THIRD FIVE-YEAR REVIEW REPORT

For

North Penn Area 1 Superfund Site

Souderton, Montgomery County, PA

September 2013

PREPARED BY:

U.S. Environmental Protection Agency, Region III

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Date:

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List of 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
ARAR's	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
GKM	Granite Knitting Mill
GPRA	Government Performance and Results Act
IA	Interagency Agreement
IC	Institutional Control
MCL	Maximum Contaminant Level
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
NPWA	North Penn Water Authority
O&M	Operation and Maintenance
OU	Operational 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
SDWA	Safe Drinking Water Act
TCE	Trichloroethene
VI	Vapor Intrusion
VOC	Volatile Organic Compound

Executive Summary

The North Penn 1 Site is located in the Borough of Souderton in Montgomery County, Pennsylvania. As a result of the contamination identified, the Site was placed on the National Priorities List (NPL) on March 31, 1989. The U.S. Environmental Protection Agency (EPA) issued a Record of Decision (ROD) for the Site on September 30, 1994. The contaminants of concern (COC) are volatile organic compounds (VOCs), primarily perchloroethene (PCE) and trichloroethene (TCE). The remedy selected included soil excavation with off-site disposal and a groundwater extraction system with discharge to a Publicly Owned Treatment Works (POTW).

The ROD divided the remedial work into two separate remedial actions (RA). The first operable unit (OU) was the source control operable unit (OU1). The selected remedy for OU1 included the excavation of contaminated soils at each of three properties (Gentle Cleaners, Parkside Apartments, and Granite Knitting Mill (GKM)) with off-site disposal. The second OU was for groundwater contamination (OU2). The selected interim remedy for OU2 consisted of pumping the upper interval of the GKM well and the entire North Penn Water Authority (NPWA) S9 well. On October 29, 1997, EPA issued an Explanation of Significant Differences (ESD) for the Site. The purpose of this ESD was to document the determination that no soil would be removed from the Parkside Apartments Property since PCE levels were below the remediation goal established in the ROD. This ESD also documented EPA's decision not to pump well S9 because of the low concentrations of PCE detected in the well during the Remedial Investigation/Feasibility Study (RI/FS) and Remedial Design (RD) studies. In addition, this ESD also changed the clean up goal for the aquifer from background to the Maximum Contaminant Levels (MCLs). A second ESD for the September 30, 1994 ROD was issued on September 24, 1998 to document EPA's decision that the interim extraction system selected for OU2 should be sufficient to serve as the final remedy for the contaminated groundwater. As part of the RA, a total of 482 tons of contaminated soil were excavated from the entire backyard at the Gentle Cleaners property and in four (4) different areas at the GKM property. The groundwater extraction system was installed at the GKM well and consisted of an extraction pump and conveyance piping, with direct discharge to the sanitary sewer.

In February 2005, the groundwater extraction system associated with the GKM well was shut down. Concentrations of PCE within the GKM well had been consistently below the cleanup standard since the 1999 semi-annual sampling event. However, since 1998, one of the monitoring wells, S1, located approximately 200 feet southwest and downgradient of the GKM well, has shown elevated levels of PCE which have reached concentrations as high as 8,300 parts per billion (ppb) during the December 2003 sampling event. This was an unusual peak; since then, concentrations have fallen to levels below the 1,000 ppb mark. In September 2008, in order to optimize the groundwater extraction system, an extraction pump and associated piping were installed and began operating in well S1. The extraction pump was installed at approximately 50 feet below ground surface in well S1. The extracted groundwater is directly discharged for treatment at the Borough of Souderton, Waste Water Treatment Plant. EPA is performing additional investigations to determine the extent of groundwater contamination in this area.

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.

Based on the additional sampling results and actions taken since the September 16, 2008 Five-Year Review, the remedy for OU2 of the North Penn Area 1 Superfund Site is protective of human health and the environment. After a review of the analytical data from the vapor intrusion investigation, it is EPA's determination that vapor intrusion (VI) is not an issue for the homes and businesses in the vicinity of the Site at this time. 1,4-Dioxane was not detected in any of the samples collected during the December 2008 sampling event. Therefore, 1,4-dioxane is not considered a contaminant of concern at the Site. Although high concentrations of PCE continue to be present in well S1, additional sampling and investigation since the September 2008 Five-Year Review have not indicated any additional sources of contamination near well S1. To further investigate the source of the high concentration of PCE in well S1, additional monitoring wells are being installed and will be sampled to determine the effectiveness of the remedy and the extent of the contamination.

GPRA Measures:

The Government Performance and Results Act (GPRA) holds federal agencies accountable for using resources wisely and achieving program results. As part of this third Five-Year Review the GPRA measures have also been reviewed. The GPRA measures and their current status are provided as follows.

Environmental Indicators:

Human Health: HEUC, Human Exposure Under Control.

Groundwater Migration: There is insufficient data to determine migration under control status.

Sitewide RAU: The Site was determined to be Site-Wide Ready for Anticipated Use (SWRAU) on June 29, 2012.

