

**Five Year Review Report  
GCL Tie and Treating Site  
Village of Sidney  
Delaware County, New York**

**Prepared by:**

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

September 2008

## **EXECUTIVE SUMMARY**

This is the second five-year review for the GCL Tie and Treating Site, located in the Village of Sidney, Delaware County, New York. While the remedy is currently protecting human health and the environment, because of nationwide concerns regarding vapor intrusion at properties located near sites with volatile organic compound-contaminated groundwater, a vapor intrusion survey should be conducted at the nearby Mead/Westvaco industrial property located downgradient of the site.

## Five Year Review Form

SITE IDENTIFICATION		
Site name (from WasteLAN): GCL Tie and Treating Site		
EPA ID (from WasteLAN): NYD981566417		
Region: 2	State: NY	City/County: Sidney/Delaware
SITE STATUS		
NPL status: <input checked="" type="checkbox"/> Final <input type="checkbox"/> Deleted <input type="checkbox"/> Other (specify)		
Remediation status (choose all that apply): <input type="checkbox"/> Under Construction <input checked="" type="checkbox"/> Operating <input type="checkbox"/> Complete		
Multiple OUs?* <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	Construction completion date: 08/30/2004	
Has Site been put into reuse? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> N/A (Site involves groundwater plume and not real property)		
REVIEW STATUS		
Lead agency: <input checked="" type="checkbox"/> EPA <input type="checkbox"/> State <input type="checkbox"/> Tribe <input type="checkbox"/> Other Federal Agency		
Author name: Monica Baussan		
Author title: Remedial Project Manager	Author title: Remedial Project Manager	
Review period:** 09/30/2003 to 09/30/2008		
Date(s) of Site inspection: 03/04/2008		
Type of review: <input checked="" type="checkbox"/> Post-SARA <input type="checkbox"/> Pre-SARA <input type="checkbox"/> NPL-Removal only <input type="checkbox"/> Non-NPL Remedial Action Site <input type="checkbox"/> NPL State/Tribe-lead <input type="checkbox"/> Regional Discretion <input type="checkbox"/> Policy <input checked="" type="checkbox"/> Statutory		
Review number: <input type="checkbox"/> 1 (first) <input checked="" type="checkbox"/> 2 (second) <input type="checkbox"/> 3 (third) <input type="checkbox"/> Other (specify)		
Triggering action: <input type="checkbox"/> Actual RA OnSite Construction at OU # _____ <input type="checkbox"/> Actual RA Start at OU# _____ <input type="checkbox"/> Construction Completion <input checked="" type="checkbox"/> Previous Five-Year Review Report <input type="checkbox"/> Other (specify)		
Triggering action date (from WasteLAN): 09/30/2003		
Due date (five years after triggering action date): 09/30/2008		
Does the report include recommendation(s) and follow-up action(s)? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no Is human exposure under control? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no Is migration of contaminated groundwater stabilized? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> not yet determined Is the remedy protective of the environment? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> not yet determined		

## **Five-Year Review Summary Form (continued)**

### ***Issues, Recommendations, and Follow-Up Actions***

The selected remedy for the Site has been constructed and includes ongoing operation, maintenance and monitoring activities. For the remedy to be fully implemented, appropriate institutional controls need to be put in place. Table 5 contains recommendations and follow-up actions which will ensure continued long-term protectiveness.

### ***Protectiveness Statement***

Based on the current and reasonably anticipated use of the Site, the Environmental Protection Agency has determined that the Site-wide remedy protects human health and the environment. There are no current risks present at the Site in either groundwater or soils and none are expected, as long as the engineered and access controls are properly operated, monitored, and maintained. However, in order for the remedy to be protective in the long term, a vapor intrusion survey should be conducted at the MeadWestvaco property and institutional controls need to be implemented at the Site.

## **I. Introduction**

This five-year review for the GCL Tie and Treating Superfund Site (Site), located in the Town of Sidney, Delaware County, New York, was conducted by United States Environmental Protection Agency (EPA) Remedial Project Manager (RPM) Monica Baussan. 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 a five-year review 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.

This is the second five-year review for the GCL Site. Since, after the completion of the remedial action, contaminants remain on-Site, a statutory five-year review is required. In accordance with the Section 1.3.3 of the five-year review guidance, a subsequent five-year review is triggered by the signature date of the last review (September 30, 2003).

This Site is being addressed in two phases addressing the source of contamination and the clean up of the groundwater. Operable Unit 1 (OU1), completed in August 2000, consisted of the excavation and onsite treatment of approximately 109,000 tons of soil, sediment, and debris by a thermal desorption process. Operable Unit 2 (OU2), consisted of the construction of an onsite groundwater treatment facility for the extraction, collection and onsite treatment of contaminated groundwater. The Site achieved construction completion in August 30, 2004 and the groundwater treatment system is currently operating.

