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Remedial Investigation Report

Hazardous Waste Disposal, Inc.
Farmingdale, New York

April 2000

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

April 14, 2000

Mr. David Camp
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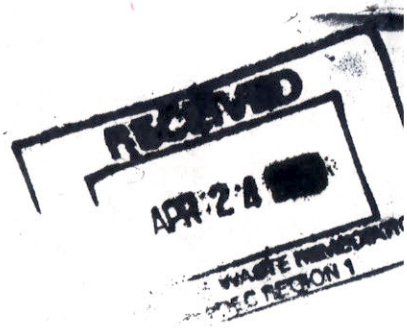

RE: Remedial Investigation Report Submittal
Hazardous Waste Disposal (HWD), Inc.
11A Picone Boulevard
Farmingdale, New York
NYSDEC Order on Consent Index # W1-0728-95-05 Site #1-52-113

Dear Mr. Camp:

In accordance with Section II of the referenced Order on Consent, the HWD Respondents are submitting the Remedial Investigation Report completed in accordance with the Remedial Investigation (RI) / Feasibility Study (FS) Work Plan dated February, 1997.

The scope of the Remedial Investigation (RI) included the following primary tasks:

- A geophysical survey was completed.
- Ten soil borings were installed and 22 soil samples were collected and submitted to the laboratory for analysis.
- Sixty Hydropunch™ ground-water samples were obtained from 15 Hydropunch™ borings to a maximum depth of 100 feet below grade and submitted to the laboratory for analysis.
- Based on a review of the initial field results, three additional deep monitoring wells were installed and screened from 55 to 65 feet below grade at well MW-1D and from 40 to 50 feet below grade at wells MW-2D and MW-3D.
- Nine ground-water samples were collected from the six existing shallow water table wells and the three new deep monitoring wells and submitted to the laboratory for analysis.

The significant findings of the RI include the following:

1. Soils at the site are uniform sand and gravel at all locations investigated.
2. The groundwater table is encountered at approximately 14 feet below the concrete surface at the site. The ground-water flow direction is to the southwest and the estimated average linear ground-water flow velocity ranges from 8 to 15 feet per year.

3. Inorganic compounds at the site are naturally occurring and concentrations were not elevated over background levels in soils or ground water.

4. Tetrachloroethene is the major compound of concern in site soils with the highest concentration of 170 milligrams per kilogram (mg/Kg) detected vicinity of the former sludge pit from the 0 to 2 foot interval below the concrete slab.

5. The highest concentration of tetrachloroethene detected in ground water was on-site in well MW-2 at 68 micrograms per liter (ug/L). The off-site wells and deep monitoring wells were not impacted.

6. Currently, there are no existing exposure pathways for human or ecological receptors of hazardous substances at the site.

7. No interim remedial measures are necessary at the site.

8. A limited number of soil borings, installation of one additional shallow monitoring well and utilization of a newly identified monitoring well to collect another round of ground-water samples for analysis of volatile organic compounds (VOCs) will provide adequate information to complete a focused feasibility study of remedial alternatives for the site.

If you have any questions regarding the enclosed report please contact Michael Westerheim of the HWD Site Technical Committee by telephone at 651-687-2887 or by email at michael.westerheim@unisys.com. We would also appreciate the opportunity to meet with you to address any issues that you may have prior to the preparation of written report comments by NYSDEC.

Very truly yours,

David T. Noble

David T. Noble
Assistant General Counsel, Environment, Health and Safety
Unisys Corporation--on behalf of the HWD, Inc. Site RI/FS Consent Order Respondents

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CERTIFICATION STATEMENT for REMEDIAL INVESTIGATION REPORT

HAZARDOUS WATE DISPOSAL (HWD), INC SITE RI/FS

FARMINGDALE, NEW YORK

ADMINISTRATIVE ORDER ON CONSENT INDEX #W1-0728-95-05, SITE #1-52-113

Pursuant to Section II. D.4 of the above referenced Administrative Order on Consent , the undersigned hereby certifies that he is the individual with primary responsibility for the day to day performance of the Remedial Investigation and that all activities were performed in full accordance with the Department-approved RI/FS Work Plan .

Stephen A. Cox, P.G.
Vice President
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List of Acronyms

AOC	-	Administrative Order of Consent
ASP	-	Analytical Services Protocol
AST	-	Aboveground Storage Tank
ASTM	-	American Society for Testing and Materials
BBL	-	Blasland, Bouck & Lee, Inc.
bgs	-	below ground surface
CERCLA	-	Comprehensive Environmental Response, Compensation, and Liability Act
DRO	-	Diesel Range Organics
FPM	-	Fanning, Phillips, and Molnar
FSP	-	Field Sampling Plan
FS	-	Feasibility Study
GPM	-	Gallons Per Minute
GPR	-	Ground Penetrating Radar
HASP	-	Health and Safety Plan
HWD	-	Hazardous Waste Disposal, Inc.
IRMs	-	Intermediate Remedial Measures
LUST	-	Leaking Underground Storage Tank
MDEP	-	Massachusetts Department of Environmental Protection
MCP	-	Massachusetts Contingency Plan
MSL	-	Mean Sea Level
NAD83	-	North American Datum of 1983
NAVD88	-	North American Vertical Datum of 1988
NAPL	-	Non-Aqueous Phase Liquid
NCP	-	National Contingency Plan
NPL	-	National Priority List
NYSDEC	-	New York State Department of Environmental Conservation
PAH	-	Polynuclear Aromatic Hydrocarbon
PCBs	-	Polychlorinated Biphenyls
PID	-	Photoionization Detector
ppb	-	Parts Per Billion
PRG	-	Preliminary Remediation Goals
PRP	-	Potentially Responsible Parties
QAPP	-	Quality Assurance Project Plan
RBCs	-	Risk-Based Concentrations
RCRA	-	Resource Conservation and Recovery Act
RI	-	Remedial Investigation
RI/FS	-	Remedial Investigation/Feasibility Study
SCHD	-	Suffolk County Health Department
SVOCs	-	Semivolatile Organic Compounds
TAL	-	Target Analyte List
TAGM	-	Technical and Administrative Guidance Memorandum
TCL	-	Target Compound List
TDS	-	Total Dissolved Solids
TOC	-	Total Organic Carbon
TSS	-	Total Suspended Solids
USEPA	-	United States Environmental Protection Agency
USGS	-	United States Geological Survey
VOCs	-	Volatile Organic Compounds

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1. Introduction

1.1 Purpose

This Remedial Investigation (RI) Report has been prepared for the Hazardous Waste Disposal, Inc. (HWD) site (the "site") located in the Village of Farmingdale, Suffolk County, New York (Figure 1-1).

This report is being submitted in accordance with the Administrative Order on Consent (AOC) (Index No. W1-0728-95-05 Site No. 1-52-113) executed between the New York State Department of Environmental Conservation (NYSDEC) and the Hazardous Waste Disposal, Inc. Potentially Responsible Parties (PRP) Group in August 1999. The AOC required the PRP Group conduct a Remedial Investigation/Feasibility Study (RI/FS) at the site consistent with an RI/FS Work Plan which was approved by NYSDEC in 1997 and attached to the AOC. Blasland, Bouck & Lee, Inc. (BBL) was retained by the Hazardous Waste Disposal, Inc. PRP Group as their technical consultant to develop the RI/FS Work Plan, and complete the RI/FS activities pursuant to the Work Plan.

The Work Plan was prepared consistent with the elements of an RI/FS as set forth in the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended, 42 U.S.C. 960 *et seq.*, the National Contingency Plan (NCP), and United States Environmental Protection Agency (USEPA) guidance for conducting an RI/FS (USEPA, October 1988).

The overall objectives of this RI are to provide data to assess soil and ground-water quality, and to determine the scope of potential future remedial activities that may be required to address alleged releases of chemical constituents associated with the site during its operational history. Consistent with this general objective, the following specific objectives were established for the RI:

- determine the presence and extent of chemical constituents in soil and ground water associated with the site;
- evaluate potential on-site/off-site migration of chemical constituents present in soil and/or ground water associated with the site;
- provide information to determine if implementation of interim or long-term remedial measures may be necessary to address confirmed releases of chemical constituents associated with the site; and
- provide data for preparation of a Feasibility Study (FS) to evaluate potential remedial alternatives for implementation at the site (if necessary).

The activities implemented to achieve the objectives of the RI/FS for the HWD site consist of the following seven tasks, as outlined in the RI/FS Work Plan:

- Task 1 - Area Reconnaissance and Mapping;
- Task 2 - Soil Investigation;
- Task 3 - Ground-Water Investigation;
- Task 4 - Assessment of Air Emissions;
- Task 5 - Assessment of Potential IRMs;
- Task 6 - Qualitative Exposure Assessment; and
- Task 7 - RI Report.

1.2 Report Organization

This report is organized into the following sections:

- Section 1 - Introduction, which presents background information regarding the history and the physical setting associated with this site and investigations previously completed;

- Section 2 - RI Field Investigation Activities, which includes a detailed description of the activities implemented for the RI;

- Section 3 - Physical Site Characterization, which presents information regarding the physical characteristics of the site and surrounding area based on data derived during this RI and previous investigations;

- Section 4 - Nature and Extent of Site-Related Constituents, which presents the analytical results of the soil and ground-water sampling performed, along with a discussion of these data with respect to the nature and extent of constituents associated with this site;

- Section 5 - Qualitative Exposure Assessment, which evaluates potential exposure pathways and identifies potential receptors under both current and hypothetical future site use scenarios;

- Section 6 - Assessment of Potential Interim Remedial Measures (IRMs), which identifies if potential IRMs would be required to be implemented at the site based on the RI results;

- Section 7 - Summary and Conclusions, which summarizes the key findings and conclusions of the RI activities related to the site; and

- Section 8 - References, which provides a list of references used in this report.

Appendices to this RI Report include the following:

- Appendix A contains the laboratory analytical data packages, which will be submitted under separate cover due to the size of the documents;

- Appendix B contains the Data Usability Report which was developed based upon the data usability review activity outlined in the RI/FS Work Plan;

- Appendix C contains the results of the geophysical survey completed by the geophysical survey subcontractor, Bay Geophysical, Inc. as part of the RI/FS Work Plan Task 1 activities;

- Appendix D contains soil boring logs and monitoring well construction logs for the soil boring and well drilling activities in RI/FS Work Plan Task 2 and 3;

- Appendix E contains ground-water sampling logs for the sampling activities outlined in RI/FS Work Plan Task 3; and

- Appendix F contains the daily air monitoring logs generated during the performance of RI/FS Work Plan Task 4.

1.3 Site Background and Physical Setting

The following section presents relevant information regarding the history and physical setting of the site and vicinity.

1.3.1 Site Location and Description

The HWD site is located on Picone Boulevard in the Village of Farmingdale, Suffolk County, New York (Figure 1-1). The site and surrounding areas are located in an area of predominantly commercial and industrial land use. The site encompasses an area where hazardous waste storage, transfer, and recycling operations were historically conducted. The approximate boundaries of the HWD site are shown on Figure 1-2.

The site is generally bounded to the north, east and south by adjacent commercial/industrial properties, and is identified as Tax Lot 31.004 in the Suffolk County, New York tax maps. The site is bounded to the west by a one-story furniture warehouse and storage yard. The HWD site is accessible from Picone Boulevard, and from a paved driveway located north of the adjacent furniture warehouse building. The portion of the site where the historical waste handling activities occurred is currently covered with concrete paving, and is used for parking tractor-trailer trucks by a local business.

1.3.2 Site History

This section provides a brief summary of historic site operations and general environmental information which was previously discussed in the RI/FS Work Plan. Unless otherwise noted, this information was obtained from the following reports:

- "Summary of History and Sampling at the Former Hazardous Waste Disposal, Inc. Site" prepared by Fanning, Phillips, and Molnar (FPM, April 1995); and

- "Engineering Investigations at Inactive Hazardous Waste Sites in the State of New York Phase II Investigation, Hazardous Waste Disposal Site, Site No. 152113, Town of Babylon, Suffolk County, New York" prepared by Gibbs & Hill, Inc. (Gibbs & Hill, December 1991).

HWD operated a hazardous waste storage, transfer, and recycling facility at the site from approximately 1979 to 1982. Information about the site history prior to 1979 was not provided in these reports. Hazardous wastes (primarily spent solvents and acidic wastes) were collected from off-site generators, transported to the site by HWD, and stored at the site prior to off-site transport and disposal. HWD also reportedly utilized the site to recycle spent solvents for resale. Hazardous wastes stored at the site were managed in 55-gallon drums, one or more tanks, and a "sludge pit."

In March 1981, HWD reported a vapor discharge from the site to the Suffolk County Health Department (SCHD). The incident reportedly produced a 150- to 200-foot high visible vapor plume.

The USEPA inspected the HWD facility in September 1981. At the time of the inspection, the USEPA noted the presence of 1,900 55-gallon drums of spent solvent and a 2,500-gallon acid tank. The USEPA noted that the majority of the drums stored at the site were leaking at the time of the inspection. The USEPA also noted that HWD was operating an ammonium hydroxide scrubbing process on the acid storage tank without a required permit. In addition, USEPA noted that two storm drains were located on the site, and that the potential existed for potentially impacted surface-water runoff to be collected by the storm drains and be conveyed to other areas of the site.

SCHD prepared a site visit report sketch during a June 1982 site visit which shows a diked storage area, a neutralization tank and associated pump, and a waste sludge pit covered with plastic.

At the time of a September 1982 site visit conducted by the SCHD, approximately 840 55-gallon drums containing wastes and 420 empty 55-gallon drums were observed at the site. The SCHD noted the presence of spills in the storage area at the time of the 1982 inspection.

In November 1982, HWD entered into an Order of Consent with the NYSDEC that required HWD to cease hazardous waste management operations at the site. All remaining wastes and waste management tanks were reportedly removed from the site during 1984. As the result of a 1985 inspection of the property by the NYSDEC, the site was listed on the New York State Registry of Inactive Hazardous Waste Sites as a Class 2a site.

Phase I and Phase II site investigations were conducted by a contractor to the NYSDEC at the property between 1988 and 1990. The site investigations included a site reconnaissance; a geophysical survey; installation of four ground-water monitoring wells; and collection of soil, surface-water/sediment, and ground-water samples.

The site reconnaissance was conducted in May 1990. At that time, the site was being used as a parking lot and was rented to J.S. Trucking Company. There was no evidence of the previous waste business and the site had been paved with concrete. A storm drain, covered with grating, was located in the middle of the parking lot and was reportedly connected to a drainage system which was used to discharge water into the recharge basin located northeast of the site.

The results of the site investigations completed at the facility indicated that chlorinated volatile organic compounds (VOCs) were present in soil and ground water at the facility. The results of the ground-water investigation indicated the presence of VOCs in ground water beneath the site, as well as in the ground-water sample (GW-1) collected from monitoring well MW-1 located hydraulically upgradient of the site (with respect to ground-water flow direction). These data suggested that there were sources of regional ground-water quality impacts external to the HWD site. Specifically, trichloroethene was detected in a ground-water sample designated GW-1 (collected from well MW-1) at a concentration of 91 parts per billion (ppb), which exceeds the NYSDEC Ground Water Quality Standard of 5 ppb. In addition, toluene and ethylbenzene were detected in ground-water sample GW-1 at concentrations slightly above their respective Ground-Water Quality Standards. Based on the results of the site investigations, the NYSDEC reclassified the site on the Inactive Hazardous Waste Site Registry from Class 2a to Class 2.

The historical detection of the BTEX compounds in this upgradient well, and in site well MW-3, are also consistent with historical information which indicates that there were leaking USTs at three adjacent properties to the HWD site, and that these leaking USTs have impacted ground-water quality at the site and in surrounding areas. A regulatory database review also provided information of these regulated sites, as discussed later in this RI Report in Section 3.1.3. This historical information was reviewed by BBL during preparation of this RI report, and included documents and information previously submitted to the NYSDEC and the SCHD by technical consultants to the property owners. The information includes the following:

- There were UST releases related to an UST dispensing system located at 13D Picone Boulevard formerly known as Ronnies Truck Repair (immediately west of and adjacent to the HWD site). This release was investigated and reported to the SCHD, and ground water was found to have been impacted by BTEX compounds. The upgradient well to that property, well MW-1, which is also upgradient to the HWD site, was found to be impacted by VOCs and BTEX.

- There was an abandoned gasoline station located at the active trucking company property at the end of Picone Boulevard, as depicted by Gibbs & Hill on Figure 1-2 of the December 1991 investigation report prepared on behalf of the NYSDEC. This abandoned gas station and related UST are located in the northeastern corner of the property, immediately downgradient of HWD off-site well MW-4, and upgradient of HWD off-site well MW-3. Well MW-3 has historically had the highest concentrations of BTEX constituents during the prior sampling and analysis events, and also has a suite of contaminants that are dissimilar to those detected at other HWD site monitoring wells.

- Work was performed on an UST "tank field" by Tyree Brothers Environmental Services, Inc. at the Picone Property located south of the HWD site across Picone Boulevard, approximately 150 feet south of the HWD site boundary. This location was also depicted on various figures in the Gibbs & Hill December 1991 report near off-site wells south of Picone Boulevard labeled W-1 and W-3. The UST removal activities were conducted and free-phase LNAPL was apparently removed, and ground-water quality impacts from BTEX were assessed by Tyree.

In June 1994, FPM (representing Little Joseph Realty Corporation) installed two upgradient ground-water monitoring wells (existing monitoring wells MW-5 and MW-6) to determine if chemical constituents may be migrating onto the property. Ground-water samples collected from monitoring well MW-6 indicated that tetrachloroethene was present at a concentration of 9 ppb above the NYSDEC Ground Water Quality Standard of 5 ppb. In addition, 1,1-dichloroethane and 1,1,1-trichlorethane were also detected in MW-5 and MW-6 at concentrations greater than laboratory detection limits, but less than NYSDEC Ground-Water Quality Standards/Guidance Values. These data confirmed that ground water beneath the site has been impacted by hydraulically upgradient sources of these constituents.

1.3.3 Physical Setting

This section provides a general description of the physical setting of the site.

Prior to ceasing operations in 1984, the HWD site contained a hazardous waste storage and disposal area, an acid storage tank, a sludge pit, and a shed which were incidental to the site operations. The 1991 Gibbs & Hill report contains rough sketches of the relative locations of these features. As depicted in the 1980 aerial photograph (RI/FS Work Plan Figure 2), aboveground storage tanks (ASTs) were placed in the waste handling and aboveground tank storage area, and in the hazardous waste storage and treatment area in the northwestern and northeastern portions of the site, respectively. Hazardous wastes stored at the site were managed in 55-gallon drums, one or more tanks, and a sludge pit.

At the time of a site reconnaissance in May 1990 several years after HWD, Inc. ceased operations, the site was devoid of any structures, and was being used as a parking lot which was rented by the property owner, Little Joseph Realty, to J.S. Trucking Company. There were no remaining on-site structures or evidence of equipment or materials used during the previous business activities of HWD, Inc. The site area where the historical activities were conducted was covered with concrete. A storm drain, covered with grating, was located in the middle of the parking lot, and was reportedly connected to a drainage system which was used to collect and convey stormwater from the paved areas and concrete covered areas through stormwater conveyance piping to the recharge basin located northeast of the site (Figure 1-2).

Currently, Guaranteed Overnight Delivery, Inc. uses the property exclusively for truck parking and storage of trailers. No other industrial activities appear to be occurring at the site.

1.3.3.1 General

Site Topography

Surface topography in the vicinity of the HWD site ranges from a topographic high area at elevation 80 feet above Mean Sea Level (MSL) to the north of the site, to a topographic low of approximately 65 feet MSL to the south of the site. The land surface topography slopes gently from the north-northwest towards the south-southeast (Figure 1-2).

The entire site is covered by a level, poured-concrete slab parking lot, and occurs at an elevation of approximately 65 feet MSL. A recharge basin with a surface water elevation of 53.5 feet above MSL is located approximately 80 to 100 feet north-northeast of the concrete covered areas of the site. Land surface elevations surrounding this feature slope inward towards the surface water feature, at comparably steeper gradients to those in the surrounding areas.

Site Drainage

A series of three catch basins are located in the central portion of the site, and convey stormwater runoff from the paved and concrete portions of the site to the recharge basin located northeast of the site. A second series of catch basins, located immediately southeast of the concrete covered portions of the site, collect stormwater runoff from surrounding areas to the south and southeast, and this stormwater is also conveyed to the recharge basin to the north. The recharge basin likely exists as a ground-water recharge feature to the underlying aquifer, as the elevation of the water surface in the recharge basin is higher than the water table elevation in the shallow aquifer beneath the site.

1.3.3.2 Regional Geology

The site is located on the Northern Atlantic Coastal Plain physiographic province. The Coastal Plain is a seaward-dipping wedge of unconsolidated sediment that ranges in age from Cretaceous to Holocene (Zapecza, 1984). Overburden geology in the vicinity of the HWD site consists of sediments of Upper Pleistocene Age overlying Cretaceous Age sediments.

The Upper Pleistocene deposits beneath the site are approximately 100 feet in thickness with an approximate maximum thickness of 700 feet in the province. This unit is referred to as the Upper Glacial Unit, and consists of glacial till and outwash deposits. Till deposits characteristically contain clay, sand, gravel, and boulders. Outwash deposits consist of fine to very coarse, quartzose sand, and pebble to boulder size gravel. Characteristically, the till is poorly permeable while the outwash deposits are moderately to highly permeable (Smolensky, Buxton, and Shernoff, 1989). This unconfined Upper Glacial Aquifer unit lies unconformably on the Cretaceous Age sediments.

The Cretaceous Age sediments beneath the site are approximately 1,700 feet in thickness. These deposits are composed of two distinct formations: the Magothy Formation and the underlying Raritan Formation.

The Magothy Formation (approximately 1,000 feet in thickness) consists of fine to medium sand (clayey in part) interbedded with lenses and layers of coarse sand, and sandy and solid clay. Colors are gray, white, red, brown, and yellow. This unit lies unconformably on the Raritan Formation.

The Raritan Formation (approximately 700 feet in thickness) consists of clay, solid and silty with few lenses and layers of sand in the upper 200 feet of the formation. Colors include gray, red, and white, commonly variegated. The remainder of the formation consists of fine to coarse sand and gravel commonly with clayey matrix; some lenses and layers of solid and silty clay. Colors are yellow, gray, and white; clay is red locally. The upper 200 feet is poorly to very poorly permeable. The remainder of the formation is poorly to moderately permeable (Smolensky, Buxton, and Shernoff, 1989).

1.3.3.3 Regional Hydrogeology

All information discussed below was taken from the Hydrogeologic Framework of Long Island, New York (Smolensky, Buxton, and Shernoff, 1989), along the E-E' geological cross section map contained in the document between wells N8520 and N2225, which is the approximate location of the HWD site.

Ground water occurs in two major aquifers within the unconsolidated sediments, the Upper Glacial Aquifer and the Magothy Aquifer. The Upper Glacial Aquifer is located within the Pleistocene deposits and is approximately 700 feet in thickness. The clay deposits are mostly poorly permeable but locally have thin, moderately permeable layers of sand and gravel. The average horizontal hydraulic conductivity is approximately 270 feet per day (Smolensky, Buxton, and Shernoff, 1989). The geological cross section indicates that the Upper Glacial Aquifer in the vicinity of the site is approximately 100 feet in thickness.

The Magothy Aquifer is the thickest hydrogeologic unit on Long Island and is approximately 1,100 feet in thickness. It is separated from the Upper Glacial Aquifer by two low-permeability lenses of silt and clay that overlay the Magothy Formation. Most layers are poorly to moderately permeable; some are highly permeable locally. Ground water is unconfined in the uppermost parts of this aquifer. The Magothy Aquifer serves as the predominant aquifer for public water supply in the region. The average horizontal hydraulic conductivity of the Magothy Aquifer is 50 feet per day (Smolensky, Buxton, and Shernoff, 1989).

2. RI Field Investigation Activities

2.1 General

The RI field activities were implemented as specifically outlined in the RI/FS Work Plan by BBL as the technical consultant to the HWD, Inc. PRP Group, and the following subcontractors to BBL:

- Delta Well & Pump, Inc. (Delta) provided the well drilling, well installation, and soil boring services required in Task 2 and 3 of the Work Plan;
- Albert W. Tay, Licensed Land Surveyor, provided the site surveying services and developed the site base map as required by Task 1 of the Work Plan;
- Bay Geophysical Associates, Inc. performed the geophysical survey as required by Task 1 of the Work Plan; and
- STL Envirotech provided the laboratory analytical services required in Tasks 2 and 3 of the Work Plan.

The implementation of each of the task activities described above is discussed in greater detail below. Table 2-1 presents a summary of samples collected during the RI and their analytical parameters. The complete set of laboratory reports for analyses completed during the RI are included as Appendix A to this report. A report of the analytical data usability is provided as Appendix B.

The detailed procedures for the soil and ground-water investigation at the HWD site were described in the RI/FS Work Plan (BBL, February 1997), which was accompanied by a Field Sampling Plan (FSP), a Quality Assurance Project Plan (QAPP), and a Health and Safety Plan (HASP). BBL adhered to these procedures during implementation of field work and therefore, the procedures will not be reiterated in this report. Any deviations from the Work Plan were generally discussed with the NYSDEC Case Manager at the time of the work execution, and are also discussed in the text of this report.

2.2 Task 1 - Area Reconnaissance and Mapping

This task consisted of on-site reconnaissance of site topography, drainage patterns, and aboveground/underground utilities, and preparation of a detailed base map of the HWD site. Information on site topography, drainage patterns, and aboveground/underground utilities was incorporated in the description of the site background and physical setting (Section 1.3). A detailed site map is provided as Figure 1-2. Figure 1-2 also presents the existing site topographic contours and other existing site features, including surface cover types and stormwater drainage features.

A site inspection was conducted prior to the initiation of RI field implementation activities by BBL, Delta (drilling subcontractor), and Albert W. Tay (survey subcontractor) on November 4, 1999. The purpose of the site inspection was to identify any potential difficulties for access of the drilling rig and equipment, and to review the locations of the proposed soil borings and well installations with the subcontractors. Any overhead obstructions were identified, and the exact locations of all subsurface utilities were marked out by the appropriate utility companies on this date. All locations were later verified by BBL with the NYSDEC Case Manager on November 30, 1999 upon the initiation of drilling activities.

The on-site reconnaissance of aboveground/underground utilities included a reconnaissance of the drainage structures (i.e., catch basins, dry wells, storm sewers, etc.) located at the HWD site. The drainage structure reconnaissance activities included a visual inspection of the site to locate surface structures such as catch basins and storm sewer manholes, and a geophysical survey to determine the presence and location of subsurface drainage structures and other subsurface structures. The visual inspection was conducted at the time of the geophysical survey, which was

conducted on November 18 and 19, 1999. The results of the visual inspection and geophysical survey are presented in Section 3.1. The geophysical survey data is provided as Appendix C.

Also, as part of the on-site reconnaissance activities related to the development of the site base map, tax maps, aerial maps, Sanborn maps, and other relevant historical information were obtained and reviewed to delineate the previous operational areas and boundaries of the site. A discussion of review of this information is provided in Section 3.1.

2.3 Task 2 - Soil Investigation

A soil investigation was conducted to define the potential presence, concentration, and distribution (horizontal and vertical) of chemical constituents in the soil underlying the site.

The soil investigation included installation of ten soil borings (SB-4 through SB-12, and SB-16) and collection of soil samples from these borings. Figure 2-1 depicts the locations of the soil borings.

The rationale for selecting the specific soil boring locations was based on a detailed review of an aerial photograph of the site from 1980 when the site operational activities were occurring, the information contained in the 1991 Engineering Investigation Report (Gibbs & Hill, December 1991), and results of field observations and the geophysical survey conducted during the area reconnaissance activities. Soil borings SB-4 through SB-12 also served as Hydropunch™ ground-water sampling locations (HP-4 through HP-12), as discussed in Section 2.4.1 of this report.

The selection of the locations for individual soil borings are discussed below.

- Soil boring location SB-4 coincides with the approximate location of a former waste handling and aboveground tank storage area. The analytical results of samples collected from this location were used to determine if past activities in the former waste handling and aboveground tank storage area have impacted soil, or if off-site conditions northwest (upgradient) of this area are affecting soils or ground water.

- Soil boring location SB-5 coincides with the approximate location of the former sludge pit. The analytical results of samples collected from this location were used to determine if the former sludge pit is a source of chemical constituents observed in ground water in downgradient monitoring well MW-3.

- Soil boring location SB-6 coincides with the approximate location of the former hazardous waste storage and treatment area and is biased toward a former AST, as depicted in the 1980 aerial photograph. The analytical results of samples collected from this location were used to determine if past activities in the hazardous waste storage and treatment area or the AST have impacted on-site soil. The analytical results will also be used to further delineate the horizontal extent of chemical constituents previously detected in soil samples collected from borings B-1 and B-2.

- Soil boring SB-7 is located at the northeastern portion of the site, and coincides with the location of a mounded feature adjacent to the former shed location evident on the April 7, 1980 aerial photograph taken during site operations. This location was moved from the originally proposed location of SB-7 (near the hazardous waste storage and treatment area and associated AST) based upon the results of the area reconnaissance and discussions with the NYSDEC Case Manager, as this originally intended location was to be investigated by locations SB-6 and SB-16.

- Soil boring location SB-8 coincides with the approximate location of a former drum storage area, as depicted in the 1991 Engineering Investigation Report and the approximate location of five ASTs, as depicted in the April 7, 1980 aerial photograph. The analytical results of samples collected from this location were used to determine

if past activities in this area have impacted on-site soil. The analytical results will also be used to further delineate the horizontal extent of chemical constituents previously detected in soil samples collected from borings B-1 and B-2.

- Soil boring location SB-9 coincides with the approximate location of a former shed, as depicted in both the 1991 Engineering Investigation Report and the April 7, 1980 aerial photograph. The analytical results of samples collected from this location will be used to determine if past activities in this area have impacted underlying soils.

- Soil boring SB-10 is located in the southern portion of the site. The results of samples collected from this location were used to determine if past activities in this area have impacted underlying soils.

- Soil boring SB-11 is located southeast of the approximate site boundary. The results of samples collected from this location were used to determine if past activities in this area have impacted underlying soils.

- Soil boring SB-12 is located adjacent to the eastern historical site operations boundary. The results of samples collected from this location were used to determine if past activities in this area have impacted soil and could potentially be a contributing source of VOCs and petroleum-related compounds previously detected in a ground-water sample collected from monitoring well MW-3.

- Soil boring location SB-16 coincides with the approximate location of the hazardous waste storage and treatment area. The analytical results of samples collected from this location were used to determine if past activities in the hazardous waste storage and treatment area have impacted on-site soil. The analytical results were also used to further delineate the horizontal extent of chemical constituents previously detected in soil samples collected from borings B-1 and B-2.

The soil borings were advanced by Delta using a Failing F-10 drill rig using the hollow-stem auger drilling techniques, and were completed from November 30 through December 22, 1999. All drilling activities were conducted under the observation of a BBL geologist.

Continuous soil samples were collected from ground surface to the ground-water table (maximum depth of 29 feet bgs) by driving 2- and 3-inch diameter, 2-foot long, stainless steel, split-spoon sampling devices following American Society for Testing and Materials (ASTM) Method D-1586 (1984).

Upon opening each split-spoon, the BBL geologist observed the soil lithology and characterized the soil type, color, texture, grain size, and shape, and moisture content. The BBL geologist also conducted field screening of the soil core that included visually observing any staining or discoloration of the soil, and measuring total organic vapors in the sample headspace using a photoionization detector (PID).

The procedures performed in the collection of soil samples were as follows:

- the 6-inch interval from each 2-foot split-spoon sampling device having the highest PID reading was placed directly into a 4-ounce sample container supplied by the laboratory for VOC analysis, properly labeled, and placed in a cooler packed with ice;

- the remaining soil recovered from each 2-foot split-spoon sampling device was placed in a plastic ziplock bag, properly labeled, and placed in a cooler packed with ice;

- soil sampling continued to the ground-water table;

- the soil headspace in the ziplock bags was screened using a PID (the PID readings are presented on the soil boring logs provided as Appendix D);

- a portion of the soil from the interval having the highest PID reading or visibly impacted soil for inorganic analysis was placed in a stainless steel bowl and homogenized; then

- the soil was placed into two additional sample containers provided by the laboratory, properly labeled, and placed in a cooler packed with ice.

The 2-foot soil interval above ground water was collected using the same sample handling methods described above.

Two soil sample intervals were selected for laboratory analyses from each soil boring location based upon the field screening results. Soil samples were selected for laboratory analysis based on the following criteria.

- One sample was selected from the interval that exhibited the highest PID reading above background or where the soil was observed to be stained or discolored. At boring locations where no impact was observed, one sample was selected at the midpoint interval between ground surface and the ground-water table.

- The second soil sample was collected from the 2-foot interval located directly above the ground-water table.

Soil samples were submitted for laboratory analyses for Target Compound List (TCL) VOCs, TCL semivolatile organic compounds (SVOCs), Target Analyte List (TAL) inorganic constituents, and polychlorinated biphenyls (PCBs) using current NYSDEC 1995 Analytical Services Protocol (ASP) methods. The samples were also analyzed for grain size analysis by ASTM D-422 and total organic carbon (TOC) by USEPA Method 415.1.

In addition to the analytical parameters described above, one soil sample was collected from each of the following soil borings at the request of NYSDEC during finalization of the RI/FS Work Plan, and were analyzed for TCL pesticides using current NYSDEC 1995 ASP methods:

- SB-5, installed in the area of the former sludge pit;
- SB-8, installed in the former drum storage area; and
- SB-9, installed in the location of the former shed.

In general, all soil sampling protocols were in accordance with the Work Plan (BBL, February 1997). Any slight modifications made during the implementation of the RI were first discussed with the on-site NYSDEC case manager, and were recorded in the field logbook.

2.4 Ground-Water Investigation

A ground-water investigation was conducted to vertically and horizontally profile the presence and concentration of chemical constituents in ground water at and surrounding the site. The ground-water investigation included a ground-water field screening program using Hydropunch™ field screening sampling methodology, and the installation and sampling of three permanent deep monitoring wells in addition to the existing monitoring well network. These activities are discussed below.

2.4.1 Hydropunch™ Ground-Water Screening

The Hydropunch™ sampling was performed as a field screening level of activity to identify ground-water quality at depth-specific intervals within the Upper Glacial Aquifer, to vertically and horizontally delineate potential impacts

to ground water from site-related constituents in the Upper Glacial Aquifer, and to guide the selection of vertical placement of the well screens for the three proposed permanent deep monitoring wells.

Ground-water grab samples from the Hydropunch™ borings were collected from 15 different locations (HP-1 through HP-15) between November 30 through December 22, 1999. A Hydropunch™ sampling device was used for the collection of ground-water samples from specific depth intervals within the saturated soil column. Hydropunch™ sampling locations are shown on Figure 2-1.

Hydropunch™ locations HP-4 through HP-12 are coincident with soil boring locations SB-4 through SB-12; the rationale for selecting these locations was discussed previously in Section 2.3. The rationale for selecting locations HP-1 through HP-3, and HP-13 through HP-15 is presented below.

- HP-1 is located off-site and hydraulically upgradient of the recharge basin;
- HP-2 and HP-3 are located off-site and are hydraulically downgradient and sidegradient of the recharge basin, respectively;
- HP-13 is located near MW-1 and was used to vertically delineate a previous VOC detection in that well. The analytical results were also used to determine the screened interval of deep monitoring well MW-1D;
- HP-14 is located near MW-2 and was also used to vertically delineate previous VOC detections at monitoring well MW-2. The analytical results were also used to determine the screened interval of deep monitoring well MW-2D; and
- HP-15 is located southeast of the HWD site and is hydraulically downgradient of the site. The analytical results were also used to determine the screened interval of deep monitoring well MW-3D.

Hydropunch™ ground-water samples were collected from four different depth intervals. Shallow Hydropunch™ samples (denoted with an "A" prefix) were collected from just below the ground water surface. Analytical results from these samples were used to evaluate the horizontal extent of potential ground-water impacts. Deeper Hydropunch™ samples (denoted with "B", "C", and "D" sample prefixes) were collected at correspondingly deeper depth intervals approximately 30 vertical feet apart below the water table, to a maximum depth of 100 feet below ground surface (bgs). The analytical results from these samples were used to establish a vertical profile of potential site-related ground-water impacts within the Upper Glacial Aquifer, and to target the screen intervals of the deep monitoring wells. Table 2-1 presents the sample designations, sample depths, and the corresponding soil boring location for these samples.

After each sample was collected, general ground-water quality parameters, including pH, specific conductance, temperature, turbidity, dissolved oxygen, and oxidation reduction potential, were measured using a Horiba U-22. Table 2-2 presents the field parameter measurements collected for each of these samples. Samples were managed consistent with the procedures outlined in the Field Sampling Plan (Appendix A to the RI/FS Work Plan). Each ground-water sample was submitted to the laboratory for analysis of TCL VOCs using current NYSDEC 1995 ASP methods.

2.4.2 Drilling and Installation of Deep Ground-Water Monitoring Wells

Three deep ground-water monitoring wells (MW-1D, MW-2D, and MW-3D) were installed near three existing shallow monitoring wells to better define the vertical extent of ground-water quality. The boreholes for the monitoring wells were advanced by Delta under the supervision of a BBL geologist using the hollow stem auger

drilling method from December 27 through 30, 1999. Monitoring well screen intervals were selected for these wells based on the expedited turnaround time analytical results of Hydropunch™ locations HP-13, HP-14, and HP-15 for new wells MW-1D, MW-2D, and MW-3D, respectively. A summary of the monitoring well construction details is presented in Table 2-3. Boring logs and monitoring well construction logs are provided as Appendix D.

Monitoring wells, MW-1D, MW-2D, and MW-3D, were developed following installation. The six existing monitoring wells (MW-1 through MW-6) at the HWD site and adjacent properties were also redeveloped following an inspection which included determining the physical integrity of the monitoring wells, their construction, depth to ground water, and total depths of the wells.

Development/redevelopment was accomplished by surging the wells with a surge block through the entire length of saturated well screen. Surging was followed by evacuating at least five well volumes of ground water from the well using a 2-inch stainless-steel submersible pump and dedicated polyethylene tubing. The development/redevelopment water was contained in 55-gallon steel drums for future disposition as an investigation-derived waste.

The three newly-installed deep monitoring wells (MW-1D, MW-2D, and MW-3D) and existing shallow wells (MW-1 through MW-6) were then surveyed by Albert W. Tay, a licensed land surveyor. All locations were surveyed in the New York State Plane Coordinate System (Lambert Grid). The horizontal locations of the wells were determined with respect to the North American Datum of 1983 (NAD83). Elevations were determined with respect to the North American Vertical Datum of 1988 (NAVD88). All work was run to National Geodetic Survey third order specifications. Vertical elevations of the top of the inner casing, outer protective casing, and ground surface adjacent to the wells were established within 0.01 foot above MSL. A permanent mark was etched into the inner casing to act as a reference point for depth-to-water measurements. The reference point elevation and the ground surface elevation for each well is provided in Table 2-3.

2.4.3 Ground-Water Elevation Measurements and Ground-Water Sampling

Ground-water elevation measurements and ground-water sampling was conducted for each of the newly-installed and existing monitoring wells at the site (MW-1 through MW-6, MW-1D, MW-2D, and MW-3D) on January 20, 2000.

Ground-Water Elevation Measurements

The ground-water elevation measurements were used to confirm flow patterns within the Upper Glacial Aquifer. A complete round of ground-water measurements was obtained prior to the collection of ground-water samples using an electronic water level indicator. The depth to ground water was measured from a permanent elevation reference point at each well, and was recorded to the nearest 0.01 foot. Table 2-4 presents the ground-water elevation data obtained on January 20, 2000.

Ground-Water Sampling

Prior to evacuating water from the monitoring wells as part of the pre-sample purging activities, the headspace within each monitoring well was screened with a PID for the presence of VOCs. A submersible pump with dedicated polyethylene tubing was then used to evacuate three to five well volumes of ground water from each well, as calculated using the depth to water measurements and the length of the water column in the wells. This purge water was contained in 55-gallon drums and appropriately managed for future disposition as an investigation-derived waste.

Ground-water quality parameters including pH, specific conductance, temperature, turbidity, dissolved oxygen, and oxidation reduction potential were monitored during well purging activities and again after sample collection. Once

purging was complete and the parameters had stabilized, ground-water samples were collected with a dedicated, disposable Teflon™ bailer from each well and poured directly into the sample containers provided by the laboratory.

Ground-water sampling logs are provided as Appendix E, and include ground-water quality parameters measurements monitored during evacuation. Table 2-5 presents the ground-water quality field parameter measurements obtained after sample collection.

The ground-water samples were analyzed by STL Envirotech for the following parameters using current NYSDEC 1995 ASP methods:

- TCL VOCs by NYSDEC Method 95-1;
- TCL SVOCs by NYSDEC ASP Method 95-2;
- PCBs by SW-846, Method 8080 as referenced in NYSDEC 1995 ASP; and
- Inorganics by ASP Method 239.2 CLP-M.

Ground-water samples were also analyzed for total suspended solids (TSS) by USEPA Method 160.2, total dissolved solids (TDS) by USEPA Method 160.1, and diesel range organics (DRO). Ground-water analytical results are discussed in Section 4.4 of this report.

2.5 Assessment of Air Emissions

Air emissions in the worker breathing zone during implementation of the RI activities were monitored for total organic vapors using a PID, and particulate levels were monitored using a MiniRam. Appendix F presents the Daily Air Monitoring Logs for this activity.

There were no sustained elevated PID readings or particulate levels above background readings in the breathing zone measured during the implementation of RI field activities.

2.6 Qualitative Exposure Assessment

BBL conducted a qualitative exposure assessment to determine potentially complete pathways of exposure for both current and hypothetical future receptors that may come into contact with site-related constituents of interest. Results of the qualitative exposure assessment are presented in Section 5 of this report.

2.7 Assessment of Potential IRMs

Potential requirements for implementing IRMs to address conditions at the site were evaluated. Results of this assessment are presented in Section 6 of this report.

3. Physical Site Characterization

3.1 Area Reconnaissance

This section presents the results of the on-site reconnaissance of site topography, drainage patterns, and aboveground/underground utilities. This section also presents the results of a reconnaissance of the drainage structures (i.e., catch basins, dry wells, storm sewers, etc.) located at the HWD site. The drainage structure reconnaissance activities included a visual inspection of the site to locate surface structures such as catch basins and storm sewer manholes and a geophysical survey to determine the presence and location of subsurface drainage structures and other subsurface structures. Also, the review of tax maps, aerial maps, Sanborn maps, and other relevant historic information to delineate the previous working areas and boundaries of the site is presented in this section.

The site topography and drainage patterns were previously discussed in Section 1.3.3.1.

3.1.1 Visual Inspection

A site inspection was conducted by BBL, Delta, and Albert W. Tay on November 4, 1999. The purpose of the site inspection was to locate surface structures such as catch basins and storm sewer manholes and to identify any potential difficulties for drill rig access (i.e., vegetation, overhead obstructions, subsurface utilities, etc.). If any obstructions were identified, the Hydropunch™ sampling locations and soil borings were moved to an appropriate location. Exact locations of all subsurface utilities were marked out by the appropriate utilities on November 4, 1999.

Surface structures such as catch basins and storm sewer manholes were surveyed by Albert W. Tay and are shown on Figure 1-2.

3.1.2 Evaluation of Geophysical Survey

The geophysical survey was completed using both a high sensitivity metal detector (EM61) and ground penetrating radar (GPR) methods. The EM61 data were used to identify buried metal anomalies and to direct the GPR survey. Results of the geophysical survey are provided in Appendix C. Figure 1 of Appendix C presents a color-enhanced plan contour map of the EM61 data. Figure 2 of Appendix C presents a GPR profile along transect line 160N.

The geophysical survey identified several anomalies indicative of subsurface drainage structures and other subsurface structures. These features and structures are depicted on Figure 3-1, and include:

- an elongated reinforced concrete slab located in the southern portion of the site, coincident with the suspected location of the former sludge pit;
- a possible buried concrete structure located in the southeastern portion of the site;
- two reinforced concrete structures, one buried at the on-site manhole and another buried at the sewer grate and non-metallic conduits connecting the reinforced concrete structures; and
- an area where shallow soils appear to have been disturbed beneath the concrete located in the southeastern portion of the site.

3.1.3 Regulatory Database Information Review

As part of the RI, BBL engaged VISTA Information Solutions, Inc. (VISTA) to conduct a regulatory database search to identify other sites within radii ranging from ⅛ to one mile of the HWD site, and to obtain other historical records

such as aerial photographs, topographic maps, Sanborn maps, and other relevant information. This information was used to supplement the other information reviewed during the NYSDEC and SCHD file reviews.

The database search identified numerous sites, including USEPA National Priority List (NPL) sites, Resource Conservation and Recovery Act (RCRA) corrective action sites and permitted treatment, storage, and disposal facilities, RCRA registered large and small hazardous waste generators, and sites currently or formerly under review by the USEPA (CERCLIS/NFRAP sites) in the vicinity of the site. Additionally, the search identified numerous sites on the New York State equivalent priority, CERCLIS, and spills lists and New York State-listed leaking underground storage tanks (LUST), registered underground and aboveground storage tanks, and sites permitted as solid waste landfills, incinerators, or transfer stations.

Within the area adjacent to the HWD site (i.e., within ⅛-mile), fourteen sites were identified by the database search. Various businesses within ⅛-mile of the HWD site are listed as small or large hazardous waste generators, and several sites with aboveground and underground storage tanks were noted. Two sites within ⅛-mile of the HWD site contain LUSTs (No. 2 fuel oil and gasoline), and two sites, located directly north of the HWD site, are included on the New York spills list. According to VISTA, these spills consisted of a release of No. 2 fuel oil (quantity not indicated) in October 1990 and a five-gallon transformer oil release in July 1998. Sites located within one mile and potentially upgradient of the HWD site include a site containing several aboveground and underground storage tanks (gasoline, diesel fuel, waste oil, and motor oil) and one LUST site (No. 2 fuel oil). One additional potentially upgradient site was formerly under review by NYSDEC due to the discharge of wastewater containing VOCs (individual VOCs not specified) into a drywell. No further remedial actions are reportedly planned for this site, located between ¼ to ½-mile of the HWD site.

The VISTA database search indicates that sites with numerous potential environmental issues (relative to other sites identified during the database search) are located in the regional area, and these sites include the Fairchild Republic Company, located within ⅛ to ¼-mile south/southeast of the HWD site, and Circuitron Corporation, located approximately ½-mile north of the HWD site. The Fairchild Republic Company, which apparently operates the adjacent Republic Airport, is a RCRA corrective action site and contains several ASTs and one LUST. Additionally, the site is listed on the New York priority and spills lists. According to the documentation provided by VISTA, the site is included on the New York priority list due to the presence of vinyl chloride (environmental medium not specified). The Circuitron Corporation site, located approximately ½-mile northeast of the HWD site, is an NPL site. Constituents of interest at the Circuitron site include heavy metals, trichloroethene, and methyl ethyl ketone.

3.2 Site Geology

The physical and geotechnical properties of the unconsolidated materials in the subsurface at the site and in the site vicinity have been characterized based on observations made during the advancement of soil borings and monitoring well boreholes. Field observations were recorded of the materials encountered in connection with a total of one on-site soil boring (SB-16), seven on-site soil borings/Hydropunch™ sampling locations (SB-4/HP-4, SB-5/HP-5, SB-6/HP-6, SB-7/HP-7, SB-8/HP-8, SB-9/HP-9, and SB-10/HP-10), one Hydropunch™ sampling location (HP-14) and one monitoring well (MW-2D) installed as part of the RI. Additionally, field observations were recorded of the materials encountered in connection with a total of two off-site soil borings/Hydropunch™ sampling locations (SB-11/HP-11 and SB-12/HP-12), five off-site Hydropunch™ sampling locations (HP-1, HP-2, HP-3, HP-13, and HP-15) and two off-site monitoring wells (MW-2D and MW-3D) installed as part of the RI. Soil borings/Hydropunch™ sampling locations and monitoring well boreholes were all installed in the Upper Glacial Aquifer materials. The soil boring and monitoring well construction logs are presented in Appendix D.

Figure 3-2 is a map view which shows the locations of two geologic cross-sections prepared for the site. Geologic cross-section A-A' (Figure 3-3), is located along the primary axis of the ground-water flow direction. Geologic cross-

section B-B' (Figure 3-4) is located perpendicular to the primary axis of the ground-water flow direction. As shown on the cross-sections and the subsurface logs, the subsurface materials primarily consist of tan, fine to coarse, subangular to subrounded sand and gravel with trace amounts of fines (silt and clay).

The sequence of unconsolidated materials in the subsurface underlying the site typically consists of:

- concrete (approximately 0.5-foot-thick);
- construction debris (described as brick and concrete fragments);
- fill material (consisting of dark brown, fine to coarse sand and medium to coarse gravel, with concrete fragments);
- dark brown, medium to coarse sand and gravel (in localized areas); and
- tan, fine to coarse, subangular to subrounded sand and gravel.

The results of the grain size analyses are provided in Table 3-1. The grain size data are generally consistent with the field observations, and confirm that the subsurface material beneath the site consists primarily of sand and gravel.

3.3 Ground-Water Flow Direction, Hydraulic Gradients, and Flow Velocity

Ground-Water Flow Direction

Ground-water elevation measurements were obtained on January 20, 2000 using an electronic water level probe. To characterize ground-water flow directions and calculate horizontal ground-water flow gradients, the ground-water elevation data presented in Table 2-4 were used to prepare a map illustrating the potentiometric surface of the ground water within the Upper Glacial Aquifer. The potentiometric surface map, based on the data from the January 20, 2000 water levels, is presented as Figure 3-5.

Based on the January 20, 2000 ground-water depth measurements obtained from the monitoring wells, the depth to ground water ranges from approximately 13.2 to 26.4 feet bgs. The ground-water flow direction is from the north-northwest to the south-southeast across the site (towards the southeast).

Hydraulic Gradients

The horizontal component of the hydraulic gradient in the Upper Glacial Aquifer may be estimated using water table elevation data. Based on the January 20, 2000 ground-water elevation data, the horizontal hydraulic gradient observed across the site and in the vicinity of the site ranged from 0.001 to 0.002 ft/ft.

The vertical component of the hydraulic gradient was evaluated from monitoring wells nested within the uppermost 65 feet of the Upper Glacial Aquifer at monitoring well cluster MW-1/MW-1D. The vertical hydraulic gradient was upward, with a magnitude of 0.004 ft/ft. As there is a discrepancy between the Gibbs & Hill, Inc. report text and the monitoring well construction logs regarding the screen length, the vertical hydraulic gradient can not be calculated at monitoring well cluster MW-2/MW-2D. A vertical hydraulic gradient was not calculated at monitoring well cluster MW-3/MW-3D due the horizontal distance between the wells in the cluster.

Ground-Water Flow Velocity

An estimate of the average linear velocity for ground-water flow was calculated using the following equation (Fetter, 1994):

$$V = \frac{Ki}{n_e}$$

where:

V is the average linear ground-water velocity (ft/day);
K is the geometric mean hydraulic conductivity;
I is the hydraulic gradient; and
n_e is the assumed effective porosity (0.2 to 0.35 for a well-sorted sand or gravel, USEPA, 1998).

Using a hydraulic conductivity value of 5.9 ft/day (based on a slug test conducted at well MW-4 as described in the 1990 Gibbs & Hill Report), the range of hydraulic gradients (0.001 to 0.002 ft/ft, as measured at the site and previously discussed in this section), and an assumed effective porosity of 0.28 representative of the aquifer materials, the estimated average linear ground-water flow velocity ranged from 0.021 ft/day (approximately 8 ft/year) to 0.042 ft/day (approximately 15 ft/year).

4. Nature and Extent of Site-Related Constituents

This section presents the soil and ground-water analytical results, and a comparison of the soil analytical results to relevant criteria. This section also summarizes the data quality as appropriate to the project quality objectives discussed in Section 1.3 of the QAPP. A more detailed analysis of data quality can be found in the Data Usability Summary Reports included as Appendix B.

The selection of the analytical parameters for these sample analyses was outlined in the RI/FS Work Plan, and is again described below:

- TCL VOCs, TCL SVOCs, and TAL Inorganic Constituents: These constituents were previously detected in select soil and ground-water samples collected at the site. Both soil and ground-water samples collected for the RI were analyzed for these parameters.

- PCBs: The purpose of these analyses is to provide information to determine if PCBs are present in the soil and ground water due to past operations at the site. Both soil and ground-water samples collected for the RI were analyzed for these parameters.

- Pesticides: The purpose of these soil analyses is to provide information to determine if pesticides are present in the soils near the former shed, former sludge pit, and former drum storage area as a result of past operations at the site.

- Grain Size and TOC Analyses: The purpose of these analyses is to provide geotechnical and chemical information to determine the partitioning potential of VOCs and inorganic constituents from soil to ground water. Soil samples collected for the RI were analyzed for these parameters.

- DRO: Petroleum-related constituents, possibly unrelated to the HWD site, were detected in ground-water samples previously collected in the vicinity of the site. To determine if petroleum-related constituents are related to an off-site source (e.g., a former gasoline station adjacent to the eastern site boundary, or other former storage tanks located off site), ground-water samples collected for the RI were analyzed for DRO.

- TDS and TSS: These analyses were used to preliminarily assess potential relationships between dissolved-phase VOC and inorganic constituent concentrations, and potential VOC and inorganic constituent fate and transport via adsorption onto particulate matter in ground water. Ground-water samples collected for the RI were analyzed for these parameters.

