FIFTH FIVE-YEAR REVIEW REPORT FOR
NORTH PENN – AREA 1 SUPERFUND SITE
MONTGOMERY COUNTY, PENNSYLVANIA

Prepared by

U.S. Environmental Protection Agency
Region 3
Philadelphia, Pennsylvania

PAUL LEONARD Digitally signed by PAUL LEONARD
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Paul Leonard, Division Director

Date

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LIST OF ABBREVIATIONS & ACRONYMS

1,1-DCA	1,1-Dichloroethane
1,1-DCE	1,1-Dichloroethene
1,2-DCE	Cis and Trans-1,2-Dichloethene
1,1,1-TCA	1,1,1-Trichloroethane
ARARs	Applicable or Relevant and Appropriate Requirements
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
COC	Contaminant of Concern
COE	U.S. Army Corps of Engineers
EPA	U.S. Environmental Protection Agency
ESD	Explanation of Significance Difference
FYR	Five Year Review
GKM	Granite Knitting Mill
GPRA	Government Performance and Results Act
IA	Interagency Agreement
IC	Institutional Control
MCL	Maximum Contaminant Level
NPL	National Priorities List
NPWA	North Penn Water Authority
O&M	Operation and Maintenance
OU	Operable Unit
ppb	Parts per billion
PADEP	Pennsylvania Department of Environmental Protection
PCE	Perchloroethene / Tetrachloroethene
PCOR	Preliminary Close Out Report
POTW	Publicly Owned Treatment Works
PRP	Potentially Responsible Party
RA	Remedial Action
RAO	Remedial Action Objective
RD	Remedial Design
RI/FS	Remedial Investigation / Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
RSL	Regional Screening Level
SDWA	Safe Drinking Water Act
TCE	Trichloroethene
VI	Vapor Intrusion
VOC	Volatile Organic Compound

I. INTRODUCTION

The purpose of a Five-Year Review (FYR) is to evaluate the implementation and performance of a remedy in order 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 five-year review 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 five-year review 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 fifth FYR for the North Penn – Area 1 Superfund Site. The triggering action for this policy review is the completion of the previous FYR on September 19, 2018. The FYR has been prepared due to the fact that hazardous substances, pollutants, or contaminants remain at the site above levels that do not allow for unlimited use and unrestricted exposure (UU/UE).1

The Site consists of two operable units, both of which will be addressed in this FYR. OU-1 addressed soil contamination while OU-2 addresses groundwater contamination.

The North Penn - Area 1 Superfund Site Five-Year Review was led by Caleb Melvin of the EPA's Superfund and Emergency Management Division. Participants included Mindi Snoparsky, EPA Hydrogeologist; Linda Watson, EPA Toxicologist; Angela Ithier, EPA Community Involvement Coordinator (CIC); and Colin Wade, PADEP Project Officer. The review began on 10/10/2022.

Site Background

The Site is located in Souderton Township in Montgomery County, Pennsylvania, south of the intersection of Green Street and Main Street (Figure 1). The Site was initially discovered based on detections of high concentrations of tetrachloroethylene (PCE) in North Penn Water Authority (NPWA) production well S9. The well was immediately taken out of service and additional investigations were performed. The Site was initially comprised of five separate facilities; however, contamination was only identified at the following three locations (Figure 2):

- Gentle Cleaners, located at 162 Main Street, Souderton, PA;
- Granite Knitting Mills (GKM), located at 38 Green Street, Souderton PA; and
- Parkside Apartments, on Parkview Drive, Souderton, PA.

The first facility, Gentle Cleaners, used PCE, 1,1,1-trichloroethane (TCA) and other chlorinated solvents of unknown composition from 1953 to 1983. The second facility, GKM, maintained a dry-cleaning machine using PCE from 1967 to 1979. The third property, Parkside Apartments, once included a dry-cleaning establishment. At the Parkside Apartments, historical records document a PCE spill in the early 1970s, which contaminated soil and groundwater with hazardous substances. At the issuance of this report, the Gentle Cleaners location is occupied by Modern Male Barber Shop and a restaurant called the Burger Shop; the GKM building is used by Total Equestrian Enterprises including Franconia International, which makes equestrian articles (horse tacks, saddles, and accessories) and Elite Sportswear Productions which makes sportswear uniforms and accessories; and the Parkside Apartments continues to be residential apartments. The area surrounding the Site is a densely populated mixture of residences and businesses. The Site was proposed to the National Priorities List (NPL) on January 22, 1987 and placed on the NPL on March 31, 1989.

[1] UU/UE generally is the level of cleanup at which all exposure pathways present an acceptable level of risk for all land uses.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: North Penn – Area 1		
EPA ID: PAD096834494		
Region: 3	**State:** PA	**City/County:** Souderton Township, Montgomery County
SITE STATUS		
NPL Status: Final		
Multiple OUs? Yes	**Has the site achieved construction completion?** Yes	
REVIEW STATUS		
Lead agency: EPA		
Author name (Federal or State Project Manager): Caleb R. Melvin		
Author affiliation: EPA Region 3		
Review period: 10/10/2022 - 9/19/2023		
Date of site inspection: 11/16/2022		
Type of review: Policy		
Review number: 5		
Triggering action date: 9/19/2018		
Due date *(five years after triggering action date)*: 9/19/2023		

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

The remedial investigation found that the Site presented potential current and future unacceptable risk due to exposure to VOCs from ingestion, dermal absorption, and inhalation of vapors from contaminated soil and groundwater. Exposure pathways assessed were for current and future residents both onsite and offsite. EPA determined that actual or threatened releases of hazardous substances from the Site, if not addressed, may present an imminent and substantial endangerment to public health. COCs in groundwater are listed below in Table 2.