## **II. Site Chronology**

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

## **III. Background**

### *Site Location*

The 26-acre GCL Site is located in the Town of Sidney, Delaware County, New York, approximately 40 miles northeast of Binghamton and about 20 miles north of exit 84 off Route 17. It is approximately 187 miles northwest of New York City.

### *Physical Characteristics*

The GCL Tie and Treating Site includes approximately 60 acres in an industrial/commercial area of Delaware County, New York. The Site includes two major areas, generally referred to as the

"GCL property" and "non-GCL property." The GCL property is bordered on the north by a railroad line (formerly Delaware & Hudson, now CSX). A subsidiary of MeadWestvaco Corporation, At-A-Glance, which manufactures time management products, and a municipal airport are located to the north of the railroad line. Route 8 and Delaware Avenue generally delineate the eastern and southern borders of the Site, respectively. A drainage ditch (known as Unalam Tributary) runs west to east across the Site and woodland areas exits in the southern portion of the Site. The western portion of the GCL property includes a wetlands area. The Site eventually drains via overland flow to the Susquehanna River, which is located within one mile of the Site. In general, groundwater in the area flows in the north-northwesterly direction, toward the Susquehanna River.

The 26-acre GCL property housed a wood-treating facility called GCL Tie & Treating, and included four structures. The primary building housed the wood pressure treatment operations including two treatment vessels, an office, and a small laboratory. Wood (mostly railroad ties) and creosote were introduced into the vessels which were subsequently pressurized in order to treat the wood. The other three structures housed a sawmill and storage space. The non-GCL property includes two active light manufacturing companies (which did not conduct wood treatment operations) located on a parcel of land adjacent to the GCL property.

The Route 8 Landfill and the Hill Site, both of which are being addressed by the New York State Department of Environmental Conservation (NYSDEC), are nearby and have contributed to the groundwater contamination in the area. The Route 8 Landfill is located approximately 500 feet east of the GCL Site, and the Hill Site is approximately 1,600 feet southeast of the GCL Site.

### *Geology/Hydrogeology*

The GCL site is located in the Appalachian Plateau Geomorphic Province of south central New York. The province is characterized by forested hills with moderate to steep slopes that are separated by relatively flat and broad valleys. Much of the shape of the unconsolidated deposits is attributable to the Wisconsin ice sheet advance. The Site lies in the broad Susquehanna River Valley, approximately 4,000 ft southeast of the river. The Site and surrounding areas are characterized by Devonian bedrock overlain by glacial till, glaciofluvial, and glaciocustrine deposits.

The hydrogeology of GCL and surrounding area can be roughly subdivided into bedrock and unconsolidated (glacial deposit) aquifer systems. Within bedrock the groundwater moves primarily through fractures, joints, and bedding planes. The general direction of groundwater flow in the bedrock and intermediate unconsolidated aquifers is to the north-northwest at the GCL Site, in the direction of the Susquehanna River.

### *Land and Resource Use*

The GCL Site is located in a light industrial/commercial zone. Approximately 1,100 people are employed on the adjacent properties, about 5,000 people live within 2 miles of the Site, and the

nearest residential well is within 0.5 miles of the Site. Two municipal wells, which supply the Village of Sidney with potable water, are located within 1.25 miles of the Site. A shopping plaza is located within 300 feet of the Site; and a hospital, public schools, senior housing and a child-care center are within a 2-mile radius of the Site.

### *History of Contamination*

The GCL property was originally developed in 1940 by Delaware & Hudson Railroad Corp. as a railroad tie & treating (creosote) facility. Railcon Wood Products/ Railcon Materials, Inc., acquired the property in 1979 and sold it to GCL Tie and Treating in 1983. GCL operated a wood processing and treating facility that cut and treated wood products, predominantly railroad ties, with creosote. Contaminants are known to have been released to the environment through direct contact with the surface soil as a result of open drip-drying of treated products and one documented spill. The practice of drip-drying creosote-soaked lumber with no containment safeguards contaminated the soil in numerous areas on the Site.

In 1986, one of the two treatment vessels inside the GCL process building malfunctioned causing a release of an estimated 30,000 gallons of creosote. GCL representatives excavated the contaminated surface soil and placed it in a mound; no further action was taken at the time.

### *Initial Response*

EPA, responding to a request from the NYSDEC, initiated a removal action at the Site in March 1991. The immediate action resulted in Site stabilization, installation of fencing, identification and disposal of hazardous wastes (both containerized and non-containerized from drums, tanks and sumps), staging of contaminated soil and wood debris, removal of 14,159 gallons of creosote from tanks and associated piping and removal of 500 gallons of creosote from floors, sumps, and other equipment, as well as a pilot study to determine the effectiveness of using bio-remediation composting of the soils.

In February 1994, EPA proposed that the Site be added to the National Priorities List (NPL). The listing became final in May of 1994.