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 ☐Deleted ☐ Other (specify)_____		
Remediation Status (choose all that apply): ☐ Under Construction ▶ Operating ▶ Complete		
Multiple OUs?* ▶YES NO	**Construction completion date: 09/24/1998**	
Has site been put into reuse? ☐YES ▶ NO		
REVIEW STATUS		
Lead agency: ▶ EPA ☐ State ☐ Tribe ☐ Other Federal Agency _____		
Author name: José R Redmond Girón		
Author title: Remedial Project Manager	**Author Affiliation: U.S. EPA - Region III**	
Review period: September, 2012 to September, 2013		
Date(s) of site inspection: January 29, 2013		
Type of review: ▶ Post-SARA ☐ Pre-SARA ☐ NPL-Removal only ☐ Non-NPL Remedial Action Site ☐ NPL State/Tribe-lead ☐ Regional Discretion		
Review number: ☐☐☐ 1 (first) ☐☐ 2 (second) ▶☐ 3 (third) ☐☐ Other(specify)_____		
Triggering action: ☐Actual RA Onsite Construction at OU # _____ ☐ Actual RA Start at OU# 1 ☐ Construction Completion ▶ Previous Five-Year Review Report ☐ Other (specify) _____		
Triggering action date: September 16, 2008		
Due date (five years after triggering action date): September 16, 2013		

Five-Year Review Summary Form, Cont'd

Issues:

1) Persistent levels of PCE at well S1.

Recommendations:

To further investigate the source of the high concentration of PCE in well S1, by installing additional monitoring wells and sampling them to determine the effectiveness of the remedy. A capture zone analysis may be considered to further delineate the extent of the contamination.

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 migrating to the groundwater was removed.

Based on the additional sampling results and actions taken since the September 16, 2008 Five-Year Review, the remedy for OU2 of the North Penn Area 1 Superfund Site is protective of human health and the environment. After a review of the analytical data from the vapor intrusion investigation, it is EPA's determination that vapor intrusion (VI) is not an issue for the homes and businesses in the vicinity of the Site at this time. 1,4-Dioxane was not detected in any of the samples collected during the December 2008 sampling event. Therefore, 1,4-dioxane is not considered a contaminant of concern at the Site. Although high concentrations of PCE continue to be present in well S1, additional sampling and investigation since the September 2008 Five-Year Review have not indicated any additional sources of contamination near well S1. To further investigate the source of the high concentration of PCE in well S1, additional monitoring wells are being installed and will be sampled to determine the effectiveness of the remedy and the extent of the contamination.

I. Introduction

The purpose of the Five-Year Review is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in Five-Year Review reports. In addition, Five-Year Review reports identify issues found during the review, if any, and recommendations to address them. The Agency is preparing this Five-Year Review report pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) § 121 and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). CERCLA § 121 (c) states:

If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.

The Agency interpreted this requirement further in the NCP; 40 Code of Federal Regulations § 300.430(f)(4)(ii) states:

If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.

The Environmental Protection Agency (EPA) Region 3 has conducted two previous Five-Year Reviews of the remedial actions implemented at the North Penn Area 1 Superfund Site in Souderton, PA. This is the third Five-Year Review. This report documents the results of the review. This review was conducted from September 2012 through August 2013. The action that triggers this review is the signature date of the Second Five-Year Review, September 16, 2008. The Five-Year Review at this Site is required because hazardous substances, pollutants, or contaminants remain on-site above levels that allow for unlimited use and unrestricted exposure.

II. Site Chronology

Table 1. Chronology of Site Events	
Event	Date
North Penn Water Authority (NPWA) discovers tetrachloroethene (PCE) contamination in well S9; sampling is initiated	1979
Site discovery report completed	July, 1986
Site proposed to National Priorities List (NPL)	January, 1987
Final NPL listening	March, 1989
Remedial Investigation (RI) completed	March, 1993
Feasibility Study (FS) report completed	June, 1994
Record of Decision (ROD) selecting remedy is signed	September, 1994
Remedial Design (RD) approved by EPA	September , 1996
EPA issued Explanation of Significant Difference (ESD) #1 for not pumping well S9 and not removing soil at the Parkside Apartments property	October, 1997
Start of Construction for Soil Removal & Groundwater Treatment	June, 1998
Construction for Operable Unit (OU)1 (Soil Removal)	June-July, 1998
Construction for OU2 (groundwater treatment)	June-July, 1998
Remedial Action (RA) completion report issued for OU1 and OU2	August, 1998
EPA issued ESD#2 establishing the interim RA for OU2 as the final remedy for the site	September, 1998
Site achieved construction complete status and Preliminary Close Out Report (PCOR) signed	September, 1998
First Five-Year Review completed	September, 2003
Second Five-Year Review completed	September, 2008
Installation of well S-1 piping and pump system	September, 2008
1,4 Dioxane testing was performed	December,2008
Commencement of Operation and Maintenance (O&M) period by PADEP	January, 2009
Vapor Intrusion (VI) study is performed	April,2009 to April,2010
EPA issued an ESD (ESD#3) recognizing ICs and modifying the groundwater component of the remedy, to allow greater flexibility in the depth and location of the extraction system.	May 2012

III. Background

Physical Characteristics

The North Penn 1 Site is located in the Borough of Souderton in Montgomery County, Pennsylvania. The Site is located south of the intersection of Main Street and Green Street (See Figure 1). It once encompassed an area surrounding the following three businesses: Gentle Cleaners, Granite Knitting Mills (GKM), and Parkside Apartments properties. Currently the location for Gentle Cleaners is empty and available to be rented as a business. The GKM building was sold and is presently occupied by Budd Leather Company; a manufacturer of leather goods. Parkside Apartments continues to be operated as rental residential community.

Land and Resource Use

The Site is in an area that contains a mixture of commercial and residential properties. An estimated 75,000 people obtain drinking water from public and private wells within 3 miles of the site. All residences within the immediate area use public drinking water supplies. Due to the topography and bedrock conditions, the groundwater flow in the immediate area follows the slope of the land surface (to the southwest).

