Five-Year Review Report

Fifth Five-Year Review Report
for
The Picillo Farm Superfund Site
Town of Coventry
Kent County, Rhode Island

July 2013

Prepared by:
The United States Environmental Protection Agency
Region 1, New England
Boston, Massachusetts

Approved by:

Date:

07/30/13

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Executive Summary

EPA Region 1, New England has conducted the fifth five-year review for the Picillo Farm Superfund Site in Coventry, Rhode Island (the Site). The methods, findings, and conclusions of reviews are documented in this five-year review report. The purpose of the five-year review is to determine whether the remedy at a site is protective of human health and the environment. This is the fifth five-year review for this Site and focuses on remedial action implementation associated with Operable Unit 2 (OU2). Work associated with Operable Unit 1 (OU1) was completed prior to the second five-year review.

OU1 involved the excavation and off-Site disposal of stockpiled soil that was completed in 1989. Residual PCB-impacted surficial soil associated with these stockpiles was removed by EPA as part of OU2 in 1998. Based upon these actions, the remedy for OU1 is protective of human health and the environment.

OU2 protects human health in the short-term through implementation of various response actions, placement of Institutional Controls, and the physical control of Site access. The 1993 ROD determined that the response actions that are in the process of being implemented would be protective in the long term to human health and the environment. However, in order for the remedy to be protective in the long-term, the clean-up levels in the 1993 ROD, or alternative clean-up levels that are demonstrated to be equally protective, have to be met to ensure long-term protectiveness.

Overall, the remedy at the Site is protective in the short-term. In order for the remedy to be protective in the long-term, the clean-up levels in the 1993 ROD, or alternative clean-up levels that are demonstrated to be equally protective, have to be met to ensure long-term protectiveness.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name: Picillo Farm		
EPA ID: RID980579056		
Region: 1	**State:** RI	**City/County:** Coventry/Kent

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

REVIEW STATUS
Lead agency: EPA
Author name (Federal or State Project Manager): Anna Krasko
Author affiliation: EPA Region 1 – New England
Review period: - 01/22/2013 – 07/30/2013
Date of site inspection: April 17, 2013
Type of review: Statutory
Review number: 5
Triggering action date: 07/28/2008
Due date *(five years after triggering action date)*: 07/28/2013

Five-Year Review Summary Form (continued)

Issues/Recommendations

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

Issues and Recommendations Identified in the Five-Year Review:

OU(s): OU 2	Issue Category: Remedy Performance			
	Issue: Assess probable groundwater plume longevity			
	Recommendation: Perform groundwater fate and transport modeling to assess plume longevity under varying assumptions			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	No*	PRP	EPA/State	06/30/14

OU(s): OU 2	Issue Category: Remedy Performance			
	Issue: Assess ability to achieve performance standards			
	Recommendation: Perform Focused Feasibility Study to evaluate remedy options			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	No*	PRP	EPA/State	06/30/15

* It is premature to determine if these issues will affect future protectiveness of the remedy

Five-Year Review Summary Form (continued)

Protectiveness Statement(s)

Operable Unit:	*Protectiveness Determination:*
1	Protective
Protectiveness Statement: OU1 involved the excavation and off-Site disposal of stockpiled soil that was completed in 1989. Residual PCB impacted surficial soil associated with these stockpiles was removed by EPA as part of OU2 in 1998. Based upon these actions, the remedy for OU1 is protective of human health and the environment.	

Operable Unit:	*Protectiveness Determination:*
2	Short-term Protective
Protectiveness Statement: OU2 protects human health in the short-term through implementation of various response actions, the placement of Institutional Controls, and the physical control of Site access. The 1993 ROD determined that the response actions that are in the process of being implemented would be protective in the long term to human health and the environment. However, in order for the remedy to be protective in the long-term, the cleanup levels in the 1993 ROD, or alternative clean-up levels that are demonstrated to be equally protective, have to be met to ensure long-term protectiveness.	

Sitewide Protectiveness Statement
For sites that have achieved construction completion, enter a sitewide protectiveness determination and statement.
Protectiveness Determination: Short-term Protective
Protectiveness Statement: Overall, the remedy at the Site is protective in the short-term. In order for the remedy to be protective in the long-term, the clean-up levels in the 1993 ROD, or alternative clean-up levels that are demonstrated to be equally protective, have to be met to ensure long-term protectiveness.

1.0 INTRODUCTION

The purpose of five-year reviews 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 deficiencies found during the review, if any, and identifies recommendations to address them.

The Agency is preparing this Five-Year Review report pursuant to CERCLA Section 121 and the National Contingency Plan (NCP). CERCLA Section 121 states:

> *If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each 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.*

The Agency interpreted this requirement further in the NCP; 40 CFR Section 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 1 has conducted this statutory five year review of the remedial actions implemented at the Picillo Farm Superfund Site in Coventry, Rhode Island (the Site) in accordance with OSWER Directives 9355.7-03B-P, "Comprehensive Five-Year Review Guidance" (June 2001). Woodard & Curran, the contractor for the Potentially Responsible Parties, provided analysis in support of this five year review.

This is the fifth five-year review conducted for the Site. The triggering action for this review is the completion of the previous five-year review on July 28, 2008 and the fact that the remedial action in OU2 requires five or more years to complete and contaminated water is still present at the Site that prevents unlimited use and unrestricted exposure.

2.0 SITE CHRONOLOGY

Table 1 presents a chronology of significant events for the Picillo Farm Superfund Site.

Table 1
Site Chronology

Date	Event
Prior to late '70s	Pig farm and private residences occupied the Site.
1977	Waste shipped from other disposal facilities or diverted by waste haulers to Picillo Pig Farm over the course of several months was disposed of illegally into open, unlined trenches.
September 1977	Sodium aluminum hydride disposed of at the Site reacted and caused a large explosion and fire, which brought the Site to the attention of the Town of Coventry, RIDEM and EPA.
1980-1982	Early EPA and RIDEM removal actions: over 10,000 drums removed; 6 former disposal trenches excavated; some soil disposed of off-Site; approximately 6,500 cubic yards of soil stockpiled – 2 piles of Phenol-containing soil and 1 pile of PCB-containing soil.
September 8, 1983	Site was listed on the NPL.
September 30, 1985	EPA issued ROD calling for disposal of approximately 6,500 cubic yards of stockpiled contaminated soil in an on-Site RCRA landfill. (Operable Unit (OU) 1)
March 3, 1987	EPA issued an amended ROD stipulating off-Site disposal of the stockpiled contaminated soil and requiring a second RI/FS to determine the nature and extent of residual contamination and to evaluate groundwater cleanup alternatives. (Operable Unit (OU) 1)
February 7, 1990	EPA certified that remedial action work to implement the 1987 amended ROD under 1988 Consent Decree completed by PRPs.
September 27, 1993	EPA issued second ROD issued requiring SVE of Source Area; groundwater treatment and extraction; and institutional controls.
November 28, 1995	EPA entered into a Consent Decree with a group of PRPs, five of which agreed to implement the 1993 ROD.
October 1998	PRP Group completed 100 Percent Design for remedial action.
Fall 1998	EPA excavated and removed shallow soils in vicinity of former PCB pile.
January 18, 1999 – January 17, 2000	PRP Group implemented 100 Percent Design by constructing the Management of Migration (MOM) Remedy (hydraulic control) and the Source Area Remedy (dewatering and SVE) and the associated groundwater and air treatment systems.
August 1999	PRP Group discovered epoxy waste and grossly contaminated soil during pipe trench excavation in the Northwest trench area.
March 2001 – August 2001	PRP Group commenced with full-scale groundwater extraction and treatment system operation.
November 2001	PRP Group commenced source control SVE operation.
September 25, 2002	EPA issued Action Memorandum for the epoxy waste Removal Action.
December 5, 2002	EPA issued Administrative Order on Consent for Picillo Waste Removal Action.
May -November 2003	PRP Group implemented the Picillo Waste Removal Action.
September 3, 2003	EPA issued Preliminary Close Out report
November 17, 2003	PRP Group submitted Picillo Waste Removal Completion of Work Report
February 2005	Final ELUR recorded. All institutional controls in place
August 30, 2005	PRPs submitted draft Interim Remedial Action Completion Report
September 13, 2005	EPA issued approval of Interim Remedial Action Report and remedy construction is completed.
April 12, 2006	PRPs submit the Draft Source Remedy Performance Summary and Preliminary Closure Evaluation (Preliminary Report) for the Source Remedy in the Northeast and Northwest Trenches.
June 30, 2006	PRPs submitted Draft System Evaluation Report (SER)-Phase I which presented

	the technical rationale for shutting down the Source Remedy and the approach for evaluating continued MOM operation performance.
September 11, 2006	Operation of the SVE portion of the Source Remedy was suspended.
October 16, 2006	Operation of the dewatering system was suspended in the Northeast and Northwest Trenches.
March 16, 2007	PRPs submitted Draft System Evaluation Report (SER) – Phase II which summarized Source Remedy operation and monitoring
	Actions since the last Five Year Review
April 2008	Additional Northwest Plume monitoring wells installed PRPs submitted Preliminary MOM Optimization & Alternative Discharge
May 27, 2009	Evaluation Letter which evaluated reducing the MOM flow rate and switching the discharge of the treatment system effluent from surface water to groundwater discharge.
August 2009	MOM wells EW-307 and EW-308 were installed. MOM operation optimized by initiating groundwater extraction from EW-307 and EW-308 and suspending groundwater extraction from EW-301, EW-302, EW-303, EW-306 and Source Area wells ED-231, ED-232, ED-235, and ED-243.
August 2010 and July 2011	Alternative treatment system effluent discharge pilot study conducted via discharge into a rapid infiltration basin.
April 20, 2012	Revised Quality Assurance Project Plan (QAPP) submitted to EPA
June 2012	PRPs submitted Draft Source Assessment and Shutdown Test Work Plan which presented an approach to evaluate residual source and non-pumping groundwater conditions.
August – September, 2012	Soil borings were advanced for Source Assessment. Additional Northwest Trench monitoring wells were installed to support the Shutdown Test.
September 20, 2012	The MOM remedy was shutdown to evaluate non-pumping groundwater conditions.
November 2012 – Present	Tracer test conducted in Northwest Trench to support Shutdown Test

3.0 BACKGROUND

This section describes the fundamental aspects of the Site to assist in identifying the threat posed to the public and the environment at the time of ROD.

3.1 Physical Characteristics and Land Use

The Site is located at 210 Piggy Lane in Coventry, Rhode Island near the intersection of State Highway 102 and Perry Hill Road (Figure 1). Located on a former pig farm, the Site includes a 10-acre disposal area, which is currently fenced, and approximately 35 acres of surrounding woodland and wetland areas, defined by the extent of the groundwater and surface water impacts. Land surrounding the Site is rural and consists of mixed woods and wetlands. Residential properties are located north, northeast, and east of the Site, along Perry Hill, Colewood Circle and West Log Bridge Roads. All nearby residences are served by private wells and the testing of these drinking water wells has not found any Site-related contamination to date. To the west, southwest, and south of the Site is a mix of wetlands and wooded areas.

3.2 History of Impacts

During a limited period in 1977, at least 10,000 drums of hazardous substances plus an undetermined volume of liquid chemical waste and solid waste were illegally disposed of into several unlined trenches at the Site. Wastes disposed of at the Site included industrial solvents, oils, pesticides, PCBs, paint sludges, resins, still bottoms, and other hazardous materials.

3.3 Initial Response

Impacts at the Site were discovered after a sodium aluminum hydride explosion and fire at the Site in September 1977 brought the dumping activities to the attention of regulatory agencies. This led to a number of investigations and remedial activities at the Site. The State of Rhode Island and EPA shared responsibilities in joint cleanup activities and supervision. Between 1980 and 1982, the trenches located along the perimeter of a cleared field – the northeast trench, northwest trench, west trench, south trench, and two slit trenches – were excavated, approximately 10,000 drums and a significant amount of contaminated soils were removed and disposed off-Site. Approximately 6,500 cubic yards of PCB- and phenol-contaminated soil were also stockpiled on Site at that time.

On September 30, 1985, after conducting an RI/FS, EPA issued a Record of Decision (ROD) for Operable Unit 1 (OU 1) which called for disposal of the stockpiled contaminated soil in an on-site RCRA landfill. The State of Rhode Island contested the ROD, and in 1987, following the enactment of the Superfund Amendments and Reauthorization Act (SARA), EPA issued an amended ROD. The amended March 3, 1987, ROD required that the contaminated soils be disposed offsite in a RCRA/TSCA landfill, and Site closure activities be implemented. The stockpiled soils were removed in 1988 by four Potentially Responsible Parties.

The 1987 amended ROD stated that the recommended remedy would not eliminate the residual groundwater contamination at the Site and required the EPA to conduct a remedial investigation/feasibility study (RI/FS) to determine the nature and extent of the contamination and to evaluate cleanup alternatives. The EPA initiated RI/FS activities in 1988. Upon RI/FS completion, the EPA issued a ROD for OU 2 on September 27, 1993.

