ENVIRONMENTAL ALLIANCE

June 29, 2011

• *Engineering*
• *Remediation*
• *Consulting*

Mr. James Richmond
Maryland Department of the Environment
Oil Control Program
1800 Washington Boulevard
Baltimore, Maryland 21230

Re: **Corrective Action Plan Addendum - Pilot Test Work Plan – 3017 Walnut Street**
Sheetz Store #177
3281 Main Street
Manchester, Maryland
MDE Case # 06-0056CL
MDE Facility ID No. 6297

Dear Mr. Richmond:

Environmental Alliance, Inc. (Alliance) has been contracted by Sheetz, Inc. (Sheetz) to complete the environmental activities required by the Maryland Department of the Environment (MDE) for the above-referenced site. Based on a MDE directive dated June 24, 2011 the MDE is requesting localized remediation to address the hydrocarbon impacts present in the agricultural well located at 3017 Walnut Street (DePalmer residence).

In January 2007, the Carroll County Health Department (CCHD) collected a water sample from a potable well located at 3017 Walnut Street. The results indicated that methyl-tertiary butyl-ether (MtBE) was detected above MDE standards. In February 2007, the residential potable well was promptly connected to a point of entry treatment (POET) system. The residence was subsequently connected to public water in June 2007 and the POET system was removed. At this time, the potable well was changed to an agricultural designation.

Following June 2007, access was not again granted for the sampling of the agricultural well until February 2009. Since that time, the agricultural well has been sampled, as directed by the MDE, and is currently sampled on a quarterly basis. The analytical results have consistently indicated MtBE concentrations above MDE Generic Numeric Cleanup Standards (GNCS). The MtBE concentrations have fluctuated over time without a strong correlation to possible factors. The

historic analytical results are summarized in Table 1 and the MtBE concentration trend is presented in Figure 1.

In order to continue an evaluation of the bedrock aquifer and/or the associated presence of potential fractures and bedding plane or foliation partings that may preferentially affect groundwater and contaminant migration, geophysical and packer testing was conducted on the 3017 Walnut Street agricultural well in November 2009. During packer testing, five intervals were chosen (based on geophysical testing), in an attempt to isolate identified fractures and/or potential water bearing zones within the well for groundwater sample collection and analysis. The data is summarized below:

Location	Interval (feet below grade)	Pumping Rate (gpm)	Recovery	Notes
Zone 1	55 to 59	--	--	Strong connection to Zone 2*
Zone 2	55 to 68.5	0.5	90% after 2.5 days	No connection to Zone 3
Zone 3	89 to 95	1	85% in 41 minutes	Water flows in both directions toward this zone
Zone 4	100 to 106	0.25	90% in 33 minutes	Leaky connection to Zone 3 and strong hydraulic connection to Zone 5
Zone 5	120 to 143	<0.1	--	Test aborted due to low yield

* Zone 1 indicated very strong connection between the isolated zone and Zone 2,therefore Zone 1/Zone 2 were combined for testing

The three successfully tested zones were sampled, and MtBE concentrations were 3,380 ug/l (Zone 1/2), 4,920 ug/l (Zone 3) and 5,830 ug/l (Zone 4). Full analytical results from the packer testing are presented in Table 2. The complete results and evaluation of the testing were presented in the March 2010 Update Report and Work Plan submitted to the MDE.

This report is intended to present a remedial work plan to reduce MTBE concentrations in the agricultural well.

Pilot Aquifer Pumping Test

To evaluate the hydraulic connection between the site and the agricultural well located at 3017 Walnut Street, Alliance proposes a pilot aquifer pumping test . One week before the start of the

pilot test, an In-Situ Level Troll 700® pressure transducer with vent line/data cable will be set in the 3017 Walnut Street agricultural well to record the water level. In addition, a Barotroll® pressure transducer will monitor barometric pressure readings near the agricultural well to evaluate the barometric effect on the water level in the well. This background data will be utilized to correct, if needed, the pressure transducer data collected during the pilot test.

Pumping well MW-17D will be turned off approximately three to five days before the start of the pilot test to allow the area to recover to non-pumping conditions. Due to the distance from the agricultural well and the low pumping yield, the on-site pumping wells will remain operational during the period of the pilot testing. It is possible that the system may need to be shut down during testing. This will be evaluated based on the data collected in the field. Prior to the commencement of the testing, the existing pump, piping, and connections will be removed from the agricultural well and replaced with a new submersible electric pump and tubing. The new pump will be set at the same depth as the current pump in order to retain the historic pumping conditions. The new pump will be connected to piping that will run aboveground from the agricultural well to the Sheetz property for the extracted groundwater to be treated by the groundwater treatment system. The piping will be fitted with a totalizer and ball valve to monitor and control the flow rate and evaluate the total volume pumped. In addition, a sample port will be installed in the piping to facilitate sampling of the agricultural well during the test.

