U. S. EPA Superfund Program

Proposed Remedial Action Plan

North Penn Area 6 Superfund Site
Operable Unit 2, J.W. Rex Property
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

The United States Environmental Protection Agency (EPA) is issuing this Proposed Remedial Action Plan (Proposed Plan) to present the Preferred Alternative for a remedial action to address soil contamination (Operable Unit 2 or OU2) at a portion of the North Penn Area 6 Superfund Site (Site). This Proposed Plan addresses soil contamination only at the J.W. Rex Property portion of the Site. This Proposed Plan includes a summary of alternatives evaluated for the OU2 cleanup of soils at the J.W. Rex Property and provides the rationale for proposing the Preferred Alternative. The EPA is the lead agency for Site activities, and the Pennsylvania Department of Environmental Protection (PADEP) is the support agency.

EPA, in consultation with PADEP, will select a final soil remedy for the J.W. Rex Property after reviewing and considering all information submitted during the 30-day public comment period on the Proposed Plan to be held from March 30, 2018 to April 30, 2018.

EPA, in consultation with PADEP, evaluated the following alternatives for addressing soil contamination at the J.W. Rex Property:

Alternative 1: No Action
Alternative 2: Clay Cap and Institutional Controls
Alternative 3: Concrete/Asphalt Cap and Institutional Controls
Alternative 4: Geomembrane Cap and Institutional Controls
Alternative 5: Excavation, Off-Site Disposal, and Institutional Controls

Based on the available information, the Preferred Alternative proposed for public comment is **Alternative 5: Excavation, Off-Site Disposal, and Institutional Controls**.

The estimated cost for this alternative is $5,196,400. Although this is the Preferred Alternative, EPA and PADEP welcome the public's comments on all of the alternatives listed above. The public comment period ends on April 30, 2018. After the close of the public comment period and consideration of comments received, EPA will document selection of the remedy in a Record of Decision (ROD) for OU2. The public's comments and EPA's responses will be documented in the Responsiveness Summary section of the OU2 ROD. Therefore, the public is encouraged to review and comment on all alternatives presented in this Proposed Plan. EPA, in consultation with PADEP, may modify the Preferred Alternative or select another alternative response action presented in this Proposed Plan based on new information or public comments.

EPA is issuing this Proposed Plan 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).

This Proposed Plan highlights key information that can be found in greater detail in the OU2 Feasibility Study (FS) for the J.W. Rex Property and other documents contained in the Administrative Record file supporting selection of this OU2 remedial action for the J.W. Rex Property. 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 file for this action can be accessed at https://semspub.epa.gov/src/collections/03/AR/PAD980926976 (for documents relating to OU2, select the link for Remedial - 02) 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 8:30 am to 4:30pm
By appointment only

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 J.W. Rex Property. 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 Site includes the J.W. Rex Property located at 951 West Eighth Street in Lansdale, Pennsylvania, upon which industrial operations, including disposal, occurred in the past. The Site also includes other properties on which contamination from such operations has migrated or otherwise come to be located. The northern edge of the J.W. Rex Property was used as a dump by Lansdale Borough until 1954, at which time the J.W. Rex Company purchased the property. The former dump is currently an open field.

The industrial building on the J.W. Rex Property is currently used for heat-treating various metals to achieve a change in their properties. Activities performed for heat treatment of metals include degreasing, heating, and cooling. Since 1958, controlled degreasing has been performed in the industrial building at the J.W. Rex Property. From approximately 1958 to 1974, TCE was used for degreasing. After 1974, TCE was no longer purchased or used. From 1974 to 1984, degreasing was performed using tetrachloroethene (PCE). Since 1984, PCE has not been used at the J.W. Rex Property. All known receiving areas for TCE and PCE at the J.W. Rex Property are located between the large loading dock on the northeastern side of the industrial building and the storage room on the east side of the building. The spent chemicals were stored at the loading dock area prior to being shipped off-site.

Previous Environmental Investigations and Actions

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 J.W. Rex Property 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 was used to support the addition of the Site to the NPL in March 1989.

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), 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 potentially responsible parties at four of the properties have completed the work required at their respective properties under the RI/FS AOC. The J.W. Rex Property is one of the two remaining properties where OU2 soil contamination still needs to be addressed. This Proposed Plan pertains specifically to remediation of the OU2 soils at the J.W. Rex Property.

Several environmental sampling events have occurred to support the OU2 Remedial Investigation (RI) at the J.W. Rex Property. These included sampling groundwater, surface water, soil, and indoor air for a variety of contaminants. Data from these sampling events was used to determine if there are contaminants of concern (COCs) present at the J.W. Rex Property and assess the risks from the COCs.

In March 2017, an OU2 FS was completed at the J.W. Rex Property to identify alternatives for a remedial action based on the data collected during the previous investigations. The FS summarizes these investigations and identifies alternatives for addressing the risk presented by contaminated soil at the J.W. Rex Property. EPA will be the lead for conducting the remedial action associated with this Proposed Plan.

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 a Record of Decision for OU3 in 2000. The remedy set forth in the OU3 ROD consists of groundwater extraction and treatment, 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 J.W. Rex Property. 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 responsible parties. To date, EPA has installed groundwater extraction and treatment systems at five of the six EPA-lead properties. The need for a groundwater treatment system at the final EPA-lead property is currently being reassessed. The J.W. Rex Property is one of the four properties where the responsible party entered into a Consent Decree with EPA to implement the OU3 remedy. As a result, a treatment system has been built and is being operated at the J.W. Rex Property by the responsible party. As part of the OU3 groundwater remedy, the groundwater at the J.W. Rex Property is currently extracted and treated via air stripping and discharged into a nearby creek. Remedial design activities are underway to install systems at two of the four properties where the respective responsible parties entered into a Consent Decree with EPA to implement the OU3 remedy. The need for groundwater treatment is being reassessed at the fourth property where the responsible party has entered into a Consent Decree with EPA to implement the OU3 remedy.

C. SITE CHARACTERISTICS

The J.W. Rex Property occupies 13.3 acres, is zoned as industrial, and is expected to remain industrial in the foreseeable future. The J.W. Rex Property currently contains a commercial building and the industrial building, which is an active industrial facility. A map of the J.W. Rex Property is provided in Figure 2.

Residential homes are situated northwest of the J.W. Rex Property across Squirrel Lane. Railroad tracks border the eastern side of the J.W. Rex Property, and commercial and residential properties are situated to the southwest across Eighth Street. Ground elevations in the area range from approximately 300 to 330 feet above mean sea level (msl), with the ground sloping slightly to the north.

The following sections summarize EPA's current information regarding environmental conditions at the J.W. Rex Property and at the Site.

Soil

Because of the amount of construction in this area, not much native or undisturbed soil is expected to be present. Soil sampling conducted at the J.W. Rex Property showed that soil generally consists of silty-clay and some clayey-silt. The soil samples were collected at increasing depths until bedrock was reached, which mostly occurred between 11.5 and 12 feet below ground surface (bgs). Many of the samples contained thin layers of black cinders, sand, concrete, or stone.

Between 1996 and 2002, three rounds of soil sampling were conducted at the J.W. Rex Property. Additional soil sampling was conducted in 2009, and again in 2016, to address data gaps identified during review of the Final Baseline Risk Assessment (BRA) Report (May 2009). Figure 3 shows the locations of soil sampling. Soil at the J.W. Rex Property was found to be contaminated with 20 chemicals above EPA Risk-Based Concentrations (RBCs) after the first three rounds of soil sampling. Later risk assessment efforts utilized the Region 3 Regional Screening Levels (RSLs) which replaced RBCs as screening concentrations. The most significant exceedances included a family of compounds known as volatile organic compounds (VOCs). The VOCs detected at significant levels include 1,1-dichloroethene (DCE), *cis*-1,2-dichloroethene (*cis*-1,2-DCE), tetrachloroethene (PCE), trichloroethene (TCE), and vinyl chloride. Metals (hexavalent chromium and vanadium) and semi-volatile organic compounds (SVOCs) (benzo(a)pyrene equivalents (BAP)) were also detected in soils at the J.W. Rex Property. The area of highest soil contamination is in the northern field of the J.W. Rex Property, although contamination was found in soil samples throughout the J.W. Rex Property.

In 2009, additional soil sampling was conducted to confirm the high vanadium and BAP detections from previous soil investigations. The previous high detections of these contaminants could not be duplicated in the samples collected in 2009, and the Human Health Risk Assessment (HHRA) portions of the BRA were adjusted to remove the previous high detections. The soil sampling in 2016 was performed after vapor intrusion

(VI) investigations inside the industrial building indicated a possible source of contamination near a storage shed. The results of this sampling did not locate any additional sources on the exterior of the industrial building. No soil samples have been collected from underneath the industrial building itself, although the presence of high concentrations of VOC contamination in subslab VI samples indicates that sources of contamination may still be present underneath the building.

Surface Water

An unnamed tributary (designated Tributary No. 2) of the western branch of Neshaminy Creek flows through the southern portion of the J.W. Rex Property and continues northeast along the rail line, as shown in Figure 2. Neshaminy Creek and its tributaries generally flow eastward and ultimately discharge to the Delaware River. Generally, surface drainage at the J.W. Rex Property flows into channelized streams and then into Tributary No. 2. With the exception of the area immediately surrounding the tributary (i.e., within approximately 50 feet), the majority of the J.W. Rex Property is located outside of the 500-year flood plain.

Site Geology/Hydrogeology

The Site is located in the Gettysburg-Newark Lowland Section of the Piedmont Plateau physiographic province. Area geology for Lansdale, Pennsylvania includes beds of fractured rocks of the Brunswick Formation and the Lockatong Formation. The Brunswick Formation consists of Brunswick shale, which is reddish-brown shale interbedded with siltstone and sandstone. Brunswick shale is generally thin and bedding planes are irregular and discontinuous. The Lockatong Formation is a gray argillite interbedded with thin beds of gray/black calcareous shale and siltstone. The total thickness of the Brunswick Formation in Montgomery County is approximately 9,000 feet, but thins to zero at locations where the underlying unit outcrops.

Groundwater at the Site occurs mostly in joints and fractures in the bedrock. The intergranular porosity (the pore space between sedimentary grains of the sedimentary rock) in sandstone may act as storage for groundwater; however, groundwater flow through the primary porosity is limited. Aquifer test results indicate the presence of an unconfined aquifer condition underlying the J.W. Rex Property.