3.4 Summary of Basis for Taking Action

Investigations by RIDEM and EPA determined that impacted groundwater was discharging to a wetland approximately 1,200 feet northwest of the former waste/trench Disposal Areas, and that the groundwater and surface waters were impacted by various halogenated and aromatic VOCs, SVOCs, and metals. On-site soil was contaminated with SVOCs and VOCs that were found to represent a continuing source for adverse groundwater impacts. Potential threats include use of groundwater and surface water as drinking water supplies. Contaminated surface water and the PCB-contaminated shallow soils also posed ecological risks.

4.0 REMEDIAL ACTIONS

Following initial emergency response actions between 1980 and 1982, remedial actions have been

developed and implemented in accordance with the March 3, 1987 amended ROD (OU 1) and September 27, 1993 ROD (OU 2). In addition, a CERCLA Removal Action was implemented under the December 2002 Administrative Order on Consent for the excavation and disposal of epoxy waste in the Northwest Trench. Between May 28 and June 20, 2003, approximately 2,300 tons of waste was excavated and disposed of offsite at two incineration facilities. As of November 6, 2003, the date of the Final inspection conducted by the RIDEM and the EPA, the SVE wells in this area had been put back on-line and the excavation area had been sufficiently restored. See Section 4.5 for more details.

4.1 Operable Unit 1 Remedial Actions

All remedial actions required by the 1987 amended ROD (OU 1) were completed as documented in the EPA's February 7, 1990 certification letter. Remedy selection, implementation, and operation and maintenance (O&M) were documented in the first two Five Year Reports. The following summarizes this information.

The 1987 amended ROD required off-Site disposal of approximately 3,500 cubic yards of PCB impacted soils and 3,000 cubic yards of phenol impacted soils at an appropriate facility. In 1988, under a Consent Decree with EPA and the State, four of the PRPs implemented this remedial action. The PRPs submitted a report certifying project completion in January 1989. EPA approved this report conditioned upon the Site being reseeded during spring 1989 and making improvement to Site drainage structures. These requirements were met by the PRPs as confirmed by a December 19, 1989, EPA and RIDEM Site inspection and documented in an EPA February 7, 1990, certification letter.

Post remedial action O&M involved periodic Site inspections which were initially performed as part of the EPA RI/FS activities in the early 1990s and then continued as part of the PRP lead remedial action. These O&M requirements have since been incorporated into ongoing O&M performed under the 1993 ROD (OU 2).

4.2 Operable Unit 2 Remedy Selection

In 1988, EPA initiated the groundwater RI/FS. Following its completion, EPA Region 1 signed the ROD for OU 2 on September 27, 1993. The remedy described in the ROD includes treatment of contaminated groundwater and treatment of soil which presents an ongoing source of adverse groundwater impacts. Removal of the drums and impacted soil conducted in the early 1980s reduced the immediate threat to public health from exposure to hazardous waste contained in the drums and disposal trenches. Implementation of the 1987 amended ROD resulted in the removal of the remaining stockpiled soil from these initial activities. These actions reduced the immediate risk to public health from exposure to contaminated soil remaining on-Site.

The 1993 ROD selected a remedy that combined source control and management of migration (MOM) to address remaining in-situ contamination. The ROD also required excavation and off-site disposal of surface soils impacted with PCBs from the soil stockpiles managed under OU 1. The ROD's primary objective was to address the remaining principal threats to human health and the environment posed by residual soil contamination that presents a continuing source for leaching of

contaminants to Site groundwater. To meet this objective the selected remedy included construction and operation of an enhanced Soil Vapor Extraction (SVE), dewatering and groundwater pump & treat systems, natural attenuation of fringes of the groundwater plume, institutional controls, long-term environmental monitoring, and removal of PCB impacted surface soil. The specific objectives associated with each of these remedial actions are summarized below.

- Source control - reduce VOC and SVOC levels in the soils so that they no longer represent a significant continuing source for leaching of contaminants to Site groundwater;
- MOM - provide hydraulic containment and treatment of groundwater plumes to limit contaminant migration and discharge into surface waters; fringes of the plume (Dilute Plume) are to be monitored for the natural attenuation process;
- Institutional controls - restrict the use of impacted land, groundwater and surface water for the duration of the remedial action and ensure that off-Site activities do not interfere with the remedial action;
- PCB-impacted surface soil - remove residual surface soil contamination;
- Long-term environmental monitoring program - evaluate the extent of contamination over time and demonstrate compliance.

The major components of the source control remedy included:

- In-situ enhanced soil vacuum extraction (SVE) to remove volatile organic compounds and semi-volatile organic compounds;
- Dewatering to lower the water table and treatment of the extracted groundwater;
- Thermally treating vapors extracted from the soil;
- Constructing a temporary cap over source area;
- Performing SVE pilot test and other investigations to optimize SVE system design and evaluate SVE enhancements;
- Developing and implementing a soil monitoring program and performance monitoring program to evaluate the effectiveness of the soil vapor extraction system; and
- Maintaining access restrictions to the source area via fence construction and maintenance activities.

The major components of the MOM remedy and long-term monitoring include:

- Extracting and treating contaminated groundwater from the overburden and shallow bedrock aquifers;
- Developing and implementing an environmental monitoring program for ground water, surface water, and sediment to evaluate the extent of contamination over time and to demonstrate compliance; and
- Developing and implementing a monitoring program to evaluate natural attenuation in the fringes of the groundwater plume.

The major institutional control components include:

- Limiting access to areas of active remediation; and
- Placing environmental land use restrictions.

The PCB soil removal component involved delineation and excavation and off-site disposal of surface soil contaminated with PCBs.

4.3 Operable Unit 2 Remedy Implementation

In 1995, EPA entered into a Remedial Design and Remedial Action (RD/RA) Consent Decree (Consent Decree) with its associated Statement of Work (SOW) with a number of Potentially Responsible Parties (PRPs) at the Site. The SOW specifies the remedial design requirements and sets the performance standards for the remedial action. Five of the PRPs, American Cyanamid Company (whose obligations were initially performed by Wyeth and now are performed by Pfizer), Ashland Inc. (for Ashland Chemical Company), ISP Environmental Services, Inc. (for GAF Corporation; ISP Environmental Services was acquired by Ashland in 2011), General Electric Company, and Solutia Inc. for Monsanto Company (Monsanto Company is now performing the work), agreed to perform the RD/RA, as set forth in the ROD, the Consent Decree and its associated SOW. The five parties are defined in the Consent Decree as the Performing Settling Defendants and are referred to herein as the PRPs. Rohm and Haas Company became a participating member of the PRP Group in 2006. In 2010, Dow Chemical became a participating member of the PRP Group after its acquisition of Rohm and Haas.

With the October 1995 integrity testing of existing monitoring wells the PRPs initiated design investigations. The PRPs submitted the Draft Remedial Design Work Plan and Project Operations Plan (GeoTrans, January 10, 1996) detailing extensive pre-design investigations, an SVE pilot test, and SVE thermal enhancement bench scale study activities. The PRPs initiated field activities with the collection of the first round of quarterly groundwater data in February 1996. Information from these investigations was used during the preparation of the Draft 30 Percent Design Report (HSI GeoTrans, September 16, 1997). Design refinements proposed in the Draft 30 Percent Design Report included discharging treated groundwater to the Unnamed Swamp surface water body and not incorporating thermal enhancement into the SVE system design.

Based on additional engineering evaluations and Agencies' comments, the Draft 60 Percent Design Report (Envirogen, March 2, 1998) included a modification to use 2 ppm (instead of 1 ppm) total VOCs specified in the SOW as a basis for the source control implementation areas and specifying that select SVE and/or dual phase extraction wells be constructed using stainless steel to facilitate future thermally enhanced SVE, if so required.

The Final 100 Percent Design Report (Envirogen, October 5, 1998) presented the final design, drawings, and technical specifications for constructing the source control remedy and MOM remedy. This included development of an Investigatory Boring Program and Construction Stage Testing

Program to provide additional information to refine source area remedy implementation area and to establish source area target dewatering elevations. The Investigatory Boring Program was completed prior to construction and was used to refine the Final 100 Percent Design. In addition, EPA's Office of Research and Development (NRMP, Ada, Oklahoma), in collaboration with EPA Region 1, installed a number of monitoring wells and collected soil data to facilitate implementation of the remedy.

On January 13, 1999, EPA Region 1 issued an Administrative Order for Property Access to one of the affected property owners; other required access was obtained by the PRPs through the execution of access agreements. Following securing of the access, remedial construction in accordance with the Final 100 Percent Design Report and Revised Draft Remedial Action Work Plan (Envirogen, January 18, 1998) began January 18, 1999, and was completed January 17, 2000. Construction activities are documented in the Construction Completion Report (Envirogen, March 2000). Construction activities included the installation of 95 SVE wells, 37 dual phase extraction wells, and 4 MOM wells to collect soil vapors and groundwater. The bedrock SVE wells proposed in the Final 100 Percent Design Report were not installed based upon the results of the Construction Stage Testing program. A treatment system for soil vapor and groundwater was constructed within an enclosed treatment building.

The groundwater treatment system included:

- Pre-treatment system to remove metals and suspended solids;
- Ultraviolet oxidation (UV/OX) unit to remove VOCs;
- Carbon to remove residual peroxide from the UV/OX unit;
- Air stripping unit; and
- Sludge management system.

The SVE vapor treatment system included:

- Liquid/vapor separators;
- Catalytic oxidation (Catox) unit for VOC removal;
- Acid-gas scrubber for HCL removal; and
- Brine management system.

Initial mechanical shakedown of the treatment system was successfully completed in the winter of 1999 and mechanical performance testing was partially completed by April 2000. Complete system testing was delayed as the system was forced to operate in batch mode while the PRPs attempted to demonstrate compliance with Surface Water Discharge Criteria (SWDC) for treated groundwater. Specifically SWDC for aluminum, zinc, and four SVOCs were not met during initial batch scale testing. To address this issue the PRPs, the EPA, and the RIDEM agreed to extend the startup period to facilitate full-scale system testing. The SVE system would not run during this initial startup period.

The MOM remedy component and groundwater portion of the Source Control remedy commenced continuous operation in March 2001. From March 2001 through August 2001, the PRPs implemented a series of tests and plant modifications to achieve aluminum and zinc surface-water-discharge criteria. Continued weekly monitoring of groundwater treatment system process water has shown the system is meeting all required SWDC, including the four SVOCs that initially did not meet SWDC, with occasional inorganic exceedances. The occurrence of these exceedances was remedied with further system optimization and maintenance. Significant modification to the 100 Percent Design groundwater treatment system was not required.

The SVE portion of the Source Control remedy commenced continuous operation on November 13, 2001. Monthly process vapor samples collected from the SVE system demonstrated that applicable maximum allowable stack concentrations (MASCs) were being met by the system.

In the summer of 1998, the Army Corps of Engineers performed PCB soil removal in accordance with the 1993 ROD under an Interagency Agreement with the EPA and under a mixed-work agreement provision of the Consent Decree The objective was to define the extent of the PCB contamination in the surface soil in four known locations of the site, excavate all contaminated soil above the site-specific cleanup level of 1.3 parts per million (ppm) based on protection of environmental receptors, and dispose of the contaminated soil off-site. The excavation and stockpiling of approximately 1,350 cubic yards of soil was completed on September 1, 1998. Following stockpile sampling for characterization, the contaminated soil was transported and disposed of at an off-site facility in November and December 1998.

The PRPs began developing the Institutional Controls Plan (ICP) in 1996, with the final Draft Institutional Controls Plan submitted to the EPA on March 20, 2000, and approved by the EPA March 30, 2000. The ICP established the institutional control limits for controlling contact with soil, groundwater and surface water. The ICP requires that Environmental Land Use Restrictions (ELURs) be placed on property owned by four private parties. Institutional controls implementation commenced prior to final ICP approval and included expanding the source area fence to include all portions of the source area remedy, installing fences around MOM wells located outside the source area fence, placing warning/informational signs on the source area fence and adjacent to portions of the surface water bodies covered by institutional controls, and initiating negotiations with four property owners to place ELURs on their properties. ELURs are in place on the property owned by four private parties as required by the ICP.

4.4 Operable Unit 2 System Operations and Maintenance

4.4.1 Historic Remedy Operations and Maintenance

The MOM remedy and dewatering portion of the source control remedy commenced full-scale operation March 2001. The SVE portion of the source control remedy commenced full-scale operation November 2001 and ran in various configurations to optimize TVOC removal until the SVE system was shutdown on September 11, 2006. Progress and changes in the configuration and operation of the primary remedy components since the submittal of the previous Five Year Report are

summarized below.