History of Contamination

The North Penn 1 Site is one of 12 sites identified in the North Penn area on the basis of contamination of groundwater by (VOCs) in production wells. The contamination at this Site was first noted in 1979 in the North Penn Water Authority (NPWA) well S9. The well was immediately taken out of service because of high tetrachloroethene (PCE) concentrations found in the groundwater. Sampling was conducted at several wells in the area to determine the concentrations of contamination in the groundwater. The following contaminants were identified:

- 1,1,1 -trichloroethane (1,1,1 -TCA)
- 1,1 -dichloroethane (1,1 -DCA)
- 1,1 -dichloroethene (1,1 -DCE)
- cis- and trans-1,2-dichloroethene (1,2-DCE)
- trichloroethene (TCE)
- tetrachloroethene (PCE)

These contaminants were found in several wells at concentrations of up to 250 ppb. As a result of the contamination identified, the Site was proposed for the NPL in January 22, 1987 and was placed on the NPL in March 31, 1989.

EPA identified five facilities in the area that may have contributed to the ground water contamination. During the RI/FS, no significant contamination was found at two of the facilities. The remaining three facilities found to have soil and groundwater contamination were Gentle Cleaners, GKM, and Parkside Apartments. Gentle Cleaners, a dry cleaning business, began operating before 1953 and used PCE. GKM operated a dry cleaning machine using PCE from 1967 to 1979. Property owners reported discharges from the facility into an adjacent alley that runs along the southeast side of the building. The Parkside Apartments once included a dry cleaning business.

Initial Response Activities

After discussions with the five facilities that may have contributed to the groundwater contamination, the owners or operators of the properties indicated they were not willing and/or able to perform or finance activities at the Site to prevent a release or threatened release of hazardous substances, pollutants or contaminants. Therefore in 1991, EPA initiated the RI/FS activities with funds from the Hazardous Substance Superfund, as authorized by Section 104 of CERCLA, 42 U.S.C. §9604.

Basis for Taking Action

During the RI/FS, EPA sampled the groundwater and soil; encountering VOCs, primarily PCE and TCE. A summary description of the soil and groundwater results is provided below.

Soil

At all three facilities, Gentle Cleaners, GKM, and Parkside Apartments, the contamination found was primarily PCE. At Gentle Cleaners, the highest concentrations of PCE were detected in samples from the 6- to 10-foot interval in the backyard of the facility. The highest concentration at the facility, was found to be 300,000 ppb. At the GKM facility, the highest concentration of PCE was from the 6- to 8-foot level and was found to be 6,900 ppb. At the Parkside Apartments, the highest concentration of PCE, located next to the building, was found to be 120 ppb.

Groundwater

VOCs, particularly PCE and TCE, were detected in the groundwater at the Site. The highest concentrations of contamination occurred in the wells at the center of the Site, including, but not limited to, the GKM well and NPWA well S9. PCE was detected above the Maximum Contaminant Level (MCL) of 5 ppb only in well S9. Based on the RI/FS, 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 and/or the environment.

IV. Remedial Actions

Remedy Selection

After reviewing the result of the RI/FS, EPA issued a ROD for the Site on September 30, 1994. The contaminants of concern are VOCs, primarily PCE and TCE. The remedy selected included soil excavation and groundwater extraction and treatment. To address the contamination, three remedial action objectives (RAOs) were established for the Site, as described in the ROD;

- Remove the potential exposure risk from the contaminated soil;
- Eliminate the source of contamination migrating to groundwater;
- Prevent the spread of contaminated groundwater.

The ROD divided the remedial work into two separate remedial actions. The first operable unit (OU) was the source control operable unit (OU1). The ROD selected a final remedial action for OU1, which addressed the soil contamination that is contributing to groundwater contamination. The second OU is for groundwater contamination. The groundwater remedy selected in the ROD was an interim action, and EPA later selected it as the final groundwater remedy. 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 levels reached those identified in Table 2.

Table 2. Soil Remediation Goals for the North Penn 1 Site

Property	PCE Soil Remediation Goal
Gentle Cleaners	270 ppb
Granite Knitting Mills	260ppb
Parkside Apartments	820 ppb

The interim remedy for 0U2 consisted of pumping two wells: (1) the upper interval of the GKM well (the top 30 to 40 feet); and (2) the entire NPWA S9 well, which was approximately 270 feet deep. The extracted water from these wells would be combined prior to treatment. An option considered in the ROD for treatment was the direct discharge of the extracted water to a publicly owned treatment work (POTW).

Remedy Implementation

On February 2, 1995, EPA entered into an interagency agreement (IA) with the U.S. Army Corps of Engineers (COE) to conduct the RD for the Site. EPA approved the design on September 12, 1996. As part of the RD, soil sampling was conducted at the three properties of concern to determine the volume of soil that would need to be removed. Levels of contamination in soils at the Parkside Apartments property were below the remediation goals established in the ROD. Therefore, excavation of soils was not required at this property, only at the GKM and the Gentle Cleaners properties. Also, as part of the RD activities, three new wells were installed (S1, S2, and D3). These new wells, in addition to well S9, were sampled at that time. Since sampling results in all wells revealed low concentrations of contamination, EPA determined that extracted water would be discharged to the sanitary sewer to be treated at the POTW.

On October 29, 1997, EPA issued an ESD. The purpose of this ESD was to document the determination that soil would not be removed from the Parkside Apartments Property since PCE levels were below the remediation goal established in the ROD. This ESD also documented EPA's decision not to pump well S9 because of the low concentrations of PCE detected in the well during the RI/FS and RD studies. In addition, the ESD also changed the cleanup goal for the aquifer from background to MCLs. The MCLs are the maximum permissible concentrations of a chemical in drinking water, as established by the Safe Drinking Water Act (SDWA).

