U. S. EPA Superfund Program

Proposed Remedial Action Plan

North Penn Area 6 Superfund Site
Operable Unit 3, Central Sprinkler/Tyco Parcel
Lansdale, Pennsylvania

EPA ANNOUNCES PROPOSED PLAN April 2018

A. INTRODUCTION

Dates to Remember

March 30, 2018 to
April 30, 2018
Public Comment Period on EPA's Proposed Plan

April 12, 2018,
6:30 p.m. to 8:30 p.m.
Public Meeting
Lansdale Borough Hall
One Vine Street
Lansdale, PA 19446

This Proposed Remedial Action Plan (Proposed Plan) identifies the U.S. Environmental Protection Agency's (EPA's) Preferred Alternative to revise the Selected Remedy for contaminated groundwater at the Central Sprinkler/Tyco Parcel (Central Sprinkler Parcel) at the North Penn Area 6 Superfund Site (Site) (see Figure 1). The Central Sprinkler Parcel is located at 451 North Cannon Avenue, Lansdale, Montgomery County, Pennsylvania (see Figure 2).

The Site is divided into three Operable Units (OUs). OUs are remedy components, usually defined by contaminated media or physical characteristics of the Site. OU1 addressed contaminated soils at four properties at the Site that were cleaned up by EPA. OU2 addresses contaminated soils at six additional properties at the Site, including five addressed by the Responsible Parties (RPs) with EPA oversight and one addressed by EPA. Cleanup of contaminated soils at both OU1 and OU2 has been completed or is currently underway.

OU3 addresses the Site-wide contaminated groundwater. OU3 is comprised of 10 different parcels, independent from each other, geographically and in terms of ownership. The groundwater at six parcels is being addressed by EPA, while the groundwater at the other four parcels is being addressed by the RPs with EPA oversight. The Central Sprinkler Parcel that is the subject of this Proposed Plan is included in OU3 and is being addressed by Central Sprinkler Corporation (Central Sprinkler) with EPA oversight.

EPA issued the OU3 Record of Decision (ROD) on August 10, 2000. The Selected Remedy in the OU3 ROD included extraction and treatment of contaminated groundwater using an air stripper. The OU3 Selected Remedy also required connecting 15 affected residences with private wells to public water, which was completed in 2006.

This Proposed Plan proposes a modification of the OU3 Selected Remedy for the Central Sprinkler Parcel that will speed up the remediation process in response to the low-level concentrations of contaminants in the groundwater at that parcel. The groundwater cleanup levels in the OU3 ROD are the maximum contaminant levels (MCLs) for the contaminants. MCLs are standards that are set by EPA for drinking water quality. An MCL is the legal threshold limit on the amount of a substance that is allowed in public water systems under the Safe Drinking Water Act.

Groundwater extraction and treatment remedies at many other sites have had difficulty cleaning up contaminants in groundwater to below MCLs. Once the concentrations are near MCLs, it is difficult for the treatment system to reduce the concentrations of contaminants to below MCLs. This Proposed Plan for the Central Sprinkler Parcel presents a modification of the Selected Remedy in the OU3 ROD that is expected to reduce the concentrations to below MCLs. The Selected Remedy at the remaining nine parcels that comprise OU3 will not change. The proposed modification for the Central Sprinkler Parcel consists of replacing the groundwater extraction and treatment component of the OU3 Selected Remedy with Enhanced Reductive Dechlorination (ERD), which will treat the groundwater in place by enhancing the conditions for naturally occurring microorganisms to consume the contaminants in the groundwater. This Proposed Plan provides the background and rationale for this modification and is being issued by EPA, the lead agency for the Site. EPA is working in coordination with the Pennsylvania Department of Environmental Protection (PADEP), the support agency, to modify the OU3 Selected Remedy for the Central Sprinkler Parcel.

EPA is issuing this proposal as part of its public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA), 42 U.S.C. § 9617(a), and Section 300.430(f)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. § 300.430(f)(2).

EPA, in consultation with PADEP, will select a modification to the OU3 Selected Remedy in a ROD Amendment for the Central Sprinkler Parcel after reviewing and considering all information submitted during the public comment period for this Proposed Plan. EPA, in consultation with PADEP, may modify the proposed Preferred Alternative or select another alternative presented in this Proposed Plan based on new information or public comment. Therefore, the public is encouraged to review and comment on all alternatives presented in this Proposed Plan during the public comment period.

This Proposed Plan summarizes information that can be found in greater detail in reports such as the ROD for OU3 (2000), Central Sprinkler Corp. - ERD Pilot Test Work Plans (First, Second and Third Injections) and their respective reports, Letter Request for Amendment to the ROD (June 14, 2016), Annual Monitoring Reports (2013-2016), and

other documents contained in the Administrative Record file for the Site. EPA and PADEP encourage the public to review these documents to gain a more comprehensive understanding of the Site and Superfund activities that have been conducted at the Site. The Administrative Record for the Site can be accessed at https://semspub.epa.gov/src/collections/03/AR/PAD980926976 (for documents relating to OU3, select the link for Remedial – O3 - Groundwater) and at the locations set forth in Section J (Community Participation) of this Proposed Plan.

B. SITE BACKGROUND

Site Location and Description

The North Penn Area 6 Site (Site) is located within the North Penn Water Authority (NPWA) service district in Montgomery County, Pennsylvania. Five other National Priorities List (NPL) sites (North Penn Areas 1, 2, 5, 7, and 12) and a state Superfund Site (North Penn Area 4) have also been identified in the NPWA area.

This Site is in the Borough of Lansdale and small portions of Hatfield, Towamencin, and Upper Gwynedd townships. The preliminary boundaries of the Site were determined based on groundwater quality data. In 1979, high levels of trichloroethene (TCE) were detected in several wells within the Lansdale area, including those at the Central Sprinkler Parcel. This discovery led to the addition of the Site to the NPL in 1989. The Site is situated over a large area with commercial, industrial, and residential uses. The Site layout is provided in Figure 1.

The Central Sprinkler Parcel encompasses approximately 5.3 acres, with a 16,000-square foot main building and a 4,800-square foot satellite storage building. The area around the buildings is paved, except for a narrow grassy strip along the southeastern side of the main building. Previously, the Central Sprinkler Parcel was used as a manufacturing and testing facility by Central Sprinkler. Currently, the buildings are being leased as office space and for file storage.

Hydrogeologic Setting

Lansdale and the surrounding area are underlain by sedimentary rocks of the Brunswick and Lockatong Formations. The lower beds of the Brunswick Formation consist predominantly of mudstones, clay and mud-shales, and siltstones. Groundwater originates from infiltration by local precipitation and discharges into streams and pumping wells. After infiltrating through soil and shallow, weathered bedrock, groundwater moves through fractures in the bedrock. Groundwater is a major drinking water source in the area.

Groundwater contamination at the Site was initially identified by NPWA when it tested its production wells in 1979. NPWA treats the contaminated groundwater from several wells before it is delivered to the public. There are also residents who depend on private wells for their drinking water supply. Because of the extensive use of groundwater in the Lansdale area, minimizing future contamination and controlling existing contamination is critical for the continued beneficial use of the aquifer.

History of Contamination

The Site was discovered in 1979, when NPWA discovered elevated levels of contamination in its wells. The wells were immediately taken out of service because of the levels of TCE in the groundwater. The NPWA began sampling several wells in the area in 1979 to determine the types and levels of contamination in the groundwater. The production well at the Central Sprinkler Parcel was one of the sampled wells that showed significant levels of TCE. The Site was referred to EPA, which conducted a Preliminary Assessment/Site Investigation (PA/SI). The data from the PA/SI were used to support the addition of the Site to the NPL in March 1989.

