THIRD FIVE-YEAR REVIEW REPORT

For

RESIN DISPOSAL SITE
JEFFERSON BOROUGH

ALLEGHENY COUNTY, PENNSYLVANIA

DECEMBER 2010

PREPARED BY:

United States Environmental Protection Agency
Region III
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Date: 12/30/2010

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List of Acronyms

ARARs	Applicable or Relevant and Appropriate Requirements
AOC	Administrative Order on Consent
BTEX	Benzene, Toluene, Ethylbenzene, and Xylene
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
EPA	United States Environmental Protection Agency
FS	Feasibility Study
FYR	Five Year Review
GMUC	Groundwater Migration Under Control
GRPA	Government Performance Results Act
HEUC	Current Human Exposure Under Control
HI	Hazard Index
IC	Institutional Control
MCLs	Maximum Contaminant Levels
mg/kg	milligrams per kilogram
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List

O&M	Operations and Maintenance
OU	Operable Unit
PADER	Pennsylvania Department of Environmental Resources
PADEP	Pennsylvania Department of Environmental Protection
PICCO	Pennsylvania Industrial Chemical Corporation
PRP	Potentially Responsible Party
RA	Remedial Action
RAO	Remedial Action Objective
RAU	Ready for Anticipated Use
RCRA	Resource Conservation Recovery Act
RD	Remedial Design
RDS	Resin Disposal Site (PICCO)
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RP	Responsible Party
RPM	Remedial Project Manager
SARA	Superfund Amendments and Reauthorization Act of 1986
SDWA	Safe Drinking Water Act
SWRAU	Sitewide Ready for Anticipated Use
µg/L	Micrograms per Liter
VOC	Volatile Organic Compound
WEG	Weavertown Environmental Group
WESA	West Elizabeth (PA) Sanitary Authority

Executive Summary

The remedies for the Resin Disposal Superfund Site in Jefferson Township, Allegheny County, Pennsylvania included: installation of a multilayer cap over the contaminated soils, and management of leachate through an oil/water separator, collecting and separating wastewater and oil from the leachate collection system. (The wastewater is sent to the wastewater treatment facility and oil is collected and disposed off-site.) The fence around the landfill restricts access. Institutional controls, which alert prospective buyers of contaminants on-site and place prohibitions on future development, have been implemented. This is the third five-year review for the Site. The trigger for this five-year review is the signature date of the previous Five-Year Review report, September 21, 2005. The purpose of a Five-Year Review is to ensure that the cleanup remains protective of human health and the environment and is functioning as designed.

A protectiveness determination of the remedy at the Resin Disposal Site cannot be made at this time until further information is obtained. Further information will be obtained by taking the following actions:

Update the well survey and documenting the location of the waterline. If residential wells are in use, EPA recommends collecting samples to ensure their protectiveness. In addition, a preliminary investigation should be performed to determine if a groundwater barrier exists between residents located over the former mine area and the potentially contaminated mine voids in the Pittsburgh Coal Formation. This investigation will determine the necessity for a vapor intrusion survey of residences located over the mine.

Re-sample all 2010 surface water locations to verify detections of contaminants at SW-1. If detections are verified and remain above ecological protectiveness levels, then an investigation of contaminant sources should be conducted.

Perform maintenance on the potentially contaminated fittings downstream of the oil/water separator carbon treatment system.

Sample the Jefferson Hills sewer line at key locations (on-site, upgradient, downgradient, and at on-site sewer intersections) to establish a baseline for the current water quality of the sewer system near the oil/water separator discharge.

It is expected that these actions can be conducted in the next year and that an Addendum to this Five Year Review will be completed by January 2012, at which time a protectiveness determination will be made.

GPRA Measure Review

As part of this Five-Year Review the GPRA (Government Performance Results Act) Measures have also been reviewed. The GPRA Measures and their current status are provided as follows:

Environmental Indicators

Human Health: HEUC = Current Human Exposure Under Control

Groundwater Migration: GMUC = Groundwater Migration Under Control

Sitewide RAU: The Site achieved SWRAU on 6/15/2006; however, because the protectiveness of the remedy is deferred as a result of this Five-Year Review, the SWRAU will be reviewed for retraction.

Five-Year Review Summary Form

SITE IDENTIFICATION

Site name (from WasteLAN): Resin Disposal Site

EPA ID (from WasteLAN): PAD063766828

Region: III **State:** PA **City/County:** Jefferson Borough / Allegheny County

SITE STATUS

NPL status: □ Final ☒ Deleted □ Other (specify) _____

Remediation status (choose all that apply) □ Under Construction □ Operating ☒ Complete

Multiple OUs?* ☒ Yes □ No **Construction Completion date:** 11/20/1996

Has site been put into reuse? □ Yes ☒ No

REVIEW STATUS

Lead agency: ☒ EPA □ State □ Tribe □ Other Federal Agency _____

Author name: Robert Wallace

Author title: Remedial Project Manager **Author Affiliation: EPA**

Review period: 09/02/2009 to 12/22/2010**

Date(s) of site inspection: 12/15/2009

Type of review:
X Post-SARA □ Pre-SARA □ NPL-Removal only □ Non-NPL Remedial Action Site
□ NPL State/Tribe-lead □ Regional Discretion

Review number: □ first □ second ☒ third □ other _____

Triggering action:

□ Actual RA Onsite Construction at OU#____ □ Actual RA Start at OU#____
□ Construction Completion ☒ Previous Five-Year Review Report
□ Other (specify) _____

Triggering action date (from WasteLAN): 09/21/2005

Due Date (five years after triggering action date): 09/21/2010

* "OU" refers to operable unit.
** Review period should correspond to the actual start and end dates of the Five-Year Review in WasteLAN

Five-Year Review Summary Form, cont'd

Issues:

- Results from surface water samples collected near the oil/water separator exceeded the PADEP Surface Water Standards for the Protection of Fish and Aquatic Life.
- The oil/water separator treatment system efficiency dropped significantly from > 95% to 74.4 percent in June 2009 and 87.5 percent in August 2009.
- Residential well RW-4 was sampled for this review and Site-related contaminants were detected. Although all results were below the drinking water standards, 1991 results for this location were non-detect.
- A vapor instrusion evaluation must be completed.

Recommendations:

- Re-sample surface water locations in 2011 to verify detections at SW-1. Perform investigation if detections are verified above ecological criteria.
- Determine the cause of oil/water separator efficiency loss. Replace or repair oil/water separator fittings. Sample the Jefferson Hills sewer line at key locations (on-site, upgradient, downgradient, and at on-site sewer intersections) to establish a baseline for the current water quality of the sewer system near the oil/water separator discharge.
- Update the well survey and document the location of the waterline. If residential wells are in use, EPA recommends collecting samples to ensure their protectiveness. Continue to monitor residential well RW-4 to ensure it remains below the drinking water standards. This well is not connected to the public water supply and the owner currently uses bottled drinking water.
- Determine if an unconfined groundwater barrier is present over the former mine area in the Pittsburgh Coal Formation in the vicinity of the residential area to rule out the potential for vapor intrusion.

Protectiveness Statement(s):

A protectiveness determination of the remedy at the Resin Disposal Site cannot be made at this time until further information is obtained. Further information will be obtained by taking the following actions:

Re-sample all 2010 surface water locations to verify detections of contaminants at SW-1. If detections are verified and remain above ecological protectiveness levels, then an investigation of contaminant sources should be conducted.

Perform maintenance on the potentially contaminated fittings downstream of the oil/water separator carbon treatment system. Sample the Jefferson Hills sewer line at key locations (on-site, upgradient, downgradient, and at on-site sewer intersections) to establish a baseline for the current water quality of the sewer system near the oil/water separator discharge.

Update the well survey and documenting the location of the waterline. If residential wells are in use, EPA recommends collecting samples to ensure their protectiveness.

Determine if an unconfined groundwater barrier is present over the former mine area in the Pittsburgh Coal Formation in the vicinity of the residential area to rule out the potential for vapor intrusion.

It is expected that these actions can be conducted in the next year and that an Addendum to this Five Year Review will be completed by January 2012, at which time a protectiveness determination will be made.

Other Comments: None

Five-Year Review Report
For
Resin Disposal
Jefferson Borough, Pennsylvania

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 recommendations to address them.

The United States Environmental Protection Agency (EPA) is preparing this Five-Year Review report pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) §121 and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). CERCLA §121states:

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 judgement of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.

The Agency interpreted this requirement further in the NCP; 40 Code of Federal Regulations §300.430(f)(4)(ii) states:

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

EPA Region III has conducted a Five-Year Review of the remedial actions implemented at the Resin Disposal Site (also referred to as the PICCO Landfill) in Jefferson Borough, Allegheny County, Pennsylvania. This review was conducted from September 2009 to December 2010. This report documents the results of the review. The Weavertown Environmental Group (WEG) representatives assisted in providing data. WEG has been contracted by Hercules to provide site management, operations maintenance, and sampling for the Resin Disposal Site.

This is the third Five-Year Review for the Resin Disposal Site. The triggering action for this statutory review is the signature date of the previous Five-Year Review report, as shown in EPA's WasteLAN database: September 21, 2005. The Five-Year Review is required due to the fact that contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure. The purpose of a Five-Year Review is to ensure that a remedial action remains protective of human health and the environment and the remedy is functioning as designed.

II. Site Chronology

Table 1: Chronology of Site Events

Date	Event
1950 to 1964	Pennsylvania Industrial Chemical Corporation (PICCO) utilized the site as an industrial landfill for depositing waste materials from PICCO's resins manufacturing plant.
1973	Hercules Incorporated purchased the business and facilities, including the landfill property from PICCO.
April 1, 1979	Initial discovery of problem or contamination.
1980 to 1984	Field investigations were conducted for Hercules by Roy F. Weston, Inc. and Murray Associates to provide information on groundwater conditions in the coal formation, deep bedrock, and on the extent of contaminated soils downslope of the landfill.
April 1982	Superfund Site Investigation completed.
December 1982	Site received a Hazard Ranking System score of 37.69 and was proposed for the National Priorities List (NPL).
1983	Leachate collection trench installed below the lower landfill dike to collect leachate and ground water.
September 1983	The landfill was placed on the NPL.
November 2, 1987	Hercules enters into a Consent Order and Agreement with the Pennsylvania Department of Environmental Resources (PADER) to conduct a Remedial Investigation/Feasibility Study (RI/FS).
February 1988	RI work plan approved by PADER and EPA.
March 1991	Final RI submitted to PADER and EPA.
May 1991	Final FS submitted to PADER and EPA.
June 28, 1991	Record of Decision (ROD) selecting the OU-1 Remedy is signed.
February 1992	Consent Decree issued by EPA for Remedial Design and Remedial Action (RD/RA) for OU-1 (landfill)
December 1992	Final RD Work Plan was approved by EPA.
December 1994	Final Oil/Water Separator Design was approved by EPA
September 29, 1995	No Further Action ROD for OU-2 (groundwater) including long-term monitoring of the groundwater was issued and Final Design for landfill cap and fence was approved by EPA.
September 1996	Administrative Order by Consent (AOC) for OU-2 between Hercules Incorporated and EPA.
Fall 1996	Landfill Closure complete.
November 20, 1996	Construction Completion Date.
November 20, 1996	Final Close-out Report
1999	Based on the RI and groundwater monitoring, it was determined the residential water users were not affected by Site related contaminants. Sampling of residential wells was therefore discontinued.
September 19, 2000	First Five-Year Review was completed by EPA.
October 21, 2003	Deletion from NPL.
September 21, 2005	Second Five-Year Review was completed by EPA.

III. Background

Physical Characteristics

The Site is located about one half mile west of the town of West Elizabeth in Jefferson Borough, Allegheny County, Pennsylvania and comprises approximately 26 acres (See Figure 1). West Elizabeth is a mixed commercial, industrial, and residential area with a population of 565 (2000 census). According to U.S. Census Bureau 1990 records, the population within a one-mile radius of the site is 1,819. The Site was operated as a landfill between 1950 and 1964. The landfill is located at the head of a narrow valley on the site of a former coal mine in which the landfill comprises approximately 2 of the 26 acres. The topography of the area is characterized as relatively level highland, with deeply eroded stream valleys. Coal was strip mined from the valley prior to 1950 in the area surrounding the Site. An unnamed intermittent stream originates in the northeastern portion of the Site and runs downslope through the Site to the southeast, ultimately discharging into the Monongahela River approximately one-half mile from the Site boundary.

Land and Resource Use

The Site is surrounded by a suburban residential area to the north and west and by undeveloped property to the south and east. A trailer park and several residential homes are located approximately ¼ mile southeast and downslope of the Site.

Major sources of groundwater in the area are alluvial valley fill aquifers in the large river valleys. However, groundwater within the Site area is limited to storage within bedrock fractures and large chambers left from subsurface coal mining. The quantity of groundwater in the bedrock is generally low due to the limited amount of fractures within the deep bedrock. In addition, groundwater in the coal seam is not considered potable due to its low pH and high concentrations of metals. Perched groundwater is sporadically present in the unconsolidated soils downslope of the landfill during wetter periods of the year. The flow of groundwater in the unconsolidated soils generally flows towards the Monongahela River paralleling the surface topography. It was determined during the RI, and re-confirmed by the 1999 ground water monitoring, that residential water users are not affected by the Site related contaminants. The majority of residents in the area, near the Site are connected to a public water supply. Some private wells are still used for activities such as washing cars or watering lawns.

History of Contamination

Between 1950 and 1964, prior to the Resource Conservation and Recovery Act, as amended (RCRA), 42 U.S.C. 6901 et seq., the Pennsylvania Industrial Chemical Corporation (PICCO) Plant generated and deposited an estimated 85,000 tons of production wastes into the onsite landfill. As a result of these activities, the Site is known as the Resin Disposal Site. The wastes consisted mainly of clay poly cakes and dechlor cakes, which are composed of petroleum and coal derived chemicals mixed with clay. The waste materials were converted into slurry that was dumped into a topographic chute and deposited into the landfill behind a dike constructed across the upper end of the strip-mined valley. Precipitation runoff from the surrounding hillsides along with any free water from the waste materials collected within the active landfill behind the dike.

After the land filling activities ceased, PICCO placed a poorly graded, native clayey soil cover, ranging in thickness from four to ten feet, over the surface of the landfill. As a result, the direct precipitation and runoff from the surrounding hills ponded at times on the landfill cover. Some of the water infiltrated the cover and waste materials thereby recharging the bedrock aquifer and unconsolidated perched aquifer. The remainder of the water evaporated or ran off to the unnamed stream. Over time, residual product oils decanted from the waste materials as free product. The free product and perched groundwater within the landfill migrated in two directions: to the southeast through the landfill dike into unconsolidated downslope soils and to the southwest within the mine voids of the adjacent Pittsburgh Coal Formation.

Prior to 1950, the original coal was strip-mined and deep mined throughout the valley. The deep mining was done through a process known as room and pillar mining, which resulted in mine voids throughout the Site. At the location of the landfill, approximately 20 feet of waste was deposited in place of the mined coal. No records exist of the actual wastes deposited in the landfill.

Hercules purchased the business and facilities, which includes the landfill property, from PICCO in 1973. Between 1980 and 1984, a series of field investigations were conducted to provide information on groundwater conditions in coal formation, deep bedrock, and on the extent of contaminated soils downslope of the landfill. Roy F. Weston, Inc., and Murray Associates conducted the field investigations for Hercules. The data from these investigations indicated that contaminants had migrated beyond the buried waste in the landfill and could be found in groundwater in both the Pittsburgh Coal Formation and the perched groundwater of the unconsolidated downslope soils. As a result of these investigations, Weston recommended that Hercules install a leachate collection trench in the unconsolidated soils below the lower landfill dike to collect leachate and groundwater. This trench was installed in 1983 and is still operating. Liquids collected in the trench are directed to an oil/water separator. The oil was burned at the Hercules Jefferson Plant boiler until June 2002. Since June 2002, the oil has been transported to AES in Morgantown, West Virginia for fuel blending. The treated water from the oil/water separator is discharged to the Jefferson Borough Sanitary Sewer System and then to the West Elizabeth sewage treatment plant.

A Superfund Site Investigation was completed in April 1982. The Site was proposed for the National Priorities List (NPL) in December 1982 and was placed on the NPL in September 1983. On November 2, 1987, Hercules entered into a Consent Order and Agreement with the Pennsylvania Department of Environmental Resources (PADER) to conduct a Remedial Investigation/Feasibility Study (RI/FS) at the Site. The RI work plan was approved by the PADER and the EPA in February 1988, and work began on March 17, 1988. The purpose of the RI/FS was to characterize the site for potential remediation. This included study of the extent of contamination of the soils, groundwater, and surface water associated with the landfill. A final RI was submitted to the PADER and the EPA in March 1991, and the final FS was submitted in May 1991.

The EPA has categorized the Site into two operable units. Operable Unit One (OU-1) addresses remediation of the landfill, the adjacent contaminated soils, non-aqueous floating product present in the subsurface mine voids of the Pittsburgh Coal Formation, and monitoring

of onsite groundwater. Operable Unit Two (OU-2) addresses offsite groundwater, seeps, and residential wells.

Basis for Taking Action

The RI identified and evaluated Site–related contaminants, the potential migration routes, and exposure pathways for human and ecological receptors. The following discussion of contamination is based on the RI and is reflective of conditions at the time the RI was written.

Free Product

Over time, residual product oils were decanted from the waste materials as free product. The free product and infiltrated water migrated through the landfill dike into downslope soils and also southwest into mine voids in the adjacent Pittsburgh Coal Formation.

Mine Voids

The mine workings within the Pittsburgh Coal Formation resulted in a honeycomb of bedrock voids and chambers below the land surface that act as conduits for groundwater flow. Data collected during the RI has verified that some voids are open while other voids are partially or mostly collapsed. Mine voids and collapsed rubble are expected to be the preferential pathways for groundwater flow, whereas pillars and walls (i.e., unmined sections of the Pittsburgh Coal Formation) within the mine are expected to impede groundwater flow.

Groundwater System and Contamination Found During the Remedial Investigation

The groundwater system within the Pittsburgh Coal is well constrained since the downgradient extent of the system is defined by the outcrop of limit of the coal, which was strip mined. Seeps and springs are common along the outcrop and represent groundwater discharge from the mines. Based on the significant permeability contrasts between the mine voids and the coal, it is anticipated that most of the groundwater flow is through the mine voids. Groundwater in the mine voids downgradient of the landfill contain aromatic organic compounds (i.e., benzene, toluene, ethylbenzene, xylene [collectively BTEX], naphthalene, and 2-methylnaphthalene) as contaminants dissolved from the waste materials in the landfill and from free product in the adjacent mine voids.

No landfill–related contaminants were detected at the seeps downgradient from the landfill during the OU-2 RI and no Site-related compounds were found in any of the residential wells sampled downgradient from the landfill. Through the RI and following groundwater monitoring, it was determined that the residential water users were not affected by Site-related contaminants, so sampling of residential wells was discontinued in 1999.

A groundwater system was found below the Pittsburgh Coal Formation, but at the three monitoring wells (TW-5, TW-6, and TW-25) where the groundwater was sampled, the formation was very tight and the yield was very low. Monitoring wells TW-5 and TW-6 were abandoned during the RI activities. Site-related contaminants were not found in the groundwater zones of the deeper groundwater system and subsequent investigation of this unit was deemed unnecessary.

IV. Remedial Actions

Remedy Selection

EPA has categorized the Site into the following two operable units.

OPERABLE UNIT 1

OU-1 addressed remediation of the landfill, the adjacent contaminated soils, non-aqueous floating product present in the subsurface mine voids of the Pittsburgh Coal Formation, and monitoring of onsite groundwater. A June 28, 1991 ROD documented the selected remedial action for OU-1, which included: installation of a multi-layer cap; reinforcement and upgrading of the lower landfill dike to increase its stability; installation of an upgraded oil/water separator downslope of the leachate collection system, with discharge of aqueous phases to a publicly owned treatment works; relocation of a sanitary sewer; institutional controls that include use restrictions to alert prospective buyers to the presence of hazardous substances on site and to prohibit future development; construction of a fence around the perimeter of the Site property to prevent unauthorized access; offsite reclamation of non-aqueous phase liquids (NAPLs) via recovery wells; and implementation of a Site maintenance and long-term groundwater monitoring program.

OPERABLE UNIT 2

OU-2 addressed offsite groundwater, seeps, and residential wells. The monitoring occurred on a quarterly basis for the first three years, and is required semi-annually for the balance of thirty years. During the remedial investigation it was determined the ingestion of water from a new well drilled into the Pittsburgh Coal seam is considered unlikely, because a public water supply is readily available to residents in the area surrounding the Site. A future well in the deeper bedrock aquifer in the vicinity of the site is also unlikely because the bedrock in this area is dry. A No Further Action ROD for OU-2, which included long-term monitoring of the groundwater, was issued on September 29, 1995.

Remedy Implementation

OPERABLE UNIT 1

On October 9, 1991, Hercules submitted a good faith offer to perform the Remedial Design and Remedial Action (RD/RA) for OU-1. After a period of negotiations with the EPA, Hercules signed a Consent Decree on February 11, 1992 to perform the RD/RA at the Site. On May 11, 1992, Roy F. Weston, Inc. was approved by the EPA as the RD contractor for Hercules. On December 4, 1992, the final RD Work Plan, written by Weston for Hercules, was approved by the EPA. A Final Oil/water separator Design was submitted prior to the landfill cap design. It was approved on December 21, 1994. The Final Design for the landfill cap and the fence was approved by the EPA on September 29, 1995.

The remedial objectives for OU-1 specified the remediation of the landfill. A multi-layer cover equivalent to a RCRA Subtitle C landfill cap was placed over the existing landfill.

Infiltration controls were also installed around the perimeter of the landfill to control run-on and runoff. Construction of the cap began in June of 1995 and was completed in the fall of 1996. The completed landfill cover system included a low permeability clay liner, geomembrane, a drainage layer and surface drainage channels. The cap surface is covered in grass. The lower landfill dike was reinforced with approximately 5,000 tons of clean soil, regraded, and hydroseeded. In total, 57,000 tons of clean fill, 3,200 tons of topsoil and 3,800 tons of rip-rap were used to cover and stabilize the Site. A security fence was also installed around the perimeter of the Site and the landfill.

Surface water sampling conducted during the period 1991 through 1998 showed that the multi-layer cover and product recovery program resulted in a decrease of Site-related constituents in the unnamed stream to levels at or below Maximum Contaminant Levels. Surface water sampling was subsequently discontinued in 1998.

In addition, the remedial objectives for OU-1 specified the monitoring of onsite groundwater and recovery of free-phase floating product in the mine voids of the Pittsburgh Coal Formation. Free phase floating product is collected from on-site recovery wells and by the oil/water separator below the landfill.

The Weavertown Group measures free product thickness and groundwater levels on a quarterly basis in on-site wells PH-1, PH-2, PH-10, PH-11, TW-2, TW-7, TW-13, TW-14, TW-21, TW-22 and TW-24. Recoverable quantities of free product have been historically bailed from recovery wells PH-10, TW-2 and TW-14, and discharged into the Site oil/water separator. Since July of 1999, virtually no recoverable free product has been measured in Site recovery wells (Appendix 1 – WES Bi-annual Product Recovery Report, Tables 1 and 2). Free product recovery was reduced from a monthly to the current quarterly frequency during 1999, due to the minimal thickness of free product measured in Site wells.

Accumulated free product is removed from the oil/water separator on a quarterly basis. Product accumulation in the reservoir of the oil/water separator is monitored by a float system connected to an autodialer. Free product removal is performed upon notification from the autodialer. On May 20, 2004, the oil/water separator was emptied, pressure washed and visually inspected in accordance with the oil/water separator maintenance program. The separator was found to be free of leaks, cracks and other damage.

Quarterly groundwater sampling and laboratory analyses performed in OU-1 initially included on-site monitoring wells TW-7, TW-13, TW-14, TW-21, TW-22 and TW-23. Site-related indicator compounds included in the monitoring program include benzene, toluene, ethylbenzene, xylenes and naphthalene. Since the first quarter of 1998 through 1999, Site-related constituents were reported at detection levels or as non-detects in wells TW-7, TW-21, TW-22 and TW-24. Consequently, these wells were removed from the on-site groundwater monitoring program.

OPERABLE UNIT 2

Monitoring initially required under OU-2 included the quarterly sampling of off-site monitoring wells TW-17, TW-18, TW-19, TW-20, and TW-24, the quarterly sampling of three seeps (designated Seep 3, Seep 4, and Seep 5), and the sampling of residential wells during 1999.

The seeps receive groundwater from the mine voids downgradient of the Site. The OU-2 monitoring wells listed above also monitor groundwater in the mine voids of the Pittsburgh Coal Formation, downgradient of the Site. No Site-related constituents were detected in samples collected from the seeps (Appendix 2) or the residential wells during the first 5-year review period. Consequently, the seeps and residential wells were dropped from the OU-2 groundwater monitoring program during the second Five Year Review (FYR) period. However, groundwater levels were measured in off-site monitoring wells on a quarterly basis, during sampling events for on-site monitoring well TW-13. Groundwater elevations and flow directions for the Pittsburgh Coal Formation are depicted in Figure 4. Free product has not been observed in any of the off-site monitoring wells.

Institutional Controls

In August 2002, Hercules executed and recorded the institutional controls required by the ROD, including deed restrictions to alert prospective buyers to the presence of hazardous substances on-site and to prohibit future development, excavation or drilling that could disturb covered or reconstructed areas. In addition, the security system was upgraded to include a fence around the perimeter of the Site with a locked gate restricting access to the Site. An EPA Memorandum dated 8/5/2002, which includes documentation of Site Institutional Controls, is presented in Appendix 3.

System Operation/Operation and Maintenance

The landfill cover, landfill cap, and surface drainage channels are inspected at a minimum of every quarter. The landfill cap and landfill dike are periodically mowed to maintain the grass cover. In 1999, Hercules performed modifications to the drainage channels following a severe precipitation event. This work included the lining of drainage channels passing along the landfill dike with Reno mats and gabion baskets in order to contain and control surface water during precipitation events. In addition, the landfill access road was regraded. The landfill cover and drainage channels remain in operational condition.

The Site management activities were initially conducted by Hercules and Roy F. Weston, Inc. and are now conducted by Weavertown Environmental Group (WEG) for Hercules. WEG provides services for the operation and maintenance (O&M) of the oil/water separator including product removal and disposal. As part of the O&M, product in the discharge from the landfill underdrain system is separated from the flow and is accumulated in the product reservoir of the facility's oil/water separator. Based on historical Site work, the product reservoir in the oil/water separator requires evacuation approximately four times per year. Typically, eight 55 gallon drums of product are generated during each evacuation event.

Upon notification by the Site automated monitoring system, WEG evacuates the oil/water separator reservoir using a pump provided by Hercules into new DOT 17H drums, and transports the drums of product to the disposal facility (ChemTron facility in Avon, OH), in accordance with Department of Transportation regulations, under manifest as a hazardous waste liquid.

Site Maintenance and Optimization of Operation and Maintenance

The following system operation/O&M is required until the next Five –Year Review:

- Continue quarterly sampling of well TW-13 for BTEX and naphthalene.
- On-site monitoring wells will continue to be gauged for LNAPL and depth to water on a quarterly basis until the next Five-Year Review. In the event that a recoverable quantity of LNAPL is detected in an on-site well, the LNAPL will be recovered and the on-site wells will be gauged for LNAPL thickness during the following quarter.
- Periodic (quarterly) inspections of the landfill cover, oil/water separator compound, and security fence will be performed, and maintained as required.
- Hercules will continue to operate the oil/water separator until the next Five-Year Review and perform operation and maintenance on the oil/water separator annually.
- Hercules will provide oil/water separator records detailing the amount of water treated, the quantity of product removed, and water quality results from samples collected at three locations within the treatment system: before treatment, at the mid-point of treatment, and post treatment. Water quality samples will also be collected before and after cleaning the oil/water separator.