Source Control Remedy

In general, from start-up of the SVE system in November 2001, the SVE system was configured to maximize mass removal from the subsurface across all trenches by maximizing air flow from the SVE wells that demonstrated the highest VOC concentrations. This successful operating approach was continued until January 22, 2004 when a series of operating modifications, including air injection and reduced extraction air flow configurations, were implemented to evaluate the optimization of system performance in consideration of groundwater mounding and energy usage. On December 14, 2004, the SVE system treatment train and wellfield were reconfigured to a focused extraction flow configuration with ambient air injection in the Northwest Trench. For this focused flow configuration, 38 SVE wells and 11 air injection wells were activated as primary wells while an additional set of 5 to 10 wells were run on an intermittent basis. The reconfigured operation allowed for the same air flow through the soil, but at a lower vacuum while focusing air flow in those areas that demonstrated the highest concentrations of VOCs in soil. This reconfiguration included taking the catalytic oxidation (CatOx)/acid gas scrubber air treatment unit offline and replacing it with a heat exchanger and a vapor phase granular activated carbon based off gas control system.

In August 2003, an exploratory boring program was initiated in the West Trench to allow an evaluation of SVE effectiveness in the West Trench in accordance with the provisions of the Compliance Monitoring Plan (CMP). The evaluation of soil data collected from the boring program allowed the refinement of the SVE Closure program conceptualized in the CMP. Additional evaluations were performed to assess the progress of the SVE remedy in the West, Northwest and Northeast Trenches in 2004, 2005 and 2006. Based on these results, and after approval by EPA and RIDEM, the operation of the SVE system was suspended on a sequential basis. In September 2004, the operation of the SVE wells in Area 2 and Area 3 of the West Trench was suspended and the operation of the remaining SVE wells in the West Trench was suspended on October 31, 2005. The SVE system continued to run in the Northeast and Northwest trenches in the focused flow configuration, rotating sets of 5-10 intermittent wells into and out of extraction every two weeks, until SVE operation was suspended site-wide on September 11, 2006. Dewatering operations in the Northeast and Northwest Trenches were shutdown on October 16, 2006. Source Remedy evaluations and closure approach are presented in the Draft SER – Phase I (ESS, June 2006) and Draft SER – Phase II (ESS, March 2007). The shutdown of the source remedy was approved by the EPA and RIDEM in a correspondence dated September 18, 2006; achieving the ROD soil cleanup levels was still required.

Groundwater Treatment System and MOM Remedy

The groundwater treatment system was operated in the 100% Design Configuration until October 6, 2003. On October 6, 2003, as a result of the decrease in influent organic loading, the operation of the UV/OX and the peroxide destruction units (PDUs) were suspended. The PDU vessels were cleaned and re-filled with virgin grade liquid phase granular activated carbon (LGAC) and put online in series at the "end-of-pipe" as a final polish prior to discharge to the Unnamed Swamp.

On December 10, 2004, the groundwater treatment system was reconfigured to bypass the air

stripper. On April 11, 2005, the LGAC units were replaced with two new 2,000 pound fiberglass units. On May 5, 2005, a second pair of bag filters was placed in parallel with the two existing units on the inlet of the lead LGAC. These bag filters were run in manual mode until June 22, 2005 when automatic controls were installed.

Dewatering operations in the Northeast and Northwest trenches were suspended on October 16, 2006, as recommended in the Draft System Evaluation Report – Phase I. Select dewatering wells (seven wells) in the Northwest Trench remained in operation in accordance with the Draft System Evaluation Report Recommendation Implementation Work Plan (ESS, September 26, 2006 (Draft SER Work Plan)).

To improve the performance of the MOM remedy, two new MOM Wells (EW-305 and EW-306) were installed and developed in the Northwest Plume in November 2006 as proposed in the Draft SER Work Plan. Groundwater extraction from these wells began in December 2006.

In August 2009, two additional MOM wells (EW-307 and EW-308) were installed and developed at the base of the Northeast Trench and in the MW-28 Area to optimize performance of the MOM remedy. On August 25, 2009, the active well configuration was changed in accordance with the May 27, 2009, Preliminary MOM Optimization & Alternative Discharge Letter. The optimized configuration included four MOM wells (EW-304, EW-305, EW-307 and EW-308) and three Northwest Trench source area wells (ED-216, ED-217, and ED-249).

On April 29, 2010, the air stripper was reactivated due to detections of methylene chloride in the effluent samples. In April 2011, the treatment system control computer and supervisory control and data acquisition (SCADA) system was replaced to improve system monitoring and data collection.

4.4.2 Current MOM Remedy Operation and Maintenance

As of September 20, 2012, the MOM remedy was shutdown in accordance with the Revised Draft Source Assessment and Shutdown Test Work Plan, dated June 2012. The purpose of the shutdown is to evaluate non-pumping groundwater conditions at the Site. As indicated in the plan, re-start of the groundwater extraction and treatment system will occur one year following the initiation of the shutdown test (i.e., in September 2013) unless unexpected conditions leads to an earlier re-start.

From August 25, 2009 until initiation of the shutdown test on September 20, 2012, the pumping configuration included three Northwest Trench source area pumping wells and four MOM wells. Two MOM wells are piped directly to the influent holding tank for flow and chemical equalization. The two new MOM wells and the active source area pumping wells discharge to the satellite groundwater transfer stations (GWTS-3). The transfer station conveys the Site groundwater to the influent holding tank and then into the groundwater treatment system. The treated effluent flows down the gravity sewer line to a surface water discharge outfall at the Unnamed Swamp.

Operations and maintenance activities are monitored and reported to the EPA in accordance with the current Operation and Maintenance Plan (Woodard & Curran, March 31, 2010), the Compliance Monitoring Plan (ESS, June 13, 2003 as revised) and the SER Work Plan. The frequency of

monitoring has been reduced since the SVE and dewatering systems have been shut down and is limited to physical (water levels) and chemical (via both field instruments and laboratory) analysis of groundwater, surface water, process water, sediments, and sludge.

Remedy performance is summarized in Quarterly Performance Monitoring Reports prepared by the PRPs. These reports were submitted through September 2012 groundwater treatment system operation. Because the extraction system is not operational during the shutdown test, the submittal of Quarterly Performance Monitoring Reports was suspended until system re-start.

Prior to 2011, interpretation of system monitoring data and important events at the Site were detailed in Semi-Annual Remedy progress monitoring (SAR) Reports. Beginning in 2011, these progress monitoring reports are completed annually instead of semi-annually. Groundwater monitoring events are performed semi-annually to monitor trends in groundwater contaminants and are detailed in Semi-Annual Monitoring Event Reports. Also included in these reports are the results of the annual residential well monitoring program. Select surface water and sediment samples at the Site are collected as required and the results are also summarized in Semi-Annual Monitoring Event Reports. Status and effectiveness of institutional controls at the Site are reviewed on an annual basis and are summarized in Institutional Control Plan (ICP) status reports.

Treatment system performance is reported in Quarterly and Annual (formerly Semi-Annual) Reports. Based on review of these reports, the current groundwater treatment system train was sufficient in removing site contaminants as the system continues to meet the applicable Rhode Island SWDC for VOCs, SVOCs, inorganics, pesticides, and PCBs. As documented in a Quarterly Report, treatment system effluent in Fall 2011 contained bis(2-chloroethyl)ether at a concentration up to 1.2 ug/L, which exceeds the SWDC of 1.0 ug/L. The increased concentration of this compound in the influent was attributed to groundwater extracted via the two new MOM wells (EW-307 and EW-308) and an overall reduction in influent flow. System maintenance and modifications, including restart of the air stripper, was conducted to address the bis(2-chloroethyl)ether presence. The air stripper was cleaned and the airflow through the unit was increased by adjusting the blower. Effluent sample analytical results collected after the optimization activities described above measured an improvement in the removal efficiency of bis(2-chloroethyl)ether. The air stripper continued to operate in this higher airflow configuration and performance improved prior to system shutdown.

Analysis of site data within the Quarterly Performance Monitoring Reports and Remedy Progress Reports results in the following conclusions:

- The MOM system maintains hydraulic control of the 1 ppm TVOC plume (the Concentrated Plume);
- The groundwater treatment system continues to meet the treatment standards, although the efficiency and effectiveness of the metals removal system is decreased during periods of low groundwater extraction rates attributable to a seasonal drop in the water table; and
- VOC concentrations in the Dilute Plume are generally stable or decreasing.

System and Site maintenance is continuously performed in accordance with the O&M Plan. System maintenance includes pump and pipe servicing to maintain flows, tank and piping inspections to identify possible leaks, and treatment system maintenance to ensure performance. Site maintenance includes grass cutting, snow plowing, road grading, erosion and sedimentation control device inspections and maintenance, and fence maintenance. In addition the integrity of all system and monitoring well points are inspected on an annual basis.

The following table summarizes the PRPs' actual O&M costs. The ROD estimated the total O&M costs would be $11,400,000. Through December 2012, the actual total cost of O&M has been $17,902,000.

Table 2
PRPs' O&M Costs

Dates		Actual Total Costs	Notes
From	To		
March 2001	February 2002	$3,730,000	MOM and dewatering commenced 3/01 SVE operation commenced 11/01
March 2002	February 2003	$3,210,000	
March 2003	February 2004	$2,390,000	
March 2004	February 2005	$2,100,000	
March 2005	February 2006	$1,410,000	
March 2006	February 2007	$1,230,000	Site-wide SVE shutdown 9/06 Dewatering suspended 10/06
March 2007	February 2008	$1,010,000	
March 2008	December 2008	$ 682,000	Ten month period
January 2009	December 2009	$ 550,000	
January 2010	December 2010	$ 570,000	
January 2011	December 2011	$ 540,000	
January 2012	December 2012	$ 480,000	Ten months operation; Treatment system shutdown September 20, 2012
	TOTAL	$17,902,000	

The presented costs do not include any closure related costs. According to the PRPs, the underestimated costs in the ROD can be attributed to increased efforts required to achieve inorganic Surface Water Discharge Criteria (SWDC), the number of components in the initial groundwater treatment train, increased monitoring effort (treatment system and groundwater), the number of open work plans not finalized prior to initiating O&M, level of reporting, and inflation (ROD estimated costs are from 1993 and have not been adjusted to represent present value). In particular, the increase in utility costs has had a significant bearing on the system operational costs. Despite a significant

reduction in electricity consumption as a result of SVE system shutdown and groundwater treatment system optimization, electricity costs have not significantly decreased and remain greater than those in the original remedy estimates. Similarly, propane costs for heating the building have also risen significantly.

Since MOM optimization in August 2009, which included well field reconfiguration and reducing pumping conditions to a minimum flow rate that maintains hydraulic containment of the Concentrated Plume while providing optimal TVOC mass removal, yearly O&M costs have begun to decrease. The decrease in costs can be attributed to the reduced amount of preventative and routine maintenance required under these operating conditions. A full time operator is no longer needed. Treatment chemical consumption and waste disposal costs have also decreased as a result. In addition, a new SCADA system enables an operator to access the system controls and fix problems remotely.

4.5 CERCLA Response Actions

In 1999, during the SVE system piping installation, an area of hazardous material consisting of elongated lumps of white to slightly gray, solid, firm textured material (the "epoxy waste" material), and grossly contaminated soil was uncovered in what is now the West Leg of the Northwest Trench. In order to install the piping, approximately 250 cubic yards of this material was excavated and disposed of at a hazardous waste incinerator. The remaining waste material was left in place and temporarily capped with asphalt.

On September 25, 2002, EPA Region 1 signed an Action Memorandum for removal of the epoxy waste. The Action Memorandum required the delineation, excavation, sampling, and off-site disposal of the epoxy material and grossly contaminated soil. Following the Respondents' submittal of a formal application for preauthorization for mixed funding, EPA Region 1 signed an Administrative Order on Consent between EPA and the Respondents on December 5, 2002. An Interim Work Plan (ESS) was submitted to the EPA on December 24, 2002. Following initial field testing, the Finalized Work Plan (ESS) was submitted to the EPA March 12, 2003.

The first fieldwork completed was the temporary disconnection of the SVE system in the work area. Excavation work was performed from May through June, 2003. Approximately 2,300 tons of waste was excavated and loaded into 116 lined intermodal shipping containers for off-site disposal. After the epoxy waste material was removed, the excavation was backfilled and the SVE system restored. A Construction Completion Report (ESS) was submitted to the EPA on August 1, 2003 summarizing the Picillo Waste Removal Actions. As of November 6, 2003, the date of the Final Inspection conducted by the RIDEM and the EPA, the SVE system and appurtenances had been put back on-line and the excavation area had been sufficiently restored as described in the Picillo Waste Removal Completion of Work Report submitted to the EPA on November 17, 2003.

5.0 PROGRESS SINCE LAST FIVE-YEAR REVIEW

The July 2008 five-year reviews for the Site, recommended several actions that were followed-up during

the current review period. These recommendations along with the follow up activities completed and status are summarized below.

- *Evaluate additional treatment system O&M optimization, including alternate discharge option, and remedy implementation optimization*

Optimization of the treatment system O&M was evaluated through consideration of an alternative to the metals pretreatment system. A pilot study evaluating green sand filtration as an alternative was conducted in 2010. The pilot study focused on the removal of iron, manganese and total suspended solids (TSS) from the process water. Overall, the green sand filter effectively removed iron and TSS from the influent stream; however, the green sand system did not effectively remove manganese to a concentration below the surface water discharge criteria. Therefore, green sand was not selected as an effective alternative to the current metals pretreatment system.

