

**FIVE-YEAR REVIEW REPORT FOR  
WESTINGHOUSE ELECTRIC CORP. (SHARON PLANT) SUPERFUND  
SITE  
MERCER COUNTY, PENNSYLVANIA**



**September 2016**

**Prepared By:  
United States Environmental Protection Agency  
Region 3  
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A handwritten signature in blue ink, which appears to read "Karen Melvin", is written over a horizontal line.

**Karen Melvin, Director  
Hazardous Site Cleanup Division**

**SEP 21 2016**

**Date**

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## LIST OF ABBREVIATIONS

AHI	Adult Hazard Index
ARAR	Applicable or Relevant and Appropriate Requirement
AOC	Administrative Order on Consent
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CHI	Child Hazard Index
CIC	Community Involvement Coordinator
COC	Contaminant of Concern
CR	Cancer Risk
DNAPL	Dense Non-Aqueous Phase Liquid
EPA	United States Environmental Protection Agency
FYR	Five-Year Review
GPRA	Government Performance and Results Act
HHRA	Human Health Risk Assessment
HQ	Hazard Quotient
IC	Institutional Control
LNAPL	Light Non-Aqueous Phase Liquid
LTM	Long-Term Monitoring
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
mg/kg	Milligram per Kilogram
NAPL	Non-Aqueous Phase Liquid
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PADEP	Pennsylvania Department of Environmental Protection
PADER	Pennsylvania Department of Environmental Resources
PCB	Polychlorinated Biphenyl
PCE	Tetrachloroethylene
ppm	parts per million
PRP	Potentially Responsible Party
RA	Remedial Action
RAO	Remedial Action Objective
RD	Remedial Design
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
RSL	Regional Screening Level
SLERA	Screening-Level Ecological Risk Assessment
SWRAU	Sitewide Ready for Anticipated Use
TBC	To-Be-Considered
TCE	Trichloroethylene
TI	Technical Impracticability
TSCA	Toxic Substances Control Act
UAO	Unilateral Administrative Order

µg/L	Microgram per Liter
VI	Vapor Intrusion
VISL	Vapor Intrusion Screening Level
VOC	Volatile Organic Compound

## **EXECUTIVE SUMMARY**

The Westinghouse Electric Corp. (Sharon Plant) Superfund site (the Site) is located on the west side of Sharpsville Avenue in the City of Sharon, Mercer County, Pennsylvania. The former transformer plant occupies nearly 58 acres and is about 1-mile long on a north-south axis.

For more than 60 years, Westinghouse produced distribution transformers, power transformers and related electrical apparatus. During operations, leakages and spills contaminated site soils, storm sewer drainages leading from the plant to the Shenango River, sediments and riparian soils of the Shenango River, and groundwater at and downgradient of the former plant with polychlorinated biphenyls (PCBs).

The United States Environmental Protection Agency (EPA) listed the Site on the Superfund program's National Priorities List (NPL) on August 30, 1990. The Site consists of two operable units (OUs); OU1 addressed soils and OU2 addressed groundwater, riparian soils, drainage ways, and Shenango River sediments. The Record of Decision (ROD) included excavation, treatment and off-site disposal of contaminated soils and institutional controls. The ROD included groundwater monitoring; land use restrictions; a technical impracticability (TI) waiver for drinking water standards; fish tissue monitoring; sediment and riparian soil removal and off-site disposal; and removal and off-site disposal of debris and sediments from the Wishart Court sewer line.

The triggering action for this five-year review (FYR) was the signing of the previous FYR on September 22, 2011.

The remedy for soils (OU1) is protective in the short term. It currently protects human health and the environment because areas of soil contamination were excavated and capped, and institutional controls are in place. In order for the remedy to be protective in the long term, the following action is needed at OU1 to ensure long-term protectiveness:

Update the operation and maintenance (O&M) plan as needed to include cap inspections and maintenance.

The remedy for groundwater, sediments (OU2) is protective of human health and the environment in the short term. The PCB contaminated sediments have been removed from the Site drainageways and the sediments and riparian soils of the Shenango River have been remediated to cleanup standards required by the ROD with respect to the Site-related PCB contamination. The current Commonwealth of Pennsylvania fish advisory, based on the fish tissue analyzed in 2015, is not protective under Superfund human health risk assessment assumptions for smallmouth bass. While there are currently no known exposures to the Site-related ground water contaminants and a long-term ground water monitoring program is in place, an adjustment to the plan's frequency and parameters is recommended so EPA may ascertain if Site related arsenic and VOC contamination in the alluvial aquifer is migrating beyond the TI Zone.

In addition, in order for the remedy at OU2 to be protective in the long term, the following actions need to be taken:

- Include 1,4-dioxane in the groundwater sampling program to determine if this is a COC for the Site.
- Develop a sampling plan to determine if there is an ongoing release to the Shenango River.
- Notify the Commonwealth of Pennsylvania that the present Fish Advisory may not be protective and should be reconsidered.
- Perform additional Fish Tissue sampling to verify the increase of PCB concentrations.
- Include appropriate wells in sampling plan and analyze for relevant contaminants to better determine if contaminants exceed the maximum contaminant levels (MCLs) outside of the TI Zone.
- Update the O&M plan as needed to change requirements for groundwater monitoring and light non-aqueous phase liquid (LNAPL) removal.
- Include a subset of samples for PCB-congener analysis to determine if Aroclor analysis is accurately measuring total PCBs and to determine if dioxin-like PCBs are a potential contaminant of concern (COC).

The following additional items, though not expected to affect protectiveness, warrant additional follow-up:

- During the FYR site visit, several wells needed maintenance, these wells should be repaired.
- Documents at the Site's repository only included an Administrative Record up until the ROD. Important site documents (RODs and FYRs) should be sent to the repository.
- Subslab concentrations of 1,2,4-trimethylbenzene in the South Sector increased from 2014 to 2015, additional sampling for vapor intrusion is warranted.
- The Davis Alloys buildings is currently vacant. If it becomes occupied, additional sampling for vapor intrusion is warranted and mitigation should be considered prior to re-use of the building.

The Site is protective in the short term.

### **Government Performance and Results Act of 1993 (GPRA) Measure Review**

As part of this FYR, the GPRA Measures have also been reviewed. The GPRA Measures and their status are provided as follows:

#### Environmental Indicators

Human Health: Current human exposure is under control.

Groundwater Migration: Contaminated groundwater migration is under control.

#### Sitewide Ready for Anticipated Use (SWRAU)

The Site is current Sitewide Ready for Anticipated Use.

## FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
<b>Site Name:</b> Westinghouse Electric Corp. (Sharon Plant)		
<b>EPA ID:</b> PAD005000575		
<b>Region:</b> 3	<b>State:</b> PA	<b>City/County:</b> Sharon/Mercer County
SITE STATUS		
<b>NPL Status:</b> Final		
<b>Multiple OUs?</b> Yes	<b>Has the site achieved construction completion?</b> Yes	
REVIEW STATUS		
<b>Lead agency:</b> EPA If "Other Federal Agency" selected above, enter Agency name: <a href="#">Click here to enter text.</a>		
<b>Author name:</b> David Turner, with additional support provided by Skeo Solutions		
<b>Author affiliation:</b> EPA Region 3		
<b>Review period:</b> October 2015 – August 2016		
<b>Date of site inspection:</b> 10/27/2015		
<b>Type of review:</b> Statutory		
<b>Review number:</b> 3		
<b>Triggering action date:</b> 9/22/2011		
<b>Due date (five years after triggering action date):</b> 9/22/2016		

**FIVE-YEAR REVIEW SUMMARY FORM (CONTINUED)**

**Issues/Recommendations**

**Issues and Recommendations Identified in the FYR:**

<b>OU(s): Sitewide</b>	<b>Issue Category: Operations and Maintenance</b>			
	<b>Issue:</b> The O&M plans are not up to date for cap inspections and maintenance, groundwater monitoring, and LNAPL removal.			
	<b>Recommendation:</b> Update O&M plans as needed.			
<b>Affect Current Protectiveness</b>	<b>Affect Future Protectiveness</b>	<b>Implementing Party</b>	<b>Oversight Party</b>	<b>Milestone Date</b>
No	Yes	PRP	EPA	9/22/2017

<b>OU(s): 2</b>	<b>Issue Category: Monitoring</b>			
	<b>Issue:</b> 1,4-Dioxane is not currently sampled.			
	<b>Recommendation:</b> Include 1,4-dioxane in the groundwater sampling program to determine if this is a COC for the Site.			
<b>Affect Current Protectiveness</b>	<b>Affect Future Protectiveness</b>	<b>Implementing Party</b>	<b>Oversight Party</b>	<b>Milestone Date</b>
No	Yes	PRP	EPA	9/22/2017

<b>OU(s): 2</b>	<b>Issue Category: Monitoring</b>			
	<b>Issue:</b> Polychlorinated biphenyl (PCB) concentrations in 2015 fish tissues were higher than previous samples.			
	<b>Recommendation:</b> Develop a sampling plan to determine if there is an on-going release from the Site to the Shenango River.			
<b>Affect Current Protectiveness</b>	<b>Affect Future Protectiveness</b>	<b>Implementing Party</b>	<b>Oversight Party</b>	<b>Milestone Date</b>
No	Yes	PRP	EPA	9/22/2017

<b>OU(s): 2</b>	<b>Issue Category: Institutional Controls</b>			
	<b>Issue:</b> The one meal per month Commonwealth of Pennsylvania fish advisory for smallmouth bass consumption is not protective under Superfund risk assessment assumptions.			
	<b>Recommendation:</b> Coordinate with PADEP and PRP to perform fish tissue sampling. Continue outreach and educational efforts about consuming fish.			

Affect Current Protectiveness	Affect Future Protectiveness	Implementing Party	Oversight Party	Milestone Date
Yes	Yes	EPA/State	EPA	9/22/2017

<b>OU(s): 2</b>	<b>Issue Category: Monitoring</b>			
	<b>Issue:</b> Arsenic and vinyl chloride have been detected above their MCLs in TI Zone perimeter wells.			
	<b>Recommendation:</b> Include appropriate wells in sampling plan and analyze for all COCs to determine if the plume is migrating beyond the TI Zone.			
Affect Current Protectiveness	Affect Future Protectiveness	Implementing Party	Oversight Party	Milestone Date
No	Yes	PRP	EPA	9/22/2017

<b>OU(s): 2</b>	<b>Issue Category: Monitoring</b>			
	<b>Issue:</b> Aroclor analysis performed on riparian soils may have underestimated total PCBs due to weathering and does not identify whether dioxin-like PCBs are present.			
	<b>Recommendation:</b> Include PCB-congener analysis to determine if Aroclor analysis is accurately measuring total PCBs and to determine if dioxin-like PCBs are a potential COC.			
Affect Current Protectiveness	Affect Future Protectiveness	Implementing Party	Oversight Party	Milestone Date
No	Yes	PRP	EPA	9/22/2017

**Protectiveness Statements**

<i>Operable Unit:</i> 1	<i>Protectiveness Determination:</i> Short-Term Protective	<i>Addendum Due Date (if applicable):</i> <a href="#">Click here to enter date.</a>
<i>Protectiveness Statement:</i> The remedy at OU1 currently protects human health and the environment because areas of soil contamination were excavated and capped, and institutional controls are in place. In order for the remedy to be protective in the long term, the O&M plan should be updated to include cap inspections and maintenance.		
<ul style="list-style-type: none"> <li>Update O&amp;M plan to include cap inspections and maintenance.</li> </ul>		

<i>Operable Unit:</i> 2	<i>Protectiveness Determination:</i> Short-term Protective	<i>Addendum Due Date (if applicable):</i>
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***Protectiveness Statement:***

The remedy at OU2 is currently protective of human health and the environment, because contaminated sediments have been removed from the Site drainage ways, and the sediments and riparian soils of the Shenango River have been remediated to the cleanup standards specified in the ROD. Arsenic should be added to the groundwater monitoring program. The current Commonwealth of Pennsylvania fish advisory for one meal per month for smallmouth bass is not protective under Superfund risk assessment assumptions.

In order for the remedy to be protective in the long term, the following actions should to be taken:

- Include 1,4-dioxane in the groundwater sampling program to determine if this is a COC for the Site.
- Develop a sampling plan to determine if there is an ongoing release to the Shenango River.
- Perform additional Fish Tissue sampling to verify the increase of PCB concentrations.
- Notify the Commonwealth of Pennsylvania that the present Fish Advisory may not be protective and should be reconsidered.
- Include appropriate wells in sampling plan and analyze for relevant contaminants to better determine if contaminants exceed the maximum contaminant levels (MCLs) outside of the TI Zone.
- Update the O&M plan as needed to change requirements for groundwater monitoring and light non-aqueous phase liquid (LNAPL) removal.
- Include a subset of samples for PCB-congener analysis to determine if Aroclor analysis is accurately measuring total PCBs and to determine if dioxin-like PCBs are a potential contaminant of concern (COC).

**Sitewide Protectiveness Statement**

***Protectiveness Determination:***  
Short-term Protective

**Addendum Due Date (if applicable):**  
[Click here to enter date.](#)

***Protectiveness Statement:***

The overall remedy is currently protective of human health and the environment in the short term. All site soils have been remediated to industrial exposure standards, PCB contaminated sediments have been removed from the Site drainage ways. All institutional controls are in place as required by two RODs. The sediments and riparian soils of the Shenango River have been remediated to standards which are protective of ecological receptors with respect to the Site-related PCB contamination. The soil and sediment cleanup goals are protective, especially given the extent of soil cover. The current Commonwealth of Pennsylvania fish advisory is not protective under Superfund risk assessment assumptions for smallmouth bass. While there are currently no known exposures to the Site-related ground water contaminants and a long-term ground water monitoring program is in place, an adjustment to the plan's frequency and parameters is recommended so EPA may ascertain if Site related VOC and arsenic contamination in the alluvial aquifer is migrating beyond the TI Zone.

# **Third Five-Year Review Report for Westinghouse Electric Corp. (Sharon Plant) Superfund Site**

## **1.0 Introduction**

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

The United States Environmental Protection Agency (EPA) prepares FYRs pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Section 121 and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). CERCLA Section 121 states:

If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each 5 years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.

EPA interpreted this requirement further in the NCP, 40 Code of Federal Regulations (CFR) Section 300.430(f)(4)(ii), which states:

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

EPA Region 3, with contractor support from Skeo Solutions, conducted the FYR and prepared this Report regarding the remedy implemented at the Westinghouse Electric Corp. Superfund site (the Site) in Sharon, Mercer County, Pennsylvania. EPA conducted this FYR from October 2015 to August 2016. EPA is the lead agency at the Site and the potentially responsible party (PRP) financed the cleanup. Pennsylvania Department of Environmental Protection (PADEP), as the support agency representing the Commonwealth of Pennsylvania, has reviewed all supporting documentation and provided input to EPA during the FYR process.

This is the third FYR for the Site. The triggering action for this statutory review is the previous FYR. The FYR is required because hazardous substances, pollutants or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure. The Site consists of

two operable units (OUs). OU1 comprises contaminated soils at the Site. OU2 comprises Site groundwater, riparian soils, drainage ways and Shenango River sediments. This FYR report addresses both OUs.

## 2.0 Site Chronology

Table 1 lists the dates of important events for the Site.

**Table 1: Chronology of Site Events**

<b>Event</b>	<b>Date</b>
Westinghouse Electric Corp. (Westinghouse) purchased the former plant property from the Savage Arms Corporation	1922
Westinghouse first used Inerteen (a PCB mixture) at the plant	1936
Westinghouse discontinued use of Inerteen at the plant	1976
EPA discovered contamination at the Site	December 1, 1979
EPA conducted an inspection of the facility pursuant to the Toxic Substances Control Act	July 1983
Pennsylvania Department of Environmental Resources (PADER, now PADEP) performed preliminary assessment at the Site	July 1, 1984
Westinghouse shut down the plant	1984
EPA performed a site inspection, and PADER issued an Administrative Order to Westinghouse to conduct a study of subsurface conditions and submit a cleanup plan	April 1985
EPA proposed the Site to the Superfund program's National Priorities List (NPL)	June 24, 1988
PADER entered into Consent Order and Agreement with Westinghouse, requiring the company to conduct a remedial investigation and feasibility study (RI/FS); Westinghouse initiated OU1 RI/FS	September 20, 1988
The PRP initiated OU2 FS	December 31, 1988
EPA listed the Site on the NPL	August 30, 1990
EPA issued Unilateral Administrative Order (UAO) requiring Westinghouse to develop and implement a removal action plan to reduce off-site migration of light non-aqueous phase liquids (LNAPLs)	February 4, 1994
LNAPL recovery removal action initiated	February 16, 1994
The PRPs completed OU1 RI/FS, and EPA signed OU1 Record of Decision (ROD)	February 18, 2000
EPA issued UAO to the Viacom, Inc., Winner Development Company, and AK Steel Corporation (the PRPs) for the remedial design and action necessary to implement the OU1 ROD	September 29, 2000
The PRPs initiated OU1 remedial design (RD)	November 1, 2000
City of Sharon Ordinance 28-00 passed, prohibiting drilling or use of private groundwater wells as a source of water for either potable or industrial purposes within certain areas of the City of Sharon (including the Site)	November 29, 2000
The PRPs completed OU2 FS	May 31, 2001
The PRPs completed OU1 RD and initiated OU1 remedial action (RA)	August 2, 2001
EPA approved the Technical Impracticability (TI) of Groundwater Restoration waiver from the PRPs	July 22, 2002
EPA signed OU2 ROD	February 20, 2003
LNAPL recovery RA terminated following issuance of OU2 ROD	March 27, 2003

Event	Date
EPA issued UAO to Viacom, Inc., Winner Development Company, and AK Steel Corporation to conduct the RD and RA necessary to implement the OU2 ROD	April 29, 2003
The PRPs initiated OU2 RD (groundwater and sediments)	June 2, 2003
The PRPs initiated OU2 RA	October 15, 2003
RA for storm sewer cleaning initiated and completed	February 17, 2004 – March 5, 2004
The PRPs completed OU2 RD (groundwater and sediments)	June 22, 2004
RA for sediments and riparian soils initiated	July 30, 2004
The PRPs completed OU1 RA	February 23, 2005
EPA conducted a pre-final inspection, which found that all polychlorinated biphenyl (PCB)-contaminated sediments exceeding the cleanup criteria had been removed from the Shenango River	November 30, 2005
EPA signed Preliminary Close Out Report and deemed the Site construction complete	December 22, 2005
The PRPs completed OU2 RA	September 28, 2006
EPA signed first FYR	September 29, 2006
EPA signed second FYR	September 22, 2011
The PRPs reinstated LNAPL removal	July 2014
PRPs conducted fish tissue sampling	October 7, 2015
EPA completed vapor intrusion assessment of buildings along east side of Sharpsville Avenue	October 30, 2015
EPA submitted notice letter to railroad regarding soil contamination	March 10, 2016
The PRPs submitted vapor intrusion assessment	March 2016

### 3.0 Background

#### 3.1 Physical Characteristics

The Site is on the west side of Sharpsville Avenue in the City of Sharon, Mercer County, Pennsylvania (Figure 1). The former transformer plant occupies nearly 58 acres, is about 1-mile long on a north-south axis, and 200 to 800 feet wide. The Site is generally flat and is mostly covered with pavement and concrete building foundations. For purposes of conducting the environmental investigations, the Site was divided into three areas: the North Sector, Middle Sector and South Sector (Figure 2).

The 2010 Census lists the Sharon city population as 14,038. Land use east of the Site is primarily urban residential, while land use to the west (between the Site and Shenango River) varies from commercial, institutional, recreational, and light to heavy industrial. A railroad property borders the former plant property to the west; this property is considered part of the Site (Figure 3). As of March 2016, the Site is still part of an industrial expansion program under the direction of the Penn Northwest Development Corporation.

The Site is in the Shenango River Valley. The River varies from 800 to 2,000 feet west of the Site, and flows south. There are two aquifers at the Site. The alluvial aquifer is unconfined and associated with alluvial deposits. The groundwater in the lower, bedrock aquifer is present under confined or semi-confined conditions in Orangeville Shale. An 8-foot to 80-foot thick layer of glacial till underlies the alluvial aquifer and acts as an aquitard between the alluvial aquifer and the bedrock aquifer. Groundwater in the alluvial and bedrock aquifers generally flows west-southwest toward the Shenango River.

The contamination in the alluvial groundwater exists as three phases: a light non-aqueous phase liquid (LNAPL) floating on the surface of the groundwater, a dense non-aqueous phase liquids (DNAPL), which have sunk to the bottom of the groundwater, and as contaminants dissolved in the groundwater. The contamination in the bedrock groundwater is extremely localized and consists of contaminants dissolved in the groundwater. Groundwater studies during and after the remedial investigation indicate that groundwater contaminants are not reaching and are not expected to reach the Shenango River.

