



June 8, 2015

Jeannette DeBartolomeo  
Environmental Compliance Specialist  
MDE-OCP  
1800 Washington Blvd.  
Suite 620  
Baltimore, MD 21230

**RE: Supplemental Investigation Report**  
Calvert Citgo (2815 Northeast Road)  
2802 Northeast Road (McMillan Residence – Currently Vacant)  
2794 Northeast Road (O’Brien Residence)  
North East, Maryland 21901  
Facility No. 5678  
**REPSG Project Reference No. 005977.130.01**

Dear Ms. DeBartolomeo:

This correspondence is being submitted by REPSG on behalf of the remediating parties for the above-referenced Site to present the results of the recently completed downhole geophysical evaluation conducted at the off-Site drinking water well located at 2802 Northeast Road as per the November 2014 *Revised Scope of Work/Supplemental Work Plan* (“Revised SOW”), partially approved by the MDE in a *Partial Work Plan Approval Letter* dated February 10, 2015, as well as the results of the recently completed packer testing completed at the off-Site drinking water well located at 2802 Northeast Road as per the requirements set forth in the February 2015 MDE letter. Collectively, this downhole geophysical evaluation and packer testing are known as “Phase I” within the February 2015 MDE letter.

**Section 1.0** of this *Supplemental Investigation Report* letter presents the results of the “Supplemental Investigation” downhole geophysical evaluation and packer testing of the off-Site drinking water well located at 2802 Northeast Road. **Section 2.0** of this letter concludes on the results of the supplemental investigation, and presents recommended steps moving forward.

## **1.0 Supplemental Investigation**

### **1.1 Downhole Geophysics Evaluation**

REPSG retained Advanced Geological Services, Inc. (AGS) to complete the geophysical survey of drinking water well DW-005, located at 2802 Northeast Road. This well was selected for the completion of the geophysical survey as it is the deeper of the two (2) potable wells currently being monitored as part of this project, and the residence it supplies is currently vacant. The well is approximately 250 feet deep and is cased to approximately 87 feet below grade; the remainder is an uncased (open) rock well. The primary objective of this survey was to determine the location and orientation of potential water-bearing fractures. Secondary objectives were to determine water yield and water quality in the depth intervals within the well that potentially have significant water-bearing fracture zones.

Following a 24-hour equilibrium period after the removal of the drinking water well pump on April 21, 2015, AGS mobilized their equipment to the Site and performed the logging on April 22, 2015, under oversight by professional geologist Kevin McAllister.

The following borehole geophysical logs were acquired:

- Acoustic Televiwer (ACTV), which provided azimuth and dip information for fractures and bedding structures;
- Optical Televiwer (OPTV), which provided an oriented high-resolution 360-degree image of the borehole in order to identify water-bearing zones and changes in lithology in the borehole; and
- Heat-Pulse Flowmeter (HPFM), which measured the vertical flow rates and direction (upward or downward) within the borehole to identify contributing fracture zones under natural and pumping conditions.

The ACTV, OPTV, and HPFM logs were collected with a Matrix System manufactured by Mount Sopris Instrument Company.

A standard suite of logs, including electrical, natural gamma, temperature, and 3-arm caliper were originally intended to also be collected in addition to the imaging and flow logs, but were unable to be completed due to severe on-Site weather. This change to the planned scope of the downhole geophysical borehole evaluation was made under the oversight of MDE Western Section Head of Remediation and State-Lead Division Oil Control Program, Susan Bull, who was on-Site for a portion of the survey work.

Each geophysical tool was lowered down the entire length of the well suspended from a calibrated, depth-encoded wireline equipped with four instrument cables. The responses of the geophysical probes were recorded starting at five feet below grade (fbg), monitoring continuously to the bottom of the well, and centrally recorded in a datalogger. The measurements were referenced to the top of the well casing (TOC),

which is 1.45 feet above the ground surface. Multiple logging runs of each probe were performed, to ensure data quality.

### 1.1.1 Downhole Geophysics Results Discussion

AGS evaluation of the results of the geophysical logging indicates the following relevant data:

- The OPTV log showed numerous foliations (or “repetitive layering”) and fractures throughout the well, while the ACTV log responded mainly to the presence of potential bedrock fractures and not to foliations.
- Based on the results of both the OPTV log and the ACTV log, bedrock fractures observed in the well coincide with the orientations of the foliations. Several low angle fractures and high angle joints that do not coincide with foliations were also identified, however.
- Several possible high angle, discontinuous joints, or fractures, were noted in a zone between 200 feet and 230 feet. The average strike of the joints and fractures was 267 degrees, or approximately due east. The average dip angle is approximately 68 degrees, dipping downward towards the north.
- In general, the HPFM results showed an upward flow throughout the majority of the well under ambient conditions, with fractures between 200 and 230 feet providing much of the upward flow, with no flow detected below 230 feet.

In summary, the geophysical borehole evaluation indicated that bedrock fractures are a combination of foliation fractures, non-foliation fractures, and high angle joint fractures; with a zone between depths of 200 feet and 230 feet containing several intersecting discontinuous fractures that, combined with the continuous fractures, may contribute water to the well. The results further indicated that the largest grouping of fractures within the well is from 210 to 218 fbg.

Under ambient conditions, the HPFM data results indicated an upward flow present within the well at depths above 230 feet, with no flow detected below 230 feet.

Following the completion and analysis of the geophysical borehole evaluation, REPSG, in conjunction with the MDE, evaluated the proposed packer testing scope (see **Section 1.2**), and proposed sample point location depth ranges in order to intercept the contaminant transport pathways. The results of this borehole geophysical survey are included in the **Attachments** of this report.

## **1.2 Packer Sampling Evaluation**

On April 23-24, 2015, following the completion of the downhole geophysical survey (described in **Section 1.1**), REPSG conducted discrete zone, or “packer testing” of the off-Site drinking water (DW-005) well located at 2802 Northeast Road. This packer testing was done under oversight of a professional geologist, Kevin McAllister, and under MDE oversight by Susan Bull and Case Manager Jeanette Debartolomeo. This discrete zone sampling utilized inflatable “straddle” packers positioned in the well above and below specific sampling intervals in order to allow for the isolation of specific sampling intervals of interest in order to assist in the collection of discrete zone samples.

The straddle packers that were used at the Site were designed and built to be used within 6” boreholes, were composed of steel skeleton (“mandrel”) encased in a malleable-rubber gland and included rubber shoulders, retaining rigs, and lock nuts on each end.

Each mandrel consisted of a steel head located at either end, through which tubing and cables pass. Electrical splices made within each packer are immobilized using a polymer resin in order to prevent the introduction of air into the packer. Individual wires are wrapped with heat-shrinking tubing in order to prevent damage caused by packer under-inflation under high hydrostatic pressures. Once in place, packers were inflated using compressed nitrogen from two (2) 300-cubic-foot air tanks, and tested for stability by recording air pressures in the packer system and hydrostatic pressures in adjacent (“unpacked”) depth intervals.

Discrete zone depth ranges were determined through a discussion between the on-Site professional geologist and MDE oversight staff, following the completion of the downhole geophysics evaluation (see **Section 1.2**). Initial depth ranges for packer test sample collection were as follows:

- Depth Range 1: 186 to 196 fbg;
- Depth Range 2: 209 to 219 fbg;
- Depth Range 3: 110 to 120 fbg; and
- Depth Range 4: 87 to 97 fbg.

However, packer test sampling activities completed on April 23, 2015, which included the collection of samples from Depth Ranges 1 and 2, indicated that only one viable water bearing fracture within the shallow zone of the aquifer was providing significant water for the well. Therefore, a revised sampling scope for the completion of packer testing on April 24, 2015 was initiated. This revised scope included the collection of packer test samples from the following depth ranges, isolated using a single packer setup:

- Depth Range 3: 115 to 247 fbg;
- Depth Range 4: 0 to 115 fbg;

The setup for the packer tests further included a submersible groundwater pump (Grundfos MP-1) suitable for purging and sampling. The packed intervals were pumped during testing for the purposes of 1) purging the well of stagnant water (target: 3 well volumes), to produce water representative of the tested interval, 2) producing a quantitative measure of sustainable yield from the tested interval, and 3) producing the sample volume. Finally, pressure transducers were installed above, between and beneath the packered intervals, to measure for changes in hydrostatic head during pumping.

Samples from all four (4) discrete zone depth ranges (209-219, 186-196, 0-115, and 115-247) were analyzed for the full suite Volatile Organic Compound (VOCs), including fuel oxygenates and naphthalene, by EPA Methods 8260 and 8015. Samples were collected in EPA approved bottleware and submitted, packed on ice and under chain of custody, to Analytical Laboratory services, Inc. of Middletown, PA.

#### 1.2.1 Packer Sampling Results Discussion

The pumping of the tested intervals yielded the following results:

- Depth Range 1 (186 to 196 fbg): This depth range interval was pumped dry after approximately one (1) well volume (approximately 15 gallons). No pumping rate at or above the approximately 0.5 gallons per minute (gpm) lowest rate of the pump was found to be sustainable.
- Depth Range 2 (209 to 219 fbg): The results of the pumping of this depth range interval were very similar to those for Depth Range 1.
- Depth Range 3 (15 to 247 fbg): Pumping was started at 0.5 gpm, and gradually increased to 4 gpm, near the top rate achievable with the pump; 4 gpm was found to be the sustainable yield. Based on the stability of water quality testing (Horiba U-52 Multiparameter Meter) parameters of the purge water, and based on time and severe weather considerations, purging of this depth interval took place after approximately 200 gallons was pumped, representing approximately 1.2 well volumes.
- Depth Range 4 (0 to 115 fbg): The sustainable yield for this depth interval was found to be approximately 4 gpm. Approximately 150 gallon, or approximately 1 well volume, was purged. Purging was halted based on stable water quality results and impending severe weather.

The results of the monitoring of hydrostatic pressures indicated no significant impacts to the adjacent depth intervals from the pumping of the packered intervals.

The results of the potable well investigation laboratory analyses were compared to the applicable U.S EPA National Primary DW Standards, which are enforced in Maryland by the MDE’s Safe Drinking Water Act Implementation Division.

Analysis results indicated the presence of MTBE at concentrations above the applicable EPA DW standards in all packer testing zone depth ranges. In addition, compounds for which no EPA standards exist were also detected at concentrations above the laboratory method detection limits (MDLs). Compounds with detectable concentrations above the MDLs are shown on **Table 1**, below. A complete analytical comparison table as well as the full analytical laboratory report are included in the **Attachments** of this letter.

**Table 1: Compounds with Detectable Concentrations in Packer Testing Sample Zones**

Sample Name		DW-005:0-115	DW-005:115-247	DW-005:186-196	DW-005:209-219
Depth Range (fbg)		0-115	115-247	186-196	209-219
Compound	EPA Drinking Water Standard (ug/L)	Results Concentration (ug/L)			
1,2-Dichloroethane	5	1.2	ND	0.79J	0.5J
Acetone	**	ND	ND	4.3J	ND
Bromodichloromethane	**	ND	0.36J	0.52J	1.1
Chloroform	**	ND	4	1.5	5.1
Diesel Range Organics (DRO)	**	37J	44J	830	330
Gasoline Range Organics (GRO)	**	142	39.4J	77.5J	51.1J
Isopropyl Ether	**	1.4	ND	0.26J	ND
Methyl bromide	**	0.44J	ND	0.43J	0.51J
Methyl tert-butyl ether	20	<b>195</b>	<b>26.7</b>	<b>28.1</b>	<b>38.6</b>
Tert-Amyl alcohol	**	19.9	ND	ND	ND
Tert-Amyl Methyl Ether	**	2	0.33J	0.32J	0.38J
tert-Butylalcohol	**	165	20.7	30.9	91.2
Toluene	1000	0.75J	1.8	1.7	1.2

Exceedences of the regulatory standard are printed in **bold**; “J” values denote an estimated value between the MDL and the practical quantitation limit (PQL). “ND” denotes compounds not detectable above the MDL.

