Five-Year Review Report
Rowe Industries Superfund Site
Suffolk County
Sag Harbor, New York

Prepared by:

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

February 2008

EXECUTIVE SUMMARY

This is the first five-year review for the Rowe Industries Superfund site, located in Sag Harbor, Suffolk County, New York. The assessment of this five-year review is that the implemented actions at the site protect human health and the environment.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name *(from WasteLAN)*: Rowe Industries		
EPA ID *(from WasteLAN)*: NYD981486954		
Region: 2	**State:** NY	**City/County:** Sag Harbor/Suffolk 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:** 2/25/2003
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: Pamela Tames	
Author title: Remedial Project Manager	**Author affiliation:** EPA
Review period:** 02/25/2003 to 02/25/2008	
Date(s) of site inspection: 11/07/07	
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 # __ ☐ Actual RA Start at OU# ■ Construction Completion ☐ Previous Five-Year Review Report ☐ Other (specify)	
Triggering action date *(from WasteLAN)*: 2/25/2003	
Due date *(five years after triggering action date)*: 2/25/2008	
Does the report include recommendation(s) and follow-up action(s)? ☐ yes ■ no **Is human exposure under control?** ■ yes ☐ no **Is migration of contaminated groundwater stabilized?** ■ yes ☐ no ☐ not yet determined **Is the remedy protective of the environment?** ■ yes ☐ no ☐ not yet determined **Acres in use or suitable for use: restricted:** __ **unrestricted:** 8 acres	

Five-Year Review Summary Form (continued)

Issues, Recommendations, and Follow-Up Actions

The selected remedy has been fully implemented. This site has ongoing operation, maintenance, and monitoring activities as part of the selected remedy. Table 3 includes suggestions for improving, modifying and/or adjusting these activities. This report did not identify any issue or make any recommendation for the protection of public health and/or the environment which was not included or anticipated by the site decision documents.

Protectiveness Statement

The implemented actions at the site protect human health and the environment. The unsaturated soil (above the water table) has been remediated and allows for unlimited use. The groundwater remedy is expected to be protective upon completion. In the interim, exposure pathways that could result in unacceptable risks are being controlled by groundwater use restrictions.

I. Introduction

This first five-year review for the Rowe Industries Superfund site, located in Sag Harbor, Suffolk County, New York, was conducted by United States Environmental Protection Agency (EPA) Remedial Project Manager (RPM) Pamela Tames. The review was conducted 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 1.3.2 of the five-year review guidance, a policy five-year review is triggered by the signature date of the Preliminary Close-Out Report (PCOR). The trigger for this first five-year review is February 25, 2003, the approval date of the PCOR. This five-year review provides background information, covers the site history, discusses past data-collection efforts along with information collected in the past five years, re-evaluates risk and remedy protectiveness based on updated assumptions, and makes suggestions for follow-up actions.

This five-year review covers the entire site and has determined that the implemented remedy is functioning as intended and continues to protect human health and the environment.

II. Site Chronology

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

III. Background

Site Location

The Rowe Industries site is situated on Sag Harbor-Bridgehampton Turnpike in the Village of Sag Harbor, Suffolk County, New York. It is located on the south fork of eastern Long Island, approximately 75 miles east of New York City. The major roadways in this area include Sag Harbor-Bridgehampton Turnpike and Noyack Road.

Physical Characteristics

The site is comprised of an eight-acre industrial facility. The most prominent feature of the property is a small factory covering one acre of the site with the remainder containing a small lawn area, parking lot, several acres of woods and a small pond. The oak forest and pond are part of the Long Pond Greenbelt, a protected ecological sanctuary. Residences are located on both sides of the facility.

Sag Harbor Cove is about 3,000 feet northwest of the site. Ligonee Brook, which flows into Sag Harbor Cove, is to the east and north of the site.

Site Geology/Hydrogeology

The site's geology is typical of the regional geology. The site is underlain by the Upper Glacial aquifer, which mostly consists of sand and gravel, with some silt and clay. The upper sediments above the water table consist of medium to fine sand with a trace amount of medium to fine gravel. The lower sediments below the water table consist of medium to very fine sand, alternating with intervals of silty clay, silt and clay.

