pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0261751**
Facility Type	**Industrial**	APS ID	**759439**
Major / Minor	**Minor**	Authorization ID	**1159965**

NPDES PERMIT FACT SHEET INDIVIDUAL INDUSTRIAL WASTE (IW) AND IW STORMWATER

Applicant and Facility Information

Applicant Name	**United Refining Company**	Facility Name	**Kwik Fill S0038**
Applicant Address	15 Bradley Street	Facility Address	6479 Carlisle Pike
	Warren, PA 16365-3224		Mechanicsburg, PA 17050-2385
Applicant Contact	Scott Wonsettler	Facility Contact	Scott Wonsettler
Applicant Phone	(814) 726-4863	Facility Phone	(814) 726-4863
Client ID	189857	Site ID	510891
SIC Code	5541	Municipality	Silver Spring Township
SIC Description	Retail Trade - Gasoline Service Stations	County	Cumberland
Date Application Received	October 3, 2016	EPA Waived?	Yes
Date Application Accepted	December 14, 2016	If No, Reason	

Purpose of Application: NPDES Renewal for discharge of treated groundwater

Summary of Review

This is a permit renewal of discharges from a groundwater treatment system Kwik Fill S-038 located at 6479 Carlisle Pike, Mechanicsburg, PA.

Since the storm drain is connected to Trindle Spring Run, which is designated as HQ-CWF, the discharge does not qualify for the PAG-05 NPDES General Permit for Discharges from Petroleum Product Contaminated Groundwater Remediation Systems (PAG-05).

The site contains a retail gasoline and diesel refueling station with an active groundwater remediation system on the property associated with a past release of diesel. In February 2006, United Refining Company (United) installed a canopy over the diesel fuel dispensers at the Kwik Fill S-038 facility. On February 21, 2006, during excavation of the northeastern footer (adjacent to the diesel dispenser), diesel fuel-impacted soil was encountered. Letterle & Associates Inc (Letterle) was retained by United in March 2006 to complete environmental site characterization activities. Interim remedial actions were completed in April 2006 and consisted of the excavation and disposal of approximately 84.62 tons of impacted soil. A series of Site Characterization Reports (SCR) along with a series of Remedial Action Plans (RAP) were completed by Letterle and submitted to PADEP from 2007 to 2011.

The groundwater remediation system consists of total phase extraction (TPE) and vapor enhanced groundwater extraction (VEGE). Soil vapor and groundwater is extracted from recovery wells using a 25-hp high vacuum extraction pump and pneumatic submersible pumps. The groundwater passes through sediment filters and treated with two 400-lb liquid-phase granular activated carbon (GAC) units to removed hydrocarbons and a BIRM unit to remove dissolved solids and discharged to a nearby storm drain connected to Trindle Spring Run. The location where the storm drain enters Trindle Spring Run is designated as Outfall 001.

See Figure 1, NPDES Discharge Location Map (location of site and Outfall 001)

Approve	Deny	Signatures	Date
x		/s/ Brenda J. Fruchtl, P.G. / Licensed Professional Geologist	December 2, 2019
x		/s/ Scott M. Arwood, P.E. / Environmental Engineer Manager	December 2, 2019

Summary of Review

September 20, 2019. PADEP sent email to permittee / consultant requesting the following (*responses received from the consultant on November 1, 2019 are in italics below each request*):

1. **Status update on the system / project (since renewal application received October 3, 2016).**
   Per an agreement with United Refining Company and the PA Underground Storage Tank Indemnification Fund, the remediation system was shut down on September 18, 2018. Post-remediation system quarterly groundwater sampling was performed during the 4th quarter of 2018 and 1st quarter of 2019 to monitor static groundwater conditions. Groundwater analytical results from all wells sampled during this period indicated no exceedances of the applicable PADEP UARSHS MSCs; therefore, Letterle utilized the 4th quarter of 2018 groundwater sampling event as the first of eight quarters of groundwater attainment sampling required as part of the groundwater attainment monitoring program. Four quarters of attainment sampling at the site has been completed. If contaminant rebound occurs during the attainment monitoring period, the system could be restarted.
   There have been no changes to the system. The system is currently idle (winterized).

2. **Requested technical deficiencies be addressed. The sampling for Module 2 was incomplete per the Module 2 instructions. An influent sample for many of the Module 2 parameters for Petroleum Products Other Than Gasoline were not provided, even though effluent sample results were provided for most of the parameters for Products Other Than Gasoline.**
   These are not parameters of concern for untreated groundwater. Our concerns for untreated groundwater are the PADEP short list of petroleum products. The parameters of concern for treated groundwater were specified in the April 1, 2012 approved permit.

3. **Requested revised sample results to include sampling date since the October 3, 2016 submission.**
   An updated table is attached that includes data from 2017 and 2018.

Note: The existing NPDES Permit No PA0261751 was effective April 1, 2012 with a March 31, 2017 expiration date. The terms and conditions were automatically continued and will remain fully effective and enforceable until DEP takes final action on the pending permit application. (25 Pa Code 92a.7 (b), (c))

Public Participation

DEP will publish notice of the receipt of the NPDES permit application and a tentative decision to issue the individual NPDES permit in the *Pennsylvania Bulletin* in accordance with 25 Pa. Code § 92a.82. Upon publication in the *Pennsylvania Bulletin*, DEP will accept written comments from interested persons for a 30-day period (which may be extended for one additional 15-day period at DEP's discretion), which will be considered in making a final decision on the application. Any person may request or petition for a public hearing with respect to the application. A public hearing may be held if DEP determines that there is significant public interest in holding a hearing. If a hearing is held, notice of the hearing will be published in the *Pennsylvania Bulletin* at least 30 days prior to the hearing and in at least one newspaper of general circulation within the geographical area of the discharge.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.025
Latitude	40º 14' 52.96"	Longitude	-77º 0' 19.90"
Wastewater Description:	Groundwater Cleanup Discharge		
Receiving Waters	Trindle Spring Run (HQ-CWF, MF)	Stream Code	10222
NHD Com ID	56404309	RMI	0.40
Drainage Area	17.8 sq mi	Yield (cfs/mi^2)	1.45
Q_{7-10} Flow (cfs)	25.9	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	358	Slope (ft/ft)	
Watershed No.	7-B	Chapter 93 Class.	HQ-CWF, MF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	ORGANICS, POLYCHLORINATED BIPHENYLS (PCBS)		
Source(s) of Impairment	LANDFILLS, SOURCE UNKNOWN		
TMDL Status	Final	Name	Conodoguinet Creek Watershed
Nearest Downstream Public Water Supply Intake	PA American Water / Steelton Boro Water Authority		
PWS Waters	Susquehanna River	Location	Steelton Boro, Dauphin Co.
PWS RMI	53	Distance from Outfall (mi)	21

