REPSG
React Environmental
Professional Services Group, Inc.

July 3, 2013

Maryland Department of the Environment
1800 Washington Blvd.
Baltimore MD 21230
Attention: Ms. Jeannette DeBartolomeo, Case Manager

RE: Corrective Action Plan (CAP) Addendum Letter
Calvert Citgo (Former Alger Country Store)
2815 Northeast Road
2802 Northeast Road (Ginski Residence)
2794 Northeast Road (O'Brien Residence)
North East, Maryland 21901
Facility No. 5678
REPSG Project Reference No. 005977.130.01

Dear Ms. DeBartolomeo,

On May 1, 2013 REPSG submitted a *Corrective Action Plan (CAP)* for the above referenced Site for approval to the MDE. The CAP indicated that, based on the results of the Site characterization and the remediation technology screening, that the use of dual-phase extraction (DPE) as a remedial technology at the Site should be considered favorably. Details pertaining to a proposed full-scale DPE remedial system, consisting of a multi-phase vacuum extraction pump connected to and operating on multiple extraction wells, were included in the CAP.

A meeting between personnel from the MDE-OCP and REPSG was then held at the MDE on June 11, 2013 to discuss the contents of the CAP. During this meeting, several items of concern were identified by the MDE-OCP in regards to the Proposed Remediation System. The MDE-OCP requested that a written response addressing these concerns be submitted within thirty days of the meeting. This CAP Addendum letter addresses this request in its entirety.

The MDE-OCP requested that details be provided regarding which existing on-Site monitoring wells, if any, will be used as extraction wells. Information on the design specification for all newly installed extraction wells was also requested.

P.O. Box 5377
6901 Kingsessing Avenue, Suite 201
Philadelphia, PA 19142-0377

215 729.3220
215 729.1557 (Fax)
www.repsg.com

As indicated in **Section 12.2 (Methodology)** and on **Figure 13** of the CAP, a total of seven (7) extraction wells are proposed as part of the Proposed Remediation System at the Site. Of these seven (7) proposed extraction wells, three (3) of them are existing on-Site monitoring wells proposed for reuse as extraction wells. The CAP indicated that these three wells were MW-001R, MW-003R, and MW-005R.

During the meeting, the MDE-OCP indicated that any existing on-Site monitoring wells to be used as extraction wells at the Site must be properly screened for the proposed technology. As shown on the monitoring well construction logs included in the attachments of this letter, monitoring well MW-001R contains 15 feet of screening from 30 feet below grade (fbg) to 45 fbg, while both MW-003R and MW-005R contain 10 feet of screening from 15 fbg to 25 fbg. All three (3) of these wells are 4-inches in diameter, and are constructed with schedule 40 PVC piping with 0.2 inch slots as the screening material and unslotted schedule 80 PVC piping as the casing material.

Based on the construction of MW-001R, REPSG has determined that it is not appropriate for reuse as an extraction well. Instead, REPSG proposes that monitoring well MW-001 be utilized as an extraction well. As shown on the logs included in the attachments of this letter, this well contains 9 feet of screening from 19 fbg to 28 fbg and is also 4-inches in diameter and constructed with schedule 40 PVC piping with 0.2 inch slots as the screening material and unslotted schedule 80 PVC piping as the casing material. An updated figure depicting the locations and radius of influence for all proposed extraction wells is included in the attachments of this letter.

The four (4) extraction wells proposed for installation as part of the Proposed Remediation System will be also constructed of 4-inch diameter PVC materials. The submitted CAP report indicated that these newly installed extraction wells would be installed to a total depth of approximately 25 fbg, and screened from 5 fbg to the bottom of the well, for a total of approximately 20 feet of screening. However, based on the depth of contamination present at the Site a revision to the proposed extraction well construction has been determined to be appropriate. Instead, these proposed newly installed extraction wells will be installed to a total depth of approximately 25 fbg, and screened from 10 fbg to the bottom of the well, for a total of approximately 15 feet of screening

While the current on-Site monitoring wells proposed for reuse as extraction wells differ in screened intervals as compared to the proposed additional extraction wells, the construction of the current on-Site monitoring wells is appropriate for their use as extraction wells within the Proposed Remediation System.