Response Actions

EPA issued the Record of Decision (ROD) to select the remedy for the Site on September 30, 1994 and modified the selected remedy in three Explanations of Significant Differences (ESDs) issued on October 19, 1997, September 24, 1998, and May 31, 2012.

The 1994 ROD selected a final remedial action for OU1, which addresses the soil contamination that was the

source of groundwater contamination. The OU2 groundwater remedy selected in the 1994 ROD was an interim action, and EPA later selected it as the final groundwater remedy in the 1998 ESD.

The 1994 ROD established the following Remedial Action Objectives (RAOs):

- Remove the potential exposure risk from the contaminated soil (OU1);
- Eliminate the source of contamination migrating to groundwater (OU2);
- Prevent the migration of contaminated groundwater (OU2).

The selected remedy for OU1 included the excavation of contaminated soils at each of the three properties (Gentle Cleaners, GKM, and Parkside Apartments) with off-site disposal. Soils were to be excavated until the PCE concentrations reached the cleanup levels identified in Table 1 below.

Table 1: Soil Cleanup Levels

Property	**PCE Soil Cleanup Levels** (µg/kg)
Gentle Cleaners	270
Granite Knitting Mills	260
Parkside Apartments	120

The interim remedy for OU2 consisted of pumping and treating contaminated groundwater from two wells until MCLs were achieved throughout the groundwater plume. The two wells selected for pumping in the 1994 ROD were the upper interval of the GKM well (the top 30 to 40 feet), which was approximately 208 feet deep; and the entire NPWA S9 well, which was approximately 300 feet deep.The extracted water from these wells would be combined prior to treatment. The 1994 ROD allowed the direct discharge of the extracted water to a publicly owned treatment works (POTW), if determined appropriate during the remedial design.

Based on sampling results during the remedial design (RD), the 1997 ESD documented that no soil excavation was required from the Parkside Apartments property and groundwater extraction from well S9 was not required.

The 1994 ROD identified fifteen (15) contaminants of concern (COCs) in groundwater. At the time of the 1994 ROD, the cleanup levels selected for the COCs were “natural background” concentrations. After the issuance of the 1994 ROD, Pennsylvania passed into law the Land Recycling and Remediation Standards Act (Act 2), which discontinued the use of “natural background” as a cleanup level for groundwater and established new groundwater cleanup levels known as Medium-Specific Concentrations (MSCs). EPA determined that the cleanup levels established under Act 2 were not more stringent than MCLs and the cleanup levels were changed to MCLs with the issuance of the first ESD on October 29, 1997.

Not all of the COCs in the 1994 ROD have MCLs; however, only PCE and TCE have ever been detected in groundwater at concentrations higher than MCLs or Act 2 MSCs. Therefore, the groundwater cleanup levels are MCLs for all COCs with MCLs and the other COCs in the ROD have risk-based clean-up values, as summarized in Table 2 below:

Table 2: Groundwater COCs and Cleanup Levels

COC	**Cleanup Level (µg/L)**	**Cleanup Level Basis**
Benzene	5	MCL
Cis-1,2-dichloroethene	70	MCL
Trans-1,2-dichloroethene	100	MCL
Methylene chloride	5	MCL
Ethylbenzene	700	MCL
Tetrachloroethene (PCE)	5	MCL
Toluene	1,000	MCL

1,1,1-Trichloroethane	200	MCL
Trichloroethene (TCE)	5	MCL
Acetone	No MCL	RSL
Bromodichloromethane	No MCL	RSL
Carbon Disulfide	No MCL	RSL
Chloroform	No MCL	RSL
Chloromethane	No MCL	RSL
1,1-Dichloroethane	No MCL	RSL

Status of Implementation

OU1 Remedial Action

The soil remedial action was performed at the Gentle Cleaners and GKM properties in June and July 1998. A total of 482 tons of soil were excavated and disposed offsite. The OU1 remedial action is considered complete.

OU2 Remedial Action

During the RD, three additional monitoring wells were installed (S1, S2 and D3) in addition to the existing extraction wells, GKM and S9. Sampling results in all wells during and prior to the RD revealed low concentrations of contamination (PCE ranged between 330 ppb to ND); therefore, EPA determined that extracted water would be discharged to the sanitary sewer to be treated at the POTW. Construction of the extraction system, which consisted of installation of a pump and conveyance piping from the GKM well to the sanitary sewer, was completed in July 1998. As indicated above, well S9 was never pumped due to the low concentrations. Therefore, NPWA S-9 was destroyed in 1998.

The Site achieved construction completion status when the Preliminary Close-Out Report (PCOR) was issued by EPA on September 24, 1998.

The GKM well was operated until 2005, when PCE concentrations had decreased by two orders of magnitude and were consistently below the MCL. In October 2017 the GKM well was grouted from depth to 36 feet below ground surface to prevent it from being a possible conduit of contamination. However, the PCE concentration at monitoring well S1 had increased significantly since installation and initial sampling in 1998 (PCE was measured at 19,000 ppb following installation and 8,300 ppb in 2003); therefore, an extraction system and associated piping was installed in well S1 in September 2008 and is currently in operation. On January 8, 2009, operation and maintenance (O&M) of OU2 was transferred to PADEP.

