pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0087076**
Facility Type	**Industrial**	APS ID	**336949**
Major / Minor	**Minor**	Authorization ID	**1180974**

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

Applicant and Facility Information

Applicant Name	**Hershey Entertainment & Resorts Company (HE&R)**	Facility Name	**Former HE&R Laundry Facility**
Applicant Address	27 West Chocolate Avenue	Facility Address	North 1st Street
	Hershey, PA 17033		Hershey, PA 17033
Applicant Contact	David Lavery	Facility Contact	David Lavery
Applicant Phone	(717) 534-3147	Facility Phone	
Client ID	212464	Site ID	541951
SIC Code	7211	Municipality	Derry Township
SIC Description	Services - Power Laundries, Family And Commercial	County	Dauphin
Date Application Received	April 3, 2017	EPA Waived?	Yes
Date Application Accepted	May 23, 2017	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 located at the former HE&R Laundry facility, a former dry cleaning / laundry facility. The system discharges treated water via Outfall 001 to Spring Creek with an effluent pump. See Figure 1, Site Location Map.

Groundwater contamination attributed to the Former HE&R Laundry Facility was discovered in the early 1990s. A groundwater collection and treatment system began operation on December 4, 1995 to treat dissolved phase tetrachloroethylene (PCE) contamination. Groundwater was recovered from Well A and pumped to a shallow tray aerator (STA) treatment system. The sustained pumping of Well A captured groundwater containing PCE, and a total of 27.32 gallons of PCE were recovered between 1995 and 2009.

The treatment system experienced several shutdowns throughout the 2005 and 2006 calendar years due to several large-scale construction projects in the site area. Additional reconstruction required Well A to be abandoned. After meeting with the PADEP, the remedial system was shut down in September 2007. Well A was subsequently decommissioned on May 13, 2009.

From September 1996 through December 2014, monitoring included the Flume Well, Turnpike Well, Well 6, Well B, Well C-D, with groundwater samples analyzed for PCE only.
Collection of groundwater samples from the Rhineland and Trailblazer wells began in December 2014.
With the March 2015 monitoring event, laboratory analysis included PCE and breakdown products trichloroethylene (TCE), cis-1,2-dichloroethene, trans-1,2 dichloroethene, and vinyl chloride.

Figure 2 shows the locations of the quarterly sampling wells. location of the decommissioned Well A, and location of the Remediation System.

Approve	Deny	Signatures	Date
x		/s/ Brenda J. Fruchtl, P.G. / Licensed Professional Geologist	November 5, 2019
x		/s/ Scott M. Arwood, P.E. / Environmental Engineer Manager	November 8, 2019

Summary of Review

Currently, the STA treatment system is only operated 4-6 days a year to take in and treat the purge water removed from the monitoring wells during quarterly groundwater sampling events.

The quarterly monitoring program will continue until the site can be closed.

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)	.0213
Latitude	40º 17' 11"	Longitude	-76º 39' 6"
Wastewater Description:	Groundwater Cleanup Discharge		
Receiving Waters	Spring Creek (WWF, MF)	Stream Code	09507
NHD Com ID	56400853	RMI	2.2
Drainage Area	20.1	Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)	3.72	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)		Slope (ft/ft)	
Watershed No.	7-D	Chapter 93 Class.	WWF, MF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	DEWATERING, DEWATERING, HABITAT ALTERATIONS, HABITAT ALTERATIONS, SILTATION, SILTATION, SILTATION, SILTATION		
Source(s) of Impairment	SOURCE UNKNOWN, SOURCE UNKNOWN, URBAN RUNOFF/STORM SEWERS, URBAN RUNOFF/STORM SEWERS, URBAN RUNOFF/STORM SEWERS, URBAN RUNOFF/STORM SEWERS, URBAN RUNOFF/STORM SEWERS		
TMDL Status		Name	
Nearest Downstream Public Water Supply Intake	Suez Water		
PWS Waters	Swatara Creek	Location	Hummelstown Boro Dauphin Co.
PWS RMI	10.5	Distance from Outfall (mi)	6.5

*USGS StreamStats: Pennsylvania. (Basin Delineation from October 30, 2019, see Figure 3)

Changes Since Last Permit Issuance: None

Treatment Facility Summary

Treatment Facility Name: Hershey Entertainment and Resorts Company (HE&R), former HE&R Laundry Facility

The treatment system consists of a shallow tray aerator (STA) (Figure 4). The STA treatment system is only operated during quarterly sampling events when groundwater is purged via dedicated submersible pumps from the monitoring wells (Well B, Well C-D, the Flume Well, and the Turnpike Well) and is transported to the treatment system via truck or pumped directly from the monitoring well.
Note: The other monitoring wells (Well 6, the Rhineland Well, and the Trailblazer Well) sampled quarterly are active productions wells and are not purged separately.

During the quarterly sampling events, approximately 1800 to 2000 gallons of purged groundwater is treated and discharged in batches over an approximate 6 to 8-hour period. Treated water is conveyed to Outfall 001 that discharges to Spring Creek.

Compliance History	
Summary of DMRs:	eDMR results from September 2018-August 2019 (see Table below) **Flow.** Daily max ranged from 0.00175 MGD to 0.001954 MGD **Tetrachloroethylene** was reported as non-detect for Avg Monthly and Daily Max *(detection limit* < 0.0002*mg/L)* No permit limits were exceeded in the past 5 years. **pH** was reported consistently between 6.0 and 9.0 SU. **Summary of the 2018 sample results of the monitoring wells and effluent from the treatment system:** • See Table 1: 2018 Monitoring Summary Update from the 2018 Annual Groundwater Monitoring Report: Former Hershey Laundry and Dry-Cleaning Facility (Figure 5)
Summary of Inspections:	DEP conducted a compliance evaluation on 09/22/2015. 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

DMR Data for Outfall 001 (from September 1, 2018 to August 31, 2019)Compliance History				
Parameter	**JUN-19**	**MAR-19**	**DEC-18**	**SEP-18**
Flow (MGD) Average Monthly	0.000065	0.000063	0.00007	0.00191
Flow (MGD) Daily Maximum	0.001954	0.001897	0.00175	0.00191
pH (S.U.) Minimum	7.03	7.94	7.76	7.60
Tetrachloroethylene (mg/L) Average Monthly	< 0.0002	< 0.0002	< 0.000003	< 0.0002
Tetrachloroethylene (mg/L) Daily Maximum	0.0002	< 0.0002	< 0.0002	< 0.0002

Influent Data

Influent to the treatment system is composed of purge water from the quarterly groundwater quality sampling of the following wells: Flume Well, Rhineland Well, Trailblazer Well, Turnpike Well, Well 6, Well B, and Well C-D.

Summary of the quarterly groundwater quality monitoring sample results:

- See Table 2: Five-Year Historical Monitoring Summary from the September 2019 Quarterly Monitoring Progress Report: Former Hershey Laundry and Dry-Cleaning Facility (Figure 6)

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.0213
Latitude 40º 17' 11.00" **Longitude** -76º 39' 6.00"
Wastewater Description: Groundwater Treatment System Discharge

Chemical Additives. None reported

Water Quality-Based Limitations
A "Toxics Screening Analysis" (Attachment A) determined the following parameters were candidates for PENTOXSD Modeling: Tetrachloroethylene (PCE) and Trichloroethylene (TCE).

The maximum concentration for the parameters were taken from the maximum result found in Table 2: Five-Year Historical Monitoring Summary from the September 2019 Quarterly Monitoring Progress Report: Former Hershey Laundry and Dry-Cleaning Facility (Table 2) (Figure 6) as follows: PCE result of 874 ug/L detected in Well C-D during the June 28, 2016 quarterly sampling event and TCE = 9 ug/L detected in the Flume Well during the March 23, 2017 quarterly sampling event.
Note: When the maximum results from Table 2 (Figure 5) for 1,2-cis-Dichlorethylene; 1,2-Trans-Dichlorethylene; and Vinyl Chloride were entered into the Toxics Screening Analysis, they were not indicated as parameters of concerns.

Development of Effluent Limitations

Since the purpose of the groundwater treatment system is to treat for contaminated groundwater, limitations were established based on the maximum concentrations of pollutants in the untreated groundwater to evaluate the effectiveness of the treatment system. WQBELs were established based on $Q_{7\text{-}10}$ streamflow of 3.72 cfs at RMI 2.2 on Spring Creek with the point of first use as the outfall.

PENTOXSD was run on the pollutants of concern as determined from the Toxics Screening Analysis.
The PENTOXSD Analysis Results and Modeling Input Data are attached (Attachment B).