As shown on **Table 1**, the results of the packer testing conducted on off-Site drinking water well DW-005 indicate that contamination known to be present within the shallow groundwater zone at the Site (located to the west of the off-Site residences) is present in both the shallow and deep zone aquifers associated with off-Site drinking water well DW-005. Compound concentrations present in both water bearing zones further indicate that some migration of contaminates from the shallow water bearing zone at the gas station into the deeper water bearing zones at the residences is occurring.

## **2.0 Conclusions and Recommendations**

In the February 2014 *Proposed Interim Remedial Measures (PIRM)* letter and the November 2014 *Revised SOW* submitted by REPSG to the MDE, REPSG recommended that if the results of the evaluation of drinking water well DW-005 indicated that viable drinking water wells with alternate open depth ranges from those currently in use could be installed to replace those same wells at the two off-Site residents of concern, that a deep zone monitoring well be installed within the front yard of the residence located at 2794 Northeast Road, and assessed for viability prior to conversion to a new drinking water well.

The goal of the measures proposed within the aforementioned letter and Revised SOW was to permanently resolve the issue of contaminated drinking water wells at the two adjacent residential properties to the east of the Site, at a highest priority basis. While the approved corrective action plan (CAP) for the Site (currently 'on hold' pending the approval of the '*Proposed Interim Remedial Measures*' as per the MDE during the October 6, 2014 meeting) shares this objective, under the current scope of work approved within the CAP, relief to the residents of these properties is at least several years away, with probably a significantly greater period until source area remediation and natural attenuation combine to result in a viable water source returning to these two (2) existing wells.

However, as shown in **Section 1.2** of this letter, the analytical results of the packer zone testing, when combined with the results of the downhole geophysical evaluation results (**Section 1.1**) indicate that it is not clear there exists a distinct water bearing zone within the 0-250 foot depth range which would provide the combination of water quality and water yield to serve as a replacement drinking water supply well. Therefore, the installation of a new deep zone replacement drinking water well at the residence with a more limited open depth system will likely not be sufficient in providing immediate relief to the residents via the supply of a clean, viable drinking water source.

It is therefore recommended that a reassessment of current groundwater conditions and remedial needs at the Site be conducted in conjunction with the MDE, and that a determination as to the most efficient corrective action plan for cleanup of the groundwater contaminate plume at the Site be made and subsequently implemented.

Maryland Department of the Environment  
June 8, 2015

Supplemental Investigation Report  
Calvert Citgo  
2815 Northeast Road, North East, Cecil County, MD  
REPSG Project Reference No: 005977.130.01

If you have any questions or concerns, please do not hesitate to contact our office at 215-729-3220.

Sincerely,



Kevin McAllister, P.G.  
Professional Geologist



Suzanne Shourds  
Project Manager



Brenda MacPhail Kellogg  
Senior Project Manager

**React Environmental Professional Services Group, Inc**

*Enclosures*

*cc: Susan Bull, Case Manager, MDE  
Prag Patel, Owner Calvert Citgo Stores  
Chris Haab, Country Stores, Inc.*

**ATTACHMENT 1: GEOPHYSICAL EVALUATION REPORT**

Reference: 14-339-1

May 2, 2015



3 Mystic Lane  
Malvern, PA 19355  
(610) 722-5500 (ph.)  
(610) 722-0250 (fax)

Ms. Suzanne Shourds  
React Environmental Professional Services Group, Inc.  
6901 Kingsessing Avenue, Suite 201  
Philadelphia, PA 19142

Subject: Geophysical Logging Results  
Well DW005  
2802 Northeast Drive  
Northeast, Maryland

Dear Ms. Shourds:

Advanced Geological Services (AGS) is pleased to present this letter report summarizing the results of borehole geophysical logging performed at the above referenced site. The logging was performed on April 22, 2015.

Based on the well completion log provided to AGS, well DW-005 had been drilled to a total depth of 250 feet, and was cased with 6-inch diameter PVC casing to a depth of 87 feet below the ground surface.

The objective was to wireline log well DW-005 to identify water-producing fracture zones, and to determine bedrock fracture strike and dip orientations. To achieve the objective, oriented borehole image logs and a flow log of the well were completed. A standard suite of logs including electrical, natural gamma, temperature, and 3-arm caliper were originally intended to also be collected in addition to the image and flow logs, but because of time constraints and severe weather, they were not completed in this well.

## **1.0 METHODOLOGY**

The logs that were run for this investigation included optical televiewer (OPTV), acoustic televiewer (ACTV), and heat pulse flowmeter (HPFM) under ambient (i.e. non-pumping) conditions. All logs were acquired with a Mount Sopris Matrix logging system.

### *1.1. OPTICAL TELEVIEWER (OPTV) LOGS*

The optical televiewer log provides an oriented, high-resolution, 360-degree photographic image of the borehole in either an air-filled, or water filled borehole. The oriented image of the borehole is presented in unwrapped format on the log. Results from this tool provide location, color, and orientation information of features such as bedding/foliation, fractures, lithologic contacts and cavities. The acquired image is digitized and properly oriented with respect to borehole deviation and tool rotation. Processing of the resulting image can provide accurate strike and dip information of fractures and other structural features.

### *1.2. ACOUSTIC TELEVIEWER (ACTV) LOGS*

The acoustic televiewer log provides an oriented high-resolution image of the borehole using high-resolution sound waves. The oriented image of the borehole is presented in both amplitude and travel time. Results from this tool provide location and orientation information of features such as fractures, lithologic contacts and cavities. The ATV digitizes 256 measurements around the borehole every 0.02 feet along the length of the borehole. Since the acquired image is digitized and properly oriented with respect to borehole deviation and tool rotation, it allows data processing to provide accurate strike and dip information of structural features.

The ACTV log can, in some instances, be better at identifying fractures than the OPTV because it is sensitive to subtle changes in borehole diameter that can often indicate the presence of a fracture. This is particularly true in highly foliated rocks where the presence of highly visible foliations may be observed in the OPTV logs that are not necessarily indicators of bedrock fractures.

### *1.3. HEAT PULSE FLOWMETER LOGS (HPFM)*

The heat pulse flowmeter measures the vertical flow rates within a borehole. The log may be used to identify contributing fracture zones under natural and pumping conditions. The system operates by heating a wire grid that is located between two thermistors. The heated body of water moves toward one of the thermistors under the effect of the vertical component of flow within the well. Positive and negative values on the log represent upward and downward flow, respectively. The flow is calibrated to gallons/minute (gpm) for the flowmeter tool. The HPFM tool used in this investigation can detect vertical flow rates between 0.03 and 1.0 gpm.

## **2.0 RESULTS AND DISCUSSION**

### *2.1. WELL DW-005*

The OPTV, ACTV, and HPFM logs of DW-005 are attached to the end of this report. All depths shown on the logs and discussed below are relative to the top of casing (TOC). The TOC was 1.45 feet above the ground surface..

The OPTV log was of high resolution, showing numerous foliations and fractures throughout. The ACTV log in this well responded primarily to the presence of potential bedrock fractures and not to un-fractured foliations. Based on the combination on of the OPTV log and the ACTV log, it appears that many of the bedrock fractures observed in the well do coincide with the orientations of the foliations. However, several low angle fractures and high angle joints that

do not coincide with foliations were identified. Table 1, presented below, shows the fracture depths, dip azimuth, and dip angle. Note that dip azimuth is 90°, or perpendicular to strike. Orientations of non-fractured foliations were not determined.

Table 1 - Identified Fractures and Orientations

Fracture Depth (ft.)	Dip Azimuth (deg.)	Dip Angle (deg.)
91.46	223.28	74.63
101.26	220.57	76.61
116.08	92.06	47.22
122.01	152.04	66.32
134.32	179.17	70.91
145.47	0.00	0.00
150.97	320.61	48.74
151.37	18.91	61.74
155.04	142.83	64.47
171.79	282.29	86.11
180.13	139.09	69.01
185.59	289.77	40.89
189.46	282.33	86.30
194.93	115.53	68.16
198.58	132.05	71.54
200.88	202.66	67.44
201.80	302.27	78.48
210.81	98.52	88.47
211.65	119.47	66.49
216.48	148.10	67.38
218.97	148.10	70.48
222.48	296.53	85.10
228.49	141.38	62.04
233.80	134.87	44.16
242.68	46.48	67.38

In a zone between approximately 200 feet and 230 feet, there were several possible high angle, discontinuous joints, or fractures noted. Because of the discontinuous nature of these features it is not possible to determine their strike and dip, but they could contribute the presence of a water producing zone based on the HPFM results.

Generally the HPFM results show upward flow throughout the majority of the well under ambient conditions. Flow rates were low, and in some instances below lower range of the instrument (0.03 gpm). However, when flow rates are less than 0.03 gpm the instrument often does indicate general flow direction. The HPFM data indicate that fractures between 200 and 230 feet provide much of the upward flow, with additional flow being added in the interval

between 170 and 195 feet. Water flow losses occur at a depth of approximately 172 feet with additional flow loss occurring at 145 feet, and the remainder of upward flow being lost at approximately 101 feet. No flow was detected below 230 feet. Table 2, showing HPFM results is shown below.

Table 2 – Heat Pulse Flowmeter Results

Depth (ft)	Flow (gpm)
89.70	0.01
96.10	0.01
100.19	0.02
119.85	0.03
122.46	0.02
130.48	0.02
139.18	0.04
141.03	0.02
149.48	0.04
157.48	0.04
167.09	0.04
170.00	0.05
174.04	0.05
179.08	0.06
188.23	0.06
194.14	0.03
209.01	0.03
220.03	0.02
229.08	-0.01
231.21	0.00
235.97	0.00
240.08	0.00

### 3.0 SUMMARY AND CLOSING

Identified bedrock fractures were a combination of foliation fractures, non-foliation fractures, and high angle joint fractures. A zone between depths of 200 feet and 230 feet contains several intersecting discontinuous fractures that, combined with the continuous fractures, may contribute water to this well. Under ambient conditions, heat pulse flowmeter results indicated that upward flow was present at depths above 230 feet, and no flow was detected below 230 feet.

The data collection and interpretation methodologies used in this investigation are consistent with standard practices applied to similar geophysical investigations. The correlation of

Ms. Suzanne Shourds  
May 2, 2015  
Reference: 14-339-1  
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geophysical responses with probable subsurface features is based on the past results of similar surveys although it is possible that some variation could exist at this site.

Please contact us if you have any questions regarding this survey. We appreciate your business and look forward to working with you again.

Sincerely,

A handwritten signature in blue ink that reads "Donald Jagel". The signature is written in a cursive style.

