Five-Year Review Report
Richardson Hill Road Landfill Superfund Site
Delaware County
Towns of Sidney and Masonville, New York

Prepared by:

United States Environmental Protection Agency
Region 2
New York, New York

September 2007

EXECUTIVE SUMMARY

This is the first five-year review for the Richardson Hill Road Landfill Superfund site. The site is located in the Towns of Sidney and Masonville, Delaware County, New York. Currently, the remedy is functioning as intended by the decision documents and is protecting human health and the environment.

Five-Year Review Summary Form

SITE IDENTIFICATION

Site Name *(from WasteLAN)*: Richardson Hill Road Landfill site

EPA ID *(from WasteLAN)*: NYD980507735

Region: 2	**State:** NY	**City/County:** Towns of Sidney and Masonville/Delaware County

SITE STATUS

NPL Status: ■ Final ☐ Deleted ☐ Other (specify)

Remediation Status (choose all that apply): ■ Under Construction ■ Operating ☐ Complete

Multiple OUs? ☐ YES ■ NO	**Construction completion date:** N/A

Are portions of the site in use or suitable for reuse? ■ YES ☐ NO ☐ N/A

REVIEW STATUS

Lead agency: ■ EPA ☐ State ☐ Tribe ☐ Other Federal Agency _____

Author name: Young S. Chang

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

Review period: 09/19/2002 - 09/19/2007

Date(s) of site inspection: April 9, 26, and June 26, 2007

Type of review:

☐ Post-SARA ☐ Pre-SARA ☐ NPL-Removal only
☐ Non-NPL Remedial Action Site ☐ NPL State/Tribe-lead
☐ Regional Discretion ☐ Policy ■ Statutory

Review number: ■ 1 (first) ☐ 2 (second) ☐ 3 (third) ☐ Other (specify)

Triggering action:

■ Actual RA Onsite Construction at OU #1 ☐ Actual RA Start at OU #
☐ Construction Completion ☐ Previous Five-Year Review Report
☐ Other (specify) _____

Triggering action date *(from WasteLAN)*: 09/19/2002

Due date *(five years after triggering action date)*: 09/19/2007

Does the report include recommendation(s) and follow-up action(s)? ■ yes ☐ no

Acres in use or suitable for use: **restricted:** 9.2 acres **unrestricted:** 0

Five-Year Review Summary Form (continued)

Issues, Recommendations, and Follow-Up Actions

Construction activities have not been completed at this site. There are several ongoing activities which are necessary to reach construction completion. In addition, institutional controls are part of the selected remedy and have not been fully implemented.

Since private well data downgradient of the site have not been collected since 1994, it cannot be determined whether the vapor intrusion pathway is potentially complete. Therefore, private well data should be collected. If the data show that the potential for vapor intrusion exists, this pathway should be assessed based on current scientific approaches.

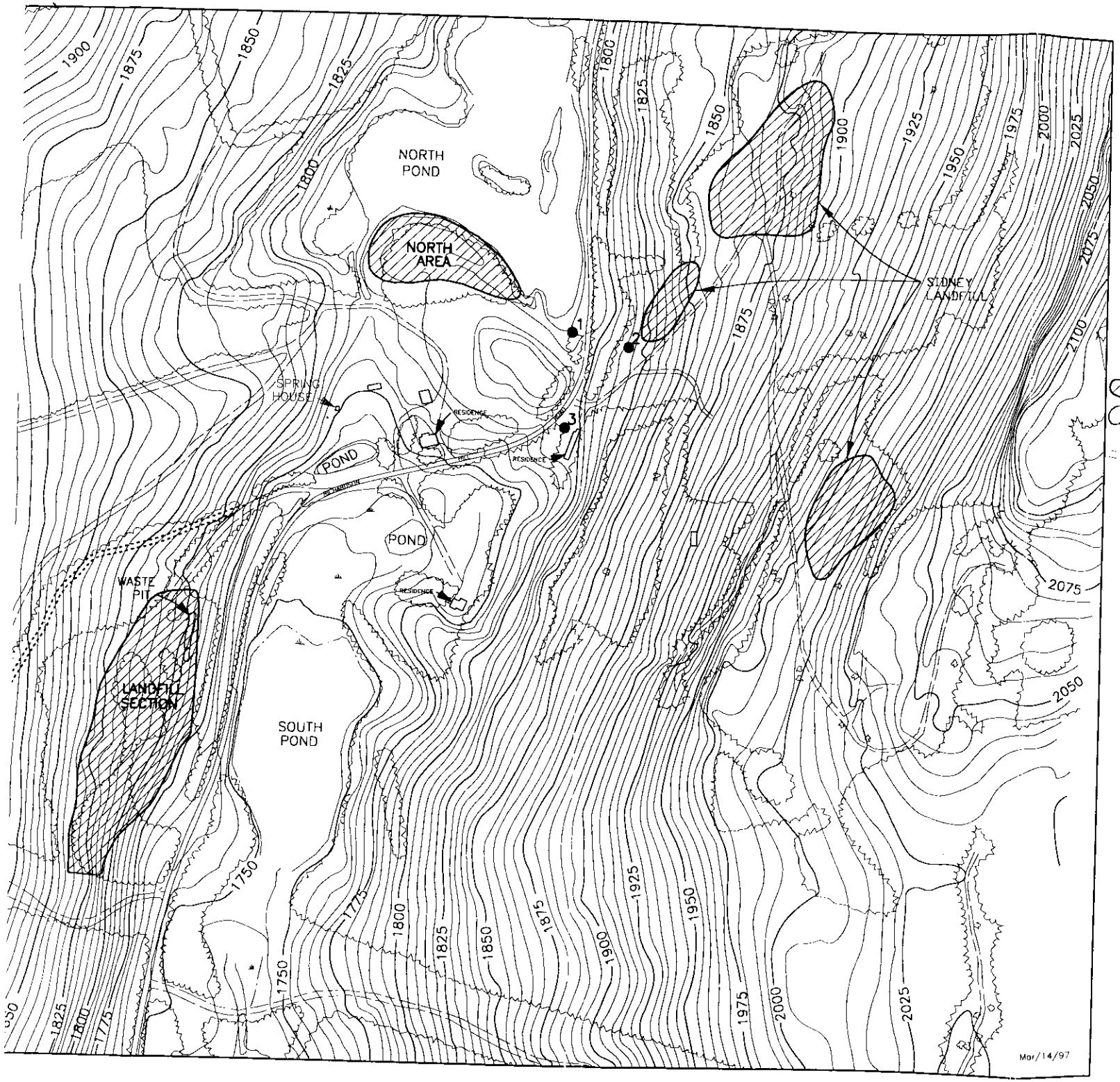
This site also has ongoing operation, maintenance and monitoring activities. As anticipated by the decision documents, these activities are subject to routine modification and adjustment. This report includes suggestions for improving, modifying and/or adjusting these activities.

