

# MARYLAND DEPARTMENT OF THE ENVIRONMENT

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Land Management Administration • Oil Control Program

**Environmental Investigation  
Former Farmington Garage  
1016 Biggs Highway,  
Cecil County, Rising Sun, Maryland  
MDE Oil Control Case No. 2008-0125CE**

The Maryland Department of the Environment (MDE), Oil Control Program (OCP), is evaluating petroleum impacts at the Former Farmington Garage located in Rising Sun. There have been no gasoline retail activities at this facility for over thirty years. The property was owned by Lloyd and Grace Gifford until 1988 when it was re-titled to Lloyd Gifford and Florence Palmer. The property owners have been fully cooperative with the Department.

In August 2007, an environmental assessment completed as part of the due diligence process for a real estate transaction revealed the presence of liquid phase hydrocarbons (LPH) within the subsurface. Groundwater samples collected from the subject site in April 2008 detected: benzene at 7,200 parts per billion (ppb); toluene at 10,100 ppb; 1,2-dichloroethane (EDC) at 23.1 ppb; ethylbenzene at 1,200 ppb; xylenes at 16,200 ppb; naphthalene at 451 ppb; methyl tertiary-butyl ether (MTBE) at 64.7 ppb; and total petroleum hydrocarbons/gasoline-range organics (TPH/GRO) at 45,500 ppb.

Benzene is a component of petroleum products. The Maximum Contaminant Level (MCL) for benzene is 5 ppb. MTBE is a fuel additive commonly used to reduce carbon monoxide and ozone levels caused by auto emissions. There is no national regulatory standard for MTBE in drinking water. In 1997, the U.S. Environmental Protection Agency (EPA) issued an advisory for MTBE of 20 to 40 ppb, based on taste and odor. Although the EPA has not established a regulated MCL for MTBE, the MDE has adopted an action level of 20 ppb. Ethylene dibromide (EDB) and 1,2-dichloroethane (1,2-DCA), also known as ethylene dichloride (EDC) were additives of leaded gasoline until the late 1980s when leaded gasoline was phased out. The MCL for 1,2-DCA is 5 ppb. The MCL for 1,1-dichloroethene (1,1-DCA) is 7 ppb.

During September and October 2008, MDE oversaw the removal of five USTs from the subject property. Each of the USTs removed were approximately 550-gallons and historically stored petroleum products. Two of the five USTs were previously abandoned in October 1992 and documented within Department records under closed MDE Case No. 95-2783-CE. During removal activities, approximately 7,890 gallons of petroleum impacted groundwater was evacuated from the excavation and approximately 584 tons of oil-contaminated soil was excavated for proper disposal. Three monitoring wells were installed in March 2009 and post-excavation groundwater monitoring was initiated. Two monitoring wells were installed on-site and the third well was installed hydraulically down gradient off-site. Initial sampling of the monitoring wells in March of 2009 detected: benzene at 436 ppb; MTBE at 122 ppb and naphthalene at 76.6 ppb. Groundwater flow at the site has been depicted to the southeast.

Based on the levels of petroleum contaminants detected within newly installed monitoring wells and pursuant to Section 4-411.2 of the Environment Article, Annotated Code of Maryland, in May 2009, the MDE notified the CCHD and area residents of petroleum impacts. The site is located in a mostly residential area served by private drinking water wells.

In September 2007, samples collected from the potable well located at 884 Barns Corner Road detected MTBE at 48 ppb. A granular activated carbon (GAC) filtration system was retrofitted to the drinking water well servicing 884 Barns Corner Road. The property owner also connected a water supply line to the potable water supply well located at 1016 Biggs Highway. A pre-treatment water sample collected from 884 Barns Corner Road in April 2008 detected MTBE at 3.4 ppb. Under the direction of the Department, a limited off-site sampling survey of adjacent drinking water supply wells was completed. Off-site potable well sampling results have been non-detect or below regulatory levels for petroleum constituents. At this time, the MDE-OCP does not anticipate any additional off-site residential sampling effort beyond sampling needed to ensure community safety.