Based on the geophysical and packer testing of the agricultural well conducted in November 2009, Alliance anticipates a pumping rate of approximately one to two gallons per minute (gpm). Based on field measurements, the pumping rate may be adjusted during the pilot test. The water level in the agricultural well will be measured both manually and by a pressure transducer during the pilot testing. In addition, water levels in the monitoring wells in the vicinity (MW-21D, MW-20, and MW-26D) will be measured manually during the test. A site map is provided as Figure 2.

Sampling

Groundwater samples will be collected from the agricultural well at a predetermined schedule, which includes at least three samples collected during the first week of testing and one during each following week of testing. The groundwater samples will be shipped to Fairway Laboratories (Fairway) of Altoona, Pennsylvania under chain of custody protocols for analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX) and MtBE in accordance with EPA Method 8260. Previously, samples have been analyzed in accordance with EPA Method 524.2, however, due to the agricultural well designation and the groundwater not having a potable use,

Alliance proposes that groundwater samples during this test and in the future be analyzed in accordance with EPA Method 8260.

Alliance anticipates the pilot test will be complete in approximately 30 days, however, the test duration may be shortened or extended depending on the data collected. Upon completion of the pilot test, Alliance will evaluate the data and submit a report presenting the results within forty-five days. Should the results indicate that continued pumping of the agricultural well is prudent, Alliance will submit a Corrective Action Plan (CAP) Modification.

If you have any questions or further information is required, please contact Cari Finch at (410) 729-9000 ext. 5014 or William Smith at (302) 234-4400 ext. 1019. Thank you for your time.

Sincerely,
ENVIRONMENTAL ALLIANCE, INC.

Carianne A. Finch
Professional Engineer

William Smith, P.G.
Principal Hydrogeologist

ATTACHMENTS:

Figure 1:	MTBE Concentration Trends; Depalmer Residence - 3017 Walnut St.
Figure 2:	Site Base Map
Table 1:	Residential Potable Well Analytical Data Summary
Table 2:	Packer Testing Analytical Data Summary

c: Mr. David Dodson, Sheetz, Inc. (electronic submittal)
Ms. Susan Bull, MDE – Oil Control (one copy plus CD)
Mr. Chris Ralston, MDE – Oil Control (one copy)
Mr. Edwin Singer, Carroll County Health Department (CD only)
Mr. Steve Miller, Town of Manchester (CD only)
Mr. Warren Fox, XL Insurance (one copy plus CD)
Mr. Hugh Murphy, Carroll County (CD only)
Mr. John Grace, MDE Water Supply (CD only)
Mr. Peter Garey, Garey Business Center (CD only)