Although no major clay layers were observed downgradient of the site, a local, continuous clay bed was observed beneath the former drum storage area, at a depth of about 30 to 40 feet below the land surface. The clay layer is about two feet thick and it extends about 40 feet by 40 feet laterally. The top of the clay layer is about five to 10 feet below the water table. The depth to groundwater beneath the former drum storage area is about 20 to 25 feet; groundwater levels in this area were observed to fluctuate by about five feet.

Groundwater flow direction is north-northwest and discharges into Sag Harbor Cove. Groundwater velocity averages about 1 foot per day.

Land and Resource Use

The area surrounding the site is largely undeveloped to the east and west. Several designated wetlands in the vicinity of the site are considered to be significant habitats. The Nation Wetlands Inventory classifies the area where Ligonee Brook enters Sag Harbor Cove as a mixture of palustrine forested, broadleaf deciduous wetlands and intertidal emergent estuarine wetlands communities. The on-site pond is also classified as a palustrine, open water, intermittently exposed wetland community. One other significant habitat, a tern nesting area, is listed as occurring within two miles of the site along Noyack Bay. The tiger salamander is the only endangered animal known to live within two miles of the site. It is listed as endangered in the New York State Department of Environmental Conservation’s database.

With respect to water use, groundwater is used as a potable water source by some local residents within a three-mile radius and as a source of irrigation water by farmers. The residences located in the vicinity of the groundwater plume are connected to a public water supply.

History of Contamination

The Rowe Industries facility was constructed in 1953 to manufacture small electric motors and transformers. Chlorinated solvents were used to degrease oil-coated metals during the manufacturing process. Waste solvents were discharged into on-site dry wells and/or stored behind the facility, where they leaked into the soils below. The original building was completely destroyed by a fire in 1962, and was rebuilt that same year to twice the size of the

original facility.

In November 1965, Aurora Plastics purchased the plant and its equipment from Rowe Industries. The manufacture of the motors continued and Nabisco acquired Aurora Plastics in the early 1970's. The facility remained active until 1974, when Nabisco relocated its operations and the building was closed.

The building remained shuttered until it was sold to Sag Harbor Industries in 1980. The facility is currently used to manufacture electronic devices. Solvents are no longer used in the manufacturing process.

Initial Response

Groundwater contamination was first discovered by the Suffolk County Department of Health in 1983. Water from a private well near the site revealed contamination by three volatile organic solvents (VOCs), 1,1,1-trichloroethane (TCA), 1,1,2-trichlorethylene (TCE), and tetrachloroethylene (PCE). Further investigations determined that a groundwater contaminant plume extended from the former Rowe Industries facility northwest to Ligonee Brook. In 1985, twenty-five residences in the vicinity of the groundwater plume were hooked up to the public water supply. Based on the extent of groundwater contamination, the Rowe Industries site was placed on the National Priorities List on July 7, 1987.

Basis for Taking Action

During the remedial investigation (RI), 32 wells were sampled to evaluate groundwater conditions. The highest concentration of PCE found in the groundwater at that time was 12,000 micrograms per liter (µg/l). TCA and TCE were also found in the groundwater. Their highest concentrations were 690 µg/l and 530 µg/l, respectively. Soils in the former drum storage area exhibited levels of PCE as high as 67 milligrams per kilogram. Four of six dry wells also had elevated levels of VOCs.

IV. Remedial Actions

Remedy Selection

Based upon the results of the RI and feasibility study (FS), in September 1992, EPA signed a Record of Decision (ROD) selecting a remedy for the site. The remedy included excavating volatile organic-contaminated soils located in a former solvent storage area, the excavation of three on-site dry wells, the off-site disposal of the contaminated soils and dry well contents, and the pumping and treatment of the contaminated groundwater. Subsequently, Nabisco, Inc.[1] and Sag Harbor Industries, Inc. signed a Consent Decree with EPA agreeing to design and implement the selected remedy for the site. A Notice of Lodging of the Consent Decree was

[1] Kraft acquired Nabisco Inc. in 2000.

published in the *Federal Register* on December 28, 1993. The Consent Decree was entered in U.S. District Court on April 21, 1994.