To address the Site contamination, EPA separated the Site into three operable units (OUs) as follows:

Operable Unit 1 (OU1) – Twenty-six properties were initially identified by EPA as potential sources of contamination at the Site. Beginning in 1993, EPA evaluated 20 of the properties as part of the OU1 Source Control OU. Based on the OU1 Remedial Investigation/Feasibility Study (RI/FS) of soil at the Site, EPA determined that soil contamination at four of the properties may have contributed to groundwater contamination and required remedial action. In September 1995, EPA issued the OU1 ROD, which required soil remediation at the four properties.

Operable Unit 2 (OU2) – OU2 consists of six properties identified initially as having contributed to soil contamination at the Site, but which were not addressed in the OU1 effort. Under OU2, the owners or operators of these six properties conducted soil investigations in accordance with an Administrative Order on Consent for RI/FS (RI/FS AOC) under EPA oversight. The RPs at four of the properties have completed the work required at their respective properties under the RI/FS AOC. RPs are addressing contaminated soil at one of the remaining properties and EPA is addressing contaminated soil at the final property.

Operable Unit 3 (OU3) – The groundwater at the Site is being addressed as OU3. EPA completed the RI/FS for OU3 in 1999, and issued the OU3 ROD in 2000. The remedy set forth in the OU3 ROD consists of groundwater extraction and treatment, connecting residences with wells contaminated above MCLs to public water, monitoring of residential wells, and long-term monitoring of the groundwater. Currently, ten properties

have been selected for installation of groundwater extraction and treatment systems, including the Central Sprinkler Parcel. EPA is responsible for implementing the remedy at six of the ten properties, and the remedy at the remaining four properties is being implemented by the respective RPs. To date, EPA has installed groundwater extraction and treatment systems at five of the six EPA-lead properties. The Central Sprinkler Parcel is one of the four properties where the RP entered into a Consent Decree to implement the OU3 remedy. As a result, a groundwater extraction and treatment system was to be built and operated at the Central Sprinkler Parcel by the RP. This Proposed Plan proposes modifying the original OU3 Selected Remedy by replacing the groundwater extraction and treatment system with ERD at the Central Sprinkler Parcel.

C. SITE CHARACTERISTICS

EPA conducted a RI/FS for OU1 in March 1993 to evaluate potential soil contamination at 20 separate properties. The investigation included soil borings and soil sampling and analysis. Of those 20 properties, 10 did not have contaminants of concern in their soil and six had low levels of soil contaminants that were not significantly impacting the groundwater; therefore, no remedial action for soil was recommended for those 16 properties. EPA issued an OU1 ROD on September 29, 1995, in which it selected a soil remedy for the four remaining properties.

The OU1 Selected Remedy consisted of injecting heated air into the soil to separate and remove the contaminants from the sub-surface soil. The vapors were then collected in a hood and treated via a carbon adsorption unit. A binding material was added at locations where levels of metals were elevated to render them immobile. The OU1 Selected Remedy was completed by EPA at the four parcels that comprise OU1 in 1995.

The RPs for the six OU2 properties performed or are performing a RI/FS with EPA oversight at their respective properties in accordance with a RI/FS AOC. No soil contamination that required cleanup was identified at three of those six properties. Contaminated soil was addressed at the Central Sprinkler Parcel via a removal action in 1999. RI/FS activities are currently ongoing at the remaining two OU2 properties, with the RP performing a RI/FS with EPA oversight at one of those two properties in accordance with a RI/FS AOC. The RI at the other remaining OU2 property was performed by the RP with EPA oversight in accordance with a RI/FS AOC, but EPA conducted the FS.

OU3 addresses the Site-wide contaminated groundwater and is comprised of 10 different parcels, independent from each other, geographically and in terms of ownership. EPA completed a RI/FS for OU3 in August 1999, to determine the extent of the groundwater contamination and to evaluate alternatives for cleaning up the contamination. The RI/FS included gathering background information, identifying contamination sources at the properties through sampling and analysis, evaluating analytical data, modeling

contaminant fate and transport, and assessing human health and environmental risk associated with the contaminated groundwater.

While EPA conducted the OU3 RI/FS at the Central Sprinkler Parcel, Central Sprinkler performed an independent comprehensive groundwater investigation. This investigation included the installation of seven monitoring wells that investigated 29 discrete water bearing zones. The wells were installed as shallow, intermediate, and deep monitoring wells, and monitoring data obtained from these wells showed that there is very little communication between the different water bearing zones. Groundwater samples indicated that tetrachloroethene (PCE) was the most prevalent contaminant of concern (COC) at the Central Sprinkler Parcel, with low concentrations of both TCE and *cis*-1,2-dichloroethene (*cis*-1,2-DCE). Vinyl Chloride was not detected.

EPA issued the OU3 ROD selecting the remedy for contaminated groundwater at the Site on August 10, 2000. The cleanup levels for the Site COCs set forth in the OU3 ROD are:

COC*	**MCL (µg/l)***
Tetrachloroethene (PCE)	5
Trichloroethene (TCE)	5
Cis-1,2-dichloroethene (*cis*-1,2-DCE)	70
Vinyl Chloride (VC)	2
***COC: Contaminant of Concern**	***MCL:Maximum Contaminant Level**

Six of the parcels that comprise OU3 are being addressed by EPA and four of the parcels, including the Central Sprinkler Parcel that is the subject of this Proposed Plan, are being addressed by RPs. The Selected Remedy in the OU3 ROD generally consisted of extraction and treatment of contaminated groundwater and included the following major components:

1. Completion of a groundwater remedial design study to determine the most efficient design of a groundwater extraction and treatment system.
2. Installation, operation, and maintenance of onsite groundwater extraction wells to remove contaminated groundwater from beneath the Site and to prevent contaminants from migrating offsite.
3. Installation, operation, and maintenance of air stripping equipment and discharge piping to treat groundwater to required cleanup levels.
4. Periodic sampling of groundwater and treated water to ensure treatment components are effective and groundwater remediation is progressing toward the cleanup levels.
5. Connection of homes to public water where Site COCs were detected above MCLs in residential drinking water supply wells.

6. Performance of long-term groundwater monitoring in accordance with the terms of the EPA-approved Operation and Maintenance Plan for 30 years at approximately 50 locations to evaluate the effectiveness of the treatment system.

Central Sprinkler agreed to implement the OU3 Selected Remedy with respect to the Central Sprinkler Parcel under a 2005 Consent Decree (CD), entered by the U.S. District Court in *U.S. v. Central Sprinkler Corp.*, Civil Action No. 05-1351 (E.D. Pa.).

A total of 17 residences with wells impacted by the Central Sprinkler Parcel groundwater contamination were connected to public water between June 2005 and August 2006, by Central Sprinkler under EPA oversight.

Central Sprinkler initiated the remedial design in 2005 for construction of a groundwater extraction and treatment system at the Central Sprinkler Parcel in accordance with the OU3 ROD. While performing the investigation to support the remedial design, Central Sprinkler installed several wells that identified only low levels of contamination in groundwater at the Central Sprinkler Parcel. Based on these findings, Central Sprinkler submitted a pilot test work plan in April 2012, to evaluate using ERD as an alternative remedy to address contaminated groundwater at the Central Sprinkler Parcel. ERD consists of injecting a substrate into the groundwater to enhance the conditions for naturally occurring microorganisms to break down contamination. The resulting end-products of this process are non-toxic compounds such as ethene or ethane.