MOM operation was optimized in August 2009 in accordance with the Preliminary MOM Optimization & Alternative Discharge Letter, dated May 29, 2009, with the startup of two new MOM wells (EW-307 and EW-308) and the suspension of pumping from four MOM wells and three Source Area wells. This configuration was intended to maintain hydraulic containment of the Concentrated Plume while providing an optimized approach for mass removal. As reported in Annual and Semi-Annual Remedy Progress Reports, MOM operation under this configuration did maintain hydraulic control of the Concentrated Plume. In addition, TVOC concentrations in groundwater decreased in the Northeast Trench and MW-28 areas. For example, at wells MW-107BRS (Northeast Trench) and MW-101BRS (MW-28 Area), the TVOC concentrations have decreased from more than 5,000 ug/L to less than 150 ug/L since MOM optimization in 2009. At the same time, the reduction in VOC concentrations in the Dilute Plume is evidence that MNA processes are occurring (Figure 5).

An alternative to effluent discharge using groundwater discharge into a rapid infiltration basin (RIB) was evaluated in August 2010 and July 2011. Results from the tests indicated that treatment system effluent discharge via groundwater discharge instead of surface water discharge is feasible.

- *Perform groundwater fate and transport modeling to assess plume longevity under varying assumptions*

A groundwater fate and transport model was used to simulate future conditions at the Site. Calibration and use of the model was discussed with EPA and RIDEM in a series of meetings in 2010 and 2011. In October 2011, a Groundwater Flow and Solute Transport Modeling Report prepared by Gradient Corporation was submitted to the Agencies. This report documented construction and calibration of the model and addressed topics raised during the meetings.

An outcome of the meetings was the agreement to undertake an assessment of residual source material in the vicinity of the MW-85 in the Northwest Trench and a shutdown test to observe plume migration in a non- pumping scenario. These activities were presented in the Draft Source Assessment and Shutdown Test Work Plan, dated June 2012. Source assessment activities were conducted in August and September 2012, and the shutdown test was initiated on September 20, 2012. Data collection and interpretation are ongoing. Data collected during the source assessment and shutdown test is being used

to refine the groundwater flow and solute transport model. Use of the model to evaluate MNA processes and an estimated timeframe for achieving remedy objectives will be conducted after completion of model refinement.

- *Confirm that concentrations of contaminants of concern observed in the northwest portion of the Concentrated Plume are stable or declining*

As presented in the MW-28 Area Report dated June 2013, assessment activities were conducted to monitor concentrations of contaminants of concern in the MW-28 Area. Activities included groundwater elevation gauging, semi-annual groundwater sampling, and construction of a MOM well (EW-308) in the MW-28 area. The data collected from these activities demonstrate that the concentrations of contaminants of concern observed in the northwest portion of the Concentrated Plume are stable or declining.

6.0 FIVE-YEAR REVIEW PROCESS

This section describes activities performed during the five-year review process and provides a summary of findings when appropriate.

6.1 Administrative Components

The Picillo Farm Superfund Site Five Year Review was conducted by EPA Region 1 with analysis provided by Woodard & Curran, Inc., the contractor for the PRPs. On April 2, 2013 EPA held a conference call with Woodard & Curran to discuss the Picillo Farm Superfund Site Five Year Review.

6.2 Community Involvement

Recently the community interest in the Site has been low. No inquiries were received by the EPA in response to the Five Year Review public notice.

A public meeting to update the public on the progress at the Site was held on November 13, 2008 at the Greene Public Library in Greene, Rhode Island. The meeting was coordinated through the Roaring Brook Watershed Association which received EPA's Technical Assistance Grant (TAG) in the past. The objective of the meeting was to provide the public with an update on Site activities. At the meeting, the local residents requested assessment of groundwater conditions near Whitford Pond and at the western extent of the dilute plume to understand current conditions. Wells MW-40A and MW-40B (adjacent to Whitford Pond) and wells MW-69 and MW-70 (western extent of dilute plume) were sampled during the Spring 2009 sampling event. TVOC were not detected in groundwater samples collected at MW-40A and MW-40B. TVOC concentrations of 2 ug/L were detected in the groundwater samples collected at both MW-69 and MW-70; this concentration is less than TVOC detections previously measured at these locations. Subsequent groundwater monitoring in Fall 2009 and Spring 2010 confirmed these results.

The Town of Coventry approved a Power Purchase Agreement in June 2012 for the installation of two wind turbines on a portion of the town's parcel located within the Site. Construction of the wind

turbines on the town's parcel (outside the fenced area) is planned in 2013.

All residents near the site rely on private drinking water wells in the aquifer. Approximately 40 residences in the vicinity of the Site participate in the annual residential well testing program. EPA distributes results of these tests to individual home owners on a yearly basis. The results of the residential sampling are also presented in the most recent Spring 2012 Groundwater Monitoring Report (Woodard & Curran, October 2012). EPA and the State provide information letters to prospective home buyers in the vicinity of the Site and to residents seeking refinancing upon request. Testing of these drinking water wells has not found any Site-related contamination to date.

Copies of the Five Year Review are being placed in the information repositories, including the Coventry Public Library. Copies of established and recorded land usage restrictions are available at the Coventry Land Records.

6.3 Site Inspection and Interviews

The Site inspection was led by Anna Krasko, the EPA Remedial Project Manager (RPM) for the Site, on April 17, 2013. Lou Maccarone, RIDEM Project Manager for the Site, assisted in the review as the representative for the support agency. A representative of the Town of Coventry also participated. At the time of the Site inspection, the groundwater shutdown test was ongoing. Therefore, no groundwater extraction was occurring and the groundwater treatment system was not operating. The inspection included a walkthrough of the treatment building, observation of the integrity and wear of the protective caps over the source area Northeast, Northwest, and West trenches, and security and condition of the source area fence line. No problems were observed. Copies of established and recorded land use restrictions are available at the Coventry Land Records.

Operation and maintenance of the Site is reviewed in regular conference calls between EPA, RIDEM and the PRPs' consultants. During the ongoing groundwater shutdown test, these conference calls have reviewed recently collected data from the shutdown test. In addition, the PRP Group's Project Coordinator and Project Engineer were interviewed during site inspection for this Five Year Review to provide an understanding of the testing and future operational plan issues that might require documentation in this Five Year Review report.

6.4 Document Review

Major reports consulted as part of this review are listed in the Reference Section. Quarterly, semi-annual, and annual reports to assist in evaluating system performance and an annual review of the institutional controls are performed by the PRPs. Report formats are optimized when necessary to ensure appropriate and relevant information is both documented and reported. No significant issues relating to document and data reporting were discovered during this five-year review.

6.5 Data Review

Data are regularly collected in accordance with the Compliance Monitoring Plan (CMP), O&M Plan, and other work plans generated in accordance with the Consent Decree's Statement of Work. Data

are reported in Quarterly, Semi-Annual, and Annual reports. System operating data are included in the Quarterly Performance Monitoring reports. System performance and compliance is summarized in Remedy Progress Monitoring reports written annually since 2011. Prior to 2011, the Remedy Progress Monitoring reports were written semi-annually. The results of Site-wide monitoring activities are presented in Semi-Annual Monitoring Event reports.

Quarterly Performance Monitoring reports have not been prepared since the July 2012-September 2012 Quarterly Performance Monitoring Report, submitted on January 25, 2103, due to the shutdown of the MOM remedy. The submission of quarterly reports will remain suspended until the re-start of the MOM remedy which is scheduled for September 2013.

Hydraulic Containment Assessment

The system performance was evaluated to determine whether the groundwater extraction program achieves hydraulic control of the 1 ppm TVOC plume (see Figures 2 and 3), thereby isolating the source area and concentrated groundwater plume from the dilute groundwater plume. Results of this evaluation are summarized below.

1. Converging lines of evidence indicate that under the MOM-only operating conditions (with operation of three Northwest Trench source area wells) conducted prior to the shutdown test, the groundwater extraction system has maintained hydraulic containment of the current and historic 1 ppm TVOC plume laterally and vertically in the Northwest and Southwest plumes. This conclusion is supported by the general decline of TVOC concentrations within all of the monitoring wells at the downgradient well groups based on historic and recent monitoring data. During the shutdown test, TVOC concentrations have increased directly downgradient of well MW-85 in the Northwest Trench (see Figure 4). This change supports the conclusion that the MOM-only operations were hydraulically containing the 1 ppm TVOC plume in the vicinity of MW-85.

2. Hydraulic and groundwater quality data collected within the MW-28 Area continues to support the conclusion that hydraulic containment of the MW-28 Area is being maintained. The MW-28 Area is located in the northeastern portion of the Northwest Plume.

3. Data from the Southwest Plume continues to suggest that ongoing natural attenuation processes are effectively reducing groundwater concentration in this area of the Site. For example, a reduction in TVOC concentrations within the Southwest Plume since 2002 has been observed at overburden wells MW-33 (282 ug/L to 26 ug/L) and MW-70 (14 ug/L to 2 ug/L and shallow bedrock wells MW-45 (68 ug/L to 25 ug/L) and MW-69 (70 ug/L to 4 ug/L). This is a continuation of the groundwater and surface water quality improvements observed before the active remedy was implemented.

4. Based on the results of the evaluations completed during this review period, it is concluded that the MOM and Northwest Trench pumping well system that was in operation prior to shutdown, was providing hydraulic containment in accordance with the requirements of the CMP. As a result, no further enhancements to the MOM extraction system are warranted. After the expected MOM system restart in September 2013, the system will be required to meet the same hydraulic containment objectives as was occurring prior to the shutdown test.

VOC Reduction in the Dilute Plume Area

In general, the monitored natural attenuation rates within Dilute Plume monitoring wells have remained relatively consistent since 2002 (see Figure 5). Data from the most recent sampling event, the Fall 2012 event, identified limited exceedances of the Interim Groundwater Cleanup Levels (IGCL) at the Dilute Plume monitoring locations. For example, tetrachloroethylene was detected in groundwater sampled from well MW-45 at a concentration of 8 ug/L (IGCL of 5 ug/L) and benzene was detected at SBR-1 at a concentration of 8.2 ug/L (IGCL of 5 ug/L). Semi-annual monitoring of Dilute Plume monitoring wells, in accordance with the CMP, continues.

During the shutdown test, there has been no change in the extent of the Dilute Plume. Contaminant concentrations at the majority of monitored locations within the Dilute Plume have also remained stable. For example, stable contaminant concentrations have been measured during the shutdown test at well clusters MW-92, MW-93, and MW-102 in the Northwest Plume and well clusters MW-96 and MW-97 in the Southwest Plume. A small increase in TVOC concentration (about 10 to 15 ug/L) has been measured during the shutdown test at well clusters MW-46/ORW-1 (Northwest Plume) and MW-33/45 (Southwest Plume).

Groundwater Treatment System Discharges

The standards for determining groundwater treatment compliance are the Surface Water Discharge Criteria (SWDC) established in accordance with applicable RIDEM regulations. In general, the groundwater treatment system has been effective at meeting the applicable SWDC for all organic constituents, including VOCs, SVOCs, pesticides and PCBs, with the exception of bis(2-chloroethyl)ether in September and December 2011 and methylene chloride in February 2010. These exceptions were attributed to the addition of MOM wells EW-307 and EW-308 and a reduction in the overall influent flow. System maintenance and modifications were completed to address the issue, including reactivating the air stripper. The air stripper was cleaned and the airflow through the unit was increased by adjusting the blower. Results of the post cleaning and airflow increase samples indicated an improvement in the removal efficiency of bis(2-chloroethyl)ether and methylene chloride. The air stripper continued to operate in this higher airflow configuration and performance improved prior to the recent system shutdown test.

The groundwater treatment system has been effective at meeting the applicable SWDC for all inorganic constituents with the exception of aluminum and iron for a portion of 2011. This exception was attributed to a reduction in the efficiency of the metals removal system during periods of low influent flow rates (less than 6 gallons per minute). Maintenance activities, including pump and treatment system cleaning, were conducted, and treatment system performance improved.

MOM optimization and the reduction in size of the Concentrated Plume have resulted in a decreased rate of groundwater extraction from about 20 to 25 gpm (prior to August 2009) to about 5 to 10 gpm (following MOM optimization in August 2009). Because the groundwater treatment system was designed to handle higher influent flows, the system is less effective at addressing inorganic constituents at the optimized influent rates. Modification of treatment system operation and

maintenance, including initiation of groundwater discharge instead of surface water discharge, is planned to address this issue in the near future upon system restart.

Groundwater treatment discharge compliance samples will continue to be collected on a quarterly basis and will be validated once per calendar year. Results will continue to be reported in Quarterly reports once the system is restarted.

Surface Water and Sediment Monitoring

Surface water monitoring is performed on an annual basis. More extensive sampling is performed every five years and includes sediment sampling and testing. Results from the latest sampling events for surface water (2012) and sediment (2009) are described below:

1. During recent monitoring events (2008 to 2012), all detected VOC and SVOC concentrations were below the applicable surface water cleanup levels, including samples collected from two upland seep locations.
2. The most recent sediment sampling within the Unnamed Swamp detected VOCs and SVOCs similar to the compounds detected in nearby groundwater monitoring wells. The detected concentrations were either less than or within the range of historic results for these locations.

