SIXTH FIVE-YEAR REVIEW REPORT FOR
KIMBERTON SUPERFUND SITE
CHESTER COUNTY, PENNSYLVANIA

Prepared by

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Date

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LIST OF ABBREVIATIONS & ACRONYMS

ARAR	Applicable or Relevant and Appropriate Requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CIC	Community Involvement Coordinator
CFR	Code of Federal Regulations
CO	Consent Order
EC	Environmental Covenant
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Difference
FYR	Five-Year Review
ICs	Institutional Controls
lbs.	Pounds
MCL	Maximum Contaminant Level
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
OU	Operable Unit
PADEP	Pennsylvania Department of Environmental Protection
PADER	Pennsylvania Department Environmental Resources
PRP	Potentially Responsible Party
RAO	Remedial Action Objectives
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
TBC	To be considered
TCE	Trichloroethene
µg/L	micrograms per liter
USGS	United States Geological Survey
UU/UE	Unlimited Use and Unrestricted Exposure
VC	Vinyl Chloride
VOC	Volatile Organic Compound
1,2-DCE	1,2-Dichloroethylene

TABLES

FIGURES

ATTACHMENTS

I. INTRODUCTION

The purpose of a Five-Year Review (FYR) is to evaluate the implementation and performance of a remedy to determine if the remedy is and will continue to be protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in FYR reports such as this one. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The U.S. Environmental Protection Agency (EPA) is preparing this FYR pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, consistent with the National Contingency Plan (NCP)(40 CFR Section 300.430(f)(4)(ii)), and considering EPA policy.

This is the sixth FYR for the Kimberton Superfund Site (Site). The triggering action for this statutory review is the completion date of the previous FYR, August 4, 2014. The FYR has been prepared because hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure (UU/UE).

The Site consists of two Operable Units (OUs): OU-1 addresses the supply of safe drinking and contact water to residences and businesses impacted by Site related groundwater contamination and OU-2 addresses the extraction and treatment of contaminated groundwater and surface water.

The FYR was led by Andrew Haneiko, EPA's Remedial Project Manager (RPM) for the Site. Participants included Alex Mandell, EPA Community Involvement Coordinator (CIC), Jennifer Hubbard, EPA Toxicologist, Herminio Concepcion, EPA Hydrogeologist, Ben Cohan, EPA Regional Counsel, and Colin Wade, Pennsylvania Department of Environmental Protection (PADEP) Project Manager. The Potentially Responsible Parties (PRPs) were notified of the initiation of the FYR. The review began on July 11, 2018.

Site Background

The Site is approximately 45 acres and located in the Village of Kimberton, East Pikeland Township, Chester County, Pennsylvania on Coldstream Road between Hares Hill Road and Route 113 (Pike Springs Road) (Figure 1). Surrounding the Site is undeveloped land to the west and north. To the east and northeast, across Coldstream Road are several businesses as well as a few residences. A residential community and a senior living retirement community are located to the south of Pike Springs Road.

To the north of the Site is an unnamed tributary that flows along Hares Hill Road through the Village of Kimberton. This unnamed tributary eventually flows to French Creek and then to the Schuylkill River. Local groundwater flows in a north-northeasterly direction from the Site towards the Village of Kimberton and is known to discharge into local streams at topographic low points. The Site is underlain by two hydrogeologic bedrock units; Precambrian age graphitic gneiss and the Triassic age Stockton formation.

The Henry Company, the PRPs, and its predecessors have utilized approximately 25 acres of the Site to manufacture asphalt products since 1969. In 2007, approximately 21.5 acres of the Site, consisting primarily of undeveloped land, was sold by the PRPs to Kimberton Town Square LP and currently remains undeveloped.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: Kimberton Superfund Site		
EPA ID: PAD980691703		
Region: 3	**State:** PA	**City/County:** Kimberton/Chester County
SITE STATUS		
NPL Status: Final		
Multiple OUs? Yes	**Has the site achieved construction completion?** Yes	
REVIEW STATUS		
Lead agency: EPA *[If "Other Federal Agency", enter Agency name]*:		
Author name (Federal or State Project Manager): Andrew Haneiko		
Author affiliation: EPA		
Review period: July 11, 2018 – June 30, 2019		
Date of site inspection: Feburary 27, 2019		
Type of review: Statutory		
Review number: 6		
Triggering action date: August 4, 2014		
Due date *(five years after triggering action date)*: August 4, 2019		

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

From 1947 to 1959, Ciba-Geigy Corporation (Ciba) manufactured epoxy resins and textile auxiliaries at the Site. During manufacturing operations, waste solvents were disposed of in several unlined lagoons (numbered 1, 2, 3, 4, 6, 7, 8 and 9) and a former septic pit (Figure 2). The property was purchased from Ciba by Firmenich, Inc. (Firmenich) in 1959. Firmenich never initiated manufacturing operations on the property, and, in 1968, sold the property to Monsey Products Co. which manufactured asphalt products. Off specification asphalt product was disposed of in the former septic pit. Disposal practices resulted in contaminated soils in the lagoon and former septic areas which permeated into the groundwater, resulting in contaminated groundwater that also discharged to local creeks. Monsey Bakor, Inc. (Monsey Products Company) was purchased by Henry Co. in 1999. Henry currently owns the property and operates a facility manufacturing asphalt products.

In August 1981, the U.S. Geological Survey (USGS) detected volatile organic compounds (VOCs) during sampling of monitoring wells at the Site and in the surrounding area. In 1982, additional sampling of potable wells in the vicinity of the Site was conducted by Pennsylvania Department Environmental Resources (PADER), the predecessor to PADEP, and confirmed the presence of VOCs. An investigation of groundwater, surface water, and soils was conducted by EPA in the same year and trichloroethene (TCE) and 1,2-dichloroethene (1,2-DCE) were detected in soil, groundwater, and surface water. The Site was proposed to the National Priorities List (NPL) on December 1, 1982 and was formally added to the NPL on September 8, 1983.

Response Actions

Under an enforcement order between PADER and the PRPs, cleanup actions were initiated in 1982 and fifty-seven 55-gallon drums were removed from the abandoned septic pit at the Site. Following the drum removal, sampling of the former lagoons indicated that materials within lagoons 6, 7, and 9 (lagoon 6 was initially identified incorrectly as lagoon 5) were of sufficient VOC concentrations to merit excavation and removal. In 1984, as part of a PADER site remedial action program, approximately 2,050 cubic yards of contaminated soil was excavated from lagoons 6, 7 and 9 and transported offsite for treatment and disposal. Samples to confirm cleanup of these lagoons were collected as part of the remedial action program. Additional samples from all of the lagoons were collected from soil borings as part of the Remedial Investigation (RI). Laboratory analysis of soil samples from the lagoons indicated the presence of a limited number of VOCs and base neutral compounds in all of the former lagoon areas, with the exception of lagoon 1 in which no VOCs or base neutral compounds were detected. In 1985, as part of a Consent Order (CO) with PADER, 23 nearby residential wells received granular activated carbon filters and two businesses received tanks of potable water.

The RI was completed by the PRPs in February 1989, and a Feasibility Study (FS) was completed in March 1989 for the Site. The RI Report provided data to determine the nature and extent of the contamination, while the FS report provided a series of remedial alternatives for the Site.

EPA selected "no further action" for OU-1 in a Record of Decision (ROD) on September 30, 1988, selected a remedy for OU-2 in a ROD on June 30, 1989, and revised the OU-2 remedy in an Explanation of Significant Differences (ESD) on March 29, 2018.

The Remedial Action Objectives (RAOs) for OU-1 include:

- Provide a safe drinking and contact water source to those impacted by the groundwater contamination.

The OU-1 "no further action" selected remedy is described in detail under Status of Implementation, below.

The RAOs for OU-2 include:

- Hydraulic groundwater control should be established to contain the identified Site contaminants and to reduce the concentration and mass of these contaminants in groundwater; and
- A local spring (Spring A-10) should be remediated to improve water quality of a local stream designated as "Stream A" (Figure 3).

The OU-2 Selected Remedy consists of the following components:

- Continued monitoring of groundwater and surface water for the Contaminants of Concern (COCs) listed in Table 1;
- Installation of extraction wells for onsite hydraulic control, treatment of groundwater by air stripping, discharge of treated water to adjacent stream, treatment to natural background;
- Collect and treat Spring A-10 to improve surface water quality;
- Treat drinking water and maintain potable water supply storage tanks until public water system is installed;
- Install administrative controls to prevent the installation of new groundwater wells within the area affected by contamination;
- Long-term monitoring to assess the plume and evaluate the Stockton formation to assess the validity of groundwater model assumptions.

The OU-2 ROD required groundwater extraction and treatment until a cleanup level of "natural background conditions".

Table 1. COCs Selected for Monitoring

Surface Water	Groundwater
1,1-DCE	TCE
1,2-trans-DCE	Vinyl Chloride (VC)
TCE	1,2-trans-DCE

2018 ESD

On March 29, 2018, EPA issued an ESD that made two significant changes to the selected remedy in the OU-2 ROD: 1) modified the required institutional controls (ICs) to include ICs related to vapor intrusion (VI) as well as maintaining the existing caps over the former lagoon and septic pit areas; and 2) changed groundwater cleanup levels from natural background conditions to federal maximum contaminant levels (MCLs) (Table 2).

Table 2. Site Related "natural background" and MCL Concentrations

Contaminant	Natural Background micrograms/Liter (µg/L)	MCL (µg/L)
TCE	0	5
1,2-cis-DCE	0	70
VC	0	2

In addition, once MCLs have been met, the ESD requires that the cumulative risk from any remaining Site-related COCs shall be at or below a cancer risk of 1E-04 and a target-organ-specific Hazard Index at or below 1.

Status of Implementation

OU-1 Drinking Water Supply Remedy Implementation

In 1986, PADER negotiated a CO with the PRPs to provide 23 residential wells with granular activated carbon filters and supply two commercial locations with potable water tanks until a permanent public waterline was installed. In the OU-1 ROD, EPA selected "no further action" and recommended the continued implementation of the activities outlined in the CO. In 1990, construction of the public water supply system started in the area and was completed in early June 1991. Residential properties in the area were connected to the public water supply and, in April 1992, the granular activated carbon filters that treated residential well water were dismantled.

OU-2 Groundwater Extraction and Treatment Remedy Implementation

Under a Consent Decree with EPA, the PRPs prepared the technical specifications and design for the remediation system for OU-2, which was submitted on July 5, 1990. EPA approved the final groundwater treatment system design on February 26, 1993.

The groundwater recovery system includes ten extraction wells (PW-001 to PW-010) and Spring SP-001 sump. Extraction wells PW-001 to PW-007 were designed to capture groundwater at the perimeter of the Site. Extraction wells PW-008 to PW-010 were designed to capture groundwater with high VOC concentrations. Sump SP-001 was intended to quickly reduce VOC concentrations in a tributary to French Creek (Figure 4).

The groundwater treatment system consists of a 5,500-gallon equalization tank, an air stripping tower, and pumps and controls. Each extraction well has a submersible pump, well vault, and sensors/controls that are linked by fiber optics and electrical wiring to a process control panel in the treatment building to allow for automatic operation. Groundwater is pumped into the building and treated by an air stripper to remove the VOCs. The treatment system has the capacity to pump and treat up to 250 gallons per minute. The effluent discharges 85 million gallons of treated water per year to an unnamed tributary, referred to as Stream A, which is north of the Site (Figure 3).