As part of the remedial design effort, the Potentially Responsible Parties' (PRPs') contractor collected numerous soil and groundwater samples and performed a number of groundwater tests necessary to prepare the design of the selected remedy. As a result of this sampling effort, the estimated volume of contaminated soil requiring excavation increased from the ROD estimate of 360 cubic yards to approximately 1,700 cubic yards. It was also determined that approximately half of the excavated soils were more highly contaminated than originally believed, which would necessitate on-site pretreatment prior to off-site disposal in order to comply with the requirements of Resource Conservation and Recovery Act Land Disposal Restrictions. The selected remedy was modified via a July 1997 Explanation of Significant Differences (ESD) to include a partial excavation of the former drum storage area, the installation of in-situ Soil Vapor Extraction (SVE) wells to remediate the remaining unsaturated contaminated soils and air sparging wells to assist in the remediation of the saturated contaminated soils during extraction and treatment of the groundwater. In addition, the ESD called for the pretreatment of the excavated soils using ex-situ SVE.

The ROD also called for the treated groundwater to be discharged in Ligonee Creek/Inner Sag Harbor Cove. However, in response to public concerns about potential impacts resulting from the discharge of fresh water into a saline environment, the remedy was modified so as to allow for the discharge of the treated groundwater to a recharge basin (the Town of Southampton granted the PRPs access to the Town's property for the construction of a recharge basin)[2].

Remedy Implementation

In late 1997, Leggette, Brashears & Graham, Inc., the PRPs' contractor, hired a local well driller to install the SVE wells. A contract was awarded by the PRPs to Handex Inc. in April 1998 for the implementation of the remaining portions of the soil remedy.

In February 2000, a well-drilling contract and a groundwater extraction and treatment system contract were awarded by the PRPs to Earth Technology LLC for the implementation of the groundwater remedy.

Contaminated Soils and Dry Wells

The contaminated soils associated with the former drum storage area spanned a portion of the parking lot behind the facility and two adjacent residential properties. Site construction work

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[2] This modification to the remedy was effected via two ESDs. In response to the public's concern regarding discharging the treated effluent into a saltwater environment, in May 2001, EPA issued an ESD documenting a decision to split the discharge between surface water and a recharge basin. However, since the public objected to having any surface water discharges, in December 2001, EPA issued another ESD documenting a decison to discharge all of the treated groundwater into a recharge basin.

commenced in late 1997, with the installation of six SVE wells (10-foot-long screens starting at depths ranging from 4-17 feet below the surface) into the unsaturated soils and associated piping beneath the parking lot. In April 1998, 230 cubic yards of VOC-contaminated soils located on the adjacent residential properties were excavated to a depth of four feet. In May 1998, nine SVE wells and associated piping were installed on the adjacent residential properties within the former drum storage area[3]. Subsequently, a 40-mil high density polyethylene vapor barrier was installed at the bottom of the four-foot excavation, followed by clean fill and top soil. Disturbed areas of the site were subsequently seeded and a number of pine trees were planted to provide a privacy hedge between the two affected residents' properties and the plant grounds.

An ex-situ treatment system, consisting of a soil impoundment containing SVE-piping underlain with a 40-mil high density polyethylene liner was constructed adjacent to the excavation area behind the facility. The excavated soil was placed within the treatment system and sealed with high density polyethylene. Soil vapors were extracted from the system and piped through two 1,250-pound carbon units in series. The SVE system in the soil impoundment operated from January 28, 1999 to March 11, 1999. On April 8, 1999, twenty-two soil samples were collected from the excavated soils within the soil impoundment and analyzed to determine if sufficient VOCs had been removed prior to off-site disposal. The soils were disposed of at an off-site landfill in mid-1999; the soil impoundment was subsequently dismantled.

The three dry wells were pumped out in June 1998 and their contents were disposed of off-site. Approximately 120 cubic yards of contaminated soil in the vicinity of a broken pipe leading to a fourth dry well (the contents were not contaminated) were excavated in February 2003 and disposed of off-site.