### *Basis for Taking Action*

EPA conducted a remedial investigation/feasibility study (RI/FS) at the Site between 1993 and 1994. The results of the RI/FS indicated that soils, groundwater, and surface-water sediments were contaminated with creosote and creosote by-products such as anthracene, chrysene, benzo(a)anthracene, and benzo(a)pyrene.

One of the structures had asbestos insulation. Mounds of contaminated soil (4,800 cubic yards (cy)) and wood debris (3,000 cy) were also stockpiled on the Site. Several aboveground tanks and drums, holding approximately 20,000 gallons of creosote wastes and sludges were also on the Site.

The results of the RI/FS led to the September 30, 1994 Record of Decision(ROD), which selected a low temperature thermal desorption remedy for contaminated soils designated as operable unit (OU1). A second RI/FS for OU2, which focused on the Site groundwater and sediment contamination, served as the basis for the March 1995 ROD which selected groundwater treatment by extraction and onsite treatment, as well as thermal desorption of sediments.

#### **IV. Remedial Actions**

##### *Remedy Selection*

The GCL Site was divided into two OUs. The ROD for OU1 included the excavation and treatment of contaminated soils and sediments onsite through a thermal desorption process. OU2 addresses the contamination in the soils on the remainder of the Site (non-GCL property), and in the groundwater, surface water, and sediments. In March 1995, EPA selected a remedy in the OU2 ROD, calling for the extraction and onsite treatment of groundwater and discharge to surface water, and the excavation and treatment of contaminated sediments via the thermal desorption system used for OU1.

##### *Remedy Implementation*

##### Soils

The remedial design (RD) for OU1 was completed in September 1997. Construction activities for the OU1 remedial action began in September 1998 and were completed in August 2000. These activities included removal of all buildings and soil piles from the surface of the Site. Soils were excavated to depths of up to 20 feet below the surface and thermally treated onsite in a low temperature thermal desorption unit. In addition, several underground structures were located and removed from the Site. At the completion of remedial activities, approximately 109,000 tons of soil, sediment, and debris had been excavated and treated onsite. Excavated areas were backfilled with treated soil and clean soil brought from offsite sources, graded and compacted.

A Remedial Action Report for OU1 was completed and approved in September 2000 describing the work done.

##### Groundwater

The OU2 RD for groundwater was initiated in November 1997 and was completed in October 2001. The primary objective of the treatment system was to treat the groundwater contaminated with polycyclic aromatic hydrocarbons (PAHs), benzene, toluene, ethylbenzene and xylenes (BTEX) and DNAPL to levels acceptable for discharge to surface water pursuant to New York State Standards. Remedial construction was performed in two phases.

Site activities for Phase I began on October 29, 2002 and consisted of the drilling, installation and development of six extraction wells. Installation started with extraction well EW-3I followed



by 1I, 2I, 5I, 1B and 2B. Three overburden extraction wells and two bedrock extraction wells were installed on the GCL property. Aquifer testing was performed to determine the size of the plant equipment. One well, EW-5I, yielded little or no flow; therefore it was not connected to the groundwater treatment plant. Instead it was used as a monitoring well. Approximately 40,000 gallons of water were collected during the development and aquifer testing stages of the project. The water was sampled and discharged to the drainage swale upon complying with NYSDEC discharge standards. Based on the aquifer tests, the plant was designed for a minimum flow rate of 40 gallons per minute (GPM) and a maximum flow rate of 100 GPM with an average rate of 70 GPM. The equipment primarily used for this phase included drill rigs, pumps and frac tanks. Site activities for Phase I were completed on March 29, 2003.

Site activities for Phase II began on October 28, 2003. The work for Site preparation consisted of removing part of the chain link fence along the access road, installation of silt fencing for erosion control, removal of an old electrical line, clearing and grubbing of the Site, removal of soil in the location of the water treatment plant building and layout of the building area. Construction activities in Phase II included the construction of the plant, and the installation of six additional monitoring wells and two additional extraction wells for the adjacent MeadWestvaco property.

Six monitoring wells were installed on the MeadWestvaco property beginning on November 17, 2003. They consisted of wells 13I, 13B, 14I, 14B, 15I and 15B. These wells were completed on November 23, 2003 and are used to monitor the groundwater flow east of the GCL property. Two extraction wells (EW-4I and EW-4B) were also installed on the MeadWestvaco property and connected to the groundwater treatment plant.

A 60-foot by 80-foot metal building with a height of 22.5 feet on a concrete foundation was constructed. Water piping and electrical conduits were installed to connect the extraction wells to the treatment plant building. An 18-inch steel pipe was installed beneath the D&H property to enable the two extraction wells on the MeadWestvaco property to connect to the treatment plant building. The unit processes that are included in the pump and treat system consist of DNAPL separation/removal, oil/water separation, flow equalization, iron and manganese removal, air stripping, pH adjustment, mechanical filtration, liquid-phase carbon polishing and vapor-phase granular activated carbon treatment. The GCL groundwater extraction and treatment system operation is completely automatic and is equipped with the process instrumentation and controls that provide alarms and automatic shutoff controls for systems that malfunction or cause an alarm condition during operation.