Site maintenance activities include:

- Inspection of the general condition of vegetative cover on the Site landfill, general condition of gabions and Reno mats installed along the drainage ways, evidence of unauthorized entry or vandalism, condition of access roads, and any other pertinent observations.
- Spraying of landfill ditches, roadways and treatment compound with a broad-spectrum herbicide (Roundup or equivalent) to control weed growth. Also perform minor weed cutting in these areas to address minor, sporadic weed growth in spray areas.
- Perform rotational mowing of the landfill. Alternate halves of the landfill cap will be mowed during two proposed events. The "face" and accessible perimeter of the landfill cap will also be mowed. Mowing will be performed with a tractor and brush-hog style mower.
- Check on and maintain operation of the system autodialer.
- Inspection and cleaning the oil/water separator periodically.
- Inspection of the condition of the groundwater monitoring wells and security fence.
- Quarterly monitoring of designated groundwater monitoring wells.

V. Progress Since Last Five-Year Review

The Protectiveness Statement of the previous Five-Year Review in 2005 concluded, "The remedy is protective of human health and the environment. All threats at the Site have been addressed through upgrading the multilayer cap of the contaminated soils and through the oil/water separator, collecting and separating wastewater and oil from the leachate collection system. (The wastewater is sent to the wastewater treatment facility 26 and oil is collected and disposed off-site, thus preventing exposure to or ingestion of contaminated groundwater.) The fence around the landfill restricts access. The implementation of institutional controls, which alert prospective buyers of contaminants on-site and place prohibitions on future development, addresses future threat." No issues were identified in the previous Five-Year Review.

During the period of this Five-Year Review, the Weavertown Group performed quarterly product recovery and well monitoring from February 2005 through December 2009 (Appendix 2). No product has been observed in any of the wells since 2007. The LNAPL recovery and depth to water will continue on a quarterly basis until the next Five-Year Review. The leachate collection trench continues to operate as designed, with accumulated free product being removed from the oil/water separator on a quarterly basis. Currently, product is being transported to Chemtron Corporation in Avon, Ohio for proper disposal. The operation and maintenance on the oil/water separator will continue; however, the Responsible Party will provide oil recovery records and raw water data for treated water annually and before and after cleaning the oil/water separator.

Optimization of the Pittsburgh Coal monitoring well network was recommended in the last FYR. Accordingly, LNAPL was measured at TW-13 and TW-14 and the wells were sampled quarterly. The remaining wells were sampled at the request of the EPA. EPA recommends that the PRP's submit an updated well optimization plan to include the potential abandonment of some wells.

In 2005 to 2006, the West Elizabeth Sanitary Authority (WESA) was experiencing odor issues downstream of the Resin Disposal Site. One of the contributing sources was the discharge of the aqueous phase of material from the oil/water separator from the Resin Disposal Site into Jefferson Hills sewer line, which crosses the northeastern portion of the Site before connecting with the WESA sewer system. Consequently, a pre-treatment filter was installed on the oil/water separator to treat the water prior to discharge to the sanitary sewer system in August 2008. To date, over 450,000 gallons of water have been pre-treated prior to discharge to the sanitary sewer system, with typical VOC removal of greater than 95%. However, the treatment system efficiency dropped significantly to 74.4 percent in June 2009 and 87.5 percent in August 2009 (see Appendix 4). As seen in the August 2010 Treatment System Sampling Results, the mid-point sample between the two carbon filters had an efficiency of 99.9 percent while the effluent sample had an efficiency of 87.5 percent. The Site consultant (Cummings Riter Consultants, Inc.) attributes the high effluent concentrations to the pipe fitting located downgradient of the carbon adsorption units. As of December 2010, the pipe fittings have not been replaced. EPA recommends that the contaminated fittings be decontaminated or replaced.

As noted in the PADEP Summary of Issues related to the Eastman Chemical Resins – Jefferson Plant, the Hercules – PICCO Resin Dump, and the West Elizabeth Sewer Authority, (Appendix 5), "To begin to address the problem of odors in the sewer, the Department had

Hercules provide additional pre-treatment of the discharge to the WESA system from the PICCO resin Disposal site. Contaminated groundwater from the 837 Tank Farm continues to enter the Jefferson Hills interceptor and then into the WESA STP [sewer treatment plant] and may still be a source of odors." Since the treated water from Resin Disposal Site oil/water separator is discharged into the Jefferson Hills sewer line, the potential exists that breakdowns in the treatment system efficiency will result in contaminated water entering the sewer system. EPA recommends that the Jefferson Hills sewer line be sampled at key locations (on-site, upgradient, downgradient, and at on-site sewer intersections) to establish a baseline for the current water quality of the sewer system near the oil/water separator discharge.

VI. Five-Year Review Process

Administrative Components

Hercules and WEG were notified of the initiation of the Five-Year Review in September 2009. The Five-Year Review team was led by the EPA Remedial Project Manager, Rashmi Mathur, EPA hydrogeolgist Bernice Pasquini and Pennsylvania Department of Environmental Protection (PADEP) Project Officer, Barbara Gunther, Mr. Bruce Hough, Hercules Incorporated, Bryan Mauer Cummings Riter, and WEG representatives (Mr. Timothy Ratvasky, Kelly Hamilton, and Craig Wyda) assisted in the review. The review consisted of the following review components:

- Community Involvement
- Documentation Review
- Data Review
- Site Inspection
- Local Interviews

Community Involvement

Notice of the Five-Year Review was published in *The Daily News* local newspaper on April 5, 2010. The results of the review and the report will be made available to the public at the Jefferson Borough Building. EPA conducted community interviews in the immediate vicinity of the Site with residents having no issues with the Resin Disposal Site. EPA also talked with local officials and West Elizabeth Sewer Authority (WESA) technical support staff about the Site and the Five-Year Review. On May 26, 2010 WESA provided a letter to EPA regarding the Site and its concern that contaminated [overburden] groundwater could potentially impact the Jefferson Hills sewer line that traverses the Resin Disposal Site before connecting with the WESA sewer line. WESA notes that they continue to experience VOC vapor problems, which the PADEP attributes to groundwater contamination emanating from the State Route 837 petroleum facility. However, WESA still believes that the Resin Disposal Site is a potential contributor to their sewer line VOC vapor problem.

Document Review

The Five-Year Review included the review of the following documents. The administrative documents were reviewed to provide historical Site conditions and risks, the design documentation and plans were reviewed to evaluate the system design, and the biannual reports were reviewed to evaluate current operating and analytical data trends.

- June 28, 1991 ROD for OU-1
- December 1992 Final RD Work Plan for OU-1
- February 1992 Consent Decree issued by EPA for Remedial Design and Remedial Action (RD/RA) for OU-1
- December 1994 Final Oil/Water Separator Design for OU-1
- September 29, 1995 No Further Action ROD for OU-2 including long-term monitoring of the groundwater was issued and Final Design for landfill cap and fence was approved by EPA
- September 1996 Administrative Order by Consent (AOC) for OU-2 between Hercules Incorporated and EPA
- September 19, 2000 First Five-Year Review completed by EPA
- September 21, 2005 Second Five-Year Review completed by EPA
- Bi-Annual Progress Reports
- Patricia Flores-Brown's Evaluation of the Responses to EPA's Questions for the PICCO Resin Disposal Vapor Intrusion Assessment

Data Review

Groundwater Monitoring

For this review period, WEG measured free product thickness and groundwater levels on a monthly basis from January 2005 until December 2009 in on-site wells PH-1, PH-2, PH-10, PH-11, which are screened within the landfill, and TW-2, TW-13, TW-14, TW-21, TW-22 and TW-24, which are screened in the Pittsburgh Coal Formation. At times, product globules were present in some of the wells. However, no product was recoverable during this period. In general, product recoveries from wells screened in the Pittsburgh coal have decreased to a level such that no recovery can occur. This data is summarized in Appendix 1.

Quarterly groundwater sampling and laboratory analyses performed for OU-1 initially included on-site monitoring wells TW-7, TW-13, and TW-21, TW-22 and TW-23. Monitoring wells TW-2, TW-14, TW-18, and TW-24 could not be sampled because the wells were dry or did not contain enough water for the collection of a representative groundwater sample. Site-related indicator compounds included in the monitoring program include benzene, toluene, ethylbenzene, xylenes and naphthalene. Since the first quarter of 1998 through 1999, Site-related constituents were reported at detection levels or as non-detects in wells TW-7, TW-21, TW-22 and TW-24 (Appendix 2). Consequently, these wells were removed from the annual on-site groundwater monitoring program.

Based on sampling from the first quarter of 2006 through the fourth quarter of 2009, the only well with detected concentrations of site related compounds was TW-13. Low levels of benzene were detected in 12 of the 16 quarters sampled. However, the MCL of 5 µg/L was exceeded in only 2 quarters at concentrations of 9.7 µg/L (2006) and 5.9 µg/L (2009). The average yearly concentration of benzene was 2.6 µg/L in 2005, 4.9 µg/L in 2006, 2.5 µg/L in 2007, 3.9 µg/L in 2008, and 1.5 µg/L in 2009. Naphthalene was detected at a maximum concentration of 150 ppb. The average yearly concentration for naphthalene was 102 µg/L in 2005, 109 µg/L in 2006, 61.3 µg/L in 2007, 58 µg/L in 2008 and 86 µg/L in 2009. All other samples were non-detect for sampled VOCs or had trace levels. Analytical results for TW-13 and other bedrock monitoring wells are summarized in Appendix 2 and shown on Figures 2 and 3. Groundwater samples were not collected from TW-14 because a measurable but unrecoverable thickness of free product was present and an insufficient quantity of water was available to collect a groundwater sample.

At the request of the EPA, Cummings Riter Consultants prepared an assessment of the potential for vapor intrusion issues at the Resin Disposal Site (Appendix 6). The document concluded that the vapor intrusion pathway related to the Pittsburgh Coal groundwater is not likely to present an unacceptable risk to nearby residents. This conclusion was based on the limited presence of volatile constituents in groundwater of the Pittsburgh Coal that were below relevant state and federal vapor intrusion screening criteria; and the vertical (> 100 feet) and horizontal (~ 160 feet) separation of the closest residences and the Pittsburgh Coal groundwater (TW-13 and TW-14) exhibiting the highest contaminant concentrations. EPA generally agrees with this conclusion; however, EPA notes that there is a potential that vapors may still exist in the chambers of the former mining operation of the Pittsburgh Coal. These chambers are located directly below the adjacent residential neighborhood and no wells were installed within the adjacent neighborhood to monitor the former Pittsburgh Coal mine.

Based on the Conceptual Site Model, groundwater flow through the mining operation directly below the residents has been significantly reduced by the presence of the landfill cap and by the action of the oil/water separator. Consequently, as exhibited by TW-14, the potential exists that oily residues may remain on the floors and walls of chamber within the former coal mine. This condition would potentially lead to vapors filling the mine voids and migrating through bedrock fractures to the ground surface. Therefore, EPA recommends that a well survey be preformed to locate potential wells in the adjacent neighborhoods. If residential wells are located, well construction data, water elevations and groundwater samples should be collected. This data will be used to determine water quality in the unconfined aquifer and ascertain whether a water barrier exists between the mine and the residents.

Surface Water Results

As noted above, surface water samples were collected from three locations for the un-named stream (Figure 6) in January 2010. Analytical results from SW-1, which was located just downstream of the oil/water separator, had low level detections of ethylbenzene and toluene. Detected concentrations of naphthalene (750 ug/L) and Total xylenes (340 ug/L) exceeded the PADEP Surface Water Standards for the Protection of Fish and Aquatic Life (43 ug/L and 210 ug/L respectively). Other detections included isopropylbenzene (4.9 J), 1,2,4-trimethylbenzene (550 ug/L) and 1,3,5-trimethylbenzene (300 ug/L); however there are no Pennsylvania or EPA Surface Water Standards for the Protection of Fish and Aquatic Life for these compounds. Surface water concentrations for the same set of compounds dropped of significantly at SW-2

near the property line and to near non-detect levels at SW-3 downstream of the property line. Surface water sampling results are presented in Table 2.

Table 2
Surface Water Analytical Results

Compound	PADEP Surface Water Standard Fish/Aquatic Life	SW-1 1/13/2010 near OWS	SW-2 1/13/2010 near OWS	SW-3 1/13/2010 near OWS
Ethylbenzene	580	15	0.58 J	< 1.0
Isopropylbenzene	none	4.9 J	0.19 J	< 1.0
Naphthalene	43	**750**	8.6	1.3 J
Toluene	330	17	1.3	< 1.0
1,2,4-Trimethybenzene	none	550	66	0.36 J
1,3,5-Trimethybenzene	none	300	110	< 1.0
Xylenes, Total	210	**340**	69	< 2.0

Note: All results in ug/L Only compounds detected are listed

Bold with highlight indicates detection > Standard

During the last FYR, product sheen was observed emanating from a seep and pooling in the stream near the oil/water separator. At the time, it was postulated that the sheen was related to contaminated soils in the overburden between the oil/water separator and the stream. Consequently, EPA recommends re-sampling the un-named stream under similar flow conditions. Water levels and flow volume should be measured at the weir to establish comparative sampling data to the RI. If contaminated surface water is confirmed above the PADEP Surface Water Standards for the Protection of Fish and Aquatic Life, then an investigation should be implemented to determine the nature and extent of contaminated soils and groundwater in the overburden.

Residential Well Results

As noted above, RW-4 was sampled for this FYR (Figure 6). Detections in groundwater included the Site-related compounds: naphthalene (11 µg/L) 1,2,4-trimethylbezene (0.77 J µg/L) and Total xylenes (0.42 J µg/L) (Table 3). Other detections included acetone (8.3 J µg/L) and carbon disulfide (3.8 µg/L). In contrast, groundwater results from RW-4 were all non-detect when the well was sampled as part of the Resin Disposal RI (Weston, 1991). Although the current groundwater results from RW-4 were all below EPA MCLs and PADEP Act 2 medium specific concentrations, the site-related detections are a concern because the RW-4 is not on the public water supply and is currently using bottled water. Consequently, EPA recommends annual sampling of RW-4 well to establish a concentration pattern. If concentrations approach MCLs, then an investigation should be performed to determine the nature and extent of contaminants. In addition, a residential well survey should be performed to locate other potential wells and residents that rely on wells for drinking water. A diagram of the public water supply

network in the vicinity of the Site should be obtained to illustrate residences that are currently not on the public drinking water system.

Table 3
RW-4 Residential Well Results

Compound	USEPA MCL	PADEP Act2 MSC	RW-4 Results 1/13/2010
Acetone	none	3,700	8.3 J
Benzene	5	5	< 1.0
Carbon disulfide	none	1,900	3.8
Ethylbenzene	700	700	< 1.0
Isopropylbenzene	none	1,100	< 1.0
Naphthalene	none	100	11
Styrene	100	100	< 1.0
Toluene	1,000	1,000	< 1.0
1,2,4-Trimethybenzene	none	16	0.77 J
1,3,5-Trimethybenzene	none	16	< 1.0
Xylene, Total	10,000	10,000	0.42 J

Note: All results in µg/L

Only compounds detected or associated with the PICCO site groundwater are listed

PADEP Act 2 Median Specific Concentration is for residential, low-TDS, used aquifer

Site Inspection

Inspection of the Site was conducted on December 15, 2009 by the EPA RPM, EPA hydrogeologist, PADEP Project Officer, PADEP hydrogeologist, the Responsible Party and the Responsible Party's Consultant. The purpose of the inspection was to evaluate the protectiveness of the remedy, including the presence of the security fence around the landfill to restrict access, and the integrity of the monitoring wells. Institutional controls alerting buyers of the presence of the hazardous substances on Site to prohibit future development were put into place in 2002. No significant issues at the inspection were identified regarding the physical components of the remedy: cap, drainage features, fence or monitoring wells, thus the implemented remedy is operating as designed.

Interviews

EPA conducted community interviews in the immediate vicinity of the Site. In general, nearby residents have no issues with the Resin Disposal Site. However, during the FYR visit, EPA visited the residence closest to the Site and discovered that the residence was not connected to public water. EPA subsequently requested the responsible party to sample the well. The findings of this sampling event are discussed above. EPA also talked with local officials and West Elizabeth Sewer Authority (WESA) technical support staff about the Site and the Five-Year Review; none of which have issues of concern regarding the Site but asked to be notified of the inspection results, especially if any problems are discovered.

VII. Technical Assessment

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

No. Sampling conducted for this FYR revealed concentrations of two Site-related compounds above PADEP Surface Water Standards for Fish and Aquatic Life; if confirmed to be present in surface water, these detections could represent a risk to the environment. Consequently, the remedial actions may not be protective of the environment. Surface water sampling should be repeated under similar water flow conditions to verify the results. Otherwise, the remedy is functioning as intended by the decision documents after review of documents, ARARS, risk assumptions, and groundwater data.

EPA has determined that the remedial actions implemented for OU-1 (landfill and on-site groundwater) and confirmed by OU-2 (off site-groundwater) are protective of human health and the environment in the short term. The remedial actions were conducted in accordance with the requirements of the 1991 Record of Decision (ROD) and the 1995 ROD, and the physical remedies are functioning as designed. They have been addressed through the installation of a multilayer cap of the contaminated soils, installation of an oil/water separator, and the collection and separation of wastewater and oil from the leachate collection system. (The wastewater is sent to the wastewater treatment facility and oil is collected and disposed off-site.) The fence around the landfill restricts access. Institutional controls, which alert prospective buyers of contaminants on-site and place prohibitions on future development, have been implemented.

Performance standards for the remediation of groundwater were not clearly stated in the 1991 decision document because the OU-1 ROD was source controls remedy that included groundwater monitoring. MCL's were cited as ARARs for the OU-1 remedy. The OU-2 ROD addressed off-site groundwater contamination. The remedy selected for OU-2 groundwater was no further action with periodic monitoring of off-site monitoring wells. The data from the monitoring wells are compared to MCLs to evaluate the effectiveness of the source control remedy on the groundwater.

During the last (second) FYR there was an opportunity to optimize the groundwater monitoring network as no Site-related contaminants had been observed in the following monitoring wells for two consecutive years: TW-7, TW-17, TW-18, TW-19, TW-20, TW-21, TW-23, and TW-24. These wells were subsequently removed from the standard ground water monitoring program. Monitoring wells TW-19, TW-21, and TW-24 were not abandoned, but were periodically sampled at EPA's request. Quarterly sampling of three seeps was discontinued after the last FYR as Site-related contaminants were not detected during any of the sampling events.

As part of the current FYR, monitoring wells TW-07, TW-19, TW-20, TW-21, TW-22, TW-23 were sampled for BTEX and naphthalene in the 4th quarter of 2009. Analytical results were non-detect for all compounds at each well with the exception of single detection of o-xylene (1 µg/L) at TW-21 (Appendix 2). Monitoring well TW-17 was not sampled due to well damage; TW-18 and TW-24 were dry at the time of sampling; and TW-14 was not sampled due to the presence of product sheen. TW-13 consistently detected Site-related compounds during quarterly sampling performed for this FYR; however, contaminant concentrations generally appear to be decreasing.

EPA recommends that quarterly sampling of monitoring wells TW-13 and TW-14 be continued for the next FYR. EPA also recommends that monitoring well TW-17 be repaired and monitoring wells TW-7, TW-17, TW-18, TW-19, TW-20, TW-21, TW-22 and TW-24 be sampled bi-annually for BTEX and naphthalene starting the first quarter of 2011. After the second round of sampling in 2011, the PRP's should prepare a well optimization plan for the Pittsburgh Coal monitoring well network. Monitoring wells that have been consistently non-detect for Site contaminants and wells that do not produce water would be eligible for abandonment. The monitoring well optimization should result in a well network that will be sufficient for the preparation of groundwater flow contour maps and for monitoring for potential contaminant migration; this optimized well network will then be sampled again in second quarter of the 4th year of the FYR period.

The institutional controls in place include access restrictions which shall help reduce potential exposure to contaminated groundwater until cleanup levels are achieved and prevent the disturbance of the cap. The restrictions employed consist of notices of restrictions on potential future land use. The restrictions cover any development; excavation or drilling on-site that could disturb covered or reconstructed areas and an existing security system including the construction of a fence around the perimeter of the Site containing a locked gate system. Access controls (fencing) are in place and successfully prevent exposure. These institutional controls were executed and recorded in August 2002 (Appendix 3).

Operation and maintenance of the cap, drainage structures, oil/water separator and monitoring wells has been effective as a whole. Hercules has contracted WEG to manage the Site and perform all O&M activities as previously described.

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

Changes in Standards and TBCs

Have standards identified in the ROD been revised, and does this call into question the protectiveness of the remedy? Do newly promulgated standards call into question the protectiveness of the remedy? Have TBCs used in selecting cleanup levels at the site changed, and could this affect the protectiveness of the remedy?

Groundwater is currently monitored for five chemicals: benzene, toluene, ethylbenzene, xylenes, and naphthalene. Naphthalene does not have an MCL, and therefore under the NCP, its goal should be a risk-based standard [40 CFR 300.430(e)(2)(i)(A)(2)]. For the chemicals that do have MCLs (benzene 5 µg/L, toluene 1000 µg/L, ethylbenzene 700 µg/L, xylenes 10000 µg/L), the MCLs would not be protective in combination (adult Hazard Index 10, child Hazard Index 7, cancer risk 2E-4).

If the water were used with the currently-monitored concentrations (2008-2009 from TW-13: benzene 3.5 µg/L, toluene 2.3 µg/L, ethylbenzene 16 µg/L, m,p-xylenes 20 µg/L, o-xylene 25 µg/L), the adult HI would be 2 (due mostly to naphthalene), the child HI would be 0.6, and the cancer risk would be approximately 6E-5. Benzene was detected once during this time period at a concentration of 5.9 µg/L, which slightly exceeded the MCL of 5 µg/L. Consequently, the groundwater monitored by TW-13 would not be protective at current

concentrations, nor at MCLs. However, this water is not currently consumed and ICs are in place to prevent the use of this water at the Site.

Changes in Exposure Pathways

Has land use or expected land use on or near the site changed? Have human health or ecological routes of exposure or receptors been newly identified or changed in a way that could affect the protectiveness of the remedy? Have physical site conditions or the understanding of these conditions changed in a way that could affect the protectiveness of the remedy?

As discussed above, EPA discovered during the FYR Site Visit that a residence (RW-4) adjacent to the Site was still using their residential well. The resident reported they used bottled water for drinking. However, EPA requested the responsible parties to sample the well for this FYR. As presented in Table 3, the detected concentrations in the residential well yielded a total Hazard Index of about 0.2 for the adult and 0.06 for the child, and a cancer risk of 5E-6. No MCLs were exceeded. Therefore, for the chemicals sampled, the risks are within the acceptable range (HI $\leq$ 1, cancer risk between 1E-6 and 1E-4). However, it should be noted that RW-4 was non-detect for Site-related compounds in 1989 to 1990 during the RI (Weston, 1991). Given that concentrations of Site-related compounds have appeared at RW-4 for the first time, continued monitoring is recommended. A full analytical suite (data were provided for only 11 organic analytes) would also give a clearer picture of the total risk associated with this well. In addition, EPA believes that the well survey should be updated to determine the use of residential wells and determine the location of the waterline to ensure there are no other residential wells that require follow-up sampling.

Risks were also estimated for current surface water concentrations. For surface water near the oil/water separator, the recreational risk for a child would be an HI of 0.6 and a cancer risk of 5E-8. For downstream water at the property line, the HI would be 0.05 with no estimated carcinogenic risk. For surface water 500 feet downstream of the property line, concentrations were below screening levels. Eco-risk in surface water was not calculated during this period; however, EPA recommends re-sampling the un-named stream under similar flow conditions to confirm detections of Site-related compounds. Water levels and flow volume should be measured at the weir to establish comparative sampling data to the RI. If contaminated surface water is confirmed above the PADEP Surface Water Standards for the Protection of Fish and Aquatic Life, then an eco-risk evaluation should be performed and an investigation should be implemented to determine the nature and extent of contaminated soils and groundwater in the overburden.

As noted above, a potential exposure pathway involving vapors may exist in the chambers of the former mining operation of the Pittsburgh Coal. These chambers are located directly below the adjacent residential neighborhood and no wells were installed within the adjacent neighborhood to monitor the former Pittsburgh Coal mine. Dewatering of Pittsburgh Coal mine voids has occurred since the installation of the landfill cap creating the potential for oily residues to remain on the floors and walls of chambers within the former coal mine. This condition would potentially lead to vapors filling the mine voids and migrating through bedrock fractures to the ground surface. Consequently, EPA recommends that a well survey be preformed to locate potential wells in the adjacent neighborhoods. If residential wells are located, well construction data, water elevations and groundwater samples should be collected.

This data will be used to determine water quality in the unconfined aquifer and ascertain whether a water barrier exists between the mine and the residents.

Are there newly identified contaminants or contaminant sources? Are there unanticipated toxic byproducts of the remedy not previously addressed by the decision documents?

No

Changes in Exposure Pathways, Toxicity and other Contaminant Characteristics

Have toxicity factors for contaminants of concern at the site changed in a way that could affect the protectiveness of the remedy? Have other contaminant characteristics changed in a way that could affect the protectiveness of the remedy?

Toxicity factors have changed since the original risk assessment, as have risk assessment methods. For example, assessments of PAHs now include an evaluation of mutagenicity, and the risk assessment guides for dermal and inhalation exposures have changed.

To evaluate the current and future protectiveness, the following risks were considered:

- Risks from current groundwater concentrations in monitoring wells (using concentrations from the 2008 and 2009 TW-13 data);
- Risks at MCLs;
- Risks from current groundwater concentrations in a local residential well;
- Risks from current surface water concentrations.
- Risks from vapor intrusion.

Changes in Risk Assessment Methods

Have standardized risk assessment methodologies changed in a way that could affect the protectiveness of the remedy?

There have been significant changes in EPA's risk assessment guidance since the original risk assessment was performed. These include changes in basic methodology, dermal guidance, inhalation methodologies, and exposure factors. Risks were estimated using current methodology; those estimated were discussed above.

Expected Progress Towards Meeting RAOs

Is the remedy progressing as expected?

Monitoring well TW-13 still shows sporadic benzene and naphthalene contamination in groundwater above MCLs. However, groundwater at the Site is not currently used; therefore, these conditions are currently protective.

One residential well was sampled, and the concentrations are currently protective for potable use. However, chemicals potentially associated with the site were detected, and periodic follow-up sampling is recommended as this resident is not connected to the public water supply.

Surface water shows site-related contaminants. Continued monitoring is recommended.

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

Yes. As residual product likely exists in mine chambers located beneath a residential neighborhood, a potential exists for vapor intrusion into these residences. See responses to Question B and the Technical Assessment Summary for a synopsis of the vapor intrusion issue.

Technical Assessment Summary

During the Five-Year Review, several issues have been identified that warrant further evaluation.

Groundwater: One residence adjacent to the Site was still using their residential well. The homeowner stated they used bottled water for drinking. The well was sampled and was determined to be within the acceptable risk range. However, the potentially Site-related compounds naphthalene, 1,2,4-trimethybenzene and total xylenes were detected; therefore, EPA recommends follow-up sampling at this location. In addition, the well survey should be updated and the location of the waterline should be confirmed to ensure long-term protectiveness. If additional residents that use wells for drinking water purposes are located down gradient of the landfill or the Pittsburgh coal outcrops affected by the landfill, then these wells should be sampled.

Surface Water: Sampling conducted for this FYR revealed elevated concentrations of two Site-related compounds and if confirmed to be present could represent a risk to the environment. Surface water sampling should be repeated under similar water flow conditions to verify the results.

Sewer Vapors: On May 26, 2010 WESA provided a letter to EPA regarding the Site and its concern that contaminated [overburden] groundwater could potentially impact the Jefferson Hills sewer line that traverses the Resin Disposal Site before connecting with the WESA sewer line. WESA notes that they continue to experience VOC vapor problems, which the PADEP attributes to groundwater contamination emanating from the State Route 837 petroleum facility. However, WESA still believes that the Resin Disposal Site is a potential contributor to their sewer line VOC vapor problem. Although EPA does not believe this is related to groundwater, it could possibly be related to the discharge of Site-related contaminants to the sewer system because of the reduced efficiency of the carbon at the oil/water separator. Therefore, oil/water separator parts should be replaced, efficiencies should be verified, and sampling of the sewer line should be performed at strategic locations of the Resin Disposal Site.