The in-situ SVE system was started up in December 1998. Various pairs of SVE wells were run in cycles so that the VOC vapors in the unsaturated soils were extracted from all directions and pumped through the two carbon units. In October 2000, twenty-eight soil borings were drilled to collect 38 soil samples from the treated soils. Soil analyses revealed that while the majority of the soil had been remediated, seven samples within a 300-square-foot section of the former drum storage area remained contaminated above the New York State Technical and Administrative Guidance Memorandum (TAGM) objectives ranging from 3,100 micrograms per kilogram (μg/kg) to 4,200,000 μg/kg for PCE. The SVE system was restarted using a single SVE well which was run in a pulsed fashion (two weeks on and one week off) from mid-December 2000 to April 2002 in order to address the remaining hot spot. A second round of soil confirmation samples was collected in April 2002. Analyses of twenty-three soil samples revealed that the SVE system continued to remediate the unsaturated soils, with only five samples containing VOC concentrations that exceeded the TAGM objectives, ranging from

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[3] Air sparge wells to assist the removal of the VOCs from the contaminant plume were installed into the saturated soils under the parking lot behind the facility and the two adjacent residential properties concurrently with the installation of the SVE wells in the unsaturated soils. Details related to this effort are discussed in the "Groundwater Remediation" section, below.

3,400 μg/kg to 5,300 μg/kg PCE. The SVE system was restarted in June 2002 to complete the remediation of the unsaturated soils within the former drum storage area. A third round of confirmation samples was collected in January 2003. Analyses of nine soil samples revealed that the SVE system continued to remediate the unsaturated soils, with only three samples containing VOC concentrations exceeding the TAGM objectives, ranging from 1,800 μg/kg to 21,000 μg/kg PCE. It was determined that these three soil samples were located within the saturated zone much of the year due to the seasonal fluctuation of the groundwater table. A bioremediation pilot (see the "Groundwater Remediation" section, below) was used in an attempt to address the contamination in this area in November 2004. This area is being addressed by the continued operation of the full-scale groundwater extraction and treatment system. It was concluded that all of the soils within the unsaturated zone had been successfully remediated. Approximately 690 pounds of VOCs have been removed from the unsaturated soils by the SVE system. A Remedial Action Report for the soil was approved in March 2005.

Groundwater Remediation

As was noted above, concurrent with the installation of the SVE wells, air sparging wells were installed to facilitate the remediation of the plume. Prior to the installation of the SVE and air sparge wells within the former drum storage area, four geoprobe borings were drilled to determine the bottom elevation of the plume for proper placement of the air sparge wells. This investigation revealed the existence of a clay lens located approximately seven feet below the water table. The clay locally impedes vertical groundwater flow and contaminant transport. An order-of-magnitude difference between the analytical results of groundwater samples collected above and below the clay lens near the top of the saturated soils indicated that the clay lens was retaining VOCs, possibly due to its concave shape.

In October 2000, four small recovery wells and below grade piping were installed in this area in order to perform "focused remediation" of the groundwater within the former drum storage area. The four wells were designed to pump at a variable flow rate averaging about 47 gallons per minute. The groundwater was pumped into a 425-gallon equalization tank before being sent through two 1,000-pound carbon units placed in series. The treated water was then piped into an existing on-site pond. The system began operation on March 22, 2001 and operated until December 23, 2003.

The highest observed concentration of PCE since the system started operating was 3,700 μg/l in December 2001. In November 2004, the former drum storage area was treated using a bioremediation pilot. Several injections of EHC™, which contains zero-valent iron and an enriched carbon nutrient source, were performed at the site. Groundwater samples taken from the focused pumping wells showed that while some degradation took place as a result of the injection, the main benefit of the treatment was accelerated loosening and partitioning of VOCs from the soil to the groundwater. Due to a lack of significant decrease in the concentration of VOCs in the groundwater in the vicinity of the former drum storage area, the "focused remediation" of this area was restarted in May 2006. The "focused remediation" system ran intermittently until April 2007 when it was shut down due to clogging of the system with mobilized EHC™. The groundwater in this area is being monitored to determine when the system can be restarted.

Eleven air sparge wells to assist the removal of the VOCs from the contaminant plume were installed in the former drum storage area; two on the plant grounds and nine on the adjacent residential yards. The air sparge wells, which have two-foot screens, range in depth from 30 to 50 feet into the saturated soils. The air sparge wells were activated on February 10, 2003 and decommissioned in December 2004.

The groundwater extraction and treatment system construction began in 1996 with the construction of two recovery wells. The remaining seven recovery wells were installed in April 2000. The construction of the treatment system and recharge basins was initiated in September 2001 in accordance with the final design specifications and completed in November 2002. The design flow is 535 gallons per minute.