The MDE also requested clarification as to how the effectiveness of the remediation at the Site will be both monitored and evaluated.

As indicated in **Section 12.4 (Operations & Maintenance Plan)** of the CAP, the Proposed Remediation System O&M Plan will include the monitoring of system performance parameters such as VOC concentrations in air and water discharges, system and extraction well air flow rates, system and extraction well water discharge rates, and vacuum reading from various points in the system. This information will be used to calculate contaminant mass removal rates for the system and for the individual extraction wells.

Contaminant mass removal rates will be evaluated on a monthly period, based on the system measurements collected during that time period. The performance of the system and of each extraction well will be documented in spreadsheets and presented to the MDE in quarterly reports. On a quarterly basis, REPSG will evaluate the need for system optimization steps, based on the review of trends in performance parameters. For example, if an extraction well exhibits a clear downward trend in monthly vapor-phase VOC extraction rates over the previous quarter, REPSG will consider temporarily de-energizing that well, in favor of activating another extraction well. De-activated wells will be monitored for headspace VOCs to gauge recovery. Likewise, the volume of water to be extracted from the system, or from the particular extraction wells, will be evaluated on a similar basis; contaminant removal rate trends will dictate changes in well or system-wide extraction strategies.

Discontinuation of remediation activities on any extraction well, any treatment area, or the entire system, will be considered when contaminant mass removal rates exhibit asymptotic conditions that are unresponsive to system optimization measures.

As part of the performance monitoring to be conducted for the Proposed Remediation System, quarterly groundwater monitoring will continue to be conducted at the Site on the following on-Site monitoring wells: MW-001, MW-001R, MW-002, MW-003R, MW-005R, MW-006, MW-007, MW-008, and MW-008D in order to monitor concentrations of the known compounds of concern (COCs)[1] in Site groundwater for decreasing concentrations trends.

In addition, Site wide groundwater level measurements will be collected on a quarterly basis, and evaluated to determine groundwater flow characteristics. This information

[1] TPH-DRO; TPH-GRO; 1,1,2-trichloroethane; 1,2-dibromoethane; 1,2-dichloroethane; acetone; benzene; ethylbenzene; methyl chloride; methyl ethyl ketone (MEK); methyl tert-butyl ether (MTBE); naphthalene; tetrachloroethylene (PCE); toluene; and total xylenes.

will be further evaluated to determine if adjustment of system parameters may be needed to enlarge or improve the groundwater capture zone.

Quarterly monitoring of on-Site drinking water and monthly monitoring of off-Site drinking water at 2794 NE Road and 2802 NE Road will also continue to be conducted as part of the performance monitoring to be conducted for the Proposed Remediation System. Until such a time as the off-Site drinking water quality has been established to be of potable quality, a supply of safe, clean off-Site drinking water will continue to be provided to the impacted residents.

REPSG will present the results of system monitoring, and any planned changes in system parameters, to the MDE via the quarterly reports.

In addition, the installation of a two (2) pairs of nested shallow and deep groundwater monitoring wells off-Site is proposed for installation. These nested shallow and deep well pairs will be within the front lawns near the boundary with road, of the residences located 2794 NE Road and 2802 NE Road. One (1) pair of nested shallow and deep groundwater monitoring wells is proposed for installation at 2794 NE Road and one (1) pair of nested shallow and deep groundwater monitoring wells is proposed for installation at 2802 NE Road. These wells, which would be monitored on a quarterly basis for all COCs under investigation at the Site, would fulfill multiple purposes. They would serve as points of monitoring for the on-Site remediation that will be in progress, act as “sentry” wells for the current off-Site drinking water wells by providing an advanced warning of potential contaminant migration, provide information relevant to the potential installation of new off-Site drinking water wells, and provide additional detail regarding groundwater COC distribution for the improvement of the Site Conceptual Model.