Topography may exert some influence on regional groundwater flow, but that influence has historically been largely eliminated in the central Lansdale area because of extensive well pumping. Central Lansdale acts as a hydraulic divide between groundwater flow generally to the northeast and to the southwest of the J.W. Rex Property. In addition, the elevations of potentiometric surfaces are much higher to the east of the J.W. Rex Property than to the west, corresponding to the subsurface geologic features. The Lockatong Formation is generally harder and less permeable than the Brunswick Formation, and outcrop to the east of the J.W. Rex Property. The lower permeability at higher topographic elevations to the east of the J.W. Rex Property tends to result in higher groundwater elevations.

Five wells are located at the J.W. Rex Property: REX-1 is 385 feet deep and REX-2D (deep) is 615 feet deep. Well REX-2S (shallow) was drilled to 50 feet bgs, well REX-3S was drilled to 65 feet bgs, and REX-3I (intermediate) was drilled to 150 feet bgs. Based on previous studies, it was determined that the groundwater at the J.W. Rex Property is contaminated. The primary COC for the groundwater at the J.W. Rex Property is TCE. Per the OU3 ROD, a groundwater treatment system was installed to provide groundwater remediation of COCs at the J.W. Rex Property. The groundwater treatment strategy includes the following: groundwater is continuously pumped from wells REX-1 and REX-2S, sent to an air stripping tower to remove contaminants, and then discharged to Neshaminy Creek via an outfall to the unnamed tributary east of the industrial building. Discharge of treated groundwater is governed by the substantive provisions of the National Pollutant Discharge Elimination System (NPDES) regulations.

Indoor Air

EPA conducted VI sampling events inside the industrial building on the J.W. Rex Property on three occasions: in April 2013, December 2014, and March 2016. In April 2013 and March 2016, ambient indoor and outdoor air samples were collected, as well as subslab samples. During the December 2014 sampling event, only ambient indoor air samples were collected. The ambient indoor and outdoor air sample results were initially screened by comparing the values of the detected contaminants to their respective industrial worker air levels from the Regional Screening Levels (RSLs) Summary Table. VOCs were detected in the indoor air at levels that exceeded the RSLs for carcinogenic effects. Subslab air results were multiplied by an attenuation factor (AF) of 0.03 to simulate potential ambient air concentrations and then compared to their respective industrial worker ambient air RSLs. VOCs were detected in the subslab at levels that exceeded the RSLs for both carcinogenic and non-carcinogenic effects based on the attenuated concentrations.

D. SCOPE AND ROLE OF RESPONSE ACTION

This Proposed Plan for OU2 addresses soils at the J.W. Rex Property portion of the Site. The Remedial Action Objectives (RAOs) for this action are as follows:

- Prevent direct contact with soils contaminated with COCs at levels which are associated with a 1E-04 excess cancer risk or hazard index greater than 1.0.

- Prevent potential future exposure to COCs via vapor intrusion which poses a 1E-04 excess cancer risk or hazard index greater than 1.0.

- Prevent migration of contaminants in soil that would result in groundwater contamination in excess of the EPA maximum contaminant level (MCL) or other risk-based standard.

The RAOs are described in additional detail in Section F.

OU3 addresses groundwater contamination at the Site, including groundwater at the J.W. Rex Property. The OU3 remedial action at the J.W. Rex Property, which includes a groundwater extraction and treatment system, has been constructed and is currently in operation. There is no direct groundwater treatment associated with this OU2 response action; however, the contaminated soils that are addressed by this OU2 response action may contribute to groundwater contamination through infiltration. Therefore, by addressing the contaminated soils, it is anticipated that this OU2 response action will contribute to reducing groundwater contamination in the future.

EPA characterizes waste on-site as either principal threat waste or low-level threat waste. The concept of principal threat waste and low-level threat waste, as developed by EPA in the NCP, is applied on a site-specific basis when characterizing source material. "Source material" is defined as material that includes or contains hazardous substances, pollutants, or contaminants, and acts as a reservoir for migration of contamination to groundwater, surface water, or air, or acts as a source for direct exposure. Principal threat wastes are those source materials considered to be highly toxic or highly mobile, which would present a significant risk to human health or the environment should exposure occur. The soils at the J.W. Rex Property may be characterized as source material because the soils contain hazardous substances and act as a reservoir for migration of contamination to groundwater and air and act as a source for direct contact exposure. The soils at the J.W. Rex Property may be considered principal threat wastes because they would present a significant threat to human health or the environment should exposure occur. The following section discusses in greater detail the risks to human health and the environment from exposure to contamination in the soils at the J.W. Rex Property. The proposed OU2 remedial action at the J.W. Rex Property is intended to permanently reduce the toxicity, mobility, and volume of those source materials that constitute the principal threat wastes at the J.W. Rex Property.

WHAT IS A "PRINCIPAL THREAT"?

The NCP establishes an expectation that EPA will use treatment to address the principal threats posed by a site wherever practicable (NCP Section 300.430(a)(1)(iii)(A)). The "principal threat" concept is applied to the characterization of "source materials" at a Superfund site. A source material is material that includes or contains hazardous substances, pollutants or contaminants that act as a reservoir for migration of contamination to ground water, surface water or air, or acts as a source for direct exposure. Contaminated ground water generally is not considered to be a source material; however, Non-Aqueous Phase Liquids (NAPLs) in ground water may be viewed as source material. Principal threat wastes are those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained, or would present a significant risk to human health or the environment should exposure occur. The decision to treat these wastes is made on a site-specific basis through a detailed analysis of the alternatives using the nine remedy selection criteria This analysis provides a basis for making a statutory finding that the remedy employs treatment as a principal element.

E. SUMMARY OF SITE RISKS

As part of the OU2 RI for the J.W. Rex Property, a baseline risk assessment (BRA) was undertaken to identify the potential risks to human health and the environment that could result from exposure to the hazardous substances associated with the J.W. Rex Property. The Final BRA (May 2009) provides the basis for taking action and identifies the contaminants, media, and exposure pathways that need to be addressed by the remedial action at the J.W. Rex Property. The BRA performed for the J.W. Rex Property evaluated the potential risks from exposure to contamination found in soils investigated during the OU2 RI. A separate BRA was performed for groundwater at the J.W. Rex Property and other properties included in the Site as part of the OU3 RI and ROD.

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.

As described above in Section C, Site Characteristics, the current land use of the J.W. Rex Property is industrial. The use of the J.W. Rex Property is expected to remain industrial in the near-future. However, the J.W. Rex Property is surrounded by a mixture of commercial and residential properties. Both industrial and residential exposure scenarios were considered in the BRA for future land use at the J.W. Rex Property, in the event the use of the J.W. Rex Property changes, to ensure the selected alternative will remain protective into the future.

The BRA identified an unacceptable human health risk associated with the contamination in the soils at the J.W. Rex Property under both industrial and residential exposure scenarios. It is EPA's current judgment that the Preferred Alternative identified in this Proposed Plan, or one of the other alternatives considered in this Proposed Plan (other than Alternative 1, No Action), is necessary to protect public health or welfare or the environment from actual or threatened releases of hazardous substances, pollutants, and contaminants into the environment. A detailed discussion of the HHRA and ecological risk assessment (ERA) for the J.W. Rex Property is included in the Final BRA (May 2009) and the Final FS (March 2017) reports for the J.W. Rex Property. The results of the Final BRA are summarized below. In accordance with EPA Region III guidance, risk-based screening was performed initially to identify contaminants of potential concern (COPCs) in soil at the J.W. Rex Property which required further evaluation during the human health and ecological risk assessments.

Human Health Risks

The NCP establishes a range of acceptable cancer risk for Superfund sites from one in ten thousand to one in one million additional cancer cases, expressed in scientific notation as lE-04 to lE-06, over a lifetime exposure to site-related contaminants. In comparison, the chance of a person developing cancer from other causes (e.g., smoking or excess sun exposure) has been estimated to be as high as one in three.

Additionally, chemicals that are ingested, inhaled, or absorbed through the skin may present non-cancer risks to different organs of the human body. The non-carcinogenic risks, or toxic effects, are expressed as a Hazard Quotient calculated for the effect of each COPC on each target human organ; the cumulative risk is expressed as a Hazard Index (HI). If an HI is less than one (1.0), then exposure to site conditions is not expected to result in adverse effects during a lifetime or part of a lifetime. The NCP establishes an HI exceeding one (1.0) as an unacceptable non-carcinogenic risk.

Human health COCs are determined by performing a site-specific risk analysis for each COPC and each pathway to indicate areas of current or potential future risk that exceed EPA's acceptable risk level of lE-04 to lE-06 for carcinogens or exceed an HI of 1 for non-carcinogens. Table 1 summarizes COCs for human health risk from soil at the J.W. Rex Property by exposure pathway.

The direct contact exposure pathway includes risks associated with direct ingestion, inhalation, or absorption through the skin, by direct contact with soils that are contaminated with the COCs.

Table 1: Human Health Contaminants of Concern by Exposure Pathways

Direct Contact	Vapor Intrusion (VI)	Soil to Groundwater
TCE	PCE	1,1-DCE
Hexavalent Chromium Cr(VI)	TCE	*cis*-1,2-DCE
	Vinyl Chloride	PCE
		TCE
		Vinyl chloride
		Cr(VI)

The VI pathway is associated with inhalation of hazardous vapors which are formed when certain chemicals such as VOCs are released into the subsurface. Those vapors can be transported through unsaturated soils and eventually enter buildings through cracks or other conduits in basement floors, walls, or foundations. The VI pathway was evaluated by collecting samples of air from the interior and beneath the foundation of the industrial building.

The soil-to-groundwater pathway is associated with the migration of contamination from the soil to the groundwater below via infiltration. Groundwater that becomes contaminated can then present a risk to receptors that are exposed via direct contact to the contaminated groundwater.

The potential human health risks associated with exposure to contaminated soils found at the J.W. Rex Property are summarized in Table 2. Table 2 includes the risks calculated for populations that exceed the acceptable risk range in the media and potential pathways for exposure. Potential carcinogenic risks exceed the acceptable risk range for future industrial workers and future residents (child + adult). The carcinogenic risks are associated with the VI pathway. Potential non-carcinogenic risks exceed an HI of 1.0 for future industrial workers, future resident children, and future resident adults. The non-carcinogenic risks are associated with VI and, in the case of future resident children, with direct contact with contaminated soils. Note that the soil-to-groundwater pathway is not included in Table 2. The soil-to-groundwater pathway was evaluated by comparing contaminant concentrations in the soil to the EPA Region III soil-to-groundwater soil screening levels (SSLs). Table 1 includes a list of the COCs that had exceedances of the soil-to-groundwater SSLs. More detailed discussions of the soil-to-groundwater screening can be found in the Final BRA (May 2009) and the Final FS (March 2017) reports for the J.W. Rex Property.