The initial pilot test was performed in May 2012, and consisted of injecting 24,000 gallons of potassium lactate into one injection well. Monitoring conducted four months after the initial injection event indicated that the wells in the flow path from the injection well were being influenced by the injections. A significant decrease in PCE concentrations was initially observed in two wells (reductions of 59% and 57%); however, the level in one well rebounded after several months to pre-injection concentrations while the level in the other well increased by 5%.

A revised ERD approach was proposed and approved in April 2013, changing the substrate from potassium lactate to emulsified vegetable oil (EVO) with a lactate component. The EVO portion of the substrate would have a longer residence time near the injection and the lactate portion of the substrate would continue to travel as it did in the first injection, treating more distant portions of the contaminant plume.

Monitoring of the groundwater at the Central Sprinkler Parcel conducted one month after the second injection showed biological activity with reductions of PCE between 85% and 95% in the wells within the expected area of influence in the flow path. Samples collected three months after the second injection event showed a reduction of PCE greater than 99%. All wells that were sampled, except for one well, showed

concentrations of Site COCs below MCLs, which are the cleanup levels for groundwater at the Site.

Based on the successful reduction of Site COCs to below MCLs within the anticipated area of influence at the Central Sprinkler Parcel and the sustainability of those reductions, expansion of the pilot testing to a broader area was proposed in June 2014. To affect a wider area, four additional injection points were installed. The third injection event occurred in July 2014, reducing concentrations of all Site COCs in all monitoring wells associated with the Central Sprinkler Parcel to below MCLs.

Sampling since the third injection event has demonstrated sustained reduction levels of Site COCs (below MCLs) with no apparent rebound effect. Only recently have there been exceedances of the MCL (2 µg/l) for vinyl chloride in MW-10 (2.7 µg/l on March 28, 2017, and 7.7 µg/l on September 26, 2017). Continued monitoring of the wells is recommended to detect any rebound effect. In addition, the implementation of this technology has created a temporary change in the soil and groundwater chemistry, which allowed naturally occurring arsenic to temporarily enter the groundwater. In several of the monitoring wells, the arsenic level increased to greater than the MCL (10 µg/l); however, this trend is reversing itself as the soil and groundwater chemistry return to pre-injection conditions. Arsenic will also continue to be monitored.

D. SCOPE AND ROLE OF RESPONSE ACTION

As previously described, OU1 and OU2 address contaminated soil and OU3 addresses contaminated groundwater. With this Proposed Plan, EPA is proposing to modify the OU3 Selected Remedy at the Central Sprinkler Parcel portion of the Site only. The Selected Remedy for the remaining parcels that comprise OU3 will not be modified. The Selected Remedy in the OU3 ROD included groundwater extraction and treatment to restore groundwater to its beneficial use and established federal MCLs as the cleanup levels. The proposed modification to the OU3 Selected Remedy for the Central Sprinkler Parcel would replace groundwater extraction and treatment with ERD. ERD is capable of restoring contaminated groundwater more effectively than the Selected Remedy in the OU3 ROD through the use of treatment technologies that would permanantly reduce the toxicity, mobility, and volume of contaminants in groundwater as well as protect human health and the environment.

The proposed remedy modification would continue to provide protection to human health and the environment by eliminating potential exposure to contaminated groundwater at the Central Sprinkler Parcel.

E. SUMMARY OF SITE RISKS

Following the OU3 RI, EPA conducted analyses to estimate the human health and environmental risks that could result if contamination at the Site is not addressed. These analyses are commonly referred to as risk assessments and they identify existing and potential future risks that could occur if conditions at the Site do not change. The Baseline Human Health Risk Assessment (BHHRA) evaluated human health risks and the Screening Level Ecological Risk Assessment (SLERA) evaluated environmental impacts from the Site. EPA has set a target risk range of 10^{-4} to 10^{-6} for a lifetime excess carcinogenic risk. For non-carcinogenic risk, EPA has set a target Hazard Index (HI) of no greater than one. These risk assessments demonstrated that actual or threatened releases of hazardous substances from this Site, if not addressed by EPA's Preferred Alternative or one of the other cleanup alternatives considered, may present a current or potential threat to public health, welfare, or the environment.

WHAT IS RISK AND HOW IS IT CALCULATED?

A Superfund human health risk assessment estimates the baseline risk. This is an estimate of the likelihood of health problems occurring if no cleanup action were taken at a site. To estimate the baseline risk at a Superfund site, EPA undertakes a four-step process:

Step 1: Analyze Contamination
Step 2: Estimate Exposure
Step 3: Assess Potential Health Dangers
Step 4: Characterize Site Risk

In Step 1, EPA looks at the concentrations of contaminants found at a site as well as past scientific studies on the effects these contaminants have had on people (or animals, when human studies are unavailable). Comparisons between site-specific concentrations and concentrations reported in past studies help EPA to determine which contaminants are most likely to pose the greatest threat to human health.

In Step 2, EPA considers the different ways that people might be exposed to the contaminants identified in Step 1, the concentrations that people might be exposed to, and the potential frequency and duration of exposure. Using this information, EPA calculates a reasonable maximum exposure (RME) scenario, which portrays the highest level of human exposure that could reasonably be expected to occur.

In Step 3, EPA uses the information from Step 2 combined with information on the toxicity of each chemical to assess potential health risks. EPA considers two types of risk: cancer risk and non-cancer risk. The likelihood of any kind of cancer resulting from a Superfund site is generally expressed as an upper bound probability; for example, a 1 in 10,000 chance. In other words, for every 10,000 people exposed, one extra cancer may occur as a result of exposure to site contaminants. An extra cancer case means that one more person could get cancer than would normally be expected, given the background cancer rate. For non-cancer adverse health effects, EPA calculates a hazard index. The key concept here is that a threshold level (measured usually as a hazard index of less than 1) exists below which non-cancer adverse health effects are no longer predicted.

In Step 4, EPA determines whether site risks are great enough to cause health problems for people at or near the Superfund site. The results of the three previous steps are combined, evaluated and summarized. EPA adds up the potential risks from the individual contaminants and exposure pathways and calculates a total site risk.

Human Health Risk Assessment

The BHHRA evaluated the groundwater dermal contact and ingestion exposure pathways for current and future adult and child residents of the overall Site. Contaminants that were historically detected in groundwater at the Central Sprinkler Parcel are similar to the contaminants detected at the overall Site; therefore, the BHHRA findings are generally applicable to the Central Sprinkler Parcel. Human health risks identified in the BHHRA are summarized in the table below.

Risk Summary

Exposure Scenario	Maximum Non-Carcinogenic Risk (HI)	Maximum Carcinogenic Risk
Current and Future Adult Resident	22	2.2×10^{-4}
Current and Future Child Resident	49	3.7×10^{-4}

Arsenic was detected in groundwater during the ERD pilot studies at concentrations exceeding the MCL of 10 µg/L. The MCL of 10 µg/L is equivalent to a carcinogenic risk level of 1.94×10^{-4}, which is at the upper bound of EPA's acceptable risk range of 10^{-4} to 10^{-6} for excess lifetime carcinogenic risk. Therefore, arsenic is proposed to be added as a Site COC in this Proposed Plan.