## Chronology

- August 3, 2007. MDE notified that gasoline components were identified in the groundwater through subsurface sampling. Information was discovered during a Phase II Environmental Site Assessment. The Phase II was performed in a due diligence effort for the possible sale of the property.
- August 24, 2007. MDE case review with future requirements recorded in case file. Case review included MDE closed MDE Case No. 99-1290-CE. This case involved an adjacent property that had two 1,000-gallon aviation gasoline USTs that were removed in November 24, 1998. The file did not indicate the presence of contamination. MDE requirements are listed below:
  - Sample the on-site drinking water supply well(s) for full volatiles including fuel oxygenates by EPA Method 524.2 and submit a copy of the results to this Administration.
  - Submit for this Administration's approval a work plan to determine the extent subsurface contamination. Any work performed prior to the Administration's approval may not be accepted.
  - Submit the full initial subsurface investigation report prepared by Advanced Environmental Concepts.
  - Perform a half-mile well survey.
  - Investigate to determine the status of the registered 280-gallon kerosene and 550-gallon gasoline UST systems. Submit a report of the investigation performed and results.
- August 24, 2007. MDE received *Phase II Environmental Site Assessment – August 8, 2007*.
  - Five soil borings were conducted. Three of five borings exhibited LPH with in the soil and groundwater at approximately 8 feet below ground surface.
  - Groundwater samples were collected from two of the five soil borings. One sample contained elevated concentrations of volatile organic compounds (VOCs) and TPH GRO above the State groundwater cleanup standards. VOCs included benzene at 1,400 ppb, toluene at 5,040 ppb, ethylbenzene at 1,840 ppb and naphthalene at 480 ppb.
- August 29, 2007. MDE transmitted the case review and requirements to the realtor for the property.
- September 26, 2007. MDE reviewed an additional closed case (1995-2783-CE), which involved the removal of vent pipes from the two previously abandoned in place USTs.
- October 19, 2007. MDE site visit to review reports in conjunction with the site and surrounding topography.
- November 27, 2007. MDE received *Subsurface Investigation Work Plan – November 12, 2007*.
  - Analyses from two drinking water samples were included with the report.
  - One sample was collect from the residence located on the Farmington garage premises. The sample was non-detect for petroleum constituents.
  - A second sample was collected from an adjacent property located at 848 Barns Corner Road. The sample results detected MTBE at 48 ppb.
- December 13, 2007. MDE site visit to identify surrounding properties around the Farmington Garage for possible future off-site sampling.
- January 2, 2008. MDE memo to file. MDE spoke with consultant to confirm exact drinking water sample locations and addresses.
- May 8, 2008. MDE received *Subsurface Investigation – May 2, 2008*.
  - A total of thirteen (13) soil borings were advanced for this investigation.
  - A total of eleven (11) 2-inch temporary wells were installed to collect groundwater samples, identify if LPH was present, and to ascertain groundwater elevations and flow.
  - Approximately 1/8 inch of LPH was detected in boring B-6.
  - Two of the seven soil samples submitted for analysis detected elevated petroleum contamination.
  - A total of eleven (11) groundwater samples were collected from the temporary wells and six (6) adjacent drinking water wells were sampled (See table).