*USGS StreamStats: Pennsylvania. (Basin Delineation from November 9, 2019)

Changes Since Last Permit Issuance: No changes to Outfall 001

Outfall 001 is at the point where the discharge enters Trindle Spring Run.
The location of the remediation system at the Kwik Fill S-038 is approximately 0.7 miles to the west of Outfall 001 (following the storm sewer system)

Treatment Facility Summary
Treatment Facility Name: United Refining Company - Kwik Fill S038 The groundwater remediation system consists of total phase extraction (TPE) and vapor enhanced groundwater extraction (VEGE). Soil vapor and groundwater will be extracted from up to nine extraction wells. There are 4 shallow water bearing zone groundwater extraction wells (RW-2S, MW-16S, MW-23S, and MW-36S) and 5 deep water bearing zone groundwater extraction wells (RW-1D, MW-5D, MW-18D, MW-28R, and MW-37D). Refer to the Site Plan (Figure 2) for locations of the extraction wells. Vapor and groundwater is extracted using one 25-hp high vacuum extraction liquid ring pump (LRP) for the shallow water bearing extraction wells. The shallow water bearing zone extraction wells have an average design pumping rate of 0.65 gallons per minute (gpm), and the deep water bearing zone groundwater extraction wells have an average design pumping rate of 2.6 gpm. The maximum discharge rate is 0.025 MGD. Following the TPE extraction, groundwater and soil vapor are routed through an air/water separator (AWS). After separation, the groundwater is pumped through six sediment filters (connected in series) and pumped to the VEGE trailer for treatment with two liquid phase granular activated carbon (GAC) units connected in series. There are two sets of GAC units in parallel configuration. The groundwater from both the TPE and VEGE systems will pass through cartridge filters to remove sediment, through liquid-phase granular activated carbon (GAC) units to remove petroleum compounds, and through a unit of BIRM material to remove total dissolved solids. The treated groundwater is discharged to a storm drain south of the site property that feeds Trindle Spring Run. Refer to the Remedial System Layout (Figure 3) for a conceptual diagram of the remediation system. Routine remedial system operation and maintenance activities include: system influent, midfluent, and effluent groundwater and soil vapor sampling, and general system maintenance (filter replacement, y-strainer cleaning, valve adjustment, etc.) Backwash and cleaning wastewaters are routed back to the influent holding tank. The water then passes through the treatment system before being discharged. Sediment that settles in the holding tank is periodically removed into drums and properly disposed.

Updates since the last permit:

The TPE system was started on May 23, 2012, and the VEGE system startup occurred 30 days later.
The TPE/VEGE remediation systems operated for approximately 40 months, until shutdown on November 5, 2015. Approximately 2,153,073 gallons of groundwater was recovered/treated and discharged to the stormwater collection system in accordance with the NPDES permit.

The TPE/VEGE system was shut down on November 5, 2015 to monitor static groundwater conditions in an effort to evaluate an amended remedial approach (remedial system upgrades or more toward a Site Specific Standards closure). The data collected during the static groundwater monitoring period supported the assertion of a shrinking/stable dissolved-phase contaminant plume at the site and also confirmed the remediation system had been very successful in mitigating COCs at the site and limiting the migration of the dissolved-phase plume (off-site).

Given these results, United elected to reactivate and operate the remediation system for another year or two (groundwater conditions will be re-evaluated after two years of operations); however, they elected to only operate system recovery wells MW-23S & RW-2S (shallow zone) and RW-1D & MW-37D (deep zone) to target the current impacted areas.

The TPE/VEGE remediation systems were restarted on August 19, 2016 to continue with the RAP approved remedial strategy. Only system recovery/extraction wells MW-23S & RW-2S (shallow zone) and RW-1D & MW-37D (deep zone) were initially put in operation. As a result of increasing MTBE concentrations observed in MW-18D, system recovery/extraction well (deep zone) MW-18D was reactivated April 2017.

The TPE/VEGE remediation systems were shut down on September 18, 2018 in order to monitor static groundwater conditions during the 4th quarter of 2018.

As of September 2019, the TPE/VEGE remediation systems have not been restarted.