### **3.2 Land and Resource Use**

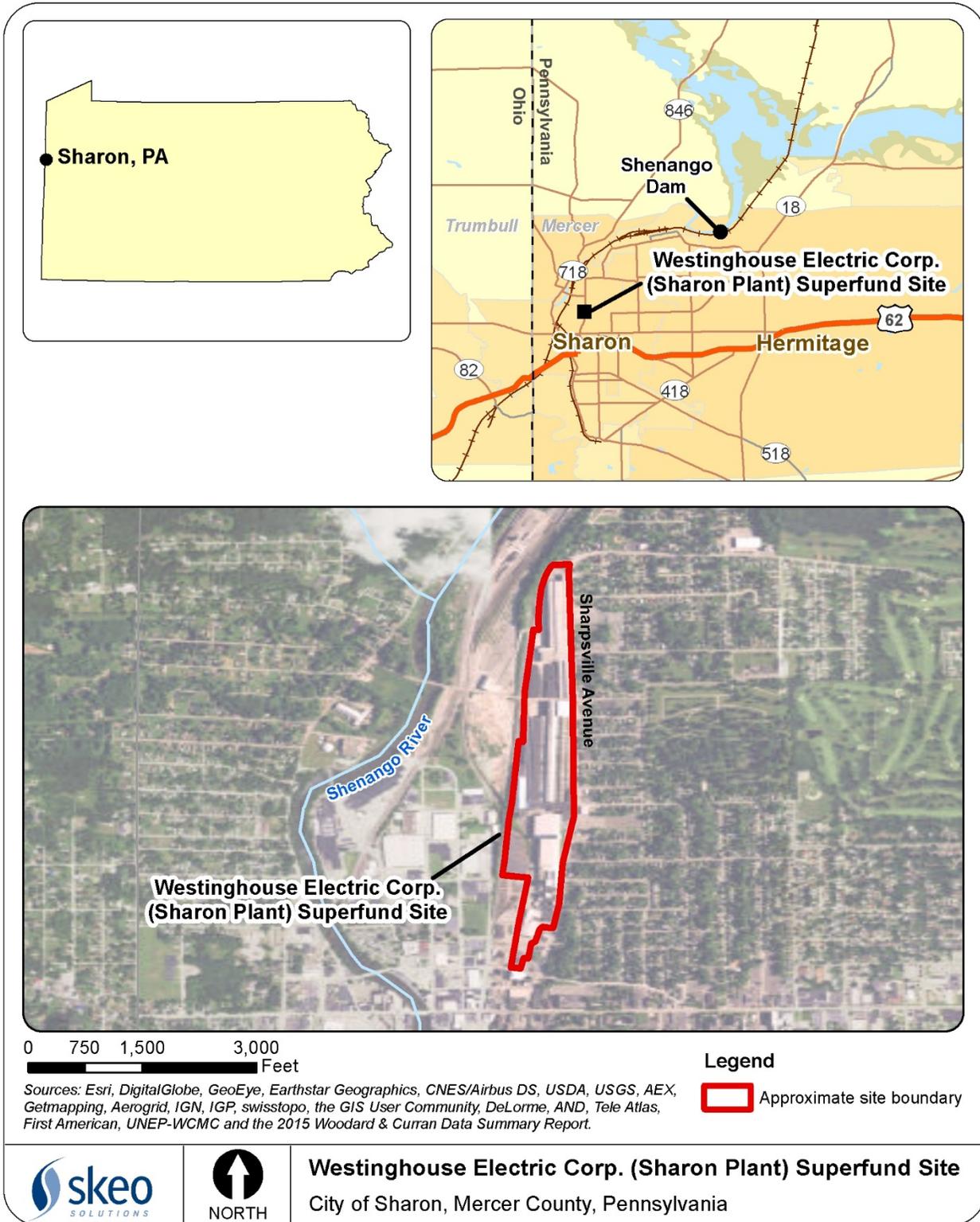
The Site and surrounding area have been used for commercial, rail and industrial activities since the mid-1800s. Westinghouse purchased the former plant property from the Savage Arms Corporation in 1922. For more than 60 years, Westinghouse produced distribution transformers, power transformers and related electrical apparatus until the plant was shut down in 1984.

According to the City of Sharon 2006 Zoning Ordinance, the site properties are zoned as M-1 Light Industrial District, M-2 Heavy Industrial District and C-1 Central Commercial District. Land use is not expected to change. Currently, the Site houses a variety of industrial businesses, including Sharon Coating, LLC (South Sector) and the Ellwood Crankshaft Group (North Sector). Some of the Site remains vacant, including portions of the former transformer plant building (Middle Sector) owned by Winner Development LLC. Based on an assessment of remaining polychlorinated biphenyls (PCBs) in the former transformer plant building and the cost to safely demolish, remove and properly dispose of the waste, redevelopment of the former transformer plant is considered unlikely.

Several businesses operate west of the Site including Noise Solutions and Habitat for Humanity. However, some businesses in this area have moved and there are vacant properties for sale..

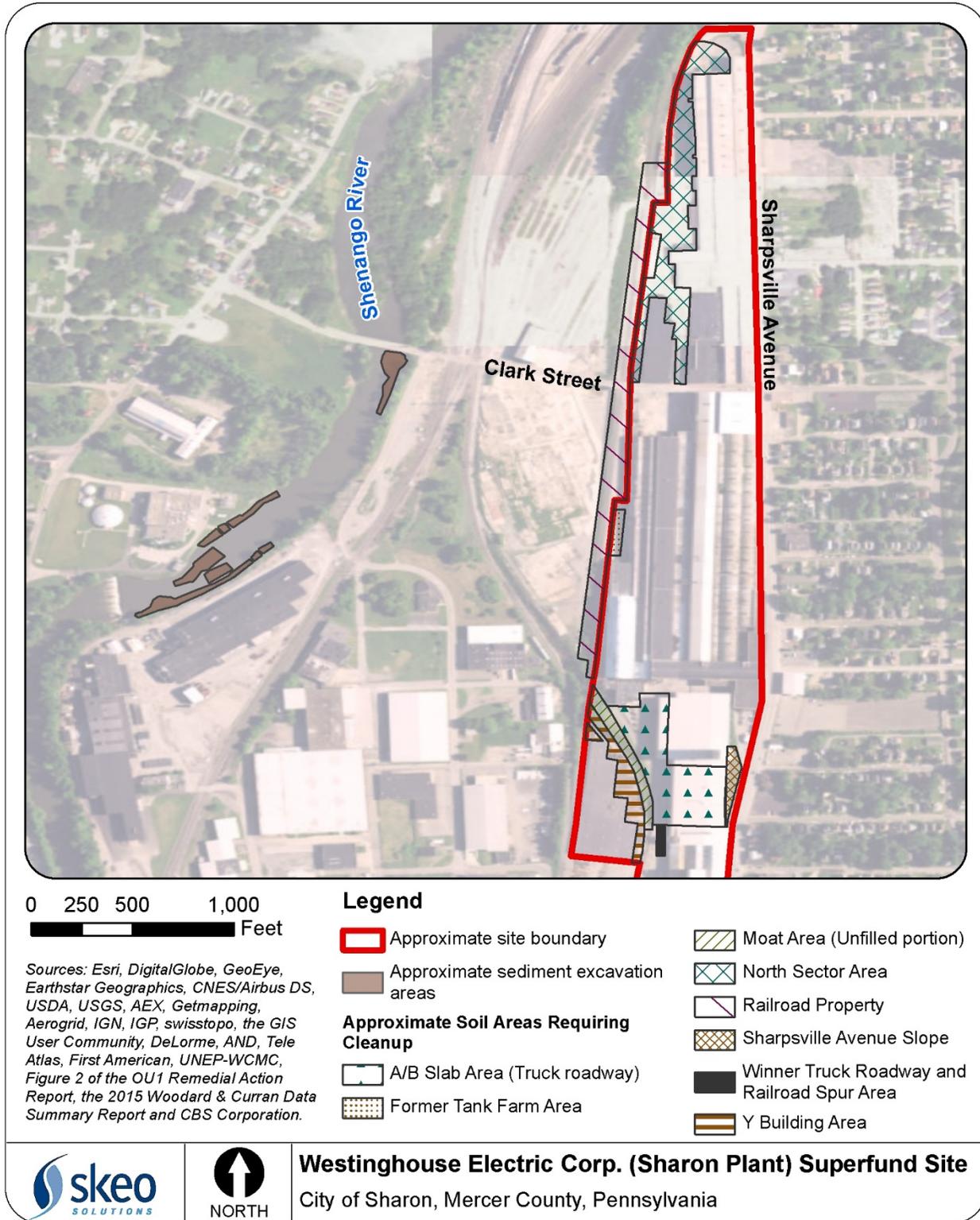
The Shenango River flows in a north-to-south direction and varies from 800 feet to 2000 feet to the west of the former plant property. The River is a potable water source, and Aqua America water treatment plant (shown on Figure 2) has its water intake located approximately ¼ mile downstream from the Clark Street Bridge. The River is also used for recreational boating and fishing. Groundwater at the Site is not used, as the entire area is under a local ordinance requiring the use of public water.

**Figure 1: Site Location 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 2: Site Feature 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.

### **3.3 History of Contamination**

Some transformers produced at the Westinghouse Sharon plant were liquid-cooled; about 98 percent of those were filled with highly-refined mineral oil. About 2 percent were filled with a silicone fluid or commercially-produced dielectric fluid called Inerteen. Inerteen was nonflammable and consisted of undiluted PCBs or a mixture of PCBs and trichlorobenzene. Westinghouse first used Inerteen at the Sharon plant in 1936 and discontinued its use in 1976.

Westinghouse used several other chemicals at the Site, including six volatile organic compounds (VOCs): ethyl acetate, methyl ethyl ketone, toluene, xylene, trichloroethylene (TCE) and 1,1,1-trichloroethane. TCE and 1,1,1-trichloroethane were used in metal cleaning and degreasing. Metal cleaning was also accomplished by acid or phosphatizing-bath processes. Leftover material from these processes was piped to a neutralization facility where it was treated. Other materials used at the Site included paints, varnishes, as well as small amounts of flammable liquids and cyanide. During operations, leaks and spills contaminated soils; storm sewer drains that lead from the plant to the Shenango River; sediments and riparian soils of the Shenango River; and groundwater at and downgradient of the former plant.

### **3.4 Initial Response**

From 1976 to 1986, Westinghouse undertook several cleanup actions, including:

- Excavation and off-site disposal of more than 7,800 tons of PCB-contaminated soil, including soil from five underground storage tanks and from the cleanup of a spill in the moat area (Figure 3).
- Removal and landfill disposal of 60 cubic yards of PCB-contaminated fly ash from two settling tanks and a reservoir for the collection of hot water known as a hot well.
- Recovery and off-site incineration of 104 gallons of PCB liquid discovered in a concrete sump.
- Removal, shredding and incineration of more than 4,500 PCB-containing capacitors.

In July 1983, EPA inspected the facility pursuant to the Toxic Substances Control Act (TSCA). The plant shut down in 1984. In April 1985, the Pennsylvania Department of Environmental Resources (PADER) now Pennsylvania Department of Environmental Protection (PADEP) issued Westinghouse an Administrative Order for subsurface investigation to determine the extent of impacted groundwater and soil, and to submit a plan and schedule for cleanup. Westinghouse submitted a report summarizing the results of the investigation in September 1986, and the cleanup plan and schedule in October 1986.

EPA proposed the Site for the National Priorities List (NPL) in June 1988 and added it in August 1990.

In September 1988, Westinghouse entered into a Consent Order and Agreement with PADER to conduct the Remedial Investigation and Feasibility Study (RI/FS). In February 1994, EPA issued a Unilateral Administrative Order (UAO) to Westinghouse for development and implementation of a Response Action Plan for removal of LNAPL from groundwater under the tank farm in the

Middle Sector, to reduce the threat of off-site LNAPL migration. EPA approved a work plan for an LNAPL Removal Response Action. The LNAPL response action used in-well skimmers, bailers, then absorbent socks to remove the LNAPL from wells GM-5A, M-2 and S-4. The LNAPL was containerized and shipped off-site for proper disposal. The LNAPL response action was terminated after EPA issued a Record of Decision (ROD) in 2003.

On October 23, 1998, pursuant to the 1998 Consent Order and Agreement with PADER, CBS Corporation submitted a Feasibility Study Supplemental Sampling and Analysis Plan for analysis of sediments, groundwater, riparian soils and non-aqueous phase liquids (NAPLs). In 1999, CBS Corporation submitted reports detailing findings from sampling of the Shenango River sediments and riparian soils, groundwater, and bench-scale testing to help determine the effectiveness of potential cleanup technologies for NAPLs.

### **3.5 Basis for Taking Action**

On June 6, 1997, Westinghouse submitted a final Screening-Level Ecological Risk Assessment (SLERA). On April 7, 1998, Westinghouse submitted the final Baseline Human Health Risk Assessment (HHRA). Soil, river sediments, and groundwater were contaminated with PCBs and VOCs. LNAPLs were found in the alluvial aquifer, including a former tank farm location on the west side of the Middle Sector as well as the immediate vicinity of well M-2 (located inside the Middle Sector buildings) and well S-4 (located inside the South Sector building). DNAPLs were found in the alluvial aquifer in a north-to-south elongated area on the west side of the Middle Sector buildings. NAPLs were found primarily beneath the Norfolk Southern railroad tracks, the former tank farm area and other features that serve as a barrier and help prevent direct human contact.

The HHRA's principal carcinogenic risk for soils was for potential child trespassers who could be exposed to surficial soils within the railroad property. Excess non-carcinogenic risks resulted for the child trespasser and the adolescent trespasser within the railroad right-of-way, the future employee within the Middle Sector buildings, the indoor and outdoor construction worker, and the unrestricted worker in the moat area. Risks posed by human consumption of fish impacted by PCBs in sediments were not quantitatively evaluated as part of the HHRA.

Westinghouse and EPA evaluated groundwater using hypothetical exposures (adult residents, child residents and on-site workers). Risk evaluations conservatively assumed that these persons might be exposed to the groundwater through ingestion, dermal (skin) contact and inhalation. These risks were orders of magnitude above the acceptable cancer risk range and the non-cancer hazards were well above EPA's target hazard quotient of 1.

### **4.0 Remedial Actions**

In accordance with CERCLA and the NCP, the overriding goals for any remedial action are protection of human health and the environment and compliance with applicable or relevant and appropriate requirements (ARARs). A number of remedial alternatives were considered for the Site, and final selection was made based on an evaluation of each alternative against nine evaluation criteria that are specified in Section 300.430(e)(9)(iii) of the NCP.

## 4.1 Remedy Selection

### OU1

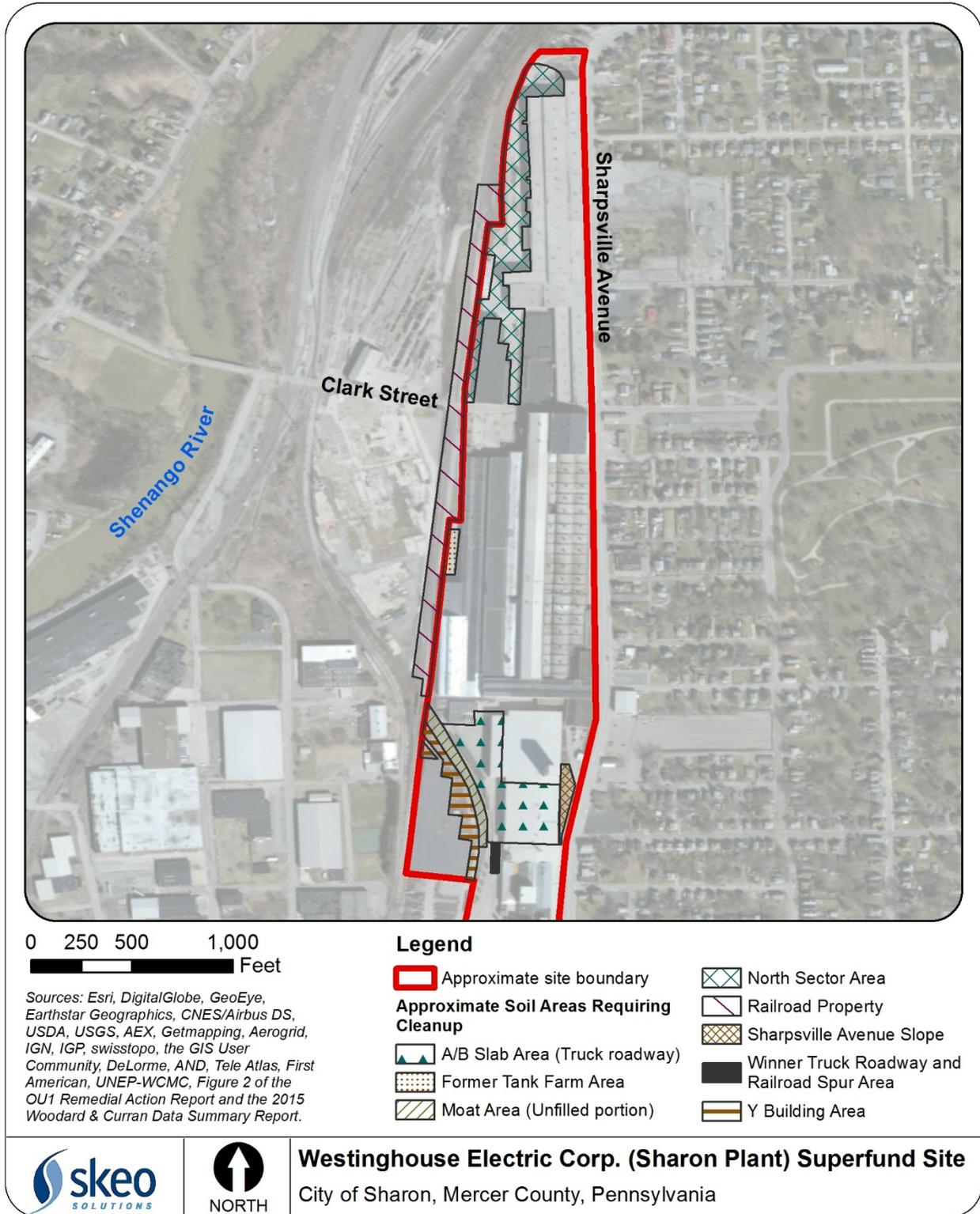
The 2000 ROD addressed contaminated soils; the remedial action objective (RAO) was to reduce the risk posed by contaminated soils to levels acceptable for industrial use. The remedy consisted of characterization, excavation, treatment and off-site disposal of contaminated soils, and institutional controls in areas where contamination would remain above levels considered safe for unrestricted use. Areas cleaned up are in Figure 3, and risk based cleanup levels are in Table 2. The remedy included:

- Railroad Property - Backfilling of excavated areas.
- Moat Area - Covering with at least two feet of soil.
- A/B Slab Area - Backfilling or paving with materials strong enough to support anticipated truck traffic.
- Winner Steel Services (Winner) Truck Roadway and Railroad Spur Area - Remediation of surface soils in the area expected to be occupied by the railroad spur, consistent with the Railroad Property surface soil remediation.
- North Sector (AK Steel Corporation property) Area - Remediation of surface soils, where required, consistent with remediation required for the A/B Slab.
- The Y Building (American Industries) Area -
  - Remediation of surface soils on the south, east and north portions of the area consistent with remediation required for the Winner Steel Services truck roadway portion of the A/B Slab.
  - Remediation of soils on the west side of the area, if necessary, consistent with the Railroad Property soils remediation.
- Former Tank Farm Area - Remediation of surface soils consistent with remediation required for the Winner Steel Services truck roadway portion of the A/B Slab.

**Table 2: Soil Contaminant of Concern (COC) Cleanup Goals**

Soil COC	Area and Depth	Cleanup Goal (mg/kg)
Total PCBs	0 to 10 inches from final surface in Moat fill; unpaved areas or imported fill for the North Sector Area, the Y Building Area (east/north/south sides), A/B Slab, and the Former Tank Farm Area	1 (unrestricted use)
	0 to 10 inches Railroad Spur Area, the railroad property, and the Y Building Area (west side)	25
	0 to 24 inches from final surface of A/B Slab Area (truck roadway portion). North Sector Area and Y Building Area (east/north/south sides), and the Former Tank Farm Area if paved; 10 to 24 inches if unpaved	
	10 to 24 inches of Winner Truck Roadway and Railroad Spur Area, the railroad property, and the Y Building Area (west side)	71
	The entire Moat Area	689
	More than 24 inches in the Winner Truck Roadway and Railroad Spur Area, the Y Building Area (east/north/south sides), and the Former Tank Farm Area	
Arsenic	All areas – 0 to 24 inches	104
Lead	All areas – 0 to 24 inches	1,000
<p><i>Source: Table 2 OUI RA Report</i>  mg/kg = milligrams per kilogram</p>		

**Figure 3: Approximate Areas Requiring Soil Cleanup**



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.

## OU2

EPA issued a ROD in 2003 that addressed site groundwater, riparian soils, drainage ways and Shenango River sediments. The ROD included the following RAOs:

### *Groundwater:*

The RAO for groundwater is to prevent human exposures via ingestion, inhalation and dermal contact to site-related contaminants in the groundwater. No RAOs were deemed necessary to prevent exposures of ecological receptors to contaminated groundwater because such exposures are neither present nor probable.

### *Riparian soils:*

The RAO for riparian soils is to eliminate potential exposures of ecological receptors to soils where those soils have total PCB concentrations greater than 10 mg/kg, and to minimize the probability that soils having PCB concentrations between 1 and 10 mg/kg would erode into the River. EPA selected the 10 mg/kg cleanup level for the soil to protect ecological receptors that might come in contact with the soil.

### *Site drainage ways:*

The RAO for the site drainage ways is to eliminate the possibility of sediments containing concentrations of PCBs of 1 mg/kg or greater from washing into the Shenango River. EPA selected the 1 mg/kg cleanup level to be consistent with the 1 mg/kg cleanup level selected for Shenango River sediments.

### *Shenango River sediments:*

The RAO for the Shenango River sediments is to eliminate the possibility of exposure of ecological receptors to sediments with total PCB concentrations greater than 1 mg/kg.

The remedy included the following components:

### *Groundwater:*

- No further action with monitoring.
- Land use restrictions (institutional controls) as previously required under the OU1 ROD and the OU1 UAO.
- The waiver of drinking water standards, as provided at CERCLA Section 121(d)(4)(C), as being technically impracticable to attain.
- Installation of additional monitoring wells and development of a groundwater monitoring regimen. The number and placement of additional wells and monitoring required will be established during the remedial design.

*Riparian soils:*

- Removal of an estimated 300 cubic yards of soils containing PCB concentrations greater than 10 mg/kg in the floodway along the eastern edge of the Shenango River downstream from Clark Street.
- Protection and monitoring of the City's water intake during remedial action to ensure that the public water supply is not contaminated as a result of the remedial action.
- Off-site disposal of the riparian soils removed, including any treated soils.
- Amounts and types of riparian area backfill materials will be established during the remedial design and modified, if required, during the remedial action.