The groundwater treatment system consists of influent equalization, pre-filtration using a series of three stations of eight bag filters, and air stripping with discharge of the treated effluent to two 50- by 150-foot recharge basins. The VOC-contaminated air stream generated by the air stripping is being treated with activated carbon before being released to the atmosphere. The air stripper tower has been equipped with an acid backwash system for maintenance associated with tower fouling. The system became operational on December 17, 2002. To date, more than 697 million gallons of groundwater have been treated and approximately 210 pounds of VOCs have been removed from the groundwater plume via this system.

Institutional Controls Implementation

Since the contaminated soils have been remediated to levels that protect human health and the groundwater, they are suitable for unlimited use. The monitoring and recovery wells are protected from invasive activities on the adjacent residential properties with access/use agreements. The recharge basin was constructed on Town-owned property that is protected with a conservation easement.

Town of Southampton regulations prohibit the construction and use of drinking water wells unless tested and certified as clean by the Suffolk County Department of Health, Office of Drinking Water. No further controls are necessary to safeguard public health with respect to the site.

System Operations/Operation and Maintenance

The Operation and Maintenance (O&M) Manual for the site contains the procedures for operating, inspecting, and evaluating the groundwater extraction and treatment system along with the long-term monitoring of groundwater. Repairs are to be made, as necessary, to control the effect of any event that might interfere with the performance of the remedy.

Scheduled O&M activities include weekly overall site inspections and groundwater extraction, treatment (checking the bag filter for solids loading, gauging air flow through the stripper, and noting flow rates and totalized flow). Preventive maintenance items include monthly inspections of the air stripper blower and the well pumps for mineral deposits. The recovery

wells, effluent water quality and pre-, mid-, and post-carbon air are sampled monthly. Surface water elevations are taken in the nearby ponds of the Long Pond Greenbelt, and salinity and temperature measurements are taken at various points in Ligonee Brook. Piezometer data is collected during the months of June, July, August and September and compared to historical data collected from 1993 to 2007.

The PRPs were not required by the terms of the Consent Decree to make cost information available but the inspections, maintenance, sampling, monitoring, data evaluation and reporting costs are estimated to be $300,000 on an annual basis.

V. Five-Year Review Process

Administrative Components

The five-year review team consisted of Pamela Tames (RPM), Michael Scorca (hydrogeologist), Charles Nace (human health risk assessor), and Mindy Pensak (ecological risk assessor, Biological Technical Assistance Group).

Community Involvement

The EPA Community Involvement Coordinator (CIC) for the Rowe Industries site, Cecelia Echols, published a notice in the *Sag Harbor Express*, a local newspaper, on November 21, 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 was 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 addresses and telephone numbers for the RPM and CIC for questions related to the five-year review process or the Rowe Industries 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

The primary compounds of concern detected in the groundwater at the site are PCE, TCE, and TCA[4]. Based upon a review of the data collected during the review period and a trend analysis, it appears that there is an overall downward trend in VOC concentrations in the on- and off-site monitoring wells and extraction wells.

The levels of PCE, TCE and TCA are currently either not detected or are marginally above

[4] The MCL for all three compounds is 5 μg/l.

their respective Maximum Contaminant Levels in the three on-site extraction wells and four of six off-site extraction wells. In the remaining two extraction wells, the most recent analyses showed levels of PCE, TCE, and TCA at 25 µg/l, not detected, and 7.5 µg/l, respectively.

A review of the salinity, surface water, and piezometer data indicate that the pumping of the aquifer does not adversely affect the nearby ponds of the Long Pond Greenbelt, Ligonee Brook, and Ligonee Creek.

Since groundwater samples from wells in the former drum storage area still contain elevated levels of VOCs, the injection of the EHC™ in this area (described above) has not yet removed the source contamination.

Site Inspection

On November 7, 2007, a five-year review-related site inspection was conducted by Pamela Tames, Michael Scorca, and Charles Nace. Paul Jobmann (PRP consultant LBG, Inc.) was also present at the site inspection.

There were no visible signs of trespassing or vandalism at the site. All of the well casings were found to be properly secured and locked. The treatment system building was found to be properly secured and locked. The fence surrounding the recharge basins was intact and its gate was secured.