When the WQBELs from PENTOXSD were entered into the Toxics Screening Analysis (Attachment A), the screening recommendation for both PCE and TCE were "no limits/monitoring."

Since the previous permit limit for PCE was based on previously calculated Technology Based Effluent Limits (TBEL), it was determined to maintain the more stringent TBEL for PCE from the previous permit.
The prior TBEL was based on a 99% removal of PCE using air stripping technology.
PCE has been non detect (using a MDL of 0.0002 mg/L) in the effluent, so the treatment system is capable of treating to the previously established TBEL (which is more stringent than the WQBEL).

Comparison of Effluent Limitations and Parameters from 2012 NPDES Permit and Draft NPDES Permit:

	2012 NPDES Permit Limits Renewal			**Proposed 2019 NPDES Permit Limits Renewal**		
Parameter	*Ave Monthly*	*Max Daily*	*Inst. Maximum*	**Ave Quarterly***	**Max Daily**	**Inst. Maximum**
Flow (MGD)	*xxx*	*xxx*	*xxx*	**xxx**	**xxx**	**xxx**
pH (SU)	*From 6.0 to 9.0 inclusive*			**From 6.0 to 9.0 inclusive**		
Tetrachloroethylene (mg/L)	*0.050*	*0.10*	*0.125*	**0.050**	**0.100**	**0.125**

**changed limit from Average Monthly to Average Quarterly since the treatment system only discharges during quarterly sampling events.*

Part C Special Conditions

I. Other Requirements (Standard – as applicable)

A. The approval herein given is specifically made contingent upon the permittee acquiring all necessary property rights by easement or otherwise, providing for the satisfactory construction, operation, maintenance or replacement of all structures associated with the herein approved discharge in, along, or across private property, with full rights of ingress, egress and regress.

B. Collected screenings, slurries, sludges, and other solids shall be handled, recycled and/or disposed of in compliance with the Solid Waste Management Act (35 P.S. §§ 6018.101 – 6018.1003), 25 Pa. Code Chapters 287, 288, 289, 291, 295, 297, and 299 (relating to requirements for landfilling, impoundments, land application, composting, processing, and storage of residual waste), Chapters 261a, 262a, 263a, and 270a (related to identification of hazardous waste, requirements for generators and transporters, and hazardous waste, requirements for generators and transporters, and hazardous waste permit programs), federal regulation 40 CFR Part 257, The Clean Streams Law, and the Federal Clean Water Act and its amendments. Screenings collected at intake structures shall be collected and managed and not be returned to the receiving waters.

The permittee is responsible to obtain or assure that contracted agents have all necessary permits and approvals for the handling, storage, transport and disposal of solid waste materials generated as a result of wastewater treatment.

C. If the applicable standard or effluent guideline limitation relating to the application for Best Available Technology (BAT) Economically Achievable or to Best Conventional Technology (BCT) is developed by DEP or EPA for this type of industry, and if such standard or limitation is more stringent than the corresponding limitations of this permit (or if it controls pollutants not covered by this permit), DEP may modify or revoke and reissue the permit to conform with that standard or limitation.

II. Groundwater Remediation System – Shallow Tray Aerator (STA) Treatment System

Note: There were no Groundwater Cleanup Special Conditions in the previous permit.
The section was named "Groundwater Remediation System – Shallow Tray Aerator (STA) Treatment System," since the system no longer functions as an active groundwater cleanup site.
Special Condition A was added since an air stripper is used for treatment and is the standard language included for air stripper systems (modified for a shallow tray aerator versus an air stripper tower).
Special Condition B is specific to this permit to clarify when quarterly sampling shall occur, since sampling frequency is being reduced from monthly in the previous permit to quarterly sampling in the proposed permit.

A. There shall be no discharge of shallow tray aerator (STA) treatment system cleaning wastewaters to waters of the Commonwealth. Cleaning wastewaters shall be discharged to the sanitary sewer or hauled off site for proper disposal.

B. The quarterly sampling of the treatment system effluent at Outfall 001 shall correspond with the quarterly groundwater sampling events when groundwater purged from the monitoring wells is pumped through the treatment system.

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 Quarterly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report Avg Qrtly	Report Daily Max	XXX	XXX	XXX	XXX	1/quarter	Measured
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	9.0	9	1/quarter	Grab
Tetrachloroethylene	XXX	XXX	XXX	0.050	0.100	0.125	1/quarter	Grab

Compliance Sampling Location: Outfall 001

Tools and References Used to Develop Permit	
☐	WQM for Windows Model (see Attachment)
☒	PENTOXSD for Windows Model (see Attachment B)
☐	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☒	Toxics Screening Analysis Spreadsheet (see Attachment A)
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☒	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
☐	Pennsylvania CSO Policy, 385-2000-011, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
☐	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
☐	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
☐	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
☐	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97.
☐	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 391-2000-019, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99.
☐	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 391-2000-022, 3/1999.
☐	Design Stream Flows, 391-2000-023, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
☐	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☐	SOP:
☐	Other:

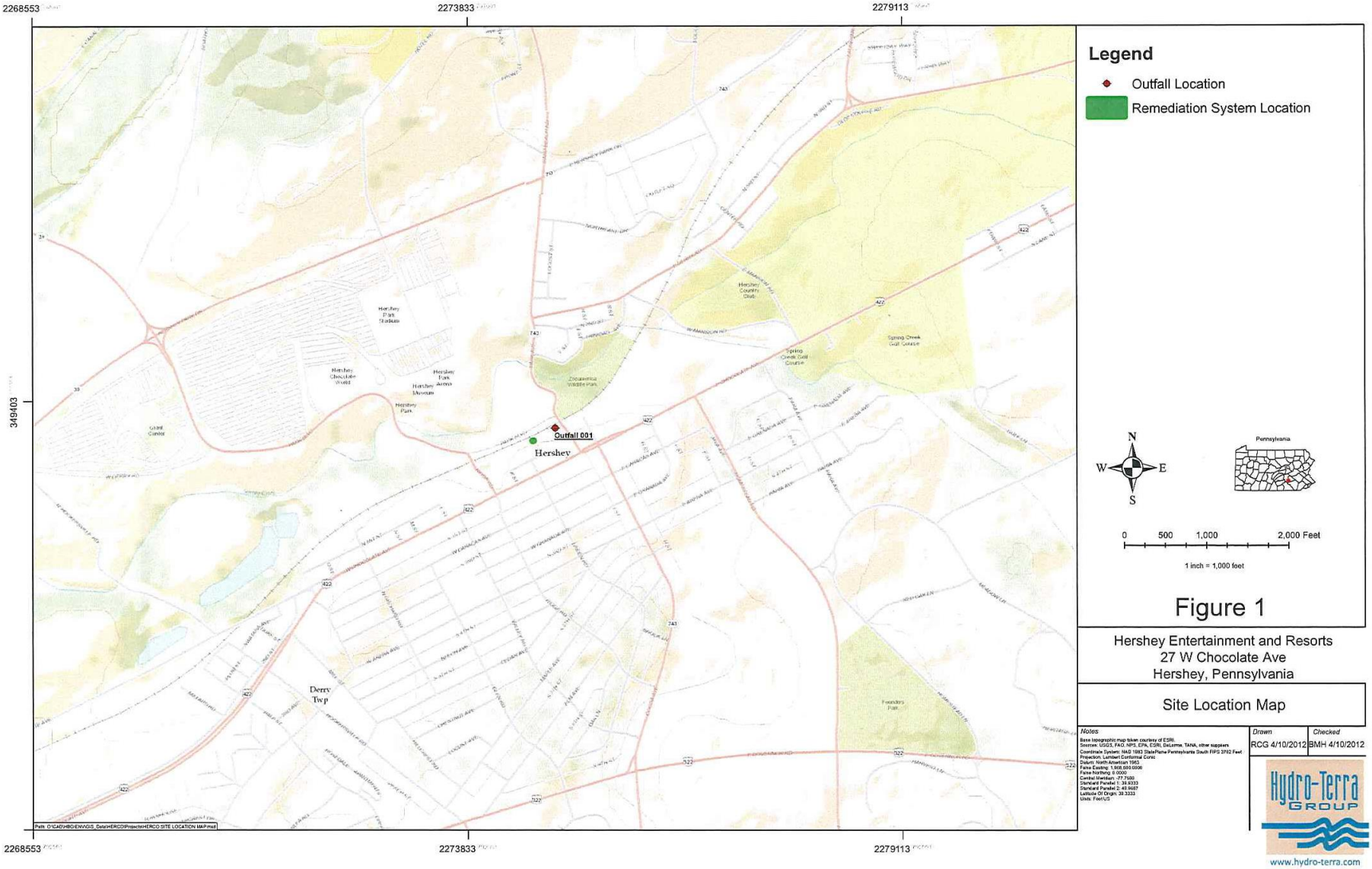


Figure 1. Site Location Map (from renewal application received April 3, 2017)