New York State requires, through an annual certification process, that remedy-related operation and maintenance (O&M) is being performed. The potentially responsible parties need to provide proof that institutional controls are in place (once they are put into place) and that remedy-related O&M is being performed to meet certification requirements.

Protectiveness Statement

The implemented actions at the site protect human health and the environment in the short term; however, in order for the site to be protective in the long term, a final groundwater remedy for the eastern portion of the site needs to be implemented and institutional controls need to be fully implemented. Currently, there are no exposure pathways that could result in unacceptable risks and none are expected, as long as the site use does not change and the engineered and access controls that are currently in place continue to be properly operated, monitored, and maintained.

FIGURE 1



LEGEND

- LANDFILL SECTION
- WASTE PIT AREA
- TREE LINE
- ROADWAY
- ROAD ADJACENT STONE WALL
- ●1 SPRINGS

RICHARDSON HILL ROAD
MUNICIPAL LANDFILL SITE

SITE MAP

0 300 600

APPROX. SCALE IN FEET

3729.037-013

O'BRIEN & GERE ENGINEERS, INC.
Syracuse, New York

I. Introduction

This five-year review for the Richardson Hill Road Landfill site, located in the Towns of Sidney and Masonville, Delaware County, New York, was conducted by United States Environmental Protection Agency (EPA) Remedial Project Manager (RPM) Young S. Chang. The review was conducted pursuant to Section 121(c) of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C. §9601 *et seq.* and 40 CFR 300.430(f)(4)(ii) and in accordance with the Comprehensive Five-Year Review Guidance, OSWER Directive 9355.7-03B-P (June 2001). The purpose of five-year reviews is to ensure that implemented remedies protect public health and the environment and that they function as intended by the site decision documents. This report will become part of the site file.

In accordance with Section 1.3.1 of the five-year review guidance, a five-year review is triggered by the initiation of the first remedial action at the site that leaves hazardous substances, pollutants, or contaminants on-site above levels that allow for unlimited use and unrestricted exposure. This five-year review is triggered by the first remedial action at the site, the construction of a groundwater management system, which consists of extraction wells, a groundwater interception trench, and a groundwater treatment system. Some groundwater contamination will remain on-site. The groundwater management system construction commenced on September 19, 2002.

II. Site Chronology

Table 1 (attached) summarizes the site-related events from discovery to the present.

III. Background

Site Location

The site, located in the Towns of Sidney and Masonville, Delaware County, New York, approximately 3.3 miles south-southwest of Sidney Center, is situated on the western side of Richardson Hill Road, adjacent to the Sidney Landfill[1]. The site consists of two sections designated as the North Area and the South Area (see Figure 1).

Physical Characteristics

The South Area is comprised of an 8-acre landfill (which contains a former waste oil disposal pit), South Pond, and a portion of Herrick Hollow Creek. Surface water from the landfill drains into South Pond through a drainage ditch. Water from South Pond drains into Herrick Hollow Creek, which eventually flows into the Cannonsville Reservoir on the west branch of the Delaware River. The Cannonsville Reservoir is part of the Delaware Watershed System, supplying drinking water to

[1] The Sidney Landfill Superfund site, also a National Priorities List (NPL) site, has been remediated separately.

the New York City metropolitan area. There are numerous springs around the site, some of which eventually discharge into wetlands.

The North Area, located about 1,000 ft northeast of the landfill, includes two disposal trenches (approximately 70 ft by 70 ft) and a man-made surface water body called North Pond. The North Area is situated on a drainage divide between the Susquehanna and Delaware River basins, with the primary drainage toward the Delaware basin. Water from North Pond drains through a series of beaver dams into Carr's Creek, a tributary to the Susquehanna River.

Three residences are located between the entrances of both NPL sites, near or within the North Area. Two are located on the eastern side of Richardson Hill Road. The third residence is located on the western side of the road, directly south of the North Area.

Site Geology/Hydrogeology

The surficial geology of the region is dominated by Pleistocene-age glacial and recent alluvial sediments. The subsurface geology of the site is characterized by unconsolidated glacial deposits overlying bedrock. The unconsolidated deposits consist of soil mixed with municipal refuse in the landfill underlain by a dense reddish brown to gray glacial till. Bedrock beneath the till consists of interbedded layers of shale, siltstone, and sandstone. The depth to bedrock varies from 18 ft to 39 ft and depth to bedrock is less in the center of the valley along Richardson Hill Road. Bedrock elevations at the site decrease from west to east toward South Pond.

Groundwater exists at the site in the overburden, shallow bedrock (18 to 70 ft), and the deeper bedrock (greater than 70 ft). The overburden and shallow bedrock flow regimes appear to be hydraulically connected and isolated from the deeper bedrock groundwater flow system. Groundwater in the overburden and shallow bedrock flows toward the center of the valley, east toward South Pond and generally follows the site topography. Groundwater in the North Area flow to the north toward the North Pond.

