

**Second Five-Year Review Report
for
Hooker (102nd Street) Landfill Superfund Site
Niagara County
Niagara Falls, New York**



Prepared by:

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

September 2006

**Second Five-Year Review Report
Hooker (102nd Street) Landfill Superfund Site**

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List of Acronyms

CIC	Community Involvement Coordinator
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Differences
NPL	National Priorities List
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
MCL	Maximum Contaminant Level
PRP	Potentially Responsible Party
RI	Remedial Investigation
RA	Remedial Action
RD	Remedial Design
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
O&M	Operation and Maintenance
COPC	Contaminant of Potential Concern

Executive Summary

This second Five-Year Review for the Hooker (102nd Street) Landfill Superfund Site (the “Site”) located in Niagara Falls, Niagara County, New York, has been completed.

Based upon reviews of the Record of Decision, the Amended Record of Decision, the Explanation of Significant Differences, Semi-Annual Ground-Water Sampling Results, Annual Operation & Maintenance Reports, Site Inspection Reports as conducted by the NYSDEC, and a Site visit by the EPA’s RPM in February 2006, it has been concluded that the remedies, as defined by the Site’s decision documents, continue to protect human health and the environment.

Five-Year Review Summary Form

SITE IDENTIFICATION

Site Name (from WasteLAN): Hooker (102nd Street) Landfill Superfund Site

EPA ID (from WasteLAN): NYD980506810

Region: 2

State: NY

City/County: Niagara Falls/Niagara

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: 03/06/99

Has site been put into reuse? YES NO N/A

REVIEW STATUS

Lead agency: EPA State Tribe Other Federal Agency _____

Author name: Paul J. Olivo

Author title: Remedial Project Manager

Author affiliation: EPA

Review period:** 09/01/2001 to 04/30/2006

Date(s) of site inspection: 02/22/2006

Type of review:

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

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

Triggering action:

- Actual RA Onsite Construction at OU # _____ Actual RA Start at OU# __1__
 Construction Completion Previous Five-Year Review Report
 Other (specify) _____

Triggering action date (from WasteLAN): 08/15/2001

Due date (five years after triggering action date): 08/15/2006

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

Acres in use or available for use: restricted: 22 unrestricted: 0

Five-Year Review Summary Form (continued)

Issues, Recommendations, and Follow-Up Actions

This site has ongoing operation, maintenance and monitoring activities as part of the selected 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. 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.

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

Since the contaminant Mercury is missing from the chemicals tested for during the annual ground-water sampling events, Mercury should be added to the list for ground-water sampling.

Since there were no surface-water samples taken in areas near the Site, surface-water and sediment samples should be taken near wells PCM-03, PCM-04, and PCM-05.

Piezometer Nos. 8 and 9 should be checked to be certain that they are giving accurate readings.

Protectiveness Statement

The remedy at the Hooker (102nd Street) Site protects human health and the environment. There are no exposure pathways that could result in unacceptable risks, and none are expected as long as the engineered and institutional controls currently in place continue to be properly operated, monitored, and maintained.

I. Introduction

This second Five-Year Review of the Hooker (102nd Street) Landfill Superfund Site (the “Site”) 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 continue to be protective of public health and the environment and that they continue to function as intended by the Site’s

decision documents. This document will become part of the Site file.

This is the second Five-Year Review for the Site. Since, after the completion of the remedial action, contaminants remain on-Site, a statutory Five-Year Review is required. In accordance with Section 1.3.3 of the Five-Year Review guidance, a subsequent statutory Five-Year Review is triggered by the signature date of the previous Five-Year Review Report. The trigger for this subsequent Five-Year Review is the date of the previous Five-Year Review Report, which was August 15, 2001.

II. Site Chronology

Table 1, which is attached, summarizes the Site-related events running from the placing of hazardous wastes on the Site through to the deletion of the Site from the National Priorities List.

III. Site Background

The Site is located on Buffalo Avenue in Niagara Falls, New York. It borders on the Niagara River (the “River”), and lies less than one-quarter of a mile directly south of the Love Canal Superfund Site, separated from the Love Canal Site by the LaSalle Expressway, and Buffalo and Frontier Avenues.

