Five-Year Review Report
Niagara County Refuse Site
Town of Wheatfield
Niagara County, New York

Prepared by
U.S. Environmental Protection Agency

October 2003

Five-Year Review Summary Form

SITE IDENTIFICATION

Site name *(from WasteLAN)*: Niagara County Refuse

EPA ID *(from WasteLAN)*: NYD000514257

Region: 2 | **State:** NY | **City/County:** Wheatfield/Niagara

SITE STATUS

NPL status: ■ Final ☐ Deleted ☐ Other (specify) _____

Remediation status (choose all that apply): ☐ Under Construction ■ Constructed ■ Operating

Multiple OUs?* ☐ YES ■ NO | **Construction completion date:** 6/30/00

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

REVIEW STATUS

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

Author name: Michael J. Negrelli

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

Review period:** 10/19/1998 to 10/19/2003

Date(s) of site inspection: 10/23/2003

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

Triggering action date *(from WasteLAN)*: 10/19/1998

Does the report include recommendation(s) and follow-up action(s)? ☐ yes ■ no
Is human exposure under control? ■ yes ☐ no ☐ not yet determined
Is contaminated groundwater under control? ■ yes ☐ no ☐ not yet determined
Is the remedy protective of the environment? ■ yes ☐ no ☐ not yet determined
Acres in use or suitable for reuse: 65 acres ■ restricted ☐ unrestricted

* ["OU" refers to operable unit.]
** [Review period should correspond to the actual start and end dates of the Five-Year Review in WasteLAN.]

I. Introduction

This five-year review was conducted by Michael J. Negrelli, U.S. Environmental Protection Agency (EPA) Remedial Project Manager (RPM). This review was conducted pursuant to Section 121(c) of the Comprehensive Environmental Response, Liability and Compensation Act (CERCLA), as amended, 42 U.S.C. Section 9601, et seq., and 40 C.F.R. 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 assure that implemented remedies protect public health and the environment and that they function as intended by the site decision documents. This document will become part of the site file.

II. Site Chronology

Table 1, below, summarizes site-related events from discovery to present.

Table 1: Chronology of Site Events	
Event	**Date**
Site Placed on National Priorities List (NPL)	1983
EPA Initiates Remedial Investigation/Feasibility Study (RI/FS)	1987
Administrative Order on Consent with Potentially Responsible Parties (PRPs) for RI/FS	1989
RI/FS Completed	1993
Record of Decision (ROD) Issued by EPA	1993
Consent Decree between EPA and PRPs for Remedial Design/Remedial Action (RD/RA) Entered with Court	1995
RD Completed/RA Started	1997
Preliminary Close-Out Report Issued	2000
RA Completed	2000
Operation and Maintenance (O&M) Started	2000
Deletion from NPL	2003*

* projected

III. Background

Physical Characteristics

The Niagara County Refuse site (Site) is a former municipal landfill, comprised of approximately 65 acres, located along the eastern border of the Town of Wheatfield, New York and the western border of the City of North Tonawanda. The Site lies approximately 500 feet north of the Niagara River. To the west of the Site lies former farmland, currently undeveloped but planned for residential housing; to the north is wooded wetlands, a Niagara-Mohawk Power Corporation transmission line, and a right-of-way owned by the New York State Department of Transportation; to the east are woodlands and low-density housing (approximately 1000 feet from the Site boundary); and to the south are access roads, railroad tracks, River Road, and the Niagara River.

Geology/Hydrogeology

Three overburden zones and one bedrock zone are present beneath the Site. The two uppermost overburden zones are characterized as a silt unit and clay/upper till unit. The silt unit is present across the Site outside the limits of the landfill cells, varying in thickness from one (1) to eight (8) feet, and exhibits a low hydraulic conductivity, which has minimized the potential for horizontal migration of contaminants from the landfill. The clay/upper till unit is present beneath the silt unit with an average thickness of 30 feet; this unit is characterized as an aquitard due to low hydraulic conductivities measured in the unit and similarly has minimized the potential for vertical migration of contaminants from the landfill.

