Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision

Amenia Town Landfill Site

Town of Amenia, Dutchess County, New York
Site No. 3-14-006

March 2006

New York State Department of Environmental Conservation
GEORGE E. PATAKI, *Governor* DENISE M. SHEEHAN, *Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION

Amenia Town Landfill Inactive Hazardous Waste Disposal Site
Town of Amenia, Dutchess County, New York
Site No. 3-14-006

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedy for the Amenia Town Landfill site, a Class 2 inactive hazardous waste disposal site. The selected remedial program was chosen in accordance with the New York State Environmental Conservation Law and is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300), as amended.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the Amenia Town Landfill inactive hazardous waste disposal site, and the public's input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. A listing of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Assessment of the Site

Actual or threatened releases of hazardous waste constituents from this site, if not addressed by implementing the response action selected in this ROD, presents a current or potential significant threat to public health and/or the environment.

Description of Selected Remedy

Based on the results of the Remedial Investigation and Feasibility Study (RI/FS) for the Amenia Town Landfill site and the criteria identified for evaluation of alternatives, the NYSDEC has selected excavation of contaminated sediments from the wetland west of the landfill, placement of the sediment on the landfill, and construction of a cap consistent with Part 360 over the landfill. The components of the remedy are as follows:

1. Excavation of sediments contaminated with PCBs and heavy metals (zinc, copper, lead, mercury and nickel) from the wetland/pond adjacent to the landfill and placement on the landfill;

2. Restoration of the excavated area of the wetland/pond, meeting the substantive requirements of 6 NYCRR Part 663 to provide appropriate habitat for indigenous aquatic flora and fauna;

3. Construction of a low-permeability cap meeting the substantive requirements of Part 360 over the landfill to eliminate potential exposures to waste and contaminated surface soils on the landfill and to reduce infiltration into the waste mass;

4. Development of a site management plan to address residual contamination and any use restrictions, including a two-year, annual surface water and sediment post-construction monitoring program for East Stream downgradient of the landfill to determine if wetland/pond sediments that may be resuspended during construction activities result in increased downstream contaminants;

5. Imposition of an environmental easement; and

6. Periodic certification of the institutional and engineering controls.

New York State Department of Health Acceptance

The New York State Department of Health (NYSDOH) concurs that the remedy selected for this site is protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

MAR 31 2006

Date

Dale A. Desnoyers, Director
Division of Environmental Remediation

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RECORD OF DECISION

Amenia Town Landfill Site
Town of Amenia, Dutchess County, New York
Site No. 3-14-006

March 2006

SECTION 1: SUMMARY OF THE RECORD OF DECISION

The New York State Department of Environmental Conservation (NYSDEC), in consultation with the New York State Department of Health (NYSDOH), has selected this remedy for the Amenia Town Landfill. The presence of hazardous waste has created significant threats to human health and/or the environment that are addressed by this remedy. As more fully described in Sections 3 and 5 of this document, historic landfilling operations have resulted in the disposal of hazardous wastes, including polychlorinated biphenyls (PCBs), petroleum hydrocarbons and heavy metals (zinc, copper, lead, mercury and nickel). These wastes have contaminated the landfill soil, aquatic sediment of the adjacent wetland/pond and groundwater at the site, and have resulted in:

- a significant threat to public health associated with potential exposure to landfill waste, surficial soil and on-site groundwater; and
- a significant environmental threat associated with the impacts of contaminants to biota in the wetland/pond bordering the west side of the landfill.

To eliminate or mitigate these threats, the NYSDEC has selected the following remedy:

- Excavation of sediments contaminated with PCBs and heavy metals (zinc, copper, lead, mercury and nickel) from the wetland/pond adjacent to the landfill and placement on the landfill;
- Restoration of the excavated area of the wetland/pond meeting the substantive requirements of 6 NYCRR Part 663 to provide appropriate habitat for indigenous aquatic flora and fauna;
- Construction of a low-permeability cap meeting the substantive requirements of Part 360 over the landfill to eliminate potential exposures to waste and contaminated surface soils on the landfill and to reduce infiltration into the waste mass;
- Development of a site management plan to address residual contamination and any use restrictions, including a two-year, annual surface water and sediment post-construction monitoring program for East Stream downgradient of the landfill to determine if

wetland/pond sediments that may be resuspended during construction activities result in increased downstream contaminants;

- Imposition of an environmental easement; and
- Periodic certification of the institutional and engineering controls.

The selected remedy, discussed in detail in Section 8, is intended to attain the remediation goals identified for this site in Section 6. The remedy must conform with officially promulgated standards and criteria that are directly applicable, or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, criteria and guidance are hereafter called SCGs.

SECTION 2: SITE LOCATION AND DESCRIPTION

The ten acre Amenia Town Landfill is located in rural Dutchess County, approximately 1.5 miles south of the hamlet of Amenia on the west side of Route 22 (see Figure 1). The surface of the northern half of the landfill is generally flat and covered with grasses and shrubs. Approximately two acres at the northern end are occupied by Sharon Oil, a fenced, active propane storage facility, presently consisting of one aboveground propane storage tank and several smaller tanks. Four additional fuel storage tanks have been emptied, closed and left within the fenced area. A concrete helicopter pad, located southeast of the propane facility, is in disrepair and appears to be rarely used.

The southern part of the landfill area is about 15 feet higher than the northern end, and also covered with grasses and shrubs. The southern edge of waste terminates at the base of a steep, wooded hill.

The western edge of the landfill slopes down steeply into a wetland/pond that drains through a north-flowing stream along the northwest corner of the landfill. This unnamed stream turns east and flows through a wetland just beyond the northern end of the landfill. The stream is channeled through a culvert beneath Route 22 and empties into Amenia Stream east of the landfill. The wetland is a Class II wetland regulated by NYS under Environmental Conservation Law Article 24: Freshwater Wetlands; and 6 NYCRR Part 663: Freshwater Wetlands Permit Requirements.

A former drum disposal area is located in the far southwestern corner of the landfill. These drums and associated contaminated soil were removed by the United States Environmental Protection Agency at the request of the NYSDEC as an emergency response action in 1998. See Section 3.2 for additional information on the drum removal activities.

Figure 2 shows the site layout.

The Harlem Valley Landfill, a permitted solid waste landfill that was closed in 1999, is located south of the Amenia Town Landfill. No homes are located within 1/4 mile of the site.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

1940-1968: Operated as a municipal disposal area by the Town of Amenia; on leased land
1969-1971: Owned and operated by Mr. Salvatore Surico
1971-1972: Owned and operated by Tri-Town Landfill Corporation
1972-1976: Operated by the Town of Amenia under a succession of owners

Municipal and household waste was brought to the landfill throughout its operation from the Towns of Amenia, New York and Sharon, Connecticut. Industrial waste from many sources, including drummed waste, also was reported to have been disposed of at the landfill. The landfill was closed in 1976 and covered with six inches to three feet of soil.

3.2: Remedial History

In 1983, the NYSDEC first listed the site as a Class 2a site in the Registry of Inactive Hazardous Waste Disposal Sites in New York (the Registry). Class 2a is a temporary classification assigned to a site that has inadequate and/or insufficient data for inclusion in any of the other classifications. A Phase 1 investigation was performed for the site in 1986, and a Phase 2 investigation was completed in 1993. Based on the results of these investigations, the NYSDEC listed the site as a Class 2 site in the Registry in 1992, due to the presence of PCBs in landfill soil and wetland/pond sediment. A Class 2 site is a site where hazardous waste presents a significant threat to the public health or the environment and action is required.

Based on historic aerial photos and recommendations in the Phase 2 Investigation Report, the NYSDEC conducted a test pit investigation in September 1998 to verify the presence of buried drums in the landfill. A total of fourteen test pits were excavated across the ten acre landfill. Six of the test pits were excavated just south of the Sharon Oil enclosure where elevated soil vapor concentrations had been identified. Typical municipal waste (white goods, garbage, plastic bags, newspapers, glass, metal, etc) was encountered, as well as occasional crushed and empty drums. Three test pits were located in the southern end of the landfill. The landfill waste was similar to that seen in test pits in the north end of the landfill. All test pits were backfilled and revegetated.

The remaining five test pits were excavated at the far southwestern corner of the landfill, in a swale between the steep hill south of the landfill and a wooded area next to the wetland/pond. Numerous leaking drums and containers, containing various liquid, powdery and solid substances were encountered. Drums with leaking, liquid product were overpacked into secure containers and reburied until arrangements could be made for a full-scale drum removal. The results of the test pit investigation are contained in the October 1998 "Test Pit Installation Report."

At the request of the NYSDEC, the USEPA conducted an emergency drum removal action in late 1998. Details of this action are reported in the December 1998 "Drum Removal Report." A total of 175 drums were removed, sampled, overpacked and secured, and approximately 150 cubic

yards of contaminated soil were staged for off-site disposal. All drums and contaminated soil were removed from the site in December 1999 and disposed of at an approved off-site facility.

SECTION 4: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers. The NYSDEC identified 36 PRPs for the Amenia Town Landfill. The NYSDEC and 10 of the PRPs entered into a Consent Order on October 4, 2001. The original participating PRPs are:

Alastair B. Martin
Ashland Inc.
BP America, Inc.
Curtiss-Wright Corp.
Estate of Edith Park Martin
Metal Improvement Company, Inc.
Syngenta Crop Protection, Inc.
Town of Amenia, New York
Town of Sharon, Connecticut
Unisys Corp.

Following the original filing of the Consent Order, these additional PRPs entered the Order:

Great Eastern Color Lithographic Corp.
H.O.Penn Machinery Co.
IBM Corp.
TBG Services
Weyerhauser Corp.

The Order obligates the responsible parties to implement a remedial investigation and feasibility study (RI/FS). After the remedy is selected, the NYSDEC will approach the PRPs to implement the selected remedy under an Order on Consent.

SECTION 5: SITE CONTAMINATION

An RI/FS has been conducted to evaluate the alternatives for addressing the significant threats to human health and the environment.

5.1: Summary of the Remedial Investigation

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The RI was conducted between October 2001 and June 2002, with additional investigations in 2003 and 2004. The field activities and findings of the investigation are described in the RI Report and the October 2004 "Off-site Groundwater Investigation Report."

The following activities were conducted during the RI and the Off-site Groundwater Investigation:

- Research of historical information;

- Installation of 12 soil borings and 12 monitoring wells for analysis of surface and subsurface soils and groundwater as well as physical properties of soil and hydrogeologic conditions;

- Sampling of 12 monitoring wells to determine the nature and extent of groundwater contamination;

- Installation of four piezometers to evaluate groundwater flow properties;

- Collection of six off-site groundwater samples using a direct push technique;

- Collection of 33 surface soil samples to determine background conditions and evaluate potential risks to public health and the environment from soil at the landfill;

- Collection of eight surface water samples to evaluate surface water quality upstream, downstream and next to the landfill;

- Installation of eight staff gauges in the wetland/pond and streams to evaluate the relationship between groundwater and surface water flow;

- Collection of 71 aquatic sediment samples to evaluate aquatic sediment quality upstream, downstream and next to the landfill; and

- Collection of 52 soil vapor samples at the landfill to evaluate subsurface organic vapors originating from landfill waste.