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

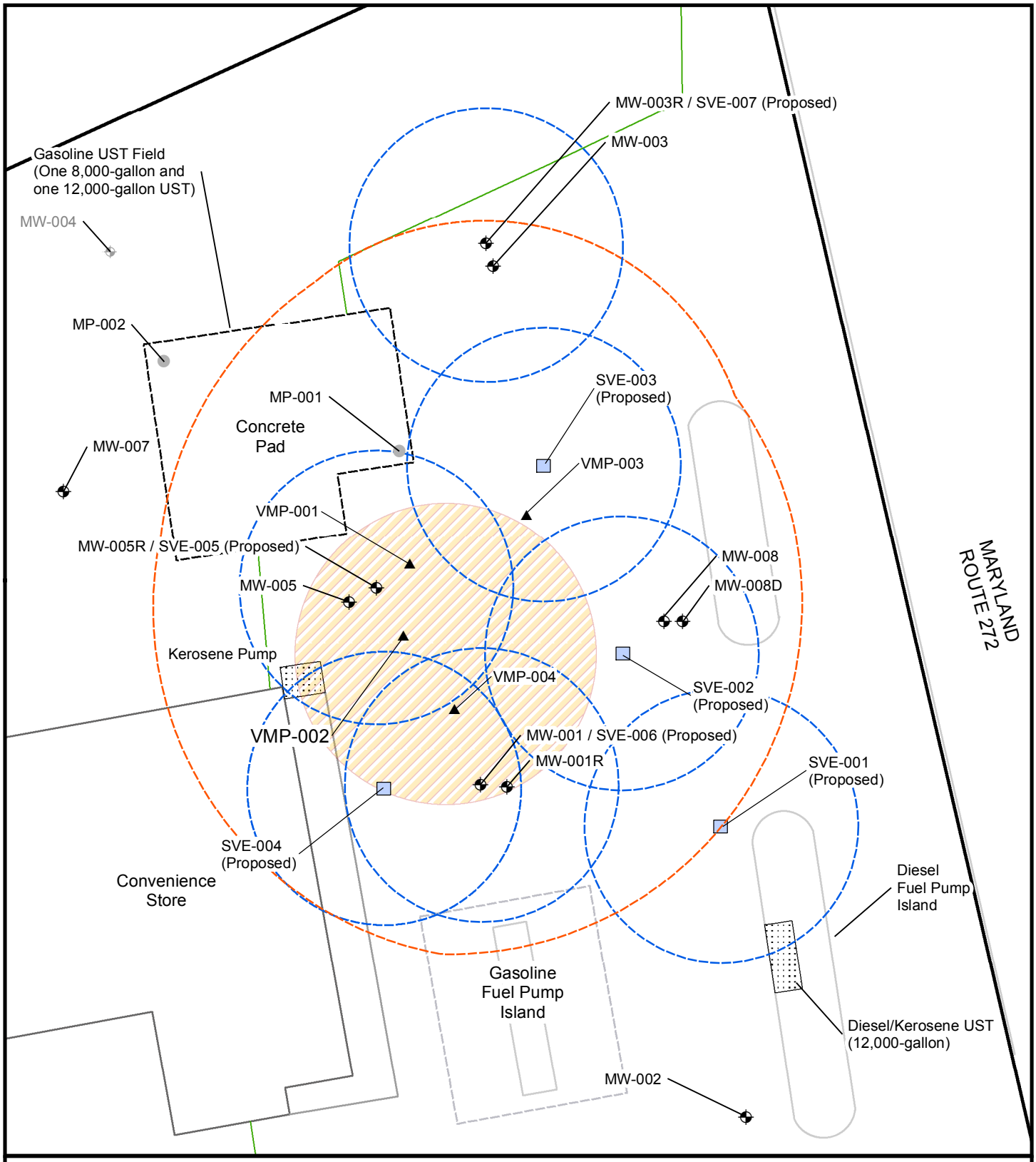
Sincerely,

Suzanne Shourds
Environmental Risk Analyst

Brenda MacPhail Kellogg
Project Manager

React Environmental Professional Services Group, Inc

Enclosures



Revised Treatment Area and Remedial System Layout

- Vapor Monitoring Points
- Lost/Abandoned Monitoring Well
- Leak Detection Well
- Monitoring Well
- Potable Well
- Soil Treatment Area (Primary)
- Radius of Influence of DPE
- Proposed Additional Soil Vapor Extraction Locatio
- Soil Treatment Area (Secondary)
- Site Boundary

REPSG
React Environmental
Professional Services Group, Inc.