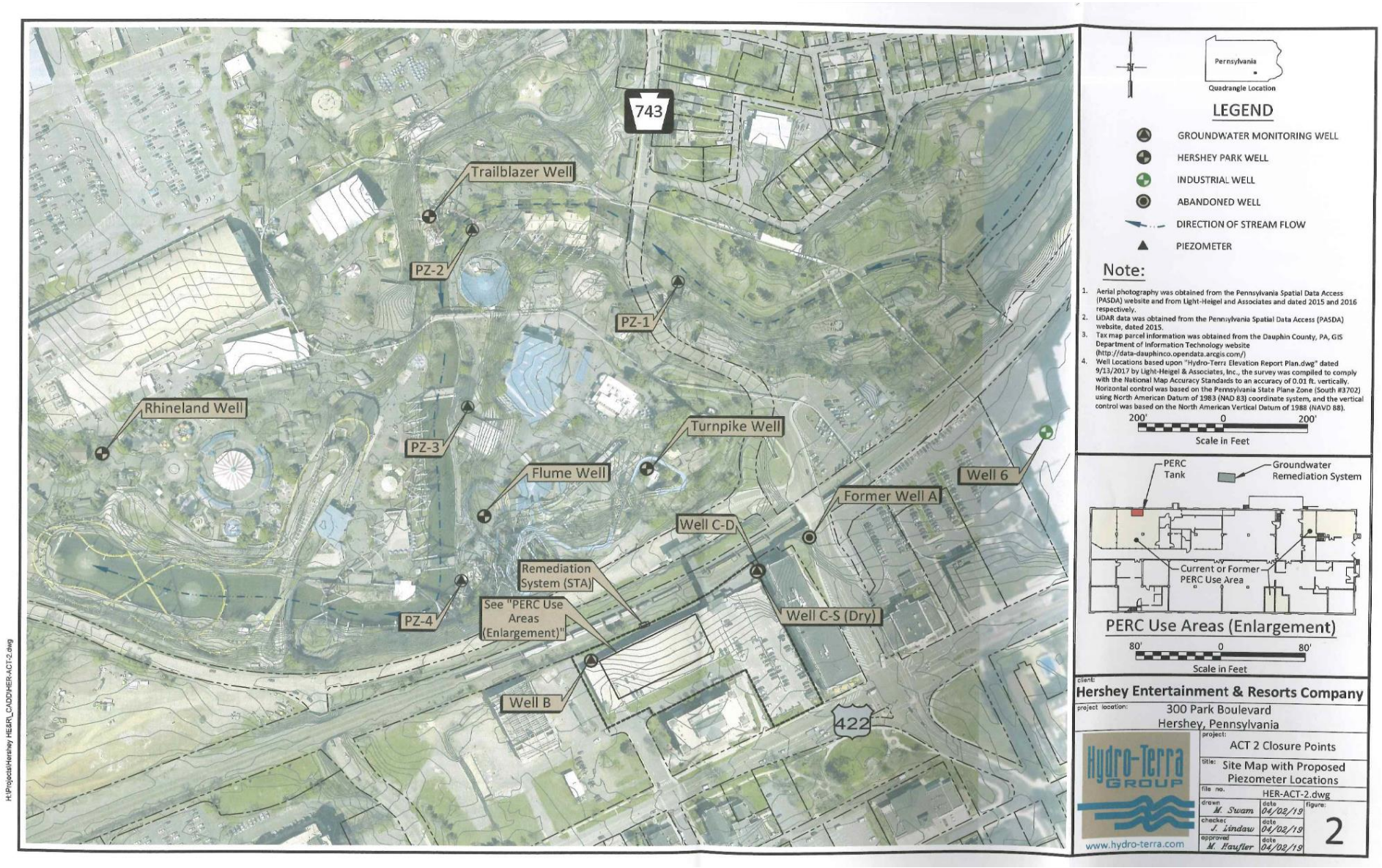
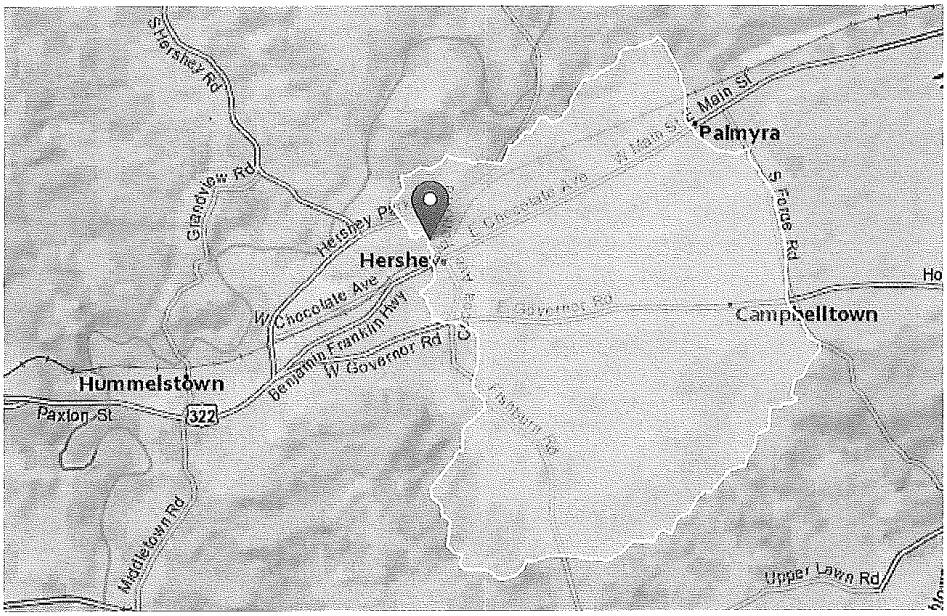


Figure 2. Site Map with well locations (from September 2019 Quarterly Monitoring Progress Report)

PA0087076. Hershey Entertainment and Resorts Company (HE&R). former HE&R Laundry Facility.

Region ID: PA
Workspace ID: PA20191030153536328000
Clicked Point (Latitude, Longitude): 40.28872, -76.65347
Time: 2019-10-30 11:35:53 -0400



Low-Flow Statistics Parameters[Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	20.1	square miles	4.93	1280

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	SEp
7 Day 2 Year Low Flow	5.79	ft^3/s	38	38
30 Day 2 Year Low Flow	6.63	ft^3/s	33	33
7 Day 10 Year Low Flow	3.72	ft^3/s	51	51

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

Figure 3. Basin Delineation and Low Flow Statistics (from October 30, 2019 using USGS StreamStats: Pennsylvania)