- May 14, 2008. MDE received *Corrective Action Plan – May 14, 2008*. The CAP proposed:
  - Source removal via excavation of petroleum impacted soils; and
  - Chemical oxidation through the injection of activated sodium persulfate in the presence of the transition metal ferrous sulfate.
- June 20, 2008. MDE issued a *Corrective Action Plan Approval* letter in which the Department conditionally approved part of the proposed CAP (excavation of impacted soils) and requested installation of three 2-inch diameter post-excavation monitoring wells.
- July 24, 2008. MDE off-site sampling results letter issued to adjacent property owner.
  - Drinking water supply well results were below regulatory levels (See table).
- June 2008. MDE received *Notice of Domestic Supply Well Sampling Results*.
  - A drinking water sample was collected from 848 Barnes Corner Road on April 22, 2008 (water supply believed to have been converted to draw from supply well located at 1016 Biggs Hwy).
  - Drinking water supply well results were below regulatory levels (See table).
- September 24 & 25, 2008. MDE site visit to observe petroleum impacted soil excavation. During excavation activities four USTs were encountered and removed.
- September 29, 2008. MDE received amended UST Notification form.
  - Amending registration to reflect removal of four USTs.
- October 8, 2008. MDE site visit to observe petroleum impacted soil removal.
  - A fifth tank was located and removed.
- October 9, 2008. MDE site visit to observe removal of UST number five.
  - Petroleum impacted contact water was removed from excavation via vacuum truck.
- October 10, 2008. MDE site visit to observe the continued excavation of petroleum impacted soils.
  - Contaminated soils stock piled on-site, pending characterization prior to off-site disposal.
- October 16, 2008. MDE site visit to follow-up on soil excavation activities.
  - Previously removed soils remain stock piled on-site and no additional soils have been excavated.
- October 20, 2008. MDE site visit to observe resumed excavation of petroleum impacted soils.
- October 22, 2008. MDE site visit to observe petroleum impacted soil removal activities.
  - Excavation pit backfilled with new material.
  - Impacted soils stock piled on-site.
- October 23, 2008. MDE received electronic correspondence from the environmental consultant to an off-site property owner requesting permission to install a groundwater monitoring well on their property at 1024 Biggs Highway.
- November 17, 2008. MDE site visit to follow-up on removal activities.
  - Stockpile of impacted soils remains on-site.
  - Hand delivered requested residential heating oil reimbursement package.
- January 12, 2009. MDE received *Report of Soil Excavation & Underground Storage Tank Removal – January 5, 2009*. The report detailed the removal of five tanks and the excavation on petroleum impacted soils.
  - Approximately 7,890-gallons of petroleum impacted groundwater were recovered.
  - Approximately 584 tons of petroleum impacted soils were removed and properly disposed of.
  - Post excavation soil sampling revealed a decreased, but continued presence of petroleum hydrocarbons.
  - November 25, 2008, drinking water supply well samples for 884 Barnes Corner Road/1016 Biggs Highway), all results were below regulatory levels (See table).
  - UST disposal receipts for five tanks.

- January 30, 2009. MDE site visit to document current site conditions in conjunction with received *Report of Soil Excavation & Underground Storage Tank Removal – January 5, 2009*.
- February 16, 2009. MDE received a copy of a signed and dated letter granting permission for the installation of the required off-site monitoring well at 1024 Biggs Highway (signed by property owner on February 5, 2009).
- February 23, 2009. MDE issued *Site Status Letter – February 23, 2009* to the current property owners.
- February 23, 2009. MDE site visit to observe installation of monitoring wells.
  - Wells were not installed due to direct push refusal at 15 feet.
- March 9, 2009. MDE site visit to observe installation of monitoring wells.
  - Observed drilling of MW-3 (off-site well).
  - A total of three 2-inch diameter monitoring wells were installed, two on-site and one off-site.
- March 23, 2009. MDE site visit to gauged monitoring wells.
  - MW-1 depth to water (DTW) = 4.14 feet.
  - MW-2 DTW = 4.62 feet.
  - MW-3 DTW = 4.02 feet.
- April 6, 2009. MDE received *Report of Monitoring Well Installation & Sampling – April 3, 2009*.
  - Monitoring well boring logs.
  - Monitoring well sampling event conducted on March 17, 2009 (See table).
  - Drinking water supply well sampling event conducted on March 17, 2009 (See table).
  - Groundwater flow depicted to the southeast.

**Future Updates:**

- Future updates on this case investigation will be posted at [www.mde.state.md.us](http://www.mde.state.md.us) [at the MDE home page, (select) Land, (select) Program, (select) Oil Control, (select) Remediation Sites].