The remedy in the OU-2 ROD required an evaluation of the Stockton formation to determine if groundwater conditions in the formation would be restored by the selected remedy. Specifically, the OU-2 ROD states, "...the performance of the Stockton formation will be further evaluated to assess the validity of the groundwater model assumptions, which involve the remediation of the Stockton formation. If this evaluation indicates that further groundwater remediation in the Stockton formation is a viable alternative, then such a program may be implemented for that area" (Page 37 of the OU-2 ROD). The Compilation of Stockton Evaluation Investigation Reports was completed in 2010 and provided a summary of the investigations of the Stockton formation. Data gathered during the Stockton evaluation did not result in changes to groundwater flow, contaminant transport conclusions, or the delineation of the extent of the VOC plume and demonstrated that the system is effective in plume capture. EPA completed a review of the Compilation of Stockton Evaluation Investigation Reports and approved the evaluation by letter dated April 28, 2011.

VI was identified as a potential new migration pathway during the 2009 FYR, and a VI evaluation was performed in 2011. Based on data collected from the indoor air and subslab sampling, vapor mitigation systems were installed at an onsite warehouse and an offsite residence. Subsequent sampling in 2013 and 2014 indicated that the mitigation systems were performing as intended.

Institutional Controls Summary

The OU-2 ROD required administrative controls, now referred to as ICs, to prevent installation of new groundwater wells in the area of contamination. The Chester County Health Department regulates the installation of wells within Chester County via a well permit approval process. The Chester County Health Department is aware of the Site and the associated groundwater plume and restricts the permitting and installation of new wells without prior PADEP and EPA approval.

In the 2018 ESD, EPA modified the ICs required in the selected remedy to include ICs related to VI and to maintain protection of the existing caps on the former lagoon and septic pit areas. The PRPs also filed a VI Notice with the Township. This notice will be provided to any property owner within the VI area of interest (AOI) when a building permit application is filed with the Township. The PRPs will install a VI mitigation system in any new structure within the VI AOI. The ICs, as clarified in the 2018 ESD, were implemented through an environmental covenant (EC) that was recorded with the Chester County Recorder of Deeds on September 14, 2018.

Table 3. Summary of Planned and/or Implemented ICs

Media, engineered controls, and areas that do not support UU/UE based on current conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (or planned)
Groundwater	Yes	Yes	26-2-194 and 26-2-194.2	Protect the integrity of the remedy, to prevent exposure to VI and to maintain the existing caps on the former lagoon and septic pit areas.	Environmental Covenant September 14, 2018
Groundwater	Yes	Yes	Groundwater Contaminant Plume	Informational ICs provided to property owners within the VI AOI when a building permit application is filed with the Township. PRPs will provide financial assistance for installation of mitigation system.	Environmental Covenant September 14, 2018 and East Pikeland Township Building Regulations

Media, engineered controls, and areas that do not support UU/UE based on current conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (or planned)
Groundwater	Yes	Yes	Groundwater Contaminant Plume	Prevent installation of wells in the groundwater contaminant plume.	Chester County Health Department Regulations

Systems Operations/Operation & Maintenance

The Pre-Final Design package that EPA approved on February 26, 1993 contained the Construction Quality Control Plan to monitor the quality of the construction, an Operation and Maintenance Plan, and a Post-Construction Sampling and Analysis Plan. The Operation and Maintenance Plan was revised most recently in March 2014. As reported in the 2017 Annual Report, the treatment system continues to operate reliably.

The groundwater treatment system is designed to treat 250 gallons per minute with a concentration as high as 4,000 µg/L total VOCs. Data from the 2017 Twenty-Fourth Annual Groundwater Evaluation Report show the 2017 average flow rate was approximately 65 gallons per minute, and a maximum total VOC concentration in the treatment influent was 11.98 µg/L. The effluent from the treatment system is sampled monthly. Table 4 summarizes the discharge limitations. There have been no exceedances of the discharge limits for the treated groundwater since system start up.

Table 4. Groundwater Treatment System Effluent Limits

Parameter	EPA Approved Analytical Method	EPA Operational Discharge Limit (µg/L) Avg Annual	Instant Max
1,2-trans-DCE	EPA 601	440	135
1,2-cis-DCE	EPA 601	*	*
TCE	EPA 601	18	216
VC	EPA 601	nd	nd
Chloroform	EPA 601	12	144
Methylene Chloride	EPA 601	10	120
1,1-DCE	EPA 601	nd	n/a
1,1,1-trichloroethane	EPA 601	550**	1375
Chlorobenzene	EPA 601	20**	n/a

Note:
*1,2-cis-DCE added as a required monitoring in 1999. Discharge limits were not established for this compound. However, discharge concentrations have not exceeded the MCL of 70 µg/L.
**monthly average.
nd – not detected
n/a – not applicable

Extraction well PW-010 was shut down in 2010 with EPA approval as the VOC levels had been below MCLs for two years. VOC levels in that well have remained below MCLs since the shutdown. Pumping at spring SP-001 was shut down in October 2013 with EPA approval. SP-001 had been below MCLs for several years and remains below MCLs. Following recommendations in the 2016 Twenty-Third Annual Groundwater Evaluation Report, wells PW-006, PW-007, and PW-009 were shut down in October 2017 with EPA approval. VOC levels in all three wells had been below MCLs for four years prior to the shutdown. Extraction well PW-008 was shutdown with EPA approval in October 2018. PW-001 through PW-005 continue to extract contaminated groundwater at the Site and are located primarily at the perimeter of the groundwater contaminant plume (Figure 4).

A summary of the maintenance performed on the groundwater extraction and treatment system in 2017 is presented in Attachment 4. Repairs included replacing a well pump, motor starters, and a battery back-up for the pump controls.

Performance Monitoring

The air stripper continues to operate with minimal maintenance. The system is emitting approximately 0.00017 pounds (lbs.) per hour of total VOCs, which is below the level allowed by PADEP, and which is below the calculated maximum rate of 0.64 lb. per hour projected in the 1989 FS. This lower rate is due to lower than expected VOC concentrations in the groundwater and diminishing flowrates due to the shutdown of wells.

Long-term monitoring consists of water level measurements, monitoring the groundwater treatment system, monitoring contaminant levels in the extraction wells and monitoring wells, and monitoring and inspection of the two VI mitigation systems. The PRPs submit monthly status reports and an annual report on the groundwater treatment system to EPA. Table 5 outlines the monitoring frequency.

Table 5. Monitoring Frequency

Sampling Point	No. Wells	Frequency	Parameters
Influent and effluent of groundwater treatment system	n/a	Monthly	20 VOCs
Extraction Wells	10	Semi-annually	20 VOCs
Springhouse Sump	1	Semi-annually	20 VOCs
Monitoring Wells	18	Semi-annually	20 VOCs

Groundwater is monitored for the 20 VOCs listed in Table 6, which include additional VOCs that are not required to be monitored by the OU-2 ROD. For groundwater, three VOCs (TCE, 1,2-trans-DCE, and vinyl chloride) were identified in the OU-2 ROD as exceeding the acceptable risk levels. Originally, the OU-2 ROD included 1,2-trans-DCE; however, as analytical methods became more accurate 1,2-cis-DCE was added as a VOC to monitor. 1,2-cis-DCE is detected in higher concentrations than its isomer, 1,2-trans-DCE. Each annual report includes information on the annual operation of the groundwater treatment system and provides monitoring data. The most recent data for the Site are presented in the Twenty-Fourth Annual Groundwater Evaluation Report, which provides data for 2017.

Table 6. VOCs Monitored

1,1,1-Trichloroethane	1,3-cis-Dichloropropylene	Methyl bromide
1,1,2-Trichloroethane	1,4-Dichlorobenzene	Methylene chloride
1,1-Dichloroethane	2-Chloroethyl Vinyl Ether	Tetrachloroethene
1,1-DCE	Carbon Tetrachloride	Trichlorofluoromethane
1,2-cis-DCE	Chlorobenzene	TCE
1,2-trans-DCE	Chloroethane	VC
1,2-Dichloroethane	Chloroform	

III. PROGRESS SINCE THE LAST REVIEW

This section includes the protectiveness determinations and statements from the **last** FYR as well as the recommendations from the **last** FYR and the current status of those recommendations.

Table 7: Protectiveness Determinations/Statements from the 2014 FYR

OU #	Protectiveness Determination	Protectiveness Statement
1	Protective	The remedy for OU-1 is protective of human health and the environment. The ROD called for no further action. Under the requirement of the Commonwealth of Pennsylvania enforcement action, a public water supply line was installed for residences and businesses around the Site in 1992. The public water line provides a permanent and protective source of water.
2	Short-term Protective	The remedy for OU-2 is protective of human health and the environment in the short term. A groundwater treatment system was installed on the Site and has been operating since December 1993. During its operation, the groundwater treatment system has removed approximately 6,000 lb. of VOCs. Additionally, the groundwater plume is hydraulically contained onsite by a series of extraction wells. The ROD also required an evaluation of the Stockton formation, which has been conducted. Groundwater contamination beyond the influence of the groundwater extraction system is naturally degrading as prescribed in the OU-2 ROD, including the Stockton Formation. Treatment will continue until groundwater achieves the cleanup standard of natural background. Institutional controls are in place to prevent groundwater exposure. Based on a vapor intrusion assessment, vapor mitigation systems have been installed at two locations, an onsite warehouse and an offsite residence. Sampling indicates that the vapor mitigation systems are performing as intended. Long-term monitoring of the mitigation systems is being conducted annually and should continue. For those properties (Industrial 12, 13, and 17) which did not have unacceptable risks under current or future scenarios, but for which potentially site-related compounds were identified in the indoor air and/or sub-slab, review of

OU #	Protectiveness Determination	Protectiveness Statement
		property conditions and potential monitoring in the future, e.g., change in building use, status of building foundation, etc., will be considered. In order for the remedy to be protective in the long-term, institutional controls to prevent future potential vapor intrusion risks in new structures constructed within the influence of the groundwater contaminant plume must be put in place. Also, in order to be protective in the long-term, potential risks from residual contamination in the lagoon soils and waste must be evaluated. The appropriate response action(s), if any, will be selected in a decision document.

A Site-Wide Protectiveness Determination/Statement was not included in the 2014 FYR.

Table 8: Status of Recommendations from the 2014 FYR

OU #	Issue	Recommendations	Current Status	Current Implementation Status Description	Completion Date (if applicable)
02	There is potential for future vapor intrusion concerns if new structures are built within the influence of the contaminant plume boundary.	Institutional controls should be selected in a decision document and implemented to prevent future unacceptable risk from vapor intrusion. Follow-up monitoring of existing buildings should be conducted as necessary.	Completed	EPA issued an ESD on March 29, 2018 modifying the Selected Remedy to include ICs related to VI. An EC was recorded on September 14, 2018 implementing the ICs.	September 14, 2018
02	Potential risks from remaining contaminated soils in the former lagoons were not addressed in the OU2 ROD. However, no one is currently being exposed to these soils.	Future potential human and ecological health risks from the lagoon soils and wastes should be evaluated. Potential applicable or relevant and appropriate requirements (ARARs) associated with the lagoons soils and wastes should also be evaluated. A technical report proposal from the RPs detailing	Completed	EPA issued an ESD on March 29, 2018 modifying the Selected Remedy to include ICs to protect the integrity of the existing caps on the former lagoon and septic pit areas preventing direct contact to contaminated soils as well as eliminating a "soil to groundwater" pathway of residual COCs. An EC was recorded on September 14, 2018 implementing the ICs.	September 14, 2018

OU #	Issue	Recommendations	Current Status	Current Implementation Status Description	Completion Date (if applicable)
		projected potential risks and potential options for addressing these issues should be submitted to EPA and the PADEP for review. EPA and PADEP will review this proposal and determine the appropriate path forward. EPA will formalize its ultimate decision for the lagoons and septic pit issue in a decision document.			

