892 Georgetown Pike
Great Falls, Virginia

Well ID	Date	Top of Casing Elevation (feet)	Depth to Water (feet)	Depth to Hydrocarbon (feet)	Hydrocarbon Thickness (feet)	Corrected GW Elevation (feet)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TPH-GRO (µg/L)	Comments
W-7 (cont.)	6/04/2018	329.77	37.67	ND	ND	292.10	NS	NS	NS	NS	NS	NS	
	7/16/2018	329.77	36.77	ND	ND	293.00	NS	NS	NS	NS	ND(0.5)	NS	
	12/04/2018	329.77	31.95	ND	ND	297.82	ND(0.03)	ND(0.1)	ND(0.05)	ND(0.1)	ND(0.08)	76	
	5/30/2019	329.77	30.19	ND	ND	299.58	ND(0.03)	ND(0.1)	ND(0.05)	0.1 J	ND(0.08)	54	
	11/25/2019	329.77	35.88	ND	ND	293.89	ND(0.2)	ND(0.2)	ND(0.4)	ND(1)	ND(0.2)	140	
	5/14/2020	329.77	34.77	ND	ND	295.00	ND(0.2)	ND(0.2)	ND(0.4)	ND(1)	ND(0.2)	82	
MW-B3	7/16/2018	328.43	DRY	DRY	DRY	DRY	NS	NS	NS	NS	NS	NS	Screened from 13.5 - 33.5'
	12/4/2018	328.43	30.17	ND	ND	298.26	ND(0.03)	ND(0.1)	ND(0.05)	ND(0.1)	41	33 J	
	5/30/2019	328.43	28.67	ND	ND	299.76	ND(0.03)	ND(0.1)	ND(0.05)	ND(0.1)	ND(0.08)	ND(11)	
	11/25/2019	328.43	DRY	DRY	DRY	DRY	NS	NS	NS	NS	NS	NS	
	5/14/2020	328.43	32.62	ND	ND	295.81	NS	NS	NS	NS	NS	NS	

Notes:
µg/L - micrograms per liter
NM - not monitored
NS - not sampled
MTBE - methyl tertiary butyl ether
GW - groundwater
ND (#) - not detected at or above the laboratory reporting limit or method detection limit
ND - not detected
J - estimated value
Sampling data prior to July 2018 was collected by Kleinfelder.

Appendix A – Local Area Map (Kleinfelder, 2014)

0 175 350 700 Feet

KLEINFELDER
Bright People. Right Solutions.
www.kleinfelder.com

PROJECT NO.	20143589
DRAWN:	9/19/14
DRAWN BY:	PD/RA
CHECKED BY:	PW
FILE NAME:	26140_LAM_07_14.mxd

LOCAL AREA MAP

INACTIVE FAIRFAX FACILITY # 26140
9901 GEORGETOWN PIKE
GREAT FALLS, VIRGINIA

FIGURE
3

Appendix B – Laboratory Data and Chain-of-Custody Documentation for Groundwater

eurofins | Lancaster Laboratories Environmental

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LancLabsEnv

ANALYSIS REPORT

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

GES, Inc.
440 Creamery Way, Suite 500
Exton PA 19341

Report Date: May 27, 2020 13:48

Project: Motiva - 9829 Georgetown Pike, Great Falls, VA

Account #: 08390
Group Number: 2099758
PO Number: 0403257-203000-00001
Release Number: ORG # 0404
State of Sample Origin: VA

Electronic Copy To	GES, Inc.-MD	Attn: Data Distribution
Electronic Copy To	GES, Inc.-MD	Attn: Anne Ashley Bell

Respectfully Submitted,

Lynn M. Frederiksen
Principal Specialist Group Leader

(717) 556-7255

To view our laboratory's current scopes of accreditation please go to https://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/certifications-and-accreditations-eurofins-lancaster-laboratories-environmental/ . Historical copies may be requested through your project manager.

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LancLabsEnv

SAMPLE INFORMATION

Client Sample Description	Sample Collection Date/Time	ELLE#
W-1 Grab Groundwater	05/14/2020 13:30	1315878
W-2 Grab Groundwater	05/14/2020 12:15	1315879
W-7 Grab Groundwater	05/14/2020 13:00	1315880
MW-20D(73-83) Grab Groundwater	05/14/2020 11:15	1315881
MW-20D(90-100) Grab Groundwater	05/14/2020 12:30	1315882
MW-20D(132-142) Grab Groundwater	05/14/2020 14:45	1315883
MW-21S Grab Groundwater	05/14/2020 11:45	1315884
MW-21I Grab Groundwater	05/14/2020 11:30	1315885
MW-22 Grab Groundwater	05/14/2020 09:05	1315886
MW-27S Grab Groundwater	05/14/2020 09:35	1315887
MW-27I Grab Groundwater	05/14/2020 10:10	1315888

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Sample Description: **W-1 Grab Groundwater**
Motiva - 9829 Georgetown Pike, Great Falls, VA