Following completion of the RI, a Test Pit Investigation was implemented in October 2003 to identify the edge of waste. These results are contained in Appendix A of the FS Report. Eleven test pits were excavated around the perimeter of the landfill.

To determine whether the soil, groundwater, surface water and sediment contain contamination at levels of concern, data from the investigation were compared to the following SCGs:

- Groundwater, drinking water, and surface water SCGs are based on NYSDEC "Ambient Water Quality Standards and Guidance Values" and Part 5 of the New York State Sanitary Code.

- Soil SCGs are based on the NYSDEC "Technical and Administrative Guidance Memorandum (TAGM) 4046; Determination of Soil Cleanup Objectives and Cleanup Levels."

- Sediment SCGs are based on the NYSDEC "Technical Guidance for Screening Contaminated Sediments."

- Background soil and upgradient sediment samples were taken from locations believed to be unaffected by historic landfill operations. The samples were analyzed for semi volatile

organic compounds (SVOCs), PCBs and inorganic compounds. The results of the analysis were compared to data from the RI (Table 1) to aid in determining appropriate site remediation goals.

Based on the RI results, in comparison to the SCGs and potential public health and environmental exposure routes, certain media and areas of the site require remediation. These are summarized below. More complete information can be found in the RI report.

5.1.1: Site Geology and Hydrogeology

Native overburden material at the site consists of sand and gravel and varies from 10 to 20 feet thick. A silt unit interbedded with clay lies beneath the sand and gravel and also varies from 10 to 20 feet thick. Another sand and gravel unit of varying thickness lies beneath the silt and clay across part of the site, but in some locations the silt/clay unit lies directly on bedrock. Total depth to bedrock, a gray marble, ranges from 20 to 70 feet below ground surface.

Shallow groundwater at the site was encountered in the overburden material, between 20 and 50 feet below ground surface. Data from watertable elevations in overburden monitoring wells and staff gauges installed in surface water adjacent to the site show that shallow groundwater beneath the landfill is recharged by the wetland/pond west of the landfill and discharges into the streams east of Route 22 (see Figure 3).

Deep bedrock groundwater is confined by the overlying overburden units and shows an upward gradient toward shallow groundwater.

5.1.2: Nature of Contamination

As described in the RI report, many soil, groundwater, soil vapor, surface water and sediment samples were collected to characterize the nature and extent of contamination. As summarized in Tables 1 and 2, the main categories of contaminants that exceed their SCGs are volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs), and inorganics (metals).

The VOCs that most often exceeded their SCGs were benzene, trichloroethene and trichloroethene breakdown products. Two PCBs were identified, Aroclor 1242 and Aroclor 1254. The inorganics that most often exceeded the SCGs were iron, manganese, copper, nickel and zinc.

5.1.3: Extent of Contamination

This section describes the findings of the investigation for all environmental media that were investigated.

Chemical concentrations are reported in parts per billion (ppb) for water, parts per million (ppm) for waste, soil, and sediment, and micrograms per cubic meter ($\mu g/m^3$) for air samples. For comparison purposes, where applicable, SCGs are provided for each medium.

Tables 1 and 2 summarize the degree of contamination for the contaminants of concern and compares the data with the SCGs for the site. The following are the media which were investigated and a summary of the findings of the investigation.

Waste Materials

A total of fourteen test pits were excavated into waste in September 1998. Typical municipal waste (white goods, garbage, plastic bags, newspapers, glass, metal, etc) was encountered, as well as occasional crushed and empty drums.

Surface Soil

Thirty surface soil samples (0-6 inches) were collected from the existing landfill cover and the north and west slopes of the landfill next to the wetland/pond. PCBs were detected in eighteen of the samples up to 33.9 ppm, exceeding the SCG of 1 ppm. Several inorganics were detected above SCGs, including chromium (up to 83.5 ppm), copper (up to 609 ppm), iron (up to 273,000 ppm), lead (up to 89.7 ppm), manganese (up to 1,530 ppm), nickel (up to 88.6 ppm) and zinc (up to 3,010 ppm). The SCGs for these inorganics are shown on Table 1.

Subsurface Soil

Nine subsurface soil samples were collected from depths of ten to twelve feet below ground surface in the far southwest corner of the landfill, at the area of the 1998 drum removal action. No VOCs and only one SVOC, phenol, were detected above SCGs. Phenol was detected at 0.084 ppm, which exceeded the SCG of 0.03 ppm. Five inorganics were detected above SCGs: arsenic (9.0 ppm), copper (up to 57.8 ppm), iron (up to 34,300 ppm), manganese (up to 2,400 ppm) and nickel (up to 46.8 ppm). The SCGs for these inorganics are shown on Table 1. Test pits excavated within the fenced area at the north end of the landfill identified isolated areas of petroleum contamination on top of the watertable.

Background Soil

Three background soil samples were collected from locations unimpacted by landfilling activities to aid in determining appropriate clean up levels for some inorganic compounds (see Table 3) at the landfill. The highest of the three values was used to determine cleanup levels for lead and manganese. The concentrations of other inorganics were below TAGM 4046 SCGs and therefore TAGM values were used as cleanup levels.

Groundwater

Twelve groundwater monitoring wells were installed during the RI: nine shallow wells in overburden and three deep wells in bedrock (see Figure 3). Two rounds of groundwater sampling were conducted, in January 2002 and April 2002. Several organic compounds were detected above SCGs in five shallow overburden wells (see Table 1). These exceedences occurred in wells installed at the edge of landfill waste. No exceedences were detected in

bedrock wells. Following completion of the landfill RI, an off-site shallow groundwater investigation was conducted with temporary probes to determine if low-level shallow groundwater contamination at the eastern edge of waste was migrating off-site. No organic compounds were detected in groundwater collected from the off-site locations. Inorganic compounds exceeding SCGs were detected in many of the groundwater wells, including arsenic, iron and manganese (see Table 1). These results show that although the waste has impacted shallow groundwater, contamination is not migrating off-site or down into the bedrock.

Surface Water

Eight surface water samples were collected: two from upgradient streams, one from the wetland/pond, and five from the downgradient streams. No volatile, semi-volatile or PCB compounds were detected. Three pesticides, alpha-chlordane, delta-BHC (benzene hexachloride), and gamma-chlordane, were detected above SCGs (see Table 1). Pesticides were not observed in surface or subsurface soil samples collected at the landfill and their presence in surface water is likely associated with other historic or existing land uses. Aluminum and iron were the only inorganics detected above SCGs, and the levels were highest in Amenia Stream upstream from the landfill. The results suggest that surface water has not been impacted by landfill waste.

Sediments

Seventy-one aquatic sediment samples were collected from the wetland/pond and streams: upgradient, downstream and in the wetland/pond next to the landfill. For clarity of discussion in this document, the stream that flows into the wetland/pond from the west (upstream) is called "West Stream." The stream that flows out of the wetland/pond is called "West Pond Tributary." After West Pond Tributary crosses beneath Route 22, it is called "East Stream." East Stream then flows into Amenia Stream.

Upgradient: No volatile organic compounds or PCBs were detected in the six sediment samples collected upgradient of the landfill from West Stream and Amenia Stream upgradient of the confluence with East Stream. Several inorganics (arsenic, copper, iron, manganese, nickel and zinc) exceeded sediment SCGs (see Table 1) in these samples, and are considered either background concentrations for the area (arsenic, copper and manganese) or indicators of an upgradient source in West Stream (iron, nickel and zinc).

Adjacent wetland/pond: Forty eight aquatic sediment samples were collected in the wetland/pond next to the landfill and analyzed for PCBs and/or inorganics. Aroclor 1242 and Aroclor 1254 (PCBs) were detected in many of the locations at concentrations up to 15.1 mg/kg (see Table 2 for concentrations and SCGs). Several inorganic compounds exceeded sediment SCGs: arsenic, cadmium, copper, iron, lead, manganese, mercury, nickel, silver and zinc (see Table 1 for concentrations and SCGs). Concentrations of iron and nickel were higher in sediment samples from West Stream than in the adjacent wetland/pond. Concentrations of PCBs and the heavy metals were greatest next to the landfill and decreased away from the landfill towards the center of the wetland/pond.

Downstream: Aquatic sediment samples were collected from West Pond Tributary, East Stream and Amenia Stream, downstream of the landfill. PCBs were the only organic compounds detected. The PCBs were identified up to concentrations of 0.636 mg/kg, at generally decreasing levels downstream from the wetland/pond. The concentrations of inorganics that exceeded SCGs in the downstream samples were not consistently higher or lower than concentrations from either West Stream (upgradient) or the wetland/pond. Background (or upgradient) sediment concentrations of zinc and nickel also exceeded the SEL, suggesting sources of inorganics other then the landfill to the stream environments. (See Tables 1 and 2 for all sediment results and SCGs.)

Based on groundwater flow (from the wetland/pond eastward beneath the landfill) and quality (lack of PCB contamination in site groundwater), the probable source of PCBs in wetland/pond sediment is due to erosion of PCB-contaminated soil and waste from the landfill into the wetland/pond. The aquatic sediment results indicate impacts to the wetland/pond from the landfill, particularly PCB and heavy metal contamination in excess of sediment criteria. These areas will require remediation.

The remedial goal of 1.4 µgPCB/g of organic carbon in sediment for PCBs in the wetland/pond is based on the sediment criterion for the protection of wildlife from PCB bioaccumulation. Due to the high organic content of sediment in this area [ranging from 63 to 421 grams per kilogram (g/kg) of organic carbon with an average of 212 g/kg], the site specific criteria for PCBs in the wetland/pond is 0.3 mg/kg. Given the practical difficulties of achieving low levels of PCB concentrations during sediment excavation, a PCB concentration of less than 1.0 mg/kg (1.0 ppm) in sediment approximates the site specific criteria and will be used as the cleanup objective for sediment in the wetland/pond at the Amenia Landfill site.

A remedial goal of 19.3 µg PCB/g of organic carbon in sediment for PCBs was chosen for the downgradient stream sediments based on the protection of benthic aquatic life because significant bioaccumulation of PCBs is not anticipated in the stream as the stream is small and the section with detectable PCBs in not great. Given the average organic carbon content of the stream sediments of 85 g/kg, the site specific criteria for PCB in the downgradient streams is 1.64 mg/kg. The remedial investigation indicated that sediment concentrations of PCBs in the downgradient streams did not exceed the criteria of 1.64 mg/kg and therefore, remediation of the downgradient streams is not necessary at this time.

Soil Vapor

Fifty two soil vapor samples were collected from the landfill to evaluate the subsurface occurrence of potential areas of concern within the waste. Several VOCs were detected, primarily benzene, toluene, ethylbenzene, xylenes and chlorobenzene, and the highest levels were concentrated near the propane and fuel storage area at the north end of the landfill. See Table 1 for results.