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Involvement & Site Interviews

A public notice was published in the *The Pottstown Mercury* on April 25, 2019, stating that there was a FYR and providing information to contact EPA with questions. The results of the review and the report will be made available at the Site information repository located at the Phoenixville Central Public Library, 183 2nd Ave, Phoenixville, PA 19460 and over the internet at https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0301432.

During the FYR process, an interviews was conducted with local residents, municipal officials, and reprenentatives of the PRPs. A summary of the site interviews can be found in Attachment 3.

Data Review

The PRPs submit monthly and annual progress reports summarizing monitoring data on the groundwater extraction and treatment system. EPA reviewed these reports to determine the effectiveness of the remedy in reducing concentrations of COCs in groundwater and in preventing further migration of groundwater contamination.

Groundwater COC Concentrations

Figures 5, 6 and 7 provide graphical representations of the TCE plume in 2007, 2012, 2017, respectively. TCE has been a focus in reports because the extent of the TCE plume is larger than, and in most cases, encompasses the extent of the other COCs for the Site.

Information from the 2017 Twenty-Fourth Annual Groundwater Evaluation Report stated that the treatment system has recovered approximately 6,000 pounds (lbs.) of VOCs in the last twenty-four years. The VOC mass removal rate has declined with time. Table 9 presents a summary of historical total VOC mass removal. Table 10 presents a summary of historical total VOC concentrations.

Table 9. Historical Total VOC Mass Removal

Extraction Well No.	VOC Mass Removed (lbs.) 2012	VOC Mass Removed (lbs.) 2013	VOC Mass Removed (lbs.) 2014	VOC Mass Removed (lbs.) 2015	VOC Mass Removed (lbs.) 2016	VOC Mass Removed (lbs.) 2017
PW-001	0.7	0.7	0.5	0.6	0.7	0.2
PW-002	0.6	0.7	0.2	0.1	0.2	0.0
PW-003	0.2	0.0	0.1	0.0	0.0	0.0
PW-004	0.4	0.4	0.3	0.5	0.4	0.3
PW-005	2.8	1.1	0.7	0.4	0.3	0.5
PW-006	2.6	0.5	0.3	0.2	0.4	0.1
PW-007	10.9	2.1	0.7	0.5	0.5	0.2
PW-008	1.4	1.1	0.7	0.6	0.5	0.2
PW-009	0.8	0.6	0.3	0.1	0.1	0.0
PW-010	0.0	0.0	0.0	0.0	0.0	0.0
SP-001	0.6	0.4	0.0	0.0	0.0	0.0
Total	21	8	4	3	3	1

Table 10. Historical Total VOC Concentrations

Extraction Well No.	November 2012 (µg/L)	November 2013 (µg/L)	November 2014 (µg/L)	November 2015 (µg/L)	November 2016 (µg/L)	November 2017 (µg/L)
PW-001	40	35	34	27	38	14
PW-002	16	4	1	1	3	0
PW-003	65	13	10	8	14	3
PW-004	17	33	22	20	21	16
PW-005	80	33	35	20	26	17
PW-006	30	8	6	5	12	3
PW-007	26	19	7	5	7	3
PW-008	17	13	11	8	7	4
PW-009	13	6	4	1	2	0
PW-010	4	4	4	3	5	6
SP-001	3	2	2	1	2	0

Summary

The groundwater extraction and treatment system is operating as designed and is making progress towards achieving the cleanup objectives. All bedrock groundwater having COC concentrations in excess of cleanup levels is hydraulically contained by the extraction well network. A significant improvement to groundwater and surface water quality has been documented since the extraction and

treatment system began operation and since the previous FYR. In addition, performance monitoring confirms that the groundwater treatment systems effective in meeting discharge requirements.

Site Inspection

The inspection of the Site was conducted on February 27, 2019. In attendance were Andrew Haneiko, EPA RPM, Alex Mandell, EPA CIC, Tim Cherry, PADEP Solid Waste Supervisor, Kim Moretti and Michelle Rubin, of East Pikeland Township, Matt Stofko, Henry Company, Joe Guarnaccia, BASF, Chris Bolton, CMI, and Steve Sayko, Services Environmental Inc. The purpose of the inspection was to assess the protectiveness of the remedy.

During the inspection the site team visited the former lagoon area, the former septic pit area, monitoring wells, extraction wells, the groundwater treatment building, and the treatment plant discharge point. The former lagoon area is wooded and generally undisturbed. The former septic pit area is paved and utilized as a loading dock. Wells are numbered, secured, and generally in good condition. The groundwater treatment building is secured and fenced. The groundwater treatment equipment is in good condition. The effluent (treated groundwater) is discharged downhill from the treatment plant just off of the site property and discharges to an unnamed tributary (Stream A) which flows to French Creek.

A site inspection checklist and site photos are included in Attachment 1 and 2.

V. TECHNICAL ASSESSMENT

QUESTION A: Is the remedy functioning as intended by the decision documents?

Yes. The RAOs of the OU-1 ROD have been satisfied through the installation of a public drinking water supply to those impacted by groundwater contamination. The review of documents and the results of the inspection indicate that the groundwater remedy is functioning as intended by the OU-2 ROD, as modified by the 2018 ESD. The groundwater extraction and treatment system operates effectively and is making demonstrable progress towards achieving cleanup objectives; however, monitoring data indicate that cleanup levels have not yet been attained. Operation and maintenance of the groundwater extraction and treatment system is effective. Monitoring data confirms that the groundwater treatment system is effective in meeting discharge requirements. Groundwater contamination above MCLs is hydraulically contained by the groundwater extraction and treatment system. The ICs have been implemented by Chester County Health Department regulations, East Pikeland Township building permit regulations, and by an EC recorded with the Chester County Recorder of Deeds.

QUESTION B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?

No. Although the remedial action objectives are still valid, some of the exposure assumptions, toxicity data and cleanup levels have changed since the time of remedy selection. However, these changes do not impact the protectiveness of the remedy.

Changes in Standards and Standards To Be Considered (TBC)

As part of this FYR, EPA reviewed the ARARs for the Site to determine whether any significant changes in regulations, promulgated standards or standards TBC such as criteria and guidance had occurred, and if so, whether the changes impact the selected cleanup levels or protectiveness of the remedy. A comprehensive list of those ARARs identified for the Site are included in the decision documents. During the review, EPA did not identify any changes in regulations, standards, or TBCs that would call into question the protectiveness of the remedy.

The cleanup levels for groundwater in the 2018 ESD consist of MCLs and a cumulative risk assessment. The ESD names three MCLs: TCE (5 µg/L), 1, 2-cis-DCE (70 µg/L), and vinyl chloride (2 µg/L). These MCLs have not changed.

The cumulative risk assessment, which will be performed once the MCLs have been met, consists of determining if a cancer risk at or below the 1E-04 risk level, and a chemical-specific, target-organ-specific Hazard Index less than or equal to 1 have been achieved. This risk assessment standard is protective by definition.

Groundwater has not yet reached these cleanup levels but is expected to do so in the future.

Changes in Toxicity and Risk Assessment Methods

There have been significant changes in EPA's risk assessment guidance since the original risk assessment was performed for the Site. These revisions include changes in basic methodology, dermal guidance, inhalation methodologies, exposure factors, and a change in the way early-life exposure is assessed for vinyl chloride. The risk assessments for the Site were performed prior to 1990, and there have been numerous changes in toxicity factors since that time. In light of these changes, the protectiveness of the various components of the remedy is discussed below.

Groundwater

Since the groundwater cleanup specified in the 2018 ESD includes a requirement for a risk assessment using up-to-date risk assessment methodology and toxicity information to verify final cleanup, this provision of the remedy is protective by definition. In addition, residents impacted by contaminated groundwater are served by a public water supply.

Vapor Intrusion

VI was identified as a potential new migration pathway during the 2009 FYR, and a VI evaluation was performed in 2011. Based on data collected from the indoor air and subslab sampling, vapor mitigation systems were installed at an onsite warehouse and an offsite residence. Subsequent sampling in 2013 and 2014 indicated that the mitigation systems were performing as intended. Long-term monitoring of the mitigation systems is being conducted to verify they are still operating properly. Therefore, the remedy is protective with respect to these properties.
In addition, for those properties (Industrial 12, 13, and 17) that did not have unacceptable risk under current or future scenarios at the time of sampling, but for which potentially site-related compounds were identified in the indoor air and/or subslab, EPA stated in the 2014 FYR that review of property

conditions and potential monitoring in the future would be considered. EPA found no notable changes that would be expected to change the earlier conclusion that VI was not significant at these properties.

EPA also set a requirement in the 2018 ESD for any future construction in the VI AOI (Figure 8) to incorporate VI mitigation, or to demonstrate to EPA's satisfaction that such mitigation would not be necessary at a given property. A VI Notice will be provided by the Township to any property owner within the VI AOI when a building permit application is submitted. The PRPs will install a VI mitigation system in any new occupied buildings.

Soil Contamination

As part of the 2014 FYR, EPA evaluated the potential future human health risks from the soils in the former lagoons and septic pit based on the historical soil data set. Potential unacceptable risks or hazards for one or more human receptors were identified in Lagoons 2, 7, 9 and the septic pit, if future exposures were to occur. As a result, EPA included requirements in the 2018 ESD to prohibit disturbance of the soil caps. Therefore, exposure to the lagoon contents and contaminated subsurface soil is physically prevented.

Surface Water

Surface water samples were last collected in 2000 at five locations and were analyzed for VOCs. The maximum concentrations were 3 µg/L for TCE, 4.9 µg/L for 1,2-cis-DCE, and 0.1 for 1,3-cis-dichloropropene. Using the Regional Screening Level calculator (spring 2018 version) for surface water recreation, conservatively assuming 90 days/year and 4 hours/day exposure and using defaults for all other inputs, screening levels are 3.6 µg/L for TCE, 15 µg/L for 1,2-cis-DCE, and 5 µg/L for 1,3-dichloropropene. The 2000 surface water concentrations are below these screening levels.
The local spring (SP-001), which is groundwater that emerges to become surface water, was sampled twice in 2017. In May 2017, 1,2-cis-DCE was detected at 1.2 µg/L; the other VOCs were not detected. This 1,2-cis-DCE concentration is below its MCL (70 µg/L) and the RSL for drinking water (3.6 µg/L at an HQ of 0.1). In November 2017, the spring was again sampled, and none of the VOCs were detected (detection limit 1 µg/L).

Air Emissions

EPA modeled vapor-phase emissions from the air stripper as part of the 2009 FYR. The modeled concentrations were well below the Fall 2008 RSLs for these chemicals, and no unacceptable risk was expected via this exposure. As the mass of VOCs removed by the air stripper has decreased further since 2009, and the concentrations are still below the May 2018 RSLs, no unacceptable risks are currently anticipated via this exposure route.

Changes in Exposure Pathways

Land use around the Site is a mix of residential, industrial, commercial, and agricultural. Agricultural use has declined, and residential use has increased since the remedy was implemented. For example, a residential development was constructed across from the Site on Route 113. As discussed in the 2014 FYR, monitoring wells between the Site and the development did not detect VOCs, and the groundwater plume travels north in the opposite direction from the development.