The carcinogenic or cancer risk to future industrial workers at the J.W. Rex Property due to exposure to contaminated soil from the VI pathway was calculated at 2.7E-03, or about 27 additional cancer cases for every 10,000 people exposed. The HHRA also calculated a total HI for non-carcinogenic risk for future industrial workers for the VI pathway at 250. The cumulative carcinogenic risk to future residents (child + adult) due to exposure to contaminated soils for the VI pathway was calculated at 3.5E-02, or about 35 additional cancer cases for every 1,000 people exposed. The HHRA also calculated total HIs for non-carcinogenic risk for future adult and child residents for the VI pathway at 1,100. For the direct contact pathway, an HI for non-carcinogenic risk for the future child resident was calculated at 3.7. Each of these exposure scenarios exceeded the acceptable range established in the NCP of lE-04 to lE-06 for carcinogenic risk and an HI of 1.0 for non-carcinogenic risk.

Table 2: Human Receptor Population Exposures to Contaminated Soil that Exceed Acceptable Risk Range

Receptor Population	Exposure Pathway	Total Hazard Index (HI) Non-carcinogenic Risk	Cumulative Carcinogenic Risk
Future Industrial Worker	Vapor Intrusion*	250	2.7E-03
Future Resident Child	Direct Contact	3.7	--**
Future Resident Child	Vapor Intrusion*	1,100	N/A***
Future Resident Adult	Vapor Intrusion*	1,100	N/A***
Future Resident (Child + Adult)	Vapor Intrusion*	N/A****	3.5E-02

* Future vapor intrusion risks were calculated by applying an attenuation factor of 0.03 to sub-slab sampling results.
** The direct contact carcinogenic risk for the future child resident was calculated. However, the value did not exceed the acceptable risk range and is therefore not included in this table.
*** For future residential carcinogenic risk, a 30-year exposure beginning at birth (child + adult) is evaluated in the HHRA.
**** For non-carcinogenic risk, residential child and residential adult are evaluated independent of each other in the HHRA.

Ecological Risks

An ERA evaluates the potential for risks due to exposure to site contaminants by ecological receptors (such as small mammals, birds, and plants). The ERA for the J.W. Rex Property was performed to identify the potentially affected natural environment, distribution of contamination, fate and transport of contaminants, exposure pathways, and to develop a list of contaminants of potential ecological concern (COPECs).

The ERA consisted of a screening level assessment to identify COPECs and a more detailed examination of potential effects of the COPECs on site-specific flora and fauna. The Screening-Level Ecological Risk Assessment (SLERA) incorporated site-specific exposure assumptions and conditions to quantitatively demonstrate whether unacceptable risks are associated with exposure of ecological receptors to soils at the J.W. Rex Property. The ERA considered both direct exposure of soil invertebrates and plants as well as food chain exposure of two herbivorous mammals (white footed mouse and deer mouse) and an insectivorous avian receptor (American robin) to bioaccumulative compounds. The results of the SLERA evaluation support the conclusion that exposure to soil COCs is not resulting in adverse effects in plants, soil invertebrates, and small mammal and bird populations at the J.W. Rex Property. As a result, no further assessment of ecological risk was performed beyond the SLERA and no ecological COCs were identified. A complete discussion of the ERA can be found in the Final BRA (May 2009) and the Final FS (March 2017) reports for the J.W. Rex Property.

F. REMEDIAL ACTION OBJECTIVES

The Remedial Action Objectives (RAOs) have been developed to address the COCs and exposure pathways listed in the previous section. These RAOs will be the basis for evaluation of remedial alternatives.

The RAOs describe both the exposure pathway to be addressed as well as the acceptable risk criteria that serve as the basis for the cleanup level. The RAOs developed for soil at the J.W. Rex Property are as follows:

- Prevent direct contact with soils contaminated with COCs at levels which are associated with a 1E-04 excess cancer risk or hazard index greater than 1.0.
- Prevent potential future exposure to COCs via vapor intrusion which poses a 1E-04 excess cancer risk or hazard index greater than 1.0.
- Prevent migration of contaminants in soil that would result in groundwater contamination in excess of the EPA maximum contaminant level (MCL) or other risk-based standard.

With the exception of hexavalent chromium (Cr(VI)), all of the COCs associated with the soil-to-groundwater pathway have a MCL that is used to determine their respective soil cleanup level. MCLs, codified at 40 C.F.R. Part 141, are the maximum permissible levels of a contaminant in public water supplies under the federal Safe Drinking Water Act. Because Cr(VI) does not have a MCL, the EPA Region III risk-based Regional Screening Level for Tapwater using a 1E-05 excess cancer risk endpoint was used to determine the soil cleanup level for Cr(VI).

Soil cleanup levels were calculated for the direct contact and soil-to-groundwater RAOs. The final cleanup level was determined by comparing the direct contact and soil-to-groundwater cleanup levels for each COC and selecting the lower of the two. This provides the most conservative approach for the protection of public health. Table 3, below, summarizes the final soil cleanup levels for each COC.

Table 3: Soil Cleanup Levels

COC	Cleanup Level (mg/kg)
1,1-Dichloroethene (1,1-DCE)	0.162
cis-1,2-Dichloroethene (*cis*-1,2-DCE)	1.52
Tetrachloroethene (PCE)	0.162
Trichloroethene (TCE)	0.129
Vinyl chloride	0.043
Hexavalent chromium Cr(VI)	0.44

Figure 3 shows the approximate areas that are expected to exceed the soil cleanup levels in Table 3. These areas are depicted in Figure 3 as "Area[s] of Soil Remediation," and are based on the locations of soil samples from the OU2 RI that exhibited concentrations of COCs above their respective cleanup levels. These areas in Figure 3 were used in the development of the remedial alternatives as the areas that are anticipated to require remediation.

G. SUMMARY OF REMEDIAL ALTERNATIVES

The alternatives evaluated below will be designed to meet the RAOs listed in the previous section. Superfund law and regulations require that the alternative chosen to clean up a contaminated site meet several criteria. The alternative must protect human health and the environment and meet legally applicable and relevant and appropriate Federal and State cleanup requirements. Permanent solutions to contamination, which reduce the volume, toxicity, or mobility of the contaminants, should be developed wherever possible. Emphasis is also placed on treating the wastes at a site whenever possible, and on applying innovative technologies to clean up the contaminants.

The remedial alternatives evaluated for the OU2 remedial action for soils at the J.W. Rex Property are presented below. The Preferred Alternative is Alternative 5: Excavation, Off-Site Disposal, and Institutional Controls.

Remedial Alternatives Evaluated for Soils at J. W. Rex Property

Alternative	Description
1	No Action
2	Clay Cap and Institutional Controls (ICs)
3	Concrete/Asphalt Cap and ICs
4	Geomembrane Cap and ICs
5	Excavation, Off-Site Disposal, and ICs

Common Elements

Other than the No Action alternative, all alternatives include an institutional controls (IC) component to address potential Site-related contamination underneath the existing industrial building, existing commercial building, and any future buildings at the J.W. Rex Property. While the VI indoor air sampling conducted thus far in the industrial building does not indicate that there is a current unacceptable risk to the workers inside that building, the VI subslab sampling conducted in the industrial building indicates the potential for future risk to both workers as well as residents if the use of the industrial building changes. Additionally, while VI sampling has not been conducted in either the commercial building or the soils exterior to the buildings, the potential for VI exists if new buildings are constructed anywhere on the J.W. Rex Property, as VOC contamination may migrate from contaminated soils to the interior of any new buildings through preferential pathways such as utility conduits or through cracks in the foundations of those buildings. Therefore, ICs are necessary to prevent potential future exposure.

ICs for the existing industrial and commercial buildings would require an additional assessment of subsurface soils to characterize the extent of soil contamination underneath the buildings, if any future use of the buildings allows for access to sample the soils underneath the buildings. Based on the results of the evaluation, the following actions would be required:

- If the evaluation indicates the potential for VI and the detected indoor air concentrations are equal to or exceed applicable EPA acceptable risk criteria, an engineered vapor barrier or other vapor mitigation system would be installed, maintained and monitored.
- If the evaluation indicates the potential for VI, but indoor air concentrations do not equal or exceed EPA acceptable risk criteria, an engineered vapor mitigation system would be designed and installed or the indoor air would be sampled regularly to determine if VI is occurring.
- If the evaluation indicates levels of contaminants that exceed the soil cleanup levels in Table 3 established for the direct contact and soil-to-groundwater pathways, the areas with exceedances would be remediated in accordance with the selected remedy.

In addition to the potential for VI within the existing industrial and commercial buildings, there is a potential for VI throughout the entire J.W. Rex Property. Therefore, ICs would be needed to address any future buildings constructed on the J.W. Rex Property. For all alternatives, the ICs component of the remedy would also require additional testing for VI in future developments across the entire J.W. Rex Property to address potential future risks of VI. Based on the results of the additional VI evaluation, the following actions would be required:

- If the evaluation demonstrates the potential for unacceptable risks based on EPA's acceptable risk criteria through the VI pathway, all new habitable buildings constructed on the J.W. Rex Property would include, at a minimum, a foundation vapor barrier and the subsurface piping for a sub-slab depressurization system. Prior to occupancy, the indoor air in all new habitable buildings would be tested to determine if the vapor barrier and subsurface piping are effective at reducing the indoor air concentrations to within EPA acceptable risk criteria.
- If indoor air concentrations are equal to or exceed EPA acceptable risk criteria, a subslab mitigation system which actively withdraws vapors from the subslab and removes them away from the indoor space would be operated and maintained to ensure indoor air concentrations are within EPA's acceptable risk criteria while the building is inhabited and until EPA determines that the groundwater contamination no longer poses a VI risk.

The ICs would be implemented through an enforceable mechanism such as, but not limited to, a judicial consent decree, administrative order, or an Environmental Covenant pursuant to the Pennsylvania Uniform Environmental Covenants Act, Act No. 68 of 2007, 27 Pa. C.S. §§ 6501-6517 ("UECA").

All alternatives rely on a description of the J.W. Rex Property developed during the RI/FS. Analytical results of initial soil samples were screened against screening levels. Soil samples with exceedances of the screening levels were grouped into Areas of Concern (AOCs). Initially there were six AOCs. Subsequent sampling efforts were conducted on other portions of the J.W. Rex Property and these soil sampling results were grouped into two areas, known as “None Inside Fence” (NIF) and “None Outside Fence” (NOF). During the development of the BRA, these soil sample groups were combined into three exposure areas (EA) for the purpose of calculating risk. These three EAs are known as the Facility EA, Non-Facility-1 EA, and Non-Facility-2 EA.