The bedrock zone and the overlying overburden zone (lower till unit) are the primary water-bearing formations. The lower till unit is present beneath the clay/upper till unit with an average thickness of 15.7 feet. The bedrock unit beneath the lower till unit is a highly fractured water-bearing unit characterized as a usable aquifer by the New York State Department of Environmental Conservation (NYSDEC). The ground water in these two aquifers generally flows in a south/southwesterly direction towards the Niagara River beneath the southern half of the Site and in a north/northwesterly direction towards Black Creek beneath the northern half of the Site.

Surface water runoff is channeled through a network of drainage swales, primarily to a municipal storm water sewer system which discharges to the Niagara River, although some surface water runoff flows to the wetlands at the north end of the Site.

Land and Resource Use

Institutional controls have been put in place at the Site. These controls include the recording of the Consent Decree with the Niagara County Clerk's Office (recorded January 30, 2001) and restrictive covenants placed on the real property at the site by Niagara County and the Town of Wheatfield (filed with the land records on March 19, 2001 and March 23, 2001, respectively). The area surrounding the Site is primarily zoned residential although the area immediately to the south of the

Site is mixed industrial/commercial.

Since the completion of the remedial action, Niagara County has given some consideration to potential reuse or redevelopment scenarios for the Site within the restrictions of the institutional controls. Although there have not been any formal planning in this regard at this time, the long grasses maintained as cap cover and the revitalized wetland area at the north end of the Site have attracted various wildlife species, particularly native and migrating birds. There has been some preliminary discussion about setting up blinds for bird watching. Regardless of any formally planned reuse or redevelopment, the long grasses of the cap and the wetlands along the north end of the Site serve a useful environmental purpose.

History of Contamination

During the landfill's operational period (1968-1976), the Niagara County Refuse Disposal District (NCRDD) accepted municipal refuse and industrial wastes, which are commingled throughout the landfill. More than 100 waste generators or transporters are thought to have used the Site. Disposed materials included heat-treatment salts, plating-tank sludge, tetrachloroethylene, polyvinyl chloride skins and emulsions, thiazole polymer blends, polyvinyl alcohol, phenolic resins, and brine sludge containing mercury. The Site was capped with 20 inches of dirt and clay at the time that it was closed by the NCRDD in 1976. Illegal dumping of rubbish and hard fill, as well as the erosion of the clay cap, had been concerns at the Site since its closure. The Town of Wheatfield acquired ownership of the Site from the NCRDD in June 1977.

Initial Response

Beginning in 1980, the Site became the focus of several investigations by EPA, NYSDEC, and the United States Geological Survey. The investigations were comprised of limited sampling of on-site soils, groundwater, drainage swale surface water and sediments, as well as some off-site soil, surface water, and sediment sampling. Volatile organic compounds (VOCs) (primarily methylene chloride), semi-volatile organic compounds (SVOCs) (primarily phenolic compounds, phthalates, and polycyclic aromatic hydrocarbons (PAHs)), pesticides, and metals were detected at varying concentrations on Site. Based on the results of these investigations, the Site was placed on the National Priorities List (NPL) in September 1983. In 1987, EPA initiated a Remedial Investigation/Feasibility Study (RI/FS) for the Site to determine the nature and extent of site contamination and to evaluate alternatives for the mitigation of any risks associated with the contamination. Under EPA oversight, the performance of the RI/FS was taken over by a group of fourteen potentially responsible parties (PRPs) in 1989. The investigation was concluded in 1991 and a draft RI Report was completed in 1992.