5.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before completion of the RI/FS. In 1998, an emergency drum removal action was conducted by the USEPA at the far southwest corner of the landfill (see section 3.2). Confirmatory soil sampling indicated that the removal action remediated the area to levels below SCGs. There were no additional IRMs performed at this site during the RI/FS.

5.3: Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the human exposure pathways can be found in Section 6 of the RI report.

An exposure pathway describes the means by which an individual may be exposed to contaminants originating from a site. An exposure pathway has five elements: [1] a contaminant source, [2] contaminant release and transport mechanisms, [3] a point of exposure, [4] a route of exposure, and [5] a receptor population.

The source of contamination is the location where contaminants were released to the environment (any waste disposal area or point of discharge). Contaminant release and transport mechanisms carry contaminants from the source to a point where people may be exposed. The exposure point is a location where actual or potential human contact with a contaminated medium may occur. The route of exposure is the manner in which a contaminant actually enters or contacts the body (e.g., ingestion, inhalation, or direct contact). The receptor population is the people who are, or may be, exposed to contaminants at a point of exposure.

An exposure pathway is complete when all five elements of an exposure pathway exist. An exposure pathway is considered a potential pathway when one or more of the elements currently does not exist, but could in the future.

Analytical results obtained for the Remedial Investigation indicate that, based on the level and frequency of exceeding recommended cleanup objectives, VOCs, PCBs and inorganics (metals) are the primary contaminants of concern in Site groundwater and soil, and surface and sediments of the adjacent wetland/ponds.

Current and reasonable anticipated potential future exposures were evaluated for Site visitor/trespasser/hunter, off-site recreational user and off-site resident from contaminants in groundwater, surface water, soil, and sediment. The following discussion addresses the current/potential exposure pathways present at the Site:

Groundwater:

On-site monitoring well data indicates that site groundwater has been impacted with low level volatile organic compounds. An evaluation of off-site groundwater does not indicate that a contaminated groundwater plume has moved off-site. Private water supply wells were identified within 1/4 mile radius of the site. Exposure to contaminants in drinking water is not expected as

results of groundwater samples collected from these water supplies did not indicate that the wells have been impacted by site contaminants. There are no groundwater production wells on the Site. It is unlikely that casual visitors or trespassers to the site will be exposed to contaminated groundwater through direct contact, incidental ingestion or inhalation of contaminated vapors that could volatilize off of the groundwater. It is not expected that construction workers would be exposed to contaminants in groundwater through direct contact, incidental ingestion or inhalation of vapors during excavation activities since groundwater is found at depth (greater than 20 feet below ground surface).

Surface Water:

Surface water data does not indicate that the pond and streams adjacent to the Site have been impacted by Site contaminants. The detection of three low level pesticides and two metals above SCGs do not appear to be Site related as they were either not detected in the landfill itself or were also detected at an upgradient location. It is not expected that individuals engaged in recreational activities in adjacent surface waters would be exposed to levels of contaminants that would represent a concern.

Soil and Sediment:

Areas of on-site soil contamination and adjacent wetland/pond sediment contamination have been identified. Although the Site and adjacent wetland/ponds are privately owned, the site is not fenced and therefore access to the areas of contamination is not restricted. Exposure to contaminated Site soils could occur through direct contact, incidental ingestion, or inhalation of contaminated dust particulates by individuals engaging in recreational activities at the Site. During construction activities, where soils are disturbed or removed, construction workers could be exposed to contaminated soils through incidental ingestion, inhalation or dermal contact.

Recreational visitors to the wetland adjacent to the Site could be exposed to contaminated sediments through direct contact or incidental ingestion. Construction workers could be exposed to contaminants in sediments through direct contact, incidental ingestion or through inhalation of contaminated dust particulates should sediments be allowed to dry out during remedial activities.

Results of an ecological field survey indicate that the wetland/pond waters do not support a viable fish population suitable for consumption. Exposure to site contaminants through ingestion of wetland/pond biota is not likely.

5.4: Summary of Environmental Impacts

This section summarizes the existing and potential future environmental impacts presented by the site. Environmental impacts include existing and potential future exposure pathways to fish and wildlife receptors, as well as damage to natural resources such as aquifers and wetland/ponds.

The Ecological Risk Evaluation, which is included in the RI report, presents a detailed discussion of the existing and potential impacts from the site to fish and wildlife receptors. The following environmental exposure pathways and ecological risks have been identified:

- Sediments in the wetland/pond next to the landfill contained levels of heavy metals and PCBs that are predicted to affect the growth and survival of benthic organisms and to bioaccumulate in fish and terrestrial animals. This results in the potential for reduced availability of food for forage species and in reproductive effects in fish, terrestrial wildlife and birds.

SECTION 6: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375-1.10. At a minimum, the remedy selected must eliminate or mitigate all significant threats to public health and/or the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

The remediation goals for this site are to eliminate or reduce to the extent practicable:

- exposures of persons at the site to VOC- contaminated groundwater, landfill surface soils, and wetland/pond and downstream sediment contaminated with PCBs and landfill waste;
- environmental exposures of wildlife to PCB, zinc, copper, lead, mercury and nickel contamination in aquatic sediments; and
- the release of contaminants from landfill waste and PCB-contaminated landfill surface soil into adjacent water bodies.

Further, the remediation goals for the site include attaining to the extent practicable:

- surface water, freshwater wetland and aquatic sediment SCGs.

SECTION 7: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. Recognizing that there are a limited number of remedial technologies applicable to closed municipal landfills, the USEPA has developed a policy to streamline the selection of remedial actions. The USEPA directive, based on nationwide experience, establishes containment as the presumptive remedy for these sites.
Potential remedial alternatives for the landfill waste at the Amenia Town Landfill Site are based on the presumptive remedy approach for municipal landfills were identified, screened and evaluated in the FS report which is available at the document repositories identified in Section 1.

A summary of the remedial alternatives that were considered for this site are discussed below. The present worth represents the amount of money invested in the current year that would be sufficient to cover all present and future costs associated with the alternative. This enables the

costs of remedial alternatives to be compared on a common basis. As a convention, a time frame of 30 years is used to evaluate present worth costs for alternatives with an indefinite duration. This does not imply that operation, maintenance, or monitoring would cease after 30 years if remediation goals are not achieved.

7.1: Description of Remedial Alternatives

The following potential remedies were considered to address the contaminated aquatic sediment in the wetland/pond next to the landfill, contaminated soil on the existing cover and landfill waste. Results of the subsurface soil sampling in the former drum disposal area (addressed by the EPA emergency drum removal action in 1998, see Section 3.2) demonstrate that that area requires no additional remediation.

Alternative 1: No Action

Present Worth: ..... *$ 0*
Capital Cost: ..... *$ 0*
Annual OM&M: ..... *$ 0*

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. It allows the site to remain in an unremediated state. This alternative would leave the site in its present condition and would not provide any additional protection to human health or the environment.

Alternative 2: Limited Action

Present Worth: ..... *$ 503,260*
Capital Cost: ..... *$ 190,400*
Annual OM&M: ..... *$ 20,352*

Alternative 2 consists of installing a fence around the landfill to restrict access to the site by trespassers, thereby reducing the potential for exposures to contaminated surface soil. A site management plan (SMP) would be developed that would include long term groundwater monitoring, short term surface water and sediment monitoring in the stream downgradient of the landfill, an exclusion against future residential use, and a prohibition against the use of groundwater as a source of potable or process water without necessary water quality treatment. In addition, an environmental easement would be required for the property to restrict use of the site and groundwater as well as to require compliance with the SMP.

Alternative 3: In-Place Capping of Wetland/Pond Sediment and Landfill Cap

Present Worth: ..... *$ 5,719,292*
Capital Cost: ..... *$ 5,239,702*
Annual OM&M: ..... *$ 31,198*

Alternative 3 would cap in place wetland/pond sediment contaminated with PCBs greater than 1 ppm and heavy metals (copper, lead, and mercury) that are associated with the PCBs or that exceed upstream concentrations (nickel and zinc). A low-permeability engineered cap would be constructed over the landfill waste to prevent contact with, and migration of, the waste mass and contaminated surface soil. The cap would also minimize infiltration and migration of landfill contaminants to groundwater. A SMP would be developed that would include operation, maintenance and monitoring of the wetland/pond sediment and landfill caps, long term groundwater monitoring, short term surface water and sediment monitoring in the stream downgradient of the landfill, an exclusion against future residential use, and a prohibition against the use of groundwater as a source of potable or process water without necessary water quality treatment. In addition, an environmental easement would be required for the property to restrict use of the site and groundwater as well as to require compliance with the SMP.

Alternative 4: Wetland/Pond Sediment Excavation and Placement below Landfill Cap

Present Worth: ..... *$ 5,459,762*
Capital Cost: ..... *$ 4,980,172*
Annual OM&M: ..... *$ 31,198*

Alternative 4 would excavate wetland/pond sediment contaminated with PCBs greater than 1 ppm, and heavy metals (copper, lead, and mercury) that are associated with the PCBs or that exceed upstream concentrations (nickel and zinc). The excavated sediments would be placed under a low-permeability engineered cap, which would be constructed over the landfill waste to prevent contact with, and migration of, the waste mass and contaminated surface soil. A SMP would be developed that would include operation, maintenance and monitoring of the landfill cap, long term groundwater monitoring, short term surface water and sediment monitoring in the stream downgradient of the landfill, a restriction against future residential use, and a prohibition against the use of groundwater as a source of potable or process water without necessary water quality treatment. A two-year, annual surface water and sediment post-construction monitoring program would be implemented for East Stream downgradient of the landfill to determine if wetland/pond sediments that may be resuspended during construction activities result in increased contaminant levels in this area. In addition, an environmental easement would be required for the property to restrict use of the site and groundwater as well as to require compliance with the SMP.

7.2 Evaluation of Remedial Alternatives

The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375, which governs the remediation of inactive hazardous waste disposal sites in New York State. A detailed discussion of the evaluation criteria and comparative analysis is included in the FS report.

The first two evaluation criteria are termed "threshold criteria" and must be satisfied in order for an alternative to be considered for selection.

1. Protection of Human Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

2. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether a remedy will meet environmental laws, regulations, and other standards and criteria. In addition, this criterion includes the consideration of guidance which the NYSDEC has determined to be applicable on a case-specific basis.

The next five "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Short-term Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

4. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on-site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the engineering and/or institutional controls intended to limit the risk, and 3) the reliability of these controls.

5. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction of the remedy and the ability to monitor its effectiveness. For administrative feasibility, the availability of the necessary personnel and materials is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, institutional controls, and so forth.

7. Cost-Effectivness. Capital costs and operation, maintenance, and monitoring costs are estimated for each alternative and compared on a present worth basis. Although cost-effectiveness is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the other criteria, it can be used as the basis for the final decision. The costs for each alternative are presented in Table 4.

This final criterion is considered a "modifying criterion" and is taken into account after evaluating those above. It is evaluated after public comments on the Proposed Remedial Action Plan have been received.

8. Community Acceptance - Concerns of the community regarding the RI/FS reports and the PRAP have been evaluated. The responsiveness summary (Appendix A) presents the public comments received and the manner in which the NYSDEC addressed the concerns raised. In general, the public comments received were supportive of the selected remedy.