- Facility EA consists of AOC 1, AOC 2, AOC 3, and NIF
- Non-Facility-1 EA consists of AOC 4, AOC 5, and AOC 6
- Non-Facility-2 EA consists of NOF

The Facility EA roughly comprises all soil samples collected around the main industrial facility on the J.W. Rex Property within the fence line. The Non-Facility-1 EA comprises soil samples that exceeded screening levels which were located outside the facility fence line in the northern portion of the J.W. Rex Property where a historic dump is purported to have been located. The Non-Facility-2 EA includes all remaining soil samples on the J.W. Rex Property outside the facility fence line which are not included in the Non-Facility-1 EA. Because all soil samples in the Non-Facility-2 EA were below screening levels, the Non-Facility-2 EA was not evaluated further for risk. Figure 3 shows the locations of the Facility EA and Non-Facility-1 EA. Further discussion of the alternatives utilizes this terminology when discussing how the respective alternatives will be implemented.

All capping alternatives (Alternatives 2, 3, and 4) share many similar features. All caps would require the installation of the cap over soils exceeding the soil cleanup levels set forth in Table 3. The purpose of all the caps would be to provide a physical barrier to prevent direct contact with contaminated soils and to minimize infiltration in order to prevent further soil-to-groundwater migration of contamination. The cap alternatives would include a 25-foot buffer around the areas of contamination to minimize infiltration at the cap edges and to allow for necessary sloping and drainage. All caps would require installation of a stormwater management system to limit erosion of the cap and yearly inspections and maintenance to ensure the cap is functioning as designed. Construction of each of the caps would require compliance with Resource Conservation and Recovery Act (RCRA) applicable and relevant and appropriate requirements (ARARs) and related State ARARs to ensure permeability standards are met. The technology and materials required for construction of the caps are readily available and reliable. Construction of all the cap alternatives would require compliance with the action-specific ARARs for erosion and sediment control and fugitive air emissions as noted in Table 4. All of the capping alternatives would require ICs, including activity and use restrictions, to ensure the caps are not disturbed and remain protective.

Further details regarding all of the alternatives can be found in the OU2 FS, which is located in the Administrative Record file for the Site.

Alternative 1: NO ACTION

Consideration of a no action alternative is required by the NCP and CERCLA. Alternative 1 would require no additional remedial action to be taken at the J.W. Rex Property. The No Action alternative serves as a basis against which the effectiveness of all the other proposed alternatives can be compared. Under this alternative, the J.W. Rex Property would remain in its present condition, and soil contamination would be subject to natural remediation processes only.

Alternative 2: CLAY CAP AND INSTITUTIONAL CONTROLS

Alternative 2 would require installation of a compacted clay cap over soils exceeding the soil cleanup levels in Table 3, and over an additional buffer of 25 feet to minimize infiltration at the cap edges and to allow for necessary sloping and drainage (see Figure 4). The clay cap would be installed in the Non-Facility-1 EA over existing soil. In the Facility EA, where there is currently concrete or asphalt cover, the concrete or asphalt would be removed and a clay cap would be installed. A stormwater management system would be installed to limit erosion of the cap, and yearly inspections and maintenance would be necessary to ensure that the cap is functioning as designed. Figure 4 presents the approximate sizes and shapes of the clay cap areas for Alternative 2.

Alternative 3: CONCRETE/ASPHALT CAP AND INSTITUTIONAL CONTROLS

Alternative 3 would require the installation of a concrete and/or asphalt cap in the Non-Facility-1 EA over soils exceeding the soil cleanup levels in Table 3, and over an additional buffer of 25 feet to minimize infiltration at the cap edges and to allow for necessary sloping and drainage (see Figure 5). Concrete and/or asphalt currently exists in the Facility EA as parking lots and access roads around the industrial building (see Figure 5); the concrete and/or asphalt areas act as an impervious surface, preventing infiltration of groundwater throughout the area. Surface re-grading may be required in specific areas. A stormwater management system would be installed in the Non-Facility-1 EA to limit erosion of the cap, and yearly inspections and maintenance would be necessary to ensure that the cap is functioning as designed. Figure 5 presents the approximate sizes and shapes of the concrete and/or asphalt cap areas for Alternative 3.

Alternative 4: GEOMEMBRANE CAP AND INSTITUTIONAL CONTROLS

Alternative 4 would require installation of a geomembrane cap in the Facility EA and/or Non-Facility-1 EA over soils exceeding the soil cleanup levels in Table 3, and over an additional buffer of 25 feet to minimize infiltration at the cap edges and to allow for necessary sloping and drainage (see Figure 6). In the Facility EA, where there is currently concrete or asphalt cover, the concrete or asphalt would be removed and a geomembrane cap would be installed. Some re-grading of the geomembrane cap areas may be required to meet stormwater drainage requirements. Clean fill would be placed over the geomembrane cap and re-vegetated as a protective layer for the geomembrane cap. A stormwater management system would be installed to limit erosion of the geomembrane cap, and yearly inspections and maintenance will be necessary to ensure that the geomembrane cap is functioning as designed. Figure 6 presents the approximate sizes and shapes of the geomembrane cap areas for Alternative 4.

Alternative 5: EXCAVATION, OFF-SITE DISPOSAL, AND INSTITUTIONAL CONTROLS

Alternative 5 would require excavation to remove soils exceeding the soil cleanup levels in Table 3. This alternative would eliminate the human health risks posed by direct contact with soils exceeding the soil cleanup levels and would protect the environment by removing the soils impacted by COCs to prevent further transport of COCs from the soil to the groundwater. Soil would be mechanically excavated by an excavator or front-end loader using conventional construction methods. Excavation activities would be scheduled during normal business hours (to the greatest extent practicable) to minimize disruption to surrounding residential areas, and the excavated areas would be protected with temporary fencing and warning signs at the conclusion of daily activities. In the portion of the Facility EA where there is currently concrete or asphalt cover over the "areas of soil remediation" depicted in Figure 7, the concrete or asphalt would be removed, and soils exceeding the soil cleanup levels in Table 3 would be excavated. Excavation in the Facility EA would be conducted in stages to minimize the footprint impact on the operations associated with the industrial building. Excavation activities in the Facility EA and the Non-Facility-1 EA would require compliance with the action-specific ARARs for erosion and sediment control and fugitive air emissions as noted in Table 4, including perimeter air monitoring to ensure the surrounding residential and commercial areas are not adversely impacted by the excavation activities. Figure 7 presents the approximate excavation areas and soil staging (stockpile) area for Alternative 5.

Soil samples would be collected from soil in the excavated areas and analyzed to confirm complete excavation of soil exceeding the soil cleanup levels. Additional excavation may be required based on the results of the confirmation sampling. One bottom confirmation sample would be collected for every 25-foot by 25-foot excavation area. One sidewall confirmation will be collected for every 25 feet of excavated sidewall.

Excavated soil would be properly stockpiled on-site for RCRA disposal classification. Stockpiled soils would be covered at the conclusion of daily operations to minimize dust and erosion. Silt fencing would be placed around the staged soils. Disposal actions would require compliance with action-specific ARARs for identification of hazardous wastes and, if any soil is characterized as hazardous waste, disposal actions would require compliance with action-specific ARARs for generators of hazardous waste (Table 4). Options for off-site disposal of soil would depend on the COC concentrations of the stockpiled soil. Any soil exceeding RCRA Toxicity Characteristic Leaching Procedure (TCLP) criteria would qualify as characteristic hazardous waste. Stockpiles would be sampled for RCRA hazardous waste characterization. Soil characterized as hazardous waste would be transported in accordance with applicable U.S. Department of

Transportation regulations and disposed of in accordance with applicable RCRA regulations at a RCRA Subtitle C facility. Soil characterized as non-hazardous waste would be disposed of at a RCRA Subtitle D facility. It is estimated that roughly 4,422 cubic yards of soil would be disposed at a RCRA Subtitle C facility and 13,389 cubic yards of soil would be disposed at a RCRA Subtitle D facility.

Upon completion of confirmation sampling and analysis, reconstruction activities would be conducted at the J.W. Rex Property to mitigate the impacts of excavation. Reconstruction activities would include placement and compaction of clean soil to stabilize the excavation area. The clean soil used would be "clean fill" as defined in PADEP's "Management of Fill" policy, dated August 7, 2010. Revegetation efforts would consist of site-appropriate grasses. Reconstruction areas would be covered at the conclusion of daily operations to minimize dust and erosion. A landscaping mesh would be laid down just prior to the application of site-appropriate grasses to minimize erosion while the grasses are rooting. Areas that were not originally covered with grass would be repaired using the original cover material (e.g., if the area was concrete, then the final repair for that area would be concrete). Reconstruction activities would require compliance with the action-specific ARARs for erosion and sediment control and fugitive air emissions as noted in Table 4. The "Area[s] of Soil Remediation" depicted in Figure 7 are the approximate areas of soil excavation for Alternative 5.

H. EVALUATION OF ALTERNATIVES

In this section, the remedial alternatives summarized above are evaluated individually and against each other using the nine criteria set forth in 40 C.F.R. § 300.430(e)(9)(iii). In the remedial decision-making process, EPA profiles the relative performance of each alternative against the evaluation criteria, noting how each alternative compares to the other options under consideration. A detailed analysis of alternatives can be found in the OU2 FS, which is 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 groups described as follows:

Threshold criteria must be satisfied in order for an alternative to be eligible for selection.

Primary balancing criteria are used to weigh major tradeoffs among alternatives.

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) does not include measures to prevent current and future receptors from exposure to contaminated soil. The Final BRA indicates that contaminants would present unacceptable risk if human receptors were exposed to the contaminated soil. If action is not taken, contaminated soil could expose the public to unacceptable levels of Site-related contaminants via the direct contact and vapor intrusion pathway. Movement of contaminants from the soil to groundwater also has the potential to expose human receptors to contaminants via direct contact with contaminated groundwater if no action is taken. Therefore, Alternative 1 would not be protective of human health and the environment. Because the No Action alternative would not be protective of human health and the environment and fails the threshold criteria, it is eliminated from further consideration under the remaining eight criteria.

Alternatives 2, 3, and 4 would provide adequate protection of human health and the environment by creating a physical barrier between the contaminated soil and human receptors. The caps in these alternatives would prevent potential direct contact with contaminated Site soil, and prevent exposure to contaminants via the VI pathway. These alternatives would also minimize the infiltration of contamination through the soil, which would reduce the potential for contaminants to migrate to the groundwater and expose the public via direct contact with contaminated groundwater. The ICs in these alternatives would ensure that the caps are maintained and continue to remain protective. The ICs would also prevent future potential exposure to contaminants via administrative controls on future land use and development.