*Site drainage ways:*

- Removal of an estimated 20 cubic yards of PCB-contaminated debris and sediments from about 600 feet of the Wishart Court sewer line north of Silver Street.
- Off-site disposal of sediments and debris removed, including any treated materials.

*Shenango River sediments:*

- Removal of an estimated 4,100 cubic yards of up to 48 inches (in depth) of sediments greater than 1 mg/kg PCBs in the Shenango River between Clark Street and the dam at the City's water intake.
- Off-site disposal of sediments removed, including any treated sediments.
- Protection and monitoring of the City's water intake during remedial action to ensure that the public water supply is not contaminated as a result of the remedial action.
- Establishment of a fish tissue monitoring plan to determine the edibility of fish tissue.
- Amounts and types of backfill materials will be established during the remedial design and modified, if required, during the remedial action.

## **4.2 Remedy Implementation**

### OU1

EPA issued a UAO to three PRPs, Viacom Inc., Winner Development LLC, and AK Steel Corporation, to conduct the remedial design and remedial action required to implement the OU1 ROD. EPA approved the remedial design in August 2001 that the PRP, Viacom Inc. submitted.

The remedial action began on October 8, 2001 and was completed on September 1, 2004. Cleanup included excavation of about 44,460 tons of PCB-contaminated soils. Most excavated soils were sent for off-site disposal at permitted residual waste or hazardous waste landfills. A small portion of the excavated soils, containing less than the industrial limit of 25 mg/kg PCBs, was used for fill material on Site. After excavation of contaminated soils, large portions of the Site were paved. A final inspection was conducted on September 1, 2004 and found that the soils cleanup had been satisfactorily completed at the Site. Areas requiring soil excavation are depicted in Figure 3. The institutional control component of the remedy is discussed in Section 6.3.

## OU2

On April 29, 2003, EPA issued a UAO to Viacom Inc., Winner Development LLC, and AK Steel Corporation to implement the ROD. Viacom Inc. submitted the remedial design in October 2003 and June 2004.

The groundwater remedial action began on January 19, 2004. Groundwater cleanup included a Technical Impracticability of Groundwater Restoration waiver that EPA had approved on July 22, 2002. To monitor the TI Zone, the remedial action included drilling two new well clusters (OS-8 and OS-9) along the perimeter of the TI Zone, abandoning many wells, retrofitting or re-establishing damaged wells, and establishing an initial monitoring schedule. The schedule included sampling more than 40 monitoring wells twice a year for site-related groundwater contaminants. Groundwater is sampled within and on the perimeter of the TI Zone to monitor potential contaminant migration. The recovery of LNAPL from groundwater west of the Middle Sector buildings was terminated. In 2014 EPA required that the PRP to perform quarterly LNAPL recovery which is discussed in Section 6.4.

The remedial action contractor began cleaning the Wishart Court storm sewer on February 17, 2004 and completed it on March 5, 2004. PCB-contaminated wastes removed from the sewer were disposed of off site in a permitted residual waste landfill.

The cleanup of sediments contaminated with PCBs greater than 1 ppm, and riparian soils contaminated with PCBs greater than 10 ppm took place in the ¼-mile section of the Shenango River. The area cleaned up extends from the Clark Street Bridge to the dam immediately downstream of the intake of the Aqua America water treatment plant. The remedial action contractor mobilized on July 30, 2004. Excavations were made to a maximum depth of 48 inches. Areas where PCBs in excess of 1 mg/kg remained after excavation were backfilled. The remedial action resulted in excavation and off-site disposal of about 8,700 cubic yards (12,615 tons) of PCB-contaminated sediments and riparian soils. An inspection on November 30, 2005 found that all PCB-contaminated sediments exceeding the cleanup criteria had been removed this section of from the Shenango River.

The Site achieved construction completion on December 22, 2005.

### **4.3 Operation and Maintenance (O&M)**

OU1 O&M is limited to inspection for settlement, erosion, or damage of the vegetative and paved cover areas. Maintenance of these areas is generally the responsibility of property owners. Disturbance of these areas requires prior EPA approval, with the owners notifying EPA prior to the activity.

OU2 O&M consists of regular groundwater monitoring of both the alluvial and bedrock groundwater zones according to the Revised Long-Term Groundwater Monitoring Plan. Groundwater is monitored annually; 2016 marked the 12th year of groundwater monitoring for the Site. The wells included in the sampling plan have been modified through agreements with EPA. Samples are collected from wells selected in the groundwater monitoring plan. The

objective of the groundwater monitoring program is to provide long-term performance monitoring of contaminants in site groundwater and to ensure groundwater contamination does not expand past the TI Zone. Fish tissue is sampled every five years prior to each FYR, per the ROD's monitoring requirement.

**Table 3: Annual PRP O&M Costs**

<b>Year</b>	<b>Total Cost (rounded to the nearest \$1,000)</b>
2011	\$53,000
2012	\$63,000
2013	\$53,000
2014	\$128,000
2015	\$140,000

### **5.0 Progress Since the Last Five-Year Review**

The protectiveness statement from the 2011 FYR for the Site stated the following:

*Overall remedy protectiveness cannot be determined at this time due to the lack of data with respect to vapor intrusion into the buildings which lie above the VOC groundwater plume. All site soils have been remediated to industrial exposure standards, PCB contaminated sediments have been removed from the Site drainage ways. The sediments and riparian soils of the Shenango River have been remediated to standards which are protective of ecological receptors with respect to the Site-related PCB contamination. The original soil and sediment cleanup goals are still protective, especially given the extent of soil cover, despite any changes in risk assessment methodology and toxicity factors. Based on Superfund risk assessment assumptions the current Commonwealth of Pennsylvania Fish Advisory would not be protective. Therefore, EPA recommends that the Commonwealth of Pennsylvania review the current advisory and revise if determined to be necessary. Institutional controls are still not in place for the railroad property. While there are currently no known exposures to the Site-related ground water contaminants and a long-term ground water monitoring program is in place, an adjustment to the plan's frequency and parameters is recommended so EPA may ascertain if Site related VOC and PCB contamination in the alluvial and bedrock aquifers is migrating beyond the TI Zone. In addition, EPA believes additional LNAPL removal from the TI Zone should be considered. EPA will evaluate the VI assessment data along with the groundwater monitoring data collected under the modified plan and determine if contaminants are migrating beyond the designated TI Zone. It is expected that these actions will take approximately 12 to 24 months to complete.*

The 2011 FYR included five issues and recommendations. This report summarizes each recommendation and its current status below.

**Table 4: Progress on Recommendations from the 2011 FYR**

<b>Recommendations</b>	<b>Party Responsible</b>	<b>Milestone Date</b>	<b>Action Taken and Outcome</b>	<b>Date of Action</b>
Continue working with Railroad to implement ICs [institutional controls] on the property parcel they own.	EPA, PRP and Railroad	9/30/2013	EPA sent a letter to Norfolk Southern Railway Company to inform of an institutional control. Norfolk Southern acknowledged receipt of the letter and agreed to take appropriate precautions regarding use of the property.	3/10/2016
Complete Vapor Intrusion Assessment.	EPA/ PADEP and PRP	9/30/2012	Vapor intrusion assessments found no site-related current unacceptable risk.	3/30/2016
Modify long-term groundwater monitoring plan to include designated TI Zone perimeter well locations (specifically OS-8) and sample for PCBs and VOCs concurrently.	EPA/ PADEP and PRP	9/30/2012	The PRP currently includes these wells in monitoring events.	4/25/2011
Continue to monitor fish tissue concentrations, which should decrease now that the sediment has been remediated. Furnish fish tissue sampling data to PADEP for evaluation. Increase educational efforts to local community to improve compliance with fishing advisory.	EPA/ PADEP and PRP	9/30/2013	The PRP continued fish tissue sampling. EPA will work with the state to complete additional sampling and determine if additional fish advisories are needed.	10/06/2015
Consider modification of the remedy to reinstate LNAPL removal.	EPA/PADEP	9/30/2013	The PRP voluntarily began quarterly LNAPL removal actions in 2014.	7/2/2014

## 6.0 Five-Year Review Process

### 6.1 Administrative Components

EPA initiated the FYR in October 2015 and scheduled its completion by September 2016. EPA remedial project manager (RPM) David P. Turner led the EPA site review team, which also included site attorney Michael Hendershot, community involvement coordinator (CIC) Carrie

Deitzel and contractor support provided to EPA by Skeo Solutions. The review schedule established consisted of the following activities:

- Community notification.
- Document review.
- Data collection and review.
- Site inspection.
- Local interviews.
- FYR Report development and review.

## **6.2 Community Involvement**

In June 2016, EPA published a public notice in the Sharon Herald newspaper announcing the commencement of the FYR process for the Site, providing contact information for Carrie Deitzel and inviting community participation. The press notice is available in Appendix B. No one contacted EPA as a result of the advertisement.

EPA will make the final FYR Report available to the public. EPA will place copies of the document in the designated site repository: Community Library of the Shenango Valley, located at 11 N. Sharpsville Ave., Sharon, Pennsylvania 16146.

## **6.3 Document Review**

### ARARs Review

CERCLA Section 121(d)(1) requires that Superfund remedial actions attain “a degree of cleanup of hazardous substance, pollutants, and contaminants released into the environment and of control of further release at a minimum which assures protection of human health and the environment.” The remedial action must achieve a level of cleanup that at least attains those requirements that are legally applicable or relevant and appropriate.

This FYR included a review of relevant, site-related documents, including the RODs, remedial action reports and recent monitoring data. A complete list of the documents reviewed is in Appendix A.

The OU1 ROD identified TSCA and its implementing regulations as ARARs for the cleanup of PCB-contaminated soil. There have been no changes to the TSCA PCB regulations since the OU1 ROD was implemented.

The OU2 ROD did not identify ARARs for groundwater. The maximum contaminant levels (MCLs) and maximum contaminant level goals (MCLGs) under the federal Safe Drinking Water Act were waived for COCs within the TI Zone.

The OU2 ROD identified the Pennsylvania Fish and Boat Code Act of October 16, 1983 and its implementing regulations relating to fish consumption advisors as a To Be Considered (TBC).

## Institutional Control Review

The RODs required institutional controls for soils that are depicted in Appendix F. As stated in the OU1 Remedial Action Report, restrictions are necessary because although site soils meet the ROD cleanup goals, PCBs remain in site soils above the TSCA criterion of 1 mg/kg for unrestricted use.

On February 9 and 22, 2016, Skeo Solutions staff conducted research at the Mercer County Public Records and Tax Parcel Viewer websites and found institutional control information pertaining to the Site listed in Table 5.<sup>1</sup> All institutional controls and parcel numbers are mapped in Figure 4.

The 1994 deed for parcel 2O48.66 includes a notification that spills and/or leaks of hazardous substances and wastes occurred on the property, that the property is part of the Superfund site, and that Winner (the grantee of the deed) shall only use the property for the purpose of manufacturing and/or warehousing products that are non-hazardous and non-consumable.

A 2003 Title Notice applies to parcel 2AE48XX, which prohibits installing groundwater wells, using the Site residentially, and disturbing the land surface without EPA approval.

A 2004 Title Notice applies to parcels 2Q48, 2P48, 2P1, 2P2, 2P3 and 2P48.1A1; it prohibits installing groundwater wells, using the Site residentially and disturbing the land surface without EPA approval. The property owners have conducted excavations in accordance with these requirements, including developing work plans for EPA and disposing of waste in EPA-approved facilities.

A 2006 Notice of Encumbrance states that the Winner Property (parcels 2Q48, 2P48, 2P1, 2P2, 2P3) is contaminated with PCBs in the flooring and subsurface. If the flooring and/or subsurface is disrupted or removed, the materials must be stored, treated and disposed of appropriately. Warning signs are in place in portions of the Middle Sector Winner International buildings noting that materials contain PCBs.

City of Sharon Ordinance 28-00, passed on November 29, 2000, prohibits drilling or use of private groundwater wells as a source of water for either potable or industrial purposes within certain areas of the City of Sharon (Figure 4).

There were no deed documents associated with parcel 2AK on the Mercer County Tax Parcel Viewer. In March 2016, EPA sent a letter to Norfolk Southern Railway Company that informed of an institutional control on the railroad property (parcel 2AK). The letter states that if the property remains unused, Norfolk Southern has no obligations regarding stewardship of the property. The letter also states that though it is unlikely that anyone will ever attempt to live on or use the groundwater of the property, any such use is prohibited. Should Norfolk Southern contemplate using or developing the property (including excavation or rehabilitation), EPA and PADEP should be notified to provide for appropriate worker protection from any subsurface

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<sup>1</sup> <https://recorder.mcc.co.mercer.pa.us>; <https://www.mcc.co.mercer.pa.us/GIS/TaxparcelViewer.htm>

contamination that may exist. Norfolk Southern acknowledged receipt of the letter and agreed to take appropriate precautions regarding use of the property.

There is also a 2016 Pennsylvania Fish Advisory that states the quantities, species and sizes of fish that are safe to eat for different bodies of water. For the Shenango River, there is a “Do Not Eat” restriction for muskellunge, carp and channel catfish due to PCB contamination. There is a one meal per month restriction for largemouth bass, smallmouth bass, black crappie, white crappie, walleye, bluegill, sunfish and all suckers due to PCB contamination. EPA will notify the Commonwealth of Pennsylvania that the present Fish Advisory may not be protective and should be reconsidered.

**Table 5: Institutional Control (IC) Summary Table**

Media	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s) <sup>a</sup>	IC Objective	Instrument in Place	Notes
Soil	Yes	Yes	Tax parcel 2048.66 and unidentified parcel (South Sector)	Reduce the risk posed by contaminated site soils to acceptable levels for industrial use	1994 Deed	Includes a notification that spills and/or leaks of hazardous substances and wastes occurred on the property and that it is part of the Superfund site.  States that Winner (the grantee of the deed) shall only use the property for the purpose of manufacturing and/or warehousing products that are non-hazardous and non-consumable.
Ground water	Yes	Yes	See Figure 4; the area includes all site-related parcels	Prevent human exposures via ingestion, inhalation and dermal contact to site-related contaminants in the groundwater	2000 City of Sharon Ordinance	Prohibits drilling or use of private groundwater wells as a source of water for either potable or industrial purposes within certain areas of the City of Sharon.
Soil, groundwater	Yes	Yes	Tax parcel 2AE48XX (North Sector)	Reduce the risk posed by contaminated site soils to acceptable levels for industrial use  Prevent human exposures via ingestion, inhalation and dermal contact to site-related contaminants in the groundwater	2003 Title Notice	Refrain from using the Site for any purposes that might interfere with, obstruct, or disturb the performance, support, or supervision of the work, including any O&M activities, pursuant to the orders. Such restrictions include, but are not limited to (a) no installation of new groundwater wells or use of any existing groundwater wells, (b) the land may not be used for any residential purposes, and (c) no disturbance of the surface of the land by filling, drilling, excavation, removal of soil, rocks or minerals, or change in the topography of the land without at least 30 days prior approval from EPA.

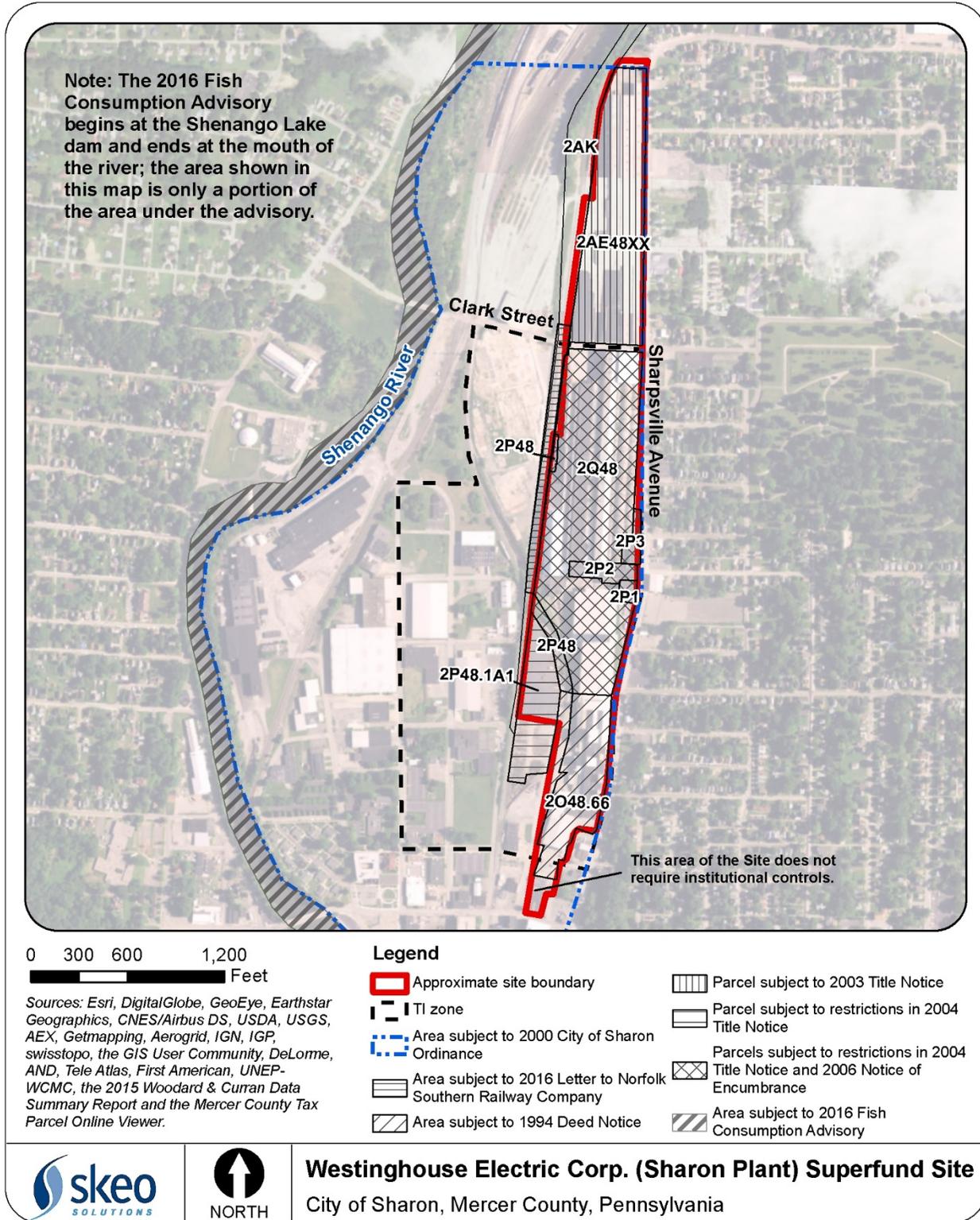
Media	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s) <sup>a</sup>	IC Objective	Instrument in Place	Notes
Soil, groundwater	Yes	Yes	Tax parcels 2Q48, 2P48 <sup>b</sup> , 2P1, 2P2, 2P3 and 2P48.1A1 (Middle Sector)	<p>Reduce the risk posed by contaminated site soils to acceptable levels for industrial use</p> <p>Prevent human exposures via ingestion, inhalation and dermal contact to site-related contaminants in the groundwater</p>	2004 Title Notice	<p>Refrain from using the property in any manner that would interfere with, or adversely affect, the integrity or protectiveness of the response actions implemented pursuant to the orders.</p> <p>Refrain from using the Site for any purposes that might interfere with, obstruct, or disturb the performance, support, or supervision of the work, including any O&amp;M activities, pursuant to the orders. Such restrictions include, but are not limited to (a) no installation of new groundwater wells or use of any existing groundwater wells, (b) the land may not be used for any residential purposes, and (c) no disturbance of the surface of the land by filling, drilling, excavation, removal of soil, rocks or minerals, or change in the topography of the land without at least 30 days prior approval from EPA.</p>
Soils/ flooring	Yes	Yes	Tax parcels 2Q48, 2P48, 2P1, 2P2, 2P3 (Middle Sector Area)	Reduce the risk posed by contaminated site soils to acceptable levels for industrial use	2006 Notice of Encumbrance	The interest conveyed is contaminated with PCBs in the flooring and subsurface. If the flooring and/or subsurface are disrupted in any manner or removed, the materials so disrupted or removed must be stored, treated and disposed of in accordance with the TSCA, 15 U.S.C. Sections 2601-2692, and all applicable, federal, state and local requirements.
Fish	Yes	No	Shenango River, from Shenango Lake dam to mouth	There is no specific RAO for prevention of fish consumption, although that is the objective of this IC.	Pennsylvania Public Health Advisory, 2016 Fish Consumption	<p>“Do Not Eat” restriction for muskellunge, carp, and channel catfish due to PCB contamination</p> <p>One meal per month restriction for largemouth bass, smallmouth bass, black crappie, white crappie walleye, bluegill, sunfish and all suckers due to PCB contamination. EPA will notify the Commonwealth of Pennsylvania that the present Fish Advisory may not be protective and should be reconsidered.</p>

Media	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s) <sup>a</sup>	IC Objective	Instrument in Place	Notes
Soil, groundwater	Yes	Yes	Tax parcel 2AK	Reduce the risk posed by contaminated site soils to acceptable levels for industrial use  Prevent human exposures via ingestion, inhalation and dermal contact to site-related contaminants in the groundwater	2016 Letter to Norfolk Southern Railway Company	Attempts to live on or use the groundwater of the property are prohibited.  Should Norfolk Southern contemplate using or developing the property (including excavation or rehabilitation), EPA and PADEP should be notified to provide for appropriate worker protection from any sub-surface contamination that may exist.

<sup>a</sup> Parcel boundaries from <https://www.mcc.co.mercer.pa.us/GIS/TaxparcelViewer.htm> (accessed 2/22/2016).

