FIRST FIVE-YEAR REVIEW REPORT FOR BRESLUBE-PENN, INC. SUPERFUND SITE ALLEGHENY COUNTY, PENNSYLVANIA

APRIL 2019

Prepared by

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Date

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LIST OF ABBREVIATIONS AND ACRONYMS

ARAR	Applicable or Relevant and Appropriate Requirement
CDSA	Coraopolis District Sportsmen's Association
COC	Contaminant of Concern
DCA	Dichloroethane
DCE	Dichloroethene
DEHP	bis(2-Ethylhexyl)phthalate
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Differences
FS	Feasibility Study
FYR	Five-Year Review
IC	Institutional Control
LNAPL	Light Non-Aqueous Phase Liquid
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
mg/kg	Milligram per Kilogram
MSC	Medium-Specific Concentration
MTC	Montour Trail Council
NPL	National Priorities List
O&M	Operation and Maintenance
OU	Operational Unit
PADEP	Pennsylvania Department of Environmental Protection
PCB	Polychlorinated Biphenyl
PCE	Tetrachloroethene
PRP	Potentially Responsible Party
RI	Remedial Investigation
ROD	Record of Decision
RPM	Remedial Project Manager
SLERA	Screening Level Ecological Risk Assessment
TC	Treatment Cell
TCA	Trichloroethane
TCE	Trichloroethene
TEQ	Toxicity Equivalence
UU/UE	Unlimited Use and Unrestricted Exposure
VISL	Vapor Intrusion Screening Level
VOC	Volatile Organic Compound
WMA	Waste Management Area
µg/L	Microgram per Liter

I. INTRODUCTION

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

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

This is the first FYR for the Breslube-Penn, Inc. Superfund site (the Site). The triggering action for this statutory review is the on-site construction start date of the Operable Unit 1 (OU1) remedial action. The FYR has been prepared because hazardous substances, pollutants or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure (UU/UE).

The Site consists of two OUs, both of which are addressed in this FYR. OU1 provides source control for the Site, including construction of a waste management area (WMA), excavation and consolidation of soils in the WMA, and construction of groundwater gradient controls. OU2 addresses groundwater outside the WMA.

The EPA remedial project manager (RPM) led the FYR. Participants included the EPA community involvement coordinator, EPA biologist, EPA hydrogeologist, the Pennsylvania Department of Environmental Protection (PADEP) project manager, EA Engineering (EPA's oversight contractor) and Skeo (EPA's FYR contractor). The potentially responsible party (PRP) group was notified of the initiation of the FYR. The review began on August 16, 2018.

Site Background

The Site is located near Coraopolis in Allegheny County, Pennsylvania, and has been identified as being located on both Ewing Road and at 84 Montour Road (see Figure 1). The Site encompasses the former Breslube-Penn facility ("the facility"), a level, 7-acre tract of land in the floodplain of Montour Run in Moon Township. The Site also includes a small portion of adjacent properties owned by the Montour Trail Council and the Coraopolis District Sportsmen's Association (CDSA), which is traversed by Montour Run and is partially located in Robinson Township.

Wiseman Oil Company operated a used oil processing and reclamation facility at the Site from 1977 to 1982. This process generated a clay filter cake waste that was stockpiled at the facility. Breslube-Penn, Inc. bought the facility in 1982 and continued used oil processing operations. Clay filter cake waste continued to be produced and stockpiled on the facility. Breslube-Penn, Inc. discontinued oil processing around 1986. The facility was a used oil transfer station from 1987 until 1992, at which time operations at the facility ceased.

The former facility property includes the Site's waste management area (WMA), which is a 4.7-acre area of consolidated waste covered with a cap, and a constructed wetland. There are no buildings on the former facility property. The current owner of the former facility property is a private individual who is not a PRP; the owner currently stores several junk vehicles on the property. A steep, wooded hillside borders the Site to the north and west. Montour Run flows across the southern part of the Site. A private road runs across the Site, leading to an inactive scrapyard to the west of the Site. The recreational Montour Trail also runs across the Site just south of the former facility; it is used by walkers and bicyclists. The CDSA owns property directly south of the former facility, on both sides of Montour Run. Other land uses to the south of Montour Run include residences and a school. EPA expects that the future use of the surrounding area will remain the same.

Groundwater beneath the Site occurs in the fill and native soil (shallow unconsolidated aquifer) as well as in the uppermost saturated bedrock (shallow bedrock aquifer). The unconsolidated aquifer and the bedrock aquifer appear to be hydraulically connected due to the absence of laterally continuous clay or silt layers (i.e., aquitards). Groundwater flow direction across the Site is generally to the east and can vary between northeast and southeast.

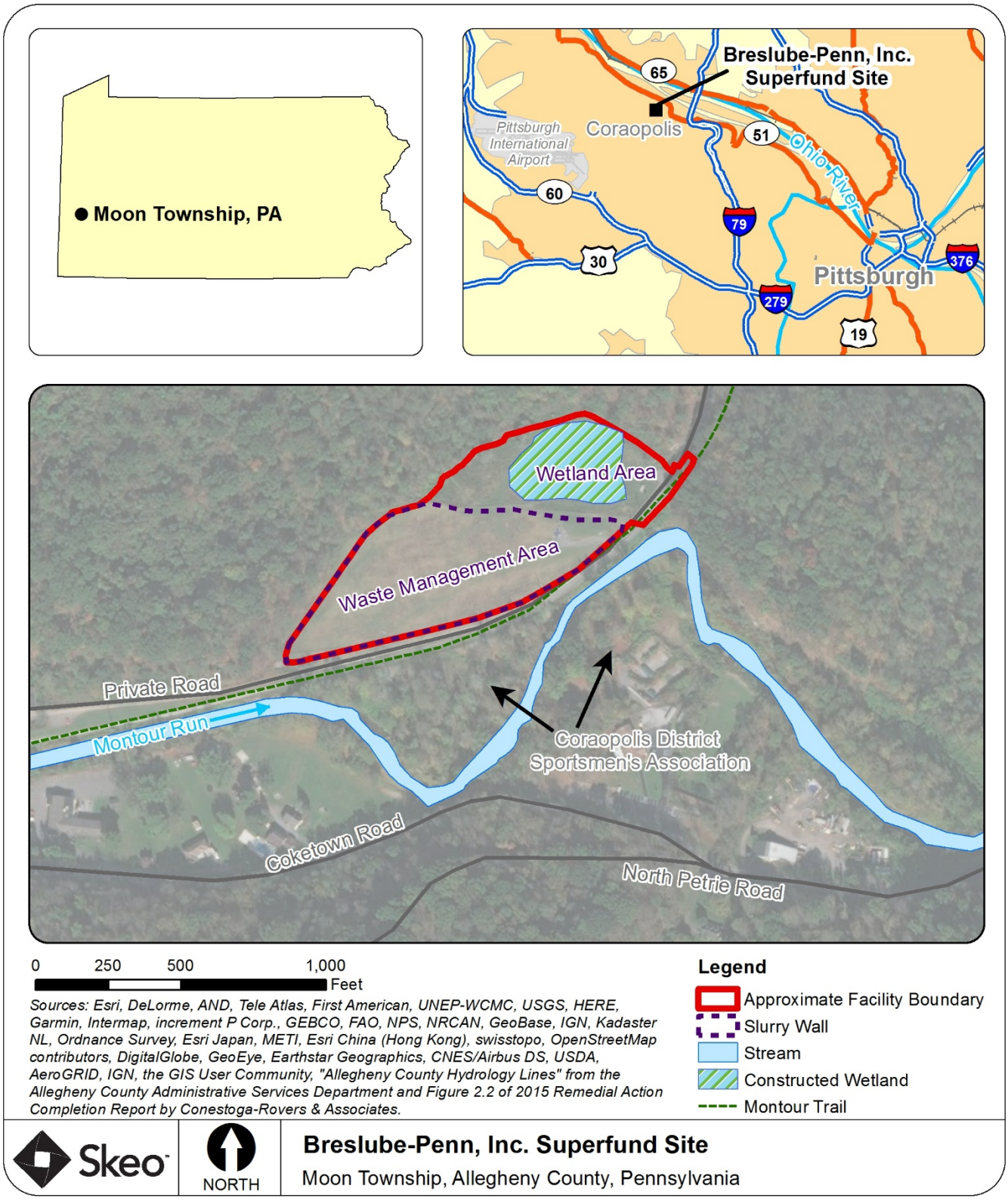
There are two houses within a quarter mile of the former facility that use private wells for drinking water. Based on monitoring data collected during the remedial investigation (RI), these two homes have not been impacted by groundwater contamination associated with the Site. Other nearby residents are connected to a municipal water supply.

Refer to Appendix A for additional resources and to Appendix B for the Site's chronology of events.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: Breslube-Penn, Inc.		
EPA ID: PAD089667695		
Region: 3	**State:** PA	**City/County:** Coraopolis / Allegheny
SITE STATUS		
NPL Status: Final		
Multiple OUs? Yes	**Has the Site achieved construction completion?** No	
REVIEW STATUS		
Lead agency: EPA		
Author name: Frank Klanchar, with additional support provided by Skeo		
Author affiliation: EPA Region 3		
Review period: 8/16/2018 - 6/7/2019		
Date of site inspection: 8/21/2018		
Type of review: Statutory		
Review number: 1		
Triggering action date: 6/7/2014		
Due date *(five years after triggering action date)*: 6/7/2019		

Figure 1: Site Vicinity Map



Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding EPA's response actions at the Site.

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

The PRP group conducted a human health risk assessment for the Site as part of the 2005 RI. The risk assessment found that shallow unconsolidated and bedrock groundwater (both on and off the former facility property) would pose an unacceptable cancer risk if it were to be used for residential purposes. The risk assessment also found that soil contamination at the former facility property and southeast of the facility property would pose unacceptable cancer and non-cancer risks to residents and construction workers. The risk assessment found that surface water and sediment contamination in the wetland on the facility property would also pose a risk to human health. EPA conducted an independent evaluation of the potential human health risks for recreational users of Montour Run; EPA found that surface water and sediment in Montour Run did not pose an unacceptable risk to recreational users.

Table 1 lists the Site's contaminants of concern (COCs), as identified in EPA's 2007 Record of Decision (ROD).

Table 1: COCs, by Media

Media	COCs	
Soil	Chromium	Aroclor 1242
	Lead	Aroclor 1248
	Manganese	Aroclor 1254
	Benzo(a)pyrene	Aroclor 1260
	Naphthalene	2,3,7,8-Tetrachlorodibenzodioxin (toxicity equivalence (TEQ))
	Tetrachloroethene (PCE)	
Surface Water and Sediment	Lead	
Groundwater	Acetone	4-Methylphenol
	Benzene	Acenaphthene
	Chloroethane	Benz(a)anthracene
	Chloroform	Benzo(b)fluoranthene
	1,2-Dichlorobenzene	Chrysene
	1,3-Dichlorobenzene	bis(2-Ethylhexyl)phthalate (DEHP)
	1,4-Dichlorobenzene	Dibenzofuran
	1,1-Dichloroethane (1,1-DCA)	Fluoranthene
	1,2-Dichloroethane (1,2-DCA)	Fluorene
	1,1-Dichloroethene (1,1-DCE)	Naphthalene
	1,2-Dichloroethene (1,2-DCE) (total) (cis/trans)	Pentachlorophenol
	2,4-Dichlorophenol	Phenanthrene
	2,4-Dimethylphenol	Pyrene
	Ethylbenzene	Aroclor 1254
	Methylene chloride	Aroclor 1260
	PCE	Aluminum
	Toluene	Antimony
	1,2,4-Trichlorobenzene	Arsenic
	1,1,1-Trichloroethane (1,1,1-TCA)	Barium
	1,1,2-Trichloroethane (1,1,2-TCA)	Chromium (total)
	Trichloroethene (TCE)	Iron
	Vinyl chloride	Lead
	Xylenes (total)	Manganese
	2-Methylnaphthalene	Thallium
	2-Methylphenol	Vanadium

The PRP group conducted two Screening Level Ecological Risk Assessments (SLERAs) to identify the potential environmental risks associated with the Site. The initial SLERA concluded that there were potential risks associated with on-facility soils and with surface water and sediments in the facility wetlands. The supplemental

SLERA also identified potential risks to ecological receptors associated with surface soils located adjacent to the former facility along Montour Trail, and potential risks to ecological receptors due to COCs in off-facility shallow groundwater. Polychlorinated biphenyls (PCBs) detected in off-facility surface soils and in off-facility shallow groundwater samples drove the potential ecological risks noted in the SLERA.

Response Actions

In 1987, Breslube-Penn, Inc. signed a Consent Order with the Pennsylvania Department of Environmental Resources (now known as PADEP). The order required the company to remove large fuel storage tanks and all oil-contaminated soil, complete a groundwater study and comply with all PADEP regulations. Breslube-Penn, Inc. drained some of the tanks and installed six monitoring wells on and around the facility, but later fell out of compliance with the order.

In 1990, Breslube-Penn, Inc. excavated and moved staged wastes and a portion of the filter cake waste to a new pile located in the western section of the property. In June 1993, EPA conducted a Removal Site Assessment, which determined that a removal action was needed to address the imminent threat to human health or the environment posed by this stockpile of waste. In 1994, after Breslube-Penn, Inc. failed to comply with an Administrative Order on Consent to conduct the removal, EPA removed a total of about 6,400 tons of filter cake waste containing PCBs and lead, and disposed of it off-site.

In October 1995, EPA proposed listing the Site on the National Priorities List (NPL). The Site was listed on the NPL in June 1996.

In February 2000, several companies signed an Administrative Order on Consent to perform the RI and feasibility study (FS). PRPs completed the RI in 2005 and the FS in 2006.

EPA selected a remedy for the Site in the 2007 ROD. The ROD identifies the following remedial action objectives:

- Groundwater
    - Restore the aquifer to beneficial use (achieve applicable or relevant and appropriate requirements (ARARs)) in groundwater. Groundwater is restored and COC levels are reduced to maximum contaminant levels (MCLs), non-zero maximum contaminant level goals (MCLGs), or applicable Act 2 medium-specific concentrations (MSCs) (see ROD Table 22), whichever is more stringent, and additionally, the cumulative risk from residual COCs will be reduced to an acceptable risk level (i.e., carcinogenic risk of 1×10^{-6} to 1×10^{-4} or less, and hazard index of 1 or less per target organ) in accordance with EPA risk assessment guidance. However, EPA will not require COCs to be reduced below background concentrations.
    - Prevent residential use of contaminated groundwater (shallow and bedrock) until performance standards are achieved.
    - Prevent or reduce further migration of contaminants in the groundwater (shallow and bedrock), monitor groundwater to ensure that migration does not occur and potable wells do not become contaminated, and contaminants are not released to Montour Run to prevent fish and wildlife exposure.
    - Prevent the further migration of contaminated groundwater from the waste management area (WMA) located at the facility.
    - Reduce further leaching of contaminants from the contaminated soils to the groundwater.
- Soil
    - Prevent residential, construction worker and ecological receptor exposure to on-facility surface and subsurface soil, or remove soil that is above protective levels.
    - Prevent residential, construction worker and ecological receptor exposure to off-facility surface and subsurface soil, or remove soil that is above protective levels.

- Surface Water
    - Prevent trespasser and wildlife exposure to lead contamination in wetlands located within the WMA.

The selected remedy for both OUs, as specified in the 2007 ROD, includes the following major components:

- Excavation of all off-facility contaminated soils above the groundwater table exceeding PCB performance standards of 1.5 milligrams per kilogram (mg/kg) (residential cleanup levels) and consolidation into the WMA.
- Excavation of on-facility contaminated soils above the groundwater table (removal of at least 2 feet) outside the WMA exceeding PCB performance standards of 15 mg/kg (industrial cleanup levels) and consolidation into the WMA.
- Excavation of all contaminated soils outside the WMA and above the groundwater table that contain COCs that exceed Pennsylvania's Land Recycling and Environmental Remediation Standards Act (Act 2) soil-to-groundwater MSCs and/or are visually stained with light non-aqueous phase liquid (LNAPL) and consolidation into the WMA.
- Confirmative soil samples from the excavated areas collected and analyzed to verify no COCs present above the performance standards.
- Installation of a Resource Conservation and Recovery Act modified cap over the 4.7-acre WMA with an impermeable membrane to restrict direct contact and infiltration of precipitation into the soils.
- Installation of a 2- to 3-foot-thick vertical slurry wall around the perimeter of the 4.7-acre WMA to contain groundwater flow from the source area at the WMA.
- If the cap and/or slurry wall containment system fails to meet performance standards by creating an inward and upward gradient to achieve containment at the WMA, then Contingency 1, Extraction and Treatment of Groundwater within the WMA, will be implemented to capture and/or contain the impacted groundwater within the WMA.
- Installation and operation of a product recovery system to remove floating and collectible LNAPL such as oil from the soil and the surface of the groundwater table.
- Installation of a fence to restrict access (prevent vandalism) to the facility.
- Enhancement of in-situ bioattenuation through the injection of reagents to reduce concentrations of COCs in groundwater outside the WMA to performance standards.
- If enhanced bioattenuation fails to meet performance standards, then Contingency 2, Extraction and Treatment of Groundwater, will be implemented outside the WMA to remediate groundwater.
- Performance of long-term groundwater, surface water and slurry wall monitoring using a network of monitoring wells.
- Implementation of institutional controls (ICs) (such as title notices and land use restrictions through easements and covenants and orders from or agreements with EPA and/or PADEP) to restrict use of the facility to preclude any disturbance of the WMA and to prevent potable use of contaminated groundwater.
- Removal of the wetlands located on the WMA and replacement in accordance with Section 404 of the Clean Water Act.

In 2014, EPA issued an Explanation of Significant Differences (ESD) to modify the remedy selected in the ROD. The ESD modified the remedy selected in the ROD by adding a passive groundwater collection, treatment and discharge system to manage groundwater within the WMA, in order to achieve the ROD's performance standard of maintaining the appropriate hydraulic gradient to capture and contain the impacted groundwater within the WMA.[1] The ESD also modified the remedy selected in the ROD by calling for the slurry wall to extend down to the top of the bedrock rather than keying the slurry wall into the bedrock to a depth of 2 to 5 feet. Bedrock testing at the Site found that keying the slurry wall into bedrock would require extraordinary measures (such as blasting) that could prove counterproductive by creating fractures that would increase hydraulic conductivity.

[1] Note that the passive groundwater collection system added in the ESD is not the same as Contingency 1 (active pump-and-treat system).

Tables 2 and 3 present the Site's groundwater and soil cleanup levels, as selected in the 2007 ROD. The 2007 ROD also selected cleanup levels for the surface water and sediment in the Site's wetland; those cleanup levels are not presented in this FYR because the wetland was removed and replaced as part of the remedial action.