SECTION 8: SUMMARY OF THE SELECTED REMEDY

Based on the Administrative Record (Appendix B) and the discussion presented below, the NYSDEC has selected Alternative 4, Wetland/Pond Sediment Excavation and Placement below Landfill Cap, as the remedy for this site. The elements of this remedy are described at the end of this section. The selected remedy is based on the results of the RI and the evaluation of alternatives presented in the FS.

Alternative 1 was rejected because leaving the landfill in its current state would not meet the threshold criteria. Alternative 2 was also rejected because it would fail to meet SCGs, and PCBs and inorganic contaminated aquatic sediment would continue to impact fish and wildlife resources.

Alternative 4 was selected because, as described below, it satisfies the threshold criteria and provides the best balance of the primary balancing criteria described in Section 7.2. It will achieve the remediation goals for the site by removing the PCB- and heavy metal-contaminated sediment from the wetland/pond that presents the most significant threat to public health and the environment. Alternative 4 will prevent exposures to contaminated surface soil on the landfill and to waste in the landfill, and it would minimize precipitation infiltration into the landfill waste mass. It will also prevent migration of PCB contaminated soil and landfill wastes into the wetland/pond or groundwater, and eliminate the potential for surface water transport of PCBs from the landfill to wetland/pond sediment. Figure 4 shows the area of wetland/pond sediment excavation and approximate extent of the landfill cap.

Alternative 3 would also prevent exposures to contaminated surface soil on the landfill and to waste in the landfill, as well as minimize infiltration of precipitation into the landfill waste mass. Alternative 3 would not remove contaminated sediment from the wetland/pond, but capping the sediment in place would reduce the potential for exposures. Filling would eliminate wetland habitat for fish and wildlife and could potentially alter the watertable and groundwater flow patterns. Under Alternative 4, excavated sediment would be replaced with similar substrate and revegetated.

Alternatives 3 (landfill and sediment cap) and 4 (landfill cap and sediment excavation) both would have short-term impacts that could be addressed with proper engineering controls. The time needed to achieve the remediation goals would be similar for Alternatives 3 and 4.

The sediment cap of Alternative 3 and landfill caps of Alternatives 3 and 4 would require monitoring to ensure their long-term effectiveness. Periodic maintenance of any cap would be required. Alternative 4 would have the highest long-term effectiveness as a result of excavation and removal of the contaminated wetland/pond sediment.

Both Alternatives 3 and 4 would require dewatering a portion of the wetland/pond to cap (Alternative 3) or excavate (Alternative 4) contaminated sediment. Alternatives 3 and 4 would also include construction of a low-permeability cap over the landfill. Alternative 3 includes capping of contaminated sediments in the wetland. To conduct work in a Freshwater Wetland,

the proposed activity must minimize degradation to, or loss of, any part of the wetland and minimize any adverse impacts. Since there is a reasonable and practicable alternative to sediment capping (Alternative 4: sediment excavation and wetland restoration), Alternative 3 is not considered as protective of fish and wildlife habitat, as it would alter the present functioning of the wetland.

Alternative 3 would potentially reduce the mobility of PCBs and heavy metals in the wetland/pond but this reduction is dependent upon effectiveness and long-term maintenance of the sediment cap. Alternative 3 would reduce the mobility of contaminated wetland/pond sediments by isolation beneath a sediment cap. Alternative 4 would reduce the volume of waste in the wetland/pond by excavating PCB- and heavy metal- contaminated sediment, and placing the sediment beneath the landfill cap would reduce toxicity and mobility of the contaminants.

The costs of the alternatives vary from no cost for Alternative 1, to about $500,000 for Alternative 2, to $5.7 million for Alternative 3, and $5.4 million for Alternative 4.

Alternatives 1 and 2 would be least protective of public health and the environment and do not meet the threshold criteria. Alternative 4 would provide the best protection to public health and the environment by removing contaminated sediment from the wetland/pond adjacent to the landfill and placing it beneath an engineered low permeability cap. The cap would be monitored regularly and maintained as required. The SMP would ensure that any post-construction activities that take place at the landfill are compatible with the proposed remedy. The operation, maintenance and monitoring program to be developed in the SMP would also provide for routine groundwater monitoring to evaluate effectiveness of the remedy.

The estimated present worth cost to implement the proposed remedy is $ 5,459,762. The cost to construct the remedy is estimated to be $ 4,980,172 and the estimated average annual operation, maintenance, and monitoring costs for 30 years is $ 31,198.

The elements of the selected remedy are as follows:

- A remedial design program will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedy.

- Sediment contaminated with PCBs and heavy metals (zinc, copper, lead, mercury and nickel) will be excavated from the wetland/pond adjacent to the landfill and placed on the landfill to eliminate the threat to fish and wildlife resources, as shown on Figure 4.

- The excavated area of the wetland/pond will be restored, meeting the substantive requirements of 6 NYCRR Part 663 to provide appropriate habitat for indigenous aquatic flora and fauna.

- An engineered low permeability cap meeting the substantive requirements of 6 NYCRR Part 360 (Solid Waste Management Facilities) will be constructed over the landfill waste mass and excavated sediment to prevent exposure to contaminated soils, landfill waste and contaminated sediment. The cap will consist of a gas venting layer, overlain by a

geomembrane barrier and covered with a protective soil barrier layer. The total cover system will be a minimum of 24 inches. The top six inches of soil will be of sufficient quality to support vegetation.

- Development of a site management plan (SMP) to: (a) monitor groundwater in selected wells; (b) address residual contaminated soils that may be excavated from the site during future redevelopment. The plan will require soil characterization and, where applicable, disposal/reuse in accordance with NYSDEC regulations; (c) evaluate the potential for vapor intrusion for any buildings developed on the site, including provision for mitigation of any impacts identified; (d) identify use restrictions noted below; and (e) provide for the operation and maintenance of the components of the remedy. A two-year, annual surface water and sediment post-construction monitoring program will be implemented for the stream downgradient of the landfill between Route 22 and Amenia Stream. The SMP, institutional controls and the periodic review will cover the area of the closed landfill (approx. 10 acres) and the area of the EPA drum removal (approx. 1 acre).

- Imposition of an institutional control in the form of an environmental easement that will (a) require compliance with the approved site management plan; (b) limit the use and development of the property to commercial, industrial or recreational uses only; (c) restrict the use of groundwater as a source of potable water, without necessary water quality treatment as determined by NYSDOH; and (d) require the property owner to complete and submit to the NYSDEC a periodic certification.

- The property owner, or authorized representative, will provide a periodic certification, prepared and submitted by a professional engineer or such other expert acceptable to the NYSDEC, until the NYSDEC notifies the property owner in writing that this certification is no longer needed. This submittal will contain certification that the institutional controls and engineering controls are still in place, will allow the NYSDEC access to the site, and will certify that nothing has occurred that would impair the ability of the control to protect public health or the environment, or constitute a violation or failure to comply with the site management plan.

SECTION 9: HIGHLIGHTS OF COMMUNITY PARTICIPATION

As part of the remedial investigation process, a number of Citizen Participation activities were undertaken to inform and educate the public about conditions at the site and the potential remedial alternatives. The following public participation activities were conducted for the site:

- Repositories for documents pertaining to the site were established.

- A public contact list, which included nearby property owners, elected officials, local media and other interested parties, was established.

- A fact sheet was sent in August 1998 announcing upcoming test pit excavations to look for buried drums in the landfill.

- A fact sheet was sent in October 1999 with information on results of the emergency drum removal action at the landfill.
- A fact sheet was sent in October 2001 announcing the beginning of remedial investigation field activities.
- A fact sheet was sent in December 2003 with an update on the remedial investigation.
- A public information session was held on December 16, 2003.
- A fact sheet was sent in January 2006 announcing the availability of the Proposed Remedial Action Plan.
- A public meeting was held on February 13, 2006 to present and receive comment on the PRAP.
- A responsiveness summary (Appendix A) was prepared to address the comments received during the public comment period for the PRAP.

TABLE 1
Nature and Extent of Contamination
Amenia Town Landfill, Site No. 3-14-006

SURFACE SOIL Nov 2001 0 - 6"	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Semivolatile Organic Compounds	phenol	ND[d] - 4.1	0.03	1 of 9
PCBs	Total Aroclors	ND - 63.6	1	10 of 30
Inorganics	chromium	4.2 - 83.5	50	2 of 30
	copper	23.8 - 609	25	28 of 30
	iron	17,000 - 273,000	2,000	30 of 30
	lead	17.6 - 89.7	47 (SB[e])	7 of 15*
	manganese	346 - 1530	1030 (SB)	15 of 30
	nickel	17.9 - 88.6	13	30 of 30
	zinc	45.3 - 3010	20	30 of 30

Surface soil: 21 samples analyzed for PCBs and inorganics
9 samples analyzed for SVOCs, PCBs and inorganics
*15 sample results for lead rejected due to QA/QC problems

SUBSURFACE SOIL Nov 2001 10' - 12' bgs	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Semivolatile Organic Compounds	phenol	ND - 0.084	0.03	1 of 9
Pesticides/PCBs	none			
Inorganics	arsenic	1.9 - 9.0	7.5	1 of 9
	copper	25.9 - 57.8	25	9 of 9
	iron	19,600 - 34,300	2,000	9 of 9
	manganese	481 - 2,400	1030 (SB)	6 of 9
	nickel	22.1 - 46.8	13	9 of 9

Subsurface soil samples collected from drum removal area (after excavation)

GROUNDWATER	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds	acetone	ND - 85.4	50	1 of 30
	1,1-dichloroethane	ND - 8.67	5	6 of 30
	1,1-dichloroethene	ND - 11.5	5	1 of 30
	1,2-dichloroethane	ND - 3.5	0.6	2 of 30
	1,3-dichlorobenzene	ND - 3.2	3	1 of 30
	1,4-dichlorobenzene	ND - 6.4	3	3 of 30
	benzene	ND - 45.7	1	8 of 30
	chlorobenzene	ND - 16.8	5	2 of 30
	chloroethane	ND - 8.9	5	4 of 30
	cis-1,2-dichloroethene	ND - 104	5	5 of 30
	trans-1,2-dichloroethene	ND - 23.8	5	2 of 30
	trichloroethene	ND - 22	5	6 of 30
	vinyl chloride	ND - 15.3	2	5 of 30
Semivolatile Organic Compounds	4-chloro-3-methylphenol	ND - 2.8	1	1 of 24
Pesticides	beta-BHC	ND - 0.966	0.04	1 of 24
Inorganic Compounds	antimony	ND - 51.8	3	20 of 32
	arsenic	ND - 58.9	25	12 of 32
	iron	72.7 - 566,000	300	26 of 32
	manganese	5.9 - 24,800	300	21 of 32
	thallium	ND - 47.7	0.5	13 of 32