Project Name: **Motiva - 9829 Georgetown Pike, Great Falls, VA**

Submittal Date/Time: 05/15/2020 17:50
Collection Date/Time: 05/14/2020 13:30

GES, Inc.
ELLE Sample #: GW 1315878
ELLE Group #: 2099758
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**	**ug/l**	
11997	Benzene	71-43-2	N.D.	0.2	1
11997	Ethylbenzene	100-41-4	N.D.	0.4	1
11997	Methyl Tertiary Butyl Ether	1634-04-4	360	2	10
11997	Toluene	108-88-3	N.D.	0.2	1
11997	Xylene (Total)	1330-20-7	N.D.	1	1
GC Volatiles	**SW-846 8015C**		**ug/l**	**ug/l**	
10598	TPH-GRO water C6-C10	n.a.	390	23	1

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11997	VOCs- 5ml Water by 8260C/D	SW-846 8260C	1	5201461AA	05/25/2020 13:13	Linda C Pape	1
11997	VOCs- 5ml Water by 8260C/D	SW-846 8260C	1	5201472AA	05/26/2020 15:01	Jennifer K Howe	10
01163	GC/MS VOA Water Prep	SW-846 5030C	1	5201461AA	05/25/2020 13:12	Linda C Pape	1
01163	GC/MS VOA Water Prep	SW-846 5030C	2	5201472AA	05/26/2020 15:00	Jennifer K Howe	10
10598	TPH-GRO water C6-C10	SW-846 8015C	1	20139A53A	05/18/2020 23:20	Jeremy C Giffin	1
01146	GC VOA Water Prep	SW-846 5030C	1	20139A53A	05/18/2020 23:19	Jeremy C Giffin	1

Sample Description: **W-2 Grab Groundwater**
Motiva - 9829 Georgetown Pike, Great Falls, VA

Project Name: **Motiva - 9829 Georgetown Pike, Great Falls, VA**

Submittal Date/Time: 05/15/2020 17:50
Collection Date/Time: 05/14/2020 12:15

GES, Inc.
ELLE Sample #: GW 1315879
ELLE Group #: 2099758
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**	**ug/l**	
11997	Benzene	71-43-2	N.D.	0.2	1
11997	Ethylbenzene	100-41-4	N.D.	0.4	1
11997	Methyl Tertiary Butyl Ether	1634-04-4	59	0.2	1
11997	Toluene	108-88-3	N.D.	0.2	1
11997	Xylene (Total)	1330-20-7	N.D.	1	1
GC Volatiles	**SW-846 8015C**		**ug/l**	**ug/l**	
10598	TPH-GRO water C6-C10	n.a.	62	23	1

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11997	VOCs- 5ml Water by 8260C/D	SW-846 8260C	1	5201461AA	05/25/2020 13:34	Linda C Pape	1
01163	GC/MS VOA Water Prep	SW-846 5030C	1	5201461AA	05/25/2020 13:33	Linda C Pape	1
10598	TPH-GRO water C6-C10	SW-846 8015C	1	20139A53A	05/18/2020 23:46	Jeremy C Giffin	1
01146	GC VOA Water Prep	SW-846 5030C	1	20139A53A	05/18/2020 23:45	Jeremy C Giffin	1

Sample Description: **W-7 Grab Groundwater**
Motiva - 9829 Georgetown Pike, Great Falls, VA

Project Name: **Motiva - 9829 Georgetown Pike, Great Falls, VA**

Submittal Date/Time: 05/15/2020 17:50
Collection Date/Time: 05/14/2020 13:00

GES, Inc.
ELLE Sample #: GW 1315880
ELLE Group #: 2099758
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**	**ug/l**	
11997	Benzene	71-43-2	N.D.	0.2	1
11997	Ethylbenzene	100-41-4	N.D.	0.4	1
11997	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.2	1
11997	Toluene	108-88-3	N.D.	0.2	1
11997	Xylene (Total)	1330-20-7	N.D.	1	1
GC Volatiles	**SW-846 8015C**		**ug/l**	**ug/l**	
10598	TPH-GRO water C6-C10	n.a.	82	23	1

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11997	VOCs- 5ml Water by 8260C/D	SW-846 8260C	1	5201461AA	05/25/2020 13:54	Linda C Pape	1
01163	GC/MS VOA Water Prep	SW-846 5030C	1	5201461AA	05/25/2020 13:53	Linda C Pape	1
10598	TPH-GRO water C6-C10	SW-846 8015C	1	20139A53A	05/19/2020 00:12	Jeremy C Giffin	1
01146	GC VOA Water Prep	SW-846 5030C	1	20139A53A	05/19/2020 00:11	Jeremy C Giffin	1

Sample Description: **MW-20D(73-83) Grab Groundwater**
Motiva - 9829 Georgetown Pike, Great Falls, VA

Project Name: **Motiva - 9829 Georgetown Pike, Great Falls, VA**

Submittal Date/Time: 05/15/2020 17:50
Collection Date/Time: 05/14/2020 11:15

GES, Inc.
ELLE Sample #: GW 1315881
ELLE Group #: 2099758
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**	**ug/l**	
11997	Benzene	71-43-2	N.D.	0.2	1
11997	Ethylbenzene	100-41-4	N.D.	0.4	1
11997	Methyl Tertiary Butyl Ether	1634-04-4	88	0.2	1
11997	Toluene	108-88-3	N.D.	0.2	1
11997	Xylene (Total)	1330-20-7	N.D.	1	1
GC Volatiles	**SW-846 8015C**		**ug/l**	**ug/l**	
10598	TPH-GRO water C6-C10	n.a.	93	23	1