On March 26, 1998, EPA entered into an IA with the COE to conduct the remedial action at the Site. A total of 482 tons of contaminated soil were excavated from the entire backyard at the Gentle Cleaners property and in four (4) different areas at the GKM property. The groundwater extraction system was installed at the GKM well, consisting of an extraction pump and conveyance piping, with direct discharge to the sanitary sewer for treatment at the sewage

treatment plant. In addition, samples were collected from the three existing monitoring wells (SI, S2, and D3) and well S9. Construction activities were completed on July 13, 1998.

A second ESD (for the September 30, 1994 ROD) was issued on September 24, 1998 to document EPA's decision that the interim extraction system selected for OU2 should be sufficient to serve as the final remedy for the contaminated groundwater. Therefore, the interim action implemented during construction activities was determined to be the final remedial action for OU2. The Site achieved construction completion status when the PCOR was issued by EPA on September 24, 1998.

System Operation/Operation and Maintenance

Since 2005, the groundwater extraction system associated with the GKM well has been shut down because concentrations of PCE within the well had been consistently below the cleanup standard. However, since 1998, one of the monitoring wells, S1, located approximately 200 feet southwest and downgradient of the GKM well, has shown elevated levels of PCE which were as high as 8,300 ppb at one point. Beginning in September 2008, in order to optimize the groundwater extraction system, an extraction pump and associated piping were installed and began operating in well S1. Biannual sampling continues to be conducted and recent results indicate levels of PCE have decreased to less than 800 ppb. Additional groundwater monitoring wells will be installed in this area to better define the extent of the groundwater contamination. This information will all be used to help determine the effectiveness of the groundwater extraction system.

V. Progress Since Last Five-Year Review

This is the third Five-Year Review for the North Penn Area 1 Site. The Second Five-Year review identified four issues; the continued presence of contaminants in well S1, lack of data pertaining to 1,4-dioxane and vapor intrusion in the community and the lack of institutional controls. The following protectiveness statement was included in the 2008 Five-Year Review Report:

"The remedy at OUl, 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.

While the remedy at OU2, groundwater contamination, is expected to achieve protectiveness in the long-term, there are several issues that need to be resolved. The groundwater extraction system associated with the GKM well was shut down in February 2005 since concentrations of PCE within this well were below the cleanup standard. However, monitoring well SI, located 200 feet southwest and downgradient of the GKM well, showed elevated levels of PCE, which reached concentrations as high as 8,300 ppb. The persistent, high concentrations of PCE in monitoring well S1 should be further evaluated with respect to identifying any remaining source in the soils or shallow bedrock. More frequent sampling of the SI monitoring well should occur. Optimization of the current groundwater extraction system is currently underway and will include bringing well SI on-line as the extraction well. Additionally, the remedy for the Site should be modified to require institutional controls.

A protectiveness determination for this Site is being deferred at this time. A determination regarding the short-term protectiveness of the remedy is being deferred until additional information regarding 1,4-dioxane is collected, and the vapor intrusion pathway is evaluated. Due to the high concentrations of shallow groundwater contamination in monitoring well SI, a protectiveness determination of the groundwater cannot be made at this time until further information is obtained. The time required to perform additional investigations and gather information regarding the long-term pumping effects of well SI will be approximately 18 months. After EPA and PADEP have a chance to evaluate that information, EPA will make a protectiveness determination regarding the Site."

The following actions were taken to address the issues identified in the 2008 Five-Year Review Report. In September 2008, in order to optimize the groundwater extraction system, an extraction pump and associated piping were installed and began operating in well S1. The extraction pump was installed at approximately 50 feet below ground surface in well S1. The extracted groundwater is directly discharged for treatment at the Borough of Souderton Waste Water Treatment Plant.

In April 2009, EPA conducted vapor intrusion sampling at approximately 30 residences and one business in the vicinity of monitoring well S1. Subslab and indoor air samples were

collected. Two of the homes sampled on Hillside Ave, slightly exceeded EPA's acceptable risk levels while the other homes did not exceed EPA's risk levels. In January 2010, EPA conducted follow-up vapor intrusion sampling at the two homes that exceeded EPA's acceptable risk levels and performed confirmation vapor intrusion sampling at six residences that were sampled in April 2009. Subslab and indoor air samples were again collected. Sample results from all eight homes were below EPA's acceptable risk levels. Based on the analytical results, it is EPA's determination that vapor intrusion is not an issue for the homes and businesses in the vicinity of the Site. Should Site conditions change significantly in the future, this determination may need to be reevaluated.

In recent years EPA has become aware that sites with certain VOCs may also be contaminated with the solvent stabilizer 1,4-dioxane. The VOC most commonly associated with 1,4-dioxane is 1,1,1-TCA, which has historically been detected at the North Penn 1 Site. During EPA's December 2008 biannual sampling event, samples were collected from the four monitoring wells S1, S2, S3, and D3 and the unnamed tributary that flows along Wile Avenue Park, east of monitoring well D3, and were analyzed for 1,4-dioxane. 1,4-Dioxane was not detected in any of the samples during the December 2008 sampling event, and therefore, 1,4-dioxane is not considered a COC at the Site.

The 2008 Five-Year Review recommended EPA modify the remedy to address institutional controls (ICs). On May 31, 2012, EPA issued an ESD which called for ICs 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. As set forth in the ESD, EPA will rely on existing requirements established by the Montgomery County Health Department and Souderton Borough to achieve these objectives.

VI. Five-Year Review Process

Administrative Components

The following personnel were involved in the Five-Year Review: José R. Redmond Girón, EPA Remedial Project Manager (RPM); David Polish, the EPA Community Involvement Coordinator; Thomas Cinti, EPA Regional Counsel; EPA's technical team of Patricia Flores, Mindy Snoparski, and Linda Watson; and Colin Wade, Project Manager from PADEP.