Land and Resource Use

The area surrounding the site is rural and consists of a mixture of disturbed land, shrub land, wetland and upland forest. Land use is mixed in the vicinity of the site and zoned residential-agricultural. Approximately 50 property owners reside (part-time or permanently) within a one-mile radius of the site. The three residences within the immediate vicinity of the site (see "Physical Characteristics," above) obtain their water from private wells or springs. For further explanation of the nearby residence within the groundwater plume, see the "Site Background" section, above.

History of Contamination

The land on which the Richardson Hill Road Landfill is located was purchased by Devere Rosa, Jr. in 1964 for the purpose of operating a refuse disposal area. Devere Rosa, Sr. was issued a permit from the New York State Department of Health (NYSDOH) to operate the landfill. In July 1964, the Towns of Sidney entered into a contract with Devere Rosa, Jr. for the disposal of town wastes at the landfill, including spent oils from the Scintilla Division of Bendix Corporation. According

to New York State Department of Environmental Conservation (NYSDEC) and the NYSDOH, the Richardson Hill Road Landfill was poorly operated, with the improper compaction of waste, poor daily covering, no supervision, and uncontrolled access to the site.

Initial Response

Based on continuing violations at the landfill, NYSDOH sought to close it. On October 31, 1968, Mr. Rosa, Sr. signed an order issued against him by NYSDOH to close the landfill, however, waste disposal did not cease until 1969. In 1968, the ownership of the property containing the landfill was transferred to Joseph Del Vecchio and Robert Pacelli. In 1969 and 1970, the properties comprising the North Area were sold to John Spizziri, Sr. and Sandra S. Spizziri. In 1972, these properties were transferred to John Spizziri, Sr. and Alexandra Vitale Spizziri. Based upon the results of an EPA-performed site investigation which revealed the presence of PCBs and VOCs in sediment and water samples collected from the waste oil pit and downgradient of the pit, the site was listed on the NPL on July 1, 1987.

In 1985, NYSDOH initiated water supply sampling at several residences near and downgradient of the site. In 1994, pursuant to an order issued by EPA, two private water supplies (springs) showed site-related contamination above drinking water standards. Whole-house treatment systems were installed on these water supplies by the potentially responsible parties (PRPs), pursuant to an order. As a result of the treatment systems, the water supplies show no contamination at the point-of-use.

Basis for Taking Action

After the listing of the site on the NPL, on July 22, 1987, EPA entered into an Administrative Order on Consent (AOC), Index Number II CERCLA-70205, with Amphenol Corporation and Honeywell International, Inc. (formerly known as AlliedSignal, Inc.) (collectively formerly known as Bendix Corporation), requiring them to perform a remedial investigation and feasibility study (RI/FS) to determine the nature and extent of the contamination at and emanating from the site and to identify and evaluate remedial alternatives.

The PRPs performed the RI/FS from 1988-1997 and the final RI report and FS report were approved in March and May 1997, respectively. The results revealed the presence of polychlorinated biphenyls (PCBs) and volatile organic compounds (VOCs)in site soil, sediment, and overburden and shallow bedrock aquifers. The VOCs were predominantly trichloroethene (TCE), toluene, ethylbenzene, xylene, tetrachloroethylene (PCE), 1,1,1-trichloroethane (1,1,1-TCA), and their breakdown products, 1,2-DCE, 1,1-dichloroethene (1,1-DCE), 1,1- dichloroethane (1,1-DCA) and vinyl chloride.

In 1993, in response to a fish kill in South Pond attributable to the seep of contaminants from the oil disposal pit, EPA issued an AOC, Index Number II CERCLA-93-0214, and a Unilateral Administrative Order, Index Number II CERCLA-93-0217, to Amphenol Corporation and Honeywell. The work performed pursuant to these orders included the excavation of approximately 2,200 cubic yards (cy) of contaminated sediments from South Pond (temporarily stored on-site in lined storage cells), the installation of seep interceptor collection basins upgradient of South Pond, and a sediment trap weir system at the outlet of South Pond to prevent the downstream migration

of contaminated sediments, and the installation and maintenance of two whole-house supply water treatment systems.

IV. Remedial Actions

Remedy Selection

Based upon the results of the RI/FS, a Record of Decision (ROD) was signed in September 1997, selecting soil and sediment excavation/ dredging, consolidation, on- and/or off-site disposal, Toxic Substances Control Act (TSCA) cell construction, installation of landfill cap consistent with 6 NYCRR Part 360, and groundwater extraction (North Area via extraction wells and South Area via an interceptor trench) and treatment. Specifically, the ROD called for:

- Excavating contaminated waste material and soil exceeding NYSDEC's Technical and Administrative Guidance Memorandum No. 94-HWR-4046 (TAGM) objectives in the North and South Areas (other than the landfill). Clean fill would be used as backfill in the excavated areas;

- Based upon pre-design sampling of soil in the area to be capped (primarily, in the vicinity of the former waste oil disposal pit), soil with PCB concentrations which equal or exceed 500 mg/kg would be excavated and sent off-site for treatment/disposal at a TSCA-compliant facility;

- Excavating and/or dredging sediments exceeding 1 mg/kg PCB from South Pond and excavating and/or dredging sediments exceeding 1 mg/kg PCB from downstream areas to the maximum extent practicable so as to minimize negative physical impacts to the surrounding wetlands and habitat. All excavated/dredged sediments would be dewatered, as necessary. Any wetlands impacted by remedial activities would be fully restored.

- Installation of an outlet control/sediment trap downgradient of South Pond to minimize migration of contaminated sediment further downstream from the Main Beaver Pond.