The Site consists of approximately 22.1 acres; 15.6 acres are owned by Occidental Chemical Corporation (OCC) formerly the Hooker Chemicals & Plastics Corporation and 6.5 acres are owned by Olin Corporation (Olin). (OCC and Olin are collectively referred to as the “Companies.”) The Companies operated the Site as a landfill from approximately 1943 to 1970.

During the period of active waste disposal at the Site (1943 through 1970), the Companies deposited approximately 159,000 tons of wastes, in both liquid and solid forms, into the landfill. These deposits included approximately 4,600 tons of benzene, chlorobenzene, chlorophenols, and hexachlorocyclohexanes, all of which are hazardous substances.

Prior to the grading and capping of the Site, topographical relief at the Site was minimal since the ground surface was relatively flat. The maximum change in elevation across the Site behind the bulkhead was approximately five feet. Subsequent to the grading and capping, and to allow for proper surface-water runoff, the OCC portion of the Site rises to approximately 23 feet above the elevation of Buffalo Avenue while the Olin section of the Site rises to a height of approximately 17 feet.

In December 1970, The Buffalo District of the U.S. Army Corps of Engineers (COE) inspected the Site and notified the Companies that their disposal practices were in violation of the Rivers and Harbors Act of 1899 (RHA). As a result, any further landfilling at the Site by the Companies was stopped. A bulkhead along the water’s edge was completed in 1973.

On December 20, 1979, a complaint pursuant to the Resource Conservation and Recovery Act (RCRA), the Clean Water Act (CWA), and the RHA was filed by the United States of America, on behalf of the Administrator of the EPA, against the Companies seeking injunctive relief to remediate imminent and substantial endangerment to the public health and welfare, and civil penalties. On November 18, 1980, a complaint pursuant to the New York State Conservation Law and the state's common law of public nuisance was filed by New York State (NYS) against OCC and Olin in the U.S. District Court for the Western District of New York, seeking injunctive relief and civil penalties. The two complaints were consolidated. The Site was added to the National Priorities List in September 1983.

IV. Remedial Actions

Remedy Selection

On September 26, 1990, a Record of Decision (ROD) was signed for the remediation of the Site. The ROD called for capping of the landfill with a synthetic liner; consolidation of all contaminated soils beneath the cap; construction of a slurry wall surrounding the landfill's perimeter to contain the plume of nonaqueous phase liquids (NAPL) emanating from the landfill; recovery and treatment of leachate to maintain an inward gradient across the slurry wall; recovery of NAPL and the destruction of any NAPL recovered; removal of contaminated River sediments; incineration of any sediments with high levels of contaminants and reconsolidation of excavated sediments with lower levels of contaminants beneath the cap (the ROD was amended on June 9, 1995 to eliminate the incineration contingency - all excavated sediments have since been consolidated beneath the cap); refurbishing of an existing City of Niagara Falls's storm sewer which transects the landfill (on September 30, 1993, the EPA issued an Explanation of Significant Differences [ESD] to notify the public that the then-existing storm sewer would be plugged and a new storm sewer would be re-routed around the eastern perimeter of the landfill); post-remedial monitoring; and, institutional controls.

Remedy Implementation

On May 24, 1991, the EPA sent Special Notice letters under Section 122(e) of CERCLA to OCC and Olin offering the Companies the opportunity to perform the Remedial Design/Remedial Action (RD/RA) as set forth in the ROD for the Site. The Special Notice provided for a moratorium of 120 days during which the EPA agreed not to conduct the RD/RA pending the outcome of negotiations for OCC and Olin to conduct the RD/RA. This letter also included a demand for the reimbursement of the EPA's past costs of \$3,047,706.88 plus interest. On July 16, 1991, OCC and Olin responded to the EPA's Special Notice and Demand Letter with a "good faith offer" of willingness to perform the RD/RA. Negotiations however, were not successful.

In the absence of an agreement on the RD/RA, the EPA, pursuant to Section 106(a) of CERCLA, issued a Unilateral Administrative Order (UAO) to OCC and Olin on September 30, 1991, for them to conduct the RD/RA for the Site. Counsel for OCC and Olin indicated that their clients

intended to comply with the terms of this UAO.