<sup>b</sup> The 2004 Title Notice includes a map of the area subject to the restrictions listed. The map shows this area as one boundary, although the current parcel boundaries indicate that there are six parcels within this area. This IC review also found the 2008 deed documents for 2P1, 2P2 and 2P3, which indicate that they are owned by Winner and are subject to the same restrictions. This IC review also found the 2013 2P48 parcel's deed document, which cited an environmental covenant in a 2006 deed that was the same as the restrictions in the 2004 Title Notice. Lastly, although the 2P48.1A1 parcel was not mapped in the original Title Notice area, a 2007 Special Warranty Deed for 2P48.1A1 incorporated the notice's restrictions by reference.

**Figure 4: Institutional Control Base 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.

## 6.4 Data Review

### DNAPL/ LNAPL

#### *NAPL Extent*

The thickness and extent of DNAPL and LNAPL is measured as part of the long-term monitoring . For all 2011-2015 sampling events, LNAPLs were detected in M-2 and GM5-A; DNAPLs were detected in GM-5B and MW-16B (Figure 5). In 2011-2013, S-4 also contained LNAPL. An adsorbent sock placed in S-4 in 2014 prevented values from being measurable; in 2014 and 2015 the sock captured a limited amount of LNAPL. NAPL sampling of MW-15B was added to the long-term groundwater monitoring plan in 2013; DNAPL has been detected in MW-15B in all sampling events since 2013. Overall, it does not appear that the NAPL has migrated in the last five years.

#### *LNAPL Removal*

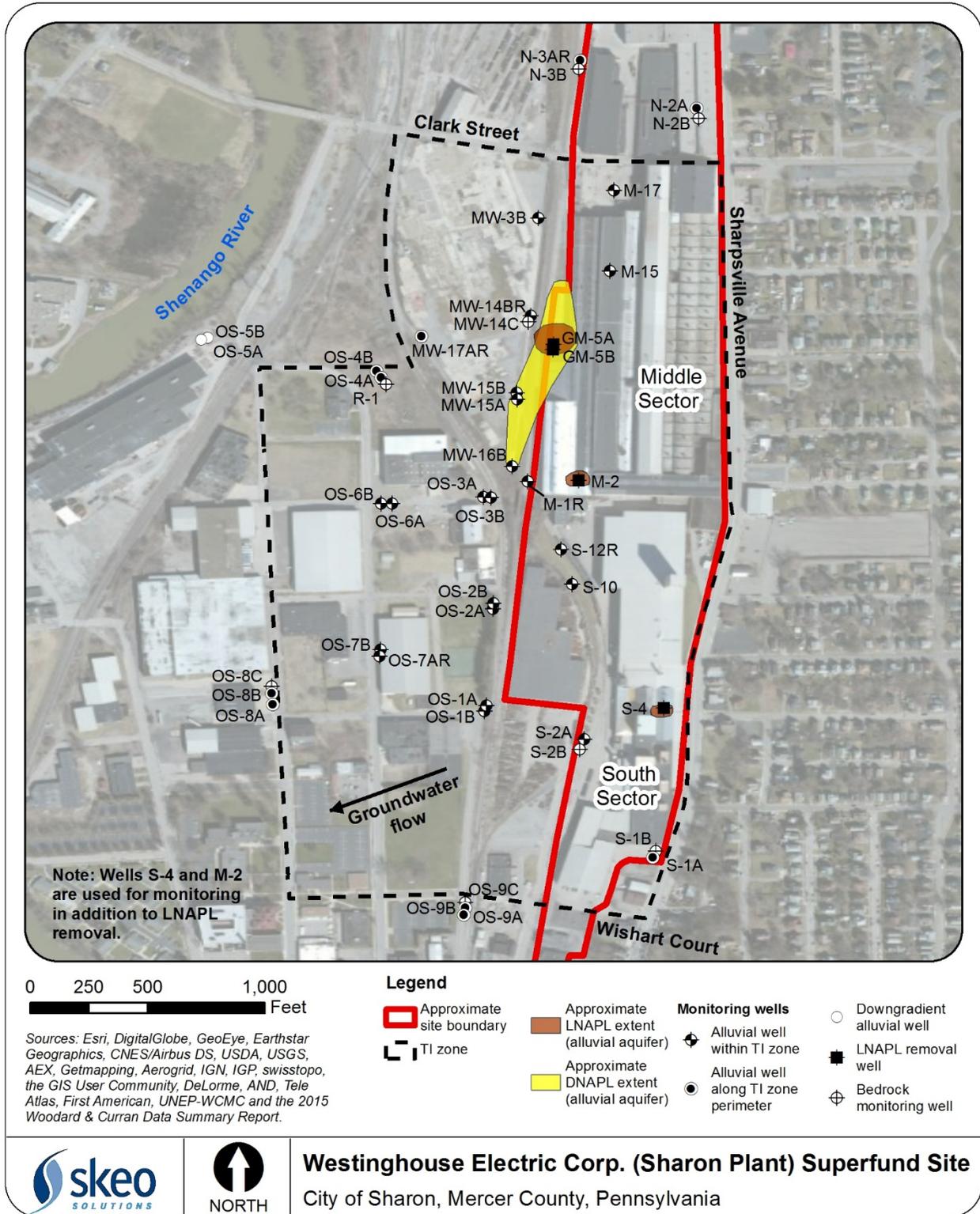
At EPA's request, limited LNAPL removal activities are performed on a quarterly basis. LNAPL was removed from M-2 and GM-5A in July, September and December 2014, and March, May, September and December 2015. The wells were purged of LNAPL until remaining LNAPL could not be captured using a bailer. In July 2014, the volume of recovery was limited by the size of the container used. A total of 58.02 gallons of LNAPL has been removed and properly disposed of off-site from July 2014 to December 2015.

An adsorbent sock was used to remove LNAPL in S-4; the sock is replaced as needed. Results are summarized in Appendix G. In general, the quantity of LNAPL recovered has declined in GM-5A and slightly declined in M-2. The last two times the S-4 sock was inspected it did not need to be replaced, which also indicates reduction of recovered LNAPL.

### Groundwater

The PRP contractor performs long-term monitoring of groundwater annually to monitor the concentrations of site-related constituents in groundwater outside the TI Zone, and to determine whether those constituents are at concentrations that might be considered to not be protective of public health and the environment. Groundwater samples were collected from selected wells at the frequencies specified in the Revised Long-Term Groundwater Monitoring Plan. The sampling program includes 20 alluvial aquifer wells in or near the NAPL source zone, 12 alluvial aquifer wells along the TI Zone perimeter, and eight bedrock monitoring wells. Well locations are depicted in Figure 5 and Appendix H.

**Figure 5: Monitoring Well and NAPL Locations**



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.

### *Alluvial Aquifer Source Zone Wells*

In the past five years, groundwater from alluvial aquifer wells in the contaminant source zone was sampled for VOCs and PCBs. Contaminant concentrations in the source zone wells remain above MCLs and are consistent with historical concentrations; this is expected because the source zone NAPL is still present. Table 6 shows maximum concentrations in 2015. Appendix I includes charts with contaminant concentrations over time and a table showing which contamination source zone wells had MCL exceedances in the last five years.

**Table 6: Maximum 2015 Detections in Source Zone Wells**

Contaminant	Well	Maximum Concentration Detected (µg/L)
Benzene	M-2	58
Chlorobenzene	M-2	3,900
Tetrachloroethylene	M-17	17
TCE	M-17	71
cis-1,2-Dichloroethene	S-10	210
Vinyl chloride	S-10	82
1,3-Dichlorobenzene	OS-1A	1,000
1,4-Dichlorobenzene	MW-14BR	940
1,2,4-Trichlorobenzene	MW-15B	4,700
Total PCBs	MW-15B	190
<i>Source: 2016 Annual Report</i> µg/L = micrograms per liter		

### *Alluvial Aquifer TI Zone Perimeter Wells*

Data from 2011-2015 indicate that concentrations from the TI Zone perimeter wells are not increasing and remain below MCLs for VOCs or total PCBs, with the exception of arsenic in S-1A and vinyl chloride in OS-4A (Table 7).

In response to the vinyl chloride exceedances at OS-4A in 2014, downgradient alluvial monitoring wells OS-5A and OS-5B, last sampled in 2012, were returned to the monitoring program. The 2015 concentrations in OS-5A and OS-5B were 0.1 micrograms per liter (µg/L) and 0.2 µg/L, respectively. OS-4A also showed increasing chlorinated ethenes and chlorinated benzenes over the past 3-5 years. Sampling of these wells will continue to ensure vinyl chloride and other VOCs are not migrating beyond the TI Zone.

The arsenic concentration at S-1A is above the MCL, but within the range of historical results for this location. The source of arsenic is not known. Arsenic concentrations did not exceed MCLs historically in downgradient monitoring wells OS-9A or OS-9B, last sampled in 2005.

**Table 7: Alluvial Aquifer TI Zone Wells with MCL Exceedances**

Well	Contaminant	Concentration (µg/L)					
		MCL	2011	2012	2013	2014	2015
S-1A	Arsenic	10	<b>94.7</b>	<b>71.9</b>	<b>167</b>	<b>106</b>	<b>281</b>
OS-4A	Vinyl chloride	2	<b>10 U</b>	<b>10 U</b>	<b>2</b>	<b>5</b>	<b>5</b>

*Source: 2016 Woodard & Curran Data Summary Report.*  
**Bold** = MCL exceedance  
 Data Qualifier:  
 U=Compound was not detected at the given quantitation limit

*Bedrock Aquifer*

In the last five years, there were no exceedances of VOCs above the MCLs in the bedrock wells. In 2013, total PCBs at well MW-14C were above the MCL; however, there were no PCB exceedances in 2014. In 2015 there was one PCB exceedance, but not as high as the exceedance observed in 2013. PCB concentrations in wells N-3B and S-1B were previously detected marginally above, the MCL (0.64 µg/L 0.66/0.52 µg/L respectively), but since 2012 PCB concentrations in those wells have been below the MCL

**Table 8: Bedrock Aquifer Wells with MCL Exceedances**

Well	Contaminant	Concentration (µg/L)					
		MCL	2011	2012	2013	2014	2015
MW-14C	Aroclor-1242	0.5	0.48 U	0.24 J	<b>21</b>	0.42 U	0.37 J
	Aroclor-1254	0.5	0.48 U	<b>0.78</b>	<b>9.5</b>	0.18 J	0.082 U
	Aroclor-1260	0.5	0.48 U	0.47 U	<b>5.4</b>	0.42 U	<b>0.58</b>
S-1B	Aroclor-1260	0.5	0.25 J, <b>1.0<sup>a</sup></b>	<b>0.66/0.52</b>	0.35 J	0.34 J	0.19 J
N-3B	Aroclor-1254	0.5	--	<b>0.64</b>	0.27 J	0.27 J	0.28 J

*Source: 2016 Woodard & Curran Data Summary Report.*  
<sup>a</sup>0.25 J was the value for April 2011 and 1.0 was the value for September 2011.  
**Bold** = MCL exceedance  
 Data Qualifiers:  
 J= Estimated Value  
 U=Compound was not detected at the given quantitation limit

Fish Tissue

The PRP performed a fish tissue sampling event on October 7, 2015, for the FYR. Fish tissue samples were collected in 2003, 2005, 2010 and 2015. The 2015 event is the second fish tissue sampling to be performed since completion of the sediment remediation. Target species include carp, channel catfish, and large- and small-mouth bass.

Fish were collected from the Shenango River between the Clark Street Bridge and the dam next to the Aqua America water treatment plant. During the 2015 event, no catfish or largemouth bass

were collected. Individual samples were submitted from six carp (plus a duplicate) and six smallmouth bass.

No standards were set by EPA for fish tissue, but PCB concentrations for the latest fish sampling round in 2015 exceed the fish ingestion value of 1.9 mg/kg used as a threshold value by the Commonwealth of Pennsylvania for their do-not-consume fish advisories. In 2015, total PCB concentrations in carp ranged from 6.6 mg/kg to 37 mg/kg; smallmouth bass concentrations ranged from 0.41 mg/kg to 8.1 mg/kg (Appendix J). Overall, total PCB concentrations in the 2015 fish samples were greater than historical concentrations. The maximum concentrations for carp and smallmouth bass fillets for Aroclor 1254 were 18 and 3.4 mg/kg, respectively. The maximum concentrations for carp and smallmouth bass fillets for Aroclor 1260 were 20 and 5.3 mg/kg, respectively. The variation in concentrations may be associated with variations in specimen sizes, as the carp and bass specimens were generally larger than past specimens.

Additionally variations in results generated by the Commonwealth of Pennsylvania and the PRP may be attributed to differences in sampling techniques and laboratories used for the analysis.

#### Water Quality Report

The June 2015 Water Quality Report for Aqua America water treatment plant (PWS PA6430054), Shenango Valley System plant, was reviewed with a focus on site-related COCs. PCBs and other site-related chemicals, such as chlorinated benzenes, were not detected in treated effluent.

#### Vapor Intrusion

In 2014 and 2015, EPA and the PRP conducted vapor intrusion assessments at the residences and commercial buildings along the east side of North Sharpsville Avenue as well as at the downgradient commercial buildings between the Site and the Shenango River. The sample results were compared against the EPA's risk-based Vapor Intrusion Screening Levels (VISL).

The sample locations along Sharpsville Avenue were planned based on the location of buildings and potential receptor populations relative to the LNAPL and groundwater plume (Appendix K). Locations were limited to the buildings whose owners provided access to EPA for sampling. The sampling was conducted during the winter season, because vapor intrusion is more likely to occur when a building's heating system is in operation and air is being drawn into the building.

The first sampling event occurred in March 2014. EPA sampled a total of nine buildings (seven of which were residential), and the PRP sampled two residential properties. The second sampling round was conducted in April 2015 and focused on re-sampling one residential property. EPA reviewed the vapor intrusion results from both the EPA and PRP sampling efforts and determined that no vapor intrusion unacceptable human health risks were present.

In 2016, the PRPs submitted a vapor intrusion assessment for the downgradient commercial buildings. Subslab vapor and indoor air samples were collected in on-site buildings, as well as

residential and non-residential buildings adjacent to the Site. The following buildings were included in the assessment; see Appendix K for a map and detailed discussion:

- Winner Steel/NLMK/Sharon Coatings
- Y-Building/American Industries building
- Crosstex International building
- Davis Alloys building
- Habitat for Humanity building
- Warehouse at 420 Vine Avenue between Franklin and Mill Streets (subsequently renovated and occupied by Noise Solutions, Inc.)
- Vacant warehouse at corner of Franklin Street and Vine Avenue (owned by Winner)
- Residential buildings 2 and 3 (Appendix K, Figure 1-2)
- Residential building 7 (Appendix K, Figure 1-2)

Among the on-site buildings assessed, a total of 24 subslab vapor samples and 22 indoor air samples were collected. In addition, a total of 32 subslab vapor samples and 32 indoor air samples were collected from six non-residential buildings downgradient of the Site. In all of the buildings, there were no unacceptable risks in the indoor air due to vapor intrusion. Some of the buildings had VOCs above screening levels in the indoor air, however, the VOCs could not be attributed to subsurface sources and indoor sources were suspected.

Only two of the commercial buildings, a South Sector building and the Davis Alloys building, warrant follow-up sampling in the future. In case of the South Sector building, concentrations of 1,2,4-trimethylbenzene increased dramatically above the (VISLs), from 2014 to 2015, in the subslab samples collected near monitoring well MS S-4. However, actual measured indoor air concentrations of 1,2,4-trimethylbenzene dropped slightly from 2014 to 2015, and all detections were below the VISLs and acceptable.

In the case of the Davis Alloys building that was vacant in 2014, TCE was detected in the subslab at 490 ug/m<sup>3</sup>. However the indoor air concentration of TCE and other VOCs were below their respective VISLs. The TCE detected in the subslab may be a concern for vapor intrusion in the future if the building is re-occupied.

## **6.5 Site Inspection**

The site inspection took place on October 7, 2015. Participants included David Turner, RPM; Chuck Tordella and Mariruth Hoffman, PADEP; Bryan Maurer, Woodard & Curran, PRP O&M Contractor; Rick Herman and Jimmy Ross, NLMK PA & Sharon Coating; and Ryan Burdge and Kelly MacDonald, Skeo Solutions. The group toured the Site. General conditions were noted and photographed (Appendix E). Results of the site inspection are available in the completed site inspection checklist in Appendix D.

The team first met in a conference room in the Sharon Coating facility and went over site history and current conditions. The group then toured on-site buildings, including the Sharon Coating facility (South Sector), the Ellwood Crankshaft building (North Sector), and the former Winner

International building (Middle Sector). The PCB warning signage in the Winner International building was legible and in good condition. The group also inspected the Site's monitoring wells; some were locked and marked, while others were unmarked, unlocked, had rusted locks or caps, or no caps at all. The asphalt caps outside the buildings were well maintained. The group went to the River to observe fish tissue sampling. The group saw the Shenango River, areas where sediments and riparian soils were removed, and the Aqua America water treatment plant. The team then visited and photographed commercial properties on the western side of the railroad tracks.

Skeo Solutions staff visited the Community Library of the Shenango Valley, the designated site repository. Documents at the library only included an Administrative Record up until the ROD and did not include the ROD or FYRs. The library staff said they would prefer compact disc copies of the site documents.

## **6.6 Interviews**

The FYR process included interviews with parties affected by the Site, including the current tenants involved in site activities or aware of the Site. The purpose was to document the perceived status of the Site and any perceived problems or successes with the phases of the remedy implemented. The interviews are summarized below. Appendix C provides the complete interviews.

### Richard Herman: Plant Manager at NLMK Pennsylvania (South Sector)

Mr. Herman stated that he was familiar with the cleanup at the Site and was not concerned. He has not received comments from the community and is unaware of any trespassing or vandalism at the Site. He did note new development in the site area, including a new Primary Health Care Network Building being built Southwest of the Site and the Ellwood Crankshaft facility in the North Sector. Mr. Herman commented that Winner International is continually seeking tenants for the Site.

### Gerhard Epp: Plant Manager of Ellwood Crankshaft Group - Sharon Forge (North Sector)

Mr. Epp said he was familiar with the Site. He noted that Ellwood Crankshaft has worked closely with EPA and PADEP to ensure that excavation and other construction activities were performed in accordance with the Site's Excavation Work Plans and Soil Management Plans. Mr. Epp also noted that Ellwood Crankshaft has been following the requirements of the North Sector's deed restriction. He said he was not concerned about that Site; Ellwood Crankshaft performed due diligence before acquiring the property and has been monitoring and managing site soils during construction. However, Ellwood Crankshaft is interested in the progress and monitoring of the rest of the Site. Mr. Epp stated that he had not been contacted by any community members and was unaware of any vandalism or trespassing. He was also unaware of any other development in the site vicinity or of any plans to revitalize the Site.

## **7.0 Technical Assessment**

### **7.1 Question A: Is the remedy functioning as intended by the decision documents?**

Yes, the remedy is functioning as intended by the decision documents.

The OU1 remedy addressed contaminated site soils. Currently the Site is mostly covered with buildings and concrete, effectively capping areas of contamination and preventing exposures to any contaminated soils. Inside the former Winner International building, there are PCB warning signs indicating that the building contained PCBs. Other uncapped areas of the Site were appropriately excavated and backfilled and present no unacceptable soil risks. Although in good condition during this FYR, regular inspections to verify the integrity of vegetative covers in the Moat Area, the Sharpsville Avenue fill area, and the railroad property are not conducted. There is also no formal plan to require property owners to inspect and maintain the asphalt caps on the Site. Institutional controls are in place for all required areas.

The PRP conducted quarterly limited LNAPL removal activities in 2014 and 2015. The volume of LNAPL removed in 2015 was less than 2014; the PRP suggested decreasing the removal frequency to semi-annual. EPA will determine the appropriate frequency for future removal events.

The sediment, riparian soil and drainage way portions of the OU2 remedy were completed. Groundwater which isn't being consumed at the site, is monitored annually; alluvial source zone and NAPL sampling results for the past five years do not indicate any significant contamination migration although there are uncertainties with respect to arsenic and VOCs at a few wells, as discussed below. A City of Sharon Ordinance prevents drilling and using wells in the site area; there are parcel-specific groundwater restrictions for the Middle and North Sectors.

The OS-5A and OS-5B monitoring wells will continue to be sampled for vinyl chloride. The arsenic concentration at S-1A is well above the MCL, but samples in downgradient wells OS-9A or OS-9B have not been analyzed for arsenic since 2005. Appropriate downgradient wells should be included in the sampling plan and analyzed for relevant contaminants to determine if contamination concentrations exceed MCLs outside the TI Zone.

The 2015 fish tissue results were the highest PCB concentrations detected since 2003. EPA believes additional sampling or studies are warranted to further assess PCB contamination in fish or remaining sediments. A Commonwealth of Pennsylvania Fish Advisory for 2016 states PCB contamination is present in the Shenango River. However, based on the results of the 2015 fish tissue results, the PCB concentrations in smallmouth bass now exceed the do-not-consume advisory. See Section 7.2 for additional discussion.

## **7.2 Question B: Are the exposure assumptions, toxicity data, cleanup levels and remedial action objectives (RAOs) used at the time of remedy selection still valid?**

This section summarizes the components of the risk assessment, and the protectiveness of current conditions. The RAOs and cleanup levels are still valid, and that while some of the exposure assumptions have changed, the remedy remains protective.

On-site soils were covered by buildings, asphalt, concrete, gravel and/or soil fill with revegetation. Where clean fill was used on the surface, the PCB concentrations were less than 1 mg/kg. Therefore, although arsenic, lead and manganese were also noted in the OU1 ROD, the values for PCBs are the relevant post-remedial numbers for current surface soils. Exposed soils at the site have PCBs at 1 mg/kg or less (10 mg/kg in riparian soils). Soils with higher concentrations of PCBs are not expected to be available for contact as long as the covering materials (buildings, asphalt, concrete, etc.) are in place and intact, and ICs are in place. The risks to workers associated with the 10 ppm cleanup level are within the acceptable risk range for most PCBs, including Aroclors and most dioxin-like congeners. Only if the PCBs had significant quantities of the most toxic dioxin-like congeners (especially congeners 126 and 169) would these concentrations not be protective. Congener analysis was not previously performed. Sampling for it now would answer the question of whether the cleanup goal is still protective.