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11997	VOCs- 5ml Water by 8260C/D	SW-846 8260C	1	5201461AA	05/25/2020 14:15	Linda C Pape	1
01163	GC/MS VOA Water Prep	SW-846 5030C	1	5201461AA	05/25/2020 14:14	Linda C Pape	1
10598	TPH-GRO water C6-C10	SW-846 8015C	1	20139A53A	05/19/2020 00:37	Jeremy C Giffin	1
01146	GC VOA Water Prep	SW-846 5030C	1	20139A53A	05/19/2020 00:36	Jeremy C Giffin	1

Sample Description: **MW-20D(90-100) Grab Groundwater**
Motiva - 9829 Georgetown Pike, Great Falls, VA

Project Name: **Motiva - 9829 Georgetown Pike, Great Falls, VA**

Submittal Date/Time: 05/15/2020 17:50
Collection Date/Time: 05/14/2020 12:30

GES, Inc.
ELLE Sample #: GW 1315882
ELLE Group #: 2099758
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**	**ug/l**	
11997	Benzene	71-43-2	N.D.	0.2	1
11997	Ethylbenzene	100-41-4	N.D.	0.4	1
11997	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.2	1
11997	Toluene	108-88-3	N.D.	0.2	1
11997	Xylene (Total)	1330-20-7	N.D.	1	1
GC Volatiles	**SW-846 8015C**		**ug/l**	**ug/l**	
10598	TPH-GRO water C6-C10	n.a.	N.D.	23	1

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11997	VOCs- 5ml Water by 8260C/D	SW-846 8260C	1	5201461AA	05/25/2020 14:36	Linda C Pape	1
01163	GC/MS VOA Water Prep	SW-846 5030C	1	5201461AA	05/25/2020 14:35	Linda C Pape	1
10598	TPH-GRO water C6-C10	SW-846 8015C	1	20139A53A	05/19/2020 01:03	Jeremy C Giffin	1
01146	GC VOA Water Prep	SW-846 5030C	1	20139A53A	05/19/2020 01:02	Jeremy C Giffin	1

Sample Description: **MW-20D(132-142) Grab Groundwater**
Motiva - 9829 Georgetown Pike, Great Falls, VA

Project Name: **Motiva - 9829 Georgetown Pike, Great Falls, VA**

Submittal Date/Time: 05/15/2020 17:50
Collection Date/Time: 05/14/2020 14:45

GES, Inc.
ELLE Sample #: GW 1315883
ELLE Group #: 2099758
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**	**ug/l**	
11997	Benzene	71-43-2	N.D.	0.2	1
11997	Ethylbenzene	100-41-4	N.D.	0.4	1
11997	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.2	1
11997	Toluene	108-88-3	N.D.	0.2	1
11997	Xylene (Total)	1330-20-7	N.D.	1	1
GC Volatiles	**SW-846 8015C**		**ug/l**	**ug/l**	
10598	TPH-GRO water C6-C10	n.a.	N.D.	23	1

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11997	VOCs- 5ml Water by 8260C/D	SW-846 8260C	1	5201461AA	05/25/2020 14:56	Linda C Pape	1
01163	GC/MS VOA Water Prep	SW-846 5030C	1	5201461AA	05/25/2020 14:55	Linda C Pape	1
10598	TPH-GRO water C6-C10	SW-846 8015C	1	20139A53A	05/19/2020 01:54	Jeremy C Giffin	1
01146	GC VOA Water Prep	SW-846 5030C	1	20139A53A	05/19/2020 01:53	Jeremy C Giffin	1

Sample Description: **MW-21S Grab Groundwater**
Motiva - 9829 Georgetown Pike, Great Falls, VA

Project Name: **Motiva - 9829 Georgetown Pike, Great Falls, VA**

Submittal Date/Time: 05/15/2020 17:50
Collection Date/Time: 05/14/2020 11:45

GES, Inc.
ELLE Sample #: GW 1315884
ELLE Group #: 2099758
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**	**ug/l**	
11997	Benzene	71-43-2	N.D.	0.2	1
11997	Ethylbenzene	100-41-4	N.D.	0.4	1
11997	Methyl Tertiary Butyl Ether	1634-04-4	0.6 J	0.2	1
11997	Toluene	108-88-3	N.D.	0.2	1
11997	Xylene (Total)	1330-20-7	N.D.	1	1
GC Volatiles	**SW-846 8015C**		**ug/l**	**ug/l**	
10598	TPH-GRO water C6-C10	n.a.	N.D.	23	1

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11997	VOCs- 5ml Water by 8260C/D	SW-846 8260C	1	5201461AA	05/25/2020 15:17	Linda C Pape	1
01163	GC/MS VOA Water Prep	SW-846 5030C	1	5201461AA	05/25/2020 15:16	Linda C Pape	1
10598	TPH-GRO water C6-C10	SW-846 8015C	1	20139A53A	05/19/2020 02:20	Jeremy C Giffin	1
01146	GC VOA Water Prep	SW-846 5030C	1	20139A53A	05/19/2020 02:19	Jeremy C Giffin	1