Another parcel, consisting of approximately 21.5 acres of undeveloped land southwest of the manufacturing part of the Site, was sold to Kimberton Town Square LP in 2007. One residential property is located at the far northern edge of the parcel. EPA is not aware of any proposed additional development of this property at this time. However, the far northeastern portion of the 21.5-acre parcel is adjacent to the area where the closed lagoons were located on the Site. Monitoring wells on the parcel have shown VOC contamination. If the parcel were to be redeveloped, the remaining subsurface VOCs, if any, should be evaluated and the monitoring of the groundwater would need to continue. Any potential development may also have implications for VI, but provisions to address VI in new construction were included in the 2018 ESD.

Expected Progress Toward Meeting RAOs

Based on the data reviewed, the site inspection, and the interviews, the remedies currently in place at the Site are functioning as intended by the RODs and ESD. A groundwater treatment system was installed on the Site and has been operating since December 1993. The cleanup levels for groundwater contamination selected in the 2018 ESD have not yet been met. However, progress is being made toward achieving cleanup objectives and RAOs. The groundwater plume is hydraulically contained by a series of extraction wells. VOCs are being removed from the groundwater via the air stripper, and the discharged water meets state and federal surface water quality requirements. Air stripper vapor emissions are also below levels of concern.

VI has been addressed by the existing mitigation systems and the institutional controls identified in the 2018 ESD. Long-term monitoring of the mitigation systems is being conducted. EPA found no notable changes that would be expected to change the earlier conclusion that VI was not significant at these properties.

Soil has been addressed by the soil caps and the ICs identified in the 2018 ESD.

QUESTION C: Has any **other** information come to light that could call into question the protectiveness of the remedy?

No. EPA is not aware of any newly identified contaminants or sources since the most recent decision document, the 2018 ESD. There is no other information that calls into question the protectiveness of the remedy.

Summary

The OU-2 groundwater remedy is effective in reducing contaminant concentrations and groundwater with concentrations in excess of MCLs is hydraulically contained. The groundwater remedy is making demonstrable progress towards achieving cleanup objectives. Effective O&M and long-term monitoring activities are being performed and the groundwater treatment system is effective in meeting discharge requirements. The ICs have been implemented to ensure the protectiveness of the remedy.

VI. ISSUES/RECOMMENDATIONS

Issues/Recommendations
OU(s) without Issues/Recommendations Identified in the Five-Year Review:
OU-1 Drinking Water Supply and OU-2 Groundwater

OTHER FINDINGS

- EPA recommends that the groundwater extraction and treatment system be evaluated to determine if current optimization procedures are adequate to achieve groundwater cleanup levels throughout the contamination plume.

VII. PROTECTIVENESS STATEMENT

Protectiveness Statement(s)		
Operable Unit: OU-1 Drinking Water Supply	*Protectiveness Determination:* Protective	*Planned Addendum Completion Date:* Not Applicable
Protectiveness Statement: The remedy for OU-1 is protective of human health and the environment. The public water supply line was installed for residences and businesses around the Site in 1992 and provides a permanent and protective source of water.		

Protectiveness Statement(s)		
Operable Unit: OU-2, Groundwater	*Protectiveness Determination:* Protective	*Planned Addendum Completion Date:* Not Applicable
Protectiveness Statement: The remedy for OU-2 is protective of human health and the environment. A groundwater treatment system was installed on the Site and has been operating since December 1993. The groundwater plume is hydraulically contained onsite by a series of extraction wells and treatment will continue until groundwater cleanup levels are achieved. Institutional controls are in place to prevent groundwater exposure, prevent disturbance of the caps at the former lagoons and septic pit, and prevent current and future VI risks.		

Sitewide Protectiveness Statement	
Protectiveness Determination: Protective	*Planned Addendum Completion Date:* Not Applicable
Protectiveness Statement: The Sitewide remedy is protective of human health and the environment. Residents impacted by groundwater contamination were connected to the public water supply in 1992. Physical construction of the groundwater remedy is complete, operation and maintenance is being conducted in accordance with the OU-2 ROD, and EPA approved plans, ICs have been implemented. The Site was designated Sitewide Ready for Anticipated Use (SWRAU) in 2018.	

VIII. NEXT REVIEW

The next FYR report for the Site is required five years from the completion date of this review.

APPENDIX A – REFERENCE LIST

U.S EPA, 1988 ROD, Kimberton Superfund Site.
U.S. EPA, 1989 ROD, Kimberton Superfund Site.
U.S. EPA, 1994 First FYR, Kimberton Superfund Site.
U.S. EPA, 1999 Second FYR, Kimberton Superfund Site.
U.S. EPA, 2004 Third FYR, Kimberton Superfund Site.
U.S. EPA, 2009 Fourth FYR, Kimberton Superfund Site.
U.S. EPA, 2014 Fifth FYR, Kimberton Superfund Site.
U.S. EPA, 2018 ESD, Kimberton Superfund Site.
Services Environmental, Inc., 2016 Technical Report Proposal
Services Environmental, Inc., 2015 Twenty-First Annual Groundwater Evaluation Report.
Services Environmental, Inc., 2016 Twenty-Second Annual Groundwater Evaluation Report.
Services Environmental, Inc., 2017 Twenty-Third Annual Groundwater Evaluation Report.
Services Environmental, Inc., 2018 Twenty-Fourth Annual Groundwater Evaluation Report.

APPENDIX B – CHRONOLOGY OF SITE EVENTS

Event	Date
Initial discovery of groundwater contamination.	August 1981
Removal of fifty-seven 55-gallon drums from abandoned septic System.	November 1982
NPL Listing.	September 8 1983
Excavation of approximately 2,050 cubic yards of contaminated soils from Lagoons 6, 7, and 9.	September 17-October 8, 1984
ROD signature for OU-1.	September 30, 1988
RI/FS completed.	March 1989
ROD signature for OU-2.	June 30, 1989
Remedial design approved.	February 26, 1993
Construction completion.	September 22, 1993
First FYR.	July 22, 1994
Second FYR.	September 29, 1999
Third FYR.	September 30, 2004
Fourth FYR.	September 30, 2009
Shutdown of extraction well PW-010.	September 2010
Installation of two vapor intrusion mitigation systems.	February 2013
Ceased treatment of the water from Spring A-10.	October 31, 2013
Fifth FYR.	August 4, 2014
Shutdown of extraction wells PW-006, PW-007, and PW-009.	October 2017
ESD signed.	March 29, 2018
SWRAU signed.	September 25, 2018
Shutdown of extraction well PW-008	October 12, 2018