Donald Jagel, P.G.  
*Senior Geophysicist*

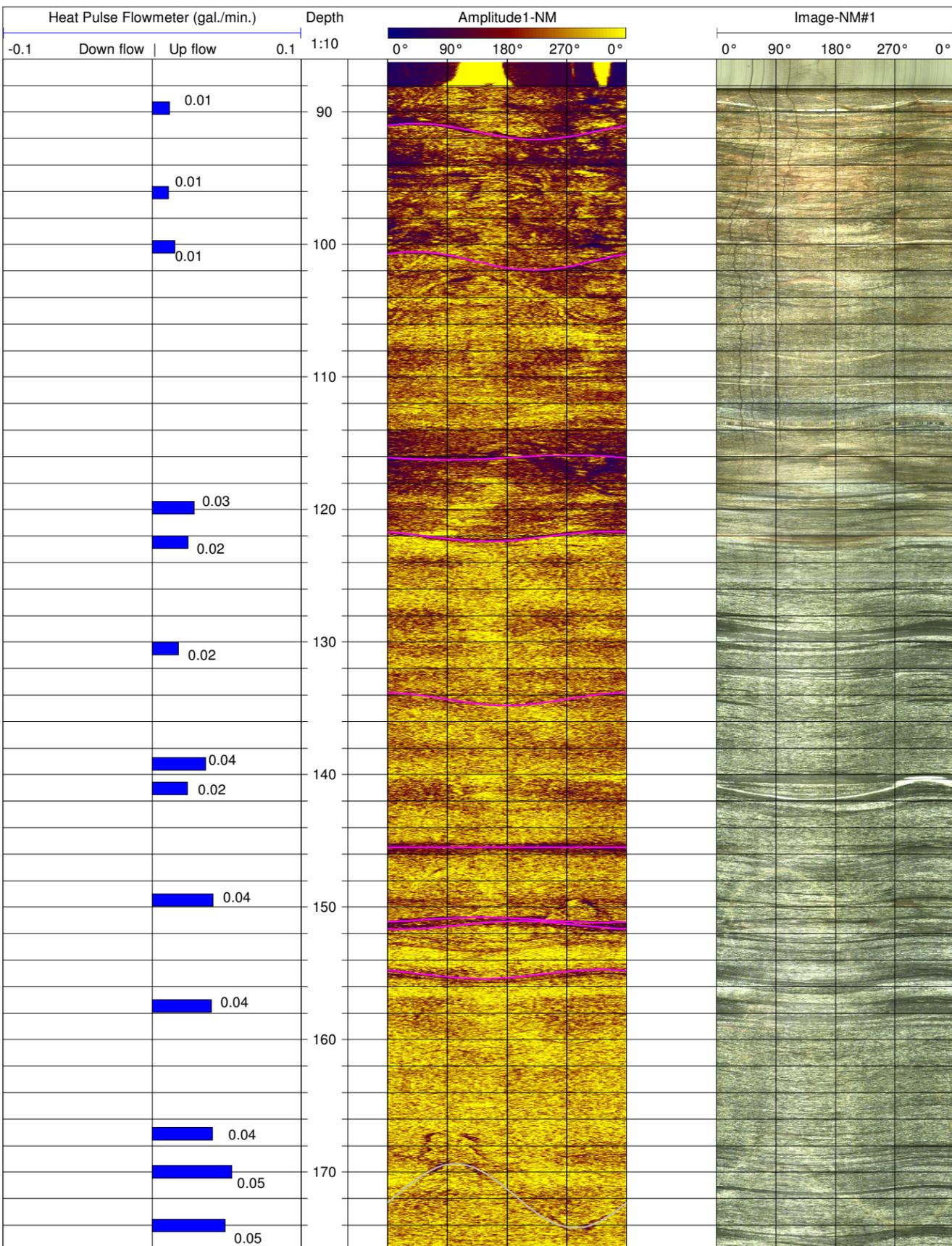
Attachment: Geophysical Well Log

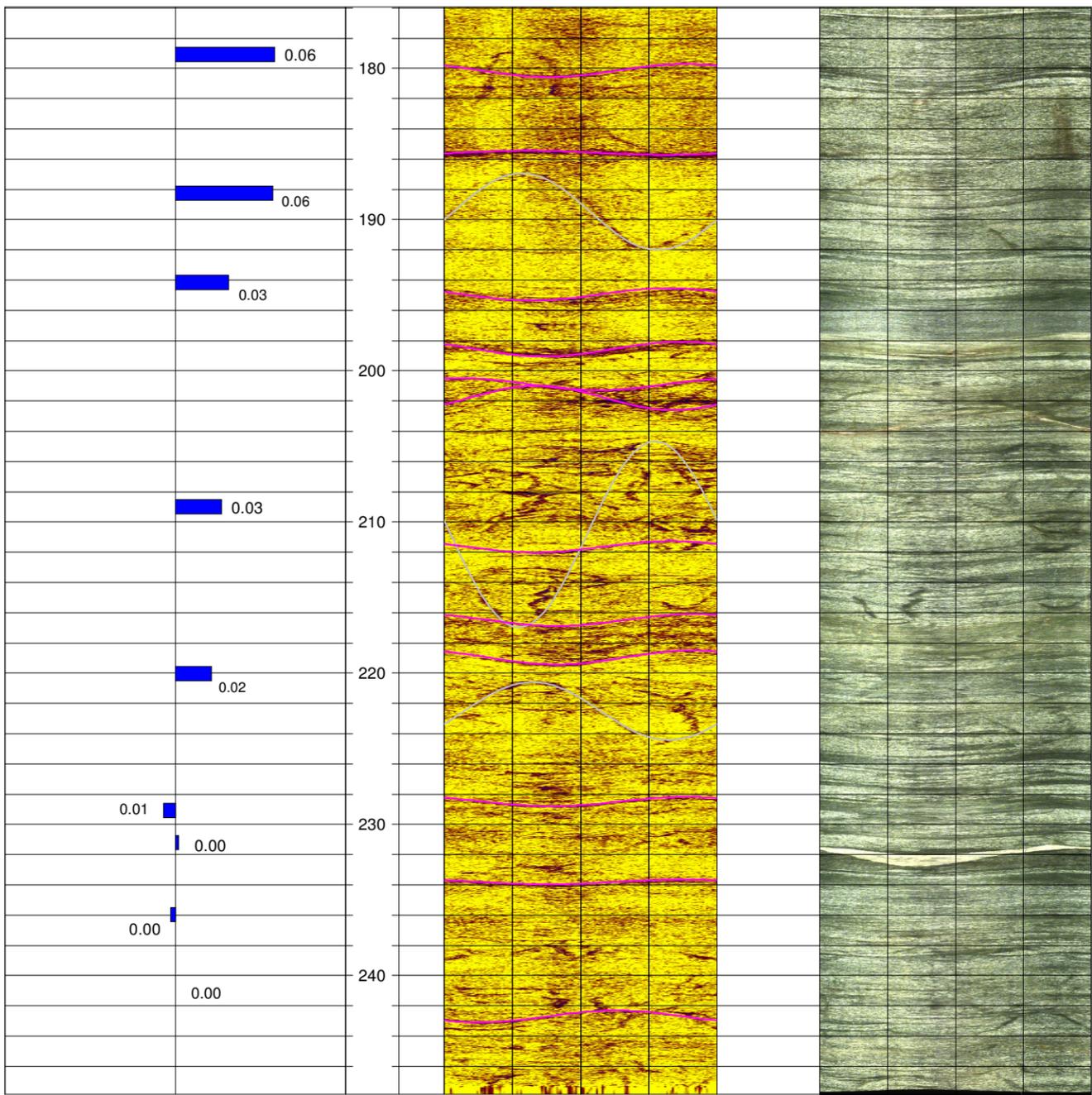


## Acoustic Televiewer/Optical Televiewer

<b>CO React Env.</b> <b>WELL DW-005</b> <b>FLD 2802 Northeast Drive</b> <b>CTY Northeast</b> <b>STE Maryland</b> <b>FILING No</b>		<b>CLIENT</b> React Environmental Professional Services Group, Inc <b>WELL ID</b> DW-005 <b>SITE</b> 2802 Northeast Drive <b>CITY</b> Northeast <b>STATE</b> Maryland
<b>PERMANENT DATUM:</b> _____ <b>LOG MEAS. FROM:</b> Top of Casing (TOC) _____ ABOVE PERM. DATUM _____ <b>DRILLING MEAS. FROM:</b> _____	<b>LOCATION</b> SEC _____ TWP _____ RGE _____ ELEVATION _____ <b>DATE</b> 4/22/2015 <b>TYPE LOG</b> ACTV/OPTV/Heat Pulse <b>DEPTH-DRILLER</b> 250 <b>DEPTH-LOGGER</b> 248 <b>BTM LOGGED INTERVAL</b> 248 <b>TOP LOGGED INTERVAL</b> 86 <b>OPERATING RIG TIME</b> <b>RECORDED BY</b> P. Miller <b>WITNESSED BY</b>	<b>OTHER SERVICES</b> K.B. D.F. G.L. Water

REMARKS: TOC stick up is 1.45 feet above ground surface  
 Heat Pulse Flowmeter (HPFM) log collected under ambient (non-pumping) conditions.  
 HPFM instrument range: 0.03 gpm - 1.00 gpm.





**ATTACHMENT 2: ANALYTICAL CHAIN OF CUSTODY**



34 Dogwood Lane  
 Middletown, PA 17057  
 P. 717-944-5541  
 F. 717-944-1430

### CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

Page 1 of 1

Courier:

COC#

Tracking #:

ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT /  
 SAMPLER. INSTRUCTIONS ON THE BACK.

Co. Name: **REPS6, Inc.**  
 Contact (Report to): **James Manuel jmanuel@repsg.com** Phone: ~~717-944-5541~~ 215-729-3220  
 Address: **6901 Kingsessing Ave Philadelphia, PA 19142**

Bill to (if different than Report to): **Same** PO#: **10611**

Project Name#: **Calvert Citygo 15977** ALS Quote #:

TAT:  Normal-Standard TAT is 10-12 business days. Date Required:  
 Rush-Subject to ALS approval and surcharges. Approved By:

Email?  **jmanuel@repsg.com**  
 Fax?  -Y No

***Container Type	VOA	MPAmB																		
***Container Size	40mL	1L																		
***Preservative	HCL	HCL																		

ANALYSES/METHOD REQUESTED																				
*G or C	**Matrix	Enter Number of Containers Per Analysis																		
	VOC's 8260																			
	DRO 3 GRO																			

**Receipt Information**  
 (Completed by Sample Receiving)

Performed by: \_\_\_\_\_

Cooler Temp: \_\_\_\_\_

Therm. ID: \_\_\_\_\_

No. of Coolers: \_\_\_\_\_

Notes:

N	N	N	N
Y	Y	Y	Y
Correct containers?	Correct sample volume?	Correct preservation?	Headspace/Volatiles?
N	N	N	N
Y	Y	Y	Y
Custody seals Present? (if present)	Seals intact?	Received on ice?	COC/Labels complete/accurate?
N	N	N	N
Y	Y	Y	Y
Container in good condition?	Circle appropriate Y or N.		

Sample Description/Location (as it will appear on the lab report)	COC Comments	Sample Date	Military Time	*G or C	**Matrix	Enter Number of Containers Per Analysis														
1 Field Blank-001		4-23-15	212	G	GW	X	X													
2 Trip Blank-001		4-23-15	-	G	GW	X														
3 Dup-001		4-23-15	-	G	GW	X	X													
4 DW-005: 186-196'		4-23-15	1430	G	GW	X	X													
5 DW-005: 204-214'		4-23-15	1545	G	GW	X	X													
6 Field Blank-002		4/24/15	1212	G	GW	X	X													
7 DW-005: 0-115		4/24/15	1400	G	GW	X	X													
8 DW-005: 115-247		4/24/15	1520	G	GW	X	X													

SAMPLED BY (Please Print): **Garth Mahosky**

Project Comments:

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
					2
					4
					6
					8
					10

Data Deliverables

Standard  
 CLP-like  
 NJ-Reduced  
 NJ-Full  
 Other

SDWA Format?   
 yes   
 if yes, format type

State Samples Collected In?  
 MD   
 NJ   
 NY   
 PA

EDDs Required?

Enter PWSID No. \_\_\_\_\_

DOD Criteria Required?

**ALS FIELD SERVICES**

Pickup  
 Labor  
 Composite Sampling  
 Rental Equipment  
 Other:

\* G=Grab; C=Composite \*\*Matrix: Al=Air; DW=Drinking Water; GW=Groundwater; Ol=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater  
 \*\*\*Container Type: AG-Amber Glass; CG-Clear Glass, PL-Plastic. Container Size: 250ml, 500ml, 1L, 8oz., etc. Preservative: HCl, HNO3, NaOH, etc.