Community Involvement

A notice appeared in the Souderton Independent newspaper on July 7, 2013 indicating that EPA was conducting a Five-Year Review for the Site and identifying points of contacts at EPA. The same notice was shared with the Borough of Souderton with the intention for it to be published at their website. Information on how to obtain the results of the review and the schedule upon which the review will be available were also included in the announcement.

Interview

On May 9, 2013, EPA met with the Borough Manager to discuss Site activities and the upcoming Five-Year Review, as well as to find out if he or any members of the community had any concerns about the Site. No questions or comments from the manager or citizens were presented.

Site Inspection

A Site inspection was conducted on May 23, 2013 by José R. Redmond Girón, EPA RPM. Colin Wade and Mike Penzone of PADEP; and, Bruce Elkins and Mike White of AECOM (PADEP contractors), joined the RPM during the inspection. The GKM building was in operation under the name of Budd Leather Company, while the Gentle Cleaners building appeared shut down. The Parkside Apartment Complex continues to operate as a residential property. All monitoring wells and the extraction well were securely locked and appeared to be working accordingly. No issues were observed.

Document Review

This Five-Year Review included a review of relevant documents including the RI/FS reports, ROD, ESDs, Preliminary Closeout Report (PCOR), groundwater sampling data, and the previous Five-Year Review reports.

Data Review

Samples have been collected at six month intervals from both current extraction wells and the monitoring wells. Since the last Five-Year Review data has shown that most of the wells continue to be within acceptable levels. PCE contamination has persisted in well S1 and has periodically exceeded the MCL in well GKM (almost always during the month of June sampling event). The MCL for PCE is five parts per billion (ppb). All the other wells are under MCLs or

non-detect during the same period. Concentrations of PCE range from non-detect to 9.8 ppb at the GKM Well, and from 240 to 853 ppb in well S1(see Figure 2 and Table 3).

Table 3. PCE and TCE Sampling Data for Extraction Wells at North Penn Area 1(ppb)

Well	COC	Dec-08	Jun-09	Dec-09	Jun-10	Dec-10	Jun-11	Dec-11	Jun-12	Dec-12
S1	PCE	**240**	**760**	**700**	**260**	**580**	**510**	**586**	**853**	**590**
	TCE	1.4	4.5	3.7	1.6	3.5	3.4	**5**	4.6	4.3
S2	PCE	1.9	2	2.4	2	2.4	1.6	2.2	1.8	1.8
	TCE	0.27	0.3	0.2	0.2	0.2	0.2	ND	ND	ND
S3	PCE	0.9	0.8	0.8	0.8	0.9	0.7	0.86	0.56	ND
	TCE	ND	0.2	0.2	0.1	0.2	0.2	ND	ND	ND
D3	PCE	1.6	ND	1.1	0.5	1.3	0.5	2.1	0.91	ND
	TCE	ND	0.7	0.3	0.6	0.2	0.4	ND	ND	ND
GKM	PCE	1.9	**8.3**	1.5	**9.8**	2.3	**8.1**	1.8	4.2	1.4
	TCE	0.53	1.6	0.4	1.8	0.6	1.8	ND	0.68	ND

Highlighted values above MCL, which is the site Remedial Goal
ND: Non detect

PCE continues to be the only contaminant of concern that exceeds its' MCL, presenting itself in higher concentrations at S1 and sometimes at well GKM. EPA is working to install three new wells to study the extent of PCE contamination near S1. In the meantime, pumping continues as per the selected remedy. A capture zone analysis would be helpful to estimate the efficiency of the remedy and complement the data obtained from the new wells.

The rest of the wells present lower concentrations (under MCLs) of PCE. In regards to TCE, the highest concentration is also at S1, which just reached the MCL of 5 ppb in 2011 (see Figure 3). All other samples from S1 and the other monitoring wells were below the MCL for TCE.

These concentrations do not represent a threat for human health because of ICs being in place to protect the remedy and prevent human exposure. In order to prevent exposure to the groundwater contamination, Montgomery County's permitting process requires that all newly constructed drinking water wells be tested for certain parameters, including VOCs. 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. Because of the current configuration of the Borough, all new construction would be within the

requirement to connect to public water. Furthermore, no residences in the area of the North Penn Area 1 Site are on private water wells. To protect the remedy, all groundwater monitoring wells are secured.

Quarterly samples are also collected from the monitoring well S1. Results are consistent with the semi-annual data presented. Semiannual sampling at all monitoring wells, including the GKM well, will continue in order to evaluate the overall effectiveness of the remedy.

VII. Technical Assessment:

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

Yes, the remedy is functioning as intended by the 1994 ROD as modified by the three ESDs (1997, 1998 and 2012). Contaminated soil was excavated and removed for off-site disposal, preventing further contamination from it. The pump and treat system designed for the Site has been operating consistently and has been optimized to improve the efficiency.

Ground water and surface water monitoring results support the observation that the remedy is working as intended. Institutional controls are in place to protect human health by preventing human exposure to contaminated groundwater.

Question B): Are the exposure assumptions, toxicity data, clean up levels, and remedial action objectives (RAO) used at the time of the remedy still valid?

Changes in Standards and TBCs

Have standards identified in the ROD been revised, and does this call into question the protectiveness of the remedy? Do newly promulgated standards call into question the protectiveness of the remedy? Have TBCs used in selecting cleanup levels at the site changed, and could this affect the protectiveness of the remedy?