Compliance History	
Summary of DMRs:	Results have been submitted via eDMR since June 2012. Reviewed results from January 1, 2015 to present. No Discharge reported December 2015 through August 2016 No Discharge reported October 2018 to present (October 2019) No exceedances of any limits reported. *Parameters (sample frequency = 2/month; report frequency = Monthly):* Benzene: all results = <0.001 mg/L Ave monthly (limit = 0.001) Benzene: all results = <0.001 mg/L IMAX (limit = 0.0025) Naphthalene: all results = <0.001 mg/L Ave monthly (limit = 0.01) Naphthalene: all results = <0.001 mg/L IMAX (limit = 0.025) Fluorene: all results = <0.01 mg/L Ave monthly (limit = 1.0) Fluorene: all results = <0.01 mg/L Ave IMAX (limit = 2.5) Cumene: all results = <0.001 mg/L Ave monthly (limit = Report) Cumene: all results = <0.001 mg/L IMAX (limit = Report) Ethylbenzene: all results = <0.001 mg/L Ave monthly (limit = Report) Ethylbenzene: all results = <0.001 mg/L IMAX (limit = Report) Phenanthrene: all results = <0.01 mg/L Ave monthly (limit = Report) Phenanthrene: all results = <0.01 mg/L IMAX (limit = Report) Pyrene: all results = <0.01 mg/L Ave monthly (limit = Report) Pyrene: all results = <0.01 mg/L IMAX (limit = Report) Toluene: all results = <0.001 mg/L Ave Monthly (limit = Report) Toluene: all results = <0.001 mg/L IMAX (limit = Report) Total Suspended Solids: all results below 30 mg/L Ave Monthly limit Total Suspended Solids: all results below 75 mg/L IMAX limit Iron, Dissolved: all results below 7.0 mg/L IMAX limit pH: all results between 6.0 (minimum limit) and 9.0 SU (maximum limit) Flow: results range from 0.0002 to 0.005 MGD Ave Monthly (limit = Report) *Parameters (sample frequency = 1/6 months; report frequency = semiannually):* Oil and Grease: all results below 15 mg/L Ave Monthly limit Oil and Grease: all results below 30 mg/L IMAX limit TDS: results range from 1590-2780 mg/L Ave Monthly (limit = Report) TDS: results range from 1590-2780 mg/L IMAX (limit = Report)
Summary of Inspections:	DEP conducted a compliance evaluation on 09/23/2015. No violations were noted.

Other Comments: There have been no violations reported for this facility since the last renewal. There are not any open violations for the facility.

Development of Effluent Limitations

Outfall No.	001	**Design Flow (MGD)**	.025
Latitude	40º 14' 52.96"	**Longitude**	-77º 0' 19.90"

Wastewater Description: Groundwater Cleanup Discharge

The limits for the previous permit (effective April 1, 2012) were taken from the PAG-05 NPDES General Permit for discharges from petroleum product contaminated groundwater remediation systems (PAG-05), effective 12/29/2007.

The PAG-05 has been renewed/reissued twice since NPDES Permit No PA0261751 became effective on April 1, 2012.

- The PAG-05 was renewed in December 2013 with an effective date of December 29, 2013 through December 28, 2018.
- The current PAG-05 is effective December 29, 2018 through December 28, 2023.

With the reissuance of the PAG-05 permit effective December 29, 2013, there were a number of changes to the effluent limitations and monitoring requirements as compared to the December 29, 2007 PAG-05 General Permit.

- The December 29, 2018 PAG-05 permit removed the following parameters for Groundwater Contaminated with other Petroleum Products (not Gasoline): Toluene, Ethylbenzene, Pyrene, Cumene, Chrysene, Phenanthrene, Naphthalene, and Fluorene.
- The monitoring frequencies for Flow, pH, TSS, and Benzene were reduced from 2/month to 1/month; Dissolved Iron was reduced from 2/month to 1/year; Oil and Grease increased from 1/6 months to 1/month.
- Total BTEX was added at 1/month.

Explanation for removing the above parameters and reducing the sampling frequency (Taken form the PAG-05 Fact Sheet 12/2013):

- *Toluene and Ethylbenzene are not typically found in groundwater contaminated with petroleum products other than gasoline at levels of concern. A review of the existing monitoring data for Pyrene, Cumene, Chrysene, and Phenanthrene revealed essentially all results revealed no detectable concentrations of these parameters in treated effluent. Similarly, Naphthalene and Fluorene, which have effluent limits in the existing permit, were not detected in essentially all results reviewed by DEP. DEP is proposing the removal of these parameters from the permit, as it is believed that treatment to achieve effluent limitations for Benzene will result in the control of these and other organic compound*s.
- *The existing limitations for Benzene, pH, Oil and Grease, Dissolved Iron, Total Suspended Solids (TSS) will remain in the renewed permit with no changes, except that the average monthly limit for Oil and Grease will be removed because monitoring frequency is less than 1/month. Limitations for Benzene and TSS are technology based limitations derived using DEP's best professional judgement as described in prior fact sheets for the PAG-05 General Permit. Limitations for pH, Oil and Grease and Dissolved Iron are specified in 25 Pa Code Chapter 95 for industrial wastewater.*
- *A review of effluent monitoring data for approximately 40 facilities covered by the PAG-05 General Permit revealed compliance with effluent limitations greater than 99% of the time. In DEP's judgement, monitoring frequency may be reduced from 2/month to 1/month for Flow, Benzene, pH, and TSS. Dissolved Iron was considered to be less of concern, and therefore monitoring frequency would be reduced from 2/month to 1/year. Oil and Grease was occasionally discharged in elevated concentrations, and therefore DEP proposes to increase Oil and Grease monitoring from once every six months to 1/month. These monitoring frequencies are greater than or equal to the monitoring frequencies established in General Permits developed by EPA in states where EPA is responsible for NPDES program implementation.*

Note: The December 29, 2013 PAG-05 General Permit proposed adding Total BTEX technology based limit of 0.1 mg/l (average monthly) and 0.25 mg/l (IMAX), as is currently done for PPCGRS treating groundwater contaminated with gasoline, as an additional control.
This additional parameter was not seen as necessary for the NPDES Permit No PA0261751 since Benzene is already listed as a parameter with limits, and Toluene, Ethylbenzene, and Xylenes (TEX) have not been indicated in the influent to the treatment system. And Toluene and Ethylbenzene has not been detected in the effluent.

The current PAG-05 General Permit effective December 29, 2018 had no modifications to effluent limitations and monitoring requirements that were established in the December 29, 2013 PAG-05 General Permit renewal.

Due to the changes in the effluent limitations and monitoring requirements in the PAG-05 General Permit and review of the DMR data submitted for this facility from January 1, 2015 until present (see Attachment A), the following revisions to the Effluent Limitations and monitoring requirements are being proposed:

- Fluorene, Ethylbenzene, Cumene, Naphthalene, Phenanthrene, Pyrene and Toluene have been removed from the proposed permit (see explanation above from the PAG-05 Fact Sheet dated 12/2013).