Interviews

An interview was conducted on November 7, 2007 with Paul Jobmann of LBG Inc. for this review.

Institutional Controls Verification

As was noted above, since the contaminated soils have been remediated, soil-related restrictions are not needed. The affected residents have all been connected to the public water supply and cannot reconnect to a private well without Department of Health approval.

Other Comments on Operation, Maintenance, Monitoring, and Institutional Controls

Table 3 (attached) presents several observations and offers suggestions to resolve outstanding issues.

VI. Technical Assessment

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

The remedy identified in the ROD consisted of soil excavation with off-site disposal and installation of a groundwater extraction system with on-site treatment and discharge to local surface water. The soil excavation remedy was modified in the 1997 ESD to include the additional volume of soil and on-site treatment of soils prior to off-site disposal. The

groundwater extraction remedy was modified in the 2001 and 2002 ESDs to change the discharge location from Ligonee Creek to a recharge basin. The implemented actions for the soils have effectively eliminated the exposure pathway for contact with contaminated soils. Given the fact that the community is served by municipal water, the potential for exposure to contaminated groundwater has also been eliminated.

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

The ROD summarized the human health risk assessment that was conducted to support the remedial action for the site.

There were seven exposure pathways that were evaluated including, residential exposure to groundwater through ingestion and inhalation, ingestion of surface soil by residents, ingestion of subsurface soil by excavation workers and utility workers, ingestion of sediments from Ligonee Brook by residents, and ingestion of dry well sediments by utility workers. The groundwater and sediment exposure pathways are still complete; the exposure pathways for the soil are no longer complete as the soils have been remediated. The vapor intrusion pathway was previously evaluated. Further discussion of this pathway is included below.

The toxicity data that were used in the human health risk assessment have changed since the risk assessment was completed. However, using current toxicity values in the risk assessment would result in the same risk management decision for the soil and groundwater; therefore, the toxicity data is still valid.

The cleanup levels for groundwater identified in the ROD were the Safe Drinking Water Act Maximum Contaminant Levels and the NYCRR Groundwater Quality Regulations. These regulations still apply. While some of the cleanup levels for the soils that were identified in the ROD are greater than the current values that are listed for the protection of groundwater, given the fact that there is an active groundwater extraction system, the potential for residual contamination to impact groundwater in the long term is minimal.

The remedial action objectives identified in the ROD include restoration of groundwater quality to its intended use of potential drinking water by reducing contaminant levels to state and federal drinking water standards and remediation of the contaminated soil to the recommended soil cleanup objectives in order for the soil not to be a contributor to groundwater contamination. The remedial action objectives used at the time of the remedy selection are still valid. Depending upon the outcome of the vapor intrusion investigation, the remedial action objectives may need to be modified.

Vapor intrusion was not evaluated in the ROD; however, in 1997, indoor air monitoring was performed in six residences located over the plume. That study concluded that VOCs were not found in affected residences above background levels. A subslab vapor intrusion investigation was performed in mid-February 2008. The data collected during the subslab vapor intrusion investigation will be evaluated to determine if any actions are required.

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

No information has come to light that could call into question the protectiveness of the remedy.

Technical Assessment Summary

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

- The monitoring and recovery wells are securely locked and functional.
- No additional measures are needed to protect public health.

When the groundwater extraction and treatment system automatically shuts down due to power failures or operational difficulties, repairs and manual restarting of the system must await the scheduled weekly visit of the operator. As a result, the percentage of operating hours per month for the system averages a fairly low sixty-five percent.

VII. Issues, Recommendations, and Follow-Up Actions

This site has ongoing operation, maintenance, and monitoring activities as part of the remedy. As was 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 (see Table 3, attached).

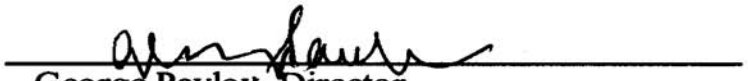
VIII. Protectiveness Statement

The implemented actions at the site protect human health and the environment. The unsaturated soil (above the water table) has been remediated and allows for unlimited use. The groundwater remedy is expected to be protective upon completion. In the interim, exposure pathways that could result in unacceptable risks are being controlled by groundwater use restrictions.