EPA issued the 2012 ESD to document the change in groundwater extraction location from the GKM well to well S1 and to allow for extraction of contaminated groundwater at future locations and depths determined by EPA to be appropriate to optimize the removal of contaminants. The third ESD also clarified that the goal of the groundwater remedy is to achieve MCLs throughout the plume of contamination. Finally, the third ESD added requirements for institutional controls (ICs), as described below.

Institutional Controls Summary

Table 3: Institutional Controls

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)
				Obligatory connection to public water of any	

Groundwater	Yes	Yes	Parcels in Souderton Township	residence within certain distance to available water supplies.	Souderton Township Ordinance #551 May 2012
Groundwater	Yes	Yes	Parcels in Souderton Township	Obligatory testing of any new well and treatment of affected groundwater.	Montgomery County Health Department, Division of Water Quality Management, Water Quality Regulations, Chapter 17. May 2012

As indicated above, the 2012 ESD called for ICs to ensure that the contaminated groundwater is not used for domestic purposes (including as a source of drinking water) and that no new wells interfere with the remedy selected for the Site. As set forth in the ESD, ICs are implemented via existing requirements established by the Montgomery County Health Department (MCHD) and Souderton Borough. These ICs help to prevent both human exposure and interference of the remedy. The MCHD *Public Health Code Chapter 17* both prevents exposure to the groundwater contamination and installations of new wells by their permitting process. MCHD requires approval for any new well and the permitting process requires that all new drinking water wells be tested for certain parameters, including PCE and TCE. If the tested parameters exceed the County's drinking water standards, an approval to operate will not be granted and consumption of the groundwater is not permitted unless treatment to remove the contaminant is provided.

In addition, Souderton Borough has a local ordinance that requires all new construction built within 175 feet of a public water line to connect to the water line. This ordinance is sourced from Souderton Borough adopting and enforcing the provisions of the Pennsylvania Construction Code Act and the National Building Codes of which the National Plumbing Code is found. Because of the current configuration of the Borough, all new construction in the vicinity of the Site would be within the requirement to connect to public water. Furthermore, no residences around the Site are currently on private well water (within the Borough of Souderton).

An additional level of protection of the remedy includes locking mechanisms on all the groundwater monitoring wells to prevent damage to the wells. Also, regular meetings between the MCHD, PADEP, and EPA occur to coordinate efforts, data and communications regarding all Superfund Sites located in Montgomery County, Pennsylvania.

Systems Operations/Operations & Maintenance

Operations and maintenance (O&M) at the site includes routine and non-routine activities, system performance monitoring, and groundwater monitoring activities. O&M is monitored by PADEP in accordance with the January 2009 O&M Work Plan.

The current O&M program consists of the following elements:

- Bi-weekly inspection of the groundwater extraction system and appropriate maintenance, as required;
- Semi-annual sampling of five groundwater monitoring wells (including the Site extraction well, S1) and two surface water locations for volatile organic compounds (VOCs); and
- Quarterly sampling of the extraction system effluent for VOCs.

In this FYR period, the semi-annual collection of groundwater samples from the five monitoring wells and two surface water locations were conducted during June 2018, December 2018, June 2019, December 2019, June 2020, December 2020, June 2021, December 2021, and June 2022.

The groundwater extraction system installed in well S-1 operated successfully during the current reporting period. The extraction system was online for most of the operational period, except for temporary system shutdowns in February 2020 for meter cleaning, during the Fall of 2020 to replace the extraction well pump and discharge tubing, and during a temporary system shutdown from December 17, 2021 to March 29, 2022 for the procurement and replacement of the extraction well pump. The extraction well operated at a groundwater extraction flow range of approximately 1.8 to 15.0 gallons per minute (gpm) during this reporting period. Problems with biofouling and the wearing out of the extraction well pump caused the wide range of extraction well flow rate. From July 1, 2018 to June 29, 2022 (the last groundwater sampling event conducted in this reporting period), 13,786,871 gallons were discharged to the Souderton POTW from the extraction system.

Quarterly discharge samples were collected for VOC analysis in October 2018, December 2018, March 2019, June 2019, September 2019, December 2019, April 2020, June 2020, October 2020, December 2020, April 2021, June 2021, September 2021, December 2021, April 2022, and June 2022 from the extraction well (S1), which discharges to the Souderton POTW.

III. PROGRESS SINCE THE LAST REVIEW

Table 4: Protectiveness Determinations/Statements from the 2018 FYR

OU #	Protectiveness Determination	Protectiveness Statement
1	Protective	The remedy at OU1, the source control operable unit, is protective of human health and the environment. The contaminated soil identified during the remedial investigation was removed to the cleanup levels established in the ROD and any potential exposure risk to this soil has been eliminated. Furthermore, this source of contamination migrating to the groundwater was removed.
2	Short-term Protective	The remedy at OU2, the contaminated groundwater control operable unit, is protective of human health and the environment in the short term. The groundwater extraction and treatment system has been effective in reducing groundwater contamination at the Site. ICs are in place to prevent exposure to contaminated groundwater. In addition, continued monitoring of the monitoring well network and annual sampling of the surface water will continue to evaluate the effectiveness of the remedy. However, additional monitoring wells are necessary to fully delineate the groundwater contamination plume to the southwest of the former source area and a capture zone analysis is necessary to ensure the remedy is protective in the long term.