The most recent cover inspections occurred in October 2015. During the site inspection, it was noted all covers were intact as intended.

Institutional controls (ICs) are in place to prevent disturbance of contaminated soils. ICs in the form of deed notices are in place for all of the site properties except the railroad area, where the IC is in the form of an informational notice. If soils under pavement or buildings are to be disturbed, property owners are to obtain prior approval from EPA and PADEP and follow work plans to handle the soils appropriately.

PCB-contaminated sediments were removed from the site drainage ways and Shenango River as prescribed by the OU2 ROD. The cleanup of the Shenango River removed sediment greater than 1 mg/kg total PCBs to a depth of 4 feet, and then replaced it with 3 feet of rock, a geotextile, and 1 foot of clean soil on top, with additional rock placed along the edge of it.

The levels of PCBs in fish tissue has not reduced since the PCBs in the sediments were remediated in 2005. The concentrations appear to be trending upward or fluctuating, rather than trending downward. It is not clear whether this difference is due to fish size from round to round, other sources of PCBs in the Shenango River, or if there has simply not been sufficient time yet for the PCBs to diminish from this ecosystem. A potential pathway may still exist for residual PCBs gradually entering the river from the soils or the underground infrastructure at the Site. In June 2016, the PRP conducted additional sediment sampling along the river banks to evaluate whether PCBs are continuing to release to the environment and have redeposited in sediments in the Shenango River at locations previously remediated in 2005-2006. These areas were also evaluated for signs of soil erosion. The results of the investigation will be available in a report in October 2016.

PCB concentrations for the fish sampling in 2015 exceed the fish ingestion value of 1.9 mg/kg used by the Commonwealth of Pennsylvania for do-not-consume sport fish advisories. Carp are under a “Do Not Consume” advisory and smallmouth bass are under a restriction of one meal per month. The fish consumption advisory for small mouth bass is not set at a value that is considered protective of human health using the Superfund risk assessment methods even for one meal per year. EPA notified PADEP in 2011 of its concerns that the fish advisory is not sufficiently protective for human health. EPA will continue follow up with PADEP about additional fish tissue sampling, improving efforts to collect channel catfish and largemouth bass, along with other fish species in October 2016, and continuing outreach and educational efforts.

The vapor intrusion pathway was evaluated at the commercial buildings at the Site and at residential properties across the street from the Site. Sampling of homes and commercial properties along Sharpsville Avenue identified VOCs at levels that EPA determined are within the acceptable risk range. Vapor intrusion is not a concern for the majority of buildings that are on the Site and buildings located between the Site and the River.

In some buildings, high concentrations of chemicals were noted in indoor air, but this could not be linked to site-related subsurface contamination, and indoor sources were suspected. In two commercial buildings (Davis Alloys and South Sector), site-related chemicals had accumulated beneath the slab at concentrations that could cause levels of concern if the vapors migrated into indoor air. Such indoor migration was not observed at the time of sampling. Additional monitoring should be performed in the future at the South Sector building to determine if subslab vapors are penetrating any cracks in the concrete floor. Vapor intrusion monitoring should also be performed at the Davis Alloys building, when the building is eventually occupied. The additional monitoring is necessary to ensure vapor intrusion is not an issue.

EPA’s remedy for groundwater was No Further Action with Monitoring and included a TI Zone and long-term groundwater monitoring. One goal of the monitoring is to ensure that unacceptable concentrations of groundwater are not migrating beyond the TI Zone.

The most recent monitoring data that EPA reviewed were from 2015 (the Year 12 report). Monitoring wells within the TI Zone still exceed risk-based screening levels and MCLs, as expected, but these concentrations are subject to the TI waiver, and the groundwater is not used.

Of greater interest are the perimeter wells. While many of the perimeter wells had chemical concentrations that exceeded risk-based screening levels, a simple screening assessment yields acceptable risks for all perimeter wells in 2015 except S-1A and OS-4A. These are also the only two perimeter wells that had MCL exceedances in 2015. Arsenic was detected in S-1A at 281 µg/L, exceeding the MCL of 10 µg/L. Vinyl chloride was detected in OS-4A at 5 µg/L, exceeding the MCL of 2 µg/L.

The arsenic at S-1A has been previously observed. Concentrations have fluctuated to as high as 3,390 µg/L in 2004, and since then have gone as low as 41.2 µg/L in 2005, but are generally in the 40-150 µg/L range, with no obvious upward or downward trend. The Year 12 report characterized this as a localized occurrence. However, most of the wells have not been sampled for arsenic in years, and EPA recommends that arsenic be added to the monitoring program.

The VOC concentrations in OS-4A do show a possible upward trend, with the chlorinated ethenes and chlorinated benzenes appearing within the past 3-5 years and generally increasing. In the case of the chlorinated benzenes, the quantitation limits were such that the chemicals may have been present without being detected, and the concentrations are still relatively low, but vinyl chloride has risen above the MCL within the past two years, and cis-1,2-DCE has gone from 3 µg/L in 2011 to 44 µg/L in 2015. The PRP will be required to continue monitoring to determine whether there is an increasing trend. Based upon the monitoring results, EPA will determine whether a focused FS would be appropriate.

These wells do not currently have potable uses, and therefore conditions are currently protective. However, monitoring must continue to ensure the future protectiveness of groundwater beyond the TI Zone.

1,4-Dioxane was widely used as a stabilizing agent in chlorinated solvents, most commonly 1,1,1-trichloroethane. Because 1,1,1-trichloroethane was used in metal cleaning and degreasing at several on-site locations, 1,4-dioxane may be present in groundwater at the Site. 1,4-Dioxane is a probable human carcinogen and highly mobile in groundwater. 1,4-Dioxane should be included in the sampling program at the Site to ensure protectiveness of the groundwater remedy.

### **7.3 Question C: Has any other information come to light that could call into question the protectiveness of the remedy?**

Investigations related to potential redevelopment of the former transformer plant, currently owned by Winner International, found PCB concentrations in the building walls. If the building were to be demolished, the structural debris would include enough volume and contamination to be considered a non-permitted TSCA landfill. There are no plans for demolition or reuse of this building.

### **7.4 Technical Assessment Summary**

The Site is mostly covered with buildings and concrete, effectively capping areas of contamination and preventing exposures to any contaminated soils. Uncapped areas of the Site were appropriately excavated and backfilled and institutional controls are in place to prevent exposures. The sediment, riparian soil and drainage way portions of the remedy were completed and groundwater is monitored to ensure no contamination migrates beyond the TI Zone.

Vapor intrusion has been evaluated and results show that vapor intrusion is not a concern from site-related contamination with the exception of two buildings. Additional monitoring may be performed in the future at the South Sector building to determine if subslab contaminant vapors are penetrating any cracks in the concrete floor. Vapor intrusion monitoring should also be performed at the Davis Alloys building, and mitigation should be considered prior to re-use.

The 2015 fish tissue results were the highest PCB concentrations detected since 2003. To more closely monitor PCB levels EPA will coordinate with PADEP and the PRP to sample fish and

sediments. A Pennsylvania Public Health Advisory for 2016 Fish Consumption states PCB contamination is present in the Shenango River and describes appropriate fish consumption patterns. The smallmouth bass consumption advisory is limited to one meal per month. The PCB data collected on smallmouth bass when evaluated using the Superfund risk assessment shows there is a risk for consuming smallmouth bass for as little as one meal per year.

Sampling conducted has identified elevated concentrations of PCB in fish tissue using analytical methods that determine total PCB concentrations using an Aroclor analysis. It is recommended that a subset of samples also be analyzed using the PCB congener analysis for riparian soils to determine if the Aroclor analysis is providing an accurate quantification of total PCBs and to determine if dioxin-like PCBs are a potential COC.

Specific TI perimeter monitoring wells had concentrations above MCLs and risk-based levels of concern. Arsenic was detected in S-1A at 281 µg/L, exceeding the MCL of 10 µg/L, vinyl chloride was detected in OS-4A at 5 µg/L, exceeding the MCL of 2 µg/L. The concentrations for cis-1,2-DCE and TCE in this well were also right at the HQ of 1.

## 8.0 Issues

Table 9 summarizes the current site issues.

**Table 9: Current Site Issues**

Issue	Affects Current Protectiveness?	Affects Future Protectiveness?
1,4-Dioxane is not currently sampled.	No	Yes
PCB concentrations in 2015 fish tissues were higher than previous sample results.	No	Yes
The one meal per month Commonwealth of Pennsylvania fish advisory for smallmouth bass consumption is not protective under Superfund risk assessment assumptions	No	Yes
Arsenic and vinyl chloride have been detected above their MCLs in TI Zone perimeter wells.	No	Yes
The O&M plans are not up to date for cap inspections and maintenance, groundwater monitoring and LNAPL removal.	No	Yes
Long-term monitoring (LTM) uses Aroclor analysis to monitor remedy performance; however, such analysis can underestimate total PCBs due to weathering and does not identify whether dioxin-like PCBs are present.	No	Yes

## 9.0 Recommendations and Follow-up Actions

Table 10 provides recommendations to address the current site issues.

**Table 10: Recommendations to Address Current Site Issues**

Issue	Recommendation / Follow-Up Action	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness?	
					Current	Future
1,4-Dioxane is not currently sampled.	Include 1,4-dioxane in the groundwater sampling program to determine if this is a COC for the Site.	PRP	EPA	9/22/2017	No	Yes
PCB concentrations in 2015 fish tissues were higher than previous samples.	Develop a sampling plan to determine if there is an on-going release from the Site to the Shenango River.	PRP	EPA	9/22/2017	No	Yes
The one meal per month Commonwealth of Pennsylvania fish advisory for smallmouth bass consumption is not protective under Superfund risk assessment assumptions	Coordinate with PADEP and PRP to perform fish tissue sampling. Continue outreach and educational efforts about consuming fish. Notify the Commonwealth that current Advisory may not be protective.	EPA/State	EPA	9/22/2017	No	Yes
Arsenic and vinyl chloride have been detected above their MCLs in TI Zone perimeter wells.	Include appropriate wells in sampling plan and analyze for all COCs to determine if the plume is migrating beyond the TI Zone.	PRP	EPA	9/22/2017	No	Yes
The O&M plans are not up to date for cap inspections and maintenance, groundwater monitoring and LNAPL removal.	Update O&M plans as needed.	PRP	EPA	9/22/2017	No	Yes
Aroclor analysis performed on riparian soils may have underestimated total PCBs due to weathering and does not identify whether dioxin-like PCBs are present.	Include PCB-congener analysis to determine if Aroclor analysis is accurately measuring total PCBs and to determine if dioxin-like PCBs are a potential COC.	PRP	EPA	9/22/2017	No	Yes

The following additional items, though not expected to affect protectiveness, warrant additional follow-up:

- During the FYR site visit, several wells needed maintenance, these wells should be repaired.
- Documents at the Site's repository only included an Administrative Record up until the ROD. Important site documents (RODs and FYRs) should be sent to the repository.
- Subslab concentrations of 1,2,4-trimethylbenzene in the South Sector increased from 2014 to 2015, additional sampling for vapor intrusion is warranted.
- The Davis Alloys buildings is currently vacant. If it becomes occupied, additional sampling for vapor intrusion is warranted and mitigation should be considered prior to re-use of the building.

## 10.0 Protectiveness Statements

The remedy at OU1 currently protects human health and the environment because areas of soil contamination were excavated and capped, and institutional controls are in place. In order for the remedy to be protective in the long term, the O&M plan should be updated to include cap inspections and maintenance.

The remedy at OU2 is currently protective of human health and the environment, because contaminated sediments have been removed from the Site drainage ways, and the sediments and riparian soils of the Shenango River have been remediated to the cleanup standards specified in the ROD. Arsenic should be added to the groundwater monitoring program. The current Commonwealth of Pennsylvania fish advisory for one meal per month for smallmouth bass is not protective under Superfund risk assessment assumptions.

In order for the remedy to be protective in the long term, the following actions should to be taken:

- Include 1,4-dioxane in the groundwater sampling program to determine if this is a COC for the Site.
- Develop a sampling plan to determine if there is an ongoing release to the Shenango River.
- Perform additional Fish Tissue sampling to verify the increase of PCB concentrations.
- Notify the Commonwealth of Pennsylvania that the present Fish Advisory may not be protective should be reconsidered.
- Include appropriate wells in sampling plan and analyze for relevant contaminants to better determine if contaminants exceed the maximum contaminant levels (MCLs) outside of the TI Zone.
- Update the O&M plan as needed to change requirements for groundwater monitoring and light non-aqueous phase liquid (LNAPL) removal.
- Include a subset of samples for PCB-congener analysis to determine if Aroclor analysis is accurately measuring total PCBs and to determine if dioxin-like PCBs are a potential contaminant of concern (COC).

The overall remedy is currently protective of human health and the environment in the short term. All site soils have been remediated to industrial exposure standards, PCB contaminated sediments have been removed from the Site drainage ways. All institutional controls are in place as required by two RODs. The sediments and riparian soils of the Shenango River have been remediated to standards which are protective of ecological receptors with respect to the Site-related PCB contamination. The soil and sediment cleanup goals are protective, especially given the extent of soil cover. The current Commonwealth of Pennsylvania fish advisory is not protective under Superfund risk assessment assumptions for smallmouth bass. While there are currently no known exposures to the Site-related ground water contaminants and a long-term ground water monitoring program is in place, an adjustment to the plan's frequency and parameters is recommended so EPA may ascertain if Site related VOC and arsenic contamination in the alluvial aquifer is migrating beyond the TI Zone.

The following additional items, though not expected to affect overall protectiveness, warrant additional follow-up:

- During the FYR site visit, several wells needed maintenance, these wells should be repaired.
- Documents at the Site's repository only included an Administrative Record up until the ROD. Important site documents (RODs and FYRs) should be sent to the repository.
- Subslab concentrations of 1,2,4-trimethylbenzene in the South Sector increased from 2014 to 2015, additional sampling for vapor intrusion is warranted.
- The Davis Alloys buildings is currently vacant. If it becomes occupied, additional sampling for vapor intrusion is warranted and mitigation should be considered prior to re-use of the building.

## **11.0 Next Review**

The next FYR will be due within five years of the signature/approval date of this FYR.

## **Appendix A: List of Documents Reviewed**

Baseline Fish Tissue Sampling Report. Westinghouse Electric (Sharon) Superfund Site. Sharon, Mercer County, Pennsylvania. Prepared by Woodard & Curran, Inc. and Normandeu Associates, Inc. for CBS Corporation. February 17, 2016.

Data Summary Report – Year 8, Operable Unit Two Groundwater. Westinghouse Electric (Sharon) Superfund Site. Sharon, Mercer County, Pennsylvania. Prepared by Woodard & Curran, Inc. for CBS Corporation. 2012.

Data Summary Report – Year 9, Operable Unit Two Groundwater. Westinghouse Electric (Sharon) Superfund Site. Sharon, Mercer County, Pennsylvania. Prepared by Woodard & Curran, Inc. for CBS Corporation. April 18, 2013.

Data Summary Report – Year 10, Operable Unit Two Groundwater. Westinghouse Electric (Sharon) Superfund Site. Sharon, Mercer County, Pennsylvania. Prepared by Woodard & Curran, Inc. for CBS Corporation. May 16, 2014.

Data Summary Report – Year 11, Operable Unit Two Groundwater. Westinghouse Electric (Sharon) Superfund Site. Sharon, Mercer County, Pennsylvania. Prepared by Woodard & Curran, Inc. for CBS Corporation. May 17, 2015.

Data Summary Report – Year 12, Operable Unit Two Groundwater. Westinghouse Electric (Sharon) Superfund Site. Sharon, Mercer County, Pennsylvania. Prepared by Woodard & Curran, Inc. for CBS Corporation. February 18, 2016.

Final Remedial Design Report, Operable Unit 2 – Storm Sewers and Groundwater. Westinghouse Electric (Sharon) Superfund Site. Sharon, Mercer County, Pennsylvania. Prepared by Cummings/Riter Consultants, Inc. for Viacom, Inc. October 1, 2003.

Fish Consumption Advisory Report. Prepared by Pennsylvania Fish & Boat Commission. 2016.

Five-Year Review Report. Westinghouse Electric (Sharon) Superfund Site. Sharon, Mercer County, Pennsylvania. Prepared by U.S. Environmental Protection Agency, Region III. September 22, 2011.

Record of Decision, OU1. Westinghouse Electric (Sharon) Superfund Site. Sharon, Mercer County, Pennsylvania. Prepared by U.S. Environmental Protection Agency, Region III. February 18, 2000.

Record of Decision, OU2. Westinghouse Electric (Sharon) Superfund Site. Sharon, Mercer County, Pennsylvania. Prepared by U.S. Environmental Protection Agency, Region III. February 20, 2003.

Remedial Action Report, Operable Unit One – Soils. Westinghouse Electric (Sharon) Superfund Site. Sharon, Mercer County, Pennsylvania. Prepared by Cummings/Riter Consultants, Inc. for Viacom, Inc. February 16, 2005.

Preliminary Close-Out Report. Westinghouse Electric (Sharon) Superfund Site. Sharon, Mercer County, Pennsylvania. Prepared by U.S. Environmental Protection Agency, Region III. December 2005.

Technical Impracticability of Groundwater Restoration Evaluation. Westinghouse Electric (Sharon) Superfund Site. Sharon, Mercer County, Pennsylvania. Prepared by Cummings/Riter Consultants, Inc. for Viacom, Inc. March 22, 2002.

# **EPA REVIEWS CLEANUP Westinghouse Electric Site**

The U.S. Environmental Protection Agency (EPA) is conducting a Five-Year Review of the Westinghouse Electric Sharon Transformer Plant Superfund Site located in Mercer County. EPA inspects sites regularly to ensure that cleanups conducted remain fully protective of public health and the environment. EPA's prior review of the site in 2011 determined that more testing was needed to make a long-term protectiveness determination. Since then, additional tests have been conducted, with test results and a long-term protectiveness determination available September 2016.

**To access results of the review (starting Sept. 2016):**

<http://epa.gov/5yr>

**To read detailed site and contact information:**

<https://www.epa.gov/superfund/westinghouseelectric>

**To ask questions or provide site information:**

**Contact:** Carrie Deitzel Phone: 215-814-5525

**Email:** [deitzel.carrie@epa.gov](mailto:deitzel.carrie@epa.gov)

**Protecting public health and the environment**

**Appendix C: Interview Forms**

**Westinghouse Electric Corp. (Sharon Plant) Superfund Site**

**Five-Year Review Interview Form**

**Site Name:** Westinghouse Electric Corp. (Sharon Plant)

**EPA ID No.:** PAD005000575

**Interviewer Name:** N/A

**Affiliation:** N/A

**Subject Name:** Richard Herman

**Affiliation:** Plant Manager at NLMK Pennsylvania (South Sector of Site)

**Time:** 1:40 p.m.

**Date:** 6/6/2016

**Interview Location:** N/A

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

**Interview Category:** Current Tenants

1. Are you familiar with the Superfund site and the cleanup EPA conducted there?  
*Yes.*
2. Do you have concerns about the Superfund site?  
*No.*
3. Have you been contacted by local community members who are concerned about the site?  
*No.*
4. Are you aware of any problems at the site, such as trespassing or vandalism?  
*No.*
5. Are you aware of any new development (residential/ recreational, commercial) in the site vicinity?  
*Yes. Not sure that this is relevant to the site vicinity but a new Primary Health Care Network Building is being built Southwest of the site just to the West of Silver Street and East of Shenango Avenue. Ellwood Crankshaft is locating in the Northern portion of the former Westinghouse Building just to the North of Clark Street and West of North Sharpsville Avenue.*
6. Do you know of any plans to revitalize the site (if it's not in reuse currently) or any additional use?  
*I say yes but that is based on the belief that Winner International is continually seeking tenants for the former site.*

**Westinghouse Electric Corp. (Sharon Plant) Superfund Site**

**Five-Year Review Interview Form**

**Site Name:** Westinghouse Electric Corp. (Sharon Plant)

**EPA ID No.:** PAD005000575

**Interviewer Name:** N/A

**Affiliation:** N/A

**Subject Name:** Gerhard Epp

**Affiliation:** Plant Manager of Ellwood Crankshaft Group - Sharon Forge (North Sector of Site)

**Time:** 2:30 p.m.

**Date:** 6/6/2016

**Interview Location:** N/A

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

**Interview Category:** **Current Tenants**

1. Are you familiar with the Superfund site and the cleanup EPA conducted there?  
*Yes – Ellwood Crankshaft & Machine Company (ECM) is familiar with the Superfund site and is currently performing an \$80+ Million expansion project, constructing a state of the art crankshaft manufacturing facility, inside the existing building located in the “North Sector” of the former Westinghouse site. ECM has worked closely with the EPA and PADEP to ensure that site development, including excavation and other site construction activities, have been performed in accordance with Excavation Work Plans and Soil Management Plans that have been reviewed and approved by the EPA. In addition, as specified in the ROD for this portion of the site, deed restrictions are in place for the North Sector property and have been followed as part of the site development activities.*
  
2. Do you have concerns about the Superfund site?  
*No – Based on the due diligence performed before our acquisition of the North Sector property, and the careful monitoring and management of soils performed by ECM during our site construction activities, our concerns about impacts to the North Sector portion of the Westinghouse site are limited. However, ECM remains interested in the overall progress on the cleanup and ongoing monitoring of the other portions of the Westinghouse Superfund site to the south of the ECM facility.*
  