Table 2: Soil COC Cleanup Levels

Soil COC	ROD Cleanup Goal (mg/kg)[a]		
	Surface Soil (0 to 2 feet below ground surface)[b]	Subsurface Soil	Basis
On-Facility			
Chromium	190	190	PADEP MSC (soil to groundwater)[c]
Lead	450	450	PADEP MSC (soil to groundwater)[c]
Manganese	190,000	NS	PADEP MSC (direct contact)[d]
Benzo(a)pyrene	11	46	Surface: PADEP MSC (direct contact)[d] Subsurface: PADEP MSC (soil to groundwater)[c]
Naphthalene	25	25	PADEP MSC (soil to groundwater)[c]
PCE	0.43	0.43	PADEP MSC (soil to groundwater)[c]
Aroclor 1242	15	15	EPA site-specific cleanup level[e]
Aroclor 1248	15	15	EPA site-specific cleanup level[e]
Aroclor 1254	15	15	EPA site-specific cleanup level[e]
Aroclor 1260	15	15	EPA site-specific cleanup level[e]
Dioxins TEQ	0.00053	0.032	Surface: PADEP MSC (direct contact)[d] Subsurface: PADEP MSC (soil to groundwater)[c]
Off-Facility			
Chromium	94	190	Surface: PADEP MSC (direct contact)[f] Subsurface: PADEP MSC (soil to groundwater)[c]
Lead	450	450	PADEP MSC (soil to groundwater)[c]
Manganese	31,000	31,000	PADEP MSC (direct contact)[f]
Aroclor 1242	1.5	15	EPA site-specific cleanup level[e]
Aroclor 1254	1.5	15	EPA site-specific cleanup level[e]
Aroclor 1260	1.5	15	EPA site-specific cleanup level[e]

Notes:

a) This table presents the most stringent cleanup concentration of the various values presented in ROD Table 22 for a given location (i.e., on-facility or off-facility) and depth (i.e., surface or subsurface).
b) Surface soil cleanup levels apply to 0 to 2 feet below ground surface except where noted by Note f.
c) PADEP Soil to Groundwater Medium-Specific Concentration (MSC) for Used Aquifer, Total Dissolved Solids <=2500, Residential, Generic Value
d) PADEP Direct Contact MSC for Non-residential Surface Soils
e) Calculated site-specific human health risk level (non-residential risk for on-facility and residential risk for off-facility)
f) PADEP Direct Contact MSC for Residential Soils (0-15 feet)

NS = no standard
Sources: 2007 ROD, Table 22; 2015 Remedial Action Completion Report, Table 1.2

Table 3: Groundwater COC Cleanup Levels

Groundwater COC	ROD Cleanup Goal		Groundwater COC	ROD Cleanup Goal	
	Micrograms per liter (µg/L)	Basis		Micrograms per liter (µg/L)	Basis
Acetone	3,700	MSC	4-Methylphenol	NS	N/A
Benzene	5	MCL and MSC	Acenaphthene	2,200	MSC
Chloroethane	230	MSC	Benz(a)anthracene	0.9	MSC
Chloroform	80	MCL	Benzo(b)fluoranthene	0.9	MSC
1,2-Dichlorobenzene	600	MCL and MSC	Chrysene	1.9	MSC
1,3-Dichlorobenzene	600	MSC	DEHP	6	MCL and MSC
1,4-Dichlorobenzene	75	MCL and MSC	Dibenzofuran	NS	N/A
1,1-Dichloroethane	27	MSC	Fluoranthene	260	MSC
1,2-Dichloroethane	5	MCL and MSC	Fluorene	1,500	MSC
1,1-Dichloroethene	7	MCL and MSC	Naphthalene	100	MSC
1,2-Dichloroethene (total) (cis/trans)	70/100	MCL and MSC	Pentachlorophenol	1	MCL and MSC
2,4-Dichlorophenol	20	MSC	Phenanthrene	1,100	MSC
2,4-Dimethylphenol	730	MSC	Pyrene	130	MSC
Ethylbenzene	700	MCL and MSC	Aroclor 1254	0.37	MSC
Methylene chloride	5	MCL and MSC	Aroclor 1260	0.5	MCL
PCE	5	MCL and MSC	Aluminum	NS	N/A
Toluene	1,000	MCL and MSC	Antimony	6	MCL and MSC
1,2,4-Trichlorobenzene	70	MCL and MSC	Arsenic	10	MCL
1,1,1-Trichloroethane	200	MCL and MSC	Barium	2,000	MCL and MSC
1,1,2-Trichloroethane	3	MCLG	Chromium (total)	100	MCL and MSC
TCE	5	MCL and MSC	Iron	NS	N/A
Vinyl chloride	2	MCL and MSC	Lead	5	MSC
Xylenes (total)	10,000	MCL and MSC	Manganese	NS	N/A
2-Methylnaphthalene	730	MSC	Thallium	0.5	MCLG
2-Methylphenol	NS	N/A	Vanadium	260	MSC

Notes:
MSC = PADEP Medium-Specific Concentration for Groundwater; residential used aquifer, total dissolved solids <=2500
NS = no standard
N/A = not applicable
Source: 2007 ROD, Table 22

Status of Implementation

The PRP group submitted the OU1 remedial design report to EPA in March 2012. EPA approved the OU1 remedial design report in May 2014. The PRP group conducted the OU1 remedial action from May 2014 through August 2015. The PRP group's September 2015 Remedial Action Completion Report for OU1 describes the implementation of the OU1 remedy, including excavation and consolidation of contaminated soil and installation of the Site's groundwater collection and treatment system, the slurry wall and the cap. The OU1 remedy implementation was conducted in accordance with the selected remedy as described in the ROD and ESD. Specific components included:

- Excavation of 8,707 cubic yards of contaminated soil from off the facility, and consolidation in the WMA. See Figure 2 for locations of off-facility excavation. Confirmation sampling was conducted to ensure that remediation goals were met. There were a limited number of off-facility areas that could not be excavated, which included: near a sanitary sewer line, near high-voltage electrical towers, and near large trees of notable value as identified by the U.S. Fish and Wildlife Service.
- Excavation of the two on-facility areas outside the WMA that exceeded soil cleanup levels (4,879 cubic yards of chromium-contaminated soil and 1,766 cubic yards of LNAPL-stained soil) and consolidation in the WMA. No soil on the facility exceeded the 15 mg/kg PCB cleanup level outside the WMA.
- Analysis of post-excavation soil samples for confirmation.
- Removal of the existing wetlands on the WMA and construction of compensatory wetlands on the section of the facility northeast of the WMA.
- Installation of a slurry wall around the perimeter of the WMA. The bottom of the slurry wall was notched into the top of competent sandstone bedrock as deep as standard excavation equipment would allow (usually 1 to 2 feet into bedrock).
- Installation of groundwater recovery lines (French drains) to dewater the WMA and to collect LNAPL floating on top of the groundwater inside the WMA. The groundwater and LNAPL collected by the recovery lines flow into treatment cells, where they are treated using activated carbon; the treated water is then discharged into underground infiltration galleries outside of the WMA.
- Installation of a multi-layered, low-permeability cap including (from bottom to top) a base layer of soil, a non-woven geotextile, 40-mil linear low-density polyethylene flexible membrane liner, drainage layer, and a 24-inch vegetated soil cover.
- Installation of a 7-foot chainlink fence separating the roadway from the WMA and the constructed wetland, and a fence between the WMA and the constructed wetland.

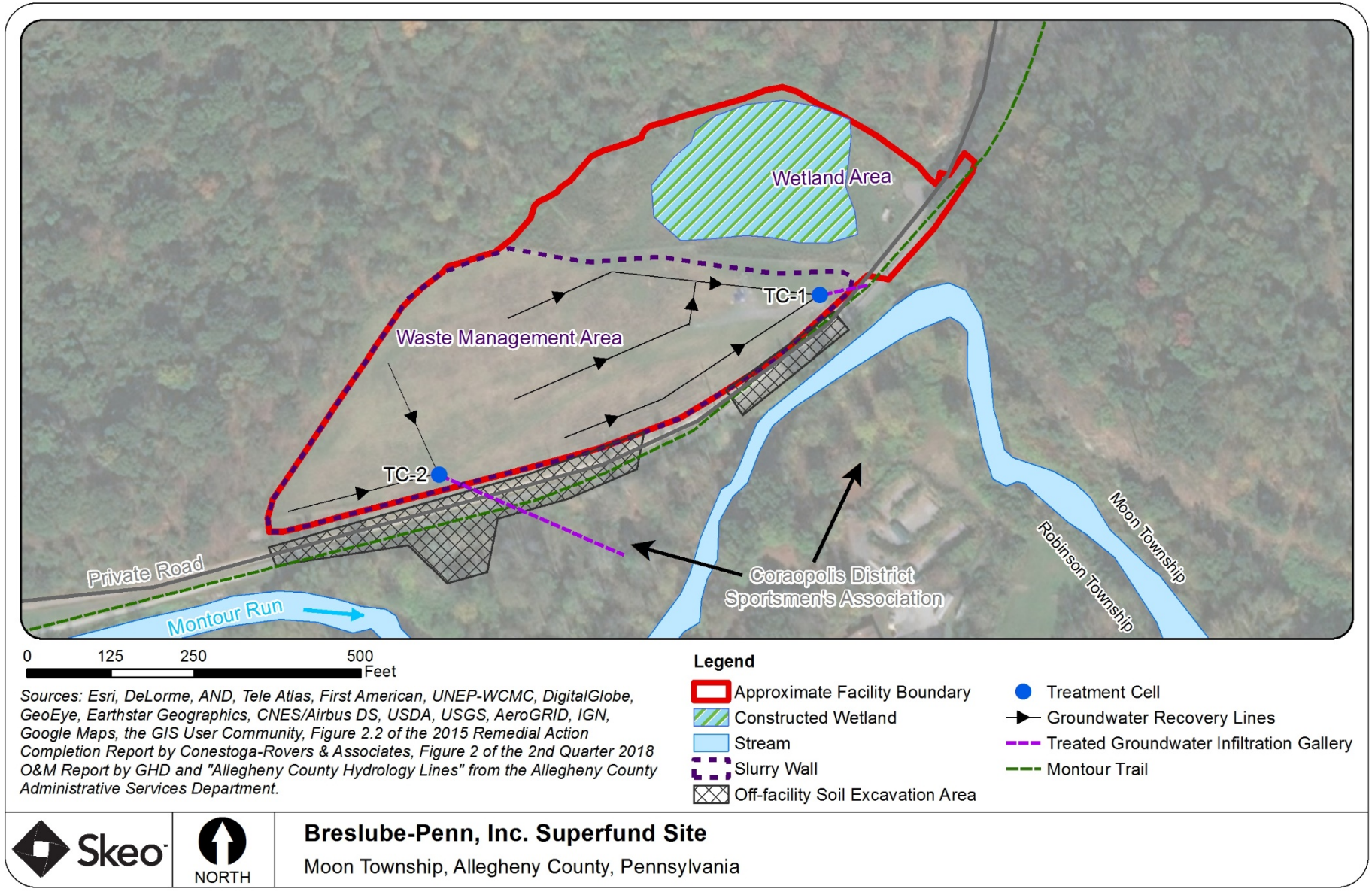
OU2 (groundwater outside the WMA) is in the remedial design phase. The primary components of the OU2 remedy include in-situ enhanced bioattenuation to treat groundwater, and long-term groundwater and surface water monitoring. EPA's 2007 ROD stated that volatile organic compounds (VOCs) act as carriers for metals and PCBs, so reductions in VOC concentrations would be expected to reduce the mobility of metals and PCBs. In June 2015, EPA approved the PRP group's *Work Plan for In-Situ Groundwater Treatment Program*. PRP contractors conducted baseline groundwater monitoring in July 2015. In September and October 2015, PRP contractors conducted the first in-situ groundwater treatment injections, as part of an extended pilot study to confirm the effectiveness of in-situ treatment. For the shallow unconsolidated aquifer, in-situ enhanced biodegradation was conducted by injecting emulsified vegetable oil (to serve as a carbon source for microbes) and nutrients into wells outside the WMA along the southeastern border of the WMA (see Figure 3). Additional nutrient injections were conducted on a quarterly basis through the fall of 2017 if needed based on nutrient monitoring data. In April 2018, additional carbon source (emulsified vegetable oil) and nutrients were injected into the shallow unconsolidated aquifer.

For the shallow bedrock aquifer, in-situ chemical oxidation was conducted during 2015 through 2017 by injecting sodium hydroxide and sodium persulfate into wells outside the WMA along the southeastern and northern borders of the WMA (see Figure 3). These injections started in October 2015 and were repeated quarterly through October 2017. In April 2018, the PRP contractors conducted additional injections into the shallow bedrock aquifer using

the in-situ enhanced biodegradation approach (emulsified vegetable oil and nutrients) rather than the previous in-situ chemical oxidation (ISCO) approach. This change was made from the findings in the two-year pilot study report that ISCO has been effective in reducing VOC concentrations. Additional oxidant injections would likely not be an efficient way to treat residual impacts given that conditions are naturally reducing in the bedrock aquifer and in areas not affected by the oxidant, biodegradation of the VOCs is occurring.

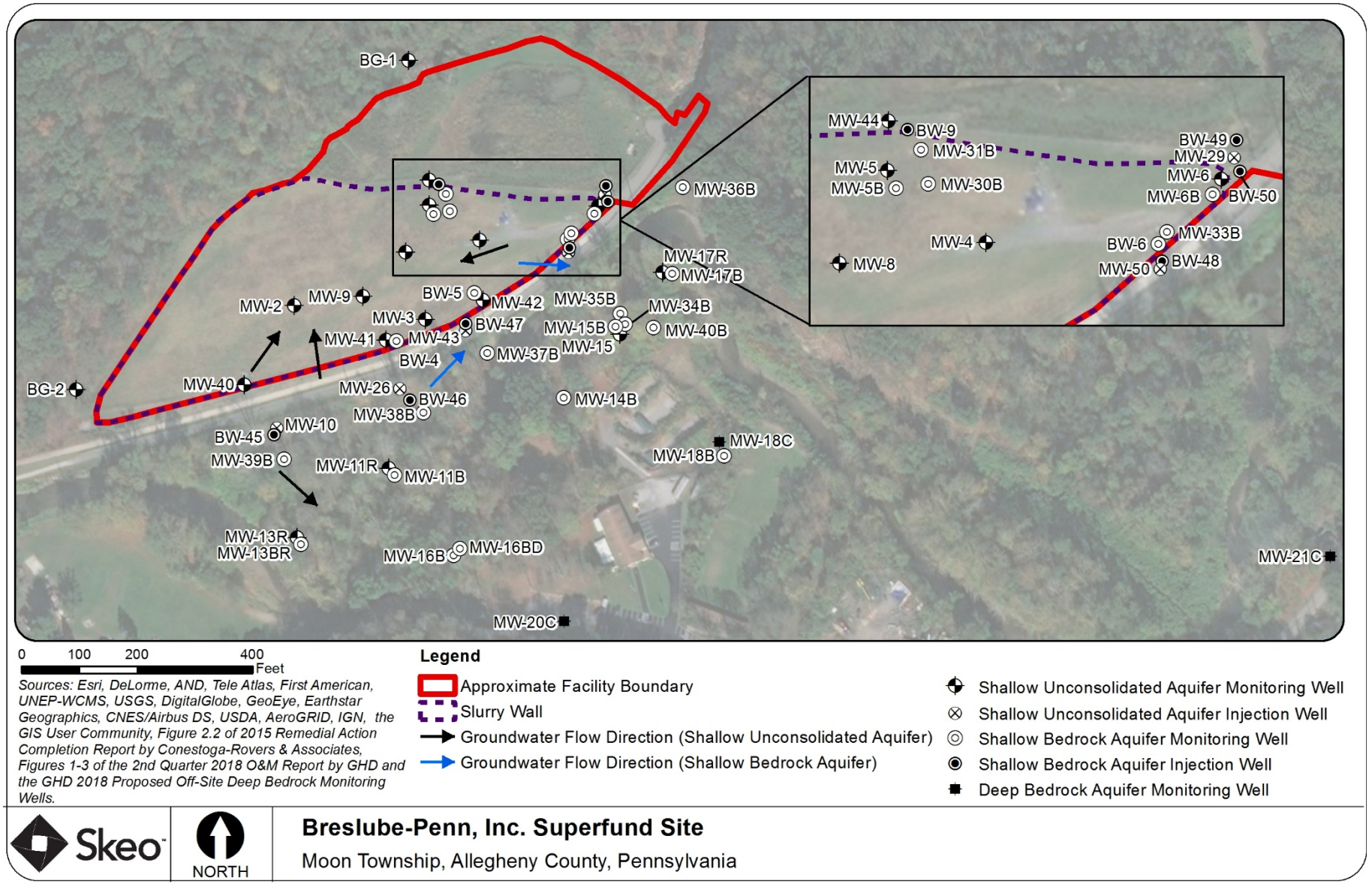
As stated in the ROD, upon completion of the pilot study, an Enhanced Bioattenuation Plan will be submitted to EPA for approval.

Figure 2: Detailed Site Map



Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding EPA's response actions at the Site.

Figure 3: Well Map



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Institutional Control Review

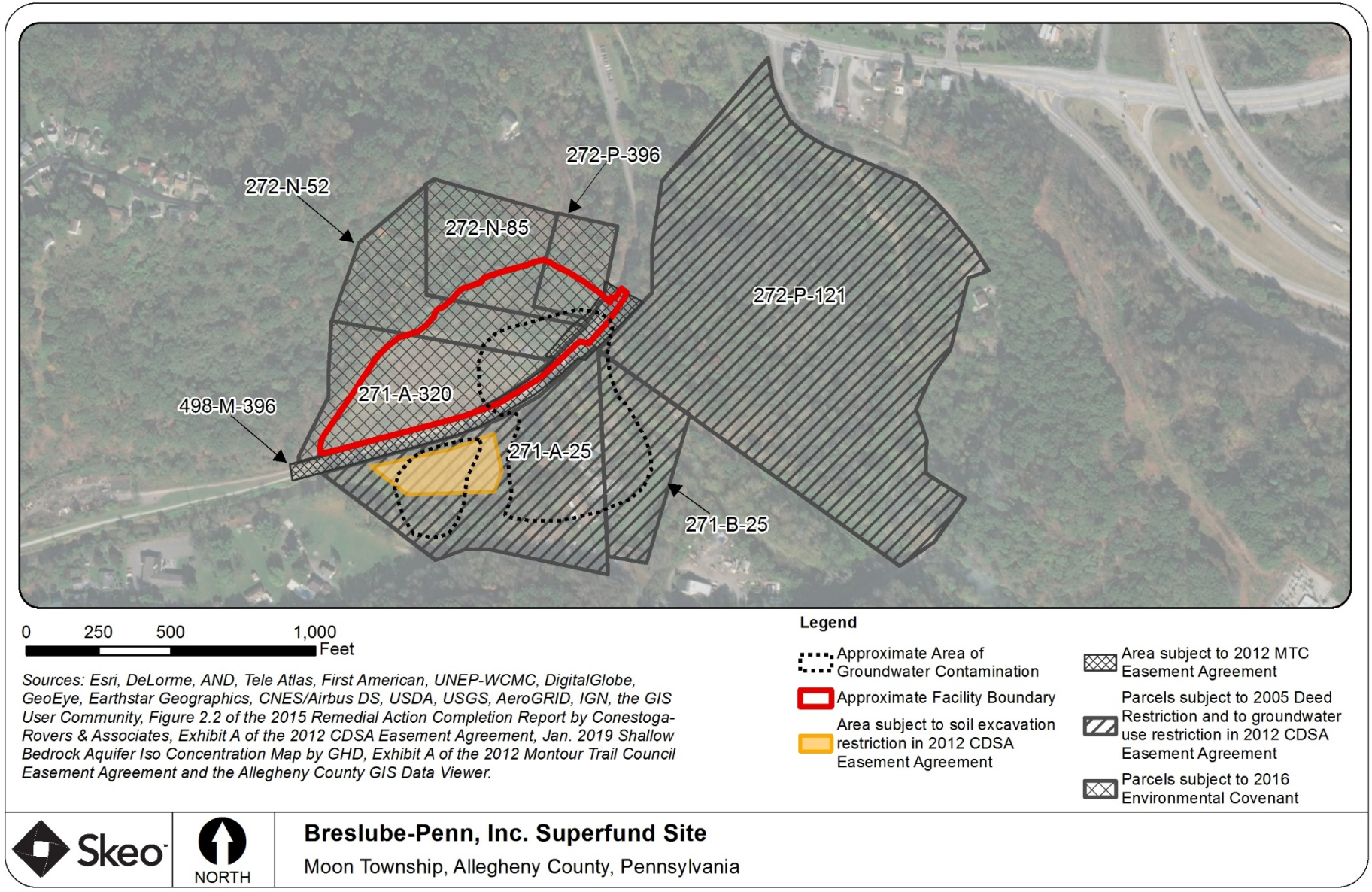
The ROD called for institutional controls (such as title notices and land use restrictions through easements and covenants and orders from or agreements with EPA and/or PADEP) to protect the remedy and prevent exposure to Site contaminants.

