FOURTH FIVE-YEAR REVIEW REPORT FOR THE HELLERTOWN MANUFACTURING CO. SUPERFUND SITE NORTHAMPTON COUNTY, PENNSYLVANIA

April 2015

Prepared by

U.S. Environmental Protection Agency
Region III
Philadelphia, Pennsylvania

Cecil A. Rodrigues, Director
Hazardous Site Cleanup Division
U.S. EPA, Region III

4/27/2015
Date

This page is left intentionally blank.

TABLE OF CONTENTS

TABLES

FIGURES

ATTACHMENTS

LIST OF ACRONYMS

µg/L	microgram per liter
AOC	Administrative Order on Consent
ARAR	Applicable or Relevant and Appropriate Requirement
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cis-1,2 DCE	cis-1,2 Dichloroethene
COC	Contaminant of Concern
CSP	Champion Spark Plug
DCA	Dichloroethane
DMR	Discharge Monitoring Report
EI	Environmental Indicator
EW	Extraction Well
EPA	U.S. Environmental Protection Agency
ESD	Explanation of Significant Differences
FS	Feasibility Study
gpm	gallons per minute
GWTS	Groundwater Treatment System
IC	Institutional Control
LTRA	Long Term Remedial Action
MCL	Maximum Contaminant Level
MNA	Monitored Natural Attenuation
NCP	National Contingency Plan
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
O&M	Operation and Maintenance
OU	Operable Unit
PADEP	Pennsylvania Department of Environmental Protection
PADER	Pennsylvania Department of Environmental Resources
PAH	Polyaromatic Hydrocarbons
PCOR	Preliminary Close-Out Report
PRP	Potentially Responsible Party
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RI	Remedial Investigation
ROD	Record of Decision
RPM	Remedial Project Manager
RSL	Risk Screening Level
SSL	Soil Screening Level
SWRAU	Site-Wide Ready for Anticipated Use
U.S.C.	United States Code
VI	Vapor Intrusion
VOC	Volatile Organic Compound

EXECUTIVE SUMMARY

The Hellertown Manufacturing Company Superfund Site (Site), located in Hellertown Borough, Northampton County, Pennsylvania, is divided into two operable units: Operable Unit 1 (OU-1) – Installation of an impermeable cover over the former unlined drainage lagoons and Operable Unit 2 (OU-2) – Installation of a groundwater extraction and treatment system. The OU-1 construction activities commenced at the site in May 1993. The Site achieved construction completion status when the Preliminary Closeout Report (PCOR) was signed on September 27, 1996.

The trigger for this fourth Five-Year Review was the completion date of the third Five-Year Review; April 29, 2010. As a result of this fourth Five-Year Review, EPA has determined that the remedial action taken at the Site to address the former lagoons area is operating and functioning as intended by the decision documents. The immediate threats have been addressed through the installation of the impermeable cover over the former lagoon areas and the stormwater conveyance system is satisfactory. The remedial action taken at the Site to address the groundwater contamination; the installation and operation of the groundwater extraction and treatment system, has resulted in a substantial decrease in the contaminant levels since initial start-up but an alternate remedy is being considered at this point to address the remaining contaminants.

The remedy is protective of human health and the environment in the short term. Exposure pathways that could result in unacceptable risks are being controlled or are incomplete. Institutional Controls, in the form of an environmental covenant, have been prepared and placed with the deed to the Site property. The Institutional Controls provide use restrictions that prohibit any activity that would interfere with the installed remedy at the Site and prevent exposure. In order to be protective in the long term, monitoring of the off-Site property for vapor intrusion must continue and EPA must determine, based on the results of an ongoing MNA evaluation and a remedy optimization review, the most appropriate option for the Site groundwater: 1) a modification to the selected remedy or 2) repair and recommencement of the groundwater extraction and treatment system activities.

The remedy for OU-1 is protective of human health and the environment. Exposure pathways that could result in unacceptable risks are being controlled. The placement of the impermeable cover over the former lagoons area continues to protect on-Site receptors from direct exposure to Site contaminants and retard the downward migration of soil contaminants to the overburden, shallow bedrock, and deep bedrock aquifers. Institutional Controls, in the form of an environmental covenant that has been filed with the deed to the property, are in-place and provide use restrictions that prohibit any activity that would interfere with the installed cap remedy.

The remedy for OU-2 is protective of human health and the environment in the short term. The contaminated groundwater plume is limited to the general Site area, contaminant levels seem to have stabilized, and exposure pathways are incomplete. Institutional Controls, in the form of an environmental covenant that has been filed with the deed to the property, are in-place and provide use restrictions that prohibit any activity that would interfere with the groundwater remedy and prevent exposure. In order to be protective in the long term,

monitoring of the off-Site property for vapor intrusion must continue and EPA must determine, based on the results of an ongoing MNA evaluation and a remedy optimization review, the most appropriate option for the Site groundwater: 1) a modification to the selected remedy or 2) repair and recommencement of the groundwater extraction and treatment system activities. The evaluation of the remedy is expected to be complete by December 31, 2016. Vapor intrusion sampling at the off-Site property will continue until it is determined that the potential for it to occur no longer exists.

Government Performance and Results Act Measure Review

The Government Performance and Results Act holds federal agencies accountable for using resources wisely and achieving program results. As part of this Five-Year Review, two environmental indicators (EI) and one land revitalization measure were reviewed. The status of these measures is presented below:

Performance Measure	Progress Category/Status
Site-Wide Human Exposure EI	Current human exposure is under control.
Contaminated Groundwater Migration EI	Contaminated groundwater migration is under control.
Site-Wide Ready for Anticipated Use (SWRAU)	Conditions for SWRAU status have been achieved.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: Hellertown Manufacturing Company Superfund Site		
EPA ID: PAD002390748		
Region: 3	**State:** PA	**City/County:** Hellertown/Northampton County

SITE STATUS	
NPL Status: Final	
Multiple OUs? Yes (two)	**Has the site achieved construction completion?** Yes

REVIEW STATUS
Lead agency: U.S. EPA
Author name (Federal or State Project Manager): Timothy Gallagher
Author affiliation: U.S. EPA Region 3
Review period: July 2014 – April 2015
Date of site inspection: September 10, 2014
Type of review: Statutory
Review number: 4
Triggering action date: April 29, 2010
Due date *(five years after triggering action date)*: April 29, 2015

Issues/Recommendations
OU(s) without Issues/Recommendations Identified in the Five-Year Review:
OU-1, Impermeable cap

Issues and Recommendations Identified in the Five-Year Review:	
Issue 1 (OU-2)	**Issue Category:** Remedy Performance
	Issue: The groundwater extraction and treatment system is inoperable. PADEP has requested permission to perform an evaluation to determine the effectiveness of MNA at the Site.
	Recommendation: Complete MNA sampling and optimization review to determine the future course of action for the groundwater remedy.

Affect Current Protectiveness	Affect Future Protectiveness	Implementing Party	Oversight Party	Milestone Date
No	Yes	EPA/PADEP	EPA	12/31/2016

Issue 2 (OU-2)	**Issue Category**: Monitoring			
	Issue: Vapor Intrusion at the off-Site property.			
	Recommendation: Continue vapor intrusion sampling at the off-Site property.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	Yes	EPA/PADEP	EPA	4/29/2020

Protectiveness Statements

Operable Unit:	*Protectiveness Determination:*	*Addendum Due Date:*
OU-1	Protective	Not applicable

Protectiveness Statement: The remedy for OU-1 is protective of human health and the environment. Exposure pathways that could result in unacceptable risks are being controlled. The placement of the impermeable cover over the former lagoons area continues to protect on-Site receptors from direct exposure to Site contaminants and retard the downward migration of soil contaminants to the overburden, shallow bedrock, and deep bedrock aquifers. Institutional Controls, in the form of an environmental covenant that has been filed with the deed to the property, are in-place and provide use restrictions that prohibit any activity that would interfere with the installed cap remedy.

Operable Unit:	*Protectiveness Determination:*	*Addendum Due Date:*
OU-2	Will be Protective	Not applicable

Protectiveness Statement: The remedy for OU-2 is protective of human health and the environment in the short term. The contaminated groundwater plume is limited to the general Site area, contaminant levels seem to have stabilized, and exposure pathways are incomplete. Institutional Controls, in the form of an environmental covenant that has been filed with the deed to the property, are in-place and provide use restrictions that prohibit any activity that would interfere with the groundwater remedy and prevent exposure. In order to be protective in the long term, monitoring of the off-Site property for vapor intrusion must continue and EPA must determine, based on the results of an ongoing MNA evaluation and a remedy optimization review, the most appropriate option for the Site groundwater: 1) a modification to the selected remedy or 2) repair and recommencement of the groundwater extraction and treatment system activities. The evaluation of the remedy is expected to be complete by December 31, 2016. Vapor intrusion sampling at the off-Site property will continue until it is determined that the potential for it to occur no longer exists.

I. INTRODUCTION

The purpose of the Five-Year Review is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in Five-Year Review reports. In addition, Five-Year Review reports identify issues found during the review, if any, and specify recommendations to address those issues.

The U.S. Environmental Protection Agency (EPA) is preparing this Five-Year Review Report pursuant to Section 121(c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Contingency Plan (NCP). CERCLA §121(c) provides:

> *If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section 104 or 106, the President shall take or require such action.*

EPA interpreted this requirement further in the NCP at 40 Code of Federal Regulations (C.F.R.) §300.430(f)(4)(ii), which provides:

> *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 has conducted a Five-Year Review of the remedial actions implemented at the Hellertown Manufacturing Company Superfund Site (Site) in Hellertown, Northampton County, Pennsylvania. This is the fourth Five-Year Review for the Site. The action triggering this statutory review was the completion of the third Five-Year Review; April 29, 2010. This review was conducted from July 2014 through April 2015 by the assigned Remedial Project Manager (RPM). This report documents the results of the review.

This Five-Year Review is statutorily required because the implemented remedy resulted in hazardous substances being left on the Site above levels that allow for unlimited use and unrestricted exposure.

II. SITE CHRONOLOGY

Table 1 – Site Chronology

Event	Date
Plating and degreasing processes are performed at the Site.	1918 – 1982
Pennsylvania Department of Environmental Resources (PADER) conducts the Preliminary Assessment of the property.	1984
Site Community Relations Plan is finalized.	June 1987
The potentially responsible party (PRP) and EPA enter into an Administrative Order on Consent (AOC).	February 1988
The Site is placed on the National Priorities List (NPL).	March 1989
The draft Remedial Investigation/Feasibility Study (RI/FS) is complete and available to the public.	July 1991
The Proposed Plan, identifying EPA's preferred remedy, is presented to the public; start of public comment period.	July 1991
Public Meeting is held.	August 1991
The Record of Decision (ROD) is signed.	September 30, 1991
Start of on-Site Remedial Action (RA).	May 1993
Completion of the installation of the on-Site groundwater treatment system and impermeable cover.	January 1996
Commencement of the groundwater treatment system operation.	March 1996
Preliminary Closeout Report (PCOR) completed.	September 27, 1996
Groundwater treatment system taken off-line due to screen deterioration and pump malfunction.	August 1997
Groundwater treatment system considered operational and functional and commencement of the Long Term Remedial Action (LTRA).	September 26, 1997
Installation of a new extraction well.	March 1998
Design Review Results and Recommendations report completed.	October 1998
Groundwater treatment system operation halted and modifications implemented.	May-July 1999
Groundwater treatment system re-started.	August 1999
Initial Five-Year Review completed.	April 21, 2000
Final Remediation System Evaluation Report completed.	November 14, 2001
Transfer of operable unit 1 (OU-1) landfill cover O&M responsibility to the Pennsylvania Department of Environmental Protection (PADEP).	June 2002

Soil gas survey conducted in the vicinity of monitoring well CSP-7.	November 2002
Soil sampling conducted in the vicinity of monitoring well CSP-7.	August 2003
Remediation System Evaluation Follow-up report (Site Optimization Tracker).	January 24, 2005
Second Five-Year Review is completed.	April 29, 2005
Completion of the LTRA and transfer of O&M responsibilities for the groundwater treatment system (OU-2) to the PADEP.	September 26, 2007
Performance of a Vapor Intrusion (VI) study on the former manufacturing building and two adjacent private residences.	June 2008 – March 2009
Groundwater Treatment System Shutdown/Rebound test.	April 2009 - October 2009
Third Five-Year Review is completed.	April 29, 2010
ESD to change groundwater cleanup standard and add a requirement for a cumulative risk assessment.	May 14, 2012
The Site environmental covenant is filed with the Northampton County recorder of deeds.	August 2, 2012
Vapor Intrusion follow-up sampling at adjacent property.	February 2013
SWRAU determination.	August 6, 2013
PADEP Request to Reevaluate the Groundwater Remedy.	April 28, 2014
Geoprobe sampling at numerous Site areas.	November 2014

III. BACKGROUND

This section describes the physical characteristics, land and resource use, history of contamination, initial response and basis for taking action.

Physical Characteristics

The Site is located at 1770 Main Street (PA Route 412) in the borough of Hellertown, Pennsylvania (Figure 1).

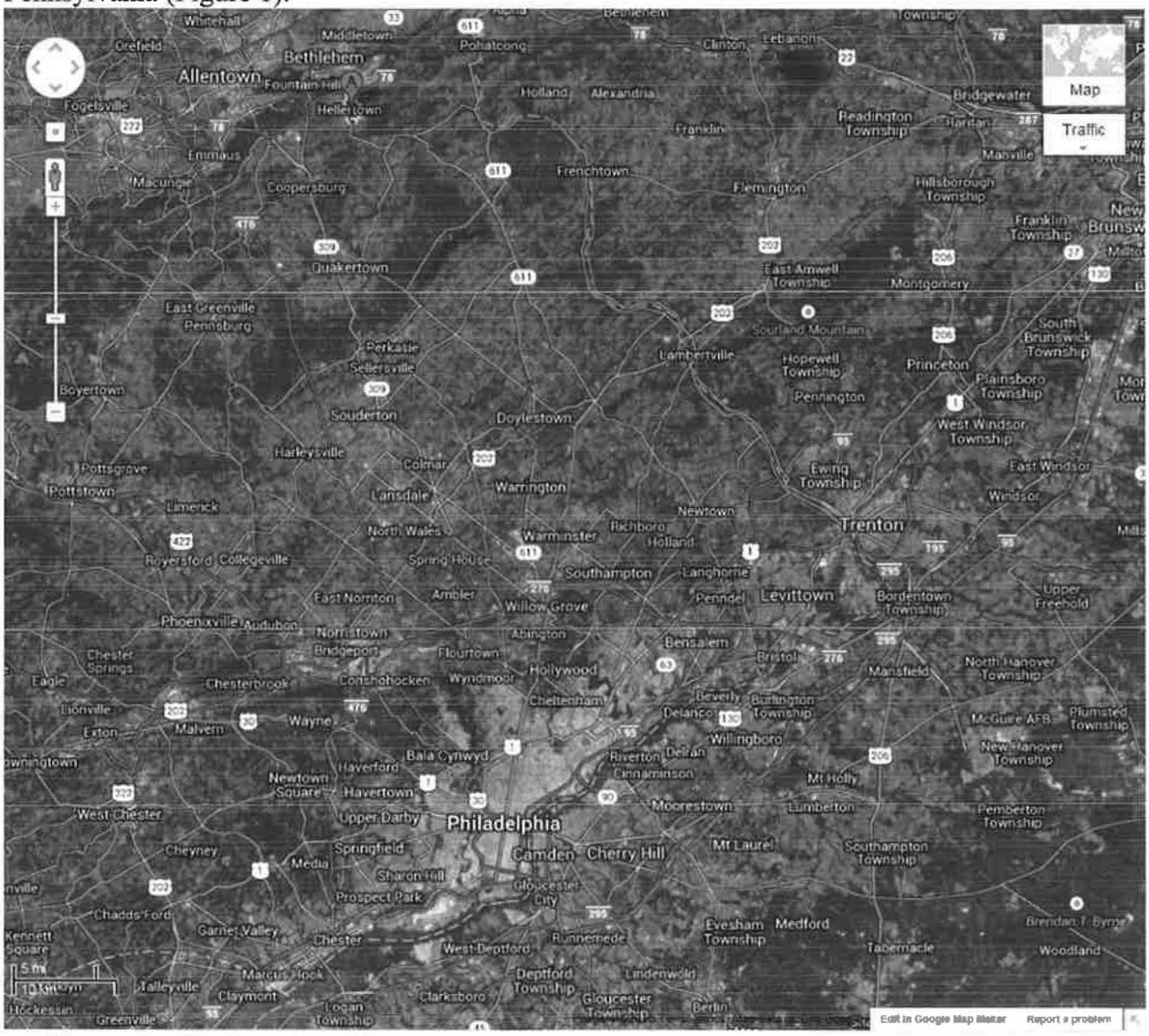


Figure 1 - Site Location Map

Hellertown is a community of approximately 6,000 residents located in Northampton County, Pennsylvania, approximately 1.5 miles southeast of the city of Bethlehem and 50 miles north of the city of Philadelphia in the southeast region of the state. Site coordinates: 40° 35' 43.5"N, 75° 20' 34"W.

The Site occupies an 8.64-acre property which contains a 124,000 square-foot brick

(former) manufacturing building located at the east (front) end of the property, facing Main Street (Route 412). Behind the manufacturing building is the former lagoons area that was capped as a portion of the Operable Unit 1 remedy. The former lagoons area is currently paved. The Site is bound by Interstate Highway 78 to the north, residential and commercial properties to the south, Main Street and undeveloped land to the east, and by the Norfolk Southern Railroad property and forested land to the west. Additionally, Saucon Creek is located beyond the Norfolk Southern property approximately 600 feet to the west of, and downgradient from, the Site. A Site Layout map is included as Figure 2.

Figure 2 – Site Layout Map

Photographs of the Site are included in Attachment 1.

The Site is underlain by deeply weathered Cambrian and Pre-Cambrian rock. The Tomstown formation lies directly under the Site and is composed primarily of dolomitis limestones with varying amounts of lime-containing shales and phylitic schists. The bedrock in the vicinity of the Site is overlain by saprolite and a mantle of undifferentiated alluvium and

colluvium. The combined thickness of these units ranges from zero to forty-one feet. The five waste lagoons were installed in the saprolite at the west end of the Site.

Land and Resource Use

The Site was developed in 1918 for use as a spark plug manufacturing facility. As part of the manufacturing process, chrome and zinc plating processes, machining operations, and degreasing processes were conducted on-Site. It was acquired by Hellertown Manufacturing Company, a subsidiary of the Champion Spark Plug Company (CSP), in 1950. The manufacturing company ceased production in 1982. Paikes Enterprises, Inc. purchased the property in 1988 and remains the current owner.

The property contains the former manufacturing building, the groundwater treatment plant building, and the asphalt-capped former lagoons area. The former manufacturing building is currently vacant. An 8-foot high chain-link fence is installed around the Site perimeter. The surrounding area land use is residential, commercial, and recreational. Saucon Creek, which runs through Saucon Park, is used for swimming and fishing. Saucon Park is located immediately west of Saucon Creek. The property is currently zoned "Highway Commercial within the Flexible Redevelopment Overlay District".

In 2003, new townhomes were constructed between the Norfolk Southern property and Saucon Creek, along Ravena Road, immediately southwest of the Site property. Potable water is supplied to these townhomes by the Bethlehem Department of Water and Sewer Resources. Both Hellertown Borough and the City of Bethlehem mandate connection to the public water supply system for new residential construction. There are no known drinking water residential wells in the area immediately surrounding the Site.

The groundwater aquifer underlying the Site has been classified as a Class IIA aquifer, a current source of drinking water. The bulk of the regional groundwater moves through carbonate rock formations, including the Leithsville Formation, that are most likely interconnected hydraulically. The groundwater flow pattern in the bedrock in the vicinity of the Site is complex. However, water level measurements in monitoring wells indicate that groundwater generally flows in a westerly direction across the Site, ultimately discharging into Saucon Creek.

History of Contamination

As stated earlier, the Hellertown Manufacturing Company Site was developed in 1918 as a spark plug manufacturing facility. Site operations included chrome and zinc plating operations, machining operations, and degreasing processes that utilized the chemical trichloroethene (TCE). Numerous underground storage tanks for storing machine oil and fuel oil were utilized as part of the Site operations as well. Between 1930 and 1976, plating wastes and spent degreasing fluids were disposed in five on-Site lagoons, which varied in depth from 17 feet to a maximum of 28 feet below ground surface (bgs). The lagoons covered an area of approximately 3.5 acres and had a total storage capacity of approximately 500,000 cubic feet. The lagoons, all situated on the western half of the Site property, as shown on Figure 3, were not lined, allowing disposed waste chemicals to seep into the soil and bedrock beneath the lagoons, ultimately contaminating the underlying groundwater. According to the Pennsylvania Department of Environmental Resources (PADER, which subsequently changed its name to the

Pennsylvania Department of Environmental Protection (PADEP)), as noted in their 1984 Preliminary Assessment, the waste disposed in the on-Site lagoons included, among other things, waste solutions and sludges generated by the manufacturing facility, zinc plating waste, chrome dip waste, cleaners, and cutting oils.

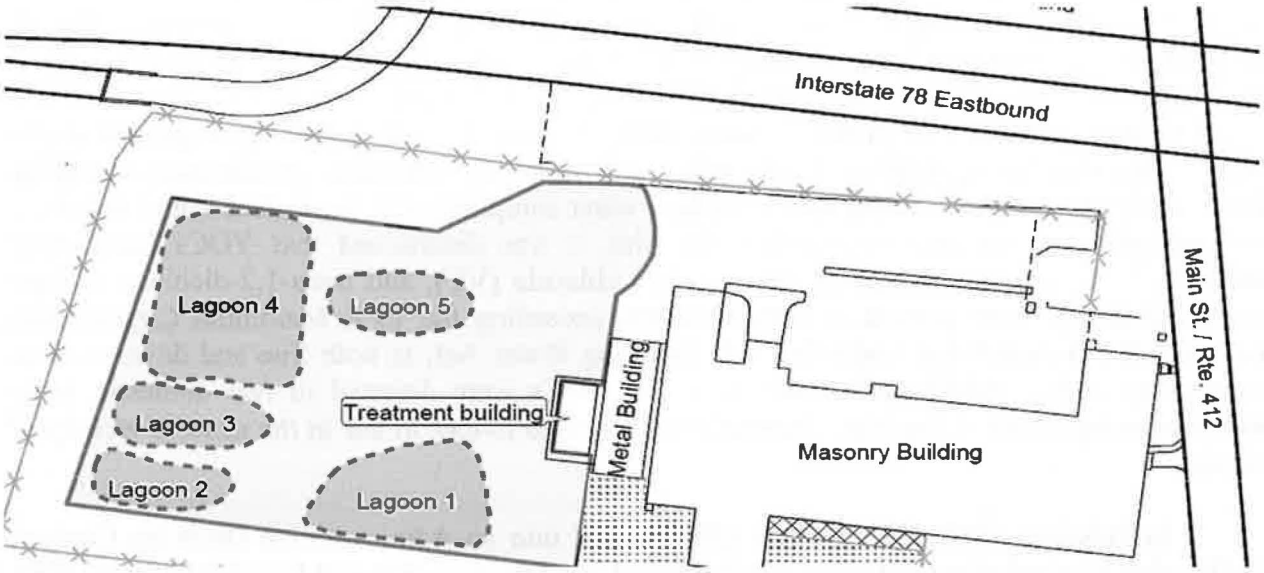


Figure 3 – Layout of the Waste Lagoons

The lagoons were phased out of use by 1976 and backfilled primarily with material imported from off-Site. Records show that 60,000 cubic yards of this imported material was excavated soil from the construction of the Bethlehem wastewater treatment plant. Other materials used as fill included undocumented quantities of sillment powder, spark plug insulators, reject spark plugs and core assemblies, crushed stone, sand, broken brick and block, and asphalt surface and stone ballast from a nearby street expansion. Approximately two feet of topsoil was placed atop the backfill materials.