A baseline sampling event was conducted from June 22 through June 30, 2004 for fourteen monitoring wells, eight extraction wells and two piezometers on the GCL and MeadWestvaco properties. The analyses included BTEX and PAH compounds. This baseline sampling was conducted before treatment plant operation began and was used to evaluate the effectiveness of the plant and plume containment/capture. This construction phase was completed in July 2004. The pump and treat system also underwent startup and performance testing for a brief period to ensure proper operation. The construction of Phase II, including all punch list items, was completed on September 13, 2004. The OU2 remedy operated for several months beginning in

August 2004 before it was temporarily shut down due to lack of funding. Long-Term Remedial Action (LTRA) officially began in October 2005. The system was restarted in January 2006.

#### *Institutional Controls Implementation*

The OU1 ROD provided that EPA would recommend to local agencies that institutional control measures be undertaken to ensure that land use of the GCL property continues to be industrial/commercial. The OU2 ROD provided that EPA would recommend to local agencies that institutional control measures be undertaken to ensure that future land use of the GCL property continues to be industrial/commercial, and precludes the use of Site groundwater for human consumption until drinking water quality is restored in the aquifer.

For the GCL property, EPA has been relying on the current industrial/commercial zoning, which serves as partial institutional control. The MeadWestvaco and D&H properties are not themselves contaminated but the plume underlies them and they contain parts of the groundwater pump and treatment system. EPA is preparing environmental easements/restrictive covenants for the GCL, MeadWestvaco, and D&H properties to prevent the installation of drinking water wells at the Site and to restrict activities which could affect the integrity of the Site remedy. At the GCL property, the easements will also limit the future use of the property to industrial/commercial.

#### *System Operations/Operation and Maintenance/Monitoring*

The groundwater pump and treatment system plant operates at approximately 60 to 80 GPM or approximately 2.6 million gallons a month. The green sandfilters are backwashed on the average of every 10 to 12 hours and the air stripper and green sand filter bags are changed on the average of every other day. After experiencing difficulty in meeting the early discharge effluent standards in September and October 2004 due to higher than expected influent concentrations for total dissolved solids (TDS) and manganese, the system has met all discharge criteria. A full-time treatment plant operator is available to perform frequent maintenance to ensure the plant continues to operate as designed.

There have been two sampling events since the initiation of LTRA; these events were performed in May 2006 and June 2007. They consisted of sampling 21 monitoring wells, one piezometer, and eight extraction wells (one not operating) for VOCs, PAHs, iron, and manganese. Wells were sampled using low-flow sampling. Laboratory analyses were provided by an independent laboratory contracted through Conti Environment and Infrastructure, the Site contractor. Ground water elevations were measured in thirty nine wells, including the seven extraction wells. The results of the events were summarized in reports that provide potentiometric surface maps for the intermediate and deep zones and contaminant concentration maps for both BTEX and PAHs (including naphthalene).

The Site was selected by EPA to undergo a Remedial System Evaluation (RSE) in the summer of 2006. The purpose of this review was to evaluate the existing treatment system to determine if its operation could be optimized. The results of this evaluation were presented in a 2007 report.

There are four main recommendations from the RSE report to decrease costs and improve the efficiency of the treatment plant operation: the installation of additional wells for the purpose of delineating the plume, implementation of a scheduled and stable groundwater monitoring sampling program, development of a vapor intrusion sampling plan and cessation of intermediate zone extraction wells operation. Implementation of these recommendations is underway.

Currently at the Site, three new monitoring wells have been installed on the MeadWestvaco property to further delineate the plume. After installation, all the wells were sampled in May 2008. Following the sampling round, the intermediate zone wells will be turned off temporarily and will be monitored. It was noted from the RSE report that historical ground water sampling from the intermediate zone extraction wells, screened at the overburden, suggests that the plume is stable without pumping from the overburden. Given that the overburden contributes high levels of natural manganese that complicate operation of the treatment plant, it's possible that the plant operations can be simplified without sacrificing effectiveness by eliminating pumping from the intermediate zone.

## **V. Progress since Last Five-Year Review**

Construction of the groundwater treatment facility was completed in 2004. As indicated in the previous paragraph, several improvements to optimize operations resulting from an RSE evaluation are underway. The first five-year review included a recommendation to evaluate the potential for vapor intrusion. Sampling for vapor intrusion is planned for late 2008. In the prior five-year review, it was suggested that post-treatment soil data be reviewed against current soil cleanup standards established for the individual PAHs. A request was made to the USACE to seek this information which was located at USACE's records facility in West Point, NY. Post-treatment soil data could not be reviewed at the time of this five year review due to damage caused by flooding at the facility that led to loss of many documents. Investigation to locate and review the information is underway.

## **VI. Five-Year Review Process**

### *Administrative Components*

The five-year review team consisted of Monica Baussan (Remedial Project Manager [RPM]), Chloe Metz (risk assessor), Lora Smith (risk assessor), and Edward Modica (hydrogeologist).