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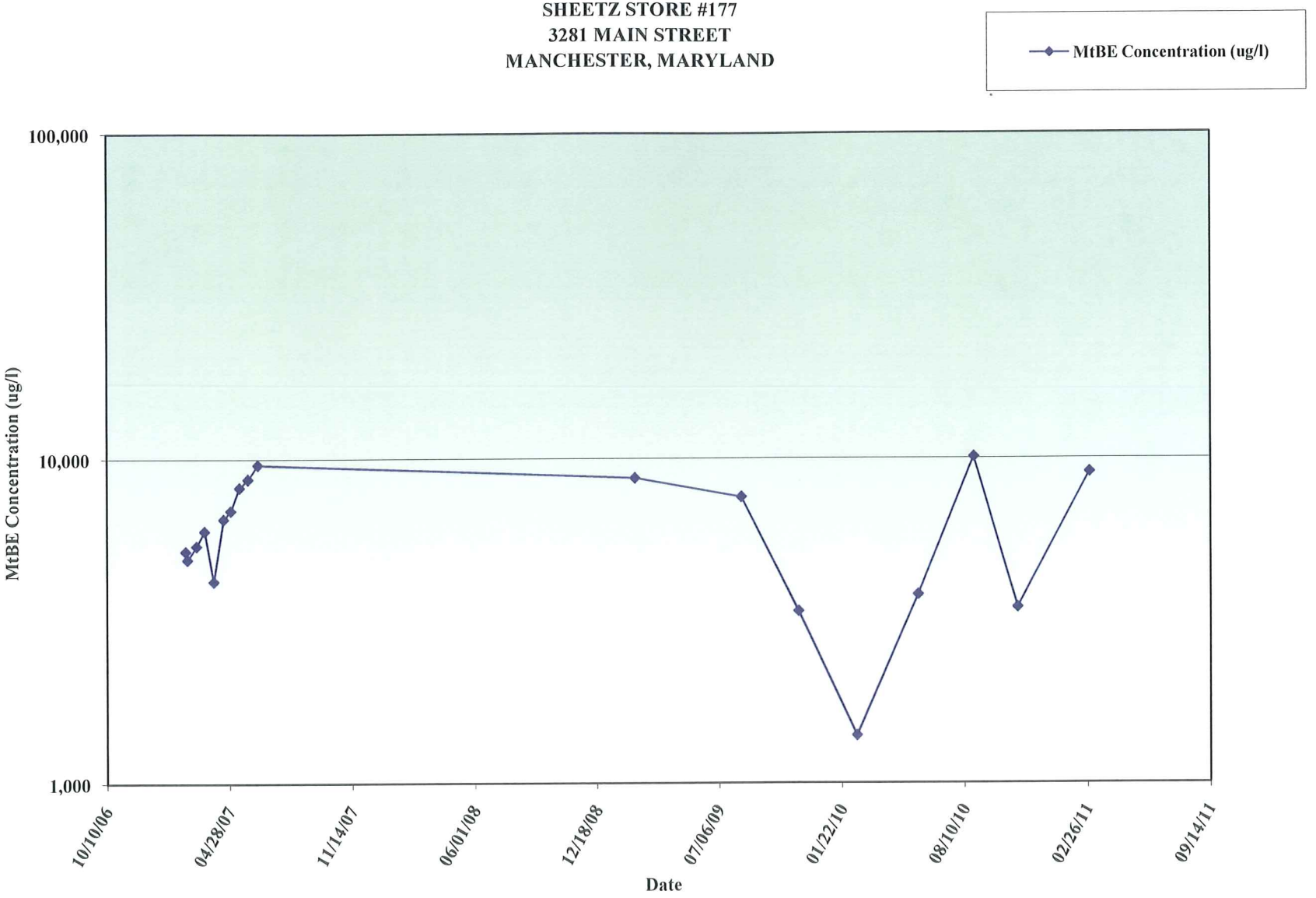
FIGURES

FIGURE 1
MTBE CONCENTRATION TRENDS
DEPALMER RESIDENCE - 3017 WALNUT STREET
SHEETZ STORE #177
3281 MAIN STREET
MANCHESTER, MARYLAND



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Legend

- Potable Well
- Town of Manchester Supply Well
- Nested Well
- Deep Well
- Shallow Well
- Tank Field Well
- Infiltration Gallery Monitoring Point
- Piezometer
- Test Well
- Spring
- Soil Vapor Point
- Curbing
- Site Boundary
- Building
- Canopy
- Dispenser
- UST
- Proposed Features
- Storm Drain
- Concrete
- Stone Pathway

0 300 600 Feet

Source: Google Earth, 2007

Environmental Alliance, Inc.
1035 Benfield Blvd., Suite H, Millersville, MD 21108
Phone: (410) 729-9000 - Fax: (410) 729-9001