**ATTACHMENT 3: ANALYTICAL CHEMISTRY SUMMARY TABLE**

Analytical Chemistry Report

Calvert Citgo 2815 Northeast Rd North East, Maryland

Project No.: 005977

Matrix: Water

Sample Dates: 04/23/2015-04/24/2015

Regulatory Standard\*:

EPA National Primary Drinking Water Standards: Office of Water. June 2003

Constituent	Unit	*Standard	Location: Date: Depth (ft):	DW-005:0-115 04/24/2015 0	DW-005:115-247 04/24/2015 0	DW-005:186-196 04/23/2015 0	DW-005:209-219 04/23/2015 0
<i>Not Otherwise Specified</i>							
DBCP	ug/l	0.2		<1.5U#	<1.5U#	<1.5U#	<1.5U#
Dichlorofluoromethane	ug/l	**		<0.37U	<0.37U	<0.37U	<0.37U
Tert-Amyl Methyl Ether	ug/l	**		2	0.33J	0.32J	0.38J
<i>Petroleum Screening Parameters</i>							
Diesel Range Organics (DRO)	ug/l	**		37J	44J	830	330
Gasoline Range ORGANICS(GRO)	ug/l	**		142	39.4J	77.5J	51.1J
<i>Volatile Organic Compounds (VOCs)</i>							
1,1,1-trichloroethane	ug/l	200		<0.22U	<0.22U	<0.22U	<0.22U
1,1,2,2-Tetrachloroethane	ug/l	**		<0.34U	<0.34U	<0.34U	<0.34U
1,1,2-Trichloroethane	ug/l	5		<0.33U	<0.33U	<0.33U	<0.33U
1,1-Dichloroethane	ug/l	**		<0.28U	<0.28U	<0.28U	<0.28U
1,1-Dichloroethylene	ug/l	7		<0.29U	<0.29U	<0.29U	<0.29U
1,2-Dibromoethane	ug/l	**		<0.28U	<0.28U	<0.28U	<0.28U
1,2-Dichloroethane	ug/l	5		1.2	<0.32U	0.79J	0.5J
1,2-Dichloropropane	ug/l	**		<0.24U	<0.24U	<0.24U	<0.24U
2-Hexanone	ug/l	**		<1.3U	<1.3U	<1.3U	<1.3U
Acetone	ug/l	**		<3.1U	<3.1U	4.3J	<3.1U
Benzene	ug/l	5		<0.23U	<0.23U	<0.23U	<0.23U
Bromodichloromethane	ug/l	**		<0.27U	0.36J	0.52J	1.1

Print Date: 05/06/2015

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\*\* No Applicable Regulatory Standard

Exceedences of the regulatory standard are printed in bold. # = Reporting limit exceeds regulatory standard. NOC = Not of Concern.

QUALIFIERS: U = Constituent not detected above Method Detection Limit (MDL). J = Estimated Value. < = Indicates that the reported concentration is the Method Detection Limit (MDL). D = Compound identified at a secondary dilution factor. B = Analyte reported in associated field or trip blank. N = Tentatively Identified Compound (TIC). Y = Tentatively Identified Compound (TIC) also identified in Method Blank. E = Reported result is over instrument calibration range. This result is an estimate; the true result may be higher. C = Calibration verification recovery was above the method control limit for this analyte. Analyte not detected, data not impacted.

Analytical Chemistry Report

Calvert Citgo 2815 Northeast Rd North East, Maryland

Project No.: 005977

Matrix: Water

Sample Dates: 04/23/2015-04/24/2015

Regulatory Standard\*:

EPA National Primary Drinking Water Standards: Office of Water, June 2003

Constituent	Unit	*Standard	Location:	DW-005:0-115	DW-005:115-247	DW-005:186-196	DW-005:209-219
			Date:	04/24/2015	04/24/2015	04/23/2015	04/23/2015
			Depth (ft):	0	0	0	0
Bromoform	ug/l	**		<0.4U	<0.4U	<0.4U	<0.4U
Carbon disulfide	ug/l	**		<0.23U	<0.23U	<0.23U	<0.23U
Carbon tetrachloride	ug/l	5		<0.31U	<0.31U	<0.31U	<0.31U
Chlorobenzene	ug/l	100		<0.19U	<0.19U	<0.19U	<0.19U
Chlorobromomethane	ug/l	**		<0.32U	<0.32U	<0.32U	<0.32U
Chloroethane	ug/l	**		<0.33U	<0.33U	<0.33U	<0.33U
Chloroform	ug/l	**		<0.21U	4	1.5	5.1
cis-1,2-Dichloroethylene	ug/l	70		<0.32U	<0.32U	<0.32U	<0.32U
cis-1,3-Dichloropropene	ug/l	**		<0.31U	<0.31U	<0.31U	<0.31U
Dibromochloromethane	ug/l	**		<0.45U	<0.45U	<0.45U	<0.45U
Dichlorodifluoromethane	ug/l	**		<0.33U	<0.33U	<0.33U	<0.33U
Ethyl tert-butyl ether	ug/l	**		<0.19U	<0.19U	<0.19U	<0.19U
Ethylbenzene	ug/l	700		<0.34U	<0.34U	<0.34U	<0.34U
Isopropyl Ether	ug/l	**		1.4	<0.25U	0.26J	<0.25U
m/p-xylene	ug/l	**		<0.52U	<0.52U	<0.52U	<0.52U
Methyl bromide	ug/l	**		0.44J	<0.39U	0.43J	0.51J
Methyl chloride	ug/l	**		<0.31U	<0.31U	<0.31U	<0.31U
Methyl ethyl ketone	ug/l	**		<1.8U	<1.8U	<1.8U	<1.8U
Methyl isobutylketone (MIBK)	ug/l	**		<1.5U	<1.5U	<1.5U	<1.5U
Methyl tert-butyl ether	ug/l	20		195	26.7	28.1	38.6
Methylene chloride	ug/l	5		<0.45U	<0.45U	<0.45U	<0.45U

Print Date: 05/06/2015

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Analytical Chemistry Report

Calvert Citgo 2815 Northeast Rd North East, Maryland

Project No.: 005977

Matrix: Water

Sample Dates: 04/23/2015-04/24/2015

Regulatory Standard\*:

EPA National Primary Drinking Water Standards: Office of Water, June 2003

Constituent	Unit	*Standard	Location:	DW-005:0-115	DW-005:115-247	DW-005:186-196	DW-005:209-219
			Date:	04/24/2015	04/24/2015	04/23/2015	04/23/2015
			Depth (ft):	0	0	0	0
o-Xylene	ug/l	**		<0.33U	<0.33U	<0.33U	<0.33U
Styrene	ug/l	100		<0.24U	<0.24U	<0.24U	<0.24U
Tert-Amyl alcohol	ug/l	**		19.9	<6.6U	<6.6U	<6.6U
Tert-Amyl Ethyl Ether	ug/l	**		<0.29U	<0.29U	<0.29U	<0.29U
tert-Butylalcohol	ug/l	**		165	20.7	30.9	91.2
Tetrachloroethylene	ug/l	5		<0.35U	<0.35U	<0.35U	<0.35U
Toluene	ug/l	1000		0.75J	1.8	1.7	1.2
trans-1,2-Di-chloroethylene	ug/l	100		<0.26U	<0.26U	<0.26U	<0.26U
trans-1,3-Dichloropropene	ug/l	**		<0.29U	<0.29U	<0.29U	<0.29U
Trichloroethylene	ug/l	5		<0.33U	<0.33U	<0.33U	<0.33U
Vinyl chloride	ug/l	2		<0.3U	<0.3U	<0.3U	<0.3U
Xylene (total)	ug/l	10000		<0.66U	<0.66U	<0.66U	<0.66U

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**ATTACHMENT 4: ANALYTICAL LABORATORY REPORT**

May 4, 2015

Mr. John Filoon  
REPSG  
6901 Kingsessing Avenue  
Suite 201  
Philadelphia, PA 19142

## Certificate of Analysis

Project Name:	<b>2013-CALVERT CITGO</b>	Workorder:	<b>2067352</b>
Purchase Order:	<b>10611</b>	Workorder ID:	<b>2015-CALVERT CITGO/5977</b>

Dear Mr. Filoon:

Enclosed are the analytical results for samples received by the laboratory on Monday, April 27, 2015.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Susan J Scherer (Project Coordinator) at (717) 944-5541.

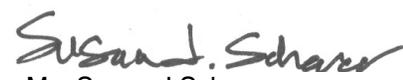
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at [www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads](http://www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads).

This laboratory report may not be reproduced, except in full, without the written approval of ALS Environmental.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Mr. James Manuel , Ms. Brenda MacPhail Kellogg

*This page is included as part of the Analytical Report and must be retained as a permanent record thereof.*

  
Ms. Susan J Scherer  
Project Coordinator

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### SAMPLE SUMMARY

Workorder: 2067352 2015-CALVERT CITGO/5977

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2067352001	Field Blank-001	Ground Water	4/23/2015 12:12	4/27/2015 19:45	Collected by Client
2067352002	Trip Blank-001	Ground Water	4/23/2015 00:00	4/27/2015 19:45	Collected by Client
2067352003	Dup-001	Ground Water	4/24/2015 00:00	4/27/2015 19:45	Collected by Client
2067352004	DW-005:186-196'	Ground Water	4/23/2015 14:30	4/27/2015 19:45	Collected by Client
2067352005	DW-005:209-219'	Ground Water	4/23/2015 15:45	4/27/2015 19:45	Collected by Client
2067352006	Field Blank-002	Ground Water	4/24/2015 12:12	4/27/2015 19:45	Collected by Client
2067352007	DW-005:0-115	Ground Water	4/24/2015 14:00	4/27/2015 19:45	Collected by Client
2067352008	DW-005:115-247	Ground Water	4/24/2015 15:20	4/27/2015 19:45	Collected by Client

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**Mexico:** Monterrey

**SAMPLE SUMMARY**

Workorder: 2067352 2015-CALVERT CITGO/5977

**Notes**

- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- The Chain of Custody document is included as part of this report.
- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are performed in the laboratory and are therefore analyzed out of hold time.
- Method references listed on this report beginning with the prefix "S" followed by a method number (such as S2310B-97) refer to methods from "Standard Methods for the Examination of Water and Wastewater".