### *Community Involvement*

The EPA Community Relations Coordinator for the GCL Site, Wanda Ayala, published a notice in the *Press & Sun-Bulletin*, a local newspaper, on April 7, 2008, notifying the community of the five-year review process. The notice indicated that EPA is conducting a five-year review of the remedy for the Site to ensure that the implemented remedy remains protective of public health and the environment and is functioning as designed. It was also indicated that once the five-year report 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 GCL Site.

#### *Document Review*

The documents, data, and information which were reviewed in completing the five-year review are summarized in Table 3 (attached).

#### *Data Review*

There have been two groundwater sampling rounds since the initiation of LTRA at the Site: these were performed in May 2006 and June 2007. The groundwater data have been reviewed and found to be of good quality and representative of field conditions. Creosote-related contaminants currently exist in the unconsolidated and bedrock aquifers beneath the GCL property and the MeadWestvaco property. The identified contaminated areas of concern generally lie within the cones of influence developed from the extraction wells.

#### Intermediate zone

A comparison of recent data to historical results indicates benzene and other volatile organic concentrations, in general, have fluctuated. For example, in the core of the plume at MW-03I, the concentration of benzene in 2004 was reported to be 41 µg/L, in May 2006 benzene was 98 µg/L, and in June 2007 it was 110 µg/L. At MW-12I, north of MW-03I, the benzene concentration decreased from 23 µg/L in June 2004 to 0.57 µg/L in June 2007. Lastly, at MW-13I, which is located at the downgradient edge of the Site, the benzene concentration decreased from 3 µg/L in June 2004 to 0.98 µg/L in May 2006. However, the benzene concentration at MW-13I increased to 8.1 µg/L in June 2007. Analytical data collected during future sampling events will be used to characterize contaminant concentrations trends and verify concentrations at the north end of the plume.

Recent and historical data suggest naphthalene and other PAH concentrations continue to fluctuate since system startup at and near the plume center. At MW-03S and MW-03I naphthalene was detected at 13,000 µg/L and 14,000 µg/L during the March 2000 sampling event, the most recent data prior to the system start-up. The concentrations of naphthalene in these two wells detected in May 2006 were 9,900 µg/L and 4,100 µg/L, respectively and June 2007 at 12,000 µg/L and 1,600 µg/L, respectively. At MW-12I, naphthalene was detected at a concentration of 9,100 µg/L in June 2004, 4,800 µg/L in May 2006, and 240 µg/L in June 2007, suggesting a decrease since system startup. Lastly, data from the sentinel wells on the MeadWestvaco property suggest PAH contamination is limited to absent in this area. Comparison of data collected during future sampling events will be critical in characterizing PAH contamination trends.

All PAH detections are within the capture zone of the intermediate extraction wells. Shallow and intermediate zone wells were checked for DNAPL in June 2007. MW-03S was the only well identified to contain DNAPL. DNAPL was found in the shallow zone at well MW-03S

after it was sampled in June 2007. However, no product was observed in the sample.

### Bedrock

A comparison of recent data to historical results suggests PAH concentrations are fluctuating in the bedrock zone. At MW-03B, naphthalene fluctuated from a concentration of 3,500 D µg/L in April 2000 to 1,800µg/L in May 2006 to 9,500µg/L in June 2007. Concentration fluctuations were observed for the heavier PAHs between these three events (e.g. acenaphthene fluctuating at MW-03B from 420µg/L to 110 Jµg/L to 330µg/L). At distal locations decreasing trends are observed. At MW-11B, naphthalene was detected at a concentration of 580µg/L in June 2004 and the detected concentration in June 2007 was 53µg/L. At MW-15B, heavier PAH compounds also indicate decreasing concentrations. For example, acenaphthene decreased from 2.3µg/L to non-detect between December 2005 to June 2007. Analytical data collected during future sampling events will be beneficial in characterizing contaminant trends. Bedrock zone wells were checked for DNAPL in June 2007. MW-07B was the only well identified to contain DNAPL.

### *Site Inspection*

A Site inspection was performed on March 4, 2008. The following parties were in attendance:

Monica Baussan, EPA RPM, Region II  
Chloe Metz, EPA Risk Assessor, Region II  
Lora Smith, EPA Risk Assessor, Region II  
Richard O. Vogel, Plant Operator, Severson

### *Interviews*

No interviews were conducted during the review period.

### *Institutional Controls Verification and Effectiveness*

Once the environmental easements/restrictive covenants are in place they will be monitored to ensure they are effective. In the prior five-year review, it was suggested that post-treatment soil data on the GCL property be reviewed against current soil cleanup standards. This evaluation should better determine the suitability for reuse of most of the GCL property and may result in a refinement of the institutional controls in that area of the Site.