Spills also occurred during the course of Site operations, adding to the groundwater contamination. Additionally, a gravel-filled area located near the southwest corner of the manufacturing building was used as an equipment wash area. This area experienced spillage associated with the delivery of product to the adjacent Site underground storage tanks area. EPA identified the equipment wash area as an additional source of volatile organic compound (VOC) contamination in groundwater. The former equipment wash area is located immediately east of monitoring well CSP-7.

Contamination at the Site was discovered during a region-wide inventory of disposal lagoons conducted by the Sanitary Water Board of the Pennsylvania Department of Health and the Delaware River Basin Commission in 1970. Contamination within the backfilled lagoon soils and underlying lagoon sediment consisted primarily of VOCs, including TCE and its breakdown products, polyaromatic hydrocarbons (PAHs), and metals. Groundwater contamination consisted of VOCs and metals.

Initial Response

The Hellertown Manufacturing Company was able to phase out the use of the disposal lagoons by 1976 in favor of treating their wastewater and discharging it to the municipal sewer system (after the construction of the new wastewater facility in Bethlehem, PA). In 1982, after the plant operations ceased, CSP initiated procedures related to the sale of the property. Based on the results presented in the Preliminary Assessment and groundwater data collected by CSP's environmental consultant, O. H. Materials Company, in December 1984 and January 1985, PADER requested that CSP prepare a work plan for additional subsurface investigations at the Site. After conducting additional subsurface soil sampling activities, groundwater sampling from newly installed monitoring wells, surface water sampling of Saucon Creek, and domestic well sampling of the area surrounding the Site, it was determined that VOCs (methylene chloride, TCE, tetrachloroethylene (PCE), vinyl chloride (VC), and trans-1,2-dichloroethylene (trans-1,2-DCE)) were present at concentrations exceeding the EPA Maximum Contaminant Levels (MCLs) established under the Safe Drinking Water Act, in both Site and downgradient monitoring wells. Additionally, trace levels of VOCs were detected in two domestic wells located downgradient of the Site. *Domestic wells are no longer in use in the general vicinity of the Site.*

In February 1988, CSP and the EPA entered into an Administrative Order by Consent (AOC) that required that CSP conduct a Remedial Investigation (RI) and Feasibility Study (FS). The purpose of the RI was to determine the full nature and extent of the threat to the public health and welfare or the environment caused by the release or threatened release of hazardous substances, pollutants or contaminants from the Site. The purpose of the FS was to develop and evaluate appropriate alternatives for remedial actions to prevent, mitigate or otherwise respond to or remedy the release or threatened release of hazardous substances, pollutants or contaminants from the Site. The Site was listed on the National Priorities List (NPL) in March 1989. A draft RI/FS was completed and made available to the public in July 1991. In September 1991, the ROD was signed.

Basis for Taking Remedial Action

The following hazardous substances have been detected in groundwater and/or soil/sediment at the Site:

Groundwater

PCE, TCE, cis-1,2-dichloroethylene (cis-1,2-DCE), trans-1,2-DCE, 1,1,1-trichloroethane (1,1,1-TCA), VC, benzene, acetone, beryllium, chromium, cyanide (total), nickel, selenium, and antimony.

Due to the presence of TCE, PCE, VC, 1,2-DCE, and various metals, it was determined that risks from exposure to groundwater were significant. In order to reduce the risk associated with exposure to Site groundwater, the ROD established groundwater cleanup standards for the following VOCs that have been identified as the contaminants of concern (COC) for the Site groundwater: benzene, PCE, TCE, VC, cis-1,2-DCE, and trans-1,2-DCE.

Lagoon Sediment/Soil

A summary of VOC contamination in soils in the former lagoons area is presented in Table 1 of the ROD. The COCs for soil include: TCE, PCE, 1,2-DCE, PAHs, 4-methyl-2-pentanone, carbon disulfide, ethylbenzene, xylenes (total), chromium, cyanide (total), and cadmium.

IV. REMEDIAL ACTIONS

Remedy Selection

The ROD was signed on September 30, 1991. The ROD did not describe the remedies associated with the lagoon soils and groundwater as separate operable units but, for administrative purposes, the impermeable cover was later designated as OU-1 and the groundwater extraction and treatment system as OU-2. The selected remedy also required long-term groundwater monitoring and the implementation of deed restrictions. The ROD described the actions required to address the contaminated soil and groundwater associated with the past Site operations:

OU-1, Impermeable Cover. The associated performance standards for the impermeable cover and stormwater conveyance system are as follows:

- Placement of an impermeable cover over the entire former lagoon area. The impermeable cover shall be designed to achieve a permeability of no more than 1×10^{-7} centimeters per second; and
- Surface water runoff controls. The installed runoff controls shall effectively collect stormwater from the parking lot and former lagoons area and convey it to an existing storm drainage pipe that runs along the northern boundary of the Site.

OU-2, Groundwater Extraction and Treatment. The associated performance standard for the groundwater extraction and treatment system is described below:

- Extraction and treatment, by air stripping and solids removal, of Site groundwater with discharge to Saucon Creek. Extraction, treatment, and discharge shall continue until such a time as EPA and PADEP determine that the performance standard (either the MCL for the contaminant or the background concentration of the contaminant (the Pennsylvania ARAR under 25 PA Code §§ 264.90 – 264.100), whichever is more stringent) for each contaminant in the groundwater has been achieved to the extent practicable throughout the entire area of groundwater contamination both on-Site and off-Site (an estimated period of 30 to 40 years).

Thus, the performance standard for each COC in the groundwater was the lower of the MCL or the established background concentration. But because the individual COCs were not detected in the background sampling, the performance standard was the lower of MCL or the method detection limit for the COC.

An Explanation of Significant Difference (ESD) that modified the groundwater

performance standard was signed on May 14, 2012 (described below).

Long-Term Groundwater Monitoring. A long-term groundwater monitoring program shall be implemented to evaluate the effectiveness of the groundwater extraction and treatment system.

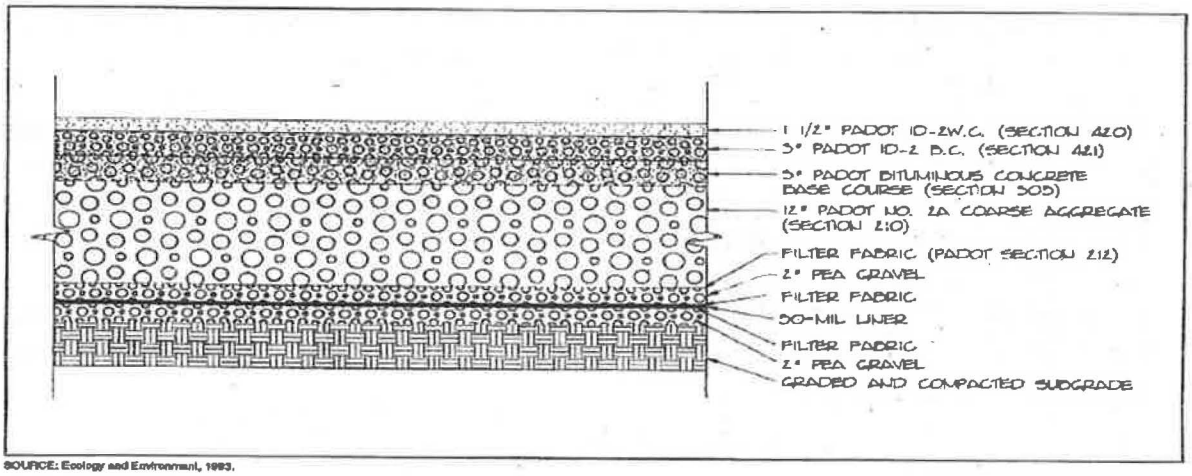
Deed Restrictions. As soon as practicable, restrictions prohibiting excavation of contaminated soils and the use of on-Site groundwater for domestic purposes shall be placed in the deed to the Site.

Remedy Implementation

As a result of failed negotiations (conducted between November 1991 and March 1992) between EPA and CSP for implementation of the selected remedy, EPA assumed the responsibility for its design and construction. (The United States, the Commonwealth of Pennsylvania, and the Settling Defendants entered into a Consent Decree, dated September 7, 2001, for reimbursement of outstanding response costs incurred by the United States and the Commonwealth in connection with the Site.)

Remedial Action construction activities were initiated in May 1993 and included the construction of the impermeable concrete and asphalt cover over the former lagoon area, installation of the surface water and runoff controls, installation of the groundwater extraction well and hydrogeologic testing of the aquifer, installation of the monitoring well network, construction of the groundwater treatment plant building and installation and operation of the groundwater treatment system components.

Impermeable Cover. The former lagoons area encompasses an area of approximately 145,000 square feet. A geosynthetic and asphalt impermeable cover system was constructed over the entire former lagoons area.



SOURCE: Ecology and Environment, 1993.

Figure 4 – Typical Cross Section of Paved Area

The asphalt and concrete cover system consists of numerous layers including a 3" bituminous concrete base course, a 3" bituminous wearing course, a 1 ½" bituminous binder course, and a surface sealant. Beneath the bituminous layer, various geosynthetic layers were

installed. The cover was required to achieve a permeability of no more than 1 x 10^{-7} centimeters per second. A cross section of the numerous layers installed atop the lagoons area is pictured in Figure 4. A stormwater collection system, consisting of pre-cast concrete catch basins and 15" PVC drainage pipes, was installed to effectively convey stormwater from the installed impermeable cap to Saucon Creek, downgradient of the Site.

Groundwater Treatment System. The groundwater treatment plant building footings, foundation walls and floor slab consist of poured concrete. The utility room was constructed of concrete masonry units. Rolled steel vertical and horizontal beams provide the structural framework for the prefabricated metal building which includes a 35' air stripper tower. Access is provided by two 7' metal frame personnel doors and a 10' x 10' roll-up, sectional door for maintenance and equipment and material handling.

Contaminated groundwater is pumped to the treatment system (See the Picture Log) from the lone extraction well, EW-1R located in the northwest corner of the asphalt-capped area. Pumped groundwater is directed to a 2,100-gallon equalization tank located within the treatment plant building, where it is collected until it is sent, via centrifugal pump, through two in-series cartridge water filters to remove particulates prior to entering the air stripper. Treated effluent enters a discharge tank located within a concrete-lined termination chamber and flows to the storm sewer system, eventually emptying into Saucon Creek. Air stripper off-gas passes through dual 2,000-pound vapor-phase granular activated carbon adsorption units prior to discharge to the atmosphere. The process flow diagram is included as Figure 5.

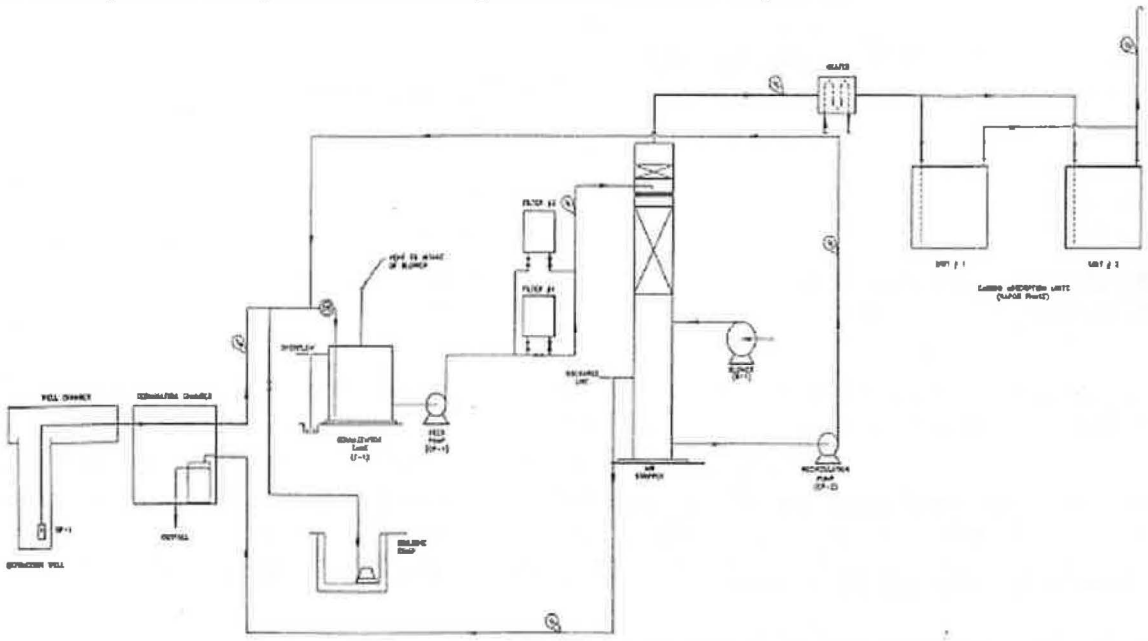


Figure 5 – Process Flow Diagram

The groundwater treatment system design criteria included the following:

- Design flow: 100 gpm
- Influent TCE concentration: 970 µg/L
- Effluent design TCE concentration: 1 µg/L

Construction of the impermeable cap and the groundwater extraction and treatment system was completed in January 1996.

The Site achieved construction completion status with the signing of the Preliminary Close-Out Report on September 27, 1996. The ROD estimated that groundwater cleanup objectives would be reached in approximately 30 to 40 years. A Final Close-Out Report will be prepared when the groundwater cleanup standards are met.

On May 14, 2012, an ESD was signed that modified the groundwater performance standard. The ESD established the MCL for each Contaminant of Concern (COC) as the modified groundwater performance standard. The ESD also added the requirement for the preparation of a cumulative risk evaluation after the MCLs have been achieved.

When EPA issued its ROD in 1991, the Agency selected as the groundwater performance standards for the COCs, the MCLs or the "background" concentrations of the COCs, whichever was lower. The MCLs are the federal standards for public drinking water supplies under the Safe Drinking Water Act; 42 U.S.C. §§ 300f-300j-26. At the time the ROD was issued, "background" was the Pennsylvania standard under 25 Pa. Code §§ 264.90-264.100. In the event that a COC was not detected in groundwater samples taken for the establishment of background concentrations, the detection limit for that COC became the Performance Standard for that COC, which was the case for this Site. Based on that rationale, the ROD identified the following groundwater performance standards:

ROD Groundwater Performance Standards

Contaminant	Detection Limit (µg/l)
Benzene	0.02
Tetrachloroethene	0.03
Trichloroethene	0.12
Vinyl Chloride	0.18
Dichloroethene (trans-1,2-DCE)	0.10
Dichloroethene (cis-1,2-DCE)	0.12

Subsequent to EPA's issuance of the ROD, the Commonwealth of Pennsylvania passed the Land Recycling and Remediation Standards Act, 35 Pa. Con. Stat. § 6026.303 legislation, commonly referred to as "Act 2", which, among other things, changed the Pennsylvania groundwater cleanup standard to the MCL. After consultation with PADEP, and in light of this change in Pennsylvania's requirements, EPA decided to change the groundwater performance standards required at the Site to the MCLs. The MCLs for the Site COCs are identified below:

MCL for Site Contaminants of Concern

Contaminant	MCL (ppb)
Benzene	5
Tetrachloroethene	5
Trichloroethene	5
Vinyl Chloride	2
Dichloroethene (trans-1,2-DCE)	100
Dichloroethene (cis-1,2-DCE)	70

Also, because groundwater which meets the MCL for individual contaminants may not meet EPA's risk-based cleanup standards (carcinogenic risk of less than 1.0 E-04 and a Hazard Index (HI) less than or equal to 1.0 cumulatively) if multiple contaminants are present, a determination of meeting the "protection of human health and the environment" statutory requirement will be performed after MCLs have been attained. Therefore, when MCLs have been attained in each monitoring well for all COCs at the Site, EPA will evaluate post-ROD groundwater sampling data and develop a trend analysis and risk assessment. The risk assessment will be based on cumulative risk across all applicable exposure routes for all COCs remaining in groundwater following achievement of the MCLs. The remediation of groundwater at the Site will continue until the risk-based cleanup standards (carcinogenic risk of less than 1.0 E-04 and a HI less than or equal to 1.0 cumulatively) are achieved.

The remaining components of the remedy selected in the 1991 ROD, including the placement of an impermeable cover over the former lagoons area, surface water runoff controls, extraction and treatment of groundwater (solids removal and air stripping) with discharge to the Saucon Creek, long-term groundwater monitoring, and deed restrictions, that put use-restrictions on Site groundwater and otherwise prevent interference with the remedy, remain unchanged.

System Operation/Operation & Maintenance

The primary activities associated with the O&M of the impermeable cover include the following:

- Visual inspection of the capped area with regard to cracks in the cap surface, settlement, and stability;
- Resealing or repaving of the capped area, as needed;
- Inspection and maintenance, as necessary, of the installed gas vents around the cover perimeter; and
- Visual inspection of the stormwater conveyance system catch basins for clogging and/or accumulation of debris.

PADEP assumed the O&M responsibilities for the impermeable cover in June 2002.

The primary activities associated with the O&M of the groundwater treatment system include the following:

- Inspection of the extraction well and treatment system for proper operation;
- Servicing and repair or replacement of the groundwater treatment system components;
- Quarterly effluent sampling to ensure effective treatment system operation and compliance with the discharge parameters; and
- Semi-annual monitoring of the Site groundwater monitoring wells.

The ten-year duration of the Long Term Remedial Action associated with OU-2 was completed on September 26, 2007. On that date, a Site inspection was conducted by EPA, PADEP officials and EPA's contractor, CDM, to document any items requiring EPA's further attention. As a result of the inspection a punchlist of minor repair items was prepared which

CDM adequately addressed shortly thereafter. The responsibility for all further Site O&M activities was transferred to PADEP in accordance with the State Superfund Contract for OU-2, dated December 17, 1992 and amended in 1994 and 2002.

In October 2008, EPA approved a PADEP request to discontinue Saucon Creek surface water and sediment sampling. The approval was granted based on historical analytical data indicating that neither the surface water nor the stream sediments have ever contained contaminants of concern (COCs) that were either over their respective MCLs or soil to groundwater pathway numeric values during the eight years of sampling (2000 – 2008). The approval was contingent upon continued monitoring of the wells directly upgradient of the Saucon Creek (CSP-16, CSP-17, CSP-18, CSP-19, and CSP-27). Any evidence of increasing COC concentrations in these wells shall constitute cause to reinstitute the surface water and stream sediment sampling program.

PADEP currently utilizes AECOM Technical Services, Inc. (AECOM) to perform the various O&M activities at the Site. AECOM's lists the current O&M program elements in the May 2014 Annual Report:

- Inspection of the groundwater extraction/treatment system and provision of appropriate maintenance, as required;
- Inspection of the impermeable cover;
- Semi-annual sampling of twenty-two (22) groundwater monitoring wells for the Site COCs; and
- Quarterly sampling of treatment system influent and effluent for the Site COCs.

On January 23, 2013, the groundwater treatment system shut down due to an apparent pump failure in the lone Site extraction well, EW-1R. The pump could not be restarted remotely by PADEP's O&M contractor, AECOM.

On February 1, 2013, AECOM visited the Site to perform non-routine repair and maintenance activities on the groundwater treatment system. The main purpose for the visit was to investigate the cause of a system shutdown on January 23, 2013. Upon inspection it was determined that the extraction well pump, EW-1R, was likely seized and that the cause was electrical in nature. During a follow-up visit to the site, AECOM attempted to further troubleshoot the extraction well failure but ultimately determined that the well was no longer functional. The pump was removed from the well in June 2014 and has not yet been replaced.

Along with the extraction well pump failure, the groundwater treatment system itself experienced significant damage during the harsh winter of 2013 – 2014. As stated in the AECOM Final 2013 Annual Groundwater Monitoring and Operation and Maintenance Report, dated May 2014:

It should also be noted that in January 2014...the building boiler heating system failed and all residual water in the plant froze, causing damage to the piping systems. Additionally it was discovered that the transfer pump that pumps water from the Equalization Tank to the treatment system had seized. A replacement pump and some pipe repairs are required prior to restarting the system. AECOM also recommends an alternative heating system, such as natural gas space

heaters, be researched should plans be made to restart the plant.

On April 8, 2014 EPA met with representatives of PADEP at their Bethlehem, PA office to discuss the current conditions and future activities at the Site. PADEP explained how the groundwater treatment system (GWTS) was shut down in January 2013 due to a failure of the lone groundwater extraction well, EW-1R. Further, PADEP described how a routine inspection of the groundwater treatment plant in March 2014 revealed numerous instances of damage to the groundwater treatment plant equipment as a result of the harsh winter and power outages. The GWTS has been off line since January 2013.

It is PADEP's position that the current groundwater remedy, extraction and treatment, is protective in both the short and long term but is no longer the most efficient or effective remedy for the Site and that alternate remedies should be evaluated. PADEP based their opinion on the implementation of use restrictions contained in the environmental covenant, the low concentrations of Site COCs (the treatment plant influent stream typically meets cleanup standards), the non-existent impact to the downgradient Saucon Creek, the fact that area residents are all connected to the public water utility, and the O&M costs.

PADEP ultimately requested EPA's approval to conduct an evaluation of alternatives to the current groundwater remedy. The following proposed actions were discussed during the meeting (and subsequently approved):

- Increase the number of groundwater monitoring events from semi-annual to quarterly to observe seasonal variability, to document any decreasing/increasing concentration trends, and to be assured that contaminant concentrations remain protective.

- Sample the Site monitoring wells for additional parameters in accordance with EPA guidance to determine if Monitored Natural Attenuation (MNA) may be an appropriate remedy in the future.

What Is Monitored Natural Attenuation?

Natural attenuation relies on natural processes to decrease or "attenuate" concentrations of contaminants in soil and groundwater. Scientists monitor these conditions to make sure natural attenuation is working. Monitoring typically involves collecting soil and groundwater samples to analyze them for the presence of contaminants and other site characteristics. The entire process is called "monitored natural attenuation" or "MNA." Natural attenuation occurs at most contaminated sites. However, the right conditions must exist underground to clean sites properly and quickly enough. Regular monitoring must be conducted to ensure that MNA continues to work.

EPA approved the proposed actions. PADEP recently submitted a work plan that describes the sampling for a range of parameters to evaluate the effectiveness of MNA. The following sample parameters are expected to be included in the approved sampling plan:

- pH
- Dissolved oxygen (electron acceptor)
- Redox potential
- Nitrate (alternate electron acceptor)

- Ferrous iron
- Sulfate (electron acceptor)
- Methane
- Chloride
- Alkalinity
- Total organic carbon

EPA has also decided to perform an optimization study of the installed groundwater remedy.

Regarding the Site soils; included in the Technical Assessment section of the 2010 Five-Year Review is a mention of a concern that PADEP had expressed to EPA that a previously unidentified soil contamination source may exist at the Site which is contributing to the persistent low level groundwater contamination and, possibly, causing vapor intrusion within the former manufacturing building and contributing to the sub-slab VOC concentrations in the private residence located adjacent to the Site ("Property B").

In November 2014, after discussions with PADEP that included a review of historical documents, EPA's remedial action contractor conducted soil investigative activities at numerous areas upgradient of the impermeable cover, including the former equipment wash area located on the south side of the former manufacturing building and the former underground storage tank locations north of the manufacturing building, in an effort to determine if source material remains on-Site.

EPA's contractor utilized direct push technology with a Geoprobe unit to collect subsurface soil samples from twenty separate locations around the former manufacturing building with a special concentration on the grassy area immediately east (upgradient) of monitoring well CSP-7. Borings were advanced to refusal and soil samples were collected based on initial screening with a photoionization detector. Soil VOC analytical results were compared to industrial Soil Screening Levels (SSLs) for potential human receptors, and to Protection of Groundwater SSLs to determine if contaminated soil is a threat to Site groundwater. Although all VOC detections were reported at concentrations below their respective industrial soil risk-based SSLs, four VOCs (TCE, PCE, cis-1,2-DCE, and 1,1-DCA), including three COCs (TCE, PCE, and cis-1,2-DCE) were reported at concentrations above their respective generic soil-to-groundwater SSLs. *1,1-DCA has not been found within the Site groundwater at any concentration above its reporting limit of 0.5 ug/l.* An MCL does not currently exist for 1,1-DCA.