Sheetz Store #177
3281 Main Street
Manchester, Maryland

Site Base Map

DESIGNED BY:	DRAWN BY:	UPDATED BY:	FIGURE NO.:
CAF	SKJ		2
APPROVED BY:	PROJECT NO.:	DATE:	
	2486	05/09/2011	

TABLES

TABLE 1
RESIDENTIAL POTABLE WELL ANALYTICAL DATA SUMMARY
SHEETZ STORE #177
3281 MAIN STREET
MANCHESTER, MARYLAND

Sample Location	Date	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Xylenes (µg/l)	MTBE (µg/l)	TBA (µg/l)	DIPE (µg/l)	TAME (µg/l)	ETBE (µg/l)
MDE GNCS, Type I and II Aquifers		5.0	1,000	700	10,000	20	NG	NG	NG	NG
P246-3032 Walnut Street	02/16/07	<0.1	<0.1	<0.1	<0.2	0.4	<5.0	<0.1	<0.1	<0.1
CL-66-W-450	05/16/07	<0.5	<0.5	<0.5	<0.5	1.12	257	<0.5	<0.5	<0.5
6.25" dia.	06/29/07	<0.5	<0.5	<0.5	<0.5	<0.5	<2.50	<0.5	<0.5	<0.5
TD=201 feet	07/19/07	<0.5	<0.5	<0.5	<0.5	<0.5	<2.50	<0.5	<0.5	<0.5
BOC=71.2 feet	08/21/07	<0.5	<0.5	<0.5	<0.5	<0.5	<2.50	<0.5	<0.5	<0.5
Teets Residence	09/12/07	<0.5	<0.5	<0.5	<0.5	<0.5	<2.50	<0.5	<0.5	<0.5
	10/23/07	<0.5	<0.5	<0.5	<0.5	<0.5	<2.50	<0.5	<0.5	<0.5
	11/26/07	<0.5	<0.5	<0.5	<0.5	<0.5	<2.50	<0.5	<0.5	<0.5
	12/17/07	<0.5	<0.5	<0.5	<0.5	<0.5	<2.50	<0.5	<0.5	<0.5
	01/08/08	<0.5	<0.5	<0.5	<0.5	<0.5	<2.50	<0.5	<0.5	<0.5
	05/06/08	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.5	< 0.5	< 0.5	< 0.5
	11/13/08	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.5	< 0.5	< 0.5	< 0.5
	08/12/09	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.5	< 0.5	< 0.5	< 0.5
	08/26/10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.5	< 0.5	< 0.5	< 0.5
P463-3017 Walnut Street	02/16/07	<5.0	<5.0	<5.0	<10	**5,200**	1,500	18	140	<5.0
CL-68-W-441	02/19/07	<5.0	<5.0	<5.0	<10	**4,900**	1,300	17	130	<5.0
6.25" dia.	03/06/07	<5.0	<5.0	<5.0	<10	**5,400**	1,200	15	120	<5.0
TD=143 feet	03/19/07	<10	<10	<10	<20	**6,000**	1,700	15	120	<10
BOC=55 feet	04/03/07	<5.0	<5.0	<5.0	<10	**4,200**	1,300	12	83	<5.0
Depalmer Residence	04/19/07	1.64	<0.5	<0.5	<0.5	**6,530**	782	23.2	117	<0.5
	05/01/07	1.68	<0.5	<0.5	<0.5	**6,940**	1,130	25.7	178	<0.5
TOC Elevation = 98.49 feet	05/15/07	2.79	<0.5	<0.5	<0.5	**8,170**	1,130	28.3	249	<0.5
	05/29/07	3.44	<0.5	<0.5	<0.5	**8,670**	2,380	31.4	191	<0.5
	06/14/07	4.81	<0.5	<0.5	<0.5	**9,610**	2,320	25	138	<0.5
	02/19/09	0.56	< 0.5	< 0.5	< 0.5	**8,720**	1,680	26.6	150	< 0.5
	08/12/09	0.96	< 0.5	< 0.5	< 0.5	**7,600**	3,080	33.1	144	< 0.5
	11/13/09	< 1.0	3.55	< 1.0	< 1.0	**3,380**	140	75.9	15	< 1.0
	02/16/10	< 0.5	< 0.5	< 0.5	< 0.5	**1,400**	< 2.5	16.5	6.61	< 0.5
	05/27/10	< 0.5	< 0.5	< 0.5	< 0.5	**3,800**	2,190	15.8	61.2	< 0.5
	08/26/10	< 0.5	< 0.5	< 0.5	< 0.5	**10,100**	400	24.1	82.2	< 0.5
	11/05/10	< 0.5	< 0.5	< 0.5	< 1.0	**3,470**	< 2.5	15.3	30.4	< 0.5
	03/02/11	< 0.5	< 0.5	< 0.5	< 1.0	**9,060**	732	17.9	131	< 0.5