FIGURE 2

AERATION PROCESS, COUNTER-CURRENT AIR AND WATER FLOW

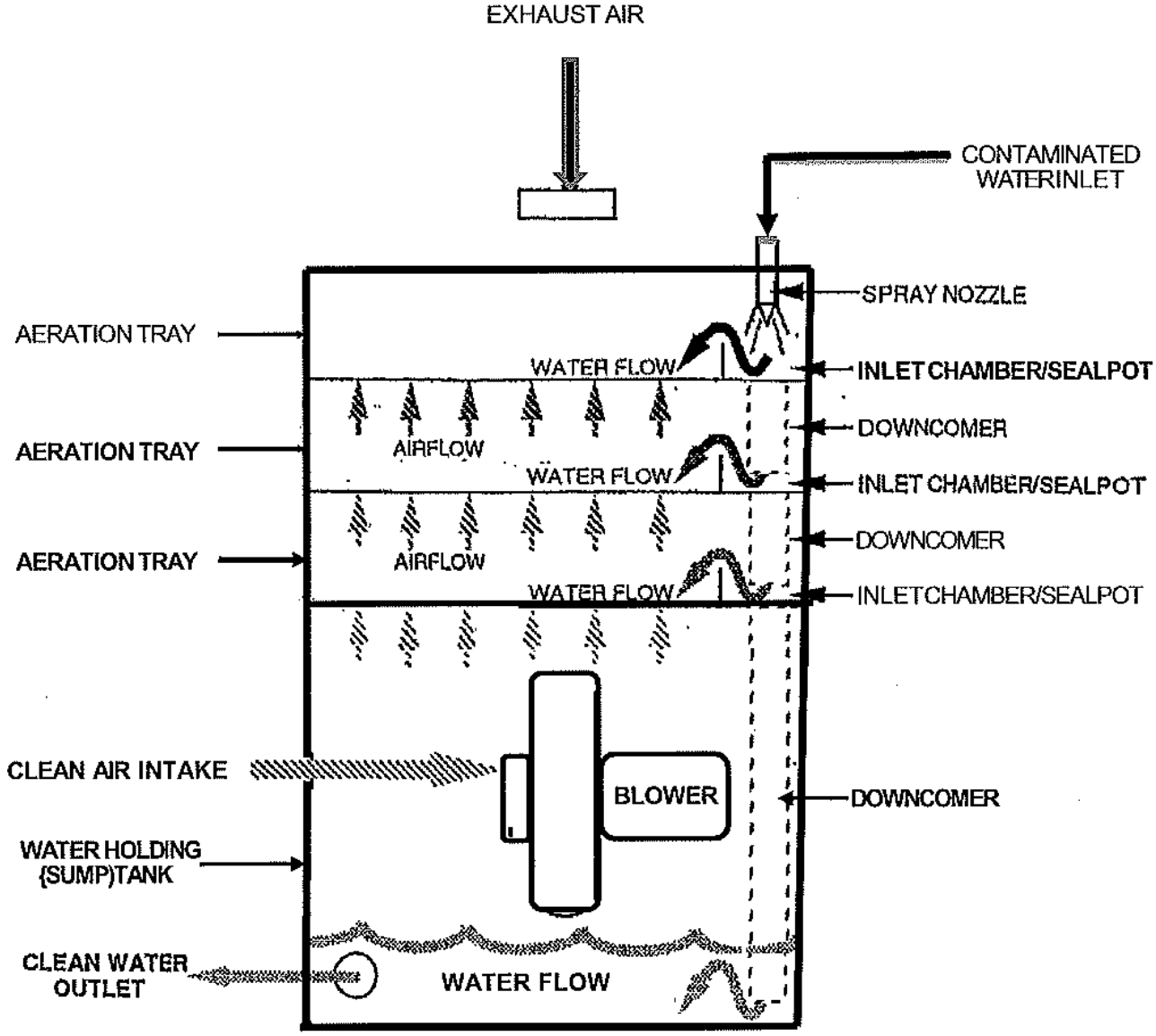


Figure 4. Treatment System Schematic (from renewal application received April 3, 2017)

Table 1. 2018 Monitoring Summary Update **former Hershey Laundry Site**

Well ID	Date	pH	Specific Conductance (uS/cm)	Temperature (Celsius)	Turbidity (NTU)	Dissolved Oxygen (mg/l)	Salinity (mg/l)	TDS (g/l)	ORP (mV)	Purge Volume	Detection Limit (ug/l)	PCE (ug/l)	TCE (ug/l)	cis-1,2-Dichloroethene (ug/l)	trans-1,2-Dichloroethene (ug/l)	Vinyl Chloride (ug/l)
PADEP Statewide Groundwater MCL's												*5*	*5*	*70*	*100*	*2*
Effluent	20-Mar-18										0.5	ND	ND	ND	ND	ND
Effluent	21-Jun-18										0.5	ND	ND	ND	ND	ND
Effluent	19-Sep-18										0.2	ND	ND	ND	ND	ND
Effluent	10-Dec-18										0.2	ND	ND	ND	ND	ND
Flume Well	20-Mar-18	6.99	1080	14.21	18.5	10.05	0.05	0.701	152	800	0.5	0.8	ND	ND	ND	ND
Flume Well	21-Jun-18	7.4	1000	15.49	8	6.61	0.05	0.637	246	825	0.5	3	ND	ND	ND	ND
Flume Well	19-Sep-18	6.82	1020	15.5	11.2	22.02	0.05	0.655	265	800	0.2	3	ND	ND	ND	ND
Flume Well	10-Dec-18	6.22	520	13.52	42.7	13.83	0.02	0.329	437	800	0.2	0.5 J	ND	ND	ND	ND
Rhineland Well	20-Mar-18	7.32	1160	12.73	4.8	9.38	0.06	0.736	170	no purge	0.5	ND	ND	ND	ND	ND
Rhineland Well	21-Jun-18	7.76	928	15.76	1.7	8.98	0.05	0.594	325	no purge	0.5	ND	ND	ND	ND	ND
Rhineland Well	19-Sep-18	6.97	970	17.68	0	8.85	0.05	0.621	293	no purge	0.2	0.3 J	ND	ND	ND	ND
Rhineland Well	10-Dec-18	6.32	827	13.62	46.1	0.55	0.04	0.531	443	no purge	0.2	0.3 J	ND	ND	ND	ND
Trailblazer Well	20-Mar-18	6.94	1520	13.46	11.2	7.16	0.08	0.975	185	no purge	0.5	ND	ND	ND	ND	ND
Trailblazer Well	21-Jun-18	7.53	1330	17.24	18.9	7.93	0.07	0.856	257	no purge	0.5	ND	ND	ND	ND	ND
Trailblazer Well	19-Sep-18	7.03	1050	19.3	1.6	7.17	0.05	0.676	281	no purge	0.2	ND	ND	ND	ND	ND
Trailblazer Well	10-Dec-18	6.14	1050	14.05	433	10.53	0.05	0.669	427	no purge	0.2	ND	ND	ND	ND	ND
Turnpike Well	20-Mar-18	6.71	3260	14.7	7.3	5.67	0.17	2.09	119	125	0.5	33	ND	ND	ND	ND
Turnpike Well	21-Jun-18	7.34	2850	15.74	53.9	6.21	0.15	1.82	196	125	0.5	71	ND	0.6 J	ND	ND
Turnpike Well	19-Sep-18	6.56	2700	15.79	8.5	6.89	0.14	1.73	206	120	0.4	60	0.2 J	0.4 J	ND	ND
Turnpike Well	10-Dec-18	6.08	2680	14.34	14.1	5.61	0.14	1.72	269	125	0.2	37	0.2 J	0.3 J	ND	ND
Well 6	20-Mar-18	7.06	1210	13.67	28.3	5.35	0.06	0.774	207	no purge	0.5	1	ND	ND	ND	ND
Well 6	21-Jun-18	7.57	1070	16.39	29.9	4.73	0.05	0.684	318	no purge	0.5	ND	ND	ND	ND	ND
Well 6	19-Sep-18	6.59	1120	16.96	47.1	6.35	0.06	0.72	226	no purge	0.2	0.3 J	ND	ND	ND	ND
Well 6	10-Dec-18	7.46	1120	13.69	17	1.76	0.06	0.716	402	no purge	0.2	0.3 J	ND	ND	ND	ND
Well B	20-Mar-18	6.93	2070	13.55	457	7.77	0.01	1.32	156	815	0.5	4	ND	ND	ND	ND
Well B	21-Jun-18	7.62	1808	17.45	788	5.52	0.09	1.15	327	873	0.5	4	ND	ND	ND	ND
Well B	19-Sep-18	6.89	1290	16.2	145	8.77	0.06	0.825	305	840	0.2	3	ND	ND	ND	ND
Well B	10-Dec-18	6.34	1240	13.94	40.5	0.46	0.06	0.795	414	825	0.2	3	ND	ND	ND	ND
Well C-D	20-Mar-18	7.2	2190	15.27	3.8	5.38	0.11	1.4	112	150	0.5	25	ND	ND	ND	ND
Well C-D	21-Jun-18	7.59	1740	17.93	21	4.61	0.09	1.11	243	140	0.5	19	ND	ND	ND	ND
Well C-D	19-Sep-18	6.63	1030	17.42	23.1	4.86	0.05	0.661	298	150	0.2	10	ND	ND	ND	ND
Well C-D	19-Dec-18	6.91	1880	15.03	37	19.83	0.09	1.2	128	140	0.2	20	ND	ND	ND	ND
Canyon Well	10-Dec-18	4.01	1120	13.60	50	0.71	0.06	0.717	249	100	0.2	ND	ND	ND	ND	ND

Notes uS/cm = microsiemens per centimeter; NTU = nephelometric turbidity unit; mV = millivolts; detect. limit for vinyl chlor. = 0.4 ug/l
mg/l = milligrams per liter; ug/l = micrograms per liter; red type indicates exceedance

Hydro-Terra Group

Figure 5. Summary of the 2018 sample results of the monitoring wells sampled and effluent from the treatment system (from the 2018 Annual Groundwater Monitoring Report: Former Hershey Laundry and Dry-Cleaning Facility)