Table 4 describes the Site's institutional controls.

Table 4: Summary of Institutional Controls (ICs)

Media, Engineered Controls, and Areas That Do Not Support UU/UE Based on Current Conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcels	IC Objective	Title of IC Instrument Implemented and Date
Groundwater and soil at former facility property	Yes	Yes	271-A-320 272-N-52 272-P-396 272-N-85	To restrict use of the facility to preclude any disturbance of the WMA and to prevent potable use of contaminated groundwater	Environmental Covenant (recorded March 2016, Book 16308 Page 407) prohibits groundwater use, prohibits excavation, restricts land use to non-residential uses, requires pre-approval by EPA and PADEP for any public or commercial uses, and requires vapor intrusion mitigation for any future buildings.
Groundwater, subsurface soil, and installed components at Coraopolis District Sportsmen's Association property	Yes	Yes	271-A-25 271-B-25 272-P-121	To prevent potable use of contaminated groundwater, to prevent exposure to contaminated subsurface soil, and to prevent exposure to contaminated soil that could not be excavated near trees and utilities	Easement Agreement (signed May 3, 2012 and recorded November 2, 2018, Book 17415 Page 52) prohibits use of contaminated groundwater throughout the property. The Agreement also restricts excavation of subsurface soil and protects installed components in the Easement Area (see Figure 4). Deed Restriction (signed January 2005) prohibits groundwater use, restricts excavation and restricts land use. Robinson Township requires all new construction to connect to a public water supply if available.
Groundwater, subsurface soil, and installed components at Montour Trail Council (MTC) property	Yes	Yes	498-M-396		Easement Agreement (signed May 7, 2012) prohibits use of contaminated groundwater, restricts excavation of subsurface soil, and protects installed components in the Easement Area (see Figure 4).

Figure 4: Institutional Control Map



Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding EPA's response actions at the Site.

The 2005 Deed Restriction for the Coraopolis District Sportsmen's Association property and the 2012 Easement Agreement for the Montour Trail Council property were signed but were not recorded in the Allegheny County land records. This FYR recommends that the PRPs record both of these documents in the Allegheny County land records.

In addition to the groundwater use restrictions contained in the institutional control documents listed in Table 4, some local ordinances that are in place may also help prevent people from installing wells in areas with contaminated groundwater. County and township rules require users to connect to a public water supply if one is available.[2] For the area of contaminated groundwater that is in Robinson Township, public water is available from the Municipal Authority of the Township of Robinson. The Municipal Authority of the Township of Robinson also has a water line in Moon Township that runs along the south side of the private road across from the Site's constructed wetland area and crosses beneath Montour Run to the CDSA property. Future development in Moon Township on Montour Road would be allowed to connect to this water line; however, it is not clear whether Moon Township officials would require connecting to the water lines of the Municipal Authority of the Township of Robinson. Neither the Moon Township Municipal Authority nor the Coraopolis Water and Sewer Authority have water lines near the Site.

System Operations

Operation and maintenance (O&M) activities for OU1 are conducted in accordance with the Operation, Maintenance and Monitoring Plan (Appendix H of the 2012 Final Design Report and Appendix J of the 2015 Remedial Action Completion Report). O&M activities include:

- Site inspections: weekly and monthly.
- Recovery of LNAPL from monitoring wells: monthly.
- Maintenance as needed.
- Groundwater monitoring: quarterly for the first two years of operation, semi-annually for years three through five, and annually thereafter.
- Slurry wall performance monitoring (hydraulic head measurements): monthly.
- Treated effluent monitoring: quarterly.
- Monitoring of wetland for three years after construction.
- Progress reports submitted to EPA and PADEP: quarterly.

At EPA's request, in August 2016, PRP contractors modified both treatment cells in the WMA to prevent influent water from rising to an elevation that could potentially bypass the treatment system. These modifications consisted of installing an actuator, fluid level regulators and a telemetry system in each treatment cell.

Treatment cell 1 (TC-1) has experienced various periods of operational downtime since it began operating in August 2015. These problems occur when the groundwater level in the discharge infiltration gallery is high, causing an inadequate hydraulic gradient between the treatment cell and the discharge gallery. At EPA's request, the PRP group submitted a work plan in May 2018 for modifications to TC-1 to address this performance issue. In July 2018, EPA notified the PRP group that it may proceed with implementing the modifications as presented in the work plan. The PRP group mobilized at the Site in September 2018 and completed the modifications by November. The modifications included installing an injection well for discharging effluent from TC-1 when the groundwater level is too high to discharge to the TC-1 discharge gallery. In addition, the PRP group conducted maintenance activities for both treatment cells, including sealing leaks, installing check valves to prevent backflow from the discharge galleries, and cleaning effluent discharge lines.

[2] Allegheny County Health Department Rules and Regulations (Article 6 Section 630 and Article 15 Section 602) require all buildings within 250 feet of a public water supply to be connected to that public water supply. Moon Township's Subdivision and Land Development Ordinance (Chapter 22 Sections 402, 511 and 704) requires all new construction to connect to a public water supply if available.

III. PROGRESS SINCE THE PREVIOUS REVIEW

This is the first FYR for the Site.

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Community Involvement and Site Interviews

A public notice was made available by publishing a newspaper advertisement in the *Allegheny County Times* on February 22, 2019 (Appendix C). It stated that the FYR was underway and invited the public to submit any comments to EPA. The results of the review and the report will be made available at the Site's information repository, Coraopolis Memorial Library located at State and School Streets in Coraopolis, Pennsylvania, and at https://www.epa.gov/superfund/search-superfund-five-year-reviews.

During the FYR process, interviews were conducted to document any perceived problems or successes with the remedy that has been implemented to date. The interviews are summarized below. Appendix D provides the complete interviews.

EPA conducted interviews with stakeholders, local officials and community associations. In general, the overall impression of EPA's ongoing work at Breslube-Penn is positive. Respondents noted that EPA has effectively communicated and has kept stakeholders informed of on-going work. Community leaders and officials expressed that the cleanup plan is being well implemented and they are confident that EPA is monitoring the Site effectively. The Coraopolis District Sportsmen's Association wants to have more information from EPA about vapor intrusion. Stakeholders look forward to the Site being returned to beneficial reuse.

Data Review

Hydraulic Gradient

PRP contractors measure hydraulic head monthly at a series of monitoring well pairs (inside and outside the slurry wall; shallow unconsolidated aquifer and shallow bedrock aquifer; see Table 5) to assess whether the WMA is achieving its goal of maintaining inward and upward hydraulic gradients. The ROD and ESD established that an upward gradient should be maintained to demonstrate the effectiveness of the remedy to contain the contamination within the WMA. If the groundwater gradients are not achieved, the contingency remedy established in the ROD would be implemented.

Hydraulic gradient data collected from July 2015 through June 2018 show that, of the six well pairs that assess the hydraulic gradient across the slurry wall, five well pairs consistently demonstrate the inward gradient needed to contain groundwater contamination within the WMA (see Table G-1 in Appendix G). One well pair (MW-6 and MW-29), which is at the eastern end of the WMA near TC-1, consistently demonstrates an outward gradient. Of the five well pairs that assess the hydraulic gradient between the unconsolidated aquifer and the shallow bedrock aquifer inside the WMA, only one well pair (MW-3 and BW-47) consistently demonstrates the upward gradient needed to contain groundwater contamination within the WMA (see Table G-1 in Appendix G). The modifications to TC-1 that the PRP group implemented in September 2018 are intended to improve these performance issues. EPA will review the monthly hydraulic head data to evaluate the effectiveness of the modifications to TC-1 and its ability to maintain the inward and upward gradients causing the groundwater in the bedrock to flow up into the overburden.

Table 5: Monitoring Well Pairs

	Well Pair	
Inside versus Outside the Slurry Wall	Inside the Slurry Wall	Outside the Slurry Wall
	MW-40	MW-10
	MW-41	MW-26
	MW-3	MW-43
	MW-42	MW-43
	MW-6	MW-29
	MW-5	MW-44
Inside the WMA: Shallow Unconsolidated versus Shallow Bedrock	Shallow Unconsolidated	Shallow Bedrock
	MW-41	BW-4
	MW-3	BW-47
	MW-42	BW-5
	MW-6	MW-6B
	MW-5	MW-5B

Treated Effluent

Treated effluent monitoring data from TC-1 and TC-2 from May/June 2015 through June 2018 show that treated effluent from TC-2 had exceedances of the Site's groundwater cleanup goals for several semi-volatile organic compounds; all the exceedances were in August and November 2015. Treated effluent from TC-1 had several VOC exceedances in August 2016; PRP contractors reported that this was due to broken piping near TC-1 allowing untreated groundwater to mix with the treated water. PRP contractors repaired this broken pipe in August 2016. Treated effluent from TC-1 also had several additional, sporadic exceedances of various COCs, both before and after the pipe repair. EPA will monitor the effluent data from the treatment cells to assess if the repair improves the performance of the treatment cells; the PRP group will continue to monitor treated effluent from TC-1.

Groundwater

Many COCs are present in groundwater outside the WMA (mainly to the south and east of the WMA) at levels exceeding their cleanup levels, including:

- VOCs (1,1,1-TCA, 1,1,2-TCA, 1,1-DCA, 1,1-DCE, 1,2-DCA, benzene, chloroethane, cis-1,2-DCE, methylene chloride, TCE, vinyl chloride).
- PCBs (Aroclor 1254, Aroclor 1260).
- Metals (antimony, arsenic, barium, chromium, lead, vanadium).

Figures 5 and 6 depict the areas of VOC contamination in the shallow unconsolidated aquifer and the shallow bedrock aquifer. Figures G-1 through G-6 in Appendix G present groundwater concentration trends for selected COCs in the shallow unconsolidated aquifer and the shallow bedrock aquifer. EPA selected these COCs for presentation in this FYR based on their widespread and frequent detections at concentrations well above their cleanup levels. Injection wells are plotted on the charts using square data markers. As shown in these figures, concentrations of 1,1-DCE, vinyl chloride and Aroclor 1254 remain well above their respective cleanup levels, in both the shallow unconsolidated aquifer and the shallow bedrock aquifer.

As described in the Status of Implementation section above, as part of the remedial design for OU2, PRP contractors have been conducting in-situ groundwater treatment injections since the fall of 2015 on an approximately quarterly basis, as needed, as part of an extended pilot study to evaluate the effectiveness of in-situ treatment. The in-situ groundwater treatment has resulted in temporary and isolated reductions in VOC concentrations in individual wells. However, a significant number of monitoring wells continue to have VOC concentrations well above cleanup goals with no apparent decreasing trend in concentration. The pilot study has not yet demonstrated that in-situ treatment will be able to achieve groundwater cleanup goals within a reasonable timeframe.

The monitoring data in the 2018 Two-Year Evaluation has initially showed that the in-situ enhanced biodegradation treatment has been effective in reducing the VOC concentrations. However, this is a pilot study which is ongoing and the data have not been completely evaluated by EPA. A final determination will be made after completion of the pilot study and evaluation of all the data.

EPA will review the Three-Year In-Situ Groundwater Treatment Program Report in 2019 and determine whether the in-situ groundwater treatment pilot study can be concluded and an Enhanced Bioattenuation Plan be submitted for EPA approval, or whether the pilot study should continue for an additional year. As established in the ROD, upon completion of the pilot study, an Enhanced Bioattenuation Plan will be submitted to EPA for approval. The Plan shall include the number of injection points and reagents to be used. The injection points will be designed to allow injection of reagents into the unconsolidated materials and upper bedrock zones. Upon EPA approval of the Enhanced Bioattenuation Plan, the full-scale technology shall be implemented at the Site.

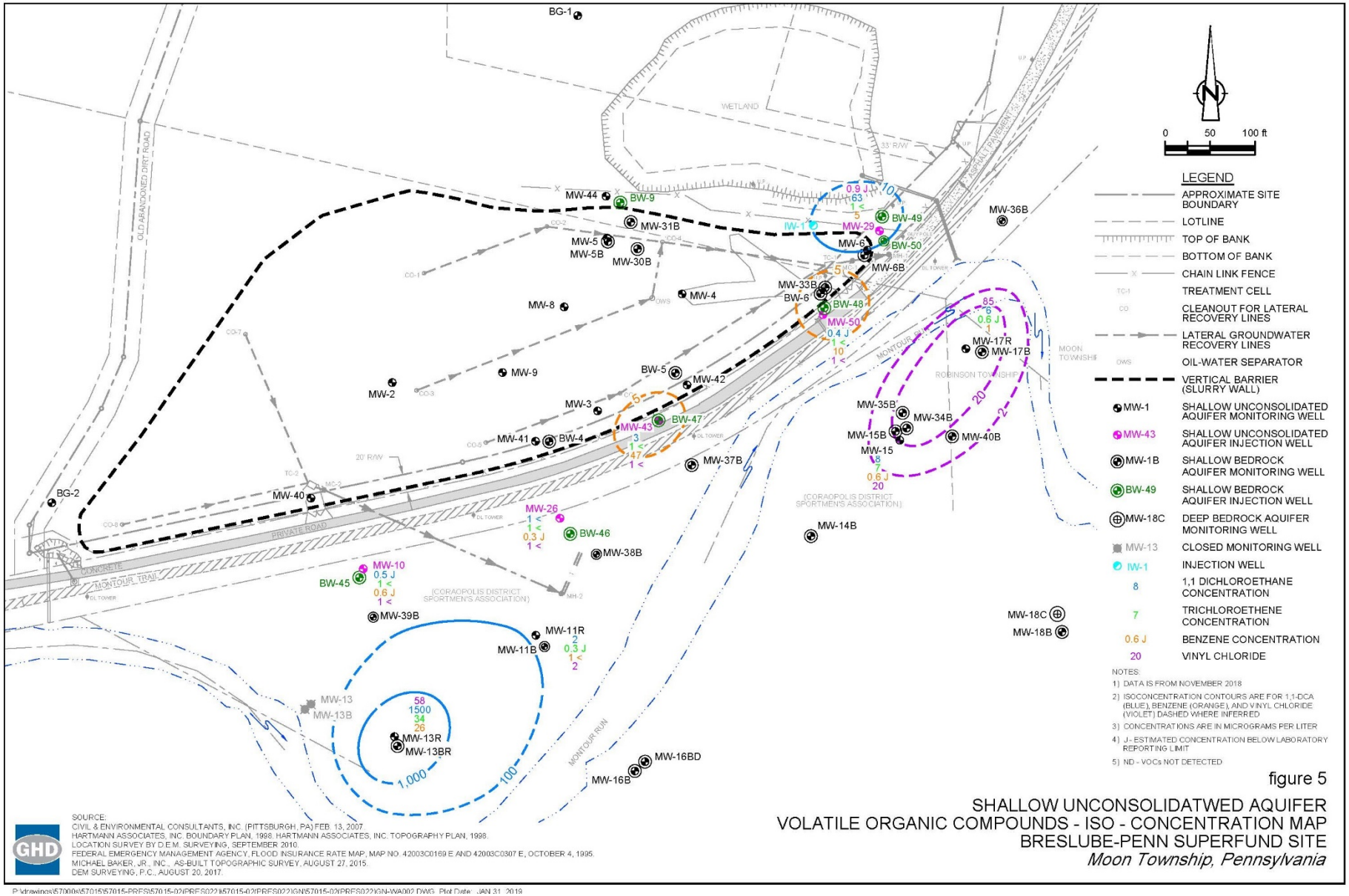
The reported detection limit for pentachlorophenol in groundwater and effluent samples (5 µg/L) is higher than its cleanup level (1 µg/L). In addition, for most sampling events, the reported detection limit for Aroclor 1254 in groundwater and effluent samples (e.g., 0.44 µg/L) was slightly higher than its cleanup level (0.37 µg/L). The PRP group should report the more stringent Method Detection Limits for pentachlorophenol and Aroclor 1254, as specified in the Site's 2016 Quality Assurance Project Plan, Worksheet #15 in order to determine if cleanup levels are being achieved.

In response to high levels of VOCs detected in deep bedrock well MW-18C, the PRP group installed two new deep bedrock monitoring wells (MW-20C and MW-21C; see Figure 3) in 2018 in order to help define the extent of contamination in the deep bedrock aquifer and to refine understanding of the groundwater flow direction in the deep bedrock aquifer. Groundwater samples collected from these two new wells in November 2018 contained no COCs above their cleanup levels, except for chromium in MW-20C (143 ug/L).

As of August 2018, PRP contractors have recovered 32 gallons of LNAPL since July 2015. Recovered LNAPL is sent off site for disposal.