**Contacts:**

- Maryland Department of the Environment (MDE), Oil Control Program – 410-537-3443
- Cecil County Health Department (CCHD) – 410-996-5160

**Other Related Cases:**

- Farmington Garage – 1016 Biggs Highway, MDE Case No. 95-2783CE (*closed*)
- Farmington Airport – 1016 Biggs Highway, MDE Case No. 99-1290CE (*closed*)

**Disclaimer**

The intent of this fact sheet is to provide the reader a summary of site events as they are contained within documents available to MDE. To fully understand the site and surrounding environmental conditions, MDE recommends that the reader review the case file that is available at MDE through the Public Information Act. The inclusion of a person or company's name within this fact sheet is for informational purposes only and should not be considered a conclusion by MDE on liability, involvement in a wrongful act or contribution to environmental damage.

**Drinking Water Sampling Results in the Vicinity of the Former Farmington Garage  
Located at 1016 Biggs Highway in Rising Sun, Maryland**

Groundwater Sampling Data	Sampling Event	Benzene <i>MCL at 5 ppb</i>	MTBE <i>State's Action Level at 20 ppb</i>	Non-Petroleum Constituents <i>1,1-Dichloroethene MCL at 7 ppb 1,1,1-TCA MCL at 200 ppb EDC (or 1,2-DCA) MCL at 5 ppb</i>
<b>Transient Non-community Supply Well</b>				
848 Barns Corner Road (Residence)	9/28/07	ND	48	ND
1016 Biggs Highway (Farmington Garage)	9/28/07	Non-detect (ND)	ND	ND
848 Barns Corner Road (water supplied via drinking water well located at 1016 Biggs Hwy.)	4/09/08	848 Barns Corner Road residency now connected to supply well located on 1016 Biggs Highway property		
	4/17/08	ND	3.4	1,1-Dichloroethene at 1.3
	June 2008	Granular activated carbon (GAC) treatment system retrofitted to the residency at 848 Barns Corner Road		
	11/25/08 Pre-treatment	ND (pre, mid, post)	1.58 (pre-treatment) ND (mid- and post)	1,1-Dichloroethene at 0.84 1,1,1-TCA at 0.84 ND (mid- and post)
	3/17/09 Pre-treatment	ND (pre, mid, post)	ND (by EPA Method 8260)	ND (by EPA Method 8260)
704 Harrington Road (Residence)	4/22/08	ND	4.6	1,2-Dichloroethane (1,2-DCA) at 0.7
	6/16/08	ND	5	(1,2-DCA) at 1.5
697 Harrington Road	4/22/08	ND	ND	1,1-Dichloroethene at 0.6
1021 Biggs Highway Hand dug well	4/22/08	ND	ND	ND
1021 Biggs Highway Potable supply well	4/22/08	ND	ND	ND
1025 Biggs Highway	4/22/08	ND	ND	ND
1024 Biggs Highway	4/20/09	ND	1.5	ND

**Groundwater Sampling Data for the Former Farmington Garage Located at 1016 Biggs Highway in  
Rising Sun, Maryland**

Groundwater Sampling Data	Sampling Event	Benzene <i>MCL at 5 ppb</i>	MTBE <i>State's Action Level at 20 ppb</i>	Toluene <i>MCL at 1,000 ppb</i>	Naphthalene <i>State clean-up level at 10 ppb</i>	Ethylbenzene <i>MCL at 700 ppb</i>	Xylenes <i>MCL at 10,000 ppb</i>
<b>MW1</b> Installed 03/09/09 Well # CE-95-2565 2 in. diameter well Borehole depth 20 ft. Screen depth 5 to 20 ft. Casing depth 0-5 ft.	3/17/09	ND	ND	ND	ND	ND	ND
<b>MW2</b> Installed 03/09/09 Well # CE-95-2566 2 in. diameter well Borehole depth 20 ft. Screen depth 5 to 20 ft. Casing depth 0-5 ft.	3/17/09	32.2	ND	ND	ND	16.5	46.6
<b>MW3</b> Installed 03/09/09 Well # CE-95-2568 2 in. diameter well Borehole depth 19 ft. Screen depth 4 to 19 ft. Casing depth 0-4 ft.	3/17/09	436	122	534	76.6	220	1,068