Vapor Intrusion Summary: At the request of the EPA, Cummings Riter Consultants prepared an assessment of the potential for vapor intrusion issues at the Resin Disposal Site (Attachment 4). The document concluded that the vapor intrusion pathway related to the Pittsburgh Coal groundwater is not likely to present an unacceptable risk to nearby residents. EPA generally agrees with this conclusion; however, EPA notes that the potential that vapors may still exist in the chambers of the former mining operation of the Pittsburgh Coal. These chambers are located

directly below the adjacent residential neighborhood and no wells were installed within the adjacent neighborhood to monitor the former Pittsburgh Coal mine.

Based on the Conceptual Site Model, groundwater flow through the mining operation directly below the residents has been significantly reduced by the presence of the landfill cap and by the action of the oil/water separator. As demonstrated by TW-14, the potential exists that oily residues may remain on the floors and walls of chambers within the former coal mine. This condition would potentially lead to vapors filling the mine voids and migrating through bedrock fractures to the ground surface. Therefore, EPA recommends that a well survey be performed to locate potential wells in the adjacent neighborhoods. If residential wells are located, well construction data, water elevations and groundwater samples should be collected. This data will be used to determine water quality in the unconfined aquifer and to ascertain whether a water barrier exists between the mine and the residents.

VIII. Issues

Issues	Affects Current Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
1. Results from surface water sampling near the oil/water separator were above PADEP Surface Water Standards for Fish and Aquatic Life.	Y	Y
2. Effluent form the oil/water separator has had reduced efficiency. The Site consultant (Cummings Riter Consultants, Inc.) attributes the high effluent concentrations to the pipe fitting located downgradient of the carbon adsorption units.	N	Y
3. Residential well RW-4 was sampled for this review and Site-related contaminants were detected. Although all results were below the drinking water standards, 1991 results for this location were non-detect.	N	Y
4. A vapor intrusion evaluation must be completed.	N	Y

IX. Recommendations and Follow-Up Actions

Recommendations and Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness (Y/N)	
				Current	Future
1. Resample all surface water locations under similar water flow conditions to verify detections at SW-1. If detections are verified and remain above ecological protection levels, then an investigation of contaminant sources should be conducted.	PRP	EPA	May 11	Y	Y
2. The oil/water separator pipe fittings have not been replaced. This maintenance should be completed to ensure the oil/water separator is operating properly. In addition, water samples should be collected at strategic on-Site locations within the Jefferson hills sewer line to determine if the Resin Disposal Site is currently contributing to volatile odors in the WESA sewer system.	PRP	EPA	June 11	N	Y
3. Continue to sample RW-4 on an annual basis to verify detections and to determine if contaminant levels are stable or rising. Conduct an updated well survey to determine the extent of residential well use and determine the extent of public water use on Circle Glenn Drive, Maryland Avenue and Riverview Drive. This survey should also include homes downgradient of the contaminated area in the immediate vicinity of the Site. If additional residential wells are found being used, samples should be collected.	PRP	EPA	June 11	N	Y
4. Determine if an unconfined groundwater barrier is present over the former mine area in the Pittsburgh Coal Formation in the vicinity of the residential area to rule out the potential for vapor intrusion.	PRP	EPA	June 11	N	Y

X. Protectiveness Statement

A protectiveness determination of the remedy at the Resin Disposal Site cannot be made at this time until further information is obtained. Further information will be obtained by taking the following actions:

Re-sample all 2010 surface water locations to verify detections of contaminants at SW-1. If detections are verified and remain above ecological protectiveness levels, then an investigation of contaminant sources should be conducted.

Perform maintenance on the potentially contaminated fittings downstream of the oil/water separator carbon treatment system. Sample the Jefferson Hills sewer line at key locations (on-site, upgradient, downgradient, and at on-site sewer intersections) to establish a baseline for the current water quality of the sewer system near the oil/water separator discharge.

Update the well survey and documenting the location of the waterline. If residential wells are in use, EPA recommends collecting samples to ensure their protectiveness.

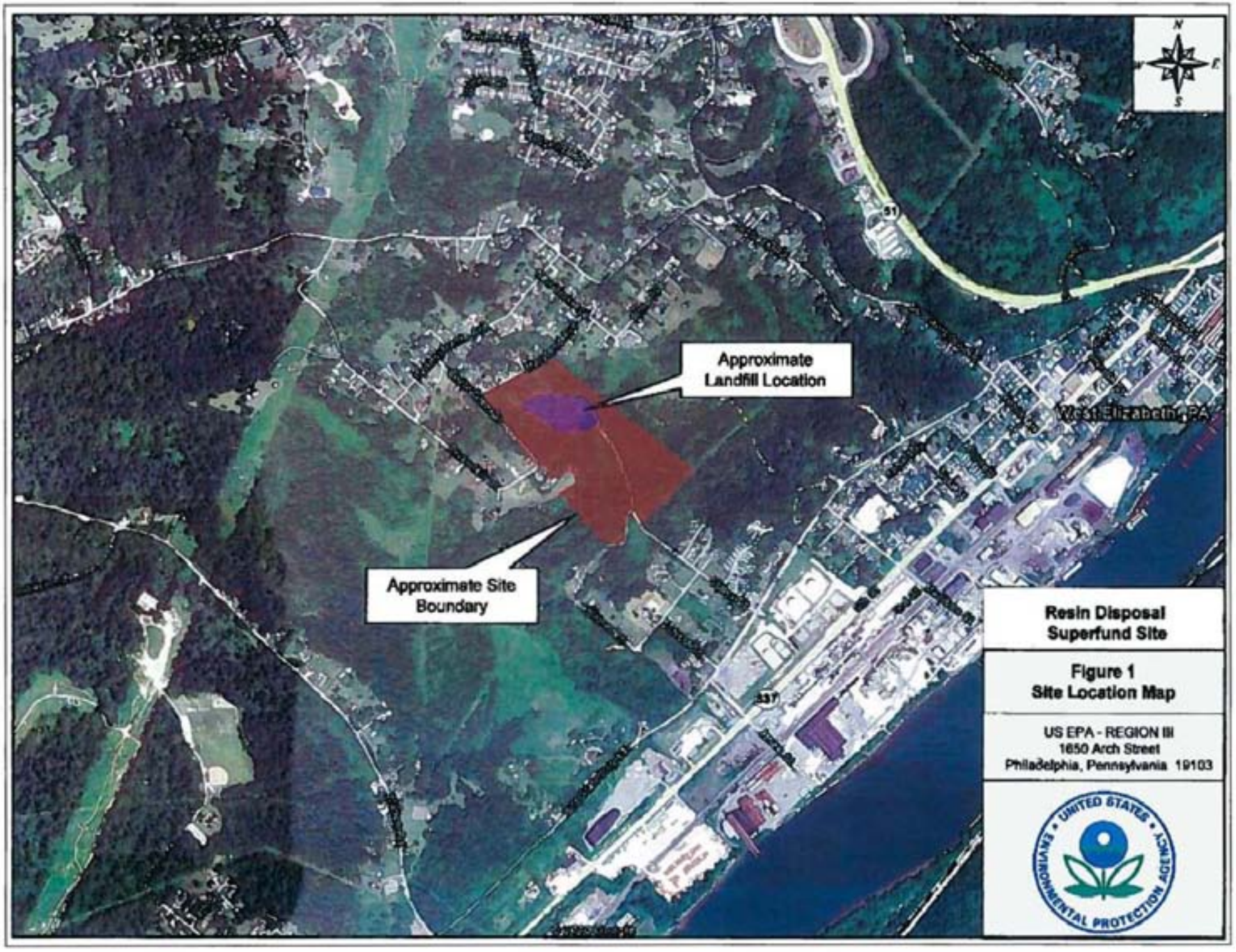
Determine if an unconfined groundwater barrier is present over the former mine area in the Pittsburgh Coal Formation in the vicinity of the residential area to rule out the potential for vapor intrusion.

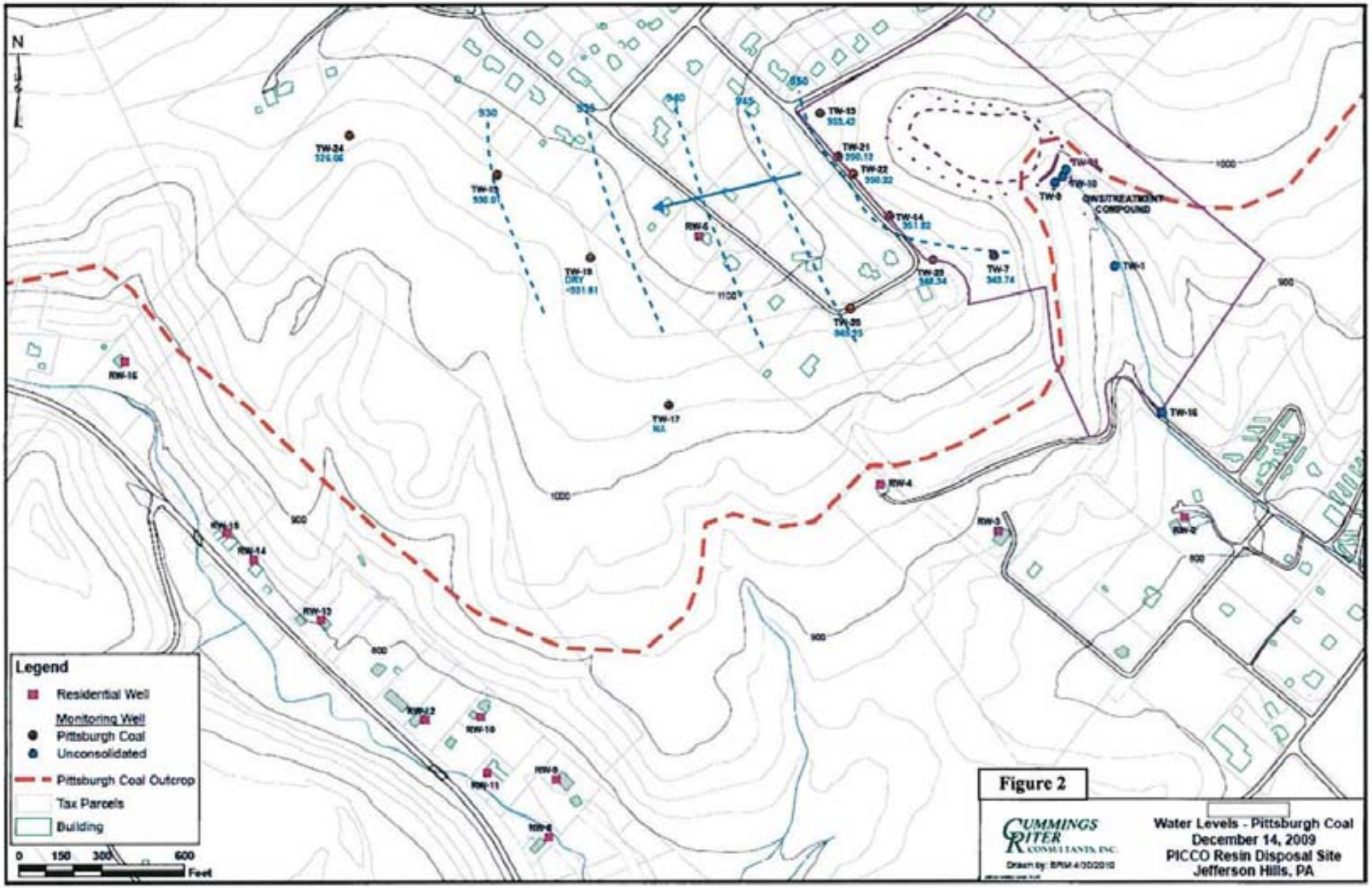
It is expected that these actions can be conducted in the next year and that an Addendum to this Five Year Review will be completed by January 2012, at which time a protectiveness determination will be made.

XI. Next Review

The next Five-Year Review will be completed no later than five years from the signature date of this five-year review.

Figures


N
W
E
S
51
Approximate Landfill Location
West Elizabeth, PA
Approximate Site Boundary
837
Resin Disposal Superfund Site
Figure 1
Site Location Map
US EPA - REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY


N
Legend
Residential Well
Monitoring Well
Pittsburgh Coal
Unconsolidated
Pittsburgh Coal Outcrop
Tax Parcels
Building
0 150 300 600
Feet
TW-24
TW-13
TW-21
TW-22
TW-14
TW-23
TW-7
TW-19
TW-20
TW-17
TW-1
TW-16
TW-4
TW-3
TW-2
RW-15
RW-14
RW-13
RW-12
RW-10
RW-11
RW-9
RW-8
RW-16
RW-5
GW/LTREATMENT COMPOUND
Figure 2
CUMMINGS RITER CONSULTANTS, INC.
Drawn by: BRM 4/30/2010
Water Levels - Pittsburgh Coal
December 14, 2009
PICCO Resin Disposal Site
Jefferson Hills, PA

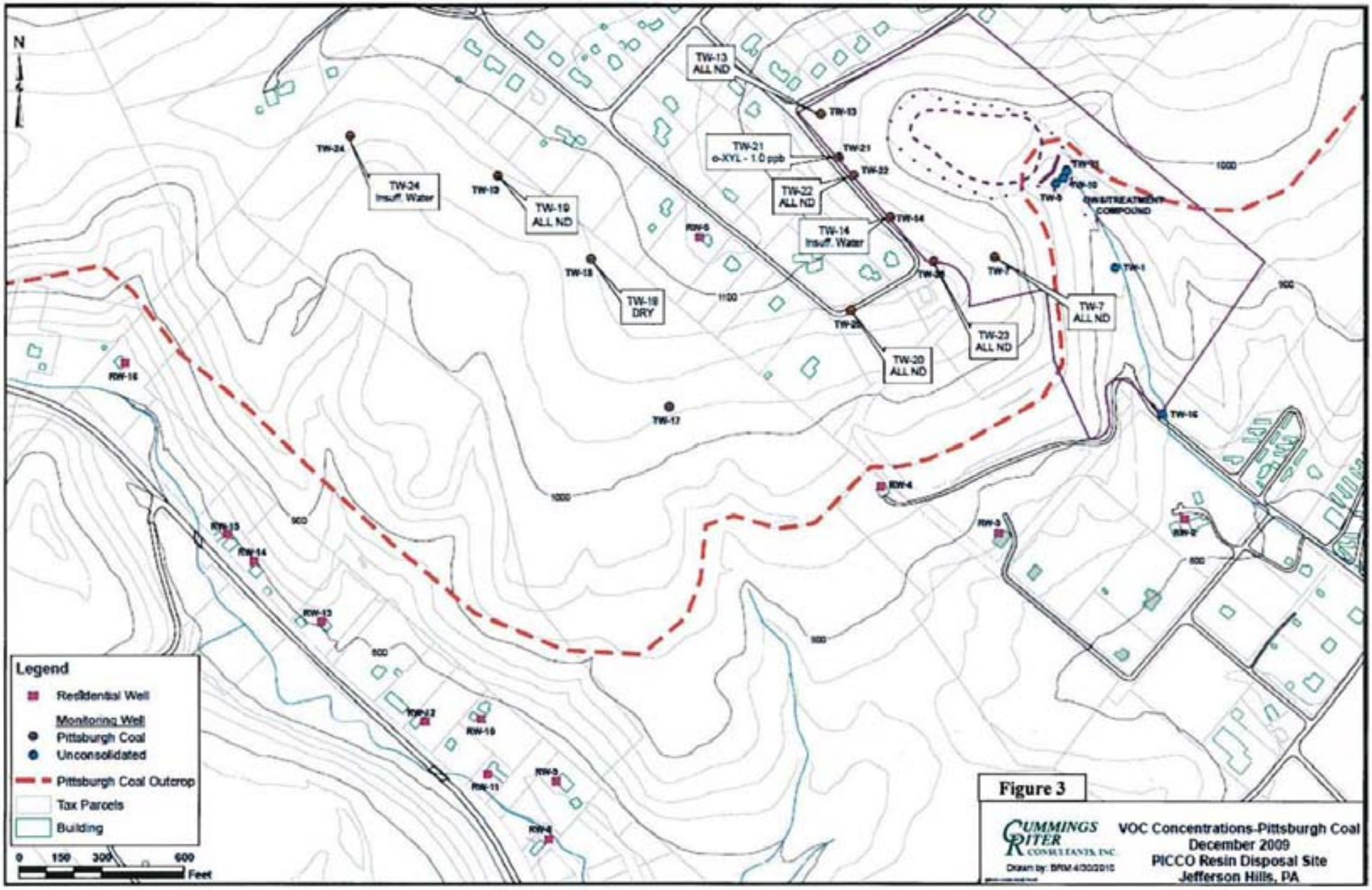
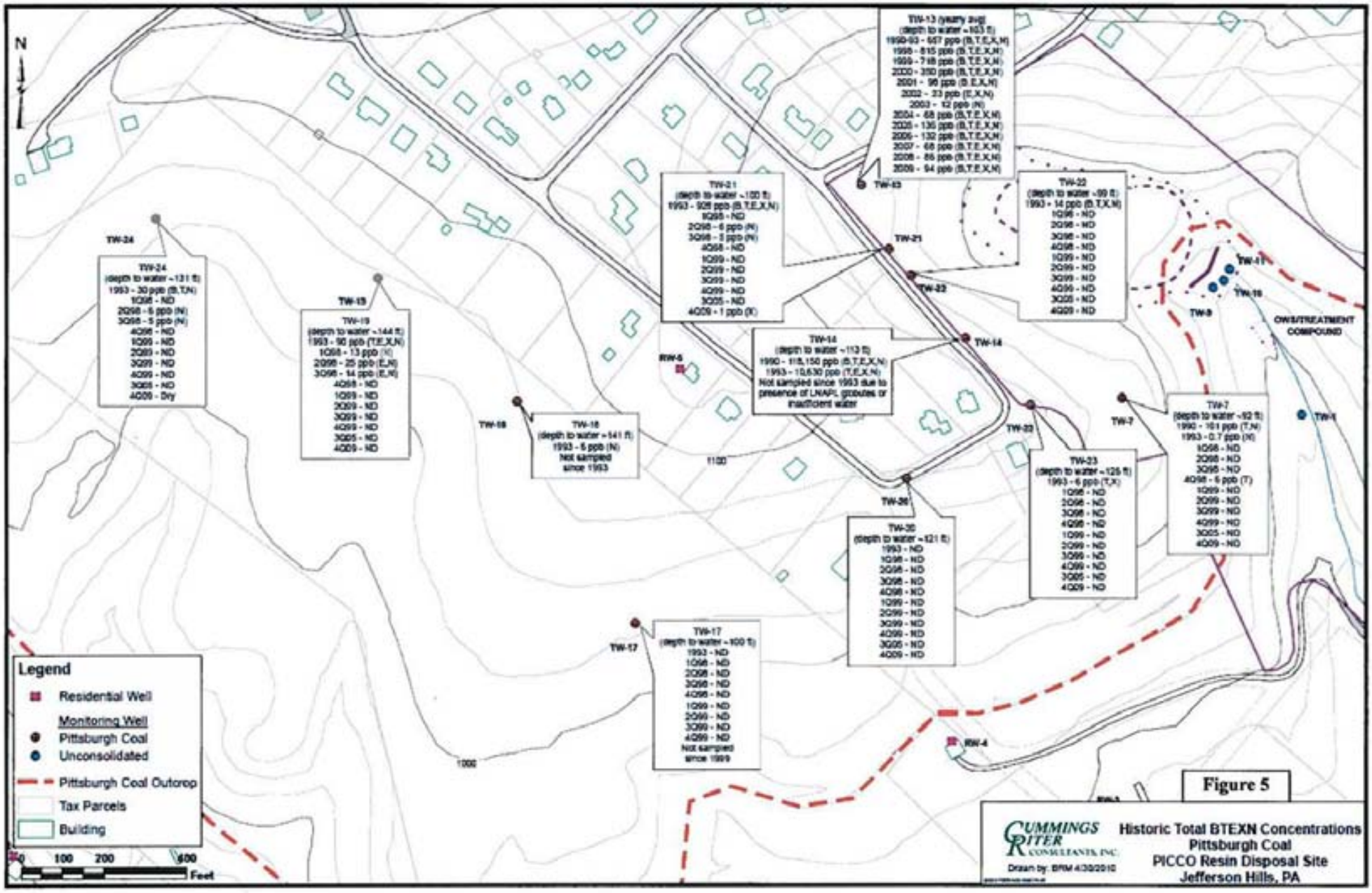
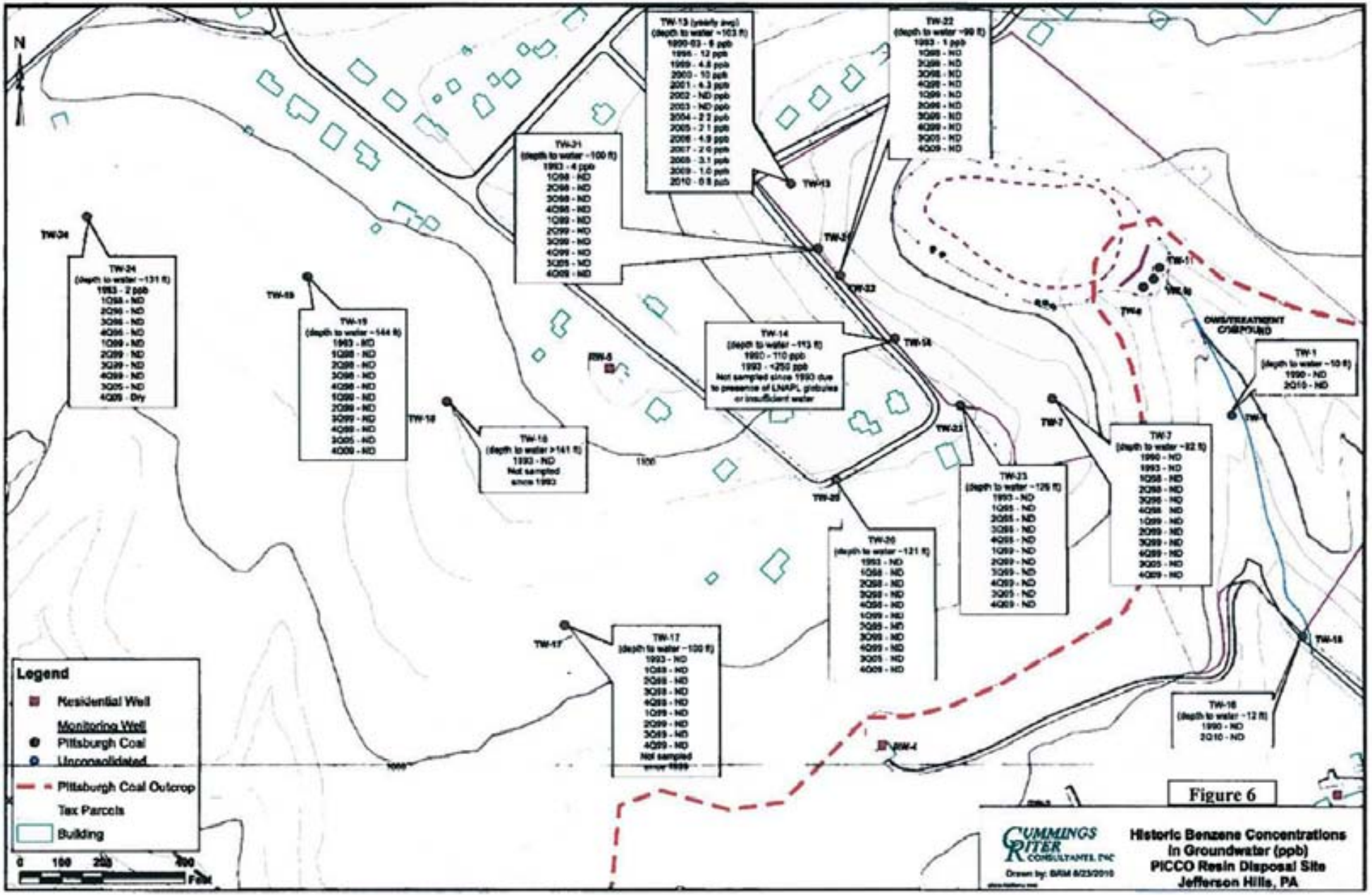

N
TW-13
ALL ND
TW-21
o-XYL - 1.0 ppb
TW-22
ALL ND
TW-14
Insuff. Water
TW-24
Insuff. Water
TW-19
ALL ND
TW-18
DRY
TW-20
ALL ND
TW-23
ALL ND
TW-7
ALL ND
GW/STREATMENT COMPOUND
TW-17
RW-16
RW-15
RW-14
RW-13
RW-12
RW-11
RW-10
RW-9
RW-8
RW-6
RW-5
RW-4
RW-3
RW-2
RW-1
1000
900
1100
800
600
500
Legend
Residential Well
Monitoring Well
Pittsburgh Coal
Unconsolidated
Pittsburgh Coal Outcrop
Tax Parcels
Building
0 150 300 600
Feet
Figure 3
CUMMINGS RITER CONSULTANTS, INC.
Drawn by: BRM 4/30/2010
VOC Concentrations-Pittsburgh Coal
December 2009
PICCO Resin Disposal Site
Jefferson Hills, PA

Figure 4
Surface Water and Residential Well Sampling Locations with Resin Landfill Monitoring Well Locations


N
TW-13 (yearly avg)
(depth to water ~103 ft)
1990-93 - 667 ppb (B,T,E,X,N)
1998 - 615 ppb (B,T,E,X,N)
1999 - 718 ppb (B,T,E,X,N)
2000 - 350 ppb (B,T,E,X,N)
2001 - 96 ppb (B,E,X,N)
2002 - 23 ppb (E,X,N)
2003 - 12 ppb (N)
2004 - 68 ppb (B,T,E,X,N)
2005 - 135 ppb (B,T,E,X,N)
2006 - 132 ppb (B,T,E,X,N)
2007 - 68 ppb (B,T,E,X,N)
2008 - 86 ppb (B,T,E,X,N)
2009 - 94 ppb (B,T,E,X,N)
TW-13
TW-21
(depth to water ~100 ft)
1993 - 926 ppb (B,T,E,X,N)
1Q98 - ND
2Q98 - 6 ppb (N)
3Q98 - 5 ppb (N)
4Q98 - ND
1Q99 - ND
2Q99 - ND
3Q99 - ND
4Q99 - ND
3Q05 - ND
4Q09 - 1 ppb (E)
TW-22
(depth to water ~99 ft)
1993 - 14 ppb (B,T,X,N)
1Q98 - ND
2Q98 - ND
3Q98 - ND
4Q98 - ND
1Q99 - ND
2Q99 - ND
3Q99 - ND
4Q99 - ND
3Q05 - ND
4Q09 - ND
TW-24
TW-24
(depth to water ~131 ft)
1993 - 30 ppb (B,T,N)
1Q98 - ND
2Q98 - 6 ppb (N)
3Q98 - 5 ppb (N)
4Q98 - ND
1Q99 - ND
2Q99 - ND
3Q99 - ND
4Q99 - ND
3Q05 - ND
4Q09 - Dry
TW-19
TW-19
(depth to water ~144 ft)
1993 - 90 ppb (T,E,X,N)
1Q98 - 13 ppb (E)
2Q98 - 25 ppb (E,N)
3Q98 - 14 ppb (E,N)
4Q98 - ND
1Q99 - ND
2Q99 - ND
3Q99 - ND
4Q99 - ND
3Q05 - ND
4Q09 - ND
TW-14
(depth to water ~113 ft)
1990 - 115,150 ppb (B,T,E,X,N)
1993 - 10,630 ppb (T,E,X,N)
Not sampled since 1993 due to presence of LNAPL globules or insufficient water
TW-14
RW-5
TW-18
(depth to water ~141 ft)
1993 - 6 ppb (N)
Not sampled since 1993
TW-18
1100
TW-23
(depth to water ~125 ft)
1993 - 6 ppb (T,X)
1Q98 - ND
2Q98 - ND
3Q98 - ND
4Q98 - ND
1Q99 - ND
2Q99 - ND
3Q99 - ND
4Q99 - ND
3Q05 - ND
4Q09 - ND
TW-7
TW-7
(depth to water ~92 ft)
1990 - 161 ppb (T,N)
1993 - 0.7 ppb (N)
1Q98 - ND
2Q98 - ND
3Q98 - ND
4Q98 - 6 ppb (T)
1Q99 - ND
2Q99 - ND
3Q99 - ND
4Q99 - ND
3Q05 - ND
4Q09 - ND
TW-1
TW-11
TW-10
TW-9
OWS/TREATMENT COMPOUND
TW-20
TW-20
(depth to water ~121 ft)
1993 - ND
1Q98 - ND
2Q98 - ND
3Q98 - ND
4Q98 - ND
1Q99 - ND
2Q99 - ND
3Q99 - ND
4Q99 - ND
3Q05 - ND
4Q09 - ND
TW-17
TW-17
(depth to water ~100 ft)
1993 - ND
1Q98 - ND
2Q98 - ND
3Q98 - ND
4Q98 - ND
1Q99 - ND
2Q99 - ND
3Q99 - ND
4Q99 - ND
Not sampled since 1999
1000
RW-4
Legend
Residential Well
Monitoring Well
Pittsburgh Coal
Unconsolidated
Pittsburgh Coal Outcrop
Tax Parcels
Building
0 100 200 400
Feet
Figure 5
CUMMINGS RITER CONSULTANTS, INC.
Drawn by: BRM 4/30/2010
Historic Total BTEXN Concentrations
Pittsburgh Coal
PICCO Resin Disposal Site
Jefferson Hills, PA