Sampling events: Round 1 - Jan 2002 - 12 wells analyzed for VOCs, SVOCs, PCBs/Pesticides, inorganics
Round 2 - April 2002 - 12 wells analyzed for VOCs, SVOCs, PCBs/Pesticides, inorganics
Off-site Investigation - June 2004 - 6 wells/probes analyzed for VOCs and inorganics
2 probes for inorganics only

SURFACE WATER May 2002	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
Pesticides	alpha-Chlordane	ND - 0.01	2×10^{-5}	1 of 8
	delta-BHC	ND - 0.00897	0.008	1 of 8
	gamma-Chlordane	ND - 0.011	2×10^{-5}	1 of 8
Inorganics	aluminum	ND - 1020	100	5 of 8
	iron	835 - 2100	300	3 of 3*

* 5 sample results for iron rejected during data validation

SEDIMENT Background May 2002	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Inorganic Compounds	arsenic	4.9 - 8.4	LEL[c] - 6	4 of 6
			SEL[c] - 33	
	copper	20.1 - 28.7	LEL - 16	6 of 6
			SEL - 110	
	iron	2.2% - 7.7%	LEL - 2%	3 of 6
			SEL - 4%	3 of 6
	manganese	663 - 1630	LEL - 460	2 of 6
			SEL - 1100	4 of 6

Background Sediment: 3 samples from West Stream analyzed for PCBs, inorganics
3 samples from Amenia Stream analyzed for VOCs, PCBs, inorganics

SEDIMENT Wetland/Pond May 2002	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Inorganic Compounds	Arsenic	2.9 - 14.4	LEL[c] - 6	27 of 48
			SEL[c] - 33	
	Cadmium	ND - 3.8	LEL - 0.6	14 of 48
			SEL - 9	
	Copper	10 - 180	LEL - 16	39 of 48
			SEL - 110	2 of 48
	Iron	0.8% - 4.2 %	LEL - 2%	28 of 48
			SEL - 4%	2 of 48
	Lead	22.1 - 205	LEL - 31	33 of 48
			SEL - 110	3 of 48
	Manganese	101 - 1740	LEL - 460	25 of 48
			SEL - 1100	4 of 48
	Mercury	0.057 - 2.5	LEL - 0.15	21 of 48
			SEL - 1.3	2 of 48
	Nickel	6.5 - 50.4	LEL - 16	34 of 48
			SEL - 50	1 of 48
	Silver	ND - 7.3	LEL - 1	3 of 48
			SEL - 2.2	3 of 48
	Zinc	49.6 - 977	LEL - 120	22 of 48
			SEL - 270	6 of 48

Wetland/pond Sediment: 39 samples analyzed for PCBs and inorganics; 9 samples analyzed for inorganics only. See Table 2 for PCB data.

SEDIMENT Downstream May 2002	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Inorganics	Arsenic	6.0 - 26.9	LEL - 6	15 of 17
			SEL - 33	
	Copper	8.1 - 36.4	LEL - 16	9 of 17
			SEL - 110	
	Iron	2.1% - 11.2%	LEL - 2%	4 of 17
			SEL - 4%	13 of 17
	Lead	1.9 - 62.7	LEL - 31	5 of 17
			SEL - 110	
	Manganese	321 - 5070	LEL - 460	2 of 17
			SEL - 1100	12 of 17
	Nickel	24.1 - 142	LEL - 16	9 of 17
			SEL - 50	8 of 17
	Zinc	65.5 - 350	LEL - 120	12 of 17
			SEL - 270	1 of 17

Downgradient Sediment: 10 samples from West Pond Tributary analyzed for PCBs, inorganics
7 samples from East Stream analyzed for VOCs, PCBs, inorganics

See Table 2 for PCB data.

SOIL VAPOR Dec 2001	Contaminants of Concern	Concentration Range Detected ($\mu g/m^3$)[a]	SCG[b] ($\mu g/m^3$)[a]	Number of Detections
Volatile Organic Compounds	vinyl chloride	ND - 3,600	no SCGs for soil vapor	17
	methylene chloride	ND - 6,500		4
	1,1-dichloroethane	ND - 5,300		5
	cis-1,2-dichloroethene	ND - 1,400		6
	trichloroethene	ND - 600		3
	tetrachloroethene	ND - 1,000		7
	benzene	ND - 19,000		20
	toluene	ND - 26,000		20
	chlorobenzene	ND - 1,600		10
	ethylbenzene	ND - 26,000		35
	xylenes	ND - 123,000		34

52 samples collected; methylene chloride, toluene also detected in blank

[a] ppb = parts per billion, which is equivalent to micrograms per liter, ug/L, in water;
ppm = parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
ug/m^3 = micrograms per cubic meter, in soil vapor;
[b] SCG = standards, criteria, and guidance values;
[c] LEL = Lowest Effects Level and SEL = Severe Effects Level: A sediment is considered to be contaminated if either of these criteria is exceeded. If both criteria are exceeded, the sediment is severely impacted. If only the LEL is exceeded, the impact is considered to be moderate.
[d] ND = none detected
[e] SB = site background

TABLE 2

Sediment PCB Contamination

Amenia Town Landfill, Site No. 3-14-006

SEDIMENT PCBs May 2002	Contaminant of Concern	Concentration Range Detected (µg/kg)[a]	SCG (µg/gOC)[b]	Sediment Organic Carbon (OC) Content (g/kg)[c]	Screening Criteria (mg/kg)[d]	Frequency Exceeding Screening Criteria
Wetland/Pond	Total Aroclors	ND - 25,100	1.4[e]	213	0.3	16 of 31
West Pond Tributary	Total Aroclors	ND - 555	19.3[f]	85	1.6	0 of 14
East Stream	Total Aroclors	ND - 636	19.3	85	1.6	0 of 14

[a] µg/kg: micrograms per kilogram

[b] µg/gOC: micrograms per gram organic carbon.

[c] Sediment Organic Carbon (OC) Content (g/kg): Average organic carbon content of wetland/pond sediment and of West Pond Tributary, calculated separately, in grams per kilogram

[d] Screening Criteria: Calculated from the SCG and sediment organic carbon content, milligrams per kilogram

[e] 1.4 µg/gOC: Wildlife Bioaccumulation factor for wetland sediment. Criterion applies to the sum of Aroclors.

[f] 19.3 µg/gOC: Benthic Aquatic Life Chronic Toxicity factor for West Pond Tributary. Criterion applies to the sum of Aroclors.

TABLE 3

Background Soil and Sediment Samples

Amenia Town Landfill, Site No. 3-14-006

SOIL	Background Range (ppm)	Cleanup Objective (ppm)
Lead	24.0 - 47.3	47.3
Manganese	541 - 1,030	1,030
SEDIMENT		
Nickel	59.2-78.5	78.5
Zinc	170-225	225

Three background soil samples were collected off the landfill
Two upgradient sediment samples were collected from West Stream

TABLE 4

Remedial Alternative Costs

Amenia Town Landfill, Site No. 3-14-006

Remedial Alternative	Capital Cost	Annual OM&M	Total Present Worth
Alternative 1: No Action	$ 0	$ 0	$ 0
Alternative 2: Limited Action	$ 190,400	$ 20,352	$ 503,260
Alternative 3: In-Place Capping of Wetland/Pond Sediment and Landfill Cap	$ 5,239,702	$ 31,198	$ 5,719,292
Alternative 4: Wetland/Pond Sediment Excavation and Placement below Landfill Cap	$ 4,980,172	$ 31,198	$ 5,459,762

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

Amenia Town Landfill
Town of Amenia, Dutchess County, New York
Site No. 3-14-006

The Proposed Remedial Action Plan (PRAP) for the Amenia Town Landfill site was prepared by the New York State Department of Environmental Conservation (NYSDEC) in consultation with the New York State Department of Health (NYSDOH) and was issued to the document repositories on February 3, 2006. The PRAP outlined the remedial measure proposed for the contaminated landfill soil, aquatic sediment of the adjacent wetland/pond and groundwater at the Amenia Town Landfill site.

The release of the PRAP was announced by sending a notice to the public contact list, informing the public of the opportunity to comment on the proposed remedy.

A public meeting was held on February 13, 2006, which included a presentation of the Remedial Investigation (RI) and the Feasibility Study (FS) as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. The public comment period for the PRAP ended on March 6, 2006.

This responsiveness summary responds to all questions and comments raised during the public comment period. The following are the comments received, with the NYSDEC's responses:

COMMENT 1: What do Emergency Medical Services have to know to be fully prepared when remedial action is taken at the Amenia Town Landfill?

RESPONSE 1: All local emergency responders, including fire, police and medical emergency departments will be notified prior to the beginning of remedial activities. At that time, these agencies will be advised of the appropriate work plans, design documents and specifications. Included in these documents will be a health and safety plan and contingency plans that will describe how various on-site emergencies will be addressed. In addition, once a remedial contractor is selected, the contractor will coordinate their efforts with local officials on preparations that may be required for possible emergencies.

COMMENT 2: Typically in Connecticut, remediation projects which impact groundwater conduct groundwater monitoring on a seasonal basis. Would the NYSDEC consider proposing groundwater monitoring on a seasonal basis instead of on an annual basis? Would the NYSDEC consider proposing air monitoring on a seasonal basis as well?

RESPONSE 2: During the design phase of the project, a Site Management Plan will be developed that includes a long term monitoring plan to evaluate post-closure site conditions. The NYSDEC will consider seasonal groundwater and air monitoring programs during development of the Site Management Plan.

COMMENT 3: How many private wells are within a half-mile radius of the contaminated site? The PRAP states that no private wells exist within a quarter-mile of the site, but what about a half-mile from the site? Will those wells be monitored?

RESPONSE 3: The investigation did not seek to identify private wells more than one quarter-mile from the site. Due to the absence of site contamination in the off-site monitoring wells adjacent to the landfill at present, there is no need to monitor any private wells farther from the site. After the landfill is closed, a long term monitoring plan will be initiated that will include sampling of groundwater in on-site wells. Should this testing indicate any concerns, additional off-site and/or private well sampling would be considered.

COMMENT 4: Will capping the landfill cause any change in the hydraulic flow of groundwater in the area?

RESPONSE 4: Placement of a cap over the landfill is not expected to result in any change in groundwater flow in the area.

COMMENT 5: Are you aware that fishing does occur in nearby ponds, creeks, and the Amenia Stream?

RESPONSE 5: Yes, the NYSDEC is aware that the nearby surface waters are used for fishing.

COMMENT 6: Are the PCBs found on site getting into the food chain?

RESPONSE 6: It is possible that benthic (bottom-feeding) organisms in the wetland adjacent to the landfill may have ingested PCB-contaminated sediment and introduced it into the food chain. However, by excavating the PCB-contaminated sediment, this exposure pathway will be addressed.

COMMENT 7: Why are the contaminated sediments going back into the landfill and not being taken off site?

RESPONSE 7: The levels of PCBs in the sediments are relatively low and are not a migration threat once capped. It is more cost-effective and limits the potential for off-site impacts due to the truck traffic to place the sediment onto the adjacent landfill rather than to transport it off site for disposal at another facility.

COMMENT 8: Why is Remedial Alternate 4 cheaper than Remedial Alternative 3?

