932085A

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ENGINEERING INVESTIGATIONS AT INACTIVE HAZARDOUS WASTE SITES IN THE STATE OF NEW YORK

PRELIMINARY SITE ASSESSMENT
Volume 1

64th Street-North Site
Site Number 932085A
City of Niagara Falls, Niagara County

March 1996

Prepared for:

New York State Department of Environmental Conservation

50 Wolf Road, Albany, New York 12233

Michael D. Zagata, Commissioner

Division of Hazardous Waste Remediation

Michael J. O'Toole, Jr., P.E., Director

Prepared by:

Ecology and Environment Engineering, P.C.

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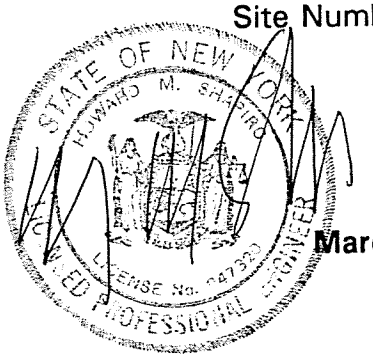
Engineering Investigations at Inactive Hazardous Waste Sites in the State of New York

Preliminary Site Assessment Volume 1

64th Street-North Site
Site Number 932085A



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Executive Summary

Under the New York State Department of Environmental Conservation (NYSDEC) Superfund Standby Contract (Contract No. D002625), Ecology and Environment Engineering, P.C., conducted a preliminary site assessment (PSA) investigation at the 64th Street-North Site (Site I.D. No. 932085A) in the City of Niagara Falls, Niagara County, New York.

The 64th Street-North Site, as delineated by NYSDEC, consists of an approximately 40-acre site located north of Niagara Falls Boulevard (Pine Avenue) and bisected by Interstate 190 (I-190). The site is bounded to the north by a Niagara Mohawk Power Company easement. It extends several hundred feet west of Connecting Road and more than 1,000 feet east of I-190. The site encompasses several commercial properties and a large open field. The site received municipal refuse, construction and demolition debris, and possibly industrial and hazardous wastes from various sources during the late 1930s through 1950s. The site was reported to have been used for disposal again from 1955 to the early 1970s. The wastes were deposited in low-lying areas, such as drainage swales and surrounding wetland areas.

The PSA investigation field work was conducted in 1993 and 1994. In 1993, 16 surface soil samples, 13 subsurface soil/waste samples from test pits, three surface water samples, and three sediment samples were collected. Analytical results of these samples indicated elevated levels of volatile and semivolatile organic compounds, pesticides, polychlorinated biphenyls (PCBs) and inorganics (including chromium, lead, mercury, nickel, and zinc) in surface soil, waste, and sediment samples. In 1994, seven surface soil, six subsurface soil, and two sediment samples were collected from previously sampled locations. These samples were analyzed for EP Toxicity chromium, lead, and mercury. One 1994 subsurface soil sample collected from a test pit (TP-9) at 2 to 4 feet below ground surface contained lead in excess of the EP Toxicity regulatory levels. No other samples exceeded EP Toxicity regulatory levels. Subsequent sampling in the same location in 1995 failed to corroborate the exceedance of EP Toxicity lead levels. Thus, the 1994 findings were

determined to be an inconsequential amount of hazardous waste. NYSDEC also sampled sediments from the wetland east of the site to better determine if any contaminant migration is occurring. The sediment samples analyses failed to demonstrate any migration of contaminants from the site.

Although no documentation of hazardous waste disposal was found in a record search, hazardous substances were detected at the site in the environmental media.

The PA Score determined for this PSA is 8, which would make the site eligible for the National Priorities List. A PREscore of 2.82 was also determined.

Despite the presence of hazardous substances on site, this investigation was unable to document the disposal of hazardous waste on site or confirm, through sampling and analysis of various environmental media, the presence on site of consequential amounts of hazardous waste. NYSDEC has determined that the inconsequential amount of hazardous waste disposed does not constitute a significant threat to the environment. Thus, it has been recommended that the site be delisted. Because the site is open to the public, it also has been recommended that the site's cover be improved to negate the possibility of any contact with the identified hazardous substances on site.