As a result of the comparison, EPA's contractor recommended that site-specific SSLs be calculated (by EPA) and if the analytical results exceed the site-specific SSLs, then further delineation sampling should be conducted.

Photographs of the Site soil investigative effort are included in the Site Photo Log attachment.

The Operation and Maintenance costs (for both OU-1 and OU-2) incurred by PADEP during the period from January 2010 to December 2014 are summarized in Table 2. The costs

include PADEP personnel costs, contractor costs, laboratory costs, and utility costs.

Table 2 – Annual O&M Costs January 2010 – December 2014

From	To	Cost
January 2010	December 2010	$120,000
January 2011	December 2011	$100,000
January 2012	December 2012	$80,000
January 2013	December 2013	$130,000
January 2014	December 2014	$170,000

V. PROGRESS SINCE THE LAST FIVE-YEAR REVIEW

The previous (2010) Five-Year Review report contained the following protectiveness statement:

The remedy is protective of human health and the environment in the short term. In order to be protective in the long term the institutional controls identified in the Record of Decision need to be implemented, the groundwater cleanup standards need to be finalized, and an evaluation to assess the potential for vapor intrusion should be completed.

The remedy for OU-1 is protective of human health and the environment in the short term. The placement of the impermeable cover over the former lagoon areas continues to protect on-Site receptors from direct exposure to Site contaminants and retard the downward migration of soil contaminants to the overburden, shallow bedrock, and deep bedrock aquifers. In order to be protective in the long term the institutional controls identified in the Record of Decision need to be implemented. In the interim, exposure pathways that could result in unacceptable risks are being controlled.

The remedy for OU-2 is protective of human health and the environment in the short term. The extraction and treatment system is effectively containing the contaminated groundwater plume and removing contaminants. In order to be protective in the long term the institutional controls identified in the Record of Decision need to be implemented, the groundwater cleanup standards need to be finalized, and an evaluation to assess the potential for vapor intrusion should be completed. In the interim, exposure pathways that could result in unacceptable risks are being controlled.

The "Issues" and "Recommendations and Follow-Up Actions" identified in the 2010 Five-Year Review report follow:

Issues

Issue	Affects Current Protectiveness? (Y/N)	Affects Future Protectiveness? (Y/N)
1. Selection and implementation of institutional controls	**N**	**Y**
2. Determine groundwater cleanup standards	**N**	**Y**
3. Vapor intrusion	**N**	**Y**

Recommendations and Follow-Up Actions

Issue	Recommendations/ Follow-Up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness? (Y/N) Current/ Future	
1. Selection and Implementa-tion of Institutional Controls	**Preparation of an Environmental Covenant for the property**	**EPA, PADEP, PRP**	**EPA, PADEP**	**12/31/2010**	**N**	**Y**
2. Determine groundwater cleanup standards	**Issue decision document**	**EPA, PADEP**	**EPA, PADEP**	**6/30/2011**	**N**	**Y**
3. Vapor Intrusion	**Complete the vapor intrusion evaluation**	**EPA**	**EPA**	**12/31/2010**	**N**	**Y**

The following actions have been taken to resolve the issues identified in the 2010 Five-Year Review:

Issue # 1: *Selection and implementation of institutional controls.* The 1991 ROD includes the following language regarding Institutional Controls (IC):

> *As soon as practicable, restrictions shall be placed in the deed to the Site to prohibit (1) excavation of contaminated soils; and (2) the use of on-Site groundwater for domestic purposes, including drinking water.*

ICs for the Site have been implemented through an Environmental Covenant (EC) which was prepared through a collaborative effort between the Site owner and EPA and filed with the recorder of deeds for Northampton County on August 2, 2012. The EC was executed pursuant to the Pennsylvania Uniform Environmental Covenants Act, 27 Pa. Con. Stat. §§ 6501-6517. The EC subjects the property to the activity and/or use limitations contained in the document, which includes, among other things, restrictions to any activity that would disturb the implemented remedy. The EC was recorded with Northampton County by the current Site owner. An August 1, 2013 Memorandum to the Hellertown Site File that was prepared to document an *Insignificant Change to the Selected Remedy* describes the decision to utilize an environmental covenant as the IC implementation tool and the actual Activity and Use Limitations contained in the EC.

Issue # 2: *Determine groundwater cleanup standards.* At the time of ROD issuance, "background" was the Pennsylvania standard under 25 PA Code §§ 264.90 - 264.100. Subsequent to the issuance of the ROD, the Commonwealth of Pennsylvania signed into law the 1995 Land Recycling and Environmental Remediation Standards Act, 35 Pa. Con. Stat. § 6026.303 legislation, commonly referred to as "Act 2", which, among other things, changed the Pennsylvania groundwater cleanup standard. After consultation with PADEP, and because of the change in Pennsylvania's requirements, EPA decided to change the groundwater performance standard at the Site to the Maximum Contaminant Levels. The change in the performance

standard, which also added the requirement for the performance of a cumulative risk evaluation after MCLs have been met, was documented in an Explanation of Significant Differences, which was signed May 14, 2012.

Issue # 3: *Vapor Intrusion.* In February 2009, EPA's contractor, HydroGeologic, Inc. (HGL), performed vapor intrusion sampling at two residential properties located adjacent to the south side Site fence line. As a follow-up to sampling performed in February 2009, EPA's remedial action contractor, HGL, performed similar sampling in May 2010 at one of the previously sampled properties, identified as "Property B" where VOCs were detected in the subslab air. Follow-up sampling was performed because, even though VOCs were not detected in the indoor air above residential health-based screening levels, (probable) Site-related chemicals were detected in the basement subslab air at levels that exceed residential health-based screening levels and it was determined that the potential for vapor intrusion existed. Again, because the May 2010 sampling yielded similar results to the February 2009 sampling effort, it was determined that more follow-up sampling was necessary.

In February 2013, HGL performed another round of VI sampling at Property B. Samples were collected of the indoor air, outdoor air, and subslab air. Figure 6 shows the air sample locations along with their associated TCE concentration. A summary of the results is contained below.

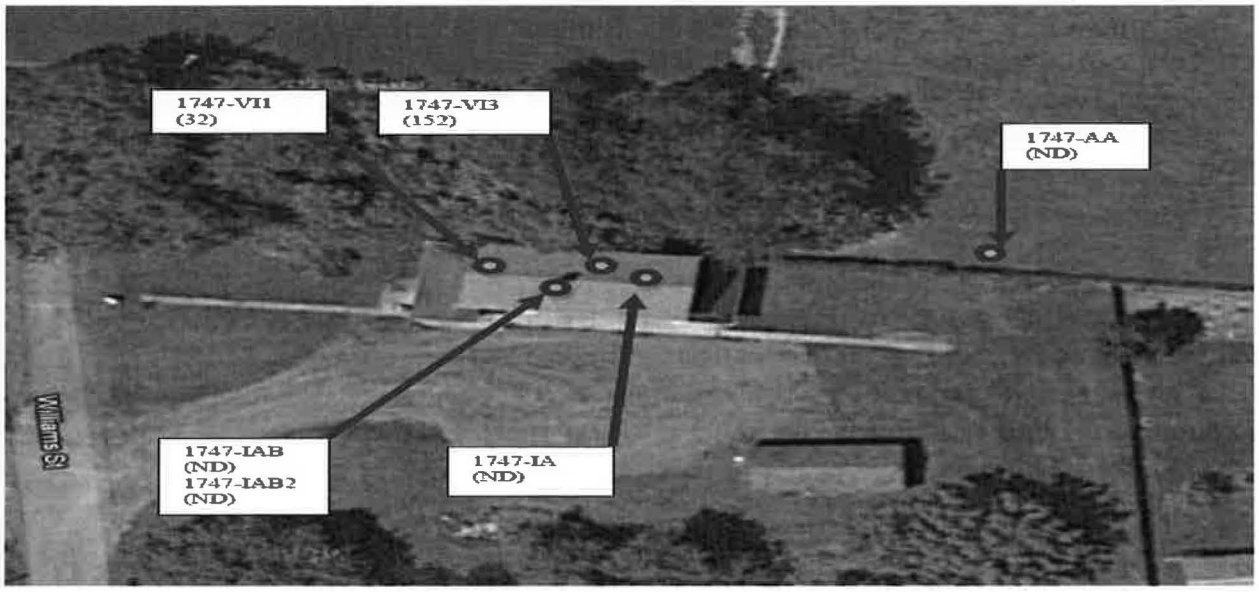


Figure 6 - Property B Sample Locations (and TCE concentrations in µg/m3)

- Indoor air – Three indoor air samples were collected from the presumed breathing spaces; one sampling canister was placed on the first floor and two (one duplicate) sampling canisters were placed in the basement of the residence. Eleven VOCs were reported in the indoor ambient air samples. All detections were reported at concentrations below their respective residential health-based risk values with the exception of benzene. Benzene was detected at a J-qualified 1 microgram per cubic meter (µg/m3) of air in all indoor ambient air samples, which exceeds the residential health-based risk screening value of 0.31 µg/m3. Of the eleven VOCs reported in the indoor air, only 4-methyl-2-pentanone and cyclohexane were not also detected in the outdoor ambient air sample.

(Note: J-values indicate that the analyte (contaminant) was detected during the sampling but that the reported value is an estimate).

- Outdoor air – One outdoor (ambient) air sample was collected at a point between the residence and the Hellertown Manufacturing building at a distance approximately twenty feet from the residential structure, northwest of the structure. Nine VOCs were reported in the outdoor ambient air samples. All detections were reported at concentrations below their respective residential health-based risk screening values with the exception of benzene. Benzene was detected at a J-qualified 1 µg/m3 in the outdoor ambient air sample, which exceeds the residential health-based risk screening value of 0.31 µg/m3.

- Area beneath the basement concrete slab – Two vapor ports were installed through the basement slab to collect samples in the space below the slab (sub-slab). One sub-slab sample was centrally located and the other was taken from the western end of the basement. Nine VOCs were detected in the subslab samples in February 2013, compared to sixteen identified during the 2009 sampling event, and eleven during the 2010 sampling event. The nine VOCs, acetone, Freon 11, Freon 12, carbon disulfide, 2-butanone, chloroform, trichloroethene, toluene, and tetrachloroethene, were reported in both subslab samples; 1747-VI1 and 1747-VI3. Three of these VOCs were detected at concentrations greater than their respective risk screening levels. Chloroform was reported at 1 µg/m3 (qualified J) in both subslab samples which exceeds the RSL of 0.11 µg/m3. PCE was reported at 5.5 µg/m3 in the sample collected from the middle of the basement, which exceeds the RSL of 4.2 µg/m3, and at 2.1 µg/m3 (qualified J) in the sample from the western side of the basement. TCE was reported in the sample collected from the middle of the basement at 152 µg/m3 and in the sample collected from the western portion of the basement at 32 µg/m3. Both concentrations exceeded the residential health-based risk screening value for TCE of 0.21 µg/m3.

Because none of the contaminants that were detected in the subslab samples were present at levels above their respective residential health-based risk values in the indoor air there is currently no evidence of vapor intrusion occurring at the property. However, due to the detection (and concentration) of probable Site-related VOCs below the slab, the potential for the occurrence of vapor intrusion in the future does exist and additional rounds of sampling are expected to be performed.

VI. FIVE-YEAR REVIEW PROCESS

This section describes the administrative components, community involvement, document review process, data review process, site inspection, and interviews performed as part of the five-year review process.

Administrative Components

EPA notified the Site owner, along with the state and local officials, of the initiation of the Five-Year Review process by letter in July 2014. The Five-Year Review was conducted from July 2014 through April 2015. The review was led by Tim Gallagher, EPA's RPM for the Site, and included participation by Alex Mandell, EPA Community Involvement Coordinator, Nancy Rios-Jafolla, EPA toxicologist, Mindi Snoparsky, EPA hydrologist, and Sheila Briggs-

Steuteville, EPA regional counsel. A Site-specific approach was developed for the Five-Year Review that included the following elements:

- Community Involvement – Notifying the community that EPA is conducting a Five-Year Review at the Site; providing information on whom to contact and how to get more information about the review process; and notifying the community of how and/or where to obtain a copy of the Five-Year Review Report upon completion.
- Document and Data Review – Reviewing all pertinent Site documents and environmental monitoring data; researching ARARs cited in the ROD and subsequent modifications to the ROD for revisions as well as identifying potentially new ARARs that may be significant to the Site circumstances; and checking available published toxicity references for Site-related contaminants to determine whether any changes have been made since the Site-specific risk assessment that may be relevant to the review team's evaluation of remedy protectiveness.
- Site Inspection – Visiting and inspecting the Site with stakeholders to visually confirm and document the conditions of the remedy, the Site, and the surrounding area.
- Interviews – Conducting interviews with state officials, responsible parties and local officials to determine whether these parties have any concerns related to the Site.
- Pennsylvania Natural Diversity Inventory – A screening exercise was performed in order to determine potential Site impacts to area threatened or endangered species and/or resources by four participating agencies.
- Report Preparation – Preparing the Five-Year Review Report and coordinating the review by team members and management.

Community Involvement

On December 31, 2014, a notice was published in the Lehigh Valley Area Express Times notifying the community that EPA was conducting a Five-Year Review for the Site. The notice listed who to contact and how to get additional information related to the Site. In addition, the notice identified when the review was scheduled to be completed and stated that once completed, a copy of the review report would be available over the internet at the following address: www.epa.gov/5yr.

EPA has not received any responses to the published notice.

The results of the review will be included in the permanent Site file and a copy of the report will be made available to the public at the Hellertown Borough Municipal Building.

Document Review

This Five-Year Review consisted, in part, of a review of the relevant Site documents

including:

- February 22, 1988 Administrative Order by Consent, U.S. EPA Docket No. III-88-11-DC
- Feasibility Study Report, Environmental Strategies Corporation, August 1991
- September 30, 1991 Record of Decision
- As-Built Drawing, Impermeable Cover Construction, Keystone Consulting Engineers, October 1994
- Remedial Action Report – Impermeable Cover, submitted by Ecology and Environment, Inc., December 1994
- Construction Report, Hellertown Remedial Action, Prepared by CH2M Hill, June 1996
- Final Operation and Maintenance Plan, Prepared by CH2M Hill, July 1999
- April 21, 2000 First Five-Year Review Report
- September 7, 2001 Consent Decree, Civil Action No. 00-4977 & 00-4978
- October 21, 2003 Draft Trip Report regarding CSP-7 area sampling, submitted by Tetra Tech EM, Inc.
- April 29, 2005 Second Five-Year Review Report
- Vapor Intrusion Evaluation for Off-Site Residences, submitted by CDM Federal Programs Corporation, August 14, 2007
- Revised O & M Plan, submitted by CDM Federal Programs Corporation, September 28, 2007
- Monitoring Well Abandonment Report, submitted by CDM Federal Programs Corporation, September 28, 2007
- Final Technical Memorandum, Vapor Intrusion, submitted by HydroGeologic, Inc., May 29, 2009
- Historical (1990 – 2014) data review of VOC concentrations in each of the three monitored groundwater zones: overburden, shallow bedrock and deep bedrock
- April 29, 2010 third Five-Year Review Report
- May 14, 2012 Explanation of Significant Differences
- Final Technical Memorandum for Vapor Intrusion Sampling at the Hellertown Manufacturing Company Site, submitted by HydroGeologic, Inc., May 22, 2013
- Final 2012 Annual Groundwater Monitoring and O & M Report, prepared by AECOM, June 2013
- April 28, 2014 PADEP letter regarding current Site status and alternate remedy evaluation
- Final 2013 Annual Groundwater Monitoring and O & M Report, prepared by AECOM, May 2014
- April 2014 Quarterly Sampling Summary Tables and Figures, prepared by AECOM, August 21, 2014
- Sampling and Analysis Plan Addendum for Subsurface Soil Investigation, submitted by HydroGeologic, Inc., August 2014
- July 2014 Quarterly Sampling Summary Tables and Figures, prepared by AECOM October 30, 2014
- Draft technical Memorandum for Subsurface Soil Sampling at the Hellertown Manufacturing Co. Site submitted by HydroGeologic, Inc., January 2015

Data Review

Operable Unit 2, Groundwater

Groundwater sampling of the Overburden, Shallow Bedrock, and Deep Bedrock monitoring wells has typically been conducted on a semi-annual basis by PADEP. However, due to PADEP's recent request to evaluate MNA as a possible remedy alternative, beginning in May 2014, sampling has been conducted on a quarterly basis. Tables 3 through 5 list the maximum 2009 - 2014 groundwater contaminant levels reported for each of the monitored zones. The tables also include significant MCL exceedances from the earliest (1990 – 1993) sampling period. A monitoring well location map is included as Figure 7. A groundwater quality map, which shows the well locations and the associated July 2014 contaminant levels, is included as Figure 8.

Overburden Monitoring Wells: CSP-1, CSP-2, CSP-3, CSP-4, CSP-7, CSP-10, CSP-16 and CSP-17.

The overburden wells are those wells that are screened within the overburden portion of the aquifer, which is typically shallower than 50' bgs. Under static conditions, water level contours indicate the overburden groundwater flow direction is generally to the west, with an average hydraulic gradient of approximately 0.038 feet per foot. An overburden groundwater contour map is included as Figure 9.

Table 3 contains the maximum detected values of COCs in the overburden wells over the previous five years. Other than the September 2009 4.1 µg/l concentration for TCE in CSP-4, TCE-impacted groundwater in the shallow (overburden) aquifer appears to be concentrated in the general vicinity of CSP-7 and CSP-10 (both wells were installed at similar depths; approximately 40' bgs, and at similar screened intervals; approximately 30' – 40' bgs). CSP-10 is the only overburden well that exhibited an exceedance of the MCL for any COC other than TCE in the past five years; PCE at 9.0 ppb in September 2009. The 2014 contaminant concentrations in the overburden wells have remained consistent with sampling results over the previous five years with no significant increasing or decreasing trends in most of the wells. Relatively large decreases in TCE concentration levels over the past five years have been noted in the following wells, however:

Well	May 2009	April 2014
CSP-7	36.5 µg/l	2.9 µg/l
CSP-10	32.1 µg/l	12.8 µg/l

Table 3: Overburden Monitoring Wells Maximum Detections, 8/2009 – 7/2014

Well	TCE	PCE	cis-1,2-DCE	trans-1,2-DCE	VC	Benzene
MCL (µg/l)	**5**	**5**	**70**	**100**	**2**	**5**
CSP-1	ND	ND	ND	ND	ND	ND
CSP-2	ND	ND	ND	ND	ND	ND
CSP-3	1.5 (4/12)	ND	1.1 (9/09)	ND	ND	ND
CSP-4	4.1 (9/09)	ND	3.3 (9/09)	ND	ND	ND

CSP-7	40.9 (9/09) 240 (1993)	2.1 (9/09)	4.1 (9/09)	ND	ND	ND
CSP-10	24.2 (8/09) 93 (1990)	9.0 (9/09)	34.7 (9/09)	0.66 (8/09)	ND	ND
CSP-16	0.51 (10/09)	ND	ND	ND	ND	ND
CSP-17	ND	ND	ND	ND	ND	ND

Detected values with month/year of detection in parentheses.
Split Cell:

Present reporting period max detection
Significant past COC Contaminant level

All values reported in µg/l.

Shallow Bedrock Monitoring Wells: CSP-6, CSP-8, CSP-11, CSP-12, CSP-13, CSP-14, CSP-18, CSP-19, CSP-20, CSP-21, CSP-22, and CSP-30. EW-1R is included in the table below because in July 2014, it was sampled at a depth of approximately 90' bgs.

The shallow bedrock wells are those wells that are screened within the shallow bedrock portion of the aquifer, which is typically shallower than 100' bgs. Under static conditions, water level contours indicate the groundwater flow direction in the shallow bedrock aquifer is generally to the northwest with an average hydraulic gradient of approximately 0.032 feet per foot. A shallow bedrock groundwater contour map is included as Figure 10.

Table 4 contains the maximum detected values of COC in the shallow bedrock wells over the previous five years. Other than the 3.0 µg/l concentration exhibited at CSP-11 in November 2013, TCE-impacted groundwater in the shallow bedrock aquifer appears to be concentrated in wells located immediately downgradient of the former lagoons: CSP-6, CSP-12, CSP-13, CSP-14, and CSP-30, which is located approximately 150' west of CSP-14. These wells are all installed at similar depths; approximately 70' – 85' bgs and at similar screened intervals; approximately 60' – 85' bgs. The 2014 contaminant concentrations in the shallow bedrock wells have remained consistent with sampling results over the previous five years with no significant increasing or decreasing trends in most of the wells. Relatively large decreases in TCE concentration levels over the past five years have been noted in the following wells, however:

Well	April 2009	April 2014
CSP – 6	13.5 µg/l	2.8 µg/l
CSP-12	26.4 µg/l	4.3 µg/l
CSP-13	49.1 µg/l	20.9 µg/l

Table 4: Shallow Bedrock Monitoring Wells Maximum Detections, 8/2009 – 4/2014

Well	**TCE**	**PCE**	**cis-1,2-DCE**	**trans-1,2-DCE**	**VC**	**Benzene**
MCL	**5**	**5**	**70**	**100**	**2**	**5**
CSP-6	21.8 (5/10) 350 (1993)	1.2 (9/09)	9.1 (5/10) 240 J (1990)	0.54 (5/10) 240 J (1990)	0.56 (5/12) 83 (1990)	ND 93(1990)
CSP-8	ND	ND	ND	ND	ND	ND
CSP-11	3.0 (11/13)	ND	ND	ND	ND	ND

CSP-12	55.5 (4/12)	0.69 (9/09)	11.6 (5/10)	0.89 (10/09)	ND	ND
	390 (1990)		230 (1990)	230 (1990)	59 (1990)	
CSP-13	58.7^ (10/09)	4.3^ (11/13)	5.8 (10/10)	ND	ND	ND
	700 (1990)		230 (1990)	230 (1990)		
CSP-14	24.2 (5/10)	3.9 (11/13)	4.9 (5/10)	ND	ND	ND
	420 (1990)		180J (1990)	180J (1990)		
CSP-18	ND	ND	ND	ND	ND	ND
CSP-19	ND	ND	ND	ND	ND	ND
CSP-20	0.71 (10/09)	ND	ND	ND	ND	ND
CSP-21	ND	ND	ND	ND	ND	ND
CSP-22	ND	ND	ND	ND	ND	ND
CSP-30	18.5^ (8/09)	2.0^ (9/09)	6.8^ (10/09)	ND	ND	ND
EW-1R	0.73 (7/14)	ND	ND	ND	ND	ND

Detected values with the month/year of the detection in parentheses.
Split Cell:

Present reporting period max detection
Significant past COC Contaminant level

All values reported in µg/l.
^ - Duplicate sample was collected; the higher value was reported.
J – Analyte present. Result may not be accurate or precise.

Deep Bedrock Monitoring Wells: CSP-24, CSP-25, and CSP-27. EW-1R is included in the table below because in July 2014, it was sampled at a depth of approximately 150' bgs.

The deep bedrock wells are those wells that are screened within the deep bedrock portion of the aquifer, which is typically deeper than 100' bgs. Under static conditions, water level contours indicate the deep bedrock groundwater flow direction is generally to the northwest, with an average hydraulic gradient of approximately 0.005 feet per foot. A deep bedrock groundwater elevation map is included as Figure 11.

The deep bedrock groundwater sampling results indicate that there is very limited impact to deep groundwater from the Site with only one MCL exceedance over the previous five years; a TCE concentration of 5.6 µg/l in CSP-25 in April 2011. The 2014 contaminant concentrations in the groundwater samples are mostly consistent with sampling events over the previous five years and do not indicate the presence of any significant increasing or decreasing trends.