Table 5: Status of Recommendations from the 2018 FYR

OU #	Issue	Recommendations	Current Status	Current Implementation Status Description	Completion Date (if applicable)

OU2	The groundwater contamination plume may not be fully delineated to the southwest of the Site.	Install additional monitoring wells to fully delineate the groundwater contamination plume.	Ongoing	One additional monitoring well has been installed to date and additional wells are planned in 2023. See additional discussion below.	N/A
OU2	The capture zone of the current extraction system has not been defined.	Perform a capture zone analysis after the new wells are installed and the delineation of the plume is complete to determine the effectiveness of the current extraction system and evaluate if additional extraction wells are necessary.	Ongoing	In 2023, contracting mechanisms are in place to begin work for the capture zone analysis.	N/A

The recommendation from the previous FYR envisioned that additional wells would be drilled southwest of well S1, in line with the groundwater flow to delineate the plume and enhance the monitoring well system. Additionally, a well is proposed to be installed east of well S-1 to better delineate the residual source zone. The new wells would also help in the completion of a capture zone analysis.

During the previous FYR period, EPA installed the new well (April 2016), MG-2220, downgradient from the extraction well S1 (Figure 1). The well was advanced to 82 feet below ground surface. During installation of the well MG-2220, faults and fractures were encountered in the well (the well is highly fractured from 25 to 60 feet below ground surface), geophysics and packer testing was performed, and a groundwater sample was collected.

In October 2017, a 2-inch free-standing (ungrouted) polyvinyl chloride (PVC) casing was installed with a 10-foot screened interval from 72 to 82 feet below land surface. Permanent installation of the casing and screen with sand pack and grout was postponed until investigations could determine the most contaminated depth interval in the borehole to place the screen. Through geophsycial investigation, extensive fracturing was found throughout the borehole. Additional work is necessary to determine the extent of hydrogeologic interconnections and contaminat source depth in the well. At this time, well MG-2220 is not completed and is not part of the Site's sampling program. Investigation at this location identified the presence of a fault within the plume that has the potential to affect its geographical extent. As such, this further indicates the need for additional wells in the vicinity.

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Involvement & Site Interviews

A public notice was published in the *Times Herald* on April 3, 2023, stating that there was a five-year review and inviting the public to submit any comments to the U.S. EPA. The results of the FYR and the report will be made available at the Site's information repository, located at the local Indian Valley Public Library, 100 East Church Avenue, Telford PA 18969, and online at https://www.epa.gov/superfund/northpenn1

During the FYR process, interviews were conducted to document any perceived problems or successes with the remedy that has been implemented to date**.** The results of these interviews are summarized below.

On November 4th, 2022 EPA Community Involvement Coordinator Angela Ithier and RPM Caleb Melvin solicited partner feedback for the Site. Solicitations were sent to and received from the Souderton Borough Manager, Director of Water Quality Management at the Montgomery County Office of Public Health, and the state partner at PADEP.

Montgomery County Office of Public Health, PADEP, and Souderton Borough have stated that there has been no public interest or concerns regarding the site since the last FYR. Additionally, it was stated that there have not been any changes in regulations or ordinances affecting the site since the last FYR.

Data Review

Groundwater samples are collected by a contractor of PADEP at six-month intervals (generally in June and December) from both the current extraction well (S1) and the monitoring wells (S2, S3, D3, and GKM). Since the previous FYR, only PCE and TCE have been detected at concentrations that exceed their respective cleanup levels (MCLs).

Table 6: Semiannual Well Sampling

Well	Compound	Target	Jun 2018	Dec 2018	Jun 2019	Dec 2019	Jun 2020	Dec 2020	Jun 2021	Dec 2021	Jun 2022
S1	PCE	5	**885**	**759**	**909**	**580**	**148**	**28.2**	**320**	**998**	**265**
	TCE	5	ND	3	4	3.5	1.28	ND	2.3	**5.6**	1.8
S2	PCE	5	ND	0.62	1.3	1	0.622	ND	ND	ND	0.77
	TCE	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
S3	PCE	5	ND	1.1	0.65	ND	0.428	ND	ND	ND	ND
	TCE	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
D3	PCE	5	ND	1.4	ND	ND	ND	1	ND	ND	ND
	TCE	5	0.84	ND	0.86	0.97	0.793	ND	ND	ND	0.61
GKM	PCE	5	3.2	1.2	3.2	**5.1**	2.88	**5.7**	2.6	2.6	2.6
	TCE	5	0.84	ND	0.62	0.6	0.339	0.54	ND	1	ND

PCE concentrations in well S1 have exceeded the MCL of 5 µg/L during all sampling events in this FYR period and samples in well GKM have periodically exceeded the MCL for PCE. All the other wells are below the MCL or non-detect for PCE during the same period. Concentrations of PCE range from non-detect to 5.7 µg/L at the GKM Well (the previous FYR period's highest concentration was 8.1 ug/L) and from 28.2 to 998 µg/L in well S1 (the previous FYR period had a concentration range of 329 to 1150 µg/L). The highest concentration of PCE at the Site was 19,000 µg/L from a sample collected at S1 soon after remedial action was implemented in 1998. The

May 2018 sample results for well MG-2220 indicated PCE to be present at 1830 ppb and TCE at 9.8 ppb. This well is not included in the current sampling network as well installation was not completed.

TCE was detected above the MCL of 5 µg/L in well S1 in December of 2021 with a concentration of 5.6 µg/L. TCE was not detected above the MCL in any other wells or samples from this FYR period. It should be noted that all Site COCs are sampled for during sampling events. Other COCs were either ND or below established clean-up levels or regional screening levels.

Table 7 identifies the current status of each well used in the monitoring well network to help identify a focus for the previous and current issues and recommendations.