Basis for Taking Action

Based on the results of the RI report, which measured the levels of VOCs, SVOCs, pesticides, and metals in various site media, EPA determined that although contamination was present in the

landfill, the low permeability clays beneath and around the Site had prevented the vertical and horizontal migration of contaminants. An analysis of the groundwater around the site perimeter showed little or no impact from the landfill. Additionally, residents nearby the Site receive municipal water. However, EPA performed a risk assessment for the Site based on the data collected during the RI and the risk assessment determined that uncontrolled leachate outbreaks, caused by the infiltration of rainwater through the landfill and subsequent seeping out from the sides of the landfill cells, would continue to degrade the quality of perimeter site groundwater, resulting in a potential future risk from ground water ingestion. This formed the basis for the decision to cap the landfill and to continue monitoring the groundwater around the perimeter of the Site after the remedial action was completed.

Enforcement Activities

The performance of the RI/FS by the group of fourteen PRPs was accomplished through an Administrative Order on Consent (AOC), issued by EPA on March 30, 1989. EPA published its Record of Decision (ROD) for the Site in September 1993 which identified the remedial actions that needed to be undertaken to mitigate risks to human health and the environment as a result of site contamination. These actions are summarized below. An agreement was reached with twelve PRPs to perform the actions identified in the ROD and was memorialized in a Consent Decree for remedial design/remedial action (RD/RA) entered by the court on February 3, 1995. EPA also issued a unilateral administrative order on July 18, 1995 requiring a recalcitrant PRP to coordinate and cooperate with the PRP group in performing the RD/RA. In addition, EPA entered into an AOC on September 23, 1994 with eleven PRPs which were determined to be minor volume contributors of waste to the Site, resulting in a cash settlement of $793,866.

IV. Remedial Actions

Remedy Selection

Based on the findings of the RI/FS, EPA signed a ROD for the site on September 24, 1993, selecting the following remedy:

- Construction of a New York State Part 360 Standard Landfill Cap;
- Construction of a clay perimeter barrier wall;
- Construction of a gas venting system beneath the cap;
- Construction of a leachate collection system;
- Removal of the field tile drains located to the west of the landfill;

- Performance of an ecological assessment of the adjacent wetlands;
- Implementation of deed and access restrictions;
- Implementation of a long-term operation & maintenance program for the cap, and gas venting and leachate collection systems; and
- Implementation of long-term air and water quality monitoring.

The remedy also calls for an evaluation of site conditions at least once every 5 years, beginning from the start of construction, to determine if any modifications to the selected remedy are necessary.

Remedy Implementation

EPA negotiated a Consent Decree with the PRP group to develop a remedial design to meet the requirements of the ROD and to implement the design through a remedial action. The Consent Decree became effective on February 3, 1995. Pre-design activities commenced shortly thereafter, culminating in the Final Design Report which was approved by EPA in 1997. The design was prepared by Conestoga - Rovers & Associates under contract with the PRP group. The completed design included the use of modern geotextiles for the cap in place of a traditional clay barrier layer and sand drainage layer and the cap liner was tied directly into native clay material outside the leachate collection system, eliminating the need for a clay barrier wall. A call for bids for remedial construction was issued and a contract was awarded to Haseley Construction Company, Inc. for remedial construction in June 1998.

In October 1998, EPA approved the Remedial Action Work Plan for site construction. An ecological assessment of the adjacent wetlands was performed prior to the start of construction and a wetland mitigation plan, calling for limited wetland replanting at the Site and wetland creation off-site at the nearby Gratwick Park site, was approved in October 1998. The remedial contractor began mobilization at the Site on October 19, 1998.

On-site construction commenced in November 1998 under the direction of Niagara County with EPA providing oversight of the construction activities through an interagency agreement with the U.S. Army Corps of Engineers. The Site was surveyed, cleared and grubbed, a security fence was erected, and erosion and sediment control measures were put in place. Installation of the leachate collection system and its tie-in to the City of North Tonawanda sanitary sewer by forcemain was completed over the winter months. Early spring was devoted to grading the Site and filling the central swales of the landfill with clean fill. Placement of the first layer of the cap (gas vent stone), began in May 1999 and the leachate collection system became operational during the summer of 1999, eliminating any potential pathway for leachate to migrate off-site. The tile drains on the west side of the landfill were removed during the summer. An unusually dry season, along with contractor efficiency, allowed for relatively uninterrupted construction activity throughout the summer and fall. The key trench was constructed concurrently with the multi-layered cap as the two

were tied in to complete a uniform seal around the landfill. By November 1999, the cap has been placed over the entire Site and seeding had been completed.