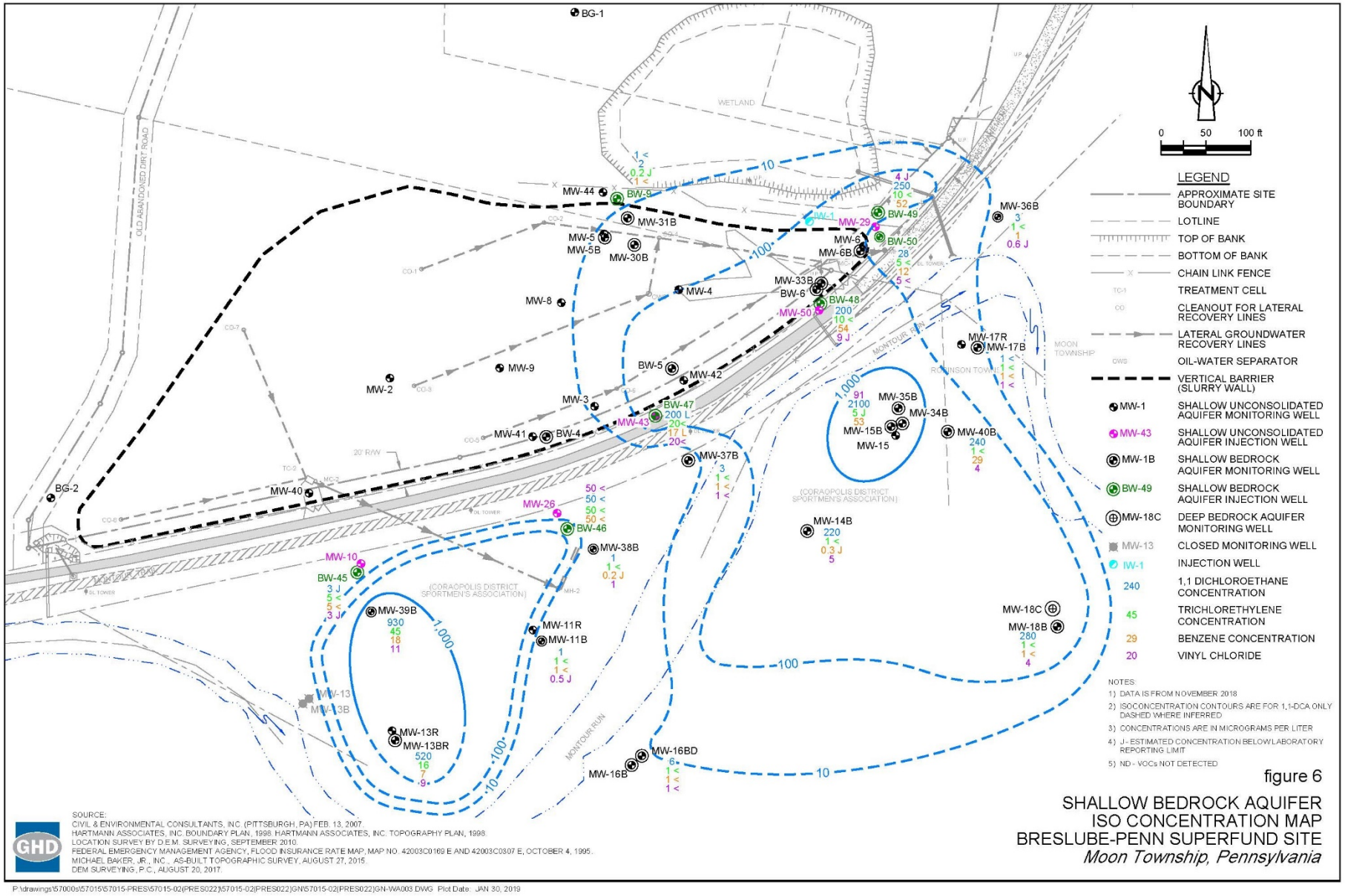
The Site's groundwater was analyzed for 1,4-dioxane in 2018 for informational purposes. 1,4-Dioxane was once commonly used as a stabilizer for chlorinated solvents such as TCE and TCA, which are present at the Site. Groundwater samples collected in August 2018 and November 2018 indicate that 1,4-dioxane is widespread in the shallow unconsolidated aquifer, the shallow bedrock aquifer and the deep bedrock aquifer at concentrations of up to 2,200 µg/L, which is well above EPA's residential tapwater screening level (0.46 µg/L) and PADEP's Medium-Specific Concentration for residential used aquifers (6.4 µg/L). This FYR recommends that EPA prepare an explanation of significant differences (ESD) to add 1,4-dioxane as a COC for the Site.

Figure 5: VOC Isoconcentration Map – Shallow Unconsolidated Aquifer[3]



[3] Prepared by PRP contractor GHD in January 2019 based on November 2018 data.

Figure 6: VOC Isoconcentration Map – Shallow Bedrock Aquifer[4]



[4] Prepared by PRP contractor GHD in January 2019 based on November 2018 data.

Surface Water

Before the OU1 remedy was implemented in 2014-2015, PRP contractors collected surface water samples in August 2011 and February 2012 from Montour Run, at one location upstream of the Site and one location downstream of the Site. The samples were analyzed for VOCs. A few VOCs were detected at low levels in the 2011 downstream sample (1,1,1-TCA, 1,1-DCA, 1,1-DCE and acetone); acetone was also detected at a low level in the 2011 upstream sample. No VOCs were detected above the laboratory detection levels in the 2012 samples. The PRP group again collected surface water samples in October 2015, December 2015 and August 2018. Samples were collected from three stations in Montour Run (upstream, midstream and downstream of the Site) for analysis of VOCs, metals with established site remedial goals, PCBs and parameters associated with the materials injected for in-situ treatment. The results were compared against Pennsylvania Human Health and Aquatic Life Criteria for Toxic Substances. No contaminants were detected at concentrations above these standards. However, some of the non-detect values have reporting limits that are higher than the standards. PRP contractors will collect additional surface water samples in 2019.

Site Inspection

The site inspection took place on August 21, 2018. Participants included the EPA RPM; EPA biologist; EPA hydrogeologist; PADEP project manager; EA Engineering (EPA's oversight contractor); Skeo (EPA FYR support contractor); the PRP group's project coordinator; GHD Inc. (PRP group's remedial action contractor); Ford Motor Company; U.S. Steel; Exxon Mobil; Kemron Environmental (representing AK Steel Corp.); and CBS Corporation. The purpose of the inspection was to assess the protectiveness of the remedy. Appendix E provides the completed FYR site inspection checklist. Appendix F provides photographs from the FYR site inspection.

The PRP group's project coordinator provided a detailed presentation about the current status of the Site's remediation. Site inspection participants then travelled to the Site. Site inspection participants visited the following areas at and near the Site: WMA, wetland area, Montour Trail, CDSA's property between Montour Run and the Montour Trail, downgradient areas along North Petrie Road and Coketown Road across Montour Run from the site property. The site property (both the WMA and the wetland area) is fenced with 7-foot chainlink fence and locked gates. The steep wooded hillside that rises at the rear of the Site is not fenced; the steep terrain deters trespassing. There were no signs of trespassing or vandalism at the Site, except for several smashed windows in the junk vehicles being stored by the property owner on the wetland area. Monitoring wells appeared to be in good condition; they are normally locked but were unlocked during the site inspection because a sampling event was in progress.

Site inspection participants walked around the WMA. The vegetated cover is well established. No animal burrows were observed. There were a few wheel ruts in the vegetated cover of the WMA, in the area where PRP contractors park their trucks. Site inspection participants opened the cover of TC-1 and observed the activated carbon treatment system.

The wetland appeared to be well established with cattails. At the time of the FYR site inspection, there were five vehicles, a small trailer, and cement mixer stored just inside the entrance to the wetland area (but not in the wetland). According to the EPA RPM's knowledge, the vehicles and equipment have been stored in this area since January 2017. The vehicles and equipment are not interfering with the remedy but over time they may release oil and metals that could contaminate the wetland area.

As part of the FYR site inspection, Skeo staff visited the Site's local repository at Coraopolis Memorial Library located at State and School Streets in Coraopolis, Pennsylvania. No site documents were available at the library. After this FYR is complete, EPA will send site documents to the library.

V. TECHNICAL ASSESSMENT

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

Parts of the OU1 remedy are functioning as intended by the decision documents. Contaminated soils were excavated and consolidated within a capped WMA, achieving the remedial action objective of preventing exposure to contaminated soils. The WMA's cap is preventing infiltration of surface water into the WMA. One of the WMA's two treatment cells (TC-2) is functioning properly. The PRP group recently made some modifications to the other treatment cell (TC-1); EPA is evaluating whether TC-1 is now functioning properly. All necessary institutional control documents have been signed to prevent exposure to contamination in groundwater and subsurface soil; however, some of the institutional control documents still need to be recorded in the county's land records. PRP contractors are conducting required O&M activities, including recovery of LNAPL.

The slurry wall surrounding the WMA does not appear to be meeting the remedial action objective of preventing the migration of contamination out of the WMA. The ROD states that the WMA must maintain an inward and upward hydraulic gradient in order to contain contamination within the WMA. One well pair at the eastern end of the WMA consistently demonstrates an outward gradient. In addition, of the five well pairs that assess the hydraulic gradient between the unconsolidated aquifer and the shallow bedrock aquifer inside the WMA, only one well pair consistently demonstrates the upward gradient needed to contain groundwater contamination within the WMA. The other four well pairs show a variable gradient in hydraulic heads from the shallow bedrock to the unconsolidated aquifer. The modifications to treatment cell TC-1 that the PRP group implemented in September 2018 are intended to improve these performance issues.

Monitoring data show that treated effluent from the WMA's treatment cells generally meets the Site's groundwater cleanup goals. TC-2 had several exceedances, all in 2015. TC-1 has had several sporadic exceedances of various COCs; some of these were caused by a broken pipe allowing untreated groundwater to mix with treated water. PRP contractors repaired this broken pipe in August 2016.

OU2 (groundwater outside the WMA) is in the remedial design phase. Many COCs are present in groundwater outside the WMA at levels exceeding their cleanup levels, including VOCs, PCBs and metals. In addition, 1,4-dioxane is widespread in the shallow unconsolidated aquifer, the shallow bedrock aquifer and the deep bedrock aquifer at concentrations well above EPA and state screening levels. As part of the remedial design for OU2, PRP contractors have been conducting an extended pilot study of in-situ groundwater treatment since the fall of 2015. The in-situ groundwater treatment has resulted in temporary and isolated reductions in VOC concentrations in individual wells. However, the pilot study has not yet demonstrated that in-situ treatment will be able to achieve groundwater cleanup goals within a reasonable timeframe. EPA will review the Three-Year In-Situ Groundwater Treatment Program Report in 2019 and determine whether the in-situ groundwater treatment pilot study can be concluded and an Enhanced Bioattenuation Plan be submitted for EPA approval, or whether the pilot study should continue for an additional year, or whether to implement Contingency 2.

PRP contractors conduct O&M activities and submit quarterly reports to EPA. This FYR notes several items with respect to the Site's monitoring. The reported detection limit for pentachlorophenol in groundwater and effluent samples (5 µg/L) is higher than its cleanup level (1 µg/L). In addition, for most sampling events, the reported detection limit for Aroclor 1254 in groundwater and effluent samples (e.g., 0.44 µg/L) was slightly higher than its cleanup level (0.37 µg/L).

Institutional controls have been implemented to prevent disturbance of the WMA, to prevent potable use of contaminated groundwater, and to prevent exposure to contamination remaining in subsurface soil. For the former facility property, an Environmental Covenant recorded in 2016 prohibits groundwater use, prohibits excavation, restricts land use to non-residential uses, requires pre-approval by EPA and PADEP for any public or commercial uses, and requires vapor intrusion mitigation for any future buildings. Institutional controls for the CDSA property and for the Montour Trail Council property were signed but have not been recorded in the county's land records.

This FYR recommends that the PRP group record the 2005 CDSA Deed Restriction and the 2012 Montour Trail Council Easement Agreement in the county's land records in order to ensure that the restrictions run with the land (i.e., apply to subsequent owners of the property).

The facility property is secured with a locked fence; trespassing and vandalism have not been a problem.

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

The exposure assumptions and remedial action objectives used at the time of remedy selection are still valid, as they have been updated since 2007. Because the total risk goal for groundwater is protective by definition, and because soil exposure has been interrupted by excavation, clean backfill, covers and institutional controls, the remedial action objectives are still valid and the remedy is expected to be protective.

As described in the ROD, two residences on North Petrie Road near the Site use groundwater wells. These residents chose not to be connected to the available municipal water supply. Monitoring data collected during the RI found that these two homes had not been impacted by groundwater contamination associated with the Site. PRP contractors collected a water well sample from one of the residences in May 2017 and analyzed it for VOCs; the other residence refused sampling. No VOCs were detected in the residential water well sample. The two new deep groundwater monitoring wells (MW-20C and MW-21C) that were installed and sampled in 2018 help define the extent of the groundwater plume in the deep bedrock aquifer; the private water wells are beyond the extent of contamination. In addition, a potable water well survey conducted in 2017 found that there are no known receptors being affected by site-related constituents of concern in groundwater.

This FYR conducted a review of the Site's ARAR values to determine whether any of the ARAR values have become more stringent since the 2007 ROD was issued. These paragraphs provide a summary of the ARAR review; see Appendix H for details. The following soil COCs have 2018 ARAR values that are more stringent than the corresponding ***on-facility*** soil cleanup levels selected in the 2007 ROD: benzo(a)pyrene, manganese and Aroclor 1242. The following soil COCs have 2018 ARAR values that are more stringent than the corresponding ***off-facility*** soil cleanup levels selected in the 2007 ROD: chromium, manganese and Aroclor 1242. Easement Agreements are in place with the Montour Trail Council and CDSA to prohibit disturbance of subsurface soil in the Easement Areas; a Deed Restriction for all CDSA properties restricts soil disturbances and requires EPA notification.

This FYR conducted a screening-level review of the Site's risk-based soil cleanup levels (see Table I-1 in Appendix I). The screening found that all of the Site's risk-based soil cleanup values fall within EPA's range of acceptable risk. The Aroclor 1254 cleanup goal for off-facility surface soil (1.5 mg/kg) corresponds to a noncancer hazard of 1.3, which slightly exceeds EPA's screening level of 1. This does not affect the Site's protectiveness because confirmation sampling found that actual PCB concentrations remaining in surface soil at off-facility areas were typically well below 1.5 mg/kg, and the areas that might be affected are not used for residential purposes.

The current ARAR values for some groundwater COCs are more stringent than the groundwater cleanup values selected in the 2007 ROD. As stated in the ROD, the Site's groundwater cleanup will continue until the cumulative risk is reduced to an acceptable risk level (i.e., cancer risk of 1×10^{-6} to 1×10^{-4} or less, and non-cancer hazard index of 1 or less per target organ). Therefore, because of the cumulative risk standard, the Site's groundwater cleanup will be protective by definition.

This FYR conducted a screening-level vapor intrusion analysis to determine whether additional investigation is needed for the vapor intrusion exposure pathway (see Tables I-2 and I-3 in Appendix I). The analysis included CDSA's social hall and the nearest residence. To provide a conservative vapor intrusion screening, groundwater data from monitoring wells closest to these structures were identified and used in EPA's Vapor Intrusion

Screening Level (VISL) calculator. The screening of CDSA's social hall indicates that the vapor intrusion exposure pathway is likely not a concern based on current data; however, contaminant concentrations in groundwater near the social hall have been increasing over the last several years. Therefore, it is recommended that the vapor intrusion pathway continue to be evaluated as additional groundwater monitoring occurs (including any newly installed monitoring wells). The screening for the nearest residence estimated that the cancer risk is equal to the upper bound of EPA's risk management range and that the noncancer hazard exceeds EPA's threshold of 1. Based on the screening-level results, EPA recommends that the PRP group further evaluate the residential vapor intrusion exposure pathway by first sampling shallow groundwater near the residence. The PRP group submitted a work plan to EPA in March 2019 which proposed two temporary shallow monitoring wells for further evaluating the potential for vapor intrusion. Indoor air and sub-slab VI sampling will be performed if warranted by the shallow groundwater results.

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

No other information has come to light that could call into question the protectiveness of the remedy.

VI. ISSUES/RECOMMENDATIONS

Issues/Recommendations
OU(s) without Issues/Recommendations Identified in the FYR:
None

Issues and Recommendations Identified in the FYR:

OU: OU1	**Issue Category:** Remedy Performance			
	Issue: The WMA is not achieving the inward and upward hydraulic gradients as specified in the ROD to ensure that contamination is contained within the WMA.			
	Recommendation: Determine whether the PRP group's modifications to treatment cell TC-1 have resulted in satisfactory performance of the WMA. If not, determine whether additional modifications can achieve the performance standards or if the ROD's Contingency 1 remedy (extraction and treatment of groundwater within the WMA) needs to be implemented.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	EPA	EPA	6/7/2020

OU: OU1, OU2	**Issue Category:** Institutional Controls			
	Issue: Institutional controls (deed restrictions) for the Coraopolis District Sportsmen's Association property and for the Montour Trail Council property were signed but have not been recorded in the county's land records.			
	Recommendation: Record the 2005 CDSA Deed Restriction and the 2012 Montour Trail Council Easement Agreement in the county's land records in order to ensure that the restrictions run with the land (i.e., apply to subsequent owners of the property).			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA	12/31/2019

OU: OU2	**Issue Category:** Remedy Performance			
	Issue: A screening-level analysis found that the vapor intrusion exposure pathway should be further evaluated for nearby residences.			
	Recommendation: Evaluate the vapor intrusion exposure pathway by sampling shallow groundwater near the residences, and performing sub-slab and indoor air VI sampling, if warranted.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
Yes	Yes	PRP	EPA	6/7/2021

OU: OU2	**Issue Category:** Monitoring			
	Issue: Recent groundwater sampling found that 1,4-dioxane is widespread at the Site at concentrations above federal and state screening levels.			
	Recommendation: Prepare an ESD to add 1,4-dioxane as a contaminant of concern for the Site.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	EPA	EPA	6/7/2020

OTHER FINDINGS

Several additional recommendations were identified during the FYR. These recommendations do not affect current protectiveness.

- The wetland appears to be well established with cattails. A vegetation survey should be performed for the wetland to demonstrate that the native plant community meets the design specifications.
- The reported detection limits for pentachlorophenol and Aroclor 1254 in groundwater and treated effluent are higher than their groundwater cleanup levels. EPA recommends that the PRP group report the more stringent Method Detection Limits for pentachlorophenol and Aroclor 1254, as specified in the Site's 2016 Quality Assurance Project Plan, Worksheet #15.

- A steel casing from an old monitoring well remains in Montour Run; this could pose a risk to recreational users of the creek. PRP contractors will attempt to remove it.
- The owner of the former facility property is storing vehicles and equipment just inside the entrance to the wetland area (but not in the wetland). The vehicles and equipment are not interfering with the remedy but over time they may release oil and metals that could contaminate the wetland area. The vehicles and equipment should be removed to prevent potential contamination of the wetland area.
- There may be errors in some of the quarterly average hydraulic head differences in the PRP group's quarterly reports. For example, Table 1C of the fourth quarter 2017 report presents -0.67 feet as the first quarter 2016 average for MW-6/MW-29, whereas EPA calculates an average of -0.50. The same table omits second quarter 2016 data for the same well pair. EPA requests that the PRP group ensure that full and accurate data are presented in all reports.
- No site documents were available at the site repository. After this FYR is complete, EPA will send site documents to the library.

VII. PROTECTIVENESS STATEMENTS

Protectiveness Statement	
Operable Unit: OU1	*Protectiveness Determination:* Short-term Protective
Protectiveness Statement: The remedy at OU1 currently protects human health and the environment because contaminated soil was excavated and consolidated within a capped Waste Management Area. However, in order for the remedy to be protective in the long term, the following actions need to be taken to ensure protectiveness: Determine whether the PRP group's modifications to treatment cell TC-1 have resulted in satisfactory performance of the WMA; if not, determine whether additional modifications can achieve the performance standards or if the ROD's Contingency 1 remedy (extraction and treatment of groundwater within the WMA) needs to be implemented. Record the 2005 CDSA Deed Restriction and the 2012 Montour Trail Council Easement Agreement in the county's land records in order to ensure that the restrictions run with the land (i.e., apply to subsequent owners of the property).	