IX. Next Review

The next review is due within five years of the signature date of this report, or before February 2013.

Approved:



George Pavlou, Director
Emergency and Remedial Response Division

2/22/08
Date

Table 1: Chronology of Site Events	
Event	**Date(s)**
Discovery of Contaminated Groundwater	1983
EPA Action to Connect Residences to Public Water Supply	1985
Site Added to the NPL	1987
Administrative Order on Consent to Potentially Responsible Parties by EPA	1988
Remedial Investigation and Feasibility Study	1988-1992
Record of Decision	1992
Consent Decree supersedes Administrative Order on Consent	1994
Remedial Design	1994-2001
Explanation of Significant Differences	1997
Explanation of Significant Differences	2001
Groundwater Remedial Action Commences	2000
Soil Remedial Action	1997-2003
Preliminary Close-Out Report	2003

Table 2: Documents, Data, and Information Reviewed in Completing the Five-Year Review	
Document Title, Author	**Submittal Date**
Remedial Investigation/Feasibility Study, Leggette, Brashears & Graham, Inc.	1992
Record of Decision, EPA	1992
Final Design Reports for Soil and Groundwater, Leggette, Brashears & Graham Inc.	1997 & 2001
Occurrence and Significance of a Clay Lens Beneath the Water Table in the Vicinity of the Former Drum Storage Area, Leggette, Brashears & Graham, Inc.	1999
Recovery Well Installation Report, Leggette, Brashears & Graham, Inc.	2000
Operation and Maintenance Monitoring Manual, Leggette, Brashears & Graham, Inc.	2001
Focused Pump & Treat Operation Summary, Leggette, Brashears & Graham, Inc.	2001
Drywells A and G Investigation, Leggette, Brashears & Graham, Inc.	2002
Focused Ground-Water Remediation System Operation Summary (January 1, 2002 - June 17, 2002), Leggette, Brashears & Graham, Inc.	2002

Table 2: Documents, Data, and Information Reviewed in Completing the Five-Year Review	
Preliminary Close-Out Report, EPA	2003
Post-Closure Monthly Groundwater Quality Monitoring Reports, Leggette, Brashears & Graham, Inc.	2003-2008
Draft EHC Monitoring Report, March 2005 to September 2005, Ground-Water Remedial Action, Leggette, Brashears & Graham, Inc.	2005
2006 Annual Summary Report, Leggette, Brashears & Graham, Inc.	2007
Summary of System Operations (August 1, 2007 through August 31, 2007), Leggette, Brashears & Graham, Inc.	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 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.	The monthly O&M reports should include a certification that remedy-related O&M is being performed.
When the groundwater extraction and treatment system automatically shuts down due to power failures or operational difficulties, repairs and manual restarting of the system must await the scheduled weekly visit of the operator. As a result, the percentage of operating hours per month for the system averages about 65%.	An effort should be made to secure a local firm to perform repairs and manual restarts to the system to reduce the downtime after system shutdowns.
Although the groundwater management system appears to be effectively addressing the contaminated groundwater plume, it will need to continue to operate as long as there is source material in the saturated zone in the vicinity of the former drum storage area. Despite efforts to remediate this source material in-situ, the levels of contaminants are still elevated.	If the focused remediation system does not prove to be effective in addressing the source material, consideration should be given to alternative remedial approaches (such as excavation).
A subslab vapor intrusion investigation was performed in mid-February 2008.	The data collected during the subslab vapor intrusion investigation will be evaluated to determine if any actions are required.

Table 4: Acronyms Used in this Document	
CIC	Community Involvement Coordinator
DCA	Dichloroethane
DCE	Dichloroethylene
EPA	United States Environmental Protection Agency
mg/kg	Milligrams per Kilogram
μg/kg	Micrograms per Kilogram
μg/l	Micrograms per Liter
O&M	Operation and Maintenance
PCOR	Preliminary Close-Out Report
RI/FS	Remedial Investigation/Feasibility Study
PCE	Tetrachloroethylene
PRPs	Potentially Responsible Parties
RD	Remedial Design
ROD	Record of Decision
RPM	Remedial Project Manager
TAGM	Technical and Administrative Guidance Memorandum
TCA	Trichloroethane
VOCs	Volatile Organic Compounds