N
TW-13 (yearly avg)
(depth to water ~103 ft)
1990-93 - 9 ppb
1996 - 12 ppb
1999 - 4.8 ppb
2000 - 10 ppb
2001 - 4.3 ppb
2002 - ND ppb
2003 - ND ppb
2004 - 2.2 ppb
2005 - 2.1 ppb
2006 - 4.9 ppb
2007 - 2.0 ppb
2008 - 3.1 ppb
2009 - 1.0 ppb
2010 - 0.8 ppb
TW-22
(depth to water ~90 ft)
1993 - 1 ppb
1Q98 - ND
2Q98 - ND
3Q98 - ND
4Q98 - ND
1Q99 - ND
2Q99 - ND
3Q99 - ND
4Q99 - ND
3Q05 - ND
4Q09 - ND
TW-21
(depth to water ~100 ft)
1993 - 4 ppb
1Q98 - ND
2Q98 - ND
3Q98 - ND
4Q98 - ND
1Q99 - ND
2Q99 - ND
3Q99 - ND
4Q99 - ND
3Q05 - ND
4Q09 - ND
TW-24
(depth to water ~131 ft)
1993 - 2 ppb
1Q98 - ND
2Q98 - ND
3Q98 - ND
4Q98 - ND
1Q99 - ND
2Q99 - ND
3Q99 - ND
4Q99 - ND
3Q05 - ND
4Q09 - Dry
TW-19
(depth to water ~144 ft)
1993 - ND
1Q98 - ND
2Q98 - ND
3Q98 - ND
4Q98 - ND
1Q99 - ND
2Q99 - ND
3Q99 - ND
4Q99 - ND
3Q05 - ND
4Q09 - ND
TW-18
(depth to water >141 ft)
1993 - ND
Not sampled
since 1993
TW-14
(depth to water ~113 ft)
1990 - 110 ppb
1993 - <250 ppb
Not sampled since 1993 due
to presence of LNAPL globules
or insufficient water
TW-23
(depth to water ~126 ft)
1993 - ND
1Q98 - ND
2Q98 - ND
3Q98 - ND
4Q98 - ND
1Q99 - ND
2Q99 - ND
3Q99 - ND
4Q99 - ND
3Q05 - ND
4Q09 - ND
TW-7
(depth to water ~82 ft)
1990 - ND
1993 - ND
1Q98 - ND
2Q98 - ND
3Q98 - ND
4Q98 - ND
1Q99 - ND
2Q99 - ND
3Q99 - ND
4Q99 - ND
3Q05 - ND
4Q09 - ND
TW-1
(depth to water ~10 ft)
1990 - ND
2Q10 - ND
TW-20
(depth to water ~121 ft)
1993 - ND
1Q98 - ND
2Q98 - ND
3Q98 - ND
4Q98 - ND
1Q99 - ND
2Q99 - ND
3Q99 - ND
4Q99 - ND
3Q05 - ND
4Q09 - ND
TW-17
(depth to water ~100 ft)
1993 - ND
1Q98 - ND
2Q98 - ND
3Q98 - ND
4Q98 - ND
1Q99 - ND
2Q99 - ND
3Q99 - ND
4Q99 - ND
Not sampled
TW-16
(depth to water ~12 ft)
1990 - ND
2Q10 - ND
OWS/TREATMENT
SYSTEM/POND
RW-5
RW-4
TW-24
TW-19
TW-18
TW-13
TW-21
TW-22
TW-14
TW-23
TW-20
TW-17
TW-7
TW-1
TW-16
1000
Legend
Residential Well
Monitoring Well
Pittsburgh Coal
Unconsolidated
Pittsburgh Coal Outcrop
Tax Parcels
Building
0
100
200
400
Feet
Figure 6
CUMMINGS RITER CONSULTANTS, INC
Drawn by: BRM 8/23/2010
Historic Benzene Concentrations
in Groundwater (ppb)
PICCO Resin Disposal Site
Jefferson Hills, PA

Appendix 1

WEG
Weavertown Environmental Group covers it all

www.weavertown.com

24
3657

January 27, 2010

Mr. Bruce Hough
Ashland Hercules
500 Hercules Road
Wilmington, Delaware 19808
Telephone: (302) 995-3404
Via email: bjhough@ashland.com

RE: PICCO Resin Disposal Site
Bi-annual Monitoring and Product Recovery
July 2009 through December 2009
WEG Project No. E0161, E8860

Dear Mr. Hough:

Weavertown Environmental Group (WEG) is submitting this bi-annual product gauging and groundwater monitoring summary report for activities performed between July 2009 and December 2009, at the PICCO Resin Disposal site located in Jefferson Borough, Allegheny County, Pennsylvania. Fluid-level gauging and groundwater sampling were performed in accordance with the September 25, 1997, "Response Action Plan" and a request by the United States Environmental Protection Agency (USEPA) for expanded sampling during the fourth quarter of 2009. A brief summary of the groundwater-monitoring event is provided below.

1.0 FLUID-LEVEL GAUGING AND OCCURRENCE OF FREE PRODUCT

Prior to well purging and groundwater sampling, the depths to groundwater and free product, if present, were measured for each site monitoring well. The depth to groundwater and free product, if present, was measured with an electronic dual-phase interface probe in each well. All fluid levels were measured from the top of the well casing, after allowing groundwater levels in the wells to stabilize for several minutes. The depth to groundwater was measured in wells TW-2, TW-7, TW-13, TW-14, TW-18, TW-19, TW-20, TW-21, TW-22, TW-23, TW-24, PH-1, PH-2, PH-10, and PH-11. Fluid-level data is summarized in Appendix A. Tables 1 and 2 summarize the product recovery activities from 1997 to the end of December 2009.

2.0 GROUNDWATER SAMPLING

Monitoring well TW-13 was sampled during the third quarter 2009 monitoring event. Well TW-14 could not be sampled because the well was dry. Well purging and groundwater sampling was performed in accordance with the "Response Action Plan." A single-use polyethylene bailer was used to purge TW-13 and to collect the groundwater sample. Three well casing volumes of groundwater were purged from well TW-13 prior to sampling. Groundwater pH, specific conductivity, and temperature were measured and visual observations of the groundwater opacity and color were recorded prior to purging and following the removal of each well volume of groundwater.

Monitoring wells TW-7, TW-13, TW-19, TW-20, TW-21, TW-22, and TW-23 were sampled during the fourth quarter of 2009. Monitoring wells TW-2, TW-14, TW-18, and TW-24 could not be sampled because the wells were dry or did not contain enough water for the collection of a representative groundwater sample. Well TW-17 is damaged. Well purging and groundwater sampling was performed in accordance with the "Response Action Plan" and a request from the USEPA to sample twelve wells in the area. A Grundfos submersible pump and dedicated low-density polyethylene tubing was used for well purging and sampling. Groundwater pH, specific conductivity, and temperature were measured and visual observations of the groundwater opacity and color were recorded prior to purging and following the removal of each well volume of groundwater.

Sampling was performed by the groundwater being extracted from the well and directly transferred to laboratory-supplied 40-milliliter (ml) vials containing hydrochloric acid preservative. Filled sample containers were placed into an iced sample cooler and shipped to TestAmerica Laboratories, Inc., in Savannah, Georgia following standard chain-of-custody procedures. The groundwater samples were analyzed for benzene, toluene, ethylbenzene, xylene isomers, and naphthalene by SW-846 Method 8260B. Quality control samples for the third and fourth quarter 2009 monitoring events include one trip blank, one duplicate sample from well TW-13, and one matrix spike and matrix spike duplicate.

WEG appreciates the opportunity to provide these services to Ashland Hercules. Should you have any questions on the information provided herein, please call me at (724) 746-4850 or email at mmccaffrey@weavertown.com.

Respectfully,

Michael P. McCaffrey
Project Manager

Attachments

cc: File: Project_Management\\E0161 Picco & Poppes Engineering Site Activities\Reports\BAR21

MPM/mpm

TABLE 1: PRODUCT RECOVERY ACTIVITIES

JANUARY 1996 THROUGH DEC. 2009

BI-ANNUAL REPORT NO. 21
PICCO RESIN DISPOSAL SITE
JEFFERSON BOROUGH, PENNSYLVANIA

Well	Jan-96	Feb-96	Mar-96	Apr-96	May-96	Jun-96	Jul-96	Aug-96	Sep-96	Oct-96	Nov-96	Dec-96
PH-1	np	np	np	np	np	np	np	np	np	np	np	np
PH-2	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry
PH-10	0.05	0.01	0.2	0.04	0.06	0.02	0.03	0.05	0.04	0.04	0.02	0.05
PH-11	np	np	np	np	np	np	np	np	np	np	np	np
TW-2	np	np	np	np	np	np	np	np	np	np	np	np
TW-13	np	np	np	np	np	np	np	np	np	np	np	np
TW-14	0.01	globules	globules	globules	globules	globules	globules	globules	globules	globules	globules	globules
TW-21	np	np	np	np	np	np	np	np	np	np	np	np
TW-22	np	np	np	np	np	np	np	np	np	np	np	np
Recovered Cum. Total (gallons)												63.00

Well	Jan-97	Feb-97	Mar-97	Apr-97	May-97	Jun-97	Jul-97	Aug-97	Sep-97	Oct-97	Nov-97	Dec-97
PH-1	np	np	np	np	np	np	np	np	np	np	np	np
PH-2	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry
PH-10	0.05	0.05	0.04	0.08	0.13	0.167	0.17	0.08	0.2	0.1	0.08	<0.1
PH-11	np	np	np	np	np	np	np	np	np	np	np	np
TW-2	np	np	np	np	np	np	np	np	np	np	np	np
TW-13	np	np	np	np	np	np	np	np	np	np	np	np
TW-14	globules	0.01	<0.1	<0.1	<0.1	<0.1	<0.0052	<0.1	<0.1	<0.1	<0.1	<0.1
TW-21	np	np	np	np	np	np	np	np	np	np	np	np
TW-22	np	np	np	np	np	np	np	np	np	np	np	np
Recovered	7.00	8.50	5.50	7.00	10.50	10.00	11.00	9.25	7.25	5.75	4.25	2.00
Cum. Total (gallons)	7.00	13.50	19.00	26.00	36.50	46.50	57.60	66.75	74.00	79.76	84.00	86.00

Well	Jan-98	Feb-98	Mar-98	Apr-98	May-98	Jun-98	Jul-98	Aug-98	Sep-98	Oct-98	Nov-98	Dec-98
PH-1	np	np	np	np	np	np	np	np	np	dry	dry	np
PH-2	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry
PH-10	0.02	0.02	0.03	0.01	0.01	0.01	0.01	0.015	0.01	0.016	0.03	0.01
PH-11	np	np	np	np	np	np	np	np	np	np	np	np
TW-2	0.01	sheen	np	0.01	0.01	0.01	0.01	0.01	0.01	0.005	0.01	globules
TW-13	np	np	np	np	np	np	np	np	np	np	np	np
TW-14	0.015	0.01	0.01	0.01	np	0.01	film	np	np	0.01	0.01	globules
TW-21	np	np	np	np	np	np	np	np	np	np	np	np
TW-22	np	np	np	np	np	np	np	np	np	np	np	np
Recovered	0.50	0.05	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.1	0.00
Cum. Total (gallons)	0.50	0.55	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.73	0.73

* All product thickness measurements are in feet.
np - no product

TABLE 1: PRODUCT RECOVERY ACTIVITIES

JANUARY 1998 THROUGH DEC. 2009

BI-ANNUAL REPORT NO. 21
PICCO RESIN DISPOSAL SITE
JEFFERSON BOROUGH, PENNSYLVANIA

Well	Jan-99	Feb-99	Mar-99	Apr-99	May-99	Jun-99	Jul-99	Aug-99	Sep-99	Oct-99	Nov-99	Dec-99
PH-1	np	np	np	np	np	np	np	-	-	np	-	-
PH-2	np	dry	dry	dry	dry	dry	dry	-	-	dry	-	-
PH-10	0.01	0.01	0.01	0.01	0.01	0.03	0.01	-	-	0.01	-	-
PH-11	np	np	np	np	np	np	np	-	-	np	-	-
TW-2	0.01	0.01	0.01	0.01	0.01	0.04	0.01	-	-	0.01	-	-
TW-13	np	np	np	np	np	np	np	-	-	np	-	-
TW-14	0.01	0.01	0.01	0.01	globules	0.03	0.01	-	-	0.01	-	-
TW-21	np	np	np	np	np	np	np	-	-	np	-	-
TW-22	np	np	np	np	np	np	np	-	-	np	-	-
Recovered	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00
Cum. Total (gallons)	0.00	0.00	0.00	0.00	0.00	0.24	0.24	0.24	0.24	0.24	0.24	0.24

Well	Jan-00	Feb-00	Mar-00	Apr-00	May-00	Jun-00	Jul-00	Aug-00	Sep-00	Oct-00	Nov-00	Dec-00
PH-1	-	-	np	np	-	-	np	-	-	np	-	-
PH-2	-	-	dry	dry	-	-	dry	-	-	dry	-	-
PH-10	-	-	0.016	0.01	-	-	0.01	-	-	0.005	-	-
PH-11	-	-	np	np	-	-	np	-	-	np	-	-
TW-2	-	-	0.01	sheen	-	-	sheen	-	-	np	-	-
TW-13	-	-	np	np	-	-	np	-	-	np	-	-
TW-14	-	-	np	np	-	-	0.01	-	-	np	-	-
TW-21	-	-	np	np	-	-	np	-	-	np	-	-
TW-22	-	-	np	np	-	-	np	-	-	np	-	-
Recovered	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cum. Total (gallons)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Well	Jan-01	Feb-01	Mar-01	Apr-01	May-01	Jun-01	Jul-01	Aug-01	Sep-01	Oct-01	Nov-01	Dec-01
PH-1	-	np	-	np	-	-	np	-	-	np	-	-
PH-2	-	np	-	np	-	-	np	-	-	np	-	-
PH-10	-	0.01	-	0.01	-	-	0.01	-	-	0.02	-	-
PH-11	-	np	-	np	-	-	np	-	-	np	-	-
TW-2	-	0.01	-	globules	-	-	0.01	-	-	globules	-	-
TW-13	-	np	-	np	-	-	np	-	-	np	-	-
TW-14	-	globules	-	globules	-	-	globules	-	-	globules	-	-
TW-21	-	np	-	np	-	-	np	-	-	np	-	-
TW-22	-	np	-	np	-	-	np	-	-	np	-	-
Recovered	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cum. Total (gallons)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

* All product thickness measurements are in feet.
np - no product

TABLE 1: PRODUCT RECOVERY ACTIVITIES

JANUARY 1996 THROUGH DEC. 2009

BI-ANNUAL REPORT NO. 21
PICCO RESIN DISPOSAL SITE
JEFFERSON BOROUGH, PENNSYLVANIA

Well	Jan-02	Feb-02	Mar-02	Apr-02	May-02	Jun-02	Jul-02	Aug-02	Sep-02	Oct-02	Nov-02	Dec-02
PH-1	np	-	-	np	-	-	-	-	-	-	-	-
PH-2	dry	-	-	dry	-	-	-	-	-	-	-	-
PH-10	0.01	-	-	0.01	-	-	0.01	-	-	0.02	-	-
PH-11	np	-	-	np	-	-	-	-	-	-	-	-
TW-2	globules	-	-	globules	-	-	globules	-	-	globules	-	-
TW-13	np	-	-	np	-	-	-	-	-	-	-	-
TW-14	globules	-	-	globules	-	-	globules	-	-	globules	-	-
TW-21	np	-	-	np	-	-	-	-	-	-	-	-
TW-22	np	-	-	np	-	-	-	-	-	-	-	-
Recovered	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cum. Total (gallons)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Well	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03	Jul-03	Aug-03	Sep-03	Oct-03	Nov-03	Dec-03
PH-1	np	-	-	np	-	-	np	-	-	-	np	-
PH-2	dry	-	-	dry	-	-	dry	-	-	-	dry	-
PH-10	0.01	-	-	0.01	-	-	0.01	-	-	-	0.02	-
PH-11	np	-	-	np	-	-	np	-	-	-	np	-
TW-2	globules	-	-	0.01	-	-	globules	-	-	-	globules	-
TW-13	np	-	-	np	-	-	np	-	-	-	np	-
TW-14	globules	-	-	0.01	-	-	globules	-	-	-	globules	-
TW-21	np	-	-	np	-	-	np	-	-	-	np	-
TW-22	np	-	-	np	-	-	np	-	-	-	np	-
Recovered	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cum. Total (gallons)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Well	Jan-04	Feb-04	Mar-04	Apr-04	May-04	Jun-04	Jul-04	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04
PH-1	np	-	-	np	-	-	-	np	-	np	-	-
PH-2	dry	-	-	dry	-	-	-	dry	-	dry	-	-
PH-10	0.01	-	-	0.01	-	-		np	-	globules	-	-
PH-11	np	-	-	np	-	-	-	np	-	np	-	-
TW-2	globules	-	-	globules	-	-		globules	-	globules	-	-
TW-13	np	-	-	np	-	-	-	np	-	np	-	-
TW-14	globules	-	-	globules	-	-		globules	-	globules	-	-
TW-21	np	-	-	np	-	-	-	np	-	np	-	-
TW-22	np	-	-	np	-	-	-	np	-	np	-	-
Recovered	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cum. Total (gallons)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

* All product thickness measurements are in feet.
np - no product

TABLE 1: PRODUCT RECOVERY ACTIVITIES

JANUARY 1996 THROUGH DEC. 2009

BI-ANNUAL REPORT NO. 21
PICCO RESIN DISPOSAL SITE
JEFFERSON BOROUGH, PENNSYLVANIA

Well	Jan-05	Feb-05	Mar-05	Apr-05	May-05	Jun-05	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05
PH-1	-	np	-	-	np	-	np	-	-	-	NP	-
PH-2	-	dry	-	-	dry	-	dry	-	-	-	0.01	-
PH-10	-	0.01	-	-	globules	-	globules	-	-	-	dry	-
PH-11	-	np	-	-	np	-	np	-	-	-	dry	-
TW-2	-	globules	-	-	globules	-	globules	-	-	-	NP	-
TW-13	-	np	-	-	np	-	np	-	-	-	NP	-
TW-14	-	globules	-	-	globules	-	globules	-	-	-	globules	-
TW-21	-	np	-	-	np	-	np	-	-	-	np	-
TW-22	-	np	-	-	np	-	np	-	-	-	np	-
Recovered	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cum. Total (gallons)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Well	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06	Dec-06
PH-1	-	np	-	-	np	-	np	-	-	-	NP	-
PH-2	-	0.01	-	-	0.01	-	np	-	-	-	Dry	-
PH-10	-	0.01	-	-	0.01	-	0.01	-	-	-	Globules	-
PH-11	-	np	-	-	np	-	np	-	-	-	NP	-
TW-2	-	NP	-	-	np	-	np	-	-	-	NP	-
TW-13	-	NP	-	-	np	-	np	-	-	-	NP	-
TW-14	-	0.01	-	-	0.01	-	Globules	-	-	-	Globules	-
TW-21	-	np	-	-	np	-	np	-	-	-	NP	-
TW-22	-	np	-	-	np	-	np	-	-	-	NP	-
Recovered	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Cum. Total (gallons)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

Well	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07
PH-1	-	-	np	-	-	np	-	-	Dry	-	np	-
PH-2	-	-	np	-	-	dry	-	-	Dry	-	Dry	-
PH-10	-	-	np	-	-	-	-	-	Dry	-	Dry	-
PH-11	-	-	np	-	-	np	-	-	np	-	Dry	-
TW-2	-	-	np	-	-	np	-	-	Dry	-	Dry	-
TW-13	-	-	np	-	-	np	-	-	np	-	np	-
TW-14	-	-	-	-	-	-	-	-	Globules	-	Dry	-
TW-21	-	-	np	-	-	np	-	-	np	-	np	-
TW-22	-	-	np	-	-	np	-	-	np	-	Dry	-
Recovered	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cum. Total (gallons)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

* All product thickness measurements are in feet.
np - no product

TABLE 1: PRODUCT RECOVERY ACTIVITIES

JANUARY 1996 THROUGH DEC. 2009

BI-ANNUAL REPORT NO. 21
PICCO RESIN DISPOSAL SITE
JEFFERSON BOROUGH, PENNSYLVANIA

Well	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08
PH-1	-	np	-	-	-	np	-	-	-	-	-	np
PH-2	-	DRY	-	-	-	DRY	-	-	-	-	-	DRY
PH-10	-	np	-	-	-	np	-	-	-	-	-	-
PH-11	-	np	-	-	-	np	-	-	-	-	-	-
TW-2	-	DRY	-	-	-	np	-	-	-	-	-	DRY
TW-13	-	np	-	-	-	np	-	-	-	-	-	np
TW-14	-	DRY	-	-	-	DRY	-	-	-	-	-	DRY
TW-21	-	np	-	-	-	np	-	-	-	-	-	np
TW-22	-	DRY	-	-	-	DRY	-	-	-	-	-	np
Recovered	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cum. Total (gallons)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Well	Jan-09	Feb-09	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	Sep-09	Oct-09	Nov-09	Dec-09
PH-1	-	-	np	-	-	DRY	-	-	Dry	-	-	Dry
PH-2	-	-	DRY	-	-	DRY	-	-	Dry	-	-	Dry
PH-10	-	-	np	-	-	np	-	-	np	-	-	np
PH-11	-	-	np	-	-	np	-	-	np	-	-	np
TW-2	-	-	DRY	-	-	DRY	-	-	Dry	-	-	Dry
TW-13	-	-	np	-	-	np	-	-	np	-	-	np
TW-14	-	-	np	-	-	DRY	-	-	Dry	-	-	Dry
TW-21	-	-	np	-	-	np	-	-	np	-	-	np
TW-22	-	-	np	-	-	np	-	-	np	-	-	np
Recovered	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cum. Total (gallons)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

* All product thickness measurements are in feet.
np - no product

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TABLE 2: SUMMARY OF PRODUCT RECOVERY ACTIVITIES

1994 THROUGH DEC. 2009

BI-ANNUAL REPORT NO. 21
PICCO RESIN DISPOSAL SITE
JEFFERSON BOROUGH, PENNSYLVANIA

	RECOVERED PRODUCT (GALLONS)															
Month	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
January				7.00	0.50	0.00	nm	nm	0.00	0.00	nm	nm	nm	nm	nm	nm
February				6.50	0.05	0.00	nm	0.00	nm	nm	nm	0.00	0.00	0.00	0.00	nm
March				5.50	0.08	0.00	0.00	nm	nm	nm	0.00	nm	nm	nm	nm	0.00
April				7.00	0.00	0.00	0.00	0.00	0.00	0.00	nm	nm	nm	nm	nm	nm
May				10.50	0.00	0.00	nm	nm	nm	nm	nm	0.00	0.00	0.00	nm	nm
June				10.00	0.00	0.24	nm	nm	nm	nm	0.00	nm	nm	nm	0.00	0.00
July				11.00	0.00	0.00	0.00	0.00	0.00	0.00	nm	0.00	0.00	0.00	nm	nm
August				9.25	0.00	nm	nm	nm	nm	nm	0.00	nm	nm	nm	nm	nm
September				7.25	0.00	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm
October				5.75	0.00	0.00	0.00	0.00	0.00	nm	0.00	nm	nm	nm	nm	nm
November				4.25	nm	nm	nm	nm	nm	0.00	nm	0.00	0.00	0.00	nm	nm
December				2.00	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	0.00	0.00
Yearly Total	1.50	37.40	63.00	86.00	0.73	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cum. Total	2.00	39.00	102.00	188.00	189.00	189.00	189.00	189.00	189.00	189.00	189.00	189.00	189.00	189.00	189.00	189.00

nm - not monitored

Appendix 2

Table 1
Pittsburgh Coal Groundwater Sample Results

On-Site Wells

	Vapor Intrusion Screening Criteria		TW-07											
	USEPA	PADEP	1990	1993	1Q1998	2Q1998	3Q1998	4Q1998	1Q1999	2Q1999	3Q1999	4Q1999	3Q2005	4Q2009
Benzene	140	3,500	ND	<10	<5	<5	<5	<5	<5	<5	<5	<5	<1	<1
Toluene	1,500	490,000	2 J	<10	<5	<5	<5	6	<5	<5	<5	<5	<1	<1
Ethylbenzene	700	2,700	ND	<10	<5	<5	<5	<5	<5	<5	<5	<5	<1	<1
m-/p-Xylene	22,000	130,000	ND	<10	<5	<5	<5	<5	<5	<5	<5	<5	<2	<2
o-Xylene	33,000	130,000			<5	<5	<5	<5	<5	<5	<5	<5	<1	<1
Naphthalene	150	25,000	99	0.7 J	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5

	Vapor Intrusion Screening Criteria		TW-13											
	USEPA	PADEP	1990	1993	1Q1998	2Q1998	3Q1998	4Q1998	1Q1999	2Q1999	3Q1999	4Q1999		
Benzene	140	3,500	ND	7J	23	16	8	<5	7	7	<5	<5		
Toluene	1,500	490,000	18J	10	14	7	10	<5	7	7	<5	<5		
Ethylbenzene	700	2,700	23J	69	60	20	100 J	41	64	64	48	18		
m-/p-Xylene	22,000	130,000	58	260J	96	33	120	42	74	77	52	12		
o-Xylene	33,000	130,000			140	44	170 J	67	110	110	84	21		
Naphthalene	150	25,000	**490**	**380**	**640**	**210**	**1,000**	**400**	**740**	**800**	**450**	120		
			1Q2000	2Q2000	3Q2000	4Q2000	1Q2001	2Q2001	3Q2001	4Q2001	1Q2002	2Q2002	3Q2002	4Q2002
Benzene	140	3,500	23	12	<5	<5	6	6	<5	<5	<5	<5	<5	<5
Toluene	1,500	490,000	12	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Ethylbenzene	700	2,700	47	28	30	11	24	8	<5	<5	<5	<5	<5	7
m-/p-Xylene	22,000	130,000	82	42	25	6	21	8	<5	<5	<5	<5	<5	6
o-Xylene	33,000	130,000	110	51	42	11	38	14	<5	<5	<5	<5	<5	7
Naphthalene	150	25,000	**380**	**210**	**210**	69	**200**	66	<5	<5	<5	12	20	40
			1Q2003	2Q2003	3Q2003	4Q2003	1Q2004	2Q2004	3Q2004	4Q2004	1Q2005	2Q2005	3Q2005	4Q2005
Benzene	140	3,500	<5	<5	<5	<5	<5	<5	<5	2.1	2.7	3.7	1.4	<1
Toluene	1,500	490,000	<5	<5	<5	<5	<5	<5	<5	2.1	<1	1.3	1.4	<1
Ethylbenzene	700	2,700	<5	<5	<5	<5	6	9	<5	18	11	25	9.2	7.9
m-/p-Xylene	22,000	130,000	<5	<5	<5	<5	14	<5	<5	12	9.3	8.7	5.2	5.8
o-Xylene	33,000	130,000	<5	<5	<5	<5	16	<5	<5	22	7.7	16	8.8	7.8
Naphthalene	150	25,000	<5	<5	15	31	16	43	<5	110	59	**250**	51	47
			1Q2006	2Q2006	3Q2006	4Q2006	1Q2007	2Q2007	3Q2007	4Q2007	1Q2008	2Q2008	3Q2008	4Q2008
Benzene	140	3,500	4.1	9.7	2.1	3.7	4.2	1.7	<1.0	1.7	5.9	2.1	<1.0	3.7
Toluene	1,500	490,000	<1.0	6.9	1.1	1.4	1	<1.0	<1.0	1.6	4	<1.0	<1.0	1.8
Ethylbenzene	700	2,700	<1.0	34	13	6.8	5.9	9.4	<1.0	21	16	5.7	<1.0	13
m-/p-Xylene	22,000	130,000	<2.0	38	6.6	4.8	3.6	<1.0	<1.0	16	37	<2.0	<1.0	12
o-Xylene	33,000	130,000	<1.0	45	9.9	12	2.2	<2.0	<2.0	19	49	1.1	<2.0	21
Naphthalene	150	25,000	<5.0	**210**	77	40	27	27	<5.0	130	77	21	<5.0	75
			1Q2009	2Q2009	3Q2009	4Q2009								
Benzene	140	3,500	1.9	1.1	< 1	< 1								
Toluene	1,500	490,000	1.6	1.0	< 1	< 1								
Ethylbenzene	700	2,700	25	14	4.4	< 1								
m-/p-Xylene	22,000	130,000	19	13	3.4	< 2								
o-Xylene	33,000	130,000	23	8.0	2.1	< 1								
Naphthalene	150	25,000	150	100	9.1	< 5								