Table 2. Five-Year Historical Monitoring Summary **former Hershey Laundry Site**

Well ID	Date	pH	Specific Conductance (uS/cm)	Temperature (Celsius)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Salinity (mg/l)	total dissolved solids - TDS (mg/l)	oxidaton reduction potential - ORP (mV)	Purge Volume (gallons)	Detection Limit (ug/l)	tetrachloroethene - PCE (ug/l)	trichloroethene - TCE (ug/l)	cis-1,2-Dichloroethene (ug/l)	trans-1,2-Dichloroethene (ug/l)	Vinyl Chloride (ug/l)
PADEP Statewide Groundwater MCL's												***5***	***5***	***70***	***100***	***2***
Canyon Well	10-Dec-18	4.01	1120	13.6	50	0.71	0.06	0.717	249	100	0.2	ND	ND	ND	ND	ND
Flume Well	18-Sep-14	8.02	1072	15.5	20.1	7.02	0.7	0.7	139		1	5				
Flume Well	19-Dec-14	7.43	1077	11.63	17.7	6.62	0.05	0.7	223		1	6				
Flume Well	20-Mar-15	7.41	1090	13	0	6.79	0.06	0.91	209		1	3.4	ND	ND	ND	ND
Flume Well	29-Jun-15	7.1	1093	14.4	6.4	3.62	0.1	0.8	90		1	5.5	ND	ND	ND	ND
Flume Well	18-Sep-15	7.27	1100	14.57	104	8.45	0.1	0.8	106		1	4	ND	ND	ND	ND
Flume Well	21-Dec-15	7.6	1107	14.5	32.9	7.42	0	0.6	98		1	1.3	ND	ND	ND	ND
Flume Well	25-Mar-16	7.29	1270	14.4	17.9	5.81	0.1	0.8	120		1	1.6	ND	ND	ND	ND
Flume Well	28-Jun-16	7.19	1030	15.18	6.5	12.94	0.05	0.66	81		50	1	ND	ND	ND	ND
Flume Well	14-Sep-16	7.47	1050	16.7	0	15.72	0.05	0.671	231		1	ND	ND	ND	ND	ND
Flume Well	13-Dec-16	7.21	878	14.19	8.2	6.05	0.04	0.562	121	780	1	ND	ND	ND	ND	ND
Flume Well	23-Mar-17	7.38	942	13.57	14.7	7.18	0.05	0.602	92	790	1	1.3	9	ND	ND	ND
Flume Well	27-Jun-17	6.55	1040	16.04	20.7	3.68	0.05	0.669	194	800	1	2.4	ND	ND	ND	ND
Flume Well	27-Sep-17	6.48	1080	16.81	15.7	6.31	0.05	0.697	300	797	1	2.6	ND	ND	ND	ND
Flume Well	12-Dec-17	7.5	970	14.1	25.6	5.52	0	0.6	119	800	0.5	2	ND	ND	ND	ND
Flume Well	20-Mar-18	6.99	1080	14.21	18.5	10.05	0.05	0.701	152	800	0.5	0.8	ND	ND	ND	ND
Flume Well	21-Jun-18	7.4	1000	15.49	8	6.61	0.05	0.637	246	825	0.5	3	ND	ND	ND	ND
Flume Well	19-Sep-18	6.82	1020	15.5	11.2	22.02	0.05	0.655	265	800	0.2	3	ND	ND	ND	ND
Flume Well	10-Dec-18	6.22	520	13.52	42.7	13.83	0.02	0.329	437	800	0.4	0.5 J	ND	ND	ND	ND
Flume Well	21-Mar-19	6.79	1120	14.02	128	5.95	0.06	0.77	388	800	0.2	1	ND	ND	ND	ND
Flume Well	17-Jun-19	6.58	1.01	15.15	47.3	8.27	0.05	0.648	167	800	0.2	2	ND	ND	ND	ND
Rhineland Well	19-Dec-14	7.38	1078	11.48	230	12.07	0.04	0.59	339	NA	1	ND				
Rhineland Well	18-Mar-15		1091							NA						
Rhineland Well	29-Jun-15	7.7	1094	15.6	6.4	7.49	0	0.7	141	NA	1	ND	ND	ND	ND	ND
Rhineland Well	19-Sep-15	7.55	1103	23.2	1.9	10.29	0	0.6	162	NA	1	ND	ND	ND	ND	ND
Rhineland Well	21-Dec-15	6.95	1108	12.7	20.5	9.62	0	0.52	122	NA	1	ND	ND	ND	ND	ND
Rhineland Well	25-Mar-16	7.56	1180	15.2	39.8	9.92	0.1	0.8	246	NA	1	ND	ND	ND	ND	ND
Rhineland Well	29-Jun-16	7.44	940	15.49	4.4	8.14	0.05	0.609	83	NA	1	ND	ND	ND	ND	ND
Rhineland Well	14-Sep-16	7.37	946	16.31	0	15.99	0.05	0.606	170	NA	1	ND	ND	ND	ND	ND
Rhineland Well	13-Dec-16	7.13	724	17.08	1.4	15.59	0.04	0.463	195	NA	1	ND	ND	ND	ND	ND
Rhineland Well	23-Mar-17	6.22	1001	14.19	0	6.13	0.05	0.647	135	NA	1	ND	ND	ND	ND	ND
Rhineland Well	27-Jun-17	6.2	892	16.50	5	4.43	0.04	0.571	285	NA	1	ND	ND	ND	ND	ND
Rhineland Well	27-Sep-17	6.21	871	17.76	2.3	4.69	0.04	0.557	399	NA	1	ND	ND	ND	ND	ND
Rhineland Well	12-Dec-17	7.91	999	13.2	11.3	8.81	0.1	0.72	137	NA	0.5	ND	ND	ND	ND	ND

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Figure 6 (page 1 of 5). Summary of the quarterly groundwater quality monitoring sample results from the past 5 years (from the September 2019 Quarterly Monitoring Progress Report: Former Hershey Laundry and Dry-Cleaning Facility)