Protectiveness Statement		
Operable Unit: OU2	*Protectiveness Determination:* Protectiveness Deferred	*Planned Addendum Completion Date:* 6/7/2021
Protectiveness Statement: A protectiveness determination of the remedy at OU2 cannot be made at this time until further information is obtained. Further information will be obtained by further evaluating the vapor intrusion exposure pathway at nearby residences using shallow groundwater samples near the residences. In addition, 1,4-dioxane will be added as a Site COC to be included in future sampling events. It is expected that these actions will take approximately two years to complete, at which time a protectiveness determination will be made. Institutional controls are in place to prevent the potable use of contaminated groundwater. Two new monitoring wells were installed in 2018 to delineate the extent of groundwater contamination in the deep bedrock aquifer. The in-situ pilot study is ongoing to determine whether in-situ bioremediation will be able to achieve the groundwater cleanup goals within a reasonable timeframe.		

VIII. NEXT REVIEW

The next FYR Report for the Breslube-Penn, Inc. Superfund site is required five years from the completion date of this review.

APPENDIX A – REFERENCE LIST

Draft Memorandum Re: Two-Year Evaluation - In Situ Groundwater Treatment Pilot Study, Breslube-Penn Superfund Site, Moon Township, Pennsylvania. From: Alan Weston, Sophia Dore and Daniel Cusick. To: Leo Brausch. January 2, 2018.

Final Design Report, Breslube-Penn Superfund Site, Moon Township, Pennsylvania, U.S. EPA ID No. PAD08966795. Region 3. March 2012.

First Explanation of Significant Differences for the Breslube-Penn Superfund Site, Moon Township, Allegheny County, Pennsylvania. Region 3. May 27, 2014. https://semspub.epa.gov/src/document/03/2179964.

Letter Report Re: Operations and Maintenance Report, First Quarter 2017, Breslube-Penn Superfund Site, U.S. EPA ID No. PAD08966795, Moon Township, Allegheny County, Pennsylvania. To: Frank Klanchar. May 4, 2017.

Letter Report Re: Operations and Maintenance Report, First Quarter 2018, Breslube-Penn Superfund Site, U.S. EPA ID No. PAD08966795, Moon Township, Allegheny County, Pennsylvania. To: Frank Klanchar. May 3, 2018.

Letter Report Re: Operations and Maintenance Report, Fourth Quarter 2017, Breslube-Penn Superfund Site, U.S. EPA ID No. PAD08966795, Moon Township, Allegheny County, Pennsylvania. To: Frank Klanchar. February 5, 2018.

Letter Report Re: Operations and Maintenance Report, Second Quarter 2017, Breslube-Penn Superfund Site, U.S. EPA ID No. PAD08966795, Moon Township, Allegheny County, Pennsylvania. To: Frank Klanchar. August 9, 2017.

Letter Report Re: Operations and Maintenance Report, Second Quarter 2018, Breslube-Penn Superfund Site, U.S. EPA ID No. PAD08966795, Moon Township, Allegheny County, Pennsylvania. To: Frank Klanchar. August 9, 2018.

Letter Report Re: Operations and Maintenance Report, Third Quarter 2017, Breslube-Penn Superfund Site, U.S. EPA ID No. PAD08966795, Moon Township, Allegheny County, Pennsylvania. To: Frank Klanchar. November 20, 2017.

Memorandum Re: One-Year Evaluation - In Situ Groundwater Treatment Program, Breslube-Penn Superfund Site, Moon Township, Pennsylvania. From: Sophia Dore and Daniel Cusick. To: Leo Brausch. September 30, 2016.

Memorandum Re: Work Plan - Treatment Cell 1 Performance Modifications, Breslube-Penn Superfund Site, U.S. EPA ID No. PAD08966795, Moon Township, Allegheny County, Pennsylvania. Region 3. May 11, 2018.

Operation and Maintenance Report, First Quarter 2016, Breslube-Penn Superfund Site, U.S. EPA ID No. PAD08966795, Moon Township, Allegheny County, Pennsylvania. Region 3. May 9, 2016.

Operation and Maintenance Report, Fourth Quarter 2016, Breslube-Penn Superfund Site, U.S. EPA ID No. PAD08966795, Moon Township, Allegheny County, Pennsylvania. Region 3. February 6, 2017.

Operation and Maintenance Report, Second Quarter 2016, Breslube-Penn Superfund Site, U.S. EPA ID No. PAD08966795, Moon Township, Allegheny County, Pennsylvania. Region 3. August 1, 2016.

Operation and Maintenance Report, Third Quarter 2016, Breslube-Penn Superfund Site, U.S. EPA ID No. PAD08966795, Moon Township, Allegheny County, Pennsylvania. Region 3. November 3, 2016.

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Remedial Action Completion Report, Breslube-Penn Superfund Site, Operable Unit 1, Moon Township, Pennsylvania, U.S. EPA ID No. PAD08966795. Region 3. September 2015.

Remedial Design/Remedial Action Consent Decree, Breslube-Penn Superfund Site, Moon Township, Pennsylvania. Region 3. August 31, 2009.

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Remedial Investigation Report, Volume 3 of 3, Breslube-Penn Superfund Site, Moon Township, Pennsylvania. Region 3. March 2, 2005. https://semspub.epa.gov/src/document/03/2072457.

APPENDIX B – SITE CHRONOLOGY

Table B-1: Site Chronology

Event	Date
Wiseman Oil Company operated a used oil processing and reclamation facility at the Site	1977-1982
Breslube-Penn, Inc. purchased the facility	1982
Breslube-Penn, Inc. continued used oil processing operations	1982-1986
Breslube-Penn, Inc. discontinued oil processing	1986
Breslube-Penn, Inc. signed a Consent Order with PADEP agreeing to remove fuel storage tanks and contaminated soil and perform groundwater study	1987
Breslube-Penn, Inc. used the facility as an oil transfer station	1987-1992
EPA conducted a preliminary investigation of the Site	October 10, 1988
Breslube-Penn, Inc. excavated and moved staged wastes and a portion of the filter cake waste to a new pile located in the western section of the property	1990
Operations at the facility ceased	1992
EPA negotiated an Administrative Order on Consent with Breslube-Penn, Inc. to perform a removal action	1993
EPA conducted a Removal Site Assessment at the facility	June 1993
Breslube-Penn, Inc. stopped complying with the Administrative Order on Consent, and EPA conducted a removal action to remove filter cake piles	June 1994
EPA proposed listing the Site on the National Priorities List (NPL)	October 2, 1995
EPA finalized the Site on the NPL	June 17, 1996
EPA started the RI/FS and concurrently sent Special Notice Letters to identifiable parties that had sent waste to the Site	1997
PRPs signed an Administrative Order on Consent with EPA to perform the RI/FS	February 2000
Property owner signed Deed Restriction regarding Coraopolis District Sportsmen's Association property	2005
PRPs completed the RI	March 2005
PRPs completed the FS	December 2006
EPA issued the Proposed Plan describing EPA's remedial approach for the Site and EPA's preferred remedy for the Site	March 30, 2007
EPA issued the Site's ROD, selecting a remedy for the Site	August 30, 2007
EPA entered the Consent Decree for the Site	September 2, 2007
EPA approved the work plan for pilot-scale LNAPL recovery testing	June 25, 2010
PRPs began operation of pilot-scale LNAPL recovery system	May 24, 2011
Coraopolis District Sportsmen's Association signed Easement Agreement	2012
PRPs submitted the remedial design report for OU1 and OU2 to EPA	March 2012
PRPs completed pilot-scale LNAPL recovery testing	May 2012
PRPs submitted final report on pilot-scale in-situ groundwater treatment study	September 24, 2012
EPA issued an Explanation of Significant Differences (ESD) to modify the remedy selected in the ROD	2014
PRPs conducted in-situ chemical oxidation for the shallow bedrock aquifer	2015-2017
PRPs began the remedial action	May 1, 2015
PRPs issued Remedial Action Completion Report for OU1	September 29, 2015
PRPs conducted the first round of in-situ groundwater treatment injections	September 2015-October 2015

Event	Date
PRPs modified both treatment cells to prevent influent water from rising to an elevation that could potentially bypass the treatment system	August 2016
PRPs submitted draft *One-Year Evaluation – In Situ Groundwater Treatment Program*	September 2016
PRPs submitted draft *Two-Year Evaluation – In Situ Groundwater Treatment Pilot Study*	January 2018
PRPs submitted *Revised Work Plan for the Deep Bedrock Aquifer Assessment*	June 2018
PRPs completed treatment cell TC-1 modifications to improve its performance (included installing an injection well for discharging effluent from TC-1 when water table is high)	November 2018

APPENDIX C – PRESS NOTICE

EPA REVIEWS CLEANUP

Breslube-Penn Superfund Site

The U.S. Environmental Protection Agency (EPA) is reviewing the cleanup that was conducted at the Breslube-Penn, Inc. Superfund Site located in Coraopolis, PA. EPA inspects sites regularly to ensure that cleanups conducted remain protective of public health and the environment. EPA will review that the cleanup remedy is working as designed, and institutional controls continue to reduce potential exposure to contamination. Findings from the review will be available May 2019.

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

Contact: Larry Johnson, *EPA Community Involvement Coordinator*
Phone: 215-814-3239
Email: johnson.larry-c@epa.gov

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

Protecting human health and the environment

APPENDIX D – INTERVIEW FORMS

Breslube-Penn, Inc. Superfund Site — Five-Year Review Interview Form

Site Name: Breslube-Penn, Inc. **EPA ID No.:** PAD089667695

Interviewer Name: Frank Klanchar **Affiliation:** EPA
Subject Name: Name withheld for privacy **Affiliation:** CDSA
Subject Contact Information: Coraopolis District Sportsmen's Association
Time: 10:00 a.m. **Date:** 09/19/2018
Interview Location: Via phone

Interview Format (circle one): In Person **Phone** Mail Other:

Interview Category: **Residents**

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date? Yes. The interviewee is the point of contact for access to Breslube-Penn monitoring wells on CDSA property.

2. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)? Favorable impression. CDSA has about 45 acres: 15 acres in Robinson Township and 30 acres in Moon Township. CDSA property on the north side of Montour Run was properly restored after remediation project. CDSA is trying to come up with a plan for a bridge to access the area again and reuse as an archery area.

3. What have been the effects of this Site on the surrounding community, if any? The only concern is that new wells are being installed on the CDSA property and unsure why this is happening.

4. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing? Not to her knowledge.

5. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future? EPA will email FYR Report after it is finalized. Interviewee requested to review the interview discussion section of the FYR Report prior to being finalized.

6. Do you own a private well in addition to or instead of accessing city/municipal water supplies? If so, for what purpose(s) is your private well used? No private water well on property.

7. Do you have any comments, suggestions or recommendations regarding any aspects of the project? No vapor intrusion assessment conducted by EPA for the property. CDSA building is used 3x/month for meetings (1st floor). Slab basement houses a shooting range with ventilation system for lead. Indoor range is open 24/7 to members.

Breslube-Penn, Inc. Superfund Site Five-Year Review Interview Form

Site Name: **Breslube-Penn, Inc.** **EPA ID No.:** **PAD089667695**

Interviewer Name: **Frank Klanchar** **Affiliation:** **EPA**
Subject Name: **Jim Henkemeyer** **Affiliation:** **Moon Township**
Subject Contact Information: **Public Works Facility Manager**
Time: **2:30 p.m.** **Date:** **09/18/2018**
Interview Location: **Moon Township Building**

Interview Format (circle one): **In Person** Phone Mail Other:

Interview Category: **Local Government**

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date? Yes. The Township was routinely contacted during construction activities.

2. Do you feel well-informed regarding the Site's activities and remedial progress? If not, how might EPA convey site-related information in the future? Yes. Jim H. has GHD's phone number and is familiar with Dan Cusick at CDM. CDM routinely informs and coordinates Site activities with Moon Township.

3. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing? No

4. Are you aware of any changes to state laws or local regulations that might affect the protectiveness of the Site's remedy? No local law changes.

5. Are you aware of any changes in projected land use(s) at the Site? No.

6. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future? Best to provide information via email.

7. Do you have any comments, suggestions or recommendations regarding the project? No.

8. Do you consent to have your name included along with your responses to this questionnaire in the FYR report? Yes.

Breslube-Penn, Inc. Superfund Site — Five-Year Review Interview Form

Site Name: Breslube-Penn, Inc. **EPA ID No.:** PAD089667695

Interviewer Name: Frank Klanchar **Affiliation:** EPA
Subject Name: Gary Seamon **Affiliation:** Moon Township Police
Subject Contact Information: Police Chief
Time: 10:00 a.m. **Date:** 09/20/2018
Interview Location: Via phone 412-262-5000

Interview Format (circle one): In Person **Phone** Mail Other:

Interview Category: Local Government

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date? Yes. The police department is aware of the environmental issues and the property owner. The property owner claims he has no access to his property. The police are aware of cars and other things stored on the Site. Police has been called to investigate blinking red light on control panel. The area is frequented by many people using the Montour Trail for walking, biking, jogging, etc.

2. Do you feel well-informed regarding the Site's activities and remedial progress? If not, how might EPA convey site-related information in the future? Yes.

3. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing? No.

4. Are you aware of any changes to state laws or local regulations that might affect the protectiveness of the Site's remedy? No local law changes.

5. Are you aware of any changes in projected land use(s) at the Site? No.

6. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future? Best to provide information via email.

7. Do you have any comments, suggestions or recommendations regarding the project? No. Contact Scott Brillhart, Assistant Manager for land use problems. He oversees code enforcement.

8. Do you consent to have your name included along with your responses to this questionnaire in the FYR report? Yes.

Breslube-Penn, Inc. Superfund Site — Five-Year Review Interview Form

Site Name: Breslube-Penn, Inc. **EPA ID No.:** PAD089667695

Interviewer Name: Frank Klanchar **Affiliation:** EPA
Subject Name: Name withheld for privacy **Affiliation:** Montour Trail
Subject Contact Information: President, Montour Trail Council
Time: 1:00 p.m. **Date:** 09/20/2018
Interview Location: Via phone

Interview Format (circle one): In Person **Phone** Mail Other:

Interview Category: **Local Government**

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date? Yes. The Montour Trail was closed during Site construction in 2014. The project went very well and the MT was pleased with the outcome in the end.

2. Do you feel well-informed regarding the Site's activities and remedial progress? If not, how might EPA convey site-related information in the future? Yes. MT attended construction meetings in 2013-14. The MT was asphalt paved and fencing was placed between the trail and concrete driveway that runs to the scrap yard. As an afterthought, it would have been nicer if a man-door was installed halfway along the fencing to allow for easier maintenance.

3. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing? No.

4. Are you aware of any changes to state laws or local regulations that might affect the protectiveness of the Site's remedy? No.

5. Are you aware of any changes in projected land use(s) at the Site? No.

6. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future? Best to provide information via email.

7. Do you have any comments, suggestions or recommendations regarding the project? Send Final Report to interviewee.

8. Do you consent to have your name included along with your responses to this questionnaire in the FYR report? Yes.

APPENDIX E – SITE INSPECTION CHECKLIST

FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST

I. SITE INFORMATION

Site Name: Breslube-Penn, Inc.	**Date of Inspection:** 08/21/2018
Location and Region: Coraopolis, PA 3	**EPA ID:** PAD089667695
Agency, Office or Company Leading the Five-Year Review: EPA	**Weather/Temperature:** cloudy, light rain, 75°F

Remedy Includes: (Check all that apply)

- ☒ Landfill cover/containment
- ☒ Access controls
- ☒ Institutional controls
- ☐ Groundwater pump and treatment
- ☐ Surface water collection and treatment
- ☒ Other: groundwater collection and treatment; in-situ bioattenuation of groundwater
- ☐ Monitored natural attenuation
- ☒ Groundwater containment
- ☒ Vertical barrier walls

Attachments: ☒ Inspection team roster attached ☐ Site map attached

II. INTERVIEWS (check all that apply)

1. **O&M Site Manager** _____ (Name) _____ (Title) _____ (Date)
   Interviewed ☐ at site ☐ at office ☐ by phone Phone: _____
   Problems, suggestions ☐ Report attached: _____
2. **O&M Staff** _____ (Name) _____ (Title) _____ (Date)
   Interviewed ☐ at site ☐ at office ☐ by phone Phone: _____
   Problems/suggestions ☐ Report attached: _____

3. **Local Regulatory Authorities and Response Agencies** (i.e., state and tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices). Fill in all that apply.

Agency Moon Township Public Works
Contact Jim Henkemeyer (Name) | Facility Manager (Title) | 09/18/2018 (Date) | _____ (Phone No.)
Problems/suggestions ☐ Report attached: see Appendix D

Agency Moon Township Police
Contact Gary Seamon (Name) | Police Chief (Title) | 09/20/2018 (Date) | _____ (Phone No.)
Problems/suggestions ☐ Report attached: see Appendix D

Agency _____
Contact _____ (Name) | _____ (Title) | _____ (Date) | _____ (Phone No.)
Problems/suggestions ☐ Report attached: _____

Agency _____
Contact _____ (Name) | _____ (Title) | _____ (Date) | _____ (Phone No.)
Problems/suggestions ☐ Report attached: _____

Agency _____
Contact _____ (Name) | _____ (Title) | _____ (Date) | _____ (Phone No.)
Problems/suggestions ☐ Report attached: _____

4. **Other Interviews** (optional) ☒ Report attached: see Appendix D

Representative of Coraopolis District Sportsmen's Association

President of Montour Trail Council

III. ON-SITE DOCUMENTS AND RECORDS VERIFIED (check all that apply)

1. **O&M Documents**

☐ O&M manual	☐ Readily available	☐ Up to date	☐ N/A
☐ As-built drawings	☐ Readily available	☐ Up to date	☐ N/A
☒ Maintenance logs	☒ Readily available	☒ Up to date	☐ N/A

Remarks: _____

2. **Site-Specific Health and Safety Plan** ☐ Readily available ☐ Up to date ☒ N/A

☐ Contingency plan/emergency response plan ☐ Readily available ☐ Up to date ☒ N/A

Remarks: _____

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

Remarks: _____

4.	**Permits and Service Agreements**				
	☐ Air discharge permit	☐ Readily available	☐ Up to date	☒ N/A	
	☒ Effluent discharge	☒ Readily available	☒ Up to date	☐ N/A	
	☐ Waste disposal, POTW	☐ Readily available	☐ Up to date	☒ N/A	
	☐ Other permits: _____	☐ Readily available	☐ Up to date	☒ N/A	
	Remarks: _____				
5.	**Gas Generation Records**	☐ Readily available	☐ Up to date	☒ N/A	
	Remarks: _____				
6.	**Settlement Monument Records**	☐ Readily available	☐ Up to date	☒ N/A	
	Remarks: _____				
7.	**Groundwater Monitoring Records**	☒ Readily available	☒ Up to date	☐ N/A	
	Remarks: _____				
8.	**Leachate Extraction Records**	☐ Readily available	☐ Up to date	☒ N/A	
	Remarks: _____				
9.	**Discharge Compliance Records**				
	☐ Air	☐ Readily available	☐ Up to date	☒ N/A	
	☐ Water (effluent)	☐ Readily available	☐ Up to date	☒ N/A	
	Remarks: there is no discharge to surface water				
10.	**Daily Access/Security Logs**	☐ Readily available	☐ Up to date	☒ N/A	
	Remarks: _____				

IV. O&M COSTS

1.	**O&M Organization**	
	☐ State in-house	☐ Contractor for state
	☐ PRP in-house	☒ Contractor for PRP
	☐ Federal facility in-house	☐ Contractor for Federal facility
	☐ _____	

2. **O&M Cost Records**

☐ Readily available ☐ Up to date

☒ Funding mechanism/agreement in place ☐ Unavailable

Original O&M cost estimate: _____ ☐ Breakdown attached

Total annual cost by year for review period if available

From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached
From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached
From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached
From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached
From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached

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

Describe costs and reasons: _____

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

A. Fencing

1. **Fencing Damaged** ☐ Location shown on site map ☒ Gates secured ☐ N/A

Remarks: _____

B. Other Access Restrictions

1. **Signs and Other Security Measures** ☐ Location shown on site map ☐ N/A

Remarks: "Keep Out" signs are posted on fence

C. Institutional Controls (ICs)

1. **Implementation and Enforcement**

Site conditions imply ICs not properly implemented ☐ Yes ☒ No ☐ N/A

Site conditions imply ICs not being fully enforced ☒ Yes ☐ No ☐ N/A

Type of monitoring (e.g., self-reporting, drive by): EPA site visits

Frequency: at least every five years

Responsible party/agency: EPA

Contact	Frank Klanchar	remedial project manager	_____	215-814-3218
	Name	Title	Date	Phone no.