	Vapor Intrusion Screening Criteria		TW-14											
	USEPA	PADEP	1990	1993	1Q1998	2Q1998	3Q1998	4Q1998	1Q1999	2Q1999	3Q1999	4Q1999	3Q2005	4Q2009
Benzene	140	3,500	110 J	<250	Not sampled due to presence of LNAPL (globules to 0.01 ft thickness) Dry since 4Q2007									
Toluene	1,500	490,000	740	90 J										
Ethylbenzene	700	2,700	**4,300**	140 J										
m-/p-Xylene	22,000	130,000	3,000	4,400										
o-Xylene	33,000	130,000												
Naphthalene	150	25,000	**110,000**	**6,000**										

	Vapor Intrusion Screening Criteria		TW-21										
	USEPA	PADEP	1993	1Q1998	2Q1998	3Q1998	4Q1998	1Q1999	2Q1999	3Q1999	4Q1999	3Q2005	4Q2009
Benzene	140	3,500	4 J	<5	<5	<5	<5	<5	<5	<5	<5	<1	<1
Toluene	1,500	490,000	7 J	<5	<5	<5	<5	<5	<5	<5	<5	<1	<1
Ethylbenzene	700	2,700	8 J	<5	<5	<5	<5	<5	<5	<5	<5	<1	<1
m-/p-Xylene	22,000	130,000	230 J	<5	<5	<5	<5	<5	<5	<5	<5	<2	<2
o-Xylene	33,000	130,000		<5	<5	<5	<5	<5	<5	<5	<5	<1	1.0
Naphthalene	150	25,000	**680**	<5	6	5	<5	<5	<5	<5	<5	<5	<5

Table 1
Pittsburgh Coal Groundwater Sample Results

	Vapor Intrusion Screening Criteria		TW-22										
	USEPA	PADEP	1993	1Q1998	2Q1998	3Q1998	4Q1998	1Q1999	2Q1999	3Q1999	4Q1999	3Q2005	4Q2009
Benzene	140	3,500	1 J	<5	<5	<5	<5	<5	<5	<5	<5	<1	<1
Toluene	1,500	490,000	3 J	<5	<5	<5	<5	<5	<5	<5	<5	<1	<1
Ethylbenzene	700	2,700	<10	<5	<5	<5	<5	<5	<5	<5	<5	<1	<1
m-/p-Xylene	22,000	130,000	3 J	<5	<5	<5	<5	<5	<5	<5	<5	<2	<2
o-Xylene	33,000	130,000		<5	<5	<5	<5	<5	<5	<5	<5	<1	<1
Naphthalene	150	25,000	7 J	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5

	Vapor Intrusion Screening Criteria		TW-23										
	USEPA	PADEP	1993	1Q1998	2Q1998	3Q1998	4Q1998	1Q1999	2Q1999	3Q1999	4Q1999	3Q2005	4Q2009
Benzene	140	3,500	<10	<5	<5	<5	<5	<5	<5	<5	<5	<1	<1
Toluene	1,500	490,000	1 J	<5	<5	<5	<5	<5	<5	<5	<5	<1	<1
Ethylbenzene	700	2,700	<10	<5	<5	<5	<5	<5	<5	<5	<5	<1	<1
m-/p-Xylene	22,000	130,000	5 J	<5	<5	<5	<5	<5	<5	<5	<5	<2	<2
o-Xylene	33,000	130,000		<5	<5	<5	<5	<5	<5	<5	<5	<1	<1
Naphthalene	150	25,000	<11	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5

Off-Site Wells

	Vapor Intrusion Screening Criteria		TW-17										
	USEPA	PADEP	1993	1Q1998	2Q1998	3Q1998	4Q1998	1Q1999	2Q1999	3Q1999	4Q1999	3Q2005	4Q2009
Benzene	140	3,500	<10	<5	<5	<5	<5	<5	<5	<5	<5	well damaged	
Toluene	1,500	490,000	<10	<5	<5	<5	<5	<5	<5	<5	<5		
Ethylbenzene	700	2,700	<10	<5	<5	<5	<5	<5	<5	<5	<5		
m-/p-Xylene	22,000	130,000	<10	<5	<5	<5	<5	<5	<5	<5	<5		
o-Xylene	33,000	130,000		<5	<5	<5	<5	<5	<5	<5	<5		
Naphthalene	150	25,000	<11	<5	<5	<5	<5	<5	<5	<5	<5		

	Vapor Intrusion Screening Criteria		TW-18										
	USEPA	PADEP	1993	1Q1998	2Q1998	3Q1998	4Q1998	1Q1999	2Q1999	3Q1999	4Q1999	3Q2005	4Q2009
Benzene	140	3,500	<10	Obstruction in well - cannot be sampled									Well dry - no sample
Toluene	1,500	490,000	<10										
Ethylbenzene	700	2,700	<10										
m-/p-Xylene	22,000	130,000	<10										
o-Xylene	33,000	130,000											
Naphthalene	150	25,000	6 J										

	Vapor Intrusion Screening Criteria		TW-19										
	USEPA	PADEP	1993	1Q1998	2Q1998	3Q1998	4Q1998	1Q1999	2Q1999	3Q1999	4Q1999	3Q2005	4Q2009
Benzene	140	3,500	<10	<5	<5	<5	<5	<5	<5	<5	<5	<1	<1
Toluene	1,500	490,000	2 J	<5	<5	<5	<5	<5	<5	<5	<5	<1	<1
Ethylbenzene	700	2,700	11	<5	12	6	<5	<5	<5	<5	<5	<1	<1
m-/p-Xylene	22,000	130,000	12	<5	<5	<5	<5	<5	<5	<5	<5	<2	<2
o-Xylene	33,000	130,000		<5	<5	<5	<5	<5	<5	<5	<5	<1	<1
Naphthalene	150	25,000	65	13	13	8	<5	<5	<5	<5	<5	<5	<5

	Vapor Intrusion Screening Criteria		TW-20										
	USEPA	PADEP	1993	1Q1998	2Q1998	3Q1998	4Q1998	1Q1999	2Q1999	3Q1999	4Q1999	3Q2005	4Q2009
Benzene	140	3,500	<10	<5	<5	<5	<5	<5	<5	<5	<5	<1	<1
Toluene	1,500	490,000	<10	<5	<5	<5	<5	<5	<5	<5	<5	<1	<1
Ethylbenzene	700	2,700	<10	<5	<5	<5	<5	<5	<5	<5	<5	<1	<1
m-/p-Xylene	22,000	130,000	<10	<5	<5	<5	<5	<5	<5	<5	<5	<2	<2
o-Xylene	33,000	130,000		<5	<5	<5	<5	<5	<5	<5	<5	<1	<1
Naphthalene	150	25,000	<11	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5

Table 1
Pittsburgh Coal Groundwater Sample Results

	Vapor Intrusion Screening Criteria		TW-24										
	USEPA	PADEP	1993	1Q1998	2Q1998	3Q1998	4Q1998	1Q1999	2Q1999	3Q1999	4Q1999	3Q2005	4Q2009
Benzene	140	3,500	2 J	<5	<5	<5	<5	<5	<5	<5	<5	<1	Well dry - no sample
Toluene	1,500	490,000	2 J	<5	<5	<5	<5	<5	<5	<5	<5	<1	
Ethylbenzene	700	2,700	<10	<5	<5	<5	<5	<5	<5	<5	<5	<1	
m-/p-Xylene	22,000	130,000	<10	<5	<5	<5	<5	<5	<5	<5	<5	<2	
o-Xylene	33,000	130,000		<5	<5	<5	<5	<5	<5	<5	<5	<1	
Naphthalene	150	25,000	26	<5	<5	<5	<5	<5	<5	<5	<5	<5	

Seeps

	Vapor Intrusion Screening Criteria		SEEP-3								
	USEPA	PADEP	1990	1993	2Q1998	3Q1998	4Q1998	1Q1999	2Q1999	3Q1999	4Q1999
Benzene	140	3,500	ND	ND	<5	<5	<5	<5	<5	<5	<5
Toluene	1,500	490,000	ND	ND	<5	<5	<5	<5	<5	<5	<5
Ethylbenzene	700	2,700	ND	ND	<5	<5	<5	<5	<5	<5	<5
m-/p-Xylene	22,000	130,000	ND	ND	<5	<5	<5	<5	<5	<5	<5
o-Xylene	33,000	130,000				<5	<5	<5	<5	<5	<5
Naphthalene	150	25,000	ND	ND	<5	<5	<5	<5	<5	<5	<5

	Vapor Intrusion Screening Criteria		SEEP-4								
	USEPA	PADEP	1990	1993	2Q1998	3Q1998	4Q1998	1Q1999	2Q1999	3Q1999	4Q1999
Benzene	140	3,500	ND	ND	<5	<5	<5	<5	<5	<5	<5
Toluene	1,500	490,000	ND	ND	<5	<5	<5	<5	<5	<5	<5
Ethylbenzene	700	2,700	ND	ND	<5	<5	<5	<5	<5	<5	<5
m-/p-Xylene	22,000	130,000	ND	ND	<5	<5	<5	<5	<5	<5	<5
o-Xylene	33,000	130,000				<5	<5	<5	<5	<5	<5
Naphthalene	150	25,000	ND	ND	<5	<5	<5	<5	<5	<5	<5

	Vapor Intrusion Screening Criteria		SEEP-5								
	USEPA	PADEP	1990	1993	2Q1998	3Q1998	4Q1998	1Q1999	2Q1999	3Q1999	4Q1999
Benzene	140	3,500	ND	ND	<5	<5	<5	<5	<5	<5	<5
Toluene	1,500	490,000	ND	ND	<5	<5	<5	<5	<5	<5	<5
Ethylbenzene	700	2,700	ND	ND	<5	<5	<5	<5	<5	<5	<5
m-/p-Xylene	22,000	130,000	ND	ND	<5	<5	<5	<5	<5	<5	<5
o-Xylene	33,000	130,000				<5	<5	<5	<5	<5	<5
Naphthalene	150	25,000	ND	ND	<5	<5	<5	<5	<5	<5	<5

Appendix 3

44476

IRGINIA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

August 5, 2002

SUBJECT: Memorandum to the File Regarding the Protectiveness of the Institutional Controls during the Five Year Review for Resin Disposal

FROM: Rashmi Mathur
Remedial Project Manager
Environmental Protection Agency
Western PA Remedial Section

TO: Memorandum to the File

In the Five Year for the Resin Disposal Site dated 9/19/2002, EPA determined that the remedy was not fully protective because the institutional controls required by the Record of Decision (ROD) had not been implemented. The institutional controls called for in the ROD were deed restrictions to alert prospective buyers to the presence of hazardous substances onsite and to prohibit future development at the Site. As of July 10, 2002, the responsible parties executed and recorded the institutional controls with the Recorder of Deeds (Declaration of Restrictions); thus the remedy is fully protective. Accordingly, this memorandum amends the Resin Disposal Five Year Review, dated 9/19/00. Please see attached Declaration of Restrictions.

HERCULES

Hercules Incorporated
Hercules Plaza
1313 North Market Street
Wilmington, DE 19894-0001
(302) 594-5000
www.herc.com

WRITER'S DIRECT DIAL
Phone: (302) 594-7020
Fax: (302) 594-7038

July 10, 2002

Michael A. Hendershot
United States Environmental Protection Agency
Region III
1650 Arch Street
3RC43
Philadelphia, PA 19103

Re: Declaration of Restrictions – PICCO Landfill

Dear Mr. Hendershot:

Enclosed please find an executed/recorded copy of the above subject Declaration for your files.

If you have questions, please contact Rich at the above number.

Very truly yours,

Chimese Jones
Assistant to
Richmond L. Williams
Senior Counsel
SHERA Team Leader

cc: Joseph Keller
Nancy Cantwell

HERCULES

Hercules Incorporated
Hercules Plaza
1313 North Market Street
Wilmington, DE 19894-0001
(302) 594-5000
www.herc.com

WRITER'S DIRECT DIAL
Phone: (302) 594-7020
Fax: (302) 594-7038

July 3, 2002

Michael A. Hendershot
United States Environmental Protection Agency
Region III
841 Chestnut Building
Philadelphia, PA 19107

Re: Declaration of Restrictions – PICCO Landfill

Dear Mr. Hendershot:

Enclosed please find an executed/recorded copy of the above subject Declaration for your files.

If you have questions, please contact Rich at the above number.

Very truly yours,

Chimese Jones
Assistant to
Richmond L. Williams
Senior Counsel
SHERA Team Leader

cc: Joseph Keller
Nancy Cantwell

DECLARATION OF RESTRICTIONS

2002 MAR 19 AM 11:44

THIS DECLARATION OF RESTRICTIONS (this "Declaration") is made by HERCULES INCORPORATED, a Delaware corporation having an address of Hercules Plaza, 1313 North Market Street, Wilmington, Delaware 19894-0001 ("Hercules"), this 15TH day of March, 2002.

WITNESSETH:

WHEREAS, Hercules is the owner of certain real property located in Allegheny County, Pennsylvania, more particularly described in Exhibit A (Parcel A) and Exhibit B (Parcel B), attached hereto and made a part hereof (such real property being hereinafter referred to as the "Site");

WHEREAS, Hercules acquired its interest in Parcel A by deed of Pennsylvania Industrial Chemical Company to Hercules Incorporated dated May 31, 1973 and recorded in the Office of the Recorder of Deeds of Allegheny County, Pennsylvania, in Deed Book Volume 5226 beginning at Page 601, with the specific description of this parcel beginning at Page 607, this being the same property that Edward J. Beedle and Marie B. Beedle, his wife, conveyed to Pennsylvania Industrial Chemical Company by deed dated April 28, 1949 and recorded in the Office of the Recorder of Deeds of Allegheny County, Pennsylvania, in Deed Book Volume 3061 beginning at Page 5;

WHEREAS, Hercules acquired its interest in Parcel B by deed dated January 13, 1989 and recorded in the Office of the Recorder of Deeds of Allegheny County, Pennsylvania, in Deed Book Volume 3061 beginning at Page 5;

WHEREAS, on or about March 13, 2001, Liadis Engineering & Surveying, Inc. performed a field survey of Parcels A and B, which survey was finalized February 5, 2002 (the "New Survey"); and

WHEREAS, attached hereto as Exhibit C is a metes and bounds description of then entire Site based upon the New Survey;

WHEREAS, a Consent Decree (the "Consent Decree") was entered in the civil case of *United States v. Hercules, Incorporated,* Civil Action No: 92-1027, in the United States District Court for the Western District of Pennsylvania for the implementation of the Remedial Design and Remedial Action ("RD/RA") at the Site and the payment of past and future costs incurred at the Site by the United States; pursuant to the Comprehensive Environmental Response Compensation and Liability Act, 42 U.S.C. §§ 9601, et. seq. ("CERCLA");

WHEREAS, pursuant to the Consent Decree, Hercules has implemented the RD/RA at the site;

WHEREAS, the Consent Decree and the Record of Decision for the Site (the "Record of Decision") have been recorded in the Office of the Recorder of Deeds of Allegheny County, Pennsylvania, in Deed Book Volume 8748 beginning at Page 77;

WHEREAS, the Consent Decree and the Record of Decision for the Site require implementation of institutional controls restricting future use of the Site, which controls may include restrictive covenants; and

WHEREAS, Hercules desires to make known and to declare the covenants, agreements, conditions, easements, reservations, restrictions and changes which shall be applicable to the Site and binding thereon.

NOW, THEREFORE, KNOW ALL MEN BY THESE PRESENTS, that Hercules, holds and stands seized of the Site upon the following covenants, agreements, conditions, easements, reservations, restrictions and charges, to wit:

1. Purposes.

   (a) to restrict certain use and development activities at the Site so as to prevent any uses of the Site which would:

      (i) interfere with the integrity of the RD/RA implemented pursuant to the Consent Decree,

      (ii) create a risk to human health or the environment; and

   (b) to provide access to Hercules and fulfill Hercules' access commitments under the Consent Decree.

2. Specific Prohibitions.

   (a) No building, structure or other object shall be built or placed on the Site that would disturb the cap or stabilized contents of the landfill or would otherwise disturb any component of the RD/RA at the Site without the prior written approval of Hercules and the United States Environmental Protection Agency ("EPA").

   (b) No operations shall be permitted which extract, consume or otherwise utilize groundwater or surface water at the Site, except as necessary to implement the terms of the Consent Decree or Record of Decision; without prior written approval of Hercules and the EPA;

   (c) No activities shall be permitted that interfere in any way with the physical integrity of any groundwater monitoring wells at the Site;

(d) The use of the Site shall be limited to commercial or industrial purposes only; provided, further, that the owner and/or occupant of the Site shall not use the property for agricultural, institutional, elder care or child care purposes without the prior written consent of Hercules and the EPA.

3. Access.

Hercules, and their respective employees, agents, and contractors shall have the right of ingress and egress from and movement on the Site sufficient to conduct, maintain, monitor and secure the integrity of the RD/RA, and to take other actions required or authorized by the Consent Decree and to monitor and enforce compliance with the terms of this Declaration. Hercules acknowledges that, notwithstanding any other provision of this Declaration, EPA retains all of its access authorities and rights, as well as its right to require land/water use restrictions, including enforcement authorities related thereto, under CERCLA, the Solid Waste Disposal Act, as amended, 42 U.S.C. §§ 6901-6992k, and any other applicable statutes or regulations.

4. Enforceability.

(a) The covenants, conditions and restrictions of this Declaration shall be enforceable by Hercules, its successors and assigns.

(b) Such covenants, conditions and restrictions shall run with the land, shall be binding upon any and all successors in interest, and all assignees, lessees, sub-lessees, operators, tenants, licensees, and agents, and any and all persons who acquire any interest in the Site.

(c) Violation of covenants, conditions and restrictions contained herein shall give Hercules and its successors or assigns in addition to all other remedies, the right to enter upon the land upon or as to which such violation exists and summarily to abate and remove, at the expense of the owner thereof, any structure, thing or condition that may be or exist thereon contrary to the intent and meaning of the provision of this Declaration.

(d) Hercules and its successors and assigns shall be entitled to enforce the terms of this Declaration by resort to specific performance or legal process. All remedies available hereunder shall be in addition to any other remedies at law or in equity, including CERCLA. Enforcement of the terms of this Declaration shall be at the discretion of Hercules and its successors or assigns and any forbearance, delay or omission to exercise its rights under this instrument in the event of a breach of any term of this Declaration shall not be deemed to be a waiver by Hercules or its successors or assigns of such term or of any subsequent breach of the

same or any other term, or of any of the rights of such parties under this instrument.

5. Miscellaneous.

(a) Modifications. This Declaration may be modified or terminated, in whole or in part, by Hercules, provided it files a written Modification or Termination Notice in the Office of the Recorder of Deeds of Allegheny County, Pennsylvania and provided that Hercules has obtained written approval from EPA at least thirty (30) days prior to filing such Notice.

(b) Reservation of Rights. Hercules hereby reserves unto itself, its successors and assigns, all rights and privileges in and to the use of the Site which are not incompatible with the covenants, conditions and restrictions established herein.

(c) No Public Access. No right of access or use by the general public to any portion of the Site is conveyed by this instrument.

(d) Governing Law. The interpretation and performance of this Declaration shall be governed by the law of Pennsylvania.

(e) Rules of Construction. Any general rule of construction to the contrary, notwithstanding, this instrument shall be liberally construed in favor of the grant to affect the purpose of this instrument and the policy and purpose of CERCLA. If any provision of this instrument is found to be ambiguous, an interpretation consistent with the purpose of this instrument that would render the provision valid shall be favored over any interpretation that would render it invalid.

(f) Severability. If any provision of this Declaration, or the application of it to any person or circumstance, is found to he invalid, the remainder of the provisions of this Declaration, or the application of such provisions to persons or circumstances other than those to which it is found to be invalid, as the case may be, shall not be affected thereby.

(g) Entire Agreement. This Declaration sets forth the entire undertaking and agreement of Hercules with respect to rights and restrictions created hereby, and supersedes all prior discussions, negotiations, understandings, or agreements relating thereto, all of which are merged herein.

(h) No Forfeiture. Nothing contained herein will result in a forfeiture or reversion of title in any respect.

(i) Successors. The covenants, terms, conditions, and restrictions of this Declaration shall be binding upon, and inure to the benefit of, Hercules

and its successors and assigns and shall continue as a servitude running in perpetuity with the Site.

(j) Termination of Rights and Obligations. The rights and obligations of the owner(s) from time to time of the Site under this Declaration terminate upon transfer of the party's interest in the Site, except that liability for acts or omissions occurring prior to transfer shall survive transfer.

(k) Captions. The captions in this Declaration have been inserted solely for convenience of reference and are not a part of this instrument and shall have no effect upon construction or interpretation.

IN WITNESS WHEREOF, HERCULES INCORPORATED has caused its common and corporate seal to be affixed to these presents by the hand of its Treasurer, who is duly authorized to execute the Declaration on behalf of the corporation, and the same being duly attested to by its Secretary on the day and year first above written, intending to be legally bound hereby.

ATTEST:

Israel J. Floyd
Secretary

HERCULES INCORPORATED, a Delaware corporation

By:
Treasurer

RLW
KWP

[Corporate Seal]

EXHIBIT A
TO
DECLARATION OF RESTRICTIONS

ALL that certain parcel of land situate in Jefferson Borough, formerly Jefferson Township, Allegheny County, Pennsylvania, being lots 13, 14, 15 and 16, being more particularly bounded and described as follows to wit:

BEGINNING at an iron pin located in the center line of Maryland Avenue (40 feet in width) and on the dividing line of land of Catherine Braum Estate, which-point or place of beginning is also distant south 45° 50' east 20 feet from the northeasterly boundary line of land of George D. Paxton; thence south 64° 32' west along the center line of Maryland Avenue a distance of 710.70 feet to a point in the center line of Glenn Drive (40 feet in width); thence along the center line of said Glenn Drive south 37° 19' east a distance of 747 feet to a point in the center line of River View Drive; thence by a curve to the right with an arc distance of 225 feet to a point; thence north 72° 43' east a distance of 307.79 feet to a point; thence south 3° 3' east a distance of 261.17 feet to a point; thence south 20° 46' east a distance of 330.63 feet to a point in the center line of Circle Avenue; thence by a curve to the left with an arc distance of 215 feet to a point; thence continuing by a curve to the right with an arc distance of 40 feet of a point; thence continuing by a curve to the right an arc distance of 135 feet to a point to the center line of Stilley Avenue (40 feet in width); thence continuing along the center line of said Stilley Avenue south 47° 00' east a distance of 105 feet, more or less, to a point; thence north 39° 00' east running through a stake on the boundary line of land of Levi Lewis, a distance of 682.25 feet to a stake on the boundary line of land of Parkison Heirs; thence north 45° 50' west along the boundary line of land of Parkison Heirs and the Catherine Braum Estate a distance of 1427.40 feet to the center line of Maryland Avenue, marking the place of beginning. Being designated Block 1134-J, Lot 225.

EXHIBIT B
TO
DECLARATION OF RESTRICTIONS

ALL that certain lot or piece of ground situate in Jefferson Borough, (formerly Jefferson Township), Allegheny County. Pennsylvania, in the Stilley Heights Plan, unrecorded, being bound and described as follows:

BEGINNING at the corner of an iron pin on Stilley Avenue and the lot of Edward Stevens; thence by line of Stevens North 39° East, 659.04 feet more or less to point on line of land of Parkinson Heirs; ;thence by same North 46° 18' West, 265.29 feet to a point; thence by other land formerly of Edward W. Beedle, now of Hercules Inc., South 39° 00' West, 662.25 feet to point at corner of line of Stilley Avenue, thence by said Stilley Avenue, South 47° East, 265.05 feet to iron pin and place of beginning.

EXHIBIT C
TO
DECLARATION OF RESTRICTIONS

ALL THAT CERTAIN PARCEL OF LAND situate in the Borough of Jefferson Hills (formerly the Township of Jefferson), Allegheny County, Pennsylvania, bounded and described as follows, to wit:

BEGINNING at point common to the centerline of Maryland Avenue (40 feet in width) and the centerline of Circle Glen Drive (40 feet in width);

thence, along the centerline of said Circle Glen Drive, South 38° 34' 54" East a distance of 754.25 feet to a point at the intersection of the centerlines of said Circle Glen Drive and Riverview Drive (40 feet in width);

thence, along the centerline of said Circle Glen Drive, by a curve of a circle to the right with a radius of 103.00 feet, an arc distance of 268.14 feet to a point, said curve having a chord bearing of South 35° 36' 29" East;

thence North 77° 27' 06" East a distance of 313.01 feet to an iron pin;

thence South 04° 18' 54" East a distance of 261.17 feet to an iron pin;

thence South 22° 01' 54" East a distance of 340.36 feet to a point in the centerline of said Circle Glen Drive;

thence, by a curve of a circle to the left with a radius of 596.46 feet, an arc distance of 7.61 feet to a point, said curve having a chord bearing of South 86° 51' 51" East;

thence, by a curve of a circle to the left with a radius of 70.00 feet, an arc distance of 113.21 feet to a point, said curve having a chord bearing of North 47° 10' 07" East;

thence North 00° 50' 09" East a distance of 115.24 feet to a point;

thence, by a curve of a circle to the right with a radius of 70.96 feet, an arc distance of 72.69 feet to a point, said curve having a chord bearing of North 30° 11' 01" East;

thence, by a curve of a circle to the right with a radius of 27.15 feet, an arc distance of 38.36 feet to a point, said curve having a chord bearing of South 79° 59' 29" East;

thence, by a curve of a circle to the right with a radius of 231.27 feet, an arc distance of 74.31 feet to a point, said curve having a chord bearing of South 30° 18' 32" East;

thence by a curve of a circle to the left with a radius of 257.57 feet, an arc distance of 108.57 feet to a point in the centerline of Stilley Road (40 feet in width), said curve having a chord bearing of South 33° 10' 44" East;

thence North 37° 42' 25" East a distance of 20.02 feet to a point on the northeasterly side of said Stilley Road;

thence, along the northeasterly side of Stilley Road, South 48° 17' 29" East a distance of 265.04 feet to a concrete monument on the line of lands now or formerly of R. Ankney;

thence, along the line of lands now or formerly of R. Ankney, North 37° 42' 25" East a distance of 659.04 feet to a concrete monument on the line of lands now or formerly of E. Fiore;

thence, along the line of lands now or formerly of E. Fiore, North 47° 35' 33" West a distance of 265.29 feet to a concrete monument;

thence, continuing , along the line of lands now or formerly of E. Fiore, North 47° 49' 55" West a distance of 818.51 feet to a point;

thence, along the line of lands now or formerly of E. Fiore, the line of lands now or formerly of R. Gillie, and the line of lands now or formerly of H. Lloyd, North 47° 05' 19" West a distance of 609.22 feet through an iron pin and a concrete monument on the southeasterly side of Maryland Avenue to a point in the centerline of said Maryland Avenue; and

thence, along the centerline of said Maryland Avenue, South 63° 16' 41" West a distance of 730.91 feet to a point at THE PLACE OF BEGINNING.