- All excavated/dredged waste materials, soils, and sediments would be subjected to Resource Conservation and Recovery Act (RCRA) hazardous waste characteristic testing. Those waste materials, soils, and sediments that do not pass the RCRA characteristic testing would be sent off-site for treatment/disposal at a RCRA-compliant facility. Those waste materials, soils, and sediments that pass the RCRA characteristic testing and have PCB concentrations which equal or exceed 500 mg/kg would be sent off-site for treatment/disposal at a TSCA-compliant facility. Those waste materials, soils, and sediments that pass the RCRA characteristic testing and have PCB concentrations less than 50 mg/kg would be consolidated on the on-site landfill; those with PCB concentrations between 50-500 mg/kg would be placed in a TSCA-compliant landfill constructed adjacent to the existing landfill. The on-site TSCA landfill (estimated volume of 8,500 cy), which would include a double composite liner and a final cover equivalent to a RCRA cap, would meet the requirements of 40 CFR 761.75, except that it would not be in strict compliance with the requirements of 40 CFR

761.75(b)(3), as the bottom of the landfill would not be located at least 50 feet higher than the nearest high groundwater elevation. Therefore, a waiver of these requirements would be necessary. It is EPA's assessment that, considering the nature of the waste, the design and operation of the landfill would be sufficient to prevent migration of PCBs from the landfill. Therefore, a waiver of these requirements would be justified;

- Following the consolidation of the excavated/dredged waste materials, soil, and sediments with PCB concentrations less than 50 mg/kg onto the existing landfill, a New York State 6 NYCRR Part 360 or equivalent closure cap would be constructed;

- Constructing a fence around the landfill;

- Construction of a shallow leachate collection trench, keyed into the top of the bedrock, on the downgradient edge of the cap that will be installed on the existing landfill, and installation of vertical overburden and bedrock extraction wells in the North Area;

- Extraction of contaminated groundwater from the overburden and shallow bedrock in the South Area utilizing the downgradient interceptor trench and in the North Area utilizing extraction wells, and treatment of the extracted contaminated groundwater by air-stripping and activated carbon (or other appropriate treatment), followed by discharge to surface water;

- Taking steps to secure institutional controls (the placement of restrictions on the installation and use of groundwater wells at the site and restrictions on the future use of the site in order to protect the integrity of the new TSCA landfill and the cap installed on the existing landfill); and

- Long-term monitoring of groundwater, surface water, fish and sediments.

In addition, the whole-house water treatment systems that were installed at the two private residential wells would continue to be maintained by the PRPs.

Remedy Implementation

In 1998, EPA concluded Consent Decree negotiations with the PRPs related to the performance of the design and implementation of the remedy called for in the ROD. Upon lodging of the Consent Decree by the U.S. District Court on February 16, 1999, the remedial design (RD) commenced. On June 4, 1999, the Consent Decree was entered in U.S. District Court (approved by the Judge). The groundwater treatment plant portion of the RD was approved in 2002. The remainder of the site RD was approved in 2003.

The ROD called for the excavation and/or dredging of sediments exceeding one milligram/kilogram[2] PCB from South Pond and Herrick Hollow Creek downstream for approximately 2,400 feet (Segments 21 to 14). It also stated that the need for remediation in areas further downstream (*i.e.*, Segments 13 to 9) would be evaluated based on an assessment of sediment, surface water, and biological receptors over the 5-year time period subsequent to the completion of upstream remediation activities. During the design investigation in 2002, in consideration of the possibility that the PCB-contaminated sediments in Segments 13 to 9 would still need to be removed in the future after years of monitoring and the cost savings associated with the elimination of the long-term sediment, surface water, and biological receptor monitoring related to these contaminated sediments once they are removed, as well as the willingness of the PRPs to undertake the additional sediment removal work at that time, EPA decided to remove the contaminated sediments in Segments 13 to 9 concurrently with the contaminated sediments in Segments 21 to 14.

The remedial action work plan for the groundwater treatment plant was approved in 2002. The groundwater treatment plant construction and four North Area recovery wells installation were completed in 2003.

In 2004, it was determined that groundwater contamination located to the east of South Pond (monitoring wells MW-12S, MW-12D, and MW-12DD), which was originally believed to be attributable to the Sidney Landfill site, was determined to be more likely attributable to the Richardson Hill Road Landfill site. These wells still show some contamination. Because of its location, the existing groundwater management system cannot address the contamination in this area. Groundwater monitoring samples were collected from these wells in May 2007. Based upon the sample results and modeling, a determination will need to be made as to the best approach for addressing this contamination.

The excavation and backfilling/restoration of various areas with contaminated soil outside of the landfill footprint (approximately 7,350 cy of soil) commenced in 2003 and was completed in 2004. All of the PCB-contaminated sediments from South Pond, Herrick Hollow Creek, and the beaver ponds down to Segment 9 (approximately 28,520 cy) were dry excavated in 2004. All of the excavated soil and sediment outside of the landfill footprint was consolidated on the landfill prior to capping. Also, the sediment trap weir system placed in the Herrick Hollow Creek in 1994 and 1999 was removed in 2004 since all contaminated sediments upstream of the sediment trap weir system were removed. Within the former waste oil pit, approximately 882 tons of soil with PCB contamination equal to or greater than 500 mg/kg were excavated and disposed/treated at an off-site TSCA facility in 2004. Materials with PCB concentrations between 50-500 mg/kg were placed in the TSCA-cell in the northwestern part of the landfill. The groundwater interceptor trench construction located downgradient of the landfill commenced and was completed in 2004. The groundwater interceptor trench was installed to collect and treat groundwater flowing from the landfill, while also minimizing off-site migration of potentially contaminated groundwater.

---

[2] NYSDEC's 1 milligram/kilogram sediment cleanup objective for PCBs is specified in its Division of Fish and Wildlife, Division of Marine Resources, *Technical Guidance for Screening Contaminated Sediments*, November 1993.