Soils Analytical Results

To provide an initial screening of the RI soil data, tabulated analytical results for VOCs, SVOCs, inorganic constituents, PCBs, and pesticides were first compared to the NYSDEC Division of Technical and Administrative Guidance Memorandum [TAGM] 4046, January 1994, as this guidance is not formally promulgated cleanup criteria, but is useful to assess the need for further site evaluation. In addition, the results were compared to the following criteria:

- *USEPA Region 3 Risk-Based Concentrations (RBCs).* [Website: http:www.epa.gov/reg3hwmd/risk/riskmenu.htm. February 29, 2000.]

  RBCs for commercial/industrial soil ingestion are based on adult occupational exposure, including an assumption that only 50 percent of total soil ingestion is work-related. Separate carcinogenic and non-carcinogenic risk-based concentrations are calculated for each pathway. The concentration in the USEPA Region 3 RBC table is the lower of the two values.

- *USEPA Region 9 Preliminary Remediation Goals (PRGs).*[Website: http:www.epa.gov/region09/waste/sfund/prg/index.htm. February 29, 2000.]

  The PRGs were specifically developed for screening purposes; each PRG corresponds to an excess lifetime cancer risk of 1 x 10^{-6} or a non-cancer hazard quotient of 1. Soil PRGs have been developed for residential soils and industrial soils. The comparison of detected concentrations to these PRGs will use the industrial soil PRGs for commercial/industrial areas.

- *NYSDEC, Division of Hazardous Substances Regulation, TAGM 3028, "Contained-In" Criteria for Environmental Media Soil Action Levels, November 30, 1992, revised March 14, 1997.*

  This TAGM sets minimum criteria for an environmental medium impacted by listed hazardous waste which must be met in order to preclude its management as hazardous waste. These TAGM criteria are risk-based numerical criteria designed to be protective of human health, and are useful in assessing the significance of soils data in the context of protecting human health and to determine if further actions maybe required.

- *Background Concentrations of 20 Elements in Soils with Special Regard for New York State* (McGovern, 1984). New York State Department of Environmental Conservation Wildlife Pathology Unit, Delmar, New York.

  This comparison presents data regarding the naturally occurring levels of metal concentrations observed in soils in the Eastern United States with emphasis on New York State.

Grain size distribution and TOC results are provided in Table 3-1. Soils analytical results are summarized by analytical parameter, and are presented in Table 4-1 (VOCs), Table 4-2 (SVOCs), Table 4-3 (PCBs), Table 4-4 (pesticides), and Table 4-5 (inorganics).

Ground-Water Analytical Results

The ground-water analytical results were compared to the NYSDEC Ground-Water Quality Standards/Guidance Values (NYSDEC, October 1993, revised March 1998).

Ground-water samples collected using the Hydropunch™ were analyzed for TCL VOCs only. Analytical results for VOCs for these samples are summarized in Table 4-6.

Ground-water analytical results for samples collected from the monitoring wells are summarized in Table 4-7 (VOCs), Table 4-8 (SVOCs), Table 4-9 (PCBs), Table 4-10 (inorganics), Table 4-11 (DRO), and Table 4-12 (TSS and TDS).

4.1 Quality Assurance/Quality Control Evaluation

This section briefly summarizes the quality of data collected and/or used as appropriate to the project quality objectives discussed in Section 1.3 of the QAPP.

Eight sets of analytical data for soil and water samples collected at the HWD site were reviewed for quality assurance/quality control compliance with method guidelines and project specific requirements. Each data package from the laboratory (STL-Envirotech of Edison, New Jersey) was reviewed as outlined in the QAPP. Specifically included were an evaluation of holding times, calibration requirements (initial and continuing), blank contamination, surrogate spike recovery (where applicable), matrix spike and duplicate performance and laboratory control sample recovery, as applicable.

The following summarizes the findings of the data review. A more detailed analysis of data quality can be found in the Data Usability Summary Report included as Appendix B.

Soil Sample Results

Volatiles

- All samples were analyzed within the specified holding times.
- All surrogate, matrix spike and matrix spike blank recoveries were within control limits.
- All field duplicate results were acceptable.
- Methylene chloride was detected in one of the method blanks and one of the field blanks. Based on the blank content, methylene chloride data for sample SB-5A(0- 2) was qualified as undetected. No target compounds were detected in the remaining method or field blanks.

Semivolatiles

- One sample was extracted beyond the NYSDEC ASP method-specified holding time. However, since the sample was extracted within the USEPA Region 2 data validation guidelines technical holding time, no data qualification was necessary. Due to poor surrogate recovery in the original extract, sample SB-10A(8-10) was reextracted beyond the holding time. All data for the reextracted sample were qualified as estimated based on the holding time violation. All other samples were extracted and analyzed with the specified holding times.
- One surrogate recovery was above control limits in one sample. Since all remaining surrogate recoveries were within control limits, no data were qualified based on the deviation. Recoveries for four surrogates were above control limits in sample SB-10A(8-10). The sample was later reextracted with acceptable surrogate recoveries. No data from the original analysis were reported. All other surrogate recoveries were within control limits.
- All matrix spike and matrix spike blank recoveries were within control limits.
- All field duplicate results were acceptable.
- Di-n-butyl phthalate and bis(2-ethylhexyl)phthalate were detected in the method blanks. Based on the blank content, data for bis(2-ethylhexyl)phthalate were qualified as undetected in samples SB-10(8-10)RE, SB-6A(8-10), SB-6B(12-14), SB-7A(8-10), SB-7B(12-14), SB-9A(10-12), SB-9B(12-14) and BD122199.

Pesticides

- One sample was extracted beyond the NYSDEC ASP method-specified holding time. However, since the sample was extracted within the USEPA Region 2 data validation guidelines technical holding time, no data qualification was necessary. All other samples were extracted and analyzed within the specified holding times.
- All surrogate recoveries were within control limits.
- Matrix spike recovery for two compounds and matrix spike duplicate recovery for one compound were below control limits in one of the three matrix spike/matrix spike duplicate sets. Since all matrix spike blank recoveries were within control limits, no data were qualified based on the deviations.

- All field duplicate results were acceptable.

- No target compounds were detected in the method or field blanks.

- Due to the differences between quantitated results for the two analytical columns, data for seven compounds were qualified as estimated and data for two compounds were rejected.

PCBs

- Twelve samples were extracted beyond the NYSDEC ASP method-specified holding time. However, since the samples were extracted within the USEPA Region 2 data validation guidelines technical holding time, no data qualification was necessary. All other samples were extracted and analyzed within the specified holding times.

- All surrogate recoveries were within control limits.

- All matrix spike recoveries were below control limits in one of the three matrix spike/matrix spike duplicate sets. However, since all matrix spike duplicate and matrix spike blank recoveries were within control limits and since the poor recoveries could be attributed to interference from PCBs present in the unspiked sample, no data were qualified based on the deviations.

- All field duplicate results were acceptable.

- No target analytes were detected in the method or field blanks.

Inorganics

- All samples were analyzed within the specified holding times.

- Three matrix spike recoveries were outside control limits. Manganese and antimony data for samples SB-8A(0-2), SB-8B(12-14), BD120999, SB-16A(0-2), SB-16B(12-14), SB-7A(8-10), SB-7B(12-14), SB-6A(8-10) and SB-6B(12-14), and cyanide data for samples SB-9A(10-12), SB-9B(12-14) and BD122199 were qualified as estimated based on the recoveries.

- Laboratory duplicate results were outside control limits for four compounds. Since the deviations were minor; no data were qualified based on the results.

- The results for calcium and manganese were outside the acceptable limits for one of the field duplicates. Data for the listed analytes were qualified as estimated in samples SB-9A(10-12), SB-9B(12-14) and BD122199 based on the results.

- Thallium was present above the detection limits in one of the preparation blanks and calcium was present above the detection limit in one of the calibration blanks. Based on the blank content, calcium data for samples SB-5B(10-12) and SB-10B(12-24) should be considered suspect.

Ground-Water Sample Results

Volatiles

- All samples were analyzed within the specified holding times.

- All surrogate, matrix spike and matrix spike blank recoveries were within control limits.
- All field duplicate results were acceptable.
- Methylene chloride was detected in one of the method blanks and one of the trip blanks. Based on the blank content, methylene chloride data for samples HP-4B(42), HP-4C(72), HP-4D(95), HP-5A(17), HP-5B(43), HP-5D(96), BD120299, HP-2A(22), HP-9A(19), HP-9C(24) and HP-9D(96) were qualified as undetected. No target compounds were detected in the remaining method, field or trip blanks.

Semivolatiles

- All samples were originally extracted and analyzed within the specified holding times. Due to poor surrogate recovery, sample MW-2D was reextracted beyond the holding time. All data for the reextracted sample were qualified as estimated based on the holding time violation.
- One surrogate recovery was above control limits in two samples and two surrogate recoveries were above control limits in one sample. Since all remaining surrogate recoveries were within control limits, no data were qualified based on the deviations. Recoveries for all surrogates were below control limits in sample MW-2D. The sample was later reextracted with acceptable surrogate recoveries. No data from the original analysis were reported. All other surrogate recoveries were within control limits.
- All matrix spike and matrix spike blank recoveries were within control limits.
- All field duplicate results were acceptable.
- Bis(2-ethylhexyl)phthalate was detected in the method and field blanks. Based on the blank content, data for bis(2-ethylhexyl)phthalate were qualified as undetected in samples MW-1, MW-1D, MW-2, MW-2D, MW-2DRE, MW-3D, MW-4, MW-5, and MW-6.

PCBs

- All samples were extracted outside the NYSDEC ASP method-specified holding time. However, since the samples were extracted within the USEPA Region 2 data validation guidelines technical holding time, no data qualification was necessary.
- All surrogate, matrix spike and matrix spike blank recoveries were within control limits.
- The field duplicate results were acceptable.
- No target analytes were detected in the method or field blanks.

Inorganics

- All samples were analyzed within the specified holding times.
- All matrix spike recoveries and laboratory duplicate results were within control limits.
- All field duplicate results were acceptable.

- Manganese was present above the detection limit in the preparation blank. Based on the blank content, manganese data for samples MW-1, MW-2, MW-5 and MW-6 should be considered suspect.

4.2 Evaluation of Soil Data

This section presents an evaluation of laboratory analyses of 22 subsurface soil samples collected from 10 soil borings installed during this RI (SB-4, SB-5, SB-6, SB-7, SB-8, SB-9, SB-10, SB-11, SB-12, and SB-16). Detected parameters of VOCs, SVOCs, inorganic compounds, PCBs, and pesticides are compared to the NYSDEC TAGM 4046 guidance values as a first level of screening comparison. Next, the compounds whose concentrations exceeded their respective NYSDEC TAGM 4046 guidance value are also compared to other regulatory guidance (USEPA Region 3 RBCs, USEPA Region 9 PRGs, and NYSDEC TAGM 3028 action levels). Inorganic compounds were also related to background concentrations. Tables 4-1 through 4-5 present summaries of constituents detected in soil, with all of the regulatory guidance previously referenced in Section 4.1 provided on the left margins of the tables.

Figure 4-1 shows the distribution of organic compounds in soil where the concentrations were above the NYSDEC TAGM 4046 guidance values.

TCL VOCs

VOCs positively detected in soil include acetone, benzene, 2-butanone, cis-1,2-dichloroethene, ethylbenzene, methylene chloride, tetrachloroethene, toluene, trichloroethene, and xylenes (total). As summarized below, only the VOCs benzene, ethylbenzene, tetrachloroethene, toluene, trichloroethene, and xylenes (total) were detected above their respective NYSDEC TAGM 4046 guidance value. Only tetrachloroethene was detected above the other regulatory guidance values. These detections were very limited in areal extent and confined to a limited number of sample locations.

VOCs	Number of Times		Concentration Range for Detected VOCs (ug/Kg)	Soil Boring Location(s) Where Initial Screening Guidance Was Exceeded	Regulatory Guidance			
	Analyzed	Detected			TAGM 4046	Region 3 RBC	Region 9 PRG	TAGM 3028
Benzene	22	1	310 J	SB-9B (12-14')	*			
Ethylbenzene	22	2	2 J to 31,000	SB-11B (12-14')	*			
Tetrachloroethene	22	19	1J to 170,000	SB-5A (0-2') SB-8A (0-2') SB-8A (0-2') Dup. SB-16A (0-2')	* * * *	*	* * * *	* * * *
Toluene	22	3	2 J to 12,000 J	SB-11B (12-14')	*			
Trichloroethene	22	8	1 J to 980 J	SB-5A (0-2')	*			
Xylenes, Total	22	3	20 to 110,000	SB-11B (12-14')	*			

Notes:
ug/Kg - micrograms per kilogram.
J - estimated value below the contract required quantitation limit (CRQL).
A - shallow sample.
B - deeper sample.
Dup. - duplicate field sample.
* - Constituent concentration exceeded regulatory guidance.

TCL SVOCs

A total of 28 SVOCs were detected in at least one of the soil samples, as indicated on Table 4-2. However, as shown below, only benzo(a)pyrene and phenol were detected at concentrations exceeding the NYSDEC TAGM 4046 guidance values.

SVOCs	Number of Times		Concentration Range for Detected VOCs (ug/Kg)	Soil Boring Location(s) Where Initial Screening Guidance Was Exceeded	Regulatory Guidance			
	Analyzed	Detected			TAGM 4046	Region 3 RBC	Region 9 PRG	TAGM 3028
Benzo(a)pyrene	22	6	80 J	SB-12A (4-6')	*			
Phenol	22	9	31 J to 180 J	SB-5A (0-2') SB-7A (8-10') SB-16A (0-2')	* * *			

Notes:
ug/Kg - micrograms per kilogram.
J - estimated value below the CRQL.
A - shallow sample.
B - deeper sample.
* - Constituent concentration exceeded regulatory guidance.

Other SVOCs detected at trace concentrations below the NYSDEC soil cleanup objective include polynuclear aromatic hydrocarbons (PAHs), phthalate esters, phenolic compounds, 1,2- and 1,4-dichlorobenzene, and 1,2,4-trichlorobenzene. Generally, the detectable concentrations were very low, and were reported at estimated values below the quantitation limits.

TAL Inorganic Constituents

TAL inorganic compounds were detected in soil samples collected during the RI except antimony, selenium, silver, and thallium as shown on Table 4-5. Only concentrations of chromium, iron, and zinc in certain soil samples were reported above their respective NYSDEC TAGM 4046 guidance values of 10, 2000, and 20, respectively. The concentrations of chromium in on-site soil ranged from 0.8 to 22.9 mg/kg; the concentrations of iron ranged from 726 to 10,900 mg/kg; and the concentrations of zinc ranged from 2.3 to 219 mg/kg.

Reportedly, the hazardous wastes collected from off-site generators, transported to the site by HWD, and stored at the site prior to off-site transport and disposal during its operational history were primarily spent solvents and acidic wastes; these waste materials would not be expected to contain the metals found in site soils. The chromium, iron, and zinc found in on-site soil likely occurs naturally as confirmed by the concentrations of these constituents in background regional soils. The chromium, iron, and zinc concentrations found in on-site soil related to naturally occurring concentrations are discussed below.

Analytical results of a sample collected from the background soil boring (B-6, 2 to 4 feet), installed as part of the Gibbs & Hill 1991 Engineering Investigation, indicate the concentrations of chromium and iron in background areas are similar to their on-site concentrations. Soil boring B-6 was installed hydraulically upgradient of the site adjacent to and northwest of monitoring well MW-1. Chromium was detected at an estimated concentration of 6.4 mg/Kg. Iron was detected at a concentration of 4,660 mg/Kg. These background data provide a further line of evidence that indicates that the iron and chromium found in on-site soil occurs naturally.

Research by Ku (1978) concerning various concentrations of metals in Upper Glacial Aquifer soils, using two different extraction methods, determined that the presence of iron, chromium, and zinc are native to the aquifer

materials in the South Farmingdale area. Research by McGovern (1984) on a broader base of samples also identified similar levels of these metals in soils, both sets of research suggesting that the site-specific concentrations are likely representative of background conditions.

The concentrations of chromium found in on-site soil are within the range of naturally-occurring levels found in soil in the Eastern United States (1 to 100 mg/Kg) and New York State (1.4 to 40 mg/Kg) (McGovern, 1984). Research concerning the levels of chromium found in the Upper Glacial Aquifer matrix materials specific to the South Farmingdale-Massepequa area of Long Island (Ku *et al*, 1978) indicates that the median concentration of this constituent in core samples collected from the aquifer matrix is 7.5 mg/Kg, with a highest concentration measured during the study of 19 mg/Kg. The concentrations of iron found in on-site soil are less than the average concentration of naturally-occurring levels found in soil in the Eastern United States (14,000 mg/Kg) (McGovern, 1984). The concentrations of zinc found in on-site soil are within the range of naturally occurring levels found in soil in the Eastern United States (9 to 50 mg/Kg) (McGovern, 1984) with the exception of soil from borings SB-5 (0 to 2 feet) and SB-10 (8 to 10 feet). However, the concentrations of zinc decreased to 3.3 mg/Kg at SB-5 (10 to 12 feet) and 3.9 mg/Kg at SB-10 (12 to 14 feet). These concentrations are below the regulatory guidance and the naturally-occurring levels found in soil in the Eastern United States.

TCL PCBs

PCBs were detected at trace levels in 11 of 22 soil samples collected from six soil borings including SB-5, SB-6, SB-7, SB-9, SB-11, and SB-12. Total PCB concentrations ranged from 240 ug/Kg at soil boring SB-6 (12 to 14 feet) to 5,700 ug/Kg at soil boring SB-11 (12 to 14 feet). These concentrations are all well below the NYSDEC TAGM 4046 guidance value of 10,000 ug/Kg. PCBs detected in the analyses included Aroclor 1242, Aroclor 1248, Aroclor 1254, and Aroclor 1260.

TCL Pesticides

Soil samples collected from the soil borings installed near the former shed (SB-9) and the former sludge pit (SB-5) had detectable trace levels of pesticides. Endrin aldehyde was detected at both soil boring locations. Aldrin, dieldrin, alpha-chlordane, and gamma-chlordane were only detected in soil collected at soil boring SB-9. Endosulfan II was only detected in soil collected at soil boring SB-5. There are no NYSDEC TAGM 4046 guidance values, USEPA Region 3 RBCs, USEPA Region 9 PRGs, or NYSDEC TAGM 3028 soil action levels for pesticides endrin aldehyde and alpha-chlordane. Concentrations of endrin aldehyde were low and ranged from 9.4 to 14 ug/Kg. Concentrations of alpha-chlordane were also low and ranged from 4.2 to 5.8 ug/Kg. All other pesticide concentrations were below NYSDEC TAGM 4046 guidance values.

Pesticides were not detected at SB-8 located in the former drum storage area.

Grain Size and Total Organic Carbon

Geotechnical testing was performed on all the soil samples, and included laboratory determinations of moisture content and grain-size distribution. The laboratory results of these geotechnical analyses are presented on Table 3-1. Correlation of lithologies described in the subsurface boring logs in Appendix D with the grain size data is relatively good. As observed in the field and confirmed by the grain-size analyses, the subsurface material at the site is primarily fine to coarse, subangular to subrounded, sand and gravel with trace amounts of fines (silt and clay). The grain-size analyses indicate the amount of sand ranged from 43.5 to 80.94 percent; the amount of gravel ranged from 18 to 52.91 percent, and the amount of fines (silt and clay) was 9.75 percent or less. The detectable concentrations of TOC ranged from 123 to 6,950 mg/Kg.

Both sets of data will be retained for use during the identification, assembly, and evaluation of various remedial alternatives during the FS.

4.3 Identification of Potentially Impacted Soils

This section discusses the constituents detected in the unsaturated soil at or in the vicinity of the site, and provides an identification of areas where the chemical constituents detected in unsaturated soil may have previously impacted ground-water quality beneath and in the vicinity of the site.

Organic constituents in soil detected above NYSDEC TAGM 4046 guidance values discussed above are compared to other regulatory guidance (USEPA Region 3 RBCs, USEPA Region 9 PRGs, and NYSDEC TAGM 3028 soil action levels). The inorganics, chromium, iron, and zinc, are not discussed in this section; concentrations of these constituents in background regional soils indicate that the site-specific concentrations are representative of background conditions.

Due to current site conditions, it is not likely these organic constituents represent a continuing impact to ground-water quality beneath and in the vicinity of the site. Currently, the site is covered with concrete which prevents surface water infiltration to the subsurface; consequently limiting any potential leaching of constituents from soil to ground water. Moreover, constituents with elevated concentrations were generally found in the shallow soils well above the water table and directly below the concrete surface.

The following subsections briefly discuss the relevance of the soils data as it relates to historic operational areas at the site.

Former Waste Handling and Aboveground Tank Storage Area

Soil boring SB-4 coincides with the approximate location of a former waste handling and aboveground tank storage area. Samples from this location were used to determine if past activities in the former waste handling and aboveground tank storage area have impacted soil, or if off-site conditions northwest (upgradient) of this area are affecting soils or ground water.

The analytical results of samples collected from this location indicate that no organic constituents were detected above NYSDEC TAGM 4046 guidance values. The concentrations of these constituents are also below their respective USEPA Region 3 RBCs, USEPA Region 9 PRGs, and NYSDEC TAGM 3028 soil action levels.

Based on the soil analytical results, past activities in the former waste handling and aboveground tank storage area do not appear to have adversely impacted soil.

Off-site conditions northwest (upgradient) of this area could potentially affect downgradient ground-water quality, although data collected as part of this RI indicate only low levels of organic compounds. According to the VISTA report (discussed in Section 3.1.3 of this report) and analytical results from this RI, low levels of VOCs have been detected in ground water upgradient of the site, indicating there are sources of regional ground-water quality impacts external to the HWD site.

Hazardous Waste Storage and Treatment Area

Soil borings SB-6 and SB-16 coincide with the approximate location of the former hazardous waste storage and treatment area. Soil boring location SB-6 is biased toward a former AST, as depicted in the 1980 aerial photograph. The analytical results of samples collected from these locations were used to determine if past activities in the former

hazardous waste storage and treatment area or the ASTs have impacted on-site soil. The analytical results were also used to further delineate the horizontal extent of chemical constituents previously detected in soil samples collected from borings B-1 and B-2 (Gibbs & Hill, 1991).

Tetrachloroethene and phenol were the only constituents detected in soil at levels above their respective NYSDEC TAGM 4046 guidance values in this area. The exceedances occurred in the shallow sample collected from boring SB-16 (0 to 2 feet), and concentrations decreased with depth to below the NYSDEC TAGM 4046 guidance values for both constituents.

The concentration of tetrachloroethene (70,000 ug/Kg) at SB-16 was above the NYSDEC TAGM 4046 guidance value of 1,400 ug/Kg. This concentration was also above the USEPA Region 9 PRG of 19,000 ug/Kg and the NYSDEC TAGM 3028 soil action level of 12,000 ug/Kg; however, it was below the USEPA Region 3 RBC of 110,000 ug/Kg.

The concentration of phenol (estimated at a concentration of 31 ug/Kg below the CRQL) marginally exceeded the NYSDEC TAGM 4046 guidance value in the 0 to 2 foot interval at SB-16. The NYSDEC TAGM 4046 document provides a guidance value of 30 ug/Kg or the Method Detection Limit (MDL); however, in this instance, the guidance value of 30 ug/Kg was used for comparison purposes as the CLP analyses is reported to the CRQL as defined by NYSDEC 1995 ASP not the MDL. The low estimated concentration of phenol was well below the USEPA Region 3 RBC of 1,200,000,000 ug/Kg, the USEPA Region 9 PRG of 100,000,000 ug/Kg, and the NYSDEC TAGM 3028 soil action level of 47,000,000 ug/Kg. Phenol was not detected in the 12 to 14 foot sample interval from SB-16. Based on the low concentration of phenol observed, phenol is not considered to be a constituent of concern.

Based on the concentration of tetrachloroethene, past activities in the hazardous waste storage and treatment area may have impacted on-site shallow soil quality in the vicinity of soil boring SB-16.

Former Sludge Pit

Soil boring SB-5 coincides with the approximate location of the former sludge pit. The analytical results of samples collected from this location were used to determine if the former sludge pit is a source of chemical constituents observed in ground water in downgradient monitoring well MW-3.

The following constituents were detected in soil at concentrations above their respective NYSDEC TAGM 4046 guidance values in this area:

- tetrachloroethene;
- trichloroethene; and
- phenol.

The exceedances occurred in the shallow sample collected from boring SB-5 (0 to 2 feet), and concentrations decreased with depth to levels well below the NYSDEC TAGM 4046 guidance values for all constituents.

Tetrachloroethene was detected at a concentration of 170,000 ug/Kg which is above the NYSDEC TAGM 4046 guidance value of 1,400 ug/Kg. The concentration of tetrachloroethene decreased to an estimated level of 2 ug/Kg for the 10 to 12 foot sample interval. The concentration of tetrachloroethene was also above the USEPA Region 3 RBC of 110,000 ug/Kg, the USEPA Region 9 PRG of 19,000 ug/Kg, and the NYSDEC TAGM 3028 soil action level of 12,000 ug/Kg.

Although the concentration of trichloroethene (980 ug/Kg) exceeded the NYSDEC TAGM 4046 guidance value of 700 ug/Kg in the 0 to 2 foot sample interval, this constituent was not detected in the 10 to 12 foot sample interval. The concentration of trichloroethene was well below the USEPA Region 3 RBC of 520,000 ug/Kg, the USEPA Region 9 PRG of 6,100 ug/Kg, and the NYSDEC TAGM 3028 soil action level of 58,000 ug/Kg.

The concentration of phenol (estimated at a concentration of 120 ug/Kg below the CRQL) exceeded the NYSDEC TAGM 4046 guidance value of 30 ug/Kg in the 0 to 2 foot sample interval; however, this compound was not detected in the 10 to 12 foot sample. The low estimated concentration of phenol was well below the USEPA Region 3 RBC of 1,200,000,000 ug/Kg, the USEPA Region 9 PRG of 100,000,000 ug/Kg, and the NYSDEC TAGM 3028 soil action level of 47,000,000 ug/Kg. Based on the low concentration of phenol observed, phenol is not considered to be a constituent of concern.

The analytical results of the sample collected from this location indicate the shallow soil quality has been historically impacted, and that the former sludge pit could be a potential source of chemical constituents in ground water based on the concentrations of tetrachloroethene.

Former Drum Storage Area

Soil boring SB-8 coincides with the approximate location of a former drum storage area, as depicted in the 1991 Engineering Investigation Report and the approximate location of five ASTs, as depicted in the 1980 aerial photograph. The analytical results of samples collected from this location were used to determine if past activities in this area have impacted on-site soil. The analytical results were also used to further delineate the horizontal extent of chemical constituents previously detected in soil samples collected from borings B-1 and B-2.

The analytical results indicate that tetrachloroethene was the only organic constituent detected above the NYSDEC TAGM 4046 guidance value of 1,400 ug/Kg. The exceedance occurred only in the 0 to 2 foot sample interval at concentrations of 65,000 ug/Kg in the primary sample and 53,000 ug/Kg in the duplicate sample. Tetrachloroethene was detected in the deeper soil sample (12 to 14 feet); however, at a concentration (53 ug/Kg) below the NYSDEC TAGM 4046 guidance value. The concentrations of tetrachloroethene in the primary and duplicate samples from 0 to 2 feet were also above the USEPA Region 9 PRG of 19,000 ug/Kg and the NYSDEC TAGM 3028 soil action level of 12,000 ug/Kg; however, were below the USEPA Region 3 RBC of 110,000 ug/Kg.

Past activities in the former drum storage area may have impacted shallow soil quality as indicated by the tetrachloroethene concentrations, and these soils may have also impacted ground-water quality.

Former Shed

Soil boring SB-9 coincides with the approximate location of a former shed, as depicted in both the 1991 Engineering Investigation Report and the 1980 aerial photograph. The analytical results of samples collected from this location were used to determine if past activities in this area have impacted on-site soil.

The analytical results indicate that benzene was the only organic constituent detected at a level above the NYSDEC TAGM 4046 guidance value of 60 ug/Kg. Benzene was detected at an estimated concentration of 310 ug/Kg above the guidance value in the soil sample collected from the 12 to 14 foot interval only. Benzene was not detected in the 10 to 12 foot sample interval. The concentration of benzene is well below the USEPA Region 3 RBC of 200,000 ug/Kg, the USEPA Region 9 PRG of 1,500 ug/Kg, and the NYSDEC TAGM 3028 soil action level of 22,000 ug/Kg.

Soil in this area does not appear to be impacted as the result of historical site activities. With the exception of the one benzene detection at soil boring SB-9, this constituent was not detected in on-site soils. This data suggests a

source of petroleum-related constituents may be located somewhere near the areas to the east and southeast of the HWD site.

Northeastern Portion of the Site

Soil boring SB-7 is located at the northeastern portion of the site. The analytical results of samples collected from this location were used to determine if past activities in the northeastern portion of the site has impacted on-site soil.

Phenol was the only organic constituent detected in soil above the NYSDEC TAGM 4046 guidance value of 30 ug/Kg in this area. Phenol, estimated at a concentration of 180 ug/Kg below the CRQL, exceeded the guidance value in the 8 to 10 foot sample interval at soil boring SB-7. The concentration of phenol decreased to an estimated concentration of 9 ug/Kg in the 12 to 14 foot sample interval. The low estimated concentration of phenol was well below the USEPA Region 3 RBC of 1,200,000,000 ug/Kg, the USEPA Region 9 PRG of 100,000,000 ug/Kg, and the NYSDEC TAGM 3028 soil action level of 47,000,000 ug/Kg.

Consequently, past activities in this area of the site have not adversely impacted soil to the extent that they could be considered a source of constituents to ground water.

Southern Portion of the Site

Soil boring SB-10 is situated in the southern portion of the site and is downgradient of the sludge pit. The results of samples collected from this location were used to determine if past activities in this area have impacted on-site soil.

The analytical results of samples collected from this location indicate that no organic constituents were detected above NYSDEC TAGM 4046 guidance values. The concentrations of these constituents are also below their respective USEPA Region 3 RBCs, USEPA Region 9 PRGs, and NYSDEC TAGM 3028 soil action levels.

Based on the soil analytical results, past activities in the southern portion of the site, downgradient of the sludge pit, do not appear to have adversely impacted soil.

Southeast of the Approximate Site Boundary

Soil boring SB-11 is situated southeast of the approximate site boundary. The results of samples collected from this location were used to determine if past activities in this area have impacted on-site soil.

The analytical results indicate that the only constituents detected above NYSDEC TAGM 4046 guidance values include:

- ethylbenzene;
- toluene; and
- xylenes (total).

Ethylbenzene, toluene, and xylenes (total) concentrations were above guidance values in the 12 to 14 foot sample interval and were 31,000, 12,000, 110,000 ug/Kg, respectively. These concentrations were above the respective NYSDEC TAGM 4046 guidance values of 5,500 ug/Kg for ethylbenzene, 1,500 ug/Kg for toluene, and 1,200 ug/Kg for xylenes. Toluene and xylenes (total) were also detected in the 10 to 12 foot sample interval; however, concentrations were below the NYSDEC TAGM 4046 guidance values. Ethylbenzene was not detected in the 10 to 12 foot sample interval. The concentrations of ethylbenzene, toluene, and xylenes (total) were well below the USEPA Region 3 RBCs (200,000,000, 410,000,000, and 4,100,000,000 ug/Kg, respectively), the USEPA Region

9 PRGs (230,000, 520,000, and 210,000 ug/Kg, respectively), and the NYSDEC TAGM 3028 soil action levels (7,800,000, 16,000,000, and 160,000,000 ug/Kg, respectively).

Soil in this area does not appear to be impacted as the result of historical site activities. The data suggest another source of petroleum-related constituents in the areas to the southeast of the HWD site, based on the concentrations of ethylbenzene, toluene, and xylenes (total). Although these compounds were positively detected in soil, they were well below the USEPA Region 3 RBCs, USEPA Region 9 PRGs, and the NYSDEC TAGM 3028 soil action levels.

East of the Approximate Site Boundary

Soil boring SB-12 is located east of the approximate site boundary. The results of samples collected from this location were used to determine if past activities in this area have impacted on-site soil and could potentially be a contributing source of VOCs and petroleum-related compounds previously detected in a ground-water sample collected from monitoring well MW-3.

The analytical results indicate that the only constituent detected above the NYSDEC TAGM 4046 guidance value was benzo(a)pyrene. The NYSDEC TAGM 4046 document provides a guidance value of 61 ug/Kg or the MDL for benzo(a)pyrene; however, in this instance, the guidance value of 61 ug/Kg was used for comparison purposes as the CLP analyses is reported to the CRQL as defined by NYSDEC 1995 ASP not the MDL.

Although the concentration of benzo(a)pyrene (estimated at a concentration of 80 ug/Kg below the CRQL) was above the guidance value in the shallow sample (4 to 6 feet) collected from this boring, this compound was not detected in the deep sample (12 to 14 feet). The low estimated concentration of benzo(a)pyrene was below the USEPA Region 3 RBC of 780 ug/Kg, the USEPA Region 9 PRG of 290 ug/Kg, and the NYSDEC TAGM 3028 soil action level of 90 ug/Kg.

Past activities at the HWD site do not appear to have impacted on-site soil in this area and are not likely a contributing source of VOCs and petroleum-related compounds previously detected in a ground-water sample collected from monitoring well MW-3.

Summary

Past activities at the HWD site may have impacted soil quality on a very localized basis, based on elevated concentrations of tetrachloroethene in shallow soil samples in the following areas:

- the hazardous waste storage and treatment area (SB-16, 0 to 2 feet);
- the former sludge pit (SB-5, 0 to 2 feet); and
- the former drum storage area (SB-8, 0 to 2 feet).

As shown on Figure 2-1, these soil borings are all located in the south central portion of the site in the vicinity of the former sludge pit. A review of historical information concerning prior cleanup efforts at the site after site operations had ceased indicates that all waste materials were removed from the site. The levels of constituents remaining in soils are at residual concentrations and not evidence of gross or wide spread soils impacts.

Additional delineation of soils in the area of soil borings SB-5, SB-8, and SB-16 would be necessary to complete the delineation of these impacts, and to provide additional information necessary to permit the calculation of the volume of impacted soils in this area.

4.4 Evaluation of Ground-Water Analytical Data

This section presents a summary and a regulatory standards comparison of laboratory analyses of ground-water samples collected for this RI during the following sampling tasks:

- Ground-water samples collected for the Hydropunch™ ground-water screening were analyzed for TCL VOCs.
- Ground-water samples collected from the newly-installed and existing ground-water monitoring wells were analyzed for TCL VOCs, TCL SVOCs, PCBs, TAL inorganics, DRO, pH, TSS, and TDS.

The concentrations of VOCs, SVOCs, inorganic compounds, PCBs, and pesticides are compared to the NYSDEC Division of Water Technical and Operational Guidance Series 1.1.1, Ambient Ground-Water Quality Standards/Guidance Values, June 1998 (NYSDEC Ground-Water Quality Standards/Guidance Values).

4.4.1 Hydropunch™ Ground-Water Screening

This section presents the analytical results of the ground-water samples obtained with the Hydropunch™ sampler from specific depth intervals within the saturated soil column. The Hydropunch™ sampling was performed as a field screening level of activity to identify ground-water quality at depth-specific intervals within the Upper Glacial Aquifer, to vertically and horizontally delineate potential impacts to ground water from site-related constituents in the Upper Glacial Aquifer, and to guide the selection of vertical placement of the well screens for the three proposed permanent deep monitoring wells.

Table 4-6 presents a summary of constituents detected in ground water. Figure 4-2 shows the distribution of VOC concentrations above NYSDEC Ground-Water Quality Standards/Guidance Values in a cross-sectional view along the ground-water flow direction. It is important to recognize that Hydropunch™ sampling provides field screening level results only, and not actual dissolved VOC concentrations in ground water. As previously shown on Table 2-2, the turbidity levels of the ground-water samples were elevated. Therefore, the differences in the analytical results between the Hydropunch™ samples and the monitoring well samples may be indicative of VOCs adsorbed onto colloidal matter suspended in the sample volume, as opposed to constituents dissolved in ground water.

The analytical results of the ground-water samples obtained with the Hydropunch™ sampler from on-site locations are discussed first, followed by the results of locations outside the approximate site boundary.

On-Site Hydropunch™ Locations

Based on the analytical results of the samples collected from the Hydropunch™ (HP-4, HP-5, HP-6, HP-7, HP-8, HP-9, HP-10, HP-14), ground-water quality at the site is affected (defined herein as containing concentrations that are above NYSDEC Ground-Water Quality Standards/Guidance Values) with three primary VOCs, including:

- benzene;
- tetrachloroethene; and
- trichloroethene.

Ground-water quality has not been affected at location HP-14.

Benzene was detected in the shallowest ground-water sample obtained at 19 feet bgs at locations HP-7 and HP-9; however, benzene was not detected in any of the deeper samples from these locations. These sample locations are

near one of the areas previously discussed in Section 1.3.2 where leaking USTs may have impacted ground-water quality with BTEX compounds.

Trichloroethene was detected in the shallowest ground-water sample obtained at 19 feet bgs at location HP-7 (22 ug/L).

Tetrachloroethene was detected in ground water at all locations except HP-9. These concentrations ranged from 6 ug/L at HP-4 (18 feet bgs) to 320 ug/L at HP-7 (19 feet bgs). Generally, the detections occurred at all sample depths (Figure 4-2). The deepest samples collected were approximately 96 feet bgs; the concentrations of tetrachloroethene decreased substantially with depth at locations HP-6, HP-7 and HP-8. Concentrations at HP-4, HP-5, and HP-10 were relatively consistent or increased only slightly with depth.

Hydropunch™ Locations Outside Approximate Site Boundaries

Analytical results from ground-water samples collected from the Hydropunch™ samples located hydraulically upgradient of the site (HP-1, HP-2, and HP-13), or hydraulically side gradient (HP-3) indicate ground water has not been affected by VOCs in these areas. Low concentrations (generally less than 2 ug/L) of carbon disulfide, chloromethane, 1,1-dichloroethene, 1,1-dichloroethane, cis-1,2-dichloroethene, ethylbenzene (less than 3 ug/L), toluene, 1,1,1-trichloroethane, trichloroethene, benzene (0.6 ug/L), tetrachloroethene (less than 3 ug/L) were detected in upgradient and side gradient ground-water samples. As discussed earlier in Section 1.3.2, ground-water quality has been impacted regionally from similar chlorinated VOC constituents to those detected at the HWD site.

Tetrachloroethene was detected at HP-12 located east of the approximate site boundary. These detections occurred in the ground-water samples collected at 18 and 74 feet bgs at concentrations of 30 and 10 ug/L, respectively.

Based on the analytical results of the samples collected from the Hydropunch™ sampler located hydraulically downgradient of the site (HP-11 and HP-15), ground water is impacted with 6 primary VOCs, including:

- cis-1,2-dichloroethene;
- ethylbenzene;
- tetrachloroethene;
- toluene;
- trichloroethene; and
- xylenes (total).

Ethylbenzene, toluene, and xylenes (total) were detected at both locations. Ethylbenzene, toluene, and xylenes (total) concentrations ranged from 7 (estimated) to 170 ug/L, 6 (estimated) to 140 ug/L, and 6 (estimated) to 640 ug/L, respectively. The highest concentrations were detected in the ground-water sample obtained at 18 feet bgs from location HP-11(close to well MW-3, where similar BTEX compounds were detected). As discussed earlier in Section 1.3.2, these constituents are not believed to be related to the HWD site and are likely related to historical ground-water quality impacts by leaking USTs near the site.

Tetrachloroethene was detected in the shallowest sample collected from HP-11 (at 18 feet bgs) and at all depths at HP-15 (18, 44, 74, and 96 feet bgs). These concentrations ranged from 6 (estimated) to 34 ug/L.

Trichloroethene was detected in the shallowest ground-water sample obtained at 18 feet bgs at location HP-11 (7 J ug/L).

Cis-1,2-dichloroethene was detected in the shallowest sample collected from HP-11 (at 18 feet bgs) and at all depths with the exception of the deepest sample at HP-15 (18, 44, and 74 feet bgs). These concentrations ranged from 8 (estimated) to 21 ug/L.

Trichloroethene and cis-1,2-dichlorothene are both geochemical degradation daughter products of the degradation of tetrachloroethene, and may be indicative of an important fate process occurring for this compound in the aquifer. These data will be evaluated further once additional ground-water data is collected.

Important data has recently been published by Eckhardt and others (1989) which directly attributes the occurrence of the same VOCs evidenced in site ground water to land use and ground-water quality in the Upper Glacial Aquifer in Nassau and Suffolk counties. Their research has indicated that the most commonly detected VOCs in Upper Glacial Aquifer wells tested during their study among combined land use categories are tetrachloroethylene (37% of all wells), trichloroethylene (33% of all wells), and 1,1,1-trichloroethane (35% of all wells). The constituent 1,2-dichloroethylene was detected in 9% of all wells tested. The frequency of detections for these VOCs was statistically highest in the institutional, commercial, and high density residential land use areas, such as areas with land use similar to the Farmingdale, New York area surrounding the site. The research concludes that the spatial distribution of these VOCs is directly related to population density, and is also affected by the presence or absence of municipal sewers for sanitary wastes.

4.4.2 Ground-Water Monitoring Well Sampling

This section presents the analytical results of the ground-water samples collected at existing monitoring wells (MW-1, MW-2, MW-3, MW-4, MW-5, and MW-6) and newly-installed monitoring wells (MW-1D, MW-2D, and MW-3D) on January 20, 2000. Tables 4-7 through 4-10 present summaries of constituents detected in ground water. Figure 4-3 shows the distribution of organic compounds in ground water whose concentrations exceed NYSDEC Ground-Water Quality Standards/Guidance Values. Figure 4-4 shows the distribution of inorganic compounds in ground water whose concentrations exceed NYSDEC Ground-Water Quality Standards/Guidance Values.

TCL VOCs

On-Site

Based on the analytical results of the samples collected from the on-site monitoring wells (MW-2 and MW-2D), shallow ground water at the site has only been affected to a level above NYSDEC Ground-Water Quality Standards/Guidance Values by tetrachloroethene (Figure 4-3). Tetrachloroethene was detected above the NYSDEC Ground-Water Quality Standards/Guidance Values in ground water at shallow monitoring well MW-2 at a concentration of 68 ug/L. At deep monitoring well MW-2D, tetrachloroethene was detected; however, it was present at an estimated concentration (0.9 ug/L) well below the NYSDEC Ground-Water Quality Standards/Guidance Values.

Other VOCs detected at low concentrations below NYSDEC Ground-Water Quality Standards/Guidance Values include: 1,1-dichloroethene (at monitoring well MW-2D), 1,1-dichloroethane (at monitoring wells MW-2 and MW-2D), cis-1,2-dichloroethene (at monitoring well MW-2), and trichloroethene (at monitoring wells MW-2 and MW-2D). These data suggest that tetrachloroethene is attenuating/degrading over time at the site, and that this fate mechanism should be more closely evaluated in subsequent sampling and analysis events. Ground-water quality at the site has improved substantially over time, as determined by a comparison of the September 26, 1990 ground-water analytical results from the Gibbs & Hill sampling event, to the recently collected sample results from this RI. In most instances, concentrations of site-related VOCs have declined an order of magnitude or greater in the monitoring well samples over this period of time. Figure 4-5 depicts the concentrations of constituents from these

two sampling events and how these concentrations have changed over time. For example, the concentration of tetrachloroethene has decreased from 790 to 68 ug/L. Additionally, the concentrations of 1,2-dichloroethene, 1,1,1-trichloroethane, and trichloroethene have decreased from 59, 6, and 130 ug/L, respectively to not detected.

Off-Site

Based on the analytical results of the samples collected from the off-site monitoring wells located hydraulically upgradient and side gradient of the site (MW-1, MW-1D, MW-4, MW-5, and MW-6), ground water has not been significantly impacted with site-related VOCs.

In fact, there were no detections of VOCs at monitoring wells MW-4 and MW-5, and only low concentrations of VOCs were detected at trace concentrations below their respective NYSDEC Ground-Water Quality Standards/Guidance Values at monitoring wells MW-1, MW-1D, and MW-6. These VOCs include: 1,1-dichloroethene (at monitoring well MW-1D), 1,1-dichloroethane (at monitoring wells MW-1D and MW-6), cis-1,2-dichloroethene (at monitoring wells MW-1 and MW-1D), 1,1,1-trichloroethane (at monitoring well MW-1D), trichloroethene (at monitoring wells MW-1 and MW-1D), and tetrachloroethene (at monitoring wells MW-1, MW-1D and MW-6).

Based on the analytical results of the samples collected from the off-site monitoring wells (MW-3 and MW-3D) located southeast and hydraulically downgradient of the site, shallow ground water is impacted with 5 primary VOCs, including:

- chlorobenzene;
- cis-1,2-dichloroethene;
- ethylbenzene;
- toluene; and
- xylenes (total).

These constituents were only found above their respective NYSDEC Ground-Water Quality Standards/Guidance Values in the ground-water sample collected from the shallow monitoring well MW-3. Well MW-3 contains a dissimilar suite of VOC compounds in comparison to other site monitoring wells, and the BTEX compounds detected are likely related to the leaking USTs previously described in Section 1.3.2 of this report.

Detectable concentrations of VOCs in ground water did not exceed NYSDEC Ground-Water Quality Standards/Guidance Values at monitoring well MW-3D. Only low concentrations (estimated at 1 to 2 ug/L) of 1,1-dichloroethene, 1,1-dichloroethane, tetrachloroethene, and trichloroethene were qualitatively identified.

TCL SVOCs

On-Site

Based on the analytical results of the samples collected from the on-site monitoring wells (MW-2 and MW-2D), ground water at the site is not impacted with SVOCs. In fact, SVOCs were not detected in ground water at either monitoring well.

Off-Site

Based on the analytical results of the samples collected from the off-site monitoring wells located hydraulically upgradient and side gradient of the site (MW-1, MW-1D, MW-4, MW-5, and MW-6), ground water is not

impacted with SVOCs. Only low concentrations of two PAHs (acenaphthene, estimated at 0.2 ug/L; and fluorene, estimated at 0.1 ug/L) were detected, and were at concentrations well below NYSDEC Ground-Water Quality Standards/Guidance Values at monitoring well MW-4.

Based on the analytical results of the samples collected from the off-site monitoring wells (MW-3 and MW-3D) located southeast and hydraulically downgradient of the site, shallow ground water is impacted with two primary SVOCs, including 2,4-dimethylphenol and naphthalene. These constituents were only detected above NYSDEC Ground-Water Quality Standards/Guidance Values at shallow monitoring well MW-3. Naphthalene was detected at concentrations of 230 and 250 ug/L in the primary and duplicate samples, respectively. 2,4-Dimethylphenol was detected at estimated concentrations of 13 and 16 ug/L in the primary and duplicate samples, respectively.

SVOCs were not detected in ground water at monitoring well MW-3D, indicating that deep ground water in this area is not impacted by SVOCs.

TAL Inorganic Constituents

A discussion of detected inorganic compounds in ground water at on-site and off-site monitoring wells related to the NYSDEC Ground-Water Quality Standards/Guidance Values is provided below. The available literature suggest that the levels of these inorganic constituents evidenced in site ground water are representative of naturally occurring levels of these constituents, and that the historical site activities have not caused the levels of the constituents evidenced.

On-Site

Based on the analytical results of the samples collected from the on-site monitoring wells (MW-2 and MW-2D), manganese and sodium were detected above their respective NYSDEC Ground Water Quality Standard/Guidance Values only at the on-site deep monitoring well MW-2D; however, these constituents were also detected at off-site monitoring wells MW-1D and MW-4 located hydraulically upgradient and side gradient, respectively.

Off-Site

Based on the analytical results of the samples collected from the off-site monitoring wells located hydraulically upgradient and side gradient of the site (MW-1, MW-1D, MW-4, MW-5, and MW-6), ground water contains three naturally-occurring metals, iron, manganese, and sodium. Iron and manganese were detected at monitoring well MW-4 and manganese and sodium were detected at deep monitoring well MW-1D. This information suggests that concentrations of iron, manganese, and sodium evidenced in site monitoring wells are representative of background ground-water quality conditions.

Based on the analytical results of the samples collected from the off-site monitoring wells (MW-3 and MW-3D) located southeast and hydraulically downgradient of the site, ground water also contains three naturally-occurring metals, including iron, manganese, and sodium.

The reason for the frequent detections of these inorganic constituents in ground water is well documented in the literature. Research by Suarez and Langmuir (1976) reports that both iron and manganese would be solubilized by the leaching of iron and manganese oxides from the aquifer matrix under slightly anaerobic conditions, and that the associated metals would also be released from both the iron and manganese oxides to ground water. Brown and Schoonen (1994) also report that extremely high dissolved iron concentrations are directly related to the precipitation of iron hydroxides in the Upper Glacial Aquifer.

TCL PCBs

PCBs were not detected in any of the ground-water samples.

Diesel Range Organics

Diesel range organics were only detected in the ground-water sample collected from shallow monitoring well MW-3. The detectable concentrations ranged from 4.3 to 5.1 mg/L in the duplicate and primary samples, respectively. The detection of this parameter in well MW-3 further suggests that ground water near this well has been impacted by UST-related BTEX constituents that are not related to the HWD site.

Total Suspended Solids/Total Dissolved Solids/pH

The total dissolved solids detected in the ground-water samples ranged from 57 mg/L at monitoring well MW-5 to 246 mg/L at monitoring well MW-3. The total suspended solids detected in the ground-water samples ranged from 16 mg/L at well MW-4 to 47 mg/L at monitoring well MW-3. Total suspended solids were not detected in ground water at monitoring wells MW-1, MW-1D, MW-2, MW-2D, MW-3D, MW-5, or MW-6.

These data strongly suggest that the presence of total suspended solids in the sample volume plays a significant role in the concentrations of specific VOCs and inorganic constituents evidenced in unfiltered Hydropunch™ field screening samples. Samples collected from monitoring wells constructed with a filter pack, which are relatively low in total suspended solids, did not have similar levels of constituents and were less influenced by the effects of particulate matter in the sample volume.

4.5 Fate and Transport Assessment

This section presents a preliminary assessment of the fate and transport of site-related chemical constituents detected in soils and ground water at the site.

The results of this investigation provide a technical basis on which to characterize the possible routes of constituent migration from the site. Section 5 (Qualitative Exposure Assessment) presents an evaluation and discussion of the existence of potential exposure pathways that may exist at the site, and a preliminary identification of potential receptors to site-related constituents. Further evaluation of constituent fate and transport issues will be presented in connection with the forthcoming FS.

Generally, possible routes of constituent migration away from the site, as will be discussed in the following section, include volatilization to the air, migration from the site with surface water runoff, and transport of dissolved constituents with ground water. An evaluation of the site data and the currently existing physical setting at the site indicates the potential for constituents of concern to be transported from the site appears to be limited to migration of constituents with ground water. Based on factors such as site topography and the fact that the entire surface of the site is now covered with concrete, the potential for off-site migration due to overland runoff from the site and constituent volatilization to the air phase can be eliminated as potential off-site migration pathways. Therefore, the only potential route for constituents to be transported from the site under current site conditions is through the migration of site-related constituents in ground water along the direction of ground-water flow.

Fate and Transport Assessment

Based on our understanding of the regional hydrogeologic setting, ground water from the Upper Glacial Aquifer beneath the site vicinity flows toward the southeast and ultimately discharge to Massapequa Creek, located

approximately 2.25 miles southeast of the site. As discussed in the following section, the nearest downgradient East Farmingdale municipal water supply wells are located approximately 1.75 miles southeast of the HWD site, and are screened at great depths in the Magothy Formation.

The average linear ground-water flow velocity at the site was estimated to range from 0.021 ft/day (approximately 8 ft/year) to 0.042 ft/day (approximately 15 ft/year) as discussed at the end of Section 3.3. The average linear velocity of constituents dissolved in ground water is less than the flow velocity of ground water itself due to natural attenuation processes such as biodegradation, dispersion, dilution, sorption, volatilization, and/or chemical and biochemical stabilization of contaminants.

The average linear velocity of dissolved constituents in ground water was estimated to perform calculations to determine (theoretically) if site-related constituents could have potentially reached specific downgradient locations and/or potential receptors to ground water. These downgradient locations and/or potential receptors include monitoring well MW-3, Massapequa Creek, and the downgradient East Farmingdale municipal supply wells. The latter two locations are discussed in greater detail in the following Section 5.1.1.

Site-related constituents that were detected either during the RI (only tetrachloroethene) or historic sampling events (tetrachloroethene, trichloroethene, 1,2-dichloroethene and 1,1,1-trichloroethane) in site ground water above NYSDEC Ground-Water Quality Standards/Guidance Values at on-site monitoring well MW-2 were used as the basis for this analysis. The detection of the fuel oil constituents detected in MW-3 were not addressed in this analysis, as the source(s) of these constituents are not located on the portions of the site where the historical waste handling procedures were conducted, and the soils and ground-water data suggest that there is likely other sources of these constituents located on properties adjacent to the HWD site.

Estimates of the compound specific retardation coefficient and the average linear velocities of select dissolved organic compounds used in this analysis are presented in Table 4-13. The assumptions and equations used in the estimates of the average linear velocity of constituents dissolved in ground water are discussed below.

The retardation coefficient R, which is determined from the distribution coefficient, is often used to describe the attenuation of a specific organic compound due to the effects of sorption to the aquifer matrix. Sorption retards the migration of a chemical in ground water relative to the average linear ground-water flow velocity, and can reduce the chemical concentration detected in the aquifer at locations hydraulically downgradient of a potential constituent source. The retardation coefficient (R) for organic compounds is determined from the following equation:

$$R = 1 + \rho_b \frac{K_d}{n}$$

where:

K_d is the distribution coefficient (cm^3/g);
ρ_b is the bulk density (g/cm^3); and
n is the total porosity (Fetter, 1993).