CONTAINING an area of 31.149 acres, more or less.

BEING designated as Block 1134-J, Lot 225 and Block 1134-P, Lot 150 in the Real Estate Tax Assessment Records of Allegheny County, Pennsylvania.

STATE OF DELAWARE)
) ss:
COUNTY OF NEW CASTLE)

I HEREBY CERTIFY that on this day before me, an officer duly qualified to take acknowledgement, personally appeared Stuart Shears, to me known to be the person described in and who executed the foregoing instrument, and acknowledged before me that he/she is the Treasurer of HERCULES INCORPORATED, a Delaware corporation, and that, being duly authorized to do so, he/she, as such Treasurer executed the same for purposes therein contained for and on behalf of such corporation.

WITNESS my hand and official seal in the County and State last aforesaid this 15th day of March, 2002.

Jean M. Watkins
Notary Public

My Commission expires:

[Notarial Seal]

JEAN M. WATKINS
NOTARY PUBLIC
STATE OF DELAWARE
My Commission Expires Feb. 13, 2004

DECLARATION OF RESTRICTIONS

MADE BY

HERCULES INCORPORATED,
a Delaware corporation

After recording, please mail to:

Israel Floyd, Secretary
Hercules Incorporated
1313 North Market Street
Wilmington, DE 19894

Appendix 4

SUMMARY OF ANALYTICAL RESULTS
PICCO TREATMENT SYSTEM SAMPLES

all conc. in ug/l (ppb)	8/13/2008			8/28/2008			9/10/2008			9/24/2008	
Analyte	Effluent (PT-6)	Post-Clay (SP-4)	Post-Filt (SP-2)	Effluent (PT-6)	Post-Clay (SP-4)	Influent (SP-1)	Effluent (PT-6)	Post-Clay (SP-4)	Influent (SP-1)	Effluent (PT-6)	Post-Clay (SP-4)
Benzene	< 1.0	0.59 J	38	0.47 J	55	420	< 1.0	450	580	< 1.0	490
Ethylbenzene	< 1.0	< 1.0	50	< 1.0	40	1200	< 1.0	550	1500	< 1.0	670
Isopropylbenzene	< 1.0	0.58 J	4.4	< 1.0	< 10	75	< 1.0	13 J	85	< 1.0	15 J
Naphthalene	2.7 J	0.63 J	200	0.28 J	< 50	6200	< 5.0	99 J	8200	< 5.0	8.3 J
Styrene	< 1.0	< 1.0	< 4.0	< 1.0	16	790	< 1.0	190	890	< 1.0	< 20
Toluene	< 1.0	1.3	220	< 1.0	320	3400	< 1.0	2900	5300	< 1.0	450
1,2,4-Trimethylbenzene	< 1.0	< 1.0	160	< 1.0	11	3500	< 1.0	170	4800	< 1.0	210
1,3,5-Trimethylbenzene	< 1.0	< 1.0	63	< 1.0	3.2 J	1300	< 1.0	49	1800	< 1.0	61
Xylenes, Total	< 2.0	0.91 J	480	< 2.0	300	9100	< 2.0	3400	12000	< 2.0	4000
Total VOCs	2.7	4.0	1,215	0.75	745	25,985	-	7,821	35,155	-	5,881
% Removal	99.8%			100.0%			100.0%			NA	

all conc. in ug/l (ppb)	10/9/2008			10/22/2008		11/5/2008			11/19/2008	
Analyte	Effluent (PT-6)	Mid-Carbon (SP-5)	Influent (SP-1)	Effluent (PT-6)	Mid-Carbon (SP-5)	Effluent (PT-6)	Mid-Carbon (SP-5)	Influent (SP-1)	Effluent (PT-6)	Mid-Carbon (SP-5)
Benzene	< 1.0	0.33 J	500	< 1.0	< 1.0	< 1.0	< 1.0	500	< 1.0	< 1.0
Ethylbenzene	< 1.0	< 1.0	1400	< 1.0	< 1.0	< 1.0	< 1.0	1800	< 1.0	< 1.0
Isopropylbenzene	< 1.0	< 1.0	76	< 1.0	< 1.0	< 1.0	< 1.0	97	< 1.0	< 1.0
Naphthalene	< 5.0	0.32 J	5200	0.52 J	1.2 J	0.93 J	3.3 J	7500	< 5.0	< 5.0
Styrene	< 1.0	< 1.0	770	< 1.0	< 1.0	< 1.0	< 1.0	< 50	< 1.0	< 1.0
Toluene	< 1.0	0.38 J	4700	< 1.0	< 1.0	< 1.0	< 1.0	5700	< 1.0	< 1.0
1,2,4-Trimethylbenzene	0.33 J	0.38 J	3700	0.34 J	0.43 J	< 1.0	0.42 J	4600	< 1.0	< 1.0
1,3,5-Trimethylbenzene	< 1.0	< 1.0	1300	< 1.0	< 1.0	< 1.0	< 1.0	1400	< 1.0	< 1.0
Xylenes, Total	< 2.0	1.0 J	10000	< 2.0	< 2.0	< 2.0	< 2.0	11000	< 2.0	< 2.0
Total VOCs	0.33	2.4	27,646	0.86	1.6	0.93	3.7	32,597	-	-
% Removal	100.0%			NA		100.0%			NA	

all conc. in ug/l (ppb)	12/4/2008			12/17/2008		1/8/2009			1/26/2009	
Analyte	Effluent (PT-6)	Mid-Carbon (SP-5)	Influent (SP-1)	Effluent (PT-6)	Mid-Carbon (SP-5)	Effluent (PT-6)	Mid-Carbon (SP-5)	Influent (SP-1)	Effluent (PT-6)	Mid-Carbon (SP-5)
Benzene	< 1.0	1.5	340	< 1.0	8.5	< 1.0	80	130	< 1.0	190
Ethylbenzene	< 1.0	< 1.0	1400	< 1.0	< 1.0	< 1.0	2.4	400	< 1.0	10
Isopropylbenzene	< 1.0	< 1.0	77	< 1.0	< 1.0	< 1.0	< 1.0	84	< 1.0	< 1.0
Naphthalene	< 5.0	3.0 J	6700	< 5.0	< 5.0	< 5.0	0.47 J	7200	< 5.0	0.32 J
Styrene	< 1.0	< 1.0	920	< 1.0	< 1.0	< 1.0	0.43 J	380	< 1.0	< 1.0
Toluene	< 1.0	0.37 J	3900	< 1.0	1.7	< 1.0	63	1300	< 1.0	320
1,2,4-Trimethylbenzene	< 1.0	< 1.0	4700	< 1.0	< 1.0	< 1.0	1.6	5700	< 1.0	0.40 J
1,3,5-Trimethylbenzene	< 1.0	< 1.0	1800	< 1.0	< 1.0	< 1.0	1.0	2300	< 1.0	0.36 J
Xylenes, Total	< 2.0	< 2.0	13000	< 2.0	< 2.0	< 2.0	11	8700	< 2.0	59
Total VOCs	-	4.9	32,837	-	10	-	159	26,194	-	579.0
% Removal	100.0%			NA		100.0%			NA	

all conc. in ug/l (ppb)	2/11/2009			2/25/2009		3/11/2009			3/25/2009	
Analyte	Effluent (PT-6)	Mid-Carbon (SP-5)	Influent (SP-1)	Effluent (PT-6)	Mid-Carbon (SP-5)	Effluent (PT-6)	Mid-Carbon (SP-5)	Influent (SP-1)	Effluent (PT-6)	Mid-Carbon (SP-5)
Benzene	< 1.0	350	250	< 1.0	380	0.59 J	340	300	< 1.0	370
Ethylbenzene	< 1.0	170	630	< 1.0	53	< 1.0	130	1100	< 1.0	180
Isopropylbenzene	< 1.0	2.9	64	< 1.0	< 10	< 1.0	< 20	79	< 1.0	< 20
Naphthalene	< 5.0	11	6700	< 5.0	< 50	0.39 J	< 100	7100	< 5.0	< 100
Styrene	< 1.0	< 1.0	< 50	< 1.0	< 10	< 1.0	75	1000	< 1.0	< 20
Toluene	< 1.0	2000	2600	< 1.0	1200	< 1.0	2000	3900	< 1.0	1600
1,2,4-Trimethylbenzene	< 1.0	10	4600	< 1.0	< 10	< 1.0	< 20	5500	< 1.0	< 20
1,3,5-Trimethylbenzene	< 1.0	8.7	1800	< 1.0	< 10	< 1.0	< 20	2100	< 1.0	< 20
Xylenes, Total	2.2	1700	9900	< 2.0	430	< 2.0	1100	13000	< 2.0	1500
Total VOCs	2.2	4,253	26,544	-	2,063	0.98	3,645	34,079	-	3,650
% Removal	100.0%			NA		100.0%			NA	

SUMMARY OF ANALYTICAL RESULTS
PICCO TREATMENT SYSTEM SAMPLES

all conc. in ug/l (ppb)	4/8/2009			5/7/2009			6/25/2009		9/1/2009		
Analyte	Effluent (PT-6)	Mid-Carbon (SP-5)	Influent (SP-1)	Effluent (PT-6)	Mid-Carbon (SP-5)	Influent (SP-1)	Effluent (PT-6)	Influent (SP-1)	Effluent (PT-6)	Mid-Clay (SP-3)	Influent (SP-1)
Benzene	130	700	410	670	610	440	940	380	390	270	340
Ethylbenzene	0.44 J	650	2200	4.5 J	1800	1800	9.2	1400	110	1500	1600
Isopropylbenzene	< 1.0	17 J	170	< 5.0	66	190	< 5.0	110	< 10	130	120
Naphthalene	1.6 J	230	9600	27	1300	11000	2.5 J	6200	10 J	7500	9800
Styrene	< 1.0	510	1400	< 5.0	< 50	< 100	< 5.0	1000	< 10	1100	1100
Toluene	8.1	4700	5200	110	7000	4600	390	3600	1200	3300	3900
1,2,4-Trimethylbenzene	0.67 J	140	6800	3.7 J	1400	7700	< 5.0	4700	16	5700	6000
1,3,5-Trimethylbenzene	0.36 J	88	2700	2.3 J	720	3100	< 5.0	1900	8.8 J	2100	2300
Xylenes, Total	3.0	9200	16000	25	22000	15000	44	11000	830	12000	12000
Total VOCs	144	16,235	44,480	843	34,896	43,830	1,386	30,290	2,565	33,600	37,160
% Removal	99.7%			98.1%			95.4%		93.1%		

Media change 7/29/10

all conc. in ug/l (ppb)	9/28/2009			10/20/2009			11/24/2009			1/13/2010		
Analyte	Effluent (PT-6)	Mid-Clay (SP-3)	Influent (SP-1)	Effluent (PT-6)	Post-Clay (SP-4)	Influent (SP-1)	Effluent (PT-6)	Mid-Carbon (SP-5)	Influent (SP-1)	Effluent (PT-6)	Mid-Carbon (SP-5)	Influent (SP-1)
Benzene	230	440	530	220	310	550 J	220	< 50	450	55	230	250
Ethylbenzene	48	1400	1900	82	920	1600 J	71	1300	1900	49	420	710
Isopropylbenzene	< 5.0	110	120	0.93 J	66	< 2000	0.69 J	59	130	0.45 J	57	80
Naphthalene	23 J	5600	8200	5.6 J	2700	5200 J	3.0 J	240 J	7800	5.3	4000	7300
Styrene	< 5.0	< 50	< 50	< 5.0	< 40	< 2000	< 2.0	< 50	1100	< 1.0	< 10	< 50
Toluene	480	3400	4600	390	2900	3800	200	530	4900	37	1700	2300
1,2,4-Trimethylbenzene	6.5	4900	6000	7.0	3300	3700	6.3	1200	6000	4.1	2700	4400
1,3,5-Trimethylbenzene	4.1 J	1900	2300	4.2 J	1200	1400 J	4.6	680	2300	2.3	1100	1800
Xylenes, Total	450	11000	13000	600	7200	9400	490	8500	13000	280	6600	11000
Total VOCs	1,242	28,750	36,650	1,310	18,596	25,650	996	12,509	37,580	433	16,807	27,840
% Removal	96.6%			94.9%			97.4%			98.4%		

all conc. in ug/l (ppb)	2/12/2010			6/28/2010		8/24/2010					
Analyte	Effluent (PT-6)	Mid-Carbon (SP-5)	Influent (SP-1)	Effluent (PT-6)	Influent (SP-1)	Effluent (PT-6)	Mid-Carbon (SP-5)	Influent (SP-1)			
Benzene	37	450	220	290	530	390	2.2	460			
Ethylbenzene	41	250	520	180	1600	190	1.5	1300			
Isopropylbenzene	< 1.0	23	65	24	88 J	16	0.42 J	97 J			
Naphthalene	3.0 J	280	8800	2300	7700	260	< 5.0	7500			
Styrene	< 1.0	27	< 50	< 1.0	1000	< 10	< 1.0	680			
Toluene	31	520	2200	1300	5500	640	1.9	3900			
1,2,4-Trimethylbenzene	3.0	670	5200	1300	5000	460	6.5	4400			
1,3,5-Trimethylbenzene	1.4	250	1600	490	1900	210	3.4	1700			
Xylenes, Total	210	1700	9500	3400	13000	1600	14	10000			
Total VOCs	326	4,170	28,105	9,284	36,318	3,766	30	30,037			
% Removal	98.8%			74.4%		87.5%	99.9%				

(note: sample port contamination suspected at PT-6, based on SP-5 sample result on 8/24. Media change performed 6/10/10)

Appendix 5

Summary of Issues related to the Eastman Chemical Resins – Jefferson Plant, the Hercules – PICCO Resin Dump, and the West Elizabeth Sewer Authority

Jefferson Plant

Eastman Chemical Resins owns and operates the Jefferson Plant that consists of an approximately 56 acre hydrocarbon resin manufacturing facility. The Pennsylvania Industrial Chemical Company ("PICCO") began production of hydrocarbon resins at the Jefferson Plant in 1954. Hercules purchased the Jefferson Plant from PICCO in 1973. Eastman purchased the Jefferson Plant from Hercules in 2001. Eastman currently manufactures hydrocarbon resins at the Jefferson Plant.

The Jefferson Plant is divided into seven major areas: the Upper Plant, V-8 Area, Office, Finished Products Warehouse, C5 Plant, Lower Plant, and the 837 Tank Farm. State Route 837 runs between the 837 Tank Farm and the rest of the Jefferson Plant (See attached Plant Process Areas figure).

The Jefferson Plant is located adjacent to the Monongahela River. An unnamed tributary to the Monongahela River flows through the Jefferson Plant before entering the Monongahela River ("UNT"). The UNT flows through the 837 Tank Farm area and into a culvert under Route 837. The culvert discharges to a pond within the Jefferson Plant known as Jorgy's Pond ("Jorgy's Pond"). A second culvert, conveying storm water from Route 837, runs from the 837 Tank Farm area into Jorgy's Pond. Jorgy's Pond discharges through an inverted pipe into another culvert under railroad tracks. The culvert discharges into an open stream channel within the C5 and Lower Plant Areas. The UNT flows to the Monongahela River. Three concrete overflow dams have been constructed within the UNT in order to control oil in the stream.

Environmental investigations conducted at the Jefferson Plant indicate that shallow groundwater at the Jefferson Plant is contaminated with organic compounds used in the production of resins at the Jefferson Plant. The contaminated shallow groundwater is discharging to the UNT and the Monongahela River.

On November 16, 1989, the Department and Hercules signed a Consent Order and Agreement to address the discharge of contaminated groundwater to the Monongahela River and the UNT ("1989 COA"). The 1989 COA terminated in 1996; however the findings of fact remain in full force and effect.

Hercules has conducted remedial actions intended to eliminate discharges of contaminated groundwater to the Monongahela River and the UNT (See attached Site Plan figure).

In 1989, Hercules installed the Lower Plant Interceptor Trench ("LPIT") to prevent the discharge of contaminated shallow groundwater to the Monongahela River. The LPIT

consists of an approximately 630 foot long underground collection system along the bank of the Monongahela River in the Lower Plant area of the Jefferson Plant. Groundwater withdrawal from the LPIT is controlled automatically by a float switch on an evacuation pump in a manhole. Contaminated groundwater is sent through an oil/water separator then to the Jefferson Plant's industrial waste pre-treatment facility and finally to the West Elizabeth Sewer Authority's ("WESA") sewage treatment plant for disposal.

In 1995, Hercules installed the Under Creek Interceptor Trench ("UCIT") to prevent the discharge of contaminated shallow groundwater to the UNT. The UCIT consists of an approximately 550 foot long collection system underneath the exposed portion of the UNT within the C5 and Lower Plant areas. Groundwater withdrawal from the UCIT is controlled automatically by a float switch on an evacuation pump in a manhole. Collected groundwater is sent through an oil/water separator then to the Jefferson Plant's industrial waste pre-treatment facility and finally to the WESA sewage treatment plant for disposal.

In 2004, Hercules's submitted a Remedial Investigation Report to the Department that indicated that contaminated groundwater remains at the Jefferson Plant and is being collected by the LPIT and the UCIT. However, contaminated groundwater is continuing to discharge to the UNT through infiltration into storm sewers under Route 837 and from seeps into Jorgy's pond upstream of the LPIT and UCIT.

On May 23, 2008, Hercules submitted a report to the Department detailing a ground water assessment conducted at the Jefferson Plant 837 Tank Farm. The report indicated that shallow groundwater in the vicinity of the sanitary sewer lines adjacent to the Jefferson Plant 837 Tank Farm is contaminated with organic chemicals and may be discharging to the Jefferson Hills Borough sanitary sewer line.

PICCO Resin Disposal Site

The Resin Disposal Site consists of a twenty six acre site previously used for the disposal of production wastes from the Jefferson Plant, including clay poly cakes and dechlor cakes, which are composed of petroleum and coal-derived chemicals mixed with clay. The Resin Disposal Site was owned and operated by the Pennsylvania Industrial Chemical Company ("PICCO") from 1954 to 1964. An estimated 85,000 tons of waste was dumped at the site into voids remaining from prior coal mining activities. The waste was deposited in the Resin Disposal Site by dumping wet viscous sludge from trucks down a topographic chute above the dump. The waste was contained within the Resin Disposal Site by earthen dikes. Hercules purchased the Resin Disposal Site from PICCO in 1973. (See attached Resin Disposal Site Location Figure).

Hercules conducted investigations of the Resin Disposal Site in 1980 and 1981. The investigations indicated that site contaminants were leaching into ground and surface waters adjacent to the Resin Disposal Site. In 1983, in order to prevent the migration of leachate from the Resin Disposal Site, Hercules installed a leachate collection trench down slope of the disposal areas. Liquids collected in the leachate collection trench were

directed to an oil/water separator. The leachate discharge from the oil/water separator was discharged into a Jefferson Hills Borough sanitary sewer for treatment at the WESA sewage treatment plant.

The U. S. Environmental Protection Agency ("EPA") conducted a Site Investigation of the Resin Disposal Site in 1982 and placed the site on the National Priorities List in 1983.

On November 2, 1987, the Department and Hercules signed a Consent Order and Agreement to conduct a remedial investigation and feasibility study at the Resin Disposal Site ("1987 COA"). In 1991, Hercules submitted a Remedial Investigation Report to the Department that indicated that site contaminants were migrating to adjacent soil, shallow groundwater, the Pittsburgh coal mine system, and surface water.

On June 28, 1991, EPA issued a Record of Decision ("ROD") for the Resin Disposal Site that prescribed remedial actions. The ROD divided the remedial actions into operable units: OU-1 that included the remediation of waste material, upgrading the oil/water separator, and control of non-aqueous floating product in the Pittsburgh coal mine system; and OU-2 that included assessment and control of the dissolved-phase groundwater contamination in the Pittsburgh coal mine system. The Department concurred with the ROD.

Hercules signed a Consent Decree in February 1992 to provide for the design, implementation, operation, and maintenance of the proposed remedial actions ("1992 Consent Decree").

In August 1994, Hercules submitted a Focused Remedial Investigation Report to the Department. The Focused Remedial Investigation Report indicated that the majority of the leachate from the Resin Disposal Site was being captured by the leachate collection system and the remaining leachate was entering the Pittsburgh coal mine system. Placement of a low permeability cap was proposed to reduce infiltration entering the dump and the amount of leachate generated.

In March 1997, Hercules submitted a Closure Report for OU-1 at the Resin Disposal Site to the Department. Closure activities conducted by Hercules included:

- Installation of a skimmer well system down gradient of the Resin Disposal Site to collect floating product from groundwater wells, hand bailing of product recovery wells has been conducted periodically since December 1994;
- Installation of an upgraded oil/water separator, completed in 1995;
- Stabilization of the lower landfill dike, completed in 1996;
- Installation of a multi-layered geo-composite cap on the Resin Disposal Site, completed in November 1996;
- Installation of a security fence around the site, completed in 1997;
- Relocation of a sanitary sewer line along the northeast border of the site was proposed but was not completed because it was determined that the sanitary sewer

line is located at an elevation above the waste and therefore impacted groundwater should not be migrating into the sanitary sewer line.

In July 2008, Hercules installed a pre-treatment system consisting of an equalization tank, dual bag filters, dual 4,000-pound organoclay vessels, and dual 400-pound aqueous phase carbon adsorption vessels to provide additional pre-treatment of the leachate discharge from the oil/water separator prior to discharging to the Jefferson Hills Borough sanitary sewer system.

West Elizabeth Sewer Authority

WESA owns and operates the West Elizabeth sewage treatment plant, a publicly owned treatment works that serves West Elizabeth and Jefferson Hills Boroughs in Allegheny County and Union Township in Washington County.

Jefferson Hills Borough owns and operates sanitary sewer lines located along the PICCO Resin Disposal Site and along Route 837 through the Jefferson Plant. The Jefferson Hills Borough sanitary sewer lines discharge into WESA's Fourth Street lift station for pumping to the WESA sewage treatment plant.

On numerous occasions WESA has observed excessive levels of organic chemical vapors in the Fourth Street lift station. WESA conducted investigations of the Jefferson Hills Borough sanitary sewer lines along the Resin Disposal Site and the Jefferson Plant in July 2006 and July 2007. The investigations indicated that discharges of pre-treated leachate from the Resin Disposal Site and infiltration of contaminated groundwater from the Jefferson Plant are causing or contributing to excessive levels of organic chemical vapors within the Fourth Street Lift Station.

On October 20, 2008, Hercules submitted a report to the Department detailing sampling conducted by Hercules of the Jefferson Hills Borough sanitary system in proximity to the 837 Tank Farm and the Resin Disposal Site and from the WESA Fourth Street lift station. The sampling indicated excessive levels of organic chemicals and organic chemical vapors within the Jefferson Hills Borough sanitary sewer system and the WESA Fourth Street lift station.

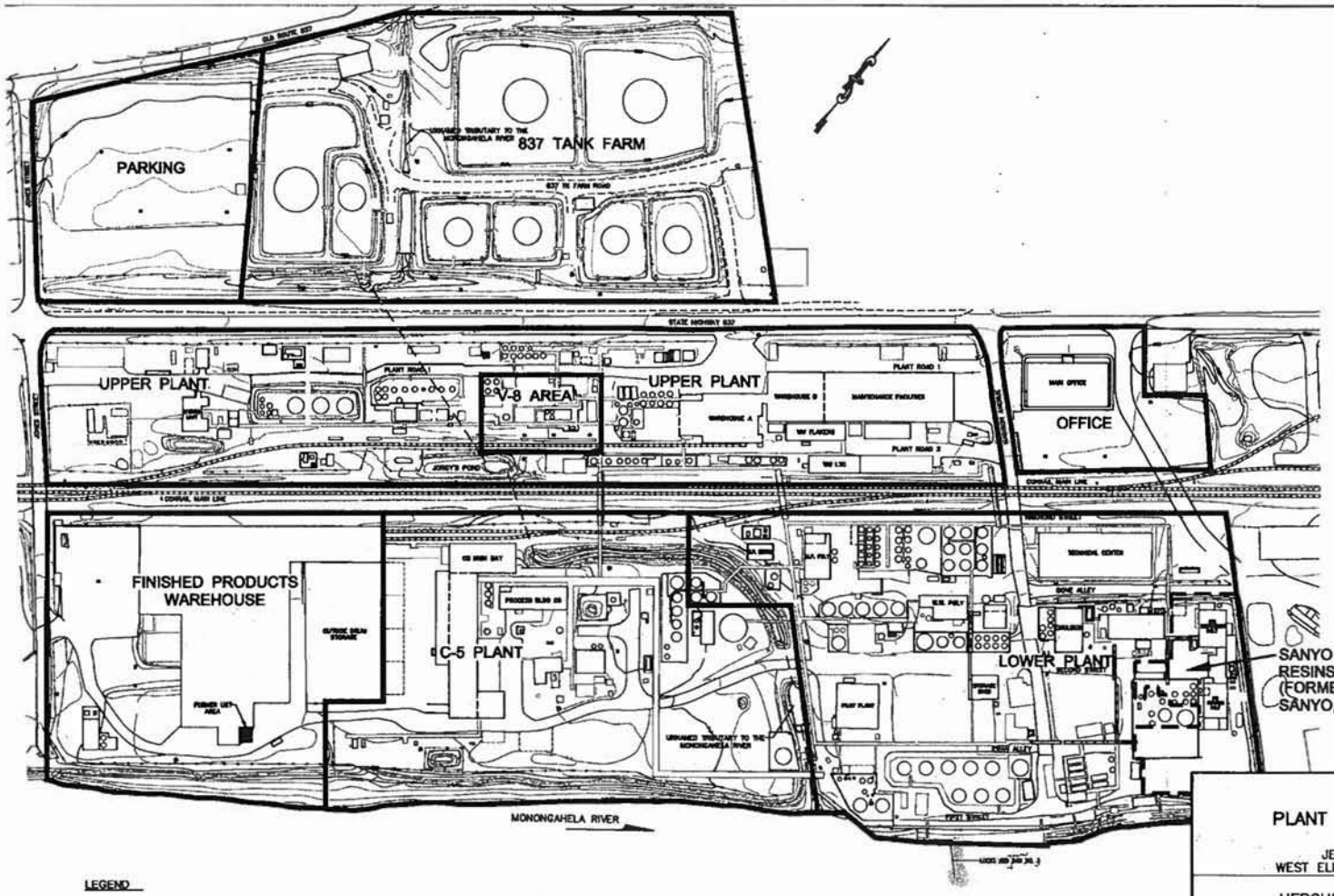
Corrective Actions

To begin to address the problem of odors in the sewer the Department had Hercules provide additional pre-treatment on the discharge to the WESA system from the PICCO Resin Disposal site. The additional treatment that has been installed has helped with reducing one source of odors to the WESA system. Contaminated groundwater from the 837 Tank Farm continues to enter the Jefferson Hills interceptor and then into the WESA STP and may still be a source of odors.

The Department is currently negotiating a Consent Order & Agreement with Hercules and Eastman to address the migration of subsurface contamination to the WESA system.