RESPONSE 8: The cost of installing a cap over the contaminated sediment in the wetland and long-term maintenance costs of the cap make it a more expensive remedy than excavation and placement on the landfill.

COMMENT 9: Remedial Alternates 3 and 4 are physical/mechanical means of remediation. Has the NYSDEC considered any biological remedial tactics? Wouldn't the fact that you don't see PCBs beyond the wetland/pond indicate that already there are biological agents at work?

RESPONSE 9 : Biodegradation of PCBs was not evaluated beyond the preliminary screening during the FS. It is possible that there has been some limited biodegradation of PCBs in the wetland/pond and stream. However, biological degredation of PCBs would take a significant amount of time. By removing the PCBs from the wetland and placing them on the landfill under the cap we are, in effect, isolating the PCBs from the environment. Removal of the PCB-contaminated sediment from the wetland eliminates the possibility that contamination will continue to erode and migrate downstream.

COMMENT 10: What happens under the landfill cap in terms of PCB degradation? Will the PCBs be around, under the cap, forever?

RESPONSE 10: Yes, it is likely that some PCBs will persist for a long time, along with many of the other waste materials in the landfill.

COMMENT 11: Can sediments and groundwater for a property located south of the site along Route 22 be tested if the groundwater is planned to irrigate crops? Can one apply for sampling, or must one pay for it oneself?

RESPONSE 11: Because there is no significant off-site contamination adjacent to the site, additional off-site sampling is not warranted at this time. After the landfill is closed, a monitoring plan will be initiated that will include sampling of groundwater in on-site wells. Should this testing indicate any concerns, additional off-site and/or private well sampling would be considered.

COMMENT 12: Should the NYSDEC be concerned about groundwater and sediments beyond the scope of the monitoring wells? The entire 30-acre area must have complex surface inflow, outflow, and groundwater flow.

RESPONSE 12: The NYSDEC accepts the results of the extensive sampling and analytical program conducted to date as having sufficiently defined the nature and extent of contamination.

COMMENT 13: To what extent will the PRPs and NYSDEC bear the cost of remediation? At this time, has any percentage of the cost has been paid by the state?

RESPONSE 13: Upon signing of the ROD, the NYSDEC will notice the PRPs to enter into a consent order for the site remediation. If agreement cannot be reached, the NYSDEC would implement the ROD using the State Superfund and seek to recover these costs from the PRPs. The NYSDEC does not know at this time who will bear the cost of remediation. Costs incurred by NYSDEC at the site prior to the RI/FS Consent Order have not been reimbursed by the PRPs. However, costs incurred since the RI/FS Consent Order was signed are reimbursable under the order.

COMMENT 14: Does this site qualify for the Brownfields program?

RESPONSE 14: The Amenia Town Landfill does not qualify for the Brownfields program because it is a class 2 site.

COMMENT 15: What is the intended future use of the property?

RESPONSE 15: Future use will be restricted to commercial, industrial or recreational uses that do not compromise the integrity of the landfill cap.

COMMENT 16: How much of the site will be capped? How much of the site acreage will be usable/buildable? How long until the site is capped and completed?

RESPONSE 16 : The cap will cover approximately 10-11 acres. The extent of "useable" acreage will be determined by what the future uses are, within the constraints of the restrictions outlined in the ROD. The length of time until the site is capped will be determined, in large part, by the time required to negotiate the remedial design/remedial action consent order with the PRP group. Once the order is completed, the remedial design would take 12-18 months to complete and the excavation and construction activities would take another 24-36 months to complete.

COMMENT 17: Will there ever be wells on site for industrial or commercial use? If so, would they be drilled into bedrock?

RESPONSE 17 : On-site groundwater could be used if appropriate water-quality treatment is provided as determined by the Dutchess County DOH. Bedrock wells could be used if the yield is sufficient for anticipated uses.

COMMENT 18: Page 8 of the PRAP reads that shallow groundwater beneath the landfill is recharged by the wetland/pond west of the landfill and discharges into the streams east of Rt 22. Does this suggest that water from landfill is moving into the wetlands? Why aren't contaminants found in the groundwater if this is true? Also, does rainfall pass through the landfill and into the groundwater?

RESPONSE 18: Data collected during the investigation indicate that water is flowing from the wetland beneath the landfill and into the streams east of the site. Very little, if any, groundwater is in contact with the landfill waste mass, which is one reason that little groundwater contamination was detected during the investigation. Infiltration of rainfall into the waste mass is presently occurring.

COMMENT 19: Will the wetland/pond be thoroughly studied before remediation so that it can be made the same if not better than before? Phyto- and bio-remediation should be considered and studied.

RESPONSE 19: A thorough study of wetland habitat was conducted in response to a comment generated at a previous public meeting concerning the possibility of bog turtles in the wetland. Although the habitat was found not to favor the bog turtle, the information acquired during this investigation can be used in re-establishing the wetland habitat following remediation.

The remedial design will describe how the wetland will be restored. Restoration will meet the substantive requirements of Part 663 (Freshwater Wetlands). The restoration will include planting of wetland species that could increase the diversity of the wetland/pond environment. Although some research has been done to evaluate the applicability of phyto- and bio-remediation to wetland sediment, their effectiveness has not been proven.

COMMENT 20: Who exactly are the PRPs and what will happen if the PRAP is not agreed to by the PRPs?

RESPONSE 20: Initially, there were 10 signatories to the October 2001 RI/FS Consent Order, as stated in Section 4.0 of the PRAP. Subsequent to that date, there were five additional PRPs: Great Eastern Color Lithographic Corp, H.O.Penn Machinery Co., IBM Corp., TBG Services, and Weyerhaeuser Corp. If the PRPs do not agree to implement the ROD, the NYSDEC would finance the remedy through the State Superfund and commence legal action against the PRPs to recover costs.

COMMENT 21: Is the helipad going to be removed and will there be a study of what is beneath it?

RESPONSE 21: The concrete helipad may be removed prior to capping activities or incorporated under the cap. The fate of the helipad will be determined during the remedial design. It is located within the known waste area that will be capped and it is not likely that additional investigation beneath it will take place.

COMMENT 22: Are there available examples of how nearby municipalities deal with capped landfills, as far as maintenance goes? Do they build structures, playing fields, parks? Wouldn't it be most beneficial to know the intended future use of a property before the design phase? Is the NYSDEC involved in the permitting process to build on the property after it is capped?

RESPONSE 22: The NYSDEC does not have any local examples of alternate uses for capped landfills. Buildings and playing fields and parks are acceptable uses and have been constructed at several sites in New York State. It would be advantageous to know the intended future use of the landfill property prior to cap design and the PRP group will be contacted on this issue during negotiation of the RD/RA consent order. The NYSDEC will need to confirm that any potential future use of the landfill is protective of public health and the environment.

COMMENT 23: Are there any incidents of caps being ruptured or damaged? And does the DEC repair the geomembrane if breeched?

RESPONSE 23: Breaches of landfill caps are rare, however, repairs and modifications have occurred at sites in New York State. Repair of any component of the remedy would be the responsibility of the site owner, or the authorized representative. If such party fails to correct the breach, the NYSDEC would use State Superfund money and pursue cost recovery.

COMMENT 24: Who owns the land now? What is the cost estimate of what has already been done in the 23 years of work at this site?

RESPONSE 24: The northern portion of the site associated with the propane storage facility is owned by Karl Saliter, and the southern portion is owned by Theoharis Theoharis. Because the PRPs have funded the majority of the investigation at the site, the NYSDEC has no knowledge of the total costs spent at the site.

The Town of Amenia Conservation Advisory Commission (CAC) submitted a letter dated February 23, 2006, which included the following comments:

COMMENT 25: The CAC urges the NYSDEC to investigate phytoremediation and bioremediation of the contaminated sediments in the wetland.

RESPONSE 25: As stated in Response 19: Although some research has been done to evaluate the applicability of phyto- and bio-remediation to wetland sediment, the effectiveness of this technology has not been proven. Excavation of the contaminated sediment would result in its immediate removal and isolation of PCB-contaminated sediments from the wetland organisms.

COMMENT 26: The CAC requests that the NYSDEC conduct a complete pre-remediation biodiversity study of the wetland in order to facilitate an adequate restoration of the wetland if the contaminated sediments are to be removed. The CAC requests to be kept apprised of this investigation.

RESPONSE 26: As stated in Response 19, a thorough study of wetland habitat was conducted in response to a comment generated at a previous public meeting concerning the possibility of bog turtles in the wetland. The information acquired during this investigation will be used in re-establishing the wetland habitat following remediation. The Bog Turtle Study Report is available at the document repositories at Amenia Town Hall, Sharon Town Hall, and the Amenia Free Library.

COMMENT 27: Even though there is no evidence of downgradient pollution of either the stream or groundwater we question the accuracy of the study and we are concerned that the placement of many tons of water laden contaminated sediment from the wetland onto the landfill area will result in contamination of the groundwater under the landfill, even though it is covered, and lead to the contamination of the stream to the east of the landfill.

RESPONSE 27: The NYSDEC supports the results of the investigation. The sediment will be dewatered prior to placement on the landfill. It is not expected that the placement of the PCB-contaminated sediment will change current groundwater conditions or cause contaminant migration. However, after the landfill is closed, a monitoring plan will be initiated that will include sampling of groundwater in on-site wells. Should this testing indicate any concerns, additional off-site and/or private well sampling would be considered.

COMMENT 28: Since the most recent landfill cover material seems to the source of the PCBs in the landfill, we are concerned that the thousands of cubic yards of new cover material that will be required be free of any contamination. We request that the NYSDEC certify that the cover material be free of any toxic and hazardous materials and that it be tested for such material before and during the covering process.

RESPONSE 28: The NYSDEC will require that all landfill cover material must come from a clean source and be pre-approved for use by the NYSDEC prior to placement, and this requirement will be included in the design specifications.

COMMENT 29: The helicopter pad on the property sags several inches at its center as if subsurface

materials have settled considerably. The CAC thinks that this pad should be torn up and the area under it investigated for further buried waste.

RESPONSE 29: See response 21.

COMMENT 30: Alternative 4, the DEC preferred remediation plan, would place excavated pond sediment under a low-permeability cap which, until it inevitably leaks, would prevent rainwater and snow melt from infiltrating through the contaminated material and causing it to move into the groundwater. Presumably several thousand cubic meters of water laden contaminated material would be relatively concentrated on higher ground. Would the water from this material then infiltrate into the ground below it and move off site, possibly even back to the wetland? Could this result in a "pulse" of contaminated groundwater into the surrounding area?

RESPONSE 30: As stated in Response 27, the sediment will be dewatered after it is excavated from the wetland and prior to its placement on the landfill. No additional water will be introduced into the landfill mass. A site management plan will be developed that will require periodic inspection and maintenance of the cap. Further, an environmental professional will periodically certify that the cap is functioning as designed. If the low-permeability cap is maintained appropriately, the possibility of leakage is remote.