Sample Description: **MW-21I Grab Groundwater**
Motiva - 9829 Georgetown Pike, Great Falls, VA

Project Name: **Motiva - 9829 Georgetown Pike, Great Falls, VA**

Submittal Date/Time: 05/15/2020 17:50
Collection Date/Time: 05/14/2020 11:30

GES, Inc.
ELLE Sample #: GW 1315885
ELLE Group #: 2099758
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**	**ug/l**	
11997	Benzene	71-43-2	N.D.	0.2	1
11997	Ethylbenzene	100-41-4	N.D.	0.4	1
11997	Methyl Tertiary Butyl Ether	1634-04-4	0.5 J	0.2	1
11997	Toluene	108-88-3	N.D.	0.2	1
11997	Xylene (Total)	1330-20-7	N.D.	1	1
GC Volatiles	**SW-846 8015C**		**ug/l**	**ug/l**	
10598	TPH-GRO water C6-C10	n.a.	N.D.	23	1

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11997	VOCs- 5ml Water by 8260C/D	SW-846 8260C	1	5201461AA	05/25/2020 15:37	Linda C Pape	1
01163	GC/MS VOA Water Prep	SW-846 5030C	1	5201461AA	05/25/2020 15:36	Linda C Pape	1
10598	TPH-GRO water C6-C10	SW-846 8015C	1	20139A53A	05/19/2020 02:45	Jeremy C Giffin	1
01146	GC VOA Water Prep	SW-846 5030C	1	20139A53A	05/19/2020 02:44	Jeremy C Giffin	1

Sample Description: **MW-22 Grab Groundwater**
Motiva - 9829 Georgetown Pike, Great Falls, VA

Project Name: **Motiva - 9829 Georgetown Pike, Great Falls, VA**

Submittal Date/Time: 05/15/2020 17:50
Collection Date/Time: 05/14/2020 09:05

GES, Inc.
ELLE Sample #: GW 1315886
ELLE Group #: 2099758
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**	**ug/l**	
11997	Benzene	71-43-2	N.D.	0.2	1
11997	Ethylbenzene	100-41-4	N.D.	0.4	1
11997	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.2	1
11997	Toluene	108-88-3	N.D.	0.2	1
11997	Xylene (Total)	1330-20-7	N.D.	1	1
GC Volatiles	**SW-846 8015C**		**ug/l**	**ug/l**	
10598	TPH-GRO water C6-C10	n.a.	N.D.	23	1

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11997	VOCs- 5ml Water by 8260C/D	SW-846 8260C	1	5201461AA	05/25/2020 15:58	Linda C Pape	1
01163	GC/MS VOA Water Prep	SW-846 5030C	1	5201461AA	05/25/2020 15:57	Linda C Pape	1
10598	TPH-GRO water C6-C10	SW-846 8015C	1	20139A53A	05/19/2020 03:11	Jeremy C Giffin	1
01146	GC VOA Water Prep	SW-846 5030C	1	20139A53A	05/19/2020 03:10	Jeremy C Giffin	1

Sample Description: **MW-27S Grab Groundwater**
Motiva - 9829 Georgetown Pike, Great Falls, VA

Project Name: **Motiva - 9829 Georgetown Pike, Great Falls, VA**

Submittal Date/Time: 05/15/2020 17:50
Collection Date/Time: 05/14/2020 09:35

GES, Inc.
ELLE Sample #: GW 1315887
ELLE Group #: 2099758
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**	**ug/l**	
11997	Benzene	71-43-2	N.D.	0.2	1
11997	Ethylbenzene	100-41-4	N.D.	0.4	1
11997	Methyl Tertiary Butyl Ether	1634-04-4	0.4 J	0.2	1
11997	Toluene	108-88-3	N.D.	0.2	1
11997	Xylene (Total)	1330-20-7	N.D.	1	1
GC Volatiles	**SW-846 8015C**		**ug/l**	**ug/l**	
10598	TPH-GRO water C6-C10	n.a.	N.D.	23	1

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11997	VOCs- 5ml Water by 8260C/D	SW-846 8260C	1	5201461AA	05/25/2020 16:19	Linda C Pape	1
01163	GC/MS VOA Water Prep	SW-846 5030C	1	5201461AA	05/25/2020 16:18	Linda C Pape	1
10598	TPH-GRO water C6-C10	SW-846 8015C	1	20140A94A	05/19/2020 20:09	Jeremy C Giffin	1
01146	GC VOA Water Prep	SW-846 5030C	1	20140A94A	05/19/2020 20:08	Jeremy C Giffin	1

Sample Description: **MW-27I Grab Groundwater**
Motiva - 9829 Georgetown Pike, Great Falls, VA

Project Name: **Motiva - 9829 Georgetown Pike, Great Falls, VA**

Submittal Date/Time: 05/15/2020 17:50
Collection Date/Time: 05/14/2020 10:10

GES, Inc.
ELLE Sample #: GW 1315888
ELLE Group #: 2099758
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260C**		**ug/l**	**ug/l**	
11997	Benzene	71-43-2	N.D.	0.2	1
11997	Ethylbenzene	100-41-4	N.D.	0.4	1
11997	Methyl Tertiary Butyl Ether	1634-04-4	0.4 J	0.2	1
11997	Toluene	108-88-3	N.D.	0.2	1
11997	Xylene (Total)	1330-20-7	N.D.	1	1
GC Volatiles	**SW-846 8015C**		**ug/l**	**ug/l**	
10598	TPH-GRO water C6-C10	n.a.	N.D.	23	1