Table 5: Deep Bedrock Monitoring Wells Maximum Detections, 8/2009 – 4/2014

Well	TCE	PCE	cis 1,2-DCE	trans 1,2-DCE	VC	Benzene
MCL	**5**	**5**	**70**	**100**	**2**	**5**
CSP-24	ND	ND	ND	ND	ND	ND
CSP-25	5.6 (4/11)	ND	6.1 (10/11)	ND	0.79 (5/12)	ND
	310 (1993)					
CSP-27	ND	ND	ND	ND	ND	ND
EW-1R	0.78 (7/14)	ND	ND	ND	ND	ND

Detected values with the month/year of the detection in parentheses.

Split Cell:

Present reporting period max detection
Significant past COC Contaminant level

All values reported in µg/l.
ND – Non-Detect.

The extraction well (EW-1R) has been sampled only once over the past five years; in July 2014. Sampling was performed at two separate depths; 90' bgs and 150' bgs. The concentration of TCE at the 90' bgs depth was 0.73 µg/l and the concentration of TCE at the 150' bgs interval was 0.78 µg/l. No other VOCs were detected.

A July 2014 Potentiometric Groundwater Cross-Section that cuts through the known TCE plume is included as Figure 12.

Discussion of each COC

The highest COC concentration levels at the Site were found in 1990 when sampling began. Since that time, demonstrable progress has been made in reducing the concentration levels. *Indeed, three of the COCs; trans-1,2-DCE, vinyl chloride and benzene have not been detected at the Site at concentrations above their respective MCL since 1990 and cis-1,2 DCE has not been detected at concentrations above its MCL since 1992.*

- TCE: TCE is the prevalent groundwater contaminant at the Site, found in more monitoring wells than any other COC and at the greatest concentrations. Its presence in the number of Site wells along with the concentration levels has decreased, however, presumably due to the effectiveness of the extraction and treatment remedy. The number of Site wells with TCE concentrations greater than its MCL of 5 µg/L fell from nine (of the twelve wells sampled) in 1990 to three (of the twenty-three wells sampled) in April 2014, with a significant decrease in concentration in most of the wells. For example, the 1990 concentration in well CSP-13 (the most contaminated well in 1990); 700, µg/l fell to 20.9 µg/l in CSP-13 (the most contaminated well in 2014) in April 2014. During the previous five year period, TCE has been found above its MCL as shallow as 39.53 feet bgs in overburden well CSP-10 and as deep as 198 feet bgs in deep bedrock well CSP-25.
- PCE: PCE has been detected at concentrations above its MCL of 5 µg/l at a limited number of monitoring wells since 1990 with the maximum detection of 25 µg/l in 1993 in CSP-10. The most recent MCL exceedance in the overburden wells occurred in November 2013 in CSP-10; 5.6 µg/l. Several MCL exceedances have been noted in the shallow bedrock monitoring wells since 1990 but the most recent exceedances occurred in 1996 at wells CSP-13 and CSP-14. No MCL exceedances for PCE have been noted in any of the deep bedrock monitoring wells since 1990.
- Cis-1,2-DCE: In 1990, three monitoring wells contained cis-1,2-DCE at concentrations greater than its MCL of 70 µg/l: CSP-10; 170 µg/l, CSP-6; 240 µg/l, and CSP-13; 230 µg/l. Numerous Site wells have contained cis-1,2-DCE

since sampling began in 1990 but it has not been detected above its MCL since 2002 (CSP-10; 75 µg/l). Cis-1,2-DCE has not been detected at concentrations above its MCL in any Site well during the past five years.

- Trans-1,2-DCE: Several Site monitoring wells contained trans-1,2-DCE at concentrations above the MCL of 100 µg/l in 1990: CSP-10; 170 µg/l, CSP-6; 240 µg/l, CSP12; 230 µg/l, CSP-13; 230 µg/l, and CSP-14; 180 µg/l. CSP-10 is an overburden well. The rest are shallow bedrock wells. The only detection of trans-1,2-DCE in the deep bedrock zone occurred in 1996 at CSP-25 at a concentration of 29 µg/l. Over the past five years, trans-1,2-DCE has been detected in one overburden well and two shallow bedrock wells, all at concentrations much lower than the MCL.
- Vinyl Chloride: VC was found within shallow bedrock monitoring wells CSP-6 and CSP-12 at concentrations of 83 µg/l and 59 µg/l, respectively, in 1990. Only one overburden well, CSP-4, and one deep bedrock well, CSP-25, have contained detectable levels of VC since sampling began in 1990, both at concentrations below the MCL of 2 µg/l. Over the past five years, VC has been detected in one shallow bedrock well, CSP-6, and one deep bedrock well, CSP-25, both at concentrations below the MCL.
- Benzene: In 1990, benzene was detected in monitoring well, CSP-6 at a concentration of 93 µg/l. Since that detection, and until the present time, benzene has been detected on only a few occasions and at concentration levels much less than the MCL of 5 µg/l. There have been no detections of benzene during any of the sampling events over the past five years.

1,4-Dioxane

During the October 2014 quarterly sampling event, PADEP, at EPA's request, sampled monitoring wells CSP-7, CSP-8, CSP-10, CSP-13, CSP-14, CSP-25, CSP-30, BD-01 (blind duplicate of CSP-30), and Trip Blanks TB-01, TB-02 and TB-03 for 1,4-dioxane. All of the results were non-detect.

Surface Water Data

From July 2000 through April 2008 surface water samples were collected on a semi-annual basis at five locations (SW-1 through SW-5) along the Saucon Creek. Because there were no exceedances of the MCLs for any of the contaminants of concern over the approximate eight-year duration of the surface water monitoring program, EPA approved PADEP's October 2008 request to discontinue further surface water sampling. However, as contained in the approval letter, should there be any evidence of increasing contaminant concentrations in the monitoring wells that were installed upgradient of Saucon Creek (CSP-16, CSP-17, CSP-18, CSP-19, and CSP-27), the surface water sampling program would be reinstituted. As of the April 2014 sampling event, none of these wells have exhibited groundwater contaminant concentrations above the MCL since the commencement of the sampling program in 1990. In the previous five years, only one downgradient monitoring well has exhibited any detectable concentration of any of the Site COCs; CSP-16 had a TCE concentration of 0.51 µg/l in October 2009. Table 6 lists the maximum surface water contaminant concentrations detected between the

years 2000 through 2008.

Table 6 – Maximum Surface Water Contaminant Concentration* 2000-2008

Sample Location	TCE	cis-1,2 DCE	MC	Chloro-methane	MTBE	MEK	Ethyl-benzene	Total Xylenes	Toluene	Acetone
SW-1	ND	ND	0.11B (12/05)	0.12J (12/06)	ND	ND	0.3J (6/02)	ND	0.033B (12/05)	ND
SW-2	0.04J (12/05)	ND	0.12B (12/05)	ND	ND	ND	ND	ND	0.028B (12/05)	17J (6/01)
SW-3	0.84 (6/03)	0.15J (6/03)	0.11B (12/05)	0.19J (6/03)	ND	ND	ND	ND	0.035B (12/05)	4.2 (4/08)
SW-4	0.05J (12/05)	ND	0.12B (12/05)	1J (7/00)	ND	ND	ND	ND	0.03B (12/05)	6.5 (4/08)
SW-5	ND	ND	0.11B (12/05)	2J (7/00)	ND	ND	ND	ND	0.033B (12/05)	6.4 (4/08)

*Values reported in ppb with corresponding sampling date in parentheses.
B-Analyte present. Reported value may be biased low. Actual value is expected to be higher.
J-Analyte present. Result may not be accurate or precise.
ND – Non-Detect
MC – Methylene Chloride
MTBE – Methyl tert-butyl Ether
MEK – Methyl Ethyl Ketone

NPDES Discharge Performance Monitoring

A review of submitted discharge monitoring reports (DMRs) that were issued on a quarterly basis (when applicable) during the previous five years was performed and indicates that the Site groundwater treatment system has been effective in meeting the NPDES discharge requirements. In fact, a review of the DMRs reveals that not only does the treated effluent meet NPDES discharge requirements but the untreated influent groundwater meets discharge standards as well. A copy of the September 2012 DMR is provided as Attachment 2.

Air Monitoring Data

The vapor phase carbon units, located downstream of the groundwater treatment plant air stripper, are metered with a photo ionization detector during each routine O&M visit while the groundwater treatment plant is in operation. No detectable concentrations of VOCs in the air stripper off-gas have been detected over the prior five years.

Summary

The groundwater extraction and treatment system has made demonstrable progress towards achieving the ROD and the 2012 ESD performance objectives. A significant improvement to groundwater quality is documented at the Site. In addition, performance monitoring confirms that the GWTS has been effective in meeting NPDES treatment discharge requirements. Included as Attachment 3 are trend charts for select overburden, shallow groundwater, and deep groundwater monitoring wells.

Site Inspection

Because the groundwater treatment system is monitored remotely when in operation, the Site is unoccupied a majority of the time although a caretaker, employed by the site owner, visits the site on a monthly basis to perform any needed maintenance. An intact, six-foot, chain link, barbed-wire fence with a lockable vehicle entry gate off Main Street, surrounds the property and is the primary means of security for the Site. The Site buildings are currently unoccupied and, other than the normally operating groundwater pumping and treating operations, there is no current activity on-Site. The Site is visited on an approximate monthly basis by either PADEP, their O&M contractor, or the EPA.

An inspection of the Site, led by Tim Gallagher, EPA RPM, was conducted on September 10, 2014. In attendance were: Catherine Hartranft, Hellertown Borough Manager, Officer Bob Shupp, Hellertown Borough Police Department, Kris Russo, Hellertown Borough Zoning Code Enforcement Officer, Bryan Smith, Barry Isett & Associates, Inc. (Hellertown Borough Engineer), Meg Boyer, PADEP, James Kunkle, PADEP, and Alex Mandell, EPA Community Involvement Coordinator. The Five-Year Review Site Inspection Checklist is included as Attachment 4.

The purpose of the inspection was to assess the protectiveness of the remedy, including the condition of the groundwater treatment system and the integrity of the installed cap system. The inspection participants discussed the Site history, the current status of the groundwater treatment system shutdown and the removal of the extraction well pump, vapor intrusion sampling, and the scheduled geoprobe work in the CSP-7 area. Tim Gallagher also visited the off-Site discharge point at the (downgradient) Saucon Creek to inspect for impacts from Site stormwater and treatment plant effluent. No impacts were noted.

Other than the fact that the groundwater extraction and treatment system was inoperable at the time of the inspection, no significant issues were identified during the Site inspection. Previously discovered damage to some of the groundwater treatment system components, caused by a winter power outage and subsequent pipe freezing, was discussed briefly. (An example of the damage is included in the Site Photo Log Attachment.) Also, the seal-coat layer over the installed asphalt cover system appeared to be deteriorating in spots but did not require immediate attention; this was discussed with PADEP. Lastly, a workable lock needs to be installed on the southeast corner gate.

Interviews

During the Site inspection, the Hellertown Borough Manager, Ms. Catherine Hartranft, was interviewed for this Five-Year Review. Ms. Hartranft indicated that, other than a few inquiries about the availability of the property, she was unaware of any outstanding issues, complaints, or any other problems associated with the Site. Ms. Hartranft stated that the borough would encourage appropriate reuse of the property and explained the current zoning; "Highway Commercial within the Flexible Redevelopment Overlay District". The purpose of the Flexible Redevelopment Overlay District, is to permit and encourage flexibility in development to encourage reinvestment and redevelopment. The intent is to allow for the use of vacant and under-utilized land and buildings through the use of flexible development and redevelopment standards and compatible architectural design.

Borough Police Office, Bob Shupp, noted that there have been no incidents requiring police interaction at the Site over the past five years and that the Site owner performs adequate maintenance of the Site property.

Other than inquiries about the availability of the property for potential sale, PADEP officials were also unaware of complaints or other issues associated with the Site brought by the surrounding community.

Natural Diversity Inventory

At the request of EPA, a Pennsylvania Natural Diversity Inventory was performed on the Site area in order to determine if the Site activities impact any threatened or endangered species and/or special concern species and resources. The Pennsylvania Game Commission, the Pennsylvania Department of Conservation and Natural Resources, the Pennsylvania Fish and Boat Commission, and the U.S. Fish and Wildlife Service all participated in the report preparation.

As summarized in the attached report, the Pennsylvania Natural Diversity Inventory records indicate no known impacts to threatened or endangered species and/or special concern species and resources within the project area.

VII. TECHNICAL ASSESSMENT

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

The groundwater extraction and treatment system has suffered both electrical and mechanical damage caused, in part, by a winter storm-related power outage and is currently inoperable. PADEP is evaluating existing groundwater conditions to determine if natural attenuation could be an appropriate alternative to the current groundwater extraction and treatment remedy. In addition, EPA has recently requested technical support in the form of an optimization review from EPA headquarters to determine if optimization of the remedy would assist with reaching final groundwater cleanup standards.

Notwithstanding the above; based on a review of the decision documents, surface and groundwater analytical data, periodic O&M reports, and Site inspections, it appears that the selected remedial action has functioned as intended. Because chemical concentrations in groundwater still exceed MCLs, the groundwater performance standard has not yet been achieved. Additional alternatives, including natural attenuation, are being reviewed to determine if cleanup standards can be achieved through an optimization of the remedy. Other than some minor surface cracking, the impermeable cap over the contaminated lagoon soils appears to be sound: preventing exposure through inhalation, ingestion, and dermal contact, and minimizing the infiltration of stormwater.

On May 14, 2012, an ESD was signed that modified the groundwater performance standard. The ESD established the MCL for each COC as the modified groundwater performance standard. The ESD also added the requirement for the preparation of a cumulative

risk evaluation after the MCLs have been achieved.

ICs for the Site have been implemented through an Environmental Covenant which was prepared through a collaborative effort between the Site owner and EPA and filed with the Recorder of Deeds for Northampton County on August 2, 2012. The covenant subjects the property to the activity and/or use limitations contained in the document, which includes, among other things, restrictions to any activity that would disturb the implemented remedy.

There is no current exposure to contaminated groundwater or soils at the Site, groundwater contamination levels in the Site monitoring wells have remained relatively constant, and the former manufacturing building is currently unoccupied.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and RAOs used at the time of the remedy selection still valid?

There have been no changes in the physical conditions of the Site that would affect the protectiveness of the remedial actions or would suggest that the selected remedies for OU-1 and OU-2 are not protective. Applicable or relevant and appropriate public health or environmental standards are identified in the ROD. Many of these standards were met during construction of the remedy and the remaining standards are being achieved through the continued operation and maintenance at the Site.

The May 14, 2012 ESD modified the groundwater performance standard. The ESD established the MCL for each COC as the modified groundwater performance standard. The ESD also added the requirement for the preparation of a cumulative risk evaluation after the MCLs have been achieved.

Because vapor intrusion is a potential exposure pathway at sites with VOC contamination, EPA, in 2008-2009, performed an evaluation of the on-Site former manufacturing building and two off-Site properties that are adjacent to the Site. The results of the manufacturing building analyses included one indoor air sample that contained levels of TCE above its health-based value for industrial exposure indicating that vapor intrusion may be occurring. The Site environmental covenant addresses vapor intrusion within the manufacturing building. The results of the off-Site residence analyses indicate that vapor intrusion is not occurring. However, because one of the properties exhibited COC levels in the sub-slab that were above the health-based values, EPA performed an additional round of sampling in February 2013.

None of the contaminants that were detected in the subslab samples were present at levels above their respective residential health-based risk values in the indoor air so there is currently no evidence of vapor intrusion occurring at the property. However, due to the detection of probable Site-related VOCs below the slab, the potential for the occurrence of vapor intrusion in the future does exist and additional round(s) of sampling are expected to be performed.

Changes in Standards and To Be Considereds (TBCs)

The selected remedy was designed to achieve compliance with applicable or relevant and appropriate requirements (ARARs) related to groundwater, ambient air quality and surface water

at the Site. The groundwater ARARs for the Site that still need to be met include the Safe Drinking Water Act, 42 U.S.C. §§ 300(f) et seq. ARARs that continue to be met through Site O&M include the Federal National Pollutant Discharge Elimination System under the Clean Water Act, the Pennsylvania Clean Streams Law criteria as set forth in 25 PA Code §§ 93.1 – 93.9 and Section 112 of the Clean Air Act, 42 U.S.C. § 7412. During construction of the groundwater treatment plant, dual vapor phase carbon units were installed to ensure compliance with Section 112 of the Clean Air Act, 42 USC § 7412 National Emission Standard for Hazardous Air Pollutants.

Changes in Exposure Pathways, Toxicity, and other Contaminant Characteristics

Previous Five-Year Reviews for this Site have identified vapor intrusion within the manufacturing building and, due to the presence of certain Site constituents in the sub-slab air, the potential for vapor intrusion in one of the private residences adjacent to the Site.

In November 2014, geoprobe samples of soil from twenty separate locations around the manufacturing building were collected. Analytical results from the sampling event were compared to industrial SSLs and generic soil-to-groundwater SSLs. Although all VOC detections were reported at concentrations below their respective industrial soil risk-based SSLs, four VOCs, including three COCs, were reported at concentrations above their respective generic soil-to-groundwater SSLs.

Other than consideration of the possible vapor intrusion situation and possible implications of the soil-to-groundwater SSL exceedances, there have been no changes in exposure pathways, toxicity or other contaminant characteristics since the last Five-Year Review.

Installation and continued maintenance of the impermeable cap and operation and maintenance of the groundwater extraction and treatment system has significantly reduced exposure to the nearby residential and environmental communities.

Question C: Has any other information come to light that calls into question the protectiveness of the remedy?

There is no other information that calls into question the protectiveness of the remedial action selected for this Site.

Technical Assessment Summary

According to the groundwater data analyses and the results of the Site inspections, the remedial action has been functioning as intended. Groundwater contaminant levels have decreased substantially since the start of operations and exposure has been controlled. However, the groundwater extraction and treatment system has suffered both electrical and mechanical damage caused, in part, by a winter storm-related power outage and is currently inoperable. PADEP is evaluating existing groundwater conditions to determine if natural attenuation could be an appropriate alternative to the current groundwater extraction and treatment remedy. In addition, EPA will be performing an optimization review to determine if cleanup standards can be achieved through an optimization of the remedy. The approved operation and maintenance

plans appear to be effective in maintaining all the elements of the selected remedy. Vapor intrusion sampling will continue at one off-Site property. Recent geoprobe soil sampling from the area upgradient of monitoring well CSP-7 generated results in several areas, at varying depths, that exceed the generic Soil to Groundwater SSLs. Site-specific Soil-to-Groundwater SSLs will need to be calculated and, if it is determined that the sampled levels exceed the site-specific groundwater SSLs, further action may be required. Institutional controls, in the form of an environmental covenant, that limit access and exposure to Site contaminants have been implemented.

VIII. ISSUES

Table 7 lists the issues identified during this review and indicates whether the issue affects current or future protectiveness.

Table 7 - Issues

Issue	Affects Current Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
1. The groundwater extraction and treatment system is inoperable. PADEP has requested permission to perform an evaluation to determine the effectiveness of MNA at the Site.	N	Y
2. Vapor intrusion at the off-Site property.	N	Y

IX. RECOMMENDATIONS AND FOLLOW-UP ACTIONS

Table 8 summarizes the information regarding recommendations and follow-up actions for the issue identified during this review.

Table 8 - Recommendations and Follow-Up Actions

Recommendations and Follow-Up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness (Y/N)	
				Current	Future
1. Complete MNA sampling and optimization review to determine future course of action.	EPA/PADEP	EPA	12/31/16	N	Y
2. Continue vapor intrusion sampling at the off-Site property.	EPA/PADEP	EPA	4/29/2020	N	Y

X. PROTECTIVENESS STATEMENTS

The remedy is protective of human health and the environment in the short term. Exposure pathways that could result in unacceptable risks are being controlled or are incomplete. Institutional Controls, in the form of an environmental covenant, have been prepared and placed with the deed to the Site property. The Institutional Controls provide use restrictions that prohibit any activity that would interfere with the installed remedy at the Site and prevent exposure. In order to be protective in the long term, monitoring of the off-Site property for vapor intrusion must continue and EPA must determine, based on the results of an ongoing MNA evaluation and a remedy optimization review, the most appropriate option for the Site groundwater: 1) a modification to the selected remedy or 2) repair and recommencement of the groundwater extraction and treatment system activities.

The remedy for OU-1 is protective of human health and the environment. Exposure pathways that could result in unacceptable risks are being controlled. The placement of the impermeable cover over the former lagoons area continues to protect on-Site receptors from direct exposure to Site contaminants and retard the downward migration of soil contaminants to the overburden, shallow bedrock, and deep bedrock aquifers. Institutional Controls, in the form of an environmental covenant that has been filed with the deed to the property, are in-place and provide use restrictions that prohibit any activity that would interfere with the installed cap remedy.

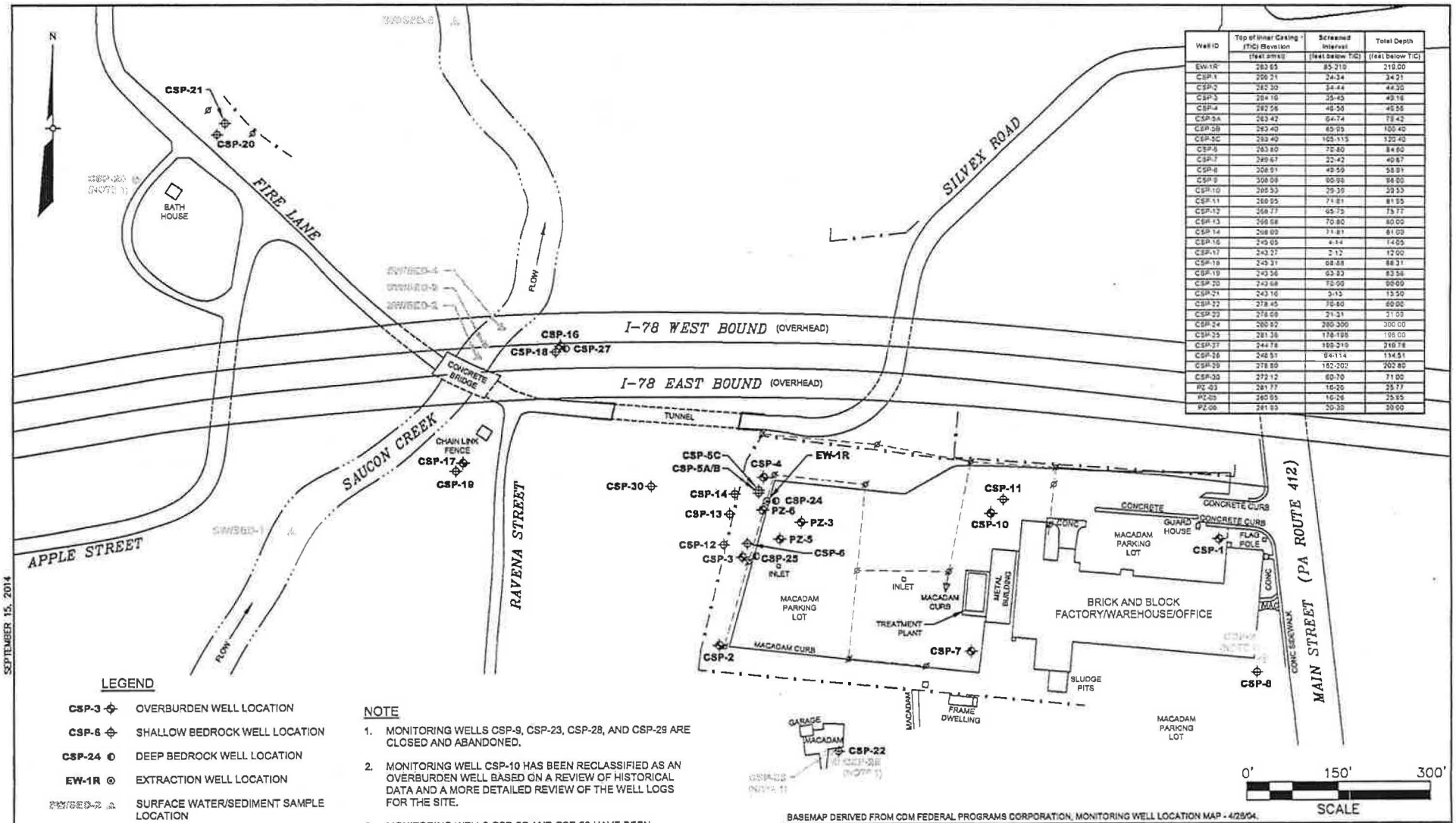
The remedy for OU-2 is protective of human health and the environment in the short term. The contaminated groundwater plume is limited to the general Site area, contaminant levels seem to have stabilized, and exposure pathways are incomplete. Institutional Controls, in the form of an environmental covenant that has been filed with the deed to the property, are in-place and provide use restrictions that prohibit any activity that would interfere with the groundwater remedy and prevent exposure. In order to be protective in the long term, monitoring of the off-Site property for vapor intrusion must continue and EPA must determine, based on the results of an ongoing MNA evaluation and a remedy optimization review, the most appropriate option for the Site groundwater: 1) a modification to the selected remedy or 2) repair and recommencement of the groundwater extraction and treatment system activities. The evaluation of the remedy is expected to be complete by December 31, 2016. Vapor intrusion sampling at the off-Site property will continue until it is determined that the potential for it to occur no longer exists.