7.0 TECHNICAL ASSESMENT OF REMEDY

7.1 Question A

Is the remedy functioning as intended by the decision documents?

OU1 – Yes. EPA certified completion of this work in February 1990.

OU2 – Yes. Remedy performance evaluations indicate that the remedy has functioned and continues to function as designed. The system was confirmed to be operational and functional as documented in the EPA-approved Interim Remedial Action Completion Report (ESS, August 30, 2005).

- **Source Control:** The SVE performed well in its nearly five years of operation and is estimated to have removed over 40,000 pounds of volatile organic compounds (VOCs) and semi-volatile organic compounds. Dramatic decreases in groundwater VOC concentrations have been observed over most of the Site as a result of the Source Remedy operations. In both the West and Northeast Trenches, the Source Remedy generally achieved its remedial objective of removing VOCs from soils to prevent further degradation of groundwater quality.

  The SER Phase I concluded that despite enhancements to both the dewatering and soil vapor extraction portions of the system, it is technically impracticable to achieve the CMP closure criteria in the Northwest Trench. This is due primarily to the presence of VOCs in saturated zone overburden heterogeneous soils in the Northwest Trench in an area that is technically infeasible to dewater. It was therefore recommended that operation of this portion of the Source Remedy be suspended, which occurred in September 2006.

Source assessment activities were conducted in 2012 to evaluate the presence of residual VOCs in soil in the area around well MW-85 in the Northwest Trench. The results of this assessment will be used in a Focused Feasibility Study. It is premature at this time to determine whether additional Source Remedy needs to be implemented at the Site. If additional Source Remedy needs to be implemented, EPA will issue an appropriate decision document at that time. As indicated in the 1993 ROD, if following a reasonable period of the system operation the selected remedy is determined to be unable to achieve cleanup levels, EPA may consider contingency measures as a modification to the selected remedy.

The OU2 remedy includes multiple components in addition to the SVE. The status of the other components of the remedy are summarized below.

- **Management of Migration**: The objective of the MOM remedy is to provide hydraulic containment of the area of groundwater defined as the Concentrated Plume (total volatile organic compounds (TVOC) >/= 1 milligram per liter [mg/L]). Operation of the MOM remedy, which consists of a groundwater pump and treat system, was commenced in March 2001 and was ongoing through this reporting period until September 20, 2012 when a shutdown test was initiated. During operation of the MOM remedy, the groundwater extraction system maintained hydraulic containment of the current and historic 1 mg/L TVOC plume laterally and vertically in the Northwest and Southwest plumes. Upon completion of the shutdown test, the MOM remedy is anticipated to be restarted in September 2013 in order to maintain hydraulic containment at the Site.

- **Natural Attenuation**: The Dilute Plume remedy consists of natural attenuation of the impacted groundwater beyond the Concentrated Plume areas. Monitoring wells in the Dilute Plume region are monitored on an annual basis as part of the ongoing Semi-Annual monitoring program and the resultant data is used to assess VOC trends. Based on monitoring data, natural attenuation is occurring in the Dilute Plume region. These evaluations are being performed in accordance with the CMP and are ongoing.

- **Institutional Controls**: Institutional controls were identified as being required for soil, groundwater and surface water. As of February 2005, all required institutional controls (environmental land usage restrictions in Rhode Island) are in place. An annual institutional controls status report is prepared to ensure the ongoing effectiveness of the Institutional Controls and to research land use changes within the restricted areas in accordance with the requirements of the USEPA-approved Institutional Controls Plan (ICP; Environmental Project Control [EPC], 2000). These activities are ongoing.

- **Long-term Monitoring**: Long-term monitoring of groundwater and surface water is required to document the performance of the multi-component remedy in accordance with the CMP. The Semi-Annual Monitoring Program also includes the periodic sampling of residential wells and sediment.

Figures 2 and 3 – Present a general Site plan and delineations over time of the Concentrated Plume Areas (> 1 mg/L TVOC) in 1998, 2002, 2007, and 2012 for the overburden and shallow bedrock. The figures show the extent of the Concentrated Plume has decreased. Previous delineations of the

Southwest Concentrated Plume are not included as there is no Concentrated Plume currently in this portion of the Site.

Figure 4 – Presents a general Site plan and delineation of the Concentrated Plume Areas (>1 mg/L TVOC) in the Fall 2012 (Pre-Shutdown) and Spring 2013 (Post-Shutdown) for the overburden and shallow bedrock. The figure shows the increase of the Concentrated Plume extent after the groundwater system shutdown in September 2012.

Figure 5 – Presents Monitored Natural Attenuation Trends in Concentration vs. Time plots for the time period 2001 - 2012 for selected VOCs in eleven bedrock monitoring wells in the Northwest, Southwest and West Plumes. The concentration trend lines generally show decrease in contaminant concentrations over time.

Figure 6 – This figure, which was also included in the Fourth Five Year Review Report, presents the SVE system influent TVOCs and SVE system cumulative mass removed via volatilization versus time during the operation of the SVE system through September 2006. As shown, the vast majority of VOC mass removal via volatilization occurred within the first two months of operation.

Figure 7 – Presents Total VOC and SVOC Groundwater Influent Concentrations and shows how influent concentration levels have decreased over time through August 2012. The rise in concentration in early 2010 is attributed to MOM optimization and startup of groundwater extraction from wells EW-307 and EW-308.

System O&M

Preventative maintenance procedures are routinely performed to maintain the effectiveness of response actions and to reduce the amount of unexpected system downtime, which has been minimal.

System monitoring is performed and the data is used to adjust system-operating parameters. Environmental data are collected in accordance with the Compliance Monitoring Plan and the O&M Plan to evaluate remedy effectiveness. Both are adequate.

Since MOM optimization in August 2009, which included the addition of two MOM wells and suspension of pumping from four other MOM wells and resulted in a reduction of the overall extraction system flow rate, yearly O&M costs have declined. The decrease in costs can be attributed to the reduced amount of preventative and routine maintenance required under these operating conditions. Treatment chemical consumption and waste disposal costs have also decreased as a result.

Opportunities for treatment system optimization identified in the 2008 Five Year Review Report, such as determining whether metals pre-treatment can be eliminated, reducing the amount of energy consumption/evaluate new sources of energy to operate equipment, rearranging the process equipment to reduce heating costs, and changing treatment system effluent discharge from a surface water location to a ground surface location effluent, have been assessed as described previously in

this report.

Further optimization will continue to be evaluated and implementation of system modifications is planned to address issues related to the decreased influent rate resulting from the MOM optimization and reduction in size of the Concentrated Plume.

Vapor Intrusion

In November 2012, USEPA published a Supplement to the "Comprehensive Five-Year Review Guidance" titled Assessing Protectiveness at Sites for Vapor Intrusion, (OSWER Directive 9200.2-84). This supplemental guidance provided recommendations for assessing the protectiveness of a remedy for vapor intrusion at Superfund sites. Prior five-year reviews did not specifically evaluate the vapor intrusion exposure at the Site. Because there are no potential receptors (i.e. buildings) in the area where vapor-forming chemicals are present in the subsurface, the vapor intrusion exposure pathway at the Site is incomplete. The implemented remedy addresses the presence of vapor-forming chemicals by containing the Concentrated Plume.

7.2 Question B

Are the exposure assumptions, toxicity data, cleanup levels, and remedial objectives (RAOs) used at the time of the remedy selection still valid?

OU1 - Yes.

OU2 – Yes. There have been no significant changes in the Site setting and surrounding land use which would affect exposure assumptions and Remedial Action Objectives (RAOs) developed in the 1993 ROD and hence, the protectiveness of the remedy.

The soil and groundwater cleanup levels established in the 1993 ROD were designed to control the principal threats to human health and the environment and to protect groundwater in the aquifer as a source of potable water. Groundwater at the Site, however, is not currently used as a current source of potable water. Interim groundwater cleanup levels were based on (1) EPA Maximum Contaminant Levels (MCLs) and non-zero Maximum Contaminant Level Goals (MCLGs), which were established as ARARs in the 1993 ROD, or (2) risk-based concentrations where MCLs/MCLGs were not available. Soil cleanup levels were established using a leaching model designed to be protective of potable groundwater. Rhode Island Ambient Water Quality Criteria (AWQCs) were ARARs for surface water bodies near the Site; these criteria and MCLs were primarily used to establish surface water cleanup levels.

MCLs, AWQCs, and toxicity values for most of the contaminants of concern (COCs) have not changed since issuance of the 1993 ROD. The changes for a few COCs that have occurred are not anticipated to affect the overall protectiveness of the remedy. The following sections describe these changes for each medium (groundwater, soil and surface water).

Groundwater: Interim Cleanup Levels

There has been no change to the MCL or MCLGs for all compounds listed in the 1993 ROD except for the following compound:

Chloroform: The previous MCL was 100 ug/L. An MCLG of 70 ug/L has been established. An MCL of 80 ug/L applies to total trihalomethanes which includes chloroform and 3 other trihalomethanes (http://water.epa.gov/drink/contaminants/basicinformation/disinfectionbyproducts.cfm). Chloroform is only detected in groundwater at one location (MW-85) at a concentration greater than the MCLG of 70 ug/L.

The ROD cleanup level for manganese is risk-based. Toxicity information has changed since issuance of the ROD, as documented in the 2008 five-year review. Also, EPA issued a Drinking Water Health Advisory for manganese in 2004, which recommended a lifetime health advisory value for manganese of 300 ug/L

Toxicity information for all contaminants will be updated at the completion of the remedy.

Soil: Cleanup Levels

Soil Cleanup Levels were established using a leaching model to calculate concentrations that would be protective of the aquifer due to the potential for leaching of contaminants from soil to groundwater. There have been no changes in soil conditions at the Site that would change the basis of the leaching model used to calculate these Soil Cleanup Levels. Potential changes to interim cleanup levels for contaminants in groundwater are not anticipated to have significant impacts on the protectiveness of the corresponding soil cleanup levels or the remedy.

Surface Water: Cleanup Levels

The 1993 surface water cleanup levels were compared to current MCLs, RI AWQC, and EPA National Recommended Water Quality Criteria (NRWQC).. The majority of the ROD surface water cleanup levels remain consistent with current state and federal criteria, with the following exceptions listed in Table 4.

Table 4
Surface Water Cleanup Levels

Compound	Cleanup Level (1993 ROD - basis, ug/L))	Current Standard (ug/L)	Current Basis
1,2-Dichloroethane	5 (MCL)	3.8	RI AWQC
Vinyl Chloride	2 (MCL)	0.025	RI AWQC
Aluminum	748 (AWQC)	750/87 (acute/chronic)	RI AWQC
Manganese	180 (HH)	300	Health Advisory

1,2-DCA and vinyl chloride were not detected in surface water monitoring in 2012.

Surface Water Discharge Criteria

SWDC for the treatment system are generally based on ambient water quality criteria (AWQC) established in the RIDEM Water Quality Regulations (August 26, 1997, updated May, 2009). However, Site specific SWDC were established for the six compounds listed in the following table. These Site specific SWDC were established to reflect laboratory Method Detection Limits (MDLs) and were approved in a June 18, 1999, RIDEM letter. RIDEM agreed that the MDLs were sufficiently close to the established SWDC for each of the compounds listed below. Table 5 shows the AWQC for Class A water bodies presented in the Water Quality Regulations, the current site-specific SWDC and the associated ROD surface water cleanup levels.

Table 5
Site Specific Surface Water Discharge Criteria

Compound	RIDEM Water Quality Regulations AWQC (ug/L)	Site Specific SWDC (ug/l)	ROD Surface Water Cleanup Level (ug/l)
1,1,2,2-Tetrachloroethane	1.7	2.0	None
Bis(2-Chloroethyl)ether	0.3	1.0	None
Pentachlorophenol*	2.7	2.0	None
Methoxychlor	None	0.12	0.1
Thallium	0.24	1.2	None
Vanadium	None	2	None

* Using default hardness of 25 mg/l as $CaCO_3$ and values from Table 2 Appendix B, RIDEM Ambient Water Quality Criteria and Guidelines for Toxic Pollutants (May, 2009)

Summary

MCLs, AWQCs, and toxicity values for most of the COCs have not changed since issuance of the 1993 ROD. It is premature at this time to decide whether the changes to a few COCs values need to be adopted as protective cleanup levels for surface water and ground water. It is recommended that adoption of appropriate protectiveness levels be evaluated in decision documents to be developed when effectiveness of the remedy to achieve the overall remediation objectives is evaluated.

7.3 Question C

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

OU1 and OU2 - No other information has been discovered that would adversely affect the protectiveness of the remedy.

Vapor Intrusion

Because there are no potential receptors (i.e. buildings) in the area where vapor-forming chemicals are present in the subsurface, the vapor intrusion exposure pathway is incomplete, and the protectiveness of the remedy is not impacted.