MAP SCALE: 1 inch = 20 feet

0 4.25 8.5 17 25.5 34 Feet

PROJECT NAME: *CALVERT CITGO*

PROJECT ADDRESS: *2815 NORTH EAST ROAD, NORTH EAST, MD*

PROJECT NUMBER: *005977*

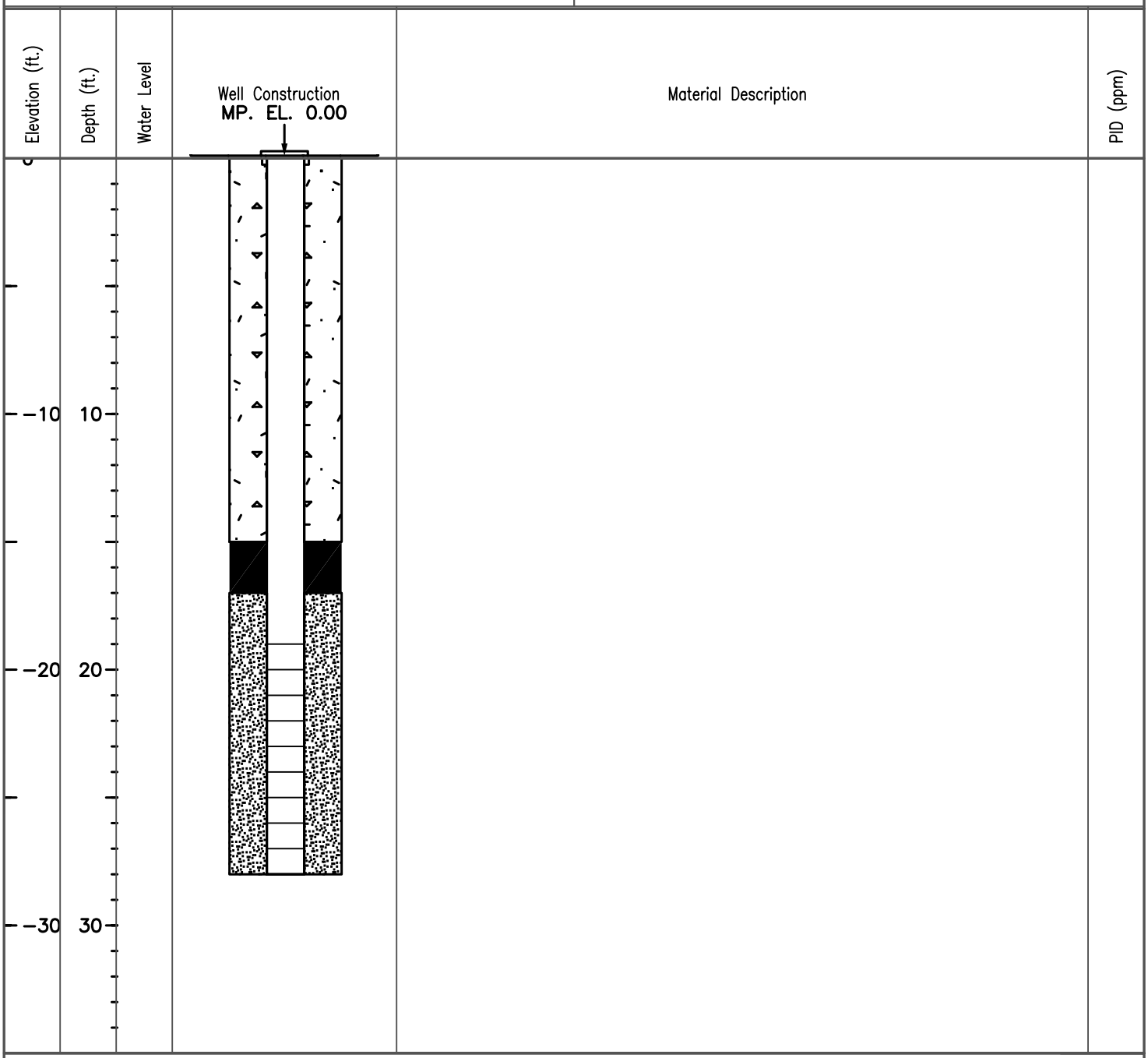
DATE: *JULY 2013*

N

S

WELL CONSTRUCTION LOG

Site ID: GMGW-001		Project Name: Calvert Citgo	Project Number: 5977
Consulting Firm: Geomatrix, Inc.		Site Address: Route 272 & Quaker Lane	
Geologist Unknown		Location: Northeast, MD.	
Reviewed By:		Date Started: 06/17/91	Date Completed: 06/17/91
Driller: Unknown		Casing: type: Schedule 40 PVC dia: 4.00in fm: 0.0' to: 19.00'	
Drilling Method: HOLLOW STEM AUGER		Screened Interval: type: Slotted size: 0.020in dia: 4.00in fm: 19.00' to: 28.00'	