Ecological Risk Assessment

Using sampling results for contaminants in surface water and sediments, EPA performed assessments on the headwaters potentially affected by the contamination. The SLERA performed on the headwaters located at the Site indicated a potential risk to aquatic organisms. This level of risk varied between the four micro-watersheds that were evaluated. The southern Towamencin Creek micro-watershed, in which the Central Sprinkler Parcel is located, presented an ecological risk to aquatic organisms by the presence of polycyclic aromatic hydrocarbons (PAHs) and pesticides. The other three micro-watersheds posed low ecological risk to aquatic organisms from the same contaminants. However, those contaminants are primarily associated with urban developments and not believed to be Site-related. Therefore, no response actions to address ecological risk at any of the watersheds were selected in the OU3 ROD.

F. REMEDIAL ACTION OBJECTIVES

The OU3 ROD does not specify Remedial Action Objectives (RAOs) for the Selected Remedy; however, the OU3 ROD does indicate that the goal of the Selected Remedy is to restore the aquifer to its beneficial use as a potable aquifer. The OU3 ROD also established MCLs as the groundwater cleanup levels for all Site COCs. As indicated in Section E of this Proposed Plan, exposure to contaminated groundwater via ingestion or direct contact could present an unacceptable risk to human health for future adult and

child residents; therefore, the RAOs for the remedy modification in this Proposed Plan are as follows:

- Prevention of current or future exposure (ingestion and/or direct contact) to contaminated groundwater which would result in unacceptable risk to human health; and
- Restoration of contaminated groundwater at the Central Sprinkler Parcel to its beneficial use, where practicable, defined as meeting the following criteria:
  a. Federal Maximum Contaminant Levels (MCLs) for Site COCs; and
  b. Reduction of cumulative excess carcinogenic risk to less than or equal to 1 in 10,000 and cumulative excess non-carcinogenic risk to an HI of less than or equal to 1.

G. SUMMARY OF ALTERNATIVES

With this Proposed Plan, EPA is proposing to modify the OU3 Selected Remedy for contaminated groundwater at the Central Sprinkler Parcel portion of the Site. The OU3 Selected Remedy for the remaining parcels that comprise OU3 as well as the remaining components of the OU3 Selected Remedy for the Central Sprinkler Parcel will not be modified. The following Remedial Alternatives are evaluated in this Proposed Plan:

Alternative	Description
1	No Action
2	Selected Remedy in OU3 ROD: Groundwater Extraction and Treatment
3	Proposed Modification: Enhanced Reductive Dechlorination (ERD)

The Remedial Alternatives are discussed in detail below.

Alternative 1 -- No Action

The NCP, 40 C.F.R. Part 300, which governs Superfund response actions, requires that EPA evaluate a "No Action" alternative for every NPL site in order to establish a baseline for the comparison of alternatives. Under this alternative, EPA would take no further action to remediate or treat contaminated groundwater or to reduce present or future exposure risk at the Central Sprinkler Parcel. This alternative would not remediate or contain the plume, thus allowing continued migration of contaminants through the groundwater. In accordance with Section 121(c) of CERCLA, 42 U.S.C. § 9621(c), and Section 300.430(f)(4)(ii) of the NCP, 40 C.F.R. § 300.430(f)(4)(ii), review of Site conditions would be required every five years under this alternative, as long as hazardous substances, pollutants, or contaminants remain at the Central Sprinkler Parcel above levels that allow for unlimited use and unrestricted exposure.

Alternative 2 – Selected Remedy in OU3 ROD: Groundwater Extraction and Treatment

Alternative 2 is the current groundwater extraction and treatment component of the Selected Remedy in the OU3 ROD. This alternative requires installation of extraction wells to remove contaminated groundwater from beneath the Central Sprinkler Parcel and prevent contaminant migration. The extracted groundwater would be treated using an air stripper to remove contaminants. A vapor phase granular activated carbon (GAC) or ultraviolet (UV) oxidation unit would be installed to treat off-gas from the air stripper. A pump house would be constructed to enclose the treatment system. Trenches and piping would be installed to discharge the treated groundwater to a storm sewer or directly to surface water. Long-term groundwater monitoring would also be performed. Groundwater extraction and treatment and groundwater monitoring would continue until Site COC levels in groundwater meet MCLs throughout the groundwater contaminant plume at the Central Sprinkler Parcel.

At the time of the OU3 ROD, EPA estimated that the Selected Remedy for all 10 of the parcels that comprise OU3 would cost $20,402,692 to implement. Therefore, for purposes of comparing the alternatives, EPA will assume the estimated cost to implement the Selected Remedy in the OU3 ROD at the Central Sprinkler Parcel would be approximately $1/10^{th}$ of the total OU3 Selected Remedy cost. The estimated present worth cost to construct and operate the groundwater extraction and treatment system at the Central Sprinkler Parcel for 20 years, with 30 years of groundwater monitoring, and the connection to public water of residences that had wells affected by the contamination is $2,040,269. However, all the connections to the public water system were completed in 2006.

Alternative 3 – Proposed Modification: Enhanced Reductive Dechlorination (ERD)

Alternative 3 consists of the injection of ERD substrate into the subsurface through injection wells to treat contaminated groundwater if the levels of contaminants in the groundwater at the Central Sprinkler Parcel rebound and increase above the cleanup levels. Sampling conducted since the third injection event of the ERD pilot study has generally demonstrated sustained reduction levels (below MCLs) with no apparent rebound effect. Only recently have there been exceedances of the MCL (2 µg/l) for vinyl chloride in MW-10 (2.7 µg/l on March 28, 2017, and 7.7 µg/l on September 26, 2017). Continued monitoring of the wells is required to detect any rebound effect. This alternative assumes that two additional ERD injection events will be necessary to achieve and maintain MCLs if the levels of contaminants rebound; however, these ERD injections may not be necessary based on current groundwater conditions at the Central Sprinkler Parcel. Due to the success that was demonstrated during the pilot tests, it is expected that EVO with a lactate component will be used as the ERD substrate in any future ERD injections; however, alternative substrates may be used if determined to be appropriate for Site conditions. Information on the type of substrate to be used in any future ERD injection events would be provided to the public prior to each injection.

ERD injections would enhance the conditions for naturally occurring microorganisms to break down contaminants in the groundwater. The intermediate breakdown products of the ERD process (*cis*-1,2-DCE and vinyl chloride) are included in the list of Site COCs with their groundwater cleanup levels (set forth in Sections C and I of this Proposed Plan) and would be monitored during the ERD treatment process. The end products of the ERD process are non-toxic substances such as ethene and ethane.

ERD injections, if required, and post-injection groundwater monitoring will continue until the groundwater meets MCLs throughout the groundwater contaminant plume at the Central Sprinkler Parcel. For the purposes of this Proposed Plan, post-injection monitoring is anticipated to consist of sampling conducted one month, four months, and seven months after each injection and then at least semi-annually thereafter. However, the post-injection monitoring schedule may be modified by EPA based on monitoring results.

Once the cleanup levels are achieved throughout the groundwater plume, long-term groundwater monitoring would be performed for a total of 10 years. For the purposes of this Proposed Plan, long-term monitoring is anticipated to consist of annual groundwater monitoring for four years, followed by three biennial groundwater monitoring events (i.e., monitoring in the 6^{th}, 8^{th}, and 10^{th} years after cleanup levels are achieved), to evaluate the long-term effectiveness of the ERD. However, the long-term groundwater monitoring schedule may be modified by EPA based on monitoring results. Additionally, monitoring and injection wells would be abandoned after completion of the long-term monitoring period.

Since short-term increases in arsenic concentrations in groundwater were observed during the pilot studies, arsenic will be added as a Site COC and included in the long-term groundwater monitoring program under Alternative 3. The monitoring will evaluate the expected long-term reduction in arsenic concentrations as the soil and groundwater chemistry return to pre-injection conditions.