Table 7: Well Information

Well	Depth (feet below ground surface)	Type	Drill Year
S-1	59	Open hole	1995
S-2	60	Open hole	1995
S-3	49	Open hole	2000
D-3	198	Open hole	1995
GKM	35.5	Open hole	1957. Reconstructed in 2017
MG-2220	82	Incomplete construction	2016

Quarterly samples are also collected from extraction well S1 prior to treatment as summarized in Table 8. No other COCs were detected or were detected above their MCL or RSLs. Results are consistent with the semi-annual groundwater data presented above. Souderton Borough approval to discharge from well S-1 to the local POTW was granted on June 16, 2008 (Appendix C).

Table 8: Quarterly SI Sampling before treatment

Quarterly Sampling Date	Compound	Concentration µg/L
Sept 2018	PCE	723
Dec 2018	PCE	759
Mar 2019	PCE	781
Jun 2019	PCE	909
Sept 2019	PCE	478
Dec 2019	PCE	580
Apr 2020	PCE	420
Jun 2020	PCE	148
Oct 2020	PCE	337
Dec 2020	PCE	28.2
Apr 2021	PCE	308
Jun 2021	PCE	320
Oct 2021	PCE	302
Dec 2021	PCE	998
Apr 2022	PCE	284
Jun 2022	PCE	265

Surface water samples are also collected during the semi-annual sampling events. Two locations are sampled in

the unnamed tributary to the Skippack Creek; SW1 which is approximately 1,000 feet downstream from well S1 and SW2 which is where the unnamed tributary surfaces through a culvert under Wile Avenue, approximately 300 feet from well S1. In this FYR period, TCE has been non-detect in surface water. PCE has been found below its MCL at concentrations between non-detect and 2.6 µg/L. The measured concentrations are below the Pennsylvania Water Quality Criteria for Toxic Substances Human Health Criteria for surface water (10 µg/L) and below the Fish and Aquatic Life Criteria Continuous (140 µg/L) and Maximum (700 µg/L) Concentrations. The unnamed tributary is not used for drinking water or recreational purposes and no exposure is expected to occur. Surface water monitoring will continue to evaluate any changes in surface water quality.

Table 9: Semiannual Surface Water Sampling

Surface Water Sampling Location	Compound	PA Health Criteria for surface water * µg/L	Fish and Aquatic Life Criteria Continuous µg/L	Jun '18	Dec '18	Jun '19	Dec '19	Jun '20	Dec '20	Jun '21	Dec '21	Jun '22
SW-1	PCE	10	140	ND	1.4	ND	ND	0.12	ND	ND	ND	ND
SW-1	TCE	0.6	450	ND	ND	ND	ND	ND	ND	ND	ND	ND
SW-2	PCE	10	140	1	ND	1.1	ND	0.24	ND	ND	2.6	ND
SW-2	TCE	0.6	450	ND	ND	ND	ND	ND	ND	ND	ND	ND

* Pennsylvania Water Quality Criteria for Toxic Substances Human Health Criteria for Surface Water

Site Inspection

The official Site inspection was conducted on 11/16/2022. In attendance were EPA RPM Caleb R. Melvin, EPA RPM José R. Redmond Girón, PADEP, PADEP Contractors AECOM, and the Director of Water Quality Management at the Montgomery County Office of Public Health.

At the time of the assessment, no issues were identified with the Site or Site remedy. Monitoring wells were inspected, the pumping system was inspected, and ICs were reviewed. Additionally, surrounding land use was unchanged since the fourth FYR.

V. TECHNICAL ASSESSMENT

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

Yes. The remedy is functioning as designed in the 1994 ROD and the ESDs from 1997, 1998 and 2012. The soil remedial action was completed in 1998 at the Gentle Cleaners and GKM properties with all soil above cleanup goals excavated from the site and disposed off-site Groundwater monitoring confirms concentrations for PCE and TCE are near or below cleanup levels in all wells, with the exception of extraction well S1. Although elevated levels of PCE remain at the well S1, concentrations have decreased by an order of magnitude since pumping of well S1 began in 2008. Well S1 continues to be used as an extraction well to remove contaminated groundwater.

While the data indicate that the remedy is protective of human health and the environment, supplemental information is needed to ensure the remedy is protective in the long-term. Additional monitoring wells are recommended to further delineate the groundwater contaminant plume to the southwest of the former source area at the GKM property. Once the new wells are installed, a capture zone analysis is recommended to determine if the current system is capable of fully capturing contaminated groundwater at the Site. Continued operation of the

extraction system and monitoring of the current well network will continue to reduce the extent of groundwater contamination, and an enhanced monitoring well network will allow for a more complete evaluation of the remedy's protectiveness.

ICs are in place to ensure that the contaminated groundwater is not used as a source of drinking water and that no new wells interfere with the remedy selected for the Site. The ICs are implemented via Montgomery County Health Department and Souderton Borough regulations and ordinances.

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?

Yes. The RAOs used at the time of the remedy selection are still valid. While some of the exposure assumptions and toxicity data have changed since the remedy selection, the remedy remains protective due to ICs implemented at the Site which prevent exposure to contaminated groundwater. Vapor intrusion was evaluated at and around the Site from April 2009 to April 2010. After review of the analytical data from the vapor intrusion investigation, it was EPA's determination that vapor intrusion (VI) is not an issue for the homes and businesses in the vicinity of the Site.