7.4 Technical Assessment Summary

According to the data reviewed, the Site inspection, and the interviews, the SVE system functioned essentially as designed during its operation and the MOM is currently meeting its design performance objective of containing the concentrated portion of the plumes.

There have been no changes in the physical conditions of the Site since the prior five-year review that would change the protectiveness of the remedy.

8.0 ISSUES

OU1 - None

OU2 - Based upon the above the following issues were identified that might impact the ability of the remedy to be protective in the long-term or serve as early indicators of potential remedy problems.

Table 6
Issues Identified

Issues	Affects Current Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
Assess probable groundwater plume longevity	No	No*
Assess ability to achieve performance standards	No	No*

* It is premature to determine if these issues will affect future protectiveness of the remedy.

9.0 RECOMENDATIONS FOR FOLLOW-UP ACTIONS

For each issue identified, the following table documents recommend follow-up actions.

Table 7
Recommendations and Follow-Up Actions

Issue	Recommendations/ Follow-Up Actions	Party Responsible	Oversight Agency	Milestone Date	Follow-Up Actions: Affects Protectiveness (Y/N)	
					Current	Future
Assess probable plume longevity	Perform groundwater fate and transport modeling to assess plume longevity under varying assumptions	PRP Group	EPA/RIDEM	6/30/14	No	No*
Assess ability to achieve performance standards	Perform Focused Feasibility Study to evaluate remedy options	PRP Group	EPA/RIDEM	6/30/15	No	No*

* It is premature to determine if these issues will affect future protectiveness of the remedy.

10.0 PROTECTIVENESS STATEMENT

OU1 involved the excavation and off-Site disposal of stockpiled soil that was completed in 1989. Residual PCB impacted surficial soil associated with these stockpiles was removed by EPA as part of OU2 in 1998. Based upon these actions, the remedy for OU1 is protective of human health and the environment.

OU2 protects human health in the short-term through implementation of various response actions, the placement of Institutional Controls, and the physical control of Site access. The 1993 ROD determined that the response actions that are in the process of being implemented would be protective in the long term to human health and the environment. However, in order for the remedy to be protective in the long-term, the clean-up levels in the 1993 ROD, or alternative clean-up levels that are demonstrated to be equally protective, have to be met to ensure long-term protectiveness.

Overall, the remedy at the Site is protective in the short-term. In order for the remedy to be protective in the long-term, the clean-up levels in the 1993 ROD, or alternative clean-up levels that are demonstrated to be equally protective, have to be met to ensure long-term protectiveness.

11.0 NEXT REVIEW

The next five-year review for the Picillo Farm Superfund Site is required five years from the date of signature of this Five Year Review report.

12.0 REFERENCES

Comprehensive Five-year Review Guidance, U.S. EPA, OERR, June 2001

Construction Completion Report, Envirogen, March 29, 2000.

Draft 30 Percent Design Report, HSI GeoTrans, September 16, 1997.

Draft 60% Design Report, Envirogen/Woodward-Clyde, March 2, 1998

Draft Compliance Monitoring Plan, Environmental Science Services, Inc, June 13, 2003 as revised through December 2004.

Draft Operation and Maintenance Plan, Woodard & Curran, March 31, 2010.

Draft Institutional Controls Plan, Environmental Project Control, March 20, 2001.

Draft Final Work Plan, Picillo Waste Removal Action, Environmental Science Services, March 12, 2003.

Draft Spring 2008 Monitoring Event Report, ESS Group, September 4, 2008.

Draft Fall 2008 Monitoring Event Report, Woodard & Curran, April, 2009.

Draft Spring 2009 Monitoring Event Report, Woodard & Curran, September 2009.

Draft Fall 2009 Monitoring Event Report, Woodard & Curran, April 2010.

Draft Spring 2010 Monitoring Event Report, Woodard & Curran, October 2010.

Draft Fall 2010 Monitoring Event Report, Woodard & Curran, April 2011.

Draft Spring 2011 Monitoring Event Report, Woodard & Curran, October 2011.

Draft Fall 2011 Monitoring Event Report, Woodard & Curran, April 2012.

Draft Spring 2012 Monitoring Event Report, Woodard & Curran, October 2012.

Draft Fall 2012 Monitoring Event Report, Woodard & Curran, May 2012.

Draft Fourteenth Semi-Annual Remedy Progress Monitoring Report, Woodard & Curran, January 2009.

Draft Fifteenth Semi-Annual Remedy Progress Monitoring Report, Woodard & Curran, August 2009.

Draft Sixteenth Semi-Annual Remedy Progress Monitoring Report, Woodard & Curran, February 2010.

Draft Seventeenth Semi-Annual Remedy Progress Monitoring Report, Woodard & Curran, April 2011.

Draft Eighteenth Semi-Annual Remedy Progress Monitoring Report, Woodard & Curran, May 2011.

Draft Nineteenth Semi-Annual Remedy Progress Monitoring Report, Woodard & Curran, August 2011.

Draft Twentieth Semi-Annual Remedy Progress Monitoring Report, Woodard & Curran, August 2012.

Draft System Evaluation Report - Phase I, ESS Group, June 30, 2006.

Draft System Evaluation Report - Phase II, ESS Group, March 16, 2007.

Draft System Evaluation Report Recommendations Implementation Work Plan, ESS Group, September 26, 2006.

Drinking Water Health Advisory for Manganese, U.S. EPA, January 2004.

Five Year Review, Source Control Remedy, U.S. EPA, May 1993.

Five Year Review, Picillo Farm Superfund Site, U.S. EPA, May 1998.

Five Year Review, Picillo Farm Superfund Site, U.S. EPA, July 2003.

Five Year Review, Picillo Farm Superfund Site, U.S. EPA, July 2008.

Final 100% Design Report, Envirogen/Woodward-Clyde, October 5, 1998.

Groundwater Flow and Solute Transport Modeling Report, Gradient Corporation, August 2011.

Institutional Controls Seventeenth Report, Woodard & Curran, May 2012

Draft MW-28 Report, Woodard & Curran, July 2013

Interim Remedial Action Completion Report, ESS, August 30, 2005

Operation and Maintenance Plan, Envirogen, May 12, 2000 as revised by Environmental Science Services, Inc. through December 2004.

Picillo Waste Removal Completion of Work Report, ESS Group, Inc. November 17, 2003

United States Environmental Protection Agency Administrative Order on Consent. US EPA Region 1 CERCLA Docket No. 01-2003-0007.

United States Environmental Protection Agency Decision Document, Preauthorization of a CERCLA Section 111(a) Claim. Signed by Region 1, Regional Administrator, November 13, 2002.

United States Environmental Protection Agency Preliminary Close Out Report, Signed by Region 1, Regional Administrator, September 3, 2003.

United States Environmental Protection Agency RD/RA Consent Decree. Signed by Region 1, Regional Administrator October 25, 1995 and entered by the Court on October 9, 1997.

ATTACHMENT A

SITE INSPECTION CHECKLIST

Site Inspection Checklist

I. SITE INFORMATION	
Site name: Picillo Farm Superfund Site	**Date of inspection: April 17, 2013**
Location and Region: Coventry, RI; Region 1	**EPA ID: RID980579056**
Agency, office, or company leading the five-year review: EPA Region 1	**Weather/temperature: Clear, 60°'s**

Remedy Includes: (Check all that apply)

- ☐ Landfill cover/containment
- ☐ Access controls
- ☒ Institutional controls
- ☐ Groundwater pump and treatment
- ☐ Surface water collection and treatment
- ☒ Other soil vapor extraction – operation suspended
- ☒ Monitored natural attenuation
- ☒ Groundwater containment
- ☐ Vertical barrier walls

Attachments: ☒ Inspection team roster attached ☒ Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M site manager** Sean Driscoll (Name) Engineer (Title) 4/17/13 (Date)
   Interviewed ☐ at site ☐ at office ☒ by phone Phone no. 401-273-1007
   Problems, suggestions; ☐ Report attached Seeking ways to further optimize treatment system

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

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

Agency Town of Coventry
Contact Bob Joyal (Name) | Town Engineer (Title) | 4/17/13 (Date) | 401-822-9182 (Phone no.)
Problems; suggestions; ☐ Report attached _____

Agency Rhode Island Department of Environmental Management
Contact Lou Maccarone (Name) | Sr. Engineer (Title) | 4/17/13 (Date) | 401-222-2797 ext 7142 (Phone no.)
Problems; suggestions; ☐ Report attached _____

Agency _____
Contact _____ (Name) | _____ (Title) | _____ (Date) | _____ (Phone no.)
Problems; suggestions; ☐ Report attached _____

Agency _____
Contact _____ (Name) | _____ (Title) | _____ (Date) | _____ (Phone no.)
Problems; suggestions; ☐ Report attached _____

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

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

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

   Remarks _____

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

   Remarks _____

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

   Remarks _____

4. **Permits and Service Agreements**
   - ☐ Air discharge permit — ☐ Readily available — ☐ Up to date — ☒ N/A
   - ☒ Effluent discharge — ☒ Readily available — ☒ Up to date — ☐ N/A
   - ☐ Waste disposal, POTW — ☐ Readily available — ☐ Up to date — ☒ N/A
   - ☐ Other permits _____ — ☐ Readily available — ☐ Up to date — ☒ N/A

   Remarks _____

5. **Gas Generation Records** — ☐ Readily available — ☐ Up to date — ☒ N/A

   Remarks _____

6. **Settlement Monument Records** — ☐ Readily available — ☐ Up to date — ☒ N/A

   Remarks _____

7. **Groundwater Monitoring Records** — ☒ Readily available — ☒ Up to date — ☐ N/A

   Remarks _____

8. **Leachate Extraction Records** — ☐ Readily available — ☐ Up to date — ☒ N/A

   Remarks _____

9. **Discharge Compliance Records**
   - ☒ Air — ☒ Readily available — ☒ Up to date — ☐ N/A
   - ☒ Water (effluent) — ☒ Readily available — ☒ Up to date — ☐ N/A

   Remarks Operation of component of system with air discharge terminated 9/06

10. **Daily Access/Security Logs** — ☒ Readily available — ☒ Up to date — ☐ N/A

    Remarks _____

IV. O&M COSTS

1. **O&M Organization**

☐ State in-house ☐ Contractor for State
☐ PRP in-house ☒ Contractor for PRP
☐ Federal Facility in-house ☐ Contractor for Federal Facility
☐ Other _____

2. **O&M Cost Records**

☐ Readily available ☒ Up to date
☐ Funding mechanism/agreement in place
Original O&M cost estimate $11,400,000 over 20 years from ROD ☐ Breakdown attached

Total annual cost by year for review period if available

From 3/08 Date	To 12/08 Date	$682,000 Total cost	☐ Breakdown attached
From 1/09 Date	To 12/09 Date	$550,000 Total cost	☐ Breakdown attached
From 1/10 Date	To 12/10 Date	$570,000 Total cost	☐ Breakdown attached
From 1/11 Date	To 12/11 Date	$540,000 Total cost	☐ Breakdown attached
From 1/12 Date	To 12/12 Date	$480,000 Total cost	☐ Breakdown attached

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

Describe costs and reasons: Utility and system monitoring costs

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

A. Fencing

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

Remarks Fencing in good condition

B. Other Access Restrictions

1. **Signs and other security measures** ☐ Location shown on site map ☐ N/A

Remarks Required signs posted. Checked annually

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

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

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

Type of monitoring (*e.g.*, self-reporting, drive by) PRP lead, field visits, public record review

Frequency Annually

Responsible party/agency PRP Group

Contact Peter Nangeroni (Name) Project Coordinator (Title) 4/17/13 (Date) 781-251-0200 (Phone no.)