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11997	VOCs- 5ml Water by 8260C/D	SW-846 8260C	1	5201461AA	05/25/2020 16:40	Linda C Pape	1
01163	GC/MS VOA Water Prep	SW-846 5030C	1	5201461AA	05/25/2020 16:39	Linda C Pape	1
10598	TPH-GRO water C6-C10	SW-846 8015C	1	20140A94A	05/19/2020 20:35	Jeremy C Giffin	1
01146	GC VOA Water Prep	SW-846 5030C	1	20140A94A	05/19/2020 20:34	Jeremy C Giffin	1

Quality Control Summary

Client Name: GES, Inc. Group Number: 2099758
Reported: 05/27/2020 13:48

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result	MDL
	ug/l	ug/l
Batch number: 5201461AA	Sample number(s): 1315878-1315888	
Benzene	N.D.	0.2
Ethylbenzene	N.D.	0.4
Methyl Tertiary Butyl Ether	N.D.	0.2
Toluene	N.D.	0.2
Xylene (Total)	N.D.	1
Batch number: 5201472AA	Sample number(s): 1315878	
Methyl Tertiary Butyl Ether	N.D.	0.2
Batch number: 20139A53A	Sample number(s): 1315878-1315886	
TPH-GRO water C6-C10	N.D.	23
Batch number: 20140A94A	Sample number(s): 1315887-1315888	
TPH-GRO water C6-C10	N.D.	23

LCS/LCSD

Analysis Name	LCS Spike Added ug/l	LCS Conc ug/l	LCSD Spike Added ug/l	LCSD Conc ug/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 5201461AA	Sample number(s): 1315878-1315888								
Benzene	20	19.17			96		80-120		
Ethylbenzene	20	20.02			100		80-120		
Methyl Tertiary Butyl Ether	20	18.99			95		69-122		
Toluene	20	19.38			97		80-120		
Xylene (Total)	60	60.75			101		80-120		
Batch number: 5201472AA	Sample number(s): 1315878								
Methyl Tertiary Butyl Ether	20	19.22	20	19.27	96	96	69-122	0	30
	ug/l	ug/l	ug/l	ug/l					
Batch number: 20139A53A	Sample number(s): 1315878-1315886								
TPH-GRO water C6-C10	1100	1089.87	1100	1106.59	99	101	70-123	2	30
Batch number: 20140A94A	Sample number(s): 1315887-1315888								
TPH-GRO water C6-C10	1100	1091.5	1100	1102.5	99	100	70-123	1	30

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: GES, Inc. Group Number: 2099758
Reported: 05/27/2020 13:48

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: VOCs- 5ml Water by 8260C/D
Batch number: 5201461AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
1315878	98	102	99	95
1315879	100	104	99	95
1315880	99	102	99	96
1315881	99	103	98	95
1315882	100	103	98	94
1315883	101	104	98	95
1315884	100	105	98	94
1315885	101	104	98	93
1315886	101	104	98	93
1315887	102	103	97	93
1315888	102	104	97	93
Blank	98	102	98	96
LCS	99	101	100	99
Limits:	80-120	80-120	80-120	80-120

Analysis Name: TPH-GRO water C6-C10
Batch number: 20139A53A

	Trifluorotoluene-F
1315878	83
1315879	86
1315880	86
1315881	85
1315882	83
1315883	87
1315884	88
1315885	86
1315886	86
Blank	87
LCS	100
LCSD	101
Limits:	63-135

Analysis Name: TPH-GRO water C6-C10
Batch number: 20140A94A

	Trifluorotoluene-F
1315887	81
1315888	74
Blank	81

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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Quality Control Summary

Client Name: GES, Inc. Group Number: 2099758
Reported: 05/27/2020 13:48

Surrogate Quality Control (continued)

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: TPH-GRO water C6-C10
Batch number: 20140A94A

	Trifluorotoluene-F
LCS	90
LCSD	89
Limits:	63-135

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Environmental Analysis Request/Chain of Custody

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Acct. # 8390 Group # 209758 Sample # 1315878-89

Client: Motiva Bill: 0403257-203000-00001
Project Name/#: Great Falls Site ID #:
Project Manager: Ashley Bell P.O. #: 403201
Sampler: Jeff Plummer PWSID #:
Phone #: 800-220-3606 x 3704 Quote #:
State where sample(s) were collected: VA

Sample Identification	Collection Date	Collection Time	Grab	Composite	Matrix: Soil	Sediment	Potable Water	Ground Water	NPDES Water	Surface Water	Other:	Total # of Containers	BTEX + MTBE (8021) *	TPH-GRO (8015)	* 8260 will be used instead of 8021 5593 5/18/20									
													H	H										
W-1	5/14/20	1330	X				x					6	x	x										
W-2	5/14/20	1215	X				x					6	x	x										
W-7	5/14/20	1300	X				x					6	x	x										
MW-20D(73-83)	5/14/20	1115	X				x					6	x	x										
MW-20D(90-100)	5/14/20	1230	X				x					6	x	x										
MW-20D(132-142)	5/14/20	1445	X				x					6	x	x										
MW-21S	5/14/20	1145	X				x					6	x	x										
MW-21I	5/14/20	1130	X				x					6	x	x										
MW-22	5/14/20	0905	X				x					6	x	x										
MW-27S	5/14/20	0935	X				x					6	x	x										