1 Site Assessment Summary

1.1 Introduction

Under the New York State Department of Environmental Conservation (NYSDEC) Superfund Standby Contract (Contract No. D002625), Ecology and Environment Engineering, P.C. (E & E) conducted a Preliminary Site Assessment (PSA) investigation at the 64th Street-North Site (Site I.D. No. 932085A) in the City of Niagara Falls, Niagara County, New York. This report summarizes PSA activities to date.

1.2 Purpose

The purpose of the PSA is to provide NYSDEC with the information necessary to properly assess and classify the site according to one of the following categories of hazardous waste sites pursuant to Section 27-1305 of the Environmental Conservation Law:

- **Class 1:** Causing or presenting an imminent danger or causing irreversible or irreparable damage to the public health or environment—immediate action required;
- **Class 2:** Significant threat to the public health or environment—action required;
- **Class 3:** Does not present a significant threat to the public health or environment—action may be deferred;
- **Class 4:** Site properly closed—requires continued management; or
- **Class 5:** Site properly closed, no evidence of present or potential adverse impact—no further action required.

If none of the above categories apply to the site, or if disposal of consequential amounts of hazardous waste was not documented, the site may be deleted from the Registry of Inactive Hazardous Waste Disposal Sites.

1.3 Site Description

The 64th Street-North Site (Site Number 932085A) is approximately 40 acres in size and is located north of Niagara Falls Boulevard (Pine Avenue) in the City of Niagara Falls, Niagara County, New York (see Figures 1-1 and 1-2). The site is bisected by I-190 and is bounded to the north by the Niagara Mohawk easement. The site extends several hundred feet west of Connecting Road and more than 1,000 feet east of Interstate I-190. The identified site boundaries provided by NYSDEC were initially drawn based on the reported and suspected area of fill and, as drawn, included the Melvin Tompkins property which had previously been identified as the Basic Carbon site (No. 932004), a Class 3 inactive hazardous waste site. The site boundary (see Figure 1-2) includes areas where fill was encountered and elevated concentrations of contamination were found. A map depicting the area of fill is presented in Figure 1-3.

Prior to waste disposal activities, the site was largely a wetland area intersected by a forked drainage swale that ranged in depth from approximately 2 to 10 feet. During the late 1930s through the 1950s, the drainage swales and surrounding wetland areas were used by various parties to dispose of municipal refuse and construction debris. Reportedly, the site was also used for the dumping of industrial and hazardous wastes from 1955 to the early 1970s (NCHD 1982; NUS 1986).

The ground surface over the site is flat with a less than 1% slope and is at an elevation of approximately 575 feet above MSL (USGS 1980). In undeveloped areas of the site, isolated wetland areas remain where waste disposal has not significantly altered natural drainage conditions.

The site includes various commercial properties along Niagara Falls Boulevard (Pine Avenue), Moradian Drive, and 66th Street and west of Connecting Road. The majority of the eastern portion of the site is an open field. Evidence of scavenger dumping in this area was reported by NCHD during a 1981 inspection (NCHD 1982). Adjacent land use includes residential, commercial, and industrial properties. The nearest residential areas are the Sabre Park Trailer Court, located less than 0.25 mile to the north of the site, and an unnamed trailer park directly east of the Tops Markets property. LaSalle High School is located just north of the Niagara Mohawk Power Company right-of-way on the western side of 80th Street. CECOS Landfill is located to the north of the Niagara Mohawk right-of-way on the western portion of the site.

A New York State-registered wetland TW-1 (a Class II wetland) exists on site and extends eastward as observed during the April 30, 1991, E & E site inspection. Wetland

grasses, reeds, rushes, cattails, and ducks were observed. Exact boundaries were not defined. Various windblown refuse and illegal dumping were also observed in and around the wetland area. New York State-registered wetland TW-3 (a Class II wetlands) was also identified approximately 1 mile to the north-northeast of the site. A rare species, the chimney building crayfish, has been identified as inhabiting the area around the site (NYSDEC 1994).