No. The groundwater standards currently in effect were established in the 1997 Explanation of Significant Difference (ESD): tetrachloroethene-5 ppb, trichloroethene-5 ppb. These standards are at current Federal MCLs. Since MCLs have not changed, this does not affect the protectiveness of the remedy.

Changes in Exposure Pathways

Has land use or expected land use on or near the site changed?

No. Local land use remains a mixture of commercial and residential uses.

Have human health or ecological routes of exposure or receptors been newly identified or changed in a way that could affect the protectiveness of the remedy? Are there newly identified contaminants or contaminant sources? Are there unanticipated toxic byproducts of the remedy not previously addressed by the decision documents? Have physical site conditions or the understanding of these conditions changed in a way that could affect the protectiveness of the remedy?

Since the 1994 ROD, there have not been any changes to land use on or around the site. Recently EPA has started to sample for the presence of 1,4-dioxane, this is due to the fact that 1,4-dioxane has been used as a stabilizer with certain VOCs. The sampling results were found to be negative for the presence of 1,4-dioxane.

The remedial investigation and Record of Decision were completed prior to the development of the current ecological risk assessment guidance. While an ecological risk assessment has not been performed, the available data indicates that even with this deficiency, the remedial action is protective of ecological receptors. Surface water monitoring has been conducted in areas that would be reflective of any potential impacts of groundwater discharge. The resultant data does not indicate the potential for unacceptable ecological risk.

According to the 1994 ROD, fifteen (15) contaminants of concern (COCs) are identified for soil and groundwater; acetone, benzene, bromodichloromethane, carbon disulfide, chloroform, chloromethane, 1,1-dichloroethane, cis-1,2-dichloroethene, trans-1,2-dichloroethene, ethylbenzene, methylene chloride, tetrachloroethene, toluene, 1,1,1-trichloroethane and trichloroethene. All COCs are being tested semi-annually, however only PCE and TCE have been present at levels higher than MCLs at well S1 and sometimes at the GKM well.

Changes in Toxicity and Other Contaminants Characteristics

Have toxicity factors for contaminants of concern at the site changed in a way that could affect the protectiveness of the remedy? Have other contaminant characteristics changed in a way that could affect the protectiveness of the remedy?

Of the toxicity changes, some have increased while others have decreased, making it impossible to generalize about whether the risks would be higher or lower if recalculated today. Current toxicity values may change again in the coming years, and protectiveness is best assessed at the time when it is believed that groundwater cleanup has been achieved. Therefore, it is recommended that the groundwater risks be evaluated at the end of the remedy to ensure protectiveness at that time.

Changes in Risk Assessment Methods

Have standardized risk assessment methodologies changed in a way that could affect the protectiveness of the remedy?

There have been significant changes in EPA's risk assessment guidance since the 1994 ROD. These include changes in dermal guidance, inhalation methodologies, exposure factors, and a change in the way early-life exposure is assessed for vinyl chloride.

Current risk assessment guidance may change again in the coming years, and protectiveness is best assessed at the time when it is believed that groundwater cleanup has been achieved. Therefore, it is recommended that the groundwater risks be evaluated at the end of the remedy, to ensure protectiveness at that time. In the interim, groundwater is not being used and is not expected to be used for potable purposes.

Expected Progress towards Meeting RAOs

Is the remedy progressing as expected?

The groundwater extraction system continues to remove contaminant mass from the aquifer, and the extent of the groundwater contamination appears to be very limited. However, results from well S1 have continued to show significant levels of PCE above cleanup standards.

The source of the PCE has not been identified and thus it is possible that subsurface soils within the vicinity of the well (S1) may contain PCE levels above the 1994 ROD soil cleanup levels. In response to that, EPA is in the process of installing new wells to better understand the contamination plume. After the installation and sampling of the new wells, a capture zone analysis may be considered to gather more data about the source or movement of the contaminants.

Question C): Has any other information come to light that could call into question the effectiveness of the remedy?

No.

Technical Assessment Summary

Based on the data reviewed and the site inspections, the remedy is generally functioning as intended by the decision documents. There have been no changes in the physical condition of the site that would affect the protectiveness of the remedy. Since the last Five-Year Review an ESD has been issued, recognizing ICs that were in place for the protection of human health. Studies performed since the last Five-Year Report, have concluded that 1,4-dioxane is not an issue at the Site; and that under current conditions, vapor intrusion is also not an issue at the Site.

VIII. Issues

Table 4. Issues

Issues		Affects Current Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
1#	Persistent levels of PCE at well S1.	N	N

IX. Recommendation and Follow-Up Actions

Table 5. Recommendations and Follow-Up Actions

Issue	Recommendation and Follow-Up Action	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness Statement (Y/N)	
					Current	Future
Persistent levels of PCE at well S1.	To further investigate the source of the high concentration of PCE in well S1, by installing additional monitoring wells and sampling them to determine the effectiveness of the remedy. A capture zone analysis may be considered to further delineate the extent of the contamination.	EPA	EPA	05/31/14	N	N