- Flow, pH, TSS, and Benzene sampling frequency has been changed from 2/month to 1/month (see explanation above from the PAG-05 Fact Sheet dated 12/2013).

- Oil and Grease sampling frequency has been changed from 1/6 months to 1/month (see explanation above from the PAG-05 Fact Sheet dated 12/2013).

- Dissolved Iron sampling frequency has been changed from 2/month to 1/year (see explanation above from the PAG-05 Fact Sheet dated 12/2013).

See Table 1 (below) for comparison between the existing permit's effluent limitations and monitoring requirements, the current PAG-05 effluent limitations and monitoring requirements, and the proposed permit's effluent limitations and monitoring requirements.

The tables summarizing the influent and effluent data from May 2012 through September 2018 can be found in Attachment A.

ANTIDEGRADATION (93.4):

The antidegradation best available combination of technologies (ABACT) for this discharge is the combination of the VEGE/TPE system for treatment and the point of discharge flowing to a man-made conduit and open and grass lined ditches for approximately 3800 feet prior to entering Trindle Spring Run.
The effluent limits for this discharge have been developed to ensure that existing instream water uses and the level of water quality necessary to protect the existing uses are maintained and protected. Since the groundwater will be treated to non-detect prior to discharge utilizing ABACT, there should be no impact to the High Quality Watershed where the discharge occurs. No Exceptional Value Waters are impacted by this discharge.

Parameters 2012 permit	Avg Mo Limit	Imax Limit	Sampling Freq	Parameters PAG05 Permit (other petroleum products) - Eff 12/29/18	Avg Mo Limit	Imax Limit	Sampling Freq	Proposed Parameters 2019 permit	Avg Mo Limit	Imax Limit	Sampling Freq
Flow	Report	Report	2/month	**Flow**	Report	Report	1/month	**Flow**	Report	Report	1/month*
pH	6.0 min	9.0	2/month	**pH**	6.0 min	9.0	1/month	**pH**	6.0 min	9.0	1/month*
TSS	30	75	2/month	**TSS**	30	75	1/month	**TSS**	30	75	1/month*
TDS*	Report	Report	1/6 months	*TDS*	*Never in the PAG-05 permit*			**TDS**	Report	Report	1/6 months
Oil and Grease	15	30	1/6 months	**Oil and Grease**	15	30	1/month	**Oil and Grease**	15	30	1/month*
Dissolved Iron	Report	7.0	2/month	**Dissolved Iron**	Report	7.0	1/year	**Dissolved Iron**	Report	7	1/year*
Fluorene	1.0	2.5	2/month	*Fluorene*	Removed 12/2013			*Fluorene*	*REMOVE*		
Ethylbenzene	Report	Report	2/month	*Ethylbenzene*	Removed 12/2013			*Ethylbenzene*	*REMOVE*		
Cumene	Report	Report	2/month	*Cumene*	Removed 12/2013			*Cumene*	*REMOVE*		
Benzene	0.001	0.0025	2/month	**Benzene**	0.001	0.0025	1/month	**Benzene**	0.001	0.0025	1/month*
Naphthalene	0.01	0.025	2/month	*Naphthalene*	Removed 12/2013			*Naphthalene*	*REMOVE*		
Phenanthrene	Report	Report	2/month	*Phenanthrene*	Removed 12/2013			*Phenanthrene*	*REMOVE*		
Pyrene	Report	Report	2/month	*Pyrene*	Removed 12/2013			*Pyrene*	*REMOVE*		
Toluene	Report	Report	2/month	*Toluene*	Removed 12/2013			*Toluene*	*REMOVE*		
				Total BTEX	0.1	0.25	1/month	*Total BTEX*	*Didn't add - not currently Monitored*		

*Indicates change in sampling frequency from the existing NPDES Permit No PA0261751

Table 1. Comparison of effluent limitations and monitoring requirements

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

Outfall 001, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report IMAX	XXX	XXX	XXX	XXX	1/month	Measured
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	XXX	9.0	1/month	Grab
TSS	XXX	XXX	XXX	30	XXX	75	1/month	Grab
Total Dissolved Solids	XXX	XXX	XXX	Report SEMI AVG	XXX	Report	1/6 months	Grab
Oil and Grease	XXX	XXX	XXX	15	XXX	30	1/month	Grab
Dissolved Iron	XXX	XXX	XXX	XXX	XXX	7.0	1/year	Grab
Benzene	XXX	XXX	XXX	0.001	XXX	0.0025	1/month	Grab