In late November 2004, as a result of significant rainfall, the sand drainage layer (one of the components of the cap that was being installed on the landfill) eroded onto Richardson Hill Road. A follow-up inspection raised concerns about increased turbidity levels and the appropriateness of the South Pond and Herrick Hollow Creek restoration effort. Specifically, because vegetation had not yet been reestablished after the completion of the excavation of contaminated sediments from South Pond and Herrick Hollow Creek several weeks earlier, increased turbidity attributable to the storm water runoff flowing over the freshly-laid fine-particle soil was observed. Corrective actions were taken to stabilize the site that winter. In addition, temporary restoration activities were performed in Herrick Hollow Creek.

A redesigned multilayered 6 NYCRR Part 360 cap was installed over the landfill in 2006. Gas vents were also installed and tied to geocomposite drainage net. Fencing was installed around the site to discourage unauthorized access.

Institutional Controls Implementation

The ROD required the implementation of institutional controls to restrict the use of on-site groundwater and to protect the integrity of the cap and TSCA cell.

The land on which the North Area extraction wells and the groundwater treatment plant are located are now owned by the Amphenol Corporation. An Environmental Restriction Easements and Declaration of Restrictive Covenants that runs with the land were entered into between the property owners adjacent to the site and the PRPs and were recorded in the Delaware County Clerk's Office on January 22, 2002. These easements provide for restrictions on groundwater consumption at the two properties where groundwater contamination related to the site and treatment systems were installed pursuant to the order.

The land on which the landfill cap and TSCA cell are located is owned by Joseph Del Vecchio and Robert Pacelli. These parties have, historically, been noncooperative, such that EPA was forced to issue an access order in 1988. EPA has had no contact with these parties since 1997, when they refused to accept service of a notice letter. At that time, these parties were elderly and ill. As a result, there is currently no environmental easement. The PRPs are required to and will file a notice to successors-in-title after EPA approves the Remedial Construction report. This notice, together with other site control measures, such as signage and fencing, should provide adequate site use restrictions.

Operation and Maintenance

A draft Operation and Maintenance (O&M) Manual for the site, covering post-landfill cap construction inspection and maintenance procedures and procedures for operating, inspecting, and evaluating the groundwater extraction and treatment system along with the long-term monitoring of groundwater was submitted in January 2007. The draft O&M Manual is currently being finalized. It is anticipated that it will be finalized by August 2007. Though the monitoring called for in the O&M Manual has not yet commenced, a groundwater treatment plant operator(s) has been on-site every weekday since the completion of its construction. The operator inspects the rest of the site (landfill and wetland) on a weekly basis. Groundwater treatment system influent and effluent data

have been collected since the North Area recovery wells began operation in 2003. The effluent data have met the discharge limits set by NYSDEC. Repairs are made to the groundwater management system and monitoring well network, as necessary.

The Draft O&M Manual covers the following tasks:

- Inspection and maintenance of the site including the landfill cap, TSCA cell, storm water control features, access structures, groundwater extraction systems, and other site features on quarterly basis and after major rainfall events;
- Operation, maintenance, and monitoring of groundwater collection and treatment systems;
- Monitoring of groundwater, surface water, sediment, fish, leachate and landfill gases; and
- Documentation and reporting of inspections, maintenance, operation, and monitoring activities.

V. Five-Year Review Process

Administrative Components

The five-year review team consisted of Young Chang (RPM), Edward Modica (hydrogeologist), Julie McPherson (human health risk assessor), and Mindy Pensak (ecological risk assessor).

Community Involvement

The EPA Community Involvement Coordinator for the site, Cecilia Echols, published a notice in the *Daily Star*, a local newspaper, on May 24, 2007, notifying the community of the initiation of the five-year review process. The notice indicated that EPA would be conducting a five-year review of the site to ensure that the site is protective of public health and the environment and that the implemented components of the remedy are functioning as designed. It also indicated that once the five-year review is completed, the results will be made available in the local site repository. In addition, the notice included the RPM's address and telephone number for questions related to the five-year review process or the site.

Document Review

The documents, data, and information which were reviewed in completing the five-year review are summarized in Table 2 (attached).

Data Review

Influent and effluent data from the groundwater treatment system have been collected since the North Area recovery wells have began operation in 2003. The effluent data have met the site-specific discharge limits set by NYSDEC.

Additional groundwater analytical data will be needed to fully evaluate effectiveness of groundwater capture. As part of the long-term monitoring and maintenance program for the site, groundwater downgradient of the extraction system will be sampled to monitor the effectiveness of the groundwater management system.

Bedrock monitoring well MW-12D has historically shown elevated concentrations of 1,1,1- TCA, 1,1- DCA, toluene, vinyl chloride, TCE, and 1,2-DCE. Since the groundwater management system began operating, 1,1,1- TCA, 1,1- DCA, toluene, and vinyl chloride have not been detected; however, concentrations of 1,2-DCE and TCE have been generally constant (above the New York State Groundwater Quality Standards [NYS GWQS] of 5 micrograms per liter for TCE and 1,2-DCE). Preliminary results from samples collected in May 2007 showed a slight decrease compared to the November 2003 data. The concentrations of 1,2-DCE and TCE are, however, still above the NYS GWQS. To determine the extent of the contamination, monitoring wells will be installed downgradient of monitoring well MW-12D. Based upon the sample results from these new wells, a determination will need to be made as to the best approach for addressing this contamination.

In deep bedrock monitoring well MW-12DD, overall contamination levels have declined since the groundwater management system began operating. Preliminary results from the May 2007 sampling showed that monitoring well MW-12DD had no detection of VOCs.

Site Inspection

On April 9, 26, and June 26, 2007, five-year review-related site inspections were conducted by EPA RPM Young Chang along with technical-team members Edward Modica and Julie McPherson. Also present at the inspections were Gerard Burke, NYSDEC project manager, Sam Waldo, Amphenol (PRP), Joe Bianchi, Amphenol (PRP), and James Mickam, JTM Associates (PRPs' contractor).