**Standard Acronyms/Flags**

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)

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**ANALYTICAL RESULTS**

Workorder: 2067352 2015-CALVERT CITGO/5977

Lab ID: **2067352001** Date Collected: 4/23/2015 12:12 Matrix: Ground Water  
Sample ID: **Field Blank-001** Date Received: 4/27/2015 19:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
<b>VOLATILE ORGANICS</b>										
Acetone	9.8J	J	ug/L	10.0	3.1	SW846 8260B		4/29/15 03:47	CJG	A
tert-Amyl methyl ether	ND		ug/L	1.0	0.20	SW846 8260B		4/29/15 03:47	CJG	A
tert-Amyl Alcohol	ND		ug/L	10.0	6.6	SW846 8260B		4/29/15 03:47	CJG	A
tert-Amyl Ethylether	ND		ug/L	1.0	0.29	SW846 8260B		4/29/15 03:47	CJG	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260B		4/29/15 03:47	CJG	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260B		4/29/15 03:47	CJG	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260B		4/29/15 03:47	CJG	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260B		4/29/15 03:47	CJG	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260B		4/29/15 03:47	CJG	A
2-Butanone	10.9		ug/L	10.0	1.8	SW846 8260B		4/29/15 03:47	CJG	A
tert-Butyl Alcohol	ND		ug/L	10.0	2.2	SW846 8260B		4/29/15 03:47	CJG	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260B		4/29/15 03:47	CJG	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260B		4/29/15 03:47	CJG	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260B		4/29/15 03:47	CJG	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260B		4/29/15 03:47	CJG	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 03:47	CJG	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260B		4/29/15 03:47	CJG	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260B		4/29/15 03:47	CJG	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260B		4/29/15 03:47	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260B		4/29/15 03:47	CJG	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 03:47	CJG	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260B		4/29/15 03:47	CJG	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260B		4/29/15 03:47	CJG	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260B		4/29/15 03:47	CJG	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260B		4/29/15 03:47	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260B		4/29/15 03:47	CJG	A
Dichlorofluoromethane	ND		ug/L	1.0	0.37	SW846 8260B		4/29/15 03:47	CJG	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260B		4/29/15 03:47	CJG	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260B		4/29/15 03:47	CJG	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260B		4/29/15 03:47	CJG	A
Diisopropyl ether	ND		ug/L	1.0	0.25	SW846 8260B		4/29/15 03:47	CJG	A
Ethyl tert-butyl ether	ND		ug/L	1.0	0.19	SW846 8260B		4/29/15 03:47	CJG	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260B		4/29/15 03:47	CJG	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260B		4/29/15 03:47	CJG	A
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 03:47	CJG	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260B		4/29/15 03:47	CJG	A

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### ANALYTICAL RESULTS

Workorder: 2067352 2015-CALVERT CITGO/5977

Lab ID: **2067352001** Date Collected: 4/23/2015 12:12 Matrix: Ground Water  
Sample ID: **Field Blank-001** Date Received: 4/27/2015 19:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260B		4/29/15 03:47	CJG	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260B		4/29/15 03:47	CJG	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260B		4/29/15 03:47	CJG	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260B		4/29/15 03:47	CJG	A
Toluene	0.24J	J	ug/L	1.0	0.23	SW846 8260B		4/29/15 03:47	CJG	A
Total Xylenes	ND		ug/L	3.0	0.66	SW846 8260B		4/29/15 03:47	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260B		4/29/15 03:47	CJG	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 03:47	CJG	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 03:47	CJG	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260B		4/29/15 03:47	CJG	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 03:47	CJG	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260B		4/29/15 03:47	CJG	A
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>		<i>Method</i>	<i>Prepared By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	92.3		%	62 - 133		SW846 8260B		4/29/15 03:47	CJG	A
4-Bromofluorobenzene (S)	96		%	79 - 114		SW846 8260B		4/29/15 03:47	CJG	A
Dibromofluoromethane (S)	83.8		%	78 - 116		SW846 8260B		4/29/15 03:47	CJG	A
Toluene-d8 (S)	90.8		%	76 - 127		SW846 8260B		4/29/15 03:47	CJG	A
<b>PETROLEUM HC's</b>										
Diesel Range Organics C10-C28	0.016J	J	mg/L	0.16	0.014	SW846 8015D	4/30/15 BS	5/1/15 17:29	EGO	F
Gasoline Range Organics	ND		ug/L	100	13.9	SW846 8015D		4/29/15 12:57	DD	B
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>		<i>Method</i>	<i>Prepared By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
a,a,a-Trifluorotoluene (S)	97.3		%	90 - 129		SW846 8015D		4/29/15 12:57	DD	B
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>		<i>Method</i>	<i>Prepared By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
o-Terphenyl (S)	88.4		%	26 - 139		SW846 8015D	4/30/15 BS	5/1/15 17:29	EGO	F



Ms. Susan J Scherer  
Project Coordinator

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**ANALYTICAL RESULTS**

Workorder: 2067352 2015-CALVERT CITGO/5977

Lab ID: **2067352002** Date Collected: 4/23/2015 00:00 Matrix: Ground Water  
Sample ID: **Trip Blank-001** Date Received: 4/27/2015 19:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
<b>VOLATILE ORGANICS</b>										
Acetone	6.8J	J	ug/L	10.0	3.1	SW846 8260B		4/29/15 04:09	CJG	A
tert-Amyl methyl ether	ND		ug/L	1.0	0.20	SW846 8260B		4/29/15 04:09	CJG	A
tert-Amyl Alcohol	ND		ug/L	10.0	6.6	SW846 8260B		4/29/15 04:09	CJG	A
tert-Amyl Ethylether	ND		ug/L	1.0	0.29	SW846 8260B		4/29/15 04:09	CJG	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260B		4/29/15 04:09	CJG	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260B		4/29/15 04:09	CJG	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260B		4/29/15 04:09	CJG	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260B		4/29/15 04:09	CJG	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260B		4/29/15 04:09	CJG	A
2-Butanone	3.5J	J	ug/L	10.0	1.8	SW846 8260B		4/29/15 04:09	CJG	A
tert-Butyl Alcohol	ND		ug/L	10.0	2.2	SW846 8260B		4/29/15 04:09	CJG	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260B		4/29/15 04:09	CJG	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260B		4/29/15 04:09	CJG	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260B		4/29/15 04:09	CJG	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260B		4/29/15 04:09	CJG	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 04:09	CJG	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260B		4/29/15 04:09	CJG	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260B		4/29/15 04:09	CJG	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260B		4/29/15 04:09	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260B		4/29/15 04:09	CJG	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 04:09	CJG	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260B		4/29/15 04:09	CJG	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260B		4/29/15 04:09	CJG	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260B		4/29/15 04:09	CJG	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260B		4/29/15 04:09	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260B		4/29/15 04:09	CJG	A
Dichlorofluoromethane	ND		ug/L	1.0	0.37	SW846 8260B		4/29/15 04:09	CJG	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260B		4/29/15 04:09	CJG	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260B		4/29/15 04:09	CJG	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260B		4/29/15 04:09	CJG	A
Diisopropyl ether	ND		ug/L	1.0	0.25	SW846 8260B		4/29/15 04:09	CJG	A
Ethyl tert-butyl ether	ND		ug/L	1.0	0.19	SW846 8260B		4/29/15 04:09	CJG	A
Ethylbenzene	0.59J	J	ug/L	1.0	0.34	SW846 8260B		4/29/15 04:09	CJG	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260B		4/29/15 04:09	CJG	A
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 04:09	CJG	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260B		4/29/15 04:09	CJG	A

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### ANALYTICAL RESULTS

Workorder: 2067352 2015-CALVERT CITGO/5977

Lab ID: **2067352002** Date Collected: 4/23/2015 00:00 Matrix: Ground Water  
Sample ID: **Trip Blank-001** Date Received: 4/27/2015 19:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260B		4/29/15 04:09	CJG	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260B		4/29/15 04:09	CJG	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260B		4/29/15 04:09	CJG	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260B		4/29/15 04:09	CJG	A
Toluene	ND		ug/L	1.0	0.23	SW846 8260B		4/29/15 04:09	CJG	A
Total Xylenes	ND		ug/L	3.0	0.66	SW846 8260B		4/29/15 04:09	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260B		4/29/15 04:09	CJG	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 04:09	CJG	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 04:09	CJG	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260B		4/29/15 04:09	CJG	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 04:09	CJG	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260B		4/29/15 04:09	CJG	A
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>		<i>Method</i>	<i>Prepared By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	90.4		%	62 - 133		SW846 8260B		4/29/15 04:09	CJG	A
4-Bromofluorobenzene (S)	95.6		%	79 - 114		SW846 8260B		4/29/15 04:09	CJG	A
Dibromofluoromethane (S)	83		%	78 - 116		SW846 8260B		4/29/15 04:09	CJG	A
Toluene-d8 (S)	89.1		%	76 - 127		SW846 8260B		4/29/15 04:09	CJG	A



Ms. Susan J Scherer  
Project Coordinator

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**ANALYTICAL RESULTS**

Workorder: 2067352 2015-CALVERT CITGO/5977

Lab ID: **2067352003** Date Collected: 4/24/2015 00:00 Matrix: Ground Water  
Sample ID: **Dup-001** Date Received: 4/27/2015 19:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
<b>VOLATILE ORGANICS</b>										
Acetone	ND		ug/L	10.0	3.1	SW846 8260B		4/29/15 04:53	CJG	A
tert-Amyl methyl ether	1.9		ug/L	1.0	0.20	SW846 8260B		4/29/15 04:53	CJG	A
tert-Amyl Alcohol	18.5		ug/L	10.0	6.6	SW846 8260B		4/29/15 04:53	CJG	A
tert-Amyl Ethylether	ND		ug/L	1.0	0.29	SW846 8260B		4/29/15 04:53	CJG	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260B		4/29/15 04:53	CJG	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260B		4/29/15 04:53	CJG	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260B		4/29/15 04:53	CJG	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260B		4/29/15 04:53	CJG	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260B		4/29/15 04:53	CJG	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260B		4/29/15 04:53	CJG	A
tert-Butyl Alcohol	148		ug/L	10.0	2.2	SW846 8260B		4/29/15 04:53	CJG	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260B		4/29/15 04:53	CJG	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260B		4/29/15 04:53	CJG	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260B		4/29/15 04:53	CJG	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260B		4/29/15 04:53	CJG	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 04:53	CJG	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260B		4/29/15 04:53	CJG	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260B		4/29/15 04:53	CJG	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260B		4/29/15 04:53	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260B		4/29/15 04:53	CJG	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 04:53	CJG	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260B		4/29/15 04:53	CJG	A
1,2-Dichloroethane	1.2		ug/L	1.0	0.32	SW846 8260B		4/29/15 04:53	CJG	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260B		4/29/15 04:53	CJG	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260B		4/29/15 04:53	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260B		4/29/15 04:53	CJG	A
Dichlorofluoromethane	ND		ug/L	1.0	0.37	SW846 8260B		4/29/15 04:53	CJG	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260B		4/29/15 04:53	CJG	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260B		4/29/15 04:53	CJG	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260B		4/29/15 04:53	CJG	A
Diisopropyl ether	1.4		ug/L	1.0	0.25	SW846 8260B		4/29/15 04:53	CJG	A
Ethyl tert-butyl ether	ND		ug/L	1.0	0.19	SW846 8260B		4/29/15 04:53	CJG	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260B		4/29/15 04:53	CJG	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260B		4/29/15 04:53	CJG	A
Methyl t-Butyl Ether	188		ug/L	1.0	0.33	SW846 8260B		4/29/15 04:53	CJG	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260B		4/29/15 04:53	CJG	A

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**ANALYTICAL RESULTS**

Workorder: 2067352 2015-CALVERT CITGO/5977

Lab ID: **2067352003**

Date Collected: 4/24/2015 00:00

Matrix: Ground Water

Sample ID: **Dup-001**

Date Received: 4/27/2015 19:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260B		4/29/15 04:53	CJG	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260B		4/29/15 04:53	CJG	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260B		4/29/15 04:53	CJG	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260B		4/29/15 04:53	CJG	A
Toluene	0.73J	J	ug/L	1.0	0.23	SW846 8260B		4/29/15 04:53	CJG	A
Total Xylenes	ND		ug/L	3.0	0.66	SW846 8260B		4/29/15 04:53	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260B		4/29/15 04:53	CJG	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 04:53	CJG	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 04:53	CJG	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260B		4/29/15 04:53	CJG	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 04:53	CJG	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260B		4/29/15 04:53	CJG	A
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>		<i>Method</i>	<i>Prepared By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	89		%	62 - 133		SW846 8260B		4/29/15 04:53	CJG	A
4-Bromofluorobenzene (S)	95.9		%	79 - 114		SW846 8260B		4/29/15 04:53	CJG	A
Dibromofluoromethane (S)	81.6		%	78 - 116		SW846 8260B		4/29/15 04:53	CJG	A
Toluene-d8 (S)	89.2		%	76 - 127		SW846 8260B		4/29/15 04:53	CJG	A
<b>PETROLEUM HC's</b>										
Diesel Range Organics C10-C28	0.027J	J	mg/L	0.15	0.013	SW846 8015D	4/30/15 BS	5/1/15 18:07	EGO	F
Gasoline Range Organics	137		ug/L	100	13.9	SW846 8015D		4/29/15 16:10	DD	B
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>		<i>Method</i>	<i>Prepared By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
a,a,a-Trifluorotoluene (S)	94.3		%	90 - 129		SW846 8015D		4/29/15 16:10	DD	B
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>		<i>Method</i>	<i>Prepared By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
o-Terphenyl (S)	86.4		%	26 - 139		SW846 8015D	4/30/15 BS	5/1/15 18:07	EGO	F