Surface runoff from the site enters storm sewers that empty into the Niagara River and Gill Creek; follows man-made drainage swales along I-190; or enters the ponded water wetland areas on and east of the site. Other than the drainage swales along I-190, no other direct avenues of surface runoff are apparent with the possible exception of a wet drainage area east of the Walter S. Johnson Company parking lot, which leads to a drainage sewer pipe (E & E 1992). Runoff from the site will likely enter the Niagara River via storm sewers upstream of the City of Niagara Falls water intakes (NCHD 1982).

The nearest flowing surface waters are the Niagara River, which is approximately 1 to 3 miles south of the site, and Cayuga Creek, which is 1.2 miles east of the site.

1.4 Hazardous Waste Site Discussion

Since the late 1930s, the area now known as the 64th Street site has been used intermittently for the disposal of municipal, commercial, construction/demolition, and alleged industrial and hazardous wastes. This disposal has taken place within drainage swales crossing the site and within surrounding wetland areas.

Between the late 1930s and the 1950s, the 64th Street-North Site has been used for the disposal of municipal waste from the City of Niagara Falls and construction and demolition waste, and possibly incineration waste, from a nearby Department of Defense (DoD) housing facility. A letter to NYSDEC from a nearby resident alleged the dumping of "chemicals or hazardous waste products" in the early 1940s by the trucking company of Walter Kozdranski, a documented local waste hauler. In a deposition given by a former Kozdranski employee, it was alleged that wastes from International Paper and Goodyear Tire and Rubber Company were disposed of on the Johnson owned portion the 64th Street-North Site. As stated in the deposition, this site was reported to have been used for disposal from 1955 to the early 1970s (Reed 1985).

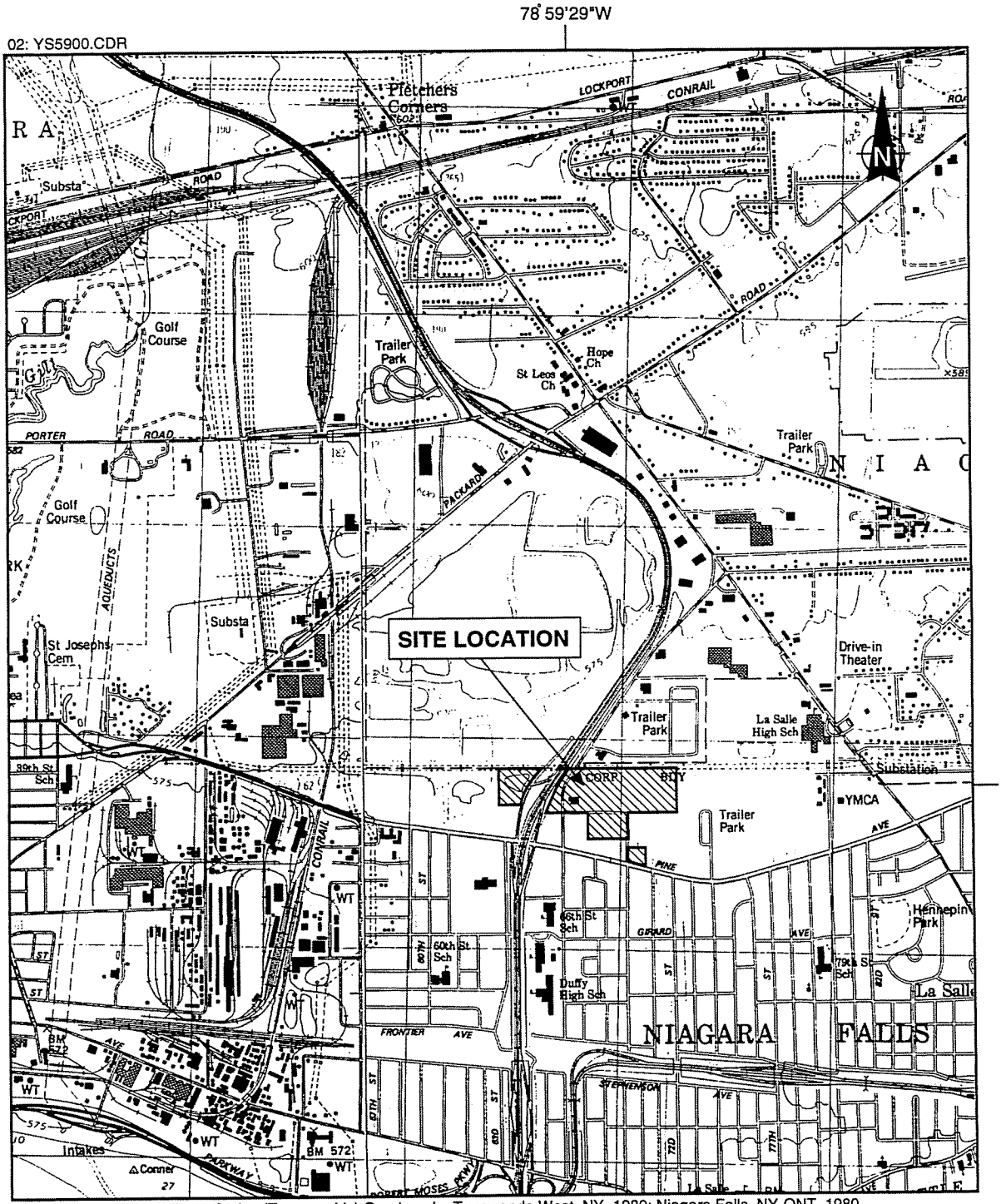
The presence of hazardous waste at the site was confirmed during the PSA sampling activities conducted in December 1994. One subsurface soil sample collected from test pit TP-9 at 2 to 4 feet below ground surface contained lead in excess of the regulatory levels for EP Toxicity.