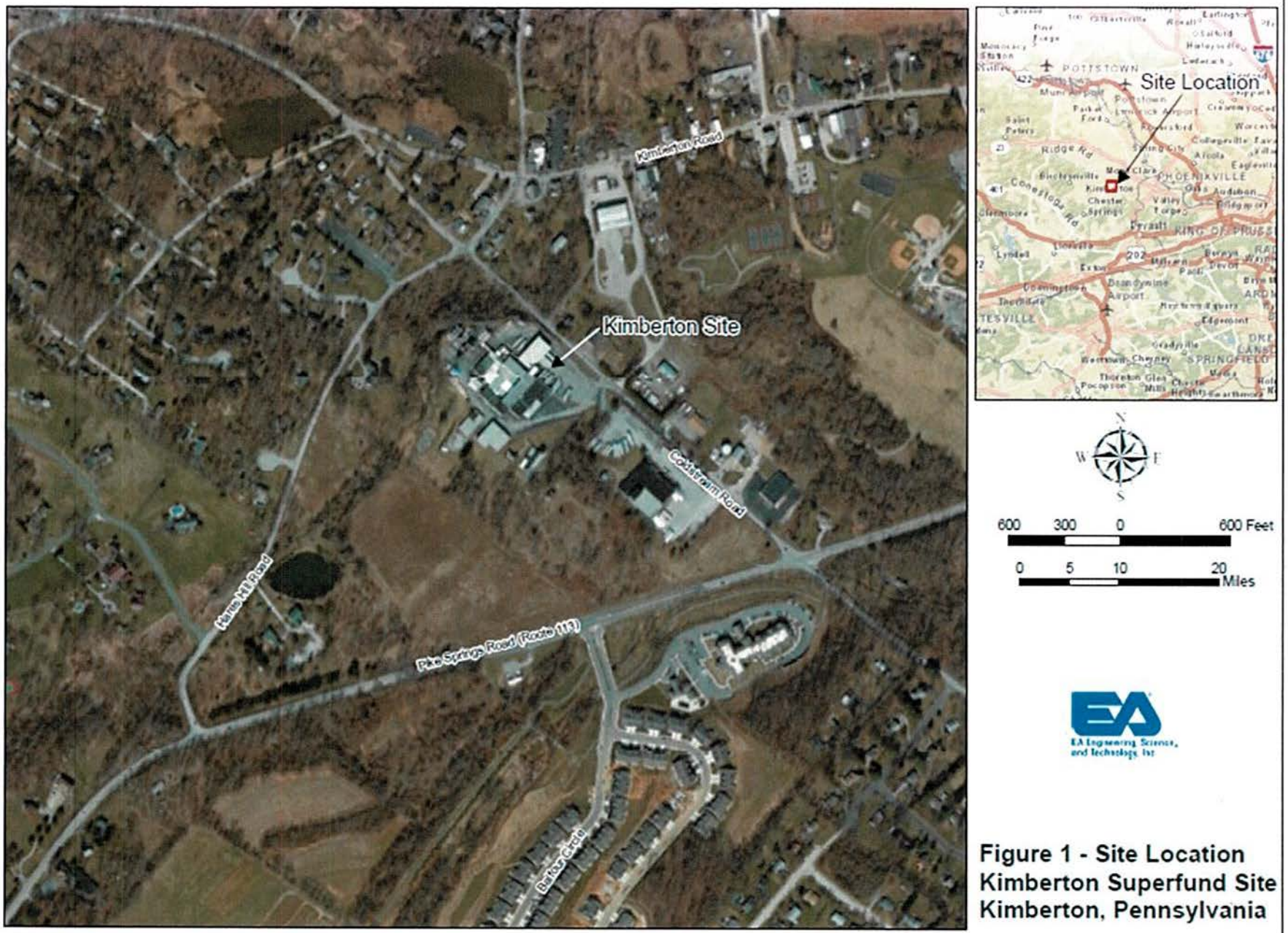


Figure 1 - Site Location
Kimberton Superfund Site
Kimberton, Pennsylvania

\GISData\Northeast\Pennsylvania\Kimberton\MXD\Sitelocation

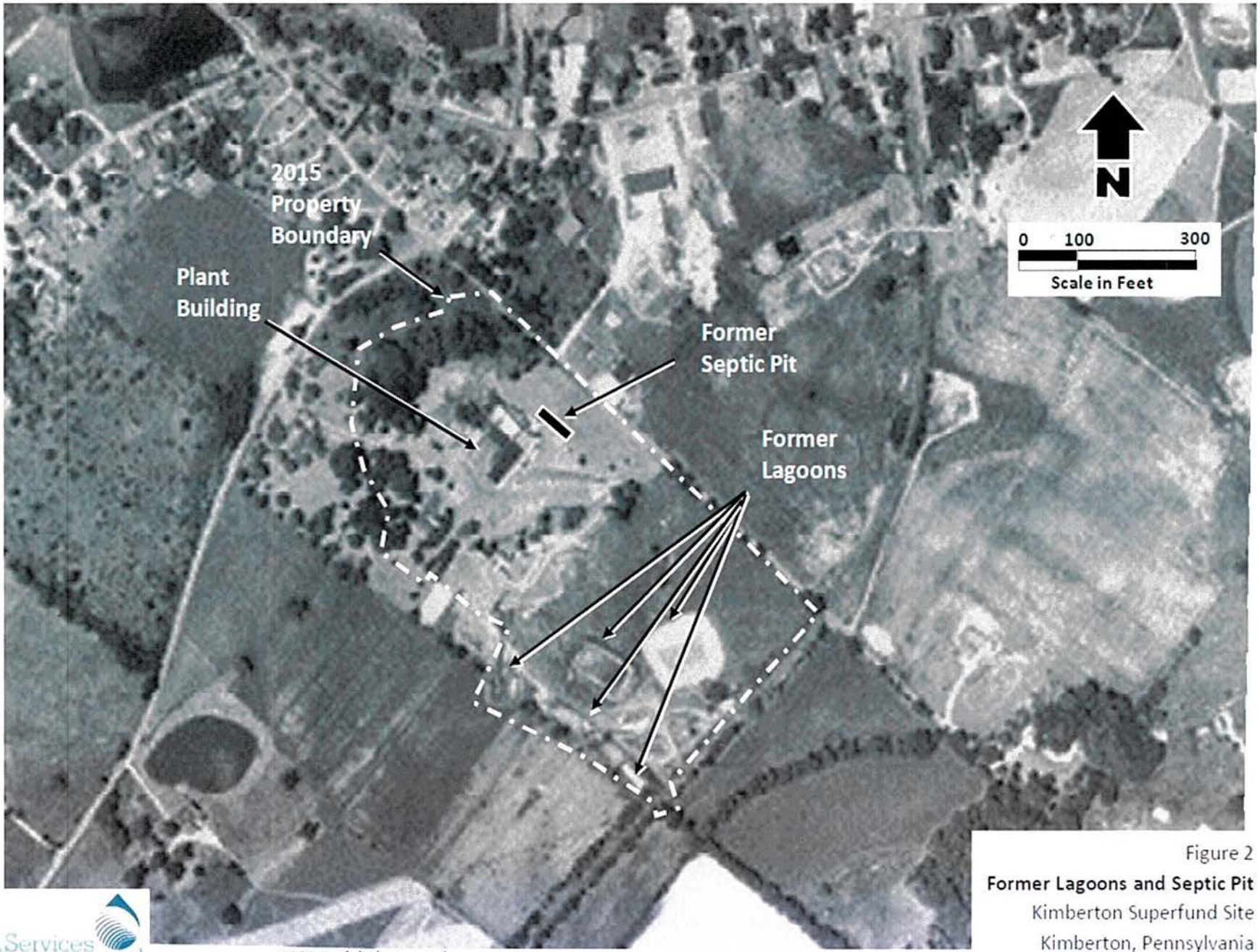


Figure 2
Former Lagoons and Septic Pit
Kimberton Superfund Site
Kimberton, Pennsylvania

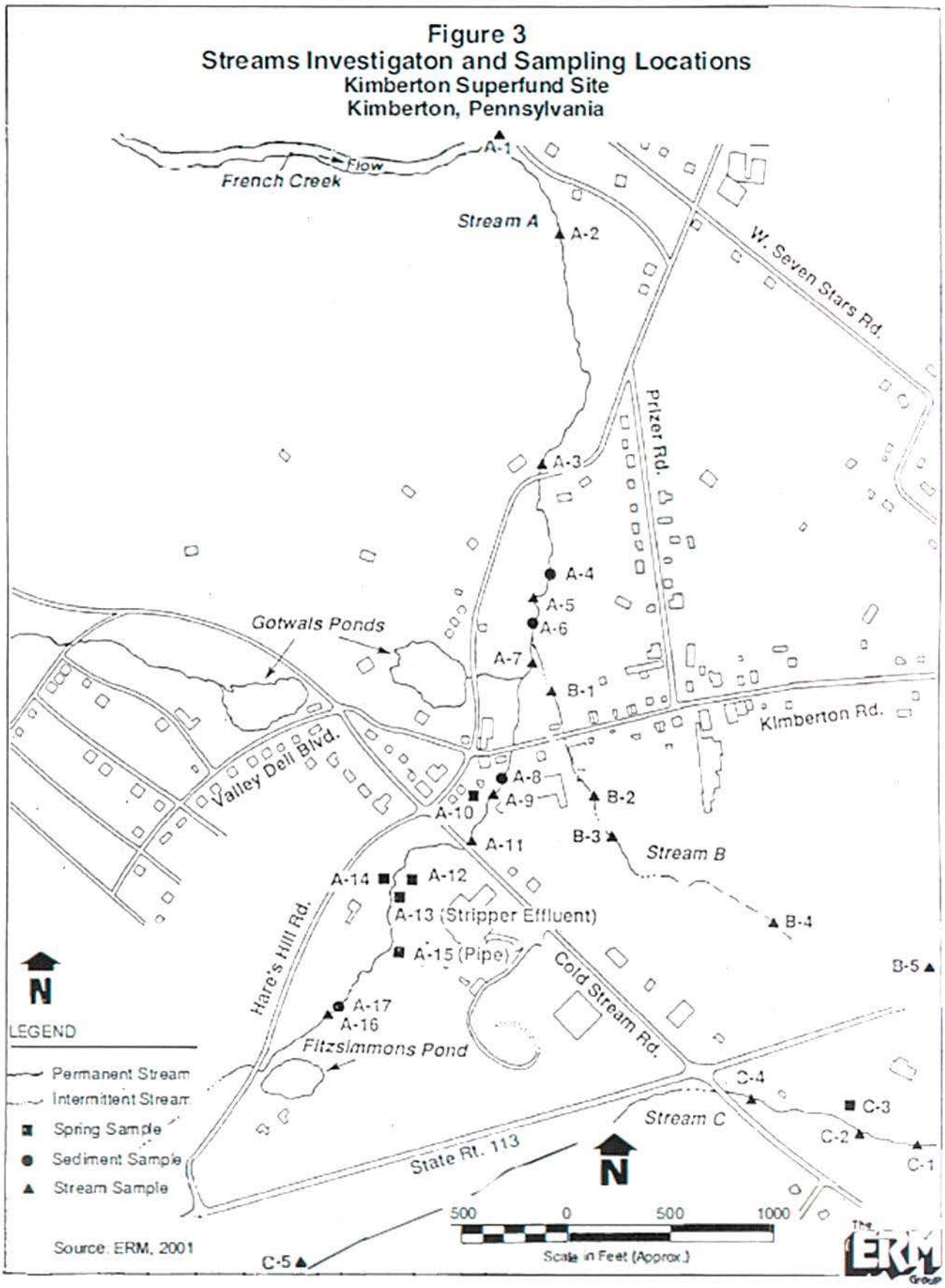


Figure 3
Streams Investigaton and Sampling Locations
Kimberton Superfund Site
Kimberton, Pennsylvania
French Creek
Flow
A-1
Stream A
A-2
W. Seven Stars Rd.
Prizer Rd.
A-3
A-4
A-5
A-6
A-7
B-1
Gotwals Ponds
Kimberton Rd.
Valley Dell Blvd.
A-8
A-9
A-10
A-11
B-2
B-3
Stream B
B-4
A-14
A-12
A-13 (Stripper Effluent)
A-15 (Pipe)
Hare's Hill Rd.
Cold Stream Rd.
B-5
A-17
A-16
Fitzsimmons Pond
C-4
C-3
C-2
C-1
Stream C
State Rt. 113
C-5
N
LEGEND
Permanent Stream
Intermittent Stream
Spring Sample
Sediment Sample
Stream Sample
Source: ERM, 2001
500
0
500
1000
Scale in Feet (Approx.)
The ERM Group

Figure 4
Locations of Wells and Piezometers
Kimberton Superfund Site
Kimberton, Pennsylvania

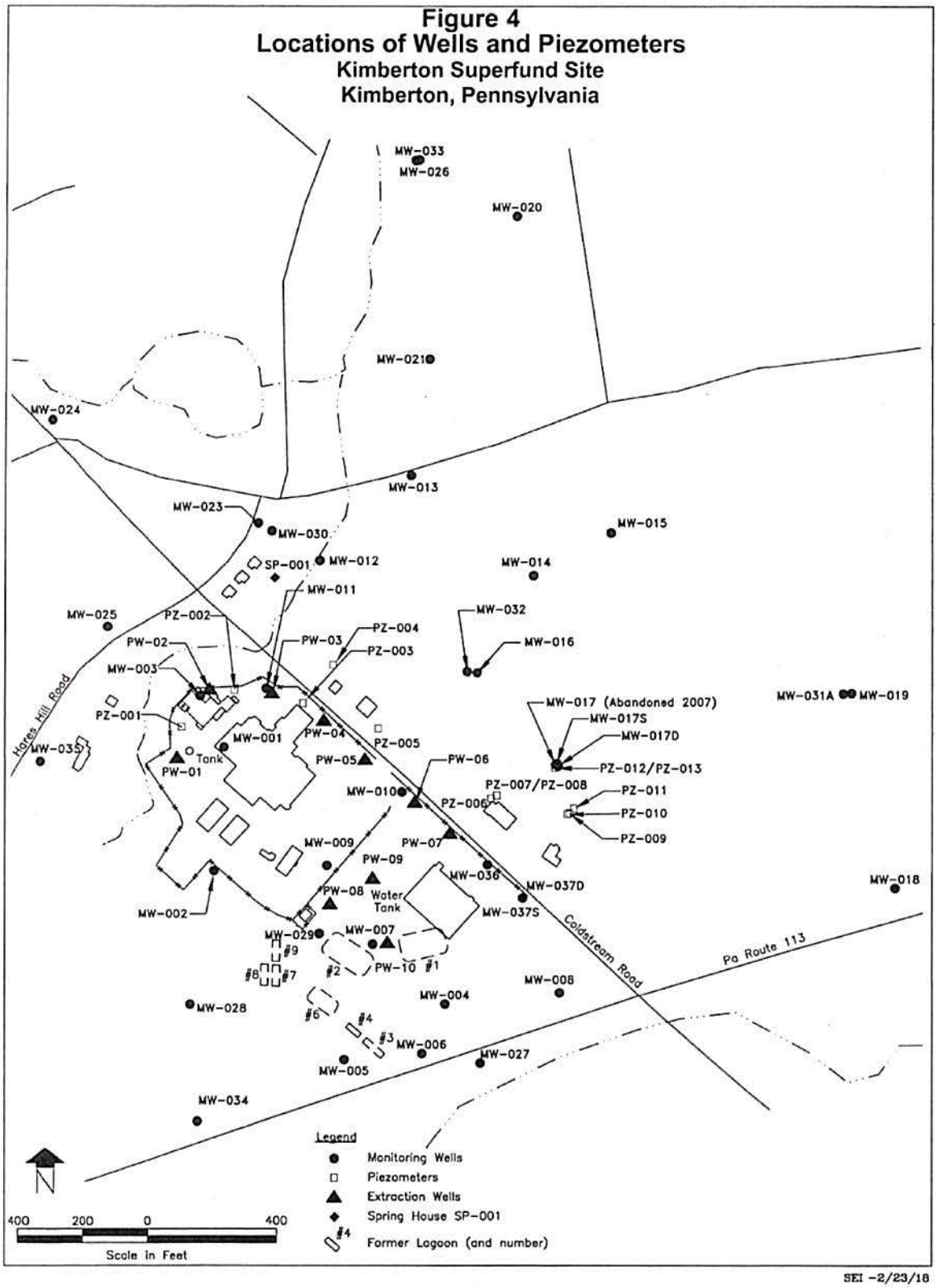


Figure 5
TCE Concentrations in Ground Water
Average 2007 Results
Kimberton Superfund Site
Kimberton, Pennsylvania