COMMENT 31: In Alternative 4, the PCBs and heavy metals are encapsulated. Will the PCBs eventually break down? And what happens to the heavy metals? Will all of this toxic material just sit there waiting for future generations to eventually clean it up? Would another Alternative be to excavate the contaminated material and transport it off the site for disposal?

RESPONSE 31: The PCBs present in the existing landfill soil and the sediment that will be placed onto the landfill may very slowly biodegrade through natural processes. The heavy metals within the sediment will not degrade and will remain in place after placement with the other landfill wastes beneath the landfill cap. Landfill caps constructed consistent with current NYSDEC regulations are expected to be permanent remedies. If future generations develop the technology to effectively remediate the large volumes of landfill waste that currently exist, that may be an option for them to consider. Presently, excavation and off-site disposal of landfill waste to another landfill is not a cost-effective option. Excavation and off-site disposal of the PCB- and heavy metal-contaminated sediment was considered during the feasibility study but not selected as noted in Section 8 of the ROD.

COMMENT 32: Careful reading of all the background material and the various investigations suggests that the PCBs arrived on the site late in its history, maybe in the final cover material that was applied in 1976. There seems to be no point source for the PCBs and they are not present in the subsurface material. It is ironic that the final effort to cover, or hide, the landfill may have resulted in severely exacerbating the contaminant problem and has greatly increased the remediation costs. Although it is beyond the scope of the remediation plan, the CAC requests the DEC, maybe with the help of the State Attorney General, track down the source of the PCB laden cover material and the individuals responsible and enlist them in helping the Town pay for the remediation.

RESPONSE 32: The NYSDEC would support efforts by the CAC or the existing PRPs to research the potential source of the PCBs.

Ms. Arlene Iuliano, resident, and former Amenia Town Supervisor and Town Councilman, submitted a letter dated March 3, 2006, which included the following comments:

COMMENT 33: The need to assure that the costs of the cleanup and those of the Site Management Plan are borne appropriately by all the potentially responsible parties (PRPs) is essential to the fiscal integrity of the Town of Amenia. ... The costs of demolishing the helicopter site and the propane storage facility should be borne directly by the owners of those two facilities as they were not municipal operations.... It will be important for the Town of Amenia to know who will bear the monitoring and maintenance costs in the matter of Site Management, and what those costs are annually.

RESPONSE 33: The NYSDEC appreciates the concerns. The allocation of costs among the various participating PRPs, including the Town of Amenia, is an issue to be resolved among the parties involved. The estimates of monitoring and maintenance costs developed in the Feasibility Study are reasonable and could be used by the Town in estimating future annual costs.

APPENDIX B

Administrative Record

Administrative Record

Amenia Town Landfill
Site No. 3-14-006

1. Proposed Remedial Action Plan for the Amenia Town Landfill site, dated January 2006, prepared by the NYSDEC.

2. Order on Consent, Index No. W3-0859-99-10, executed on October 4, 2001 between NYSDEC and:

   Alastair B. Martin
   Ashland Inc.
   BP America, Inc.
   Curtiss-Wright Corp.
   Estate of Edith Park Martin
   Metal Improvement Company, Inc.
   Syngenta Crop Protection, Inc.
   Town of Amenia, New York
   Town of Sharon, Connecticut
   Unisys Corp.

3. "Phase 1 Investigation," August 1986, prepared by EA Science and Technology.

4. "Phase II Investigation," April 1993, prepared by Lawler, Matusky & Skelly Engineers.

5. "Test Pit Installation Report," October 1998, prepared by TAMS Consultants, Inc.

6. "Remedial Investigation Report, Vols. 1 and 2," November 2003, prepared by URS Corporation.

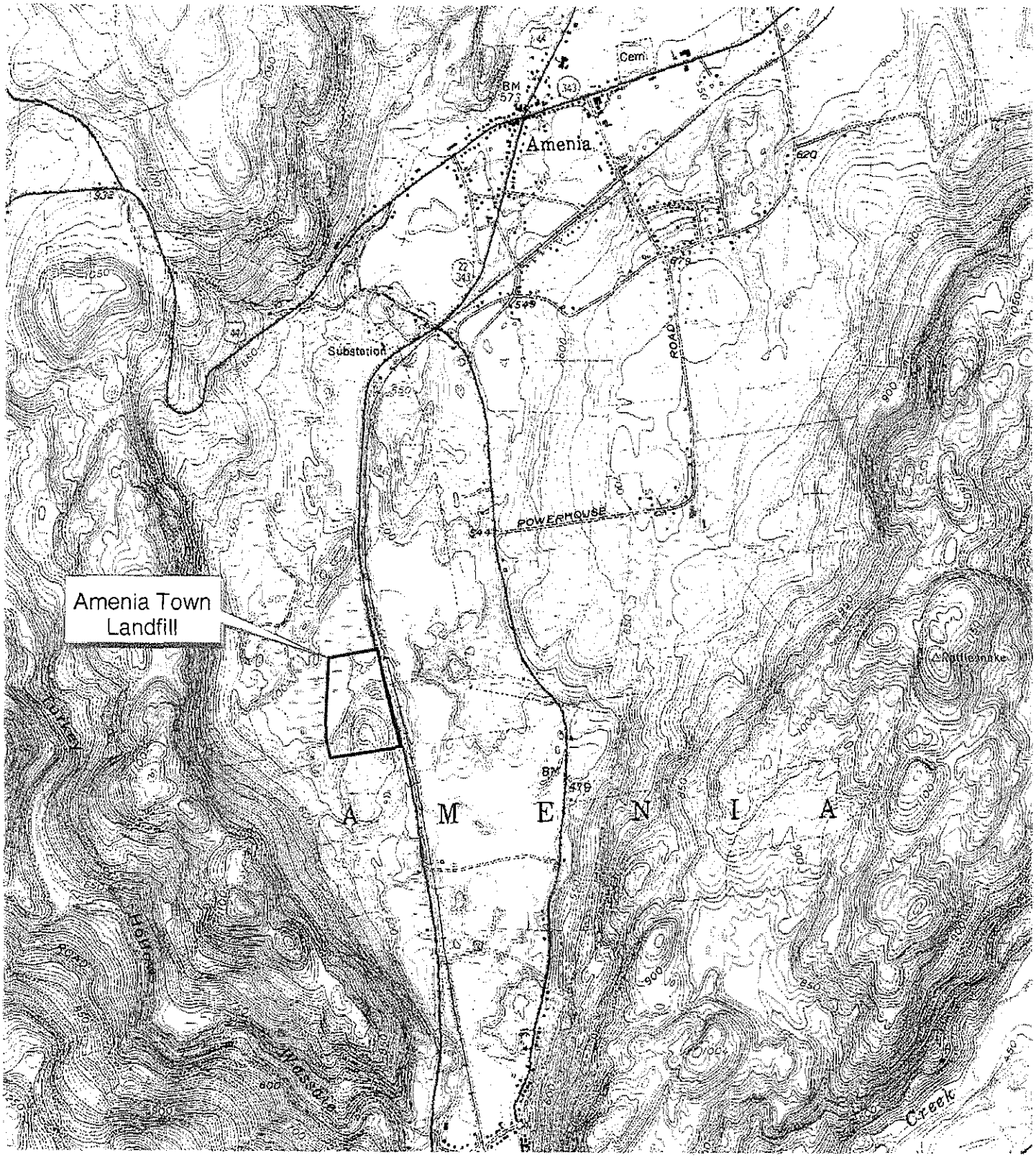
7. "Off-Site Groundwater Investigation Report," October 2004, prepared by URS Corporation.

8. "Feasibility Study Report," April 2005, prepared by URS Corporation.

9. "Phase 1 Bog Turtle Survey Report," May 2005, prepared by URS Corporation.

10. Letter dated February 23, 2006 from David Reagon, CAC chair, comments on the PRAP.

11. Letter dated March 3, 2006 from Arlene Iuliano, comments on the PRAP.



0 1000 2000 3000 4000 Feet

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Map Source: USGS 7.5 Minute Series Quadrangle
Amenia, NY-CT, 1958
Photorevised 1984

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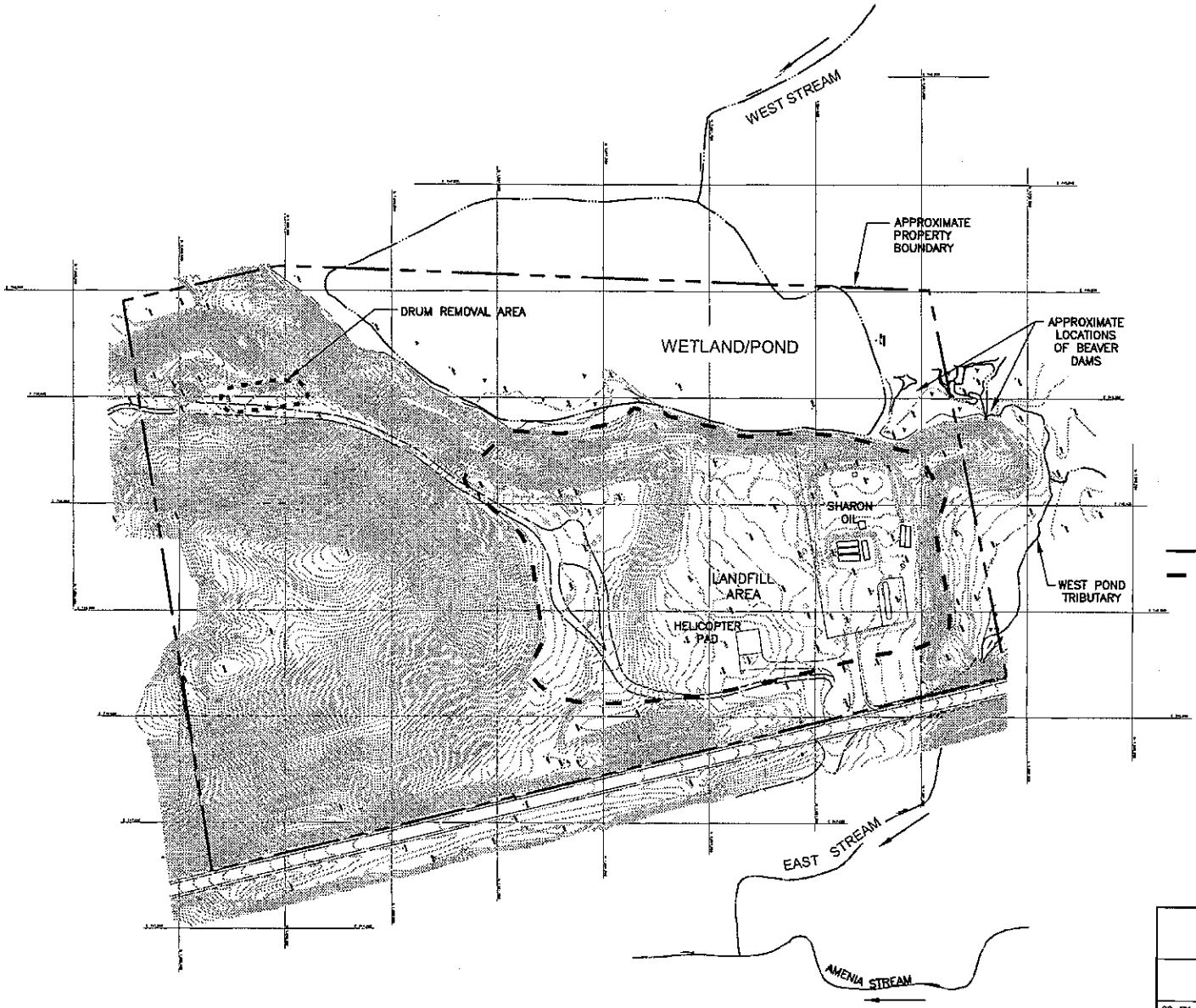
Site Location Map
Amenia Town Landfill
Amenia, New York

URS
Wayne, New Jersey

Scale 1:24000	Proj. No. 19683595	
Date: March 2004		Figure 1



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LEGEND:

SITE BOUNDARY

APPROXIMATE LIMITS OF WASTE

NOTES:

1. WATER BODY BOUNDARIES ARE APPROXIMATE AND BASED ON 1990 AERIAL PHOTOGRAPH
2. PROPERTY BOUNDARY IS APPROXIMATE AND BASED ON AMENIA TOWN ASSESSOR'S 7066-00 TAX MAP, 1999.