3. Have you been contacted by local community members who are concerned about the site?  
*No.*
  
4. Are you aware of any problems at the site, such as trespassing or vandalism?  
*No.*
  
5. Are you aware of any new development (residential/ recreational, commercial) in the site vicinity?  
*No.*

6. Do you know of any plans to revitalize the site (if it's not in reuse currently) or any additional use?

*Not beyond current ECG large forge facility.*

**Appendix D: Site Inspection Checklist**

<b>FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST</b>																																																																							
<b>I. SITE INFORMATION</b>																																																																							
<b>Site Name:</b> Westinghouse Electric Corp. (Sharon Plant)	<b>Date of Inspection:</b> 10/11/2015																																																																						
<b>Location and Region:</b> Sharon, PA; Region 3	<b>EPA ID:</b> PAD005000575																																																																						
<b>Agency, Office or Company Leading the Five-Year Review:</b> EPA	<b>Weather/Temperature:</b> Cloudy, 55																																																																						
<b>Remedy Includes:</b> (Check all that apply) <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <input type="checkbox"/> Landfill cover/containment  <input type="checkbox"/> Access controls  <input checked="" type="checkbox"/> Institutional controls  <input type="checkbox"/> Ground water pump and treatment  <input type="checkbox"/> Surface water collection and treatment  <input checked="" type="checkbox"/> Other: NAPL removal, fish tissue monitoring, groundwater monitoring, soil capping             </td> <td style="width: 50%; vertical-align: top;"> <input type="checkbox"/> Monitored natural attenuation  <input type="checkbox"/> Ground water containment  <input type="checkbox"/> Vertical barrier walls             </td> </tr> </table>		<input type="checkbox"/> Landfill cover/containment <input type="checkbox"/> Access controls <input checked="" type="checkbox"/> Institutional controls <input type="checkbox"/> Ground water pump and treatment <input type="checkbox"/> Surface water collection and treatment <input checked="" type="checkbox"/> Other: NAPL removal, fish tissue monitoring, groundwater monitoring, soil capping	<input type="checkbox"/> Monitored natural attenuation <input type="checkbox"/> Ground water containment <input type="checkbox"/> Vertical barrier walls																																																																				
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<b>Attachments:</b> <input checked="" type="checkbox"/> Inspection team roster attached <input type="checkbox"/> Site map attached																																																																							
<b>II. INTERVIEWS</b> (check all that apply)																																																																							
<b>1. O&amp;M Site Manager</b> <table style="width: 100%; border: none; margin-top: 5px;"> <tr> <td style="width: 30%; text-align: center;">_____</td> <td style="width: 30%; text-align: center;">_____</td> <td style="width: 40%; text-align: center;">_____</td> </tr> <tr> <td style="text-align: center;">Name</td> <td style="text-align: center;">Title</td> <td style="text-align: center;">Date</td> </tr> <tr> <td colspan="3">Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone    Phone: _____</td> </tr> <tr> <td colspan="3">Problems, suggestions <input type="checkbox"/> Report attached: _____</td> </tr> </table>		_____	_____	_____	Name	Title	Date	Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone    Phone: _____			Problems, suggestions <input type="checkbox"/> Report attached: _____																																																												
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Problems, suggestions <input type="checkbox"/> Report attached: _____																																																																							
<b>2. O&amp;M Staff</b> <table style="width: 100%; border: none; margin-top: 5px;"> <tr> <td style="width: 30%; text-align: center;">_____</td> <td style="width: 30%; text-align: center;">_____</td> <td style="width: 40%; text-align: center;">_____</td> </tr> <tr> <td style="text-align: center;">Name</td> <td style="text-align: center;">Title</td> <td style="text-align: center;">Date</td> </tr> <tr> <td colspan="3">Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone    Phone: _____</td> </tr> <tr> <td colspan="3">Problems/suggestions <input type="checkbox"/> Report attached: _____</td> </tr> </table>		_____	_____	_____	Name	Title	Date	Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone    Phone: _____			Problems/suggestions <input type="checkbox"/> Report attached: _____																																																												
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<b>3. Local Regulatory Authorities and Response Agencies</b> (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.  <table style="width: 100%; border: none;"> <tr> <td style="width: 15%;">Agency _____</td> <td style="width: 15%;">Contact _____</td> <td style="width: 15%;">_____</td> <td style="width: 15%;">_____</td> <td style="width: 40%;">_____</td> </tr> <tr> <td></td> <td style="text-align: center;">Name</td> <td style="text-align: center;">Title</td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Phone No.</td> </tr> <tr> <td colspan="5">Problems/suggestions <input type="checkbox"/> Report attached: _____</td> </tr> <tr><td colspan="5"> </td></tr> <tr> <td>Agency _____</td> <td>Contact _____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td></td> <td style="text-align: center;">Name</td> <td style="text-align: center;">Title</td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Phone No.</td> </tr> <tr> <td colspan="5">Problems/suggestions <input type="checkbox"/> Report attached: _____</td> </tr> <tr><td colspan="5"> </td></tr> <tr> <td>Agency _____</td> <td>Contact _____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td></td> <td style="text-align: center;">Name</td> <td style="text-align: center;">Title</td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Phone No.</td> </tr> <tr> <td colspan="5">Problems/suggestions <input type="checkbox"/> Report attached: _____</td> </tr> <tr><td colspan="5"> </td></tr> <tr> <td>Agency _____</td> <td>Contact _____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td></td> <td style="text-align: center;">Name</td> <td style="text-align: center;">Title</td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Phone No.</td> </tr> </table>		Agency _____	Contact _____	_____	_____	_____		Name	Title	Date	Phone No.	Problems/suggestions <input type="checkbox"/> Report attached: _____										Agency _____	Contact _____	_____	_____	_____		Name	Title	Date	Phone No.	Problems/suggestions <input type="checkbox"/> Report attached: _____										Agency _____	Contact _____	_____	_____	_____		Name	Title	Date	Phone No.	Problems/suggestions <input type="checkbox"/> Report attached: _____										Agency _____	Contact _____	_____	_____	_____		Name	Title	Date	Phone No.
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Problems/suggestions <input type="checkbox"/> Report attached: _____			
Agency _____			
Contact _____			
Name	Title	Date	Phone No.
Problems/suggestions <input type="checkbox"/> Report attached: _____			
4. <b>Other Interviews</b> (optional) <input type="checkbox"/> Report attached: _____			
<b>III. ON-SITE DOCUMENTS AND RECORDS VERIFIED</b> (check all that apply)			
1. <b>O&amp;M Documents</b>			
<input type="checkbox"/> O&M manual	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
<input type="checkbox"/> As-built drawings	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Maintenance logs	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks: _____			
2. <b>Site-Specific Health and Safety Plan</b>			
	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Contingency plan/emergency response plan	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks: _____			
3. <b>O&amp;M and OSHA Training Records</b>			
	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks: _____			
4. <b>Permits and Service Agreements</b>			
<input type="checkbox"/> Air discharge permit	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Effluent discharge	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Waste disposal, POTW	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Other permits: _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks: _____			
5. <b>Gas Generation Records</b>			
	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks: _____			
6. <b>Settlement Monument Records</b>			
	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks: _____			
7. <b>Ground Water Monitoring Records</b>			
	<input checked="" type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date	<input type="checkbox"/> N/A
Remarks: _____			
8. <b>Leachate Extraction Records</b>			
	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks: _____			
9. <b>Discharge Compliance Records</b>			

<input type="checkbox"/> Air	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Water (effluent)	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks: _____			
10.	<b>Daily Access/Security Logs</b>	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A
Remarks: _____			
<b>IV. O&amp;M COSTS</b>			
1.	<b>O&amp;M Organization</b>		
	<input type="checkbox"/> State in-house	<input type="checkbox"/> Contractor for state	
	<input type="checkbox"/> PRP in-house	<input checked="" type="checkbox"/> Contractor for PRP	
	<input type="checkbox"/> Federal facility in-house	<input type="checkbox"/> Contractor for Federal facility	
	<input type="checkbox"/> _____		
2.	<b>O&amp;M Cost Records</b>		
	<input checked="" type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	
	<input type="checkbox"/> Funding mechanism/agreement in place	<input type="checkbox"/> Unavailable	
	Original O&M cost estimate: _____ <input type="checkbox"/> Breakdown attached		
	Total annual cost by year for review period if available		
	From: <u>2011</u>	To: <u>2012</u>	\$53,000 <input type="checkbox"/> Breakdown attached
	Date	Date	Total cost
	From: <u>2011</u>	To: <u>2012</u>	\$63,000 <input type="checkbox"/> Breakdown attached
	Date	Date	Total cost
	From: <u>2012</u>	To: <u>2013</u>	\$53,000 <input type="checkbox"/> Breakdown attached
	Date	Date	Total cost
	From: <u>2013</u>	To: <u>2014</u>	\$128,000 <input type="checkbox"/> Breakdown attached
	Date	Date	Total cost
	From: <u>2014</u>	To: <u>2015</u>	\$140,000 <input type="checkbox"/> Breakdown attached
	Date	Date	Total cost
3.	<b>Unanticipated or Unusually High O&amp;M Costs during Review Period</b>		
	Describe costs and reasons: _____		
<b>V. ACCESS AND INSTITUTIONAL CONTROLS</b> <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A			
<b>A. Fencing</b>			
1.	<b>Fencing Damaged</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Gates secured <input checked="" type="checkbox"/> N/A
Remarks: _____			
<b>B. Other Access Restrictions</b>			
1.	<b>Signs and Other Security Measures</b>	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> N/A
Remarks: _____			

<b>C. Institutional Controls (ICs)</b>			
<b>1. Implementation and Enforcement</b>			
Site conditions imply ICs not properly implemented	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
Site conditions imply ICs not being fully enforced	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
Type of monitoring (e.g., self-reporting, drive by): _____			
Frequency: _____			
Responsible party/agency: _____			
Contact _____	_____	_____	_____
Name	Title	Date	Phone no.
Reporting is up to date	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Reports are verified by the lead agency	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Specific requirements in deed or decision documents have been met	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
Violations have been reported	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
Other problems or suggestions: <input type="checkbox"/> Report attached			
<b>2. Adequacy</b> <input checked="" type="checkbox"/> ICs are adequate <input type="checkbox"/> ICs are inadequate <input type="checkbox"/> N/A			
Remarks: ICs are adequately in place across the Site.			
<b>D. General</b>			
<b>1. Vandalism/Trespassing</b> <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> No vandalism evident			
Remarks: _____			
<b>2. Land Use Changes On Site</b> <input checked="" type="checkbox"/> N/A			
Remarks: _____			
<b>3. Land Use Changes Off Site</b> <input checked="" type="checkbox"/> N/A			
Remarks: _____			
<b>VI. GENERAL SITE CONDITIONS</b>			
<b>A. Roads</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A			
<b>1. Roads Damaged</b> <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Roads adequate <input type="checkbox"/> N/A			
Remarks: _____			
<b>B. Other Site Conditions</b>			
Remarks: _____			
<b>VII. LANDFILL COVERS</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A			
<b>A. Landfill Surface</b>			
<b>1. Settlement (low spots)</b> <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Settlement not evident			
Arial extent: _____	Depth: _____		
Remarks: _____			

2.	<b>Cracks</b> Lengths: _____ Widths: _____ Remarks: _____	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Cracking not evident Depths: _____
3.	<b>Erosion</b> Aerial extent: _____ Remarks: _____	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Erosion not evident Depth: _____
4.	<b>Holes</b> Aerial extent: _____ Remarks: _____	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Holes not evident Depth: _____
5.	<b>Vegetative Cover</b> <input type="checkbox"/> No signs of stress Remarks: _____	<input type="checkbox"/> Grass <input type="checkbox"/> Trees/shrubs (indicate size and locations on a diagram)	<input type="checkbox"/> Cover properly established
6.	<b>Alternative Cover</b> (e.g., armored rock, concrete) Remarks: _____	<input type="checkbox"/> N/A	
7.	<b>Bulges</b> Aerial extent: _____ Remarks: _____	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Bulges not evident Height: _____
8.	<b>Wet Areas/Water Damage</b> <input type="checkbox"/> Wet areas <input type="checkbox"/> Ponding <input type="checkbox"/> Seeps <input type="checkbox"/> Soft subgrade Remarks: _____	<input type="checkbox"/> Wet areas/water damage not evident <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Location shown on site map	Aerial extent: _____ Aerial extent: _____ Aerial extent: _____ Aerial extent: _____
9.	<b>Slope Instability</b> <input type="checkbox"/> No evidence of slope instability Aerial extent: _____ Remarks: _____	<input type="checkbox"/> Slides	<input type="checkbox"/> Location shown on site map
<b>B. Benches</b> <input type="checkbox"/> Applicable <input type="checkbox"/> 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.	<b>Flows Bypass Bench</b> Remarks: _____	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A or okay
2.	<b>Bench Breached</b> Remarks: _____	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A or okay

3.	<b>Bench Overtopped</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A or okay
Remarks: _____			
<b>C. Letdown Channels</b> <input type="checkbox"/> Applicable <input type="checkbox"/> 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.	<b>Settlement</b> (Low spots)	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No evidence of settlement
Aerial extent: _____		Depth: _____	
Remarks: _____			
2.	<b>Material Degradation</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No evidence of degradation
Material type: _____		Aerial extent: _____	
Remarks: _____			
3.	<b>Erosion</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No evidence of erosion
Aerial extent: _____		Depth: _____	
Remarks: _____			
4.	<b>Undercutting</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No evidence of undercutting
Aerial extent: _____		Depth: _____	
Remarks: _____			
5.	<b>Obstructions</b>	Type: _____	<input type="checkbox"/> No obstructions
<input type="checkbox"/> Location shown on site map		Aerial extent: _____	
Size: _____			
Remarks: _____			
6.	<b>Excessive Vegetative Growth</b>	Type: _____	
<input type="checkbox"/> No evidence of excessive growth			
<input type="checkbox"/> Vegetation in channels does not obstruct flow			
<input type="checkbox"/> Location shown on site map		Aerial extent: _____	
Remarks: _____			
<b>D. Cover Penetrations</b> <input type="checkbox"/> Applicable <input type="checkbox"/> N/A			
1.	<b>Gas Vents</b>	<input type="checkbox"/> Active	<input type="checkbox"/> Passive
<input type="checkbox"/> Properly secured/locked		<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled
<input type="checkbox"/> Evidence of leakage at penetration		<input type="checkbox"/> Needs maintenance	<input type="checkbox"/> Good condition
			<input type="checkbox"/> N/A
Remarks: _____			
2.	<b>Gas Monitoring Probes</b>	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning
<input type="checkbox"/> Evidence of leakage at penetration		<input type="checkbox"/> Routinely sampled	<input type="checkbox"/> Good condition
		<input type="checkbox"/> Needs maintenance	<input type="checkbox"/> N/A

Remarks: _____			
3.	<b>Monitoring Wells</b> (within surface area of landfill)		
<input type="checkbox"/>	Properly secured/locked	<input type="checkbox"/>	Functioning
<input type="checkbox"/>	Evidence of leakage at penetration	<input type="checkbox"/>	Routinely sampled
		<input type="checkbox"/>	Good condition
		<input type="checkbox"/>	Needs maintenance
		<input type="checkbox"/>	N/A
Remarks: _____			
4.	<b>Extraction Wells Leachate</b>		
<input type="checkbox"/>	Properly secured/locked	<input type="checkbox"/>	Functioning
<input type="checkbox"/>	Evidence of leakage at penetration	<input type="checkbox"/>	Routinely sampled
		<input type="checkbox"/>	Good condition
		<input type="checkbox"/>	Needs maintenance
		<input type="checkbox"/>	N/A
Remarks: _____			
5.	<b>Settlement Monuments</b>	<input type="checkbox"/>	Located
		<input type="checkbox"/>	Routinely surveyed
		<input type="checkbox"/>	N/A
Remarks: _____			
<b>E. Gas Collection and Treatment</b>		<input type="checkbox"/>	Applicable
		<input type="checkbox"/>	N/A
1.	<b>Gas Treatment Facilities</b>		
<input type="checkbox"/>	Flaring	<input type="checkbox"/>	Thermal destruction
<input type="checkbox"/>	Good condition	<input type="checkbox"/>	Needs maintenance
		<input type="checkbox"/>	Collection for reuse
Remarks: _____			
2.	<b>Gas Collection Wells, Manifolds and Piping</b>		
<input type="checkbox"/>	Good condition	<input type="checkbox"/>	Needs maintenance
Remarks: _____			
3.	<b>Gas Monitoring Facilities</b> (e.g., gas monitoring of adjacent homes or buildings)		
<input type="checkbox"/>	Good condition	<input type="checkbox"/>	Needs maintenance
		<input type="checkbox"/>	N/A
Remarks: _____			
<b>F. Cover Drainage Layer</b>		<input type="checkbox"/>	Applicable
		<input type="checkbox"/>	N/A
1.	<b>Outlet Pipes Inspected</b>	<input type="checkbox"/>	Functioning
		<input type="checkbox"/>	N/A
Remarks: _____			
2.	<b>Outlet Rock Inspected</b>	<input type="checkbox"/>	Functioning
		<input type="checkbox"/>	N/A
Remarks: _____			
<b>G. Detention/Sedimentation Ponds</b>		<input type="checkbox"/>	Applicable
		<input type="checkbox"/>	N/A
1.	<b>Siltation</b>	Area extent: _____	Depth: _____
			<input type="checkbox"/>
<input type="checkbox"/>	Siltation not evident		
Remarks: _____			
2.	<b>Erosion</b>	Area extent: _____	Depth: _____
<input type="checkbox"/>	Erosion not evident		
Remarks: _____			
3.	<b>Outlet Works</b>	<input type="checkbox"/>	Functioning
		<input type="checkbox"/>	N/A

Remarks: _____		
4. <b>Dam</b>	<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A
Remarks: _____		
<b>H. Retaining Walls</b> <input type="checkbox"/> Applicable <input type="checkbox"/> N/A		
1. <b>Deformations</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Deformation not evident
Horizontal displacement: _____		Vertical displacement: _____
Rotational displacement: _____		
Remarks: _____		
2. <b>Degradation</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Degradation not evident
Remarks: _____		
<b>I. Perimeter Ditches/Off-Site Discharge</b> <input type="checkbox"/> Applicable <input type="checkbox"/> N/A		
1. <b>Siltation</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Siltation not evident
Area extent: _____		Depth: _____
Remarks: _____		
2. <b>Vegetative Growth</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A
<input type="checkbox"/> Vegetation does not impede flow		
Area extent: _____		Type: _____
Remarks: _____		
3. <b>Erosion</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Erosion not evident
Area extent: _____		Depth: _____
Remarks: _____		
4. <b>Discharge Structure</b>	<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A
Remarks: _____		
<b>VIII. VERTICAL BARRIER WALLS</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A		
1. <b>Settlement</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Settlement not evident
Area extent: _____		Depth: _____
Remarks: _____		
2. <b>Performance Monitoring</b>	Type of monitoring: _____	
<input type="checkbox"/> Performance not monitored		
Frequency: _____		<input type="checkbox"/> Evidence of breaching
Head differential: _____		
Remarks: _____		
<b>IX. GROUND WATER/SURFACE WATER REMEDIES</b> <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A		
<b>A. Ground Water Extraction Wells, Pumps and Pipelines</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A		

<p>1. <b>Pumps, Wellhead Plumbing and Electrical</b></p> <p><input type="checkbox"/> Good condition    <input type="checkbox"/> All required wells properly operating    <input type="checkbox"/> Needs maintenance    <input type="checkbox"/> N/A</p> <p>Remarks: _____</p>
<p>2. <b>Extraction System Pipelines, Valves, Valve Boxes and Other Appurtenances</b></p> <p><input type="checkbox"/> Good condition    <input type="checkbox"/> Needs maintenance</p> <p>Remarks: _____</p>
<p>3. <b>Spare Parts and Equipment</b></p> <p><input type="checkbox"/> Readily available    <input type="checkbox"/> Good condition    <input type="checkbox"/> Requires upgrade    <input type="checkbox"/> Needs to be provided</p> <p>Remarks: _____</p>
<p><b>B. Surface Water Collection Structures, Pumps and Pipelines</b>    <input type="checkbox"/> Applicable    <input checked="" type="checkbox"/> N/A</p>
<p>1. <b>Collection Structures, Pumps and Electrical</b></p> <p><input type="checkbox"/> Good condition    <input type="checkbox"/> Needs maintenance</p> <p>Remarks: _____</p>
<p>2. <b>Surface Water Collection System Pipelines, Valves, Valve Boxes and Other Appurtenances</b></p> <p><input type="checkbox"/> Good condition    <input type="checkbox"/> Needs maintenance</p> <p>Remarks: _____</p>
<p>3. <b>Spare Parts and Equipment</b></p> <p><input type="checkbox"/> Readily available    <input type="checkbox"/> Good condition    <input type="checkbox"/> Requires upgrade    <input type="checkbox"/> Needs to be provided</p> <p>Remarks: _____</p>
<p><b>C. Treatment System</b>    <input type="checkbox"/> Applicable    <input checked="" type="checkbox"/> N/A</p>
<p>1. <b>Treatment Train</b> (check components that apply)</p> <p><input type="checkbox"/> Metals removal    <input type="checkbox"/> Oil/water separation    <input type="checkbox"/> Bioremediation</p> <p><input type="checkbox"/> Air stripping    <input type="checkbox"/> Carbon adsorbers</p> <p><input type="checkbox"/> Filters: _____</p> <p><input type="checkbox"/> Additive (e.g., chelation agent, flocculent): _____</p> <p><input type="checkbox"/> Others: _____</p> <p><input type="checkbox"/> Good condition    <input type="checkbox"/> Needs maintenance</p> <p><input type="checkbox"/> Sampling ports properly marked and functional</p> <p><input type="checkbox"/> Sampling/maintenance log displayed and up to date</p> <p><input type="checkbox"/> Equipment properly identified</p> <p><input type="checkbox"/> Quantity of ground water treated annually: _____</p> <p><input type="checkbox"/> Quantity of surface water treated annually: _____</p> <p>Remarks: _____</p>