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MDE GNCS, Type I and II Aquifers		5.0	1,000	700	10,000	20	NG	NG	NG	NG
P593 (3)-2929 Bachman Road CL-73-5618 6" dia. TD=135' BOC=70' Former Perelli Residence	03/24/11	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 2.5	< 0.5	< 0.5	< 0.5
P590-2931 Bachman Road CL-73-4833 6" dia. TD=200' BOC=24' Lewis Residence	08/19/10 09/14/10 03/02/11	< 0.5 < 0.5 < 0.5	< 0.5 < 0.5 < 0.5	< 0.5 < 0.5 < 0.5	< 0.5 < 1.0 < 1.0	1.84 2.76 < 0.5	< 2.5 < 2.5 < 2.5	< 0.5 < 0.5 < 0.5	< 0.5 < 0.5 < 0.5	< 0.5 < 0.5 < 0.5
P554-2935 Bachman Road CL-72-0223 6" dia. TD=120' BOC=57' Bosley Residence	07/15/10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.5	< 0.5	< 0.5	< 0.5
P823-2999 Bachman Road CL-94-2587 6" dia. TD=300' BOC=42' Fisher Residence	07/27/10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.5	< 0.5	< 0.5	< 0.5
P310-3001 Bachman Road CL-73-0526 6" dia. TD=310' BOC=40' Mislak Residence	07/27/10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.5	< 0.5	< 0.5	< 0.5

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MDE GNCS, Type I and II Aquifers		5.0	1,000	700	10,000	20	NG	NG	NG	NG
Walnut Street Well	03/01/07	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
CL-81-6577	04/03/07	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
8" dia.	05/02/07	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
TD=250 feet	06/07/07	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
BOC=20 feet	07/13/07	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Town of Manchester	08/01/07	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	09/12/07	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	10/08/07	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	11/07/07	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	12/10/07	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	01/16/08	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	02/20/08	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	03/12/08	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	04/22/08	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	05/21/08	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	06/26/08	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	07/23/08	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	08/13/08	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	09/08/08	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	10/01/08	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	11/10/08	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	12/10/08	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	02/19/09	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.5	< 0.5	< 0.5	< 0.5
	05/21/09	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.5	< 0.5	< 0.5	< 0.5
	08/06/09	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.5	< 0.5	< 0.5	< 0.5
	11/25/09	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.5	< 0.5	< 0.5	< 0.5
	02/03/10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.5	< 0.5	< 0.5	< 0.5
	05/27/10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.5	< 0.5	< 0.5	< 0.5
	08/26/10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.5	< 0.5	< 0.5	< 0.5
	11/04/10	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 2.5	< 0.5	< 0.5	< 0.5
	03/24/11	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 2.5	< 0.5	< 0.5	< 0.5

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3281 MAIN STREET
MANCHESTER, MARYLAND

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MDE GNCS, Type I and II Aquifers		5.0	1,000	700	10,000	20	NG	NG	NG	NG
Walnut Street Spring	03/01/07	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Town of Manchester	04/03/07	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	05/02/07	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	06/07/07	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	07/13/07	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	08/01/07	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	09/12/07	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	10/08/07	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	11/07/07	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	11/27/07	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	12/10/07	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	01/16/08	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	02/20/08	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	03/12/08	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	04/22/08	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	05/21/08	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	06/26/08	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	07/23/08	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	08/13/08	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	09/08/08	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	10/01/08	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	11/10/08	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	12/10/08	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	02/19/09	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.5	< 0.5	< 0.5	< 0.5
	05/21/09	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.5	< 0.5	< 0.5	< 0.5
	08/06/09	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.5	< 0.5	< 0.5	< 0.5
	11/25/09	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.5	< 0.5	< 0.5	< 0.5
	02/03/10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.5	< 0.5	< 0.5	< 0.5
	05/27/10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.5	< 0.5	< 0.5	< 0.5
	08/26/10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.5	< 0.5	< 0.5	< 0.5
	11/30/10	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 2.5	< 0.5	< 0.5	< 0.5
	03/03/11	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 2.5	< 0.5	< 0.5	< 0.5

TABLE 1
RESIDENTIAL POTABLE WELL ANALYTICAL DATA SUMMARY
SHEETZ STORE #177
3281 MAIN STREET
MANCHESTER, MARYLAND

Sample Location	Date	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Xylenes (µg/l)	MTBE (µg/l)	TBA (µg/l)	DIPE (µg/l)	TAME (µg/l)	ETBE (µg/l)
MDE GNCS, Type I and II Aquifers		5.0	1,000	700	10,000	20	NG	NG	NG	NG
Holland Drive Well	03/01/07	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
CL-73-8001	04/03/07	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
8" dia.	05/02/07	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
TD=100 feet	06/07/07	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
BOC=48 feet	07/13/07	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Town of Manchester	08/01/07	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	09/12/07	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	10/08/07	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	11/07/07	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	12/11/07	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	01/16/08	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	02/20/08	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	03/12/08	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	04/22/08	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	05/21/08	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	06/26/08	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	07/23/08	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	08/13/08	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	09/08/08	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	10/01/08	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	11/10/08	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	12/10/08	< 0.5	< 0.5	< 0.5	< 1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	10/06/09	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.5	< 0.5	< 0.5	< 0.5
	11/25/09	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.5	< 0.5	< 0.5	< 0.5
	02/03/10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.5	< 0.5	< 0.5	< 0.5
	05/27/10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.5	< 0.5	< 0.5	< 0.5
	08/26/10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.5	< 0.5	< 0.5	< 0.5
	11/04/10	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 2.5	< 0.5	< 0.5	< 0.5
	03/03/11	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 2.5	< 0.5	< 0.5	< 0.5

