



June 24, 2014

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

**RE: Results of Additional Groundwater Investigation at Off-Site Residences and Request for MDE Approval of Continuing PIRM Implementation**

Calvert Citgo  
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 behalf of the remediating parties, REPSG recently completed additional groundwater investigation activities at the above-referenced Site. This correspondence presents a brief summary of the project's status, recent work completed, results of analyses, and our proposed next steps based on these results.

**Project Status:** Prior to new homes being constructed on the lands immediately across North East Road in March 2006, the Calvert Citgo Site was being remediated via down well sorbents and, essentially, monitored natural attenuation (MNA). The two (2) new residences (2794 Northeast Road and 2802 Northeast Road) were both provided potable water from newly installed private wells. The potable wells were installed without any consideration being made to potential shallow zone contaminant impacts. Had the potential presence of those impacts been considered, the wells might have been constructed to address that with appropriate technology. However, constructed as they were, the wells represented new, potential sensitive receptors and it was recommended

that they be sampled and analyzed (July 9, 2008). Laboratory data indicated detectable concentrations of 1,1-dichloroethane, chloroform, diethyl ether, isopropyl ether, m-dichlorobenzene, methyl-tert butyl ether (MTBE), p-dichlorobenzene, tert-amyl alcohol, tert-amyl methyl ether, and tert-butyl alcohol (TBA). Based on those laboratory results, the residences were provided with clean bottled water and water treatment systems. Ongoing monitoring has continued since this determination was made.

**Recent work completed:** In brief, the recent work completed was implementation of the shallow and intermediate groundwater zone monitoring portion of the measures proposed within the May 2013 Corrective Action Plan (CAP) and July 5, 2013 CAP Addendum, approved by the MDE October 1, 2013. Prior to the implementation of these measures, additional details for these measures, as well as additional proposed measures, were presented by REPSG in the “Proposed Interim Remedial Measures” (PIRM) correspondence dated February 13, 2014.

Based on the results of these activities, as presented below, REPSG recommends that completion of the “Deep Zone” portion of the PIRM be completed in the near future, and requests MDE’s concurrence with that proposed action.

The objectives of the portion of the work performed to date were, per the PIRM document, to: “further refine the Site Conceptual Model (SCM) regarding the route of contaminant transport between the source area – the former tank hold, and the sole receptors of concern: the two off-Site residential potable wells.” REPSG concludes that the activities completed to date have served to further this objective, and that completion of the remainder of the proposed activities are needed to achieve the objective.

**Proposed Deep Zone Investigation:** The Deep Zone investigation, as presented in the PIRM, would consist of the installation of one (1) new deep well, to a depth of at least 240 fbg, and to an expected depth of 300 fbg, at one of the off-Site residence locations. This well will be completed as an open-hole bedrock well; and will be developed and surveyed with groundwater samples collected and sampled from each of the potential viable aquifer zones. Samples will be collected using methods approved by the MDE in order to isolate the sampled water from other aquifer zones.

If the results of the analyses of samples from the several bedrock aquifer zones indicate a potentially viable source of potable water, REPSG, using a licensed water well driller with experience in the region, will perform a series of tests to confirm the viability of the well and the zone. This will include yield testing of the zone, by pumping the zone while isolated with packers from other aquifer zones. During this testing, the nearest identified aquifer zones will be monitored to measure connectivity between those zones

and the pumped zone. A series of groundwater samples will be collected during and at the conclusion of yield testing, to be analyzed for Site COCs.

If the results of the groundwater investigation and well testing indicate that viable potable wells can be installed and reliably used by the residences, REPSG will prepare plans for construction, testing, and hook-up of the wells.

If and when the residential water wells are successfully and permanently replaced, REPSG suggests the remediating parties and MDE meet to re-evaluate the objectives, scope, and requirements of the on-Site remediation activities defined by the approved CAP.

## **MEASURES COMPLETED**

Four (4) new groundwater monitoring wells, one (1) pair of shallow and intermediate zone wells, were installed on each of the two (2) residential properties. The shallow wells (MW-009 and MW-010) are screened from 20 to 30 feet below grade (fbg); the intermediate wells are screened from 47 to 67 fbg (MW-009D) and 50 to 70 fbg (MW-010D). The wells were developed by pumping; surveyed to the existing well network; and rested. The wells were then monitored and sampled during a multi-day sampling round in which the on-Site monitoring network, and the residential potable water supplies were also sampled. The groundwater samples were analyzed for VOCs via EPA Method 8260B.

## **RESULTS**

The results of laboratory analyses of the new residential wells, the on-Site monitoring network wells, and the residential potable supply wells are presented in **Table 1** (see attached). Relevant findings are noted below:

- a) Key Site COCs, including benzene and MTBE, were found in samples from on-Site, from the new wells located at the residences, and in the potable supplies at the residences, specifically:
  - a. MTBE was detected above the MDE standards in each of the new wells, in both of the potable supplies, and in key on-Site wells. Notably, MTBE concentrations are very similar in the source area on-Site well MW-001R (357 ppb), the new well MW-009D (396), and the potable supply wells at 2794 and 2802 North East Road (417 and 317, respectively).
  - b. Benzene was detected at concentrations above the MDE standard in 11 of the 13 on-Site monitoring wells sampled, at concentrations between

19 to 1,570 ppb. Benzene was found in new wells MW-010 and MW-010D at 12 and 43 ppb, respectively. Benzene was not detected in new monitoring wells MW-009 and MW-009D, nor in either of the residential potable wells.

- b) The chlorinated VOC 1,2-dichloroethane (DCA), from an unknown source, was detected at concentrations above the MDE standard in one (1) of the on-Site wells (142 ppb, in MW-001R); in three (3) of the four (4) new wells on the residential properties (highest at 118, in MW-010); and found in both residential potable wells (12 and 4 ppb, respectively).
- c) While results of groundwater analysis conducted in the on-Site deep zone well (MW-008D, installed down to a depth of 140 fbg) have regularly indicated the presence of VOCs within the deep groundwater aquifer zone at the Site at detectable concentrations, no compound concentrations above the applicable MDE groundwater standards have been identified within this well.

## **PRELIMINARY CONCLUSIONS**

The results of the installation and monitoring of the two (2) new well pairs on the two (2) residential properties suggest that the shallow and intermediate aquifer zones, both located within the unconsolidated overburden materials, are a route of contaminant transport from the Calvert Citgo Site to the residential potable wells. In addition, a comparison of COC concentrations in the monitoring wells to the concentrations in the residential potable supplies, especially for MTBE, suggests that the overburden aquifers may be the principal, or even the sole, zones that provide contaminant transport. Under this scenario, the Site COCs are reaching the residential potable supplies via mixing of the unconsolidated and bedrock aquifers at the points of the two (2) supply wells, due to incomplete casing off of the upper aquifer zones. If this can be documented by performance of the deep zone investigation on the residential properties, this would strongly suggest that replacement or reconstruction of the two (2) existing potable wells would be a feasible means to provide immediate relief to the only known sensitive receptors impacted by the release.

We respectfully request that the MDE approve the proposed deep zone investigation.

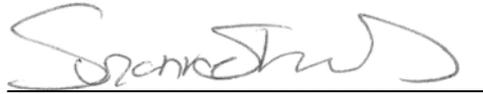
**CLOSURE**

Thank you for review of these data, and consideration of this proposed course. 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*