## **VII. Technical Assessment**

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

Based on performance evaluations and observations, all components of the remedy were completed

and are functioning as intended by the decision documents. The remedy selected in the 1994 ROD addressed contaminated soils in the area where GCL operated its facility, calling for the excavation and ex-situ treatment of contaminated soils. At the completion of remedial activities in August 2000, 109,000 tons of soil, sediment, and debris were excavated and thermally treated. Excavated areas were replaced with treated soil and clean soil brought from offsite sources. Contaminants in soil were reduced to cleanup levels specified in the ROD which were considered protective of human health and environment and allow for continued commercial/industrial use of the property.

The remedy selected in the 1995 ROD addressed groundwater, surface water, and soils/sediments on the remainder of the Site. The remedy calls for groundwater extraction, onsite treatment of groundwater contaminated with organic compounds, discharge of treated groundwater to a local creek, and excavation and treatment of contaminated sediments by means of thermal absorption. The goal of the groundwater component of the remedy is to restore groundwater to drinking water quality. Nevertheless, the ROD acknowledges that such a goal may not be achievable within a reasonable time frame due to the nature of the principal contaminant (creosote), in which case a contingency remedy may then focus on containing the extent of contamination within the Site boundary.

The most recent groundwater sampling event was conducted in June 2007 and consisted of nineteen monitoring wells and eight extraction wells sampled for volatile organic compounds (VOCs), PAHs, iron and manganese. Data show that contaminant concentrations in downgradient areas have generally decreased since 2000 whereas concentrations in the source area have fluctuated. NAPL was detected in several wells in the core area of contamination. The extent of BTEX and PAH plumes have been well defined. The plumes are observed to be contained within the system's capture zone. Long-term monitoring will determine whether groundwater restoration will be achievable within the core area of the plume.

The extraction system consists of seven pumping wells screened in the overburden and bedrock zones with bedrock wells running continuously. Pumping wells are functioning as designed and are generating a substantial cone of depression. The treatment plant was designed to treat influent concentrations of organic compounds of 19,027 µg/L. Process monitoring shows that the plant is functioning as designed; effluent is well within discharge requirements. Access to the Site is restricted by fencing. Area residences receive drinking water from a public supply well.

*Opportunities for optimization:* The RSE report recommended a pilot test to determine if pumping from intermediate wells could be discontinued. The evaluation determined that substantial drawdown is produced just by bedrock wells and that complete capture of contaminants would result from three wells pumping in the bedrock even without intermediate extraction wells (which account for nearly 24% of total extraction). Elimination of pumping from intermediate wells would also cut back on manganese fouling of greensand filters as the overburden contributes significantly to high levels of manganese. The recommendation has been adopted and the pilot test is planned for the fall of 2008.

An additional recommendation from the RSE involves installation of monitoring wells located about 300 feet downgradient of MW-11 and a monitoring well located near MW-8 screened in the zone

between the intermediate and bedrock zone. The wells will be used to further monitor groundwater quality to demonstrate plume delineation more rigorously. This recommendation was implemented in April 2008.

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

There have been no physical changes to the Site that would affect the protectiveness of the remedy. Currently, the property is zoned as industrial/commercial and is expected to remain as such. The downgradient neighboring property owner, MeadWestvaco, has expressed interest in purchasing and redeveloping the GCL property to expand operations.

Soil and groundwater use hasn't changed during the five year period of time considered in this review. Land use assumptions, exposure assumptions and pathways, and remedial action objectives considered in the decision documents remain valid. Specific parameters may have undergone minor changes since the time the risk assessment was completed but the process that was used is consistent with current practice and EPA believes that the need to implement a remedial action remains valid.

Since the 1994 ROD was signed, the practice of setting a cleanup value for total PAHs has been discontinued. PAHs have a relative toxicity, with some being more potent carcinogens than others. Establishing a cleanup value for total PAHs does not address the fact that benzo(a)pyrene, one of the most potent PAHs, represents a large percentage of the chemical composition of creosote. Information presented in the first Five-Year Review (2003) shows soil cleanup values for total PAHs from the ROD, that were set at the  $1 \times 10^{-5}$  cancer risk level, as well as those at the  $1 \times 10^{-6}$  level. Post-treatment soil data could not be reviewed to determine if concentrations in the soil met the cleanup goals established for the individual PAHs. The Remedial Action Report issued by the Army Corps of Engineers indicates that soils with concentrations of total PAHs above 500 mg/kg, ranging in depths from 8 feet to 20 feet bgs in some areas, were treated to 50 mg/kg total PAHs. Six inches of clean soil were then placed on top of the treated soil. Current receptors, such as trespassers crossing the Site for access to businesses on Delaware Avenue and workers at the groundwater treatment plant, would not be exposed to Site soils. However, without specific data on the soil cleanup values achieved for the individual PAHs, it is not possible to say whether exposure through direct contact, ingestion and inhalation below six inches would pose an unacceptable risk to future Site users (e.g., construction workers, Site workers, etc.) Therefore, the cleanup values are considered protective in the short term. As recommended in the 1994 ROD, institutional controls that maintain industrial usage would help ensure that the soil remedy remains protective and these are being implemented in the form easements.