X. 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 migrating to the groundwater was removed.

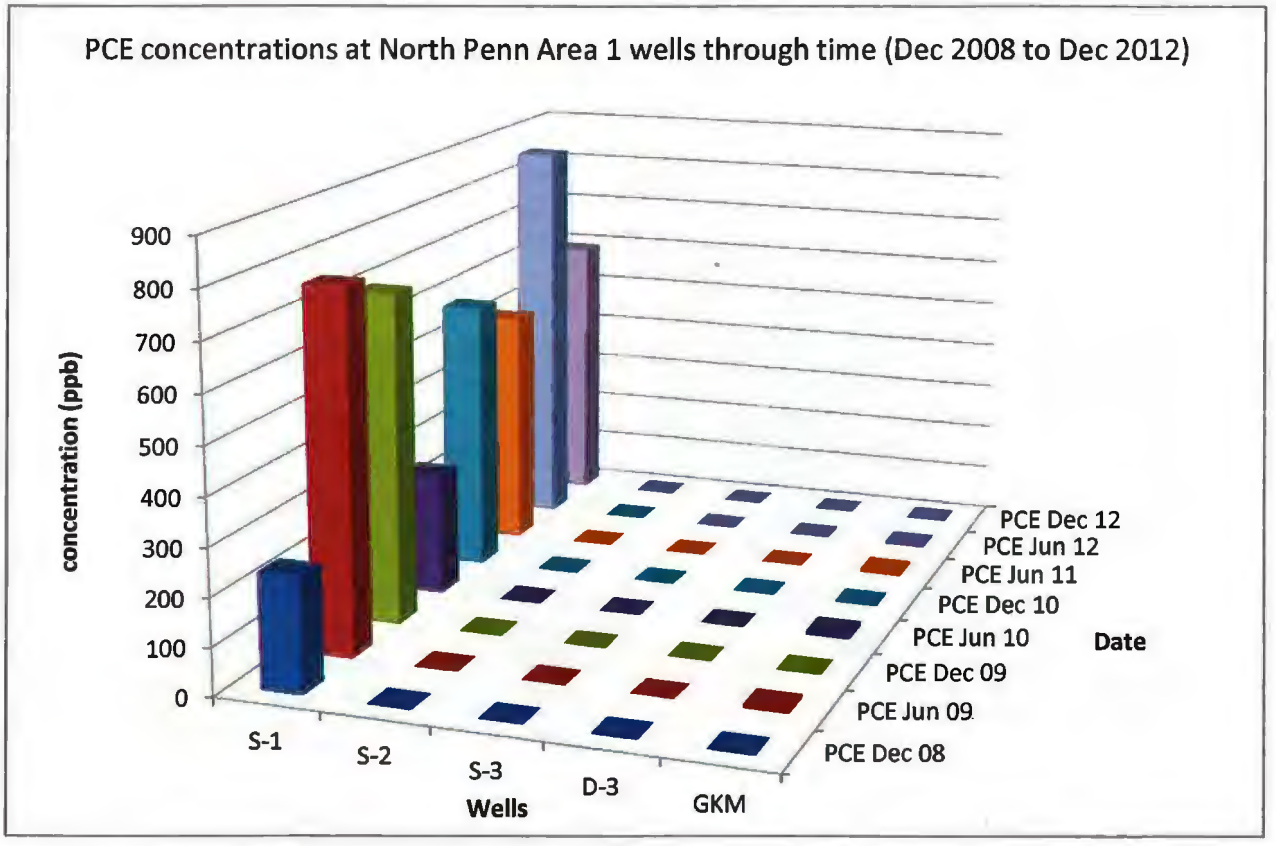
Based on the additional sampling results and actions taken since the September 16, 2008 Five-Year Review, the remedy for OU2 of the North Penn Area 1 Superfund Site is protective of human health and the environment. After a review of the analytical data from the vapor intrusion investigation, it is EPA's determination that vapor intrusion (VI) is not an issue for the homes and businesses in the vicinity of the Site at this time. 1,4-Dioxane was not detected in any of the samples collected during the December 2008 sampling event. Therefore, 1,4-dioxane is not considered a contaminant of concern at the Site. Although high concentrations of PCE continue to be present in well S1, additional sampling and investigation since the September 2008 Five-Year Review have not indicated any additional sources of contamination near well S1. To further investigate the source of the high concentration of PCE in well S1, additional monitoring wells are being installed and will be sampled to determine the effectiveness of the remedy and the extent of the contamination.

XI. Next Review

The next five-year review for the Site is to be completed within five years from the completion date of this review.