The construction contractor reconvened at the Site in May 2000 to assess the remaining work to be done. The wetland plantings and some tree perimeter plantings were completed at that time. It was determined that cleaning the drainage swales of accumulated silt and debris, some erosion repair work to the cap surface, and some spot reseeding were the only activities remaining to be completed. This work was completed during the summer months and in September 2000, EPA conducted a final inspection with NYSDEC and the PRPs. In December 2000, EPA issued its approval of the Remedial Action Report, signifying that the remedial action had been completed in accordance with the ROD and Remedial Design, and the project entered the operation, maintenance, and monitoring phase.

Operation and Maintenance

The Operation, Maintenance and Monitoring Manual was approved by EPA on December 29, 2000. It should be noted that air monitoring is not an included activity in the approved manual in that during the development of the manual, an evaluation of the air around the gas vents was performed and indicated that the gas generation rate in the landfill is very low, primarily due to the age and composition of the wastes. In addition, lateral subsurface gas migration is prevented by the perimeter barrier system. The operation and maintenance (O&M) activities outlined in the manual are being performed by Parsons (formerly Parsons Engineering Science, Incorporated) under contract to Niagara County. O&M activities were initiated in January 2001. The Site is inspected monthly and monitoring data are collected on a pre-set schedule. A summary of O&M data collection activities and the corresponding report containing the results is provided in the following table:

Report	**Data**
2001 Annual Monitoring Report	2 groundwater sampling events (May & Nov 2001); 1 surface water sampling event (Dec 2001); 14 monthly inspections (Nov 2000-Dec 2001); 12 effluent sampling events (Jan-Dec 2001); 7 water level measurement events (May, Jun, Aug-Dec 2001)
2002 Annual Monitoring Report	3 groundwater sampling events (Mar, May, Dec 2002); 1 surface water sampling event (Dec 2002); 12 monthly inspections (Jan-Dec 2002); 12 effluent sampling events (Jan-Dec 2002); 12 water level measurement events (Jan-Dec 2002)

2003 Semi-Annual Monitoring Report	1 groundwater sampling event (April 2003); 6 monthly inspections (Jan-Jun 2003); 6 effluent sampling events (Jan-Jun 2003); 6 water level measurement events (Jan-Jun 2003)

Additionally, maintenance is performed on the cap on both a scheduled and as-need basis. For example, pumps are routinely inspected and pressure-washed, repairs are made to the perimeter fence when needed, weeds and tall grass are trimmed around wells and manhole covers, and the grass cover of the cap is cut once yearly in the late summer. The leachate collection system is monitored both from a control building and a visual inspection of the wet wells and the gas vents are regularly inspected for integrity. The wetland replacement area of the site, representing 0.17 acres, is routinely monitored for habitat health and vegetation data is recorded and provided in the annual monitoring report.

The O&M monitoring results indicate that the remedial system as designed and constructed pursuant to the 1993 ROD is performing satisfactorily. Based on the uniform results obtained during the first two years of O&M, and in accordance with the O&M Manual, quarterly sampling was replaced with semi-annual monitoring in 2003. Semi-annual monitoring will continue for three years at which time the monitoring will become annual. Additionally, the wetland replacement area of the site is determined to be a productive and diverse wetland community.

Institutional Controls

Institutional controls have been put in place at the Site. Counsel for the PRP group has provided EPA with a copy of the cover page of the Consent Decree bearing the stamp of the Niagara County Clerk's Office, showing that the Consent Decree was recorded in that office on January 30, 2001. Counsel has also provided EPA with a copy of restrictive covenants placed on the real property at the site by Niagara County and the Town of Wheatfield, which were filed with the land records on March 19, 2001 and March 23, 2001, respectively. These items complete the institutional controls requirement of the ROD.