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

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

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

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

Other problems or suggestions: ☐ Report attached

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

Remarks

D. General

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

Remarks

2. **Land use changes on site** ☒ N/A

Remarks

3. **Land use changes off site** ☒ N/A

Remarks

VI. GENERAL SITE CONDITIONS

A. Roads ☒ Applicable ☐ N/A

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

Remarks

B. Other Site Conditions

Remarks _____

_____

_____

_____

_____

_____

VII. LANDFILL COVERS ☐ Applicable ☒ N/A

A. Landfill Surface

1. **Settlement** (Low spots) ☐ Location shown on site map ☐ Settlement not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

2. **Cracks** ☐ Location shown on site map ☐ Cracking not evident
   Lengths_____ Widths_____ Depths_____
   Remarks_____
   _____

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

4. **Holes** ☐ Location shown on site map ☐ Holes not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

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

6. **Alternative Cover (armored rock, concrete, etc.)** ☐ N/A
   Remarks_____
   _____

7. **Bulges** ☐ Location shown on site map ☐ Bulges not evident
   Areal extent_____ Height_____
   Remarks_____
   _____

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

Remarks_____

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

B. Benches ☐ Applicable ☒ N/A
(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

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

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

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

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

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

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

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

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

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

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

D. Cover Penetrations ☐ Applicable ☒N/A

1. **Gas Vents** ☐ Active ☐ Passive
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance
☐ N/A
Remarks_____

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

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

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

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

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

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

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

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

F. Cover Drainage Layer ☐ Applicable ☒ N/A

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

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

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

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

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

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

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

H. Retaining Walls ☐ Applicable ☒ N/A

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

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

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

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

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

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

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

VIII. VERTICAL BARRIER WALLS ☐ Applicable ☒ N/A

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

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

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

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

1. **Pumps, Wellhead Plumbing, and Electrical**
   ☒ Good condition ☐ All required wells properly operating ☐ Needs Maintenance ☐ N/A
   Remarks Shutdown test ongoing at time of site inspection

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   ☒ Good condition ☐ Needs Maintenance
   Remarks

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

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

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

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

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

C. Treatment System ☒ Applicable ☐ N/A

1. **Treatment Train** (Check components that apply)
   ☒ Metals removal ☐ Oil/water separation ☐ Bioremediation
   ☒ Air stripping ☒ Carbon adsorbers
   ☐ Filters ___ particulate ___
   ☒ Additive (*e.g.*, chelation agent, flocculent) ___ flocculent ___
   ☐ Others ___
   ☒ Good condition ☐ Needs Maintenance
   ☒ Sampling ports properly marked and functional
   ☒ Sampling/maintenance log displayed and up to date
   ☒ Equipment properly identified
   ☒ Quantity of groundwater treated annually approximately 4,000,000
   ☐ Quantity of surface water treated annually ___
   Remarks ___

2. **Electrical Enclosures and Panels** (properly rated and functional)
   ☐ N/A ☒ Good condition ☐ Needs Maintenance
   Remarks ___

3. **Tanks, Vaults, Storage Vessels**
   ☐ N/A ☒ Good condition ☒ Proper secondary containment ☐ Needs Maintenance
   Remarks ___

4. **Discharge Structure and Appurtenances**
   ☐ N/A ☒ Good condition ☐ Needs Maintenance
   Remarks ___

5. **Treatment Building(s)**
   ☐ N/A ☒ Good condition (esp. roof and doorways) ☐ Needs repair
   ☒ Chemicals and equipment properly stored
   Remarks ___

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

D. Monitoring Data

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

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

D. Monitored Natural Attenuation

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

☒ Properly secured/locked ☒ Functioning ☒ Routinely sampled ☒ Good condition
☒ All required wells located ☐ Needs Maintenance ☐ N/A
Remarks

X. OTHER REMEDIES

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

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

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

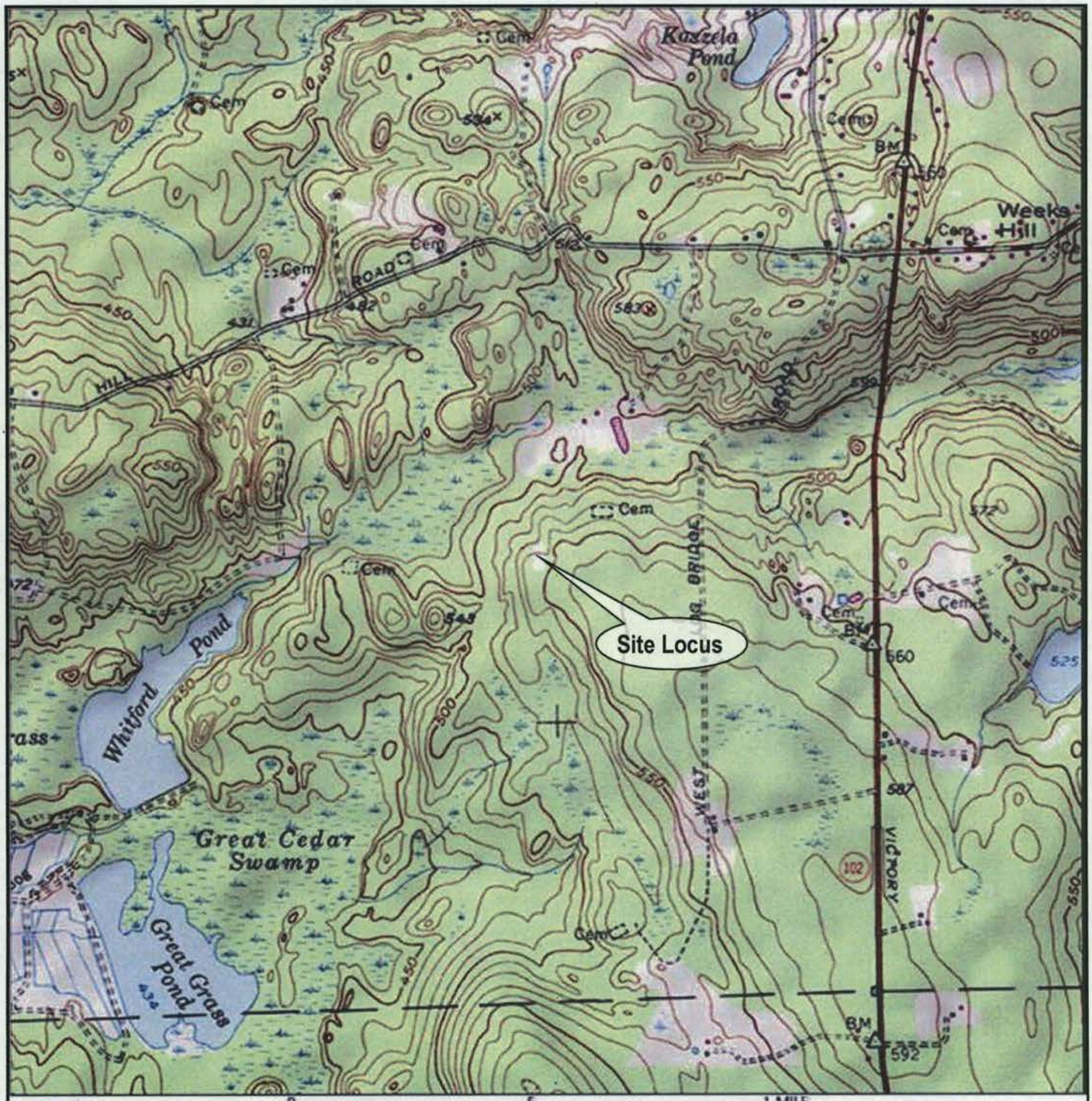
The remedy's goal is to protect human health and the environment through a combination of the source control and management of migration remedies. In the short term, the remedy is effective through source control (SVE suspended), management of migration (groundwater pump and treat) and natural attenuation along with placement of Institutional Controls and physical control of Site access until long term cleanup goals are met. A shutdown test ongoing at the time of the site inspection is intended to evaluate non-pumping groundwater conditions at the Site. No issues were observed at the Site inspection relative to remedy function or effectiveness.

B. Adequacy of O&M

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

The remediation system has experienced unplanned shutdowns because of equipment malfunctions and electrical outages, but none of these shutdowns has significantly impacted remedy performance. O&M procedures are adequate for the current and long-term protectiveness of the remedy.

C.	**Early Indicators of Potential Remedy Problems**
	Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future. According to PRPs, utility and treatment system costs are significantly greater than the ROD estimate, even with implementation of a variety of optimization efforts. As a result of optimization, the influent flow into the treatment system has decreased but efforts required to achieve inorganic surface water discharge criteria continue to be significant due to multiple system components.
D.	**Opportunities for Optimization**
	Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy. - Implement discharge of treated effluent to groundwater via a rapid infiltration basin instead of discharge to surface water.



Base Map Source:
TOPO!™ © 2000
Wildflower Productions

LAT: 41°40'40.63"
LONG: 71°42'08.88"

DES.BY:	DR.BY: MES	CK.BY: AE

110 Piggy Lane
Coventry, RI 02816

FIGURE 1 - SITE LOCUS

SCALE: AS SHOWN	JOB NO.: 221772.05
DATE: FEBRUARY 2013	FILE NAME:

COMMITMENT & INTEGRITY
DRIVE RESULTS
WOODARD & CURRAN
980 Washington St, Suite 325
Dedham, MA 02026
T: 800.446.5518

Legend

MW-86 GROUNDWATER MONITORING WELL - UNCONSOLIDATED DEPOSITS

EW-305 EXTRACTION/SOURCE AREA WELL

APPROXIMATE EXTENT OF REMEDIATION AREA

ACCESS ROAD

FENCE LINE

500 GROUND SURFACE ELEVATION CONTOUR (FT, MSL)

CONCENTRATED PLUME

- 1996 ESTIMATED 1 PPM TVOC LINE
- 2002 ESTIMATED 1 PPM TVOC LINE
- 2007 ESTIMATED 1 PPM TVOC LINE
- 2012 ESTIMATED 1 PPM TVOC LINE (PRE-SHUTDOWN)

NOTES:

1. TVOC: THE SUM OF DETECTED VOLATILE ORGANIC COMPOUNDS (VOCs) AND ESTIMATED VOCs DETECTED. DOES NOT INCLUDE TENTATIVELY IDENTIFIED COMPOUNDS (TICs).

1 inch = 200 feet

0 100 200 400 600

Feet

980 WASHINGTON STREET | SUITE 325N
DEDHAM, MASSACHUSETTS 02026
800.446.5518 | www.woodardcurran.com

COMMITMENT & INTEGRITY DRIVE RESULTS

WOODARD &CURRAN

DELINEATION OF CONCENTRATED PLUME AREA - UNCONSOLIDATED DEPOSITS, 1996, 2002, 2007, 2012

PICILLO FARM SUPERFUND SITE

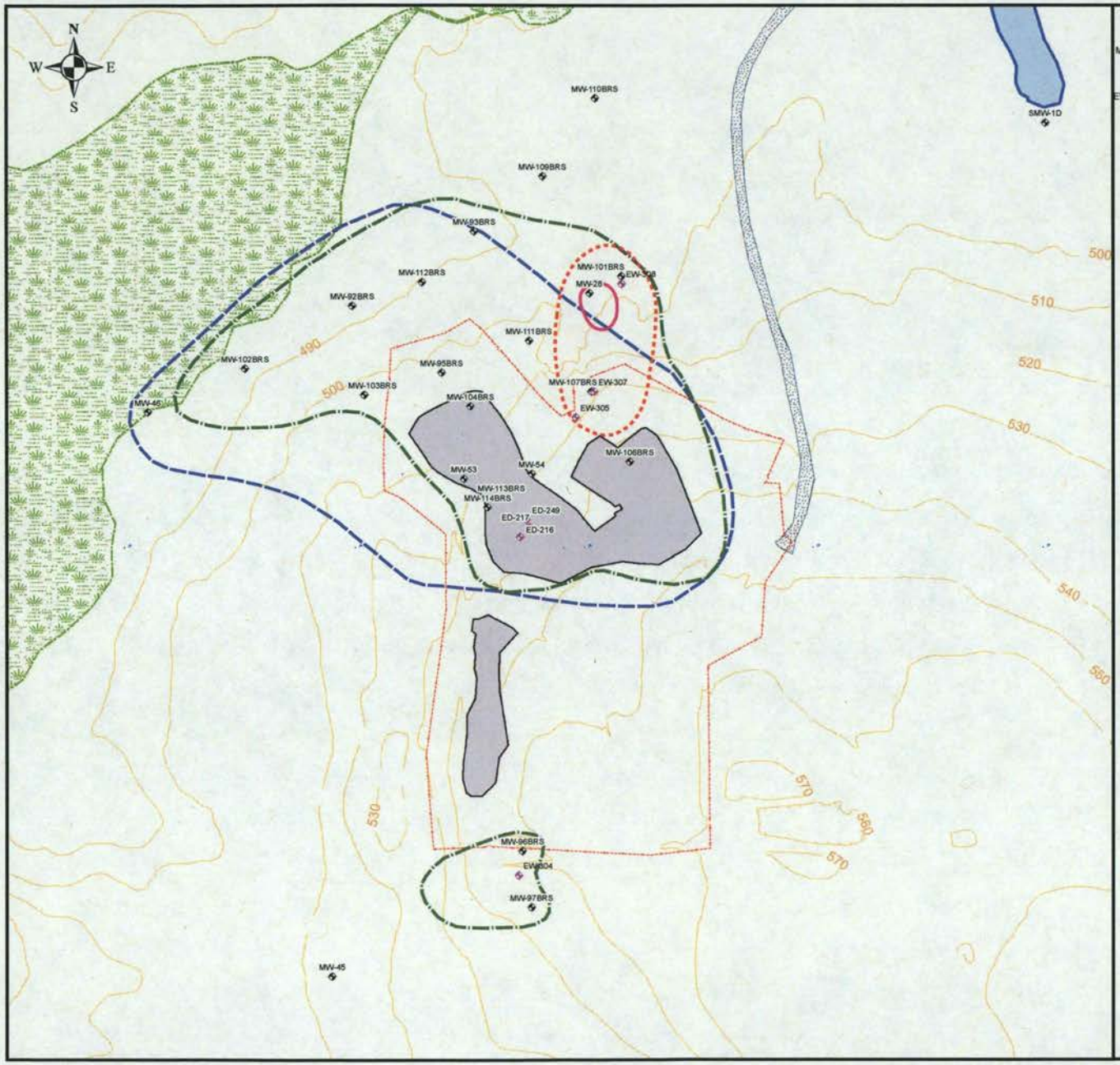
COVENTRY, RHODE ISLAND

JOB NO.: 221772

DRAWN BY: BVA

DATE: JULY 2013

FIGURE 2



Legend

MW-53 — GROUNDWATER MONITORING WELL - SHALLOW BEDROCK

EW-305 — EXTRACTION/SOURCE AREA WELL

APPROXIMATE EXTENT OF REMEDIATION AREA

ACCESS ROAD

FENCE LINE

500 — GROUND SURFACE ELEVATION CONTOUR (FT, MSL)

CONCENTRATED PLUME

- 1996 ESTIMATED 1 PPM TVOC LINE
- 2002 ESTIMATED 1 PPM TVOC LINE
- 2007 ESTIMATED 1 PPM TVOC LINE
- 2012 ESTIMATED 1 PPM TVOC LINE (PRE-SHUTDOWN)

NOTES:

1. TVOC: THE SUM OF DETECTED VOLATILE ORGANIC COMPOUNDS (VOCs) AND ESTIMATED VOCs DETECTED. DOES NOT INCLUDE TENTATIVELY IDENTIFIED COMPOUNDS (TICs).