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**ANALYTICAL RESULTS**

Workorder: 2067352 2015-CALVERT CITGO/5977

Lab ID: **2067352004** Date Collected: 4/23/2015 14:30 Matrix: Ground Water  
Sample ID: **DW-005:186-196'** Date Received: 4/27/2015 19:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
<b>VOLATILE ORGANICS</b>										
Acetone	4.3J	J	ug/L	10.0	3.1	SW846 8260B		4/29/15 05:15	CJG	A
tert-Amyl methyl ether	0.32J	J	ug/L	1.0	0.20	SW846 8260B		4/29/15 05:15	CJG	A
tert-Amyl Alcohol	ND		ug/L	10.0	6.6	SW846 8260B		4/29/15 05:15	CJG	A
tert-Amyl Ethylether	ND		ug/L	1.0	0.29	SW846 8260B		4/29/15 05:15	CJG	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260B		4/29/15 05:15	CJG	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260B		4/29/15 05:15	CJG	A
Bromodichloromethane	0.52J	J	ug/L	1.0	0.27	SW846 8260B		4/29/15 05:15	CJG	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260B		4/29/15 05:15	CJG	A
Bromomethane	0.43J	J	ug/L	1.0	0.39	SW846 8260B		4/29/15 05:15	CJG	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260B		4/29/15 05:15	CJG	A
tert-Butyl Alcohol	30.9		ug/L	10.0	2.2	SW846 8260B		4/29/15 05:15	CJG	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260B		4/29/15 05:15	CJG	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260B		4/29/15 05:15	CJG	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260B		4/29/15 05:15	CJG	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260B		4/29/15 05:15	CJG	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 05:15	CJG	A
Chloroform	1.5		ug/L	1.0	0.21	SW846 8260B		4/29/15 05:15	CJG	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260B		4/29/15 05:15	CJG	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260B		4/29/15 05:15	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260B		4/29/15 05:15	CJG	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 05:15	CJG	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260B		4/29/15 05:15	CJG	A
1,2-Dichloroethane	0.79J	J	ug/L	1.0	0.32	SW846 8260B		4/29/15 05:15	CJG	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260B		4/29/15 05:15	CJG	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260B		4/29/15 05:15	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260B		4/29/15 05:15	CJG	A
Dichlorofluoromethane	ND		ug/L	1.0	0.37	SW846 8260B		4/29/15 05:15	CJG	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260B		4/29/15 05:15	CJG	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260B		4/29/15 05:15	CJG	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260B		4/29/15 05:15	CJG	A
Diisopropyl ether	0.26J	J	ug/L	1.0	0.25	SW846 8260B		4/29/15 05:15	CJG	A
Ethyl tert-butyl ether	ND		ug/L	1.0	0.19	SW846 8260B		4/29/15 05:15	CJG	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260B		4/29/15 05:15	CJG	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260B		4/29/15 05:15	CJG	A
Methyl t-Butyl Ether	28.1		ug/L	1.0	0.33	SW846 8260B		4/29/15 05:15	CJG	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260B		4/29/15 05:15	CJG	A

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**ANALYTICAL RESULTS**

Workorder: 2067352 2015-CALVERT CITGO/5977

Lab ID: **2067352004** Date Collected: 4/23/2015 14:30 Matrix: Ground Water  
Sample ID: **DW-005:186-196'** Date Received: 4/27/2015 19:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260B		4/29/15 05:15	CJG	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260B		4/29/15 05:15	CJG	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260B		4/29/15 05:15	CJG	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260B		4/29/15 05:15	CJG	A
Toluene	1.7		ug/L	1.0	0.23	SW846 8260B		4/29/15 05:15	CJG	A
Total Xylenes	ND		ug/L	3.0	0.66	SW846 8260B		4/29/15 05:15	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260B		4/29/15 05:15	CJG	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 05:15	CJG	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 05:15	CJG	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260B		4/29/15 05:15	CJG	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 05:15	CJG	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260B		4/29/15 05:15	CJG	A
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>		<i>Method</i>	<i>Prepared By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	89.9		%	62 - 133		SW846 8260B		4/29/15 05:15	CJG	A
4-Bromofluorobenzene (S)	95.7		%	79 - 114		SW846 8260B		4/29/15 05:15	CJG	A
Dibromofluoromethane (S)	83.6		%	78 - 116		SW846 8260B		4/29/15 05:15	CJG	A
Toluene-d8 (S)	89.2		%	76 - 127		SW846 8260B		4/29/15 05:15	CJG	A
<b>PETROLEUM HC's</b>										
Diesel Range Organics C10-C28	0.83		mg/L	0.17	0.015	SW846 8015D	4/30/15 BS	5/1/15 18:44	EGO	F
Gasoline Range Organics	77.5J	J	ug/L	100	13.9	SW846 8015D		4/29/15 14:34	DD	B
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>		<i>Method</i>	<i>Prepared By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
a,a,a-Trifluorotoluene (S)	97.3		%	90 - 129		SW846 8015D		4/29/15 14:34	DD	B
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>		<i>Method</i>	<i>Prepared By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
o-Terphenyl (S)	67.1		%	26 - 139		SW846 8015D	4/30/15 BS	5/1/15 18:44	EGO	F



Ms. Susan J Scherer  
Project Coordinator

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**ANALYTICAL RESULTS**

Workorder: 2067352 2015-CALVERT CITGO/5977

Lab ID: **2067352005** Date Collected: 4/23/2015 15:45 Matrix: Ground Water  
Sample ID: **DW-005:209-219'** Date Received: 4/27/2015 19:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
<b>VOLATILE ORGANICS</b>										
Acetone	ND		ug/L	10.0	3.1	SW846 8260B		4/29/15 05:37	CJG	A
tert-Amyl methyl ether	0.38J	J	ug/L	1.0	0.20	SW846 8260B		4/29/15 05:37	CJG	A
tert-Amyl Alcohol	ND		ug/L	10.0	6.6	SW846 8260B		4/29/15 05:37	CJG	A
tert-Amyl Ethylether	ND		ug/L	1.0	0.29	SW846 8260B		4/29/15 05:37	CJG	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260B		4/29/15 05:37	CJG	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260B		4/29/15 05:37	CJG	A
Bromodichloromethane	1.1		ug/L	1.0	0.27	SW846 8260B		4/29/15 05:37	CJG	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260B		4/29/15 05:37	CJG	A
Bromomethane	0.51J	J	ug/L	1.0	0.39	SW846 8260B		4/29/15 05:37	CJG	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260B		4/29/15 05:37	CJG	A
tert-Butyl Alcohol	91.2		ug/L	10.0	2.2	SW846 8260B		4/29/15 05:37	CJG	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260B		4/29/15 05:37	CJG	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260B		4/29/15 05:37	CJG	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260B		4/29/15 05:37	CJG	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260B		4/29/15 05:37	CJG	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 05:37	CJG	A
Chloroform	5.1		ug/L	1.0	0.21	SW846 8260B		4/29/15 05:37	CJG	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260B		4/29/15 05:37	CJG	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260B		4/29/15 05:37	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260B		4/29/15 05:37	CJG	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 05:37	CJG	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260B		4/29/15 05:37	CJG	A
1,2-Dichloroethane	0.50J	J	ug/L	1.0	0.32	SW846 8260B		4/29/15 05:37	CJG	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260B		4/29/15 05:37	CJG	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260B		4/29/15 05:37	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260B		4/29/15 05:37	CJG	A
Dichlorofluoromethane	ND		ug/L	1.0	0.37	SW846 8260B		4/29/15 05:37	CJG	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260B		4/29/15 05:37	CJG	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260B		4/29/15 05:37	CJG	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260B		4/29/15 05:37	CJG	A
Diisopropyl ether	ND		ug/L	1.0	0.25	SW846 8260B		4/29/15 05:37	CJG	A
Ethyl tert-butyl ether	ND		ug/L	1.0	0.19	SW846 8260B		4/29/15 05:37	CJG	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260B		4/29/15 05:37	CJG	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260B		4/29/15 05:37	CJG	A
Methyl t-Butyl Ether	38.6		ug/L	1.0	0.33	SW846 8260B		4/29/15 05:37	CJG	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260B		4/29/15 05:37	CJG	A

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**ANALYTICAL RESULTS**

Workorder: 2067352 2015-CALVERT CITGO/5977

Lab ID: **2067352005** Date Collected: 4/23/2015 15:45 Matrix: Ground Water  
Sample ID: **DW-005:209-219'** Date Received: 4/27/2015 19:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260B		4/29/15 05:37	CJG	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260B		4/29/15 05:37	CJG	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260B		4/29/15 05:37	CJG	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260B		4/29/15 05:37	CJG	A
Toluene	1.2		ug/L	1.0	0.23	SW846 8260B		4/29/15 05:37	CJG	A
Total Xylenes	ND		ug/L	3.0	0.66	SW846 8260B		4/29/15 05:37	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260B		4/29/15 05:37	CJG	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 05:37	CJG	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 05:37	CJG	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260B		4/29/15 05:37	CJG	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 05:37	CJG	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260B		4/29/15 05:37	CJG	A
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>		<i>Method</i>	<i>Prepared By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	88.5		%	62 - 133		SW846 8260B		4/29/15 05:37	CJG	A
4-Bromofluorobenzene (S)	94.4		%	79 - 114		SW846 8260B		4/29/15 05:37	CJG	A
Dibromofluoromethane (S)	83.8		%	78 - 116		SW846 8260B		4/29/15 05:37	CJG	A
Toluene-d8 (S)	89		%	76 - 127		SW846 8260B		4/29/15 05:37	CJG	A
<b>PETROLEUM HC's</b>										
Diesel Range Organics C10-C28	0.33		mg/L	0.16	0.014	SW846 8015D	4/30/15 BS	5/1/15 19:21	EGO	F
Gasoline Range Organics	51.1J	J	ug/L	100	13.9	SW846 8015D		4/29/15 15:06	DD	B
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>		<i>Method</i>	<i>Prepared By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
a,a,a-Trifluorotoluene (S)	95.8		%	90 - 129		SW846 8015D		4/29/15 15:06	DD	B
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>		<i>Method</i>	<i>Prepared By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
o-Terphenyl (S)	81.7		%	26 - 139		SW846 8015D	4/30/15 BS	5/1/15 19:21	EGO	F



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**ANALYTICAL RESULTS**

Workorder: 2067352 2015-CALVERT CITGO/5977

Lab ID: **2067352006** Date Collected: 4/24/2015 12:12 Matrix: Ground Water  
Sample ID: **Field Blank-002** Date Received: 4/27/2015 19:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
<b>VOLATILE ORGANICS</b>										
Acetone	ND		ug/L	10.0	3.1	SW846 8260B		4/29/15 04:31	CJG	A
tert-Amyl methyl ether	ND		ug/L	1.0	0.20	SW846 8260B		4/29/15 04:31	CJG	A
tert-Amyl Alcohol	ND		ug/L	10.0	6.6	SW846 8260B		4/29/15 04:31	CJG	A
tert-Amyl Ethylether	ND		ug/L	1.0	0.29	SW846 8260B		4/29/15 04:31	CJG	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260B		4/29/15 04:31	CJG	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260B		4/29/15 04:31	CJG	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260B		4/29/15 04:31	CJG	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260B		4/29/15 04:31	CJG	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260B		4/29/15 04:31	CJG	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260B		4/29/15 04:31	CJG	A
tert-Butyl Alcohol	ND		ug/L	10.0	2.2	SW846 8260B		4/29/15 04:31	CJG	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260B		4/29/15 04:31	CJG	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260B		4/29/15 04:31	CJG	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260B		4/29/15 04:31	CJG	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260B		4/29/15 04:31	CJG	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 04:31	CJG	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260B		4/29/15 04:31	CJG	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260B		4/29/15 04:31	CJG	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260B		4/29/15 04:31	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260B		4/29/15 04:31	CJG	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 04:31	CJG	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260B		4/29/15 04:31	CJG	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260B		4/29/15 04:31	CJG	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260B		4/29/15 04:31	CJG	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260B		4/29/15 04:31	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260B		4/29/15 04:31	CJG	A
Dichlorofluoromethane	ND		ug/L	1.0	0.37	SW846 8260B		4/29/15 04:31	CJG	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260B		4/29/15 04:31	CJG	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260B		4/29/15 04:31	CJG	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260B		4/29/15 04:31	CJG	A
Diisopropyl ether	ND		ug/L	1.0	0.25	SW846 8260B		4/29/15 04:31	CJG	A
Ethyl tert-butyl ether	ND		ug/L	1.0	0.19	SW846 8260B		4/29/15 04:31	CJG	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260B		4/29/15 04:31	CJG	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260B		4/29/15 04:31	CJG	A
Methyl t-Butyl Ether	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 04:31	CJG	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260B		4/29/15 04:31	CJG	A