The estimated cost to implement Alternative 3 is $242,624, which includes two additional ERD injection events (if required), post-injection and long-term groundwater monitoring, and abandonment of monitoring and injection wells.

H. EVALUATION OF ALTERNATIVES

In this section, the Remedial Alternatives summarized above are compared to each other using the criteria set forth in 40 C.F.R. § 300.430(e)(9)(iii). In the remedial decision making process, EPA analyzes the relative performance of each alternative against the evaluation criteria, noting how each alternative compares to the other options under consideration**.** Additional information supporting this analysis of remedy alternatives can be found in the Administrative Record file for the Site.
These evaluation criteria relate directly to requirements of Section 121 of CERCLA, 42 U.S.C. § 9621, for determining the overall feasibility and acceptability of a remedy. The nine criteria fall into three categories as follows:

Threshold criteria must be satisfied in order for a remedy to be eligible for selection.

Primary balancing criteria are used to weigh major tradeoffs between remedies.

Modifying criteria are formally taken into account after public comment is received on the Proposed Plan.

Evaluation Criteria for Superfund Remedial Alternatives	
Threshold Criteria	**1. Overall Protection of Human Health and the Environment** determines whether an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment.
	2. Compliance with ARARs evaluates whether the alternative meets Federal and State environmental statutes, regulations, and other requirements that pertain to the site, or whether a waiver is justified.
Primary Balancing Criteria	**3. Long-term Effectiveness and Permanence** considers the ability of an alternative to maintain protection of human health and the environment over time.
	4. Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.
	5. Short-term Effectiveness considers the length of time needed to implement an alternative and the risks the alternative poses to workers, residents, and the environment during implementation.
	6. Implementability considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.
	7. Cost includes estimated capital and annual operations and maintenance costs, as well as present worth cost. Present worth cost is the total of an alternative over time in today's dollar value. Cost estimates are expected to be accurate within a range of +50 to -30 percent.
Modifying Criteria	**8. State/ Support Agency Acceptance** considers whether the State agrees with EPA's analyses and recommendations, as described in the FS and Proposed Plan.
	9. Community Acceptance considers whether the local community agrees with EPA's analyses and preferred alternative. Comments received on the Proposed Plan are an important indicator of community acceptance.

Detailed Analysis of Proposed Remedial Alternatives

1. Overall Protection of Human Health and the Environment

Alternative 1, No Action, would not effectively protect human health and the environment. This alternative provides no additional action or monitoring. In the original OU3 ROD, this alternative included a monitoring component in accordance with ROD policy and guidance. Current EPA policy and guidance do not include monitoring as part of the No-

Action alternative, therefore, monitoring costs are not included in the No Action alternative in this Proposed Plan.

Although the levels of contaminants are currently below cleanup levels (except for vinyl chloride in MW-10 as discussed in Sections C and G, above), any rebound effect of the contaminants would not be observed if no further actions were chosen because no monitoring would be performed. In addition, current levels of arsenic are above the MCL (10 µg/L). Although those concentrations are expected to decrease to below the MCL once the local geochemistry returns to pre-injection conditions, there would be no way to confirm this under Alternative 1. Since Alternative 1 would not provide for groundwater monitoring, it would also be impossible to determine if additional cleanup actions are necessary. Because Alternative 1 would not satisfy this threshold criterion, it is not eligible for selection and was eliminated from further consideration and discussion under the remaining eight criteria.

Alternative 2, Selected Remedy in the OU3 ROD: Groundwater Extraction and Treatment, would be expected to achieve overall protection of human health and the environment. The continuous pumping of extraction wells would prevent further migration of the groundwater contaminants. The air-stripper would remove the contaminants from the extracted groundwater. Treating the groundwater contamination at the source would reduce human exposure to the contaminated groundwater and restore the aquifer at the Central Sprinkler Parcel to its beneficial use.

Alternative 3, Proposed Modification: ERD, would be expected to achieve overall protection of human health and the environment by reducing the levels of contaminants listed in the OU3 ROD for groundwater to below MCLs. By reducing the groundwater contamination described in the OU3 ROD at the source, Alternative 3 would reduce human exposure to the contaminated groundwater and restore the aquifer at the Central Sprinkler Parcel to its beneficial use.

Due to ERD injections, the chemistry in the soil has changed, making arsenic that was bonded to the local soil soluble and mobile. For that reason, concentrations of arsenic at the Central Sprinkler Parcel have increased above MCLs. Arsenic concentrations have decreased over time after the ERD injections and are expected to be below MCLs as changes in the soil and groundwater chemistry returns to pre-injections conditions.

In the long term, both Alternative 2 and Alternative 3 are equally protective of human health and the environment. Both alternatives would eliminate human health risk from both ingestion of and dermal contact with the contaminated groundwater through treatment; however, Alternative 3 would achieve protection of human health and the environment in a shorter time frame than Alternative 2. Alternative 2 includes containment and treatment of the contaminated groundwater via the groundwater extraction and treatment system, which would reduce the concentration of contaminants, listed in the original ROD for OU3, in the

groundwater over an extended period, possibly a decade or longer. Alternative 3 would provide cleanup of the groundwater by the in-situ reduction of the concentration of contaminants, listed in the original ROD for OU3, in the groundwater to below the cleanup levels at a much faster rate than Alternative 2.

2. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)

This criterion addresses whether a remedy will meet applicable or relevant and appropriate standards, requirements, criteria, and limitations (collectively referred to as "ARARs") or provide grounds for invoking a waiver under CERCLA Section 121(d)(4), 42 U.S.C. § 9621(d)(4), and the NCP at 40 C.F.R. § 300.430(f)(1)(ii)(C). The ARARs from the OU3 ROD remain the same (although some of the names and citations have changed since the OU3 ROD was issued), and are incorporated in this Proposed Plan. Compliance of Alternative 2 with ARARs was evaluated in the OU3 ROD, and although Alternative 2 would comply with the ARARs, it is questionable whether Alternative 2 would achieve the cleanup levels, including the cleanup level for arsenic, in a reasonable timeframe.

Alternative 3 also includes some additional ARARs, which are identified in Table 1. Specifically, the Safe Drinking Water Act (SDWA) Underground Injection Control (UIC) regulations are included as ARARs because Alternative 3 includes the injection of ERD substrate into the subsurface to treat contaminated groundwater. In addition, Table 1 identifies some advisories, criteria, or guidance to be considered (TBCs) that are relevant to both Alternative 2 and Alternative 3. Table 1 includes EPA's *Guidance for Evaluating Completion of Groundwater Restoration Remedial Actions* (OSWER Directive 9355.0-129), dated November 25, 2013, and EPA's *Groundwater Remedy Completion Strategy* (OSWER Directive 9200.2-144), dated May 12, 2014, as TBCs because they will be used to evaluate remedy performance and achievement of cleanup levels. Alternative 3 is expected to comply with all ARARs, including the ARARs identified in Table 1, in a reasonable timeframe. In addition, Table 1 lists ARARs from the OU3 ROD whose names or citations have been updated since EPA issued the OU3 ROD.