XI. NEXT REVIEW

The next Five-Year Review for the Hellertown Manufacturing Site is required no later than five years from the signature date of this Five-Year Review Report.

FIGURES

This page is left intentionally blank.



Well ID	Top of Inner Casing (TIC) Elevation (feet amsl)	Screened Interval (feet below TIC)	Total Depth (feet below TIC)
EW-1R	283.65	85-215	215.00
CSP-1	296.21	24-34	34.21
CSP-2	287.30	34-44	44.30
CSP-3	284.16	35-45	45.16
CSP-4	282.56	46-56	46.56
CSP-5A	283.42	64-74	78.42
CSP-5B	283.40	85-95	100.40
CSP-5C	283.40	105-115	120.40
CSP-6	283.80	70-80	84.60
CSP-7	289.67	22-42	40.67
CSP-8	308.91	48-58	58.91
CSP-9	308.08	90-98	98.00
CSP-10	295.53	29-39	39.53
CSP-11	289.95	74-81	81.95
CSP-12	288.77	65-75	75.77
CSP-13	288.68	70-80	80.00
CSP-14	288.69	71-81	81.09
CSP-16	245.05	4-14	14.05
CSP-17	243.27	2-12	12.00
CSP-18	245.31	68-88	88.31
CSP-19	243.56	63-83	83.56
CSP-20	243.68	72-90	90.00
CSP-21	243.16	3-13	13.50
CSP-22	278.45	70-80	80.00
CSP-23	278.09	21-31	31.09
CSP-24	280.92	280-300	300.00
CSP-25	281.36	176-196	196.00
CSP-27	244.78	199-219	219.78
CSP-28	248.51	94-114	114.51
CSP-29	278.80	182-202	202.80
CSP-30	272.12	60-70	71.00
PZ-03	281.77	16-26	25.77
PZ-05	280.85	16-26	25.85
PZ-06	281.83	20-30	30.00

LEGEND

- CSP-3 ⊕ OVERBURDEN WELL LOCATION
- CSP-6 ⊕ SHALLOW BEDROCK WELL LOCATION
- CSP-24 ◐ DEEP BEDROCK WELL LOCATION
- EW-1R ⊙ EXTRACTION WELL LOCATION
- SW/SED-2 SURFACE WATER/SEDIMENT SAMPLE LOCATION
- UTILITY POLE
- CHAIN LINK FENCE
- CREEK
- OVERHEAD WIRES

NOTE

1. MONITORING WELLS CSP-9, CSP-23, CSP-28, AND CSP-29 ARE CLOSED AND ABANDONED.
2. MONITORING WELL CSP-10 HAS BEEN RECLASSIFIED AS AN OVERBURDEN WELL BASED ON A REVIEW OF HISTORICAL DATA AND A MORE DETAILED REVIEW OF THE WELL LOGS FOR THE SITE.
3. MONITORING WELLS CSP-5C AND CSP-20 HAVE BEEN RECLASSIFIED AS SHALLOW WELLS BASED ON A REVIEW OF HISTORICAL DATA AND A MORE DETAILED REVIEW OF THE WELL LOGS FOR THE SITE.
4. THE WELL CONSTRUCTION DATA PRESENTED ABOVE WAS GENERATED FROM WELL LOGS DERIVED FROM CH2M HILL, ENVIRONMENTAL SERVICES CORPORATION AND CDM SMITH.

BASEMAP DERIVED FROM CDM FEDERAL PROGRAMS CORPORATION, MONITORING WELL LOCATION MAP - 4/25/04.

AECOM

FIGURE 7.

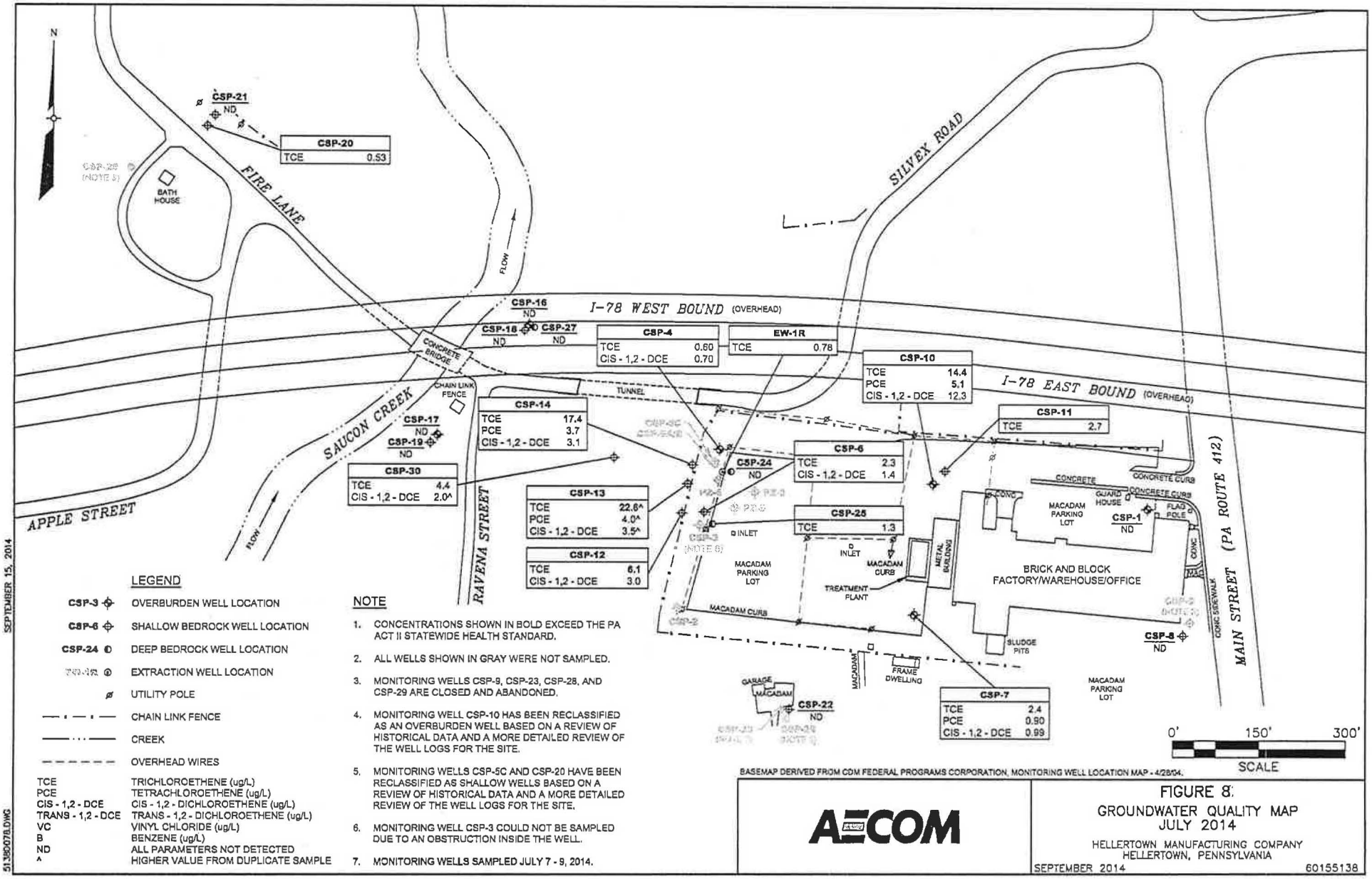
MONITORING WELL LOCATION MAP

HELLERTOWN MANUFACTURING COMPANY
HELLERTOWN, PENNSYLVANIA

SEPTEMBER 2014 60155138

SEPTEMBER 15, 2014

513606T4.DWG



LEGEND

CSP-3 ⊕	OVERBURDEN WELL LOCATION
CSP-6 ⊕	SHALLOW BEDROCK WELL LOCATION
CSP-24 ◐	DEEP BEDROCK WELL LOCATION
⊕	EXTRACTION WELL LOCATION
ø	UTILITY POLE
— · — · —	CHAIN LINK FENCE
—— ··· ——	CREEK
– – – – –	OVERHEAD WIRES

TCE	TRICHLOROETHENE (ug/L)
PCE	TETRACHLOROETHENE (ug/L)
CIS - 1,2 - DCE	CIS - 1,2 - DICHLOROETHENE (ug/L)
TRANS - 1,2 - DCE	TRANS - 1,2 - DICHLOROETHENE (ug/L)
VC	VINYL CHLORIDE (ug/L)
B	BENZENE (ug/L)
ND	ALL PARAMETERS NOT DETECTED
^	HIGHER VALUE FROM DUPLICATE SAMPLE

NOTE

1. CONCENTRATIONS SHOWN IN BOLD EXCEED THE PA ACT II STATEWIDE HEALTH STANDARD.
2. ALL WELLS SHOWN IN GRAY WERE NOT SAMPLED.
3. MONITORING WELLS CSP-9, CSP-23, CSP-28, AND CSP-29 ARE CLOSED AND ABANDONED.
4. MONITORING WELL CSP-10 HAS BEEN RECLASSIFIED AS AN OVERBURDEN WELL BASED ON A REVIEW OF HISTORICAL DATA AND A MORE DETAILED REVIEW OF THE WELL LOGS FOR THE SITE.
5. MONITORING WELLS CSP-5C AND CSP-20 HAVE BEEN RECLASSIFIED AS SHALLOW WELLS BASED ON A REVIEW OF HISTORICAL DATA AND A MORE DETAILED REVIEW OF THE WELL LOGS FOR THE SITE.
6. MONITORING WELL CSP-3 COULD NOT BE SAMPLED DUE TO AN OBSTRUCTION INSIDE THE WELL.
7. MONITORING WELLS SAMPLED JULY 7 - 9, 2014.

BASEMAP DERIVED FROM CDM FEDERAL PROGRAMS CORPORATION, MONITORING WELL LOCATION MAP - 4/28/04.

AECOM

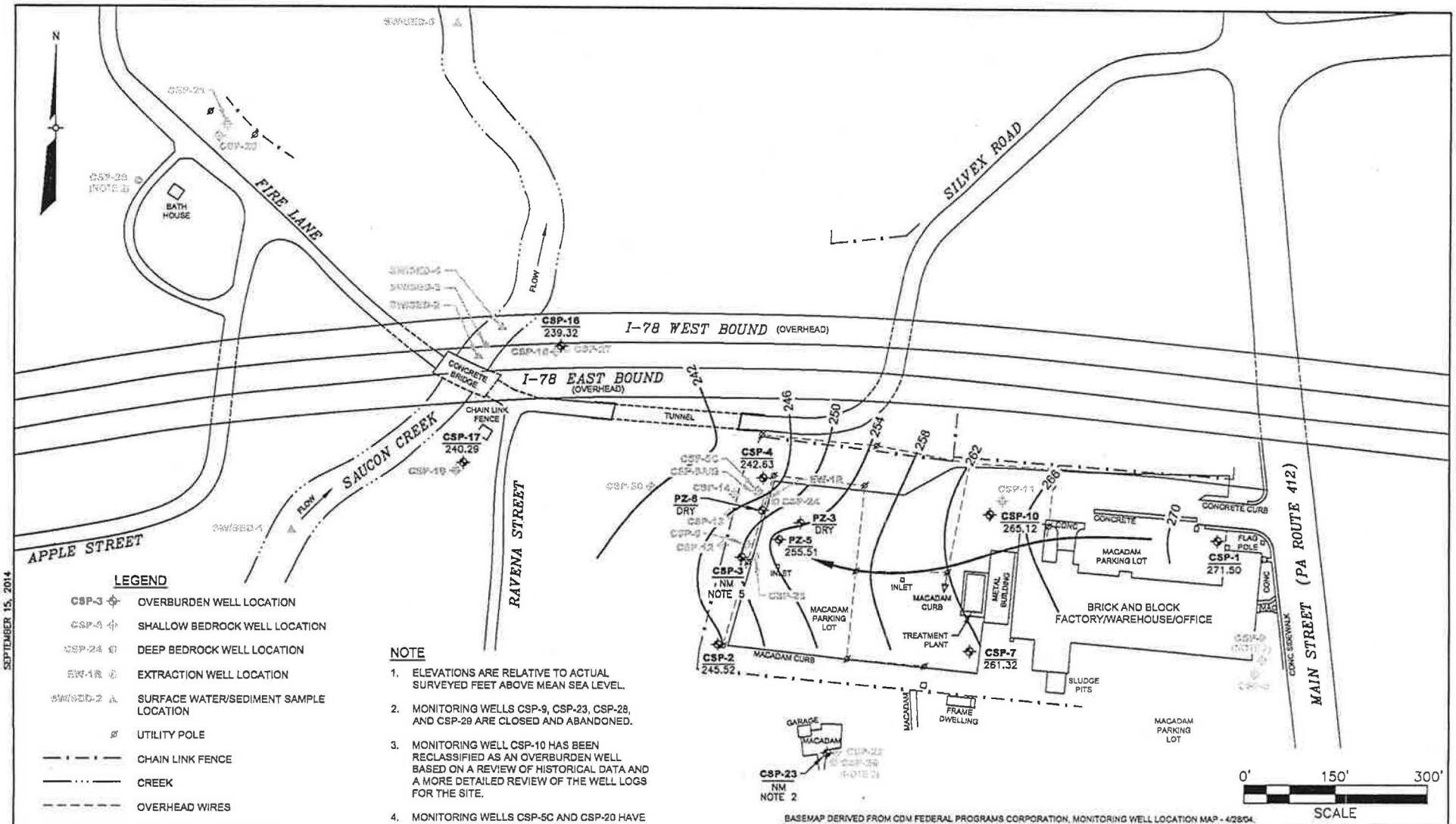
FIGURE 8:
GROUNDWATER QUALITY MAP
JULY 2014

HELLERTOWN MANUFACTURING COMPANY
HELLERTOWN, PENNSYLVANIA

SEPTEMBER 2014 60155138

SEPTEMBER 15, 2014

5138007B.DWG



LEGEND

- CSP-3 — OVERBURDEN WELL LOCATION
- CSP-4 — SHALLOW BEDROCK WELL LOCATION
- CSP-24 — DEEP BEDROCK WELL LOCATION
- SW-1R — EXTRACTION WELL LOCATION
- SW/SED-2 — SURFACE WATER/SEDIMENT SAMPLE LOCATION
- UTILITY POLE
- CHAIN LINK FENCE
- CREEK
- OVERHEAD WIRES
- GROUNDWATER CONTOUR
- INFERRED GROUNDWATER FLOW DIRECTION
- CSP-2 / 245.52 — WELL IDENTIFICATION / GROUNDWATER ELEVATION (FT)
- NM — NOT MEASURED

NOTE

1. ELEVATIONS ARE RELATIVE TO ACTUAL SURVEYED FEET ABOVE MEAN SEA LEVEL.
2. MONITORING WELLS CSP-9, CSP-23, CSP-28, AND CSP-29 ARE CLOSED AND ABANDONED.
3. MONITORING WELL CSP-10 HAS BEEN RECLASSIFIED AS AN OVERBURDEN WELL BASED ON A REVIEW OF HISTORICAL DATA AND A MORE DETAILED REVIEW OF THE WELL LOGS FOR THE SITE.
4. MONITORING WELLS CSP-5C AND CSP-20 HAVE BEEN RECLASSIFIED AS SHALLOW WELLS BASED ON A REVIEW OF HISTORICAL DATA AND A MORE DETAILED REVIEW OF THE WELL LOGS FOR THE SITE.
5. MONITORING WELL CSP-3 COULD NOT BE MEASURED DUE TO AN OBSTRUCTION INSIDE THE WELL.

BASEMAP DERIVED FROM CDM FEDERAL PROGRAMS CORPORATION, MONITORING WELL LOCATION MAP - 4/28/04.

AECOM

FIGURE 9

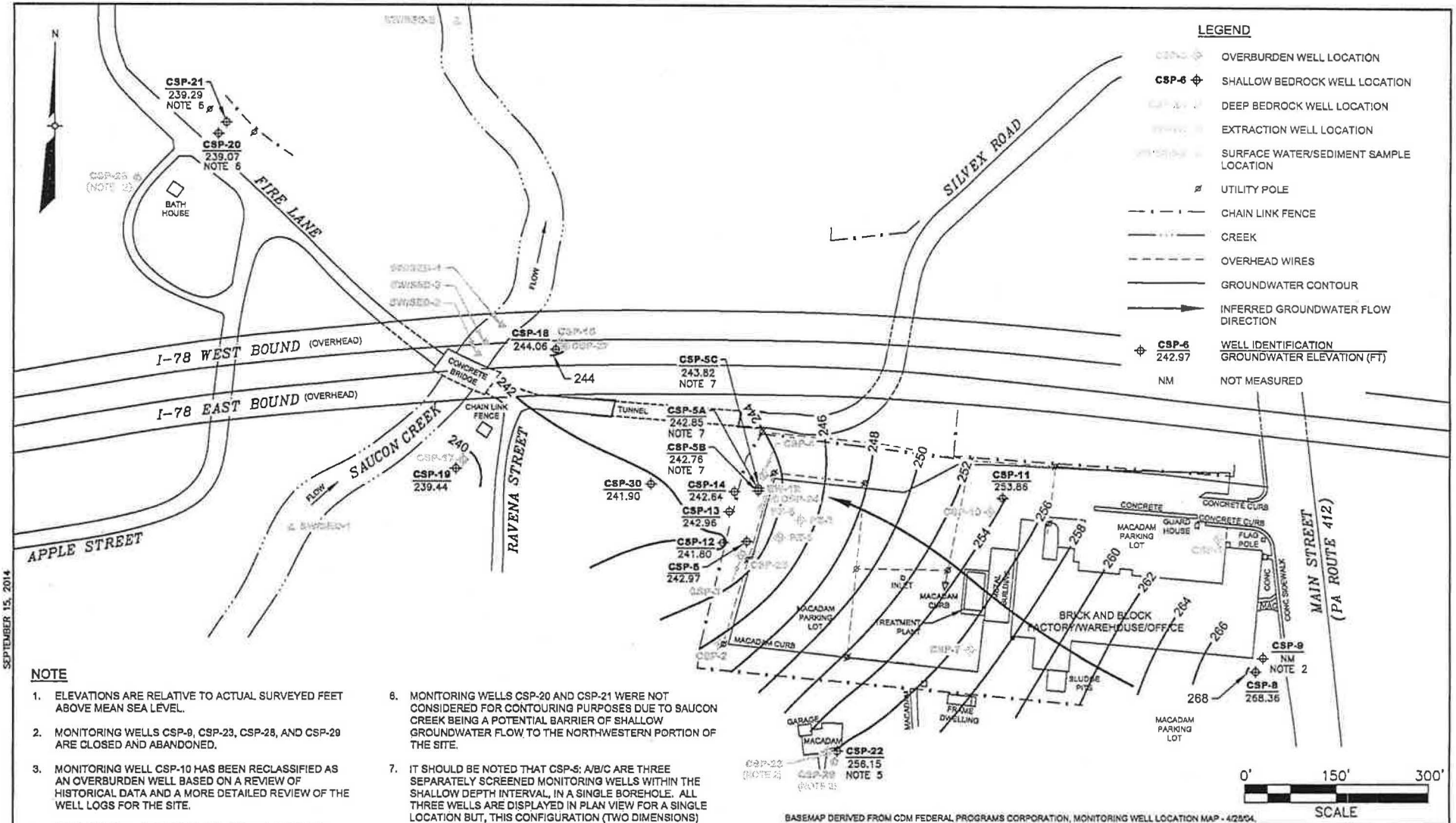
OVERBURDEN GROUNDWATER CONTOUR MAP
JULY 7, 2014

HELLERTOWN MANUFACTURING COMPANY
HELLERTOWN, PENNSYLVANIA

SEPTEMBER 2014 60155136

SEPTEMBER 15, 2014

513850075.DWG



NOTE

1. ELEVATIONS ARE RELATIVE TO ACTUAL SURVEYED FEET ABOVE MEAN SEA LEVEL.
2. MONITORING WELLS CSP-9, CSP-23, CSP-28, AND CSP-29 ARE CLOSED AND ABANDONED.
3. MONITORING WELL CSP-10 HAS BEEN RECLASSIFIED AS AN OVERBURDEN WELL BASED ON A REVIEW OF HISTORICAL DATA AND A MORE DETAILED REVIEW OF THE WELL LOGS FOR THE SITE.
4. MONITORING WELLS CSP-5C AND CSP-20 HAVE BEEN RECLASSIFIED AS SHALLOW WELLS BASED ON A REVIEW OF HISTORICAL DATA AND A MORE DETAILED REVIEW OF THE WELL LOGS FOR THE SITE.
5. THE WATER LEVEL FOR MONITORING WELL CSP-22 WAS MEASURED AT THE TIME OF SAMPLE COLLECTION ON JULY 9, 2014.
6. MONITORING WELLS CSP-20 AND CSP-21 WERE NOT CONSIDERED FOR CONTOURING PURPOSES DUE TO SAUCON CREEK BEING A POTENTIAL BARRIER OF SHALLOW GROUNDWATER FLOW TO THE NORTH-WESTERN PORTION OF THE SITE.
7. IT SHOULD BE NOTED THAT CSP-5: A/B/C ARE THREE SEPARATELY SCREENED MONITORING WELLS WITHIN THE SHALLOW DEPTH INTERVAL, IN A SINGLE BOREHOLE. ALL THREE WELLS ARE DISPLAYED IN PLAN VIEW FOR A SINGLE LOCATION BUT, THIS CONFIGURATION (TWO DIMENSIONS) CANNOT ACCURATELY DEPICT MULTIPLE GROUNDWATER POTENTIOMETRIC VALUES. THEREFORE, CSP-5B WAS USED IN THE CREATION OF GROUNDWATER POTENTIOMETRIC CONTOURS FOR THIS MAP. GROUNDWATER ELEVATIONS FOR CSP-5: A/C ARE POSTED FOR REFERENCE.

BASEMAP DERIVED FROM CDM FEDERAL PROGRAMS CORPORATION, MONITORING WELL LOCATION MAP - 4/25/04.