The sediment excavation and treatment focused on eliminating potential organic contaminant threats from exposure to contaminated sediments through direct dermal contact and ingestion. As a result of the excavation and treatment of Site sediments to meet EPA clean up levels, the remedy is protective under current and future uses.

The evaluation of groundwater initially focused on one primary exposure pathway, direct ingestion as a potable water source, but more recently the pathway of vapor intrusion has become a concern. In March 1995, NYS DOH identified and sampled all downgradient residential wells within 0.5 mile of Site boundaries. These wells were not found to be affected by Site contaminants. June 2004 results for intermediate zone sampling suggested that Site contamination remained within 200-300 feet of the source area while bedrock zone sampling suggested contaminant migration was more extensive; however, there are no residential or public supply wells within the contaminated area. As a result, the exposure pathway is incomplete and the remedy protective under current uses. Although groundwater cleanup goals have not been met, treatment of groundwater continues. As recommended in the 1995 ROD, institutional controls, which would preclude the use of Site groundwater for human consumption until the aquifer is restored to drinking water quality, would further ensure that exposure to groundwater does not occur and these are being implemented in the form of easements.

Soil vapor intrusion (SVI) may be evaluated when soils and/or groundwater are known or suspected to contain VOCs. Several of the VOCs and PAHs in groundwater identified in the 1995 ROD still exceed their respective vapor intrusion screening criteria at the most protective values (cancer risk:  $1 \times 10^{-6}$ ) identified in the draft *Evaluating the Vapor Intrusion into Indoor Air* guidance document (USEPA 2002). While a majority of exceedences occur within the capture zone of extraction wells, benzene is extending north toward the MeadWestvaco property. Furthermore, the presence of creosote NAPL in the shallow overburden at a depth of 9 – 19 feet indicates that vapor intrusion should be investigated more comprehensively to evaluate the impact of this pathway onto the downgradient MeadWestvaco property. A vapor intrusion investigation of the MeadWestvaco property is expected to take place in the winter of 2008/2009 and this pathway will be addressed as necessary.

Because the Site may be redeveloped in the future, any construction there would need to be done with consideration of the potential for vapor intrusion. If development is pursued, two options may be considered prior to construction. One option would involve including a vapor mitigation system into the building design and sampling the indoor air upon construction completion to verify that the system is working as intended. The second option would be to complete construction and then perform subslab air tests at regular intervals until groundwater concentrations decrease below levels of concern to determine that the migration of vapors is not occurring. If vapors are detected above levels of concern, an appropriate system should be installed to remove the vapors.

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

No human health or ecological risks have been identified, and no weather related events have affected the protectiveness of the remedy. Other than the potential for vapor intrusion, no other information has come to light that could call into question the protectiveness of the remedy.



### *Technical Assessment Summary*

The results of the five-year review have demonstrated that:

- The remedy appears to be functioning as intended by the RODs.
- Efforts are currently underway to optimize the performance of the groundwater treatment facility so that groundwater can be treated more effectively.
- There have been no changes in the physical conditions of the Site that would affect the protectiveness of the remedy.
- Data show that contaminant concentrations in downgradient areas have generally decreased since 2000 whereas concentrations in the source area have fluctuated.
- NAPL was detected in several wells in the core area of contamination.
- The extent of BTEX and PAH plumes have been well defined.
- The plumes are observed to be contained within the system's capture zone.
- Long-term monitoring will determine whether groundwater restoration will be achievable within the core area of the plume.
- Implementation of Institutional Controls is underway.
- The implementation of four main recommendations from the RSE report to decrease costs and improve the efficiency of the treatment plant operation is underway.
- Three new wells have been installed on the MeadWestvaco property to further delineate the plume, and a sampling round of all the wells including the new ones has been performed in May 2008. Following the sampling round, the intermediate zone wells will be turned off temporarily and will be monitored as part of the RSE recommendations.
- A vapor intrusion investigation of the MeadWestvaco property will take place and this pathway will be addressed as necessary.

### **VIII. Issues/Recommendations, and Follow-up Actions**

The selected remedy for the Site has been constructed and includes ongoing operation, maintenance and monitoring activities. For the remedy to be fully implemented, appropriate institutional controls need to be put in place. Table 5 contains recommendations and follow-up actions which will ensure continued long-term protectiveness.

**IX. Protectiveness Statement**

Based on the current and reasonably anticipated use of the Site, the Environmental Protection Agency has determined that the Site-wide remedy protects human health and the environment. There are no current risks present at the Site in either groundwater or soils and none are expected, as long as the engineered and access controls are properly operated, monitored, and maintained. However, in order for the remedy to be protective in the long term, a vapor intrusion survey should be conducted at the MeadWestvaco property and institutional controls need to be implemented at the Site.