The first construction activity at the Site began in April 1996.

The rerouting of the Sewer Line began in July 1996 and the construction was completed in September 1996.

The consolidation of all contaminated soils which started in June 1996, was finished in August 1996. Beginning in July 1996, a cofferdam was built around the portion of the embayment which contained contaminated sediments. After the embayment area was dewatered, the process of removing the contaminated sediments, placing them on top of the landfill, and then positioning clean fill into the excavated embayment, was completed in November 1996.

The circumferential slurry wall was started in August 1996, and was completed in May 1997. The construction of the cap began in November 1996, and was completed in November 1997.

In the year 2005, there were 18,153 gallons of nonaqueous phase leachate (NAPL) recovered from the Site's eight dedicated NAPL-Recovery Wells. The recovered NAPL was then sent to an off-Site incinerator (Clean Harbors Facility in Deer Park, Texas) for final destruction. In the year 2004, there were 12,151 gallons of NAPL recovered from the Site which were also incinerated.

The overburden outside the slurry wall was monitored quarterly for the first two years of operation, semi-annually for the next eight years, and now after ten years of operation, it will be monitored once every year. There are three bedrock- monitoring wells positioned on the southern, northern, and eastern sides of the Site. These bedrock wells were, and will be, monitored in the same manner as the overburden wells.

Systems Operations/Operation and Maintenance (O&M)

All leachate collected at the Site has been, and is being transferred via a forcemain system to the nearby Love Canal Treatment Facility (LCTF) where the leachate is treated and discharged. The LCTF is permitted to discharge to the Niagara Falls municipal sewerage system for final treatment at the Niagara Falls Publicly Owned Treatment Works. During the years 2004 and 2005, the leachate collection system removed 408,329 gallons of Aqueous Phase Leachate (APL) from the Site.

Institutional controls in the form of deed restrictions, precluding the extraction of ground water other than that required for implementation, and operation and maintenance of the remedy and any excavation, construction, or other activities that could interfere with the integrity of the landfill cap or other engineering controls in place at the Site, were filed on January 25, 2000 in the County Recorder's Office by the Companies which are the owners of the real property which comprises the Site. The filing of the deed restrictions which run with the land was effectuated under the terms of a Consent Decree between the Companies and the EPA and NYS, which was lodged with

the Court on July 19, 1999 and which was entered into judgement by the Court on October 1, 1999. This Consent Decree also allowed the EPA to recover past response costs and allowed the federal Natural Resources Trustees to recover claims arising out of releases from the Site.

At all times since the entry of the UAO on September 30, 1991, the Companies have been in compliance with the terms and conditions of the UAO. The final element of the remedy, the construction of which was completed on March 6, 1999, is the forcemain system.

In March 2002, the EPA accepted the Companies' Certification that the Remedial Action at the Site had been completed. Also in March 2002, the NYSDEC assumed the enforcement lead for the Site, which included the oversight responsibility for Operation and Maintenance activities.

The Site was deleted from the National Priorities List on August 5, 2004.

V. Progress Since Last Five-Year Review

The first Five-Year Review was completed in August 2001, pursuant to OSWER Directives 9355.7-02 (1991), 9355.7-02A (1994), and 9355.7-03A (1995). The first Five-Year Review concluded that the implemented remedy continued to be protective of public health and the environment. There were no recommendations, follow-up actions, or issues presented in the first Five-Year Review. Additional monitoring which has occurred since the first Five-Year Review, has been discussed in this Report.

VI. Five-Year Review Process

Administrative Components

The Five-Year Review Team consisted of: Paul J. Olivo (Remedial Project Manager), Edward Modica (Hydrogeologist), Julie McPherson (Risk Assessor), Mindy Pensak (Ecological Risk Assessor), and George Shanahan (Attorney).

Community Involvement

The EPA Community Involvement Coordinator for the Site, Michael J. Basile, published a notice in the *Niagara Gazette*, a local newspaper, on February 4, 2006, notifying the community of the initiation of the Five-Year Review process. The notice indicated that the EPA would be 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 Review is completed, the results will be made available in the local Site repository. The notice also solicited public comments or questions related to the Five-Year Review Process or to the Site.