Analyses Requested / Preservation Codes

For Lab Use Only
SF #:
SCR #:

Preservation Codes
H = HCl T = Thiosulfate
N = HNO_3 B = NaOH
S = H_2SO_4 P = H_3PO_4
O = Other

Remarks

Turnaround Time Requested (TAT) (please check): Standard ☑ Rush ☐
(Rush TAT is subject to laboratory approval and surcharges.)

Date results are needed:

Rush results requested by (please check): E-Mail ☑ Phone ☐

E-mail Address: midatlantic@gesonline.com & ges@equisonline.com

Phone:

Data Package Options (please check if required)

Type I (Validation/non-CLP) ☐ MA MCP ☐
Type III (Reduced non-CLP) ☐ CT RCP ☐
Type VI (Raw Data Only) ☐ TX TRRP-13 ☐
NYSDEC Category ☐ A or ☐ B

EDD Required? ☑ Yes ☐ No ☐ If yes, format: GES EQEDD
EQEDD Name: Motiva Great Falls -*Lab report#* .29567.EQEDD.zip

Relinquished by:	Date	Time	Received by:	Date	Time
Jeff Plummer	5-15-2020	0800	Denise Wooding	5-15-20	0900
Denise Wooding	5-15-20	1054		5-15-20	1054
	5-15-20	1745			

Relinquished by Commercial Carrier:

UPS _____ FedEx _____ Other _____

Temperature upon receipt 0.8 - 1.0 °C

Environmental Analysis Request/Chain of Custody

eurofins | Lancaster Laboratories Environmental

Acct. # 8390 Group # 209758 Sample # 1318878-89

Client: **Motiva**	**Bill: 0403257-203000-00001**	
Project Name/#: Great Falls	Site ID #:	
Project Manager: Ashley Bell	P.O. #: 403201	
Sampler: Jeff Plummer	PWSID #:	
Phone #: 800-220-3606 x 3704	Quote #:	
State where sample(s) were collected: VA		

Sample Identification	Collection Date	Collection Time	Grab	Composite	Matrix: Soil	Sediment	Potable Water	Ground Water	NPDES	Surface Water	Other:	Total # of Containers	Analyses Requested: BTEX + MTBE (8021)	Analyses Requested: TPH-GRO (8015)	Preservation Codes: H	H	Remarks
MW-27I	5/14/20	1010	X				x					6	x	x			
~~MW-B3~~ No sample JP	~~5/14/20~~	—	~~X~~				~~x~~					~~6~~	~~x~~	~~x~~	No Sample		
Trip Blank	5/14/20	—	X				x					2	x				Please Hold

For Lab Use Only
SF #: _____
SCR #: _____

Preservation Codes
H = HCl T = Thiosulfate
N = HNO_3 B = NaOH
S = H_2SO_4 P = H_3PO_4
O = Other

Turnaround Time Requested (TAT) (please check): Standard ☒ Rush ☐
(Rush TAT is subject to laboratory approval and surcharges.)

Date results are needed:

Rush results requested by (please check): E-Mail ☑ Phone ☐

E-mail Address: midatlantic@gesonline.com & ges@equisonline.com

Phone:

Data Package Options (please check if required)

Type I (Validation/non-CLP) ☐ MA MCP ☐
Type III (Reduced non-CLP) ☐ CT RCP ☐
Type VI (Raw Data Only) ☐ TX TRRP-13 ☐
NYSDEC Category ☐ A or ☐ B

EDD Required? ☑ Yes ☐ No ☐ If yes, format: GES EQEDD
EQEDD Name: Motiva Great Falls -*Lab report#* .29567.EQEDD.zip

Relinquished by:	Date	Time	Received by:	Date	Time
Jeff Plummer	5-15-20	0800	Denise Woodring	5-15-20	0900
Denise Woodring	5-15-20	1054		5-15-20	1054
	5-15-20	1745			
Relinquished by Commercial Carrier:					

UPS _____ FedEx _____ Other _____

Temperature upon receipt 0.8 - 1.0 °C

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Sample Administration Receipt Documentation Log

Doc Log ID: 284656

Group Number(s): 209758

Client: Motiva

Delivery and Receipt Information

Delivery Method:	ELLE Courier	Arrival Date:	05/15/2020
Number of Packages:	2	Number of Projects:	3
State/Province of Origin:	VA		

Arrival Condition Summary

Shipping Container Sealed:	No	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	No	Sample Date/Times match COC:	Yes
Samples Chilled:	Yes	Total Trip Blank Qty:	0
Paperwork Enclosed:	Yes	Air Quality Samples Present:	No
Samples Intact:	Yes		
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by Cory Jeremiah

Samples Chilled Details

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

Cooler #	Matrix	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	Water	DT42-01	0.8	DT	Wet	Y	Loose	N
2	Water	DT42-01	1.0	DT	Wet	Y	Loose	N