Table 2. Five-Year Historical Monitoring Summary **former Hershey Laundry Site**

Well ID	Date	pH	Specific Conductance (uS/cm)	Temperature (Celsius)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Salinity (mg/l)	total dissolved solids - TDS (mg/l)	oxidaton reduction potential - ORP (mV)	Purge Volume (gallons)	Detection Limit (ug/l)	tetrachloroethene - PCE (ug/l)	trichloroethene - TCE (ug/l)	cis-1,2-Dichloroethene (ug/l)	trans-1,2-Dichloroethene (ug/l)	Vinyl Chloride (ug/l)
PADEP Statewide Groundwater MCL's												***5***	***5***	***70***	***100***	***2***
Rhineland Well	20-Mar-18	7.32	1160	12.73	4.8	9.38	0.06	0.736	170	NA	0.5	ND	ND	ND	ND	ND
Rhineland Well	21-Jun-18	7.76	928	15.76	1.7	8.98	0.05	0.594	325	NA	0.5	ND	ND	ND	ND	ND
Rhineland Well	19-Sep-18	6.97	970	17.68	0	8.85	0.05	0.621	293	NA	0.2	0.3 J	ND	ND	ND	ND
Rhineland Well	10-Dec-18	6.32	827	13.62	46.1	0.55	0.04	0.531	443	NA	0.4	0.3 J	ND	ND	ND	ND
Rhineland Well	21-Mar-19	7.54	1010	13.49	28.4	8.26	0.05	0.646	203	NA	0.2	ND	ND	ND	ND	ND
Rhineland Well	17-Jun-19	6.67	0.959	16.59	3.9	7.08	0.05	0.614	264	NA	0.2	0.4J	ND	ND	ND	ND
Trailblazer Well	19-Dec-14	7.45	1079	11.02	246	8.67	0.06	0.8	239	NA	1	ND				
Trailblazer Well	18-Mar-15		1092							NA						
Trailblazer Well	29-Jun-15	7.84	1095	16.1	60.7	9.28	0.1	0.9	159	NA	1	ND	ND	ND	ND	ND
Trailblazer Well	19-Sep-15	7.35	1102	19.27	38.4	7.09	0.1	1.1	118	NA	1	ND	ND	ND	ND	ND
Trailblazer Well	21-Dec-15	7.25	1109	12.3	51.2	10.12	0	0.8	164	NA	1	ND	ND	ND	ND	ND
Trailblazer Well	25-Mar-16	7.51	1510	16	0	11.19	0.1	1	248	NA	1	ND	ND	ND	ND	ND
Trailblazer Well	29-Jun-16	7.22	1640	14.85	6.9	5.39	0.08	1.05	-18	NA	1	ND	ND	ND	ND	ND
Trailblazer Well	14-Sep-16	7.09	2000	19.46	4.2	9.01	0.1	1.28	69	NA	1	ND	ND	ND	ND	ND
Trailblazer Well	13-Dec-16	7.08	1140	13.48	176	6.46	0.06	0.722	28	NA	1	ND	ND	ND	ND	ND
Trailblazer Well	23-Mar-17	6.18	877	9.26	149	8.03	0.04	0.538	218	NA	1	ND	ND	ND	ND	ND
Trailblazer Well	27-Jun-17	6.33	1280	16.06	46.6	2.73	0.06	0.819	184	NA	1	ND	ND	ND	ND	ND
Trailblazer Well	27-Sep-17	6.34	1360	18.47	14.5	2.82	0.07	0.873	245	NA	1	ND	ND	ND	ND	ND
Trailblazer Well	12-Dec-17	7.88	1300	14.4	76.8	6.13	0.1	0.8	69	NA	0.5	ND	ND	ND	ND	ND
Trailblazer Well	20-Mar-18	6.94	1520	13.46	11.2	7.16	0.08	0.975	185	NA	0.5	ND	ND	ND	ND	ND
Trailblazer Well	21-Jun-18	7.53	1330	17.24	18.9	7.93	0.07	0.856	257	NA	0.5	ND	ND	ND	ND	ND
Trailblazer Well	19-Sep-18	7.03	1050	19.3	1.6	7.17	0.05	0.676	281	NA	0.2	ND	ND	ND	ND	ND
Trailblazer Well	10-Dec-18	6.14	1050	14.05	433	10.53	0.05	0.669	427	NA	0.4	ND	ND	ND	ND	ND
Trailblazer Well	21-Mar-19	6.99	1540	14.23	7.7	5.2	0.08	0.988	245	NA	0.2	ND	ND	ND	ND	ND
Trailblazer Well	17-Jun-19	7.36	1.13	18.87	26.5	9.83	0		314	NA	0.2	ND	ND	ND	ND	ND
Turnpike Well	19-Sep-14	6.83	1073	16.2	168	5.84	0.1	1.5	85		1	66.7				
Turnpike Well	19-Dec-14	6.91	1080	12.13	25.7	7.63	0.12	1.6	124		1	57.2				
Turnpike Well	18-Mar-15	6.81	1086	14.53	0	6.16	0.16	2.04	163		1	49.8	ND	ND	ND	ND
Turnpike Well	29-Jun-15	7	1096	15.2	21.5	5.46	0.1	1.6	56		1	55.8	ND	ND	ND	ND
Turnpike Well	18-Sep-15	7.02	1101	14.82	30.7	6.56	0.1	1.7	60		1	37.4	ND	ND	ND	ND
Turnpike Well	21-Dec-15	7.47	1110	14.6	25.6	7.48	0.2	2	11		1	28.7	ND	ND	ND	ND
Turnpike Well	25-Mar-16	6.91	2870	14.7	40.5	7.27	0.2	1.8	76		1	24.2	ND	ND	ND	ND
Turnpike Well	28-Jun-16	6.76	1620	16.66	19.8	12.36	0.08	1.06	70		1	10.2	ND	ND	ND	ND
Turnpike Well	14-Sep-16	7.38	762	15.48	15.1	10.27	0.04	0.488	157		1	1.5	ND	ND	ND	ND

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Figure 6 (page 2 of 5). Summary of the quarterly groundwater quality monitoring sample results from the past 5 years (from the September 2019 Quarterly Monitoring Progress Report: Former Hershey Laundry and Dry-Cleaning Facility)

Table 2. Five-Year Historical Monitoring Summary **former Hershey Laundry Site**

Well ID	Date	pH	Specific Conductance (uS/cm)	Temperature (Celsius)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Salinity (mg/l)	total dissolved solids - TDS (mg/l)	oxidaton reduction potential - ORP (mV)	Purge Volume (gallons)	Detection Limit (ug/l)	tetrachloroethene - PCE (ug/l)	trichloroethene - TCE (ug/l)	cis-1,2-Dichloroethene (ug/l)	trans-1,2-Dichloroethene (ug/l)	Vinyl Chloride (ug/l)
PADEP Statewide Groundwater MCL's												***5***	***5***	***70***	***100***	***2***
Turnpike Well	13-Dec-16	7.09	1420	13.64	103	8.27	0.07	0.895	48	137	1	10.2	ND	ND	ND	ND
Turnpike Well	23-Mar-17	5.7	2020	12.41	44.5	10.81	0.1	1.29	120	139	1	11.3	ND	ND	ND	ND
Turnpike Well	27-Jun-17	4.77	2430	15.75	216	3.49	0.12	1.55	182	110	1	50.1	ND	ND	ND	ND
Turnpike Well	27-Sep-17	6.31	2480	17.48	3.6	5.05	0.13	1.59	230	125	1	47.1	ND	ND	ND	ND
Turnpike Well	12-Dec-17	7.44	2390	14.5	10.7	6.85	0.1	1.5	119	125	0.5	48	ND	ND	ND	ND
Turnpike Well	20-Mar-18	6.71	3260	14.7	7.3	5.67	0.17	2.09	119	125	0.5	33	ND	ND	ND	ND
Turnpike Well	21-Jun-18	7.34	2850	15.74	53.9	6.21	0.15	1.82	196	125	0.5	71	ND	0.6 J	ND	ND
Turnpike Well	19-Sep-18	6.56	2700	15.79	8.5	6.89	0.14	1.73	206	120	0.4	60	0.2 J	0.4 J	ND	ND
Turnpike Well	10-Dec-18	6.08	2680	14.34	14.1	5.61	0.14	1.72	269	125	0.4	37	0.2 J	0.3 J	ND	ND
Turnpike Well	21-Mar-19	6.8	2880	14.86	58.7	8.36	0.15	1.85	-22	125	0.2	27	ND	ND	ND	ND
Turnpike Well	17-Jun-19	6.04	2.59	15.92	51.3	7	0.18	1.66	109	125	0.2	40	0.2J	0.2J	ND	ND
Well 6	24-Sep-14	7.04	1076	12.12	34.1	11.71	0.04	0.6	293	NA	1	ND				
Well 6	19-Dec-14	7.61	1081	10.48	8.4	11.34	0.05	0.7	328	NA	1	ND				
Well 6	18-Mar-15	7.31	1087	13.88	0	9.47	0.06	0.81	286	NA	1	ND	ND	ND	ND	ND
Well 6	29-Jun-15	7.87	1097	18.14	11.5	7.56	0.08	2	268	NA	1	ND	ND	ND	ND	ND
Well 6	18-Sep-15	7.63	1104	15.95	77.2	8.35	0.1	0.8	157	NA	1	ND	ND	ND	ND	ND
Well 6	21-Dec-15	7.76	1111	15.2	103	7.03	0	0.7	113	NA	1	ND	ND	ND	ND	ND
Well 6	25-Mar-16	7.54	1320	15.5	8.5	7.5	0.1	0.8	260	NA	1	ND	ND	ND	ND	ND
Well 6	28-Jun-16	7.91	978	16	3.4	7.53	0.05	0.63	76	NA	1	ND	ND	ND	ND	ND
Well 6	14-Sep-16	7.58	920	16.46	26.3	7.72	0.05	0.589	2.14	NA	1	ND	ND	ND	ND	ND
Well 6	13-Dec-16	7.26	1260	13.93	12.7	7.73	0.06	0.828	109	NA	1	ND	ND	ND	ND	ND
Well 6	23-Mar-17	6.69	1080	12.23	88.9	5.98	0.05	0.694	151	NA	1	ND	ND	ND	ND	ND
Well 6	27-Jun-17	6.43	1040	16.74	6.5	8.09	0.05	0.668	287	NA	1	1.1	ND	ND	ND	ND
Well 6	27-Sep-17	6.27	1070	16.3	19	4.13	0.05	0.681	172	NA	1	1.2	ND	ND	ND	ND
Well 6	12-Dec-17	7.96	1080	13.7	43	5.81	0	0.7	86	NA	0.5	1	ND	ND	ND	ND
Well 6	20-Mar-18	7.06	1210	13.67	28.3	5.35	0.06	0.774	207	NA	0.5	1	ND	ND	ND	ND
Well 6	21-Jun-18	7.57	1070	16.39	29.9	4.73	0.05	0.684	318	NA	0.5	ND	ND	ND	ND	ND
Well 6	19-Sep-18	6.59	1120	16.96	47.1	6.35	0.06	0.72	226	NA	0.2	0.3 J	ND	ND	ND	ND
Well 6	10-Dec-18	7.46	1120	13.69	17	1.76	0.06	0.716	402	NA	0.4	0.3 J	ND	ND	ND	ND
Well 6	21-Mar-19	7.39	1160	12.88	30.8	5.67	0.06	0.745	166	NA	0.2	.3J	ND	ND	ND	ND
Well 6	17-Jun-19	5.79	1.06	15.8	44.5	5.58	0.05	0.676	255	NA	0.2	0.3J	ND	ND	ND	ND