In addition, the notice included the RPM's mailing address, e-mail address, and telephone number for any public comments or questions. A similar notice will be published when the review is completed.

Document Review

The documents, data, and information which were reviewed in completing this second Five-Year Review are summarized in Table 2 (attached).

Monitoring and Data Review

The Companies, through their contractor, Miller Springs Remediation Mgmt., Inc., operate and maintain the facilities. NAPL recovery wells are operated and NAPL is collected in tanks and disposed of off-Site. Leachate is collected and discharged to the LCTF. Overburden and bedrock wells are monitored annually. Water level monitoring data are due quarterly. Surface area of the landfill is mowed as needed and the fences are being maintained.

Since the completion of the forcemain system and initiation of the leachate pumping operations, the system has shown excellent integrity in that the four wet wells have been recharging properly and the leachate level within the landfill has dropped and the reduced level has been maintained. During the present steady-state operations, enough leachate has been and will be removed from the landfill so as to maintain the inward differential (gradient) of one (1) to two (2) feet.

As to water-level monitoring within the landfill (piezometers) and immediately outside the slurry wall (monitoring wells), water levels in the ten pairs of piezometers and monitoring wells were measured quarterly throughout the year 2005 in accordance with the O&M Plan. This water-level monitoring showed an inward gradient was maintained for the entire time period at nine of the ten well pairs. Only one well pair on the north side of the Site (Buffalo Avenue) indicated that an inward gradient was being maintained for three of the four monitoring events at that location. However, analytical results indicated that no Site parameters above the survey levels were outside the slurry wall at that specific location.

For the period of record, the water level trends in these piezometers seem to be consistently "flat," close to the level of the bottom of the piezometers. From these trends, it is not clear whether water levels inside the landfill are as low or lower than screen bottom because water levels inside the landfill are that low or because the piezometers are not functioning properly. Consequently, it is suggested that piezometers 8 and 9 be tested to assure that they are not clogged and are in hydraulic communication with material in which they are screened and are functioning properly.

While the water quality monitoring program has shown no detections at most perimeter wells at the Site, as shown in Table 3, several Site-specific constituents have consistently been detected in perimeter wells downgradient of the Site (PCM-03, PCM-04, and PCM-05) above their respective criteria. Residual contamination in subsurface soil may still persist in the soil matrix where the

wells are screened and affect water quality in the saturated zone outside of the slurry wall near the embayment area. This finding is not unexpected as the slurry wall was constructed as close as was practicable to the edge of the steep embankment and could not enclose all of the contaminated soil. Although inward gradients across the wall should limit the migration of contaminated water to the zone just outside the wall and direct it into the landfill, pore water affected by contaminated soil may migrate into the surface water in the embayment area and affect ambient surface-water quality. It is suggested that surface-water quality measurements in the embayment area be added to the O&M program to confirm that ambient-water quality standards are being maintained and are not negatively impacted by contaminated water near the slurry wall.

Table 4 (attached) summarizes the comments and suggestions stemming from this five-year review.

Site Inspection

The Site was inspected by the Remedial Project Manager on February 22, 2006.

Interviews

No interviews were conducted for this review.

VII. Technical Assessment

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

The remedy calls for contaminants at the Hooker (102nd Street) Landfill Site to be contained within the perimeter slurry wall that is keyed into the underlying clay/till formation. Inward ground-water gradients would be maintained across the slurry wall by a ground-water collection system. The landfill would then be covered with a synthetic-lined cap to reduce infiltration. Since the startup of pumping operation in 1999, an inward gradient has been maintained across the wall. According to 2005 Annual Report, water-level monitoring at twenty perimeter wells show that the hydraulic capture around the Landfill has been largely maintained. The ground-water APL collection system appears to be functioning as intended. Discharge is eventually conveyed to the Love Canal Treatment Facility. The NAPL recovery system is also functioning properly, especially due to improved capacity at well NR-02. The landfill cap appears to be in good repair. The perimeter fence is intact and restricts access as intended.