AECOM

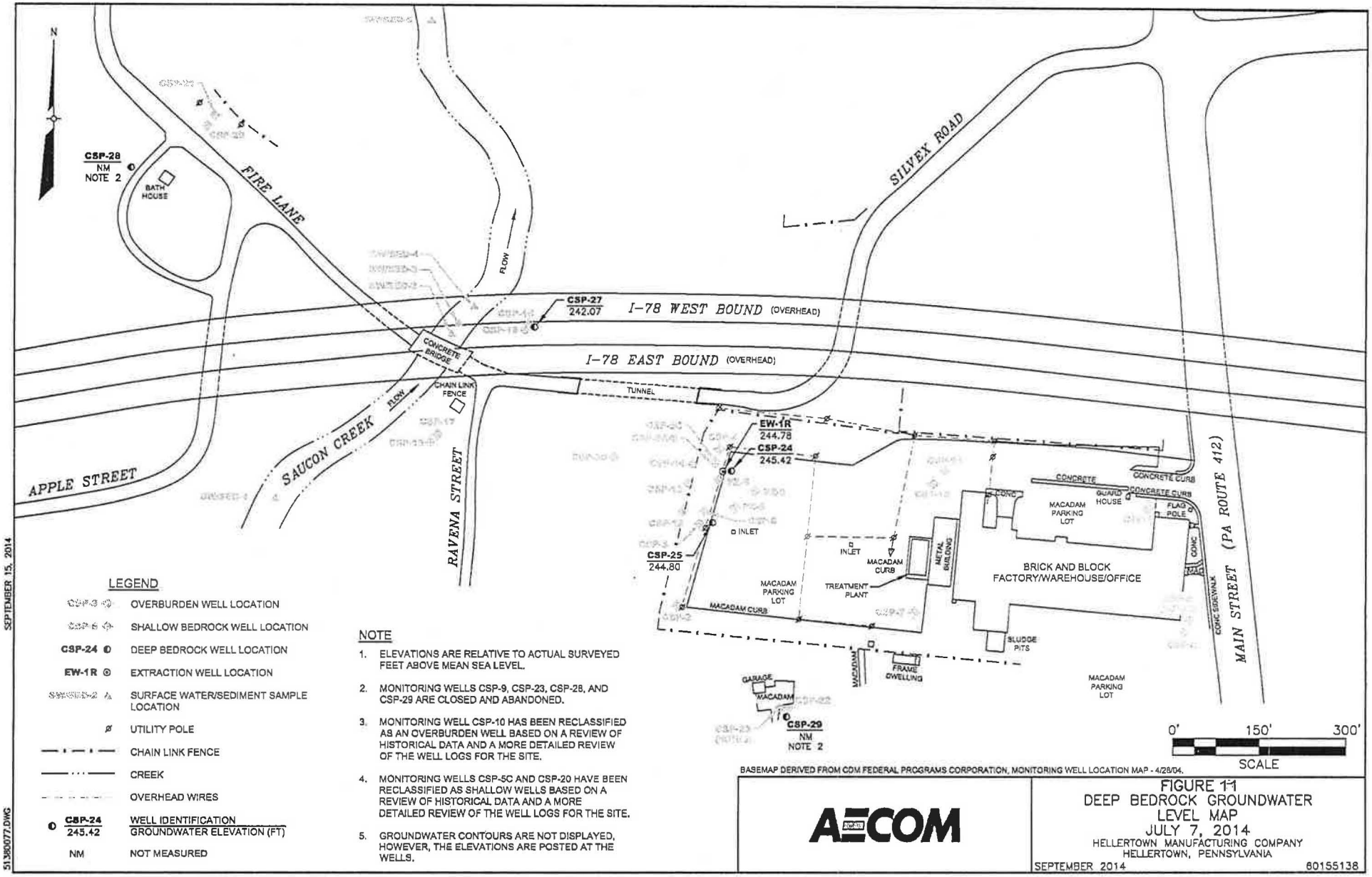
FIGURE 10
SHALLOW BEDROCK GROUNDWATER CONTOUR MAP
JULY 7, 2014

HELLERTOWN MANUFACTURING COMPANY
HELLERTOWN, PENNSYLVANIA

SEPTEMBER 2014 60155138

SEPTEMBER 15, 2014

51380076.DWG



LEGEND

- OVERBURDEN WELL LOCATION
- SHALLOW BEDROCK WELL LOCATION
- CSP-24 — DEEP BEDROCK WELL LOCATION
- EW-1R — EXTRACTION WELL LOCATION
- SURFACE WATER/SEDIMENT SAMPLE LOCATION
- UTILITY POLE
- CHAIN LINK FENCE
- CREEK
- OVERHEAD WIRES
- CSP-24 / 245.42 — WELL IDENTIFICATION / GROUNDWATER ELEVATION (FT)
- NM — NOT MEASURED

NOTE

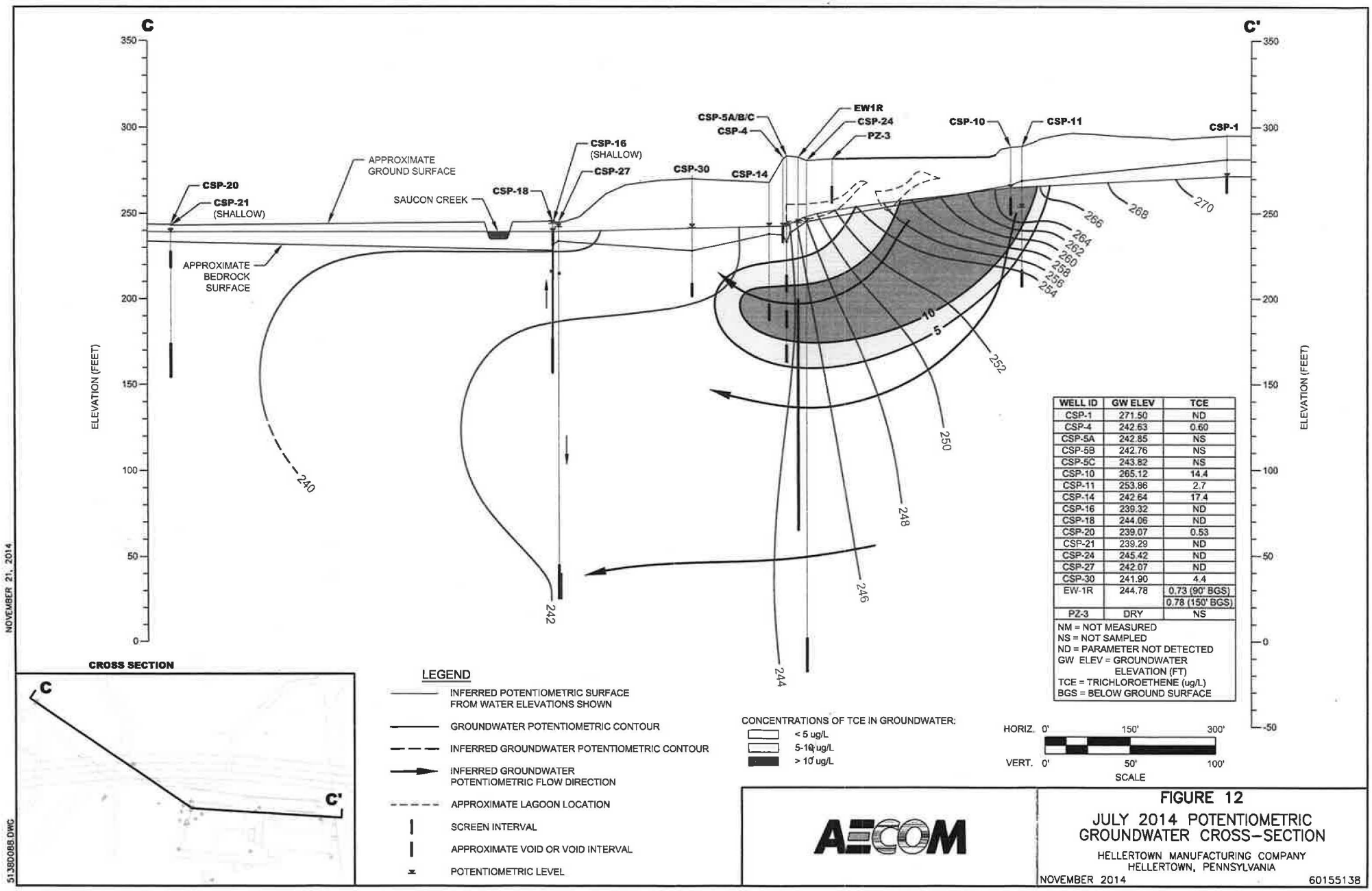
1. ELEVATIONS ARE RELATIVE TO ACTUAL SURVEYED FEET ABOVE MEAN SEA LEVEL.
2. MONITORING WELLS CSP-9, CSP-23, CSP-28, AND CSP-29 ARE CLOSED AND ABANDONED.
3. MONITORING WELL CSP-10 HAS BEEN RECLASSIFIED AS AN OVERBURDEN WELL BASED ON A REVIEW OF HISTORICAL DATA AND A MORE DETAILED REVIEW OF THE WELL LOGS FOR THE SITE.
4. MONITORING WELLS CSP-5C AND CSP-20 HAVE BEEN RECLASSIFIED AS SHALLOW WELLS BASED ON A REVIEW OF HISTORICAL DATA AND A MORE DETAILED REVIEW OF THE WELL LOGS FOR THE SITE.
5. GROUNDWATER CONTOURS ARE NOT DISPLAYED, HOWEVER, THE ELEVATIONS ARE POSTED AT THE WELLS.

BASEMAP DERIVED FROM CDM FEDERAL PROGRAMS CORPORATION, MONITORING WELL LOCATION MAP - 4/26/04.

AECOM

FIGURE 1-1
DEEP BEDROCK GROUNDWATER LEVEL MAP
JULY 7, 2014
HELLERTOWN MANUFACTURING COMPANY
HELLERTOWN, PENNSYLVANIA
SEPTEMBER 2014 60155138

SEPTEMBER 15, 2014
513600077.DWG



WELL ID	GW ELEV	TCE
CSP-1	271.50	ND
CSP-4	242.63	0.60
CSP-5A	242.85	NS
CSP-5B	242.76	NS
CSP-5C	243.82	NS
CSP-10	265.12	14.4
CSP-11	253.86	2.7
CSP-14	242.64	17.4
CSP-16	239.32	ND
CSP-18	244.06	ND
CSP-20	239.07	0.53
CSP-21	239.29	ND
CSP-24	245.42	ND
CSP-27	242.07	ND
CSP-30	241.90	4.4
EW-1R	244.78	0.73 (90' BGS)
		0.78 (150' BGS)
PZ-3	DRY	NS

NM = NOT MEASURED
NS = NOT SAMPLED
ND = PARAMETER NOT DETECTED
GW ELEV = GROUNDWATER ELEVATION (FT)
TCE = TRICHLOROETHENE (ug/L)
BGS = BELOW GROUND SURFACE

AECOM

FIGURE 12

JULY 2014 POTENTIOMETRIC GROUNDWATER CROSS-SECTION

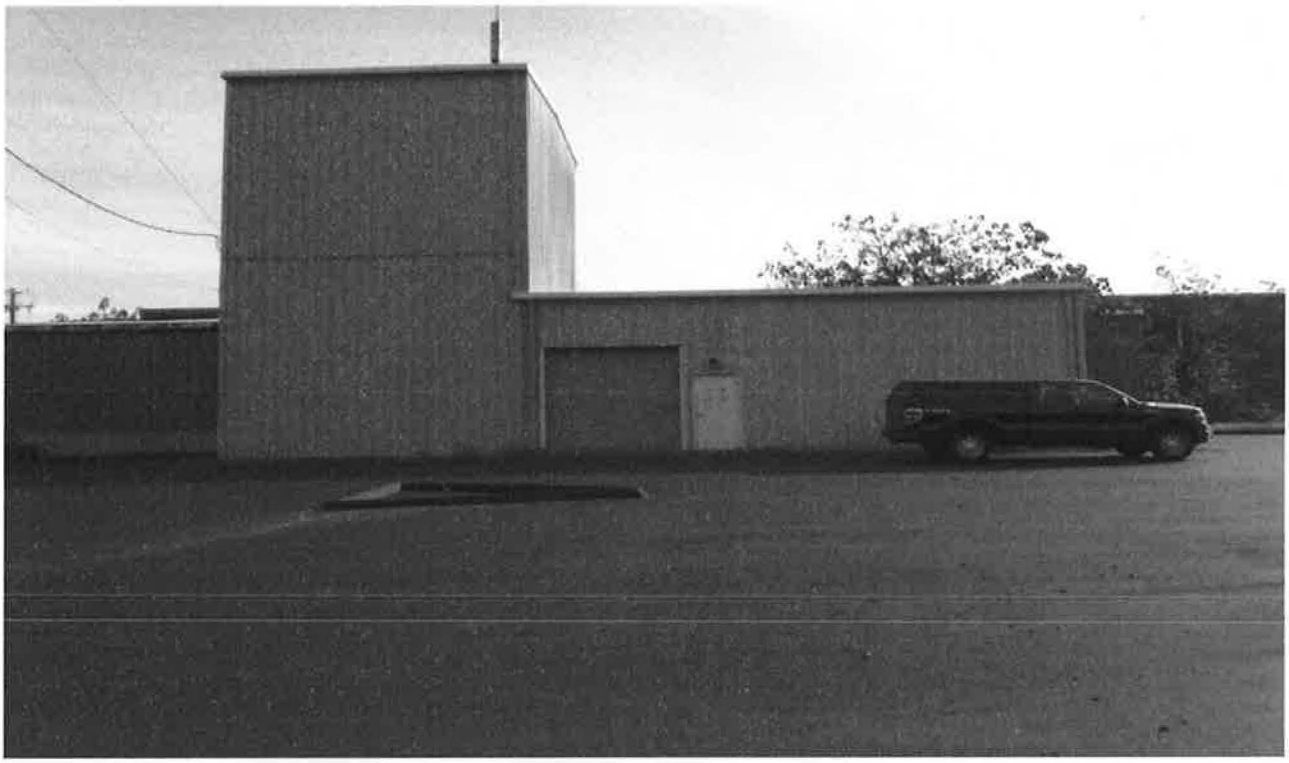
HELLERTOWN MANUFACTURING COMPANY
HELLERTOWN, PENNSYLVANIA

NOVEMBER 2014 60155138

ATTACHMENT 1

Hellertown Manufacturing Co. Superfund Site

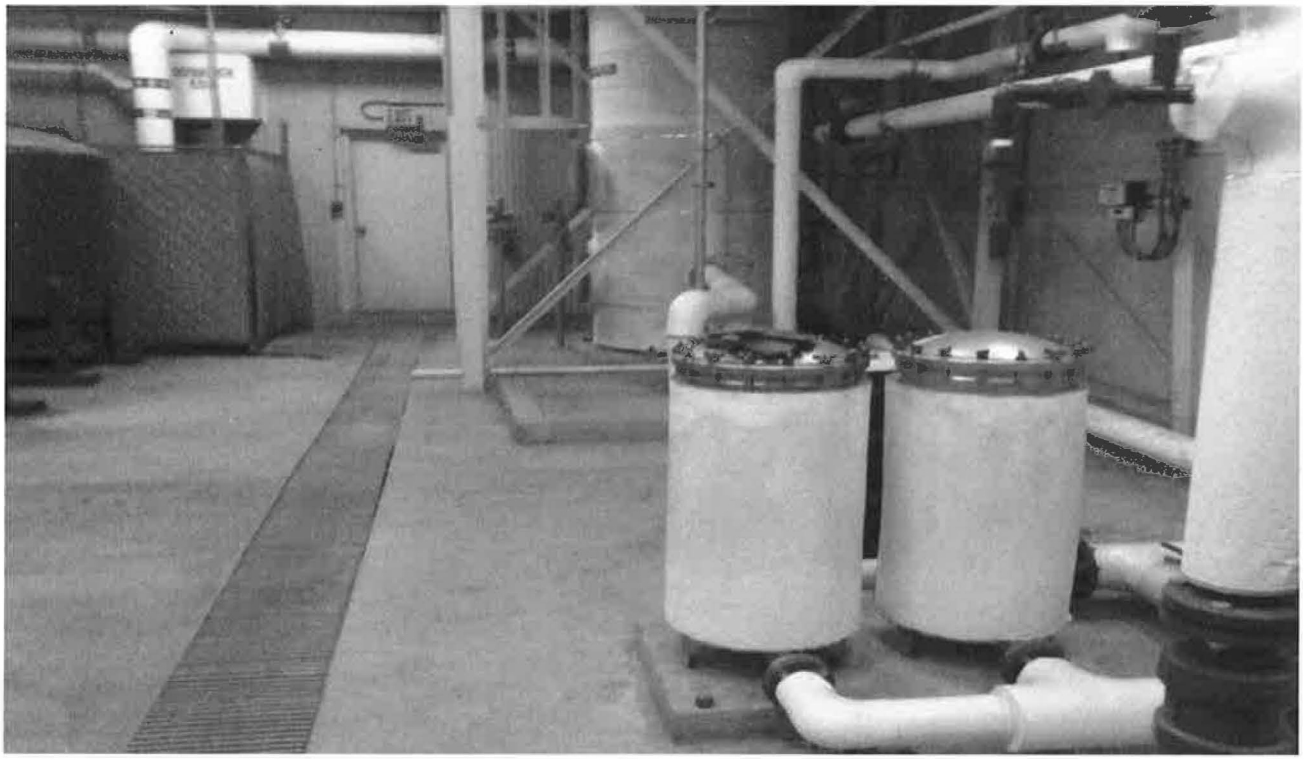
Site Photo Log



Hellertown Manufacturing Co. Superfund Site – Fourth Five-Year Review
Groundwater Treatment Plant Building Looking West across the Paved (Former Lagoons) Area.

Hellertown Manufacturing Co. Superfund Site – Fourth Five-Year Review
Former Lagoon Area Looking East from the Groundwater Treatment Plant Building

Hellertown Manufacturing Co. Superfund Site - Fourth Five-Year Review
Groundwater Treatment Plant - Cartridge Filters and Process Piping

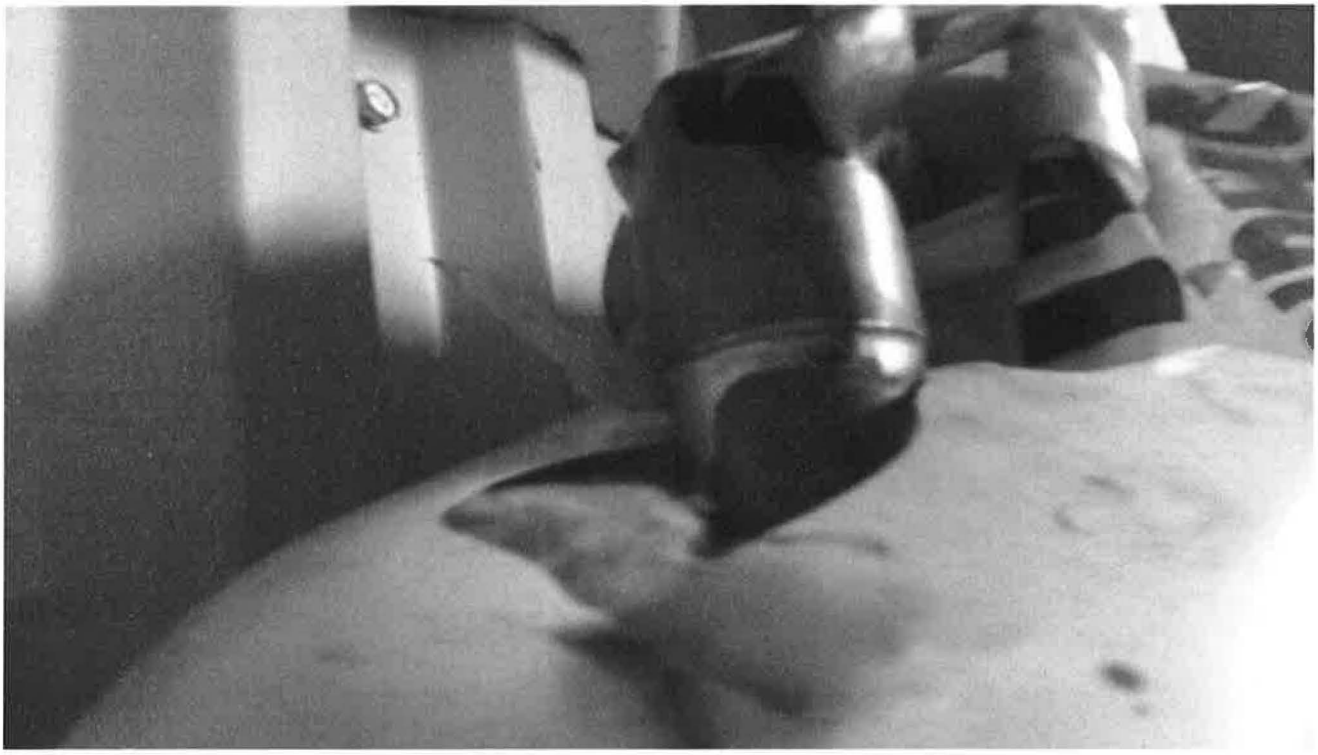


Hellertown Manufacturing Co. Superfund Site - Fourth Five-Year Review
Groundwater Treatment Plant – Cartridge Filters and Air Stripper

Hellertown Manufacturing Co. Superfund Site - Fourth Five-Year Review
Geoprobe in Monitoring Well CSP-7 Area

Hellertown Manufacturing Co. Superfund Site - Fourth Five-Year Review
Geoprobe in Former Underground Storage Tank Area

Hellertown Manufacturing Co. Superfund Site - Fourth Five-Year Review
Minor Surface Cracking in Paved Former Lagoons Area



Hellertown Manufacturing Co. Superfund Site - Fourth Five-Year Review
Freeze/Thaw Damage to Treatment Plant Piping

ATTACHMENT 2

Hellertown Manufacturing Co. Superfund Site

September 2012 Discharge Monitoring Report

AECOM
100 Sterling Parkway, Suite 205
Mechanicsburg, PA 17055

717 795 8001 tel
717 795 8280 fax

January 10, 2013

Ms. Meg Boyer
Pennsylvania Department of Environmental Protection
Environmental Cleanup Program
Bethlehem District Office
4530 Bath Pike
Bethlehem, PA 18017-9074

Subject: Discharge Monitoring Report – 3rd Quarter 2012
Hellertown Manufacturing NPL Site, Requisition No. IRRSC6-2-192

Dear Ms. Boyer:

AECOM Technical Services, Inc. (AECOM) is pleased to submit the Quarterly Discharge Monitoring Report (Report) for the Hellertown Manufacturing NPL site treatment system for the third quarter of 2012. This Report summarizes the treated groundwater discharged between July 1, 2012 and September 30, 2012. Approximately 9,772,962 gallons of treated water was discharged during this period at an average rate of approximately 0.106 MGD.

As required, one effluent sample was collected during the third quarter 2012for analysis by EPA Method 8260. The sample was collected on September 25, 2012 and is assumed to be representative of the third quarter operation. The enclosed analytical results on Table 1 indicate that all analyzed parameters are within discharge limits. The mass removal of the contaminants of concern for the third quarter was 0.24 pounds. If you have any questions regarding this submittal, or require additional information, please contact me at 717-790-3420.

Yours sincerely,

AECOM Technical Services, Inc.