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Figure 6 (page 3 of 5). Summary of the quarterly groundwater quality monitoring sample results from the past 5 years (from the September 2019 Quarterly Monitoring Progress Report: Former Hershey Laundry and Dry-Cleaning Facility)

Table 2. Five-Year Historical Monitoring Summary **former Hershey Laundry Site**

Well ID	Date	pH	Specific Conductance (uS/cm)	Temperature (Celsius)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Salinity (mg/l)	total dissolved solids - TDS (mg/l)	oxidaton reduction potential - ORP (mV)	Purge Volume (gallons)	Detection Limit (ug/l)	tetrachloroethene - PCE (ug/l)	trichloroethene - TCE (ug/l)	cis-1,2-Dichloroethene (ug/l)	trans-1,2-Dichloroethene (ug/l)	Vinyl Chloride (ug/l)
PADEP Statewide Groundwater MCL's												***5***	***5***	***70***	***100***	***2***
Well B	18-Sep-14	7.66	1074	15.4	198	7.31	0.1	1.7	240	NA	1	20.1				
Well B	19-Dec-14	4.36	1082	11.78	155	7.54	0.11	1.5	247	NA	1	11.3				
Well B	20-Mar-15	7.13	1088	14.21	42.6	7.02	0.19	2.38	205	NA	1	10.1	ND	ND	ND	ND
Well B	29-Jun-15	7.25	1099	13.54	96.7	7.4	0.1	1.3	276	NA	1	2.8	ND	ND	ND	ND
Well B	18-Sep-15	7.22	1105	14.09	999	8.45	0.1	1.3	242	NA	1	5.2	ND	ND	ND	ND
Well B	21-Dec-15	7.72	1112	14.7	999	7.75	0.1	1	146	NA	1	3.7	ND	ND	ND	ND
Well B	25-Mar-16	7.15	2380	15	412	7.88	0.1	1.5	216	NA	1	2.6	ND	ND	ND	ND
Well B	29-Jun-16	7.27	1980	18.42	0	7.37	0.1	1.27	103	NA	1	3.9	ND	ND	ND	ND
Well B	14-Sep-16	7.03	1290	15.81	0	9.2	0.06	0.824	289	NA	1	3.5	ND	ND	ND	ND
Well B	13-Dec-16	7.78	1500	13.56	556	8.68	0.08	0.971	137	270	1	4.5	ND	ND	ND	ND
Well B	23-Mar-17	7.3	1250	14.35	80.4	6.49	0.06	0.802	244	879	1	1.8	ND	ND	ND	ND
Well B	27-Jun-17	6.3	1190	16.58	95.5	4.63	0.06	0.76	321	858	1	2.9	ND	ND	ND	ND
Well B	27-Sep-17	6.65	1330	17.16	726	7.66	0.07	0.848	367	815	1	3.9	ND	ND	ND	ND
Well B	12-Dec-17	8.09	1420	14.3	358	7.45	0.1	0.9	133	815	0.5	5	ND	ND	ND	ND
Well B	20-Mar-18	6.93	2070	13.55	457	7.77	0.01	1.32	156	815	0.5	4	ND	ND	ND	ND
Well B	21-Jun-18	7.62	1808	17.45	788	5.52	0.09	1.15	327	873	0.5	4	ND	ND	ND	ND
Well B	19-Sep-18	6.89	1290	16.2	145	8.77	0.06	0.825	305	840	0.2	3	ND	ND	ND	ND
Well B	10-Dec-18	6.34	1240	13.94	40.5	0.46	0.06	0.795	414	825	0.4	3	ND	ND	ND	ND
Well B	21-Mar-19	7.11	1540	14.49	54	8.63	0.08	0.989	166	811	0.2	4	ND	ND	ND	ND
Well B	17-Jun-19	6.15	1.31	16.25	14	6.69	0.06	0.839	245	825	0.2	3	ND	ND	ND	ND
Well C-D	19-Sep-14	7.23	1075	17.7	22.2	6.56	0.1	1.4	196		1	47				
Well C-D	19-Dec-14	7.88	1083	12.33	21.9	8.67	0.11	1.5	197		1	86.5				
Well C-D	20-Mar-15	7.36	1089	15	0	4.98	0.13	1.75	87		5	288	ND	ND	ND	ND
Well C-D	29-Jun-15	7.72	1098	16.3	35.9	4.75	0.1	1.3	52		1	41.1	ND	ND	ND	ND
Well C-D	18-Sep-15	7.49	1106	17.64	71.7	11.65	0.1	1.1	233		1	108	1	1.2	ND	ND
Well C-D	21-Dec-15	7.79	1113	15.9	55.2	5.27	0.1	1.7	94		1	38.5	ND	ND	ND	ND
Well C-D	25-Mar-16	7.42	1870	17.7	1.9	7.52	0.1	1.2	196		1	54.9	ND	ND	ND	ND
Well C-D	28-Jun-16	7.4	3170	20.33	254	8.28	0.16	2.03	73		20	874	6.8	9.6	ND	ND
Well C-D	14-Sep-16	7.28	2690	17.95	14.3	22.23	0.14	1.72	246		20	814	ND	ND	ND	ND
Well C-D	13-Dec-16	7.78	1500	13.56	556	8.68	0.08	0.971	137	110	5	216	ND	ND	ND	ND
Well C-D	23-Mar-17	7.46	2200	14.35	28.6	4.53	0.11	1.41	251	132	1	35.1	ND	ND	ND	ND
Well C-D	27-Jun-17	6.7	1880	17.4	4.2	4.1	0.1	1.21	247	142	1	16	ND	ND	ND	ND
Well C-D	27-Sep-17	6.81	1540	18.02	3.4	5.32	0.08	0.985	250	130	1	19.4	ND	ND	ND	ND
Well C-D	12-Dec-17	7.94	1770	15.4	9.2	6.27	0.1	1.1	44	135	0.5	25	ND	ND	ND	ND

Hydro-Terra Group

Figure 6 (page 4 of 5). Summary of the quarterly groundwater quality monitoring sample results from the past 5 years (from the September 2019 Quarterly Monitoring Progress Report: Former Hershey Laundry and Dry-Cleaning Facility)

Table 2. Five-Year Historical Monitoring Summary **former Hershey Laundry Site**

Well ID	Date	pH	Specific Conductance (uS/cm)	Temperature (Celsius)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Salinity (mg/l)	total dissolved solids - TDS (mg/l)	oxidaton reduction potential - ORP (mV)	Purge Volume (gallons)	Detection Limit (ug/l)	tetrachloroethene - PCE (ug/l)	trichloroethene - TCE (ug/l)	cis-1,2-Dichloroethene (ug/l)	trans-1,2-Dichloroethene (ug/l)	Vinyl Chloride (ug/l)
PADEP Statewide Groundwater MCL's												***5***	***5***	***70***	***100***	***2***
Well C-D	20-Mar-18	7.2	2190	15.27	3.8	5.38	0.11	1.4	112	150	0.5	25	ND	ND	ND	ND
Well C-D	21-Jun-18	7.59	1740	17.93	21	4.61	0.09	1.11	243	140	0.5	19	ND	ND	ND	ND
Well C-D	19-Sep-18	6.63	1030	17.42	23.1	4.86	0.05	0.661	298	150	0.2	10	ND	ND	ND	ND
Well C-D	19-Dec-18	6.91	1880	15.03	37	19.83	0.09	1.2	128	140	0.4	20	ND	ND	ND	ND
Well C-D	21-Mar-19	7.27	1500	16.03	1.1	8.03	0.12	1.45	150	136	0.2	30	ND	ND	ND	ND
Well C-D	17-Jun-19	7.27	1.29	21.59	19.3	9.51	0.1	*	221	200	0.2	18	ND	ND	ND	ND
PZ1D	29-Mar-19	6.02	508	10.48		14.26	0.02	0.325	15	0	0.2	ND	ND	ND	ND	ND
PZ1D	17-Jun-19	not enough water to collect parameters									0.2	ND	ND	ND	ND	ND
PZ1S	29-Mar-19	5.57	550	11.95	31.5	14.78	0.03	0.352	292	0.57	0.2	ND	ND	ND	ND	ND
PZ1S	17-Jun-19	7.71	0.9	18.76	76999	10.03	0.1	*	148	0.57	0.2	ND	ND	ND	ND	ND
PZ2S	28-Mar-19	5.11	1470	9.66	412	0.77	0.07	0.957	-59	0.84	0.2	ND	ND	ND	ND	ND
PZ2S	17-Jun-19	7.7	1.21	19.17	630	9.72	0.1	*	-39	0.78	0.2	ND	ND	ND	ND	ND
PZ3D	28-Mar-19	5.91	1020	10.77		15.01	0.05	0.651	6	1.14	0.2	ND	ND	ND	ND	ND
PZ3D	17-Jun-19	7.7	0.9	18.85	571	10.71	0.2	*	-12	1.14	0.2	ND	ND	ND	ND	ND
PZ3S	28-Mar-19	4.89	1220	11.22		11.41	0.06	0.78	80	0.69	0.2	ND	ND	ND	ND	ND
PZ3S	17-Jun-19	7.56	0.9	19.11	688	9.79	0	*	127	0.6	0.2	ND	ND	ND	ND	ND
PZ4D	28-Mar-19	5.81		11.63	454	15.17	0.03	0.419	0.651	1.29	0.2	2	ND	ND	ND	ND
PZ4D	17-Jun-19	7.51	0.999	17.79	7999	10.26	0.1	*	321	0.5	0.2	1J	ND	ND	ND	ND
PZ4S	28-Mar-19	6.54	992	10.07	125	19.13	0.05	0.628	214	0.54	0.2	6	ND	ND	ND	ND
PZ4S	17-Jun-19	6.92	0.04	17.41	431	10.9	0	*	339	0.5	0.2	5	ND	ND	ND	ND