The distribution coefficient (K_d) can be estimated using the organic carbon partition coefficient (K_{oc}) (a physical-chemical property specific to each compound) and the fraction of organic carbon (f_{oc}) of the soil as follows:

$$K_d = K_{oc} * f_{oc}$$

The average linear velocity of a dissolved organic compound, v_c, is then given by:

$$v_c = v_x / R$$

where:

v_x is the average linear ground-water velocity (Domenico and Swartz, 1990).

Organic carbon partition coefficient (K_{oc}) values for the computations were selected from the following reference:

- Ravi, V, and J.A. Johnson, 1994 VLEACH, a One-Dimensional Finite-Difference Vadose Zone Leaching Model, Version 2.1 developed for USEPA Robert S. Kerr Laboratory, Ada, Oklahoma.

Literature values for dry bulk density (for a gravelly sand [1.37 - 1.81 g/cm^3]) and total porosity (for a coarse sand [0.31 - 0.46]) (USEPA, 1998) were used in the estimate of the average linear velocities of dissolved organic compounds. Specifically, the midpoint value of the range for dry bulk density and total porosity were applied to the calculations of average linear velocities of dissolved organic compounds.

The average linear velocities of dissolved organic compounds were calculated to be between 0.0161 to 0.0322 ft/day for cis-1,2-dichloroethene, 0.0029 to 0.0058 ft/day for tetrachloroethene, 0.0096 to 0.0192 ft/day for trichloroethene, and 0.0087 to 0.0173 ft/day for 1,1,1-trichloroethane.

Therefore, assuming the higher average linear velocity of each of the dissolved organic compounds, the expected travel times for the selected VOC constituents to reach monitoring well MW-3 (located approximately 150 feet southeast of the site), the nearest downgradient East Farmingdale municipal supply wells (located approximately 1.75 miles southeast of the HWD site), and the apparent discharge point for Upper Glacial Aquifer ground water, Massapequa Creek (located approximately 2.25 miles southeast of the site), are estimated below:

Constituent	Average Linear Velocity of Dissolved Constituent (ft/day)	Average Linear Velocity of Dissolved Constituent (ft/year)	Estimated Travel Time to Reach MW-3 (years)	Estimated Travel Time to Reach Supply wells (years)	Estimated Travel Time to Reach Massapequa Creek (years)
cis-1,2-Dichloroethene	0.0322	11.753	13	786	1,011
Tetrachloroethene	0.0058	2.117	71	4,365	5,612
Trichloroethene	0.0192	7.008	21	1,318	1,695
1,1,1-Trichloroethane	0.0173	6.315	24	1,463	1,881

Notes:
The estimated average linear ground-water flow velocity ranged from 0.021 ft/day (approximately 8 ft/year) to 0.042 ft/day (approximately 15 ft/year).

Theoretical arrival times of retarded constituents cannot be estimated reliably using only the average ground-water velocity and the retardation factor. Dispersive spreading may result in the arrival of detectable contaminant concentrations at a given location significantly before the arrival time that is expected, solely on the basis of the average ground-water flow rate. However, this analysis does suggest that the first site-related chlorinated organic compound that would be expected to be encountered in ground water downgradient of the site would be the compound cis-1,2 dichloroethene in approximately 13 years at location MW-3. The theoretical potential for site-related constituents in ground water to reach other potential receptors is extremely unlikely, given the constituent-specific travel times outlined above, and would not pose a threat for the foreseeable future.

Review of the site ground-water monitoring well analytical results and comparison to the results of the theoretical transport calculations outlined above indicate that cis-1,2 dichloroethene was the only chlorinated VOC detected in the ground-water sample collected from MW-3, and that tetrachloroethene was not yet detected in this well. This data suggests that these transport estimations are reasonably reliable in assessing the potential for constituent migration from the site in ground water, given the time period during which the HWD site was in operation (1979-1982), and the time since operations ceased at the site and all waste materials were removed (1984).

A review of the Hydropunch™ ground-water results was also performed as a conservative means of comparison, and did indicate that there were detectable trace concentrations of tetrachloroethene in two downgradient Hydropunch™ locations (HP-11 and HP-15). However, these results are from field screening level ground-water data, and may not be representative of exposure point concentrations that would be determined by a sample from a constructed monitoring well with a filter pack surrounding the well screen (such as MW-3 or MW-3D). The detection of chlorinated VOCs at these Hydropunch™ locations is likely due to the effect of advective transport of VOCs in the aquifer matrix entrained on colloidal (particulate) matter suspended in the sample volume, not from dissolved phase VOC in ground water. This observation is also supported by the absence of tetrachloroethene in downgradient deep monitoring well MW-3D.

5. Qualitative Exposure Assessment

This section presents an evaluation and discussion of the existence of potential exposure pathways that may exist at the site and a preliminary identification of potential receptors to site-related constituents. The assessment is strictly qualitative, and is not intended to calculate potential human or ecological health risks.

Analytical results from the RI and information regarding the environmental setting of the HWD site have been reviewed to identify complete potential exposure pathways for receptors that may contact site-related constituents of interest. A qualitative exposure assessment was conducted and consisted of two primary steps: (1) characterizing the exposure setting, and (2) identifying exposure pathways. As part of the qualitative exposure assessment, potential exposures to soils and ground water are discussed considering the current and hypothetical future uses of the site.

5.1 Characterization of the Exposure Setting

This section identifies the site-specific information used to assess potential exposures to constituents detected in soil and ground water during the RI. Information regarding site activities and land/water uses, general site features, and the presence of potential receptors on and near the site is presented below.

5.1.1 Site Activities and Land/Ground-Water Uses

As described in Section 1.3 of this RI Report, the HWD site is located at 11A Picone Boulevard in the Village of Farmingdale, Suffolk County, New York (Figure 1-1). The site and surrounding area are located in an area of predominantly commercial and industrial land use, consistent with the light industrial zoning designation of the site property (Town of Babylon Planning Department, 2000). The site is generally bounded to the north, east and south by commercial/industrial property within Lot 31.004 and is bounded to the west by a one-story furniture warehouse and storage yard.

Site Activities/Land Use

Little Joseph Realty, Inc. currently leases the site property to Guaranteed Overnight Delivery, Inc. (G.O.D.), an overnight delivery service. The entire site is presently covered by a concrete slab and is used by G.O.D. as a truck parking lot. G.O.D. employees are present on the site for short periods of time during the day when removing and returning trucks to the parking lot. During RI activities, trucks typically left the site in the morning, returned in the late afternoon, left again during the early evening, and apparently returned before morning. The HWD site is accessible from Picone Boulevard and from a paved driveway located north of the adjacent furniture warehouse building. Access to the site is partially limited by chain-link fencing to the north, east, and south of the site, and by the storage yard wall to the west of the site.

Other commercial/industrial activities within Lot 31.004 include bus storage and maintenance, based in a building located across Picone Boulevard (south of the site), and trucking activities, conducted out of a one-story building located west of the site. In addition to truck loading docks, the one-story building contains office facilities for the trucking company. These buildings are indicated on Figure 1-2.

A recharge basin, also located on Lot 31.004, is located to the northeast of the HWD site. The recharge basin receives stormwater runoff from the site and the surrounding area. There is fencing to the east and south of the recharge basin and partial fencing to the west. Access to the recharge basin is limited by the fencing and a steep embankment along the western side of the basin. The recharge basin is not known to be used for recreational activities (e.g., fishing, swimming).

According to the United States Census Bureau, in 1990 3,303 persons resided in the census tract in which the site is located. The nearest residence is reportedly located approximately 1,300 feet west of the site (Gibbs & Hill, 1991).

Ground-Water Use

The site and the surrounding area are served with potable water by the East Farmingdale Water District. The East Farmingdale Water District obtains its potable water from five supply wells located in four separate wellfields (East Farmingdale Water District, 2000a). Approximately 6,000 people are served by the East Farmingdale Water District. According to the Suffolk County Department of Health Services' Bureau of Drinking Water, private wells exist within the Village of Farmingdale; however, the department has no record of their uses (i.e., potable versus non-potable) or locations (Suffolk County Department of Health Services). There are no private wells used for potable water on-site, and no private well locations have been reported in the site vicinity. All nearby residences reportedly use the community water system (Gibbs & Hill, Inc., 1991). All municipal supply wells draw water from the Magothy Aquifer beneath Long Island, which is considered a sole source aquifer by the United States Geological Survey (USGS) (USGS, 1987).

Three of the four wellfields in the East Farmingdale Water District are located north (hydraulically upgradient) of the HWD site. Two supply wells (Wells 4-1 and 4-2) are located approximately 1.75 miles southeast of the site, adjacent to the Republic Airport. These wells are screened at great depths in the Magothy Formation. The East Farmingdale Water District reports pumping rates of 1,340 gallons per minute (GPM) for Well 4-1 and 1,300 GPM for Well 4-2 (East Farmingdale Water District, 2000b). Samples from the wells are routinely analyzed for principle organic contaminants, metals, inorganics, bacteria, and physical parameters. None of these constituents were detected above regulatory limits in 1998 and 1999 (East Farmingdale Water District, 2000a; 2000c).

5.2 Identification of Exposure Pathways

A complete exposure pathway must exist for a potential exposure to occur. A complete exposure pathway has four essential components:

- an impacted environmental medium;
- an exposure point (such as accessible soils);
- a potential receptor or receptors; and
- an exposure pathway.

Without all four components, an exposure pathway is incomplete, and consequently, no exposure can occur. As discussed in Section 1.3.2, past site activities (including hazardous waste management using 55-gallon drums, one or more tanks, and an unlined "sludge pit") may have resulted in the release of certain constituents (i.e., primarily chlorinated VOCs) to soils and ground water at the site. Based on information obtained during the RI, it is suspected that localized areas of impacted site soils may have served as a source of VOCs migrating to ground water. Although RI analytical results do not indicate site constituents of interest were detected in ground-water monitoring wells downgradient of the site (with the exception of cis-1,2-dichloroethene), historic analytical results indicate that several VOCs (cis-1,2-dichloroethene, tetrachloroethene, trichloroethene, and 1,1,1-trichloroethane) have been detected in site ground water. Surface water and sediment samples were collected from the recharge basin located northeast of the site in 1991 and submitted for analysis of VOCs, SVOCs, and metals. Site-related constituents of interest at the HWD site were not detected in surface water or sediment samples; therefore, potential exposures to surface water and sediment have not been evaluated as part of this assessment.

Based on the information presented above, potential exposure points and exposure pathways at and in the vicinity of the HWD site are identified below with respect to current site conditions, current and hypothetical future site activities, and the presence of potential receptors on and near the site.

5.2.1 Exposure Profiles

Exposure profiles identify how exposure could potentially occur at a given site, and are developed for each potential receptor group based on site-specific information regarding current and hypothetical future conditions. Exposure profiles are summarized in Table 5-1 for potential receptors at the HWD site. The receptors are identified based on factors such as current and reasonably foreseeable site activities, ground water use, and site setting, among other factors. Potential exposure points, receptors, and routes of exposure are discussed below.

5.2.1.1 Current Potential Exposure Pathways/Receptors

As discussed in Section 5.1.1, the current land use at the HWD site is light industrial, and access to the site is partially restricted by chain-link fencing and lockable gates. The site is entirely paved, and there is currently no use of ground water at the site. Due to current site conditions, there are currently no exposure points present within the site property, and therefore no complete exposure pathways have been identified under current conditions at the site.

As discussed in Section 4.4.2, tetrachloroethene was detected at a level above its corresponding NYSDEC Ground-Water Quality Standards/Guidance Values in monitoring well MW-2, and five other VOCs (the chlorinated VOC cis-1,2-dichloroethene, and the fuel related compounds toluene, chlorobenzene, ethylbenzene, and xylene) were detected at concentrations exceeding their corresponding NYSDEC Ground-Water Quality Standards/Guidance Values in off-site monitoring well MW-3. Additionally, various VOCs were detected at levels above NYSDEC Ground-Water Quality Standards/Guidance Values in Hydropunch™ field screening samples collected during the RI, but these VOCs may not be truly representative of potential exposure point concentrations of VOCs in ground water due to the presence of colloidal material in the sample volume.

During ground-water sampling activities, odors were noted in monitoring wells MW-3 and MW-4, and in Hydropunch™ sample HP-15. With the exception of MW-3, ground-water samples were collected a minimum of 30 feet from occupied buildings. Monitoring well MW-3 is located adjacent to the one-story trucking company building located southeast of the HWD site. This building is occupied daily by trucking company office staff. Given the presence of VOCs in ground water in close proximity to the occupied building at a depth of approximately 16 feet, and the high permeability of area soils, the potential exists for the infiltration of VOCs into indoor air of the building. Persons working inside the building could potentially be exposed to VOCs originating from ground water via inhalation. However, as discussed in the following Section 6, this potential exposure pathway is not likely to be significant based on a comparison of MW-3 analytical results to ground-water standards which were derived to be protective of indoor air exposures, and is not considered a completed pathway.

In addition to the VOCs listed above, SVOCs (naphthalene and 2,4-dimethylphenol), and three metals (iron, manganese, and sodium) were detected at levels above Ground-Water Quality Standards/Guidance Values in monitoring well samples collected during the RI. The nearest downgradient East Farmingdale municipal supply wells are located approximately 1.75 miles southeast of the HWD site. Therefore, East Farmingdale municipal supply wells 4-1 and 4-2 are theoretical potential off-site exposure points.

Therefore, these potential exposure points were evaluated to determine whether the potential exists for water district customers (including residents and commercial/industrial workers in the vicinity of the site) to be exposed to site-related constituents of interest in potable water. At BBL's request, the East Farmingdale Water District provided BBL with a copy of their most recent water quality report (i.e., *Annual Water Supply Statement and Annual Drinking*

Water Quality Report - 1998) (East Farmingdale Water District, 2000a). The water quality report provided analytical results for point of use samples collected between January 1, 1998 and December 31, 1998 and analyzed for physical and chemical constituents required by the USEPA, the New York State Department of Health, and the Suffolk County Department of Health Services. The required analytes included all constituents detected above Ground-Water Quality Standards/Guidance Values during the RI. None of these constituents were detected in the water district's point of use samples in 1998. These data indicate that persons served with potable water from the East Farmingdale Water District are not currently exposed to site-related constituents of interest in ground water. Data concerning the theoretical fate and transport of VOCs from the site in ground water, as presented in Section 4.5, also demonstrate that this is not a complete exposure pathway under current conditions.

Potential Ecological Habitat/Receptors

Given the commercial/industrial setting and small size of the HWD site, the lack of vegetation (the site is entirely paved), and the level of human activity associated with current trucking activities at and in the vicinity of the site, it has been determined that the site does not contain habitat capable of supporting ecological populations or communities. While potential ecological receptors typical of urban environs (e.g., rodents, common small birds) may occasionally be present at the site, the existing pavement prevents any potential exposures to site soils.

The New York State Natural Heritage Program and the United States Fish and Wildlife Service were contacted to identify any rare, threatened, or endangered plant and animal species or critical habitat in the vicinity of the site. According to the New York Natural Heritage Program, the following state-listed rare species may potentially be present at habitats within ½ mile of the HWD site:

Scientific Name	Common Name	Group Name	New York Legal Status	Date Last Seen
Scutellaria integrifolia	Hyssop-Skullcap	Vascular Plant	Unprotected	July 1899
Linum medium var texanum	Southern Yellow Flax	Vascular Plant	Threatened	August 1927
Hemileuca maia maia	Coastal Barrens Buckmoth	Moth	Unprotected - Special Concern	October 1985
Satyrium edwardsii	Edwards' Hairstreak	Butterfly/Skipper	Unprotected	unknown

The United States Fish and Wildlife Service reported that there are no Federally-listed or proposed endangered or threatened species known to exist in the area of the site.

As noted above, the HWD site does not currently contain habitat to support ecological receptors. Due to the lack of habitat at the HWD site and the presently inaccessible soils, no complete exposure pathways have been identified for potential ecological receptors at or in the vicinity of the site.

5.2.1.2 Future Potential Exposure Pathways/Receptors

As discussed above, the HWD site is located in an area zoned for light industrial use. Thus, the receptors most likely to be present at the site in the future are on-site commercial/industrial workers.

For the purpose of identifying potential future exposures, this exposure assessment presumes that future activities at the site may involve excavation of site soils. Under these conditions, it is assumed that excavated soils would remain at the site in the future, would be exposed to the surface (i.e. covertypes would be removed), and could become physically accessible to potential receptors.

Potential future receptors include excavation workers as well as commercial/industrial workers and individuals who access the site without authorization (i.e., trespassers). In the absence of the existing pavement, these hypothetical future receptors may be exposed to site-related constituents of interest in soils through incidental ingestion, dermal contact, and inhalation of particulates or vapors while engaged in activities involving soil disturbance. Additional potential receptors under this scenario include ecological receptors typical of urban environs (e.g., rodents, common small birds). As noted previously, the site area is not of sufficient size to support ecological populations or communities; therefore any future ecological exposures to site-related constituents of interest in site soils are expected to be minimal, if any.

It is extremely unlikely that the site property would ever be developed for residential use in the future. Under current zoning regulations, construction of residential structures in areas zoned for light industrial use is not permitted without a change in the zoning designation. However, the potential for future development of the site for residential use cannot be completely eliminated and is considered in this exposure assessment, assuming that no deed restrictions are applied to the site property and that future zoning changes would allow for this type of residential development.

The hypothetical use of the site as a residence could potentially result in the continual presence of both adults and children. Adult and child residents could directly contact site soils through digging, landscaping, play activities, or recreational sports. Potential exposure to unremediated site-related constituents in soils could occur through incidental ingestion, dermal contact, and inhalation of particulates or vapors. To determine whether hypothetical future residential exposures via soil gas migration into indoor air would be significant, VOC constituent concentrations detected in shallow on-site monitoring well MW-2 were compared to "Method 1 GW-2" ground-water standards derived by the Massachusetts Department of Environmental Protection (MDEP) to be protective of indoor air exposures. These numeric standards were used as a basis for comparison because they are formally promulgated, and represent regulatory risk-based standards specifically developed for this potential exposure pathway that are conservative and protective of this specific exposure pathway. The MDEP Method 1 GW-2 standards are further discussed in Section 6.4. Data from on-site monitoring well MW-2D, screened at depths of 40 to 50 feet below grade, were not considered in this comparison because ground-water data from these depths are not considered representative of potential indoor air exposures.

As shown in the table presented below, constituent concentrations detected in MW-2 did not exceed the MCP GW-2 standards.

Constituent	MW-2 (ug/L)	MCP GW-2 Ground-Water Standard (ug/L)
1,1-Dichloroethane	0.7 J	9,000
1,2-Dichloroethene (total)	2 J	20,000
Trichloroethene	4 J	300
Tetrachloroethene	68	3,000

This comparison indicates that constituents detected in on-site ground water would not pose a significant risk to hypothetical future residents via the indoor air inhalation pathway.

As discussed above, ground water underlying the site could eventually interact with deeper ground water that is considered a potential potable water source; accordingly, hypothetical future receptors could be exposed to constituents in ground water under the potential future scenario that private supply wells could be installed at the site. Under this hypothetical scenario, future commercial/industrial workers or residents could potentially be exposed to

ground water via ingestion, dermal contact, or inhalation of vapors. However, it is more likely that any potable water supplied to the site in the future would be obtained by connecting to the existing East Farmingdale municipal water supply via the Picone Boulevard supply line.

As discussed above, site-related constituents of interest have not been detected in East Farmingdale water supply wells. It is not expected that site-related constituents of interest will be detected in the municipal water supply wells in the future, since all wastes had been removed from the HWD site in 1984, and the constituents detected in ground water tend to attenuate in the aquifer materials and/or degrade naturally over time. Additionally, site-related constituents of interest were not detected above NYSDEC Ground-Water Quality Standards/Guidance Values in samples collected from deeper monitoring wells installed during the RI, and are not expected to impact successively deeper aquifers.

Based on this information, and considering the distance between the site and the downgradient municipal supply wells, as well as the effects of natural attenuation within the aquifer, future site-related impacts to the municipal supply wells are not expected. Under a hypothetical future scenario in which the existing covertypes (concrete or pavement) are removed, the likelihood for potential exposure to site-related constituents in the municipal supply wells may be increased if impacted soils are not remediated to levels protective of human health and constituents were to partition from soil to ground water. However, the potential for site-related VOCs in ground water to ever impact these wells, based on the concentrations evidenced and the results of the fate and transport analysis, is extremely limited.

5.3 Summary

This qualitative exposure assessment evaluated potential exposures to site-related constituents of interest under current and hypothetical future site conditions.

Based on site-specific information and the results of the RI, no current complete exposure pathways were identified for human or ecological receptors within the boundaries of the HWD site. No other potentially complete exposure pathway was identified on- or off-site under current conditions.

Initially, it was assumed that occupants of the off-site one-story building located adjacent to monitoring well MW-3 could potentially be exposed (theoretically) to VOCs originating from ground water via inhalation of indoor air. However, this potential exposure pathway was further evaluated in Section 6 - Assessment of Potential Interim Remedial Measures, and will be eliminated as a potential exposure pathway. As discussed in Section 6, this potential exposure pathway is not considered to pose a substantial risk to building occupants based on a comparison of ground-water data from MW-3 to promulgated ground-water standards derived to be protective of indoor air exposures.

East Farmingdale municipal supply wells located approximately 1.75 miles southeast of the HWD site are not considered to be off-site exposure points, because no constituents of interest related to the HWD site were detected in the municipal supply wells, according to the most recent water quality report.

Under future conditions, complete exposure pathways could exist if the HWD site were developed for residential use and/or private water supply wells were installed at the site under a " no-action" scenario. If the concrete surface cover was removed, complete exposure pathways may exist for excavation workers, commercial/industrial workers, trespassers, and ecological receptors. Under both hypothetical future scenarios, receptors could potentially be exposed to soils via incidental ingestion, dermal contact, and inhalation of particulates. In the unlikely event that a private well is installed at the site, hypothetical commercial/industrial workers or residents may be exposed to site-related constituents in ground water via ingestion, dermal contact, and inhalation of vapors. Complete ground-water exposure pathways could also exist for East Farmingdale Water District customers if site-related constituents of interest were detected in downgradient municipal supply wells in the future; however, recent analytical results for

the municipal supply wells do not indicate that such exposures are likely, and the data presented in this report suggests that it is extremely unlikely that site-related constituents would ever reach these wells. Potentially complete exposure pathways exist for commercial/industrial workers or hypothetical future residents at the site if exposed to VOCs originating from ground water beneath the site. Under this scenario, VOCs from ground water may infiltrate to indoor air within future on-site and nearby off-site buildings.

6. Assessment of Potential Interim Remedial Measures

6.1 General

According to Part 375 of Subchapter B, Chapter IV, Title 6 of the *Official Compilation of Codes, Rules and Regulations of the State of New York* (i.e., 6 NYCRR 375), an interim remedial measure (IRM) is a discrete set of activities that can be undertaken without extensive investigation and evaluation to prevent, mitigate, or remedy environmental damage or the consequences of environmental damage attributable to a site.

An IRM may be conducted to address an emergency or non-emergency condition, and may include, but is not limited to, the following activities:

- removals of wastes and other impacted materials, including environmental media;
- construction of diversion ditches, collection systems, or leachate collection systems;
- construction of fences or other barriers; and
- installation of water filters or provision otherwise of alternative water supplies.

Based on the results of the RI, and the Qualitative Exposure Assessment presented in Section 5 of this RI Report, it has been determined that current site conditions do not presently warrant completing an IRM at the HWD site. The need for an IRM was evaluated considering current site conditions, constituent concentrations in soil and ground water at the HWD site, and the potential for exposure to those constituents. This information was used to identify conditions that could pose an imminent and/or significant risk of harm to human health, safety, or the environment. The focus of the IRM evaluation was on actual or likely exposures to human and environmental receptors, considering the current use of the site and the surrounding area, and considering those conditions expected to exist at the site until the final site remedy is completed.

6.2 Assessment of IRMs to Address Releases/Threats of Release

As discussed in Section 1.3.2, HWD operated a hazardous waste storage, transfer, and recycling facility at the site from approximately 1979 to 1982, when the facility closed. All wastes and waste management tanks were reportedly removed from the site during 1984. The site is currently paved with concrete and is used as a storage/parking lot for overnight delivery trucks. During the RI, no conditions were observed that suggested the occurrence of recent or ongoing releases or indicated a threat of release to the environment. For example, all waste materials were removed from the site in 1984, and there have been no drums, barrels, tanks, piles, or other bulk storage containers containing potentially hazardous wastes that could potentially pose a threat of release at the site. The primary constituents of interest at the site (chlorinated VOCs) were not detected at levels above conservative NYSDEC TAGM 4046 guidance values in soils in contact with the water table (i.e., saturated zone soils). Additionally, no conditions were observed that would tend to exacerbate site conditions if not promptly addressed. For instance, non-aqueous phase liquid (NAPL) was not encountered during any intrusive activities conducted during the RI. Where the conservative TAGM 4046 guidance values were exceeded, the data were limited to a small number of sample locations in unsaturated zone soils.

6.3 Assessment of Potential Soil IRMs

As part of the IRM evaluation, analytical results from the RI were screened using USEPA Region 3 RBCs for occupational exposures to soils located in industrial settings, consistent with current land use at the site. USEPA Region 3 RBCs for exposures to industrial soils are based on USEPA toxicity factors (reference doses and cancer slope factors) and USEPA standard default occupational exposure factors and equations. The RBCs for industrial soils are based on adult occupational exposure, and on the assumption that 50% of total soil ingestion is work-related.

The comparison of RI soil data to USEPA Region 3 RBCs indicates that one constituent, tetrachloroethene, exceeded its RBC. The tetrachloroethene concentration in soil boring SB-5 (0 to 2 feet below grade) was 170 mg/kg, and its RBC is 110 mg/kg. Tetrachloroethene was not detected above its RBC in any of the other soil boring samples; therefore, the average site-wide tetrachloroethene concentration is well below its RBC. No other constituents were detected at levels above corresponding USEPA Region 3 RBCs in site soils.

Furthermore, as was discussed in Section 5, the site is entirely paved with concrete, and soils are not currently accessible to human or ecological receptors. Therefore, no soil exposure points currently exist within the site property, and no complete exposure pathways were identified under current conditions within the boundaries of the site. Two potentially complete pathways involving off-site exposure points were evaluated in the exposure assessment, as discussed below.

According to 6 NYCRR 375, an IRM may include soil removal or other remedial actions to address soils. Based on the above risk-based comparison and current site conditions (i.e., the presence of pavement), soil remedial actions are not currently necessary to reduce or prevent potential exposures to soils. During the RI, soil samples from two depth intervals were selected for analysis from each soil boring. At each boring, one soil sample was selected from the interval that exhibited the highest PID measurement or contained stained soil. The other soil sample was collected from the depth interval directly above the water table. At certain boring locations (e.g., SB-5, SB-8, and SB-16), the first sample was collected from the 0 to 2 foot depth interval, and the second sample was collected directly above the water table at depths ranging from 10 to 14 feet below grade. Surficial soil data (i.e., 0 to 2 feet below grade) from these borings indicate the presence of constituents of interest at levels above the NYSDEC TAGM 4046 guidance values, the TAGM 3028 "Contained In" criteria, and USEPA Region 3 RBCs.

Additional soils data may be needed to delineate the horizontal extent of site-related constituents of interest. Without completing the delineation of site soils impacts evidenced to date, potential remedial alternatives for soil cannot be reliably evaluated in terms of feasibility, implementability, or cost. Therefore, potential soil remedial actions will be formally evaluated following the collection of additional soil data. As soil IRMs are not currently warranted to address potential risks to human or environmental receptors, future soil remedial actions will be fully evaluated as part of the FS.

6.4 Assessment of Potential Ground-Water IRMs

A limited number of VOCs, SVOCs, and three metals were detected at levels above NYSDEC Ground-Water Quality Standards/Guidance Values in monitoring well samples collected during the RI. The nearest downgradient East Farmingdale municipal supply wells are located approximately 1.75 miles southeast of the HWD site. Therefore, East Farmingdale municipal supply wells 4-1 and 4-2 were evaluated as potential exposure points in the qualitative exposure assessment.

The East Farmingdale Water District routinely collects samples from each municipal supply well for analysis of various parameters, including the VOC constituents detected at levels above NYSDEC Ground-Water Quality Standards/Guidance Values at the HWD site. According to the most recent water quality report from the water district, no constituents of interest related to the HWD site were detected in samples collected from the municipal supply wells (East Farmingdale Water District, 2000a). Additionally, no constituents were detected at levels above regulatory limits in municipal supply well samples collected during 1999 (East Farmingdale Water District, 2000c). These data indicate that persons served with potable water from the East Farmingdale Water District are not exposed to site-related constituents of interest in ground water; therefore, the qualitative exposure assessment outlined in Section 5 concluded that the downgradient municipal supply wells are not current exposure points.

Comparison of Ground-Water Data to Medium-Specific Standards Protective of Indoor Air Exposures

Due to the presence of VOCs in ground water, potential exposure points were evaluated with respect to the potential for infiltration of VOCs into the indoor air of an occupied building located southeast of the HWD site. Analytical results for ground-water samples collected during the RI indicated the presence of a total of five VOCs (1,2-dichloroethene, toluene, chlorobenzene, ethylbenzene, and xylenes) in monitoring well MW-3, located adjacent to the building. Of these five VOCs, four were not believed to be related to the historical HWD site operations, but were still evaluated as an added measure of conservatism. Persons working inside the building could potentially be exposed to VOCs originating from ground water if there were migration of VOCs to indoor air. However, the following discussion demonstrates why this is not considered a potentially completed exposure pathway.

To determine whether IRMs are necessary to mitigate or prevent potential exposures to VOCs in indoor air, analytical results from MW-3 were compared to "Method 1 GW-2" ground-water standards derived by the Massachusetts Department of Environmental Protection (MDEP) to be protective of indoor air exposures. The MDEP Method 1 standards are chemical-specific cleanup standards derived by the MDEP for use under the Massachusetts Contingency Plan (MCP; 310 CMR 40.0000). In Massachusetts, the MCP Method 1 standards are used to determine whether remediation is necessary at a site, and when no further remedial actions are necessary. The MCP Method 1 standards are intended to represent levels of "oil or hazardous materials" at which no further remedial response actions would be required based on the risk of harm to human health. Method 1 standards are conservative values derived to be protective of a wide range of site conditions.

MCP Method 1 GW-2 standards apply to shallow ground water when there is currently a structure built on the land above the ground water. The GW-2 standards address the potential migration of VOCs from the ground water into the indoor air. The model used to develop the MCP GW-2 standards adopts an attenuation factor (5×10^{-4}) identified from Johnson and Ettinger (1991) for highly permeable soils. The attenuation factor relates the indoor air concentration to the soil-gas concentration at the surface of the ground water. In the derivation of the GW-2 standards, it is assumed that the receptors are continually exposed to the indoor air (i.e., a residential scenario, rather than an occupational scenario, is used to derive the GW-2 standards).

As shown in the table presented below, constituent concentrations detected in MW-3 did not exceed the MCP GW-2 ground-water standards. The results of duplicate analyses are shown in parentheses.

Constituent	MW-3 (ug/L)	MCP GW-2 Ground-Water Standard (ug/L)
cis-1,2-dichloroethene	14 J (14 J)	20,000
Toluene	200 J (200 J)	6,000
Chlorobenzene	69 J (67 J)	1,000
Ethylbenzene	1,200 (1,100)	30,000
Xylenes	4,400 (4,500)	6,000

This comparison indicates that constituents detected in ground water at MW-3 do not pose a significant risk to building occupants via the indoor air inhalation pathway.

6.5 Summary

The need for IRMs was evaluated considering current site conditions, the data generated during the RI, and the results of the qualitative exposure assessment. Based on the evaluation presented above, no IRMs are currently warranted to address current site conditions (i.e., no ongoing releases or threats of release were identified during the RI), or site-related constituents of interest detected in soils or ground water.

The need for conducting IRMs to address site conditions will be evaluated on a continual basis as additional information regarding the site is obtained. Additionally, the need for conducting IRMs will be evaluated if current site conditions (e.g., land use, potential receptors, physical features) change significantly before identification and implementation of the final site remedy.

7. Summary and Conclusions

This section presents summary conclusions that have been developed based upon the implementation of the RI Work Plan tasks as defined in Section 1, and from the available information generated through the RI activities.

Task 1 - Area Reconnaissance and Mapping

The results of the geophysical survey identified a reinforced slab located in the southern portion of the site, which coincides with the location of the former sludge pit that was historically used to manage sludges incidental to the neutralization of acid and solutions from the acid/base mix tank. Besides identifying the reinforced concrete slab and the location of the sludge pit, the geophysical survey also identified the subsurface drainage structures (manholes and stormwater conveyance piping) (Figure 1-2). The locations and orientations of these features are consistent with the historical information reviewed for the site.

Task 2 - Soils Investigation

Analytical results indicate that tetrachloroethene was detected at measurable levels in 19 of 22 soil samples that included all soil boring locations except SB-9. However, tetrachloroethene was detected above the NYSDEC TAGM 4046 guidance value, USEPA Region 3 RBC, USEPA Region 9 PRG, and the NYSDEC TAGM 3028 soil action level in shallow soils only in the vicinity of the former sludge pit, suggesting that these soil impacts are highly localized. Other constituents detected in soils above the NYSDEC TAGM 4046 guidance values included five VOCs (benzene, ethylbenzene, toluene, trichloroethene, and xylenes) and two SVOCs (benzo(a)pyrene and phenol). Inorganic compounds detected are naturally-occurring and were not detected above site background levels. The concentrations were generally well below USEPA Region 3 RBCs, USEPA Region 9 PRGs, and the NYSDEC TAGM 3028 soil action levels, and in most instances were only marginally above the TAGM 4046 guidance values. Due to current site conditions, it is not likely these constituents represent a continuing impact to ground-water quality beneath and in the vicinity of the site. Currently, the site is covered with concrete which minimizes surface water infiltration to the soil column, consequently limiting any potential for partitioning of constituents in soils to ground water. Moreover, constituents with concentrations above the guidance values were generally found in the shallow site soils, well above the water table. Also, no incidental direct contact risk is present due to the soil being covered with concrete. A minor amount of further soils delineation in the vicinity of the former sludge would be appropriate to allow for impacted soils to be evaluated in the FS.

During the implementation of Task 2 - Soils Investigation and Task 3 - Ground-Water Investigation, soil borings/Hydropunch™ sampling locations and monitoring well boreholes were installed in the Upper Glacial Aquifer to characterize this unit. The native subsurface materials primarily consist of tan, fine to coarse, subangular to subrounded sand and gravel with trace amounts of fines (silt and clay). Construction debris (described as brick and concrete fragments) in the disturbed area, and fill material (consisting of dark brown, fine to coarse sand and medium to coarse gravel, with concrete fragments) were encountered to approximately 6 feet bgs, mainly in the vicinity of the former sludge pit and towards the southeastern site boundary with the neighboring property.

Task 3 - Ground-Water Investigation

Task 3 characterized the ground-water quality and subsurface hydrogeologic conditions at the site. Based on the January 20, 2000 ground-water depth measurements obtained from the site monitoring wells, the ground-water flow direction beneath the site was confirmed towards the southeast, consistent with prior determinations. The horizontal component of the hydraulic gradient in the Upper Glacial Aquifer observed across the site and in the vicinity of the site ranged from 0.001 to 0.002 ft/ft. The vertical component of the hydraulic gradient within the uppermost 65 feet of the Upper Glacial Aquifer at monitoring well cluster MW-1/MW-1D was upward with a magnitude of 0.004 ft/ft. The estimated average linear ground-water flow velocity ranged from 0.021 ft/day (8 ft/year) to 0.042 ft/day (15 ft/year).

Hydropunch™ ground-water field screening results indicate concentrations of benzene, tetrachloroethene, and trichloroethene were detected at Hydropunch™ locations above their respective NYSDEC Ground-Water Quality Standards/Guidance Values. As discussed in Section 4.4.1, Hydropunch™ sampling provides field screening level results only and while a useful screening tool, may not be truly indicative of actual dissolved phase ground-water quality at a receptor point. The analytical results may be influenced substantially from the effects of VOCs adsorbed onto colloidal matter in the sample volume, as opposed to constituents dissolved in ground water. This observation is supported by the high turbidity levels in the Hydropunch™ sample volumes, and the fact that tetrachloroethene was the only VOC detected in monitoring well ground-water samples above the NYSDEC Ground-Water Quality Standards/Guidance Values at well locations where former site operations were conducted. Analytical results of the samples collected using the Hydropunch™ field screening technique at locations hydraulically downgradient of the site (HP-11 and HP-15), indicate cis-1,2-dichloroethene, ethylbenzene, tetrachloroethene, toluene, trichloroethene, and xylenes were detected in ground water above their respective NYSDEC Ground-Water Quality Standards/Guidance Values. These data, combined with the results of the historical information discussed in Section 1.3.2, indicate that a source of fuel-related constituents may be located somewhere near the southeastern site boundary or on an adjacent property.

Upgradient ground-water quality at the site has changed significantly since the last sampling and analysis event, as data collected during this current RI indicate only low levels of organic compounds were detected and none of the compounds exceeded their specific criteria. Overall, concentrations of constituents in ground water have decreased significantly over time since the initial site investigation by Gibbs & Hill in 1991.

Low concentrations of VOCs were detected at concentrations below their respective NYSDEC Ground-Water Quality Standards/Guidance Values at monitoring wells located hydraulically upgradient and/or sidegradient of the site (MW-1, MW-1D, MW-4, MW-5, and MW-6). These VOCs included 1,1-dichloroethene, 1,1-dichloroethane, cis-1,2-dichloroethene, 1,1,1-trichloroethane, trichloroethene, and tetrachloroethene. According to the VISTA report (discussed in Section 3.1.3 of this report), historical information reviewed concerning prior UST releases from adjacent properties, and analytical results from this RI, low levels of VOCs have historically been regionally detected in ground water, indicating there are other sources of VOCs external to the HWD site which have effected regional ground-water quality. Although RI analytical results do not indicate site constituents of interest related to historical site activities being detected in ground water downgradient of the site (with the exception of cis-1,2-dichloroethene), historic analytical results indicate several VOCs (cis-1,2-dichloroethene, tetrachloroethene, trichloroethene, and 1,1,1-trichloroethane) have been detected in ground water both at the site and downgradient of the site. Since tetrachloroethene was the only site-related constituent detected above NYSDEC Ground-Water Quality Standards/Guidance Values during the RI, and only low estimated concentrations of cis-1,2-dichloroethene were detected in shallow ground water beneath the site, the source of the other organic constituents detected in shallow ground water downgradient of the site (chlorobenzene, ethylbenzene, toluene, and xylenes, 2,4-dimethylphenol, and naphthalene) may be external to the HWD site. Additionally, diesel range organics were only detected in ground water at well MW-3, further suggesting another off-site source of these constituents.

Three metals including iron, manganese, and sodium were detected in ground water both hydraulically upgradient and downgradient of the site. Manganese and sodium were also detected in ground water at the site (MW-2D). However, the concentrations of these metals are representative of background regional ground water according to published literature by the USGS and others, and a comparison of upgradient well analytical results to downgradient well analytical results.

An additional shallow monitoring well may be installed hydraulically downgradient of the site, either between the site and monitoring well MW-3, or southeast of monitoring well cluster MW-2, to complete further horizontal delineation of potential site-related impacts to ground water. Following installation, another round of ground-water sampling could be performed using USEPA low-flow purging and sampling procedures at all existing and newly-

installed monitoring wells. This sampling would provide additional data to assess the temporal changes in ground-water quality, and use of the low-flow purging and sampling procedures could be used to further assess the influence of suspended colloidal matter in the sample volume on measured VOC concentrations.

Task 4 - Assessment of Air Emissions

As discussed in Section 2.5, the results of air monitoring activities did not indicate any air emissions above background during the implementation of RI field activities.

Task 5 - Qualitative Exposure Assessment

Task 5 was based on site-specific information and the results of the RI, and indicates that no complete exposure pathways were identified for human or ecological receptors within the boundaries of the HWD site under current conditions. Initially, the assessment hypothesized (theoretically) that a complete exposure pathway could currently exist at an exposure point identified at a location downgradient from the HWD site. Specifically, occupants of the off-site one-story building located adjacent to monitoring well MW-3 could theoretically be exposed to VOCs originating from ground water via inhalation of indoor air. However, this potential exposure pathway is not considered to pose a substantial risk to building occupants based on a comparison of ground-water data from well MW-3 to promulgated numeric standards for ground water derived to be protective of indoor air exposures, and is considered incomplete.

The exposure assessment indicated that, under future conditions, complete exposure pathways could theoretically exist only if the HWD site were developed for residential use and/or private water supply wells were installed at the site, which is extremely unlikely given the site location and local zoning regulations. If the concrete surface cover were removed, complete exposure pathways may exist for excavation workers, commercial/industrial workers, trespassers, and ecological receptors. Under both hypothetical future scenarios, receptors could potentially be exposed to soils via incidental ingestion, dermal contact, and inhalation of vapors or particulates. In the unlikely event that a private well is installed at the site, hypothetical commercial/industrial workers or residents may be exposed to site-related constituents in ground water via ingestion, dermal contact, and inhalation of vapors. Complete ground-water exposure pathways could also exist for East Farmingdale Water District customers if site-related constituents of interest were detected in downgradient municipal supply wells in the future; however, recent analytical results for the municipal supply wells do not indicate that such exposures are likely, and the results of the fate and transport assessment in Section 4.5 indicate the potential for transport of site-related constituents in ground water to this potential receptor point is remote. Potentially complete exposure pathways exist for commercial/industrial workers or hypothetical future residents exposed to VOCs originating from ground water beneath the site. Under this scenario, VOCs from ground water may infiltrate to indoor air within future on-site and nearby off-site buildings.

Task 6 - Assessment of Potential IRMs

Task 6 was conducted considering current site conditions and the results of the qualitative exposure assessment. No IRMs are currently warranted to address current site conditions. The need for conducting IRMs to address site conditions will be evaluated on a continual basis as additional information regarding the site is obtained. Additionally, the need for conducting IRMs will be evaluated if current site conditions change before implementation of the final site remedy.

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Table 2-1
Sample Analysis Summary
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Farmingdale, New York

SAMPLE NUMBER	SAMPLE DEPTH (ft)	HYDROPUNCH/BORING LOCATION	APPROXIMATE DEPTH TO WATER TABLE (ft)	SAMPLE SELECTION RATIONALE	SAMPLE MEDIUM	LABORATORY ANALYTICAL PARAMETERS	SAMPLING METHOD
HP-1A	18	HP-1 Hydraulically upgradient of the recharge basin.	12-14	3 to 5 feet below the water table	Aqueous	TCL VOCs	HydroPunch Sampler
HP-1B	46			30 feet below the water table	Aqueous		
HP-1C	74			60 feet below the water table	Aqueous		
HP-1D	96			90 feet below the water table	Aqueous		
HP-2A	22	HP-2 Hydraulically downgradient of the recharge basin.	14	3 to 5 feet below the water table	Aqueous	TCL VOCs	HydroPunch Sampler
HP-2B	44			30 feet below the water table	Aqueous		
HP-2C	74			60 feet below the water table	Aqueous		
HP-2D	96			90 feet below the water table	Aqueous		
HP-3A	19	HP-3 Hydraulically downgradient of the recharge basin.	14-16	3 to 5 feet below the water table	Aqueous	TCL VOCs	HydroPunch Sampler
HP-3B	44			30 feet below the water table	Aqueous		
HP-3C	74			60 feet below the water table	Aqueous		
HP-3D	96			90 feet below the water table	Aqueous		
SB-4A	4-6	SB-4/HP-4 Former waste handling and tank storage area.	12	Directed by field screening results*	Soil	TCL VOCs, TCL SVOCs, PCBs, TAL inorganic constituents, grain size analysis, and TOC.	Split-spoon sampler and stainless steel spatula
SB-4B	10-12			2 foot depth interval above the water table	Soil		
HP-4A	18			3 to 5 feet below the water table	Aqueous	TCL VOCs	HydroPunch Sampler
HP-4B	42			30 feet below the water table	Aqueous		
HP-4C	72			60 feet below the water table	Aqueous		
HP-4D	95			90 feet below the water table	Aqueous		
SB-5A	0-2	SB-5/HP-5 Former sludge pit.	13	Directed by field screening results*	Soil	TCL VOCs, TCL SVOCs, PCBs, TAL inorganic constituents, grain size analysis, and TOC. Sample SB-5A was also analyzed for TCL pesticides.	Split-spoon sampler and stainless steel spatula
SB-5B	10-12			2 foot depth interval above the water table	Soil		
HP-5A	17			3 to 5 feet below the water table	Aqueous	TCL VOCs	HydroPunch Sampler
HP-5B	43			30 feet below the water table	Aqueous		
HP-5C	73			60 feet below the water table	Aqueous		
HP-5D	96			90 feet below the water table	Aqueous		
SB-6A	8-10	SB-6/HP-6 Former hazardous waste storage and treatment area, baised toward a former AST.	14	Directed by field screening results*	Soil	TCL VOCs, TCL SVOCs, PCBs, TAL inorganic constituents, grain size analysis, and TOC.	Split-spoon sampler and stainless steel spatula
SB-6B	12-14			2 foot depth interval above the water table	Soil		
HP-6A	18			3 to 5 feet below the water table	Aqueous	TCL VOCs	HydroPunch Sampler
HP-6B	44			30 feet below the water table	Aqueous		
HP-6C	74			60 feet below the water table	Aqueous		
HP-6D	96			90 feet below the water table	Aqueous		
SB-7A	8-10	SB-7/HP-7 Northeastern portion of the site.	14	Directed by field screening results*	Soil	TCL VOCs, TCL SVOCs, PCBs, TAL inorganic constituents, grain size analysis, and TOC.	Split-spoon sampler and stainless steel spatula
SB-7B	12-14			2 foot depth interval above the water table	Soil		
HP-7A	19			3 to 5 feet below the water table	Aqueous	TCL VOCs	HydroPunch Sampler
HP-7B	44			30 feet below the water table	Aqueous		
HP-7C	74			60 feet below the water table	Aqueous		
HP-7D	96			90 feet below the water table	Aqueous		
SB-8A	0-2	SB-8/HP-8 Former drum storage area and the location of five former ASTs.	14	Directed by field screening results*	Soil	TCL VOCs, TCL SVOCs, PCBs, TAL inorganic constituents, grain size analysis, and TOC. Sample SB-8A was also analyzed for TCL pesticides.	Split-spoon sampler and stainless steel spatula
SB-8B	12-14			2 foot depth interval above the water table	Soil		
HP-8A	18			3 to 5 feet below the water table	Aqueous	TCL VOCs	HydroPunch Sampler
HP-8B	44			30 feet below the water table	Aqueous		
HP-8C	74			60 feet below the water table	Aqueous		
HP-8D	96			90 feet below the water table	Aqueous		

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Sample Analysis Summary
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SAMPLE NUMBER	SAMPLE DEPTH (ft)	HYDROPUNCH/BORING LOCATION	APPROXIMATE DEPTH TO WATER TABLE (ft)	SAMPLE SELECTION RATIONALE	SAMPLE MEDIUM	LABORATORY ANALYTICAL PARAMETERS	SAMPLING METHOD
SB-9A	10-12	SB-9/HP-9 Former shed.	14	Directed by field screening results*	Soil	TCL VOCs, TCL SVOCs, PCBs, TAL inorganic constituents, grain size analysis, and TOC. Sample SB-9A was also analyzed for TCL pesticides.	Split-spoon sampler and stainless steel spatula
SB-9B	12-14			2 foot depth interval above the water table	Soil		
HP-9A	19			3 to 5 feet below the water table	Aqueous	TCL VOCs	HydroPunch Sampler
HP-9B	44			30 feet below the water table	Aqueous		
HP-9C	74			60 feet below the water table	Aqueous		
HP-9D	96			90 feet below the water table	Aqueous		
SB-10A	8-10	SB-10/HP-10 Southern portion of the site.	14	Directed by field screening results*	Soil	TCL VOCs, TCL SVOCs, PCBs, TAL inorganic constituents, grain size analysis, and TOC.	Split-spoon sampler and stainless steel spatula
SB-10B	12-14			2 foot depth interval above the water table	Soil		
HP-10A	18			3 to 5 feet below the water table	Aqueous	TCL VOCs	HydroPunch Sampler
HP-10B	44			30 feet below the water table	Aqueous		
HP-10C	74			60 feet below the water table	Aqueous		
HP-10D	96			90 feet below the water table	Aqueous		
SB-11A	10-12	SB-11/HP-11 Southeast of the approximate site boundary.	14	Directed by field screening results*	Soil	TCL VOCs, TCL SVOCs, PCBs, TAL inorganic constituents, grain size analysis, and TOC.	Split-spoon sampler and stainless steel spatula
SB-11B	12-14			2 foot depth interval above the water table	Soil		
HP-11A	18			3 to 5 feet below the water table	Aqueous	TCL VOCs	HydroPunch Sampler
HP-11B	44			30 feet below the water table	Aqueous		
HP-11C	74			60 feet below the water table	Aqueous		
HP-11D	96			90 feet below the water table	Aqueous		
SB-12A	4-6	SB-12/HP-12 East of the approximate site boundary.	14	Directed by field screening results*	Soil	TCL VOCs, TCL SVOCs, PCBs, TAL inorganic constituents, grain size analysis, and TOC.	Split-spoon sampler and stainless steel spatula
SB-12B	12-14			2 foot depth interval above the water table	Soil		
HP-12A	18			3 to 5 feet below the water table	Aqueous	TCL VOCs	HydroPunch Sampler
HP-12B	44			30 feet below the water table	Aqueous		
HP-12C	74			60 feet below the water table	Aqueous		
HP-12D	96			90 feet below the water table	Aqueous		
HP-13A	29	HP-13 Adjacent to MW-1D	24-26	3 to 5 feet below the water table	Aqueous	TCL VOCs	HydroPunch Sampler
HP-13B	59			30 feet below the water table	Aqueous		
HP-13C	89			60 feet below the water table	Aqueous		
HP-13D	99			90 feet below the water table	Aqueous		
HP-14A	18	HP-14 Adjacent to MW-2D	12-14	3 to 5 feet below the water table	Aqueous	TCL VOCs	HydroPunch Sampler
HP-14B	44			30 feet below the water table	Aqueous		
HP-14C	74			60 feet below the water table	Aqueous		
HP-14D	96			90 feet below the water table	Aqueous		
HP-15A	18	HP-15 Hydraulically downgradient and south of the site.	12-14	3 to 5 feet below the water table	Aqueous	TCL VOCs	HydroPunch Sampler
HP-15B	44			30 feet below the water table	Aqueous		
HP-15C	74			60 feet below the water table	Aqueous		
HP-15D	96			90 feet below the water table	Aqueous		
SB-16A	0-2	SB-16 Former hazardous waste storage and treatment area.	14	Directed by field screening results*	Soil	TCL VOCs, TCL SVOCs, PCBs, TAL inorganic constituents, grain size analysis, and TOC.	Split-spoon sampler and stainless steel spatula
SB-16B	12-14			2 foot depth interval above the water table	Soil		

Table 2-1
Sample Analysis Summary
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SAMPLE NUMBER	HYDROPUNCH/BORING LOCATION	SAMPLE SELECTION RATIONALE	SAMPLE MEDIUM	LABORATORY ANALYTICAL PARAMETERS	SAMPLING METHOD
MW-1	Monitoring Well	Water table zone of aquifer.	Aqueous	TCL VOCs, TCL SVOCs, PCBs, TAL inorganic constituents, TPH, dissolved oxygen, pH, total dissolved soilds of total suspended solids.	Teflon Bailer
MW-1D	Monitoring Well	Deep ground-water zone aquifer.	Aqueous		
MW-2	Monitoring Well	Water table zone of aquifer.	Aqueous		
MW-2D	Monitoring Well	Deep ground-water zone aquifer.	Aqueous		
MW-3	Monitoring Well	Water table zone of aquifer.	Aqueous		
MW-3D	Monitoring Well	Deep ground-water zone aquifer.	Aqueous		
MW-4	Monitoring Well	Water table zone of aquifer.	Aqueous		
MW-5	Monitoring Well	Water table zone of aquifer.	Aqueous		
MW-6	Monitoring Well	Water table zone of aquifer.	Aqueous		

NOTES:

* If the field screening did not indicate an impacted soil zone, one soil sample was collected from aproximately the mid-depth of the soil boring, between the water table and ground surface.

Depths are reported in feet and are referenced from ground surface.