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**ANALYTICAL RESULTS**

Workorder: 2067352 2015-CALVERT CITGO/5977

Lab ID: **2067352006** Date Collected: 4/24/2015 12:12 Matrix: Ground Water  
Sample ID: **Field Blank-002** Date Received: 4/27/2015 19:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260B		4/29/15 04:31	CJG	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260B		4/29/15 04:31	CJG	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260B		4/29/15 04:31	CJG	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260B		4/29/15 04:31	CJG	A
Toluene	0.50J	J	ug/L	1.0	0.23	SW846 8260B		4/29/15 04:31	CJG	A
Total Xylenes	ND		ug/L	3.0	0.66	SW846 8260B		4/29/15 04:31	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260B		4/29/15 04:31	CJG	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 04:31	CJG	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 04:31	CJG	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260B		4/29/15 04:31	CJG	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 04:31	CJG	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260B		4/29/15 04:31	CJG	A
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>		<i>Method</i>	<i>Prepared By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	91		%	62 - 133		SW846 8260B		4/29/15 04:31	CJG	A
4-Bromofluorobenzene (S)	93.2		%	79 - 114		SW846 8260B		4/29/15 04:31	CJG	A
Dibromofluoromethane (S)	83.7		%	78 - 116		SW846 8260B		4/29/15 04:31	CJG	A
Toluene-d8 (S)	88.4		%	76 - 127		SW846 8260B		4/29/15 04:31	CJG	A
<b>PETROLEUM HC's</b>										
Diesel Range Organics C10-C28	0.023J	J	mg/L	0.15	0.013	SW846 8015D	4/30/15 BS	5/1/15 19:59	EGO	F
Gasoline Range Organics	ND		ug/L	100	13.9	SW846 8015D		4/29/15 13:29	DD	B
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>		<i>Method</i>	<i>Prepared By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
a,a,a-Trifluorotoluene (S)	96.8		%	90 - 129		SW846 8015D		4/29/15 13:29	DD	B
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>		<i>Method</i>	<i>Prepared By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
o-Terphenyl (S)	82.8		%	26 - 139		SW846 8015D	4/30/15 BS	5/1/15 19:59	EGO	F



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**ANALYTICAL RESULTS**

Workorder: 2067352 2015-CALVERT CITGO/5977

Lab ID: **2067352007** Date Collected: 4/24/2015 14:00 Matrix: Ground Water  
Sample ID: **DW-005:0-115** Date Received: 4/27/2015 19:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
<b>VOLATILE ORGANICS</b>										
Acetone	ND		ug/L	10.0	3.1	SW846 8260B		4/29/15 05:59	CJG	A
tert-Amyl methyl ether	2.0		ug/L	1.0	0.20	SW846 8260B		4/29/15 05:59	CJG	A
tert-Amyl Alcohol	19.9		ug/L	10.0	6.6	SW846 8260B		4/29/15 05:59	CJG	A
tert-Amyl Ethylether	ND		ug/L	1.0	0.29	SW846 8260B		4/29/15 05:59	CJG	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260B		4/29/15 05:59	CJG	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260B		4/29/15 05:59	CJG	A
Bromodichloromethane	ND		ug/L	1.0	0.27	SW846 8260B		4/29/15 05:59	CJG	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260B		4/29/15 05:59	CJG	A
Bromomethane	0.44J	J	ug/L	1.0	0.39	SW846 8260B		4/29/15 05:59	CJG	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260B		4/29/15 05:59	CJG	A
tert-Butyl Alcohol	165		ug/L	10.0	2.2	SW846 8260B		4/29/15 05:59	CJG	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260B		4/29/15 05:59	CJG	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260B		4/29/15 05:59	CJG	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260B		4/29/15 05:59	CJG	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260B		4/29/15 05:59	CJG	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 05:59	CJG	A
Chloroform	ND		ug/L	1.0	0.21	SW846 8260B		4/29/15 05:59	CJG	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260B		4/29/15 05:59	CJG	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260B		4/29/15 05:59	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260B		4/29/15 05:59	CJG	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 05:59	CJG	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260B		4/29/15 05:59	CJG	A
1,2-Dichloroethane	1.2		ug/L	1.0	0.32	SW846 8260B		4/29/15 05:59	CJG	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260B		4/29/15 05:59	CJG	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260B		4/29/15 05:59	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260B		4/29/15 05:59	CJG	A
Dichlorofluoromethane	ND		ug/L	1.0	0.37	SW846 8260B		4/29/15 05:59	CJG	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260B		4/29/15 05:59	CJG	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260B		4/29/15 05:59	CJG	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260B		4/29/15 05:59	CJG	A
Diisopropyl ether	1.4		ug/L	1.0	0.25	SW846 8260B		4/29/15 05:59	CJG	A
Ethyl tert-butyl ether	ND		ug/L	1.0	0.19	SW846 8260B		4/29/15 05:59	CJG	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260B		4/29/15 05:59	CJG	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260B		4/29/15 05:59	CJG	A
Methyl t-Butyl Ether	195		ug/L	1.0	0.33	SW846 8260B		4/29/15 05:59	CJG	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260B		4/29/15 05:59	CJG	A

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**ANALYTICAL RESULTS**

Workorder: 2067352 2015-CALVERT CITGO/5977

Lab ID: **2067352007** Date Collected: 4/24/2015 14:00 Matrix: Ground Water  
Sample ID: **DW-005:0-115** Date Received: 4/27/2015 19:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260B		4/29/15 05:59	CJG	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260B		4/29/15 05:59	CJG	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260B		4/29/15 05:59	CJG	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260B		4/29/15 05:59	CJG	A
Toluene	0.75J	J	ug/L	1.0	0.23	SW846 8260B		4/29/15 05:59	CJG	A
Total Xylenes	ND		ug/L	3.0	0.66	SW846 8260B		4/29/15 05:59	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260B		4/29/15 05:59	CJG	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 05:59	CJG	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 05:59	CJG	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260B		4/29/15 05:59	CJG	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 05:59	CJG	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260B		4/29/15 05:59	CJG	A
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>		<i>Method</i>	<i>Prepared By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	90.2		%	62 - 133		SW846 8260B		4/29/15 05:59	CJG	A
4-Bromofluorobenzene (S)	95.4		%	79 - 114		SW846 8260B		4/29/15 05:59	CJG	A
Dibromofluoromethane (S)	83.9		%	78 - 116		SW846 8260B		4/29/15 05:59	CJG	A
Toluene-d8 (S)	88.9		%	76 - 127		SW846 8260B		4/29/15 05:59	CJG	A
<b>PETROLEUM HC's</b>										
Diesel Range Organics C10-C28	0.037J	J	mg/L	0.16	0.014	SW846 8015D	4/30/15 BS	5/1/15 20:36	EGO	F
Gasoline Range Organics	142		ug/L	100	13.9	SW846 8015D		4/29/15 15:38	DD	B
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>		<i>Method</i>	<i>Prepared By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
a,a,a-Trifluorotoluene (S)	94.2		%	90 - 129		SW846 8015D		4/29/15 15:38	DD	B
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>		<i>Method</i>	<i>Prepared By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
o-Terphenyl (S)	99.9		%	26 - 139		SW846 8015D	4/30/15 BS	5/1/15 20:36	EGO	F



Ms. Susan J Scherer  
Project Coordinator

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Vancouver Waterloo · Winnipeg · Yellowknife **United States:** Cincinnati · Everett · Fort Collins · Holland · Houston · Middletown · Salt Lake City · Spring City · York **Mexico:** Monterrey

**ANALYTICAL RESULTS**

Workorder: 2067352 2015-CALVERT CITGO/5977

Lab ID: **2067352008** Date Collected: 4/24/2015 15:20 Matrix: Ground Water  
Sample ID: **DW-005:115-247** Date Received: 4/27/2015 19:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
<b>VOLATILE ORGANICS</b>										
Acetone	ND		ug/L	10.0	3.1	SW846 8260B		4/29/15 06:21	CJG	A
tert-Amyl methyl ether	0.33J	J	ug/L	1.0	0.20	SW846 8260B		4/29/15 06:21	CJG	A
tert-Amyl Alcohol	ND		ug/L	10.0	6.6	SW846 8260B		4/29/15 06:21	CJG	A
tert-Amyl Ethylether	ND		ug/L	1.0	0.29	SW846 8260B		4/29/15 06:21	CJG	A
Benzene	ND		ug/L	1.0	0.23	SW846 8260B		4/29/15 06:21	CJG	A
Bromochloromethane	ND		ug/L	1.0	0.32	SW846 8260B		4/29/15 06:21	CJG	A
Bromodichloromethane	0.36J	J	ug/L	1.0	0.27	SW846 8260B		4/29/15 06:21	CJG	A
Bromoform	ND		ug/L	1.0	0.40	SW846 8260B		4/29/15 06:21	CJG	A
Bromomethane	ND		ug/L	1.0	0.39	SW846 8260B		4/29/15 06:21	CJG	A
2-Butanone	ND		ug/L	10.0	1.8	SW846 8260B		4/29/15 06:21	CJG	A
tert-Butyl Alcohol	20.7		ug/L	10.0	2.2	SW846 8260B		4/29/15 06:21	CJG	A
Carbon Disulfide	ND		ug/L	1.0	0.23	SW846 8260B		4/29/15 06:21	CJG	A
Carbon Tetrachloride	ND		ug/L	1.0	0.31	SW846 8260B		4/29/15 06:21	CJG	A
Chlorobenzene	ND		ug/L	1.0	0.19	SW846 8260B		4/29/15 06:21	CJG	A
Chlorodibromomethane	ND		ug/L	1.0	0.45	SW846 8260B		4/29/15 06:21	CJG	A
Chloroethane	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 06:21	CJG	A
Chloroform	4.0		ug/L	1.0	0.21	SW846 8260B		4/29/15 06:21	CJG	A
Chloromethane	ND		ug/L	1.0	0.31	SW846 8260B		4/29/15 06:21	CJG	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	1.5	SW846 8260B		4/29/15 06:21	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	0.28	SW846 8260B		4/29/15 06:21	CJG	A
Dichlorodifluoromethane	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 06:21	CJG	A
1,1-Dichloroethane	ND		ug/L	1.0	0.28	SW846 8260B		4/29/15 06:21	CJG	A
1,2-Dichloroethane	ND		ug/L	1.0	0.32	SW846 8260B		4/29/15 06:21	CJG	A
1,1-Dichloroethene	ND		ug/L	1.0	0.29	SW846 8260B		4/29/15 06:21	CJG	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	0.32	SW846 8260B		4/29/15 06:21	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	0.26	SW846 8260B		4/29/15 06:21	CJG	A
Dichlorofluoromethane	ND		ug/L	1.0	0.37	SW846 8260B		4/29/15 06:21	CJG	A
1,2-Dichloropropane	ND		ug/L	1.0	0.24	SW846 8260B		4/29/15 06:21	CJG	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	0.31	SW846 8260B		4/29/15 06:21	CJG	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	0.29	SW846 8260B		4/29/15 06:21	CJG	A
Diisopropyl ether	ND		ug/L	1.0	0.25	SW846 8260B		4/29/15 06:21	CJG	A
Ethyl tert-butyl ether	ND		ug/L	1.0	0.19	SW846 8260B		4/29/15 06:21	CJG	A
Ethylbenzene	ND		ug/L	1.0	0.34	SW846 8260B		4/29/15 06:21	CJG	A
2-Hexanone	ND		ug/L	5.0	1.3	SW846 8260B		4/29/15 06:21	CJG	A
Methyl t-Butyl Ether	26.7		ug/L	1.0	0.33	SW846 8260B		4/29/15 06:21	CJG	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	1.5	SW846 8260B		4/29/15 06:21	CJG	A