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

The majority of the exposure pathways and the receptor populations identified in the 1990 Baseline Human Health Risk Assessment (BHHRA) are still valid. Although some exposure assumptions have changed and several exposure pathways were not evaluated, it is not expected to affect the

remedy.

The toxicity values for several COPCs have changed since the remedial investigation (RI). In order to account for changes in toxicity values since the RI, the maximum detected concentrations of COPCs detected in the on-Site monitoring wells during the 2005 sampling period were compared to their respective residential ground-water Preliminary Remediation Goals (PRGs) and MCLs (National Primary Drinking Water Standards) and New York Department of Conservation Water Quality Regulations (NYSDEC WQR). The MCL is the highest level of contaminant that is allowed in drinking water. MCLs are promulgated standards that apply to public water systems and are intended to protect human health by limiting the levels of contaminants in drinking water. The PRGs are a human health risk based value that is equivalent to a cancer risk (CR) of 1×10^{-6} or a hazard index (HI) of 1. Table 5 presents a summary of the contaminant-specific cleanup goals.

Soil vapor intrusion was not previously evaluated as a potential future exposure pathway based on the conservative (health protective) assumption that buildings are located above the maximum detected concentration of the contaminants of concern in the ground water. The health-based screening criteria provided in the Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (USEPA, 2002) were used to initially evaluate this exposure pathway. This guidance provides calculations of concentrations in ground water associated with indoor air concentrations at acceptable levels of cancer risk and noncancer hazard. This review compared the maximum detected concentrations of the chemicals of potential concern with the vapor intrusion screening criteria (Table 6). Benzene and chlorobenzene are the only constituents that have exceeded their respective risk based criteria (1×10^{-6}) and the upper bound of the risk range (1×10^{-4}). This does not indicate that a vapor intrusion problem would occur if a building were to be erected over the Site. This merely indicates that further investigation would be necessary, which includes Site-specific considerations such as the type of building, the location of the building to the maximum detected concentration, and the subsurface characteristics of the Site. Currently, there are no buildings on the Site, nor is any type of construction planned or possible due to potential damage to the landfill's cap; therefore, the exposure pathway is incomplete at this time.

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

There is no information that calls into question the protectiveness of the remedy

Technical Assessment Summary

Based upon the results of this second Five-Year Review process, it has been concluded that the remedy is functioning as intended by the Site's decision documents. The specific points are as follows:

- the inward gradient across the slurry wall, with only one nonmaterial exception at the piezometer located along Buffalo Avenue, has been maintained since the initial installation

of the remedy; and,

- the steady-state leachate pumping operations indicate that the integrity of the slurry wall has also been maintained since the initial installation of the remedy.

A breakdown of the estimated annual monitoring costs is presented in Table 7.

VIII. Protectiveness Statement

The remedy at the Hooker (102nd Street) Site protects human health and the environment. There are no exposure pathways that could result in unacceptable risks, and none are expected as long as the engineered and institutional controls currently in place continue to be properly operated, monitored, and maintained.

IX. Next Review

The next Five-Year Review for the Site will be completed before August 2011, five years from the date of this review.

Approved:

Table 1: Site Chronology

1945 to 1970:	The Companies deposited 159,000 tons of hazardous wastes at the Site
1979	The EPA sued the Companies.
1982 to 1984	RI Work Plan negotiations and pre-remedial investigations
1983-September	Site listed on the National Priorities List
1984-June	Work Plan for RI approved
1984-December	Site Operations Plan for RI approved
1985	RI field work began
1990-July	RI Final Report and FS Final Report approved
1990-Sept	ROD signed by the EPA
1991-Sept	The EPA issued an Administrative Order for the Remedial Design and Remedial Action
1996-April	Construction of the Remedy was started
1999-March	Construction of the Remedy was completed
2001-August	First Five-Year Review Report issued by the EPA
2002-March	New York State Department of Environmental Conservation assumed oversight of the Operation and Maintenance at the Site
2004-August	Site deleted from the National Priorities List

Table 2.- List of Documents Reviewed

The following documents were reviewed in completing the second Five-Year Review:

- Remedial Investigation, Final Report, July 1990;
- Record of Decision for the 102nd Street Landfill Superfund Site, September 1990;
- Explanation of Significant Differences, September 1993;
- Record of Decision Amendment, June 1995;
- Consent Decree, April 1999;
- Final Closeout Report, September 1999;
- Annual Operation and Maintenance Report for 2001;
- Annual Operation and Maintenance Report for 2002;
- Annual Operation and Maintenance Report for 2003;
- Annual Operation and Maintenance Report for 2004;
- Annual Operation and Maintenance Report for 2005; and,
- EPA Guidance for conducting Five-Year reviews.

Table 3.: - Comparison of the maximum detected concentrations of COPCs detected in the on-site monitoring wells to their respective human health risk based screening criteria (Preliminary Remediation Goal), Primary Drinking Water Standard (Maximum Contaminant Level) and New York Department of Environmental Conservation Water Quality Regulations (NYSDEC WQR)

COPC	Maximum Detected Concentration (ug/l)	Region 9 Preliminary Remediation Goal (ug/l)	Primary Drinking Water Standard - MCL (ug/l)	NYSDEC WQR (ug/l)	Location
1,2,3-trichlorobenzene	36			5	PCM-03
1,2,4-trichlorobenzene	41	7.2 (nc)	70	5	PCM-03
1,2-Dichlorobenzene	87	370 (nc)	600	3	PCM-03
1,4-Dichlorobenzene	300	0.5 (c)	75	3	PCM-03
2-Chlorotoluene	28	120 (nc)		5	PCM-03
Chlorobenzene	8600	110 (nc)	100	5	PCM-04
Benzene	140	0.35 (c)	5	1	PCM-04
2,4-Dichlorophenol	11	110 (nc)		1	PCM-03
2-Chlorophenol	21	30 (nc)			PCM-03
4-Chlorophenol	60				PCM-03
Phenol	0.628	11000 (nc)		1	PCM-03
alpha- BHC	0.055	0.01 (c)		0.01	PCM-07
beta-BHC	0.34	0.037 (c)		0.04	PCM-03
delta-BHC	0.44			0.04	PCM-03
gamma-BHC	0.24	0.052 (c)	0.2	0.05	PCM-01
Arsenic	7.2	0.045 (c)	10	25	PCM-02

Footnotes:

(c): Value is based on a cancer endpoint

(nc): Value is based on a noncancer endpoint

*: Values are National Secondary Drinking water regulations, which are nonenforceable guidelines regulating contaminants that may cause cosmetic or aesthetic effects in drinking water.

Bold The maximum detected concentration of the contaminant of concern has exceeded the human health risk-based concentration (PRG), its respective maximum contaminant level (MCL)

and/or its respective NYSDEC WQR.

Source:

Region 9 Preliminary Remediation Goals (PRGs) are human health risk based screening criteria. These values are equivalent to a cancer risk of 1×10^{-6} or a hazard index of 1. Refer to: <http://www.epa.gov/Region9/waste/sfund/prg/index.htm>

National Drinking Water Standards (MCLs) are legally enforceable standards that apply to public water systems. Refer to: <http://www.epa.gov/cgi-bin/epaprintonly.cgi>

New York State Department of Environmental Conservation Water Quality Regulations (NYSDEC WQR) are the ARARs established in the ROD. Refer to: <http://www.dec.state.ny.us/website/regs/part703.html>

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

Comment	Suggestion
The contaminant Mercury is missing from the chemicals tested for during the annual ground-water sampling events.	Mercury should be added to the list for ground-water sampling.
There are no surface-water samplings which were taken in areas near the Site.	Based on investigations of contamination near wells PCM-03, PCM-04, and PCM-05, surface-water and sediment sampling should be performed.
Ensure that all ten piezometers are providing accurate readings.	Based on the discussions found on pages 8 and 9, all piezometers should be tested to ensure they are not clogged and are in hydraulic communication.

Table 5: - Comparison of the cleanup goals established for site specific indicators to the New York State Department of Environmental Conservation TAGMs and the EPA Region 9 PRGs - Residential.