Alternative 5 would also provide protection of human health and the environment. Excavation and off-site disposal of soils exceeding the soil cleanup levels would eliminate risks associated with direct contact with contaminated soils and prevent further migration of COCs to the Site groundwater. Confirmation sampling will be used to verify that Alternative 5 is effective in attaining the RAOs. As with Alternatives 2, 3, and 4, ICs would also prevent future potential exposure to contaminants via administrative controls on future land use and development.

2. Compliance with ARARs

Section 121(d) of CERCLA, 42 U.S.C. § 9621(d), and the NCP at 40 C.F.R. § 300.430(f)(1)(ii)(B), require that remedial actions at CERCLA sites at least attain legally applicable or relevant and appropriate Federal and State requirements, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under Federal or State law, which are collectively referred to as "ARARs," unless such ARARs are waived under Section 121(d)(4) of CERCLA, 42 U.S.C. § 9621(d)(4), and the NCP at 40 C.F.R. § 300.430(f)(1)(ii)(C).

"Applicable" requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under Federal environmental or State environmental or facility-siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site. Only those State standards that are identified by a State in a timely manner and that are more stringent than Federal requirements may be applicable.

"Relevant and appropriate" requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under Federal environmental or State environmental or facility-siting laws that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well-suited to the particular site. Only those State standards that are identified by a State in a timely manner and that are more stringent than Federal requirements may be relevant and appropriate.

For Alternatives 2, 3, and 4, as required under Section 121(d) of CERCLA, 42 U.S.C. § 9621(d), all the components of the caps would comply with Federal and State ARARs. Major ARARs include RCRA landfill cap standards and ARARs for erosion and sediment control and fugitive air emissions.

Alternative 5 would also comply, as required under Section 121(d) of CERCLA, 42 U.S.C. § 9621(d), with Federal and State ARARs. Major ARARs include identification of hazardous waste under RCRA, and standards for generators of hazardous waste under RCRA that govern how excavated soil is handled and disposed. Other major ARARs include standards for erosion and sediment control and fugitive air emissions.

A list of major ARARs is provided in Table 4 (attached). ARARs will be described in further detail in the OU2 ROD for the J.W. Rex Property.

3. Long Term Effectiveness and Permanence

Long-term effectiveness and permanence addresses expected residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup goals have been met. Alternative 5 is preferable to the other alternatives for this balancing criterion.

Alternatives 2, 3, and 4 would effectively reduce the potential for long-term and recurrent direct contact exposures for human receptors. These alternatives would also be effective in reducing the long-term environmental risk by minimizing infiltration and reducing contaminant migration. RAOs could be achieved in the long-term as all current exposure scenarios are prevented. However, long-term monitoring and maintenance of the caps would be required to ensure the adequacy and reliability of these alternatives over time. The IC components of these alternatives would provide long term effectiveness and permanence by creating administrative controls to prevent future potential risks associated with VI and potential risks from the soil beneath the buildings.

Alternative 5 removes soil with contaminant levels above the soil cleanup levels, thus providing greater long-term effectiveness and permanence in the areas of soil excavation. Alternative 5 is more effective than Alternatives 2, 3, and 4 in achieving long term effectiveness and permanence because under Alternative 5, no residual risk associated with the direct contact and migration of contaminants from soil to groundwater pathways would remain after this alternative is implemented. The IC components of Alternative 5 would provide long term effectiveness and permanence by creating administrative controls to prevent future potential risks associated with VI and potential risks from the soil beneath the buildings.

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

Reduction of toxicity, mobility, or volume through treatment addresses the anticipated performance of the treatment technologies a remedy may employ. None of the alternatives includes treatment technologies. Technologies which employ treatment were identified during the technology screening portion of the OU2 FS, but none were carried forward due to significant issues with effectiveness and implementability. Therefore, the alternatives are compared based on reduction of toxicity, mobility or volume of the contamination. Alternative 5 is preferable to the other alternatives for this balancing criterion.

As stated above, Alternatives 2, 3, and 4 do not include treatment of contaminants. As a result, no amount of hazardous materials would be destroyed or treated, and no reduction in the toxicity or volume of the contaminants would be expected. However, these alternatives would reduce the mobility of the contaminants by preventing infiltration of precipitation from mobilizing contamination towards the groundwater.

Alternative 5 also does not employ treatment as a component. However, the excavation and off-site disposal of the contaminated soils would significantly and permanently reduce the toxicity, mobility, and volume of contamination at the Site. Any residual contamination would be below levels that would present a threat via either the direct contact or soil to groundwater pathway.

5. Short-Term Effectiveness

Short-term effectiveness addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation period until cleanup levels are achieved.

Alternatives 2, 3, and 4 require construction activities to build the cap and stormwater management system. The community and workers would be protected during this construction through monitoring of the site perimeter and adherence to a health and safety plan. The health and safety plans for each of these alternatives would include requirements for the use of personal protective equipment (PPE), environmental monitoring, and site access controls during implementation to ensure workers and the public are not exposed to potentially unacceptable levels of contamination. These alternatives would not generate additional on-site or off-site adverse environmental impacts. It is anticipated that construction of these alternatives would take approximately one and one-half months.

Alternative 5 requires disturbance of the subsurface soils and staging of contaminated soils on-site. As a result, workers and the public would potentially be at greater risk during this time to exposure to contamination via direct contact. However, the community and workers would be protected during this construction through adherence to a health and safety plan. The health and safety plan would include requirements for the use of PPE, environmental monitoring, and site access controls during the implementation of Alternative 5 to ensure workers and the public are not exposed to potentially unacceptable levels of contamination. The alternative would not generate additional on-site or off-site adverse environmental impacts. Excavation, disposal, and restoration activities are expected to meet performance standards within a six-month time frame.

6. Implementability

Implementability addresses the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a particular option. Alternatives 2, 3, 4, and 5 all use technology and materials that are readily available and reliable.

For Alternatives 2, 3, and 4, construction of the caps and monitoring and maintenance activities are not expected to present difficulties. For Alternative 5, soil excavation and off-site disposal is a commonly employed technique that utilizes readily available equipment. A number of vendors are readily available for the excavation, transportation, landfill disposal activities, and site reconstruction. Monitoring the effectiveness of the remedy would be accomplished through confirmation sampling, which is also easily implemented. ICs associated with all alternatives could be readily implemented.

7. Cost

Cost information for Alternatives 2, 3, 4, and 5 is presented below. Detailed cost estimates and associated assumptions are included in the OU2 FS, using a 7% discount rate.

Alternative	Description	Capital	O&M*	Total
2	Clay Cap and ICs	$3,148,200	$55,600	$3,203,800
3	Concrete/Asphalt Cap and ICs	$2,105,200	$33,300	$2,138,500
4	Geomembrane Cap and ICs	$2,673,500	$55,600	$2,729,100
5	Soil Excavation, Off-site Disposal, and ICs	$5,173,600	$22,800	$5,196,400

*O&M costs shown are the 30-Year Present Worth costs calculated using a 7% discount rate

8. State Acceptance

The State acceptance of the Preferred Alternative will be evaluated after the public comment period ends. State comments and EPA's response to any such comments will be available in the Responsiveness Summary section of the OU2 ROD for the J.W. Rex Property.

9. Community Acceptance

EPA will evaluate community acceptance of the Preferred Alternative after the public comment period ends. Community comments and EPA's response to any such comments will be available in the Responsiveness Summary section of the OU2 ROD for the J.W. Rex Property.

I. PREFERRED ALTERNATIVE

EPA's Preferred Alternative for the OU2 remedial action at the J.W. Rex Property is Alternative 5, Excavation, Off-Site Disposal, and Institutional Controls. Alternative 5 is preferred because it is considered more effective in the long-term, more permanent, and provides greater reduction of toxicity, mobility, and volume of contamination.

Alternative 5 is considered more effective in the long-term and more permanent because it removes contamination from the J.W. Rex Property by excavating contaminated soil and disposing of it off-site. By removing the contamination from the J.W. Rex Property, Alternative 5 prevents the contamination from migrating to groundwater at levels that would present an unacceptable risk to the public and reduces the potential for VI in the future. Alternatives 2, 3, and 4 leave soil contamination in place and require maintenance of the caps in order to ensure long-term protectiveness. Future land uses at the J.W. Rex Property may be hindered by requirements to maintain the caps in these alternatives. While Alternative 5 is the most expensive alternative, it ensures permanent protectiveness after the anticipated six-month time frame to implement the alternative.

The soils at the J.W. Rex Property may be considered as principal threat waste and the NCP establishes an expectation that EPA will use treatment to address principal threat wastes whenever practicable. Technologies which employ treatment were identified during the technology screening portion of the OU2 FS, but none were carried forward due to issues with effectiveness and implementability. While none of the alternatives employ treatment, Alternative 5 provides greater reduction in toxicity, mobility, and volume of contamination by removing the contamination permanently from the J.W. Rex Property and disposing of it off-site at an appropriate permitted facility.

<u>Statutory Determination</u>

Based on the information available at this time, EPA believes the Preferred Alternative (Alternative 5: Excavation, Off-Site Disposal, and ICs) meets the threshold criteria and provides the best balance of tradeoffs among the 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.

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 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 the OU2 FS and other 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 OU2, select the link for Remedial - O2), 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 OU2 at the J.W. Rex Property 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 response action 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 OU2 ROD, which selects the OU2 remedial action for the J.W. Rex Property portion of the Site. The OU2 ROD for the J.W. Rex Property will include the Responsiveness Summary. Copies of the OU2 ROD for the J.W. Rex Property will be available for public review in the Administrative Record file following finalization of the OU2 ROD.