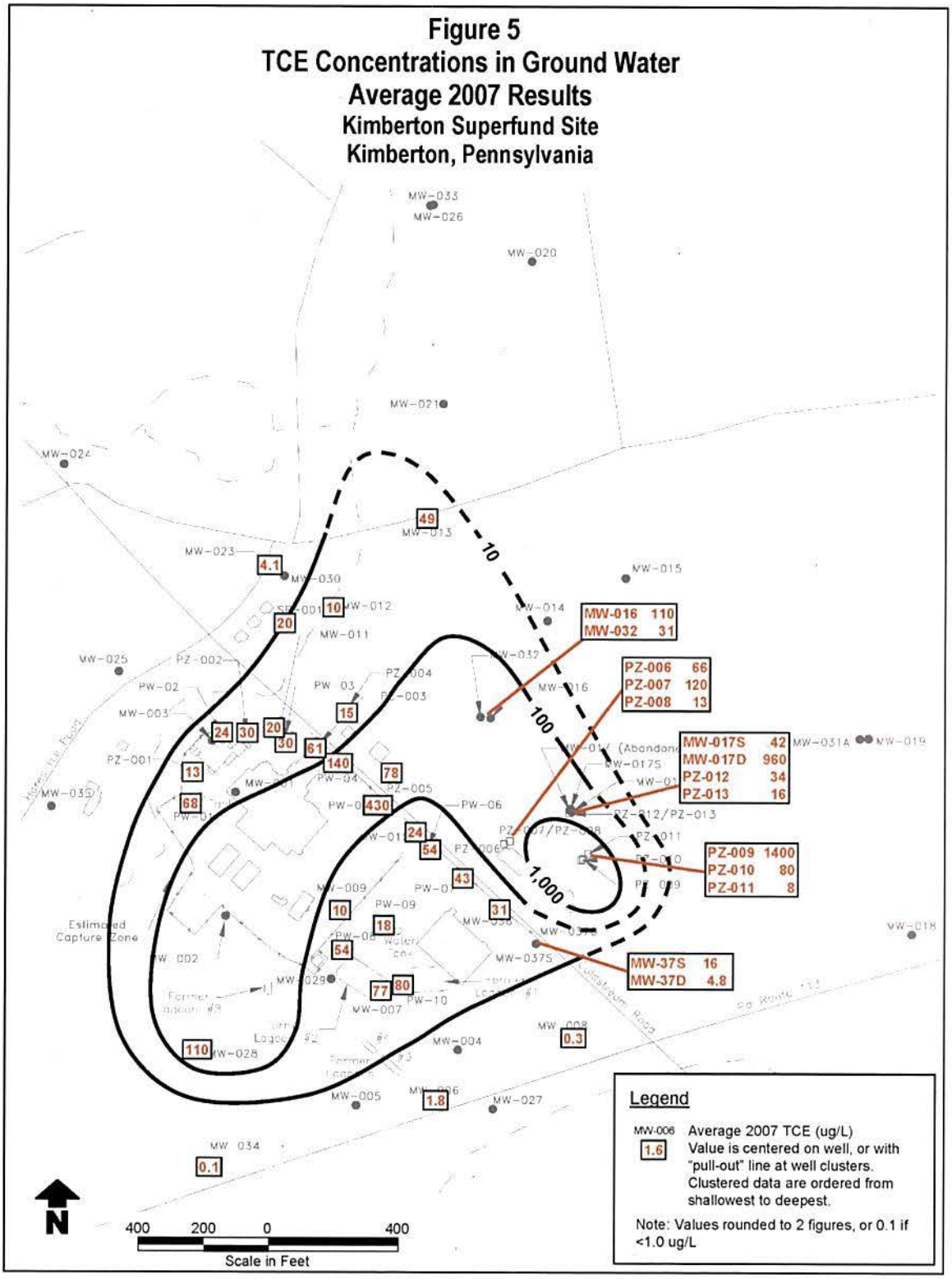


Figure 6
TCE Concentrations in Ground Water
Average 2012 Results
Kimberton Superfund Site
Kimberton, Pennsylvania

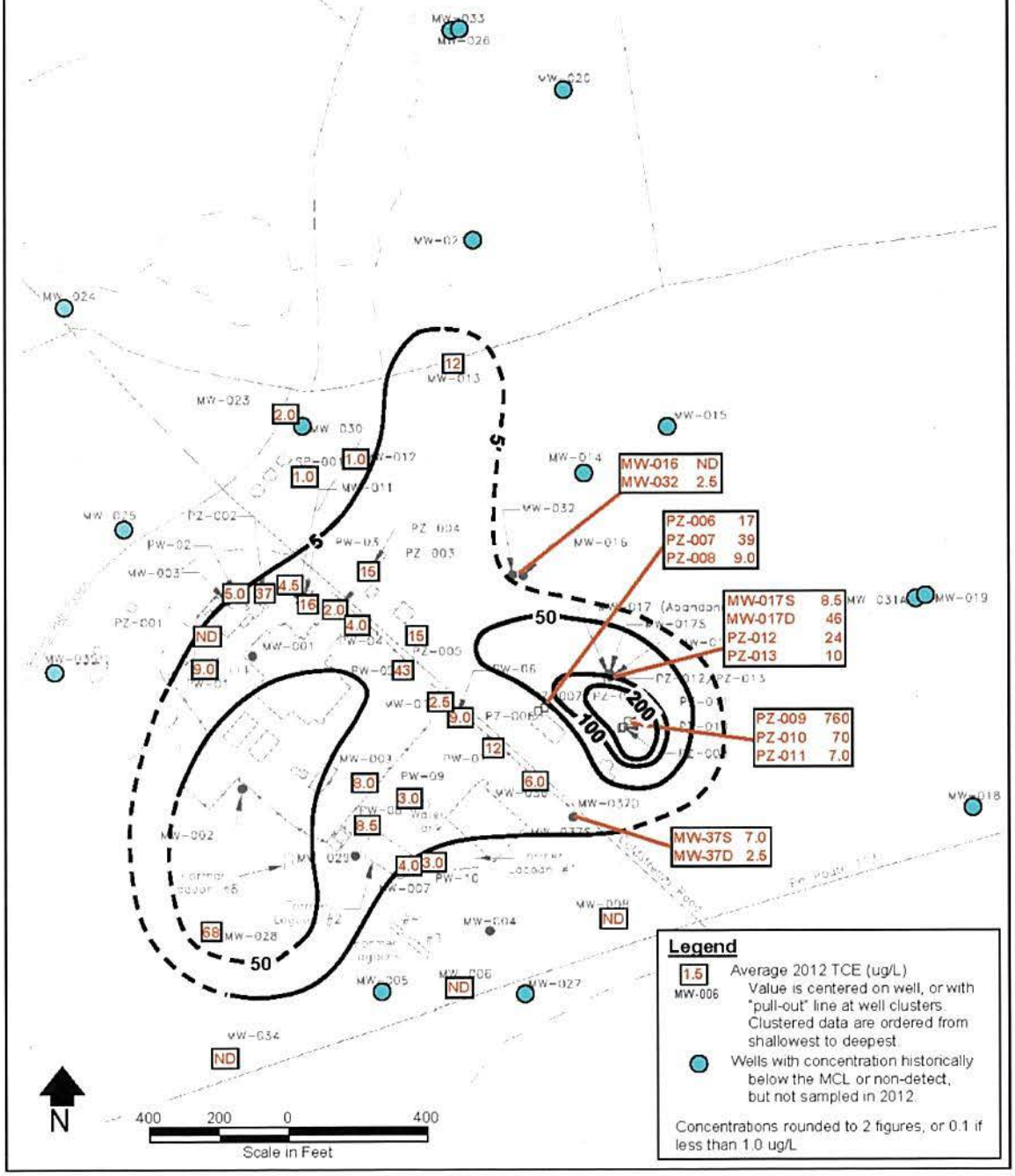
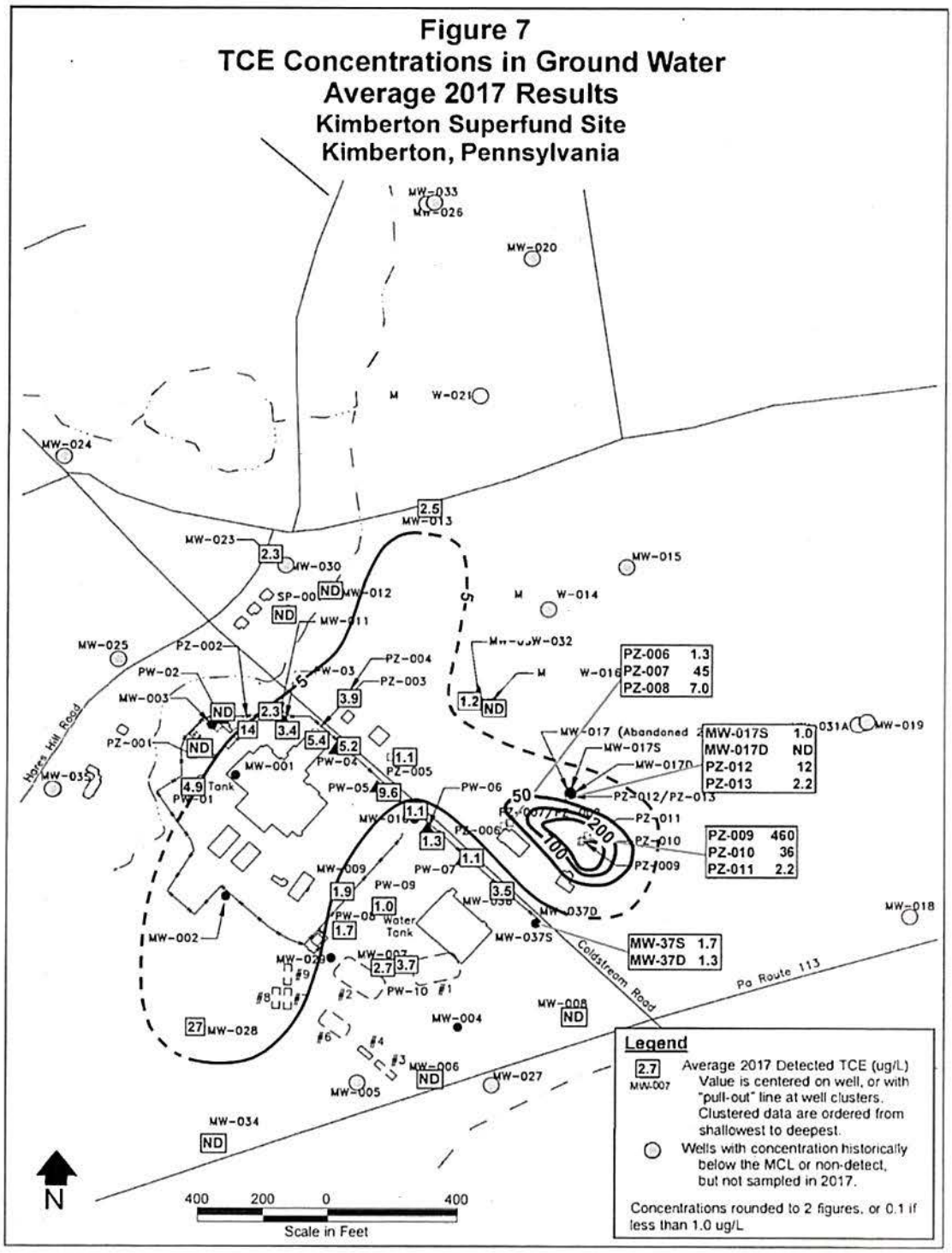