Table 1
New ARARs and TBCs
and
ARARs from the 2000 OU3 ROD that have Updated Citations

Requirement/ Standard	Legal Citation	ARAR/TBC Classification	Requirement Synopsis	Applicability to Proposed Remedies
SDWA Underground Injection Control (UIC) Regulations	40 CFR §§ 144.1(g), 144.11, 144.12(a), 144.82, 146.6,	Applicable	Establishes classes of injection wells and requirements for those wells pursuant to the Underground	These regulations apply to the installation of injection wells and the injection of material into the subsurface

Table 1
New ARARs and TBCs
and
ARARs from the 2000 OU3 ROD that have Updated Citations

Requirement/ Standard	Legal Citation	ARAR/TBC Classification	Requirement Synopsis	Applicability to Proposed Remedies
	146.7, 146.8, 146.10(c)		Injection Control Program	under Alternative 3. Alternative 3 will comply with the substantive requirements of these regulations.
EPA Guidance for Evaluating Completion of Groundwater Restoration Remedial Actions	EPA Office of Solid Waste and Emergency Response (OSWER) Directive 9355.0-129, November 25, 2013	TBC	Presents EPA's recommendations for evaluating Superfund groundwater remedy performance and determining when aquifer restoration and a groundwater restoration remedial action are complete.	This guidance will be used to evaluate remedy performance and achievement of cleanup levels for the Site COCs under Alternative 2 and Alternative 3.
EPA Groundwater Remedy Completion Strategy	EPA Office of Solid Waste and Emergency Response (OSWER) Directive 9200.2-144, May 12, 2014	TBC	Presents EPA's recommendations for evaluating Superfund groundwater remedy performance, operation, and progress toward attainment of Remedial Action Objectives (RAOs) and associated cleanup levels in a reasonable timeframe.	This guidance will be used to evaluate remedy performance and achievement of cleanup levels for the Site COCs under Alternative 2 and Alternative 3.
Pennsylvania Water Well Drillers License Act (Act 610) (referenced in OU3 ROD as Water Drillers Act); and Regulations in Chapter 47 of the Pennsylvania Code – Drilling Water Wells	32 P.S. §§ 645.1 - 645.13; and Updated citation for regulations: 17 Pa. Code §§ 47.1 – 47.8 (referenced in OU3 ROD by its former citation: 25 Pa. Code Chapter 107)	Relevant and appropriate	Requirements for the licensing of water well drillers, notification of intent to drill, record-keeping for wells, and notification of well abandonment.	Applies to Alternative 2 and Alternative 3. The substantive requirements of this statute and these regulations will be followed in connection with the installation or abandonment of wells.

Table 1
New ARARs and TBCs
and
ARARs from the 2000 OU3 ROD that have Updated Citations

Requirement/ Standard	Legal Citation	ARAR/TBC Classification	Requirement Synopsis	Applicability to Proposed Remedies
PADEP Groundwater Monitoring Guidance Manual, Chapter 7 - Well Abandonment Procedures, December 1, 2001	http://www.elibrary.dep.state.pa.us/dsweb/Get/Document-48361/383-3000-001.pdf	Relevant and appropriate	Requirements for abandonment of wells.	Applies to Alternative 2 and Alternative 3. The substantive requirements of Chapter 7 will be followed in connection with the abandonment of wells.

3. Long-term Effectiveness and Permanence

Both Alternative 2 and Alternative 3 are effective in the long-term and both will permanently reduce contamination through treatment of contaminated groundwater at the Central Sprinkler Parcel. Treatment of the contamination by Alternative 2 will be a very slow process and will likely take a decade or longer to achieve groundwater cleanup levels. Alternative 3 is expected to reduce contaminant concentrations to below the cleanup levels in a much shorter time frame, as demonstrated by the pilot studies. The pilot studies demonstrated the effectiveness of ERD in reducing PCE concentrations within the zone of influence by 98 to 100% compared to the pre-injection concentrations. In addition, all other Site COCs in the OU3 ROD have been reduced to non-detect levels. Additional ERD injection events (if necessary), post-injection monitoring, and long-term monitoring will ensure that no rebound in contaminant concentrations occurs. After cleanup levels have been met, Alternative 3 includes 10 years of long-term groundwater monitoring to monitor the sustainability of the reduced concentrations below the MCLs. Additionally, arsenic will be added as a Site COC and included in the groundwater monitoring program under Alternative 3 to monitor the anticipated reduction in arsenic concentrations as the soil and groundwater chemistry return to pre-injection conditions, which is expected to occur within five years.

4. Reduction of Toxicity, Mobility, or Volume through Treatment

Both Alternative 2 and Alternative 3 reduce toxicity, mobility, and volume of contaminants in the groundwater through treatment. The groundwater extraction and treatment system in Alternative 2 would contain the plume, thus reducing the mobility of contaminants. In addition, the volume and toxicity would be reduced as contaminants would be removed by the air stripper and treated by carbon or UV light, although groundwater cleanup levels would not be met for at least 10 years.

Alternative 3 would reduce the toxicity and volume of contaminants through the ERD process and would be expected to achieve groundwater cleanup levels more rapidly than Alternative 2. The intermediate breakdown products (*cis*-1,2-DCE and vinyl chloride) of the ERD process are included in the list of Site COCs (set forth in Sections C and I of this Proposed Plan) and will be monitored during the treatment process. The end products of the ERD process are non-toxic substances such as ethene and ethane. Alternative 3 would destroy the Site COCs in the groundwater at the Central Sprinkler Parcel, thus limiting contaminant mobility. The effectiveness of Alternative 3 in treating and reducing the levels of Site COCs was demonstrated by the pilot studies. Short-term increases in arsenic concentrations in groundwater were observed during the pilot studies. Arsenic will be included in groundwater monitoring under Alternative 3 to monitor the expected long-term reduction in arsenic concentrations as the soil and groundwater chemistry return to pre-injection conditions.

5. Short-term Effectiveness

Alternative 2 would be effective in limiting off-site contaminant migration in the short term; however, it would take longer than Alternative 3 to achieve the groundwater cleanup levels at the Central Sprinkler Parcel. Alternative 2 includes containment and capture of contaminated groundwater via the groundwater extraction and treatment system. The groundwater extraction and treatment system would capture and eliminate the off-site migration of contaminated groundwater within the first year of operation; however, it would likely take a decade or even longer for the system to achieve the groundwater cleanup levels.

Alternative 3 would be more effective at reaching the groundwater cleanup levels in the short term (as demonstrated by the recent ERD pilot testing and subsequent sampling events) by destroying the source and preventing contaminants from migrating off-site more quickly than Alternative 2.

6. Implementability

Under Alternative 2, achieving the groundwater cleanup levels may be technically challenging, due to the nature of the fractured bedrock environment. It is difficult to predict the concentrations to which contaminants in the groundwater will be reduced until the extraction and treatment system has been operating for at least several years and

possibly longer. Therefore, groundwater quality would have to be monitored during the extraction and treatment process, with the system likely needing to be optimized prior to reaching groundwater cleanup levels.

Alternative 3 has been demonstrated through pilot testing to be generally easy to implement and effective in reducing the contaminant concentrations to below the cleanup levels. Alternative 3 includes two additional ERD injection events, if necessary, to address any contaminant rebound, and the materials required for the ERD injection events are readily available. Alternative 3 also includes 10 years of periodic long-term groundwater monitoring to evaluate the performance of the remedy. Ten years of long-term monitoring will be sufficient to demonstrate through statistical analysis the sustainability of the reduced concentrations below the cleanup levels. Based on the results of the pilot testing, Alternative 3 would be more easily implemented than Alternative 2.