Borehole Dia.: 10.00in		Annular Fill: type: Grout fm: 0.00' to: 15.00'	
Elevation: 0.00'	Datum:	type: Sand Pack (generic) fm: 17.00' to: 28.00'	
Measuring Point: 0.00'	Static Water Level:	type: fm: to:	
Total Depth: 37.00'	Completed Depth: 28.00'	Remarks:	
Permit No.:	Permit Date: 06/17/91		
Purpose: Monitoring Well, Shallow			



REPSG
React Environmental
Professional Services Group, Inc.

Well ID: MW-003R

Calvert Citgo 2815 Northeast Rd
REPSG Project No.: 005977

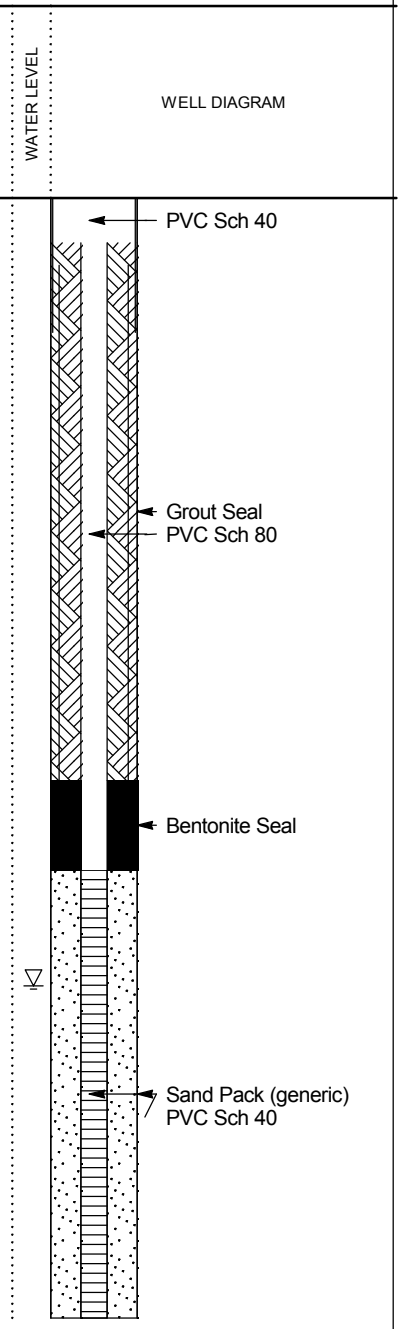
Installation Date: 11/11/10
Drilling Contractor: BL Meyers
Drilling Method: Hollow Stem Auger
Logged By: J.Crooks
Notes:

Borehole Dm.: 4 in.
Total Depth: 25 ft.
Water Level (ATD): 17.59 ft.
Water Level (AD): NA