Reporting is up to date ☐ Yes ☐ No ☒ N/A

Reports are verified by the lead agency ☐ Yes ☐ No ☒ N/A

Specific requirements in deed or decision documents have been met ☐ Yes ☒ No ☐ N/A

Violations have been reported ☒ Yes ☐ No ☐ N/A

Other problems or suggestions: ☐ Report attached

2. **Adequacy** ☐ ICs are adequate ☒ ICs are inadequate ☐ N/A

Remarks: Institutional controls for the Coraopolis District Sportsmen's Association property and for the Montour Trail Council's property were signed but have not been recorded in the county's land records.

D. General

1. **Vandalism/Trespassing** ☐ Location shown on site map ☒ No vandalism evident

Remarks: _____

2. **Land Use Changes On Site** ☒ N/A

Remarks: _____

3. **Land Use Changes Off Site** ☒ N/A

Remarks: Sportsmen club no longer uses the area between Montour Run and the Montour Trail, since the bridge washed out. Scrapyard at end of private road is no longer in operation.

VI. GENERAL SITE CONDITIONS

A. Roads ☒ Applicable ☐ N/A

1. **Roads Damaged** ☐ Location shown on site map ☒ Roads adequate ☐ N/A

Remarks: _____

B. Other Site Conditions

Remarks: _____

VII. LANDFILL COVERS ☒ Applicable ☐ N/A

A. Landfill Surface

1. **Settlement** (low spots) ☐ Location shown on site map ☒ Settlement not evident

Area extent: _____ Depth: _____

Remarks: _____

2.	**Cracks**	☐ Location shown on site map	☒ Cracking not evident
	Lengths: _____	Widths: _____	Depths: _____
	Remarks: _____		
3.	**Erosion**	☐ Location shown on site map	☒ Erosion not evident
	Area extent: _____		Depth: _____
	Remarks: _____		
4.	**Holes**	☐ Location shown on site map	☒ Holes not evident
	Area extent: _____		Depth: _____
	Remarks: _____		
5.	**Vegetative Cover**	☒ Grass	☒ Cover properly established
	☒ No signs of stress	☐ Trees/shrubs (indicate size and locations on a diagram)	
	Remarks: _____		
6.	**Alternative Cover** (e.g., armored rock, concrete)		☒ N/A
	Remarks: _____		
7.	**Bulges**	☐ Location shown on site map	☒ Bulges not evident
	Area extent: _____		Height: _____
	Remarks: _____		
8.	**Wet Areas/Water Damage**	☐ Wet areas/water damage not evident	
	☒ Wet areas	☐ Location shown on site map	Area extent: _____
	☐ Ponding	☐ Location shown on site map	Area extent: _____
	☐ Seeps	☐ Location shown on site map	Area extent: _____
	☐ Soft subgrade	☐ Location shown on site map	Area extent: _____
	Remarks: <u>There were a few water-filled wheel ruts due to PRP contractor trucks driving on the Waste Management Area.</u>		
9.	**Slope Instability**	☐ Slides	☐ Location shown on site map
	☒ No evidence of slope instability		
	Area extent: _____		
	Remarks: _____		
B. Benches		☐ Applicable	☒ N/A
	(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)		
1.	**Flows Bypass Bench**	☐ Location shown on site map	☐ N/A or okay
	Remarks: _____		
2.	**Bench Breached**	☐ Location shown on site map	☐ N/A or okay
	Remarks: _____		

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

Remarks: _____

C. Letdown Channels ☐ Applicable ☒ N/A

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

1. **Settlement** (Low spots) ☐ Location shown on site map ☐ No evidence of settlement

Area extent: _____ Depth: _____

Remarks: _____

2. **Material Degradation** ☐ Location shown on site map ☐ No evidence of degradation

Material type:_____ Area extent: _____

Remarks: _____

3. **Erosion** ☐ Location shown on site map ☐ No evidence of erosion

Area extent: _____ Depth: _____

Remarks: _____

4. **Undercutting** ☐ Location shown on site map ☐ No evidence of undercutting

Area extent: _____ Depth: _____

Remarks: _____

5. **Obstructions** Type: _____ ☐ No obstructions

☐ Location shown on site map Area extent: _____

Size: _____

Remarks: _____

6. **Excessive Vegetative Growth** Type: _____

☐ No evidence of excessive growth

☐ Vegetation in channels does not obstruct flow

☐ Location shown on site map Area extent: _____

Remarks: _____

D. Cover Penetrations ☒ Applicable ☐ N/A

1. **Gas Vents** ☐ Active ☐ Passive

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ Evidence of leakage at penetration ☐ Needs maintenance ☒ N/A

Remarks: _____

2. **Gas Monitoring Probes**

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ Evidence of leakage at penetration ☐ Needs maintenance ☒ N/A

Remarks: _____

3. **Monitoring Wells** (within surface area of landfill)

☒ Properly secured/locked ☒ Functioning ☒ Routinely sampled ☒ Good condition

☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A

Remarks: _____

4. **Extraction Wells Leachate**

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ Evidence of leakage at penetration ☐ Needs maintenance ☒ N/A

Remarks: _____

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

Remarks: _____

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

1. **Gas Treatment Facilities**

☐ Flaring ☐ Thermal destruction ☐ Collection for reuse

☐ Good condition ☐ Needs maintenance

Remarks: _____

2. **Gas Collection Wells, Manifolds and Piping**

☐ Good condition ☐ Needs maintenance

Remarks: _____

3. **Gas Monitoring Facilities** (e.g., gas monitoring of adjacent homes or buildings)

☐ Good condition ☐ Needs maintenance ☐ N/A

Remarks: _____

F. Cover Drainage Layer ☐ Applicable ☒ N/A

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

Remarks: _____

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

Remarks: _____

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

1. **Siltation** Area extent: _____ Depth: _____ ☐ N/A

☐ Siltation not evident

Remarks: _____

2. **Erosion** Area extent: _____ Depth: _____

☐ Erosion not evident

Remarks: _____

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

Remarks: _____

4.	**Dam**	☐ Functioning	☐ N/A
	Remarks: _____		
H. Retaining Walls		☐ Applicable	☒ N/A
1.	**Deformations**	☐ Location shown on site map	☐ Deformation not evident
	Horizontal displacement: _____		Vertical displacement: _____
	Rotational displacement: _____		
	Remarks: _____		
2.	**Degradation**	☐ Location shown on site map	☐ Degradation not evident
	Remarks: _____		
I. Perimeter Ditches/Off-Site Discharge		☒ Applicable	☐ N/A
1.	**Siltation**	☐ Location shown on site map	☒ Siltation not evident
	Area extent: _____		Depth: _____
	Remarks: _____		
2.	**Vegetative Growth**	☐ Location shown on site map	☐ N/A
	☒ Vegetation does not impede flow		
	Area extent: _____		Type: _____
	Remarks: _____		
3.	**Erosion**	☐ Location shown on site map	☒ Erosion not evident
	Area extent: _____		Depth: _____
	Remarks: _____		
4.	**Discharge Structure**	☒ Functioning	☐ N/A
	Remarks: _____		
VIII. VERTICAL BARRIER WALLS		☒ Applicable	☐ N/A
1.	**Settlement**	☐ Location shown on site map	☒ Settlement not evident
	Area extent: _____		Depth: _____
	Remarks: _____		
2.	**Performance Monitoring**	Type of monitoring: hydraulic head differential monitoring	
	☐ Performance not monitored		
	Frequency: quarterly		☐ Evidence of breaching
	Head differential: 1-3 feet at five locations; -1 foot at one location		
	Remarks: PRP contractors will implement performance modifications at treatment cell TC-1 to improve groundwater containment.		

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

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

1. **Pumps, Wellhead Plumbing and Electrical**

   ☐ Good condition ☐ All required wells properly operating ☐ Needs maintenance ☒ N/A

   Remarks: _____

2. **Extraction System Pipelines, Valves, Valve Boxes and Other Appurtenances**

   ☒ Good condition ☐ Needs maintenance

   Remarks: _____

3. **Spare Parts and Equipment**

   ☒ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided

   Remarks: _____

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

1. **Collection Structures, Pumps and Electrical**

   ☐ Good condition ☐ Needs maintenance

   Remarks: _____

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes and Other Appurtenances**

   ☐ Good condition ☐ Needs maintenance

   Remarks: _____

3. **Spare Parts and Equipment**

   ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided

   Remarks: _____

C. Treatment System ☒ Applicable ☐ N/A

1. **Treatment Train** (check components that apply)

   ☐ Metals removal ☐ Oil/water separation ☒ Bioremediation

   ☐ Air stripping ☒ Carbon adsorbers

   ☐ Filters: _____

   ☐ Additive (e.g., chelation agent, flocculent): _____

   ☒ Others: enhanced reductive dechlorination

   ☒ Good condition ☐ Needs maintenance

   ☐ Sampling ports properly marked and functional

   ☐ Sampling/maintenance log displayed and up to date

   ☐ Equipment properly identified

   ☐ Quantity of groundwater treated annually: _____

   ☐ Quantity of surface water treated annually: _____

   Remarks: _____

2. **Electrical Enclosures and Panels** (properly rated and functional)

☒ N/A ☐ Good condition ☐ Needs maintenance

Remarks: _____

3. **Tanks, Vaults, Storage Vessels**

☒ N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs maintenance

Remarks: _____

4. **Discharge Structure and Appurtenances**

☐ N/A ☒ Good condition ☐ Needs maintenance

Remarks: _____

5. **Treatment Building(s)**

☒ N/A ☐ Good condition (esp. roof and doorways) ☐ Needs repair

☐ Chemicals and equipment properly stored

Remarks: _____

6. **Monitoring Wells** (pump and treatment remedy)

☒ Properly secured/locked ☒ Functioning ☒ Routinely sampled ☒ Good condition

☐ All required wells located ☐ Needs maintenance ☐ N/A

Remarks: _____

D. Monitoring Data

1. **Monitoring Data**

☒ Is routinely submitted on time ☒ Is of acceptable quality

2. **Monitoring Data Suggests:**

☐ Groundwater plume is effectively contained ☐ Contaminant concentrations are declining

E. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ All required wells located ☐ Needs maintenance ☒ N/A

Remarks: _____

X. OTHER REMEDIES

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

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is designed to accomplish (e.g., to contain contaminant plume, minimize infiltration and gas emissions).

The remedy is intended to consolidate contaminated soils beneath a cap, clean up groundwater, and prevent exposure to remaining contamination using ICs. Parts of the remedy are functioning as intended. Contaminated soils were excavated and consolidated within a capped Waste Management Area, achieving the remedial action objective of preventing exposure to contaminated soils. However, the WMA is not maintaining the inward and upward hydraulic gradients needed to contain contamination within the WMA. The modifications to treatment cell TC-1 that the PRP group implemented in September 2018 are intended to improve this performance issue.

Monitoring data show that treated effluent from the WMA's treatment cells generally meets the Site's groundwater cleanup goals. TC-2 had several exceedances, all in 2015. TC-1 has had several sporadic exceedances of various COCs; some of these were caused by a broken pipe allowing untreated groundwater to mix with treated water. PRP contractors repaired this broken pipe in August 2016.

Many COCs are present in groundwater outside the WMA at levels exceeding their cleanup levels, including VOCs, PCBs and metals. The pilot study has not yet demonstrated that in-situ treatment will be able to achieve groundwater cleanup goals within a reasonable timeframe.

Based on this FYR's screening-level vapor intrusion analysis, it is recommended that the residential vapor intrusion exposure pathway be further evaluated using multiple lines of evidence.

Institutional controls have been implemented to prevent disturbance of the WMA, to prevent potable use of contaminated groundwater, and to prevent exposure to contamination remaining in subsurface soil. Institutional controls for the Coraopolis District Sportsmen's Association property and for the Montour Trail Council's property were signed but have not been recorded in the county's land records.

B. Adequacy of O&M

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

PRP contractors conduct O&M activities and submit quarterly reports to EPA. This FYR notes several items with respect to the Site's monitoring. The reported detection limit for pentachlorophenol in groundwater and effluent samples (5 µg/L) is higher than its cleanup level (1 µg/L). In addition, for most sampling events, the reported detection limit for Aroclor 1254 in groundwater and effluent samples (e.g., 0.44 µg/L) was slightly higher than its cleanup level (0.37 µg/L).

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.

The WMA is not maintaining the inward and upward hydraulic gradients needed to contain contamination within the WMA. The modifications to treatment cell TC-1 that the PRP group implemented in September 2018 are intended to improve this performance issue.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

EPA will determine whether either of the groundwater contingency remedies needs to be implemented.

Site inspection participants:
Frank Klanchar, EPA RPM
Matthew Taynor, EPA Biological and Technical Assistance Group

Herminio Concepcion, EPA Biological and Technical Assistance Group
Mike Tomei, PADEP project manager
Brooke Campanell, EA Engineering (EPA's oversight contractor)
Ivy Harvey, EA Engineering
Amanda Goyne, Skeo (EPA FYR support contractor)
Hagai Nassau, Skeo
Leo Brausch, PRP group's project coordinator
Daniel Cusick, GHD Inc. (PRP group's remedial action contractor)
Colleen Liddell, Ford Motor Company
Michael Leon, U.S. Steel
Steve Anastos, Exxon Mobil
Mary Lou Rochotte, Kemron Environmental (representing AK Steel Corp.)
Dean Reed, CBS Corporation

APPENDIX F – SITE INSPECTION PHOTOS

Fenced Waste Management Area (contractor vehicles on site to perform sampling), private road in foreground

Fenced wetland area with junk vehicles stored on site

Waste Management Area

Treatment Cell TC-2

Treatment Cell TC-1

Cleanout access point for lateral groundwater recovery line

Sign on Waste Management Area fence

Wetland area

Fenced wetland area with vehicles stored on site

Montour Run (site property is to the right)

Montour Trail (multi-use recreational rail trail)

APPENDIX G – DATA REVIEW

Table G-1: Hydraulic Gradient Data

	Well Pair	Difference in Hydraulic Head, Quarterly Average (feet)											
		2015 Q3	2015 Q4	2016 Q1	2016 Q2	2016 Q3	2016 Q4	2017 Q1	2017 Q2	2017 Q3	2017 Q4	2018 Q1	2018 Q2
Inside versus Outside the Slurry Wall	MW-40/ MW-10	1.55	2.48	2.05	1.97	1.77	2.65	1.33	0.99	1.97	2.30	1.56	1.38
	MW-41/ MW-26	1.24	2.02	2.22	2.37	1.98	2.13	1.85	1.22	1.08	2.13	1.83	1.05
	MW-3/ MW-43	1.15	3.00	2.21	2.15	1.44	2.17	1.61	2.18	1.76	3.32	2.19	2.78
	MW-42/ MW-43	0.22	1.26	0.88	0.70	2.44	1.64	-0.01	0.54	0.30	1.19	0.72	1.20
	MW-6/ MW-29	-1.53	-0.23	-0.67	-0.60	-0.44	-1.06	-0.96	-1.36	-1.00	-0.92	-1.16	-1.25
	MW-5/ MW-44	0.64	1.35	1.16	2.08	1.39	1.95	2.15	2.44	1.67	1.83	2.49	2.57
Inside the WMA: Shallow Unconsolidated versus Shallow Bedrock	MW-41/ BW-4	-1.16	-0.68	-0.68	-0.68	-1.11	-0.55	-0.65	-1.02	-0.71	-0.02	-0.49	-0.85
	MW-3/ BW-47	0.48	0.88	-0.03	0.32	0.79	1.31	0.54	-0.39	0.50	1.45	0.84	1.11
	MW-42/ BW-5	-0.78	-1.24	-1.35	-1.33	0.77	-0.30	-0.99	-1.92	-1.22	-1.01	-1.69	-1.56
	MW-6/ MW-6B	-0.03	-1.37	-0.68	-0.74	-0.18	-0.98	-0.70	-0.66	-0.56	-0.64	-0.88	-0.45
	MW-5/ MW-5B	-1.77	-1.38	-2.00	-2.09	-1.78	-0.65	-1.43	-1.79	-1.69	-1.74	-2.33	-1.85

Notes:
Positive (black) values indicate inward and upward hydraulic gradients, which are the goal for the WMA.
Negative red values indicate outward and downward hydraulic gradients.