7. Cost

When the OU3 ROD was issued on August 10, 2000, EPA estimated the OU3 ROD Selected Remedy would cost $20,402,692 to construct groundwater extraction and treatment systems at all 10 properties included in OU3 and to connect all residences with impacted wells to public water (the connection of residences with impacted wells to public water has already been completed), as set forth below:

Capital Cost:	$2,117,428
Long-Term Monitoring:	$2,472,406
Operation and Maintenance:	$9,557,965
Total Present Worth Cost:	$20,402,692 (All 10 Site Locations)

Note: The total present worth cost ($20,402,692) is a sum of the costs shown above and other estimated engineering, land lease, and contingency costs for all 10 Site properties included in OU3, as set forth in the OU3 ROD.

The estimated cost to complete the Alternative 2 OU3 ROD Selected Remedy at the Central Sprinkler Parcel is assumed to be approximately 1/10th of the total present worth cost of the OU3 ROD Selected Remedy for all 10 properties; therefore, the estimated cost to implement Alternative 2 at the Central Sprinkler Parcel is $2,040,269, minus the cost of connecting residences with impacted wells to public water, which work has already been completed. Based on experience designing, constructing, and operating systems similar to the OU3 ROD Selected Remedy, implementation of Alternative 2 may cost more than the amount estimated in the OU3 ROD. In addition, the OU3 ROD Selected Remedy cost estimate was prepared in August 2000, and actual costs to implement the OU3 ROD Selected Remedy could be significantly higher when adjusted for inflation.

The estimated present worth of the total cost for Alternative 3 is $242,624. EPA recognizes that contaminant levels may rebound and increase in the future; therefore, the estimated total present worth cost ($242,624) includes periodic costs ($99,760) for two additional ERD injection events with post-injection monitoring, although these may not be required, and well abandonment. The estimated total present worth cost of Alternative 3 also includes long-term monitoring costs for 10 years of long-term groundwater monitoring after achieving cleanup levels.

Long-Term Monitoring:	$24,415/year for 10 years
Operation and Maintenance:	$0
Periodic Costs:	$99,760 - two additional ERD injections and well abandonment
Total Present Worth Cost:	$242,624

8. State Acceptance

EPA has coordinated with PADEP in reviewing the pilot studies and in the preparation of this Proposed Plan. EPA will evaluate state acceptance of the Preferred Alternative after the public comment period ends. State comments and EPA's response to any such comments will be available in the Responsiveness Summary of the OU3 ROD Amendment for the Central Sprinkler Parcel.

9. Community Acceptance

EPA will evaluate community acceptance of the Preferred Alternative based on comments received during the public comment period. Community comments and EPA's responses will be included in the Responsiveness Summary of the OU3 ROD Amendment for the Central Sprinkler Parcel.

I. PREFERRED ALTERNATIVE

EPA's Preferred Alternative for addressing contaminated groundwater at the Central Sprinkler Parcel is Alternative 3, Enhanced Reductive Dechlorination (ERD).

As indicated in Section C of this Proposed Plan, the Selected Remedy in the OU3 ROD included the following components:

1. **Completion of a groundwater remedial design study to determine the most efficient design of a groundwater extraction and treatment system.**

2. **Installation, operation, and maintenance of onsite groundwater extraction wells to remove contaminated groundwater from beneath the Site and to prevent contaminants from migrating offsite.**
3. **Installation, operation, and maintenance of air stripping equipment and discharge piping to treat groundwater to required cleanup levels.**
4. **Periodic sampling of groundwater and treated water to ensure treatment components are effective and groundwater remediation is progressing toward the cleanup levels.**
5. Connection of homes to public water where Site COCs were detected above MCLs in residential drinking water supply wells.
6. **Performance of long-term groundwater monitoring in accordance with the terms of the EPA-approved Operation and Maintenance Plan for 30 years at approximately 50 locations to evaluate the effectiveness of the treatment system.**

The Preferred Alternative will replace the groundwater extraction and treatment system and modify the long-term monitoring components of the OU3 Selected Remedy only (items 1, 2, 3, 4, and 6 in **bold,** above). Item 5 of the OU3 Selected Remedy, which has already been completed, will not be modified. The Preferred Alternative will consist of the following components:

1. Conduct groundwater monitoring to determine if groundwater cleanup levels have been achieved throughout the groundwater contaminant plume. Monitoring shall be conducted semi-annually, at a minimum, until results indicate that Site COC concentrations are below groundwater cleanup levels for four consecutive semi-annual monitoring events.

2. If Site COC concentrations exceed groundwater cleanup levels during four consecutive monitoring events, inject ERD substrate into the subsurface through injection wells. Details of the substrate material to be used shall be made publicly available prior to any ERD injection events through community involvement activities.
3. If additional injection of ERD substrate is required, conduct post-injection groundwater monitoring to determine if groundwater cleanup levels have been achieved throughout the groundwater contaminant plume. Post-injection monitoring shall be conducted one month, four months, and seven months after the injection and semi-annually thereafter, at a minimum. The post-injection monitoring schedule may be modified by EPA based on monitoring results.

4. If the post-injection groundwater monitoring indicates that groundwater cleanup levels have not been achieved throughout the groundwater contaminant plume for four consecutive semi-annual monitoring events, conduct additional ERD injections followed by periodic post-injection groundwater monitoring (as

described in items number 2 and 3, above) until groundwater cleanup levels have been achieved for four consecutive semi-annual monitoring events.

5. Once the groundwater cleanup levels for the Site COCs are achieved throughout the groundwater contaminant plume at the Central Sprinkler Parcel for four consecutive semi-annual monitoring events, conduct long-term groundwater monitoring to evaluate the long-term effectiveness of the ERD. This groundwater monitoring will also assess the presences of dissolved arsenic concentrations to determine if arsenic levels in the groundwater exceed the groundwater cleanup level as a result of the temporary change in the soil and groundwater chemistry caused by the ERD injections. Long-term monitoring is anticipated to consist of annual groundwater monitoring for four years, followed by three biennial groundwater monitoring events (i.e., monitoring in the 6^{th}, 8^{th}, and 10^{th} years after cleanup levels are achieved), to evaluate the long-term effectiveness of the ERD. However, the long-term groundwater monitoring schedule may be modified by EPA based on monitoring results.

The Preferred Alternative will be subject to the following performance standards:

1. The following groundwater cleanup levels shall be achieved and maintained throughout the groundwater contaminant plume at the Central Sprinkler Parcel:

COC	MCL (µg/l)
Tetrachloroethene (PCE)	5
Trichloroethene (TCE)	5
Cis-1,2-dichloroethene (*cis*-1,2-DCE)	70
Vinyl Chloride (VC)	2
Arsenic	10

EPA recommends Alternative 3 because pilot studies have demonstrated that ERD can effectively address contaminants in groundwater at the Central Sprinkler Parcel by natural breakdown of the contaminants via microorganisms. Alternative 3 is expected to achieve groundwater cleanup levels within a shorter time frame and at a lower cost than Alternative 2, while still providing protection of human health and the environment in both the short and long-term.

Statutory Determination

Based on information currently available, EPA believes the Preferred Alternative meets the threshold criteria and provides the best balance of tradeoffs among the other alternatives with respect to the balancing and modifying criteria. EPA expects the Preferred Alternative to satisfy the following statutory requirements of CERCLA

§ 121(b): (1) be protective of human health and the environment; (2) comply with ARARs (or justify a waiver); (3) be cost-effective; (4) utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and (5) satisfy the preference for treatment as a principal element, or explain why the preference for treatment will not be met. The Preferred Alternative could change in response to public comments received during the public comment period or new information.