V. Five-Year Review Process

Administrative Components

Michael J. Negrelli, EPA Remedial Project Manager (RPM), conducted the five-year review. This is a PRP-lead site. EPA, in reviewing site records and reports, and in consultation with NYSDEC and the PRP O&M contractor, has provided the information necessary for this review.

Community Involvement

The EPA Community Relations Coordinator for the Site, Michael Basile, will arrange for a notice to be published in the *Niagara Gazette,* a local newspaper, that the five-year review has been completed indicating that the implemented remedy for the Site remains protective of public health and the environment and is available in the local site repository for any interested members of the public to view. The notice will include the RPM's address and telephone number for questions related to the five-year review process or the Niagara County Refuse site. If any significant comment is received concerning the protectiveness determination made in this report, EPA will consider the issue and release an addendum to this report that addresses the issue.

Document Review

The following documents, data, and information were reviewed in completing the five-year review:

- Record of Decision, EPA, September 24, 1993;
- Administrative Order on Consent, Index No. II CERCLA-90209, March 30, 1989;
- Administrative Order on Consent, Index No. II CERCLA-94-0213, September 23, 1994;
- Consent Decree, Docket No. 94-CV-849, entered in U.S. District Court for the Western District of New York on February 3, 1995;
- National Priorities List Notebook Document, Niagara County Refuse Site, updated October 2003;
- EPA WasteLAN database;
- 2001 Annual Monitoring Report, Niagara County Refuse Superfund Site, February 2002;
- 2002 Annual Monitoring Report, Niagara County Refuse Superfund Site, March 2003;
- Semi-Annual Data Summary Report, Niagara County Refuse Superfund Site, July 2003;
- Superfund Final Closeout Report, Niagara County Refuse Superfund Site, August 14, 2003; and
- EPA Comprehensive Five-Year Review Guidance, June 2001.

Site Inspection

Michael J. Negrelli, RPM, conducted a site inspection on October 23, 2003. During the site inspection, the RPM did not observe any problems or deviations from the on-going operation and maintenance activities being implemented at the Site.

Monitoring and Data Review

As discussed in the Operation and Maintenance section above, the Site is inspected monthly and monitoring data are collected according to a pre-set schedule, the results of which are contained in the 2001 and 2002 annual reports and the 2003 semi-annual report. The sampling program was developed to ensure that the perimeter collection system and the perimeter barrier system of the landfill cap effectively prevent the migration of contaminants from the Site. Additionally, effluent

from the leachate conveyance system is sampled for compliance with the City of North Tonawanda Industrial Wastewater Discharge Permit and water levels are measured within the landfill to ensure that the operation of the perimeter collection system keeps water levels within the landfill reduced. Inspections of the landfill occur monthly and include visual inspections of the perimeter collection system, off site forcemain, wetlands, perimeter fence, drainage ditches, swale outlets, culverts, gas vents, monitoring wells, and the cap surface.

Site perimeter groundwater is sampled from four monitoring wells strategically located at the north, south, east, and west boundaries of the landfill. The data collected from these monitoring wells are important in determining the effectiveness of the remedy, as the basis of the remedy is to prevent landfill leachate from degrading the quality of site perimeter groundwater. The groundwater monitoring program data show that no VOCs or SVOCs have impacted the groundwater in the immediate vicinity of the landfill. A few inorganic elements, particularly aluminum, iron, magnesium, manganese, and sodium, have been detected above drinking water standards, generally by no more than one order of magnitude, but many of these metals are naturally occurring in the silts and clays of the native material and typically exceed drinking water standards in the regional groundwater. Most notably, the results have remained uniform throughout the evaluation period, indicating that the landfill constituents are not impacting the surrounding groundwater.