**X. Next Review**

Since hazardous substances, pollutants or contaminants remain at the GCL Site which do not allow for unlimited use or unrestricted exposure, in accordance with 40 CFR 300.430(f)(4)(ii), the remedy for the Site shall be reviewed no less often than once every five years. EPA will conduct another five-year review on or before September 30, 2013.

Approved:

  
George Pavlou, Acting Director  
Emergency and Remedial Response Division

9/26/08  
Date

### **List of Acronyms**

ARAR	Applicable or Relevant and Appropriate Requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COCs	Contaminant of Concern
EPA	United States Environmental Protection Agency
FS	Feasibility Study
GPM	Gallons per minute
LTRA	Long Term Response Action
MCL	Maximum Contaminant Level
NPL	National Priority List
NYSDEC	New York State Department of Environmental Conservation
OU	Operable Unit
RI	Remedial Investigation
RD	Remedial Design
ROD	Record of Decision
RPM	Remedial Project Manager
RSE	Remediation System Evaluation
USACE	United States Army Corps of Engineers
VOCs	Volatile Organic Compounds

## **List of Figures**

Figure 1 GCL Tie and Treating Superfund Site Location Map

Figure 2 GCL Tie and Treating Superfund Site Well Location Map

Figure 3 GCL Tie and Treating Site

<b>Table 1: Chronology of Site Events</b>	
<b>Event</b>	<b>Date(s)</b>
Accidental release of 30,000 gallons of creosote reported to NYSDEC	1986
EPA performed Removal Action	1991
Site placed on National Priorities List	1994
EPA conducted a remedial investigation/feasibility study (RI/FS) for OU1 and OU2	1993-94
Record of Decision for soil and debris (OU1)	1994
Record of Decision for groundwater (OU2)	1995
Remedial design for OU1 completed	1997
EPA Remedial Action for OU1 started	1998
EPA Remedial Action for OU1 completed	2000
EPA Remedial Design for OU2 completed	2001
EPA Remedial Action for OU2 started	2002
First Five-Year Review	2003
EPA Remedial Action for OU2 completed	2004
Long-Term Response Action (LTRA) officially beginning in October 2005.*	2005
RSE report completed for the Site	2006

\* This is the official start because funding was not available in 2004 for continued operation of the system as an LTRA.

<b>Table 2: Annual LTRA Operating Costs</b>	
Estimated Costs for Contract Performance	Estimated Cost per Year
Labor: USACE oversight and project management	\$60,000
Labor: Contractor project management and travel	\$96,000
Labor: System operation (1.5+ full time equivalents)	\$209,000
Ground water sampling and reporting	\$121,000
Utilities: Electricity	\$57,000
Non-electric utilities and other services	\$20,000
Non-utility consumables, disposal and small repairs	\$105,000
Treatment plant analytical costs	\$28,000
Ground water sampling analytical costs	\$12,000
Total Estimated Cost	\$708,000

**Table 3: Documents, Data, and Information Reviewed in Completing the Five-Year Review**

<b>Document Title, Author</b>	<b>Submittal Date</b>
Record of Decision(Soil Remediation – OU1), EPA	September 1994
Initial Remedial Investigation/Feasibility Study Report, Ebasco Services	January 1995
Record of Decision (Groundwater remediation – OU2), EPA	March 1995
Remedial Design for OU1, CDM	September 1997
Remedial Action Report for OU1, EPA	September 2000
Remedial Design for OU2, EPA	October 2001
Five-Year Review Report,EPA	September 2003
Remedial Action Report for OU2, EPA	September 2005
GCL Groundwater Report, CDM	May 2006
Remedial System Evaluation (RSE) report, EPA	December 2006
GCL Groundwater Report, CDM	June 2007

**Table 4: Other Comments on Operation, Maintenance, Monitoring, and Institutional Controls**

<b>Comment</b>	<b>Suggestion</b>
Groundwater treatment facility will go through a number of changes from the recommendations indicated in the RSE report	Follow through on pilot test to discontinue pumping from intermediate zone and bypassing air-stripper.



**Table 5: Recommendations and Follow-up Actions**

Issue	Recommendations and Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness (Y/N)	
					Current	Future
Groundwater Sampling Monitoring Program	Institute annual monitoring program to demonstrate plume containment.	USEPA	ERT	4/09	N	Y
Evaluation of potential for soil vapor intrusion	perform soil vapor intrusion sampling in the MeadWestvaco property building	USEPA	ERT	9/09	N	Y
Implementation of Institutional Controls	Work is being performed by the Office of Regional Counsel in conjunction with the Emergency and Remedial Response Division to secure easements memorializing institutional controls and EPA's access to wells and piping on the GCL, MeadWestvaco and D&H properties.	USEPA	USACE	9/09	N	Y
Post-treatment soil data	Seek and collect information on post-treatment soil data from USACE and give to risk assessors for their evaluation.	USEPA	USACE	9/09	N	Y