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Lancaster, PA 17605-2425

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Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

BMQL	Below Minimum Quantitation Level	**mL**	milliliter(s)
C	degrees Celsius	**MPN**	Most Probable Number
cfu	colony forming units	**N.D.**	non-detect
CP Units	cobalt-chloroplatinate units	**ng**	nanogram(s)
F	degrees Fahrenheit	**NTU**	nephelometric turbidity units
g	gram(s)	**pg/L**	picogram/liter
IU	International Units	**RL**	Reporting Limit
kg	kilogram(s)	**TNTC**	Too Numerous To Count
L	liter(s)	**µg**	microgram(s)
lb.	pound(s)	**µL**	microliter(s)
m3	cubic meter(s)	**umhos/cm**	micromhos/cm
meq	milliequivalents	**MCL**	Maximum Contamination Limit
mg	milligram(s)		

<	less than
>	greater than
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.
ppb	parts per billion
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as “analyze immediately” are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

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Data Qualifiers

Qualifier	Definition
C	Result confirmed by reanalysis
D1	Indicates for dual column analyses that the result is reported from column 1
D2	Indicates for dual column analyses that the result is reported from column 2
E	Concentration exceeds the calibration range
K1	Initial Calibration Blank is above the QC limit and the sample result is less than the LOQ
K2	Continuing Calibration Blank is above the QC limit and the sample result is less than the LOQ
K3	Initial Calibration Verification is above the QC limit and the sample result is less than the LOQ
K4	Continuing Calibration Verification is above the QC limit and the sample result is less than the LOQ
J (or G, I, X)	Estimated value >= the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)
P	Concentration difference between the primary and confirmation column >40%. The lower result is reported.
P^	Concentration difference between the primary and confirmation column > 40%. The higher result is reported.
U	Analyte was not detected at the value indicated
V	Concentration difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity and evident interference.
W	The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.
Z	Laboratory Defined - see analysis report

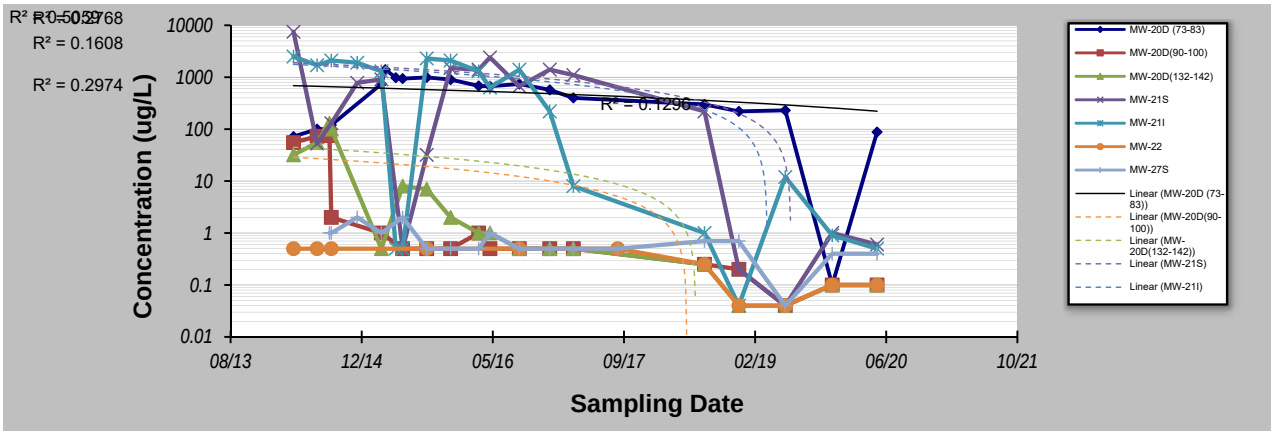
Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods.
Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Appendix C – MTBE Mann-Kendall Constituent Trend Analysis

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 1-Jul-20
Facility Name: Former Shell Station - Great Falls, VA
Conducted By: A. Ryan
Job ID:
Constituent: MTBE
Concentration Units: ug/L