Figure 7
TCE Concentrations in Ground Water
Average 2017 Results
Kimberton Superfund Site
Kimberton, Pennsylvania



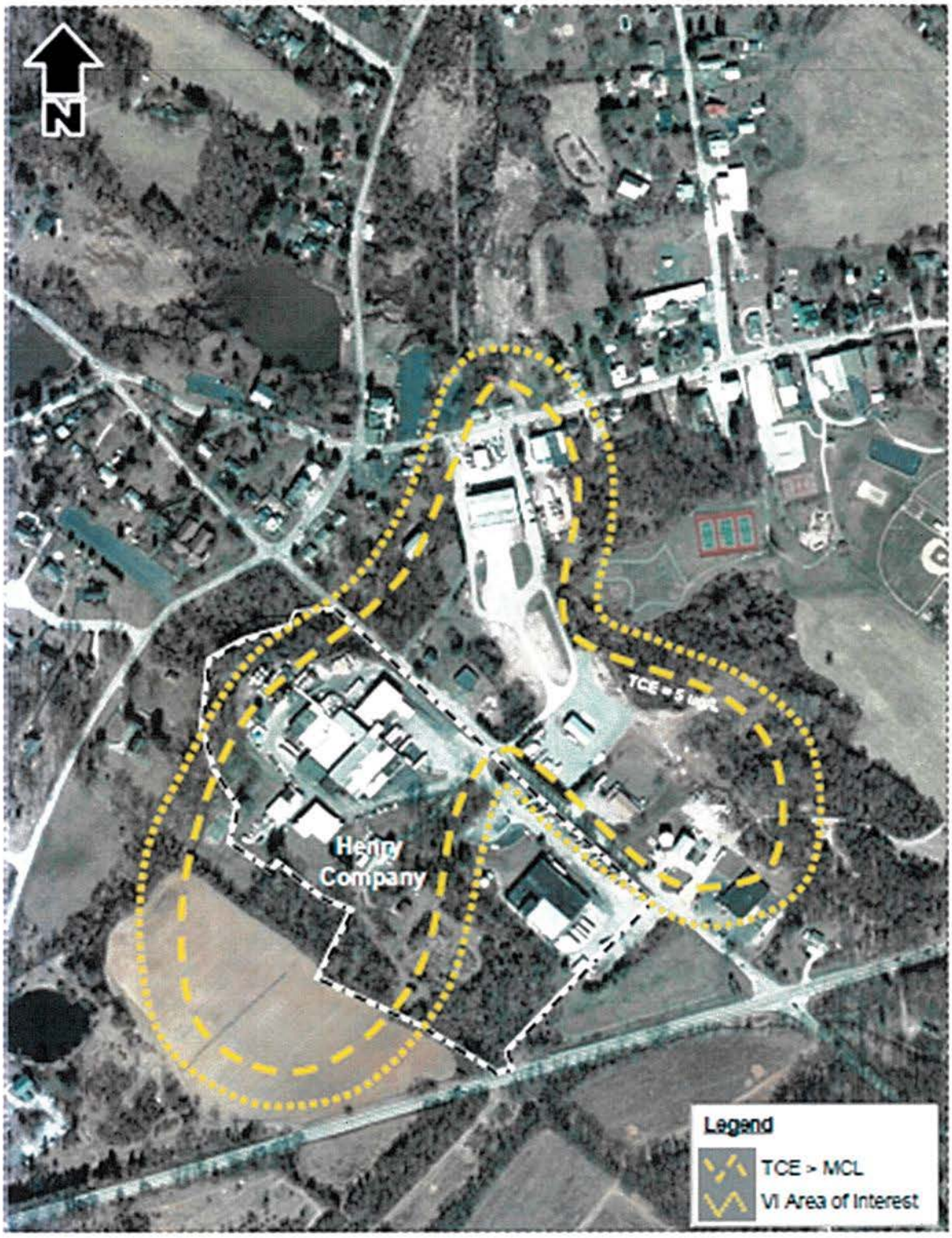


Figure 8
2014 TCE Plume and VI Area of Interest
Kimberton Superfund Site
Kimberton, Pennsylvania

Attachment 1
Five-Year Review Site Inspection Checklist

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Five-Year Review Site Inspection Checklist

(Working document for site inspection. Information may be completed by hand and attached to the Five-Year Review report as supporting documentation of site status. "N/A" refers to "not applicable.")

I. SITE INFORMATION	
Site name: Kimberton	**Date of inspection: 02/27/2019**
Location and Region: Chester County, PA	**EPA ID: PAD980691703**
Agency, office, or company leading the five-year review: EPA	**Weather/temperature: Cloudy/ 30°F**

Remedy Includes: (Check all that apply)

- ☐ Landfill cover/containment
- ☐ Access controls
- X Institutional controls
- X Groundwater pump and treatment
- ☐ Surface water collection and treatment
- ☐ Other _____
- ☐ Monitored natural attenuation
- ☐ Groundwater containment
- ☐ Vertical barrier walls

Attachments: ☐ Inspection team roster attached ☐ Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M site manager** Chris Bolton (Name) Sr. Envt. Scientist (Title) 02/27/2019 (Date)
   Interviewed X at site ☐ at office ☐ by phone Phone no. 302-650-3133
   Problems, suggestions; ☐ Report attached _____

2. **O&M staff** _____ (Name) _____ (Title) _____ (Date)
   Interviewed ☐ at site ☐ at office ☐ by phone Phone no. _____
   Problems, suggestions; ☐ Report attached _____

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency PA DEP
Contact Tim Cherry — Solid Waste Supervisor — 484-250-5728
Name — Title — Phone no.
Problems; suggestions; ☐ Report attached _____

Agency East Pikeland Township
Contact Kim Moretti — Township Manager — 610-933-1770
Name — Title — Phone no.
Problems; suggestions; ☐ Report attached _____

Agency East Pikeland Township
Contact Michelle Rubin — Community Resourses Coord. — 610-933-1770
Name — Title — Phone no.
Problems; suggestions; ☐ Report attached _____

Agency
Contact _____
Name — Title — Date — Phone no.
Problems; suggestions; ☐ Report attached _____

4. **Other interviews** (optional) ☐ Report attached.

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. **O&M Documents**
   - x O&M manual — x Readily available — ☐ Up to date — ☐ N/A
   - ☐ As-built drawings — ☐ Readily available — ☐ Up to date — ☐ N/A
   - x Maintenance logs — x Readily available — ☐ Up to date — ☐ N/A

   Remarks: Last updated April 2014.

2. **Site-Specific Health and Safety Plan** — x Readily available — ☐ Up to date — ☐ N/A
   - x Contingency plan/emergency response plan — x Readily available — ☐ Up to date — ☐ N/A

   Remarks: Last updated April 2014.

3. **O&M and OSHA Training Records** — x Readily available — ☐ Up to date — ☐ N/A

   Remarks: _____

4. **Permits and Service Agreements**
   - ☐ Air discharge permit — ☐ Readily available — ☐ Up to date — x N/A
   - ☐ Effluent discharge — ☐ Readily available — ☐ Up to date — x N/A
   - ☐ Waste disposal, POTW — ☐ Readily available — ☐ Up to date — x N/A
   - ☐ Other permits _____ — ☐ Readily available — ☐ Up to date — x N/A

   Remarks _____

5. **Gas Generation Records** — ☐ Readily available — ☐ Up to date — x N/A

   Remarks _____

6. **Settlement Monument Records** — ☐ Readily available — ☐ Up to date — x N/A

   Remarks _____

7. **Groundwater Monitoring Records** — x Readily available — ☐ Up to date — ☐ N/A

   Remarks _____

8. **Leachate Extraction Records** — ☐ Readily available — ☐ Up to date — x N/A

   Remarks _____

9. **Discharge Compliance Records**
   - ☐ Air — ☐ Readily available — ☐ Up to date — x N/A
   - ☐ Water (effluent) — ☐ Readily available — ☐ Up to date — x N/A

   Remarks _____

10. **Daily Access/Security Logs** — ☐ Readily available — ☐ Up to date — x N/A

    Remarks _____

IV. O&M COSTS

1. **O&M Organization**

☐ State in-house ☐ Contractor for State
☐ PRP in-house X Contractor for PRP
☐ Federal Facility in-house ☐ Contractor for Federal Facility
☐ Other _____

2. **O&M Cost Records**

x Readily available x Up to date
x Funding mechanism/agreement in place
Original O&M cost estimate _____ ☐ Breakdown attached

Total annual cost by year for review period if available

2014 Year	$159,140 Total cost	☐ Breakdown attached
2015 Year	$155,768 Total cost	☐ Breakdown attached
2016 Year	$153,680 Total cost	☐ Breakdown attached
2017 Year	$147,384 Total cost	☐ Breakdown attached
2018 Year	$175,179 Total cost	☐ Breakdown attached

3. **Unanticipated or Unusually High O&M Costs During Review Period**

Describe costs and reasons: _____

V. ACCESS AND INSTITUTIONAL CONTROLS X Applicable ☐ N/A

A. Fencing

1. **Fencing damaged** ☐ Location shown on site map X Gates secured ☐ N/A

Remarks: Fence around groundwater treatment building is in good condition and locked at the time of inspection.

B. Other Access Restrictions

1. **Signs and other security measures** ☐ Location shown on site map ☐ N/A

Remarks: "No Trespassing" signs posted on fence at time of inspection.

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented ☐ Yes **X** No ☐ N/A
Site conditions imply ICs not being fully enforced ☐ Yes **X** No ☐ N/A

Type of monitoring (*e.g.*, self-reporting, drive by) _____
Frequency _____
Responsible party/agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.

Reporting is up-to-date ☐ Yes ☐ No **X** N/A
Reports are verified by the lead agency ☐ Yes ☐ No **X** N/A

Specific requirements in deed or decision documents have been met ☐ Yes X No ☐ N/A
Violations have been reported ☐ Yes **X** No ☐ N/A
Other problems or suggestions: ☐ Report attached
Fencing around former lagoon area, signage and markers of former septic pit (as required in the 2018 ESD) were not installed at time of inspection. Estimated time of completion is summer 2019.