TCL - Target Compound List
TAL- Target Analyte List
VOCs - Volatile Organic Compounds
SVOCs -Semivolatile Organic Compounds
PCBs - Polychorinated Biphenyls
TOC - Total Organic Carbon
TPH - Total Petroleum Hydrocarbons

Table 2-2
Summary of General Water Quality Parameters
in Ground-Water HydroPunch Samples
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Hydropunch Sample Location	Depth (ft)	Date Collected	pH (Standard Units)	Specific Conductance (mS/cm)	Temperature (°C)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)
HP-4A	18	11/30/99	6.39	0.149	8.3	97.3	10.96	112
HP-4B	42	11/30/99	6.97	0.076	8.8	394.2	11.94	181
HP-4C	72	12/1/99	6.38	0.329	8.5	999	7.23	71
HP-4D	95	12/1/99	6.71	0.155	10.1	999	8.81	138
HP-5A	17	12/1/99	5.78	0.162	7.0	424	6.06	115
HP-5B	43	12/1/99	6.67	0.358	9.4	999	1.88	116
HP-5C	73	12/2/99	7.12	0.215	7.1	999	5.25	138
HP-5D	96	12/2/99	9.14	0.201	10.9	999	7.45	107
HP-10A	18	12/2/99	7.63	0.187	12.4	830	5.88	-8
HP-10B	44	12/2/99	8.21	0.305	11.7	999	4.64	102
HP-10C	74	12/2/99	9.29	0.218	12.2	999	9.21	104
HP-10D	96	12/2/99	10.01	0.182	13.1	999	9.25	66
HP-12A	18	12/3/99	6.78	0.169	13.74	541	6.58	179
HP-12B	44	12/6/99	6.54	0.341	14.72	171	1.93	127
HP-12C	74	12/6/99	7.75	0.154	14.37	999	9.68	180
HP-12D	96	12/6/99	7.98	0.100	14.61	999	9.19	209
HP-3A	19	12/6/99	6.99	0.419	14.38	999	1.45	-108
HP-3B	44	12/7/99	6.01	0.276	12.46	999	2.4	55
HP-3C	74	12/7/99	7.53	0.248	11.77	999	0.91	-120
HP-3D	96	12/7/99	7.19	0.227	12.83	999	8.66	116
HP-11A	18	12/7/99	6.75	0.341	14.46	782	3.59	-32
HP-11B	44	12/7/99	7.01	0.198	13.04	999	10.61	-6
HP-11C	74	12/8/99	4.93	0.523	12.25	999	7.51	122
HP-11D	96	12/8/99	6.78	0.101	11.5	999	11.17	-18
HP-8A	18	12/9/99	6.38	0.208	14.1	999	5.73	24
HP-8B	44	12/9/99	6.77	0.322	15.45	999	4.19	96
HP-8C	74	12/9/99	7.40	0.195	15.51	999	7.6	94
HP-8D	96	12/9/99	7.91	0.094	15.34	999	10.73	139
HP-14A	18	12/10/99	6.01	0.170	14.28	999	6.31	94
HP-14B	44	12/10/99	6.46	0.311	14.54	999	4.01	122
HP-14C	74	12/10/99	7.14	0.248	14.16	999	2.93	-9
HP-14D	96	12/10/99	7.72	0.168	14.01	999	6.34	101
HP-13A	29	12/13/99	5.88	0.124	13.4	999	8.84	223
HP-13B	61	12/13/99	6.13	0.255	13.44	999	4.21	186
HP-13C	81	12/13/99	6.65	0.892	14.53	999	11.41	227
HP-13D	99	12/13/99	6.63	0.192	14.37	999	10.54	179
HP-7A	19	12/14/99	6.52	0.235	12.67	999	6.89	235
HP-7B	44	12/14/99	7.70	0.245	12.86	999	5.33	239
HP-7C	74	12/14/99	8.06	0.184	14.2	999	6.9	185
HP-7D	96	12/14/99	8.46	0.208	12.14	999	6.35	91
HP-1A	18	12/15/99	5.88	0.250	12.59	999	7.7	265
HP-1B	46	12/15/99	5.86	0.149	12.88	999	8.75	57
HP-1C	74	12/16/99	6.03	0.234	14.25	999	8.04	12

Table 2-2
Summary of General Water Quality Parameters
in Ground-Water HydroPunch Samples
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Hazardous Waste Disposal, Inc.
Farmingdale, New York

Hydropunch Sample Location	Depth (ft)	Date Collected	pH (Standard Units)	Specific Conductance (mS/cm)	Temperature (°C)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)
HP-1D	96	12/16/99	6.60	0.086	15.32	999	7.88	123
HP-6A	18	12/16/99	6.17	0.187	12.9	999	2.64	-12
HP-6B	44	12/16/99	6.44	0.190	13.63	999	1.92	3
HP-6C	74	12/17/99	6.83	0.213	12.2	999	2.48	-47
HP-6D	96	12/17/99	7.09	0.131	11.72	999	9.51	115
HP-15A	18	12/20/99	6.07	0.481	13.73	999	1.69	-59
HP-15B	44	12/20/99	8.92	0.146	12.23	999	6.49	24
HP-15C	74	12/20/99	7.69	0.287	11.95	999	5.48	-37
HP-15D	96	12/20/99	7.46	0.300	12.59	999	0.95	-105
HP-9A	19	12/21/99	5.79	0.174	12.5	999	3.82	82
HP-9B	44	12/21/99	7.12	0.112	12	999	10.25	55
HP-9C	74	12/21/99	7.30	0.196	13.77	999	0.98	-83
HP-9D	96	12/21/99	7.85	0.153	13.78	999	12.74	82
HP-2A	22	12/22/99	6.36	0.219	10.8	999	1.59	74
HP-2B	44	12/22/99	8.77	0.157	12.58	999	5.24	31
HP-2C	74	12/22/99	7.28	0.291	12.01	999	5.17	-27
HP-2D	96	12/22/99	6.11	0.252	9.85	999	2.03	101

Notes:
> 999 for Turbidity Over the Range
ft. - feet
mS/cm - milliSiemens per centimeter
^{0}C - Degrees Celsius
NTUs - Nephelometric Turbidity Units
mg/L - milligrams per liter
mV - millivolts

Table 2-3
Monitoring Well Construction Details
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Location	Ground Surface Elevation	Reference Point Elevation (TIC)	Well Diameter (inches)	Well Material	Depth to Top of Screen	Depth to Bottom of Screen	Elevation of Well Screen Interval	Depth to Screen Midpoint	Elevation of Screen Midpoint	Unit(s) Monitored	Installation Date
MW-1	78.2	80.63	2	Schedule 40 PVC	13	28	65.2 to 50.2	20.5	57.7	Upper Glacial Aquifer	9/4/90
MW-1D	78.22	81.54	4	Schedule 40 PVC	55	65	23.22 to 13.22	60	18.22	Upper Glacial Aquifer	12/27/99
MW-2	65.68	65.39	2	Schedule 40 PVC	7[a]	22[a]	58.68 to 43.68[a]	14.5[a]	51.18[a]	Upper Glacial Aquifer	9/6/90
MW-2D	65.67	65.2	4	Schedule 40 PVC	40	50	25.67 to 15.67	45	20.67	Upper Glacial Aquifer	12/28/99
MW-3	67.99	67.55	2	Schedule 40 PVC	7[a]	22[a]	60.99 to 45.99[a]	14.5[a]	53.49[a]	Upper Glacial Aquifer	9/5/90
MW-3D	65.17	64.89	4	Schedule 40 PVC	40	50	25.17 to 15.17	45	20.17	Upper Glacial Aquifer	12/30/99
MW-4	67.4	69.69	2	Schedule 40 PVC	7	22	60.4 to 45.4	14.5	52.9	Upper Glacial Aquifer	9/5/90
MW-5	79.44	79.22	4	Schedule 40 PVC	Unknown	Unknown	Unknown	Unknown	Unknown	Upper Glacial Aquifer	Jun-94
MW-6	68	67.72	4	Schedule 40 PVC	Unknown	Unknown	Unknown	Unknown	Unknown	Upper Glacial Aquifer	Jun-94

NOTES:
Depths are measured in feet and referenced from ground surface.
PVC = Polyvinyl chloride.
TIC = Top of Inner Casing.
Monitoring wells MW-1 through MW-4 were installed by Gibbs and Hill, Inc. (Gibbs & Hill) in September 1990; wells MW-5 and MW-6 were installed by Fanning, Phillips, and Molnar (FP&M) in June 1994
a = The monitoring well construction logs for wells MW-2 and MW-3 indicate the well screen was installed from 7 to 22 feet below ground surface (15-feet screen length); however, the Gibbs & Hill December 1991 report states the well screens are 10 feet in length.

Table 2-4
Ground Water Elevation Data
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Well Identification	Reference Point Elevation	1/20/00		
		Depth to Water (ft.)	Time	Water Level Elevation *
MW-1	80.63	28.19	6:41	52.44
MW-1D	81.54	29.09	6:43	52.45
MW-2	65.39	13.17	6:15	52.22
MW-2D	65.2	12.94	6:18	52.26
MW-3	67.55	15.68	6:56	51.87
MW-3D	64.89	12.96	7:00	51.93
MW-4	69.69	17.44	6:51	52.25
MW-5	79.22	26.21	6:38	53.01
MW-6	67.72	15.31	6:24	52.41

NOTES:
* = Water elevations provided in feet above mean sea level in relation to the North American Vertical Datum 1988.

Table 2-5
Summary of General Water Quality Parameters
in Ground-Water Monitoring Wells
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Well	Time	Date Collected	pH (Standard Units)	Specific Conductance (mS/cm)	Temperature (°C)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)
MW-1	13:20	1/20/00	6.29	0.177	15.17	6	9.25	276
MW-1D	12:48	1/20/00	6.35	0.268	14.38	8	1.95	246
MW-2	8:22	1/20/00	6.15	0.163	12.96	11	8.99	303
MW-2D	9:10	1/20/00	5.85	0.296	13.79	1	2.56	301
MW-3	16:00	1/20/00	6.72	0.472	15.56	11	3.87	15.69
MW-3D	15:16	1/20/00	6.46	0.265	14.42	10	4.53	160
MW-4	14:15	1/20/00	6.66	0.362	15.49	4	2.57	-57
MW-5	11:45	1/20/00	5.29	0.084	15.39	9	8.1	316
MW-6	10:04	1/20/00	6	0.163	13.88	4	8.56	306

Notes:
mS/cm - milliSiemens per centimeter
^{0}C - Degrees Celsius
NTUs - Nephelometric Turbidity Units
mg/L - milligrams per liter
mV - millivolts

Table 3-1
Grain Size and Total Organic Carbon Soil Results
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Soil Boring Location		SB-4		SB-5		SB-6		SB-7	
Sample ID		SB-4A (4-6')	SB-4B (10-12')	SB-5A (0-2')	SB-5B (10-12')	SB-6A (8-10')	SB-6B (12-14')	SB-7A (8-10')	SB-7B (12-14')
Lab Sample Number		172189	172190	172196	172197	175791	175792	174987	174988
Sampling Date	UNITS	11/30/99	11/30/99	12/01/99	12/01/99	12/16/99	12/16/99	12/14/99	12/14/99
Matrix		Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Dilution Factor (TOC Analysis)		1.0	1.0	10.0	1.0	1.0	1.0	5.0	1.0
Total Organic Carbon (TOC)	mg/Kg	123	182	5810	100 U	176	140	3110	1110
Moisture Content	% (Delivered Moisture)	3.05	2.65	6.88	10.7	5.59	11.79	6.18	15.63
GRAIN SIZE	% by weight								
Coarse Gravel		5.03	9.19	2.68	8.89	9.24	9.15	2.12	11.03
Fine Gravel		19.69	21.29	33.04	15.62	12.04	20.53	34.67	6.97
Coarse Sand		11.68	11.69	14.66	13.02	8.93	11.03	15.21	10.44
Medium Sand		33.36	40.3	29.76	41.09	39.14	40.83	33.18	36.68
Fine Sand		28.59	16.46	12.55	20.84	29.9	17.87	12.91	33.82
Fines		1.65	1.06	7.32	0.53	0.75	0.58	1.9	1.07
TOTAL % by Weight		100	100	100	100	100	100	100	100

Notes:

Concentrations are reported in milligrams per Kilogram (mg/Kg).

U = Compound was not detected at the indicated concentration.

BD120999 is the blind duplicate for SB-8A (0-2').

BD122199 is the blind duplicate for SB-9A (10-12').

NA = Not analyzed

Table 3-1
Grain Size and Total Organic Carbon Soil Results
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Soil Boring Location		SB-8			SB-9		
Sample ID		SB-8A (0-2')	BD120999	SB-8B (12-14')	SB-9A (10-12')	BD122199	SB-9B (12-14')
Lab Sample Number		174183	174192	174184	176453	176455	176454
Sampling Date	UNITS	12/09/99	12/09/99	12/09/99	12/21/99	12/21/99	12/21/99
Matrix		Soil	Soil	Soil	Soil	Soil	Soil
Dilution Factor (TOC Analysis)		1.0	1.0	2.0	5.0	10.0	5.0
Total Organic Carbon (TOC)	mg/Kg	5050	4990	1010	3310	3320	2500
Moisture Content	% (Delivered Moisture)	7.54	NA	12.56	6.21	6.02	10.85
GRAIN SIZE	% by weight						
Coarse Gravel		12.77	NA	16.79	5.43	6.41	14.82
Fine Gravel		22.84	NA	12.72	22.4	26.97	27.65
Coarse Sand		13.75	NA	11.17	13.15	11.19	11.39
Medium Sand		28.55	NA	37.25	40.02	37.71	31.9
Fine Sand		12.34	NA	20.04	17.59	16.24	12.89
Fines		9.75	NA	2.03	1.41	1.48	1.34
TOTAL % by Weight		100	NA	100	100	100	100

Notes:

Concentrations are reported in milligrams per Kilogram (mg/Kg).

U = Compound was not detected at the indicated concentration.

BD120999 is the blind duplicate for SB-8A (0-2').

BD122199 is the blind duplicate for SB-9A (10-12').

NA = Not analyzed

Table 3-1
Grain Size and Total Organic Carbon Soil Results
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Soil Boring Location		SB-10		SB-11		SB-12		SB-16	
Sample ID		SB-10A (8-10')	SB-10B (12-14')	SB-11A (10-12')	SB-11B (12-14')	SB-12A (4-6')	SB-12B (12-14')	SB-16A (0-2')	SB-16B (12-14')
Lab Sample Number		172707	172708	173289	173290	172713	172714	174193	174194
Sampling Date	UNITS	12/02/99	12/02/99	12/07/99	12/07/99	12/03/99	12/03/99	12/09/99	12/09/99
Matrix		Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Dilution Factor (TOC Analysis)		4.0	1.0	4.0	20.0	5.0	2.0	5.0	1.0
Total Organic Carbon (TOC)	mg/Kg	2050	100 U	1520	6950	4010	1380	3790	371
Moisture Content	% (Delivered Moisture)	2.88	14.57	15.68	5.36	5.64	3.76	9.74	3.66
GRAIN SIZE	% by weight								
Coarse Gravel		10.31	8.17	13.06	7.36	27.94	8.15	14.88	3.76
Fine Gravel		30.74	15.56	34.65	28.22	24.97	29.76	28.99	20.32
Coarse Sand		11.87	10.5	10.66	12.56	8.98	16.38	13.97	14.6
Medium Sand		30.73	43.37	27.75	34.44	24.38	31.44	22.85	35.55
Fine Sand		14.01	22.02	12.46	15.63	10.14	12.31	13.66	24.44
Fines		2.33	0.39	1.43	1.52	3.59	1.97	5.65	1.32
TOTAL % by Weight		100	100	100	100	100	100	100	100

Notes:

Concentrations are reported in milligrams per Kilogram (mg/Kg).

U = Compound was not detected at the indicated concentration.

BD120999 is the blind duplicate for SB-8A (0-2').

BD122199 is the blind duplicate for SB-9A (10-12').

NA = Not analyzed

Table 4-1
Summary of Volatile Organic Compounds Detected in Soil
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Soil Boring Location:					SB-4		SB-5	
Sample ID	USEPA Region 3	USEPA Region 9	NYSDEC TAGM	NYSDEC TAGM	SB-4A (4-6')	SB-4B (10-12')	SB-5A (0-2')	SB-5B (10-12')
Lab Sample Number	RBCs	PRGs	3028 "Contained-In"	4046	172189	172190	172196	172197
Sampling Date	Industrial Soil	Industrial Soil	Criteria for	Soil Guidance	11/30/99	11/30/99	12/01/99	12/01/99
Matrix			Environmental Media	Values	Soil	Soil	Soil	Soil
Dilution Factor			Soil Action Level	(ppb)	1.0	1.0	1.0	1.0
Units	ug/Kg	ug/Kg	ug/Kg		ug/Kg	ug/Kg	ug/Kg	ug/Kg
VOLATILE COMPOUNDS (GC/MS)								
Chloromethane	440,000	2,700	49,000	N/A	10 U	11 U	13000 U	10 U
Bromomethane	2,900,000	13,000	110,000	N/A	10 U	11 U	13000 U	10 U
Vinyl Chloride	3,000	49	340	200	10 U	11 U	13000 U	10 U
Chloroethane	2,000,000	6,500	49,000	1900	10 U	11 U	13000 U	10 U
Methylene Chloride	760,000	21,000	85,000	100	10 U	11 U	13000 U	10 U
Acetone	200,000,000	6,200,000	7,800,000	200	10 U	11 U	13000 U	10 U
Carbon Disulfide	200,000,000	720,000	7,800,000	2700	10 U	11 U	13000 U	10 U
1,1-Dichloroethene	9,500	120	1,100	400	10 U	11 U	13000 U	10 U
1,1-Dichloroethane	200,000,000	2,100,000	7,800,000	200	10 U	11 U	13000 U	10 U
cis-1,2-Dichloroethene	20,000,000	150,000	780,000	N/A	10 U	11 U	13000 U	10 U
Chloroform	940,000	520	100,000	300	10 U	11 U	13000 U	10 U
1,2-Dichloroethane	63,000	760	7,000	100	10 U	11 U	13000 U	10 U
2-Butanone	1,200,000,000	28,000,000	47,000,000	300	10 U	11 U	13000 U	10 U
1,1,1-Trichloroethane	41,000,000	1,400,000	7,000,000	800	10 U	11 U	13000 U	10 U
Carbon Tetrachloride	44,000	530	4,900	600	10 U	11 U	13000 U	10 U
Bromodichloromethane	92,000	2,400	10,000	N/A	10 U	11 U	13000 U	10 U
1,2-Dichloropropane	84,000	770	9,400	N/A	10 U	11 U	13000 U	10 U
cis-1,3-Dichloropropene	32,000[a]	180[a]	N/A	N/A	10 U	11 U	13000 U	10 U
Trichloroethene	520,000	6,100	58,000	700	10 U	1.0 J	980 J	10 U
Dibromochloromethane	68,000	2,700	7,600	N/A	10 U	11 U	13000 U	10 U
1,1,2-Trichloroethane	100,000	1,900	11,000	N/A	10 U	11 U	13000 U	10 U
Benzene	200,000	1,500	22,000	60	10 U	11 U	13000 U	10 U
trans-1,3-Dichloropropene	32,000[a]	180[a]	N/A	N/A	10 U	11 U	13000 U	10 U
Bromoform	720,000	310,000	81,000	N/A	10 U	11 U	13000 U	10 U
4-Methyl-2-Pentanone	160,000,000	2,900,000	6,300,000	1000	10 U	11 U	13000 U	10 U
2-Hexanone	82,000,000	N/A	N/A	N/A	10 U	11 U	13000 U	10 U
Tetrachloroethene	110,000	19,000	12,000	1400	1.0 J	31	170000	2.0 J
1,1,2,2-Tetrachloroethane	29,000	900	32,000	600	10 U	11 U	13000 U	10 U
Toluene	410,000,000	520,000	16,000,000	1500	10 U	11 U	13000 U	10 U
Chlorobenzene	41,000,000	540,000	1,600,000	1700	10 U	11 U	13000 U	10 U
Ethylbenzene	200,000,000	230,000	7,800,000	5500	10 U	11 U	13000 U	10 U
Styrene	410,000,000	1,700,000	21,000	N/A	10 U	11 U	13000 U	10 U
Xylenes (Total)	4,100,000,000	210,000	160,000,000	1200	10 U	11 U	13000 U	10 U
Total Confident Conc. VOCs (s)					0	31	170000	0
Total Estimated Conc. VOC TICs (s)					0	0	0	0

Table 4-1
Summary of Volatile Organic Compounds Detected in Soil
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Soil Boring Location:					SB-6		SB-7	
Sample ID	USEPA Region 3	USEPA Region 9	NYSDEC TAGM	NYSDEC TAGM	SB-6A (8-10')	SB-6B (12-14')	SB-7A (8-10')	SB-7B (12-14')
Lab Sample Number	RBCs	PRGs	3028 "Contained-In"	4046	175791	175792	174987	174988
Sampling Date	Industrial Soil	Industrial Soil	Criteria for	Soil Guidance	12/16/99	12/16/99	12/14/99	12/14/99
Matrix			Environmental Media	Values	Soil	Soil	Soil	Soil
Dilution Factor			Soil Action Level	(ppb)	1.0	1.0	1.0	1.0
Units	ug/Kg	ug/Kg	ug/Kg		ug/Kg	ug/Kg	ug/Kg	ug/Kg
VOLATILE COMPOUNDS (GC/MS)								
Chloromethane	440,000	2,700	49,000	N/A	10 U	11 U	11 U	12 U
Bromomethane	2,900,000	13,000	110,000	N/A	10 U	11 U	11 U	12 U
Vinyl Chloride	3,000	49	340	200	10 U	11 U	11 U	12 U
Chloroethane	2,000,000	6,500	49,000	1900	10 U	11 U	11 U	12 U
Methylene Chloride	760,000	21,000	85,000	100	0.8 J	1.0 J	2.0 J	1.0 J
Acetone	200,000,000	6,200,000	7,800,000	200	10 U	11 U	120	12 U
Carbon Disulfide	200,000,000	720,000	7,800,000	2700	10 U	11 U	11 U	12 U
1,1-Dichloroethene	9,500	120	1,100	400	10 U	11 U	11 U	12 U
1,1-Dichloroethane	200,000,000	2,100,000	7,800,000	200	10 U	11 U	11 U	12 U
cis-1,2-Dichloroethene	20,000,000	150,000	780,000	N/A	10 U	11 U	1.0 J	12 U
Chloroform	940,000	520	100,000	300	10 U	11 U	11 U	12 U
1,2-Dichloroethane	63,000	760	7,000	100	10 U	11 U	11 U	12 U
2-Butanone	1,200,000,000	28,000,000	47,000,000	300	10 U	11 U	19	12 U
1,1,1-Trichloroethane	41,000,000	1,400,000	7,000,000	800	10 U	11 U	11 U	12 U
Carbon Tetrachloride	44,000	530	4,900	600	10 U	11 U	11 U	12 U
Bromodichloromethane	92,000	2,400	10,000	N/A	10 U	11 U	11 U	12 U
1,2-Dichloropropane	84,000	770	9,400	N/A	10 U	11 U	11 U	12 U
cis-1,3-Dichloropropene	32,000[a]	180[a]	N/A	N/A	10 U	11 U	11 U	12 U
Trichloroethene	520,000	6,100	58,000	700	10 U	1.0 J	3.0 J	12 U
Dibromochloromethane	68,000	2,700	7,600	N/A	10 U	11 U	11 U	12 U
1,1,2-Trichloroethane	100,000	1,900	11,000	N/A	10 U	11 U	11 U	12 U
Benzene	200,000	1,500	22,000	60	10 U	11 U	11 U	12 U
trans-1,3-Dichloropropene	32,000[a]	180[a]	N/A	N/A	10 U	11 U	11 U	12 U
Bromoform	720,000	310,000	81,000	N/A	10 U	11 U	11 U	12 U
4-Methyl-2-Pentanone	160,000,000	2,900,000	6,300,000	1000	10 U	11 U	11 U	12 U
2-Hexanone	82,000,000	N/A	N/A	N/A	10 U	11 U	11 U	12 U
Tetrachloroethene	110,000	19,000	12,000	1400	1.0 J	53	26	38
1,1,2,2-Tetrachloroethane	29,000	900	32,000	600	10 U	11 U	11 U	12 U
Toluene	410,000,000	520,000	16,000,000	1500	10 U	11 U	2.0 J	12 U
Chlorobenzene	41,000,000	540,000	1,600,000	1700	10 U	11 U	11 U	12 U
Ethylbenzene	200,000,000	230,000	7,800,000	5500	10 U	11 U	2.0 J	12 U
Styrene	410,000,000	1,700,000	21,000	N/A	10 U	11 U	11 U	12 U
Xylenes (Total)	4,100,000,000	210,000	160,000,000	1200	10 U	11 U	20	12 U
Total Confident Conc. VOCs (s)					0	53	185	38
Total Estimated Conc. VOC TICs (s)					0	0	1290	229

Table 4-1
Summary of Volatile Organic Compounds Detected in Soil
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Soil Boring Location:					SB-8		
Sample ID	USEPA Region 3	USEPA Region 9	NYSDEC TAGM	NYSDEC TAGM	SB-8A (0-2')	BD120999	SB-8B (12-14')
Lab Sample Number	RBCs	PRGs	3028 "Contained-In"	4046	174183	174192	174184
Sampling Date	Industrial Soil	Industrial Soil	Criteria for	Soil Guidance	12/09/99	12/09/99	12/09/99
Matrix			Environmental Media	Values	Soil	Soil	Soil
Dilution Factor			Soil Action Level	(ppb)	1.0	1.0	1.0
Units	ug/Kg	ug/Kg	ug/Kg		ug/Kg	ug/Kg	ug/Kg
VOLATILE COMPOUNDS (GC/MS)							
Chloromethane	440,000	2,700	49,000	N/A	5400 U	5300 U	11 U
Bromomethane	2,900,000	13,000	110,000	N/A	5400 U	5300 U	11 U
Vinyl Chloride	3,000	49	340	200	5400 U	5300 U	11 U
Chloroethane	2,000,000	6,500	49,000	1900	5400 U	5300 U	11 U
Methylene Chloride	760,000	21,000	85,000	100	5400 U	5300 U	11 U
Acetone	200,000,000	6,200,000	7,800,000	200	5400 U	5300 U	11 U
Carbon Disulfide	200,000,000	720,000	7,800,000	2700	5400 U	5300 U	11 U
1,1-Dichloroethene	9,500	120	1,100	400	5400 U	5300 U	11 U
1,1-Dichloroethane	200,000,000	2,100,000	7,800,000	200	5400 U	5300 U	11 U
cis-1,2-Dichloroethene	20,000,000	150,000	780,000	N/A	5400 U	5300 U	11 U
Chloroform	940,000	520	100,000	300	5400 U	5300 U	11 U
1,2-Dichloroethane	63,000	760	7,000	100	5400 U	5300 U	11 U
2-Butanone	1,200,000,000	28,000,000	47,000,000	300	5400 U	5300 U	11 U
1,1,1-Trichloroethane	41,000,000	1,400,000	7,000,000	800	5400 U	5300 U	11 U
Carbon Tetrachloride	44,000	530	4,900	600	5400 U	5300 U	11 U
Bromodichloromethane	92,000	2,400	10,000	N/A	5400 U	5300 U	11 U
1,2-Dichloropropane	84,000	770	9,400	N/A	5400 U	5300 U	11 U
cis-1,3-Dichloropropene	32,000[a]	180[a]	N/A	N/A	5400 U	5300 U	11 U
Trichloroethene	520,000	6,100	58,000	700	5400 U	5300 U	2.0 J
Dibromochloromethane	68,000	2,700	7,600	N/A	5400 U	5300 U	11 U
1,1,2-Trichloroethane	100,000	1,900	11,000	N/A	5400 U	5300 U	11 U
Benzene	200,000	1,500	22,000	60	5400 U	5300 U	11 U
trans-1,3-Dichloropropene	32,000[a]	180[a]	N/A	N/A	5400 U	5300 U	11 U
Bromoform	720,000	310,000	81,000	N/A	5400 U	5300 U	11 U
4-Methyl-2-Pentanone	160,000,000	2,900,000	6,300,000	1000	5400 U	5300 U	11 U
2-Hexanone	82,000,000	N/A	N/A	N/A	5400 U	5300 U	11 U
Tetrachloroethene	110,000	19,000	12,000	1400	65000	53000	53
1,1,2,2-Tetrachloroethane	29,000	900	32,000	600	5400 U	5300 U	11 U
Toluene	410,000,000	520,000	16,000,000	1500	5400 U	5300 U	11 U
Chlorobenzene	41,000,000	540,000	1,600,000	1700	5400 U	5300 U	11 U
Ethylbenzene	200,000,000	230,000	7,800,000	5500	5400 U	5300 U	11 U
Styrene	410,000,000	1,700,000	21,000	N/A	5400 U	5300 U	11 U
Xylenes (Total)	4,100,000,000	210,000	160,000,000	1200	5400 U	5300 U	11 U
Total Confident Conc. VOCs (s)					65000	53000	53
Total Estimated Conc. VOC TICs (s)					0	0	0

Table 4-1
Summary of Volatile Organic Compounds Detected in Soil
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Soil Boring Location:					SB-9		
Sample ID	USEPA Region 3	USEPA Region 9	NYSDEC TAGM	NYSDEC TAGM	SB-9A (10-12')	BD122199	SB-9B (12-14')
Lab Sample Number	RBCs	PRGs	3028 "Contained-In"	4046	176453	176455	176454
Sampling Date	Industrial Soil	Industrial Soil	Criteria for	Soil Guidance	12/21/99	12/21/99	12/21/99
Matrix			Environmental Media	Values	Soil	Soil	Soil
Dilution Factor			Soil Action Level	(ppb)	1.0	1.0	1.0
Units	ug/Kg	ug/Kg	ug/Kg		ug/Kg	ug/Kg	ug/Kg
VOLATILE COMPOUNDS (GC/MS)							
Chloromethane	440,000	2,700	49,000	N/A	11 U	11 U	1000 U
Bromomethane	2,900,000	13,000	110,000	N/A	11 U	11 U	1000 U
Vinyl Chloride	3,000	49	340	200	11 U	11 U	1000 U
Chloroethane	2,000,000	6,500	49,000	1900	11 U	11 U	1000 U
Methylene Chloride	760,000	21,000	85,000	100	11 U	11 U	1000 U
Acetone	200,000,000	6,200,000	7,800,000	200	11 U	11 U	1000 U
Carbon Disulfide	200,000,000	720,000	7,800,000	2700	11 U	11 U	1000 U
1,1-Dichloroethene	9,500	120	1,100	400	11 U	11 U	1000 U
1,1-Dichloroethane	200,000,000	2,100,000	7,800,000	200	11 U	11 U	1000 U
cis-1,2-Dichloroethene	20,000,000	150,000	780,000	N/A	11 U	11 U	1000 U
Chloroform	940,000	520	100,000	300	11 U	11 U	1000 U
1,2-Dichloroethane	63,000	760	7,000	100	11 U	11 U	1000 U
2-Butanone	1,200,000,000	28,000,000	47,000,000	300	11 U	11 U	1000 U
1,1,1-Trichloroethane	41,000,000	1,400,000	7,000,000	800	11 U	11 U	1000 U
Carbon Tetrachloride	44,000	530	4,900	600	11 U	11 U	1000 U
Bromodichloromethane	92,000	2,400	10,000	N/A	11 U	11 U	1000 U
1,2-Dichloropropane	84,000	770	9,400	N/A	11 U	11 U	1000 U
cis-1,3-Dichloropropene	32,000[a]	180[a]	N/A	N/A	11 U	11 U	1000 U
Trichloroethene	520,000	6,100	58,000	700	11 U	11 U	1000 U
Dibromochloromethane	68,000	2,700	7,600	N/A	11 U	11 U	1000 U
1,1,2-Trichloroethane	100,000	1,900	11,000	N/A	11 U	11 U	1000 U
Benzene	200,000	1,500	22,000	60	11 U	11 U	310 J
trans-1,3-Dichloropropene	32,000[a]	180[a]	N/A	N/A	11 U	11 U	1000 U
Bromoform	720,000	310,000	81,000	N/A	11 U	11 U	1000 U
4-Methyl-2-Pentanone	160,000,000	2,900,000	6,300,000	1000	11 U	11 U	1000 U
2-Hexanone	82,000,000	N/A	N/A	N/A	11 U	11 U	1000 U
Tetrachloroethene	110,000	19,000	12,000	1400	11 U	11 U	1000 U
1,1,2,2-Tetrachloroethane	29,000	900	32,000	600	11 U	11 U	1000 U
Toluene	410,000,000	520,000	16,000,000	1500	11 U	11 U	1000 U
Chlorobenzene	41,000,000	540,000	1,600,000	1700	11 U	11 U	1000 U
Ethylbenzene	200,000,000	230,000	7,800,000	5500	11 U	11 U	1000 U
Styrene	410,000,000	1,700,000	21,000	N/A	11 U	11 U	1000 U
Xylenes (Total)	4,100,000,000	210,000	160,000,000	1200	11 U	11 U	1000 U
Total Confident Conc. VOCs (s)					0	0	0
Total Estimated Conc. VOC TICs (s)					60	57	326700

Table 4-1
Summary of Volatile Organic Compounds Detected in Soil
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Soil Boring Location:					SB-10		SB-11	
Sample ID	USEPA Region 3	USEPA Region 9	NYSDEC TAGM	NYSDEC TAGM	SB-10A (8-10')	SB-10B (12-14')	SB-11A (10-12')	SB-11B (12-14')
Lab Sample Number	RBCs	PRGs	3028 "Contained-In"	4046	172707	172708	173289	173290
Sampling Date	Industrial Soil	Industrial Soil	Criteria for	Soil Guidance	12/02/99	12/02/99	12/07/99	12/07/99
Matrix			Environmental Media	Values	Soil	Soil	Soil	Soil
Dilution Factor			Soil Action Level	(ppb)	1.0	1.0	1.0	1.0
Units	ug/Kg	ug/Kg	ug/Kg		ug/Kg	ug/Kg	ug/Kg	ug/Kg
VOLATILE COMPOUNDS (GC/MS)								
Chloromethane	440,000	2,700	49,000	N/A	52 U	13 U	50 U	13000 U
Bromomethane	2,900,000	13,000	110,000	N/A	52 U	13 U	50 U	13000 U
Vinyl Chloride	3,000	49	340	200	52 U	13 U	50 U	13000 U
Chloroethane	2,000,000	6,500	49,000	1900	52 U	13 U	50 U	13000 U
Methylene Chloride	760,000	21,000	85,000	100	52 U	13 U	50 U	13000 U
Acetone	200,000,000	6,200,000	7,800,000	200	52 U	13 U	50 U	13000 U
Carbon Disulfide	200,000,000	720,000	7,800,000	2700	52 U	13 U	50 U	13000 U
1,1-Dichloroethene	9,500	120	1,100	400	52 U	13 U	50 U	13000 U
1,1-Dichloroethane	200,000,000	2,100,000	7,800,000	200	52 U	13 U	50 U	13000 U
cis-1,2-Dichloroethene	20,000,000	150,000	780,000	N/A	52 U	13 U	50 U	13000 U
Chloroform	940,000	520	100,000	300	52 U	13 U	50 U	13000 U
1,2-Dichloroethane	63,000	760	7,000	100	52 U	13 U	50 U	13000 U
2-Butanone	1,200,000,000	28,000,000	47,000,000	300	52 U	13 U	50 U	13000 U
1,1,1-Trichloroethane	41,000,000	1,400,000	7,000,000	800	52 U	13 U	50 U	13000 U
Carbon Tetrachloride	44,000	530	4,900	600	52 U	13 U	50 U	13000 U
Bromodichloromethane	92,000	2,400	10,000	N/A	52 U	13 U	50 U	13000 U
1,2-Dichloropropane	84,000	770	9,400	N/A	52 U	13 U	50 U	13000 U
cis-1,3-Dichloropropene	32,000[a]	180[a]	N/A	N/A	52 U	13 U	50 U	13000 U
Trichloroethene	520,000	6,100	58,000	700	52 U	13 U	50 U	13000 U
Dibromochloromethane	68,000	2,700	7,600	N/A	52 U	13 U	50 U	13000 U
1,1,2-Trichloroethane	100,000	1,900	11,000	N/A	52 U	13 U	50 U	13000 U
Benzene	200,000	1,500	22,000	60	52 U	13 U	50 U	13000 U
trans-1,3-Dichloropropene	32,000[a]	180[a]	N/A	N/A	52 U	13 U	50 U	13000 U
Bromoform	720,000	310,000	81,000	N/A	52 U	13 U	50 U	13000 U
4-Methyl-2-Pentanone	160,000,000	2,900,000	6,300,000	1000	52 U	13 U	50 U	13000 U
2-Hexanone	82,000,000	N/A	N/A	N/A	52 U	13 U	50 U	13000 U
Tetrachloroethene	110,000	19,000	12,000	1400	180	42	20 J	700 J
1,1,2,2-Tetrachloroethane	29,000	900	32,000	600	52 U	13 U	50 U	13000 U
Toluene	410,000,000	520,000	16,000,000	1500	52 U	13 U	6.0 J	12000 J
Chlorobenzene	41,000,000	540,000	1,600,000	1700	52 U	13 U	50 U	13000 U
Ethylbenzene	200,000,000	230,000	7,800,000	5500	52 U	13 U	50 U	31000
Styrene	410,000,000	1,700,000	21,000	N/A	52 U	13 U	50 U	13000 U
Xylenes (Total)	4,100,000,000	210,000	160,000,000	1200	52 U	13 U	200	110000
Total Confident Conc. VOCs (s)					180	42	200	141000
Total Estimated Conc. VOC TICs (s)					0	0	1972	1250000

Table 4-1
Summary of Volatile Organic Compounds Detected in Soil
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Soil Boring Location:					SB-12		SB-16	
Sample ID	USEPA Region 3	USEPA Region 9	NYSDEC TAGM	NYSDEC TAGM	SB-12A (4-6')	SB-12B (12-14')	SB-16A (0-2')	SB-16B (12-14')
Lab Sample Number	RBCs	PRGs	3028 "Contained-In"	4046	172713	172714	174193	174194
Sampling Date	Industrial Soil	Industrial Soil	Criteria for	Soil Guidance	12/03/99	12/03/99	12/09/99	12/09/99
Matrix			Environmental Media	Values	Soil	Soil	Soil	Soil
Dilution Factor			Soil Action Level	(ppb)	1.0	1.0	1.0	1.0
Units	ug/Kg	ug/Kg	ug/Kg		ug/Kg	ug/Kg	ug/Kg	ug/Kg
VOLATILE COMPOUNDS (GC/MS)								
Chloromethane	440,000	2,700	49,000	N/A	52 U	12 U	5300 U	48 U
Bromomethane	2,900,000	13,000	110,000	N/A	52 U	12 U	5300 U	48 U
Vinyl Chloride	3,000	49	340	200	52 U	12 U	5300 U	48 U
Chloroethane	2,000,000	6,500	49,000	1900	52 U	12 U	5300 U	48 U
Methylene Chloride	760,000	21,000	85,000	100	52 U	12 U	5300 U	48 U
Acetone	200,000,000	6,200,000	7,800,000	200	52 U	12 U	5300 U	48 U
Carbon Disulfide	200,000,000	720,000	7,800,000	2700	52 U	12 U	5300 U	48 U
1,1-Dichloroethene	9,500	120	1,100	400	52 U	12 U	5300 U	48 U
1,1-Dichloroethane	200,000,000	2,100,000	7,800,000	200	52 U	12 U	5300 U	48 U
cis-1,2-Dichloroethene	20,000,000	150,000	780,000	N/A	52 U	12 U	5300 U	48 U
Chloroform	940,000	520	100,000	300	52 U	12 U	5300 U	48 U
1,2-Dichloroethane	63,000	760	7,000	100	52 U	12 U	5300 U	48 U
2-Butanone	1,200,000,000	28,000,000	47,000,000	300	52 U	12 U	5300 U	48 U
1,1,1-Trichloroethane	41,000,000	1,400,000	7,000,000	800	52 U	12 U	5300 U	48 U
Carbon Tetrachloride	44,000	530	4,900	600	52 U	12 U	5300 U	48 U
Bromodichloromethane	92,000	2,400	10,000	N/A	52 U	12 U	5300 U	48 U
1,2-Dichloropropane	84,000	770	9,400	N/A	52 U	12 U	5300 U	48 U
cis-1,3-Dichloropropene	32,000[b]	180[a]	N/A	N/A	52 U	12 U	5300 U	48 U
Trichloroethene	520,000	6,100	58,000	700	13 J	2.0 J	280 J	48 U
Dibromochloromethane	68,000	2,700	7,600	N/A	52 U	12 U	5300 U	48 U
1,1,2-Trichloroethane	100,000	1,900	11,000	N/A	52 U	12 U	5300 U	48 U
Benzene	200,000	1,500	22,000	60	52 U	12 U	5300 U	48 U
trans-1,3-Dichloropropene	32,000[b]	180[a]	N/A	N/A	52 U	12 U	5300 U	48 U
Bromoform	720,000	310,000	81,000	N/A	52 U	12 U	5300 U	48 U
4-Methyl-2-Pentanone	160,000,000	2,900,000	6,300,000	1000	52 U	12 U	5300 U	48 U
2-Hexanone	82,000,000	N/A	N/A	N/A	52 U	12 U	5300 U	48 U
Tetrachloroethene	110,000	19,000	12,000	1400	830	110	70000	260
1,1,2,2-Tetrachloroethane	29,000	900	32,000	600	52 U	12 U	5300 U	48 U
Toluene	410,000,000	520,000	16,000,000	1500	52 U	12 U	5300 U	48 U
Chlorobenzene	41,000,000	540,000	1,600,000	1700	52 U	12 U	5300 U	48 U
Ethylbenzene	200,000,000	230,000	7,800,000	5500	52 U	12 U	5300 U	48 U
Styrene	410,000,000	1,700,000	21,000	N/A	52 U	12 U	5300 U	48 U
Xylenes (Total)	4,100,000,000	210,000	160,000,000	1200	52 U	12 U	5300 U	48 U
Total Confident Conc. VOCs (s)					830	110	70000	260
Total Estimated Conc. VOC TICs (s)					0	0	0	0

Table 4-1
Summary of Volatile Organic Compounds Detected in Soil
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Soil Boring Location:					FB113099	FB120899	FB120999	FB121799	FB122199
Sample ID	USEPA Region 3	USEPA Region 9	NYSDEC TAGM	NYSDEC TAGM	FB113099	FB120899	FB120999	FB121799	FB122199
Lab Sample Number	RBCs	PRGs	3028 "Contained-In"	4046	172193	173294	174189	175798	176460
Sampling Date	Industrial Soil	Industrial Soil	Criteria for	Soil Guidance	11/30/99	12/08/99	12/09/99	12/17/99	12/21/99
Matrix			Environmental Media	Values	WATER	WATER	WATER	WATER	WATER
Dilution Factor			Soil Action Level	(ppb)	1.0	1.0	1.0	1.0	1.0
Units	ug/Kg	ug/Kg	ug/Kg		ug/L	ug/L	ug/L	ug/L	ug/L
VOLATILE COMPOUNDS (GC/MS)									
Chloromethane	440,000	2,700	49,000	N/A	10 U	10 U	10 U	10 U	10 U
Bromomethane	2,900,000	13,000	110,000	N/A	10 U	10 U	10 U	10 U	10 U
Vinyl Chloride	3,000	49	340	200	10 U	10 U	10 U	10 U	10 U
Chloroethane	2,000,000	6,500	49,000	1900	10 U	10 U	10 U	10 U	10 U
Methylene Chloride	760,000	21,000	85,000	100	0.7 JB	10 U	10 U	10 U	3.0 J
Acetone	200,000,000	6,200,000	7,800,000	200	10 U	10 U	10 U	10 U	10 U
Carbon Disulfide	200,000,000	720,000	7,800,000	2700	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	9,500	120	1,100	400	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	200,000,000	2,100,000	7,800,000	200	10 U	10 U	10 U	10 U	10 U
cis-1,2-Dichloroethene	20,000,000	150,000	780,000	N/A	10 U	10 U	10 U	10 U	10 U
Chloroform	940,000	520	100,000	300	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	63,000	760	7,000	100	10 U	10 U	10 U	10 U	10 U
2-Butanone	1,200,000,000	28,000,000	47,000,000	300	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	41,000,000	1,400,000	7,000,000	800	10 U	10 U	10 U	10 U	10 U
Carbon Tetrachloride	44,000	530	4,900	600	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	92,000	2,400	10,000	N/A	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	84,000	770	9,400	N/A	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene	32,000[a]	180[a]	N/A	N/A	10 U	10 U	10 U	10 U	10 U
Trichloroethene	520,000	6,100	58,000	700	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane	68,000	2,700	7,600	N/A	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	100,000	1,900	11,000	N/A	10 U	10 U	10 U	10 U	10 U
Benzene	200,000	1,500	22,000	60	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene	32,000[a]	180[a]	N/A	N/A	10 U	10 U	10 U	10 U	10 U
Bromoform	720,000	310,000	81,000	N/A	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-Pentanone	160,000,000	2,900,000	6,300,000	1000	10 U	10 U	10 U	10 U	10 U
2-Hexanone	82,000,000	N/A	N/A	N/A	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	110,000	19,000	12,000	1400	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	29,000	900	32,000	600	10 U	10 U	10 U	10 U	10 U
Toluene	410,000,000	520,000	16,000,000	1500	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	41,000,000	540,000	1,600,000	1700	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	200,000,000	230,000	7,800,000	5500	10 U	10 U	10 U	10 U	10 U
Styrene	410,000,000	1,700,000	21,000	N/A	10 U	10 U	10 U	10 U	10 U
Xylenes (Total)	4,100,000,000	210,000	160,000,000	1200	10 U	10 U	10 U	10 U	10 U
Total Confident Conc. VOCs (s)					0	0	0	0	0
Total Estimated Conc. VOC TICs (s)					0	0	0	0	0

Table 4-1
Summary of Volatile Organic Compounds Detected in Soil
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Notes:
Values shown in bold type exceed the NYSDEC Soil Cleanup Objectives.
Concentrations are reported in micrograms per Kilogram (ug/Kg) equivalent to parts per billion (ppb).
U = Compound was not detected at the indicated concentration.
J = The result is less than the quantitation limit but greater than zero. Concentration given is an approximate value.
B = The analyte was found in the laboratory blank as well as the sample. This indicates possible laboratory contamination of the environmental sample.
N/A = Not Available.
BD120999 is the blind duplicate for SB-8A (0-2).
BD122199 is the blind duplicate for SB-9A (10-12).
VOCs = Volatile Organic Compounds.
TICs = Tentatively Identified Compounds.
GC/MS = Gas Chromatograph/Mass Spectrometry.
a = Value listed is for 1,3-Dichloropropene

Reference:
New York State Department of Environmental Conservation Division (NYSDEC) of Technical and Administrative Guidance Memorandum (TAGM 4046): Determination of Soil Cleanup Objective and Cleanup Levels, January 24, 1994.
NYSDEC, Division of Hazardous Substances Regulation, TAGM 3028, "Contained-In" Criteria for Environmental Media, November 30, 1992, revised March 14, 1997.
United States Environmental Protection Agency (USEPA) Region 3 Risk-Based Concentration (RBC) Table was downloaded from USEPA Region 3 website (http://www.epa.gov/reg3hwmd/risk/riskmenu.htm) on February 29, 2000.
USEPA Region 9 Preliminary Remediation Goals (PRGs) were downloaded from USEPA Region 9 website (http://www/epa.gov/region09/waste/sfund/prg/index.htm) on February 29, 2000.
Method: NYSDEC 1995 Analytical Services Protocol/Target Compound List (ASP/TCL) 95-1.