Soil cleanup levels are identified in the 1994 ROD for PCE and are still valid. "Natural background" was identified as the cleanup level for groundwater in the 1994 ROD but was changed to MCLs in the first ESD issued in 1997. The 2012 ESD further clarified that the RAO for groundwater is restoration of the entire groundwater plume to MCLs.

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

No. There has been no new information to question the effectiveness of the remedy.

VI. ISSUES/RECOMMENDATIONS

Issues/Recommendations
OU(s) without Issues/Recommendations Identified in the Five-Year Review:
OU1

Issues and Recommendations Identified in the Five-Year Review:

OU(s): OU2	**Issue Category: Operations and Maintenance**			
	Issue: The groundwater contamination plume may not be fully delineated specifically, to the southwest of well S1.			
	Recommendation: Install additional monitoring wells to fully delineate the groundwater contamination plume and perform a capture zone analysis to ensure the remedy is protective in the long term.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	EPA	EPA	12/29/2023

VII. PROTECTIVNESS STATEMENT

Protectiveness Statement(s)	
Operable Unit: OU1	*Protectiveness Determination:* Protective
Protectiveness Statement: The remedy at OU1, the source control operable unit, is protective of human health and the environment. The contaminated soil identified during the remedial investigation was removed to the cleanup levels established in the ROD and any potential exposure risk to this soil has been eliminated. Furthermore, this source of contamination was removed and is no longer a continuing source of contamination migrating to groundwater.	

Protectiveness Statement(s)	
Operable Unit: OU2	*Protectiveness Determination:* Short-term Protective
Protectiveness Statement: The remedy at OU2, the contaminated groundwater control operable unit, is protective of human health and the environment in the short-term. The groundwater extraction system has been effective in reducing groundwater contamination at the Site and continues to operate. ICs are in place to prevent exposure to contaminated groundwater. In addition, continued monitoring of the monitoring well network and semi-annual sampling of the surface water will continue to evaluate the effectiveness of the remedy. However, additional monitoring wells are necessary to fully delineate the groundwater contamination plume to the southwest of the former source area and a capture zone analysis is necessary to ensure the remedy is protective in the long term.	

Sitewide Protectiveness Statement
Protectiveness Determination: Short-term Protective
Protectiveness Statement: The Site is protective of human health and the environment in the short term. Both the OU1 and OU2 remedies were constructed in accordance with the Site decision documents and are effective in preventing exposure to contaminated soil and groundwater. However, additional monitoring wells and a capture zone analysis are necessary to ensure that the OU2 remedy is protective in the long term.