Compliance Sampling Location: Outfall 001

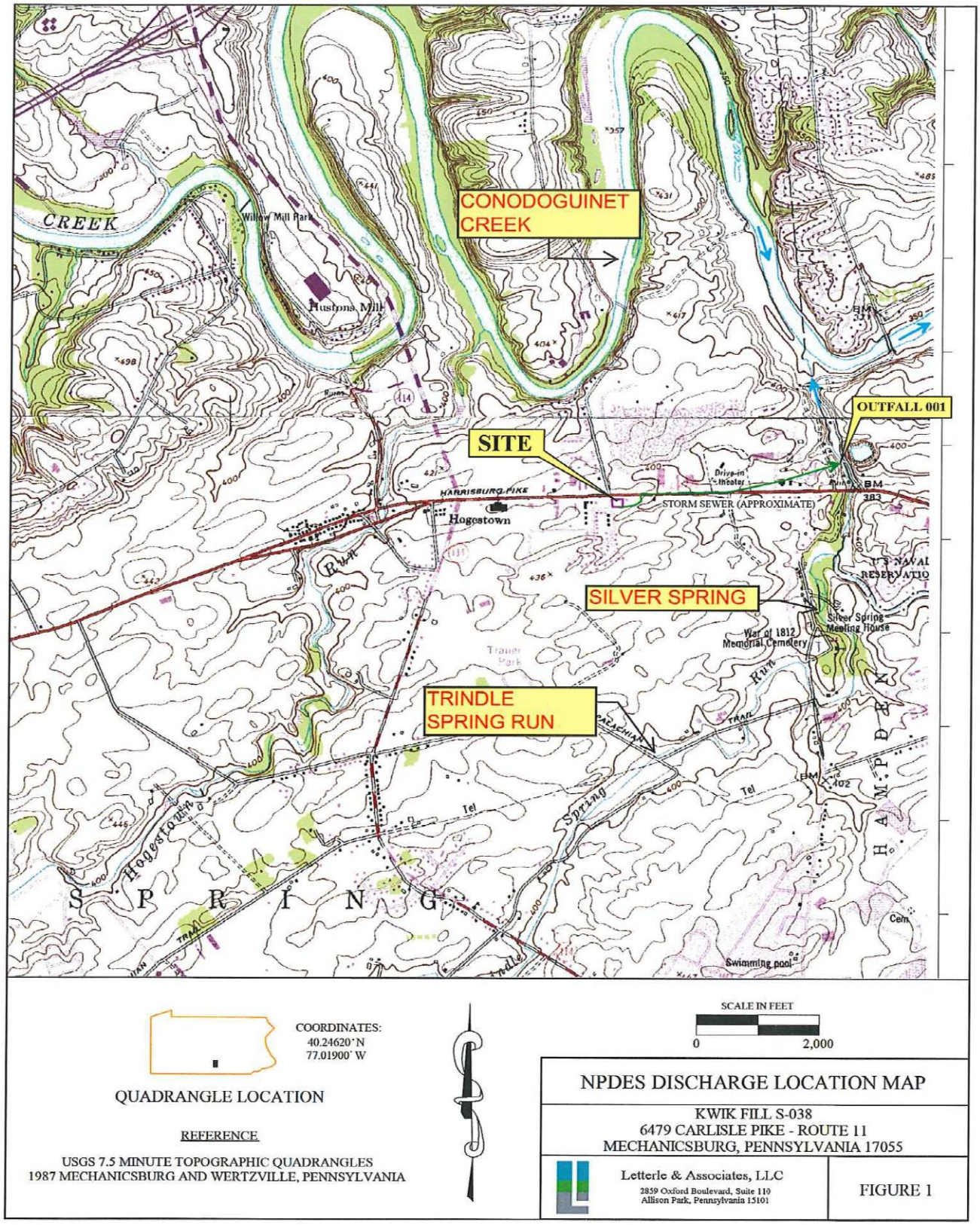

Figure 1. NPDES Discharge Location Map (location of site and Outfall 001)