James M. Profeto, Jr.
Sr. Project Manager

JMP/hg

Attachment
Mike Niederreither – AECOM (w/ attachment)

Table 1
HELLERTOWN MANUFACTURING NPL SITE
Groundwater Treatment System Analytical Summary

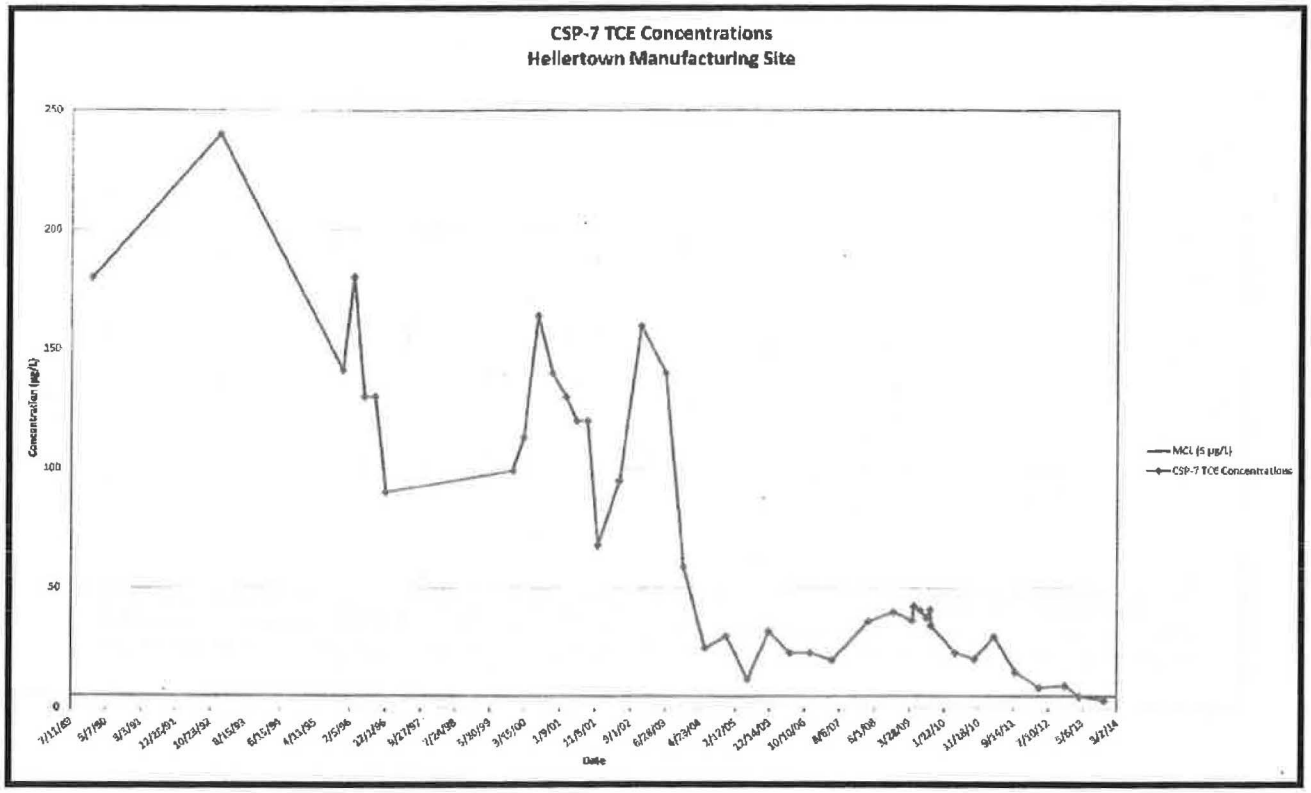
Well ID	Sample Date	Benzene	Total BTEX	PCE	TCE	VC	Trans-1,2 DCE	cis-1,2 DCE*
		(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
Discharge Limit		1	100	1	1	1	1	N/A
Effluent	9/25/2012	<0.50 U	<1.0 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U
Influent	9/25/2012	<0.50 U	<1.0 U	0.89	2	<0.50 U	<0.50 U	<0.50 U

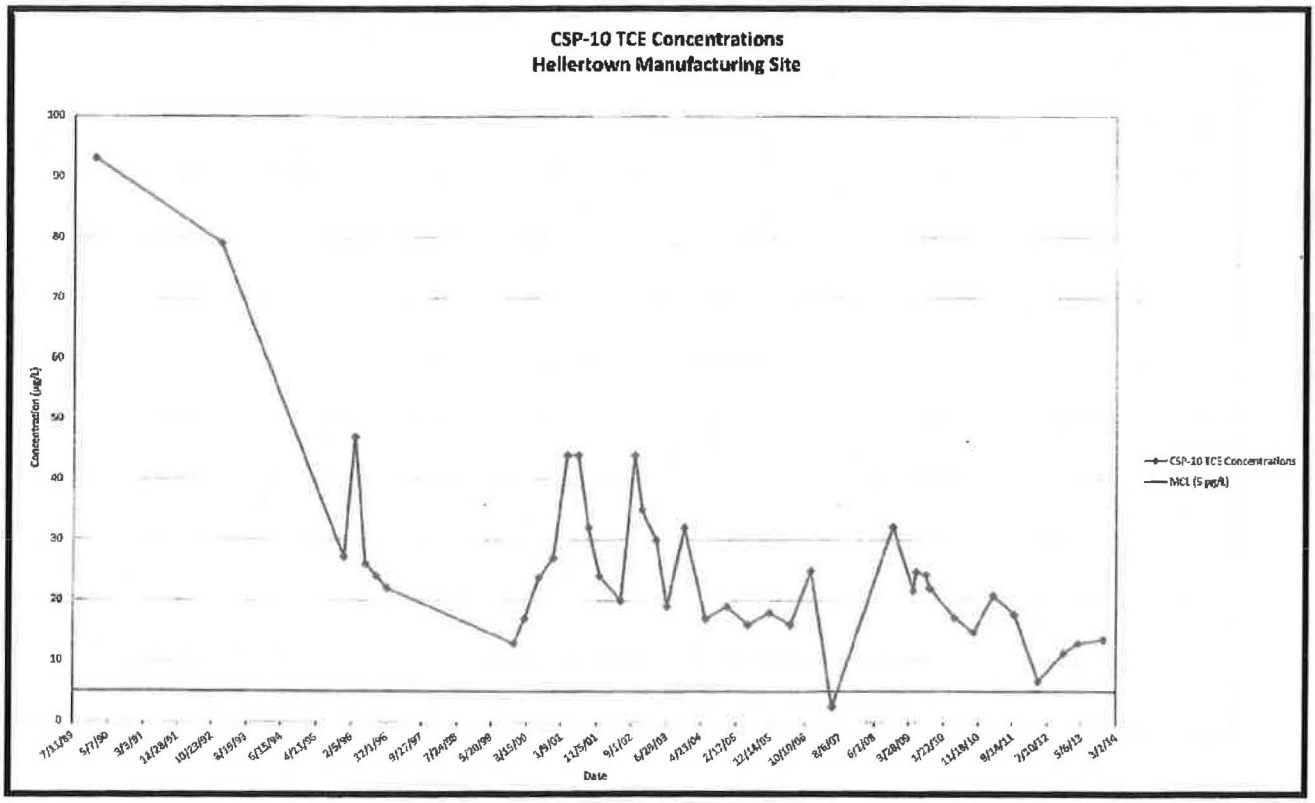
Notes:
Total BTEX - sum of benzene, toluene, ethylbenzene and xylenes
PCE - Tetrachloroethene
TCE - Trichloroethene
VC - Vinyl Chloride (Chloroethene)
Trans-1,2 DCE - Trans-1,2 Dichloroethene
Cis-1,2 DCE - Cis-1,2 Dichloroethene
* - cis-1,2 DCE is not a part of the discharge permit requirements, but is reported due to consistent detection in the samples collected at the site
U - Indicates compound was analyzed for but not detected. The sample quantitation limit is reported.

ATTACHMENT 3

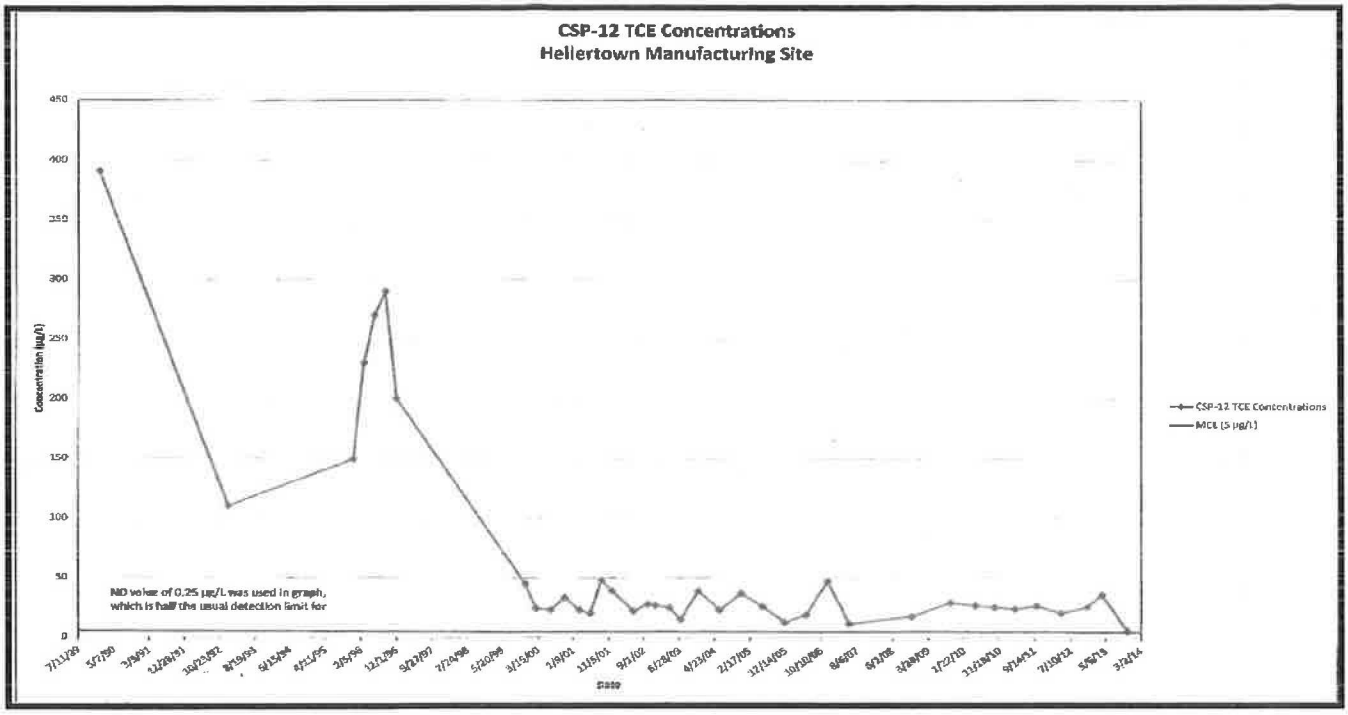
Groundwater Contaminant Trend Charts

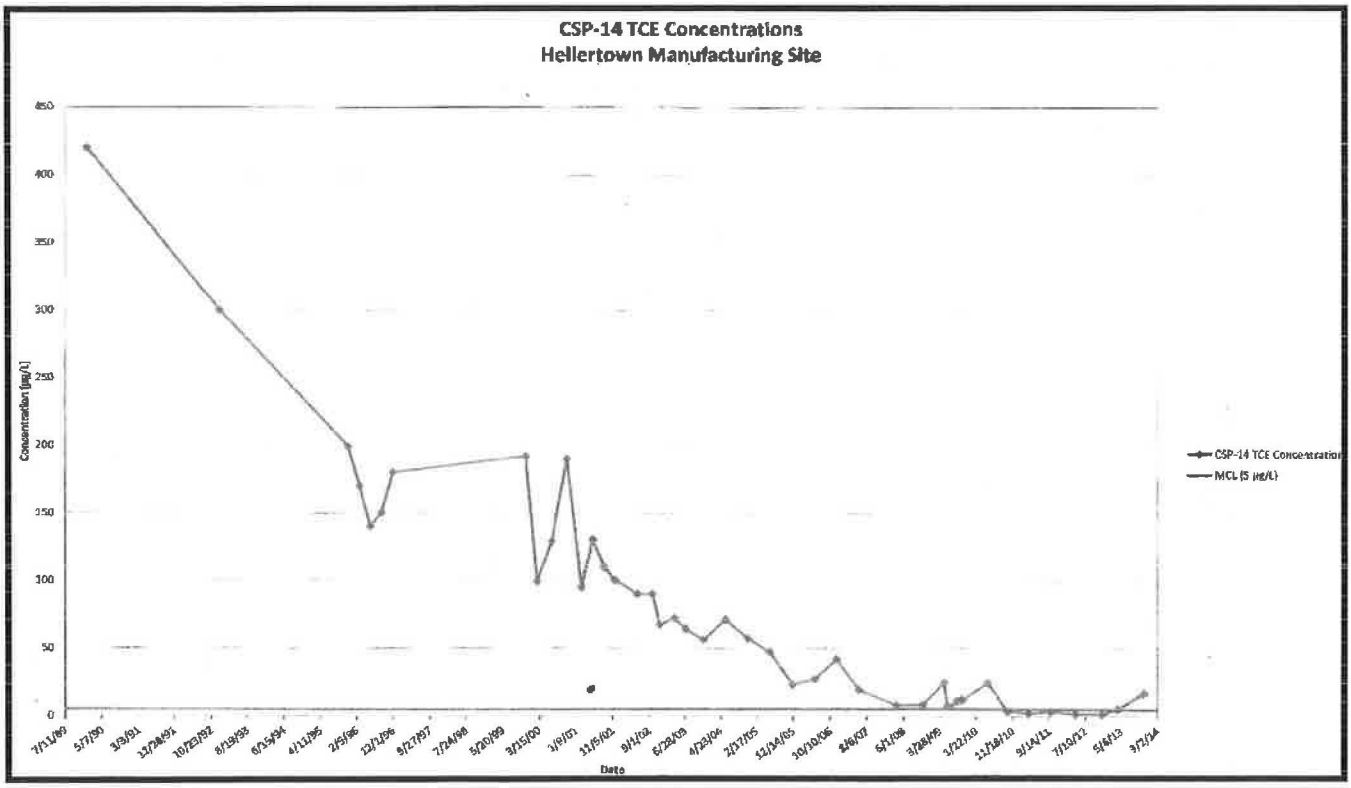
Overburden Monitoring Wells

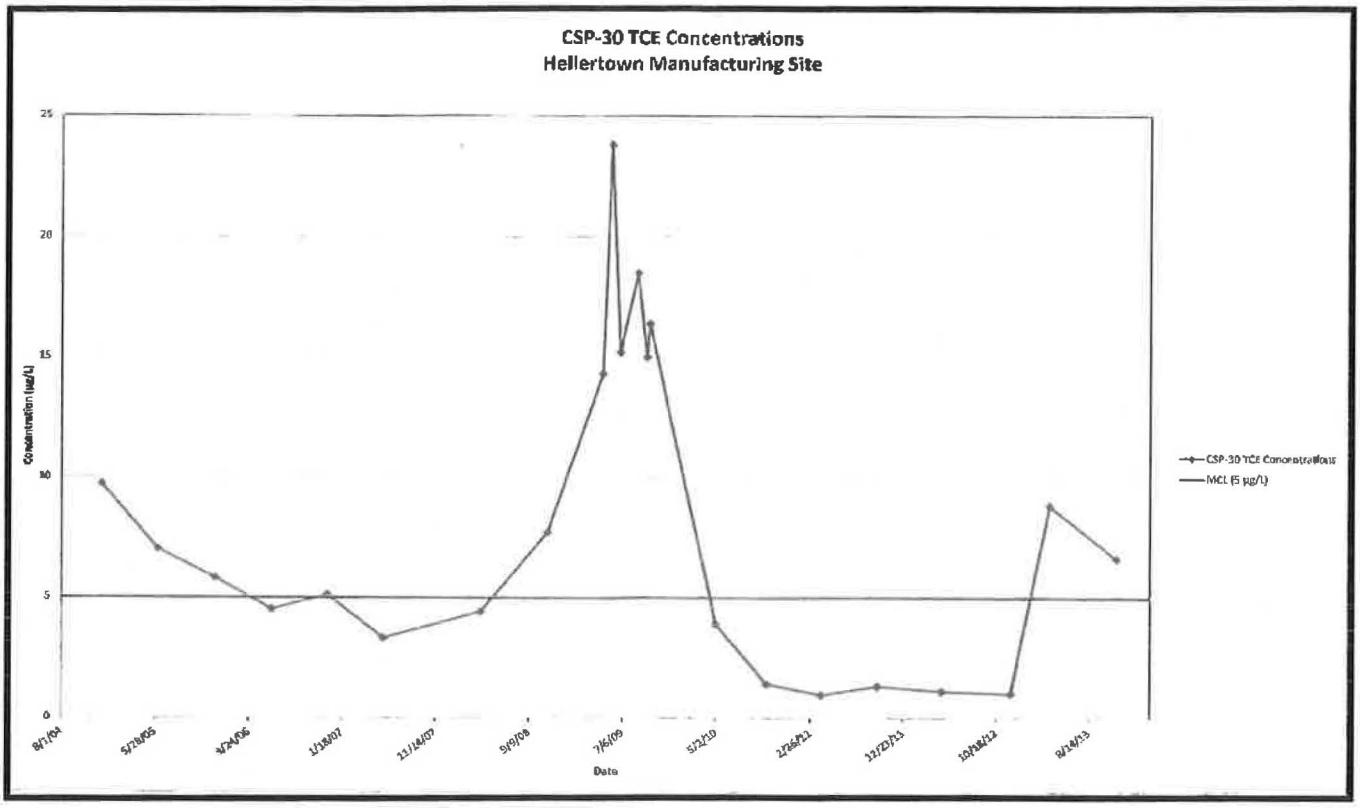




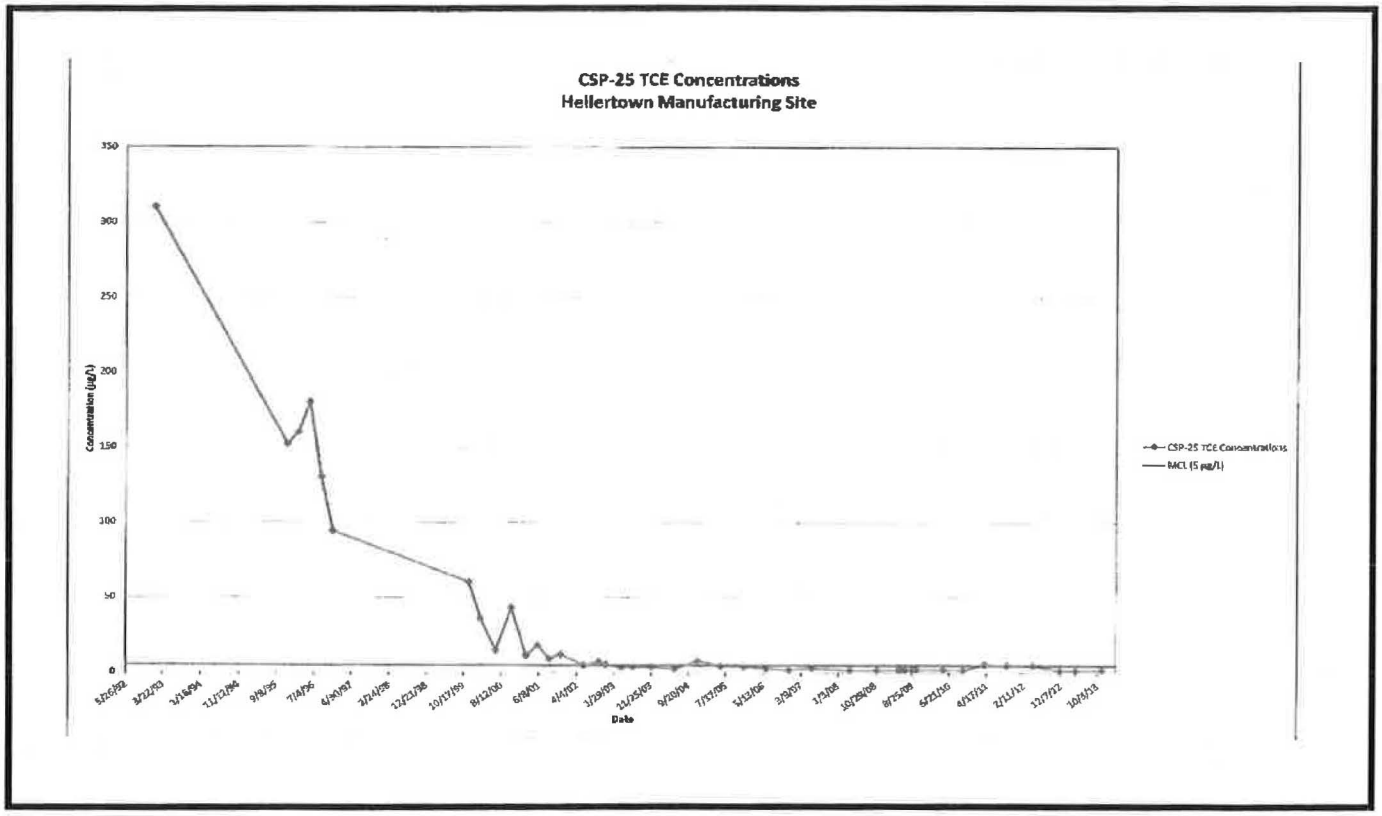
Shallow Bedrock Monitoring Wells







Deep Bedrock Monitoring Well



ATTACHMENT 4

Hellertown Manufacturing Co. Superfund Site

Site Inspection Checklist

Five-Year Review Site Inspection Checklist

Purpose of the Checklist

The site inspection checklist provides a useful method for collecting important information during the site inspection portion of the five-year review. The checklist serves as a reminder of what information should to be gathered and provides the means of checking off information obtained and reviewed, or information not available or applicable. The checklist is divided into sections as follows:

I. Site Information
II. Interviews
III. On-site Documents & Records Verified
IV. O&M Costs
V. Access and Institutional Controls
VI. General Site Conditions
VII. Landfill Covers
VIII. Vertical Barrier Walls
IX. Groundwater/Surface Water Remedies
X. Other Remedies
XI. Overall Observations

Some data and information identified in the checklist may or may not be available at the site depending on how the site is managed. Sampling results, costs, and maintenance reports may be kept on site or may be kept in the offices of the contractor or at State offices. In cases where the information is not kept at the site, the item should not be checked as "not applicable," but rather it should be obtained from the office or agency where it is maintained. If this is known in advance, it may be possible to obtain the information before the site inspection.

This checklist was developed by EPA and the U.S. Army Corps of Engineers (USACE). It focuses on the two most common types of remedies that are subject to five-year reviews: landfill covers, and groundwater pump and treat remedies. Sections of the checklist are also provided for some other remedies. The sections on general site conditions would be applicable to a wider variety of remedies. The checklist should be modified to suit your needs when inspecting other types of remedies, as appropriate.

The checklist may be completed and attached to the Five-Year Review report to document site status. Please note that the checklist is not meant to be completely definitive or restrictive; additional information may be supplemented if the reviewer deems necessary. Also note that actual site conditions should be documented with photographs whenever possible.

Using the Checklist for Types of Remedies

The checklist has sections designed to capture information concerning the main types of remedies which are found at sites requiring five-year reviews. These remedies are landfill covers (Section VII of the checklist) and groundwater and surface water remedies (Section IX of the checklist). The primary elements and appurtenances for these remedies are listed in sections which can be checked off as the facility is inspected. The opportunity is also provided to note site conditions, write comments on the facilities, and attach any additional pertinent information. If a site includes remedies beyond these, such as soil vapor extraction or soil landfarming, the information should be gathered in a similar manner and attached to the checklist.

Considering Operation and Maintenance Costs

Unexpectedly widely varying or unexpectedly high O&M costs may be early indicators of remedy problems. For this reason, it is important to obtain a record of the original O&M cost estimate and of annual O&M costs during the years for which costs incurred are available. Section IV of the checklist provides a place for documenting annual costs and for commenting on unanticipated or unusually high O&M costs. A more detailed categorization of costs may be attached to the checklist if available. Examples of categories of O&M costs are listed below.

Operating Labor - This includes all wages, salaries, training, overhead, and fringe benefits associated with the labor needed for operation of the facilities and equipment associated with the remedial actions.

Maintenance Equipment and Materials - This includes the costs for equipment, parts, and other materials required to perform routine maintenance of facilities and equipment associated with a remedial action.

Maintenance Labor - This includes the costs for labor required to perform routine maintenance of facilities and for equipment associated with a remedial action.

Auxiliary Materials and Energy - This includes items such as chemicals and utilities which can include electricity, telephone, natural gas, water, and fuel. Auxiliary materials include other expendable materials such as chemicals used during plant operations.

Purchased Services - This includes items such as sampling costs, laboratory fees, and other professional services for which the need can be predicted.

Administrative Costs - This includes all costs associated with administration of O&M not included under other categories, such as labor overhead.

Insurance, Taxes and Licenses - This includes items such as liability and sudden and accidental insurance, real estate taxes on purchased land or right-of-way, licensing fees for certain technologies, and permit renewal and reporting costs.