The CO&A will be intended to require Hercules and/or Eastman:

- To conduct a comprehensive review of all available investigations and sampling activities conducted by Hercules or Eastman regarding groundwater at the Jefferson Plant.
- To conduct a comprehensive review of all groundwater control and treatment technologies currently in place at the Jefferson Plant.
- To continue to operate and maintain all installed groundwater collection and treatment systems at the Jefferson Plant.
- To submit a plan and schedule to eliminate the discharge of contaminated groundwater to the sanitary sewer line in the vicinity of the Tank Farm
- To submit a plan and schedule to eliminate the discharge of contaminated groundwater to Jorgy's Pond.
- To operate and maintain the leachate collection system and the industrial waste pre-treatment system at the Resin Disposal Site.
- To collect samples of the discharge from the new pre-treatment system at the Resin Disposal Site to the Jefferson Hills sanitary system
- To collect samples from the UNT below the Resin Disposal Site.
- To conduct a visual assessment of the UNT for the presence of any seeps.
- To clean and properly dispose of sediments contained in the WESA Fourth Street lift station.
- To conduct on-going monitoring of organic chemical aqueous and vapor concentrations within the Jefferson Hills sanitary sewer system in the vicinity of the Resin Disposal Site and the Jefferson Plant and within the WESA Fourth Street lift station
- To pay civil penalties for violations and to reimburse Jefferson Hills and WESA for cost spent in response to the odor issues.



LEGEND

— — — — UNNAMED TRIBUTARY TO MONONGAHELA RIVER (COVERED)

SCALE

0 180 360 FEET

FIGURE 2

PLANT PROCESS AREAS

JEFFERSON PLANT
WEST ELIZABETH, PENNSYLVANIA

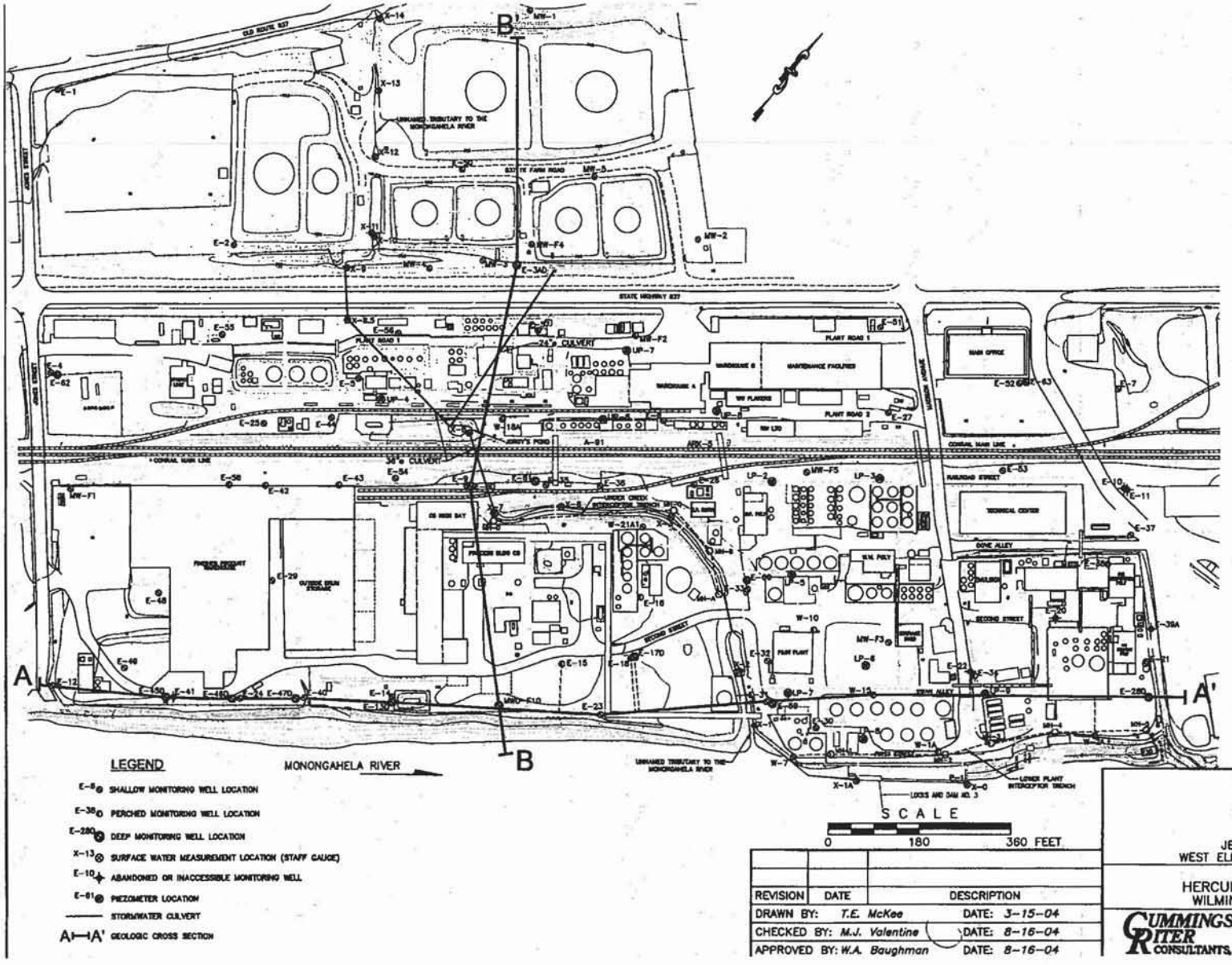
PREPARED FOR
HERCULES INCORPORATED
WILMINGTON, DELAWARE

CUMMINGS RITER CONSULTANTS, INC.

DRAWING NUMBER
01305B22

REVISION	DATE	DESCRIPTION

DRAWN BY: T.E. McKee DATE: 3-15-04
CHECKED BY: M.J. Valentine DATE: 8-16-04
APPROVED BY: W.A. Baughman DATE: 8-16-04



REVISION	DATE	DESCRIPTION
DRAWN BY: T.E. McKee		DATE: 3-15-04
CHECKED BY: M.J. Valentine		DATE: 8-16-04
APPROVED BY: W.A. Baughman		DATE: 8-16-04

FIGURE 3

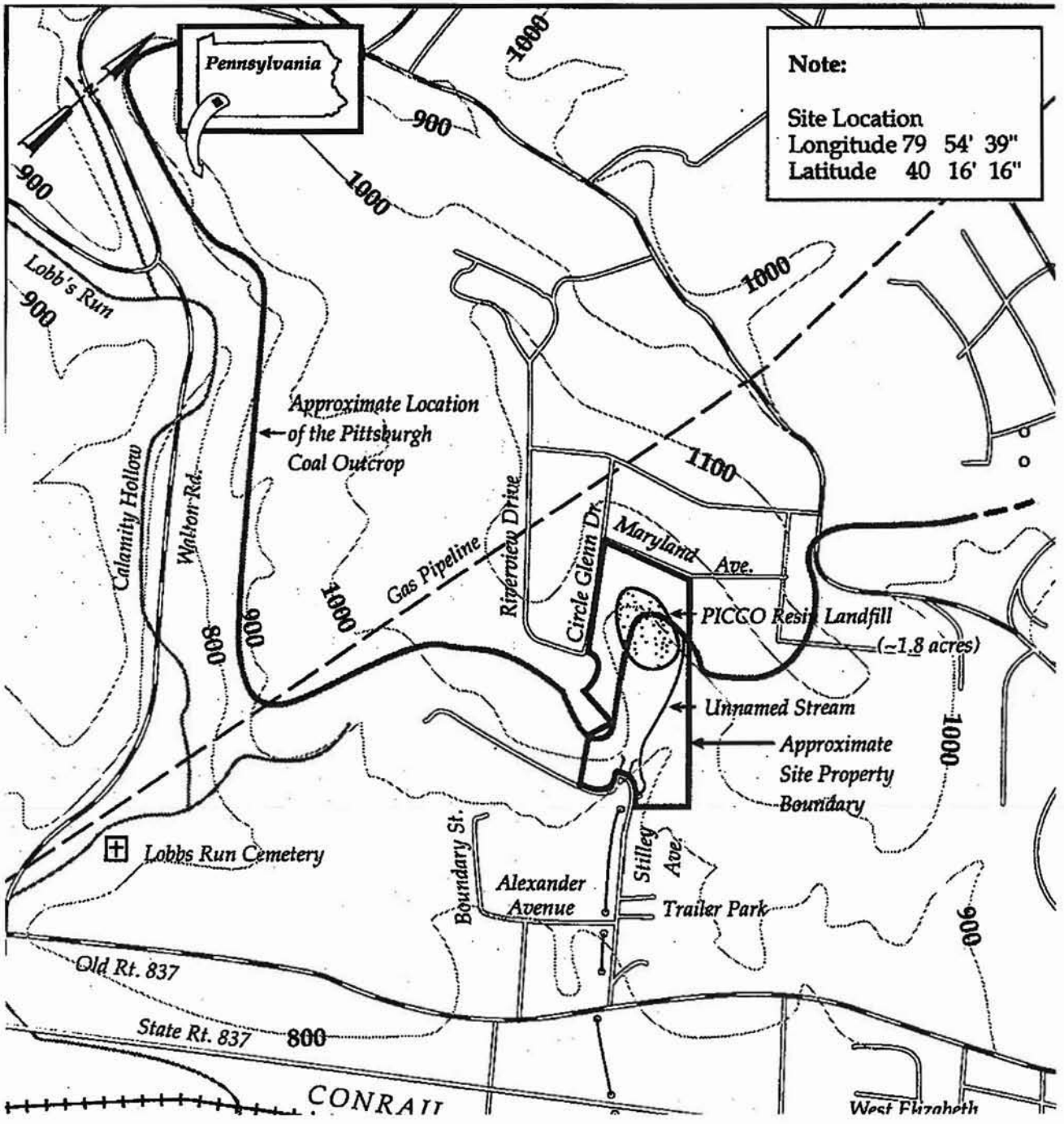
SITE PLAN

JEFFERSON PLANT
WEST ELIZABETH, PENNSYLVANIA

PREPARED FOR
HERCULES INCORPORATED
WILMINGTON, DELAWARE

GUMMINGS RITER CONSULTANTS, INC.

DRAWING NUMBER
01305B7


Pennsylvania
Note:
Site Location
Longitude 79 54' 39"
Latitude 40 16' 16"
1000
900
1000
900
1000
Lobb's Run
900
Approximate Location
of the Pittsburgh
Coal Outcrop
1100
Calamity Hollow
Walton Rd.
Riverview Drive
Circle Glenn Dr.
Maryland Ave.
Gas Pipeline
800
900
1000
PICCO Resin Landfill
(~1.8 acres)
Unnamed Stream
Approximate
Site Property
Boundary
1000
Lobbs Run Cemetery
Boundary St.
Alexander
Avenue
Stilley Ave.
Trailer Park
900
Old Rt. 837
State Rt. 837
800
CONRAIL
West Elizabeth

Appendix 6

CUMMINGS RITER CONSULTANTS, INC.

July 15, 2009
Project No. 01305.76/03

Ms. Rashmi Mathur
Remedial Project Manager (3HS22)
U.S. Environmental Protection Agency, Region III
1650 Arch Street
Philadelphia, PA 19103

RE: VAPOR INTRUSION ASSESSMENT
PICCO RESIN DISPOSAL FACILITY
ALLEGHENY COUNTY, PENNSYLVANIA

Dear Ms. Mathur:

In response to your request, Cummings/Riter Consultants, Inc. (Cummings/Riter), on behalf of Hercules Incorporated, a wholly owned subsidiary of Ashland Inc., has prepared this assessment of the potential for vapor intrusion issues at the PICCO Resin Disposal site located in Jefferson Hills, Pennsylvania. This assessment is being performed to provide additional site remedy performance information for completion of the third five-year review for the site, which is to be completed in 2010. This assessment has been prepared in accordance with the following documents:

- Interstate Technology & Regulatory Council (ITRC), "Vapor Intrusion Pathway: A Practical Guideline," January 2007.
- U.S. Environmental Protection Agency (USEPA), "OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils," November 2002.
- Pennsylvania Department of Environmental Protection (PADEP), "Land Recycling Program Technical Guidance Manual - Section IV.A.4. Vapor Intrusion into Buildings from Groundwater and Soil under the Act 2 Statewide Health Standard," January 2004.

Site-specific documents reviewed for preparation of this initial evaluation included:

- Roy F. Weston, Inc., "Focused Remedial Investigation (RI) Report," August 1994.
- Roy F. Weston, Inc., "Focused Feasibility Study," April 1995.
- USEPA, "Second Five-Year Review Report," August 2005.
- Weavertown Environmental Group, "Bi-annual Monitoring and Product Recovery, July 2008 through December 2008," March 2009.

BACKGROUND

A detailed site description and history are provided in several of the above documents, and thus only those aspects relevant to this vapor intrusion assessment are included in this document.

10 Duff Road • Suite 500 • Pittsburgh, PA 15235
(412) 241-4500 • FAX (412) 241-7500 • E-Mail: crc@cummingsriter.com

Site Description and Land Use: The site is located approximately one-half mile west of the town of West Elizabeth in Jefferson Hills, Allegheny County, Pennsylvania and comprises approximately 26 acres (Figure 1). The site was operated as a landfill between 1950 and 1964. The landfill is located in the head of a narrow valley on the site of a former coal mine in which the landfill comprises approximately 2 of the 26 acres.

The site is surrounded by a suburban residential area to the north and west and by undeveloped property to the south and east. A trailer park and several residential homes are located approximately one-quarter mile southeast and down slope of the site. The topography of the area is characterized as relatively level highland, with deeply eroded stream valleys. Coal was strip mined from the valley prior to 1950 in the area surrounding the site. An unnamed stream originates in the northeastern portion of the site and runs through the site down slope to the southeast, ultimately discharging into the Monongahela River approximately one-half mile from the site boundary.

Site Topography, Geology, and Hydrogeology: The hills surrounding the landfill are covered by a relatively thin (<10-foot-thick) mantle of clayey soil. Figure 2 is a generalized geologic cross-section of the site area. The majority of the soils at the site are classified as strip mine soil, with high slopes resulting from past strip mining, and are a mixture of disturbed native soils and fragments of excavated bedrock.

The bedrock underlying the general area is sedimentary, consisting of interbedded sandstone, shale, siltstone, limestone, and coal. Prior to 1950, the Pittsburgh coal was extensively deep-mined throughout the area surrounding the landfill. There was also, to a lesser extent, strip mining of the Pittsburgh coal (along with the shallower Redstone coal formation). The deep mining was done through a process known as room and pillar mining, resulting in subsurface mine voids which were encountered during the RI drilling programs. The landfill itself was built in a former strip mine. The bottom of the landfill is at approximately the same elevation as the base of the Pittsburgh coal (Figure 3).

Major sources of groundwater in the area are alluvial valley fill aquifers in the large river valleys. Groundwater within the site area, however, is limited to storage in fractured bedrock, the voids left from coal mining, and as perched groundwater in the unconsolidated soils down slope of the landfill. The flow of groundwater in the unconsolidated soils generally parallels the surface topography. Groundwater quantities are low in the bedrock due to its generally unfractured condition. The coal seam contains groundwater that is not considered potable due to its low pH and high concentrations of metals. Although quantities of groundwater are available for domestic use, most of the residents in the vicinity of the site are connected to the public water supply. A limited number of residential wells have been identified in the vicinity of the site, none of which draw water from the Pittsburgh coal.

Groundwater migration from the site occurs along two predominant pathways: southwesterly in the Pittsburgh coal, and southeasterly in the overburden toward the landfill interceptor trench. Results of water balance calculations during the RI (prior to landfill cap construction) suggested that the predominant leachate flow (83 percent) was toward the interceptor trench. The secondary pathway is in the Pittsburgh coal.

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The extent of the groundwater system within the Pittsburgh coal at the site is well known, as the downgradient edge of the coal can be observed along Calamity Hollow, located down slope and southwest of the site. Groundwater discharges from the Pittsburgh coal in a series of seeps, which were mapped and investigated as part of the site RI activities (Figure 4). The seeps represent the downgradient limit of the groundwater system in the Pittsburgh coal in the site area.

The shallow bedrock (bedrock overlying the Pittsburgh coal) in the area surrounding the site is sedimentary, consisting of interbedded sandstone, shale, silt stone, limestone, and coal. The shallow bedrock above the Pittsburgh coal contains little water, and groundwater supplies are limited to storage in the fractured bedrock or within the unconsolidated soils above the bedrock. Because of the stratigraphic position of the shallow bedrock, this zone has no potential to be affected by the landfill leachate.

The Focused RI supported the following conclusions:

- Site-related contaminants were not found in any of the downgradient seep water samples collected during sampling of the Pittsburgh coal outcrop along Lobbs Run.

- The conceptual model for the site is that some site-related organic compounds from the landfill are migrating within the complex, collapsed, abandoned, underground coal mine system. Concentrations of these constituents in the Pittsburgh coal groundwater significantly decrease with distance from the landfill. By the time the groundwater in the Pittsburgh coal discharges at the downgradient seeps, the organic compounds are not detected in the groundwater.

- Groundwater velocity estimated for the Pittsburgh coal mine system indicates that movement of groundwater from the landfill area to the seep area takes between 1 and 2 years. The plume has likely reached a state of dynamic equilibrium since the landfill has been present since the 1950s and 1960s.

- The results from analyses of the off-site groundwater and seep water samples suggest that site-related contaminants in off-site areas generally do not exceed the federal maximum contaminant levels (MCLs) for drinking water, although there is a possibility that some off-site groundwater near the site boundary could locally exceed the MCLs.

- Modeling during the RI indicated that approximately 83 percent of the total landfill leachate volume (estimated at that time, prior to cap construction, to be 777,000 gallons per year) was being captured by the leachate collection trench. Implementation of the Operable Unit 1 remedy (low permeability cap and drainage controls) was expected to reduce the amount of leachate generated (less than 10 gallons per year infiltration from the surface), and significantly reduce or eliminate leachate discharge to the downgradient Pittsburgh coal. These expectations appear to be confirmed, based on the current volume of

leachate captured by the collection trench (approximately 350,000 gallons per year) and the decrease in volatile organic compound (VOC) concentrations in the off-site monitoring wells (Table 1) since cap construction in the mid-1990s. In addition, several of the off-site wells have been dry during recent monitoring events.

GROUNDWATER ANALYTICAL DATA

Groundwater samples were collected quarterly in 1998 and 1999 from several on-site and off-site monitoring wells screened in the Pittsburgh coal, as well as three of the seeps at the outcrop along Lobbs Run. VOC concentrations (benzene, toluene, ethylbenzene, xylene, and naphthalene) in samples collected from each of these locations were below quantitation limits for the last five of these sampling events, with the exception of Monitoring Well TW-13, near the northwest corner of the site (Figure 5). Accordingly, sampling was terminated for each of the locations, except for continued quarterly monitoring at Monitoring Well TW-13. Samples were collected from several wells in support of the previous five-year site review in 2005, with similar results (below quantitation limits except for Monitoring Well TW-13). Analytical results are provided in Table 1. This table also includes relevant vapor intrusion reference levels provided in the PADEP and USEPA guidance documents.

VAPOR INTRUSION SCREENING

Based on the site information summarized above, Cummings/Riter has performed a vapor intrusion screening in accordance with the ITRC guidance document.

Step 1: Does the Site Represent an Acute Exposure Concern?

Odors have not been reported at residences above the portion of the Pittsburgh coal downgradient of the site. The constituents of concern (COC) concentrations in groundwater have been below relevant vapor intrusion screening levels for each of the past 10 quarterly sampling events (Table 1), and the depth to groundwater downgradient of the site is greater than 100 feet below the residences (Figure 5). As such, we do not believe the site represents an acute exposure concern.

Step 2: Are There Sufficient Characterization Data to Evaluate this Pathway?

Groundwater data are available at various on-site and off-site monitoring wells. These data are sufficient for the purposes of this preliminary screening. Collection of a current round of groundwater monitoring data, as discussed in the 2005 five-year site review to confirm current conditions are consistent with the historical data, is recommended.

Step 3: Are Any of the Site Chemicals of Concern Both Volatile and Toxic?

Benzene, ethylbenzene, toluene, xylene, and naphthalene have been reported in site groundwater, and are considered volatile and potentially toxic.

Step 4: Are Buildings Located in Close Proximity to Volatile Chemicals in Soil, Soil Gas, or Groundwater?

As shown on Figure 5, the residences downgradient and crossgradient from the site along Circle Glen Drive, Riverview Drive, and Maryland Avenue sit at elevations of at least 1,065 feet mean sea level (MSL). In comparison, the groundwater elevations in the Pittsburgh coal system at the off-site wells nearest these residences (TW-13, TW-14, TW-21, TW-22, and TW-23) are 951 feet MSL or lower. USEPA guidance suggests a threshold of 100 feet

vertically or horizontally from a vapor source, outside of which volatile constituents are not likely to present a vapor intrusion hazard. The vertical separation between the residences and the potentially impacted groundwater is greater than 100 feet. Likewise, given the lack of detections of volatile constituents at most of the monitoring wells adjacent to the residential area, the horizontal separation between the residents and the potentially impacted groundwater also exceeds 100 feet in most cases. As such, the volatile constituents in the Pittsburgh coal groundwater are not likely to present a vapor intrusion hazard to nearby residences. The potential for vertical migration of vapors would also be mitigated somewhat by the presence of groundwater in the shallow bedrock above the Pittsburgh coal (including the Redstone Coal at an elevation of approximately 1,025 feet MSL) or perched in the unconsolidated soils, although based on boring logs from the RI, the presence of such water appears to be limited.

While this finding is sufficient to conclude no further action under the relevant guidance, additional steps in the screening process will be evaluated in order to provide a weight-of-evidence determination.

Step 5: Identify the Appropriate Occupant Exposure Scenarios and Generic Screening Levels for the Site.
As described above, the primary exposure scenario for this vapor intrusion assessment is residential, and as such, residential generic screening levels are appropriate (see Table 1).

Step 6: Do the Data Exceed the Appropriate Generic Screening Levels?
As shown in Table 1, there have been no exceedances of the relevant generic screening levels in the last ten quarterly sampling events, and prior to that only sporadic exceedances of the naphthalene screening level since 2000. As discussed in Step 2, it is recommended that another round of quarterly groundwater monitoring data be collected to confirm that current groundwater conditions are consistent with the historical data for the site.

SUMMARY
In summary, based on the limited presence of volatile constituents in the Pittsburgh coal groundwater below relevant state and federal vapor intrusion screening criteria, and the vertical and horizontal separation of the residences and the Pittsburgh coal groundwater, the vapor intrusion pathway related to the Pittsburgh coal groundwater is not likely to present an unacceptable risk to nearby residents, and no further assessment is warranted at this time.

Please do not hesitate to contact me at (412) 241-4500 with any questions.

Respectfully submitted,
Cummings/Riter Consultants, Inc.

Bryan R. Maurer, P.E.
Project Manager

BRM/PFO/cld
Attachments

pc: Ms. Barbara Gunter – Pennsylvania Department of Environmental Protection
Mr. Bruce Hough – Hercules Incorporated

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TABLE

TABLE 1
PITTSBURGH COAL GROUNDWATER CONCENTRATIONS
PICCO RESIN DIPOSAL FACILITY
ALLEGHENY COUNTY, PENNSYLVANIA

On-Site Wells

	Vapor Intrusion Screening Criteria		TW-07										
	USEPA	PADEP	1990	1993	1Q1998	2Q1998	3Q1998	4Q1998	1Q1999	2Q1999	3Q1999	4Q1999	3Q2005
Benzene	140	3,500	ND	<10	<5	<5	<5	<5	<5	<5	<5	<5	<1
Toluene	1,500	490,000	2 J	<10	<5	<5	<5	6	<5	<5	<5	<5	<1
Ethylbenzene	700	2,700	ND	<10	<5	<5	<5	<5	<5	<5	<5	<5	<1
m-/p-Xylene	22,000	130,000	ND	<10	<5	<5	<5	<5	<5	<5	<5	<5	<2
o-Xylene	33,000	130,000			<5	<5	<5	<5	<5	<5	<5	<5	<1
Naphthalene	150	25,000	99	0.7 J	<5	<5	<5	<5	<5	<5	<5	<5	<5

	Vapor Intrusion Screening Criteria		TW-13									
	USEPA	PADEP	1990	1993	1Q1998	2Q1998	3Q1998	4Q1998	1Q1999	2Q1999	3Q1999	4Q1999
Benzene	140	3,500	ND	7J	23	16	8	<5	7	7	<5	<5
Toluene	1,500	490,000	18J	10	14	7	10	<5	7	7	<5	<5
Ethylbenzene	700	2,700	23J	69	60	20	100 J	41	64	64	48	16
m-/p-Xylene	22,000	130,000	58	260J	96	33	120	42	74	77	52	12
o-Xylene	33,000	130,000			140	44	170 J	67	110	110	84	21
Naphthalene	150	25,000	490	380	640	210	1,000	400	740	800	450	120

			1Q2000	2Q2000	3Q2000	4Q2000	1Q2001	2Q2001	3Q2001	4Q2001	1Q2002	2Q2002	3Q2002	4Q2002
Benzene	140	3,500	23	12	<5	<5	6	8	<5	<5	<5	<5	<5	<5
Toluene	1,500	490,000	12	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Ethylbenzene	700	2,700	47	28	30	11	24	8	<5	<5	<5	<5	<5	7
m-/p-Xylene	22,000	130,000	82	42	25	6	21	8	<5	<5	<5	<5	<5	6
o-Xylene	33,000	130,000	110	51	42	11	38	14	<5	<5	<5	<5	<5	7
Naphthalene	150	25,000	380	210	210	69	200	66	<5	<5	<5	12	20	40

			1Q2003	2Q2003	3Q2003	4Q2003	1Q2004	2Q2004	3Q2004	4Q2004	1Q2005	2Q2005	3Q2005	4Q2005
Benzene	140	3,500	<5	<5	<5	<5	<5	<5	<5	2.1	2.7	3.7	1.4	<1
Toluene	1,500	490,000	<5	<5	<5	<5	<5	<5	<5	2.1	<1	1.3	1.4	<1
Ethylbenzene	700	2,700	<5	<5	<5	<5	6	9	<5	18	11	25	9.2	7.9
m-/p-Xylene	22,000	130,000	<5	<5	<5	<5	14	<5	<5	12	9.3	8.7	5.2	5.8
o-Xylene	33,000	130,000	<5	<5	<5	<5	16	<5	<5	22	7.7	16	8.8	7.8
Naphthalene	150	25,000	<5	<5	15	31	16	43	<5	110	59	250	51	47

			1Q2006	2Q2006	3Q2006	4Q2006	1Q2007	2Q2007	3Q2007	4Q2007	1Q2008	2Q2008	3Q2008	4Q2008
Benzene	140	3,500	4.1	9.7	2.1	3.7	4.2	1.7	<1.0	1.7	5.9	2.1	<1.0	3.7
Toluene	1,500	490,000	<1.0	6.9	1.1	1.4	1	<1.0	<1.0	1.6	4	<1.0	<1.0	1.8
Ethylbenzene	700	2,700	<1.0	34	13	6.8	5.9	9.4	<1.0	21	16	5.7	<1.0	13
m-/p-Xylene	22,000	130,000	<2.0	38	6.6	4.8	3.8	<1.0	<1.0	18	37	<2.0	<1.0	12
o-Xylene	33,000	130,000	<1.0	45	9.9	12	2.2	<2.0	<2.0	19	49	1.1	<2.0	21
Naphthalene	150	25,000	<5.0	210	77	40	27	27	<5.0	130	77	21	<5.0	75

	Vapor Intrusion Screening Criteria		TW-14										
	USEPA	PADEP	1990	1993	1Q1998	2Q1998	3Q1998	4Q1998	1Q1999	2Q1999	3Q1999	4Q1999	3Q2005
Benzene	140	3,500	110 J	<250	Not sampled due to presence of LNAPL (globules to 0.01 ft thickness) Dry since 4Q2007								
Toluene	1,500	490,000	740	90 J									
Ethylbenzene	700	2,700	4,300	140 J									
m-/p-Xylene	22,000	130,000	3,000	4,400									
o-Xylene	33,000	130,000											
Naphthalene	150	25,000	110,000	6,000									

	Vapor Intrusion Screening Criteria		TW-21									
	USEPA	PADEP	1993	1Q1998	2Q1998	3Q1998	4Q1998	1Q1999	2Q1999	3Q1999	4Q1999	3Q2005
Benzene	140	3,500	4 J	<5	<5	<5	<5	<5	<5	<5	<5	<1
Toluene	1,500	490,000	7 J	<5	<5	<5	<5	<5	<5	<5	<5	<1
Ethylbenzene	700	2,700	8 J	<5	<5	<5	<5	<5	<5	<5	<5	<1
m-/p-Xylene	22,000	130,000	230 J	<5	<5	<5	<5	<5	<5	<5	<5	<2
o-Xylene	33,000	130,000		<5	<5	<5	<5	<5	<5	<5	<5	<1
Naphthalene	150	25,000	680	<5	6	5	<5	<5	<5	<5	<5	<5