Table

TABLE 4 SUMMARY OF APPLICABLE OR RELEVANT AND APPROPRIATE REGULATIONS (ARARS)

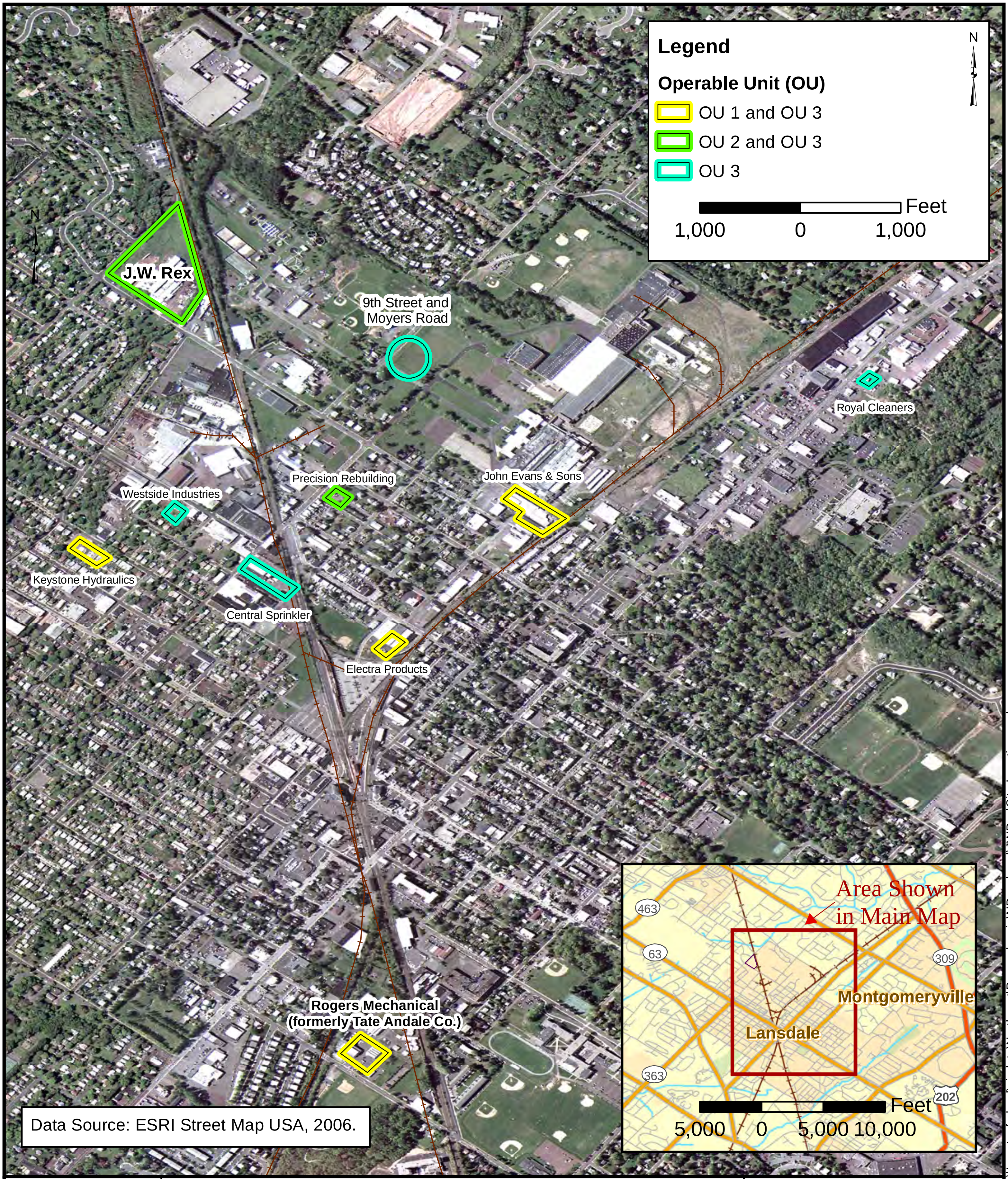
ARAR or TBC	Legal Citation	Classification	Summary of Requirement	Further Detail Regarding ARARS in the Context of the Remedy
Chemical Specific				
EPA Region 3 Regional Screening Level Table, May 2016 (including TCE toxicity value changes February 2012)		To Be Considered (TBC)	EPA Region 3 utilizes this table as a risk-based concentration screening tool.	This table was used to compare historical screening to a common screening point for contaminants, and to evaluate risk identified in site risk assessment for 1,1- dichloroethene (DCE), cis 1,2-DCE, tetrachloroethene (PCE), trichloroethene (TCE), and vinyl chloride. This table was also used in the development of the site-specific soil cleanup level for hexavalent chromium [Cr(VI)]
Risk Assessment Guidance for Superfund – Volume 1 Human Health Manual Part A, December 1989	EPA Office of Emergency and Remedial Response EPA/540/1-89/002	TBC	EPA guidance for calculating baseline human health risk and establishing risk-based performance standards for Superfund cleanups.	This guidance document was considered when establishing risk based soil cleanup standards for TCE.
National Primary Drinking Water Regulations, Maximum Contaminant Levels	40 Code of Federal Regulation (CFR) § 141.61	TBC	Establishes primary drinking water regulations pursuant to section 1412 of the Public Health Service Act, as amended by the Safe Drinking Water Act.	This regulation was considered when establishing the soil to groundwater cleanup standards for 1,1-DCE, cis 1,2-DCE, PCE, TCE, and vinyl chloride.
Pennsylvania Department of Environmental Protection (PA DEP) Management of Fill Policy, April 7, 2010	Pennsylvania E-Library Document Number 258-2182-773	TBC	Provides DEP's procedures for determining whether material is clean fill or regulated fill.	Fill that is used for backfilling excavated areas will meet the standards for clean fill as defined in this document.
Location Specific				
There are no location specific ARARs identified				

TABLE 4 SUMMARY OF APPLICABLE OR RELEVANT AND APPROPRIATE REGULATIONS (ARARS)

ARAR or TBC	Legal Citation	Classification	Summary of Requirement	Further Detail Regarding ARARS in the Context of the Remedy
Action Specific				
Erosion and Sediment Control	25 PA Code §§ 102.4(b)(1) and (4), 102.11, 102.22	Applicable	Identifies erosion and sediment control requirements and criteria for activities involving land clearing, grading and other earth disturbances and establishes erosion and sediment control criteria.	These regulations apply to construction activities at the site which disturb the ground surface, including clearing, grading, excavation and cap installation.
Identification of Hazardous Wastes	25 PA Code §§ 261a.1 (40 CFR §§ 261.20-24)[1]	Applicable	Defines and describes process for identifying hazardous wastes based on toxicity characteristic	This regulation applies to construction activities where soils are excavated from the site and sent to an off-site disposal facility or landfill.
Standards applicable to Generators of Hazardous Wastes	25 PA Code §§ 262a.10 and 11 (40 CFR §§ 262.10(a), (h) and 262.11(c)(1))[1]	Applicable	These regulations establish standards for generators of hazardous wastes, including initiating shipments, determination of hazard characteristics, and identification numbers.	This regulation applies to construction activities when excavated soils that are sent for offsite disposal are determined to be hazardous waste.
Standards applicable to Generators of Hazardous Wastes	25 PA Code § 262a.34 (40 CFR § 262.34)[1]	Applicable	Establishes requirements for generators of hazardous wastes, including temporary storage of hazardous wastes on-site.	This regulation applies to construction activities when excavated soils are determined to be hazardous wastes need to be temporarily stored on-site.
Fugitive Air Emissions	25 PA Code §§ 123.1 – 123.2	Applicable	Establishes the fugitive dust regulation for particulate matter.	This regulation applies to construction activities involving ground disturbance including clearing and grubbing, excavations, and cap installations.
Standards for Landfill Caps	25 PA Code §§ 273.231-273.236 (40 CFR §§ 264.300-317)[1]	Relevant and Appropriate	Contains requirements for landfills including requirements for caps	Portions of this regulation are relevant and appropriate to construction of a cap to prevent exposure to contaminants

[1] With respect to each of these provisions, the Commonwealth provision is a Federal ARAR if the provision is part of the Commonwealth's authorized program. The Commonwealth provision is a State ARAR if the provision is more stringent than the Federal provision (within the meaning of CERCLA) or if the Commonwealth provision is beyond the scope of the Federal provision. Otherwise, the Federal provision is a Federal ARAR.

Figures



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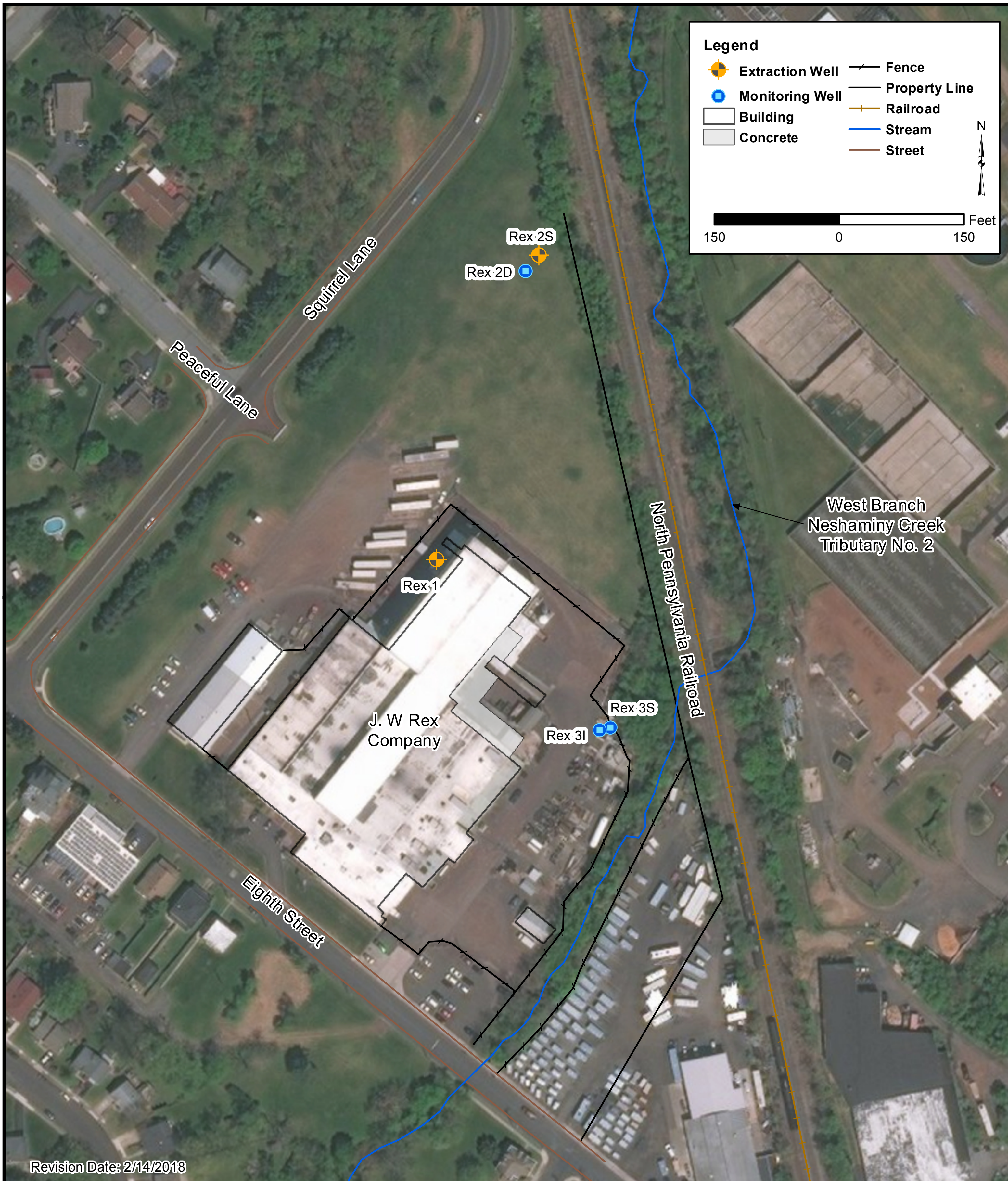
EA Engineering, Science, and Technology, Inc.