Interviews

No interviews were conducted during the review period.

Institutional Controls Verification

For the land on which the North Area extraction wells and the groundwater treatment plant are located, institutional controls have been verified as being in place. An Environmental Restriction Easements and Declaration of Restrictive Covenants that runs with the land were entered into between the property owners adjacent to the site and the PRPs and were recorded in the Delaware County Clerk's Office on January 22, 2002. These easements provide for restrictions on groundwater consumption at the two properties where groundwater contamination related to the site and treatment systems were installed pursuant to the order.

The land on which the landfill cap and TSCA cell are located is owned by Joseph Del Vecchio and Robert Pacelli. These parties have, historically, been noncooperative, such that EPA was forced to issue an access order in 1988. EPA has had no contact with these parties since 1997, when they refused to accept service of a notice letter. At that time, these parties were elderly and ill. Rather than prepare an environmental easement which the property owners would not agree to sign, EPA

determined that a notice to successors-in-title to be filed with the county clerk would be adequate protection. The wording for these notices was approved by EPA and the only additional item that was needed was the final as-built drawings of the landfill cap. EPA recently approved the as-built drawings and has requested that the PRPs file with the county clerk a notice to successors-in-title by October 28, 2007.

Other Comments on Operation, Maintenance, and Institutional Controls

Table 3 (attached) summarizes several observations and offers suggestions to resolve these issues.

VI. Technical Assessment

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

The ROD called for, among other things, the excavation of contaminated soils and sediment, consolidation of the removed material on-site and/or disposal off-site, installation of a landfill cap, construction of an on-site TSCA disposal cell, and construction of a groundwater management system. Construction activities have not been completed. Stream restoration studies and a proposed design are currently under review. Stream restoration work is expected to be performed in 2008. In addition, a determination will need to be made as to the best approach for addressing groundwater contamination located to the east of South Pond (monitoring wells MW-12D and MW-12DD). The excavation and containment of the contaminated soils and sediments have mitigated the human health and ecological risks posed by these materials. While several components of the remedy have only recently been completed (capping and interceptor trench), based on preliminary performance evaluations, the remedial components are expected to function as specified in the decision documents. Also, based on the results of the inspections, it was determined that the cap is functioning properly.

Approximately 7,300 cy of contaminated waste materials and soils have been excavated from the North and South Areas of the site, and from the Waste Oil Pit in the landfill. Approximately 28,520 cy of sediments contaminated with PCBs greater than 1 mg/kg were excavated and dredged from South Pond and Herricks Hollow Creek. Confirmatory sampling indicated that the extent of soil and sediment removal was adequate in eliminating threat from contaminated materials to human health and environment. Wetland and floodplain areas disturbed by excavation of sediment (8.6 acres) were restored in accordance with the Wetland Floodplain Mitigation Plan.

Excavated materials that exceeded 500 mg/kg of PCB were disposed of at an off-site TSCA-compliant facility. Materials with PCB concentrations between 50-500 mg/kg were placed in a TSCA cell in the northwestern part of the landfill. The TSCA cell was constructed with a double composite liner and the cell area is demarked in as-built drawings. A multilayered 6 NYCRR Part 360 cap has been successfully installed over the landfill and is stabilized. Gas vents installed and tied to geocomposite drainage net are functioning. A fence was installed around the landfill to discourage unauthorized access and is in good repair.

The groundwater management system consists of an interceptor trench located adjacent to the road and the landfill, four recovery wells in the North Area, and a water treatment plant. An evaluation of extraction well performance in the North Area indicated that the wells generate a cone of depression sufficient to maintain hydraulic control. Water levels measured in and adjacent to the interceptor trench indicate that the trench exerts hydraulic control by lowing water levels in the formation outside the trench. An operational assessment of the treatment facility indicated that the intake rates were well within the design capacity of 100 gallons per minute. The treatment plant has successfully treated site-related contaminants to the site-specific discharge limits set by NYSDEC.

Residents in the area have private drinking water wells. Three residences are located between the entrances of both NPL sites, downgradient of Sidney Landfill site and the North Area of the site. One residence is located on the western side of the Richardson Hill Road and within the North Area. The water supply on this property showed site-related contamination above drinking water standards and a whole-house water treatment system was installed. This property was purchased by the PRPs prior to the construction of the groundwater treatment plant. The building on this property was used as an office during the construction phase of the project and now is no longer used as a dwelling. Also, the water and sewage to this building have been disconnected. The other two residences are located on the eastern side of the Richardson Hill Road. One of these properties also had site-related contamination in its water supply. A whole-house water treatment system was installed by the PRPs. As a result of the treatment system, the water supply show no contamination at the point-of-use. However, in 2002 both of these residents signed an Environmental Restriction Easements and Declaration of Restrictive Covenants agreement with the PRPs that will run with the land. These easements provide for restrictions on groundwater consumption at the properties.

Remedial action objectives are specific goals to protect human health and the environment. These objectives are based on available information and standards such as applicable or relevant and appropriate requirements and risk-based levels established in the risk assessment. The following remedial action objectives were established for the site in the ROD:

- reduce/eliminate contaminant leaching to groundwater;
- control surface water runoff and erosion;
- mitigate the off-site migration of contaminated groundwater;
- restore groundwater quality to levels which meet state and federal drinking-water standards;
- prevent human contact with contaminated soils, sediments, and groundwater; and
- minimize exposure of fish and wildlife to contaminants in surface water, sediments, and soils.