2. **Adequacy** **X** ICs are adequate ☐ ICs are inadequate ☐ N/A
Remarks _____

D. General

1. **Vandalism/trespassing** ☐ Location shown on site map **X** No vandalism evident
Remarks _____

2. **Land use changes on site** **X** N/A
Remarks _____

3. **Land use changes off site** **X** N/A
Remarks _____

VI. GENERAL SITE CONDITIONS

A. Roads ☐ Applicable **X** N/A

1. **Roads damaged** ☐ Location shown on site map ☐ Roads adequate ☐ N/A
Remarks _____

B. Other Site Conditions

Remarks _____

_____

_____

_____

_____

_____

VII. LANDFILL COVERS ☐ Applicable **x** N/A

A. Landfill Surface

1. **Settlement** (Low spots) ☐ Location shown on site map ☐ Settlement not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

2. **Cracks** ☐ Location shown on site map ☐ Cracking not evident
   Lengths_____ Widths_____ Depths_____
   Remarks_____
   _____

3. **Erosion** ☐ Location shown on site map ☐ Erosion not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

4. **Holes** ☐ Location shown on site map ☐ Holes not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

5. **Vegetative Cover** ☐ Grass ☐ Cover properly established ☐ No signs of stress
   ☐ Trees/Shrubs (indicate size and locations on a diagram)
   Remarks_____
   _____

6. **Alternative Cover (armored rock, concrete, etc.)** ☐ N/A
   Remarks_____
   _____

7. **Bulges** ☐ Location shown on site map ☐ Bulges not evident
   Areal extent_____ Height_____
   Remarks_____
   _____

8. **Wet Areas/Water Damage** ☐ Wet areas/water damage not evident
- ☐ Wet areas ☐ Location shown on site map Areal extent_____
- ☐ Ponding ☐ Location shown on site map Areal extent_____
- ☐ Seeps ☐ Location shown on site map Areal extent_____
- ☐ Soft subgrade ☐ Location shown on site map Areal extent_____

Remarks_____

9. **Slope Instability** ☐ Slides ☐ Location shown on site map ☐ No evidence of slope instability
Areal extent_____
Remarks_____

B. Benches ☐ Applicable x N/A
(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

1. **Flows Bypass Bench** ☐ Location shown on site map ☐ N/A or okay
Remarks_____

2. **Bench Breached** ☐ Location shown on site map ☐ N/A or okay
Remarks_____

3. **Bench Overtopped** ☐ Location shown on site map ☐ N/A or okay
Remarks_____

C. Letdown Channels ☐ Applicable x N/A
(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. **Settlement** ☐ Location shown on site map ☐ No evidence of settlement
Areal extent_____ Depth_____
Remarks_____

2. **Material Degradation** ☐ Location shown on site map ☐ No evidence of degradation
Material type_____ Areal extent_____
Remarks_____

3. **Erosion** ☐ Location shown on site map ☐ No evidence of erosion
Areal extent_____ Depth_____
Remarks_____

4. **Undercutting** ☐ Location shown on site map ☐ No evidence of undercutting
Areal extent_____ Depth_____
Remarks_____

5. **Obstructions** Type_____ ☐ No obstructions
☐ Location shown on site map Areal extent_____
Size_____
Remarks_____

6. **Excessive Vegetative Growth** Type_____
☐ No evidence of excessive growth
☐ Vegetation in channels does not obstruct flow
☐ Location shown on site map Areal extent_____
Remarks_____

D. Cover Penetrations ☐ Applicable x N/A

1. **Gas Vents** ☐ Active☐ Passive
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance
☐ N/A
Remarks_____

2. **Gas Monitoring Probes**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____

3. **Monitoring Wells** (within surface area of landfill)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____

4. **Leachate Extraction Wells**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____

5. **Settlement Monuments** ☐ Located ☐ Routinely surveyed ☐ N/A
Remarks_____

E. Gas Collection and Treatment ☐ Applicable x N/A

1. **Gas Treatment Facilities**
   ☐ Flaring ☐ Thermal destruction ☐ Collection for reuse
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____

2. **Gas Collection Wells, Manifolds and Piping**
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____

3. **Gas Monitoring Facilities** (*e.g.*, gas monitoring of adjacent homes or buildings)
   ☐ Good condition ☐ Needs Maintenance ☐ N/A
   Remarks_____

F. Cover Drainage Layer ☐ Applicable x N/A

1. **Outlet Pipes Inspected** ☐ Functioning ☐ N/A
   Remarks_____

2. **Outlet Rock Inspected** ☐ Functioning ☐ N/A
   Remarks_____

G. Detention/Sedimentation Ponds ☐ Applicable x N/A

1. **Siltation** Areal extent_____ Depth_____ ☐ N/A
   ☐ Siltation not evident
   Remarks_____

2. **Erosion** Areal extent_____ Depth_____
   ☐ Erosion not evident
   Remarks_____

3. **Outlet Works** ☐ Functioning ☐ N/A
   Remarks_____

4. **Dam** ☐ Functioning ☐ N/A
   Remarks_____

H. Retaining Walls ☐ Applicable x N/A

1. **Deformations** ☐ Location shown on site map ☐ Deformation not evident
   Horizontal displacement_____ Vertical displacement_____
   Rotational displacement_____
   Remarks_____

2. **Degradation** ☐ Location shown on site map ☐ Degradation not evident
   Remarks_____

I. Perimeter Ditches/Off-Site Discharge x Applicable ☐ N/A

1. **Siltation** ☐ Location shown on site map x Siltation not evident
   Areal extent_____ Depth_____
   Remarks_____

2. **Vegetative Growth** ☐ Location shown on site map ☐ N/A
   x Vegetation does not impede flow
   Areal extent_____ Type_____
   Remarks_____

3. **Erosion** ☐ Location shown on site map x Erosion not evident
   Areal extent_____ Depth_____
   Remarks_____

4. **Discharge Structure** ☐ Functioning x N/A
   Remarks_____

VIII. VERTICAL BARRIER WALLS ☐ Applicable x N/A

1. **Settlement** ☐ Location shown on site map ☐ Settlement not evident
   Areal extent_____ Depth_____
   Remarks_____

2. **Performance Monitoring** Type of monitoring_____
   ☐ Performance not monitored
   Frequency_____ ☐ Evidence of breaching
   Head differential_____
   Remarks_____

IX. GROUNDWATER/SURFACE WATER REMEDIES X Applicable ☐ N/A

A. Groundwater Extraction Wells, Pumps, and Pipelines X Applicable ☐ N/A

1. **Pumps, Wellhead Plumbing, and Electrical**
X Good condition X All required wells properly operating ☐ Needs Maintenance ☐ N/A
Remarks_____

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
X Good condition ☐ Needs Maintenance
Remarks_____

3. **Spare Parts and Equipment**
X Readily available X Good condition ☐ Requires upgrade ☐ Needs to be provided
Remarks_____

B. Surface Water Collection Structures, Pumps, and Pipelines ☐ Applicable X N/A

1. **Collection Structures, Pumps, and Electrical**
☐ Good condition ☐ Needs Maintenance
Remarks_____

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
☐ Good condition ☐ Needs Maintenance
Remarks_____

3. **Spare Parts and Equipment**
☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
Remarks_____

C. Treatment System X Applicable ☐ N/A

1. **Treatment Train** (Check components that apply)
   ☐ Metals removal ☐ Oil/water separation ☐ Bioremediation
   X Air stripping ☐ Carbon adsorbers
   ☐ Filters_____
   ☐ Additive (*e.g.*, chelation agent, flocculent)_____
   ☐ Others_____
   X Good condition ☐ Needs Maintenance
   X Sampling ports properly marked and functional
   X Sampling/maintenance log displayed and up to date
   X Equipment properly identified
   X Quantity of groundwater treated annually: Approx. 34,000,000 gallons
   ☐ Quantity of surface water treated annually_____
   Remarks_____

2. **Electrical Enclosures and Panels** (properly rated and functional)
   ☐ N/A X Good condition ☐ Needs Maintenance
   Remarks_____

3. **Tanks, Vaults, Storage Vessels**
   ☐ N/A X Good condition ☐ Proper secondary containment ☐ Needs Maintenance
   Remarks_____

4. **Discharge Structure and Appurtenances**
   ☐ N/A X Good condition ☐ Needs Maintenance
   Remarks_____

5. **Treatment Building(s)**
   ☐ N/A X Good condition (esp. roof and doorways) ☐ Needs repair
   ☐ Chemicals and equipment properly stored
   Remarks_____

6. **Monitoring Wells** (pump and treatment remedy)
   X Properly secured/locked X Functioning X Routinely sampled X Good condition
   X All required wells located ☐ Needs Maintenance ☐ N/A
   Remarks_____

D. Monitoring Data

1. Monitoring Data
   X Is routinely submitted on time X Is of acceptable quality

2. Monitoring data suggests:
   X Groundwater plume is effectively contained X Contaminant concentrations are declining

D. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ All required wells located ☐ Needs Maintenance x N/A
Remarks

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).
The pump and treat system is effective in containing the groundwater plume and concentration of COC has been reduced over time. IC's are in place and exposure pathways are controlled. The goal of the remedy is to remove Sited-related COCs in groundwater to clean up levels as described in the 2018 ESD.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.
N/A

C.	**Early Indicators of Potential Remedy Problems**
	Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future. N/A

D.	**Opportunities for Optimization**
	Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy. The PRP continuously monitors performance of the pump and treat system to evaluate opportunities to optimize the system.

Attachment 2 – Site Photos

Picture 1. Former septic pit area.

Picture 2. Warehouse with VI mitigation system.

Picture 3. Monitoring well (MW-008).

Picture 4. Former lagoon area.

Picture 5. Groundwater treatment building.

Picture 6. Pumping well (PW-08).

Picture 7. Treated groundwater outfall.

Attachment 3 – Site Interviews Summary

To inform the community about the Site, EPA spoke to local stakeholders, including business owners, community members, and representatives of East Pikeland Township.

In February 2019 through April 2019 EPA conducted community interviews to explain the cleanup remedy, describe the five-year review process, and discuss any concerns about the Site. EPA spoke with both private residents/owners, representatives for the PRPs implementing the Site remedy, and local officials which included the township manager and their environmental consultant. During the interviews, there were no issues or concerns regarding the cleanup brought the EPA's attention. They mentioned some local efforts over the years, including the potential of a school to be built on or near the site, which caused some alarm for the community. This school was not built, and currently there are no plans for any school construction near the site. Additionally, a nearby park and amphitheater at one time caught the interest of the community because they wanted to know of any impacts this would of had on the site cleanup.

The community members shared valuable information on best ways to get information out to the public about our efforts. This included utilizing the local Patch paper/only resources, The Mercury newspaper, and community boards at local establishments. These establishments have billboards and binders filled with local information about various topics and events.

As part of our continued mission of protecting human health and the environment, EPA will continue to keep the community up to date and aware of our work

Attachment 4 -2017 Maintenance Log:

a. 4/7/17 – PW-002 flowmeter/check valve/flow restriction valve replaced

b. 4/21/17 – PW-002 flowmeter recalibrated

c. 5/26/17 – VI Fan #5 manometer replaced

d. 6/1/17 – PW-002 pump starter replaced

e. 6/29/17 – PW-001 & PW-002 power supply replaced

f. 8/24/17 – PW-005 battery back-up replaced and reload program

g. 8/31/17 – PW-008 pump starter replaced

h. 8/31/17 – VI Fan 14 electrical supply replaced

i. 10/6/17 – PW-005 pump/motor replaced

j. 10/17/17 – PW-006 main disconnect/fuse block replaced in vault

k. 12/6/17 – VI Fan #4 & #14 manometers replaced

Attachment 5
Press Release

EPA REVIEWS CLEANUP

Kimberton Superfund Site

The U.S. Environmental Protection Agency (EPA) is reviewing the cleanup that was conducted at the Kimberton Superfund Site located in East Pikeland Township, PA. EPA inspects sites regularly to ensure that cleanups conducted remain protective of public health and the environment. EPA's previous review of the site in 2014 determined that the remedy was working as designed and remained protective. EPA modified the cleanup plan in March 2018 to address recommendations identified in the 2014 review. Findings from the current review being conducted will be available by August 2019.

For questions or to provide site-related information for the review:

Contact: Alexander Mandell
EPA Community Involvement Coordinator
Phone: 215-814-5517
Email: mandell.alexander@epa.gov

To access detailed site information including the Review Report once finalized: https://www.epa.gov/superfund/kimberton

Protecting human health and the environment