Figures

Figure 1- Area map



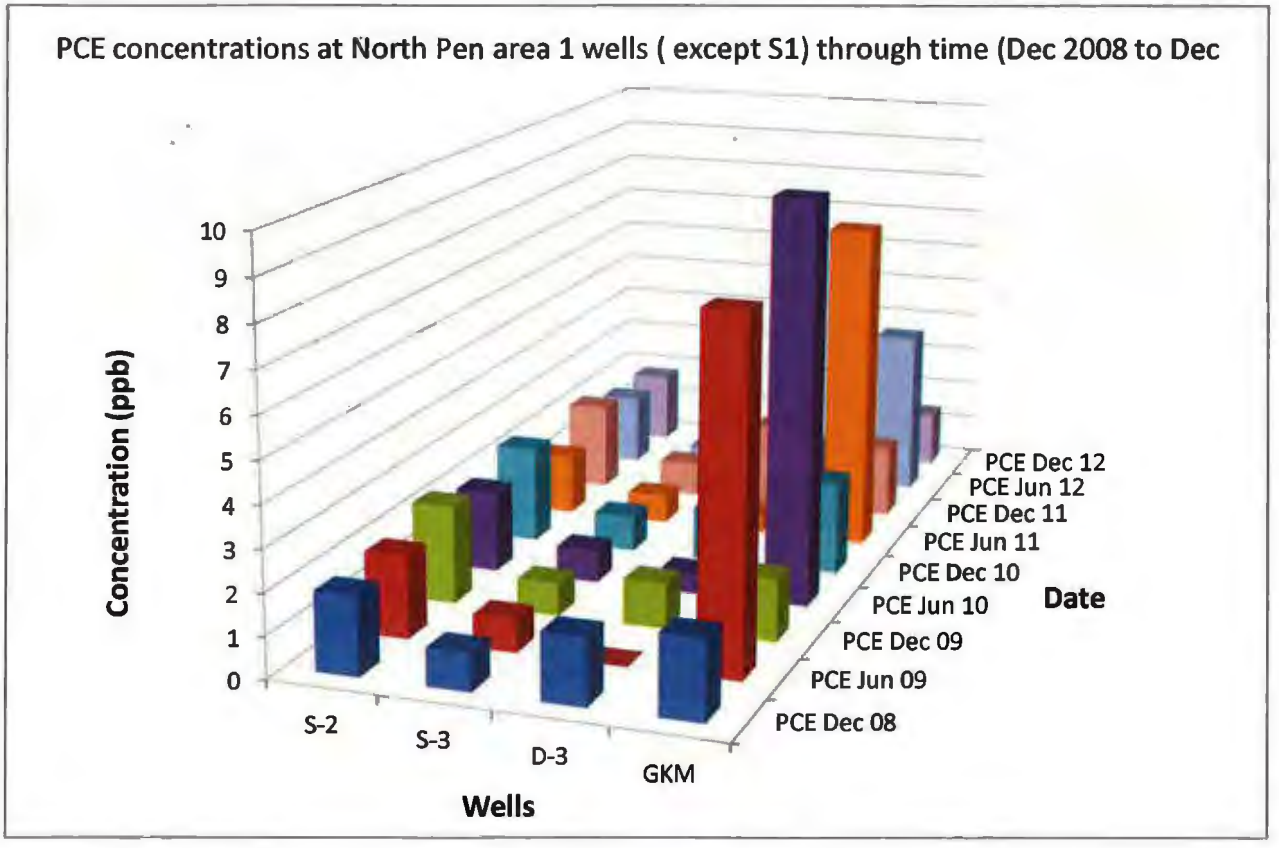


Figure 2. PCE Concentrations at North Penn Area 1 Wells during the Five-Year Review Period

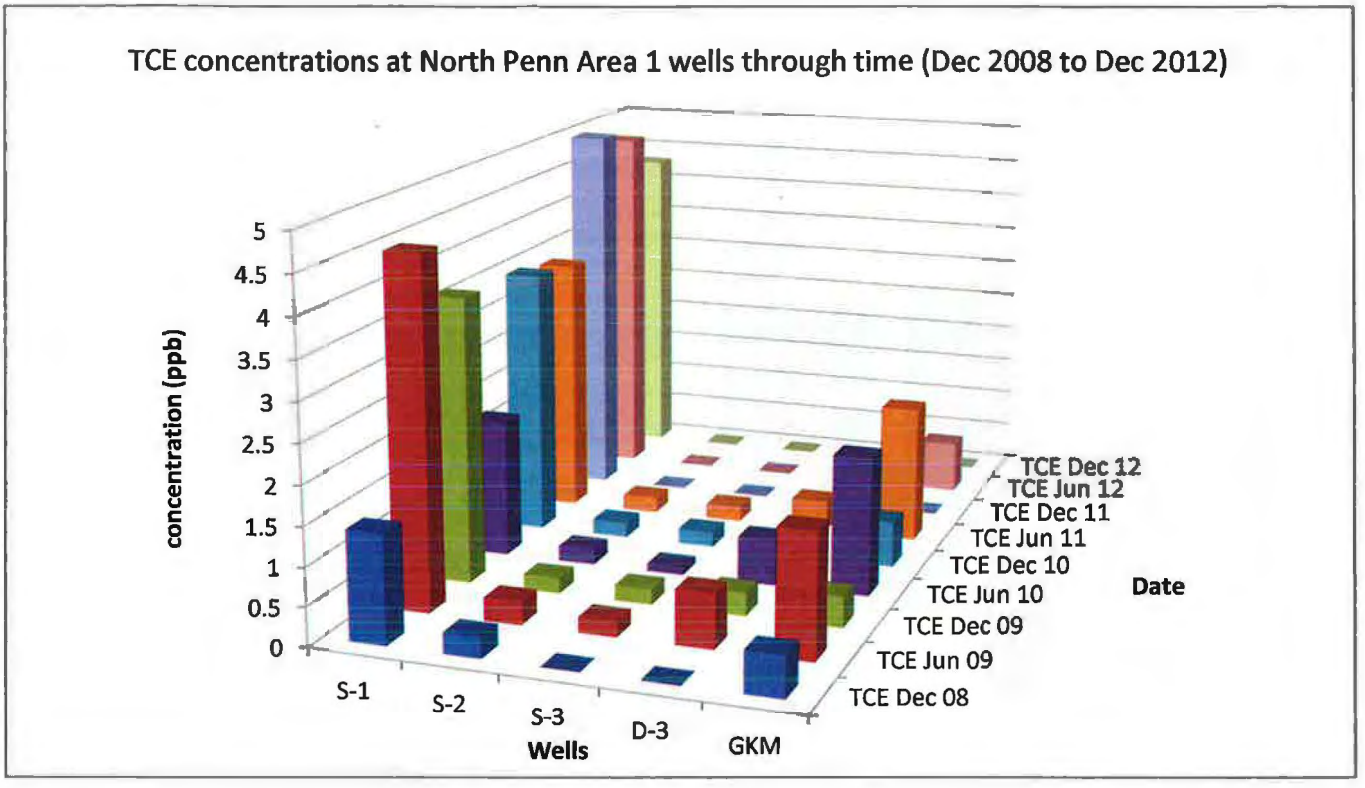


Figure 3. TCE Concentrations at North Penn Area 1 Wells during the Five-Year Review Period