Sampling Point ID:	MW-20D (73-83)	MW-20D(90-100)	MW-20D(132-142	MW-21S	MW-21I	MW-22	MW-27S
Sampling Event	Sampling Date	MTBE CONCENTRATION (ug/L)						
1	11-Apr-14	72	55.0	32.0	7500.0	2500.0	0.5	
2	10-Jul-14	100	73.0	55.0	53.0	1700.0	0.5	
3	26-Aug-14	100	75.0	130.0				1.0
4	2-Sep-14	120	2.0	100.0	130.0	2100.0	0.5	1.0
5	10-Dec-14				780.0	1900.0		2.0
6	12-Mar-15	740	1.0	0.5	910.0	1300.0		1.0
7	27-Mar-15	1400						
8	6-May-15	980				0.5		
9	1-Jun-15	940	0.5	8	0.5	0.5		2
10	1-Sep-15	990	0.5	7	32	2300	0.5	0.5
11	1-Dec-15	900	0.5	2	1500	2100		0.5
12	17-Mar-16	680	1	1	1400	1300		0.5
13	29-Apr-16	670	0.5	1	2400	630		1
14	19-Aug-16	740	0.5	0.5	670	1400	0.5	0.5
15	13-Dec-16	570	0.5	0.5	1400	220		0.5
16	13-Mar-17	400	0.5	0.5	1100	8		0.5
17	29-Aug-17						0.5	0.5
18	26-Jul-18	300	0.25	0.25	220	1	0.25	0.7
19	4-Dec-18	220	0.2	0.04	0.2	0.04	0.04	0.7
20	30-May-19	230	0.04	0.04	0.04	12	0.04	0.04
21	25-Nov-19	0.1	0.1	0.1	1	0.9	0.1	0.4
22	14-May-20	88	0.1	0.1	0.6	0.5	0.1	0.4
23								
24								
25								
Coefficient of Variation:		0.79	2.22	2.03	1.76	1.04	0.66	0.68
Mann-Kendall Statistic (S):		-42	-114	-116	-42	-92	-30	-75
Confidence Factor:		90.7%	>99.9%	>99.9%	93.9%	100.0%	99.0%	99.8%
Concentration Trend:		Prob. Decreasing	Decreasing	Decreasing	Prob. Decreasing	Decreasing	Decreasing	Decreasing



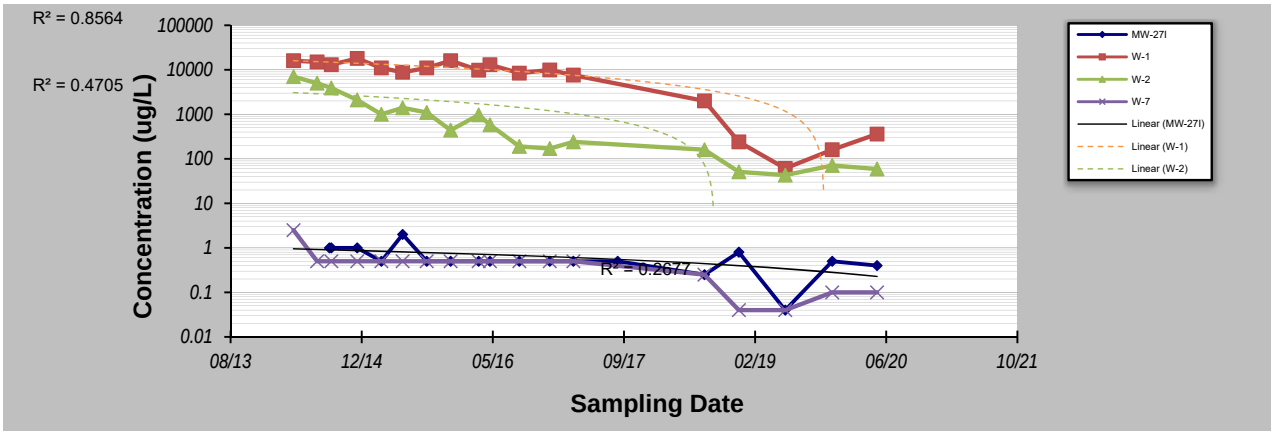
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.
4. Concentrations reported as not detected above laboratory reporting limits are included as half of the reporting limit.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **1-Jul-20**
Facility Name: **Former Shell Station - Great Falls, VA**
Conducted By: **A. Ryan**
Job ID:
Constituent: **MTBE**
Concentration Units: **ug/L**

Sampling Point ID:	MW-27I	W-1	W-2	W-7			
Sampling Event	Sampling Date	MTBE CONCENTRATION (ug/L)						
1	11-Apr-14		16000.0	7000.0	2.5			
2	10-Jul-14		15000.0	5000.0	0.5			
3	26-Aug-14	1						
4	2-Sep-14	1	13000.0	3900.0	0.5			
5	10-Dec-14	1	18000.0	2100.0	0.5			
6	12-Mar-15	0.5	11000.0	1000.0	0.5			
7	27-Mar-15							
8	6-May-15							
9	1-Jun-15	2	8800	1400	0.5			
10	1-Sep-15	0.5	11000	1100	0.5			
11	1-Dec-15	0.5	16000	440	0.5			
12	17-Mar-16	0.5	9800	970	0.5			
13	29-Apr-16	0.5	13000.0	580	0.5			
14	19-Aug-16	0.5	8400	190	0.5			
15	13-Dec-16	0.5	9900	170	0.5			
16	13-Mar-17	0.5	7600	240	0.5			
17	29-Aug-17	0.5						
18	26-Jul-18	0.25	2000	160	0.25			
19	4-Dec-18	0.8	240	51	0.04			
20	30-May-19	0.04	61	43	0.04			
21	25-Nov-19	0.5	160	71	0.1			
22	14-May-20	0.4	360	59	0.1			
23								
24								
25								
Coefficient of Variation:		0.66	0.68	1.45	1.06			
Mann-Kendall Statistic (S):		-69	-108	-133	-77			
Confidence Factor:		99.6%	>99.9%	>99.9%	99.9%			
Concentration Trend:		Decreasing	Decreasing	Decreasing	Decreasing			



Notes:

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2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.
4. Concentrations reported as not detected above laboratory method detection limits are included as half of the method detection limit.