Through remedy implementation, the remedial action objectives to prevent human contact with contaminated soils and sediments; to reduce/eliminate contaminant leaching to groundwater; to

control surface water runoff and erosion; to mitigate the off-site migration of contaminated groundwater; and to minimize exposure of fish and wildlife to contaminants in surface water, sediments, and soils have been accomplished. The remedial action objective to restore groundwater quality to levels which meet state and federal drinking-water standards have not yet been met. Groundwater analytical data will be needed to fully evaluate effectiveness of groundwater capture. As part of the long-term monitoring and maintenance program for the site, groundwater downgradient of the extraction system will be sampled for analytical data to monitor the effectiveness of the groundwater capture/treatment system. The program also calls for the installation of additional monitoring devices immediately downgradient of the trench to monitor its performance.

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

The risk assessment process has slightly changed since the original risk assessment was performed in 1996. In addition, chemical-specific toxicity values have changed since the surface soil was originally assessed. This risk assessment addressed exposure to the surface soil, subsurface soil, groundwater, surface water, sediment, and fish. This review will include an evaluation of the cleanup goals and objectives for each media that was evaluated in the risk assessment.

Contaminated waste material and soil exceeding TAGM objectives in the North and South Areas were excavated and consolidated on the landfill prior to capping. In order to determine if the remedy is currently protective of human health, the cleanup goals established for the chemicals of concern will be compared to their respective NYSDEC Soil Cleanup Objectives (NYSDEC SCO) and EPA Region 9's Residential Soil Preliminary Remediation Goal (PRG) to determine if the remedy is currently protective of human health. The cleanup goal established at the time of the ROD for PCBs (1 mg/kg surface soil and 10 mg/kg for subsurface soil) is consistent with the current NYSDEC SCO and is within EPA's risk range for higher chlorinated PCBs. Post-excavation results have been reviewed to confirm that the cleanup goal has been met (Draft Remedial Action Report - Element 1). In addition to meeting the cleanup goal, the surface soil has been excavated and replaced with clean fill in these areas. Therefore, the remedy is considered to be protective of human health.

The cleanup goal established for the sediments of the South Pond and Herrick Hollow Creek is 1 mg/kg for PCBs. This cleanup goal is consistent with the current NYSDEC sediment cleanup objective for PCBs as specified in its Division of Fish and Wildlife, Division of Marine Resources, *Technical Guidance for Screening Contaminated Sediments*, November 1993 and is within the risk range for higher chlorinated PCBs (EPA Region 9's Residential Soil PRG). Post-excavation results (Draft Remedial Action Report – Element 1) have been reviewed and it is confirmed that the 1 mg/kg cleanup goal has been met. Therefore, the remedy is considered to be protective of human health.

A TSCA cell contains excavated soil with PCB contamination equal to or exceeding 50 mg/kg and less than 500 mg/kg. The landfill, as well as the TSCA cell, is capped with a 6 NYCRR Part 360 cap. In addition to the cap, a fence has been installed to limit access to the landfill. The cap is

maintained and monitored by the PRPs to ensure the integrity of the cap has not been compromised. Since the direct exposure to the contamination has been interrupted, the remedy is considered to be protective of human health.

The cleanup goals established for the groundwater are EPA's Maximum Contaminant Levels (MCLs) or New York State Groundwater Criteria (the lesser of the two criteria). The groundwater has not yet met MCLs/NYSDEC Groundwater Criteria. While groundwater contamination will remain on-site upgradient of the interceptor trench, it is anticipated that the rest of the site-wide groundwater will ultimately achieve standards.

The remedial action objectives noted above are still valid.

Vapor intrusion into indoor air has been identified as a potentially important route of exposure at sites that contain VOCs. Soil vapor intrusion was not previously evaluated as a potential future exposure pathway at the site. This exposure pathway is based on the conservative (health protective) assumption that buildings are located above the maximum detected concentration of the contaminants of concern in the groundwater and accumulating vapors that are migrating up through the vadose zone. It is evaluated using the health-based screening criteria provided in EPA's *Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils* (USEPA, 2002). Since private well data downgradient of the site have not been collected recently (the last sample was in 1994), it cannot be determined whether the vapor intrusion pathway is potentially a complete pathway.

Question C: Has other information come to light which could affect protectiveness of remedy?

Vapor intrusion into indoor air has been identified as a potential route of exposure at sites that contain VOCs. It is recommended that this pathway be further evaluated to determine if there is a risk to human health.

Technical Assessment Summary

Based upon the results of the five-year review, it has been concluded that:

- the cap and vegetative cover are intact and in good condition;
- the landfill gas system is operating properly;
- the monitoring wells are securely locked and functional;
- the storm water management system is in good repair;
- there is no evidence of trespassing or vandalism;
- the remedy has prevented residents from drinking contaminated groundwater; and

- no additional measures are needed to protect public health.

VIII. Recommendations and Follow-Up Actions

Table 4 (attached) summarizes the recommendations and follow-up actions stemming from this five-year review.

IX. Protectiveness Statement

The implemented actions at the site protect human health and the environment in the short term; however, in order for the site to be protective in the long term, a final groundwater remedy for the eastern portion of the site needs to be implemented and institutional controls need to be fully implemented. Currently, there are no exposure pathways that could result in unacceptable risks and none are expected, as long as the site use does not change and the engineered and access controls that are currently in place continue to be properly operated, monitored, and maintained.

X. Next Review

Since hazardous substances, pollutants or contaminants remain at the site which do not allow for unlimited use or unrestricted exposure, in accordance with 40 CFR 300.430 (f) (4) (ii), the remedial action for the site shall be reviewed no less often than every five years. EPA will conduct another five-year review on or before September 2012.