Table 4-2
Summary of Semivolatile Organic Compounds Detected in Soil
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Soil Boring Location:					SB-4		SB-5	
Sample ID	USEPA Region 3	USEPA Region 9	NYSDEC	NYSDEC	SB-4A (4-6')	SB-4B (10-12')	SB-5A (0-2')	SB-5B (10-12')
Lab Sample Number	RBCs	PRGs	TAGM	TAGM	172189	172190	172196	172197
Sampling Date	Industrial Soil	Industrial Soil	3028 "Contained-In"	4046	11/30/99	11/30/99	12/01/99	12/01/99
Matrix			Criteria for	Soil Guidance	Soil	Soil	Soil	Soil
Dilution Factor			Environmental Media	Values	1.0	1.0	1.0	1.0
Units	ug/Kg	ug/Kg	ug/Kg	(ppb)	ug/Kg	ug/Kg	ug/Kg	ug/Kg
SEMIVOLATILE COMPOUNDS (GC/MS)								
Phenol	1,200,000,000	100,000,000	47,000,000	30 or MDL	5.0 J	360 U	**120 J**	350 U
bis(2-Chloroethyl)Ether	5,200	620	580	N/A	340 U	360 U	360 U	350 U
2-Chlorophenol	10,000,000	240,000	390,000	800	340 U	360 U	360 U	350 U
1,3-Dichlorobenzene	1,800,000	52,000	N/A	1,600	340 U	360 U	360 U	350 U
1,4-Dichlorobenzene	240,000	8,100	27,000	8,500	340 U	360 U	360 U	350 U
1,2-Dichlorobenzene	180,000,000	370,000	7,800,000	7,900	340 U	360 U	6.0 J	350 U
2-Methylphenol	100,000,000	44,000,000	3,900,000	100 or MDL	340 U	360 U	360 U	350 U
2,2'-oxybis(1-Chloropropane)	82,000	8,100	N/A	N/A	340 U	360 U	360 U	350 U
4-Methylphenol	10,000,000	4,400,000	3,900,000	900	340 U	360 U	360 U	350 U
N-Nitroso-di-n-propylamine	820	350	91	N/A	340 U	360 U	360 U	350 U
Hexachloroethane	410,000	180,000	46,000	N/A	340 U	360 U	360 U	350 U
Nitrobenzene	1,000,000	110,000	39,000	200 or MDL	340 U	360 U	360 U	350 U
Isophorone	6,000,000	2,600,000	670,000	4,400	340 U	360 U	360 U	350 U
2-Nitrophenol	N/A	N/A	N/A	330 or MDL	340 U	360 U	360 U	350 U
2,4-Dimethylphenol	41,000,000	18,000,000	1,600,000	N/A	340 U	360 U	7.0 J	350 U
bis(2-Chloroethoxy)methane	N/A	N/A	N/A	N/A	340 U	360 U	360 U	350 U
2,4-Dichlorophenol	6,100,000	2,600,000	230,000	400	340 U	360 U	360 U	350 U
1,2,4-Trichlorobenzene	20,000,000	3,000,000	780,000	3,400	340 U	360 U	360 U	350 U
Naphthalene	41,000,000	190,000	310,000	13000	340 U	360 U	360 U	350 U
4-Chloroaniline	8,200,000	3,500,000	18,000	220 or MDL	340 U	360 U	360 U	350 U
Hexachlorobutadiene	73,000	32,000	8,200	N/A	340 U	360 U	360 U	350 U
4-Chloro-3-Methylphenol	N/A	N/A	N/A	240 or MDL	340 U	360 U	360 U	350 U
2-Methylnaphthalene	41,000,000	N/A	N/A	36,400	340 U	360 U	360 U	350 U
Hexachlorocyclopentadiene	14,000,000	59,000,000	550,000	N/A	340 U	360 U	360 U	350 U
2,4,6-Trichlorophenol	520,000	220,000	58,000	N/A	340 U	360 U	360 U	350 U
2,4,5-Trichlorophenol	200,000,000	88,000,000	7,800,000	100	820 U	880 U	860 U	840 U
2-Chloronaphthalene	160,000,000	27,000,000	N/A	N/A	340 U	360 U	360 U	350 U
2-Nitroaniline	N/A	50,000	N/A	430 or MDL	820 U	880 U	860 U	840 U
Dimethylphthalate	20,000,000,000	100,000,000	78,000,000	2,000	340 U	360 U	360 U	350 U
Acenaphthylene	N/A	N/A	N/A	41,000	340 U	360 U	360 U	350 U
2,6-Dinitrotoluene	2,000,000	880,000	940	1,000	340 U	360 U	360 U	350 U
3-Nitroaniline	N/A	N/A	N/A	500 or MDL	820 U	880 U	860 U	840 U
Acenaphthene	120,000,000	38,000,000	4,700,000	50,000 *	340 U	360 U	360 U	350 U
2,4-Dinitrophenol	4,100,000	1,800,000	160,000	200 or MDL	820 U	880 U	860 U	840 U
4-Nitrophenol	16,000,000	7,000,000	N/A	100 or MDL	820 U	880 U	860 U	840 U
Dibenzofuran	8,200,000	5,100,000	N/A	62,000	340 U	360 U	360 U	350 U
2,4-Dinitrotoluene	4,100,000	1,800,000	940	N/A	340 U	360 U	360 U	350 U
Diethylphthalate	1,600,000,000	100,000,000	63,000,000	71,000	340 U	360 U	360 U	350 U
4-Chlorophenyl-phenylether	N/A	N/A	N/A	N/A	340 U	360 U	360 U	350 U
Fluorene	82,000,000	33,000,000	3,100,000	50,000 *	340 U	360 U	360 U	350 U
4-Nitroaniline	N/A	N/A	N/A	N/A	820 U	880 U	860 U	840 U
4,6-Dinitro-2-methylphenol	200,000	N/A	7,800	N/A	820 U	880 U	860 U	840 U
N-nitrosodiphenylamine	1,200,000	500,000	130,000	N/A	340 U	360 U	360 U	350 U
4-Bromophenyl-phenylether	N/A	N/A	N/A	N/A	340 U	360 U	360 U	350 U
Hexachlorobenzene	3,600	1,500	400	410	340 U	360 U	360 U	350 U
Pentachlorophenol	48,000	11,000	3,000	1,000 or MDL	820 U	880 U	860 U	840 U
Phenanthrene	N/A	N/A	N/A	50,000 *	340 U	360 U	360 U	350 U
Anthracene	610,000,000	10,000,000	23,000,000	50,000 *	340 U	360 U	360 U	350 U
Carbazole	290,000	120,000	32,000	N/A	340 U	360 U	360 U	350 U
Di-n-butylphthalate	200,000,000	88,000,000	7,800,000	8,100	340 U	360 U	360 U	350 U
Fluoranthene	82,000,000	30,000,000	3,100,000	50,000 *	340 U	360 U	5.0 J	350 U
Pyrene	61,000,000	54,000,000	2,300,000	50,000 *	4.0 J	4.0 J	12 J	350 U
Butylbenzylphthalate	410,000,000	100,000,000	16,000,000	50,000 *	340 U	360 U	360 U	350 U
3,3'-Dichlorobenzidine	13,000	5,500	1,000	N/A	340 U	360 U	360 U	350 U
Benzo(a)anthracene	7,800	2,900	900	224 or MDL	340 U	360 U	360 U	350 U
Chrysene	780,000	290,000	88,000	400	340 U	360 U	360 U	350 U
bis(2-Ethylhexyl)phthalate	410,000	180,000	46,000	50,000 *	40 J	60 J	110 J	350 U
Di-n-octylphthalate	41,000,000	10,000,000	1,600,000	50,000 *	340 U	360 U	360 U	350 U
Benzo(b)fluoranthene	7,800	2,900	900	1,100	340 U	360 U	17 J	350 U
Benzo(k)fluoranthene	78,000	29,000	9,000	1,100	340 U	360 U	6.0 J	350 U
Benzo(a)pyrene	780	290	90	61 or MDL	340 U	360 U	360 U	350 U
Indeno(1,2,3-cd)pyrene	7,800	2,900	900	3,200	340 U	360 U	11 J	350 U
Dibenz(a,h)anthracene	780	290	90	14 or MDL	340 U	360 U	360 U	350 U
Benzo(g,h,i)perylene	N/A	N/A	N/A	50,000 *	340 U	360 U	19 J	350 U
Total Confident Conc. SVOCs (s)					0	0	0	0
Total Estimated Conc. SVOC TICs (s)					2093	723	4474	1300

Table 4-2
Summary of Semivolatile Organic Compounds Detected in Soil
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Soil Boring Location:					SB-6		SB-7	
Sample ID	USEPA Region 3	USEPA Region 9	NYSDEC	NYSDEC	SB-6A (8-10')	SB-6B (12-14')	SB-7A (8-10')	SB-7B (12-14')
Lab Sample Number	RBCs	PRGs	TAGM	TAGM	175791	175792	174987	174988
Sampling Date	Industrial Soil	Industrial Soil	3028 "Contained-In"	4046	12/16/99	12/16/99	12/14/99	12/14/99
Matrix			Criteria for	Soil Guidance	Soil	Soil	Soil	Soil
Dilution Factor			Environmental Media	Values	1.0	1.0	5.0	1.0
Units	ug/Kg	ug/Kg	ug/Kg	(ppb)	ug/Kg	ug/Kg	ug/Kg	ug/Kg
SEMIVOLATILE COMPOUNDS (GC/MS)								
Phenol	1,200,000,000	100,000,000	47,000,000	30 or MDL	350 U	360 U	180 J	9.0 J
bis(2-Chloroethyl)Ether	5,200	620	580	N/A	350 U	360 U	1800 U	390 U
2-Chlorophenol	10,000,000	240,000	390,000	800	350 U	360 U	1800 U	390 U
1,3-Dichlorobenzene	1,800,000	52,000	N/A	1,600	350 U	360 U	1800 U	390 U
1,4-Dichlorobenzene	240,000	8,100	27,000	8,500	350 U	360 U	1800 U	390 U
1,2-Dichlorobenzene	180,000,000	370,000	7,800,000	7,900	350 U	360 U	1800 U	390 U
2-Methylphenol	100,000,000	44,000,000	3,900,000	100 or MDL	350 U	360 U	1800 U	390 U
2,2'-oxybis(1-Chloropropane)	82,000	8,100	N/A	N/A	350 U	360 U	1800 U	390 U
4-Methylphenol	10,000,000	4,400,000	3,900,000	900	350 U	360 U	1800 U	390 U
N-Nitroso-di-n-propylamine	820	350	81	N/A	350 U	360 U	1800 U	390 U
Hexachloroethane	410,000	180,000	46,000	N/A	350 U	360 U	1800 U	390 U
Nitrobenzene	1,000,000	110,000	39,000	200 or MDL	350 U	360 U	1800 U	390 U
Isophorone	6,000,000	2,600,000	670,000	4,400	350 U	360 U	1800 U	390 U
2-Nitrophenol	N/A	N/A	N/A	330 or MDL	350 U	360 U	1800 U	390 U
2,4-Dimethylphenol	41,000,000	18,000,000	1,600,000	N/A	350 U	360 U	1800 U	390 U
bis(2-Chloroethoxy)methane	N/A	N/A	N/A	N/A	350 U	360 U	1800 U	390 U
2,4-Dichlorophenol	6,100,000	2,600,000	230,000	400	350 U	360 U	1800 U	390 U
1,2,4-Trichlorobenzene	20,000,000	3,000,000	780,000	3,400	350 U	360 U	1800 U	390 U
Naphthalene	41,000,000	190,000	310,000	13000	350 U	360 U	38 J	390 U
4-Chloroaniline	8,200,000	3,500,000	18,000	220 or MDL	350 U	360 U	1800 U	390 U
Hexachlorobutadiene	73,000	32,000	8,200	N/A	350 U	360 U	1800 U	390 U
4-Chloro-3-Methylphenol	N/A	N/A	N/A	240 or MDL	350 U	360 U	1800 U	390 U
2-Methylnaphthalene	41,000,000	N/A	N/A	36,400	350 U	360 U	47 J	390 U
Hexachlorocyclopentadiene	14,000,000	59,000,000	550,000	N/A	350 U	360 U	1800 U	390 U
2,4,6-Trichlorophenol	520,000	220,000	58,000	N/A	350 U	360 U	1800 U	390 U
2,4,5-Trichlorophenol	200,000,000	88,000,000	7,800,000	100	840 U	880 U	4300 U	960 U
2-Chloronaphthalene	160,000,000	27,000,000	N/A	N/A	350 U	360 U	1800 U	390 U
2-Nitroaniline	N/A	50,000	N/A	430 or MDL	840 U	880 U	4300 U	960 U
Dimethylphthalate	20,000,000,000	100,000,000	78,000,000	2,000	350 U	360 U	1800 U	390 U
Acenaphthylene	N/A	N/A	N/A	41,000	350 U	360 U	1800 U	390 U
2,6-Dinitrotoluene	2,000,000	880,000	940	1,000	350 U	360 U	1800 U	390 U
3-Nitroaniline	N/A	N/A	N/A	500 or MDL	840 U	880 U	4300 U	960 U
Acenaphthene	120,000,000	38,000,000	4,700,000	50,000 *	350 U	360 U	1800 U	390 U
2,4-Dinitrophenol	4,100,000	1,800,000	160,000	200 or MDL	840 U	880 U	4300 U	960 U
4-Nitrophenol	16,000,000	7,000,000	N/A	100 or MDL	840 U	880 U	4300 U	960 U
Dibenzofuran	8,200,000	5,100,000	N/A	62,000	350 U	360 U	1800 U	390 U
2,4-Dinitrotoluene	4,100,000	1,800,000	940	N/A	350 U	360 U	1800 U	390 U
Diethylphthalate	1,600,000,000	100,000,000	63,000,000	71,000	44 J	360 U	1800 U	390 U
4-Chlorophenyl-phenylether	N/A	N/A	N/A	N/A	350 U	360 U	1800 U	390 U
Fluorene	82,000,000	33,000,000	3,100,000	50,000 *	350 U	360 U	1800 U	390 U
4-Nitroaniline	N/A	N/A	N/A	N/A	840 U	880 U	4300 U	960 U
4,6-Dinitro-2-methylphenol	200,000	N/A	7,800	N/A	840 U	880 U	4300 U	960 U
N-nitrosodiphenylamine	1,200,000	500,000	130,000	N/A	350 U	360 U	1800 U	390 U
4-Bromophenyl-phenylether	N/A	N/A	N/A	N/A	350 U	360 U	1800 U	390 U
Hexachlorobenzene	3,600	1,500	400	410	350 U	360 U	1800 U	390 U
Pentachlorophenol	48,000	11,000	3,000	1,000 or MDL	840 U	880 U	4300 U	960 U
Phenanthrene	N/A	N/A	N/A	50,000 *	350 U	360 U	1800 U	390 U
Anthracene	610,000,000	10,000,000	23,000,000	50,000 *	350 U	360 U	1800 U	390 U
Carbazole	290,000	120,000	32,000	N/A	350 U	360 U	1800 U	390 U
Di-n-butylphthalate	200,000,000	88,000,000	7,800,000	8,100	350 U	360 U	1800 U	390 U
Fluoranthene	82,000,000	30,000,000	3,100,000	50,000 *	350 U	360 U	1800 U	390 U
Pyrene	61,000,000	54,000,000	2,300,000	50,000 *	350 U	360 U	40 J	13 J
Butylbenzylphthalate	410,000,000	100,000,000	16,000,000	50,000 *	350 U	360 U	1800 U	390 U
3,3'-Dichlorobenzidine	13,000	5,500	1,000	N/A	350 U	360 U	1800 U	390 U
Benzo(a)anthracene	7,800	2,900	900	224 or MDL	350 U	360 U	1800 U	390 U
Chrysene	780,000	290,000	88,000	400	350 U	360 U	1800 U	390 U
bis(2-Ethylhexyl)phthalate	410,000	180,000	46,000	50,000 *	350 U	360 U	1800 U	640 U
Di-n-octylphthalate	41,000,000	10,000,000	1,600,000	50,000 *	350 U	360 U	1800 U	390 U
Benzo(b)fluoranthene	7,800	2,900	900	1,100	350 U	360 U	1800 U	390 U
Benzo(k)fluoranthene	78,000	29,000	9,000	1,100	350 U	360 U	1800 U	390 U
Benzo(a)pyrene	780	290	90	61 or MDL	350 U	360 U	1800 U	390 U
Indeno(1,2,3-cd)pyrene	7,800	2,900	900	3,200	350 U	360 U	1800 U	390 U
Dibenz(a,h)anthracene	780	290	90	14 or MDL	350 U	360 U	1800 U	390 U
Benzo(g,h,i)perylene	N/A	N/A	N/A	50,000 *	350 U	360 U	1800 U	390 U
Total Confident Conc. SVOCs (s)					0	0	0	0
Total Estimated Conc. SVOC TICs (s)					871	120	26450	10120

Table 4-2
Summary of Semivolatile Organic Compounds Detected in Soil
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Soil Boring Location:					SB-8		
Sample ID	USEPA Region 3	USEPA Region 9	NYSDEC	NYSDEC	SB-8A (0-2')	BD120999	SB-8B (12-14')
Lab Sample Number	RBCs	PRGs	TAGM	TAGM	174183	174192	174184
Sampling Date	Industrial Soil	Industrial Soil	3028 "Contained-In"	4046	12/09/99	12/09/99	12/09/99
Matrix			Criteria for	Soil Guidance	Soil	Soil	Soil
Dilution Factor			Environmental Media	Values	1.0	1.0	1.0
Units	ug/Kg	ug/Kg	ug/Kg	(ppb)	ug/Kg	ug/Kg	ug/Kg
SEMIVOLATILE COMPOUNDS (GC/MS)							
Phenol	1,200,000,000	100,000,000	47,000,000	30 or MDL	360 U	360 U	370 U
bis(2-Chloroethyl)Ether	5,200	620	580	N/A	360 U	360 U	370 U
2-Chlorophenol	10,000,000	240,000	390,000	800	360 U	360 U	370 U
1,3-Dichlorobenzene	1,800,000	52,000	N/A	1,600	360 U	360 U	370 U
1,4-Dichlorobenzene	240,000	8,100	27,000	8,500	360 U	360 U	370 U
1,2-Dichlorobenzene	180,000,000	370,000	7,800,000	7,900	360 U	360 U	370 U
2-Methylphenol	100,000,000	44,000,000	3,900,000	100 or MDL	360 U	360 U	370 U
2,2'-oxybis(1-Chloropropane)	82,000	8,100	N/A	N/A	360 U	360 U	370 U
4-Methylphenol	10,000,000	4,400,000	3,900,000	900	360 U	360 U	370 U
N-Nitroso-di-n-propylamine	820	350	91	N/A	360 U	360 U	370 U
Hexachloroethane	410,000	180,000	46,000	N/A	360 U	360 U	370 U
Nitrobenzene	1,000,000	110,000	39,000	200 or MDL	360 U	360 U	370 U
Isophorone	6,000,000	2,600,000	670,000	4,400	360 U	360 U	370 U
2-Nitrophenol	N/A	N/A	N/A	330 or MDL	360 U	360 U	370 U
2,4-Dimethylphenol	41,000,000	18,000,000	1,600,000	N/A	360 U	360 U	370 U
bis(2-Chloroethoxy)methane	N/A	N/A	N/A	N/A	360 U	360 U	370 U
2,4-Dichlorophenol	6,100,000	2,600,000	230,000	400	360 U	360 U	370 U
1,2,4-Trichlorobenzene	20,000,000	3,000,000	780,000	3,400	360 U	360 U	370 U
Naphthalene	41,000,000	190,000	310,000	13000	360 U	360 U	370 U
4-Chloroaniline	8,200,000	3,500,000	18,000	220 or MDL	360 U	360 U	370 U
Hexachlorobutadiene	73,000	32,000	8,200	N/A	360 U	360 U	370 U
4-Chloro-3-Methylphenol	N/A	N/A	N/A	240 or MDL	360 U	360 U	370 U
2-Methylnaphthalene	41,000,000	N/A	N/A	36,400	360 U	360 U	370 U
Hexachlorocyclopentadiene	14,000,000	59,000,000	550,000	N/A	360 U	360 U	370 U
2,4,6-Trichlorophenol	520,000	220,000	58,000	N/A	360 U	360 U	370 U
2,4,5-Trichlorophenol	200,000,000	88,000,000	7,800,000	100	870 U	870 U	890 U
2-Chloronaphthalene	160,000,000	27,000,000	N/A	N/A	360 U	360 U	370 U
2-Nitroaniline	N/A	50,000	N/A	430 or MDL	870 U	870 U	890 U
Dimethylphthalate	20,000,000,000	100,000,000	78,000,000	2,000	360 U	360 U	370 U
Acenaphthylene	N/A	N/A	N/A	41,000	360 U	360 U	370 U
2,6-Dinitrotoluene	2,000,000	880,000	940	1,000	360 U	360 U	370 U
3-Nitroaniline	N/A	N/A	N/A	500 or MDL	870 U	870 U	890 U
Acenaphthene	120,000,000	36,000,000	4,700,000	50,000 *	360 U	360 U	370 U
2,4-Dinitrophenol	4,100,000	1,800,000	160,000	200 or MDL	870 U	870 U	890 U
4-Nitrophenol	16,000,000	7,000,000	N/A	100 or MDL	870 U	870 U	890 U
Dibenzofuran	8,200,000	5,100,000	N/A	62,000	360 U	360 U	370 U
2,4-Dinitrotoluene	4,100,000	1,800,000	940	N/A	360 U	360 U	370 U
Diethylphthalate	1,600,000,000	100,000,000	63,000,000	71,000	360 U	360 U	370 U
4-Chlorophenyl-phenylether	N/A	N/A	N/A	N/A	360 U	360 U	370 U
Fluorene	82,000,000	33,000,000	3,100,000	50,000 *	360 U	360 U	370 U
4-Nitroaniline	N/A	N/A	N/A	N/A	870 U	870 U	890 U
4,6-Dinitro-2-methylphenol	200,000	N/A	7,800	N/A	870 U	870 U	890 U
N-nitrosodiphenylamine	1,200,000	500,000	130,000	N/A	360 U	360 U	370 U
4-Bromophenyl-phenylether	N/A	N/A	N/A	N/A	360 U	360 U	370 U
Hexachlorobenzene	3,600	1,500	400	410	360 U	360 U	370 U
Pentachlorophenol	48,000	11,000	3,000	1,000 or MDL	870 U	870 U	890 U
Phenanthrene	N/A	N/A	N/A	50,000 *	360 U	360 U	370 U
Anthracene	610,000,000	10,000,000	23,000,000	50,000 *	360 U	360 U	370 U
Carbazole	290,000	120,000	32,000	N/A	360 U	360 U	370 U
Di-n-butylphthalate	200,000,000	88,000,000	7,800,000	8,100	360 U	360 U	370 U
Fluoranthene	82,000,000	30,000,000	3,100,000	50,000 *	8.0 J	7.0 J	370 U
Pyrene	61,000,000	54,000,000	2,300,000	50,000 *	5.0 J	4.0 J	370 U
Butylbenzylphthalate	410,000,000	100,000,000	16,000,000	50,000 *	360 U	360 U	370 U
3,3'-Dichlorobenzidine	13,000	5,500	1,000	N/A	360 U	360 U	370 U
Benzo(a)anthracene	7,800	2,900	900	224 or MDL	360 U	5.0 J	370 U
Chrysene	780,000	290,000	88,000	400	360 U	4.0 J	370 U
bis(2-Ethylhexyl)phthalate	410,000	180,000	45,000	50,000 *	170 J	140 J	370 U
Di-n-octylphthalate	41,000,000	10,000,000	1,600,000	50,000 *	120 J	100 J	370 U
Benzo(b)fluoranthene	7,800	2,900	900	1,100	28 J	22 J	370 U
Benzo(k)fluoranthene	78,000	29,000	9,000	1,100	10 J	10 J	370 U
Benzo(a)pyrene	780	290	90	61 or MDL	360 U	360 U	370 U
Indeno(1,2,3-cd)pyrene	7,800	2,900	900	3,200	19 J	14 J	370 U
Dibenz(a,h)anthracene	780	290	90	14 or MDL	4.0 J	360 U	370 U
Benzo(g,h,i)perylene	N/A	N/A	N/A	50,000 *	20 J	16 J	370 U
Total Confident Conc. SVOCs (s)					0	0	0
Total Estimated Conc. SVOC TICs (s)					1954	1495	340

Table 4-2
Summary of Semivolatile Organic Compounds Detected in Soil
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Soil Boring Location:					SB-9		
Sample ID	USEPA Region 3	USEPA Region 9	NYSDEC	NYSDEC	SB-9A (10-12')	BD122199	SB-9B (12-14')
Lab Sample Number	RBCs	PRGs	TAGM	TAGM	176453	176455	176454
Sampling Date	Industrial Soil	Industrial Soil	3028 "Contained-In"	4046	12/21/99	12/21/99	12/21/99
Matrix			Criteria for	Soil Guidance	Soil	Soil	Soil
Dilution Factor			Environmental Media	Values	1.0	1.0	5.0
Units	ug/Kg	ug/Kg	ug/Kg	(ppb)	ug/Kg	ug/Kg	ug/Kg
SEMIVOLATILE COMPOUNDS (GC/MS)							
Phenol	1,200,000,000	100,000,000	47,000,000	30 or MDL	4.0 J	7.0 J	1800 U
bis(2-Chloroethyl)Ether	5,200	620	580	N/A	350 U	350 U	1800 U
2-Chlorophenol	10,000,000	240,000	390,000	800	350 U	350 U	1800 U
1,3-Dichlorobenzene	1,800,000	52,000	N/A	1,600	350 U	350 U	1800 U
1,4-Dichlorobenzene	240,000	8,100	27,000	8,500	350 U	350 U	1800 U
1,2-Dichlorobenzene	180,000,000	370,000	7,800,000	7,900	350 U	350 U	1800 U
2-Methylphenol	100,000,000	44,000,000	3,900,000	100 or MDL	350 U	350 U	1800 U
2,2'-oxybis(1-Chloropropane)	82,000	8,100	N/A	N/A	350 U	350 U	1800 U
4-Methylphenol	10,000,000	4,400,000	3,900,000	900	350 U	350 U	1800 U
N-Nitroso-di-n-propylamine	820	350	91	N/A	350 U	350 U	1800 U
Hexachloroethane	410,000	180,000	46,000	N/A	350 U	350 U	1800 U
Nitrobenzene	1,000,000	110,000	39,000	200 or MDL	350 U	350 U	1800 U
Isophorone	6,000,000	2,600,000	670,000	4,400	350 U	350 U	1800 U
2-Nitrophenol	N/A	N/A	N/A	330 or MDL	350 U	350 U	1800 U
2,4-Dimethylphenol	41,000,000	18,000,000	1,600,000	N/A	350 U	350 U	1800 U
bis(2-Chloroethoxy)methane	N/A	N/A	N/A	N/A	350 U	350 U	1800 U
2,4-Dichlorophenol	6,100,000	2,600,000	230,000	400	350 U	350 U	1800 U
1,2,4-Trichlorobenzene	20,000,000	3,000,000	780,000	3,400	350 U	350 U	1800 U
Naphthalene	41,000,000	190,000	310,000	13000	350 U	350 U	1800 U
4-Chloroaniline	8,200,000	3,500,000	18,000	220 or MDL	350 U	350 U	1800 U
Hexachlorobutadiene	73,000	32,000	8,200	N/A	350 U	350 U	1800 U
4-Chloro-3-Methylphenol	N/A	N/A	N/A	240 or MDL	350 U	350 U	1800 U
2-Methylnaphthalene	41,000,000	N/A	N/A	36,400	5.0 J	6.0 J	1800 U
Hexachlorocyclopentadiene	14,000,000	59,000,000	550,000	N/A	350 U	350 U	1800 U
2,4,6-Trichlorophenol	520,000	220,000	58,000	N/A	350 U	350 U	1800 U
2,4,5-Trichlorophenol	200,000,000	88,000,000	7,800,000	100	850 U	850 U	4500 U
2-Chloronaphthalene	160,000,000	27,000,000	N/A	N/A	350 U	350 U	1800 U
2-Nitroaniline	N/A	50,000	N/A	430 or MDL	850 U	850 U	4500 U
Dimethylphthalate	20,000,000,000	100,000,000	78,000,000	2,000	350 U	350 U	1800 U
Acenaphthylene	N/A	N/A	N/A	41,000	6.0 J	5.0 J	1800 U
2,6-Dinitrotoluene	2,000,000	880,000	940	1,000	350 U	350 U	1800 U
3-Nitroaniline	N/A	N/A	N/A	500 or MDL	850 U	850 U	4500 U
Acenaphthene	120,000,000	38,000,000	4,700,000	50,000 *	8.0 J	10 J	1800 U
2,4-Dinitrophenol	4,100,000	1,800,000	160,000	200 or MDL	850 U	850 U	4500 U
4-Nitrophenol	16,000,000	7,000,000	N/A	100 or MDL	850 U	850 U	4500 U
Dibenzofuran	8,200,000	5,100,000	N/A	62,000	350 U	350 U	1800 U
2,4-Dinitrotoluene	4,100,000	1,800,000	940	N/A	350 U	350 U	1800 U
Diethylphthalate	1,600,000,000	100,000,000	63,000,000	71,000	350 U	350 U	1800 U
4-Chlorophenyl-phenylether	N/A	N/A	N/A	N/A	350 U	350 U	1800 U
Fluorene	82,000,000	33,000,000	3,100,000	50,000 *	5.0 J	5.0 J	100 J
4-Nitroaniline	N/A	N/A	N/A	N/A	850 U	850 U	4500 U
4,6-Dinitro-2-methylphenol	200,000	N/A	7,800	N/A	850 U	850 U	4500 U
N-nitrosodiphenylamine	1,200,000	500,000	130,000	N/A	350 U	350 U	1800 U
4-Bromophenyl-phenylether	N/A	N/A	N/A	N/A	350 U	350 U	1800 U
Hexachlorobenzene	3,600	1,500	400	410	350 U	350 U	1800 U
Pentachlorophenol	48,000	11,000	3,000	1,000 or MDL	850 U	850 U	4500 U
Phenanthrene	N/A	N/A	N/A	50,000 *	25 J	20 J	54 J
Anthracene	610,000,000	10,000,000	23,000,000	50,000 *	8.0 J	7.0 J	1800 U
Carbazole	290,000	120,000	32,000	N/A	350 U	350 U	1800 U
Di-n-butylphthalate	200,000,000	88,000,000	7,800,000	8,100	350 U	350 U	1800 U
Fluoranthene	82,000,000	30,000,000	3,100,000	50,000 *	25 J	23 J	53 J
Pyrene	61,000,000	54,000,000	2,300,000	50,000 *	23 J	24 J	54 J
Butylbenzylphthalate	410,000,000	100,000,000	16,000,000	50,000 *	350 U	350 U	1800 U
3,3'-Dichlorobenzidine	13,000	5,500	1,000	N/A	350 U	350 U	1800 U
Benzo(a)anthracene	7,800	2,900	900	224 or MDL	13 J	13 J	1800 U
Chrysene	780,000	290,000	88,000	400	13 J	14 J	1800 U
bis(2-Ethylhexyl)phthalate	410,000	180,000	46,000	50,000 *	350 U	350 U	1800 U
Di-n-octylphthalate	41,000,000	10,000,000	1,600,000	50,000 *	350 U	350 U	1800 U
Benzo(b)fluoranthene	7,800	2,900	900	1,100	16 J	19 J	1800 U
Benzo(k)fluoranthene	78,000	29,000	9,000	1,100	6.0 J	8.0 J	1800 U
Benzo(a)pyrene	780	290	90	61 or MDL	13 J	12 J	1800 U
Indeno(1,2,3-cd)pyrene	7,800	2,900	900	3,200	9.0 J	7.0 J	1800 U
Dibenz(a,h)anthracene	780	290	90	14 or MDL	350 U	350 U	1800 U
Benzo(g,h,i)perylene	N/A	N/A	N/A	50,000 *	9.0 J	7.0 J	1800 U
Total Confident Conc. SVOCs (s)					0	0	0
Total Estimated Conc. SVOC TICs (s)					3041	1808	126800

Table 4-2
Summary of Semivolatile Organic Compounds Detected in Soil
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Soil Boring Location:					SB-10		SB-11	
Sample ID	USEPA Region 3	USEPA Region 9	NYSDEC	NYSDEC	SB-10A (8-10')	SB-10B (12-14')	SB-11A (10-12')	SB-11B (12-14')
Lab Sample Number	RBCs	PRGs	TAGM	TAGM	172707	172708	173289	173290
Sampling Date	Industrial Soil	Industrial Soil	3028 "Contained-In"	4046	12/02/99	12/02/99	12/07/99	12/07/99
Matrix			Criteria for	Soil Guidance	Soil	Soil	Soil	Soil
Dilution Factor			Environmental Media	Values	1.0	1.0	1.0	5.0
Units	ug/Kg	ug/Kg	ug/Kg	(ppb)	ug/Kg	ug/Kg	ug/Kg	ug/Kg
SEMIVOLATILE COMPOUNDS (GC/MS)								
Phenol	1,200,000,000	100,000,000	47,000,000	30 or MDL	350 UJ	390 U	23 J	1800 U
bis(2-Chloroethyl)Ether	5,200	620	580	N/A	350 UJ	390 U	690 U	1800 U
2-Chlorophenol	10,000,000	240,000	390,000	800	350 UJ	390 U	690 U	1800 U
1,3-Dichlorobenzene	1,800,000	52,000	N/A	1,600	350 UJ	390 U	690 U	1800 U
1,4-Dichlorobenzene	240,000	8,100	27,000	8,500	350 UJ	390 U	690 U	130 J
1,2-Dichlorobenzene	180,000,000	370,000	7,600,000	7,900	350 UJ	390 U	690 U	350 J
2-Methylphenol	100,000,000	44,000,000	3,900,000	100 or MDL	350 UJ	390 U	690 U	1800 U
2,2'-oxybis(1-Chloropropane)	82,000	8,100	N/A	N/A	350 UJ	390 U	690 U	1800 U
4-Methylphenol	10,000,000	4,400,000	3,900,000	900	350 UJ	390 U	690 U	1800 U
N-Nitroso-di-n-propylamine	820	350	91	N/A	350 UJ	390 U	690 U	1800 U
Hexachloroethane	410,000	180,000	46,000	N/A	350 UJ	390 U	690 U	1800 U
Nitrobenzene	1,000,000	110,000	39,000	200 or MDL	350 UJ	390 U	690 U	1800 U
Isophorone	6,000,000	2,600,000	670,000	4,400	350 UJ	390 U	690 U	1800 U
2-Nitrophenol	N/A	N/A	N/A	330 or MDL	350 UJ	390 U	690 U	1800 U
2,4-Dimethylphenol	41,000,000	18,000,000	1,600,000	N/A	350 UJ	390 U	690 U	1800 U
bis(2-Chloroethoxy)methane	N/A	N/A	N/A	N/A	350 UJ	390 U	690 U	1800 U
2,4-Dichlorophenol	6,100,000	2,600,000	230,000	400	350 UJ	390 U	690 U	1800 U
1,2,4-Trichlorobenzene	20,000,000	3,000,000	780,000	3,400	350 UJ	390 U	690 U	190 J
Naphthalene	41,000,000	190,000	310,000	13000	350 UJ	390 U	690 U	1900
4-Chloroaniline	8,200,000	3,500,000	18,000	220 or MDL	350 UJ	390 U	690 U	1800 U
Hexachlorobutadiene	73,000	32,000	8,200	N/A	350 UJ	390 U	690 U	1800 U
4-Chloro-3-Methylphenol	N/A	N/A	N/A	240 or MDL	350 UJ	390 U	690 U	1800 U
2-Methylnaphthalene	41,000,000	N/A	N/A	36,400	350 UJ	390 U	690 U	8100
Hexachlorocyclopentadiene	14,000,000	59,000,000	550,000	N/A	350 UJ	390 U	690 U	1800 U
2,4,6-Trichlorophenol	520,000	220,000	58,000	N/A	350 UJ	390 U	690 U	1800 U
2,4,5-Trichlorophenol	200,000,000	88,000,000	7,800,000	100	850 UJ	950 U	1700 U	4400 U
2-Chloronaphthalene	160,000,000	27,000,000	N/A	N/A	350 UJ	390 U	690 U	1800 U
2-Nitroaniline	N/A	50,000	N/A	430 or MDL	850 UJ	950 U	1700 U	4400 U
Dimethylphthalate	20,000,000,000	100,000,000	78,000,000	2,000	350 UJ	390 U	690 U	1800 U
Acenaphthylene	N/A	N/A	N/A	41,000	350 UJ	390 U	690 U	1800 U
2,6-Dinitrotoluene	2,000,000	880,000	940	1,000	350 UJ	390 U	690 U	1800 U
3-Nitroaniline	N/A	N/A	N/A	500 or MDL	850 UJ	950 U	1700 U	4400 U
Acenaphthene	120,000,000	38,000,000	4,700,000	50,000 *	350 UJ	390 U	690 U	170 J
2,4-Dinitrophenol	4,100,000	1,800,000	160,000	200 or MDL	850 UJ	950 U	1700 U	4400 U
4-Nitrophenol	16,000,000	7,000,000	N/A	100 or MDL	850 UJ	950 U	1700 U	4400 U
Dibenzofuran	8,200,000	5,100,000	N/A	62,000	350 UJ	390 U	690 U	1800 U
2,4-Dinitrotoluene	4,100,000	1,800,000	940	N/A	350 UJ	390 U	690 U	1800 U
Diethylphthalate	1,600,000,000	100,000,000	63,000,000	71,000	350 UJ	390 U	690 U	1800 U
4-Chlorophenyl-phenylether	N/A	N/A	N/A	N/A	350 UJ	390 U	690 U	1800 U
Fluorene	82,000,000	33,000,000	3,100,000	50,000 *	350 UJ	390 U	690 U	150 J
4-Nitroaniline	N/A	N/A	N/A	N/A	850 UJ	950 U	1700 U	4400 U
4,6-Dinitro-2-methylphenol	200,000	N/A	7,800	N/A	850 UJ	950 U	1700 U	4400 U
N-nitrosodiphenylamine	1,200,000	500,000	130,000	N/A	350 UJ	390 U	690 U	1800 U
4-Bromophenyl-phenylether	N/A	N/A	N/A	N/A	350 UJ	390 U	690 U	1800 U
Hexachlorobenzene	3,600	1,500	400	410	350 UJ	390 U	690 U	1800 U
Pentachlorophenol	48,000	11,000	3,000	1,000 or MDL	850 UJ	950 U	1700 U	4400 U
Phenanthrene	N/A	N/A	N/A	50,000 *	350 UJ	390 U	38 J	250 J
Anthracene	610,000,000	10,000,000	23,000,000	50,000 *	350 UJ	390 U	10 J	1800 U
Carbazole	290,000	120,000	32,000	N/A	350 UJ	390 U	690 U	1800 U
Di-n-butylphthalate	200,000,000	88,000,000	7,800,000	8,100	350 UJ	390 U	690 U	440 J
Fluoranthene	82,000,000	30,000,000	3,100,000	50,000 *	350 UJ	390 U	66 J	99 J
Pyrene	61,000,000	54,000,000	2,300,000	50,000 *	350 UJ	390 U	50 J	83 J
Butylbenzylphthalate	410,000,000	100,000,000	16,000,000	50,000 *	350 UJ	390 U	690 U	1100 J
3,3'-Dichlorobenzidine	13,000	5,500	1,000	N/A	350 UJ	390 U	690 U	1800 U
Benzo(a)anthracene	7,800	2,900	900	224 or MDL	350 UJ	390 U	37 J	1800 U
Chrysene	780,000	290,000	88,000	400	350 UJ	390 U	33 J	1800 U
bis(2-Ethylhexyl)phthalate	410,000	180,000	46,000	50,000 *	350 UJ	390 U	550 J	6200
Di-n-octylphthalate	41,000,000	10,000,000	1,600,000	50,000 *	350 UJ	390 U	690 U	1800 U
Benzo(b)fluoranthene	7,800	2,900	900	1,100	9.0 J	390 U	54 J	1800 U
Benzo(k)fluoranthene	78,000	29,000	9,000	1,100	4.0 J	390 U	19 J	1800 U
Benzo(a)pyrene	780	290	90	61 or MDL	4.0 J	390 U	30 J	1800 U
Indeno(1,2,3-cd)pyrene	7,800	2,900	900	3,200	6.0 J	390 U	22 J	1800 U
Dibenz(a,h)anthracene	780	290	90	14 or MDL	350 UJ	390 U	690 U	1800 U
Benzo(g,h,i)perylene	N/A	N/A	N/A	50,000 *	8.0 J	390 U	31 J	1800 U
Total Confident Conc. SVOCs (s)					0	0	0	16200
Total Estimated Conc. SVOC TICs (s)					2112	0	12780	250390

Table 4-2
Summary of Semivolatile Organic Compounds Detected in Soil
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Soil Boring Location:					SB-12		SB-16	
Sample ID	USEPA Region 3	USEPA Region 9	NYSDEC	NYSDEC	SB-12A (4-6')	SB-12B (12-14')	SB-16A (0-2')	SB-16B (12-14')
Lab Sample Number	RBCs	PRGs	TAGM	TAGM	172713	172714	174193	174194
Sampling Date	Industrial Soil	Industrial Soil	3028 "Contained-In"	4046	12/03/99	12/03/99	12/09/99	12/09/99
Matrix			Criteria for	Soil Guidance	Soil	Soil	Soil	Soil
Dilution Factor			Environmental Media	Values	1.0	1.0	1.0	1.0
Units	ug/Kg	ug/Kg	ug/Kg	(ppb)	ug/Kg	ug/Kg	ug/Kg	ug/Kg
SEMIVOLATILE COMPOUNDS (GC/MS)								
Phenol	1,200,000,000	100,000,000	47,000,000	30 or MDL	6.0 J	360 U	31 J	360 U
bis(2-Chloroethyl)Ether	5,200	620	580	N/A	360 U	360 U	360 U	360 U
2-Chlorophenol	10,000,000	240,000	390,000	800	360 U	360 U	360 U	360 U
1,3-Dichlorobenzene	1,800,000	52,000	N/A	1,600	360 U	360 U	360 U	360 U
1,4-Dichlorobenzene	240,000	8,100	27,000	8,500	360 U	360 U	360 U	360 U
1,2-Dichlorobenzene	180,000,000	370,000	7,800,000	7,900	360 U	360 U	360 U	360 U
2-Methylphenol	100,000,000	44,000,000	3,900,000	100 or MDL	360 U	360 U	360 U	360 U
2,2'-oxybis(1-Chloropropane)	82,000	8,100	N/A	N/A	360 U	360 U	360 U	360 U
4-Methylphenol	10,000,000	4,400,000	3,900,000	900	360 U	360 U	360 U	360 U
N-Nitroso-di-n-propylamine	820	350	91	N/A	360 U	360 U	360 U	360 U
Hexachloroethane	410,000	180,000	46,000	N/A	360 U	360 U	360 U	360 U
Nitrobenzene	1,000,000	110,000	39,000	200 or MDL	360 U	360 U	360 U	360 U
Isophorone	6,000,000	2,600,000	670,000	4,400	360 U	360 U	360 U	360 U
2-Nitrophenol	N/A	N/A	N/A	330 or MDL	360 U	360 U	360 U	360 U
2,4-Dimethylphenol	41,000,000	18,000,000	1,600,000	N/A	360 U	360 U	360 U	360 U
bis(2-Chloroethoxy)methane	N/A	N/A	N/A	N/A	360 U	360 U	360 U	360 U
2,4-Dichlorophenol	6,100,000	2,600,000	230,000	400	360 U	360 U	360 U	360 U
1,2,4-Trichlorobenzene	20,000,000	3,000,000	780,000	3,400	360 U	360 U	360 U	360 U
Naphthalene	41,000,000	190,000	310,000	13000	360 U	360 U	360 U	360 U
4-Chloroaniline	8,200,000	3,500,000	18,000	220 or MDL	360 U	360 U	360 U	360 U
Hexachlorobutadiene	73,000	32,000	8,200	N/A	360 U	360 U	360 U	360 U
4-Chloro-3-Methylphenol	N/A	N/A	N/A	240 or MDL	360 U	360 U	360 U	360 U
2-Methylnaphthalene	41,000,000	N/A	N/A	36,400	360 U	360 U	360 U	360 U
Hexachlorocyclopentadiene	14,000,000	59,000,000	550,000	N/A	360 U	360 U	360 U	360 U
2,4,6-Trichlorophenol	520,000	220,000	58,000	N/A	360 U	360 U	360 U	360 U
2,4,5-Trichlorophenol	200,000,000	88,000,000	7,800,000	100	860 U	870 U	870 U	870 U
2-Chloronaphthalene	160,000,000	27,000,000	N/A	N/A	360 U	360 U	360 U	360 U
2-Nitroaniline	N/A	50,000	N/A	430 or MDL	860 U	870 U	870 U	870 U
Dimethylphthalate	20,000,000,000	100,000,000	78,000,000	2,000	360 U	360 U	360 U	360 U
Acenaphthylene	N/A	N/A	N/A	41,000	20 J	360 U	5.0 J	360 U
2,6-Dinitrotoluene	2,000,000	880,000	940	1,000	360 U	360 U	360 U	360 U
3-Nitroaniline	N/A	N/A	N/A	500 or MDL	860 U	870 U	870 U	870 U
Acenaphthene	120,000,000	38,000,000	4,700,000	50,000 *	14 J	360 U	360 U	360 U
2,4-Dinitrophenol	4,100,000	1,800,000	160,000	200 or MDL	860 U	870 U	870 U	870 U
4-Nitrophenol	16,000,000	7,000,000	N/A	100 or MDL	860 U	870 U	870 U	870 U
Dibenzofuran	8,200,000	5,100,000	N/A	62,000	6.0 J	360 U	360 U	360 U
2,4-Dinitrotoluene	4,100,000	1,800,000	940	N/A	360 U	360 U	360 U	360 U
Diethylphthalate	1,600,000,000	100,000,000	63,000,000	71,000	360 U	360 U	360 U	360 U
4-Chlorophenyl-phenylether	N/A	N/A	N/A	N/A	360 U	360 U	360 U	360 U
Fluorene	82,000,000	33,000,000	3,100,000	50,000 *	23 J	360 U	360 U	360 U
4-Nitroaniline	N/A	N/A	N/A	N/A	860 U	870 U	870 U	870 U
4,6-Dinitro-2-methylphenol	200,000	N/A	7,800	N/A	860 U	870 U	870 U	870 U
N-nitrosodiphenylamine	1,200,000	500,000	130,000	N/A	360 U	360 U	360 U	360 U
4-Bromophenyl-phenylether	N/A	N/A	N/A	N/A	360 U	360 U	360 U	360 U
Hexachlorobenzene	3,600	1,500	400	410	360 U	360 U	360 U	360 U
Pentachlorophenol	48,000	11,000	3,000	1,000 or MDL	860 U	870 U	870 U	870 U
Phenanthrene	N/A	N/A	N/A	50,000 *	200 J	360 U	360 U	360 U
Anthracene	610,000,000	10,000,000	23,000,000	50,000 *	58 J	360 U	360 U	360 U
Carbazole	290,000	120,000	32,000	N/A	360 U	360 U	360 U	360 U
Di-n-butylphthalate	200,000,000	88,000,000	7,800,000	8,100	360 U	360 U	360 U	360 U
Fluoranthene	82,000,000	30,000,000	3,100,000	50,000 *	340 J	5.0 J	5.0 J	360 U
Pyrene	61,000,000	54,000,000	2,300,000	50,000 *	270 J	6.0 J	10 J	360 U
Butylbenzylphthalate	410,000,000	100,000,000	16,000,000	50,000 *	360 U	360 U	360 U	360 U
3,3'-Dichlorobenzidine	13,000	5,500	1,000	N/A	360 U	360 U	360 U	360 U
Benzo(a)anthracene	7,800	2,900	900	224 or MDL	130 J	360 U	360 U	360 U
Chrysene	780,000	290,000	88,000	400	140 J	360 U	360 U	360 U
bis(2-Ethylhexyl)phthalate	410,000	180,000	46,000	50,000 *	110 J	57 J	48 J	360 U
Di-n-octylphthalate	41,000,000	10,000,000	1,600,000	50,000 *	360 U	360 U	360 U	360 U
Benzo(b)fluoranthene	7,800	2,900	900	1,100	120 J	360 U	18 J	360 U
Benzo(k)fluoranthene	78,000	29,000	9,000	1,100	42 J	360 U	5.0 J	360 U
Benzo(a)pyrene	780	290	90	61 or MDL	80 J	360 U	5.0 J	360 U
Indeno(1,2,3-cd)pyrene	7,800	2,900	900	3,200	41 J	360 U	13 J	360 U
Dibenz(a,h)anthracene	780	290	90	14 or MDL	12 J	360 U	360 U	360 U
Benzo(g,h,i)perylene	N/A	N/A	N/A	50,000 *	47 J	360 U	18 J	360 U
Total Confident Conc. SVOCs (s)					0	0	0	0
Total Estimated Conc. SVOC TICs (s)					3345	412	3827	590

Table 4-2
Summary of Semivolatile Organic Compounds Detected in Soil
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Soil Boring Location:									
Sample ID	USEPA Region 3	USEPA Region 9	NYSDEC	NYSDEC	FB113099	FB120899	FB120999	FB121799	FB122199
Lab Sample Number	RBCs	PRGs	TAGM	TAGM	172193	173294	174189	175798	176460
Sampling Date	Industrial Soil	Industrial Soil	3028 "Contained-In"	4046	11/30/99	12/08/99	12/09/99	12/17/99	12/21/99
Matrix			Criteria for	Soil Guidance	WATER	WATER	WATER	WATER	WATER
Dilution Factor			Environmental Media	Values	1.0	1.0	1.0	1.0	1.0
Units	ug/Kg	ug/Kg	ug/Kg	(ppb)	ug/L	ug/L	ug/L	ug/L	ug/L
SEMIVOLATILE COMPOUNDS (GC/MS)									
Phenol	1,200,000,000	100,000,000	47,000,000	30 or MDL	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethyl)Ether	5,200	620	560	N/A	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol	10,000,000	240,000	390,000	800	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	1,600,000	52,000	N/A	1,600	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	240,000	8,100	27,000	8,500	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	180,000,000	370,000	7,800,000	7,900	10 U	10 U	10 U	10 U	10 U
2-Methylphenol	100,000,000	44,000,000	3,900,000	100 or MDL	10 U	10 U	10 U	10 U	10 U
2,2'-oxybis(1-Chloropropane)	82,000	8,100	N/A	N/A	10 U	10 U	10 U	10 U	10 U
4-Methylphenol	10,000,000	4,400,000	3,900,000	900	10 U	10 U	10 U	10 U	10 U
N-Nitroso-di-n-propylamine	820	350	91	N/A	10 U	10 U	10 U	10 U	10 U
Hexachloroethane	410,000	180,000	46,000	N/A	10 U	10 U	10 U	10 U	10 U
Nitrobenzene	1,000,000	110,000	39,000	200 or MDL	10 U	10 U	10 U	10 U	10 U
Isophorone	6,000,000	2,600,000	670,000	4,400	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol	N/A	N/A	N/A	330 or MDL	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	41,000,000	18,000,000	1,600,000	N/A	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethoxy)methane	N/A	N/A	N/A	N/A	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol	6,100,000	2,600,000	230,000	400	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	20,000,000	3,000,000	780,000	3,400	10 U	10 U	10 U	10 U	10 U
Naphthalene	41,000,000	190,000	310,000	13000	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline	8,200,000	3,500,000	18,000	220 or MDL	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	73,000	32,000	8,200	N/A	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-Methylphenol	N/A	N/A	N/A	240 or MDL	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene	41,000,000	N/A	N/A	36,400	10 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene	14,000,000	59,000,000	550,000	N/A	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol	520,000	220,000	58,000	N/A	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	200,000,000	88,000,000	7,800,000	100	26 U	26 U	25 U	25 U	26 U
2-Chloronaphthalene	160,000,000	27,000,000	N/A	N/A	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline	N/A	50,000	N/A	430 or MDL	26 U	26 U	25 U	25 U	26 U
Dimethylphthalate	20,000,000,000	100,000,000	78,000,000	2,000	10 U	10 U	10 U	10 U	10 U
Acenaphthylene	N/A	N/A	N/A	41,000	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene	2,000,000	880,000	940	1,000	10 U	10 U	10 U	10 U	10 U
3-Nitroaniline	N/A	N/A	N/A	500 or MDL	26 U	26 U	25 U	25 U	26 U
Acenaphthene	120,000,000	38,000,000	4,700,000	50,000 *	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol	4,100,000	1,800,000	160,000	200 or MDL	26 U	26 U	25 U	25 U	26 U
4-Nitrophenol	16,000,000	7,000,000	N/A	100 or MDL	26 U	26 U	25 U	25 U	26 U
Dibenzofuran	8,200,000	5,100,000	N/A	62,000	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene	4,100,000	1,800,000	940	N/A	10 U	10 U	10 U	10 U	10 U
Diethylphthalate	1,600,000,000	100,000,000	63,000,000	71,000	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl-phenylether	N/A	N/A	N/A	N/A	10 U	10 U	10 U	10 U	10 U
Fluorene	82,000,000	33,000,000	3,100,000	50,000 *	10 U	10 U	10 U	10 U	10 U
4-Nitroaniline	N/A	N/A	N/A	N/A	26 U	26 U	25 U	25 U	26 U
4,6-Dinitro-2-methylphenol	200,000	N/A	7,800	N/A	26 U	26 U	25 U	25 U	26 U
N-nitrosodiphenylamine	1,200,000	500,000	130,000	N/A	10 U	10 U	10 U	10 U	10 U
4-Bromophenyl-phenylether	N/A	N/A	N/A	N/A	10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene	3,600	1,500	400	410	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol	48,000	11,000	3,000	1,000 or MDL	26 U	26 U	25 U	25 U	26 U
Phenanthrene	N/A	N/A	N/A	50,000 *	10 U	10 U	10 U	10 U	10 U
Anthracene	610,000,000	10,000,000	23,000,000	50,000 *	10 U	10 U	10 U	10 U	10 U
Carbazole	290,000	120,000	32,000	N/A	10 U	10 U	10 U	10 U	10 U
Di-n-butylphthalate	200,000,000	88,000,000	7,800,000	8,100	10 U	10 U	10 U	10 U	10 U
Fluoranthene	82,000,000	30,000,000	3,100,000	50,000 *	10 U	10 U	10 U	10 U	10 U
Pyrene	61,000,000	54,000,000	2,300,000	50,000 *	10 U	10 U	10 U	10 U	10 U
Butylbenzylphthalate	410,000,000	100,000,000	16,000,000	50,000 *	10 U	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine	13,000	5,500	1,000	N/A	10 U	10 U	10 U	10 U	10 U
Benzo(a)anthracene	7,800	2,900	900	224 or MDL	10 U	10 U	10 U	10 U	10 U
Chrysene	780,000	290,000	88,000	400	10 U	10 U	10 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	410,000	180,000	46,000	50,000 *	10 U	10 U	10 U	10 U	10 U
Di-n-octylphthalate	41,000,000	10,000,000	1,600,000	50,000 *	10 U	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene	7,800	2,900	900	1,100	10 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene	78,000	29,000	9,000	1,100	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene	780	290	90	61 or MDL	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	7,800	2,900	900	3,200	10 U	10 U	10 U	10 U	10 U
Dibenz(a,h)anthracene	780	290	90	14 or MDL	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	N/A	N/A	N/A	50,000 *	10 U	10 U	10 U	10 U	10 U
Total Confident Conc. SVOCs (s)					0	0	0	0	0
Total Estimated Conc. SVOC TICs (s)					2.0	0	0	0	0

Table 4-2
Summary of Semivolatile Organic Compounds Detected In Soil
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Values shown in bold type exceed the NYSDEC Soil Cleanup Objectives.
Concentrations are reported in micrograms per Kilogram (ug/Kg) equivalent to parts per billion (ppb).
U = Compound was not detected at the indicated concentration.
J = The result is less than the quantitation limit but greater than zero. Concentration given is an approximate value.
B = The analyte was found in the laboratory blank as well as the sample. This indicates possible laboratory contamination of the environmental sample.
MDL = Method Detection Limit.
* = As per TAGM #4046, Total SVOCs < 500,000 ug/Kg, and individual SVOCs < 50,000 ug/Kg.
BD120999 is the blind duplicate for SB-8A (0-2).
BD122199 is the blind duplicate for SB-9A (10-12).
VOCs = Volatile Organic Compounds.
TICs = Tentatively Identified Compounds.
GC/MS = Gas Chromatograph/Mass Spectrometry.
N/A = Not Available.
Reference:
New York State Department of Environmental Conservation Division (NYSDEC) of Technical and Administrative Guidance Memorandum (TAGM 4046): Determination of Soil Cleanup Objective and Cleanup Levels, January 24, 1994.
NYSDEC, Division of Hazardous Substances Regulation, TAGM 3028, "Contained-In" Criteria for Environmental Media, November 30, 1992, revised March 14, 1997.
United States Environmental Protection Agency (USEPA) Region 3 Risk-Based Concentration (RBC) Table was downloaded from USEPA Region 3 website (http://www.epa.gov/reg3hwmd/risk/riskmenu.htm) on February 29, 2000.
USEPA Region 9 Preliminary Remediation Goals (PRGs) were downloaded from USEPA Region 9 website (http://www/epa.gov/region09/waste/sfund/prg/index.htm) on February 29, 2000.
Method: NYSDEC 1995 Analytical Services Protocol/Target Compound List (ASP/TCL) 95-1.