2.	<b>Electrical Enclosures and Panels</b> (properly rated and functional)	
	<input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs maintenance	
	Remarks: _____	
3.	<b>Tanks, Vaults, Storage Vessels</b>	
	<input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Proper secondary containment <input type="checkbox"/> Needs maintenance	
	Remarks: _____	
4.	<b>Discharge Structure and Appurtenances</b>	
	<input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs maintenance	
	Remarks: _____	
5.	<b>Treatment Building(s)</b>	
	<input type="checkbox"/> N/A <input type="checkbox"/> Good condition (esp. roof and doorways) <input type="checkbox"/> Needs repair  <input type="checkbox"/> Chemicals and equipment properly stored	
	Remarks: _____	
6.	<b>Monitoring Wells</b> (pump and treatment remedy)	
	<input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition  <input type="checkbox"/> All required wells located <input type="checkbox"/> Needs maintenance <input type="checkbox"/> N/A	
	Remarks: _____	
<b>D. Monitoring Data</b>		
1.	<b>Monitoring Data</b>	
	<input checked="" type="checkbox"/> Is routinely submitted on time <input checked="" type="checkbox"/> Is of acceptable quality	
2.	<b>Monitoring Data Suggests:</b>	
	<input type="checkbox"/> Ground water plume is effectively contained <input type="checkbox"/> Contaminant concentrations are declining	
<b>E. Monitored Natural Attenuation</b>		
1.	<b>Monitoring Wells</b> (natural attenuation remedy)	
	<input type="checkbox"/> Properly secured/locked <input checked="" type="checkbox"/> Functioning <input checked="" type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input checked="" type="checkbox"/> Needs maintenance <input type="checkbox"/> N/A	
	Remarks: Unable to locate some wells. Some wells are unlocked, lack caps, or have rusted caps and locks. These wells require maintenance.	
<b>X. OTHER REMEDIES</b>		
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.		
<b>XI. OVERALL OBSERVATIONS</b>		

<b>A.</b>	<b>Implementation of the Remedy</b>
<p>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).</p> <p>The remedy was designed to address contaminated soils, sediments, drainage ways and groundwater. The contaminated soils and sediments have been excavated; drainage ways were cleaned, and groundwater is monitored to ensure contamination does not migrate outside of the TI Zone. There have been minor exceedances of MCLs on the perimeter of the TI Zone (Arsenic in well S-1A and vinyl chloride in well OS-4A), which should be monitored with appropriate downgradient wells. 1,4-Dioxane also needs to be added to the groundwater sampling program. No exposure pathways are evident. The 2015 fish tissue contaminant concentrations are greater than historical concentrations and should be investigated. Institutional controls are effectively in place.</p>	
<b>B.</b>	<b>Adequacy of O&amp;M</b>
<p>Describe issues and observations related to the implementation and scope of O&amp;M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy. There is no up-to-date O&amp;M plan in place for cap inspections and maintenance, groundwater monitoring and LNAPL recovery. The O&amp;M plan should be updated as needed.</p>	
<b>C.</b>	<b>Early Indicators of Potential Remedy Problems</b>
<p>Describe issues and observations such as unexpected changes in the cost or scope of O&amp;M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.</p> <p>Exceedances of MCLs on the perimeter of the TI Zone and high fish tissue contaminant concentrations may indicate potential remedy problems and should be appropriately investigated.</p>	
<b>D.</b>	<b>Opportunities for Optimization</b>
<p>Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy. The frequency of LNAPL removal should be re-evaluated; reducing the frequency of removal events could optimize the remedy if deemed appropriate.</p>	

Site Inspection Roster:

David Turner, EPA RPM

Chuck Tordella and Mariruth Hoffman, PADEP

Bryan Maurer, Woodard & Curran, PRP Contractor

Rick Herman and Jimmy Ross, NLMK PA & Sharon Coating

Ryan Burdge and Kelly MacDonald, Skeo Solutions

## Appendix E: Photographs from Site Inspection Visit



Sharon Coating, LLC, located 227 N. Sharpsville Avenue, Sharon PA.  
(Picture taken facing west.)



Unmarked monitoring well S-4 inside South Sector Building.



Asphalt cap area in North Sector on Ellwood Crankshaft property.  
(Picture taken facing west.)



Monitoring well N-2A inside North Sector Building.



Locked monitoring wells N-3B and N-3AR outside of North Sector Building.  
(Picture taken facing southwest.).



Railroad in North Sector  
(Picture taken outside of North Sector Building facing south- southwest.).



Fish collected for fish tissue sampling.  
(Picture taken on west bank of Shenago River.)



Shenango River view from Aqua America water treatment plant.  
(Picture taken facing northeast.)



Monitoring wells OS-4A, OS-4B and R-1 (Picture take at Broad Pl. and Vine Ave. facing northeast)



Rusted cap of monitoring well R-1



Approximate location of OS-3 monitoring wells. (Picture taken .facing north.)



Monitoring wells OS-6A and OS-6B



For sale sign on former Davis Alloys property



Monitoring wells OS-8C, OS-8B and OS-8C



Noise Solutions property



Habitat for Humanity property



Railroad in the Middle Sector, facing north



Former tank farm area Middle Sector. (Picture taken facing southwest.)



Unlocked monitoring wells GM-5A and GM-5B Middle Sector. (Picture taken facing southwest.)



Interior of Winner International building in Middle Sector.



Monitoring well M-2, lacking proper cover Middle Sector.



Recently repaved trucking area between the Middle Sector and building constructed over the A/B slab.  
(Picture taken facing east.)



Monitoring well S-10 and former soil removal Moat Area  
(Picture taken facing southeast)



Currently unoccupied area of Winner International building in Middle Sector



PCB warning sign in unoccupied area of Winner International building in Middle Sector

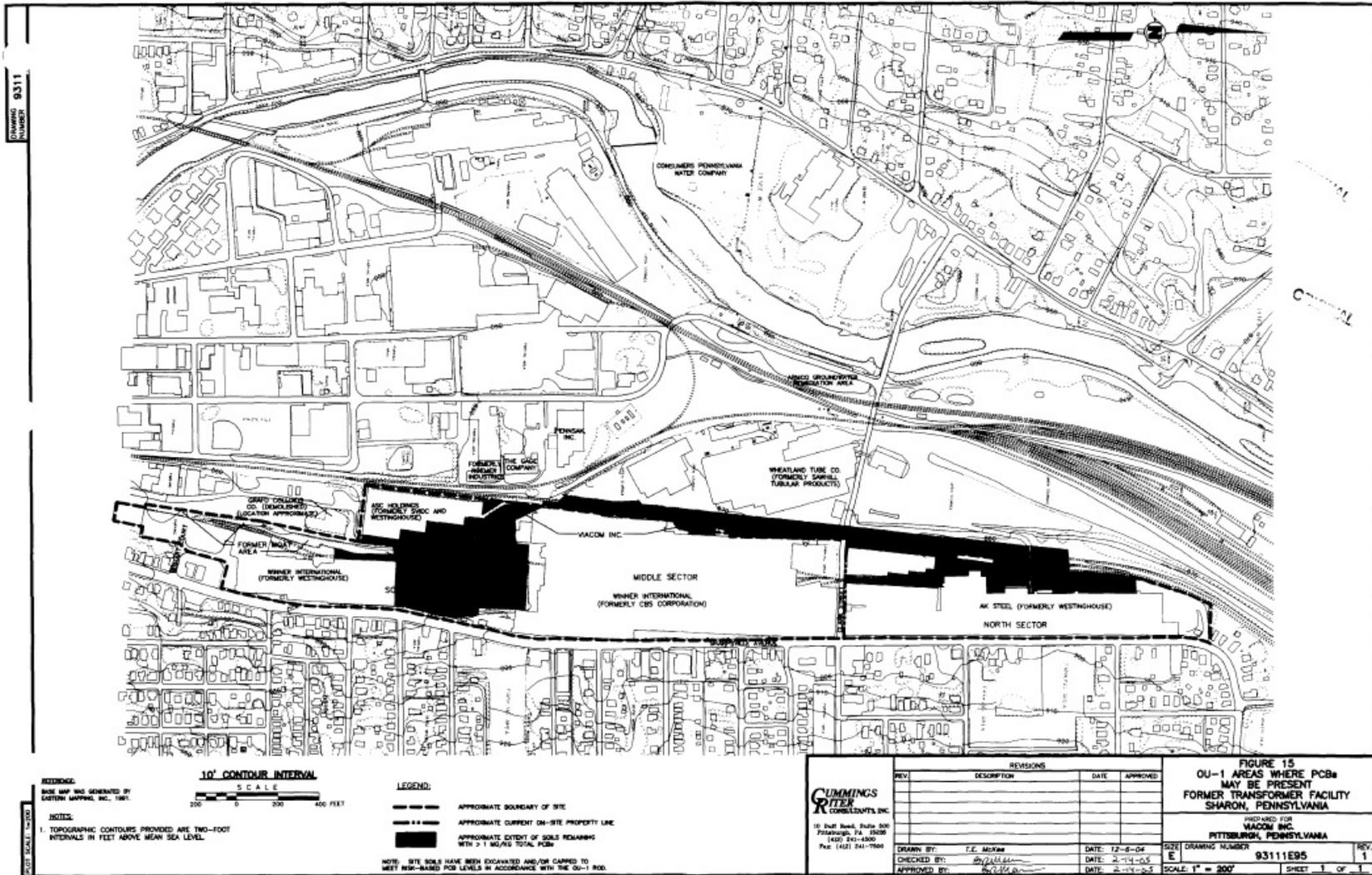


Transformer sound room in unoccupied portion of Winner International building in Middle Sector



Asphalt parking lot on southern side of Wishart Court  
(Picture taken facing south.)

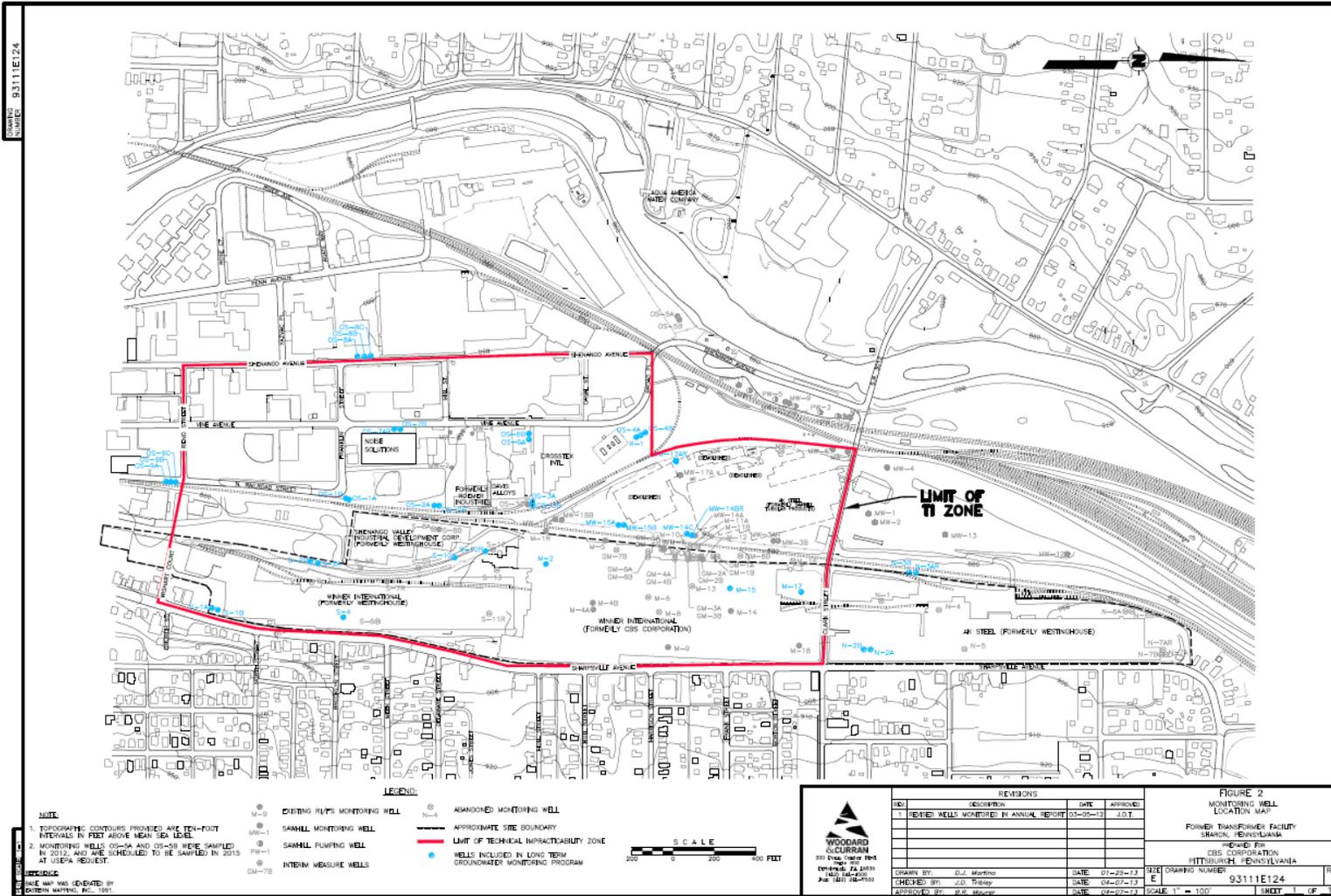
Appendix F: Area of IC Requirement for Soils



**Appendix G: Summary of LNAPL Removal Activities in 2014 and 2015**

Well ID	Date	Initial LNAPL Thickness (feet)	Final LNAPL Thickness (feet)	Approximate Volume Removed (gallons)	Total Volume Removed by Year (gallons)	
M-2	7/2/2014	8.23	0.9	1	2014: 5.6	
	9/11/2014	7.34	0.77	3		
	12/20/2014	7.00	0.15	1.6		
	GM-5A	3/6/2015	6.30	0.24	1.00	2015: 2.63
		5/21/2015	3.70	0.26	0.57	
		9/2/2015	3.20	0.27	0.47	
		12/15/2015	3.82	0.15	0.59	
S-4	7/2/2014	13.49	11.6	1	2014: 41	
	9/11/2014	7.63	0.09	20		
	12/20/2014	7.50	0.25	20		
	GM-5A	3/6/2015	2.01	0.26	4.55	2015: 8.79
		5/21/2015	0.69	0.07	1.61	
		9/2/2015	0.83	0.29	1.40	
		12/15/2015	0.95	0.19	1.23	
S-4	7/2/2014	0.34	NA	Sock Installed	--	
	9/11/2014	0.00	NA	Sock Replaced		
	12/20/2014	0.00	NA	Sock Replaced		
	3/6/2015	0.00	NA	Sock Installed		
	5/21/2015	0.00	NA	Sock Installed		
	9/2/2015	0.00	NA	NC		
	12/15/2015	0.00	NA	NC		
Sources: Table 3 of 2015 and 2016 Woodard & Curran Data Summary Reports NA = LNAPL removal was not required at that time NC = the 2-inch absorbent sock was in good condition and did not require a replacement						

# Appendix H: Map of Historical Wells



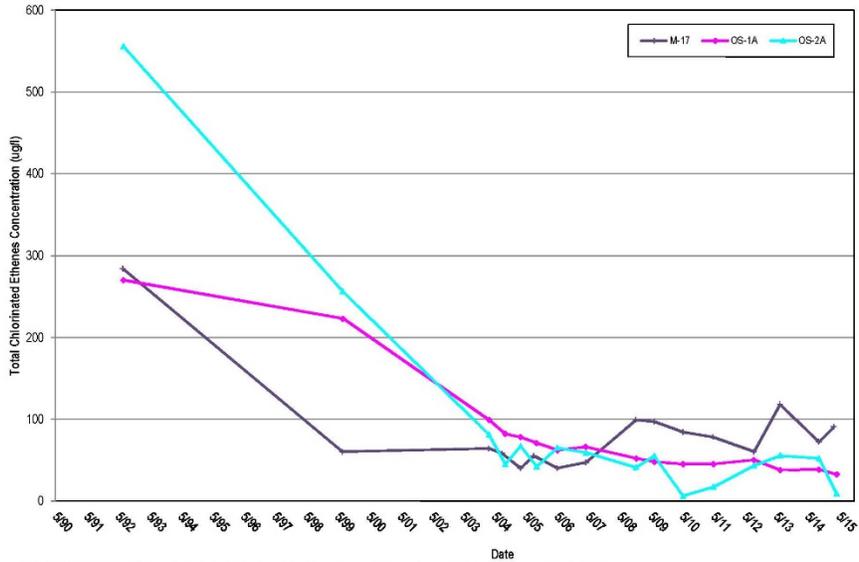
## Appendix I: Alluvial Aquifer Contaminant Source Area Data Review

Table I-1: Contamination Source Zone Wells with MCL Exceedances

Contaminant	2011	2012	2013	2014	2015
Benzene	M-2, MW-15B, MW-14BR, S-10 and M-1R	M-2 and MW-15B	M-2 and MW-15B	M-2, MW-15B and MW-14BR	M-2 and MW-15B
Chlorobenzene	M-2, MW-14BR MW-15B, OS-1A, OS-2B and S-10	M-2, MW-14BR, MW-15B, OS-1A, OS-2A and OS-2B	M-2, MW-14BR, MW-15B, OS-1A, OS-2A and OS-2B	M-2, MW-14BR, MW-15B, OS-1A, OS-2A and OS-2B	M-2, MW-14BR, MW-15B, OS-1A and OS-2B
Tetrachloroethene	M-17	M-17	M-17	M-17	M-17
TCE	M-17, MW-3B and OS-7B	M-17	M-17, MW-3B and OS-7B	M-17 and OS-7B	M-17, OS-7AR and OS-7B
cis-1,2-Dichloroethene	S-10	<i>Below MCL</i>	<i>Below MCL</i>	S-10	S-10
Vinyl chloride	S-10 and OS-2B	S-10, OS-1A, OS-2A and OS-2B	S-10, OS-1A, OS-2A and OS-2B	S-10, OS-1A, OS-2A and OS-2B	S-10, OS-1A and OS-2B
1,3-Dichlorobenzene	MW-14BR, OS-1A and OS- 2B	MW-14BR, OS-1A, OS-2A and OS-2B	MW-14BR, OS-1A, OS-2A, OS-2B, M-15 and MW- 15	MW-14BR, OS-1A and OS-2B	MW-14BR, OS-1A and M-15
1,4-Dichlorobenzene	M-15, MW-14BR, MW-15B, OS-1A, OS-2B and M-1R	M-15, MW-14BR, MW-15B, OS-1A, OS-2A and OS-2B	M-15, MW-14BR, MW-15B, OS-1A, OS-2A and OS-2B	M-15, MW-14BR, MW-15B, OS-1A, OS-2A and OS-2B	M-15, MW-14BR, MW-15B, OS-1A and OS-2B
1,2,4-Trichlorobenzene	M-15, MW-15B, MW-14BR, OS-2A, OS-2B, OS-3B, S-12R and M-1R	M-15, MW-15B, MW-14BR, OS-2A, OS-2B, OS-3A, OS-3B and S-12R	M-15, MW-15B, OS-2A, OS-2B, OS-3B and S-12R	M-15, MW-15B, MW-14BR, OS-2A, OS-2B, OS-3A, OS-3B and S-12R	M-15, MW-15B, MW-14BR, OS-2B, OS-3B and S-12R
Total PCBs	M-2, M-15, M-17, S-12R, MW-14BR, MW-15A, MW-15B, S-10, M-5 and M-1R	M-2, M-15, M-17, S-12R, MW-14BR, MW-15A, MW-15B and S-10	M-2, M-15, M-17, S-12R, MW-14BR, MW-15A and MW-15B	M-2, M-15, M-17, S-12R, MW-14BR, MW-15A, MW-15B and S-4	M-2, M-15, M-17, S-12R, MW-14BR, MW-15A, MW-15B and S-10

Sources: 2012-2016 Woodard & Curran Data Summary Reports

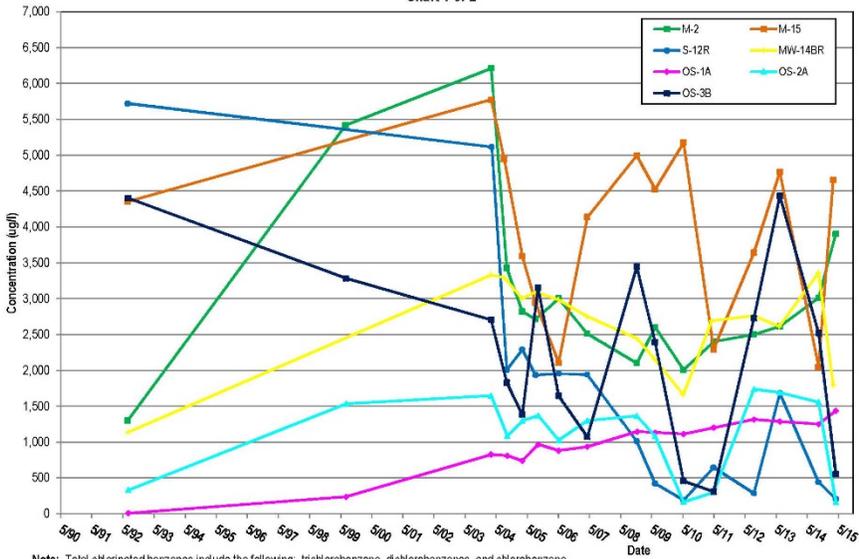
Time-Concentration Trend Chart: Total Chlorinated Ethenes  
Source Zone Wells



Note: Total chlorinated ethenes include the following: tetrachloroethene, trichloroethene, dichloroethenes, and vinyl chloride.