Approved:

_____ _____

George Pavlou, Director Date
Emergency and Remedial Response Division

Table 1: Chronology of Site Events

Event	Date(s)
Richardson Hill Road Landfill (RHRL) in Operation	1964-1969
NYSDOH directs operator to cease collection of spent oils from Scintilla Division of the Bendix	1966
EPA preliminary field assessment (Fred C. Hart Associates, Inc.)	1980-1981
Site placed on National Priorities List	1987
Remedial Investigation and Feasibility Study Administrative Order on Consent (AOC) with PRPs	1987
Remedial Investigation/Feasibility Study Performed	1988-1997
AOC for investigation of nearby residential water supply and installation and performance of whole-house supply water treatment systems.	1993
Unilateral Administrative Order for light nonaqueous phase liquid control and excavation of sediment in the hot spot of the South Pond	1993
Record of Decision (ROD) for RHRL signed	1997
Consent Decree between USEPA, Honeywell(AlliedSignal), and Amphenol for design and implementation of selected remedy lodged with U.S. District Court	1999
Remedial design commences	1999
Source control and groundwater designs approved	2002
Groundwater treatment plant and North Area Recovery Well construction initiated	2002
North Area recovery wells completed	2003
Completed excavation and restoration of contaminated waste material and soils	2003
Groundwater treatment plant construction completed	2003
Complete excavation and backfilling/restoration of contaminated soil and waste material and waste oil pit	2003
Groundwater extraction trench construction initiated	2004
Completed excavation of South Pond	2004

Initiate landfill subgrade preparation, TSCA cell construction, Gas Venting/Seepage Collection Layer and Barrier Protection layer installation (in north/western half of the landfill)	2004
Initiate backfilling, topsoil placement, seeding, and installed plantings at South Pond	2004
Initiated backfilling, topsoil placement, seeding, and wetland plantings at Herrick Hollow Creek	2004
Completed excavation of Herrick Hollow Creek	2004
Completed TSCA cell cap geomembrane layer	2004
Initiation of groundwater recovery and treatment from extraction trench	2004
Completed topsoil placement and seeding at South Pond	2004
Temporarily completed backfilling, topsoil placement, seeding, and installed plantings at Herrick Hollow Creek	2004
Extraction Trench construction completed (not including final restoration of surfaces)	2004
2004/2005 winter temporary closure plan initiated	2004
Removal of drainage sand layer placed on northern part of landfill in 2004	2005
Reinspection and repairs of the geomembrane placed in 2004	2005
Cap construction	2005-2006

Table 2: Documents, Data, and Information Reviewed in Completing the Five-Year Review

Document Title (Author)	Submittal Date
Remedial Investigation/Feasibility Study (O'Brien & Gere Engineers Inc.)	1997
Record of Decision	1997
RD/RA Consent Decree	1996
Remedial Design Investigation Report (Parsons)	1997
Draft MW-12 Group Assessment Plan (JTM Associates)	2007
Draft Basis of Design Report - Restoration of Herrick Hollow Creek (Barton & Loguidice, P.C. and Bioengineering Group)	2007
Draft Operation and Maintenance Manual (Parsons)	2007
Draft Remedial Action Report - Remedial Work Element II (groundwater) (Parsons)	2007
Draft Remedial Action Report - Remedial Work Element I (soil/sediment) (Parsons)	2007
EPA guidance for conducting five-year reviews and other guidance and regulations to determine if any new Applicable or Relevant and Appropriate Requirements relating to the protectiveness of the remedy have been developed since EPA issued the ROD	

Table 3: Other Comments on Operation, Maintenance, Monitoring, and Institutional Controls	
Comment	**Suggestion**
New York State now requires all monitoring wells in the State to obtain discrete well identification numbers from NYSDEC. In previous years, it has not been the practice to register wells with the NYSDEC and, consequently, there are many Superfund site-monitoring wells in existence in the State that can serve as useful monitoring devices but that have no record to show that they exist. To address the issue, there is an initiative in the Region to get all long-term monitoring wells in New York State on to the system.	Obtain discrete well identification number from NYSDEC for all of the wells on the long-term monitoring program.
New York State now requires annual certifications that institutional controls that are required by RODs are in place and that remedy-related operation and maintenance (O&M) is being performed.	On an annual basis, the Site will continue to be inspected to determine whether any intrusive activities have been performed at the Site. The annual O&M report should include a summary of the findings of the above-noted activities, along with a certification that the institutional controls are in place (once they are put into place) and that remedy-related O&M is being performed.

Table 4: Issues, Recommendations, and Follow-Up Actions						
Issue	**Recommendations and Follow-Up Actions**	**Party Responsible**	**Over-sight Agency**	**Mile-stone Date**	**Affects Protectiveness (Y/N)**	
					Current	**Future**
Institutional controls to restrict activities which could affect the integrity of the landfill cap and Toxic Substances Control Act cell are not in place.	The PRPs will file a notice to successors-in-title after EPA approves the Remedial Construction report.	PRPs	EPA	12/07	N	Y
Since private well data downgradient of the Site has not been collected since 1994, it cannot be determined whether the vapor intrusion pathway is potentially a complete pathway.	Private well data should be collected. If the data shows that the potential for vapor intrusion exists, this pathway should be assessed based on current scientific approaches.	PRPs, EPA	EPA	9/08	N	Y
The existing groundwater management system cannot adequately address the contamination located to the east of South Pond.	Groundwater monitoring samples were collected from these wells in May 2007. Based upon the sample results and modeling, a determination (an "Other Remedy Decision[1]") will need to be made as to the best approach for addressing this contamination.	PRPs, EPA	EPA	9/08	N	Y

[1] Such as an Explanation of Significant Differences or Record of Decision amendment.

Table 5: Acronyms Used in this Document	
ARAR	Applicable or Relevant and Appropriate Requirement
EPA	United States Environmental Protection Agency
FS	Feasibility Study
MCLs	Maximum Contaminant Levels
NPL	National Priorities List
NYSDEC	New York State Department of Environmental Protection
O&M	Operation & Maintenance
PRG	Preliminary Remediation Goal
PRP	Potentially Responsible Party
RD	Remedial Design
RI	Remedial Investigation
ROD	Record of Decision
RPM	Remedial Project Manager
VOCs	Volatile Organic Compounds