Table 4-3
Summary of PCBs Detected in Soil
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Soil Boring Location:					SB-4		SB-5		SB-6	
Sample ID	USEPA	USEPA	NYSDEC TAGM	NYSDEC TAGM	SB-4A (4-6)	SB-4B (10-12)	SB-5A (0-2)	SB-5B (10-12)	SB-6A (8-10)	SB-6B (12-14)
Lab Sample Number	Region 3	Region 9	3028 "Contained-In"	4046	172189	172190	172196	172197	175791	175792
Sampling Date	RBCs	PRGs	Criteria for	Soil Guidance	11/30/99	11/30/99	12/01/99	12/01/99	12/16/99	12/16/99
Matrix	Industrial Soil	Industrial Soil	Environmental Media	Values	Soil	Soil	Soil	Soil	Soil	Soil
Dilution Factor			Soil Action Level	(ppb)	1.0	1.0	1.0	1.0	1.0	1.0
Units	ug/Kg	ug/Kg	(ppb) (2)		ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
PCBs										
Aroclor-1016	82,000	29,000	1,000	10,000	69 U	74 U	72 U	70 U	71 U	74 U
Aroclor-1221	2,900	1,000	1,000	10,000	69 U	74 U	72 U	70 U	71 U	74 U
Aroclor-1232	2,900	1,000	1,000	10,000	69 U	74 U	72 U	70 U	71 U	74 U
Aroclor-1242	2,900	1,000	1,000	10,000	69 U	74 U	72 U	70 U	71 U	74 U
Aroclor-1248	2,900	1,000	1,000	10,000	69 U	74 U	72 U	70 U	71 U	74 U
Aroclor-1254	2,900	1,000	1,000	10,000	69 U	74 U	72 U	70 U	71 U	240
Aroclor-1260	2,900	1,000	1,000	10,000	69 U	74 U	400	70 U	71 U	74 U
Aroclor-1262	N/A	N/A	1,000	10,000	69 U	74 U	72 U	70 U	71 U	74 U
Aroclor-1268	N/A	N/A	1,000	10,000	69 U	74 U	72 U	70 U	71 U	74 U
Total PCBs	2,900	1,000	1,000	10,000	0	0	400	0	0	240

Table 4-3
Summary of PCBs Detected in Soil
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Soil Boring Location:					SB-7		SB-8		
Sample ID	USEPA	USEPA	NYSDEC TAGM	NYSDEC TAGM	SB-7A (8-10)	SB-7B (12-14)	SB-8A (0-2)	BD120999	SB-8B (12-14)
Lab Sample Number	Region 3	Region 9	3028 "Contained-In"	4046	174987	174988	174183	174192	174184
Sampling Date	RBCs	PRGs	Criteria for	Soil Guidance	12/14/99	12/14/99	12/09/99	12/09/99	12/09/99
Matrix	Industrial Soil	Industrial Soil	Environmental Media	Values	Soil	Soil	Soil	Soil	Soil
Dilution Factor			Soil Action Level	(ppb)	10.0	1.0	1.0	1.0	1.0
Units	ug/Kg	ug/Kg	(ppb) (2)		ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
PCBs									
Aroclor-1016	82,000	29,000	1,000	10,000	720 U	80 U	73 U	73 U	75 U
Aroclor-1221	2,900	1,000	1,000	10,000	720 U	80 U	73 U	73 U	75 U
Aroclor-1232	2,900	1,000	1,000	10,000	720 U	80 U	73 U	73 U	75 U
Aroclor-1242	2,900	1,000	1,000	10,000	2600	480	73 U	73 U	75 U
Aroclor-1248	2,900	1,000	1,000	10,000	720 U	80 U	73 U	73 U	75 U
Aroclor-1254	2,900	1,000	1,000	10,000	720 U	80 U	73 U	73 U	75 U
Aroclor-1260	2,900	1,000	1,000	10,000	720 U	380	73 U	73 U	75 U
Aroclor-1262	N/A	N/A	1,000	10,000	720 U	80 U	73 U	73 U	75 U
Aroclor-1268	N/A	N/A	1,000	10,000	720 U	80 U	73 U	73 U	75 U
Total PCBs	2,900	1,000	1,000	10,000	2600	480	0	0	0

Table 4-3
Summary of PCBs Detected in Soil
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Soil Boring Location:					SB-9			SB-10	
Sample ID	USEPA	USEPA	NYSDEC TAGM	NYSDEC TAGM	SB-9A (10-12)	BD122199	SB-9B (12-14)	SB-10A (8-10)	SB-10B (12-14)
Lab Sample Number	Region 3	Region 9	3028 "Contained-In"	4046	176453	176455	176454	172707	172708
Sampling Date	RBCs	PRGs	Criteria for	Soil Guidance	12/21/99	12/21/99	12/21/99	12/02/99	12/02/99
Matrix	Industrial Soil	Industrial Soil	Environmental Media	Values	Soil	Soil	Soil	Soil	Soil
Dilution Factor			Soil Action Level	(ppb)	1.0	1.0	1.0	1.0	1.0
Units	ug/Kg	ug/Kg	(ppb) (2)		ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
PCBs									
Aroclor-1016	82,000	29,000	1,000	10,000	71 U	71 U	75 U	71 U	80 U
Aroclor-1221	2,900	1,000	1,000	10,000	71 U	71 U	75 U	71 U	80 U
Aroclor-1232	2,900	1,000	1,000	10,000	71 U	71 U	75 U	71 U	80 U
Aroclor-1242	2,900	1,000	1,000	10,000	71 U	71 U	590	71 U	80 U
Aroclor-1248	2,900	1,000	1,000	10,000	71 U	71 U	75 U	71 U	80 U
Aroclor-1254	2,900	1,000	1,000	10,000	71 U	71 U	75 U	71 U	80 U
Aroclor-1260	2,900	1,000	1,000	10,000	450	460	750	71 U	80 U
Aroclor-1262	N/A	N/A	1,000	10,000	71 U	71 U	75 U	71 U	80 U
Aroclor-1268	N/A	N/A	1,000	10,000	71 U	71 U	75 U	71 U	80 U
Total PCBs	2,900	1,000	1,000	10,000	450	460	1340	0	0

Table 4-3
Summary of PCBs Detected in Soil
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Soil Boring Location:					SB-11		SB-12		SB-16	
Sample ID	USEPA	USEPA	NYSDEC TAGM	NYSDEC TAGM	SB-11A (10-12)	SB-11B (12-14)	SB-12A (4-6)	SB-12B (12-14)	SB-16A (0-2)	SB-16B (12-14)
Lab Sample Number	Region 3	Region 9	3028 "Contained-In"	4046	173289	173290	172713	172714	174193	174194
Sampling Date	RBCs	PRGs	Criteria for	Soil Guidance	12/07/99	12/07/99	12/03/99	12/03/99	12/09/99	12/09/99
Matrix	Industrial Soil	Industrial Soil	Environmental Media	Values	Soil	Soil	Soil	Soil	Soil	Soil
Dilution Factor			Soil Action Level	(ppb)	5.0	5.0	1.0	1.0	1.0	1.0
Units	ug/Kg	ug/Kg	(ppb) (2)		ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
PCBs										
Aroclor-1016	82,000	29,000	1,000	10,000	350 U	370 U	72 U	73 U	73 U	73 U
Aroclor-1221	2,900	1,000	1,000	10,000	350 U	370 U	72 U	73 U	73 U	73 U
Aroclor-1232	2,900	1,000	1,000	10,000	350 U	370 U	72 U	73 U	73 U	73 U
Aroclor-1242	2,900	1,000	1,000	10,000	2800	5700	72 U	73 U	73 U	73 U
Aroclor-1248	2,900	1,000	1,000	10,000	350 U	370 U	1500	73 U	73 U	73 U
Aroclor-1254	2,900	1,000	1,000	10,000	350 U	370 U	72 U	73 U	73 U	73 U
Aroclor-1260	2,900	1,000	1,000	10,000	2300	370 U	390	350	73 U	73 U
Aroclor-1262	N/A	N/A	1,000	10,000	350 U	370 U	72 U	73 U	73 U	73 U
Aroclor-1268	N/A	N/A	1,000	10,000	350 U	370 U	72 U	73 U	73 U	73 U
Total PCBs	2,900	1,000	1,000	10,000	5100	5700	1890	350	0	0

Table 4-3
Summary of PCBs Detected in Soil
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Soil Boring Location:								
Sample ID	USEPA	USEPA	NYSDEC TAGM	NYSDEC TAGM	FB113099	FB120899	FB120999	FB121799
Lab Sample Number	Region 3	Region 9	3028 "Contained-In"	4046	172193	173294	174189	175798
Sampling Date	RBCs	PRGs	Criteria for	Soil Guidance	11/30/99	12/08/99	12/09/99	12/17/99
Matrix	Industrial Soil	Industrial Soil	Environmental Media	Values	WATER	WATER	WATER	WATER
Dilution Factor			-Soil Action Level	(ppb)	1.0	1.0	1.0	1.0
Units	ug/Kg	ug/Kg	(ppb) (2)		ug/L	ug/L	ug/L	ug/L
PCBs								
Aroclor-1016	82,000	29,000	1,000	10,000	0.51 U	0.55 U	0.51 U	0.55 U
Aroclor-1221	2,900	1,000	1,000	10,000	0.51 U	0.55 U	0.51 U	0.55 U
Aroclor-1232	2,900	1,000	1,000	10,000	0.51 U	0.55 U	0.51 U	0.55 U
Aroclor-1242	2,900	1,000	1,000	10,000	0.51 U	0.55 U	0.51 U	0.55 U
Aroclor-1248	2,900	1,000	1,000	10,000	0.51 U	0.55 U	0.51 U	0.55 U
Aroclor-1254	2,900	1,000	1,000	10,000	0.51 U	0.55 U	0.51 U	0.55 U
Aroclor-1260	2,900	1,000	1,000	10,000	0.51 U	0.55 U	0.51 U	0.55 U
Aroclor-1262	N/A	N/A	1,000	10,000	0.51 U	0.55 U	0.51 U	0.55 U
Aroclor-1268	N/A	N/A	1,000	10,000	0.51 U	0.55 U	0.51 U	0.55 U
Total PCBs	2,900	1,000	1,000	10,000	0	0	0	0

Table 4-3
Summary of PCBs Detected in Soil
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Notes:

(1) Values for NYSDEC Soil Cleanup objective are for "Total PCBs" in subsurface soils.

Values shown in bold type exceed the NYSDEC Soil Cleanup Objectives.

(2) Values for NYSDEC TAGM Soil action levels are for "Total PCBs" in subsurface soils.

Concentrations are reported in micrograms per Kilogram (ug/Kg) equivalent to parts per billion (ppb).

U = Compound was not detected at the indicated concentration.

BD120999 is the blind duplicate for SB-8A (0-2).

BD122199 is the blind duplicate for SB-9A (10-12).

N/A = Not Available

Reference:

New York State Department of Environmental Conservation Division (NYSDEC) of Technical and Administrative Guidance Memorandum (TAGM 4046): Determination of Soil Cleanup Objective and Cleanup Levels, January 24, 1994.

NYSDEC, Division of Hazardous Substances Regulation, TAGM 3028, "Contained-In" Criteria for Environmental Media, November 30, 1992, revised March 14, 1997.

United States Environmental Protection Agency (USEPA) Region 3 Risk-Based Concentration (RBC) Table was downloaded from USEPA Region 3 website (http://www.epa.gov/reg3hwmd/risk/riskmenu.htm) on February 29, 2000.

USEPA Region 9 Preliminary Remediation Goals (PRGs) were downloaded from USEPA Region 9 website (http://www/epa.gov/region09/waste/sfund/prg/index.htm) on February 29, 2000.

Method: NYSDEC 1995 Analytical Services Protocol (ASP) Method 8082, SW-846.

Table 4-4
Summary of Pesticides Detected in Soil
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Soil Boring Location:					SB-5	SB-8		
Sample ID	USEPA Region 3	USEPA Region 9	NYSDEC TAGM	NYSDEC TAGM	SB-5A (0-2')	SB-8A (0-2')	BD120999	SB-8B (12-14')
Lab Sample Number	RBCs	PRGs	3028 "Contained-In"	4046	172196	174183	174192	174184
Sampling Date	Industrial Soil	Industrial Soil	Criteria for	Soil Guidance	12/01/99	12/09/99	12/09/99	12/09/99
Matrix			Environmental Media	Values	Soil	Soil	Soil	Soil
Dilution Factor			Soil Action Level	(ppb)	1.0	1.0	1.0	1.0
Units	ug/Kg	ug/Kg	ug/Kg		ug/Kg	ug/Kg	ug/Kg	ug/Kg
PESTICIDES								
alpha-BHC	910	590	100	110	1.7 U	1.8 U	1.8 U	1.9 U
beta-BHC	3,200	2,100	360	200	1.7 U	1.8 U	1.8 U	1.9 U
delta-BHC	N/A	N/A	N/A	300	1.7 U	1.8 U	1.8 U	1.9 U
gamma-BHC(Lindane)	4,400	2,900	490	60	1.7 U	1.8 U	1.8 U	1.9 U
Heptachlor	1,300	550	140	100	1.7 U	1.8 U	1.8 U	1.9 U
Aldrin	340	150	38	41	1.7 U	1.8 U	1.8 U	1.9 U
Heptachlor epoxide	630	270	70	20	1.7 U	1.8 U	1.8 U	1.9 U
Endosulfan I	N/A	N/A	N/A	900	1.7 U	1.8 U	1.8 U	1.9 U
Dieldrin	360	150	40	44	3.3 U	3.6 U	3.6 U	3.7 U
4,4'-DDE	17,000	12,000	1,900	2100	3.3 U	3.6 U	3.6 U	3.7 U
Endrin	610,000	260,000	23,000	100	3.3 U	3.6 U	3.6 U	3.7 U
Endosulfan II	N/A	N/A	N/A	900	4.0 J	3.6 U	3.6 U	3.7 U
4,4'-DDD	24,000	17,000	2,700	2900	3.3 U	3.6 U	3.6 U	3.7 U
Endosulfan sulfate	N/A	N/A	N/A	1000	3.3 U	3.6 U	3.6 U	3.7 U
4,4'-DDT	17,000	12,000	1,900	2100	R	3.6 U	3.6 U	3.7 U
Methoxychlor	10,000,000	4,400,000	390,000	10,000*	17 U	18 U	18 U	19 U
Endrin ketone	N/A	N/A	N/A	N/A	3.3 U	3.6 U	3.6 U	3.7 U
Endrin aldehyde	N/A	N/A	N/A	N/A	9.4 J	3.6 U	3.6 U	3.7 U
alpha-Chlordane	N/A	N/A	N/A	N/A	1.7 U	1.8 U	1.8 U	1.9 U
gamma-Chlordane	N/A	N/A	N/A	540	1.7 U	1.8 U	1.8 U	1.9 U
Toxaphene	5,200	2,200	580	N/A	170 U	180 U	180 U	190 U

Table 4-4
Summary of Pesticides Detected in Soil
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Soil Boring Location:					SB-9				
Sample ID	USEPA Region 3	USEPA Region 9	NYSDEC TAGM	NYSDEC TAGM	SB-9A (10-12')	BD122199	SB-9B (12-14')	FB120999	FB122199
Lab Sample Number	RBCs	PRGs	3028 "Contained-In"	4046	176453	176455	176454	174189	176460
Sampling Date	Industrial Soil	Industrial Soil	Criteria for	Soil Guidance	12/21/99	12/21/99	12/21/99	12/09/99	12/21/99
Matrix			Environmental Media	Values	Soil	Soil	Soil	WATER	WATER
Dilution Factor			Soil Action Level	(ppb)	1.0	1.0	1.0	1.0	1.0
Units	ug/Kg	ug/Kg	ug/Kg		ug/Kg	ug/Kg	ug/Kg	ug/L	ug/L
PESTICIDES									
alpha-BHC	910	590	100	110	1.8 U	1.8 U	1.9 U	0.051 U	0.051 U
beta-BHC	3,200	2,100	360	200	1.8 U	1.8 U	1.9 U	0.051 U	0.051 U
delta-BHC	N/A	N/A	N/A	300	1.8 U	1.8 U	1.9 U	0.051 U	0.051 U
gamma-BHC(Lindane)	4,400	2,900	490	60	1.8 U	1.8 U	1.9 U	0.051 U	0.051 U
Heptachlor	1,300	550	140	100	1.8 U	1.8 U	1.9 U	0.051 U	0.051 U
Aldrin	340	150	38	41	1.8 U	1.8 U	4.6 J	0.051 U	0.051 U
Heptachlor epoxide	630	270	70	20	1.8 U	1.8 U	1.9 U	0.051 U	0.051 U
Endosulfan I	N/A	N/A	N/A	900	1.8 U	1.8 U	1.9 U	0.051 U	0.051 U
Dieldrin	360	150	40	44	3.5 U	3.5 U	5.6	0.10 U	0.10 U
4,4'-DDE	17,000	12,000	1,900	2100	3.5 U	3.5 U	3.7 U	0.10 U	0.10 U
Endrin	610,000	260,000	23,000	100	3.5 U	3.5 U	R	0.10 U	0.10 U
Endosulfan II	N/A	N/A	N/A	900	3.5 U	3.5 U	3.7 U	0.10 U	0.10 U
4,4'-DDD	24,000	17,000	2,700	2900	3.5 U	3.5 U	3.7 U	0.10 U	0.10 U
Endosulfan sulfate	N/A	N/A	N/A	1000	3.5 U	3.5 U	3.7 U	0.10 U	0.10 U
4,4'-DDT	17,000	12,000	1,900	2100	3.5 U	R	3.7 U	0.10 U	0.10 U
Methoxychlor	10,000,000	4,400,000	390,000	10,000*	18 U	18 U	19 U	0.51 U	0.51 U
Endrin ketone	N/A	N/A	N/A	N/A	3.5 U	3.5 U	3.7 U	0.10 U	0.10 U
Endrin aldehyde	N/A	N/A	N/A	N/A	11 J	13 J	14 J	0.10 U	0.10 U
alpha-Chlordane	N/A	N/A	N/A	N/A	5.8	5.7 J	4.2	0.051 U	0.051 U
gamma-Chlordane	N/A	N/A	N/A	540	4.9	5.4	1.9 U	0.051 U	0.051 U
Toxaphene	5,200	2,200	580	N/A	180 U	180 U	190 U	5.1 U	5.1 U

Table 4-4
Summary of Pesticides Detected in Soil
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Notes:

* = As per TAGM #4046, total Pesticides < 10000 ppb.

Values shown in bold type exceed the NYSDEC Soil Cleanup Objectives.

Concentrations are reported in micrograms per Kilogram (ug/Kg) equivalent to parts per billion (ppb).

U = Compound was not detected at the indicated concentration.

P = For dual column analysis, the percent difference between the quantitated concentrations on the two columns is greater than 40%.

N/A = Not Available.

BD120999 is the blind duplicate for SB-8A (0-2).

BD122199 is the blind duplicate for SB-9A (10-12).

R =The sample results are rejected.

Reference:

New York State Department of Environmental Conservation Division (NYSDEC) of Technical and Administrative Guidance Memorandum (TAGM 4046): Determination of Soil Cleanup Objective and Cleanup Levels, January 24, 1994.

NYSDEC, Division of Hazardous Substances Regulation, TAGM 3028, "Contained-In" Criteria for Environmental Media, November 30, 1992, revised March 14, 1997.

United States Environmental Protection Agency (USEPA) Region 3 Risk-Based Concentration (RBC) Table was downloaded from USEPA Region 3 website (http://www.epa.gov/reg3hwmd/risk/riskmenu.htm) on February 29, 2000.

USEPA Region 9 Preliminary Remediation Goals (PRGs) were downloaded from USEPA Region 9 website (http://www/epa.gov/region09/waste/sfund/prg/index.htm) on February 29, 2000.

Method: NYSDEC 1995 Analytical Services Protocol/Target Compound List (ASP/TCL) 95-3.

Table 4-5
Summary of Inorganic Compounds Detected in Soil
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Soil Boring Location:					SB-4		SB-5		SB-6	
Sample ID	USEPA	USEPA	NYSDEC TAGM	NYSDEC TAGM	SB-4A (4-6')	SB-4B (10-12')	SB-5A (0-2')	SB-5B (10-12')	SB-6A (8-10')	SB-6B (12-14')
Lab Sample Number	Region 3	Region 9	3028 "Contained-In"	4046	172189	172190	172196	172197	175791	175792
Sampling Date	RBCs	PRGs	Criteria for	Soil Guidance	11/30/99	11/30/99	12/01/99	12/01/99	12/16/99	12/16/99
Matrix	Industrial Soil	Industrial Soil	Environmental Media	Values	Soil	Soil	Soil	Soil	Soil	Soil
Dilution Factor			Soil Action Level	(ppb)	NA	NA	NA	NA	NA	NA
Units	mg/Kg	mg/Kg	mg/Kg		mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
METALS										
Aluminum	2,000,000	100,000	N/A	SB	932	646	2960	424	508	357
Antimony	820	820	31	SB	0.97 U	1.0 U	1.0 U	0.97 U	0.99 UJ	1.0 UJ
Arsenic	3.8	440/2.7[a]	0.4	7.5 or SB	0.70 U	0.81	1.2	0.70 U	0.72 U	0.74 U
Barium	140,000	100,000	5,500	300 or SB	4.6	3.1	17.8	1.8	2.5	1.5
Beryllium	4,100	2,200	0.15	0.16 or SB	0.06	0.09	0.13	0.04 U	0.04 U	0.04 U
Cadmium	1,000	810	78	1 or SB	0.08 U	0.09 U	0.39	0.08 U	0.08 U	0.09 U
Calcium	N/A	N/A	N/A	SB	179	88.3	17900	37.9	53.5	28.9
Chromium	N/A	450	N/A	10 or SB	6.9	**12.4**	**17.1**	0.80	2.3	0.87
Cobalt	120,000	100,000	N/A	30 or SB	0.66	1.1	1.4	0.32	0.27 U	0.28 U
Copper	82,000	76,000	88	25 or SB	2.5	14.5	18.7	0.72	0.98	0.63
Iron	610,000	100,000	N/A	2000 or SB	**2480**	**10900**	**4010**	946	1270	726
Lead	N/A	1,000	400	SB	0.58	0.68	21.7	0.54 UJ	0.77	0.56 U
Magnesium	N/A	N/A	N/A	SB	198	172	8340	96.1	109	70.7
Manganese	41,000	32,000	11,000	SB	25.4	70.1	55.3	7.2	10.1 J	8.8 J
Mercury	N/A	610	23	0.1	0.05 U	0.05 U	0.09 J	0.05 U	0.05 U	0.05 U
Nickel	41,000	41,000	1,600	13 or SB	2.0	8.4	4.0	0.72	0.59	0.46
Potassium	N/A	N/A	N/A	SB	58.8	62.2	150	48.7	60.1	28.2 U
Selenium	10,000	10,000	390	2 or SB	0.84 U	0.90 U	0.88 U	0.84 U	0.87 U	0.89 U
Silver	10,000	10,000	390	SB	0.27 U	0.29 U	0.28 U	0.27 U	0.27 U	0.28 U
Sodium	N/A	N/A	N/A	SB	72.5 U	77.6 U	1030	72.7 U	74.6 U	76.5 U
Thallium	140	N/A	7.8	SB	0.90 U	0.97 U	0.95 U	0.91 U	0.93 U	0.95 U
Vanadium	14,000	14,000	550	150 or SB	2.2	1.9	6.4	1.2	1.7	0.80
Zinc	610,000	100,000	23,000	20 or SB	7.9	**43.3**	**219**	3.3	3.6	2.3
Cyanide					0.51 U	0.55 U	0.54 U	0.53 U	0.53 U	0.55 U

Table 4-5
Summary of Inorganic Compounds Detected in Soil
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Soil Boring Location:					SB-7		SB-8		
Sample ID	USEPA	USEPA	NYSDEC TAGM	NYSDEC TAGM	SB-7A (8-10')	SB-7B (12-14')	SB-8A (0-2')	BD120999	SB-8B (12-14')
Lab Sample Number	Region 3	Region 9	3028 "Contained-In"	4046	174987	174988	174183	174192	174184
Sampling Date	RBCs	PRGs	Criteria for	Soil Guidance	12/14/99	12/14/99	12/09/99	12/09/99	12/09/99
Matrix	Industrial Soil	Industrial Soil	Environmental Media	Values	Soil	Soil	Soil	Soil	Soil
Dilution Factor			Soil Action Level	(ppb)	NA	NA	NA	NA	NA
Units	mg/Kg	mg/Kg	mg/Kg		mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
METALS									
Aluminum	2,000,000	100,000	N/A	SB	1730	362	4230	4070	1130
Antimony	820	820	31	SB	1.0 UJ	1.1 UJ	0.94 UJ	0.95 UJ	1.0 UJ
Arsenic	3.8	440/2.7[a]	0.4	7.5 or SB	0.73 U	0.77 U	0.68 U	0.69 U	0.74 U
Barium	140,000	100,000	5,500	300 or SB	12.0	1.9	13.6	12.6	4.2
Beryllium	4,100	2,200	0.15	0.16 or SB	0.10	0.05 U	0.16	0.13	0.06
Cadmium	1,000	810	78	1 or SB	0.09	0.09 U	0.08 U	0.18	0.09 U
Calcium	N/A	N/A	N/A	SB	4770	42.8	1770	1820	257
Chromium	N/A	450	N/A	10 or SB	6.3	1.4	5.7	5.3	1.6
Cobalt	120,000	100,000	N/A	30 or SB	1.4	0.29 U	2.2	1.9	0.66
Copper	82,000	76,000	88	25 or SB	3.7	0.74	4.5	4.3	1.3
Iron	610,000	100,000	N/A	2000 or SB	2940	1390	5900	5320	1710
Lead	N/A	1,000	400	SB	12.8	0.59 U	15.4	17.2	2.4
Magnesium	N/A	N/A	N/A	SB	456	55.5	832	755	192
Manganese	41,000	32,000	11,000	SB	32.9 J	4.3 J	120 J	79.6 J	24.6 J
Mercury	N/A	610	23	0.1	0.10	0.06 U	0.05	0.05 U	0.06 U
Nickel	41,000	41,000	1,600	13 or SB	2.8	0.44	5.3	6.6	1.1
Potassium	N/A	N/A	N/A	SB	79.6	29.3 U	227	232	63.4
Selenium	10,000	10,000	390	2 or SB	0.88 U	0.92 U	0.82 U	0.83 U	0.90 U
Silver	10,000	10,000	390	SB	0.28 U	0.29 U	0.26 U	0.26 U	0.28 U
Sodium	N/A	N/A	N/A	SB	75.5 U	79.6 U	70.6 U	71.3 U	119
Thallium	140	N/A	7.8	SB	0.94 U	0.99 U	0.88 U	0.89 U	0.96 U
Vanadium	14,000	14,000	550	150 or SB	3.9	1.5	7.7	7.5	2.3
Zinc	610,000	100,000	23,000	20 or SB	36.1	4.9	17.1	17.8	6.2
Cyanide					0.54 U	0.60 U	0.55 U	0.55 U	0.56 U

Table 4-5
Summary of Inorganic Compounds Detected in Soil
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Soil Boring Location:					SB-9			SB-10	
Sample ID	USEPA	USEPA	NYSDEC TAGM	NYSDEC TAGM	SB-9A (10-12')	BD122199	SB-9B (12-14')	SB-10A (8-10')	SB-10B (12-14')
Lab Sample Number	Region 3	Region 9	3028 "Contained-In"	4046	176453	176455	176454	172707	172708
Sampling Date	RBCs	PRGs	Criteria for	Soil Guidance	12/21/99	12/21/99	12/21/99	12/02/99	12/02/99
Matrix	Industrial Soil	Industrial Soil	Environmental Media	Values	Soil	Soil	Soil	Soil	Soil
Dilution Factor			Soil Action Level	(ppb)	NA	NA	NA	NA	NA
Units	mg/Kg	mg/Kg	mg/Kg		mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
METALS									
Aluminum	2,000,000	100,000	N/A	SB	2300	984	771	2550	484
Antimony	820	820	31	SB	0.96 U	0.96 U	1.0 U	1.0 U	1.1 U
Arsenic	3.8	440/2.7[a]	0.4	7.5 or SB	1.1	0.70 U	0.76 U	0.74	0.81 U
Barium	140,000	100,000	5,500	300 or SB	16.0	6.6	5.1	12.6	2.2
Beryllium	4,100	2,200	0.15	0.16 or SB	0.11	0.09	0.08	0.10	0.05 U
Cadmium	1,000	810	78	1 or SB	0.08 U	0.08 U	0.09 U	0.74	0.10 U
Calcium	N/A	N/A	N/A	SB	4940 J	815 J	338 J	3140	50.3
Chromium	N/A	450	N/A	10 or SB	6.6	3.5	1.9	6.7	0.97
Cobalt	120,000	100,000	N/A	30 or SB	1.2	0.60	0.44	1.4	0.41
Copper	82,000	76,000	88	25 or SB	6.4	3.4	1.7	7.1	0.91
Iron	610,000	100,000	N/A	2000 or SB	**3880**	1840	1680	**5040**	1240
Lead	N/A	1,000	400	SB	10.5	5.3	1.2	19.2	0.62 UJ
Magnesium	N/A	N/A	N/A	SB	808	205	231	663	114
Manganese	41,000	32,000	11,000	SB	52.4 J	14.2 J	13.1 J	66.8	13.4
Mercury	N/A	610	23	0.1	0.05 U	0.05 U	0.05 U	0.05 U	0.06 U
Nickel	41,000	41,000	1,600	13 or SB	4.2	2.8	1.4	3.3	0.78
Potassium	N/A	N/A	N/A	SB	86.3	49.3	127	141	43.7
Selenium	10,000	10,000	390	2 or SB	0.84 U	0.84 U	0.91 U	0.87 U	0.98 U
Silver	10,000	10,000	390	SB	0.27 U	0.27 U	0.29 U	0.28 U	0.31 U
Sodium	N/A	N/A	N/A	SB	72.1 U	72.3 U	109	75.2 U	84.0 U
Thallium	140	N/A	7.8	SB	0.90 U	0.90 U	0.98 U	0.94 U	1.0 U
Vanadium	14,000	14,000	550	150 or SB	6.1	4.2	2.5	5.6	1.7
Zinc	610,000	100,000	23,000	20 or SB	**35.2**	12.7	8.2	**95.7**	3.9
Cyanide					0.53 UJ	0.53 UJ	0.56 UJ	0.53 U	0.60 U

Table 4-5
Summary of Inorganic Compounds Detected in Soil
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Soil Boring Location:					SB-11		SB-12		SB-16	
Sample ID	USEPA	USEPA	NYSDEC TAGM	NYSDEC TAGM	SB-11A (10-12')	SB-11B (12-14')	SB-12A (4-6')	SB-12B (12-14')	SB-16A (0-2')	SB-16B (12-14')
Lab Sample Number	Region 3	Region 9	3028 "Contained-In"	4046	173289	173290	172713	172714	174193	174194
Sampling Date	RBCs	PRGs	Criteria for	Soil Guidance	12/07/99	12/07/99	12/03/99	12/03/99	12/09/99	12/09/99
Matrix	Industrial Soil	Industrial Soil	Environmental Media	Values	Soil	Soil	Soil	Soil	Soil	Soil
Dilution Factor			Soil Action Level	(ppb)	NA	NA	NA	NA	NA	NA
Units	mg/Kg	mg/Kg	mg/Kg		mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
METALS										
Aluminum	2,000,000	100,000	N/A	SB	830	523	3210	1080	1350	911
Antimony	820	820	31	SB	0.96 U	1.0 U	1.0 U	1.0 U	0.97 UJ	1.0 UJ
Arsenic	3.8	440/2.7[a]	0.4	7.5 or SB	1.5	0.75 U	2.9	0.74 U	0.70 U	0.74 U
Barium	140,000	100,000	5,500	300 or SB	5.1	4.6	12.9	5.2	6.0	3.1
Beryllium	4,100	2,200	0.15	0.16 or SB	0.07	0.06	0.16	0.07	0.08	0.06
Cadmium	1,000	810	78	1 or SB	0.08 U	0.09 U	0.09 U	0.09 U	0.08 U	0.09 U
Calcium	N/A	N/A	N/A	SB	885	114	2270	658	5210	743
Chromium	N/A	450	N/A	10 or SB	2.8	2.0	**22.9**	2.5	3.1	3.7
Cobalt	120,000	100,000	N/A	30 or SB	0.41	0.37	**1.9**	0.73	0.70	0.56
Copper	82,000	76,000	88	25 or SB	4.3	1.7	8.4	2.1	2.3	1.8
Iron	610,000	100,000	N/A	2000 or SB	**2010**	1150	**6880**	1570	**2530**	**2160**
Lead	N/A	1,000	400	SB	3.5	4.1	14.7	3.3	4.8	1.6
Magnesium	N/A	N/A	N/A	SB	**167**	99.0	550	256	2300	439
Manganese	41,000	32,000	11,000	SB	17.8	5.9	40.6	19.6	55.1 J	27.3 J
Mercury	N/A	610	23	0.1	0.05 U	0.05 U	0.06 J	0.05 U	0.05 U	0.05 U
Nickel	41,000	41,000	1,600	13 or SB	1.5	0.95	3.3	1.4	2.9	1.1
Potassium	N/A	N/A	N/A	SB	79.8	40.0	138	87.6	169	44.6
Selenium	10,000	10,000	390	2 or SB	0.83 U	0.90 U	0.88 U	0.90 U	0.85 U	0.89 U
Silver	10,000	10,000	390	SB	0.26 U	0.29 U	0.28 U	0.28 U	0.27 U	0.28 U
Sodium	N/A	N/A	N/A	SB	71.8 U	77.5 U	76.1 U	77.1 U	72.9 U	76.4 U
Thallium	140	N/A	7.8	SB	0.90 U	0.97 U	0.95 U	0.96 U	0.91 U	0.95 U
Vanadium	14,000	14,000	550	150 or SB	1.9	1.4	7.7	2.6	2.9	4.2
Zinc	610,000	100,000	23,000	20 or SB	18.5	6.5	**26.4**	7.6	7.3	7.9
Cyanide					0.52 U	0.55 U	0.54 U	0.55 U	0.54 U	0.55 U

Table 4-5
Summary of Inorganic Compounds Detected in Soil
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Soil Boring Location:									
Sample ID	USEPA	USEPA	NYSDEC TAGM	NYSDEC TAGM	FB113099	FB120899	FB120999	FB121799	FB122199
Lab Sample Number	Region 3	Region 9	3028 "Contained-In"	4046	172193	173294	174189	175798	176460
Sampling Date	RBCs	PRGs	Criteria for	Soil Guidance	11/30/99	12/08/99	12/09/99	12/17/99	12/21/99
Matrix	Industrial Soil	Industrial Soil	Environmental Media	Values	WATER	WATER	WATER	WATER	WATER
Dilution Factor			Soil Action Level	(ppb)	NA	NA	NA	NA	NA
Units	mg/Kg	mg/Kg	mg/Kg		ug/l	ug/l	ug/l	ug/l	ug/l
METALS									
Aluminum	2,000,000	100,000	N/A	SB	91.3 U	91.3 U	210	183 U	183 U
Antimony	820	820	31	SB	4.7 U	4.7 U	9.4 U	9.4 U	9.4 U
Arsenic	3.8	440/2.7[a]	0.4	7.5 or SB	3.4 U	3.4 U	6.8 U	6.8 U	6.8 U
Barium	140,000	100,000	5,500	300 or SB	1.0 U	1.0 U	2.0 U	2.0 U	2.0 U
Beryllium	4,100	2,200	0.15	0.16 or SB	0.20 U	0.20 U	0.40 U	0.40 U	0.40 U
Cadmium	1,000	810	78	1 or SB	0.40 U	0.40 U	0.80 U	0.80 U	0.80 U
Calcium	N/A	N/A	N/A	SB	78.8	64.8 U	442	237	130 U
Chromium	N/A	450	N/A	10 or SB	1.2 U	1.2 U	2.4 U	2.4 U	2.4 U
Cobalt	120,000	100,000	N/A	30 or SB	1.3 U	1.3 U	2.6 U	2.6 U	2.6 U
Copper	82,000	76,000	88	25 or SB	2.7 U	2.7 U	5.4 U	5.4 U	5.4 U
Iron	610,000	100,000	N/A	2000 or SB	34.3 U	34.3 U	68.6 U	68.6 U	68.6 U
Lead	N/A	1,000	400	SB	2.6 UJ	2.6 U	5.2 U	5.2 U	5.2 U
Magnesium	N/A	N/A	N/A	SB	51.5 U	51.5 U	103 U	103 U	103 U
Manganese	41,000	32,000	11,000	SB	0.70 U	0.70 U	1.4 U	1.4 U	1.4 U
Mercury	N/A	610	23	0.1	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Nickel	41,000	41,000	1,600	13 or SB	1.3 U	1.3 U	2.6 U	2.6 U	2.6 U
Potassium	N/A	N/A	N/A	SB	130 U	130 U	260 U	260 U	260 U
Selenium	10,000	10,000	390	2 or SB	4.1 U	4.1 U	8.2 U	8.2 U	8.2 U
Silver	10,000	10,000	390	SB	1.3 U	1.3 U	2.6 U	2.6 U	2.6 U
Sodium	N/A	N/A	N/A	SB	353 U	353 U	706 U	706 U	706 U
Thallium	140	N/A	7.8	SB	4.4 U	4.4 U	8.8 U	8.8 U	8.8 U
Vanadium	14,000	14,000	550	150 or SB	1.8 U	1.8 U	3.6 U	3.6 U	3.6 U
Zinc	610,000	100,000	23,000	20 or SB	5.7 U	5.7 U	11.4 U	11.4 U	11.4 U
Cyanide					10.0 U	10.0 U	10.0 U	500 U	10.0 U

Table 4-5
Summary of Inorganic Compounds Detected in Soil
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Notes:
SB = site background
Values shown in bold type exceed the NYSDEC Soil Cleanup Objectives.
Concentrations are reported in milligrams per kilogram (mg/Kg) equivalent to parts per million (ppm).
U = Compound was not detected at the indicated concentration.
BD120999 is the blind duplicate for SB-8A (0-2).
BD122199 is the blind duplicate for SB-9A (10-12).
[a]USEPA Region 9 PRG for arsenic (non cancer endpoint) was given as 440 mg/Kg and for arsenic (cancer endpoint) was given as 2.7 mg/Kg.
[b]USEPA Region 9 PRG for arsenic (cancer endpoint).

Reference:
New York State Department of Environmental Conservation Division (NYSDEC) of Technical and Administrative Guidance Memorandum (TAGM 4046): Determination of Soil Cleanup Objective and Cleanup Levels, January 24, 1994.
NYSDEC, Division of Hazardous Substances Regulation, TAGM 3028, "Contained-In" Criteria for Environmental Media, November 30, 1992, revised March 14, 1997.
United States Environmental Protection Agency (USEPA) Region 3 Risk-Based Concentration (RBC) Table was downloaded from USEPA Region 3 website (http://www.epa.gov/reg3hwmd/risk/riskmenu.htm) on February 29, 2000.
USEPA Region 9 Preliminary Remediation Goals (PRGs) were downloaded from USEPA Region 9 website (http://www/epa.gov/region09/waste/sfund/prg/index.htm) on February 29, 2000.
Methods: NYSDEC 1995 Analytical Services Protocol (ASP) Method 200.7 CLP-U; for mercury Method 245.1/245.5 CLP-M (cold vapor); for cyanide Method 335.2 CLP-M (distillation).

Table 4-6
Summary of Volatile Organic Compounds Detected in Ground-Water HydroPunch Samples
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

HydroPunch Location:		HP-1				HP-2			
Sample ID	NYSDEC	HP-1A (18.0')	HP-1B (46.0')	HP-1C (74.0')	HP-1D (96.0')	HP-2A (22.0')	HP-2B (44.0')	HP-2C (74.0')	HP-2D (96.0')
Lab Sample Number	Ground-Water	175787	175788	175789	175790	176461	176462	176463	176464
Sampling Date	Quality Standards/	12/15/99	12/15/99	12/16/99	12/16/99	12/22/99	12/22/99	12/22/99	12/22/99
Matrix	Guidance Values	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
Dilution Factor	(ug/L)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
VOLATILE COMPOUNDS (GC/MS)									
Chloromethane	5	10 U	10 U	10 U	10 U	0.8 J	10 U	10 U	10 U
Bromomethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Vinyl Chloride	2	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methylene Chloride	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	50 G	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon Disulfide	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	5	10 U	10 U	1.0 J	10 U	10 U	1.0 J	10 U	10 U
1,1-Dichloroethane	5	10 U	10 U	2.0 J	10 U	10 U	1.0 J	1.0 J	1.0 J
cis-1,2-Dichloroethene	5*	10 U	10 U	2.0 J	10 U	10 U	1.0 J	1.0 J	1.0 J
Chloroform	7	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	0.6	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Butanone	50 G	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	5	10 U	10 U	10 U	10 U	10 U	1.0 J	10 U	10 U
Carbon Tetrachloride	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	50 G	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene	0.4 e	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene	5	10 U	10 U	2.0 J	10 U	10 U	2.0 J	2.0 J	2.0 J
Dibromochloromethane	50 G	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	1	10 U	10 U	10 U	10 U	0.6 J	10 U	10 U	10 U
trans-1,3-Dichloropropene	0.4 e	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromoform	50 G	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-Pentanone	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	50 G	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	5	10 U	10 U	2.0 J	10 U	10 U	2.0 J	3.0 J	2.0 J
1,1,2,2-Tetrachloroethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Toluene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Styrene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Xylenes(Total)	5 d	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Total Confident Conc. VOCs (s)		0	0	0	0	0	0	0	0
Total Estimated Conc. VOC TICs (s)		0	0	21	0	0	0	0	0

Table 4-6
Summary of Volatile Organic Compounds Detected in Ground-Water HydroPunch Samples
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

HydroPunch Location:		HP-3				HP-4			
Sample ID	NYSDEC	HP-3A (19.0')	HP-3B (44.0')	HP-3C (74.0')	HP-3D (96.0')	HP-4A (18')	HP-4B (42')	HP-4C (72')	HP-4D (95')
Lab Sample Number	Ground-Water	173285	173286	173287	173288	172191	172192	172194	172195
Sampling Date	Quality Standards/	12/06/99	12/07/99	12/07/99	12/07/99	11/30/99	11/30/99	12/01/99	12/01/99
Matrix	Guidance Values	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
Dilution Factor	(ug/L)	2.0	2.0	1.0	1.0	1.0	1.0	1.0	1.0
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
VOLATILE COMPOUNDS (GC/MS)									
Chloromethane	5	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane	5	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U
Vinyl Chloride	2	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane	5	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U
Methylene Chloride	5	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	50 G	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon Disulfide	NA	20 U	20 U	0.6 J	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	5	20 U	20 U	10 U	0.5 J	10 U	10 U	1.0 J	10 U
1,1-Dichloroethane	5	20 U	20 U	10 U	10 U	10 U	10 U	0.7 J	10 U
cis-1,2-Dichloroethene	5*	20 U	20 U	10 U	0.6 J	10 U	10 U	10 U	10 U
Chloroform	7	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	0.6	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Butanone	50 G	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	5	20 U	20 U	10 U	10 U	10 U	10 U	0.8 J	10 U
Carbon Tetrachloride	5	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	50 G	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	1	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene	0.4 e	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene	5	20 U	20 U	10 U	10 U	10 U	10 U	1.0 J	0.9 J
Dibromochloromethane	50 G	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	1	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	1	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene	0.4 e	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromoform	50 G	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-Pentanone	NA	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	50 G	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	5	20 U	20 U	10 U	10 U	**6.0 J**	10 U	**7.0 J**	**14**
1,1,2,2-Tetrachloroethane	5	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U
Toluene	5	1.0 J	20 U	10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	5	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	5	3.0 J	2.0 J	1.0 J	0.7 J	10 U	10 U	10 U	10 U
Styrene	5	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U
Xylenes(Total)	5 d	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U
Total Confident Conc. VOCs (s)		0	0	0	0	0	0	0	14
Total Estimated Conc. VOC TICs (s)		616	446	375	200	118	17	110	28

Table 4-6
Summary of Volatile Organic Compounds Detected in Ground-Water HydroPunch Samples
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

HydroPunch Location:		HP-5				
Sample ID	NYSDEC	HP-5A (17')	HP-5B (43')	HP-5C (73')	BD120299	HP-5D (96')
Lab Sample Number	Ground-Water	172198	172199	172201	172203	172202
Sampling Date	Quality Standards/	12/01/99	12/01/99	12/02/99	12/02/99	12/02/99
Matrix	Guidance Values	WATER	WATER	WATER	WATER	WATER
Dilution Factor	(ug/L)	1.0	1.0	1.0	1.0	1.0
Units		ug/L	ug/L	ug/L	ug/L	ug/L
VOLATILE COMPOUNDS (GC/MS)						
Chloromethane	5	10 U	10 U	10 U	10 U	10 U
Bromomethane	5	10 U	10 U	10 U	10 U	10 U
Vinyl Chloride	2	10 U	10 U	10 U	10 U	10 U
Chloroethane	5	10 U	10 U	10 U	10 U	10 U
Methylene Chloride	5	10 U	10 U	10 U	10 U	10 U
Acetone	50 G	10 U	10 U	10 U	10 U	10 U
Carbon Disulfide	NA	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	5	10 U	1.0 J	0.6 J	0.6 J	0.7 J
1,1-Dichloroethane	5	1.0 J	1.0 J	0.6 J	10 U	10 U
cis-1,2-Dichloroethene	5*	10 U	10 U	10 U	10 U	10 U
Chloroform	7	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	0.6	10 U	10 U	10 U	10 U	10 U
2-Butanone	50 G	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	5	0.7 J	10 U	10 U	10 U	10 U
Carbon Tetrachloride	5	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	50 G	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	1	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene	0.4 e	10 U	10 U	10 U	10 U	10 U
Trichloroethene	5	10 U	1.0 J	2.0 J	2.0 J	2.0 J
Dibromochloromethane	50 G	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	1	10 U	10 U	10 U	10 U	10 U
Benzene	1	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene	0.4 e	10 U	10 U	10 U	10 U	10 U
Bromoform	50 G	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-Pentanone	NA	10 U	10 U	10 U	10 U	10 U
2-Hexanone	50 G	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	5	3.0 J	**57**	**120**	**110**	**120**
1,1,2,2-Tetrachloroethane	5	10 U	10 U	10 U	10 U	10 U
Toluene	5	10 U	0.6 J	10 U	10 U	10 U
Chlorobenzene	5	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	5	10 U	10 U	10 U	10 U	10 U
Styrene	5	10 U	10 U	10 U	10 U	10 U
Xylenes(Total)	5 d	10 U	10 U	10 U	10 U	10 U
Total Confident Conc. VOCs (s)		0	57	120	110	120
Total Estimated Conc. VOC TICs (s)		0	0	58	33	29

Table 4-6
Summary of Volatile Organic Compounds Detected in Ground-Water HydroPunch Samples
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

HydroPunch Location:		HP-6				
Sample ID	NYSDEC	HP-6A (18.0')	BD121699	HP-6B (44.0')	HP-6C (74.0')	HP-6D (96.0')
Lab Sample Number	Ground-Water	175793	175797	175794	175795	175796
Sampling Date	Quality Standards/	12/16/99	12/16/99	12/16/99	12/17/99	12/17/99
Matrix	Guidance Values	WATER	WATER	WATER	WATER	WATER
Dilution Factor	(ug/L)	1.0	1.0	1.0	1.0	1.0
Units		ug/L	ug/L	ug/L	ug/L	ug/L
VOLATILE COMPOUNDS (GC/MS)						
Chloromethane	5	10 U	10 U	10 U	10 U	10 U
Bromomethane	5	10 U	10 U	10 U	10 U	10 U
Vinyl Chloride	2	10 U	10 U	10 U	10 U	10 U
Chloroethane	5	10 U	10 U	10 U	10 U	10 U
Methylene Chloride	5	10 U	0.8 J	10 U	10 U	10 U
Acetone	50 G	10 U	10 U	10 U	10 U	10 U
Carbon Disulfide	NA	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	5	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	5	10 U	10 U	10 U	10 U	10 U
cis-1,2-Dichloroethene	5*	10 U	10 U	10 U	10 U	10 U
Chloroform	7	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	0.6	10 U	10 U	10 U	10 U	10 U
2-Butanone	50 G	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	5	10 U	10 U	10 U	10 U	10 U
Carbon Tetrachloride	5	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	50 G	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	1	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene	0.4 e	10 U	10 U	10 U	10 U	10 U
Trichloroethene	5	4.0 J	3.0 J	0.7 J	0.9 J	10 U
Dibromochloromethane	50 G	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	1	10 U	10 U	10 U	10 U	10 U
Benzene	1	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene	0.4 e	10 U	10 U	10 U	10 U	10 U
Bromoform	50 G	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-Pentanone	NA	10 U	10 U	10 U	10 U	10 U
2-Hexanone	50 G	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	5	**140**	**140**	**8.0 J**	**11**	5.0 J
1,1,2,2-Tetrachloroethane	5	10 U	10 U	10 U	10 U	10 U
Toluene	5	0.4 J	0.4 J	10 U	10 U	10 U
Chlorobenzene	5	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	5	10 U	10 U	10 U	10 U	10 U
Styrene	5	10 U	10 U	10 U	10 U	10 U
Xylenes(Total)	5 d	10 U	10 U	10 U	10 U	10 U
Total Confident Conc. VOCs (s)		140	140	0	11	0
Total Estimated Conc. VOC TICs (s)		0	0	0	20	12

Table 4-6
Summary of Volatile Organic Compounds Detected in Ground-Water HydroPunch Samples
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

HydroPunch Location:		HP-7				HP-8			
Sample ID	NYSDEC	HP-7A (19.0')	HP-7B (44.0')	HP-7C (74.0')	HP-7D (96.0')	HP-8A (18.0')	HP-8B (44.0')	HP-8C (74.0')	HP-8D (96.0')
Lab Sample Number	Ground-Water	174993	174994	174995	174996	174185	174186	174187	174188
Sampling Date	Quality Standards/	12/14/99	12/14/99	12/14/99	12/14/99	12/09/99	12/09/99	12/09/99	12/09/99
Matrix	Guidance Values	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
Dilution Factor	(ug/L)	5.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
VOLATILE COMPOUNDS (GC/MS)									
Chloromethane	5	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane	5	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Vinyl Chloride	2	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane	5	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methylene Chloride	5	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	50 G	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon Disulfide	NA	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	5	4.0 J	0.7 J	10 U	10 U	10 U	1.0 J	0.6 J	10 U
1,1-Dichloroethane	5	50 U	10 U	10 U	10 U	0.6 J	1.0 J	10 U	10 U
cis-1,2-Dichloroethene	5*	5.0 J	10 U	0.6 J	0.4 J	10 U	0.5 J	10 U	10 U
Chloroform	7	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	0.6	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Butanone	50 G	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	5	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon Tetrachloride	5	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	50 G	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	1	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene	0.4 e	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene	5	**22 J**	2.0 J	2.0 J	1.0 J	10 U	2.0 J	1.0 J	10 U
Dibromochloromethane	50 G	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	1	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	1	**2.0 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene	0.4 e	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromoform	50 G	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-Pentanone	NA	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	50 G	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	5	**320**	**11**	**12**	**8.0 J**	4.0 J	**66**	**39**	**9.0 J**
1,1,2,2-Tetrachloroethane	5	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Toluene	5	3.0 J	0.4 J	10 U	10 U	0.6 J	10 U	10 U	10 U
Chlorobenzene	5	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	5	50 U	10 U	10 U	10 U	0.7 J	10 U	10 U	10 U
Styrene	5	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Xylenes(Total)	5 d	50 U	10 U	10 U	10 U	1.0 J	0.6 J	10 U	10 U
Total Confident Conc. VOCs (s)		320	11	12	0	0	66	39	0
Total Estimated Conc. VOC TICs (s)		0	0	0	6.0	30	14	17	7.0

Table 4-6
Summary of Volatile Organic Compounds Detected in Ground-Water HydroPunch Samples
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

HydroPunch Location:		HP-9				HP-10			
Sample ID	NYSDEC	HP-9A (19.0')	HP-9B (44.0')	HP-9C (74.0')	HP-9D (96.0')	HP-10A (18.0')	HP-10B (44.0')	HP-10C (74.0')	HP-10D (96.0')
Lab Sample Number	Ground-Water	176456	176457	176458	176459	172709	172710	172711	172712
Sampling Date	Quality Standards/	12/21/99	12/21/99	12/21/99	12/21/99	12/02/99	12/02/99	12/02/99	12/02/99
Matrix	Guidance Values	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
Dilution Factor	(ug/L)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
VOLATILE COMPOUNDS (GC/MS)									
Chloromethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Vinyl Chloride	2	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methylene Chloride	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	50 G	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon Disulfide	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U	0.5 J
1,1-Dichloroethene	5	10 U	10 U	10 U	10 U	10 U	0.6 J	0.7 J	10 U
1,1-Dichloroethane	5	10 U	10 U	0.5 J	10 U	0.7 J	0.7 J	0.7 J	10 U
cis-1,2-Dichloroethene	5*	10 U	0.6 J	0.8 J	0.5 J	10 U	10 U	10 U	0.5 J
Chloroform	7	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	0.6	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Butanone	50 G	10 U	10 U	2.0 J	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	5	10 U	10 U	10 U	10 U	10 U	10 U	0.7 J	10 U
Carbon Tetrachloride	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	50 G	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene	0.4 e	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene	5	10 U	0.7 J	1.0 J	0.8 J	10 U	1.0 J	1.0 J	1.0 J
Dibromochloromethane	50 G	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	1	4.0 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene	0.4 e	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromoform	50 G	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-Pentanone	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	50 G	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	5	10 U	0.8 J	0.9 J	0.7 J	9.0 J	16	12	29
1,1,2,2-Tetrachloroethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Toluene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Styrene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Xylenes(Total)	5 d	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Total Confident Conc. VOCs (s)		0	0	0	0	0	16	12	29
Total Estimated Conc. VOC TICs (s)		0	118	11	0	0	0	29	14

Table 4-6
Summary of Volatile Organic Compounds Detected in Ground-Water HydroPunch Samples
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

HydroPunch Location:		HP-11				HP-12			
Sample ID	NYSDEC	HP-11A (18.0')	HP-11B (44.0')	HP-11C (74.0')	HP-11D (96.0')	HP-12A (18.0')	HP-12B (44.0')	HP-12C (74.0')	HP-12D (96.0')
Lab Sample Number	Ground-Water	173291	173292	173293	173295	172715	173282	173283	173284
Sampling Date	Quality Standards/	12/07/99	12/07/99	12/08/99	12/08/99	12/03/99	12/06/99	12/06/99	12/06/99
Matrix	Guidance Values	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
Dilution Factor	(ug/L)	10.0	1.0	25.0	1.0	1.0	1.0	1.0	1.0
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
VOLATILE COMPOUNDS (GC/MS)									
Chloromethane	5	100 U	10 U	250 U	10 U	10 U	10 U	10 U	10 U
Bromomethane	5	100 U	10 U	250 U	10 U	10 U	10 U	10 U	10 U
Vinyl Chloride	2	100 U	10 U	250 U	10 U	10 U	10 U	10 U	10 U
Chloroethane	5	100 U	10 U	250 U	10 U	10 U	10 U	10 U	10 U
Methylene Chloride	5	100 U	10 U	250 U	10 U	10 U	10 U	10 U	10 U
Acetone	50 G	100 U	10 U	250 U	10 U	10 U	10 U	10 U	10 U
Carbon Disulfide	NA	100 U	10 U	250 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	5	100 U	10 U	250 U	10 U	10 U	1.0 J	10 U	10 U
1,1-Dichloroethane	5	100 U	10 U	250 U	10 U	10 U	1.0 J	10 U	10 U
cis-1,2-Dichloroethene	5*	**11 J**	10 U	250 U	10 U	10 U	0.6 J	0.9 J	10 U
Chloroform	7	100 U	10 U	250 U	10 U	10 U	0.5 J	0.6 J	10 U
1,2-Dichloroethane	0.6	100 U	10 U	250 U	10 U	10 U	10 U	10 U	10 U
2-Butanone	50 G	100 U	10 U	250 U	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	5	100 U	10 U	250 U	10 U	10 U	1.0 J	10 U	10 U
Carbon Tetrachloride	5	100 U	10 U	250 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	50 G	100 U	10 U	250 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	1	100 U	10 U	250 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene	0.4 e	100 U	10 U	250 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene	5	**7.0 J**	10 U	250 U	10 U	0.7 J	2.0 J	0.8 J	10 U
Dibromochloromethane	50 G	100 U	10 U	250 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	1	100 U	10 U	250 U	10 U	10 U	10 U	10 U	10 U
Benzene	1	100 U	10 U	250 U	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene	0.4 e	100 U	10 U	250 U	10 U	10 U	10 U	10 U	10 U
Bromoform	50 G	100 U	10 U	250 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-Pentanone	NA	100 U	10 U	250 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	50 G	100 U	10 U	250 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	5	**28 J**	1.0 J	250 U	10 U	**30**	4.0 J	**10**	1.0 J
1,1,2,2-Tetrachloroethane	5	100 U	10 U	250 U	10 U	10 U	10 U	10 U	10 U
Toluene	5	**140**	**20**	**53 J**	1.0 J	10 U	10 U	10 U	10 U
Chlorobenzene	5	100 U	10 U	250 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	5	**170**	**39**	**68 J**	2.0 J	10 U	10 U	10 U	10 U
Styrene	5	100 U	10 U	250 U	10 U	10 U	10 U	10 U	10 U
Xylenes(Total)	5 d	**640**	**96**	**230 J**	1.0 J	10 U	10 U	10 U	10 U
Total Confident Conc. VOCs (s)		950	155	0	0	30	0	10	0
Total Estimated Conc. VOC TICs (s)		4276	483	4210	65	0	12	17	0

Table 4-6
Summary of Volatile Organic Compounds Detected in Ground-Water HydroPunch Samples
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

HydroPunch Location:		HP-13				HP-14				
Sample ID	NYSDEC	HP-13A (29.0')	HP-13B (59.0')	HP-13C (89.0')	HP-13D (99.0')	HP-14A (18.0')	BD121099	HP-14B (44.0')	HP-14C (74.0')	HP-14D (96.0')
Lab Sample Number	Ground-Water	174989	174990	174991	174992	174190	174191	174195	174196	174197
Sampling Date	Quality Standards/	12/13/99	12/13/99	12/13/99	12/13/99	12/10/99	12/10/99	12/10/99	12/10/99	12/10/99
Matrix	Guidance Values	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
Dilution Factor	(ug/L)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
VOLATILE COMPOUNDS (GC/MS)										
Chloromethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Vinyl Chloride	2	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methylene Chloride	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	50 G	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon Disulfide	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U	0.6 J	10 U
1,1-Dichloroethene	5	10 U	2.0 J	10 U	10 U	10 U	10 U	2.0 J	0.9 J	0.7 J
1,1-Dichloroethane	5	10 U	1.0 J	10 U	0.6 J	10 U	10 U	2.0 J	1.0 J	10 U
cis-1,2-Dichloroethene	5*	10 U	0.5 J	10 U	10 U	10 U	10 U	0.6 J	10 U	10 U
Chloroform	7	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	0.6	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Butanone	50 G	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	5	10 U	2.0 J	10 U	10 U	10 U	10 U	0.8 J	10 U	10 U
Carbon Tetrachloride	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	50 G	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene	0.4 e	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene	5	10 U	2.0 J	10 U	10 U	10 U	10 U	2.0 J	1.0 J	0.7 J
Dibromochloromethane	50 G	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene	0.4 e	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromoform	50 G	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-Pentanone	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	50 G	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	5	1.0 J	1.0 J	10 U	10 U	2.0 J	1.0 J	2.0 J	4.0 J	4.0 J
1,1,2,2-Tetrachloroethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Toluene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Styrene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Xylenes(Total)	5 d	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Total Confident Conc. VOCs (s)		0	0	0	0	0	0	0	0	0
Total Estimated Conc. VOC TICs (s)		0	9.0	0	9.0	0	0	38	23	12

Table 4-6
Summary of Volatile Organic Compounds Detected in Ground-Water HydroPunch Samples
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

HydroPunch Location:		HP-15								
Sample ID	NYSDEC	HP-15A (18.0')	HP-15B (44.0')	HP-15C (74.0')	HP-15D (96.0')	TB120299	TB120899	TB121599	TB121799	TB122299
Lab Sample Number	Ground-Water	176449	176450	176451	176452	172200	173296	174997	175799	176465
Sampling Date	Quality Standards/	12/20/99	12/20/99	12/20/99	12/20/99	12/01/99	12/08/99	12/13/99	12/15/99	12/19/99
Matrix	Guidance Values	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
Dilution Factor	(ug/L)	1.0	2.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
VOLATILE COMPOUNDS (GC/MS)										
Chloromethane	5	10 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane	5	10 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Vinyl Chloride	2	2.0 J	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane	5	5.0 J	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methylene Chloride	5	10 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U	0.7 JB
Acetone	50 G	10 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon Disulfide	NA	1.0 J	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	5	10 U	20 U	10 U	1.0 J	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	5	10 U	20 U	10 U	2.0 J	10 U	10 U	10 U	10 U	10 U
cis-1,2-Dichloroethene	5*	**8.0 J**	**21**	**9 J**	5.0 J	10 U	10 U	10 U	10 U	10 U
Chloroform	7	10 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	0.6	10 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Butanone	50 G	10 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	5	10 U	20 U	10 U	2.0 J	10 U	10 U	10 U	10 U	10 U
Carbon Tetrachloride	5	10 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	50 G	10 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	1	10 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene	0.4 e	10 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene	5	0.9 J	4.0 J	1.0 J	4.0 J	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane	50 G	10 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	1	10 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	1	10 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U	2.0 J
trans-1,3-Dichloropropene	0.4 e	10 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromoform	50 G	10 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-Pentanone	NA	10 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	50 G	10 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	5	**6.0 J**	**34**	**8.0 J**	**10**	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	5	10 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Toluene	5	**7.0 J**	**31**	**6.0 J**	4.0 J	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	5	0.9 J	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	5	**7.0 J**	**7.0 J**	1.0 J	1.0 J	10 U	10 U	10 U	10 U	10 U
Styrene	5	10 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Xylenes(Total)	5 d	**6.0 J**	**28**	5.0 J	**6.0 J**	10 U	10 U	10 U	10 U	10 U
Total Confident Conc. VOCs (s)		0	113	0	10	0	0	0	0	0
Total Estimated Conc. VOC TICs (s)		900	408	137	173	0	0	0	0	0

Table 4-6
Summary of Volatile Organic Compounds Detected in Ground-Water HydroPunch Samples
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Notes:
Concentrations reported in micrograms per Liter (ug/L).
* = Criteria value listed for 1,2-Dichloroethene (Total) applies to the cis- and trans- isomers individually.
Values shown in bold type exceed the NYSDEC Ground-Water Quality Standard or Guidance Value.
G = Guidance Value.
NA = No Standard or guidance value for ground-water is available for these substances.
e = Value listed applies to the sum of the isomers.
d = Value listed applies to each isomer individually.
U = Compound was not detected at the indicated concentration.
J = The result is less than the quantitation limit but greater than zero. Concentration given is an approximate value.
B = The Analyte was found in the laboratory blank as well as the sample. Possible lab contamination of the environmental sample.
NR = Not analyzed.
BD121699 is the blind duplicate for HP-6A (18.0').
BD121099 is the blind duplicate for HP-14A (18.0').
BD120299 is the blind duplicate for HP-5C (73').
VOCs = Volatile Organic Compounds.
TICs = Tentatively Identified Compounds.
GC/MS = Gas Chromatograph/Mass Spectrometry.
Reference:
New York State Department of Environmental Conservation (NYSDEC), Division of Water Technical and Operational Guidance Series (1.1.1), Ambient Water Quality Standards and Guidance Values, June 1998.
Method: NYSDEC 1995 Analytical Services Protocol/Target Compound List (ASP/TCL) 95-1.