North Penn Area 6 Superfund Site

J. W. Rex Facility

Borough of Lansdale, Montgomery County, Pennsylvania

FIGURE 1: SITE LOCATION



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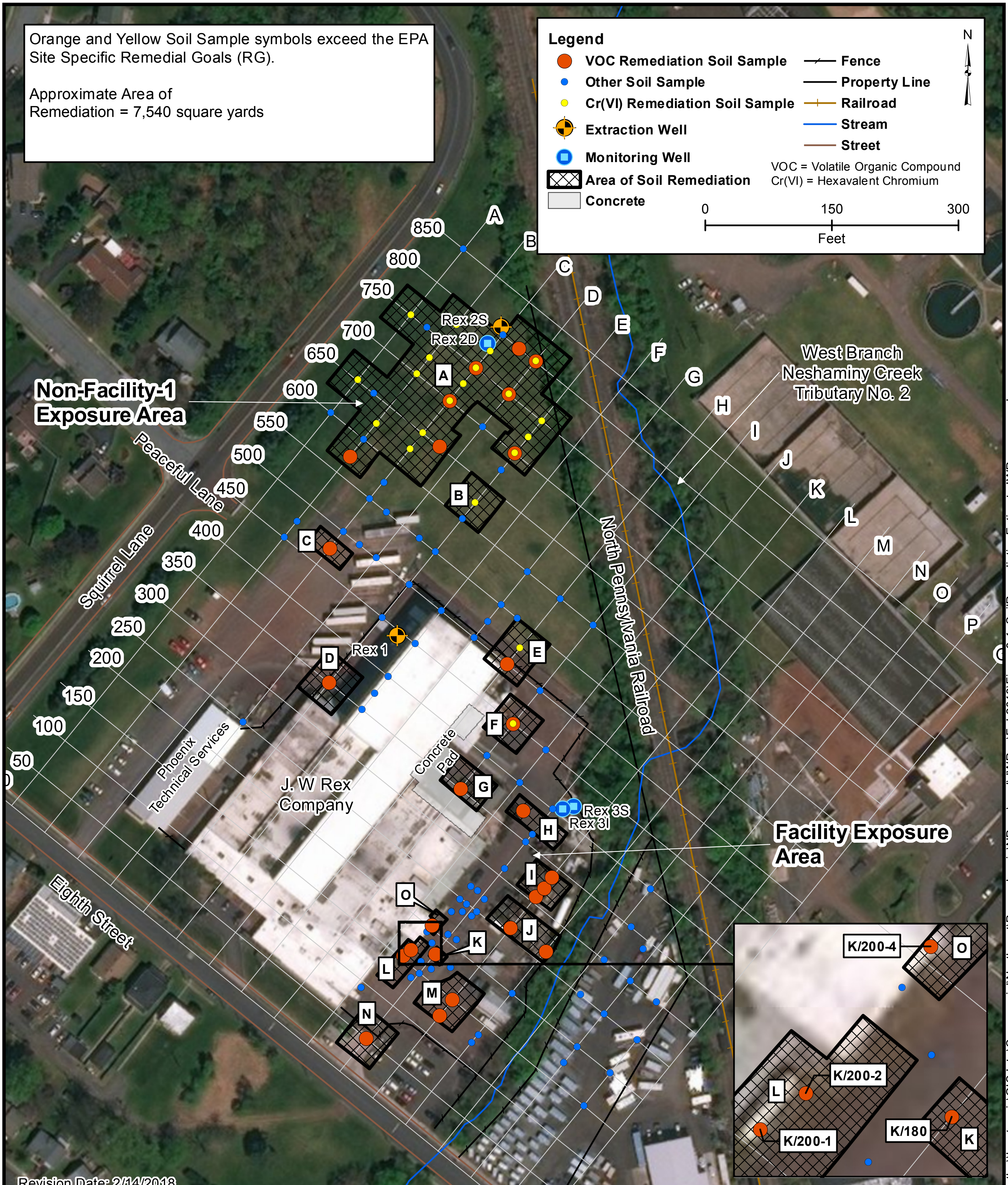
North Penn Area 6 Superfund Site

J. W. Rex Facility

Borough of Lansdale, Montgomery County, Pennsylvania

FIGURE 2
REX FACILITY LAYOUT



North Penn Area 6 Superfund Site

J. W. Rex Facility

Borough of Lansdale, Montgomery County, Pennsylvania

FIGURE 3
SOIL AREA EXCEEDING REMEDIAL GOALS

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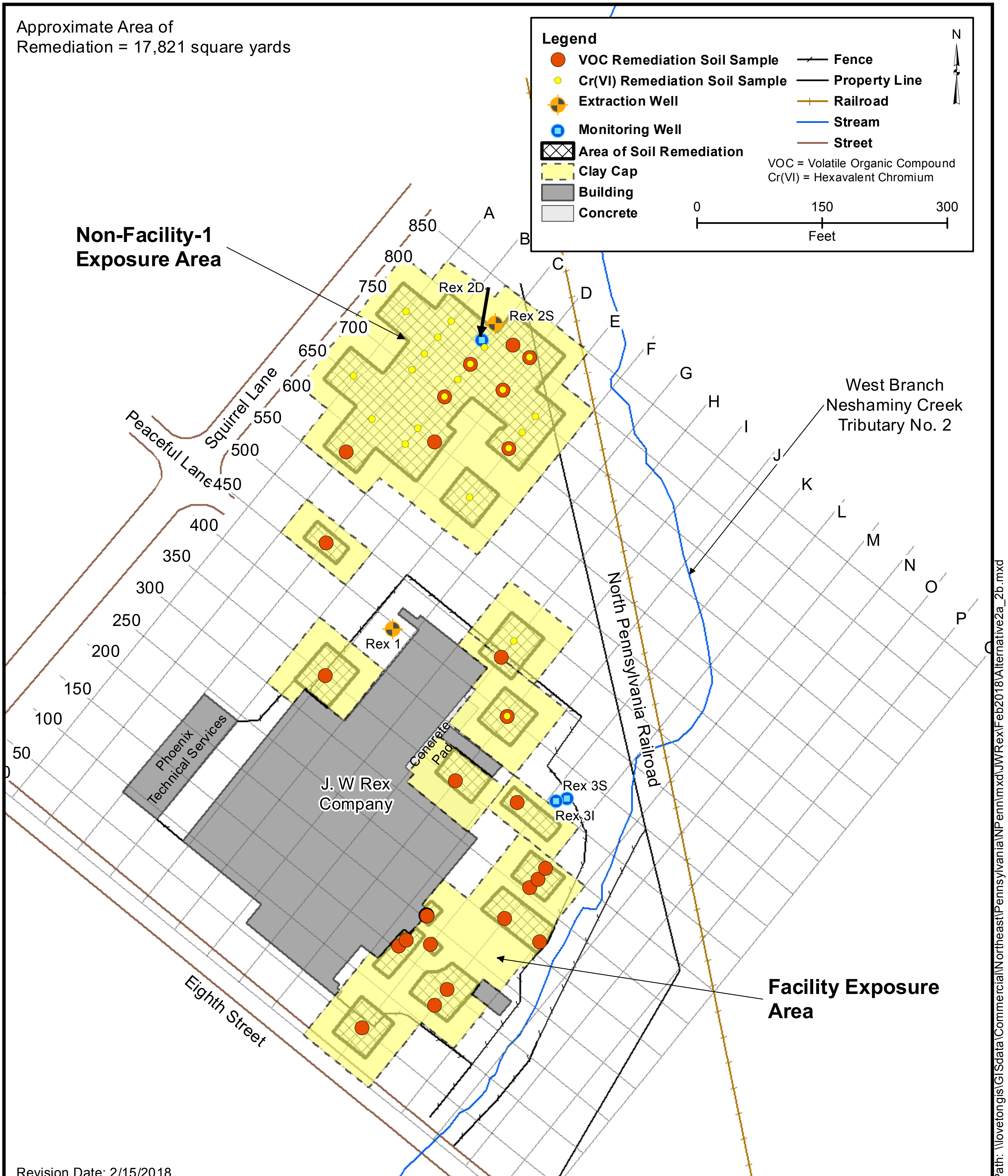
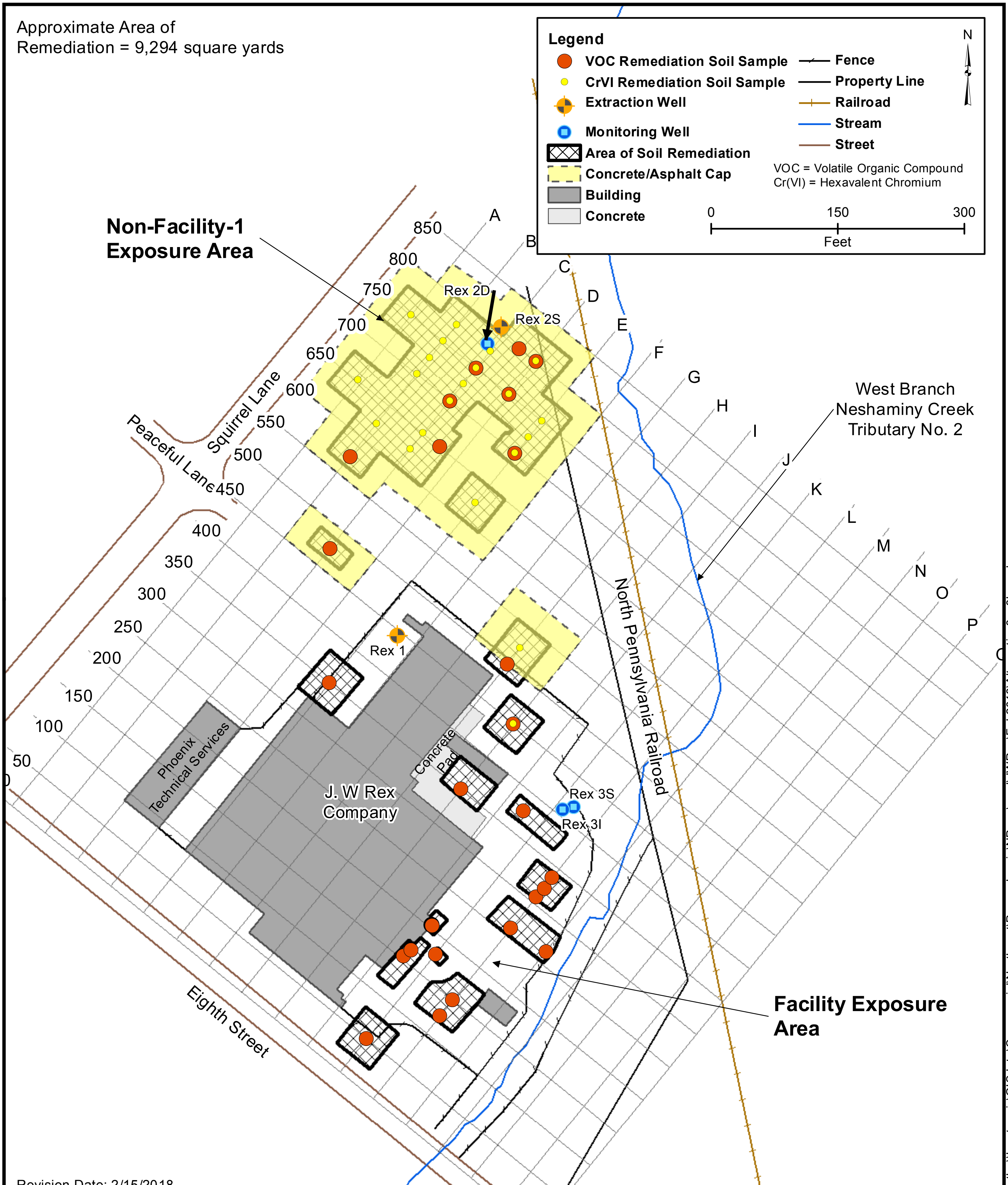