Other Costs - This includes all other items which do not fit into any of the above categories.

[This page intentionally left blank.]

Please note that "O&M" is referred to throughout this checklist. At sites where Long-Term Response Actions are in progress, O&M activities may be referred to as "system operations" since these sites are not considered to be in the O&M phase while being remediated under the Superfund program.

Five-Year Review Site Inspection Checklist (Template)

(Working document for site inspection. Information may be completed by hand and attached to the Five-Year Review report as supporting documentation of site status. "N/A" refers to "not applicable.")

I. SITE INFORMATION	
Site name: Hellertown Manufacturing	**Date of inspection:** 9/10/14
Location and Region: Northampton Co., PA	**EPA ID:** PAD 002390748
Agency, office, or company leading the five-year review: USEPA	**Weather/temperature:** Sunny, 76°

Remedy Includes: (Check all that apply)

- X Landfill cover/containment
- X Access controls
- X Institutional controls
- X Groundwater pump and treatment
- X Surface water collection and treatment
- Monitored natural attenuation
- Groundwater containment
- Vertical barrier walls
- Other _____

Attachments: Inspection team roster attached Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M site manager** _____ _____ _____
   Name Title Date
   Interviewed at site at office by phone Phone no. _____
   Problems, suggestions; Report attached _____

2. **O&M staff** _____ _____ _____
   Name Title Date
   Interviewed at site at office by phone Phone no. _____
   Problems, suggestions; Report attached _____

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency Hellertown Borough
Contact Kathy Hartnett (K.H.) Borough Manager 9/10/14 _____
Name Title Date Phone no.
Problems; suggestions; Report attached K.H. satisfied w/the O&M of the Site. KH explained Site Zoning & expressed interest in re-use of site.

Agency PADEP
Contact Meg Boyer Proj. Mngr 9/10/14 610 861-2076
Name Title Date Phone no.
Problems; suggestions; Report attached Meg described on-going O&M activities, PADEP's opinion of current shutdown & upcoming work @ CSP-1 area.

Agency Hellertown Borough P.D.
Contact Bob Schupp Police Officer 9/10/14 _____
Name Title Date Phone no.
Problems; suggestions; Report attached Officer Schupp reported that the Site has generated no police activity, no vandalism, etc.

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; Report attached _____

4. **Other interviews** (optional) Report attached.

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1.	**O&M Documents**			
	✓O&M manual	(Readily available)	✓Up to date	N/A
	As-built drawings	Readily available	Up to date	✓N/A
	✓ Maintenance logs	(Readily available)	✓Up to date	N/A
	Remarks PADEP requested a copy of the As-Built drawings.			
2.	**Site-Specific Health and Safety Plan**	✓Readily available	Up to date	N/A
	Contingency plan/emergency response plan	Readily available	Up to date	✓N/A
	Remarks			
3.	**O&M and OSHA Training Records**	Readily available	Up to date	✓N/A
	Remarks			
4.	**Permits and Service Agreements**			
	Air discharge permit	✓Readily available	Up to date	N/A
	Effluent discharge	✓Readily available	Up to date	N/A
	Waste disposal, POTW	Readily available	Up to date	✓N/A
	Other permits	Readily available	Up to date	N/A
	Remarks			
5.	**Gas Generation Records**	Readily available	Up to date	✓N/A
	Remarks			
6.	**Settlement Monument Records**	Readily available	Up to date	✓N/A
	Remarks			
7.	**Groundwater Monitoring Records**	✓Readily available	✓Up to date	N/A
	Remarks			
8.	**Leachate Extraction Records**	Readily available	Up to date	✓N/A
	Remarks			
9.	**Discharge Compliance Records**			
	Air	✓Readily available	Up to date	N/A
	Water (effluent)	✓Readily available	Up to date	N/A
	Remarks			
10.	**Daily Access/Security Logs**	Readily available	Up to date	✓N/A
	Remarks			

IV. O&M COSTS

1. **O&M Organization**
   - State in-house
   - PRP in-house
   - Federal Facility in-house
   - Other
   - ✓ Contractor for State
   - Contractor for PRP
   - Contractor for Federal Facility

2. **O&M Cost Records**
   - Readily available — Up to date
   - Funding mechanism/agreement in place
   - Original O&M cost estimate _____ Breakdown attached

   Total annual cost by year for review period if available

From 1/10 (Date)	To 12/10 (Date)	$120,000 (Total cost)	Breakdown attached
From 1/11 (Date)	To 12/11 (Date)	$100,000 (Total cost)	Breakdown attached
From 1/12 (Date)	To 12/12 (Date)	$80,000 (Total cost)	Breakdown attached
From 1/13 (Date)	To 12/13 (Date)	$130,000 (Total cost)	Breakdown attached
From 1/14 (Date)	To 12/14 (Date)	$170,000 (Total cost)	Breakdown attached

3. **Unanticipated or Unusually High O&M Costs During Review Period**
   Describe costs and reasons: During the review period, the extraction well failed and required removal. Also, the GWTP experienced a power loss resulting in extensive damage caused by freezing water within process piping. Repairs not made but large costs would be extended if they were.

V. ACCESS AND INSTITUTIONAL CONTROLS ✓Applicable N/A

A. Fencing

1. **Fencing damaged** Location shown on site map Gates secured N/A
   Remarks Some minor fence damage noticed. Also, the gate at the SW corner needs a lock.

B. Other Access Restrictions

1. **Signs and other security measures** Location shown on site map N/A
   Remarks Additional signage needed.

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented — Yes ✓No N/A
Site conditions imply ICs not being fully enforced — Yes ✓No N/A

Type of monitoring (*e.g.*, self-reporting, drive by) Site visits
Frequency approx. monthly
Responsible party/agency PADEP, EPA
Contact Mey Boyer (Name) Project Mngr. (Title) ____ (Date) ____ (Phone no.)

Reporting is up-to-date — Yes No ✓N/A
Reports are verified by the lead agency — Yes No ✓N/A

Specific requirements in deed or decision documents have been met — Yes No ✓N/A
Violations have been reported — Yes No ✓N/A
Other problems or suggestions: Report attached

2. **Adequacy** ✓ICs are adequate ICs are inadequate N/A
Remarks

D. General

1. **Vandalism/trespassing** Location shown on site map ✓No vandalism evident
Remarks

2. **Land use changes on site** ✓N/A
Remarks

3. **Land use changes off site** ✓N/A
Remarks

VI. GENERAL SITE CONDITIONS

A. Roads ✓Applicable N/A

1. **Roads damaged** Location shown on site map ✓Roads adequate N/A
Remarks

B. Other Site Conditions

Remarks

VII. LANDFILL COVERS ✓Applicable N/A

A. Landfill Surface

1. **Settlement** (Low spots) Location shown on site map ✓Settlement not evident
   Areal extent_____ Depth_____
   Remarks

2. **Cracks** Location shown on site map Cracking not evident
   Lengths_____ Widths_____ Depths_____
   Remarks Surface cracks at numerous spots. Nothing too deep. Requires asphalt coating to repair.

3. **Erosion** Location shown on site map ✓Erosion not evident
   Areal extent_____ Depth_____
   Remarks

4. **Holes** Location shown on site map ✓Holes not evident
   Areal extent_____ Depth_____
   Remarks

5. **Vegetative Cover** Grass Cover properly established ✓No signs of stress
   Trees/Shrubs (indicate size and locations on a diagram)
   Remarks

6. **Alternative Cover (armored rock, concrete, etc.)** ✓N/A
   Remarks

7. **Bulges** Location shown on site map ✓Bulges not evident
   Areal extent_____ Height_____
   Remarks

8. **Wet Areas/Water Damage** ✓ Wet areas/water damage not evident
   - Wet areas — Location shown on site map — Areal extent_____
   - Ponding — Location shown on site map — Areal extent_____
   - Seeps — Location shown on site map — Areal extent_____
   - Soft subgrade — Location shown on site map — Areal extent_____

   Remarks_____

9. **Slope Instability** Slides — Location shown on site map ✓ No evidence of slope instability
   Areal extent_____
   Remarks_____

B. Benches Applicable ✓ N/A

(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

1. **Flows Bypass Bench** — Location shown on site map — ✓ N/A or okay
   Remarks_____

2. **Bench Breached** — Location shown on site map — ✓ N/A or okay
   Remarks_____

3. **Bench Overtopped** — Location shown on site map — ✓ N/A or okay
   Remarks_____

C. Letdown Channels Applicable ✓ N/A

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

1. **Settlement** — Location shown on site map — ✓ No evidence of settlement
   Areal extent_____ Depth_____
   Remarks_____

2. **Material Degradation** — Location shown on site map — ✓ No evidence of degradation
   Material type_____ Areal extent_____
   Remarks_____

3. **Erosion** — Location shown on site map — ✓ No evidence of erosion
   Areal extent_____ Depth_____
   Remarks_____

4. **Undercutting** Location shown on site map ✓No evidence of undercutting
Areal extent_____ Depth_____
Remarks_____

5. **Obstructions** Type_____ ✓No obstructions
Location shown on site map Areal extent_____
Size_____
Remarks_____

6. **Excessive Vegetative Growth** Type_____
✓No evidence of excessive growth
Vegetation in channels does not obstruct flow
Location shown on site map Areal extent_____
Remarks_____

D. Cover Penetrations ✓Applicable N/A

1. **Gas Vents** Active ✓Passive
Properly secured/locked Functioning Routinely sampled Good condition
Evidence of leakage at penetration Needs Maintenance
N/A
Remarks Vents installed around perimeter of capped area - no penetration.

2. **Gas Monitoring Probes**
Properly secured/locked Functioning Routinely sampled Good condition
Evidence of leakage at penetration Needs Maintenance ✓N/A
Remarks_____

3. **Monitoring Wells** (within surface area of landfill)
✓Properly secured/locked Functioning ✓Routinely sampled ✓Good condition
Evidence of leakage at penetration Needs Maintenance N/A
Remarks_____

4. **Leachate Extraction Wells**
Properly secured/locked Functioning Routinely sampled Good condition
Evidence of leakage at penetration Needs Maintenance ✓N/A
Remarks_____

5. **Settlement Monuments** Located Routinely surveyed ✓N/A
Remarks_____

E. Gas Collection and Treatment Applicable ✓N/A

1. **Gas Treatment Facilities**
   Flaring Thermal destruction Collection for reuse
   Good condition Needs Maintenance
   Remarks_____

2. **Gas Collection Wells, Manifolds and Piping**
   Good condition Needs Maintenance
   Remarks_____

3. **Gas Monitoring Facilities** (*e.g.*, gas monitoring of adjacent homes or buildings)
   Good condition Needs Maintenance N/A
   Remarks_____

F. Cover Drainage Layer ✓Applicable N/A

1. **Outlet Pipes Inspected** ✓Functioning N/A
   Remarks_____

2. **Outlet Rock Inspected** ✓Functioning N/A
   Remarks_____

G. Detention/Sedimentation Ponds Applicable ✓N/A

1. **Siltation** Areal extent_____ Depth_____ N/A
   Siltation not evident
   Remarks_____

2. **Erosion** Areal extent_____ Depth_____
   Erosion not evident
   Remarks_____

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

4. **Dam** Functioning N/A
   Remarks_____

H. Retaining Walls Applicable ✓ N/A

1. **Deformations** Location shown on site map Deformation not evident
   Horizontal displacement_____ Vertical displacement_____
   Rotational displacement_____
   Remarks_____

2. **Degradation** Location shown on site map Degradation not evident
   Remarks_____

I. Perimeter Ditches/Off-Site Discharge ✓ Applicable N/A

1. **Siltation** Location shown on site map ✓ Siltation not evident
   Areal extent_____ Depth_____
   Remarks_____

2. **Vegetative Growth** Location shown on site map ✓ N/A
   Vegetation does not impede flow
   Areal extent_____ Type_____
   Remarks_____

3. **Erosion** Location shown on site map ✓ Erosion not evident
   Areal extent_____ Depth_____
   Remarks_____

4. **Discharge Structure** ✓ Functioning N/A
   Remarks_____

VIII. VERTICAL BARRIER WALLS Applicable ✓ N/A

1. **Settlement** Location shown on site map Settlement not evident
   Areal extent_____ Depth_____
   Remarks_____

2. **Performance Monitoring** Type of monitoring_____
   Performance not monitored
   Frequency_____ Evidence of breaching
   Head differential_____
   Remarks_____

IX. GROUNDWATER/SURFACE WATER REMEDIES ✓ Applicable N/A

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

1. **Pumps, Wellhead Plumbing, and Electrical**
   Good condition All required wells properly operating ✓ Needs Maintenance N/A
   Remarks The lone extraction well failed in Jan 2013 due to electrical problem. Well not replaced.

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   Good condition ✓ Needs Maintenance
   Remarks Pipelines, wells, etc., would need inspection, cleaning prior to re-start of system.

3. **Spare Parts and Equipment**
   ✓ Readily available Good condition Requires upgrade Needs to be provided
   Remarks

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

1. **Collection Structures, Pumps, and Electrical**
   Good condition Needs Maintenance
   Remarks

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   Good condition Needs Maintenance
   Remarks

3. **Spare Parts and Equipment**
   Readily available Good condition Requires upgrade Needs to be provided
   Remarks

C. Treatment System (Applicable) N/A

1. **Treatment Train** (Check components that apply)
   - ✓ Metals removal
   - Oil/water separation
   - Bioremediation
   - ✓ Air stripping
   - Carbon adsorbers
   - ✓ Filters Cartridge
   - Additive (*e.g.*, chelation agent, flocculent) _____
   - Others _____
   - Good condition
   - ✓ Needs Maintenance
   - ✓ Sampling ports properly marked and functional
   - Sampling/maintenance log displayed and up to date
   - ✓ Equipment properly identified
   - Quantity of groundwater treated annually _____
   - Quantity of surface water treated annually _____

   Remarks _____

2. **Electrical Enclosures and Panels** (properly rated and functional)
   - N/A
   - ✓ Good condition
   - Needs Maintenance

   Remarks _____

3. **Tanks, Vaults, Storage Vessels**
   - N/A
   - ✓ Good condition
   - Proper secondary containment
   - Needs Maintenance

   Remarks _____

4. **Discharge Structure and Appurtenances**
   - N/A
   - ✓ Good condition
   - Needs Maintenance

   Remarks _____

5. **Treatment Building(s)**
   - N/A
   - ✓ Good condition (esp. roof and doorways)
   - Needs repair
   - Chemicals and equipment properly stored

   Remarks _____

6. **Monitoring Wells** (pump and treatment remedy)
   - ✓ Properly secured/locked
   - ✓ Functioning
   - ✓ Routinely sampled
   - ✓ Good condition
   - ✓ All required wells located
   - Needs Maintenance
   - N/A

   Remarks _____

D. Monitoring Data

1. Monitoring Data
   - ✓ Is routinely submitted on time
   - ✓ Is of acceptable quality

2. Monitoring data suggests:
   - ✓ Groundwater plume is effectively contained
   - ✓ Contaminant concentrations are declining

D. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)
✓Properly secured/locked ✓Functioning ✓Routinely sampled ✓Good condition
✓All required wells located Needs Maintenance N/A
Remarks PADEP currently attempting to demonstrate that MNA is an acceptable remedy alternate.

X. OTHER REMEDIES

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

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

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

The GWTS, when operating effectively contains the GW contamination plume and removes contaminants. However, contaminant levels have become so low that the combined influent into the GWTP already meets discharge standards. Notwithstanding the damage to the GWTP and the extraction well, EPA feels that an investigation into alternate remedies is warranted at this point.

B. Adequacy of O&M

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

At this point (with the GWTP inoperable) O&M generally consists of inspections. The site remains in good conditions, although a few O&M-type items were noted during the inspection:

1) Remove trees immediately adjacent to Property "B."
2) Provide a lock for the SW gate.
3) Apply an asphalt sealant to the cap area.

C. Early Indicators of Potential Remedy Problems

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

Because the GW plume is contained to the general site area and there is no pathway for exposure identified, the GWTP condition described earlier, along with the current shutdown and evaluation of remedy, are not affecting the protectiveness.

D. Opportunities for Optimization

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

EPA will await the MNA monitoring results from the state (PADEP) and discuss further site action.

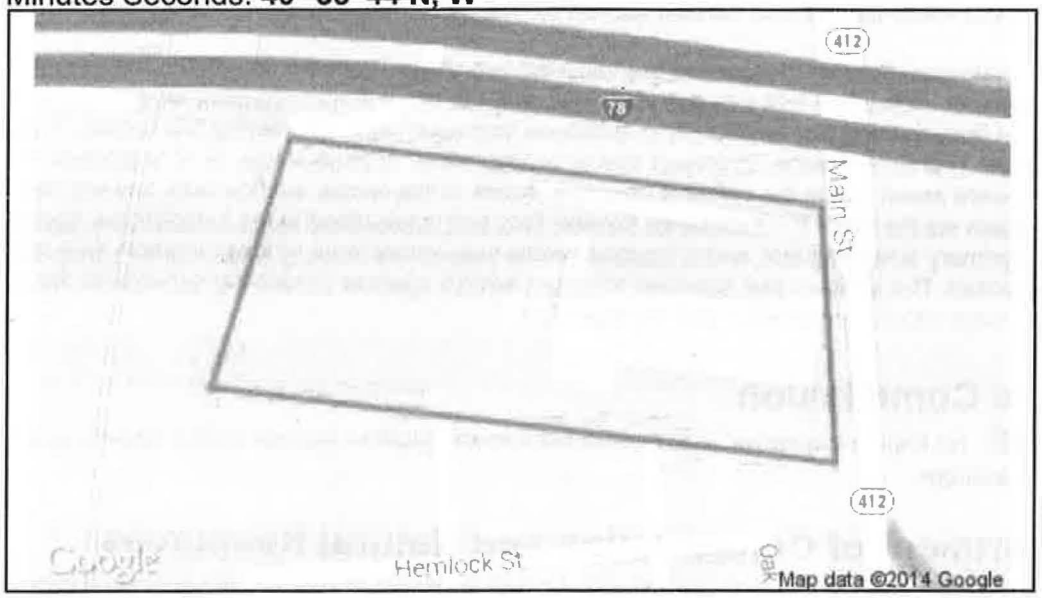
ATTACHMENT 5

Hellertown Manufacturing Co. Superfund Site

Pennsylvania Natural Diversity Inventory

1. PROJECT INFORMATION

Project Name: **Hellertown Manufacturing FYR**
Date of review: **11/18/2014 8:30:18 AM**
Project Category: **Hazardous Waste Clean-up, Site Remediation, and Reclamation,Superfund site (State or Federal, proposed or designated)**
Project Area: **8.0** acres
County: **Northampton** Township/Municipality: **Hellertown**
Quadrangle Name: **HELLERTOWN** ~ ZIP Code: **18055**
Decimal Degrees: **40.595596 N, -75.342277 W**
Degrees Minutes Seconds: **40° 35' 44 N, W**



2. SEARCH RESULTS

Agency	Results	Response
PA Game Commission	No Known Impact	No Further Review Required
PA Department of Conservation and Natural Resources	No Known Impact	No Further Review Required
PA Fish and Boat Commission	No Known Impact	No Further Review Required
U.S. Fish and Wildlife Service	No Known Impact	No Further Review Required

As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate no known impacts to threatened and endangered species and/or special concern species and resources within the project area. Therefore, based on the information you provided, no further coordination is required with the jurisdictional agencies. This response does not reflect potential agency concerns regarding impacts to other ecological resources, such as wetlands.

Note that regardless of PNDI search results, projects requiring a Chapter 105 DEP individual permit or GP 5, 6, 7, 8, 9 or 11 in certain counties (Adams, Berks, Bucks, Carbon, Chester, Cumberland, Delaware, Lancaster, Lebanon, Lehigh, Monroe, Montgomery, Northampton, Schuylkill and York) must comply with the bog turtle habitat screening requirements of the PASPGP.

3. AGENCY COMMENTS

Regardless of whether a DEP permit is necessary for this proposed project, any potential impacts to threatened and endangered species and/or special concern species and resources must be resolved with the appropriate jurisdictional agency. In some cases, a permit or authorization from the jurisdictional agency may be needed if adverse impacts to these species and habitats cannot be avoided.

These agency determinations and responses are **valid for two years** (from the date of the review), and are based on the project information that was provided, including the exact project location; the project type, description, and features; and any responses to questions that were generated during this search. If any of the following change: 1) project location, 2) project size or configuration, 3) project type, or 4) responses to the questions that were asked during the online review, the results of this review are not valid, and the review must be searched again via the PNDI Environmental Review Tool and resubmitted to the jurisdictional agencies. The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer impacts than what is listed on this PNDI receipt. The jursidictional agencies **strongly advise against** conducting surveys for the species listed on the receipt prior to consultation with the agencies.

PA Game Commission

RESPONSE: No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Department of Conservation and Natural Resources

RESPONSE: No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Fish and Boat Commission

RESPONSE: No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

U.S. Fish and Wildlife Service

RESPONSE: No impacts to **federally** listed or proposed species are anticipated. Therefore, no further consultation/coordination under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.* is required. Because no take of federally listed species is anticipated, none is authorized. This response does not reflect potential Fish and Wildlife Service concerns under the Fish and Wildlife Coordination Act or other authorities.

4. DEP INFORMATION

The Pa Department of Environmental Protection (DEP) requires that a signed copy of this receipt, along with any required documentation from jurisdictional agencies concerning resolution of potential impacts, be submitted with applications for permits requiring PNDI review. For cases where a "Potential Impact" to threatened and endangered species has been identified before the application has been submitted to DEP, the application should not be submitted until the impact has been resolved. For cases where "Potential Impact" to special

concern species and resources has been identified before the application has been submitted, the application should be submitted to DEP along with the PNDI receipt. The PNDI Receipt should also be submitted to the appropriate agency according to directions on the PNDI Receipt. DEP and the jurisdictional agency will work together to resolve the potential impact(s). See the DEP PNDI policy at http://www.naturalheritage.state.pa.us.

5. ADDITIONAL INFORMATION

The PNDI environmental review website is a **preliminary** screening tool. There are often delays in updating species status classifications. Because the proposed status represents the best available information regarding the conservation status of the species, state jurisdictional agency staff give the proposed statuses at least the same consideration as the current legal status. If surveys or further information reveal that a threatened and endangered and/or special concern species and resources exist in your project area, contact the appropriate jurisdictional agency/agencies immediately to identify and resolve any impacts.

For a list of species known to occur in the county where your project is located, please see the species lists by county found on the PA Natural Heritage Program (PNHP) home page (www.naturalheritage.state.pa.us). Also note that the PNDI Environmental Review Tool only contains information about species occurrences that have actually been reported to the PNHP.

6. AGENCY CONTACT INFORMATION

PA Department of Conservation and Natural Resources
Bureau of Forestry, Ecological Services Section
400 Market Street, PO Box 8552, Harrisburg, PA. 17105-8552
Fax:(717) 772-0271

U.S. Fish and Wildlife Service
Pennsylvania Field Office
110 Radnor Rd; Suite 101, State College, PA 16801
NO Faxes Please.

PA Fish and Boat Commission
Division of Environmental Services
450 Robinson Lane, Bellefonte, PA. 16823-7437
NO Faxes Please

PA Game Commission
Bureau of Wildlife Habitat Management
Division of Environmental Planning and Habitat Protection
2001 Elmerton Avenue, Harrisburg, PA. 17110-9797
Fax:(717) 787-6957

7. PROJECT CONTACT INFORMATION

Name: Timothy M. Gallagher
Company/Business Name: US EPA
Address: 1650 Arch Street
City, State, Zip: Philadelphia, PA 19103
Phone:(215) 814 3196 Fax:(215) 814 3002
Email: gallagher.tim@epa.gov

8. CERTIFICATION

I certify that ALL of the project information contained in this receipt (including project location, project size/configuration, project type, answers to questions) is true, accurate and complete. In addition, if the project type, location, size or configuration changes, or if the answers to any questions that were asked during this online review change, I agree to re-do the online environmental review.

Timothy M Gallagher — 20NOV14

applicant/project proponent signature — date