Table 4-7
Summary of Volatile Organic Compounds Detected in Ground-Water Monitoring Wells
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Sample ID	NYSDEC	MW-1	MW-1D	MW-2	MW-2D	MW-3	BD012000
Lab Sample Number	Ground-Water	180183	180184	180185	180186	180187	180194
Sampling Date	Quality Standards/	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00
Matrix	Guidance Values	WATER	WATER	WATER	WATER	WATER	WATER
Dilution Factor		1.0	1.0	1.0	1.0	25.0	25.0
Units	(ug/L)	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
VOLATILE COMPOUNDS (GC/MS)							
Chloromethane	5	10 U	10 U	10 U	10 U	250 U	250 U
Bromomethane	5	10 U	10 U	10 U	10 U	250 U	250 U
Vinyl Chloride	2	10 U	10 U	10 U	10 U	250 U	250 U
Chloroethane	5	10 U	10 U	10 U	10 U	250 U	250 U
Methylene Chloride	5	10 U	10 U	10 U	10 U	250 U	250 U
Acetone	50 G	10 U	10 U	10 U	10 U	250 U	250 U
Carbon Disulfide	NA	10 U	10 U	10 U	10 U	250 U	250 U
1,1-Dichloroethene	5	10 U	2.0 J	10 U	2.0 J	250 U	250 U
1,1-Dichloroethane	5	10 U	2.0 J	0.7 J	2.0 J	250 U	250 U
cis-1,2-Dichloroethene	5*	4.0 J	0.5 J	2.0 J	10 U	**14 J**	**14 J**
Chloroform	7	10 U	10 U	10 U	10 U	250 U	250 U
1,2-Dichloroethane	0.6	10 U	10 U	10 U	10 U	250 U	250 U
2-Butanone	50 G	10 U	10 U	10 U	10 U	250 U	250 U
1,1,1-Trichloroethane	5	10 U	3.0 J	10 U	10 U	250 U	250 U
Carbon Tetrachloride	5	10 U	10 U	10 U	10 U	250 U	250 U
Bromodichloromethane	50 G	10 U	10 U	10 U	10 U	250 U	250 U
1,2-Dichloropropane	1	10 U	10 U	10 U	10 U	250 U	250 U
cis-1,3-Dichloropropene	0.4 e	10 U	10 U	10 U	10 U	250 U	250 U
Trichloroethene	5	2.0 J	3.0 J	4.0 J	2.0 J	250 U	250 U
Dibromochloromethane	50 G	10 U	10 U	10 U	10 U	250 U	250 U
1,1,2-Trichloroethane	1	10 U	10 U	10 U	10 U	250 U	250 U
Benzene	1	10 U	10 U	10 U	10 U	250 U	250 U
trans-1,3-Dichloropropene	0.4 e	10 U	10 U	10 U	10 U	250 U	250 U
Bromoform	50 G	10 U	10 U	10 U	10 U	250 U	250 U
4-Methyl-2-Pentanone	NA	10 U	10 U	10 U	10 U	250 U	250 U
2-Hexanone	50 G	10 U	10 U	10 U	10 U	250 U	250 U
Tetrachloroethene	5	4.0 J	1.0 J	**68**	0.9 J	250 U	250 U
1,1,2,2-Tetrachloroethane	5	10 U	10 U	10 U	10 U	250 U	250 U
Toluene	5	10 U	10 U	10 U	10 U	**200 J**	**200 J**
Chlorobenzene	5	10 U	10 U	10 U	10 U	**69 J**	**67 J**
Ethylbenzene	5	10 U	10 U	10 U	10 U	**1200**	**1100**
Styrene	5	10 U	10 U	10 U	10 U	250 U	250 U
Xylenes(Total)	5 d	10 U	10 U	10 U	10 U	**4400**	**4500**
Total Confident Conc. VOCs (s)		0	0	68	0	5600	5600
Total Estimated Conc. VOC TICs (s)		0	15	0	41	5800	5850

Table 4-7
Summary of Volatile Organic Compounds Detected in Ground-Water Monitoring Wells
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Sample ID	NYSDEC	MW-3D	MW-4	MW-5	MW-6	TB012000	FB012000
Lab Sample Number	Ground-Water	180188	180189	180190	180191	180192	180193
Sampling Date	Quality Standards/	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00
Matrix	Guidance Values	WATER	WATER	WATER	WATER	WATER	WATER
Dilution Factor		1.0	1.0	1.0	1.0	1.0	1.0
Units	(ug/L)	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
VOLATILE COMPOUNDS (GC/MS)							
Chloromethane	5	10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane	5	10 U	10 U	10 U	10 U	10 U	10 U
Vinyl Chloride	2	10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane	5	10 U	10 U	10 U	10 U	10 U	10 U
Methylene Chloride	5	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	50 G	10 U	10 U	10 U	10 U	10 U	10 U
Carbon Disulfide	NA	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	5	1.0 J	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	5	1.0 J	10 U	10 U	2.0 J	10 U	10 U
cis-1,2-Dichloroethene	5*	10 U	10 U	10 U	10 U	10 U	10 U
Chloroform	7	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	0.6	10 U	10 U	10 U	10 U	10 U	10 U
2-Butanone	50 G	10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	5	10 U	10 U	10 U	10 U	10 U	10 U
Carbon Tetrachloride	5	10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	50 G	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	1	10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene	0.4 e	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene	5	2.0 J	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane	50 G	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	1	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	1	10 U	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene	0.4 e	10 U	10 U	10 U	10 U	10 U	10 U
Bromoform	50 G	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-Pentanone	NA	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	50 G	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	5	1.0 J	10 U	10 U	3.0 J	10 U	10 U
1,1,2,2-Tetrachloroethane	5	10 U	10 U	10 U	10 U	10 U	10 U
Toluene	5	10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	5	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	5	10 U	10 U	10 U	10 U	10 U	10 U
Styrene	5	10 U	10 U	10 U	10 U	10 U	10 U
Xylenes(Total)	5 d	10 U	10 U	10 U	10 U	10 U	10 U
Total Confident Conc. VOCs (s)		0	0	0	0	0	0
Total Estimated Conc. VOC TICs (s)		5.0	0	0	0	0	0

Table 4-7
Summary of Volatile Organic Compounds Detected in Ground-Water Monitoring Wells
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Notes:
Concentrations reported in micrograms per Liter (ug/L).
Values shown in bold type exceed the NYSDEC Ground-Water Quality Standard or Guidance Value.
* = Criteria value listed for 1,2-Dichloroethene (Total) applies to the cis- and trans- isomers individually.
G = Guidance Value.
NA = No Standard or guidance value for ground-water is available for these substances.
e = Value listed applies to the sum of the isomers.
d = Value listed applies to each isomer individually.
U = Compound was not detected at the indicated concentration.
J = The result is less than the quantitation limit but greater than zero. Concentration given is an approximate value.
BD012000 is the blind duplicate for MW-3
VOCs = Volatile Organic Compounds.
TICs = Tentatively Identified Compounds.
GC/MS = Gas Chromatograph/Mass Spectrometry.
Reference:
New York State Department of Environmental Conservation (NYSDEC), Division of Water Technical and Operational Guidance Series (1.1.1), Ambient Water Quality Standards and Guidance Values, June 1998.
Method: NYSDEC 1995 Analytical Services Protocol/Target Compound List (ASP/TCL) 95-1.

Table 4-8
Summary of Semivolatile Organic Compounds Detected in Ground-Water Monitoring Wells
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Sample ID	NYSDEC	MW-1	MW-1D	MW-2	MW-2D	MW-3	BD012000
Lab Sample Number	Ground-Water	180183	180184	180185	180186	180187	180194
Sampling Date	Quality Standards/	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00
Matrix	Guidance Values	WATER	WATER	WATER	WATER	WATER	WATER
Dilution Factor	(ug/L)	1.0	1.0	1.0	1.0	10.0	10.0
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
SEMIVOLATILE COMPOUNDS (GC/MS)							
Phenol	1 a	11 U	11 U	10 U	11 UJ	100 U	100 U
bis(2-Chloroethyl)Ether	1	11 U	11 U	10 U	11 UJ	100 U	100 U
2-Chlorophenol	1 a	11 U	11 U	10 U	11 UJ	100 U	100 U
1,3-Dichlorobenzene	NC	11 U	11 U	10 U	11 UJ	4.0 J	5.0 J
1,4-Dichlorobenzene	NC	11 U	11 U	10 U	11 UJ	24 J	26 J
1,2-Dichlorobenzene	NC	11 U	11 U	10 U	11 UJ	14 J	16 J
2-Methylphenol	1 a	11 U	11 U	10 U	11 UJ	100 U	100 U
2,2'-oxybis(1-Chloropropane)	5	11 U	11 U	10 U	11 UJ	100 U	100 U
4-Methylphenol	1 a	11 U	11 U	10 U	11 UJ	100 U	100 U
N-Nitroso-di-n-propylamine	NA	11 U	11 U	10 U	11 UJ	100 U	100 U
Hexachloroethane	5	11 U	11 U	10 U	11 UJ	100 U	100 U
Nitrobenzene	0.4	11 U	11 U	10 U	11 UJ	100 U	100 U
Isophorone	50 G	11 U	11 U	10 U	11 UJ	100 U	100 U
2-Nitrophenol	1 a	11 U	11 U	10 U	11 UJ	100 U	100 U
2,4-Dimethylphenol	1 a	11 U	11 U	10 U	11 UJ	13 J	16 J
bis(2-Chloroethoxy)methane	5	11 U	11 U	10 U	11 UJ	100 U	100 U
2,4-Dichlorophenol	1 a	11 U	11 U	10 U	11 UJ	100 U	100 U
1,2,4-Trichlorobenzene	5	11 U	11 U	10 U	11 UJ	3.0 J	3.0 J
Naphthalene	10 G	11 U	11 U	10 U	11 UJ	220	250
4-Chloroaniline	5	11 U	11 U	10 U	11 UJ	100 U	100 U
Hexachlorobutadiene	0.5	11 U	11 U	10 U	11 UJ	100 U	100 U
4-Chloro-3-Methylphenol	1 a	11 U	11 U	10 U	11 UJ	100 U	100 U
2-Methylnaphthalene	NA	11 U	11 U	10 U	11 UJ	28 J	32 J
Hexachlorocyclopentadiene	5	11 U	11 U	10 U	11 UJ	100 U	100 U
2,4,6-Trichlorophenol	1 a	11 U	11 U	10 U	11 UJ	100 U	100 U
2,4,5-Trichlorophenol	1 a	28 U	26 U	26 U	27 UJ	260 U	260 U
2-Chloronaphthalene	10 G	11 U	11 U	10 U	11 UJ	100 U	100 U
2-Nitroaniline	5	28 U	26 U	26 U	27 UJ	260 U	260 U
Dimethylphthalate	50 G	11 U	11 U	10 U	11 UJ	100 U	100 U
Acenaphthylene	NA	11 U	11 U	10 U	11 UJ	100 U	100 U
2,6-Dinitrotoluene	5	11 U	11 U	10 U	11 UJ	100 U	100 U
3-Nitroaniline	5	28 U	26 U	26 U	27 UJ	260 U	260 U
Acenaphthene	20 G	11 U	11 U	10 U	11 UJ	100 U	100 U
2,4-Dinitrophenol	1 a	28 U	26 U	26 U	27 UJ	260 U	260 U
4-Nitrophenol	1 a	28 U	26 U	26 U	27 UJ	260 U	260 U
Dibenzofuran	NA	11 U	11 U	10 U	11 UJ	100 U	100 U
2,4-Dinitrotoluene	5	11 U	11 U	10 U	11 UJ	100 U	100 U
Diethylphthalate	50 G	11 U	11 U	10 U	11 UJ	100 U	100 U
4-Chlorophenyl-phenylether	NA	11 U	11 U	10 U	11 UJ	100 U	100 U
Fluorene	50 G	11 U	11 U	10 U	11 UJ	100 U	100 U
4-Nitroaniline	5	28 U	26 U	26 U	27 UJ	260 U	260 U
4,6-Dinitro-2-methylphenol	1 a	28 U	26 U	26 U	27 UJ	260 U	260 U
N-nitrosodiphenylamine	50 G	11 U	11 U	10 U	11 UJ	2.0 J	2.0 J
4-Bromophenyl-phenylether	NA	11 U	11 U	10 U	11 UJ	100 U	100 U
Hexachlorobenzene	0.04	11 U	11 U	10 U	11 UJ	100 U	100 U
Pentachlorophenol	1 a	28 U	26 U	26 U	27 UJ	260 U	260 U
Phenanthrene	50 G	11 U	11 U	10 U	11 UJ	100 U	100 U
Anthracene	50 G	11 U	11 U	10 U	11 UJ	100 U	100 U
Carbazole	NA	11 U	11 U	10 U	11 UJ	100 U	100 U
Di-n-butylphthalate	50	11 U	11 U	10 U	11 UJ	100 U	100 U
Fluoranthene	50 G	11 U	11 U	10 U	11 UJ	100 U	100 U
Pyrene	50 G	11 U	11 U	10 U	11 UJ	100 U	100 U
Butylbenzylphthalate	50 G	11 U	11 U	10 U	11 UJ	100 U	100 U
3,3'-Dichlorobenzidine	5	11 U	11 U	10 U	11 UJ	100 U	100 U
Benzo(a)anthracene	0.002 G	11 U	11 U	10 U	11 UJ	100 U	100 U
Chrysene	0.002 G	11 U	11 U	10 U	11 UJ	100 U	100 U
bis(2-Ethylhexyl)phthalate	5	11 U	11 U	10 U	11 UJ	100 U	100 U
Di-n-octylphthalate	50 G	11 U	11 U	10 U	11 UJ	100 U	100 U
Benzo(b)fluoranthene	0.002 G	11 U	11 U	10 U	11 UJ	100 U	100 U
Benzo(k)fluoranthene	0.002 G	11 U	11 U	10 U	11 UJ	100 U	100 U
Benzo(a)pyrene	ND	11 U	11 U	10 U	11 UJ	100 U	100 U
Indeno(1,2,3-cd)pyrene	0.002 G	11 U	11 U	10 U	11 UJ	100 U	100 U
Dibenz(a,h)anthracene	NA	11 U	11 U	10 U	11 UJ	100 U	100 U
Benzo(g,h,i)perylene	NA	11 U	11 U	10 U	11 UJ	100 U	100 U
Total Confident Conc. SVOCs (s)		0	0	0	0	220	250
Total Estimated Conc. SVOC TICs (s)		0	3	0	8.0	6588	6848

Table 4-8
Summary of Semivolatile Organic Compounds Detected in Ground-Water Monitoring Wells
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Sample ID	NYSDEC	MW-3D	MW-4	MW-5	MW-6	FB012000
Lab Sample Number	Ground-Water	180188	180189	180190	180191	180193
Sampling Date	Quality Standards/	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00
Matrix	Guidance Values	WATER	WATER	WATER	WATER	WATER
Dilution Factor	(ug/L)	1.0	1.0	1.0	1.0	1.0
Units		ug/L	ug/L	ug/L	ug/L	ug/L
SEMIVOLATILE COMPOUNDS (GC/MS)						
Phenol	1 a	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethyl)Ether	1	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol	1 a	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	NC	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	NC	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	NC	10 U	10 U	10 U	10 U	10 U
2-Methylphenol	1 a	10 U	10 U	10 U	10 U	10 U
2,2'-oxybis(1-Chloropropane)	5	10 U	10 U	10 U	10 U	10 U
4-Methylphenol	1 a	10 U	10 U	10 U	10 U	10 U
N-Nitroso-di-n-propylamine	NA	10 U	10 U	10 U	10 U	10 U
Hexachloroethane	5	10 U	10 U	10 U	10 U	10 U
Nitrobenzene	0.4	10 U	10 U	10 U	10 U	10 U
Isophorone	50 G	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol	1 a	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	1 a	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethoxy)methane	5	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol	1 a	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	5	10 U	10 U	10 U	10 U	10 U
Naphthalene	10 G	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline	5	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	0.5	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-Methylphenol	1 a	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene	NA	10 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene	5	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol	1 a	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	1 a	26 U	25 U	25 U	26 U	26 U
2-Chloronaphthalene	10 G	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline	5	26 U	25 U	25 U	26 U	26 U
Dimethylphthalate	50 G	10 U	10 U	10 U	10 U	10 U
Acenaphthylene	NA	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene	5	10 U	10 U	10 U	10 U	10 U
3-Nitroaniline	5	26 U	25 U	25 U	26 U	26 U
Acenaphthene	20 G	10 U	0.2 J	10 U	10 U	10 U
2,4-Dinitrophenol	1 a	26 U	25 U	25 U	26 U	26 U
4-Nitrophenol	1 a	26 U	25 U	25 U	26 U	26 U
Dibenzofuran	NA	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene	5	10 U	10 U	10 U	10 U	10 U
Diethylphthalate	50 G	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl-phenylether	NA	10 U	10 U	10 U	10 U	10 U
Fluorene	50 G	10 U	0.1 J	10 U	10 U	10 U
4-Nitroaniline	5	26 U	25 U	25 U	26 U	26 U
4,6-Dinitro-2-methylphenol	1 a	26 U	25 U	25 U	26 U	26 U
N-nitrosodiphenylamine	50 G	10 U	10 U	10 U	10 U	10 U
4-Bromophenyl-phenylether	NA	10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene	0.04	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol	1 a	26 U	25 U	25 U	26 U	26 U
Phenanthrene	50 G	10 U	10 U	10 U	10 U	10 U
Anthracene	50 G	10 U	10 U	10 U	10 U	10 U
Carbazole	NA	10 U	10 U	10 U	10 U	10 U
Di-n-butylphthalate	50	10 U	10 U	10 U	10 U	10 U
Fluoranthene	50 G	10 U	10 U	10 U	10 U	10 U
Pyrene	50 G	10 U	10 U	10 U	10 U	10 U
Butylbenzylphthalate	50 G	10 U	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine	5	10 U	10 U	10 U	10 U	10 U
Benzo(a)anthracene	0.002 G	10 U	10 U	10 U	10 U	10 U
Chrysene	0.002 G	10 U	10 U	10 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	5	10 U	10 U	10 U	10 U	2.0 JB
Di-n-octylphthalate	50 G	10 U	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene	0.002 G	10 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene	0.002 G	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene	ND	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	0.002 G	10 U	10 U	10 U	10 U	10 U
Dibenz(a,h)anthracene	NA	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	NA	10 U	10 U	10 U	10 U	10 U
Total Confident Conc. SVOCs (s)		0	0	0	0	0
Total Estimated Conc. SVOC TICs (s)		20	33	0	0	0

Table 4-8
Summary of Semivolatile Organic Compounds Detected in Ground-Water Monitoring Wells
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Notes:

Values shown in bold type exceed the NYSDEC Ground-Water Quality Standard or Guidance Value.

Concentrations are reported in micrograms per Liter (ug/L) equivalent to parts per billion (ppb).

G = Guidance Value.

a = Value listed applies to the sum of these substances.

NA = No Standard or guidance value for ground-water is available for these substances.

U = Compound was not detected at the indicated concentration.

J = The result is less than the quantitation limit but greater than zero. Concentration given is an approximate value.

B = The analyte was found in the laboratory blank as well as the sample. This indicates possible laboratory contamination of the environmental sample.

NC = No Ground-Water cleanup objective given for this compound.

BD012000 is the blind duplicate for MW-3

SVOCs = Semivolatile Organic Compounds.

TICs = Tentatively Identified Compounds.

GC/MS = Gas Chromatograph/Mass Spectrometry.

Reference:

New York State Department of Environmental Conservation (NYSDEC), Division of Water Technical and Operational Guidance Series (1.1.1), Ambient Water Quality Standards and Guidance Values, June 1998.

Method: NYSDEC 1995 Analytical Services Protocol/Target Compound List (ASP/TCL) 95-2.

Table 4-9
Summary of PCBs Detected in Ground-Water Monitoring Wells
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Sample ID	NYSDEC	MW-1	MW-1D	MW-2	MW-2D	MW-3	BD012000	MW-3D	MW-4
Lab Sample Number	Ground-Water	180183	180184	180185	180186	180187	180194	180188	180189
Sampling Date	Quality Standards/	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00
Matrix	Guidance Values	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
Dilution Factor	(ug/L)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
PCBs									
Aroclor-1016	0.09 b	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.53 U
Aroclor-1221	0.09 b	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.53 U
Aroclor-1232	0.09 b	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.53 U
Aroclor-1242	0.09 b	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.53 U
Aroclor-1248	0.09 b	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.53 U
Aroclor-1254	0.09 b	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.53 U
Aroclor-1260	0.09 b	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.53 U
Aroclor-1262	0.09 b	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.53 U
Aroclor-1268	0.09 b	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.53 U

Notes:

Values shown in bold type exceed the NYSDEC Ground-Water Quality Standard or Guidance Value.

Concentrations are reported in micrograms per Liter (ug/L) equivalent to parts per billion (ppb).

b = Value listed applies to the sum of these substances.

U = Compound was not detected at the indicated concentration.

BD012000 is the blind duplicate for MW-3

Reference:

New York State Department of Environmental Conservation (NYSDEC), Division of Water Technical and Operational Guidance Series (1.1.1), Ambient Water Quality Standards and Guidance Values, June 1998.

Method: NYSDEC 1995 Analytical Services Protocol (ASP) Method 8080, SW-846.

Table 4-9
Summary of PCBs Detected in Ground-Water Monitoring Wells
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Sample ID	NYSDEC	MW-5	MW-6	FB012000
Lab Sample Number	Ground-Water	180190	180191	180193
Sampling Date	Quality Standards/	01/20/00	01/20/00	01/20/00
Matrix	Guidance Values	WATER	WATER	WATER
Dilution Factor	(ug/L)	1.0	1.0	1.0
Units		ug/L	ug/L	ug/L
PCBs				
Aroclor-1016	0.09 b	0.52 U	0.53 U	0.51 U
Aroclor-1221	0.09 b	0.52 U	0.53 U	0.51 U
Aroclor-1232	0.09 b	0.52 U	0.53 U	0.51 U
Aroclor-1242	0.09 b	0.52 U	0.53 U	0.51 U
Aroclor-1248	0.09 b	0.52 U	0.53 U	0.51 U
Aroclor-1254	0.09 b	0.52 U	0.53 U	0.51 U
Aroclor-1260	0.09 b	0.52 U	0.53 U	0.51 U
Aroclor-1262	0.09 b	0.52 U	0.53 U	0.51 U
Aroclor-1268	0.09 b	0.52 U	0.53 U	0.51 U

Notes:

Values shown in bold type exceed the NYSDEC Ground-Water Quality Standard or Guidance Value.

Concentrations are reported in micrograms per Liter (ug/L) equivalent to parts per billion (ppb).

b = Value listed applies to the sum of these substances.

U = Compound was not detected at the indicated concentration.

BD012000 is the blind duplicate for MW-3

Reference:

New York State Department of Environmental Conservation (NYSDEC), Division of Water Technical and Operational Guidance Series (1.1.1), Ambient Water Quality Standards and Guidance Values, June 1998.

Method: NYSDEC 1995 Analytical Services Protocol (ASP) Method 8080, SW-846.

Table 4-10
Summary of Inorganic Compounds Detected in Ground-Water Monitoring Wells
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Sample ID	NYSDEC	MW-1	MW-1D	MW-2	MW-2D	MW-3	BD012000
Lab Sample Number	Ground-Water	180183	180184	180185	180186	180187	180194
Sampling Date	Quality Standards/	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00
Matrix	Guidance Values	WATER	WATER	WATER	WATER	WATER	WATER
Dilution Factor	(ug/L)	NA	NA	NA	NA	NA	NA
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
METALS							
Aluminum	NA	81.7 U	81.7 U	81.7 U	81.7 U	81.7 U	136 B
Antimony	3	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U
Arsenic	25	3.7 U	3.7 U	3.7 U	3.7 U	8.0 B	7.5 B
Barium	1000	30.6 B	34.0 B	38.6 B	61.3 B	22.9 B	27.2 B
Beryllium	3 G	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Cadmium	5	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U
Calcium	NA	17000	14400	16400	16100	61700	72600
Chromium	50	1.7 B	1.6 U	1.6 U	1.6 U	1.6 U	2.2 B
Cobalt	NA	1.2 U	1.2 U	1.2 U	1.4 B	1.2 U	1.2 U
Copper	200	1.6 U	1.6 U	1.6 U	2.1 B	1.6 U	2.1 B
Iron	300 h	31.2 B	28.9 U	55.3 B	35.3 B	**32300**	**32900**
Lead	25	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
Magnesium	35000 G	3120 B	2230 B	2660 B	2940 B	5090	5200
Manganese	300 h	2.3 B	**8400**	1.7 B	**14800**	**610**	**621**
Mercury	0.7	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Nickel	100	3.2 B	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
Potassium	NA	2640 B	2880 B	2120 B	4190 B	3040 B	3100 B
Selenium	10	4.7 U	4.7 U	4.7 U	4.7 U	4.7 U	4.7 U
Silver	50	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Sodium	20000	9030	**26300**	8140	**21700**	6780	7130
Thallium	0.5 G	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U
Vanadium	NA	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U
Zinc	2000 G	5.6 U	5.6 U	6.7 B	5.6 U	5.6 U	9.5 B
Cyanide	200 L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U

Table 4-10
Summary of Inorganic Compounds Detected in Ground-Water Monitoring Wells
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Sample ID	NYSDEC	MW-3D	MW-4	MW-5	MW-6	FB012000
Lab Sample Number	Ground-Water	180188	180189	180190	180191	180193
Sampling Date	Quality Standards/	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00
Matrix	Guidance Values	WATER	WATER	WATER	WATER	WATER
Dilution Factor	(ug/L)	NA	NA	NA	NA	NA
Units		ug/L	ug/L	ug/L	ug/L	ug/L
METALS						
Aluminum	NA	81.7 U	81.7 U	81.7 U	81.7 U	81.7 U
Antimony	3	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U
Arsenic	25	3.7 U	4.0 B	3.7 U	3.7 U	3.7 U
Barium	1000	52.3 B	54.3 B	14.1 B	42.3 B	1.3 U
Beryllium	3 G	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Cadmium	5	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U
Calcium	NA	16200	48000	6170	14400	54.0 U
Chromium	50	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
Cobalt	NA	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Copper	200	1.6 U	1.6 U	1.8 B	1.6 U	1.6 U
Iron	300 h	28.9 U	16900	28.9 U	39.4 B	28.9 U
Lead	25	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
Magnesium	35000 G	2380 B	4580 B	1010 B	2260 B	53.3 U
Manganese	300 h	8330	308	1.4 B	2.4 B	0.90 U
Mercury	0.7	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Nickel	100	1.9 U	5.9 B	1.9 U	1.9 U	1.9 U
Potassium	NA	2930 B	2660 B	1260 B	2140 B	157 U
Selenium	10	4.7 U	4.7 U	4.7 U	4.7 U	4.7 U
Silver	50	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Sodium	20000	21900	5670	5200	9760	413 U
Thallium	0.5 G	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U
Vanadium	NA	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U
Zinc	2000 G	6.5 B	9.0 B	6.3 B	5.6 U	5.6 U
Cyanide	200 L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U

Table 4-10
Summary of Inorganic Compounds Detected in Ground-Water Monitoring Wells
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Notes:

Concentrations are reported in micrograms per Liter (ug/L).

Values shown in bold type exceed the NYSDEC Ground-Water Quality Standard or Guidance Value.

G = Guidance Value.

h = Iron and Manganese is for 300 individually or 500 as a sum.

NA = No Standard or guidance value for ground-water is available for these substances.

U = Compound was not detected at the indicated concentration.

B = The reported value was obtained from a reading less than the contract required detection limit (CRDL), but greater than or equal to the instrument detection limit (IDL).

L= Applies to total cyanide.

BD012000 is the blind duplicate for MW-3

Reference:

New York State Department of Environmental Conservation (NYSDEC), Division of Water Technical and Operational Guidance Series (1.1.1), Ambient Water Quality Standards and Guidance Values, June 1998.

Method: NYSDEC 1995 Analytical Services Protocol (ASP) Method 239.2 CLP-M.

Table 4-11
Summary of Diesel Range Organics Detected in Ground-Water Monitoring Wells
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Sample ID	MW-1	MW-1D	MW-2	MW-2D	MW-3	BD012000	MW-3D	MW-4
Lab Sample Number	180183	180184	180185	180186	180187	180194	180188	180189
Sampling Date	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00
Matrix	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
Dilution Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Total Diesel Range Organics (DRO)	0.10 U	0.10 U	0.11 U	0.10 U	5.1	4.3	0.10 U	0.10 U

Notes:
Concentrations are reported in milligrams per Liter (mg/L).
U = Compound was not detected at the indicated concentration.
BD012000 is the blind duplicate for MW-3

Table 4-11
Summary of Diesel Range Organics Detected in Ground-Water Monitoring Wells
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Sample ID	MW-5	MW-6	FB012000
Lab Sample Number	180190	180191	180193
Sampling Date	01/20/00	01/20/00	01/20/00
Matrix	WATER	WATER	WATER
Dilution Factor	1.0	1.0	1.0
Units	mg/L	mg/L	mg/L
Total Diesel Range Organics (DRO)	0.10 U	0.17 U	0.10 U

Notes:
Concentrations are reported in milligrams per Liter (mg/L).
U = Compound was not detected at the indicated concentration.
BD012000 is the blind duplicate for MW-3

Table 4-12
Total Suspended Solids and Total Dissolved Solids in Ground-Water Monitoring Wells
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Sample ID	MW-1	MW-1D	MW-2	MW-2D	MW-3	BD012000	MW-3D	MW-4
Lab Sample Number	180183	180184	180185	180186	180187	180194	180188	180189
Sampling Date	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00	01/20/00
Matrix	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
Dilution Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Total Dissolved Solids	118	162	101	163	246	240	116	174
Total Suspended Solids	10.0 U	10.0 U	10.0 U	10.0 U	47.0	47.0	10.0 U	16.0

Notes:
Concentrations are reported in milligrams per Liter (mg/L).
U = Compound was not detected at the indicated concentration.
BD012000 is the blind duplicate for MW-3

Table 4-12
Total Suspended Solids and Total Dissolved Solids in Ground-Water Monitoring Wells
Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, New York

Sample ID	MW-5	MW-6	FB012000
Lab Sample Number	180190	180191	180193
Sampling Date	01/20/00	01/20/00	01/20/00
Matrix	WATER	WATER	WATER
Dilution Factor	1.0	1.0	1.0
Units	mg/L	mg/L	mg/L
Total Dissolved Solids	57.0	84.0	10.0 U
Total Suspended Solids	10.0 U	10.0 U	10.0 U

Notes:
Concentrations are reported in milligrams per Liter (mg/L).
U = Compound was not detected at the indicated concentration.
BD012000 is the blind duplicate for MW-3

Table 4-13

Average Linear Velocity of Select Dissolved Organic Compounds

Remedial Investigation Report
Hazardous Waste Disposal, Inc.
Farmingdale, NY

Organic Compound	Organic Carbon Partition Coefficient (K_{oc})[a] mL/g	Distribution Coefficient (K_d) (cm^3/g)	Retardation Coefficient (R)	Average Linear Velocity of Dissolved Compound (ft/day)[1]	Average Linear Velocity of Dissolved Compound (ft/day)[2]
VOCs					
1,1,1-Trichloroethane	151	0.35	2.43	0.0087	0.0173
Tetrachloroethene	661	1.53	7.25	0.0029	0.0058
Trichloroethene	126	0.29	2.19	0.0096	0.0192
cis-1,2-dichloroethene	32	0.07	1.30	0.0161	0.0322

Notes:

Average Total Organic Carbon (mg/Kg)	2,318
Fraction of Organic Carbon (f_{oc})	0.002318
Kd - Distribution Coefficient of a chemical	
Bulk Density for a gravelly sand (1.37 - 1.81 g/cm^3)(USEPA, 1998)	1.59
Total Porosity, n, for a coarse sand 0.31 - 0.46 (USEPA, 1998)	0.39
Effective Porosity, ne, for a gravelly sand 0.2 - 0.35 (USEPA, 1998)	0.28
Rd - Retardation Factor	
[1]Linear Ground-Water Velocity (ft/day) = K(dh/dl)/ne where dh/dl is 0.001	0.021
[2]Linear Ground-Water Velocity (ft/day) where dh/dl is 0.002	0.042

dh/dl - 0.001 and 0.002

K = 5.9 ft/day based on MW-4 slug test)

For bulk density, total porosity and effective porosity used the midpoint of the range.

Reference:

a - Ravi, V, and J.A. Johnson, 1994 VLEACH, a One-Dimensional Finite-Difference Vadose Zone Leaching Model, Version 2.1 developed for USEPA Robert S. Kerr Laboratory, Ada, Oklahoma.

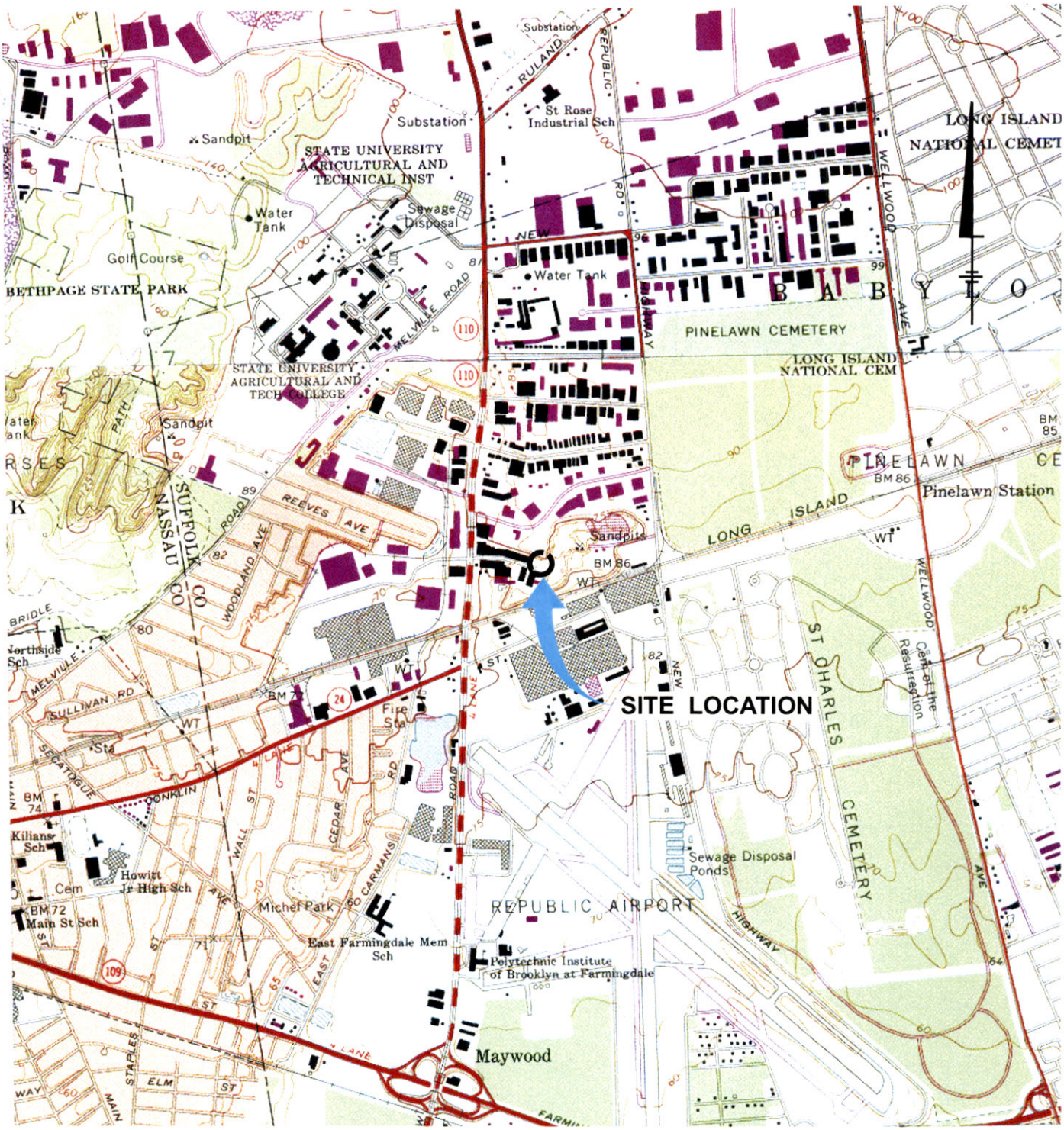
United States Environmental Protection Agency (USEPA). 1998. Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water. Office of Research and Development. Washington DC 20460. EPA/600/R-98/128. September 1998.

TABLE 5-1

REMEDIAL INVESTIGATION REPORT
HAZARDOUS WASTE DISPOSAL, INC. SITE
FARMINGDALE, NEW YORK

EXPOSURE PROFILE SUMMARY TABLE

Receptor	Exposure Point	Exposure Route
CURRENT CONDITIONS		
Off-site Commercial/Industrial Worker (Adult)	Indoor Air	Vapor Inhalation
Off-site Resident (Adult and Child)	Groundwater (municipal supply)	Ingestion Dermal Contact Vapor Inhalation
Off-site Commercial/Industrial Worker (Adult)	Groundwater (municipal supply)	Ingestion Dermal Contact Vapor Inhalation
HYPOTHETICAL FUTURE CONDITIONS		
Commercial/Industrial Worker (Adult)	Soil	Dust Inhalation Soil Dermal Contact Soil Incidental Ingestion
Excavation Worker (Adult)	Soil	Dust Inhalation Soil Dermal Contact Soil Incidental Ingestion
Off-site Resident (Teenage On-site Trespasser)	Soil	Dust Inhalation Soil Dermal Contact Soil Incidental Ingestion
Resident (Adult and Child)	Soil	Dust Inhalation Soil Dermal Contact Soil Incidental Ingestion
Ecological Receptors	Soil	Dust Inhalation Soil Dermal Contact Soil Incidental Ingestion
Commercial/Industrial Worker (Adult)	Groundwater (municipal supply) Groundwater (on-site supply)	Ingestion Dermal Contact Vapor Inhalation
Resident (Adult and Child)	Groundwater (municipal supply) Groundwater (on-site supply)	Ingestion Dermal Contact Vapor Inhalation
Commercial/Industrial Worker (Adult)	Indoor Air	Vapor Inhalation
Resident (Adult and Child)	Indoor Air	Vapor Inhalation



REFERENCE: AMITYVILLE, NEW YORK USGS QUAD. 1969 PR 1979, HUNTINGTON, NEW YORK USGS QUAD 1967 PR 1979

2000' 0 2000'

APPROXIMATE SCALE: 1" = 2000'

HAZARDOUS WASTE DISPOSAL, INC. SITE
FARMINGDALE, NEW YORK

REMEDIAL INVESTIGATION REPORT

SITE LOCATION MAP

BBL BLASLAND, BOUCK & LEE, INC. *engineers & scientists*

FIGURE 1-1

01/00 SYR-D54-JVM, DJH
60405001/60405n01.CDR

LEGEND

- APPROXIMATE SITE BOUNDARY LOCATION (11-A PICONE BOULEVARD)
- FENCE LINE
- EXISTING MONITORING WELL LOCATION
- UNMARKED MONITORING WELL

NOTE:
EXISTING WELLS MW-1 THROUGH MW-4 INSTALLED BY GIBBS & HILL, INC. IN SEPTEMBER 1990; WELLS MW-5 AND MW-6 WERE INSTALLED IN JUNE 1994 BY FANNING, PHILLIPS & MOLNAR.

40' 0 40' 80'
SCALE IN FEET

SOURCE:
ALL BASE MAP INFORMATION UNLESS OTHERWISE NOTED WAS TAKEN FROM A MAP ENTITLED "MONITORING WELL AND SOIL BORING LOCATION PLAN, HWD SITE-PICONE BOULEVARD, FARMINGDALE NEW YORK, PROJECT No. 604.05 #2". PREPARED BY ALBERT W. TAY. FILE No. 99390-3.DWG. SURVEYED 11/22/99 THROUGH 11/29/99. SURVEYED LAST REVISED 2/9/2000.

X 60405X01.DWG
LOFF=REF
P: 60405SM2.PC2
MARCH 30, 2000 CRA-62--WDN
604\60405007\60405SM2.DWG

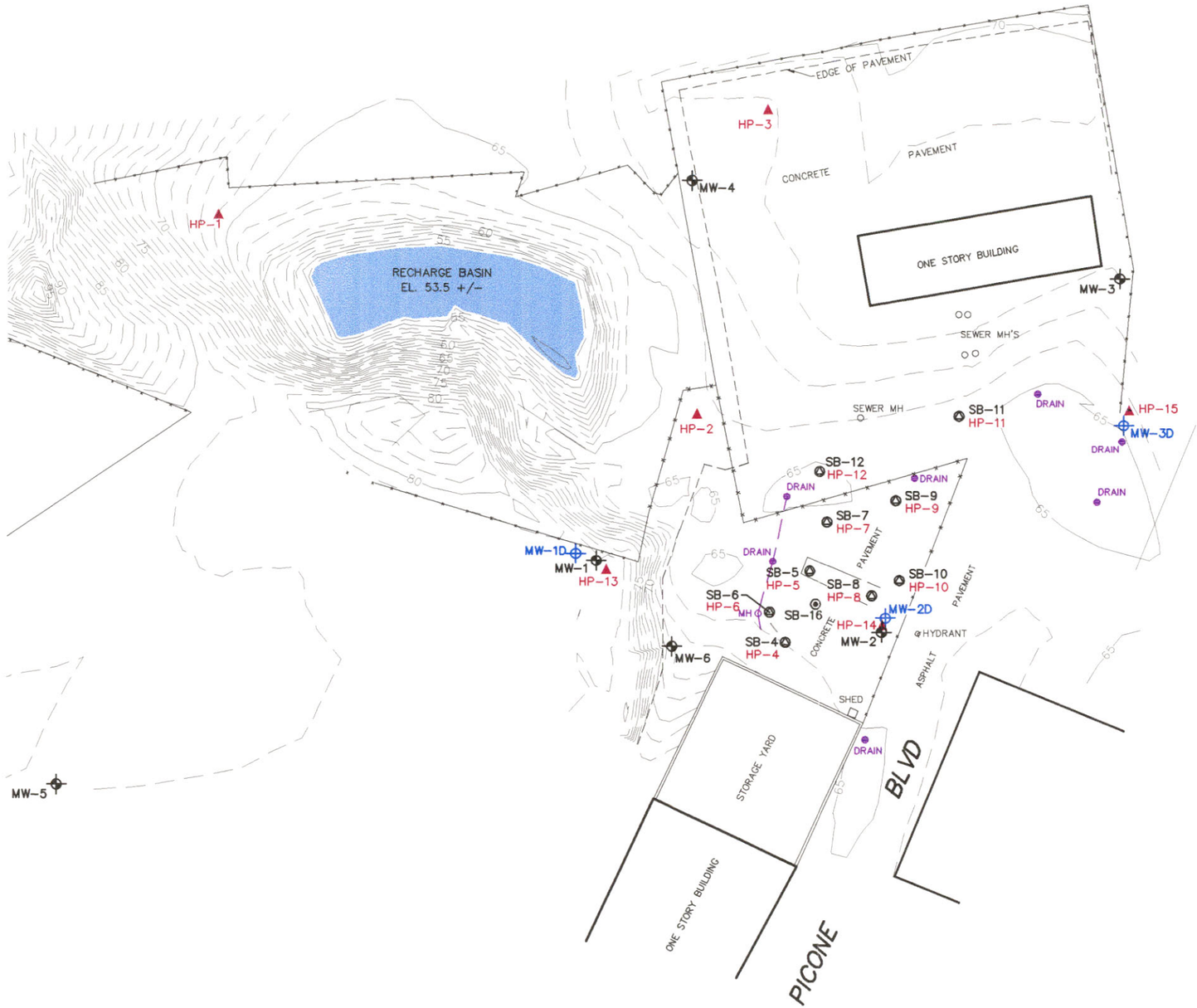
HAZARDOUS WASTE DISPOSAL, INC. SITE
FARMINGDALE, NEW YORK

REMEDIAL INVESTIGATION REPORT

SITE BASE MAP

BBL BLASLAND, BOUCK & LEE, INC. *engineers & scientists*

FIGURE **1-2**



LEGEND

- FENCE LINE
- EXISTING MONITORING WELL LOCATION
- NEW MONITORING WELL LOCATION
- SOIL BORING/HYDROPUNCH™ LOCATION
- HYDROPUNCH™ LOCATION ONLY
- SOIL BORING LOCATION ONLY

40' 0 40' 80'
SCALE IN FEET

SOURCE:
ALL BASE MAP INFORMATION UNLESS OTHERWISE NOTED WAS TAKEN FROM A MAP ENTITLED "MONITORING WELL AND SOIL BORING LOCATION PLAN, HWD SITE–PICONE BOULEVARD, FARMINGDALE NEW YORK, PROJECT No. 604.05 #2". PREPARED BY ALBERT W. TAY. FILE No. 99390–3.DWG. SURVEYED 11/22/99 THROUGH 11/29/99. SURVEYED LAST REVISED 2/9/2000.