J. COMMUNITY PARTICIPATION

EPA encourages the public to gain a more comprehensive understanding of the North Penn Area 6 Site and the action proposed in this Proposed Plan and to submit comments for consideration by EPA. A public comment period will open March 30, 2018, and close April 30, 2018. All comments must be postmarked, emailed or called in by April 30, 2018. Written comments, questions about the Proposed Plan or public meeting, and requests for information can be sent to:

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Public Meeting – A public meeting will be held to discuss the Proposed Plan on April 12, 2018, from 6:30 p.m. to 8:30 p.m. The public meeting will be held at Lansdale Borough Hall, 1 Vine Street, Lansdale, PA 19446.

Detailed information on the material discussed herein may be found in the Administrative Record file for the Site, which includes all information used by EPA in the decision-making process. EPA encourages the public to review the Administrative Record file in order to gain a more comprehensive understanding of the Site and the Superfund activities that have taken place there. Copies of the Administrative Record file are available for review at: https://semspub.epa.gov/src/collections/03/AR/PAD980926976 (for documents relating to OU3, select the link for Remedial – O3), or at the following locations:

Lansdale Public Library
301 Vine Street
Lansdale, PA 19446
Hours: Call (215) 855-3228

U.S. EPA Administrative Records Room
Administrative Records Coordinator
1650 Arch Street
Philadelphia, PA 19103-2029
Phone: (215) 814-3157
Hours: Monday-Friday 8:30a.m. to 4:30p.m.
By appointment only

Following the conclusion of the public comment period on this Proposed Plan, EPA, in consultation with PADEP, will select a final remedy for OU3 at the Central Sprinkler Parcel after reviewing and considering all information submitted during the 30-day public comment period. EPA, in consultation with PADEP, may modify the Preferred Alternative or select another alternative presented in this Proposed Plan based on new information or public comments.

EPA will prepare a Responsiveness Summary which will summarize and respond to comments received during the public comment period. EPA will then prepare a formal decision document, the OU3 ROD Amendment, which selects the modification to the OU3 ROD Selected Remedy for the Central Sprinkler Parcel portion of the Site. The OU3 ROD Amendment for the Central Sprinkler Parcel will include the Responsiveness Summary. Copies of the OU3 ROD Amendment for the Central Sprinkler Parcel will be available for public review in the Administrative Record file following finalization of the OU3 ROD Amendment.

FIGURES

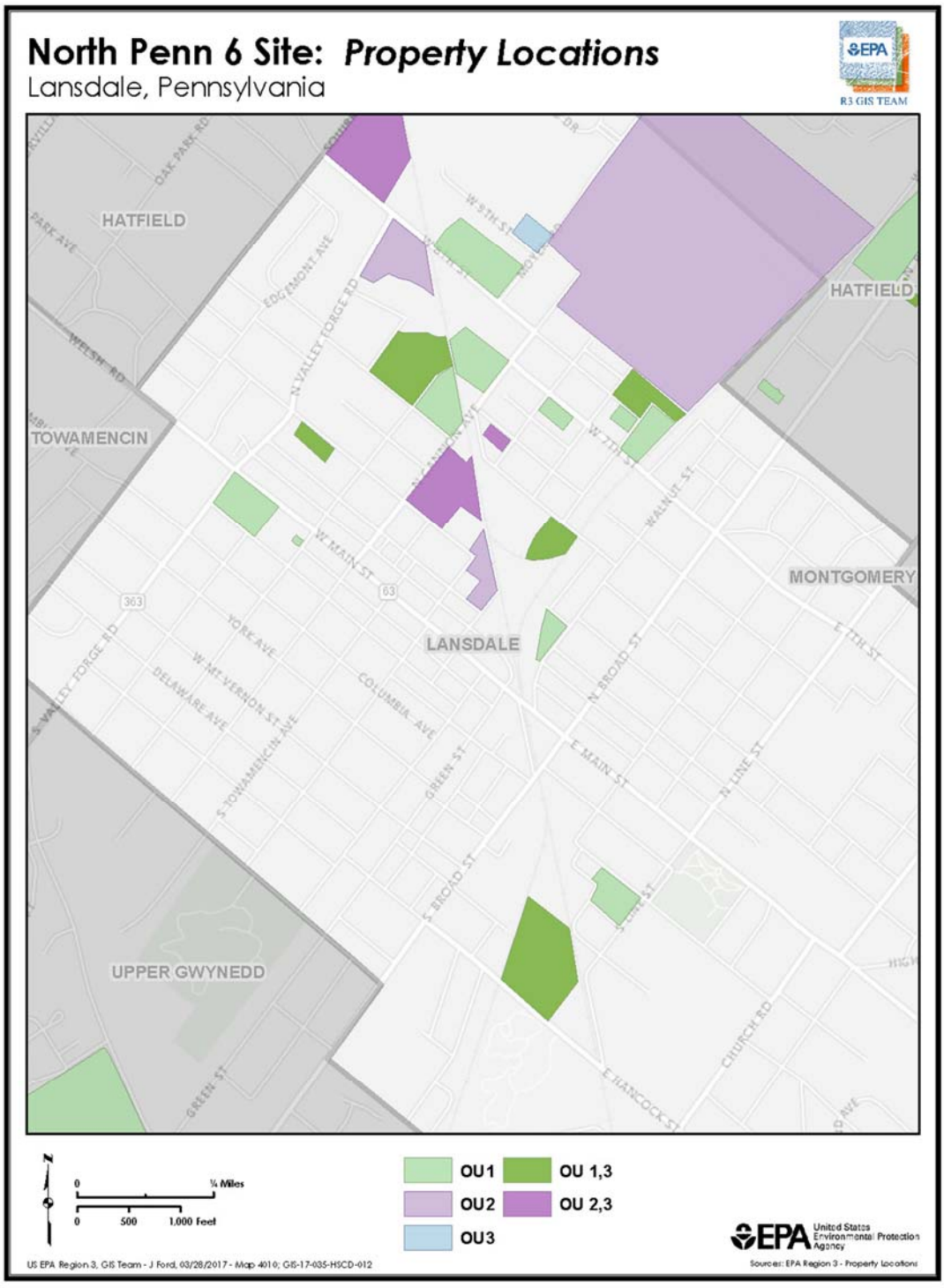
North Penn 6 Site: Property Locations
Lansdale, Pennsylvania
EPA
R3 GIS TEAM
HATFIELD
HATFIELD
TOWAMENCIN
MONTGOMERY
LANSDALE
UPPER GWYNEDD
OAK PARK RD
PARK AVE
WELSH RD
EDGEMONT AVE
N VALLEY FORGE RD
W 9TH ST
W 7TH ST
WALNUT ST
W MAIN ST
63
363
YORK AVE
W MT VERNON ST
DELAWARE AVE
S TOWAMENCIN AVE
COLUMBIA AVE
GREEN ST
N BROAD ST
E MAIN ST
N LINE ST
S BROAD ST
S LINE ST
E 7TH ST
CHURCH RD
E HANCOCK ST
N
0
¼ Miles
0
500
1,000 Feet
OU1
OU 1,3
OU2
OU 2,3
OU3
EPA United States Environmental Protection Agency
US EPA Region 3, GIS Team - J Ford, 03/28/2017 - Map 4010; GIS-17-035-HSCD-012
Sources: EPA Region 3 - Property Locations

Figure 1


North Penn Area 6 Site:
Lansdale Boro, Pennsylvania
Location of Central Sprinkler, Inc. Source Area Property
W MAIN ST
S BROAD ST
COURTLAND ST
Lansdale Boro, PA / Montgomery Co.
Legend
North Penn 6 Boundaries
OU Designation:
OU 2,3
EPA
R3 GIS TEAM

Figure 2