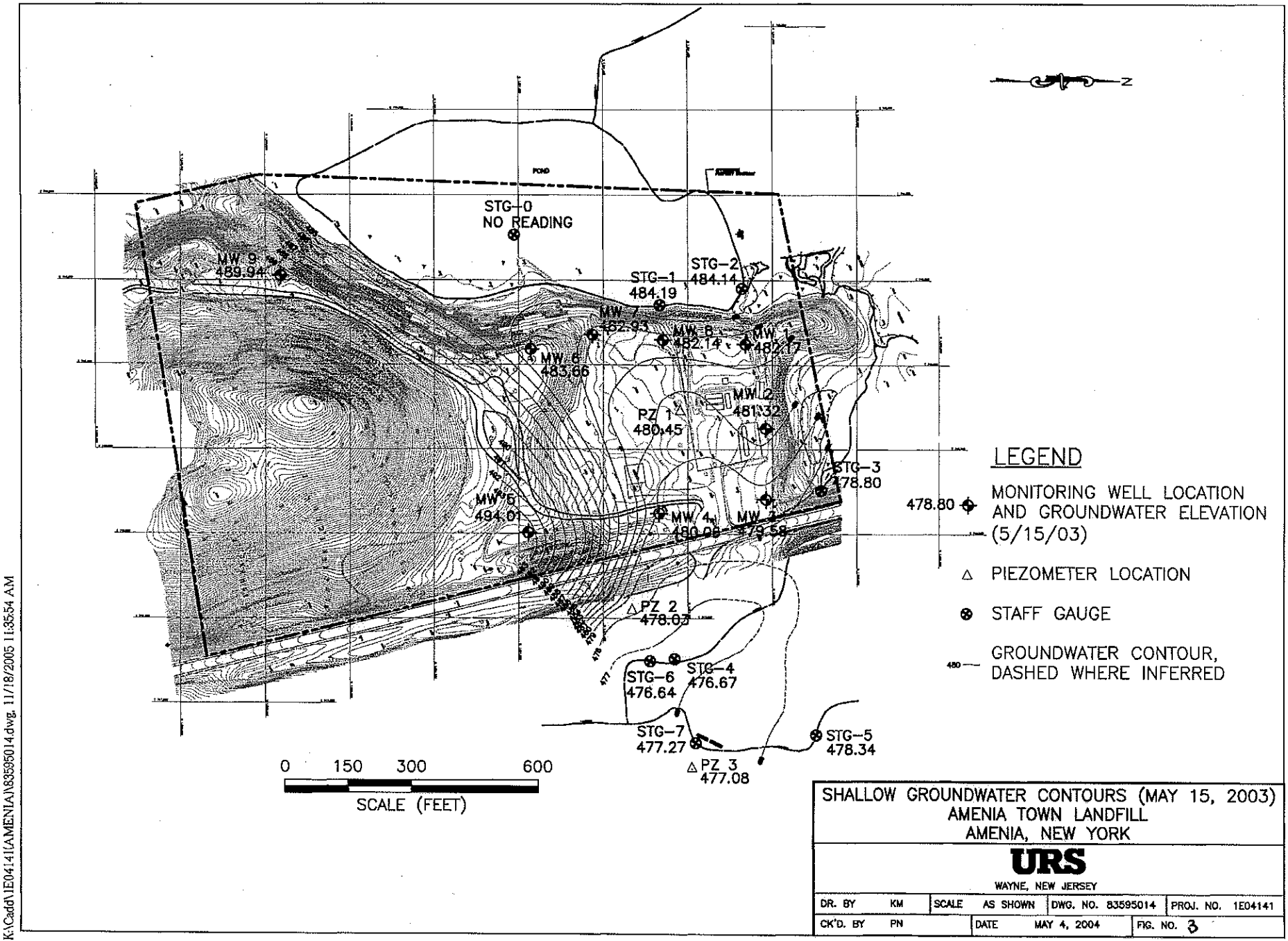
0 100 200 400

SCALE (FEET)

SITE LAYOUT
AMENIA, TOWN LANDFILL
AMENIA, NEW YORK

URS
WAYNE, NEW JERSEY

DR. BY	KM	SCALE	AS SHOWN	DWG. NO.	83595015	PROJ. NO.	196835
CK'D. BY	PN			DATE	MAY 4, 2004	FIG. NO.	2



SHALLOW GROUNDWATER CONTOURS (MAY 15, 2003)
AMENIA TOWN LANDFILL
AMENIA, NEW YORK

URS
WAYNE, NEW JERSEY

DR. BY	KM	SCALE	AS SHOWN	DWG. NO. 83595014	PROJ. NO. 1E04141
CK'D. BY	PN	DATE	MAY 4, 2004	FIG. NO. 3	

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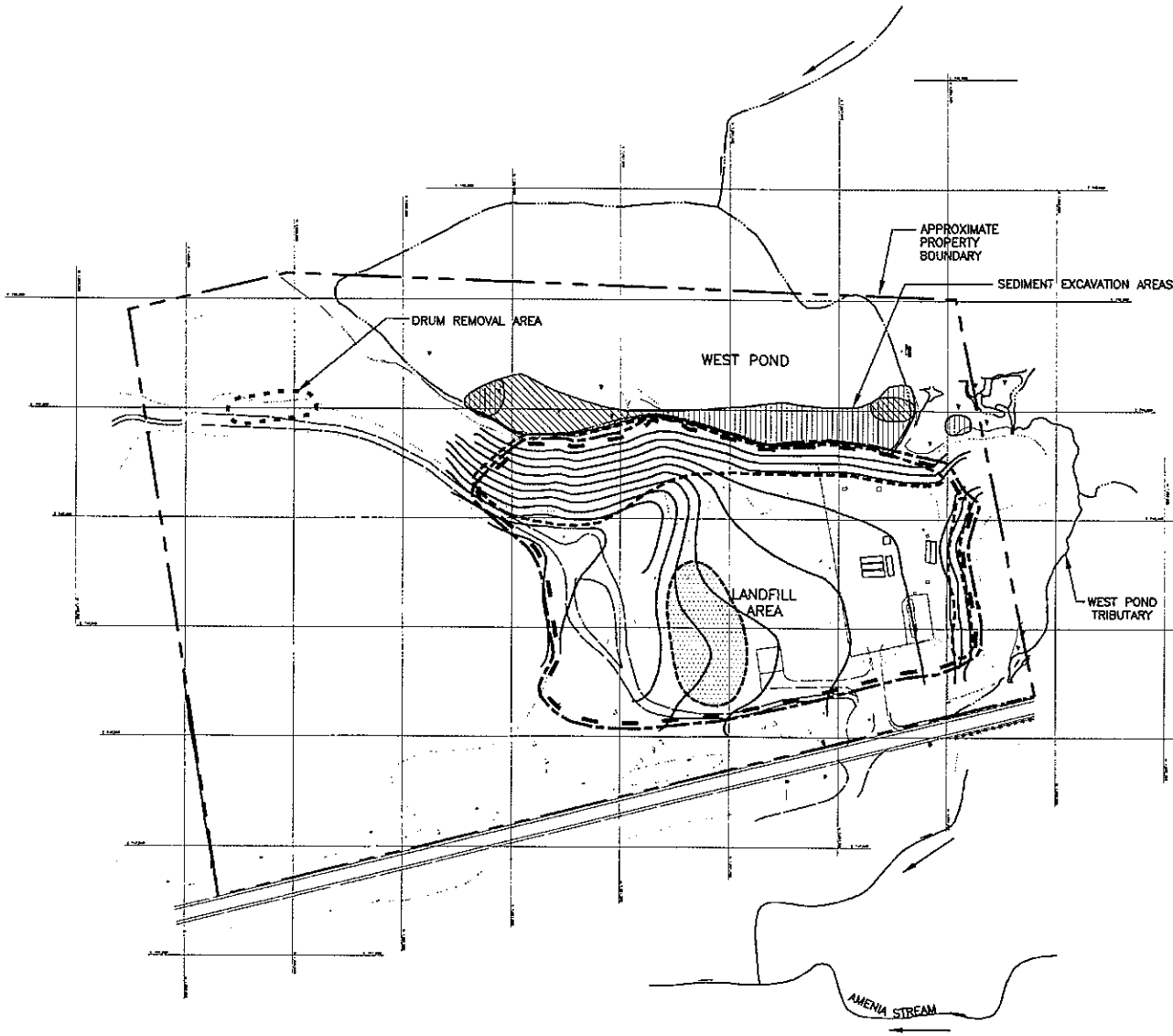

LEGEND:

- SITE BOUNDARY
- APPROXIMATE LIMITS OF WASTE
- 5FT. FINAL GRADES OF FINAL COVER
- LIMIT OF GEOCOMPOSITE DRAINAGE LAYER
- APPROXIMATE LIMITS OF LANDFILL CAP AREA
- SEDIMENT PLACEMENT AREA
- AREA REQUIRING INORGANICS CLEANUP
- AREA REQUIRING PCB CLEANUP

NOTES:

1. WATER BODY BOUNDARIES ARE APPROXIMATE AND BASED ON 1990 AERIAL PHOTOGRAPH
2. PROPERTY BOUNDARY IS APPROXIMATE AND BASED ON AMENIA TOWN ASSESSOR'S 7066-00 TAX MAP, 1999.

0 100 200 400
SCALE (FEET)

PROPOSED AREAL EXTENT OF LANDFILL CAP
AMENIA, TOWN LANDFILL
AMENIA, NEW YORK

URS
WAYNE, NEW JERSEY

DR. BY	KM	SCALE	AS SHOWN	DWG. NO. 63595022	PROJ. NO. 1E04141
CK'D. BY	MC	DATE	APRIL 12, 2005	FIG. NO. 4	

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