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**ANALYTICAL RESULTS**

Workorder: 2067352 2015-CALVERT CITGO/5977

Lab ID: **2067352008** Date Collected: 4/24/2015 15:20 Matrix: Ground Water  
Sample ID: **DW-005:115-247** Date Received: 4/27/2015 19:45

Parameters	Results	Flag	Units	RDL	MDL	Method	Prepared By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	0.45	SW846 8260B		4/29/15 06:21	CJG	A
Styrene	ND		ug/L	1.0	0.24	SW846 8260B		4/29/15 06:21	CJG	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	0.34	SW846 8260B		4/29/15 06:21	CJG	A
Tetrachloroethene	ND		ug/L	1.0	0.35	SW846 8260B		4/29/15 06:21	CJG	A
Toluene	1.8		ug/L	1.0	0.23	SW846 8260B		4/29/15 06:21	CJG	A
Total Xylenes	ND		ug/L	3.0	0.66	SW846 8260B		4/29/15 06:21	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	0.22	SW846 8260B		4/29/15 06:21	CJG	A
1,1,2-Trichloroethane	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 06:21	CJG	A
Trichloroethene	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 06:21	CJG	A
Vinyl Chloride	ND		ug/L	1.0	0.30	SW846 8260B		4/29/15 06:21	CJG	A
o-Xylene	ND		ug/L	1.0	0.33	SW846 8260B		4/29/15 06:21	CJG	A
mp-Xylene	ND		ug/L	2.0	0.52	SW846 8260B		4/29/15 06:21	CJG	A
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>		<i>Method</i>	<i>Prepared By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	91.1		%	62 - 133		SW846 8260B		4/29/15 06:21	CJG	A
4-Bromofluorobenzene (S)	93.2		%	79 - 114		SW846 8260B		4/29/15 06:21	CJG	A
Dibromofluoromethane (S)	84.5		%	78 - 116		SW846 8260B		4/29/15 06:21	CJG	A
Toluene-d8 (S)	88.3		%	76 - 127		SW846 8260B		4/29/15 06:21	CJG	A
<b>PETROLEUM HC's</b>										
Diesel Range Organics C10-C28	0.044J	J	mg/L	0.15	0.013	SW846 8015D	4/30/15 BS	5/1/15 21:13	EGO	F
Gasoline Range Organics	39.4J	J	ug/L	100	13.9	SW846 8015D		4/29/15 14:02	DD	B
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>		<i>Method</i>	<i>Prepared By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
a,a,a-Trifluorotoluene (S)	95.2		%	90 - 129		SW846 8015D		4/29/15 14:02	DD	B
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>		<i>Method</i>	<i>Prepared By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
o-Terphenyl (S)	89		%	26 - 139		SW846 8015D	4/30/15 BS	5/1/15 21:13	EGO	F



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34 Dogwood Lane  
Middletown, PA 17057  
P. 717-944-5541  
F. 717-944-1430



**CHAIN OF CUSTODY/  
REQUEST FOR ANALYSIS**

ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT /  
SAMPLER. INSTRUCTIONS ON THE BACK.

Co. Name: REPS6, Inc.  
Contact (Report to): James Manuel, jmanuel@rpsg.com Phone: 717-257-3800  
Address: 6901 Kingessing Ave Philadelphia, PA 19148

Bill to (if different than Report to): SAME PO#: 10611  
Project Name#: Calvert City / 5977 ALS Quote #: \_\_\_\_\_  
Date Required: \_\_\_\_\_ Approved By: \_\_\_\_\_  
TAT:  Normal-Standard TAT is 10-12 business days.  
 Rush-Subject to ALS approval and surcharges.

Email?  Y  N Fax?  Y  N No.: \_\_\_\_\_  
jmanuel@rpsg.com

Sample Description/Location (as it will appear on the lab report)	COC Comments	Sample Date	Military Time
1 Field Blank-001		4/23/15	1212
2 Trip Blank-001		4/23/15	-
3 Dup-001		4/23/15	-
4 DW-005: 186-196		4/23/15	1430
5 DW-005: 204-214		4/23/15	1545
6 Field Blank-002		4/24/15	1212
7 DW-005: 0-115		4/24/15	1400
8 DW-005: 115-247		4/24/15	1620

Project Comments: \_\_\_\_\_

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1 <u>Shawn / REPSG</u>	4-27	10:55	2 <u>Garth Mahosky</u>	4-27	10:55
3 <u>Garth Mahosky</u>	4-27	1740	4 <u>Garth Mahosky</u>	4-27	1740
5 <u>Garth Mahosky</u>	4-27	1945	6 <u>Garth Mahosky</u>	4-27	1945
7 _____			8 _____		
9 _____			10 _____		

ANALYSES/METHOD REQUESTED

Container Type	Container Size	Preservative
VOA	10mL	HCL
10mL	1L	HCL
HCL	10mL	HCL

Enter Number of Containers Per Analysis

Matrix	1	2	3	4	5	6	7	8
VOC's 8260								
DRO 3 GRO								

Container Type	Container Size	Preservative	Correct containers?	Correct sample volume?	Correct presentation?	Headspace/Volatilized?	Container in good condition?
Y	Y	Y	Y	Y	Y	Y	Y
Y	Y	Y	Y	Y	Y	Y	Y
Y	Y	Y	Y	Y	Y	Y	Y
Y	Y	Y	Y	Y	Y	Y	Y
Y	Y	Y	Y	Y	Y	Y	Y
Y	Y	Y	Y	Y	Y	Y	Y
Y	Y	Y	Y	Y	Y	Y	Y

ALS FIELD SERVICES

State Samples Collected for?  MD  NJ  NY  PA

Form?  yes  no

Standard  CLP-like  NJ-Reduced  NJ-Full  Other

Data Deliverables  EQUIS

DOB Criteria Required?  YES  NO

Performed by: 102

Cooler Temp: 44-291

Therm. ID: 44-291

No. of Coolers: \_\_\_\_\_

Notes: \_\_\_\_\_

Custody seals Present?  Y  N

(if present) Seals intact?  Y  N

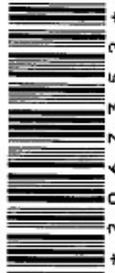
Correct sample volume?  Y  N

Correct presentation?  Y  N

Headspace/Volatilized?  Y  N

Container in good condition?  Y  N

Pickup  Labor  Composite Sampling  Rental Equipment  Other: \_\_\_\_\_

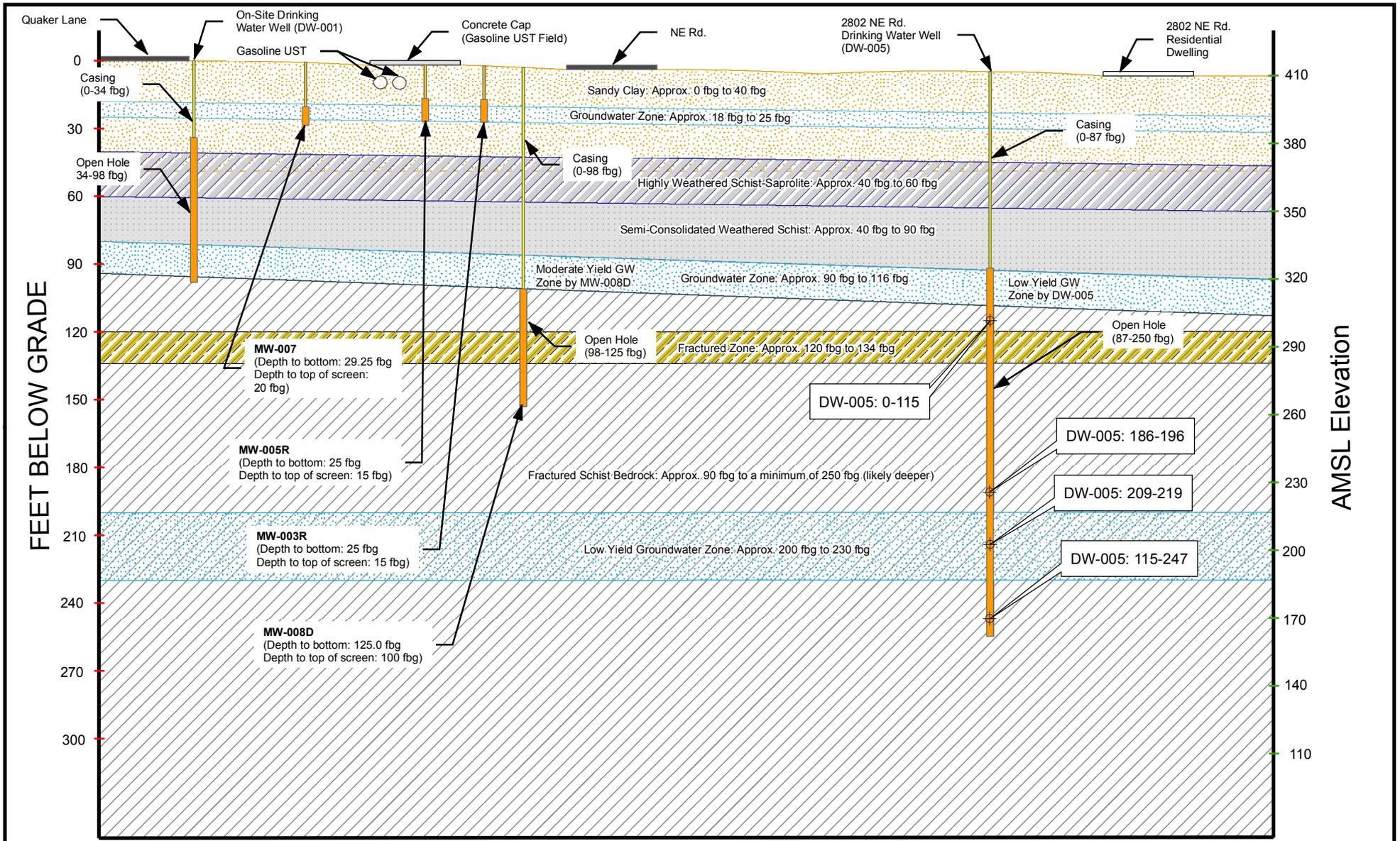


\* 2 0 6 7 3 5 2 \*

Page 1 of 1  
Counter: \_\_\_\_\_  
Tracking #: \_\_\_\_\_



**ATTACHMENT 5: CROSS-SECTION DIAGRAM**



**Soil and Groundwater Cross-Sectional Diagram**

⊕ Packer Test Samples April 2015

**REPSG**  
 React Environmental  
 Professional Services Group, Inc.

MAP SCALE: 1 inch = 60 feet

0 12.5 25 50 75 100 Feet

**PROJECT NAME:** CALVERT CITGO  
**PROJECT ADDRESS:** 2815 NORTH EAST ROAD, NORTH EAST, MD  
**PROJECT NUMBER:** 005977  
**DATE:** June 2015