Effluent sampling has consistently demonstrated compliance with the requirements of the City of North Tonawanda Industrial Wastewater Discharge Permit. Water level measurements generally vary between one and two feet per year, indicating that the operation of the perimeter collection system keeps water levels within the landfill reduced. Two annual surface water sampling events were completed in 2001 and 2002 in accordance with the O&M Manual for the Site, with results consistent with the groundwater monitoring results. Monthly inspections of the landfill occasionally show need for minor erosion repair; repairs to eroded surfaces of the cap were last completed in September 2003. Inspections of the wetland creation area of the Site have shown that the wetlands are well established, exhibiting substantial growth and propagation.

Groundwater sample collection will continue on a semi-annual basis through 2005 and thereafter will be collected annually. EPA may, however, require an increase in the frequency of sampling if warranted by the analytical results. Monthly effluent and water level monitoring will continue as well as monthly inspections of the Site for an indeterminate time.

VI. Technical Assessment

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

Yes. The landfill cap, fence, drainage system, and monitoring wells are intact and in good repair. Operation and maintenance of the remedy has been performed on a regular basis since January 2001. Monitoring data collected during this operation and maintenance period indicate that the remedial system as designed and constructed pursuant to the 1993 ROD is performing satisfactorily.

Additionally, the wetland replacement area of the site is determined to be a productive and diverse wetland community.

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

No, since the federal maximum contaminant level (MCL) for arsenic has been revised since the 1993 ROD. In the "Summary of Site Risks" from the 1993 ROD, EPA wrote:

> The greatest carcinogenic risk attributable to the Site is the potential future risk associated with the ingestion of Site perimeter ground water by area residents. This generated a risk of $2x10^{-4}$, which is at the margin of the NCP's acceptable risk range. This risk is primarily attributable to the metal arsenic, although the levels detected in Site ground-water wells were below the EPA and New York State Department of Health (NYSDOH) maximum contaminant level (MCL).

The highest detected level of arsenic in site groundwater was 2.5 parts per billion as recorded in the RI Report. On January 21, 2001 EPA lowered the MCL for arsenic from 50 parts per billion (ppb) to 10 ppb, with February 22, 2002 as the effective date for this rule and January 23, 2006 as the compliance date for water purveyors. However, for the purposes of this review, the change in MCL for arsenic has no effect on the protectiveness of the remedy. That is, the remedy was constructed based on a future potential risk to nearby residents that accounted for a continuing degradation in groundwater quality in the vicinity of the Site if no action were taken. Since a containment action has been fully implemented at the Site, the lowered MCL for arsenic is irrelevant. Otherwise, there are no changes in the cleanup standards, toxicity factors, or Applicable or Relevant and Appropriate Requirements (ARARs) known to the RPM which would affect the remedy selected at the Site.

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

No. All data indicate that the remedy is operating efficiently and effectively. Based on these monitoring data, EPA is preparing to delete the Site from the NPL.

VII. Recommendations and Follow-up Actions

The Site has ongoing operation, maintenance, and monitoring activities. There are no specific recommendations or follow-up actions necessary to protect public health or the environment.

VIII. Protectiveness Statement

The contamination at the Niagara County Refuse site is under control and there is no exposure to

human or environmental receptors from site-related contaminants due to permanent measures in place at the Site.

The landfill has been capped removing direct contact (*i.e.,* ingestion or dermal contact of soil) exposures to the public, including trespassers. Institutional controls are in place to further prevent potential exposures to the public. The potential impacts to groundwater are addressed by the cap, which reduces or prevents leachate generation. The leachate collection system is discharging to an appropriate treatment facility to further reduce potential exposures to the population. Groundwater impacts are further mitigated through a leachate collection and conveyance system to reduce potential off-site migration. Residences are supplied with public water thus eliminating direct contact exposures to groundwater. Potential impacts from soil vapor intrusion have been assessed; due to the absence of structures on the Site or within proximity of the Site, this pathway is incomplete.

The remedies implemented at this Site are protective of human health and the environment.

IX. Next Review

The next five-year review for the Niagara County Refuse site should be completed by October 2008.

Approved:

George Pavlou, Director
Emergency and Remedial Response Division

11/5/03
Date

NIAGARA COUNTY REFUSE