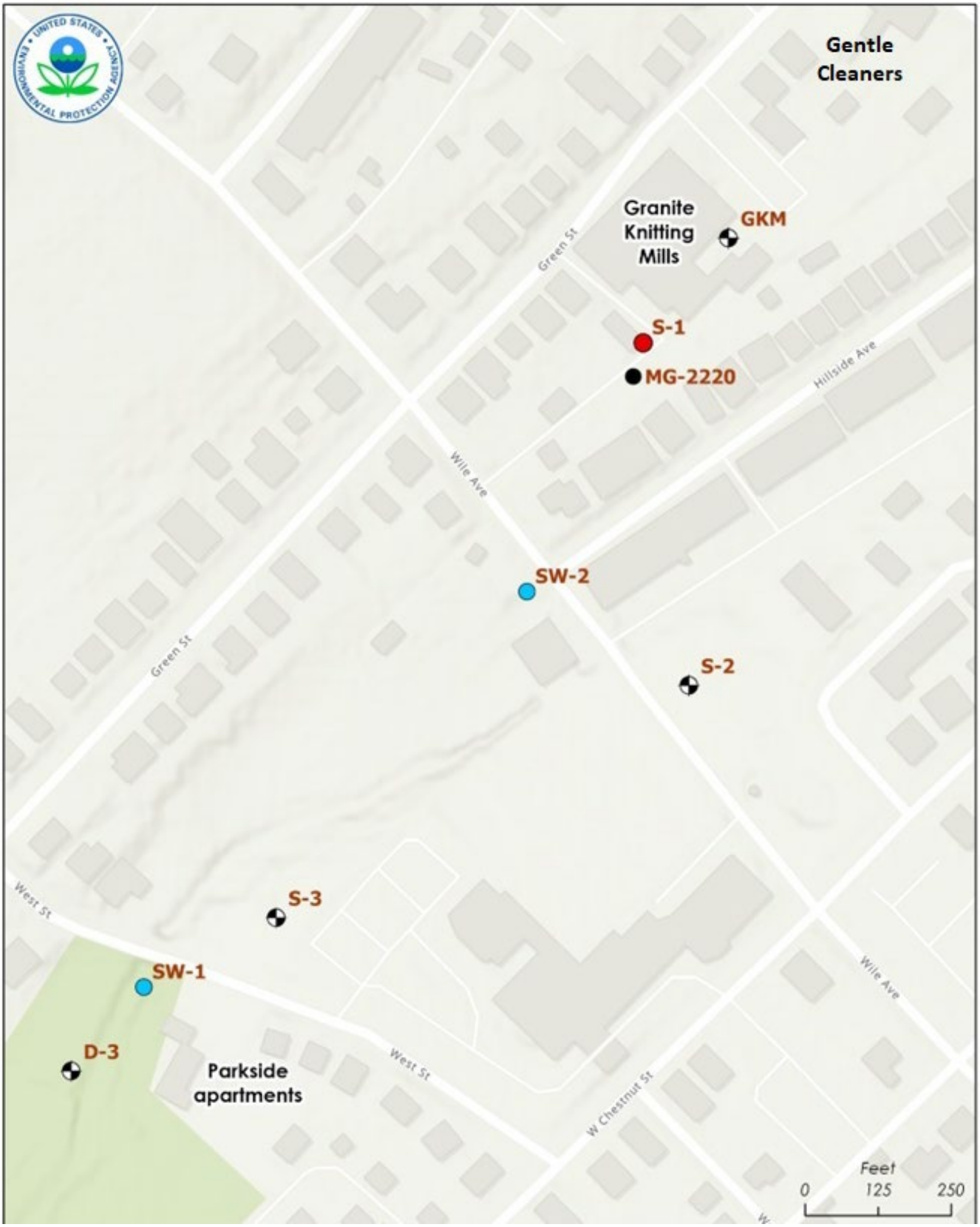
VIII. NEXT REVIEW

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

APPENDIX A – REFERENCE LIST

- Borough of Souderton Ordinance No. 551. May 1990. Six pages. https://semspub.epa.gov/work/03/2136686.pdf
- Montgomery county Health Department, Division of Water Quality Management, Public Health Code Chapter 17 "Individual *Water Supply, Irrigation Wells and Geothermal Well Systems Regulations*". January 2013. 12 pages. https://semspub.epa.gov/src/document/03/2136687
- Phase II Remedial Investigation (RI) Report Volume II. March 1993. 169 pages. https://semspub.epa.gov/work/03/28009.pdf
- Record of Decision (ROD)- OUs 1&2. September 1994. 70 pages. https://semspub.epa.gov/work/03/28077.pdf
- EPA Superfund Explanation of Significant Differences (ESD). October 1997. Six pages. https://semspub.epa.gov/work/03/83147.pdf
- EPA Superfund Explanation of Significant Differences. September 1998. Four pages. https://semspub.epa.gov/work/HQ/185585.pdf
- Third Explanation of Significance Differences (ESD). May 2012. 11 pages. https://semspub.epa.gov/src/document/03/2136696
- Fourth Five-Year Review Report. September 2018. 19 pages. https://semspub.epa.gov/work/03/2265146.pdf
- Annual Operations & Maintenance Report July 2017 to June 2018. January 2019. 62 pages.
- Annual Operations & Maintenance Report July 2018 to June 2021. October 2021. 182 pages.
- Annual Operations & Maintenance Report July 2021 to June 2022. October 2022. 70 pages.