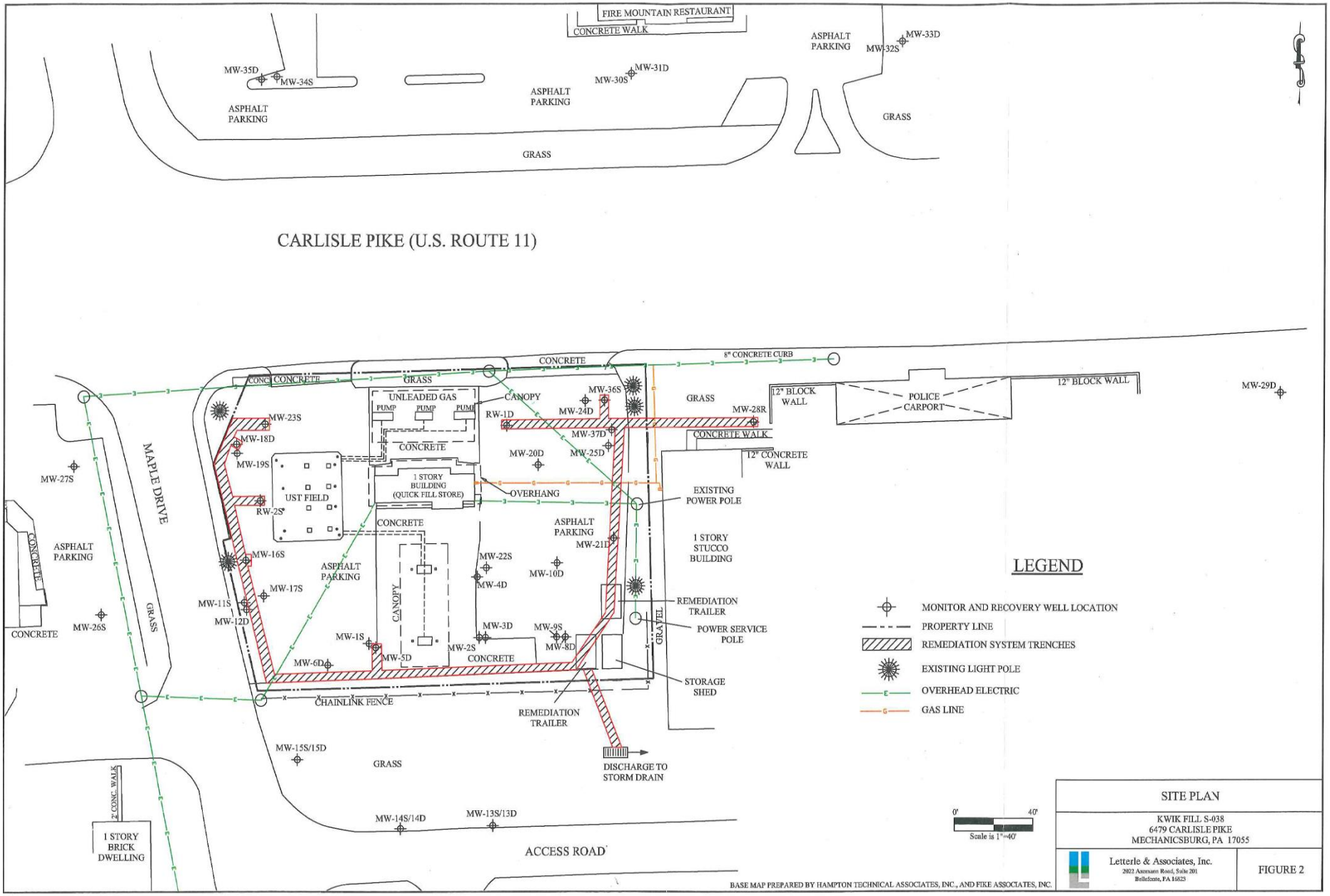

Figure 2. Site Plan

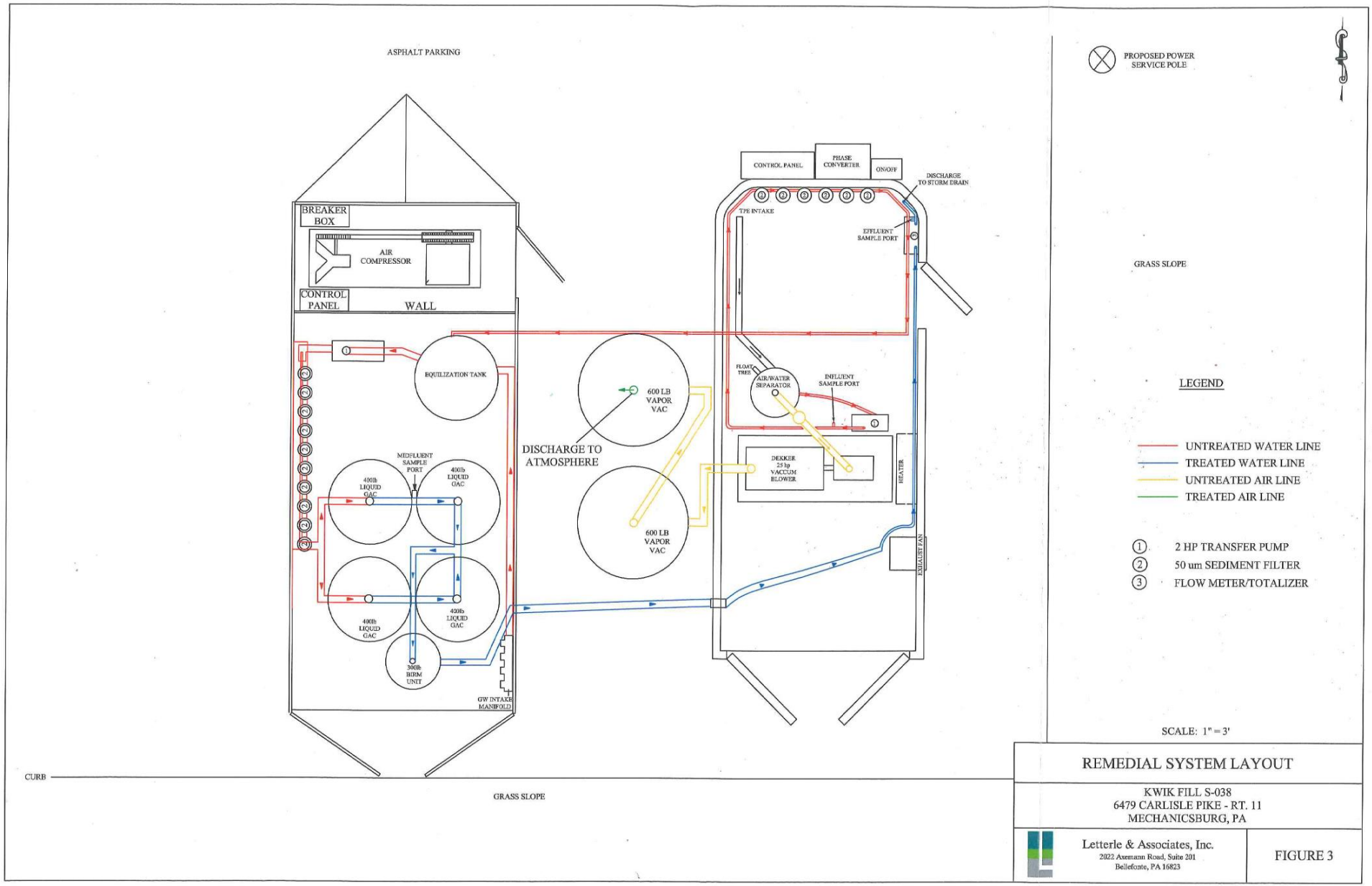

Figure 3. Remedial System Layout.

ATTACHMENT A

Table 1
Remedial System Groundwater Analytical Data
Kwik Fill S-038
6479 Carlisle Pike
Mechanicsburg, PA 17055