11/17/138-Source\_Charts-2015

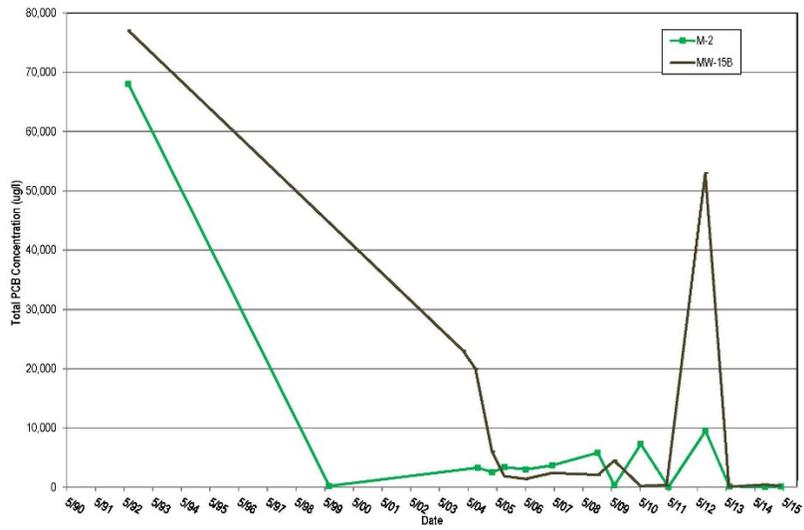
Time-Concentration Trend Chart: Total Chlorinated Benzenes  
Source Zone Wells  
Chart 1 of 2



Note: Total chlorinated benzenes include the following: trichlorobenzene, dichlorobenzenes, and chlorobenzene.

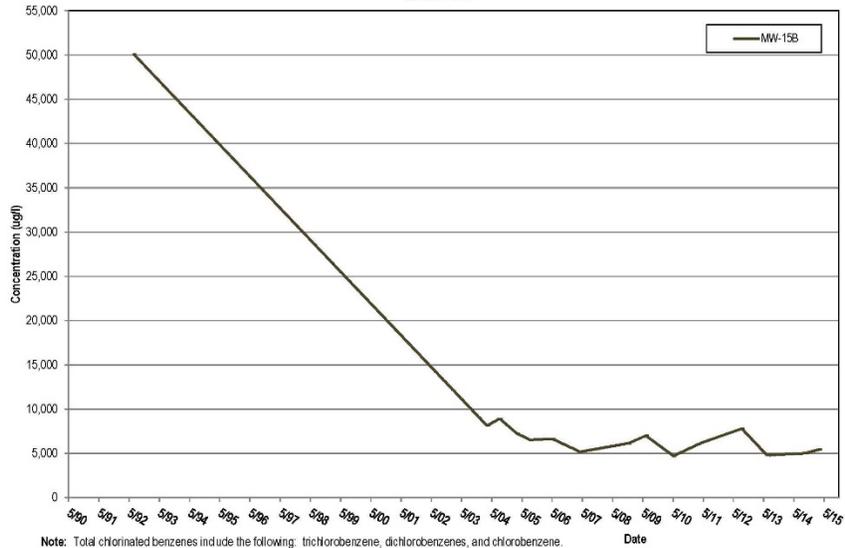
11/17/138-Source\_Charts-2015

Time-Concentration Trend Chart: Total PCBs  
Source Zone Wells  
Chart 2 of 2



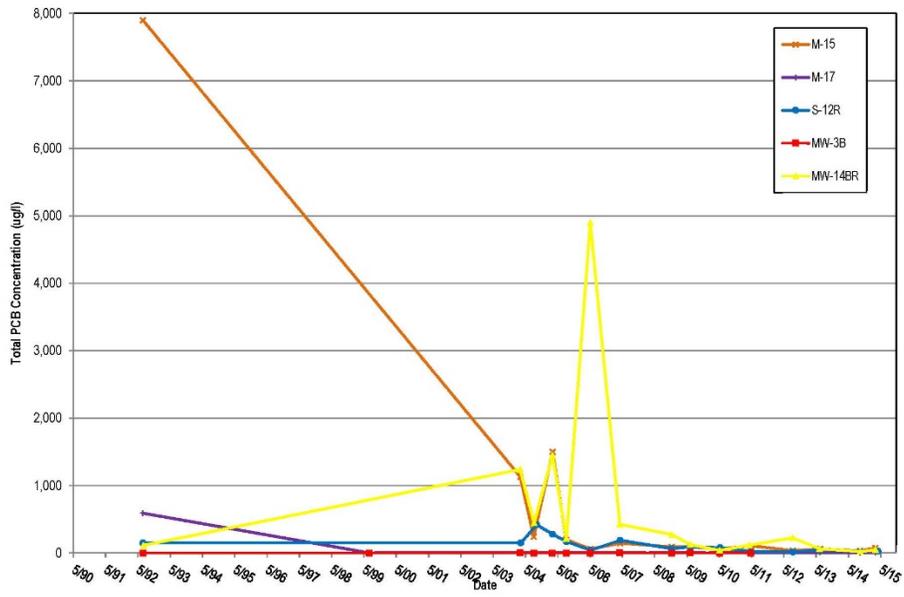
11/17/138-Source\_Charts-2015

Time-Concentration Trend Chart: Total Chlorinated Benzenes  
Source Zone Wells  
Chart 2 of 2



11/17/138-Source\_Charts-2015

Time-Concentration Trend Chart: Total PCBs  
Source Zone Wells  
Chart 1 of 2



11/17/138-Source\_Charts-2015

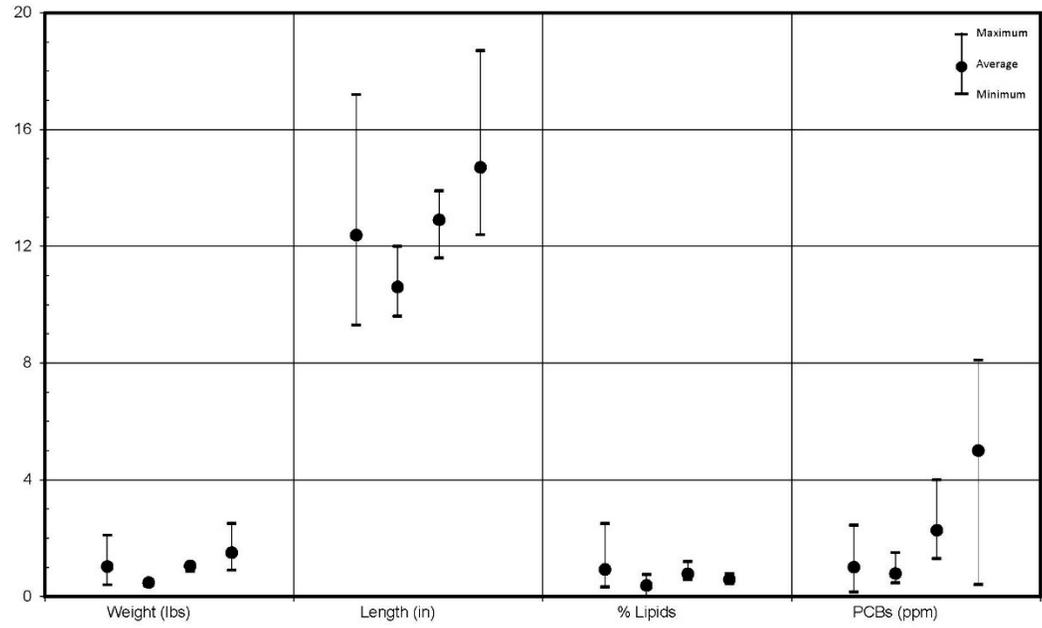
## Appendix J: 2015 Fish Tissue Sampling Data and Charts

Sample ID	Species	Weight (pounds)	Length (inches)	Date Sampled	Perc. Lipids (by weight)	PCB Results (as received, ug/kg)							
						PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254	PCB-1260	Total PCBs
15CARP1	Carp	4.3	21.3	10/7/2015	1.6	<1,700	<1,700	<1,700	<1,700	<1,700	18,000 J	19,000 J	<b>37,000</b>
15CARPD <sup>(2)</sup>	Carp	-( <sup>2</sup> )	-( <sup>2</sup> )	10/7/2015	1.9	<1,700	<1,700	<1,700	<1,700	<1,700	11,000	12,000	<b>23,000</b>
15CARP2	Carp	3.9	19.9	10/7/2015	1.6	<340	<341	<342	<343	<344	2,900	3,800	<b>6,700</b>
15CARP3	Carp	7.0	21.2	10/7/2015	2.6	<1,700	<1,700	<1,700	<1,700	<1,700	9,100	14,000	<b>23,100</b>
15CARP4	Carp	8.0	23.8	10/7/2015	9.4	<1,700	<1,700	<1,700	<1,700	<1,700	15,000	20,000 J	<b>35,000</b>
15CARP5	Carp	3.5	19.8	10/7/2015	1.9	<1,700	<1,700	<1,700	<1,700	<1,700	5,300	6,800	<b>12,100</b>
15CARP6	Carp	1.8	16.9	10/7/2015	0.5	<340	<341	<342	<343	<344	2,200	4,400	<b>6,600</b>
15SMB01	Smallmouth Bass	2.5	18.7	10/7/2015	0.46	<330	<330	<330	<330	<330	2,200	5,300	<b>7,500</b>
15SMB02	Smallmouth Bass	1.5	14.7	10/7/2015	0.78	<340	<340	<340	<340	<340	2,400	3,400	<b>5,800</b>
15SMB03	Smallmouth Bass	1.7	15.0	10/7/2015	0.45	<170	<170	<170	<170	<170	980	1,700	<b>2,680</b>
15SMB04	Smallmouth Bass	0.9	12.4	10/7/2015	0.66	<34	<34	<34	<34	<34	160	250	<b>410</b>
15SMB05	Smallmouth Bass	1.2	13.6	10/7/2015	0.66	<330	<330	<330	<330	<330	3,400	4,700	<b>8,100</b>
15SMB06	Smallmouth Bass	1.3	13.7	10/7/2015	0.50	<330	<330	<330	<330	<330	2,200	3,300	<b>5,500</b>

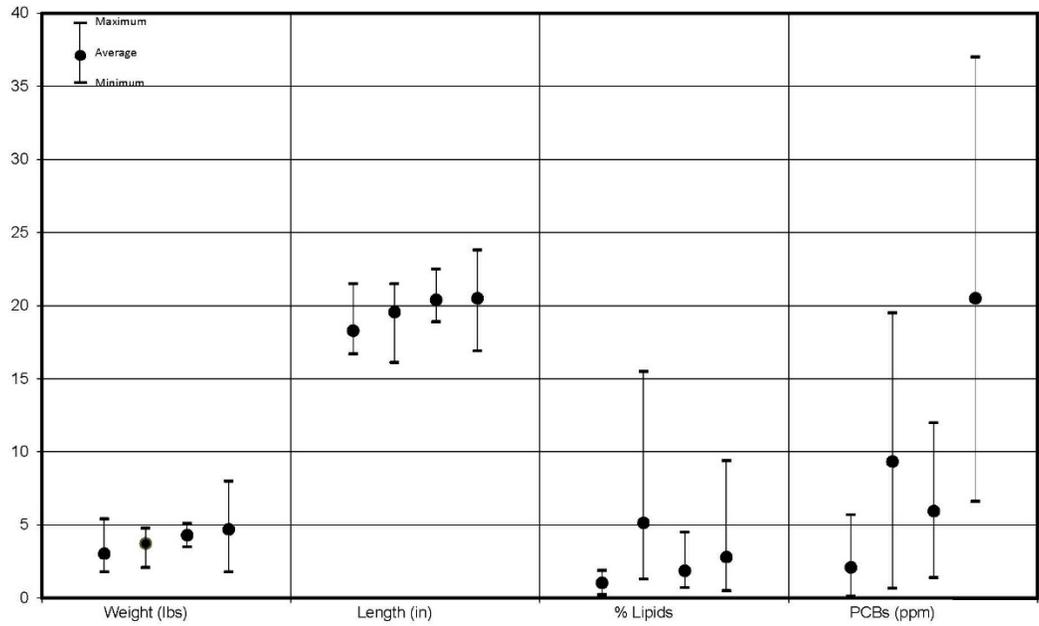
### Notes:

1. "ug/kg" is micrograms per kilogram (parts per billion).
2. 15CARPD is a duplicate of 15CARP1.
3. J indicates estimated value.
4. All tissue samples are descaled, skin-on fillets.
5. All specimens were collected from the Shenango River between the water plant and Clark Street.

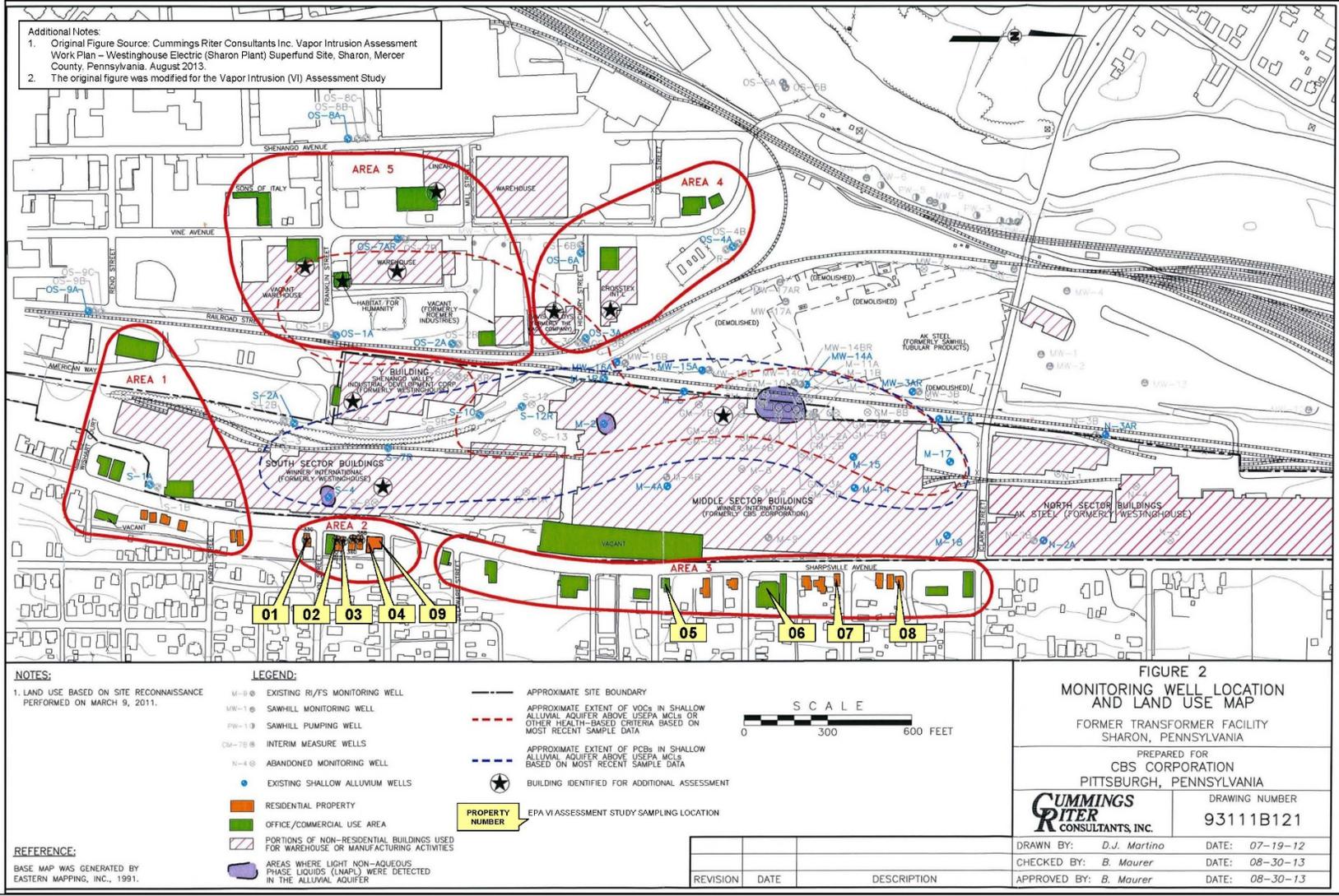
FIGURE 1  
Bass Sample Results - 2003 / 2005 / 2010 / 2015



**FIGURE 2**  
**Carp Sample Results - 2003 / 2005 / 2010 / 2015**



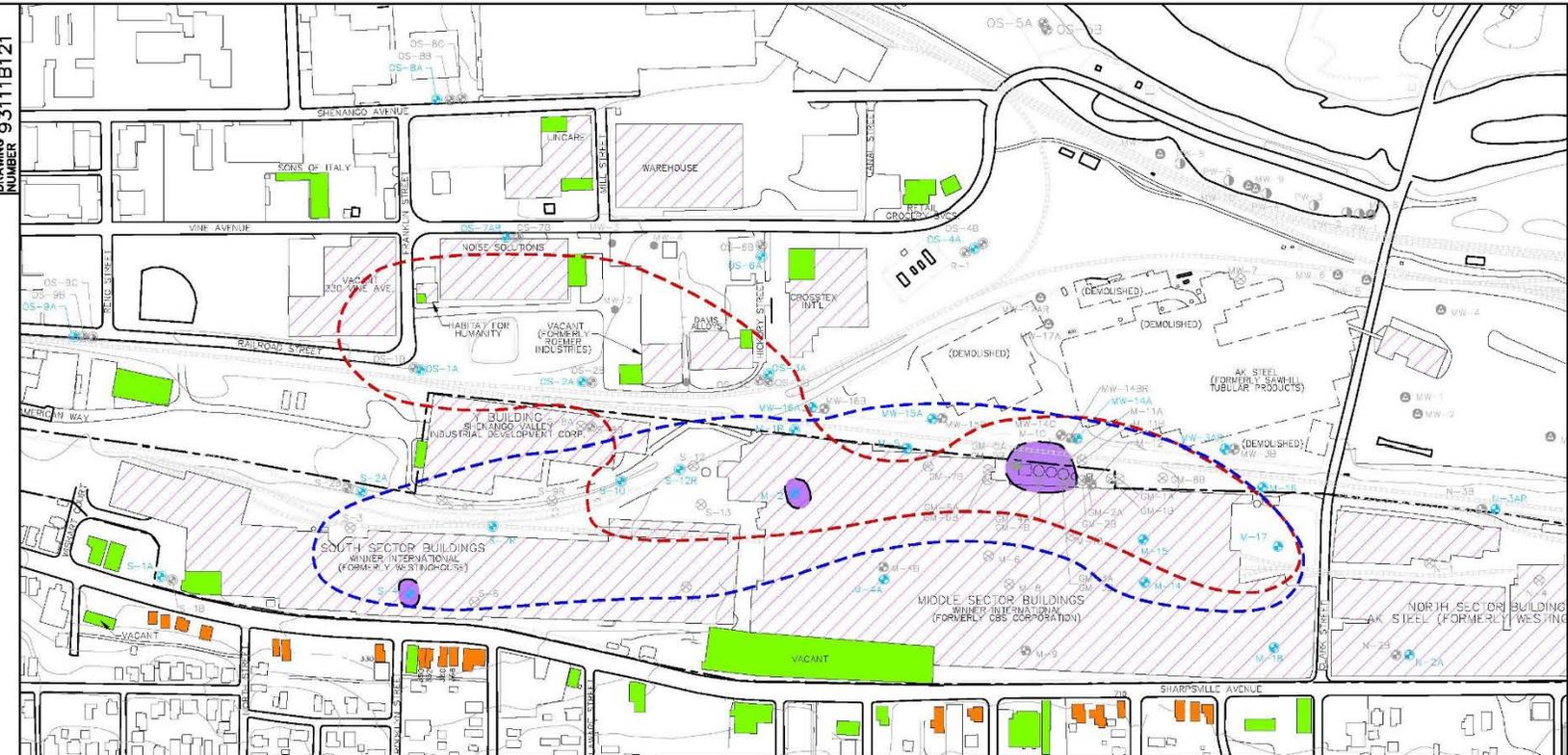
# Appendix K: 2015 and 2016 Vapor Intrusion Assessment



Westinghouse Sharon Superfund Site, OU-2  
Sharon, Pennsylvania

Figure 1-2  
Site Map and VI Sampling Locations

DRAWING NUMBER  
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**NOTES:**

1. LAND USE BASED ON SITE RECONNAISSANCE PERFORMED ON MARCH 9, 2011.

**LEGEND:**

- M-9-0 EXISTING R/F/S MONITORING WELL
- MW-1-0 SAWHILL MONITORING WELL
- PW-1-10 SAWHILL PUMPING WELL
- OM-78-0 INTERIM MEASURE WELLS
- N-4-0 ABANDONED MONITORING WELL
- EXISTING SHALLOW ALLUVIUM WELLS
- RESIDENTIAL PROPERTY
- OFFICE/COMMERCIAL USE AREA
- PORTIONS OF NON-RESIDENTIAL BUILDINGS USED FOR WAREHOUSE OR MANUFACTURING ACTIVITIES
- AREAS WHERE LIGHT NON-AQUEOUS PHASE LIQUIDS (LNAPL) WERE DETECTED BY THE ALLUVIAL AQUIFER

- APPROXIMATE SITE BOUNDARY
- - - APPROXIMATE EXTENT OF VOCs IN SHALLOW ALLUVIAL AQUIFER ABOVE USEPA WCLs OR OTHER HEALTH-BASED CRITERIA BASED ON MOST RECENT SAMPLE DATA
- - - APPROXIMATE EXTENT OF PCBs IN SHALLOW ALLUVIAL AQUIFER ABOVE USEPA WCLs BASED ON MOST RECENT SAMPLE DATA
- VI SAMPLE LOCATION (INDOOR AIR AND/OR SUBSLAB VAPOR)



**REFERENCE:**

BASIC MAP WAS GENERATED BY EASTERN MAPPING, INC., 1991.

**FIGURE 1  
SITE LAYOUT MAP**

FORMER TRANSFORMER FACILITY  
SHARON, PENNSYLVANIA

PREPARED FOR  
CBS CORPORATION  
PITTSBURGH, PENNSYLVANIA



DRAWING NUMBER  
**93111B121**

DRAWN BY: *D.J. Martino*      DATE: **07-19-12**  
 CHECKED BY: ---                      DATE: ---  
 APPROVED BY: ---                     DATE: ---

REVISION	DATE	DESCRIPTION