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TABLE 1
PITTSBURGH COAL GROUNDWATER CONCENTRATIONS
PICCO RESIN DIPOSAL FACILITY
ALLEGHENY COUNTY, PENNSYLVANIA

	Vapor Intrusion Screening Criteria		TW-22									
	USEPA	PADEP	1993	1Q1998	2Q1998	3Q1998	4Q1998	1Q1999	2Q1999	3Q1999	4Q1999	3Q2005
Benzene	140	3,500	1 J	<5	<5	<5	<5	<5	<5	<5	<5	<1
Toluene	1,500	490,000	3 J	<5	<5	<5	<5	<5	<5	<5	<5	<1
Ethylbenzene	700	2,700	<10	<5	<5	<5	<5	<5	<5	<5	<5	<1
m-/p-Xylene	22,000	130,000	3 J	<5	<5	<5	<5	<5	<5	<5	<5	<2
o-Xylene	33,000	130,000		<5	<5	<5	<5	<5	<5	<5	<5	<1
Naphthalene	150	25,000	7 J	<5	<5	<5	<5	<5	<5	<5	<5	<5

	Vapor Intrusion Screening Criteria		TW-23									
	USEPA	PADEP	1993	1Q1998	2Q1998	3Q1998	4Q1998	1Q1999	2Q1999	3Q1999	4Q1999	3Q2005
Benzene	140	3,500	<10	<5	<5	<5	<5	<5	<5	<5	<5	<1
Toluene	1,500	490,000	1 J	<5	<5	<5	<5	<5	<5	<5	<5	<1
Ethylbenzene	700	2,700	<10	<5	<5	<5	<5	<5	<5	<5	<5	<1
m-/p-Xylene	22,000	130,000	5 J	<5	<5	<5	<5	<5	<5	<5	<5	<2
o-Xylene	33,000	130,000		<5	<5	<5	<5	<5	<5	<5	<5	<1
Naphthalene	150	25,000	<11	<5	<5	<5	<5	<5	<5	<5	<5	<5

Off-Site Wells

	Vapor Intrusion Screening Criteria		TW-17									
	USEPA	PADEP	1993	1Q1998	2Q1998	3Q1998	4Q1998	1Q1999	2Q1999	3Q1999	4Q1999	3Q2005
Benzene	140	3,500	<10	<5	<5	<5	<5	<5	<5	<5	<5	
Toluene	1,500	490,000	<10	<5	<5	<5	<5	<5	<5	<5	<5	
Ethylbenzene	700	2,700	<10	<5	<5	<5	<5	<5	<5	<5	<5	well damaged
m-/p-Xylene	22,000	130,000	<10	<5	<5	<5	<5	<5	<5	<5	<5	
o-Xylene	33,000	130,000		<5	<5	<5	<5	<5	<5	<5	<5	
Naphthalene	150	25,000	<11	<5	<5	<5	<5	<5	<5	<5	<5	

	Vapor Intrusion Screening Criteria		TW-18									
	USEPA	PADEP	1993	1Q1998	2Q1998	3Q1998	4Q1998	1Q1999	2Q1999	3Q1999	4Q1999	3Q2005
Benzene	140	3,500	<10	Obstruction in well - cannot be sampled								
Toluene	1,500	490,000	<10									
Ethylbenzene	700	2,700	<10									
m-/p-Xylene	22,000	130,000	<10									
o-Xylene	33,000	130,000										
Naphthalene	150	25,000	6 J									

	Vapor Intrusion Screening Criteria		TW-19									
	USEPA	PADEP	1993	1Q1998	2Q1998	3Q1998	4Q1998	1Q1999	2Q1999	3Q1999	4Q1999	3Q2005
Benzene	140	3,500	<10	<5	<5	<5	<5	<5	<5	<5	<5	<1
Toluene	1,500	490,000	2 J	<5	<5	<5	<5	<5	<5	<5	<5	<1
Ethylbenzene	700	2,700	11	<5	12	6	<5	<5	<5	<5	<5	<1
m-/p-Xylene	22,000	130,000	12	<5	<5	<5	<5	<5	<5	<5	<5	<2
o-Xylene	33,000	130,000		<5	<5	<5	<5	<5	<5	<5	<5	<1
Naphthalene	150	25,000	65	13	13	8	<5	<5	<5	<5	<5	<5

	Vapor Intrusion Screening Criteria		TW-20									
	USEPA	PADEP	1993	1Q1998	2Q1998	3Q1998	4Q1998	1Q1999	2Q1999	3Q1999	4Q1999	3Q2005
Benzene	140	3,500	<10	<5	<5	<5	<5	<5	<5	<5	<5	<1
Toluene	1,500	490,000	<10	<5	<5	<5	<5	<5	<5	<5	<5	<1
Ethylbenzene	700	2,700	<10	<5	<5	<5	<5	<5	<5	<5	<5	<1
m-/p-Xylene	22,000	130,000	<10	<5	<5	<5	<5	<5	<5	<5	<5	<2
o-Xylene	33,000	130,000		<5	<5	<5	<5	<5	<5	<5	<5	<1
Naphthalene	150	25,000	<11	<5	<5	<5	<5	<5	<5	<5	<5	<5

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TABLE 1
PITTSBURGH COAL GROUNDWATER CONCENTRATIONS
PICCO RESIN DIPOSAL FACILITY
ALLEGHENY COUNTY, PENNSYLVANIA

	Vapor Intrusion Screening Criteria		TW-24									
	USEPA	PADEP	1993	1Q1998	2Q1998	3Q1998	4Q1998	1Q1999	2Q1999	3Q1999	4Q1999	3Q2005
Benzene	140	3,500	2 J	<5	<5	<5	<5	<5	<5	<5	<5	<1
Toluene	1,500	490,000	2 J	<5	<5	<5	<5	<5	<5	<5	<5	<1
Ethylbenzene	700	2,700	<10	<5	<5	<5	<5	<5	<5	<5	<5	<1
m-/p-Xylene	22,000	130,000	<10	<5	<5	<5	<5	<5	<5	<5	<5	<2
o-Xylene	33,000	130,000		<5	<5	<5	<5	<5	<5	<5	<5	<1
Naphthalene	150	25,000	26	<5	<5	<5	<5	<5	<5	<5	<5	<5

Seeps

	Vapor Intrusion Screening Criteria		SEEP-3								
	USEPA	PADEP	1990	1993	2Q1998	3Q1998	4Q1998	1Q1999	2Q1999	3Q1999	4Q1999
Benzene	140	3,500	ND	ND	<5	<5	<5	<5	<5	<5	<5
Toluene	1,500	490,000	ND	ND	<5	<5	<5	<5	<5	<5	<5
Ethylbenzene	700	2,700	ND	ND	<5	<5	<5	<5	<5	<5	<5
m-/p-Xylene	22,000	130,000	ND	ND	<5	<5	<5	<5	<5	<5	<5
o-Xylene	33,000	130,000				<5	<5	<5	<5	<5	<5
Naphthalene	150	25,000	ND	ND	<5	<5	<5	<5	<5	<5	<5

	Vapor Intrusion Screening Criteria		SEEP-4								
	USEPA	PADEP	1990	1993	2Q1998	3Q1998	4Q1998	1Q1999	2Q1999	3Q1999	4Q1999
Benzene	140	3,500	ND	ND	<5	<5	<5	<5	<5	<5	<5
Toluene	1,500	490,000	ND	ND	<5	<5	<5	<5	<5	<5	<5
Ethylbenzene	700	2,700	ND	ND	<5	<5	<5	<5	<5	<5	<5
m-/p-Xylene	22,000	130,000	ND	ND	<5	<5	<5	<5	<5	<5	<5
o-Xylene	33,000	130,000				<5	<5	<5	<5	<5	<5
Naphthalene	150	25,000	ND	ND	<5	<5	<5	<5	<5	<5	<5

	Vapor Intrusion Screening Criteria		SEEP-5								
	USEPA	PADEP	1990	1993	2Q1998	3Q1998	4Q1998	1Q1999	2Q1999	3Q1999	4Q1999
Benzene	140	3,500	ND	ND	<5	<5	<5	<5	<5	<5	<5
Toluene	1,500	490,000	ND	ND	<5	<5	<5	<5	<5	<5	<5
Ethylbenzene	700	2,700	ND	ND	<5	<5	<5	<5	<5	<5	<5
m-/p-Xylene	22,000	130,000	ND	ND	<5	<5	<5	<5	<5	<5	<5
o-Xylene	33,000	130,000				<5	<5	<5	<5	<5	<5
Naphthalene	150	25,000	ND	ND	<5	<5	<5	<5	<5	<5	<5

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FIGURES

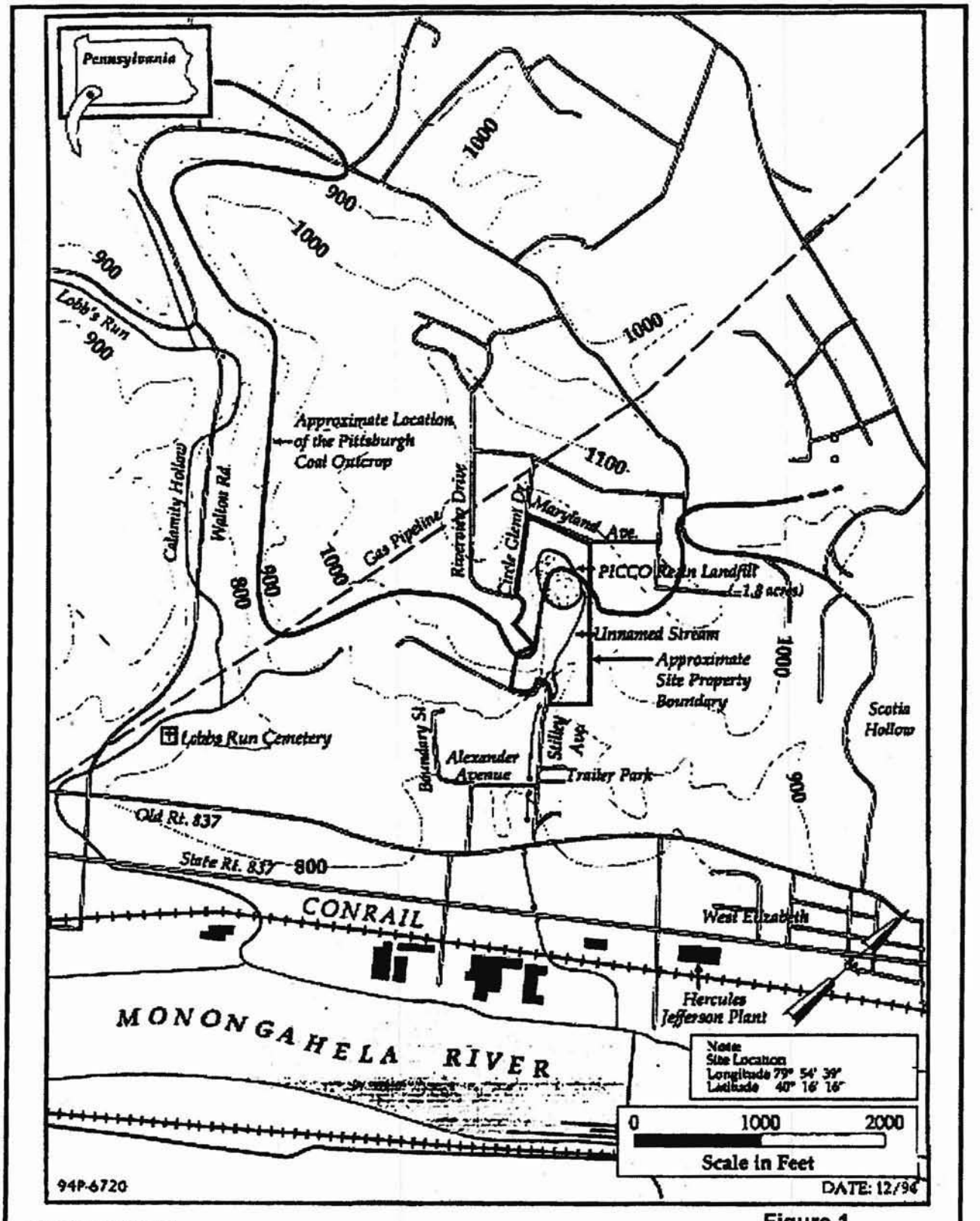

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Figure 1
Site Location Map
PICCO Resin Disposal Site

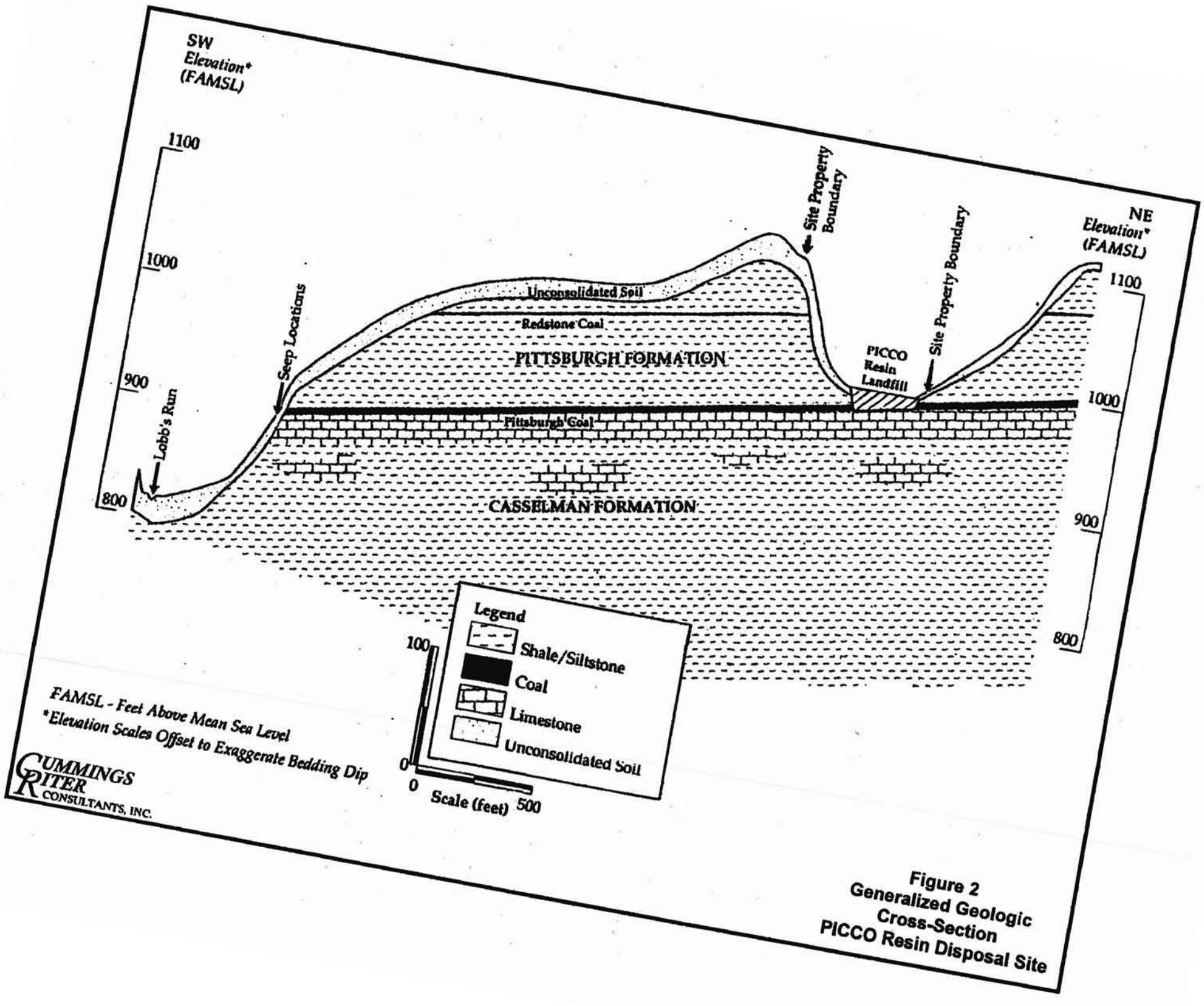

Figure 2
Generalized Geologic
Cross-Section
PICCO Resin Disposal Site

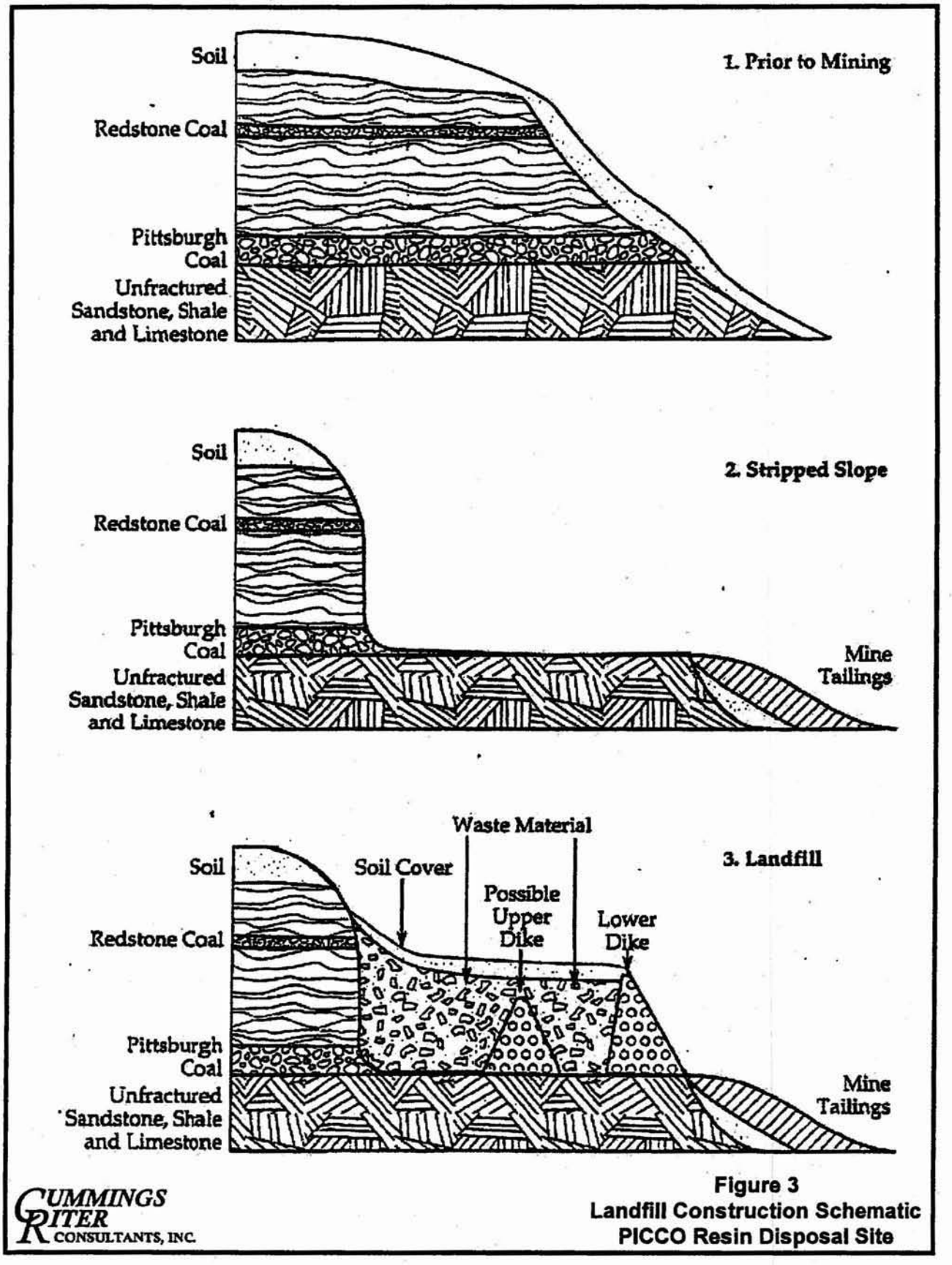

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Figure 3
Landfill Construction Schematic
PICCO Resin Disposal Site

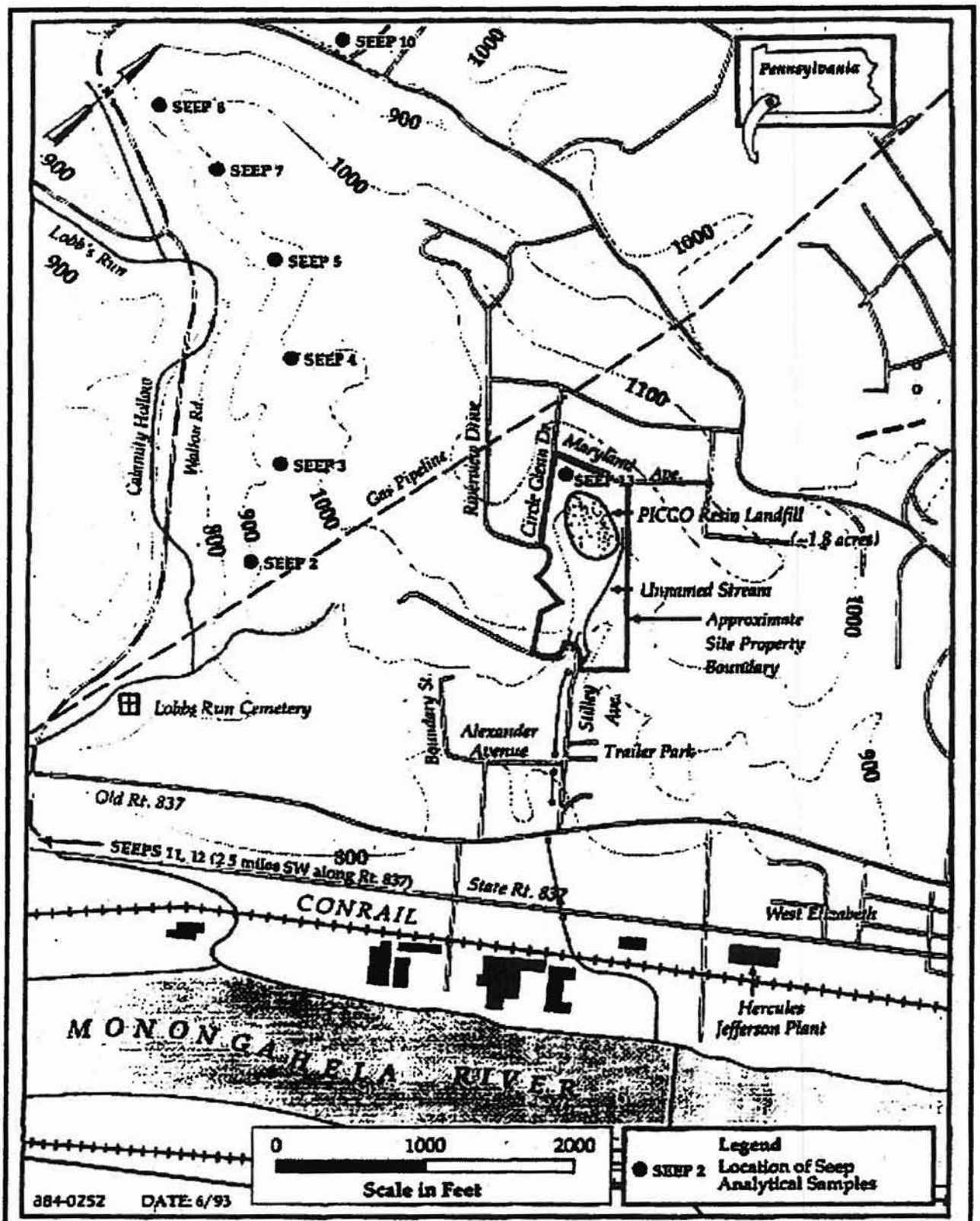

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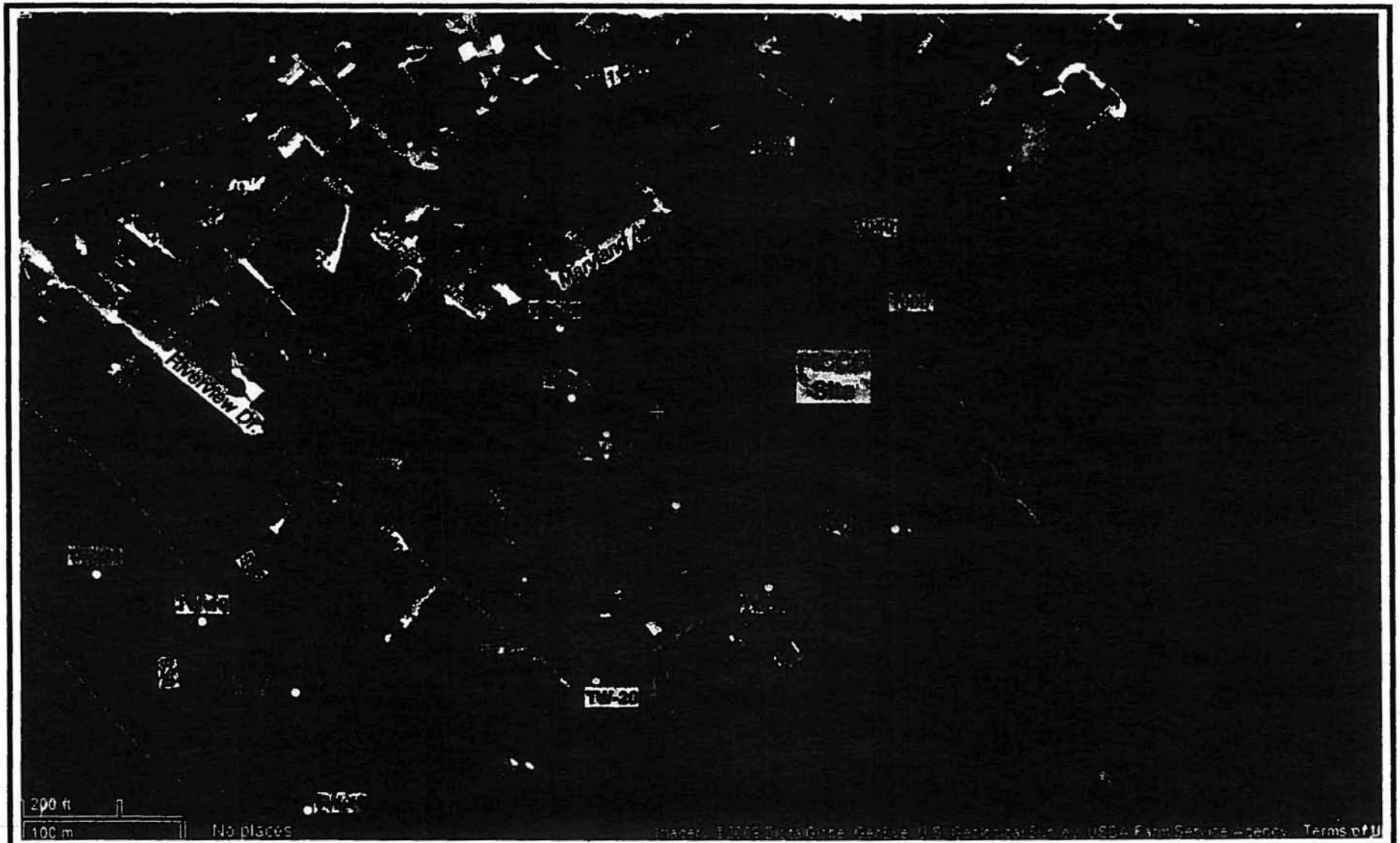
Figure 4
Seep Location Map
PICCO Resin Disposal Site



Approx. ground surface contour (USGS topographic quadrangle map)

Approx. Pittsburgh Coal groundwater contour (from Focused RI Report, Fig 3-7)

Approx. Pittsburgh Coal monitoring well location

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Figure 5
Topographic and Pittsburgh Coal Groundwater Contours
PICCO Resin Disposal Site