Sample Location	Date	Benzene (µg/l)	Toluene (µg/l)	Ethylbenzene (µg/l)	Cumene (µg/l)	MTBE (µg/l)	Naphthalene (µg/l)	1,2,4-TMB (µg/l)	1,3,5-TMB (µg/l)
Influent	05/23/12	5.42	3.4	54.3	8.30	NA	162	164	46.8
	06/12/12	<2.00	<2.00	6.20	<2.00	<2.00	48.4	66.0	16.8
	06/26/12	NS	NS	NS	NS	NS	NS	NS	NS
	07/03/12	156	10.0	54.6	42.5	129	33.7	43.1	14.3
	07/25/12	701	6.08	40.3	69.5	283	18.6	9.18	4.48
	08/08/12	869	173	207	76.3	286	63.4	162	70.9
	08/23/12	169	149	206	42.2	104	113	198	95.0
	09/19/12	202	297	249	37.9	147	108	310	110
	09/27/12	53.1	35.1	37.6	4.70	72.5	15.5	48.4	26.6
	10/15/12	183	14.8	58.2	7.26	305	44.4	92.2	34.5
	10/31/12	NS	NS	NS	NS	NS	NS	NS	NS
	11/06/12	822	156	916	120	522	632	975	130
	12/06/12	253	11.5	103	18.6	143	31.0	120	5.24
	12/31/12	NS	NS	NS	NS	NS	NS	NS	NS
	01/15/13	135	34.0	198	138	223	145	527	273
	01/23/13	NS	NS	NS	NS	NS	NS	NS	NS
	03/20/13	<2.00	<2.00	<2.00	<2.00	29.2	<2.00	4.64	<2.00
	04/11/13	191	11.1	404	68.3	110	304	942	182
	05/13/13	138	6.48	166	23.5	158	107	314	22.2
	06/06/13	285	26.0	395	46.9	152	250	617	168
	07/09/13	107	3.56	84.9	13.8	99.9	81.0	211	50.0
	08/06/13	109	5.46	101	14.1	106	150	357	111
	09/04/13	15.6	2.24	19.8	3.20	154	32.9	130	42.2
	10/08/13	1.80	<5.00	<5.00	<5.00	99.2	<5.00	<5.00	28.9
	11/05/13	153	<5.00	80.1	38.4	167	29.5	229	8.60
	12/10/13	33.6	<20.0	47.8	<20.0	50.6	111	1,120	160
	01/06/14	94.7	7.14	141	26.6	52.8	160	506	119
	02/04/14	83.0	2.38	81.1	22.5	66.6	92.6	213	36.6
	03/13/14	37.6	<2.00	27.5	14.3	45.8	12.7	95.6	8.82
	04/08/14	39.3	3.54	3.46	<2.00	67.5	5.50	81.2	116
	05/13/14	3.76	<2.00	3.02	<2.00	50.1	6.78	17.5	29.4
	06/10/14	2.80	<2.00	<2.00	<2.00	60.00	3.14	22.2	10.6
	07/08/14	24.0	<2.00	13.7	4.86	27.0	6.90	39.0	2.02
	08/05/14	31.3	<2.00	24.0	9.20	43.8	13.0	56.1	4.36
	09/09/14	8.20	<2.00	<2.00	<2.00	107	<2.00	3.42	2.74
	10/07/14	33.4	<2.00	8.58	6.98	40.5	4.04	38.1	<2.00
	11/10/14	39.6	<2.00	3.28	5.22	41.7	2.14	8.86	<2.00
	12/05/14	<2.00	<2.00	<2.00	<2.00	49.9	<2.00	<2.00	<2.00
	01/06/15	47.6	<2.00	6.28	11.6	59.3	2.08	13.7	<2.00
	02/04/15	15.0	<2.00	<2.00	6.18	25.6	<2.00	3.68	<2.00
	03/03/15	<1.00	<1.00	<1.00	<1.00	25.9	<1.00	<1.00	<1.00
	04/23/15	2.22	<2.00	<2.00	<2.00	32.1	<2.00	<2.00	<2.00
	05/12/15	45.2	<1.00	22.3	18.0	40.7	3.92	21.5	<1.00
	06/11/15	3.02	<1.00	<1.00	<1.00	6.37	<1.00	<1.00	<1.00
	07/07/15	21.4	<1.00	<1.00	<1.00	29.2	9.52	36.8	4.24
	08/11/15	4.43	<1.00	<1.00	<1.00	4.56	1.30	7.80	<1.00
	09/10/15	2.05	<1.00	<1.00	1.04	11.2	<1.00	<1.00	<1.00
	10/06/15	22.20	<1.00	<1.00	<1.00	33.4	5.15	10.2	5.34
	11/02/15	28.0	<1.00	<1.00	<1.00	39.4	8.25	13.0	6.41
	09/06/16	17.1	<1.00	1.24	1.33	42.0	1.54	6.45	1.66
	10/10/16	<1.00	<1.00	<1.00	<1.00	2.22	<1.00	<1.00	<1.00
	11/10/16	1.73	<1.00	<1.00	<1.00	48.7	<1.00	<1.00	1.36
	12/05/16	5.87	<1.00	2.94	1.89	51.2	<1.00	6.08	<1.00

Table 1
Remedial System Groundwater Analytical Data
Kwik Fill S-038
6479 Carlisle Pike
Mechanicsburg, PA 17055

Sample Location	Date	Benzene (µg/l)	Toluene (µg/l)	Ethylbenzene (µg/l)	Cumene (µg/l)	MTBE (µg/l)	Naphthalene (µg/l)	1,2,4-TMB (µg/l)	1,3,5-TMB (µg/l)
Influent (Cont.)	01/10/17	24.4	1.61	25.8	8.02	31.4	7.64	52.9	4.89
	02/09/17	3.84	5.82	<1.00	<1.00	2.73	<1.00	<1.00	<1.00
	03/07/17	<1.00	<1.00	<1.00	<1.00	6.50	<1.00	<1.00	<1.00
	04/07/17	<1.00	<1.00	<1.00	<1.00	2.40	<1.00	<1.00	<1.00
	05/09/17	<1.00	<1.00	<1.00	<1.00	12.5	<1.00	<1.00	<1.00
	06/06/17	<1.00	<1.00	<1.00	<1.00	14.6	<1.00	<1.00	<1.00
	07/13/17	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
	08/09/17	17.4	<1.00	8.00	9.75	18.8	2.94	5.03	<1.00
	09/06/17	<1.00	<1.00	<1.00	<1.00	19.7	<1.00	<1.00	<1.00
	10/06/17	2.56	<1.00	<1.00	2.55	19.0	<1.00	<1.00	<1.00
	11/09/17	9.47	<1.00	4.44	9.08	17.6	4.83	13.3	<1.00
	12/05/17	<1.00	<1.00	<1.00	<1.00	4.88	<1.00	<1.00	<1.00
	01/09/18	<1.00	<1.00	<1.00	<1.00	24.8	<1.00	<1.00	<1.00
	02/05/18	<1.00	<1.00	<1.00	<1.00	5.72	<1.00	<1.00	<1.00
	03/06/18	1.27	<1.00	<1.00	1.04	15.7	<1.00	<1.00	<1.00
	04/10/18	<1.00	<1.00	<1.00	<1.00	15.4	<1.00	<1.00	<1.00
	05/08/18	<1.00	<1.00	<1.00	<1.00	21.3	<1.00	<1.00	<1.00
	06/07/18	<1.00	<1.00	<1.00	<1.00	13.4	<1.00	<1.00	<1.00
	07/11/18	7.85	<1.00	<1.00	4.83	24.8	<1.00	<1.00	<1.00
	08/07/18	<1.00	<1.00	<1.00	<1.00	NS	<1.00	NS	NS
	08/21/18	<1.00	1.53	<1.00	<1.00	1.52	<1.00	<1.00	<1.00
	09/06/18	<1.00	<1.00	<1.00	<1.00	30.7	<1.00	<1.00	<1.00
	09/18/18	14.0	<1.00	<1.00	4.78	23.7	<1.00	<1.00	<1.00