North Penn Area 6 Superfund Site

J. W. Rex Facility

Borough of Lansdale, Montgomery County, Pennsylvania

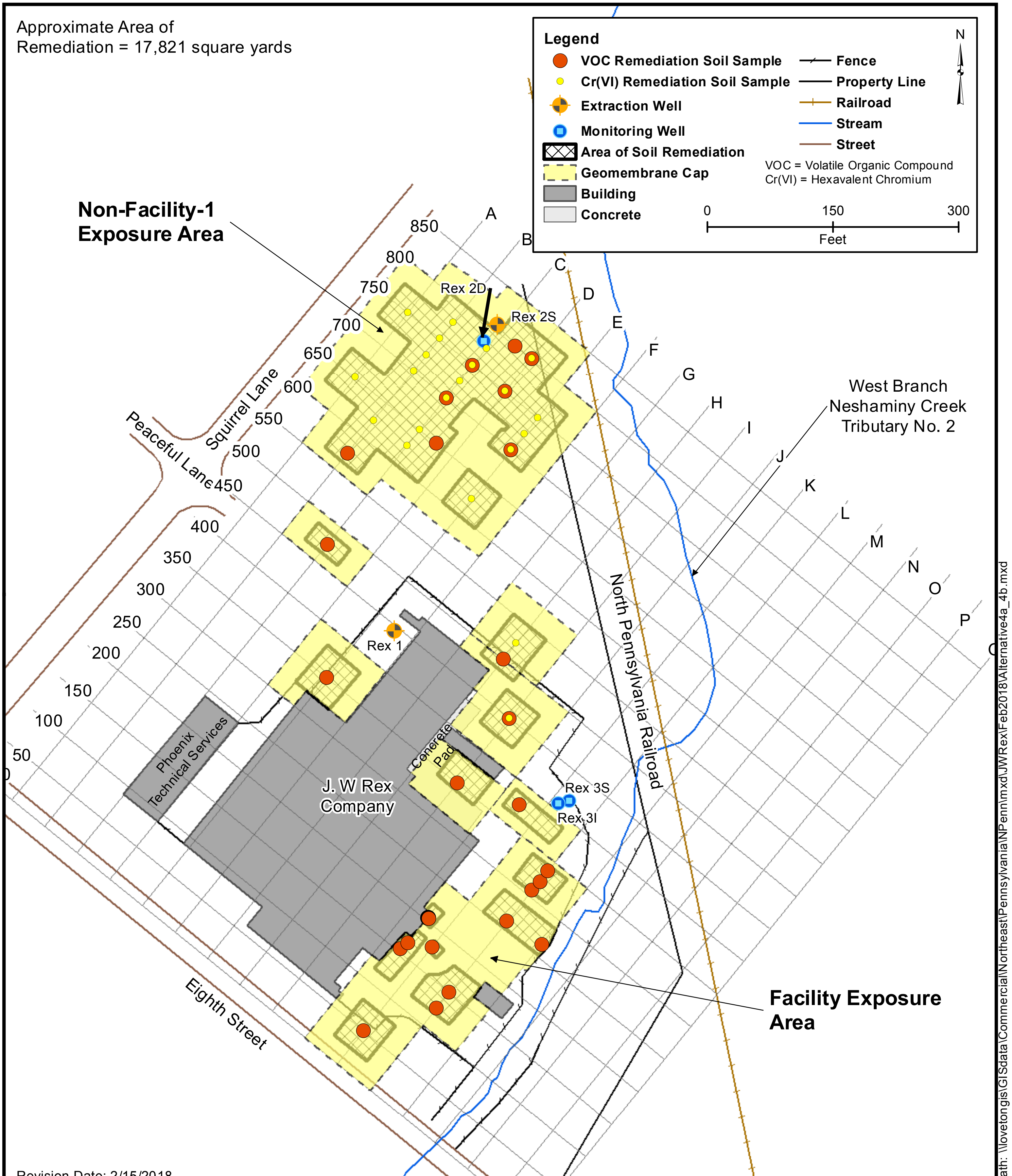
FIGURE 4
ALTERNATIVE 2
CLAY CAP



North Penn Area 6 Superfund Site
J. W. Rex Facility
Borough of Lansdale, Montgomery County, Pennsylvania

FIGURE 5
ALTERNATIVE 3
CONCRETE/ASPHALT CAP

AR301409

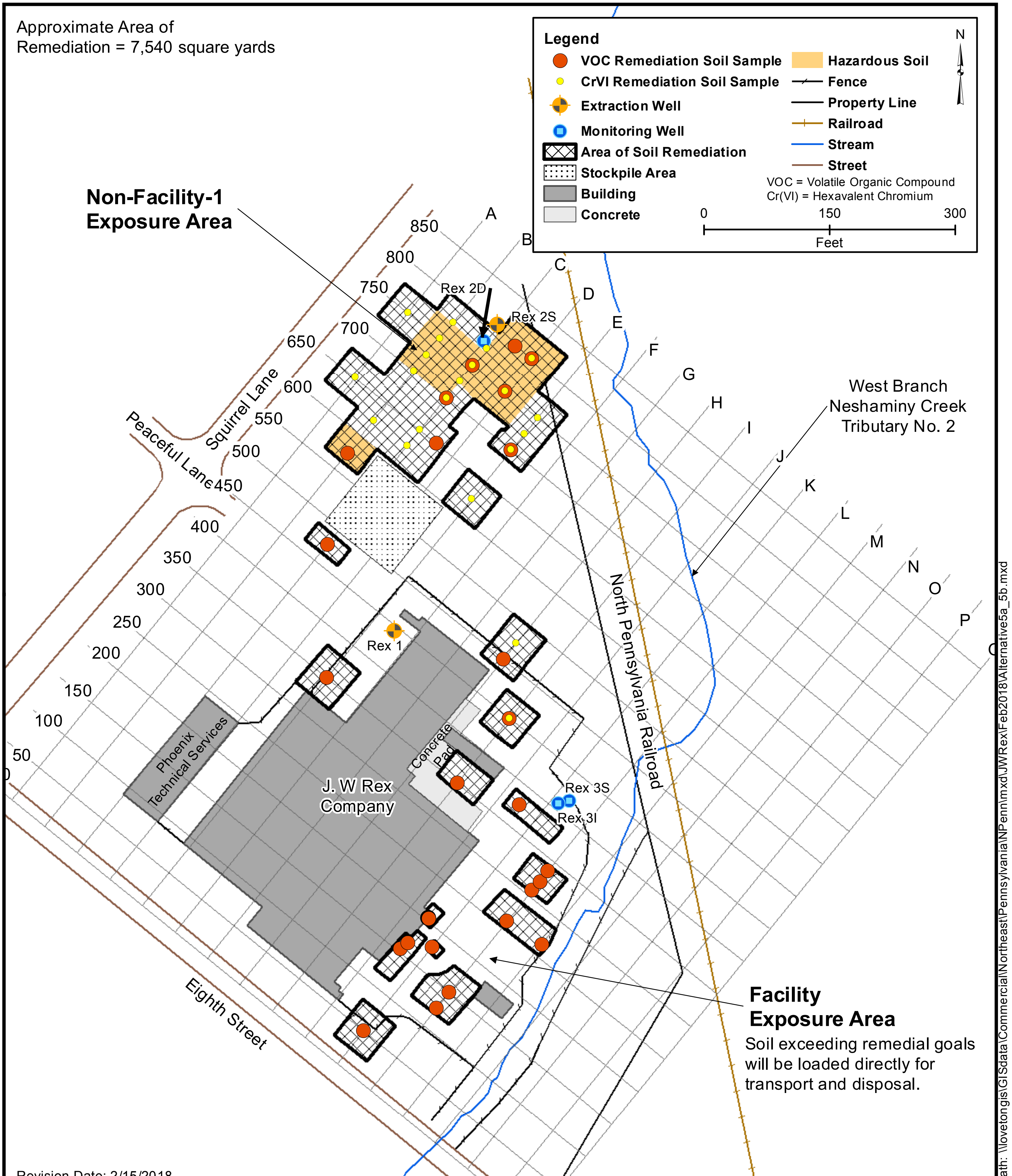


North Penn Area 6 Superfund Site

J. W. Rex Facility

Borough of Lansdale, Montgomery County, Pennsylvania

FIGURE 6
ALTERNATIVE 4
GEOMEMBRANE CAP



North Penn Area 6 Superfund Site

J. W. Rex Facility

Borough of Lansdale, Montgomery County, Pennsylvania

FIGURE 7
ALTERNATIVE 5
SOIL EXCAVATION AND DISPOSAL