Notes
uS/cm = microsiemens per centimeter
mg/l = milligrams per liter
2019 detection limit for vinyl chloride = 0.4 ug/l
NTU = nephelometric turbidity unit
ug/l = micrograms per liter
mV = millivolts detect. limit for vinyl chlor. = 0.4 ug/l
red type indicates exceedance
*Data not available

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Figure 6 (page 5 of 5). Summary of the quarterly groundwater quality monitoring sample results from the past 5 years (from the September 2019 Quarterly Monitoring Progress Report: Former Hershey Laundry and Dry-Cleaning Facility)

ATTACHMENT A

TOXICS SCREENING ANALYSIS
WATER QUALITY POLLUTANTS OF CONCERN
VERSION 2.7

CLEAR FORM

Facility: **HE&R - former HE&R Laundry Facility**
NPDES Permit No.: **PA0087076**
Outfall: **001**
Analysis Hardness (mg/L): **100**
Discharge Flow (MGD): **0.0213**
Analysis pH (SU): **7**
Stream Flow, Q_{7-10} (cfs): **3.6**

Parameter	Maximum Concentration in Application or DMRs (µg/L)		Most Stringent Criterion (µg/L)	Candidate for PENTOXSD Modeling?	Most Stringent WQBEL (µg/L)	Screening Recommendation
Total Dissolved Solids			500000			
Chloride			250000			
Bromide			N/A			
Sulfate			250000			
1,4-Dioxane			N/A			
Tetrachloroethylene		874	0.69	Yes	5383.975	No Limits/Monitoring
Trichloroethylene		9	2.5	Yes	19507	No Limits/Monitoring
1,2-cis-Dichloroethylene		9.6	12	No		
1,2-trans-Dichloroethylene	<	0.2	140	No (Value < QL)		
Vinyl Chloride	<	0.4	0.025	No (Value < QL)		

ATTACHMENT B

PENTOXSD Analysis Results

Recommended Effluent Limitations

SWP Basin	Stream Code:	Stream Name:
07D	9507	SPRING CREEK

RMI	Name	Permit Number	Disc Flow (mgd)
2.20	Hershey Laundry	PA0087076	0.0019

Parameter	Effluent Limit (µg/L)	Governing Criterion	Max. Daily Limit (µg/L)	Most Stringent WQBEL (µg/L)	Most Stringent WQBEL Criterion
TETRACHLOROETHYLENE	1000	INPUT	1560.161	5383.975	CRL
TRICHLOROETHYLENE	1000	INPUT	1560.161	19507.15	CRL

PENTOXSD

Modeling Input Data

Stream Code	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope	PWS With (mgd)	Apply FC
9507	2.20	350.00	20.10	0.00000	0.00	☑

Stream Data

	LFY	Trib Flow	Stream Flow	WD Ratio	Rch Width	Rch Depth	Rch Velocity	Rch Trav Time	Tributary Hard	Tributary pH	Stream Hard	Stream pH	Analysis Hard	Analysis pH
	(cfsm)	(cfs)	(cfs)		(ft)	(ft)	(fps)	(days)	(mg/L)		(mg/L)		(mg/L)	
Q7-10	0.185	0	0	0	0	0	0	0	100	7	0	0	0	0
Qh		0	0	0	0	0	0	0	100	7	0	0	0	0

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	AFC PMF	CFC PMF	THH PMF	CRL PMF	Disc Hard (mg/L)	Disc pH
Hershey Laundry	PA0087076	0.00194	0	0	0	0	0	0	0	100	7

Parameter Data

Parameter Name	Disc Conc (µg/L)	Trib Conc (µg/L)	Disc Daily CV	Disc Hourly CV	Steam Conc (µg/L)	Stream CV	Fate Coef	FOS	Crit Mod	Max Disc Conc (µg/L)
TETRACHLOROETHYLENE	1000	0	0.5	0.5	0	0	0	0	1	0
TRICHLOROETHYLENE	1000	0	0.5	0.5	0	0	0	0	1	0

Stream Code	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope	PWS With (mgd)	Apply FC
9507	0.00	320.00	22.40	0.00000	0.00	☑

Stream Data

	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Rch Velocity (fps)	Rch Trav Time (days)	Tributary Hard (mg/L)	Tributary pH	Stream Hard (mg/L)	Stream pH	Analysis Hard (mg/L)	Analysis pH
Q7-10	0.2	0	0	0	0	0	0	0	100	7	0	0	0	0
Qh		0	0	0	0	0	0	0	100	7	0	0	0	0

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	AFC PMF	CFC PMF	THH PMF	CRL PMF	Disc Hard (mg/L)	Disc pH
		0	0	0	0	0	0	0	0	100	7

Parameter Data

Parameter Name	Disc Conc (µg/L)	Trib Conc (µg/L)	Disc Daily CV	Disc Hourly CV	Steam Conc (µg/L)	Stream CV	Fate Coef	FOS	Crit Mod	Max Disc Conc (µg/L)
TETRACHLOROETHYLENE	0	0	0.5	0.5	0	0	0	0	1	0
TRICHLOROETHYLENE	0	0	0.5	0.5	0	0	0	0	1	0

PENTOXSD Analysis Results

Hydrodynamics

SWP Basin	Stream Code:	Stream Name:
07D	9507	SPRING CREEK

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope	Depth (ft)	Width (ft)	WD Ratio	Velocity (fps)	Reach Trav Time (days)	CMT (min)
Q7-10 Hydrodynamics											
2.200	3.7185	0	3.7185	0.003	0.0026	0.6348	27.327	43.049	0.2145	0.6267	39.758
0.000	4.1785	0	4.1785	NA	0	0	0	0	0	0	NA
Qh Hydrodynamics											
2.200	23.415	0	23.415	0.003	0.0026	1.426	27.327	19.164	0.601	0.2237	11.824
0.000	25.928	0	25.928	NA	0	0	0	0	0	0	NA

PENTOXSD Analysis Results

Wasteload Allocations

RMI	Name	Permit Number
2.20	Hershey Laundry	PA0087076

AFC

Q7-10: **CCT (min)** 15 **PMF** 0.614 **Analysis pH** 7 **Analysis Hardness** 100

Parameter	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
TETRACHLOROETHYLENE	0	0	0	0	700	700	533427.6
TRICHLOROETHYLENE	0	0	0	0	2300	2300	1750000

CFC

Q7-10: **CCT (min)** 39.758 **PMF** 1 **Analysis pH** 7 **Analysis Hardness** 100

Parameter	Stream Conc. (µg/L)	Stream CV	Trib Conc. (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
TETRACHLOROETHYLENE	0	0	0	0	140	140	173601.8
TRICHLOROETHYLENE	0	0	0	0	450	450	558005.7

THH

Q7-10: **CCT (min)** 39.758 **PMF** NA **Analysis pH** NA **Analysis Hardness** NA

Parameter	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
TETRACHLOROETHYLENE	0	0	0	0	NA	NA	NA
TRICHLOROETHYLENE	0	0	0	0	NA	NA	NA

CRL

Qh: **CCT (min)** 11.824 **PMF** 1

Parameter	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
TETRACHLOROETHYLENE	0	0	0	0	0.69	0.69	5383.975
TRICHLOROETHYLENE	0	0	0	0	2.5	2.5	19507.15