1 inch = 200 feet

0 100 200 400 600

Feet

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WOODARD & CURRAN

COMMITMENT & INTEGRITY DRIVE RESULTS

DELINEATION OF CONCENTRATED PLUME AREA - SHALLOW BEDROCK, 1996, 2002, 2007, 2012

PICILLO FARM SUPERFUND SITE

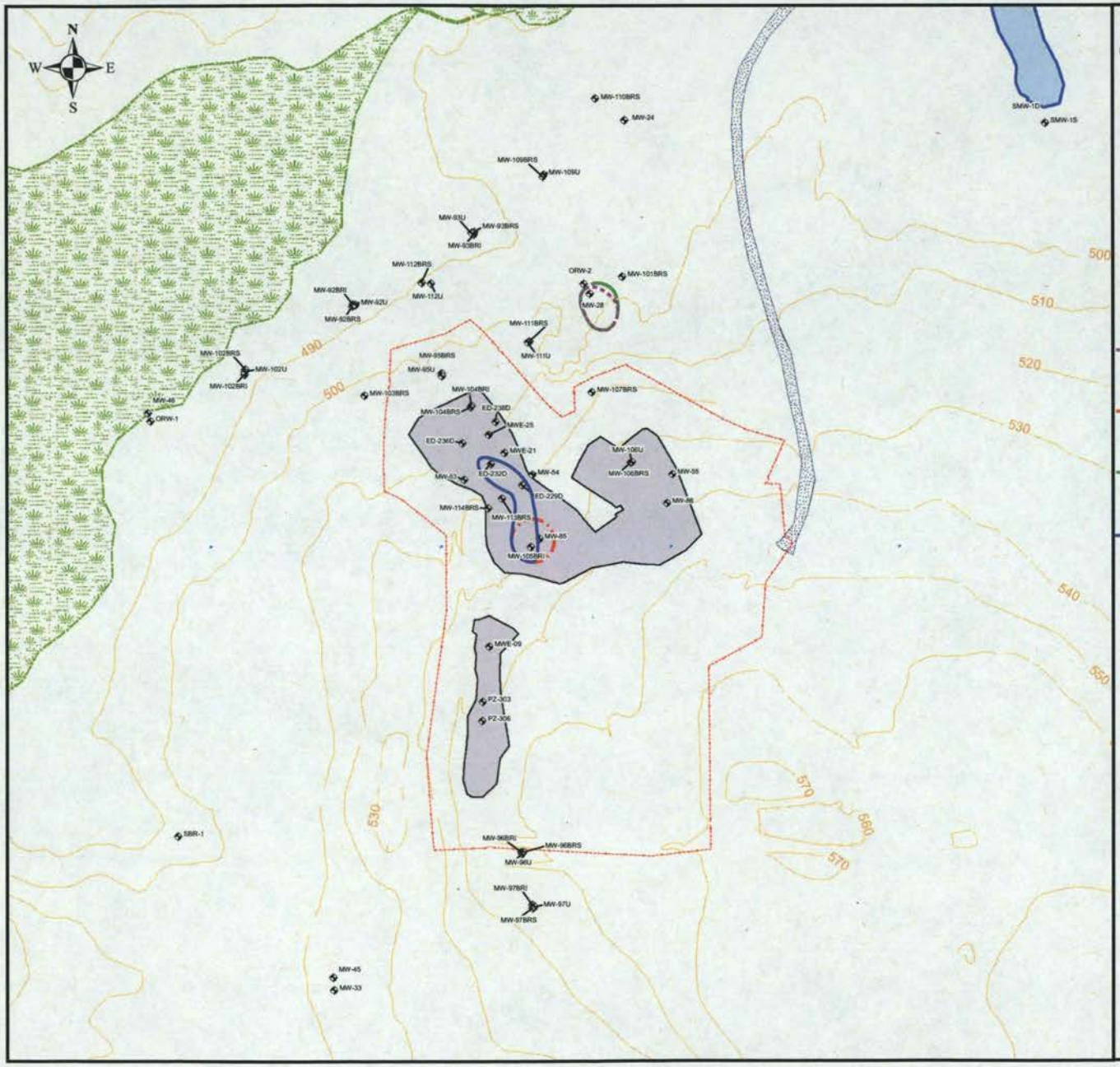
COVENTRY, RHODE ISLAND

JOB NO.: 221772

DRAWN BY: BVA

DATE: JULY 2013

FIGURE 3



Legend

- MWE-21 — GROUNDWATER MONITORING WELL
- APPROXIMATE EXTENT OF REMEDIATION AREA
- ACCESS ROAD
- FENCE LINE
- 500 — GROUND SURFACE ELEVATION CONTOUR (FT, MSL)
- CONCENTRATED PLUME DELINEATION - PREDOMINANTLY SHALLOW BEDROCK, FALL 2012 (PRE-SHUTDOWN)
- CONCENTRATED PLUME DELINEATION - SHALLOW BEDROCK AND UNCONSOLIDATED DEPOSITS, FALL 2012 (PRE-SHUTDOWN)
- CONCENTRATED PLUME DELINEATION - PREDOMINANTLY SHALLOW BEDROCK, SPRING 2013 (POST-SHUTDOWN)
- CONCENTRATED PLUME DELINEATION - SHALLOW BEDROCK AND UNCONSOLIDATED DEPOSITS, SPRING 2013 (POST-SHUTDOWN)

NOTES:

1. GROUNDWATER SAMPLES WERE COLLECTED DURING SEPTEMBER 2012 AND MAY 2013.
2. GROUNDWATER PLUMES DEPICT THE AREAS EXCEEDING 1 PPM TVOC (CONCENTRATED PLUME).
3. TVOC: THE SUM OF DETECTED VOLATILE ORGANIC COMPOUNDS (VOCs) AND ESTIMATED VOCs DETECTED. DOES NOT INCLUDE TENTATIVELY IDENTIFIED COMPOUNDS (TICs).

1 inch = 200 feet

0 100 200 400 600

Feet

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COMMITMENT & INTEGRITY DRIVE RESULTS
WOODARD & CURRAN

DELINEATION OF CONCENTRATED PLUME AREA - FALL 2012 AND SPRING 2013

PICILLO FARM
SUPERFUND SITE
COVENTRY, RHODE ISLAND

JOB NO.: 221772

DRAWN BY: BVA

DATE: JULY 2013

FIGURE 4

Figure 5
Monitored Natural Attenuation Trends
Picillo Farm Superfund Site
Coventry, Rhode Island

CONCENTRATION vs. TIME PLOTS FOR THE TIME PERIOD 2001 to 2012

SOUTHWEST PLUME	NORTHWEST PLUME	WEST PLUME
MW-45 (Bedrock) - Southwest Plume 1,2-Dichloroethane	MW-46 (Bedrock) - Northwest Plume 1,2-Dichloroethane	SBR-1 (Bedrock) - West Plume 1,2-Dichloroethane
MW-45 (Bedrock) - Southwest Plume Tetrachloroethylene	MW-46 (Bedrock) - Northwest Plume Tetrachloroethylene	SBR-1 (Bedrock) - West Plume 1,1-Dichloroethylene
MW-45 (Bedrock) - Southwest Plume 1,1,1-Trichloroethane	MW-46 (Bedrock) - Northwest Plume 1,1,1-Trichloroethane	SBR-1 (Bedrock) - West Plume Trichloroethylene
MW-45 (Bedrock) - Southwest Plume Trichloroethylene	MW-46 (Bedrock) - Northwest Plume Trichloroethylene	

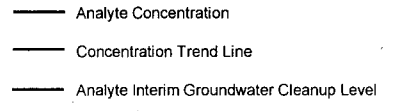

Figure 6
SVE System Mass Removal Via Volatilization and Influent TVOCs
Picillo Farm Superfund Site
Coventry, Rhode Island
November 15, 2001 - September 11, 2006

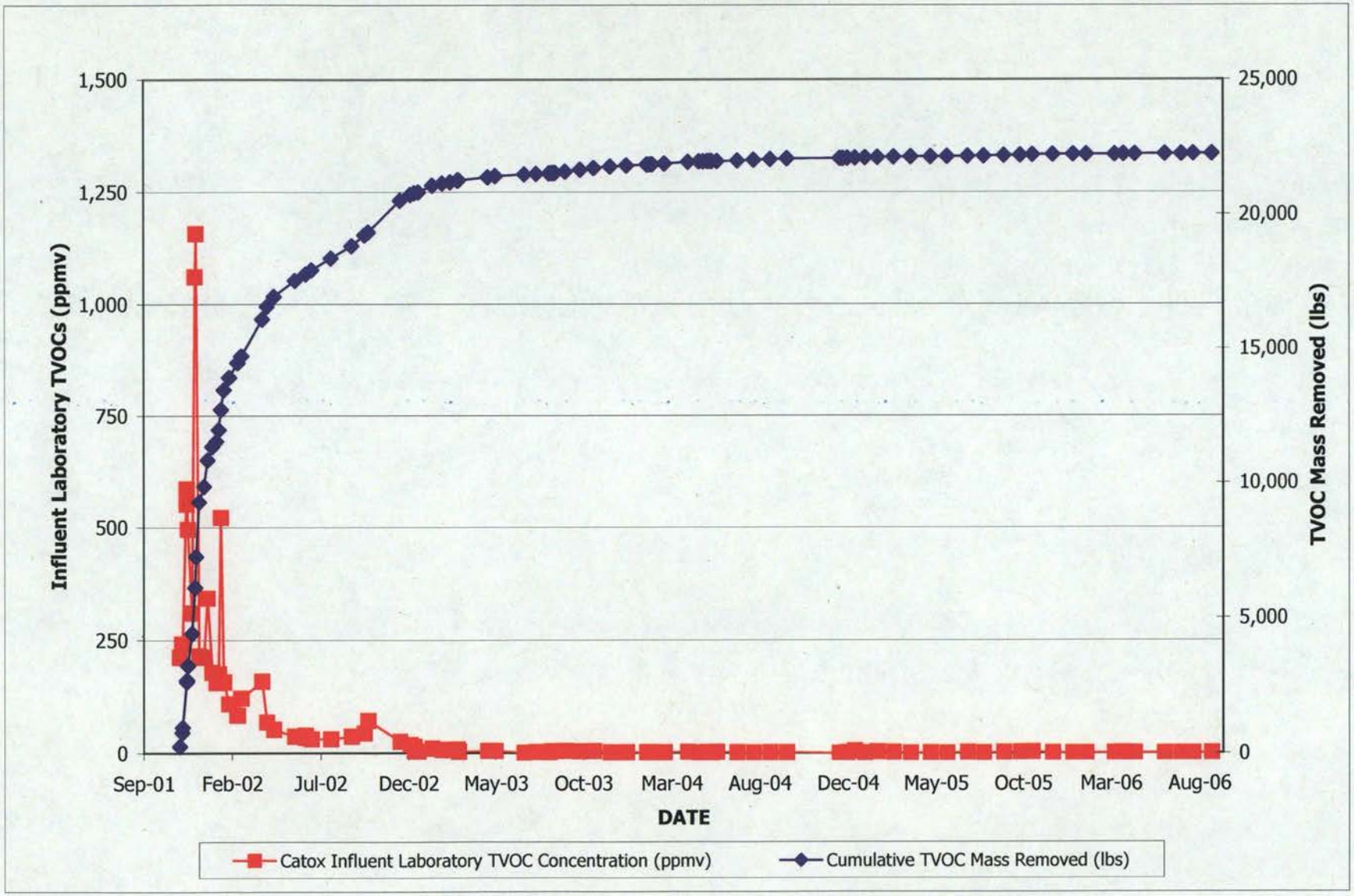

FIGURE 7
Groundwater Treatment System
Total VOC and SVOC Influent Concentrations
Picillo Farm Superfund Site
Coventry, Rhode Island
March 19, 2001 - August 29, 2012