APPENDIX B - FIGURES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MG-2220
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SW-2
S-2
Green St
S-3
West St
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D-3
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W Chestnut St
Wile Ave
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125
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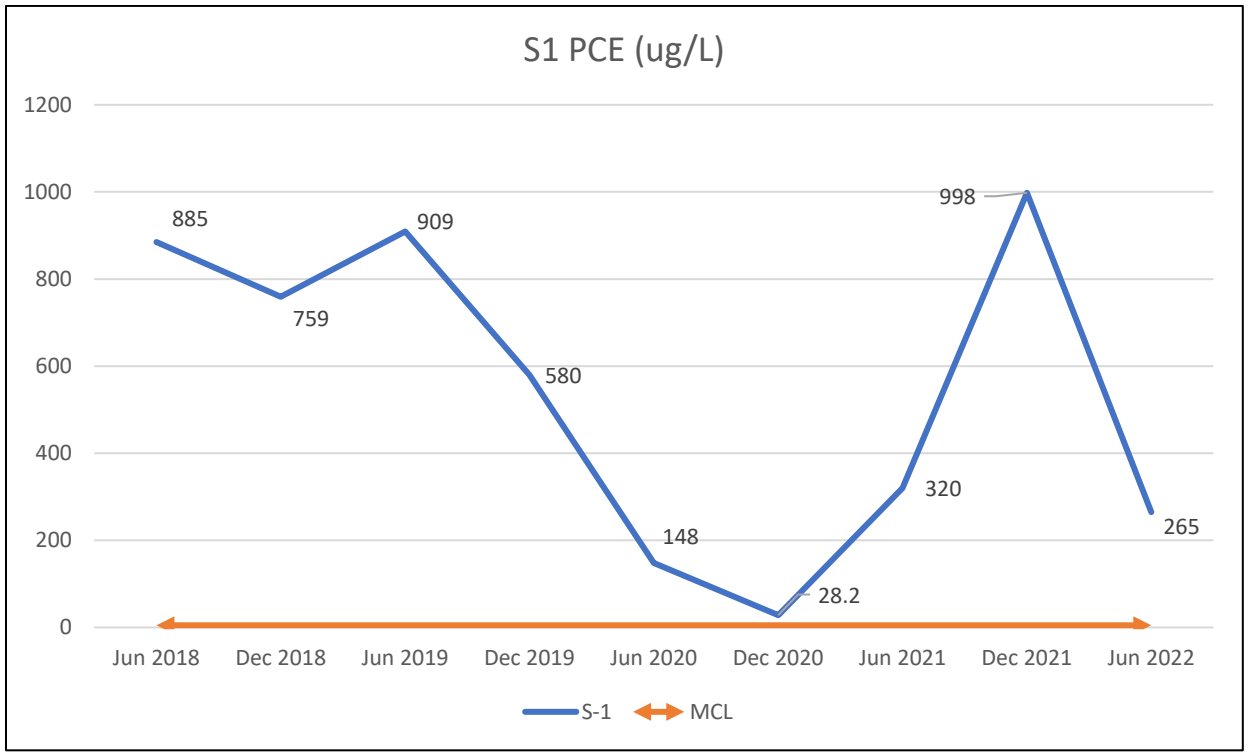
FIGURE 1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Jun 2019
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Jun 2020
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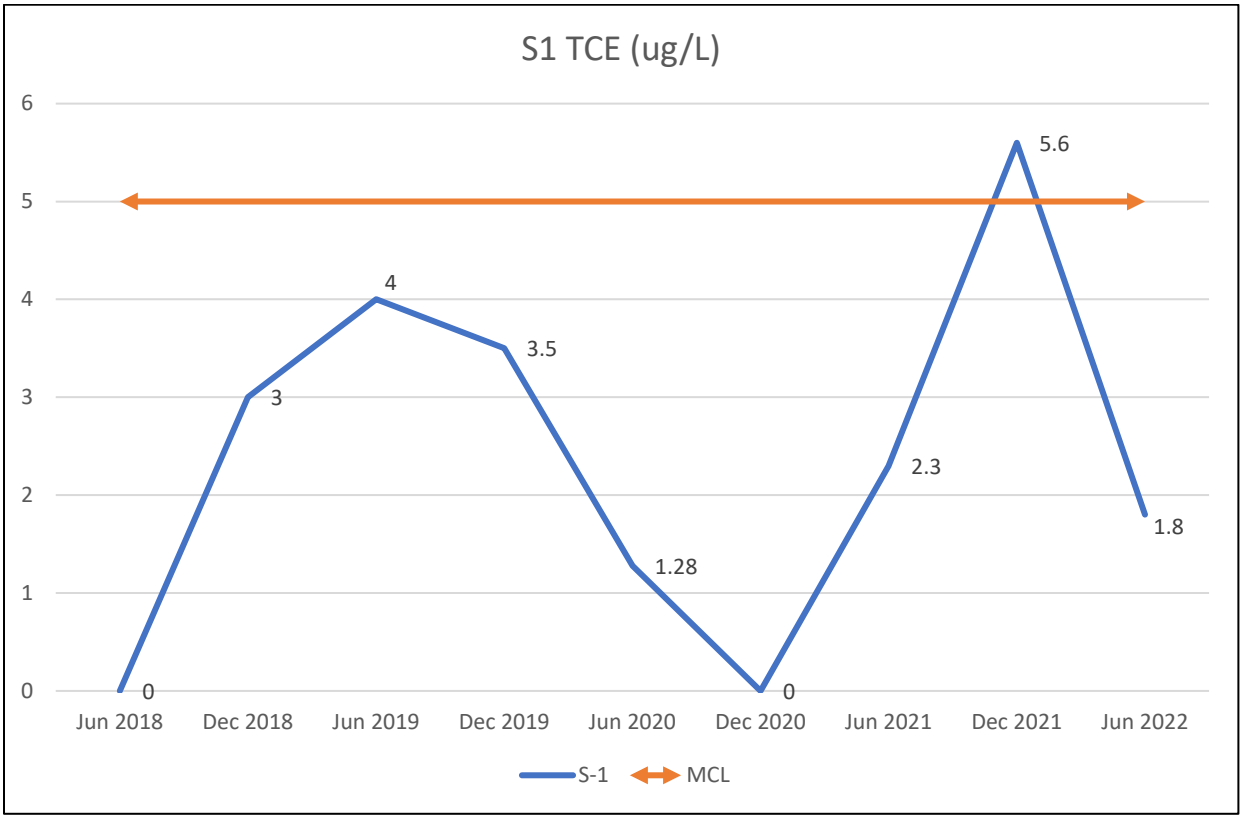
Jun 2021
Dec 2021
Jun 2022
S-1
MCL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1.8
Jun 2018
Dec 2018
Jun 2019
Dec 2019
Jun 2020
Dec 2020
Jun 2021
Dec 2021
Jun 2022
S-1
MCL

APPENDIX C– POTW DISCHARGE APPROVAL LETTER

EA Engineering, Science,
and Technology

1319 Woodbridge Station Way
Edgewood, MD 21040
Telephone: 410-538-8202
Fax: 410-538-8207
www.eaest.com

16 June 2008

P. Michael Coll
Souderton Municipal Building
31 West Summit Street
Souderton, Pennsylvania 18964

Re: Discharge into the Borough of Souderton Sanitary Sewer for the North Penn Area 1-Former Granite Knitting Mills Site
Souderton, PA

Dear Mr. Coll:

Per our telephone conversation today, this letter is to verify approval to discharge groundwater contaminated with chlorinated volatile organic compounds (mainly tetrachloroethylene, PCE) into the Borough of Souderton sanitary sewer system from an extraction well located at the above referenced facility. The discharge line from the extraction well will be connected by the Borough to the existing manhole located approximately 20 feet from the S-1 extraction well.

Also, per our conversation, the Borough will bill the cost of waste water treatment per your Residential Unit Schedule of 4 cents per cubic yard. The cost of treatment will be based on estimated quantities, which EA Engineering (EA), contractor to the Environmental Protection Agency (EPA), will provide to the Borough. The Borough will bill EA on a quarterly basis.

It is anticipated that the extraction well will be in operation in late July or early August 2008. EA will keep you posted on the start-up date and billing information.

Thank you for cooperation, and if you have any questions, please contact me at 410-538-8202 extension 1403.

Sincerely,

Kathryn S Fox

Kathryn S. Fox, P.G.
Project Manager

cc: Maria de los A. Garcia, EPA (electronic version)