Figure G-1: 1,1-DCE Concentrations in Shallow Unconsolidated Aquifer (outside WMA)[5]

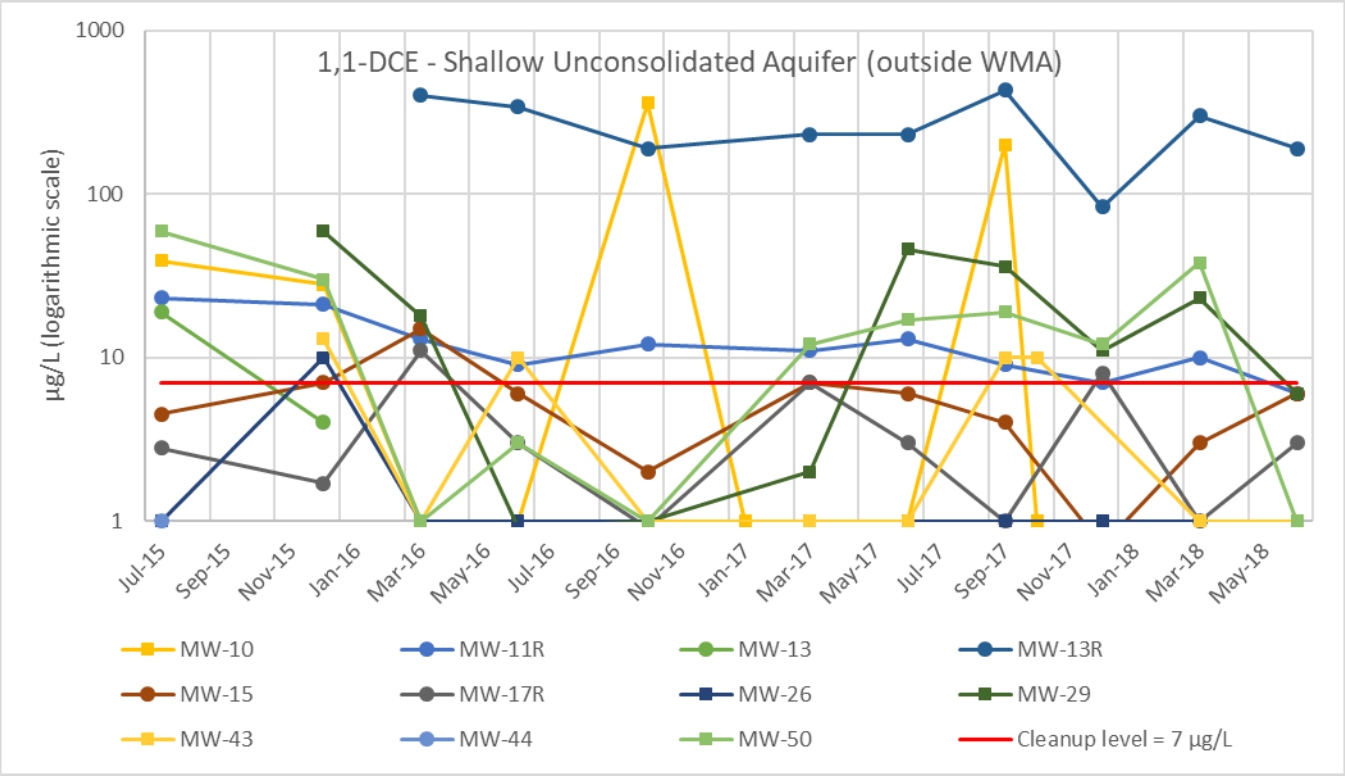
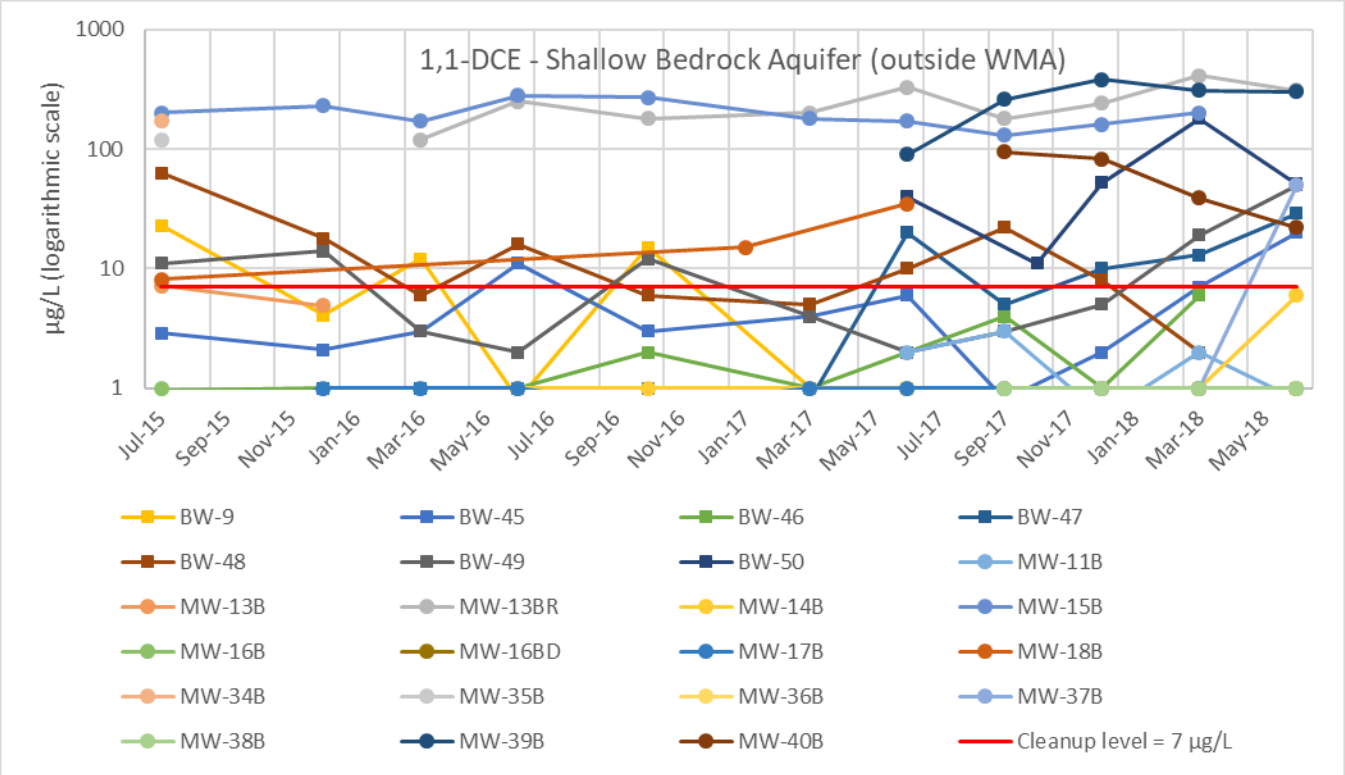


Figure G-2: 1,1-DCE Concentrations in Shallow Bedrock Aquifer (outside WMA)



[5] On Figures G-1 through G-6, square data markers indicate injection wells.

Figure G-3: Vinyl Chloride Concentrations in Shallow Unconsolidated Aquifer (outside WMA)

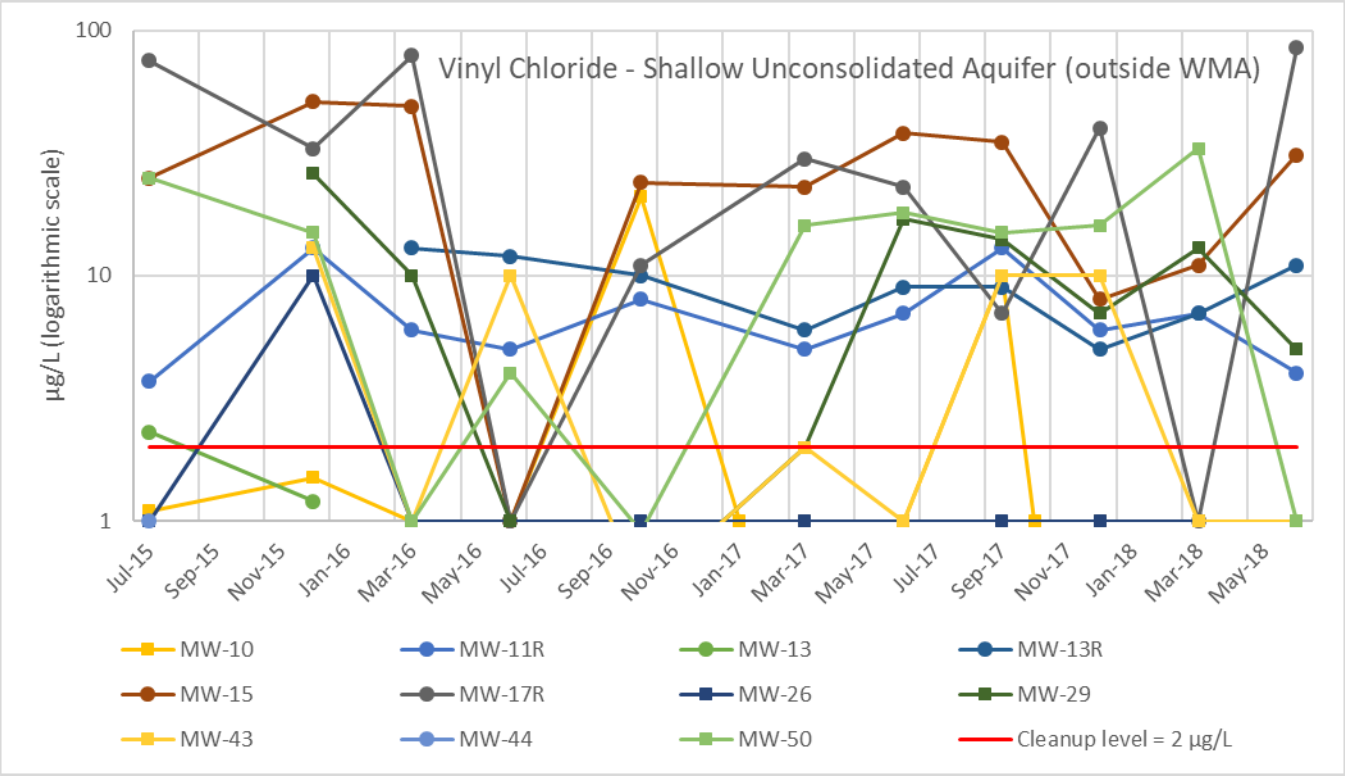


Figure G-4: Vinyl Chloride Concentrations in Shallow Bedrock Aquifer (outside WMA)

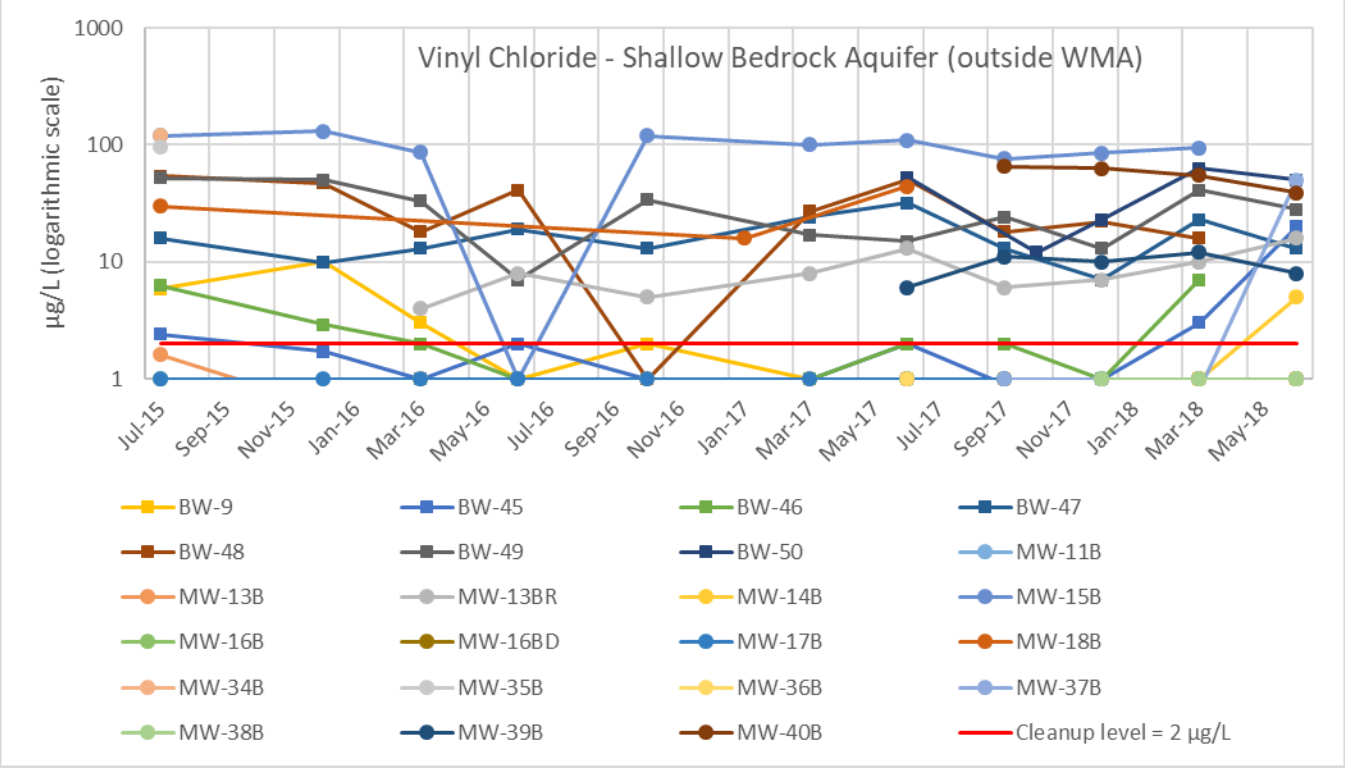


Figure G-5: Aroclor 1254 Concentrations in Shallow Unconsolidated Aquifer (outside WMA)

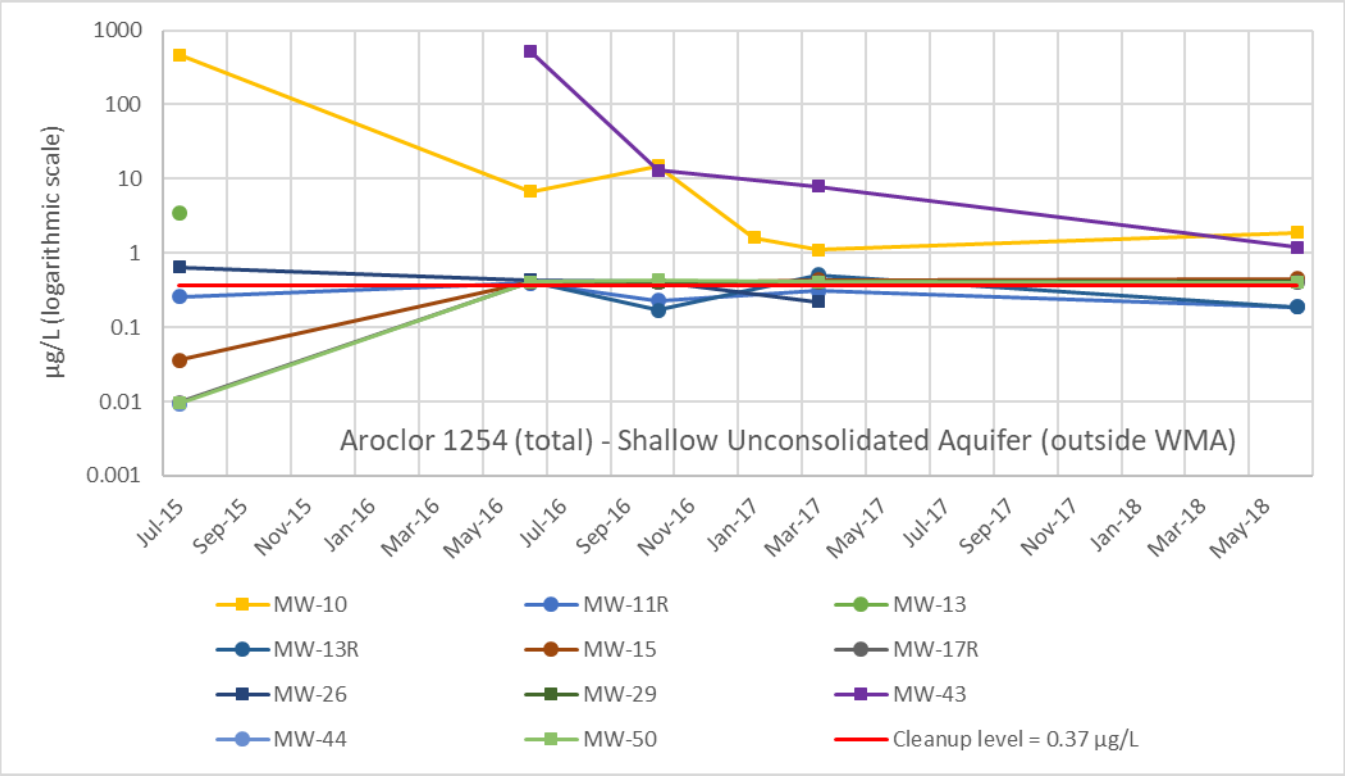
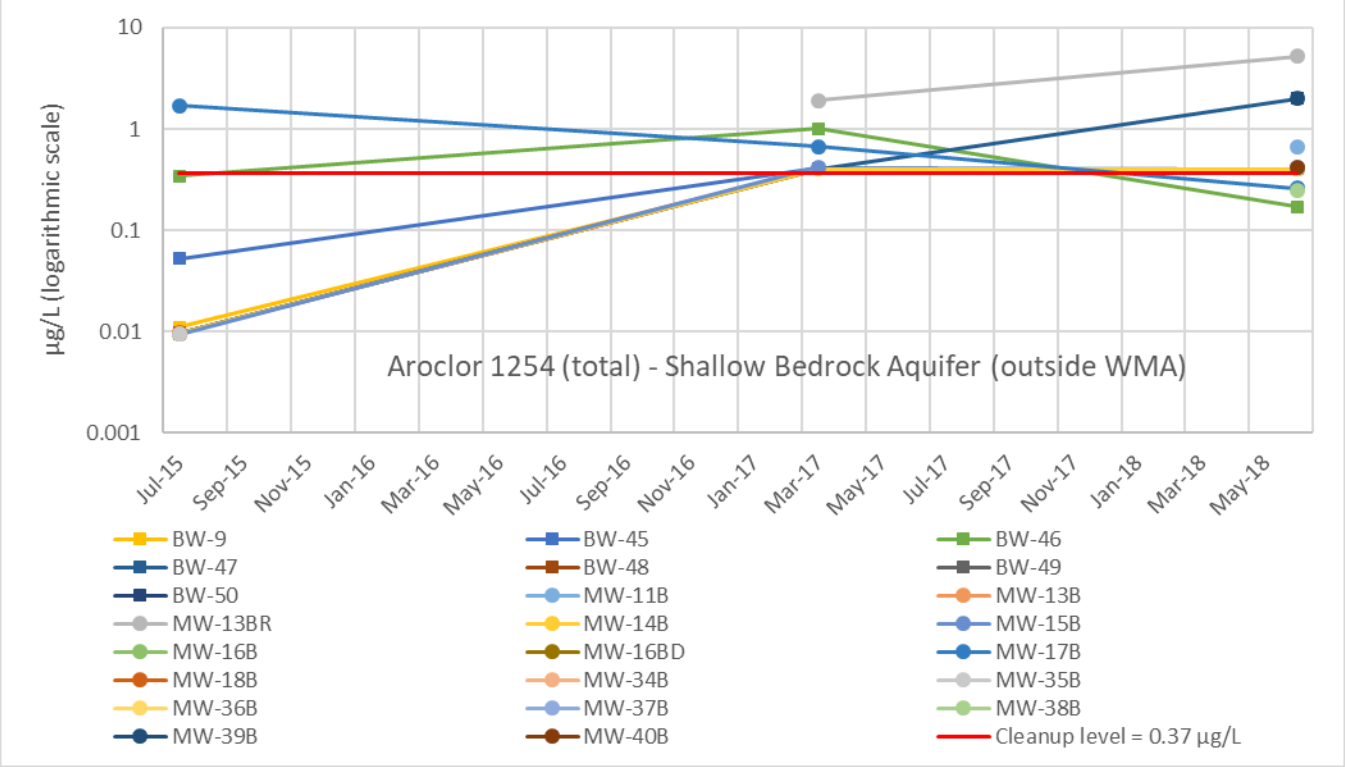


Figure G-6: Aroclor 1254 Concentrations in Shallow Bedrock Aquifer (outside WMA)



APPENDIX H – ARAR REVIEW

The Site's ROD identified the following chemical-specific ARARs and To-Be-Considered criteria for soil:

- ARAR: Pennsylvania Act 2 Statewide Health Standards (Medium-Specific Concentrations (MSCs))
- To-Be-Considered criteria: EPA Region 3 Risk-Based Concentrations

Table H-1 compares the soil ARAR values from the 2007 ROD against those ARARs' current values, to determine whether any of the values have changed since the 2007 ROD. Risk-based cleanup levels are assessed in Appendix I.