COPC	Cleanup Goal established in the ROD (mg/kg)	NYSDEC Soil Cleanup Objective (mg/kg)	NYSDEC Protection of Groundwater Objective (mg/kg)	EPA Region 9 PRG - Residential (mg/kg)
mercury	0.2	0.1		6.1 (nc)
2-monochlorotoluene	0.1			
4-monochlorotoluene	0.1			
1,2-dichlorobenzene	0.1			600 (nc)
1,4-dichlorobenzene	0.1			3.4 (c)
1,2,3-trichlorobenzene	0.1			
1,2,4-trichlorobenzene	0.1	0.33	0.034	62 (nc)
1,2,3,4-tetrachlorobenzene	0.1			
1,2,4,5-tetrachlorobenzene	0.1			18 (nc)
pentachlorobenzene	0.1			49 (nc)
hexachlorobenzene	0.1	0.41	1.4	0.3 (c)
alpha-HCCH	0.1	0.11	0.2	0.09 (c)
beta-HCCH	0.1	0.2	0.2	0.3 (c)
delta-HCCH	0.1	0.3	0.3	
gamma-HCCH	0.1		0.06	0.4 (c)
2,4-dichlorophenol	0.1	0.4	0.4	180 (nc)
2,5-dichlorophenol	0.1			
2,4,5-trichlorophenol	0.1			6100 (nc)
2,4,6-trichlorophenol	0.1			6.1 (nc)

Footnotes:

(c): Value is based on a cancer endpoint

(nc): Value is based on a noncancer endpoint

*: The cleanup goal for mercury in soil is 0.1 mg/kg and the cleanup goal for mercury in

sediment is 0.2 mg/kg

Bold The cleanup goal established in the ROD exceeds the current NYSDEC Protection of Groundwater Criteria

Source:

Region 9 Preliminary Remediation Goals (PRGs) are human health risk based screening criteria. These values are equivalent to a cancer risk of 1×10^{-6} or a hazard index of 1. Refer to: <http://www.epa.gov/Region9/waste/sfund/prg/index.htm>

New York State Department of Environment Technical and Administrative Guidance Memo #4046. These values are state established cleanup objectives. Refer to: <http://www.dec.state.ny.us/website/der/tagms/prtg4046.html>

Table 6.: - Comparison of the maximum detected concentrations of COPCs detected in the monitoring wells to their respective vapor intrusion screening criteria

COPC	Maximum Detected Concentration (ug/l)	Vapor Intrusion Screening Value (ug/l)	Vapor Intrusion Screening Value (ug/l)
		Cancer Risk = $1 * 10^{-6}$ Non-cancer hazard = 0.1	Cancer Risk = $1 * 10^{-4}$ Non-cancer hazard = 1
1,2,3-trichlorobenzene	36		
1,2,4-trichlorobenzene	41		
1,2-Dichlorobenzene	87	260 (nc)	2600 (nc)
1,4-Dichlorobenzene	300	820 (nc)	8200 (nc)
2-Chlorotoluene	28		
Chlorobenzene	8600	39 (nc)	390 (nc)
Benzene	140	1.4 (c)	140 (c)
2,4-Dichlorophenol	11		
2-Chlorophenol	21	110 (nc)	1100 (nc)
4-Chlorophenol	60		
Phenol	0.628	2.1 (c)	210 (c)
alpha- BHC	0.055	3.1 (c)	310 (c)
beta-BHC	0.34		
delta-BHC	0.44		
gamma-BHC	0.24	11 (c)	1100 (c)

Footnotes:

(c): Value is based on a cancer endpoint

(nc): Value is based on a noncancer endpoint

Bold The maximum detected concentration of the contaminant of concern has exceeded its respective vapor intrusion risk-based criterion.

Source:

Vapor Intrusion Screening Values are used for screening purposes. Refer to: <http://www.epa.gov/correctiveaction/eis/vapor.htm>

Table 7: Estimated Annual Monitoring Costs

Sampling and Analysis.....	\$75,000
Site Inspection and Maintenance.....	\$25,000
Total Estimated Annual Monitoring Costs.....	\$100,000