TABLE 1
RESIDENTIAL POTABLE WELL ANALYTICAL DATA SUMMARY
SHEETZ STORE #177
3281 MAIN STREET
MANCHESTER, MARYLAND

Sample Location	Date	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Xylenes (µg/l)	MTBE (µg/l)	TBA (µg/l)	DIPE (µg/l)	TAME (µg/l)	ETBE (µg/l)
MDE GNCS, Type I and II Aquifers		5.0	1,000	700	10,000	20	NG	NG	NG	NG
Bachman Road Well	03/11/10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.5	< 0.5	< 0.5	< 0.5
6" dia.	05/27/10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.5	< 0.5	< 0.5	< 0.5
CL-73-3684	08/26/10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.5	< 0.5	< 0.5	< 0.5
TD = 250 feet	11/04/10	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 2.5	< 0.5	< 0.5	< 0.5
BOC = 75 feet	03/03/11	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	< 2.5	< 0.5	< 0.5	< 0.5
Town of Manchester										

Notes:
NG = No Guideline
--- = Not Applicable / Not Available
J = Estimated Value
ug/l = micrograms per liter
Values exceeding the specified MDE criteria are **bolded.**
BOC = Depth from surface to bottom of potable well casing
TD = Total depth of monitoring well (feet)
TOS = Depth from surface to top of monitoring well screen
Volatile organic compound (VOC) analysis conducted in accordance with EPA Method 524.2; only BTEX and oxygenates are summarized
MDE GNCS = Maryland Department of the Environment Generic Numeric Cleanup Standards, February 2003

MTBE = Methyl-tertiary butyl-ether
TBA = Tert-butyl alcohol
TAME = Tertialy-amyl methyl-ether
DIPE = Di-isopropyl ether
ETBE = Ethyl tertiary-butyl ether
* Groundwater sample collected during packer testing

TABLE 2
PACKER TESTING ANALYTICAL DATA SUMMARY
SHEETZ STORE #177
3281 MAIN STREET
MANCHESTER, MARYLAND

Location ID	Sample Date	Constituents of Concern (ug/l)										
		BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES (TOTAL)*	MTBE	TBA	TAME	DIPE	ETBE	TPH-DRO	TPH-GRO
MDE GNCS, Type I and II Aquifers		5	1,000	700	10,000	20	NG	NG	NG	NG	47	47
3017 WALNUT STREET ZONE 2 (55 - 68 ft)	11/13/09	< 1	3.55	< 1	< 1	**3,380**	140	75.9	15	< 1	**114**	**1,050**
3017 WALNUT STRET ZONE 3 (89 - 95 ft)	11/16/09	< 1	2.31	< 1	< 1	**4,920**	1,360	117	20.3	< 1	**75.9**	**1,240**
3017 WALNUT STREET ZONE 4 (100 - 106 ft)	11/17/09	< 1	4.09	< 1	< 1	**5,830**	1,170	143	25.9	< 1	**562**	**1,270**

--- = Not Applicable / Not Available
NG = No Guideline
J = Estimated Value
ft = feet
ug/l = micrograms per liter
Values exceeding the specified MDE criteria are **bolded.**
< = indicates constituent not detected at or above specified laboratory detection limit.
* Xylenes (TOTAL) represents the laboratory total for o-, m-, and p-xylenes.
MDE GNCS = Maryland Department of the Environment Generic Numeric Cleanup Standards, February 2003
Volatile organic compound (VOC) analysis conducted in accordance with SW8260B; only BTEX, oxygenates and detected constituents are summarized.

MTBE = Methyl-tertiary butyl-ether
TBA = Tertiary-butyl alcohol
TAME = Tertiary-amyl methyl ether
DIPE = Di-isopropyl ether
ETBE = Ethyl tertiary-butyl ether
TPH = Total petroleum hydrocarbons
GRO = Gasoline-range organics
DRO = Diesel-range organics