X 60405X01.DWG
LOFF=REF
P: 60405C0.PC2
MARCH 30, 2000 CRA–62–WDN
604\60405007\60405SM1.DWG

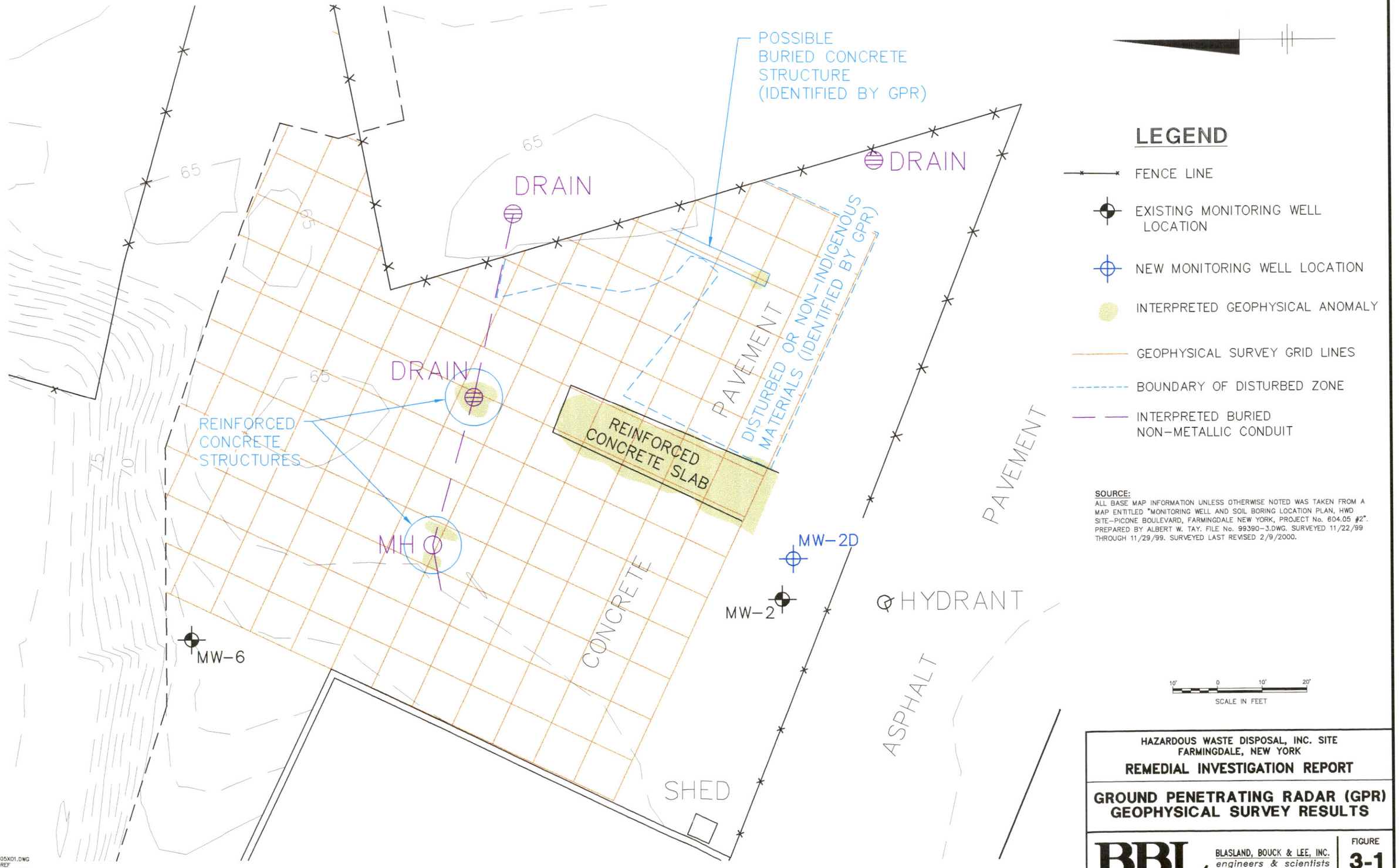
HAZARDOUS WASTE DISPOSAL, INC. SITE
FARMINGDALE, NEW YORK

REMEDIAL INVESTIGATION REPORT

SAMPLING LOCATION MAP

BBL BLASLAND, BOUCK & LEE, INC. *engineers & scientists*

FIGURE **2-1**



SOURCE:
ALL BASE MAP INFORMATION UNLESS OTHERWISE NOTED WAS TAKEN FROM A MAP ENTITLED "MONITORING WELL AND SOIL BORING LOCATION PLAN, HWD SITE-PICONE BOULEVARD, FARMINGDALE NEW YORK, PROJECT No. 604.05 #2". PREPARED BY ALBERT W. TAY. FILE No. 99390-3.DWG. SURVEYED 11/22/99 THROUGH 11/29/99. SURVEYED LAST REVISED 2/9/2000.

HAZARDOUS WASTE DISPOSAL, INC. SITE
FARMINGDALE, NEW YORK

REMEDIAL INVESTIGATION REPORT

GROUND PENETRATING RADAR (GPR) GEOPHYSICAL SURVEY RESULTS

BBL BLASLAND, BOUCK & LEE, INC. *engineers & scientists*

FIGURE **3-1**

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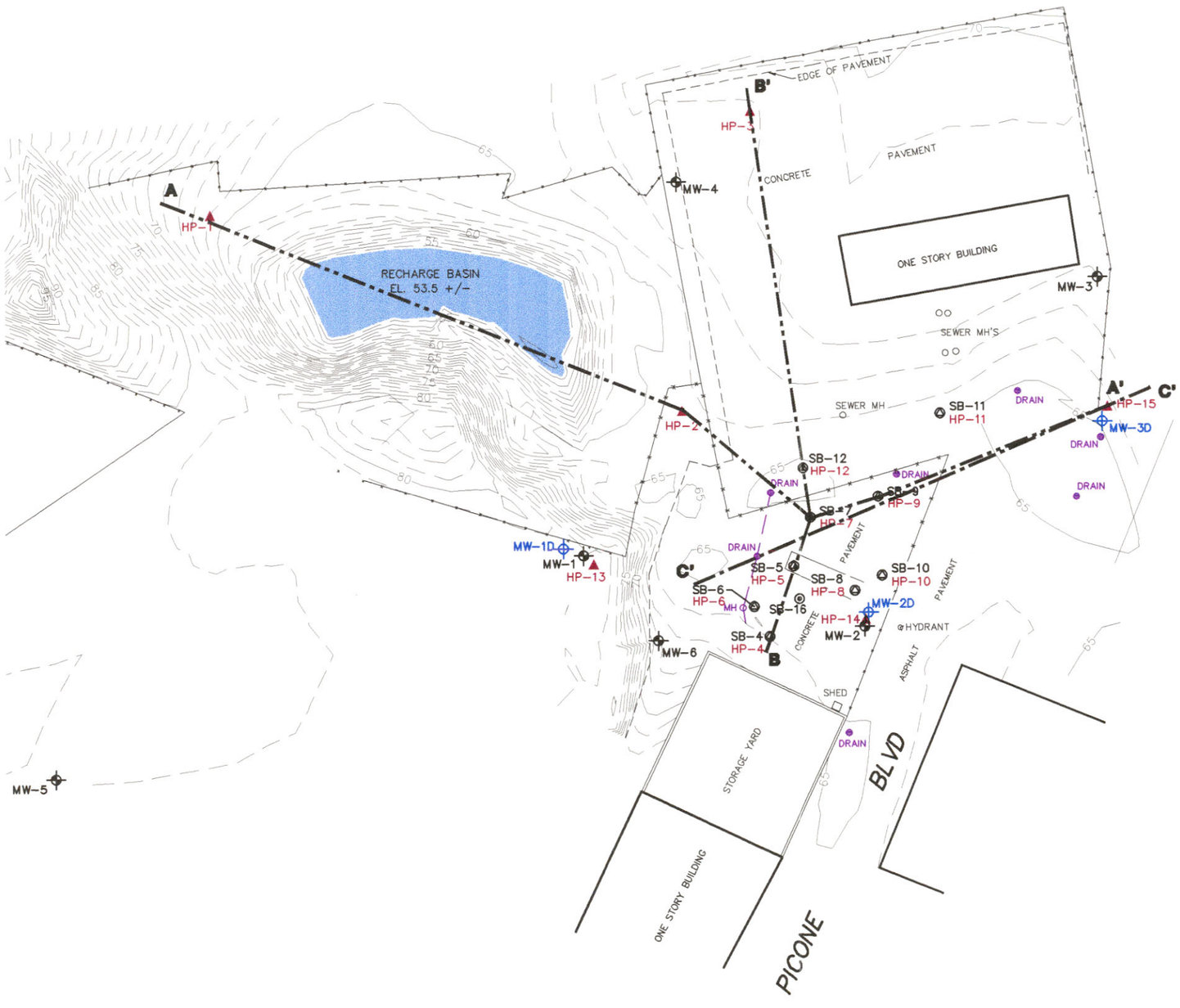

LEGEND

- FENCE LINE
- EXISTING MONITORING WELL LOCATION
- NEW MONITORING WELL LOCATION
- SOIL BORING/HYDROPUNCH™ LOCATION
- HYDROPUNCH™ LOCATION ONLY
- SOIL BORING LOCATION ONLY
- GEOLOGIC CROSS-SECTION LOCATION
- HYDROGEOLOGIC CROSS-SECTION LOCATION

40' 0 40' 80'
SCALE IN FEET

SOURCE:
ALL BASE MAP INFORMATION UNLESS OTHERWISE NOTED WAS TAKEN FROM A MAP ENTITLED "MONITORING WELL AND SOIL BORING LOCATION PLAN, HWD SITE-PICONE BOULEVARD, FARMINGDALE NEW YORK, PROJECT No. 604.05 #2". PREPARED BY ALBERT W. TAY. FILE No. 99390-3.DWG. SURVEYED 11/22/99 THROUGH 11/29/99. SURVEYED LAST REVISED 2/9/2000.

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MARCH 30, 2000 CRA-62-WDN
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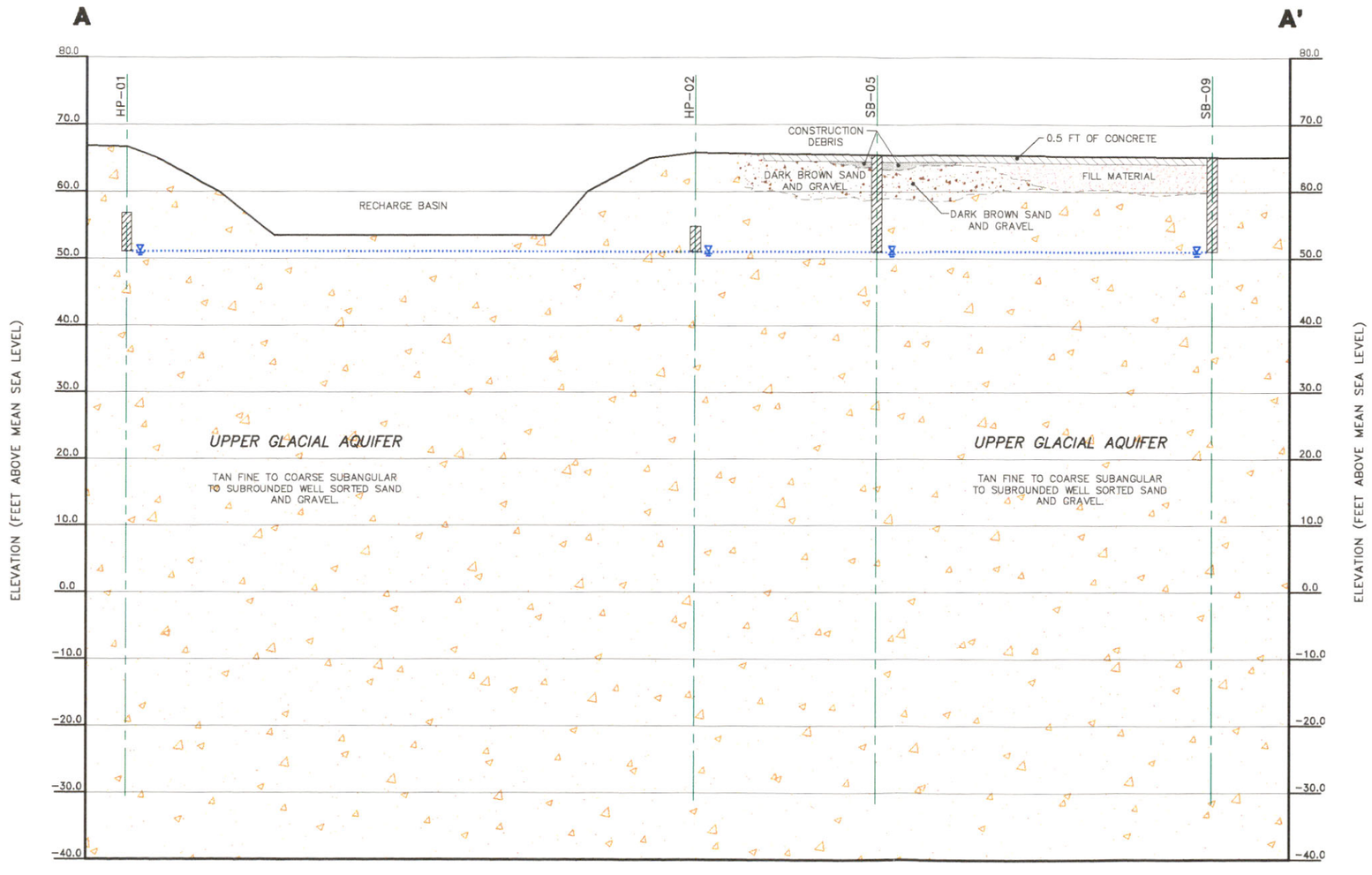
HAZARDOUS WASTE DISPOSAL, INC. SITE
FARMINGDALE, NEW YORK

REMEDIAL INVESTIGATION REPORT

CROSS-SECTION LOCATION MAP

BBL BLASLAND, BOUCK & LEE, INC. *engineers & scientists*

FIGURE 3-2



CROSS-SECTION A - A'

10' 0 10' 20'
VERTICAL SCALE IN FEET

40' 0 40' 80'
HORIZONTAL SCALE IN FEET

VERTICAL EXAGGERATION = 4 X

LEGEND

SOIL BORING/HYDROPUNCH BORING

SPLIT SPOON SAMPLE LOCATION:
- SB-05 AND SB-09 : CONTINOUS SPLIT SPOONS UNTIL CONTACT WITH GROUND WATER
- HP-01 AND HP-02 : SPLIT SPOONS ADVANCED TO VERIFY DEPTH TO GROUND WATER

GROUND WATER ELEVATION

NOTE:
SEE FIGURE 3-2 FOR CROSS-SECTION LOCATIONS.

HAZARDOUS WASTE DISPOSAL INC. SITE
FARMINGDALE, NEW YORK
REMEDIAL INVESTIGATION REPORT

GEOLOGIC CROSS-SECTION A-A'

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE 3-3

X NONE
L: OFF=REF
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MARCH 3, 2000 CRA-62-WDN
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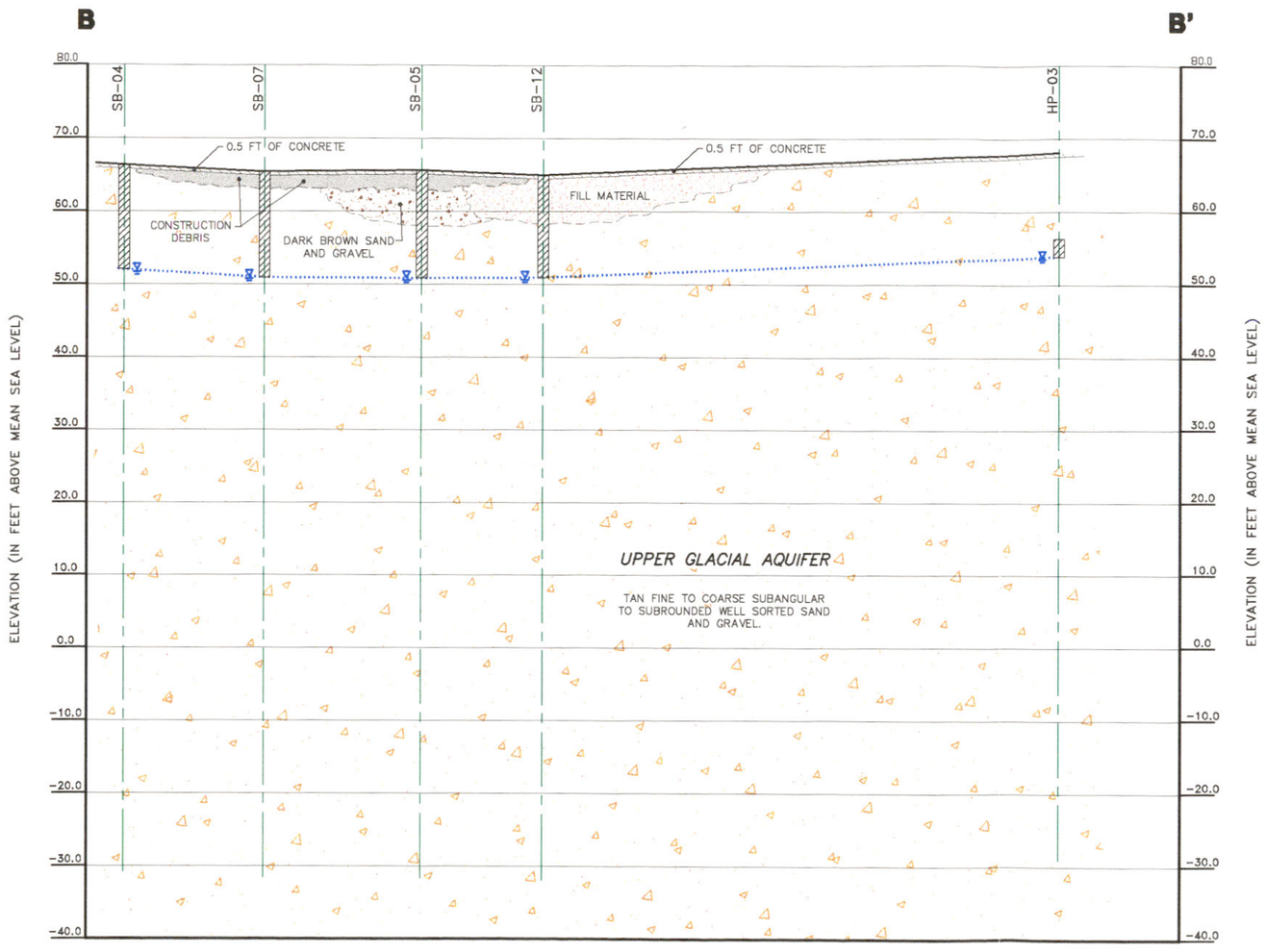

CROSS-SECTION B - B'

10' 0 10' 20'
VERTICAL SCALE IN FEET

20' 0 20' 40'
HORIZONTAL SCALE IN FEET

VERTICAL EXAGGERATION = 2 X

LEGEND

SOIL BORING/HYDROPUNCH BORING

SPLIT SPOON LOCATION:
- ALL SOIL BORINGS : CONTINOUS SPLIT SPOONS UNTIL CONTACT WITH GROUND WATER
- HP-03: SPLIT SPOON ADVANCED TO VERIFY DEPTH TO GROUND WATER

GROUND WATER ELEVATION

NOTE:
SEE FIGURE 3-2 FOR CROSS-SECTION LOCATIONS.

HAZARDOUS WASTE DISPOSAL INC. SITE
FARMINGDALE, NEW YORK
REMEDIAL INVESTIGATION REPORT

GELOGIC CROSS-SECTION B-B'

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE 3-4

X NONE
L: OFF=REF
P: 60405CS1.PC2
MARCH 3, 2000 CRA-62-WDN
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LEGEND

- FENCE LINE
- EXISTING MONITORING WELL LOCATION
- NEW MONITORING WELL LOCATION
- (52.22) GROUND-WATER ELEVATION
- GROUND-WATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
- APPROXIMATE GROUND-WATER FLOW DIRECTION

NOTE:
EXISTING WELLS MW-1 THROUGH MW-4 INSTALLED BY GIBBS & HILL, INC. IN SEPTEMBER 1990; WELLS MW-5 AND MW-6 WERE INSTALLED IN JUNE 1994 BY FANNING, PHILLIPS & MOLNAR.

40' 0 40' 80'
SCALE IN FEET

SOURCE:
ALL BASE MAP INFORMATION UNLESS OTHERWISE NOTED WAS TAKEN FROM A MAP ENTITLED "MONITORING WELL AND SOIL BORING LOCATION PLAN, HWD SITE-PICONE BOULEVARD, FARMINGDALE NEW YORK, PROJECT No. 604.05 #2". PREPARED BY ALBERT W. TAY, FILE No. 99390-3.DWG. SURVEYED 11/22/99 THROUGH 11/29/99. SURVEYED LAST REVISED 2/9/2000.

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MARCH 30, 2000 CRA-62-WDN
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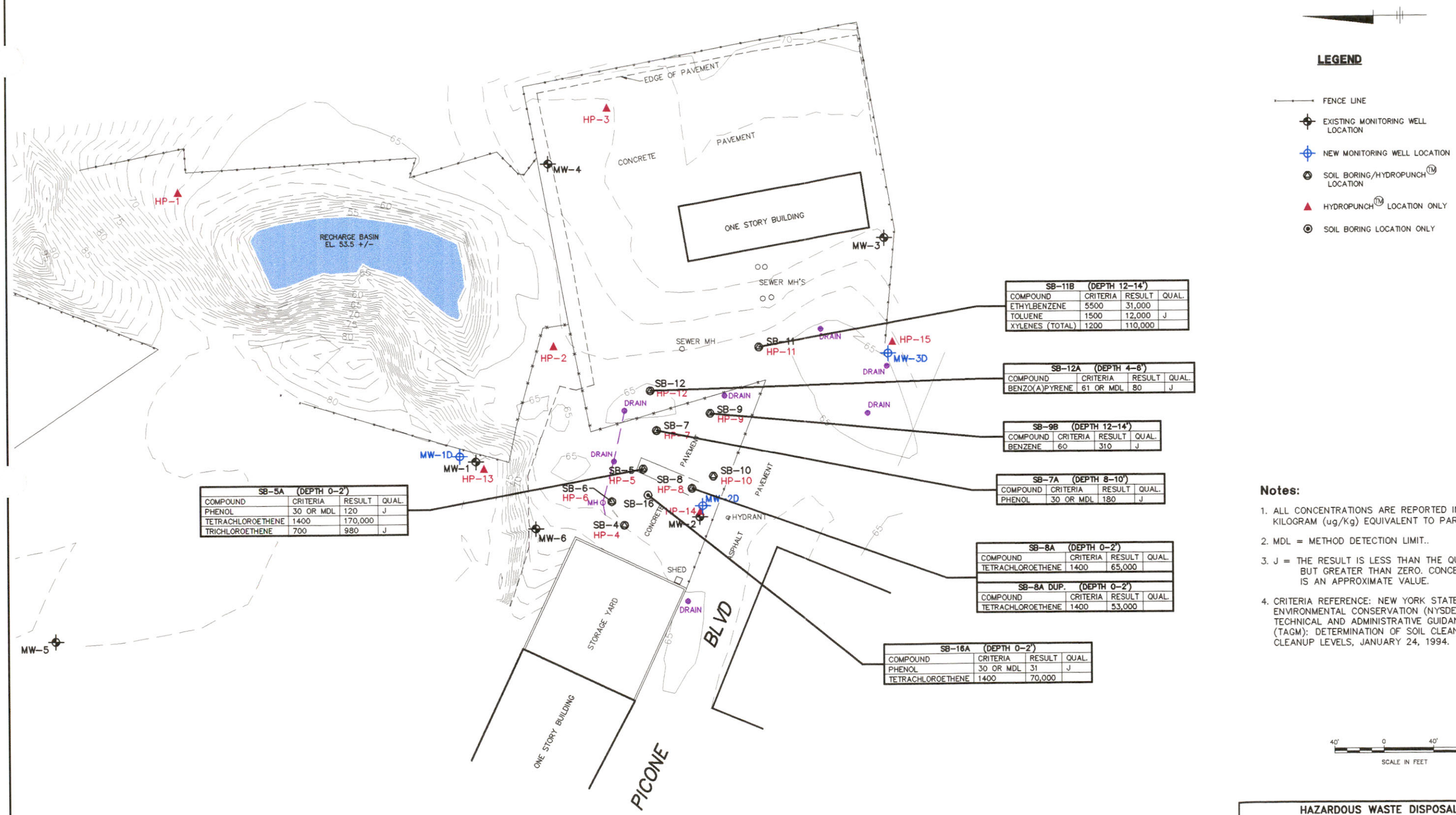
HAZARDOUS WASTE DISPOSAL, INC. SITE
FARMINGDALE, NEW YORK
REMEDIAL INVESTIGATION REPORT

GROUND-WATER ELEVATION CONTOUR MAP JANUARY 20, 2000

BBL BLASLAND, BOUCK & LEE, INC. *engineers & scientists*

FIGURE **3-5**



LEGEND

- FENCE LINE
- EXISTING MONITORING WELL LOCATION
- NEW MONITORING WELL LOCATION
- SOIL BORING/HYDROPUNCH™ LOCATION
- HYDROPUNCH™ LOCATION ONLY
- SOIL BORING LOCATION ONLY

SB-5A (DEPTH 0-2')

COMPOUND	CRITERIA	RESULT	QUAL.
PHENOL	30 OR MDL	120	J
TETRACHLOROETHENE	1400	170,000	
TRICHLOROETHENE	700	980	J

SB-11B (DEPTH 12-14')

COMPOUND	CRITERIA	RESULT	QUAL.
ETHYLBENZENE	5500	31,000	
TOLUENE	1500	12,000	J
XYLENES (TOTAL)	1200	110,000	

SB-12A (DEPTH 4-6')

COMPOUND	CRITERIA	RESULT	QUAL.
BENZO(A)PYRENE	61 OR MDL	80	J

SB-9B (DEPTH 12-14')

COMPOUND	CRITERIA	RESULT	QUAL.
BENZENE	60	310	J

SB-7A (DEPTH 8-10')

COMPOUND	CRITERIA	RESULT	QUAL.
PHENOL	30 OR MDL	180	J

SB-8A (DEPTH 0-2')

COMPOUND	CRITERIA	RESULT	QUAL.
TETRACHLOROETHENE	1400	65,000	

SB-8A DUP. (DEPTH 0-2')

COMPOUND	CRITERIA	RESULT	QUAL.
TETRACHLOROETHENE	1400	53,000	

SB-16A (DEPTH 0-2')

COMPOUND	CRITERIA	RESULT	QUAL.
PHENOL	30 OR MDL	31	J
TETRACHLOROETHENE	1400	70,000	

Notes:

1. ALL CONCENTRATIONS ARE REPORTED IN MICROGRAMS PER KILOGRAM (ug/Kg) EQUIVALENT TO PARTS PER BILLION (ppb).
2. MDL = METHOD DETECTION LIMIT..
3. J = THE RESULT IS LESS THAN THE QUANTITATION LIMIT BUT GREATER THAN ZERO. CONCENTRATION GIVEN IS AN APPROXIMATE VALUE.
4. CRITERIA REFERENCE: NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) DIVISION OF TECHNICAL AND ADMINISTRATIVE GUIDANCE MEMORANDUM (TAGM): DETERMINATION OF SOIL CLEANUP OBJECTIVE AND CLEANUP LEVELS, JANUARY 24, 1994.

40' 0 40' 80'
SCALE IN FEET

SOURCE:
ALL BASE MAP INFORMATION UNLESS OTHERWISE NOTED WAS TAKEN FROM A MAP ENTITLED "MONITORING WELL AND SOIL BORING LOCATION PLAN, HWD SITE-PICONE BOULEVARD, FARMINGDALE NEW YORK, PROJECT No. 604.05 #2". PREPARED BY ALBERT W. TAY. FILE No. 99390-3.DWG. SURVEYED 11/22/99 THROUGH 11/29/99. SURVEYED LAST REVISED 2/9/2000.

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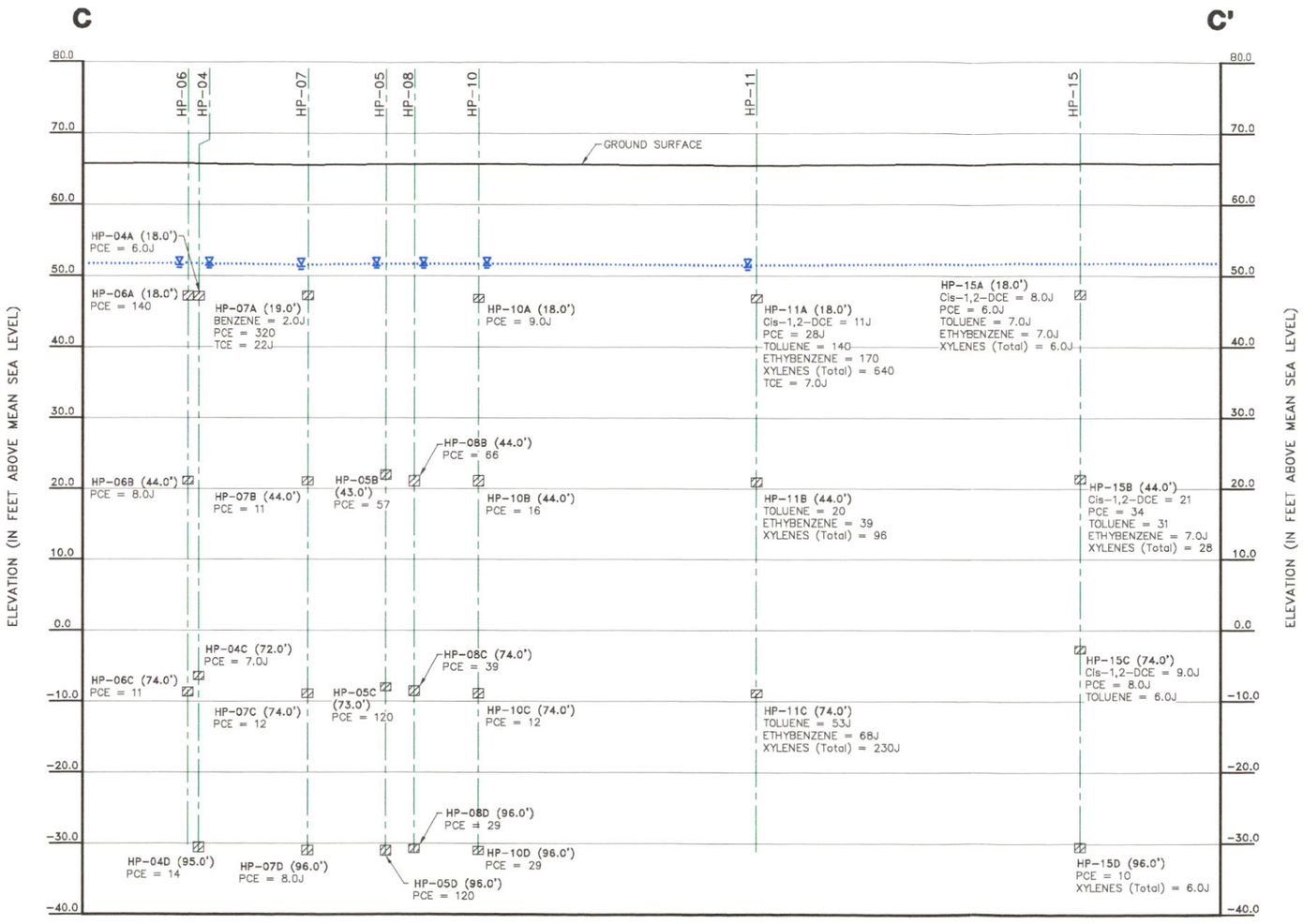
HAZARDOUS WASTE DISPOSAL, INC. SITE
FARMINGDALE, NEW YORK

REMEDIAL INVESTIGATION REPORT

DISTRIBUTION OF ORGANIC COMPOUNDS IN SOIL ABOVE NYSDEC TAGM 4046 GUIDANCE VALUES

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE 4-1



CROSS-SECTION C - C'

10' 0 10' 20'
VERTICAL SCALE IN FEET

20' 0 20' 40'
HORIZONTAL SCALE IN FEET

VERTICAL EXAGGERATION = 2 X

LEGEND

HP-15 — HYDROPUNCH™ BORING LOCATION

HYDROPUNCH™ SAMPLE LOCATION

(18.0') DEPTH IN FEET BELOW GROUND SURFACE

GROUND WATER ELEVATION

NOTES:

1. SEE FIGURE 3-2 FOR CROSS-SECTION LOCATION.
2. CONCENTRATIONS ARE REPORTED IN MICROGRAMS PER LITER (ug/L).
3. EACH HYDROPUNCH PROJECTED FROM CROSS-SECTION LINE AS INDICATED:

HP-06	PROJECTED 29 FEET IN A NE DIRECTION
HP-04	PROJECTED 51 FEET IN A NE DIRECTION
HP-07	PROJECTED 16 FEET IN A NE DIRECTION
HP-05	PROJECTED 10 FEET IN A SW DIRECTION
HP-08	PROJECTED 46 FEET IN A NE DIRECTION
HP-12	PROJECTED 40 FEET IN A SW DIRECTION
HP-10	PROJECTED 43 FEET IN A NE DIRECTION
HP-09	PROJECTED 4 FEET IN A SW DIRECTION
HP-11	PROJECTED 38 FEET IN A SW DIRECTION
HP-15	NOT PROJECTED

4. PCE = TETRACHLOROETHENE
5. TCE = TRICHLOROETHENE
6. Cis-1,2 DCE = Cis-1,2-DICHLOROETHENE
7. J = THE RESULT IS LESS THAN THE QUANTITATION LIMIT BUT GREATER THAN ZERO. CONCENTRATION GIVEN IS AN APPROXIMATE VALUE.

HAZARDOUS WASTE DISPOSAL INC. SITE
FARMINGDALE, NEW YORK
REMEDIAL INVESTIGATION REPORT
HYDROGEOLOGIC CROSS-SECTION OF INDIVIDUAL VOCs IN GROUND-WATER HYDROPUNCH™ LOCATIONS

BBL BLASLAND, BOUCK & LEE, INC. *engineers & scientists*

FIGURE 4-2

X NONE
L: OFF=REF
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APRIL 14, 2000 CRA-62-WDN
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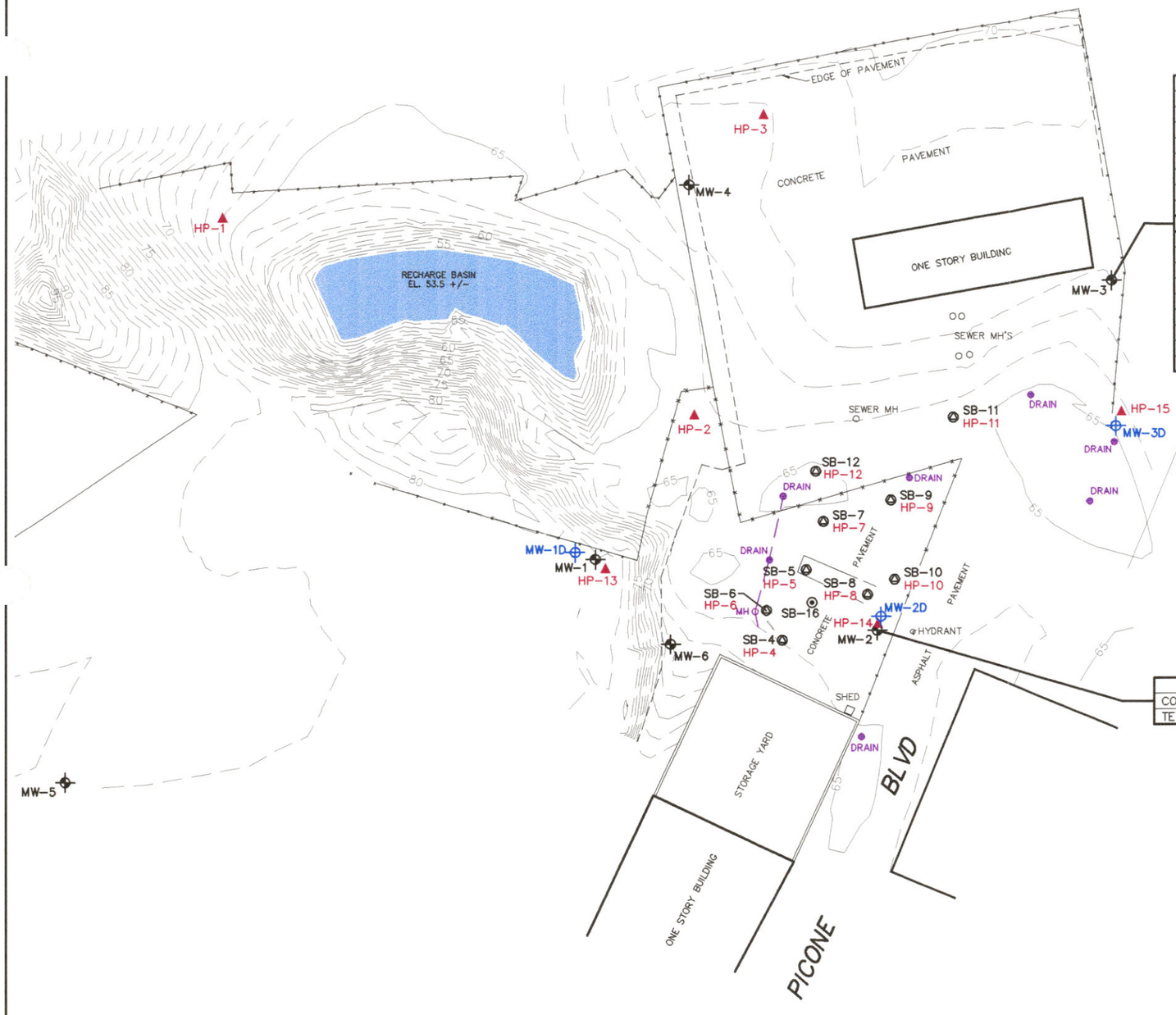

MW-3			
COMPOUND	CRITERIA	RESULT	QUAL.
CHLOROBENZENE	5	69	J
Cis-1,2-DICHLOROETHENE	5	14	J
2,4-DIMETHYLPHENOL	1 A	13	J
ETHYLBENZENE	5	1,200	
NAPHTHALENE	10 G	220	
TOLUENE	5	200	J
XYLENES (TOTAL)	5 D	4,400	

MW-3 DUP.			
COMPOUND	CRITERIA	RESULT	QUAL.
CHLOROBENZENE	5	67	J
Cis-1,2-DICHLOROETHENE	5	14	J
2,4-DIMETHYLPHENOL	1 A	16	J
ETHYLBENZENE	5	1,100	
NAPHTHALENE	10 G	250	
TOLUENE	5	200	J
XYLENES (TOTAL)	5 D	4,500	

MW-2			
COMPOUND	CRITERIA	RESULT	QUAL.
TETRACHLOROETHENE	5	68	

LEGEND

- FENCE LINE
- EXISTING MONITORING WELL LOCATION
- NEW MONITORING WELL LOCATION
- SOIL BORING/HYDROPUNCH™ LOCATION
- HYDROPUNCH™ LOCATION ONLY
- SOIL BORING LOCATION ONLY

Notes:

1. ALL CONCENTRATIONS ARE REPORTED IN MICROGRAMS PER LITER (ug/L) EQUIVALENT TO PARTS PER BILLION (ppb).
2. G = GUIDANCE VALUE
3. D = VALUE LISTED APPLIES TO EACH ISOMER INDIVIDUALLY.
4. A = VALUE LISTED APPLIES TO THE SUM OF THESE SUBSTANCES.
5. J = THE RESULT IS LESS THAN THE QUANTITATION LIMIT BUT GREATER THAN ZERO. CONCENTRATION GIVEN IS AN APPROXIMATE VALUE.
6. CRITERIA REFERENCE: NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) DIVISION OF WATER TECHNICAL AND OPERATIONAL GUIDANCE SERIES (1.1.1), AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES, JUNE 1998.

40' 0 40' 80'
SCALE IN FEET

SOURCE:
ALL BASE MAP INFORMATION UNLESS OTHERWISE NOTED WAS TAKEN FROM A MAP ENTITLED "MONITORING WELL AND SOIL BORING LOCATION PLAN, HWD SITE-PICONE BOULEVARD, FARMINGDALE NEW YORK, PROJECT No. 604.05 #2". PREPARED BY ALBERT W. TAY. FILE No. 99390-3.DWG. SURVEYED 11/22/99 THROUGH 11/29/99. SURVEYED LAST REVISED 2/9/2000.

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HAZARDOUS WASTE DISPOSAL, INC. SITE
FARMINGDALE, NEW YORK
REMEDIAL INVESTIGATION REPORT

DISTRIBUTION OF ORGANIC COMPOUNDS IN GROUND-WATER MONITORING WELLS ABOVE NYSDEC CRITERIA

BBL BLASLAND, BOUCK & LEE, INC. *engineers & scientists*

FIGURE 4-3

MW-4			
COMPOUND	CRITERIA	RESULT	QUAL.
IRON	300 H	16,900	
MANGANESE	300 H	308	

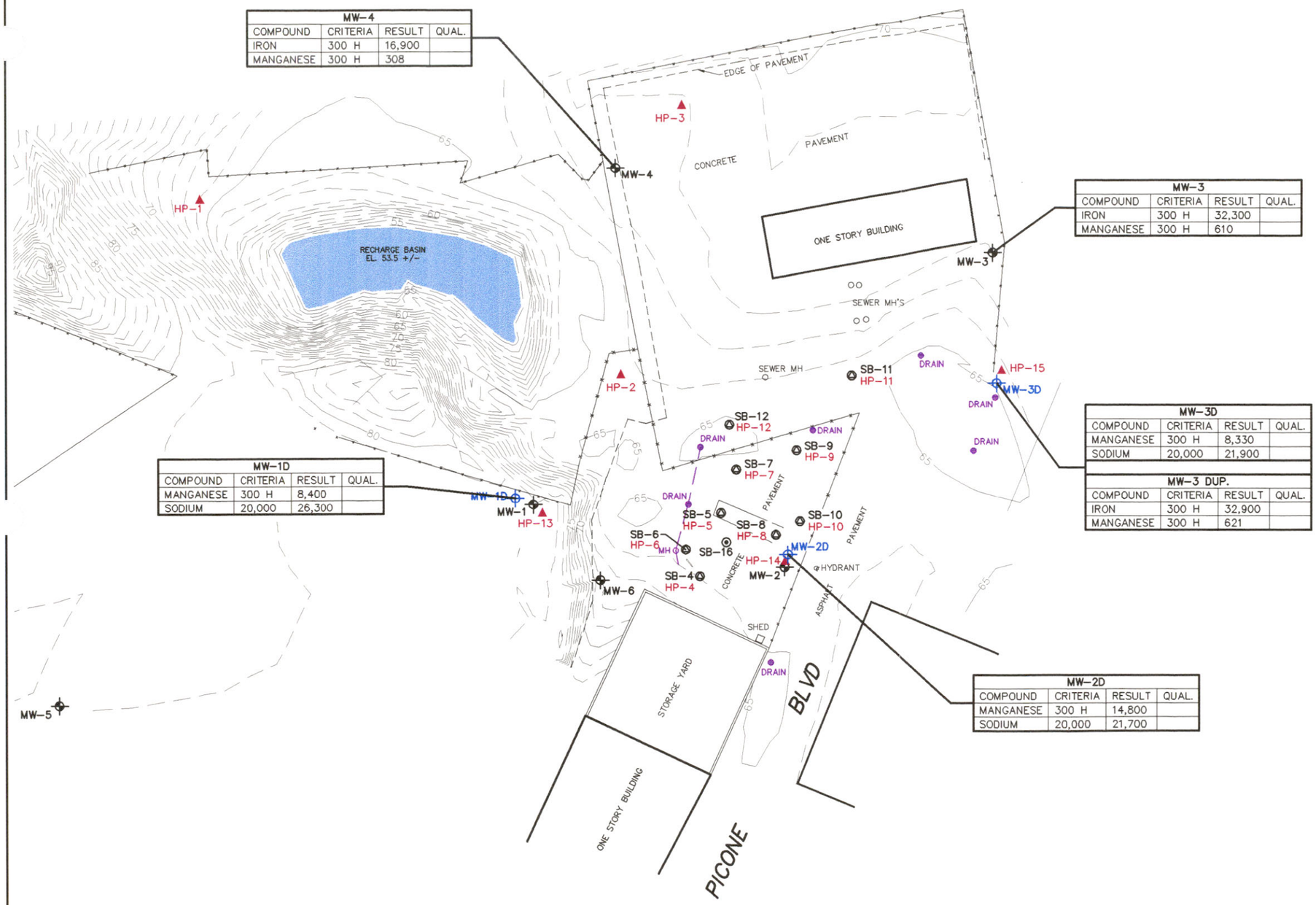
MW-3			
COMPOUND	CRITERIA	RESULT	QUAL.
IRON	300 H	32,300	
MANGANESE	300 H	610	

MW-1D			
COMPOUND	CRITERIA	RESULT	QUAL.
MANGANESE	300 H	8,400	
SODIUM	20,000	26,300	

MW-3D			
COMPOUND	CRITERIA	RESULT	QUAL.
MANGANESE	300 H	8,330	
SODIUM	20,000	21,900	

MW-3 DUP.			
COMPOUND	CRITERIA	RESULT	QUAL.
IRON	300 H	32,900	
MANGANESE	300 H	621	

MW-2D			
COMPOUND	CRITERIA	RESULT	QUAL.
MANGANESE	300 H	14,800	
SODIUM	20,000	21,700	



LEGEND

- FENCE LINE
- EXISTING MONITORING WELL LOCATION
- NEW MONITORING WELL LOCATION
- SOIL BORING/HYDROPUNCH™ LOCATION
- HYDROPUNCH™ LOCATION ONLY
- SOIL BORING LOCATION ONLY

Notes:

1. ALL CONCENTRATIONS ARE REPORTED IN MICROGRAMS PER LITER (ug/L) EQUIVALENT TO PARTS PER BILLION (ppb).
2. H = IRON AND MAGANESE IS FOR 300 INDIVIDUALLY OR 500 AS A SUM.
3. CRITERIA REFERENCE: NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) DIVISION OF WATER TECHNICAL AND OPERATIONAL GUIDANCE SERIES (1.1.1), AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES, JUNE 1998.

40' 0 40' 80'
SCALE IN FEET

SOURCE:
ALL BASE MAP INFORMATION UNLESS OTHERWISE NOTED WAS TAKEN FROM A MAP ENTITLED "MONITORING WELL AND SOIL BORING LOCATION PLAN, HWD SITE-PICONE BOULEVARD, FARMINGDALE NEW YORK, PROJECT No. 604.05 #2". PREPARED BY ALBERT W. TAY. FILE No. 99390-3.DWG. SURVEYED 11/22/99 THROUGH 11/29/99. SURVEYED LAST REVISED 2/9/2000.

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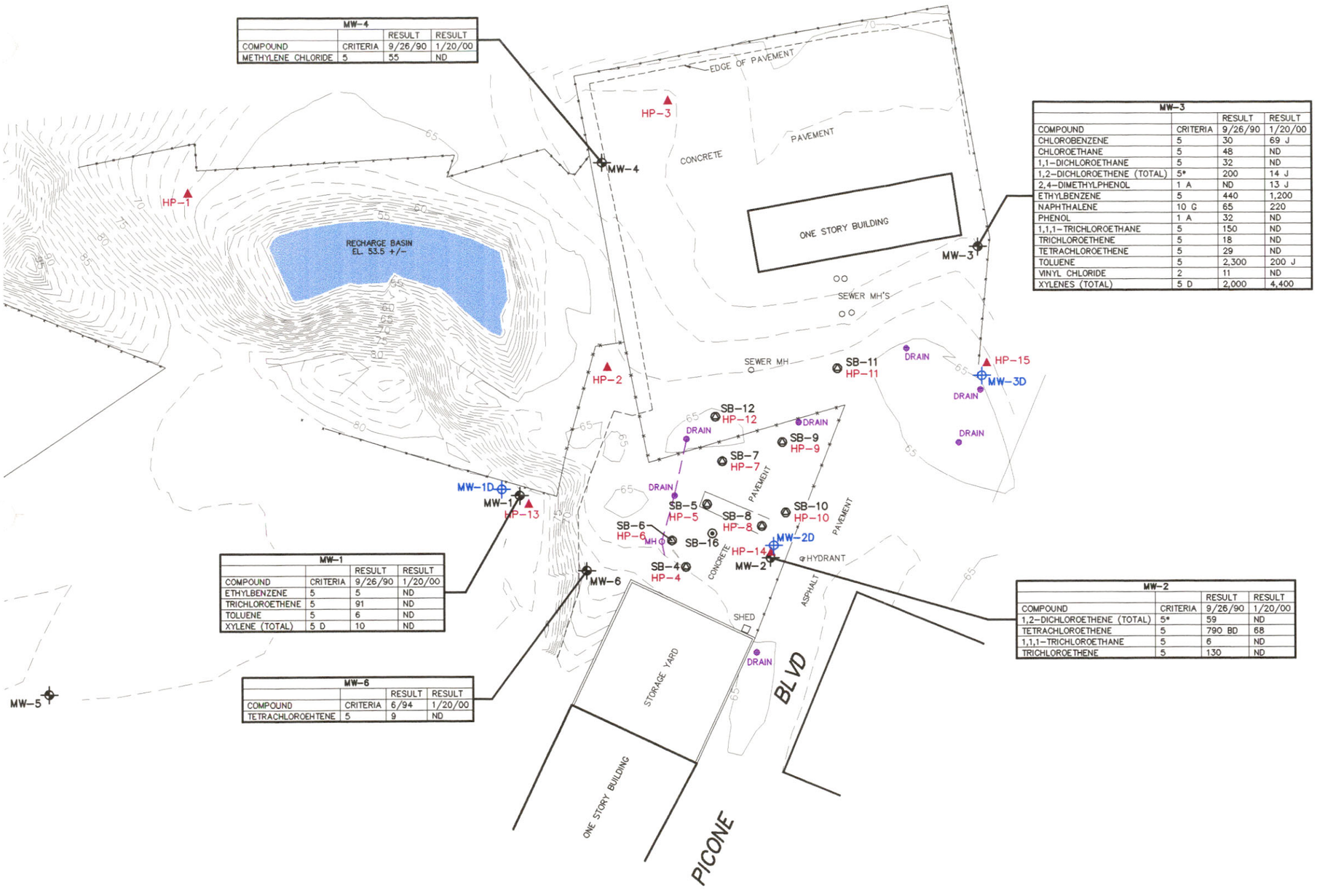
HAZARDOUS WASTE DISPOSAL, INC. SITE
FARMINGDALE, NEW YORK
REMEDIAL INVESTIGATION REPORT

DISTRIBUTION OF INORGANIC COMPOUNDS IN GROUND-WATER MONITORING WELLS ABOVE NYSDEC CRITERIA

BBL BLASLAND, BOUCK & LEE, INC. *engineers & scientists*

FIGURE **4-4**



MW-4			
		RESULT	RESULT
COMPOUND	CRITERIA	9/26/90	1/20/00
METHYLENE CHLORIDE	5	55	ND

MW-3			
		RESULT	RESULT
COMPOUND	CRITERIA	9/26/90	1/20/00
CHLOROBENZENE	5	30	69 J
CHLOROETHANE	5	48	ND
1,1-DICHLOROETHANE	5	32	ND
1,2-DICHLOROETHENE (TOTAL)	5*	200	14 J
2,4-DIMETHYLPHENOL	1 A	ND	13 J
ETHYLBENZENE	5	440	1,200
NAPHTHALENE	10 G	65	220
PHENOL	1 A	32	ND
1,1,1-TRICHLOROETHANE	5	150	ND
TRICHLOROETHENE	5	18	ND
TETRACHLOROETHENE	5	29	ND
TOLUENE	5	2,300	200 J
VINYL CHLORIDE	2	11	ND
XYLENES (TOTAL)	5 D	2,000	4,400

MW-1			
		RESULT	RESULT
COMPOUND	CRITERIA	9/26/90	1/20/00
ETHYLBENZENE	5	5	ND
TRICHLOROETHENE	5	91	ND
TOLUENE	5	6	ND
XYLENE (TOTAL)	5 D	10	ND

MW-2			
		RESULT	RESULT
COMPOUND	CRITERIA	9/26/90	1/20/00
1,2-DICHLOROETHENE (TOTAL)	5*	59	ND
TETRACHLOROETHENE	5	790 BD	68
1,1,1-TRICHLOROETHANE	5	6	ND
TRICHLOROETHENE	5	130	ND

MW-6			
		RESULT	RESULT
COMPOUND	CRITERIA	6/94	1/20/00
TETRACHLOROEHTENE	5	9	ND

LEGEND

- FENCE LINE
- EXISTING MONITORING WELL LOCATION
- NEW MONITORING WELL LOCATION
- SOIL BORING/HYDROPUNCH™ LOCATION
- HYDROPUNCH™ LOCATION ONLY
- SOIL BORING LOCATION ONLY

Notes:

1. ALL CONCENTRATIONS ARE REPORTED IN MICROGRAMS PER LITER (ug/L) EQUIVALENT TO PARTS PER BILLION (ppb).
2. G = GUIDANCE VALUE
3. * = CRITERIA VALUE LISTED FOR 1,2-DICHLOROETHENE (Total) APPLIES TO THE Cis AND Trans- ISOMERS INDIVIDUALLY.
4. D = VALUE LISTED APPLIES TO EACH ISOMER INDIVIDUALLY.
5. A = VALUE LISTED APPLIES TO THE SUM OF THESE SUBSTANCES.
6. J = THE RESULT IS LESS THAN THE QUANTITATION LIMIT BUT GREATER THAN ZERO. CONCENTRATION GIVEN IS AN APPROXIMATE VALUE.
7. BD = CONTAMINANT ALSO DETECTED IN METHOD BLANK. DILUTED SAMPLE ANALYSIS.
8. CRITERIA REFERENCE: NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) DIVISION OF WATER TECHNICAL AND OPERATIONAL GUIDANCE SERIES (1.1.1), AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES, JUNE 1998.

40' 0 40' 80'
SCALE IN FEET

SOURCE:
ALL BASE MAP INFORMATION UNLESS OTHERWISE NOTED WAS TAKEN FROM A MAP ENTITLED "MONITORING WELL AND SOIL BORING LOCATION PLAN, HWD SITE-PICONE BOULEVARD, FARMINGDALE NEW YORK, PROJECT No. 604.05 #2". PREPARED BY ALBERT W. TAY. FILE No. 99390-3.DWG. SURVEYED 11/22/99 THROUGH 11/29/99. SURVEYED LAST REVISED 2/9/2000.

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HAZARDOUS WASTE DISPOSAL, INC. SITE
FARMINGDALE, NEW YORK
REMEDIAL INVESTIGATION REPORT

HISTORIC DISTRIBUTION OF ORGANIC COMPOUNDS IN GROUND-WATER MONITORING WELLS ABOVE NYSDEC CRITERIA

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE 4-5