The following soil COCs have 2018 ARAR values that are more stringent than the corresponding ***on-facility*** soil cleanup levels selected in the 2007 ROD: benzo(a)pyrene, manganese and Aroclor 1242. The following soil COCs have 2018 ARAR values that are more stringent than the corresponding ***off-facility*** soil cleanup levels selected in the 2007 ROD: chromium, manganese and Aroclor 1242.

Table H-1: Soil ARAR Review

Soil COC	2007 ROD ARAR Value (mg/kg)			2007 ROD Site-Specific Cleanup Level[d]	2018 ARAR Value (mg/kg)[a]			ARAR Change[b]
	PADEP MSC (Direct Contact)		PADEP MSC (Soil to GW)[c]		PADEP MSC (Direct Contact)		PADEP MSC (Soil to GW)[c]	
Facility Surface Soils	See Note e				See Note e			
Benzo(a)pyrene	11		46	NC	12		46	Less stringent
Lead	500		450	1,000[f]	1,000		450	No change
Chromium	420		190	NC	220[g]		190[g]	No change
Manganese	190,000		NS	NC	150,000		2,000	More stringent
Aroclor 1260	130		500	15	46		170	See Note h
Facility Soils (Construction Worker)	Surface[e]	Subsurface[i]			Surface[e]	Subsurface[i]		
PCE	1,500	3,300	0.43	NC	3,200	3,600	0.43	No change
Dioxins TEQ	0.00053	190,000	0.032	NC	0.0007	190,000	0.032	Less stringent
Benzo(a)pyrene	190,000	190,000	46	NC	12	190,000	46	More stringent
Naphthalene	56,000	190,000	25	NC	760	190,000	25	No change
Aroclor 1242	160	10,000	16	15	46	10,000	4	More stringent
Aroclor 1248	44	10,000	18	15	46	10,000	18	No change
Aroclor 1254	44	10,000	75	15	46	10,000	75	Less stringent
Aroclor 1260	130	190,000	500	15	46	190,000	170	See Note h
Off-facility Surface Soils	See Note j				See Note j			
Aroclor 1242	36		16	1.5	9		4	See Note h
Aroclor 1254	4.4		75	1.5	4.4		75	No change
Aroclor 1260	30		500	1.5	9		170	See Note h
Chromium	94		190	NC	4[g]		190[g]	More stringent
Lead	500		450	1,000[f]	500		450	No change
Manganese	31,000		NS	NC	10,000		2,000	More stringent

Soil COC	2007 ROD ARAR Value (mg/kg)			2007 ROD Site-Specific Cleanup Level[d]	2018 ARAR Value (mg/kg)[a]			ARAR Change[b]
	PADEP MSC (Direct Contact)		PADEP MSC (Soil to GW)[c]		PADEP MSC (Direct Contact)		PADEP MSC (Soil to GW)[c]	
Off-facility Soils (Construction Worker)	Surface[e]	Subsurface[i]			Surface[e]	Subsurface[i]		
Aroclor 1242	160	10,000	16	15	46	10,000	4	More stringent
Aroclor 1254	44	10,000	75	15	46	10,000	75	Less stringent
Aroclor 1260	130	190,000	500	15	46	190,000	170	See Note h
Manganese	190,000	190,000	NS	NC	150,000	190,000	2,000	More stringent

Notes:

a) 2018 PADEP MSCs obtained at https://www.dep.pa.gov/Business/Land/LandRecycling/Standards-Guidance-Procedures/Pages/Statewide-Health-Standards.aspx, accessed 10/9/2018.
b) Determined by comparing the most stringent 2007 ROD ARAR value against the most stringent 2018 ARAR value.
c) PADEP Soil to Groundwater MSC for Used Aquifer, Total Dissolved Solids <=2500, Residential, Generic Value.
d) Calculated site-specific human health risk level (non-residential risk for on-facility and residential risk for off-facility) from 2007 ROD Table 22.
e) PADEP Direct Contact Medium-Specific Concentrations (MSC) for Non-residential Surface Soils.
f) 2015 Remedial Action Completion Report (Table 1.2) states that cleanup level for lead in surface and subsurface soil (for both on-facility and off-facility soil) was 450 mg/kg (ARAR-based value).
g) Value shown is for chromium VI.
h) ARAR value has become more stringent since the 2007 ROD, but the site-specific cleanup level is more stringent than the 2018 ARAR values.
i) PADEP Direct Contact MSCs for Non-residential Subsurface Soils.
j) PADEP Direct Contact MSC for Residential Soils (0-15 feet).

NC = not calculated (the cumulative residual risk will be calculated when the cleanup is believed to be achieved to verify that risk is acceptable)
NS = no standard

The Site's ROD identified the following chemical-specific ARARs and To-Be-Considered criteria for groundwater:

- ARAR: Federal Safe Drinking Water Act MCLs and non-zero MCLGs
- ARAR: Pennsylvania Act 2 Statewide Health Standards (Medium-Specific Concentrations)
- To-Be-Considered criteria: EPA Region 3 Risk-Based Concentrations

Table H-2 compares the groundwater ARAR values from the 2007 ROD against those ARARs' current values, to determine whether any of the values have changed since the 2007 ROD. The current ARAR values for some groundwater COCs are more stringent than the groundwater cleanup values selected in the 2007 ROD. As stated in the ROD, the Site's groundwater cleanup will continue until the cumulative risk is reduced to an acceptable risk level (i.e., cancer risk of 1×10^{-6} to 1×10^{-4} or less, and non-cancer hazard index of 1 or less per target organ).

Table H-2: Groundwater ARAR Review

Groundwater COC	2007 ROD ARAR Value (µg/L)		2018 ARAR Value (µg/L)		ARAR Change[a]
	PADEP MSC (Direct Contact)[b]	EPA MCL or Non-zero MCLG	PADEP MSC (Direct Contact)[b,c]	EPA MCL or Non-zero MCLG[d]	
Acetone	3,700	NS	38,000	NS	Less stringent
Benzene	5	5	5	5	No change
Chloroethane	230	NS	250	NS	Less stringent
Chloroform	100	80	80	70	More stringent
1,2-Dichlorobenzene	600	600	600	600	No change
1,3-Dichlorobenzene	600	NS	600	NS	No change
1,4-Dichlorobenzene	75	75	75	75	No change
1,1-Dichloroethane	27	NS	31	NS	Less stringent
1,2-Dichloroethane	5	5	5	5	No change
1,1-Dichloroethene	7	7	7	7	No change
1,2-Dichloroethene (total) (cis/trans)	70/100	70/100	70/100	70/100	No change
2,4-Dichlorophenol	20	NS	20	NS	No change
2,4-Dimethylphenol	730	NS	830	NS	Less stringent
Ethylbenzene	700	700	700	700	No change
Methylene chloride	5	5	5	5	No change
PCE	5	5	5	5	No change
Toluene	1,000	1,000	1,000	1,000	No change
1,2,4-Trichlorobenzene	70	70	70	70	No change
1,1,1-Trichloroethane	200	200	200	200	No change
1,1,2-Trichloroethane	5	3	5	3	No change
TCE	5	5	5	5	No change
Vinyl chloride	2	2	2	2	No change
Xylenes (total)	10,000	10,000	10,000	10,000	No change
2-Methylnaphthalene	730	NS	170	NS	More stringent
2-Methylphenol	NS	NS	2,100	NS	More stringent
4-Methylphenol	NS	NS	210	NS	More stringent
Acenaphthene	2,200	NS	2,500	NS	Less stringent
Benz(a)anthracene	0.9	NS	0.32	NS	More stringent
Benzo(b)fluoranthene	0.9	NS	0.19	NS	More stringent
Chrysene	1.9	NS	1.9	NS	No change
DEHP	6	6	6	6	No change
Dibenzofuran	NS	NS	42	NS	More stringent
Fluoranthene	260	NS	260	NS	No change
Fluorene	1,500	NS	1,700	NS	Less stringent
Naphthalene	100	NS	100	NS	No change
Pentachlorophenol	1	1	1	1	No change
Phenanthrene	1,100	NS	1,100	NS	No change
Pyrene	130	NS	130	NS	No change
Aroclor 1254	0.37	0.5	0.37	0.5	No change

Groundwater COC	2007 ROD ARAR Value (µg/L)		2018 ARAR Value (µg/L)		ARAR Change[a]
	PADEP MSC (Direct Contact)[b]	EPA MCL or Non-zero MCLG	PADEP MSC (Direct Contact)[b,c]	EPA MCL or Non-zero MCLG[d]	
Aroclor 1260	1.1	0.5	0.37	0.5	More stringent
Aluminum	NS	NS	NS	NS	No change
Antimony	6	6	6	6	No change
Arsenic	50	10	10	10	No change
Barium	2,000	2,000	2,000	2,000	No change
Chromium (total)	100	100	100	100	No change
Iron	NS	NS	NS	NS	No change
Lead	5	15	5	15	No change
Manganese	NS	NS	300	NS	More stringent
Thallium	2	0.5	2	0.5	No change
Vanadium	260	NS	2.9	NS	More stringent

Notes:

a) Determined by comparing the most stringent 2007 ROD ARAR value against the most stringent 2018 ARAR value.
b) PADEP Medium-Specific Concentrations for Groundwater; residential used aquifer, total dissolved solids <=2500
c) 2018 PADEP MSCs obtained at https://www.dep.pa.gov/Business/Land/LandRecycling/Standards-Guidance-Procedures/Pages/Statewide-Health-Standards.aspx, accessed 10/9/2018.
d) 2018 EPA MCLs and MCLGs obtained at https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations, accessed 10/9/2018.

NS = no standard

APPENDIX I – SCREENING-LEVEL RISK REVIEW

To determine if the Site's risk-based soil cleanup goals remain valid, this FYR conducted a screening-level review by comparing the cleanup goals to EPA's 2018 Regional Screening Levels (RSLs), which incorporate current toxicity values and standard default exposure factors. As shown in Table I-1, the screening found that all of the Site's risk-based soil cleanup values fall within EPA's range of acceptable risk, with the exception of the off-facility (residential) surface soil cleanup level for Aroclor 1254, which slightly exceeds the non-cancer screening level. This does not affect the Site's protectiveness because confirmation sampling found that actual PCB concentrations remaining in surface soil at off-facility areas are typically well below 1.5 mg/kg, and the affected areas are not used for residential purposes.

Table I-1: Review of Risk-Based Soil Cleanup Levels

Soil COC	2007 ROD Site-Specific Cleanup Level (mg/kg)[a]	2018 EPA Screening Level (mg/kg)[b]		Cancer Risk[c]	Noncancer Hazard[d]
		Cancer	Non-Cancer		
Facility Surface Soils (non-residential)					
Aroclor 1260	15	0.99	NS	1.5×10^{-5}	N/A
Facility Soils (Construction Worker)					
Aroclor 1242	15	0.95	NS	1.6×10^{-5}	N/A
Aroclor 1248	15	0.95	NS	1.6×10^{-5}	N/A
Aroclor 1254	15	0.97	15	1.5×10^{-5}	1.0
Aroclor 1260	15	0.99	NS	1.5×10^{-5}	N/A
Off-facility Surface Soils (Residential)					
Aroclor 1242	1.5	0.23	NS	6.5×10^{-6}	N/A
Aroclor 1254	1.5	0.24	1.2	6.3×10^{-6}	1.3
Aroclor 1260	1.5	0.24	NS	6.3×10^{-6}	N/A
Off-facility Soils (Construction Worker)					
Aroclor 1242	15	0.95	NS	1.6×10^{-5}	N/A
Aroclor 1254	15	0.97	15	1.5×10^{-5}	1.0
Aroclor 1260	15	0.99	NS	1.5×10^{-5}	N/A

Notes:

a) Calculated site-specific human health risk level (non-residential risk for on-facility and residential risk for off-facility) from 2007 ROD Table 22

b) Current EPA screening levels, dated May 2018, are available at https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables (accessed 10/9/2018). This table presents worker screening levels for facility soils and off-facility (construction worker). This table presents residential screening levels for off-facility surface soils (residential).

c) The cancer risks were calculated using the following equation, based on the fact that screening levels are derived based on 1 x 10^{-6} risk:
cancer risk = (cleanup level ÷ cancer-based screening level) × 10^{-6}.

d) The non-cancer hazard was calculated using the following equation:
non-cancer hazard = cleanup level ÷ non-cancer-based screening level.

This FYR conducted a screening-level vapor intrusion analysis using the most recent groundwater data to determine whether additional investigation is needed for the vapor intrusion exposure pathway. The former facility property is currently vacant. The Coraopolis District Sportsmen's Association social hall is located downgradient of the facility. Several private residences are located on Coketown Road sidegradient of the facility. To provide a conservative vapor intrusion screening, groundwater data from monitoring wells closest to these structures were identified and used in EPA's Vapor Intrusion Screening Levels (VISL) calculator. Use of the VISL is a conservative approach; the calculator does not take into account site-specific soils present between the groundwater and the building foundation or the depth to groundwater. The most current data for each well were used in EPA's VISL and the COCs evaluated were those where the current concentration exceeds the groundwater cleanup goal.

This FYR evaluated the Coraopolis District Sportsmen's Association social hall as a commercial exposure setting (Table I-2); the VISL does not provide a recreational exposure setting, which would assume less frequent exposure. Data from wells monitoring the shallowest groundwater zone are preferred because they most closely represent the contamination closest to the foundation of a building. The shallowest groundwater zone at the Site is the shallow unconsolidated aquifer; the shallow bedrock aquifer is below the shallow unconsolidated aquifer. Monitoring well MW-18B, which is screened in the shallow bedrock aquifer, is the shallowest well near the Coraopolis District Sportsmen's Association social hall. There is no monitoring well screened in the shallow unconsolidated aquifer near the social hall, so MW-18B was used in the screening because the shallow bedrock aquifer and the shallow unconsolidated aquifer are hydraulically connected. As shown in Table H-2, the cumulative cancer risk under a commercial exposure setting falls within EPA's risk management range of 1×10^{-4} to 1×10^{-6} and the sum of the noncancer hazard quotients (HQ) is below EPA's threshold of 1.0. This screening indicates that the vapor intrusion exposure pathway is likely not a concern at the social hall based on current data; however, the concentrations in this well have shown significant increases over time. Therefore, it is recommended that the vapor intrusion pathway continue to be evaluated as additional groundwater monitoring occurs (including any newly installed monitoring wells).

Table I-2: Screening-Level Vapor Intrusion Evaluation – Coraopolis District Sportsmen's Association Social Hall

COC	MW-18B[a] (µg/L)	2018 VISL Calculator[b]		
		Predicted Indoor Air Concentration (µg/m³)	Commercial	
			Cancer Risk	Noncancer HQ
1,1-DCA	1700	222	2.9×10^{-5}	--
1,1-DCE	35	22.9	--	0.03
1,1,1-TCA	650	250	--	0.01
Benzene	7	0.85	5.4×10^{-7}	0.006
Chloroethane[c]	340	99.4	--	0.002
Vinyl chloride	44	35.6	1.3×10^{-5}	0.08
		Total	4.2×10^{-5}	0.1

Notes:
a) Most recent groundwater monitoring data (June 2017) from Appendix D-2 of the Second Quarter 2018 Operations and Maintenance Report prepared by GHD, August 2018.
b) VISL calculator accessed 10/2/2018 at https://epa-visl.ornl.gov/cgi-bin/visl_search. Regional average groundwater temperature of 52°F (11.1°C) obtained from Figure 1 in EPA's 2001 Fact Sheet for Correcting Henry's Law Constant for Soil Temperature located at: https://www.epa.gov/sites/production/files/2015-09/documents/factsheet.pdf
c) Also known as ethyl chloride
-- = cancer risk or noncancer hazard could not be calculated; toxicity values not established
µg/m³ = micrograms per cubic meter

This FYR evaluated the nearest residence as shown in Table I-3. Monitoring well MW-13R, which is screened in the shallow unconsolidated aquifer, is the shallowest well near the residence. The residence is approximately 350 feet from monitoring well MW-13R. The screening-level analysis estimated that the cancer risk is equal to the upper bound of EPA's risk management range and that the noncancer HQ exceeds EPA's threshold of 1. The

VISL calculator is intentionally conservative as a screening tool and does not take into account the presence of silty soils at the off-site area, which can slow the migration of vapors into indoor air. The June 2018 MW-13R VOC concentrations that were used in this evaluation are significantly lower than concentrations previously detected in that well; if groundwater concentrations returned to their previous levels, then the VISL calculator's estimated risk would increase. Based on the screening-level results, it is recommended that the residential vapor intrusion exposure pathway be further evaluated using multiple lines of evidence.

Table I-3: Screening-Level Vapor Intrusion Evaluation – Off-site Resident

COC	MW-13R[a] (µg/L)	2018 VISL Calculator[b]		
		Predicted Indoor Air Concentration (µg/m^3)	Residential	
			Cancer Risk	Noncancer HQ
1,1-DCA	580	75.7	4.3×10^{-5}	--
1,1-DCE	190	124	--	0.60
1,2-DCA	8	0.20	1.9×10^{-6}	0.028
1,1,1-TCA	800	308	--	0.059
1,1,2-TCA	15	0.24	1.4×10^{-6}	**1.15**
Benzene	9	1.10	3.1×10^{-6}	0.035
Methylene chloride	12	0.94	9.2×10^{-9}	0.002
TCE	30	6.35	1.3×10^{-5}	**3.05**
Vinyl chloride	11	8.89	5.3×10^{-5}	0.085
		Total	**1.2×10^{-4}**	**5.0**

Notes:

a) Most recent groundwater monitoring data (June 2018) from Table 7A of the Second Quarter 2018 Operations and Maintenance Report prepared by GHD, August 2018.

b) VISL calculator accessed 10/2/2018 at https://epa-visl.ornl.gov/cgi-bin/visl_search. Regional average groundwater temperature of 52°F (11.1°C) obtained from Figure 1 in EPA's 2001 Fact Sheet for Correcting Henry's Law Constant for Soil Temperature located at: https://www.epa.gov/sites/production/files/2015-09/documents/factsheet.pdf

-- = cancer risk or noncancer hazard could not be calculated; toxicity values not established

µg/m^3 = micrograms per cubic meter

Bold = cancer risk exceeds 1×10^{-4} or noncancer HQ exceeds 1.0.