North (ft): 741466.13
East (ft): 1599567

Surface Elevation (ft.): NA
NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88)

DEPTH (ft)	ELEV (ft)	CORE SAMPLE	RECOVERY	REMARKS	FID (ppm)	PID (ppm)	GRAB SAMPLE	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0						0			0.5 (ASPHALT) Asphalt
						0			(CLS) Low Plasticity Sandy Clay light brown and brown, dense, dry
2.0						0			
						0			
4.0						0			
						0			
6.0						0			
						0			
8.0						0			
						0			
10.0						0			
						0			
12.0						0			
						0			
14.0						0			
						0			15.0
16.0						0			(CH) High Plasticity Clay brown and orange, dense, saturated
						0			
18.0						0			
						0			
20.0						0			
						0			
22.0						0			
						0			
24.0						0			25.0



Bottom of borehole at 25 ft.

REPSG
React Environmental
Professional Services Group, Inc.

Well ID: MW-005R

Calvert Citgo 2815 Northeast Rd
REPSG Project No.: 005977

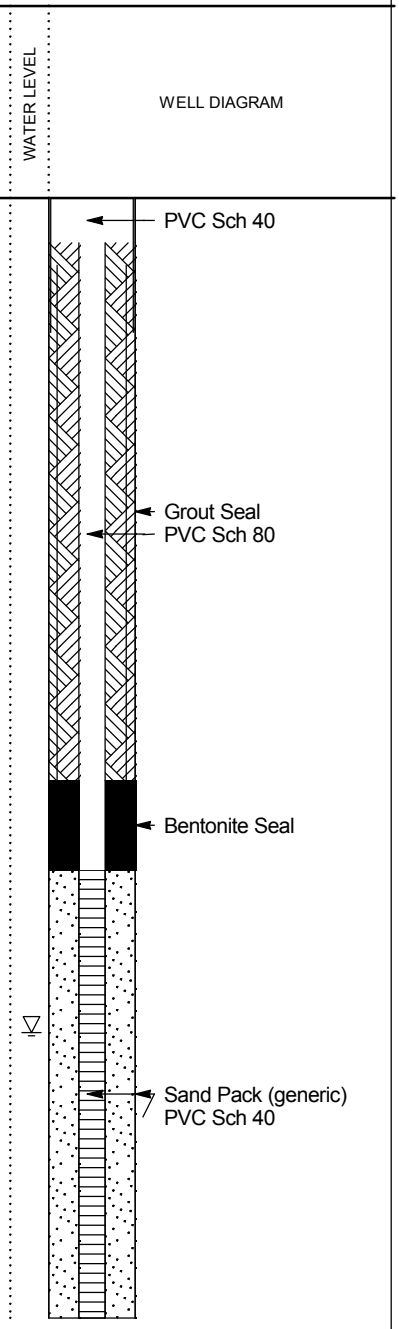
Installation Date: 11/11/10
Drilling Contractor: BL Meyers
Drilling Method: Hollow Stem Auger
Logged By: J.Crooks
Notes:

Borehole Dm.: 4 in.
Total Depth: 25 ft.
Water Level (ATD): 18.63 ft.
Water Level (AD): NA

North (ft): 741426.88
East (ft): 1599543.6

Surface Elevation (ft.): NA
NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88)

DEPTH (ft)	ELEV (ft)	CORE SAMPLE	RECOVERY	REMARKS	FID (ppm)	PID (ppm)	GRAB SAMPLE	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0						0			0.5 (ASPHALT) Asphalt
						0			(CLS) Low Plasticity Sandy Clay brown and orange, dense, dry
2.0						0			
						0			
4.0						0			
						0			
6.0						0			
						0			
8.0						0			
						0			
10.0						0			
						0			
12.0						0			
						0			
14.0						0			
						0			15.0
16.0						0			(CLS) Low Plasticity Sandy Clay brown and orange, dense, saturated
						0			
18.0						0			
						0			
20.0						0			
						0			
22.0						0			
						0			
24.0						0			25.0



Bottom of borehole at 25 ft.