Table 1
Remedial System Groundwater Analytical Data
Kwik Fill S-038
6479 Carlisle Pike
Mechanicsburg, PA 17055

Sample Location	Date	Benzene (µg/l)	Toluene (µg/l)	Ethylbenzene (µg/l)	Cumene (µg/l)	Naphthalene (µg/l)	Fluorene (µg/l)	Phenanthrene (µg/l)	Pyrene (µg/l)	Iron (Dissolved) (mg/l)
Effluent	05/23/12	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0020
	06/12/12	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0020
	06/26/12	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.07
	07/03/12	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0200
	07/25/12	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0200
	08/08/12	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0200
	08/23/12	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	1.40
	09/19/12	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	5.69
	09/27/12	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	5.25
	10/15/12	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	0.503
	10/31/12	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	0.240
	11/06/12	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	0.630
	12/06/12	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	1.69
	12/31/12	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	12.9
	01/15/13	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	46.2
	01/23/13	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	4.49
	03/20/13	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	0.0328
	04/11/13	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0200
	04/29/13	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0200
	05/13/13	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0200
	05/28/13	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0200
	06/06/13	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0200
	06/20/13	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0200
	07/09/13	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0200
	07/24/13	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0200
	08/06/13	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0200
	08/21/13	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0200
	09/04/13	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	0.0300
	09/17/13	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0200
	10/08/13	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0200
	10/22/13	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	0.0434
	11/05/13	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	0.0493
	11/18/13	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	0.129
	12/10/13	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	0.0958
	12/23/13	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	0.0227
	01/06/14	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	0.751
	01/21/14	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	0.0959
	02/04/14	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	1.01
	02/24/14	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	0.164
	03/13/14	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	0.975
	03/26/14	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	1.20
	04/08/14	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	0.211
	04/24/14	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0200
	05/13/14	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0200
	05/28/14	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0200
	06/10/14	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0200
	06/26/14	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0200
	07/08/14	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0200
	07/24/14	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0200
	08/05/14	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0200
	08/19/14	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0200
	09/09/14	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0200
	09/24/14	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0200

Table 1
Remedial System Groundwater Analytical Data
Kwik Fill S-038
6479 Carlisle Pike
Mechanicsburg, PA 17055

Sample Location	Date	Benzene (µg/l)	Toluene (µg/l)	Ethylbenzene (µg/l)	Cumene (µg/l)	Naphthalene (µg/l)	Fluorene (µg/l)	Phenanthrene (µg/l)	Pyrene (µg/l)	Iron (Dissolved) (mg/l)
Effluent (Cont.)	10/07/14	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0200
	10/21/14	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0200
	11/10/14	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0200
	11/24/14	<1.00	<1.00	<1.00	<1.00	<1.00	<50.0	<50.0	<50.0	<0.0200
	12/05/14	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0200
	12/22/14	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0200
	01/06/15	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	0.0285
	01/21/15	<1.00	<1.00	<1.00	<1.00	<1.00	<20.0	<20.0	<20.0	<0.0200
	02/04/15	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0200
	03/03/15	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0200
	03/20/15	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	0.0788
	04/23/15	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	0.103
	04/30/15	<1.00	<1.00	<1.00	<1.00	<1.00	<50.0	<50.0	<50.0	0.111
	05/12/15	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	0.0793
	05/26/15	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	0.0795
	06/11/15	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	0.0589
	06/23/15	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	0.0686
	07/07/15	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	0.0476
	07/21/15	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	0.0523
	08/11/15	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	0.0703
	08/25/15	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	0.123
	09/10/15	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	09/23/15	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	10/06/15	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	10/20/15	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	11/02/15	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	09/06/16	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	09/26/16	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	10/10/16	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	10/26/16	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	11/10/16	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	11/23/16	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	12/05/16	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	12/20/16	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	01/10/17	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	01/26/17	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	02/09/17	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	02/23/17	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	03/07/17	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	03/21/17	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	04/07/17	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	04/20/17	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	05/09/17	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	05/23/17	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	06/06/17	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	06/20/17	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	07/13/17	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	07/24/17	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	08/09/17	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	08/22/17	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	09/06/17	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	09/19/17	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	10/06/17	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400

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Mechanicsburg, PA 17055

Sample Location	Date	Benzene (µg/l)	Toluene (µg/l)	Ethylbenzene (µg/l)	Cumene (µg/l)	Naphthalene (µg/l)	Fluorene (µg/l)	Phenanthrene (µg/l)	Pyrene (µg/l)	Iron (Dissolved) (mg/l)
Effluent (Cont.)	10/19/17	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	11/09/17	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	11/21/17	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	12/05/17	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	12/20/17	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	01/09/18	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.200
	01/22/18	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	02/05/18	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	02/22/18	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	03/06/18	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	03/22/18	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	04/10/18	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	04/24/18	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	05/08/18	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	05/23/18	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	0.0680
	06/07/18	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	06/19/18	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	07/11/18	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	07/25/18	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	08/07/18	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	08/21/18	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	09/07/18	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400
	09/18/18	<1.00	<1.00	<1.00	<1.00	<1.00	<10.0	<10.0	<10.0	<0.0400

Notes:
NA - Not Analyzed.
NS - Not Sampled.