1.5 Summary of PSA Work

A PSA Task 1 report for the 64th Street-North Site, submitted by E & E in February 1992, concluded that insufficient information existed to determine whether the site posed a significant threat to human health or the environment. Additional soil, groundwater, and surface water samples were recommended to assess possible significant threats to human health or the environment. In 1993, a field investigation program consisting of test pit excavation and surface and subsurface soil/waste sampling and surface water/sediment sampling was implemented. Analytical results indicated the presence of elevated levels of semivolatile organics, pesticides, polychlorinated biphenyls (PCBs), and inorganics in surface soil. VOCs, semivolatiles, pesticides, PCBs, and inorganics were detected in subsurface soil/waste from test pits. Surface water and sediment samples collected from the site showed elevated levels of semivolatiles, pesticides, PCBs, and inorganics. Additional soil and sediment samples were collected in December 1994 for EP Toxicity analysis (chromium, lead, and mercury only). One subsurface soil sample contained lead in excess of the regulatory level. No other samples exceeded the EP Toxicity regulatory levels. Additional subsurface soil sampling conducted by NYSDEC in November 1995 failed to substantiate the elevated level of lead found in the one 1994 subsurface sample. NYSDEC has determined that the one subsurface sample that failed EP Toxicity testing does not confirm the disposal of a consequential amount of hazardous waste at this site.

1.6 NYSDEC Classification Forms

The NYSDEC Registry Site Classification Decision Form and Classification Worksheet are presented on pages 1-11 and 1-14, respectively. These forms provide information necessary to properly classify the site in accordance with 6 NYCRR, Part 375.



SOURCE: USGS 7.5 Minute Series (Topographic) Quadrangle: Tonawanda West, NY, 1980; Niagara Falls, NY-ONT, 1980.

SCALE 1:24,000

0 ½ 1 Mile

0 .5 1 Kilometer

Figure 1-1 LOCATION MAP, 64TH STREET-NORTH SITE

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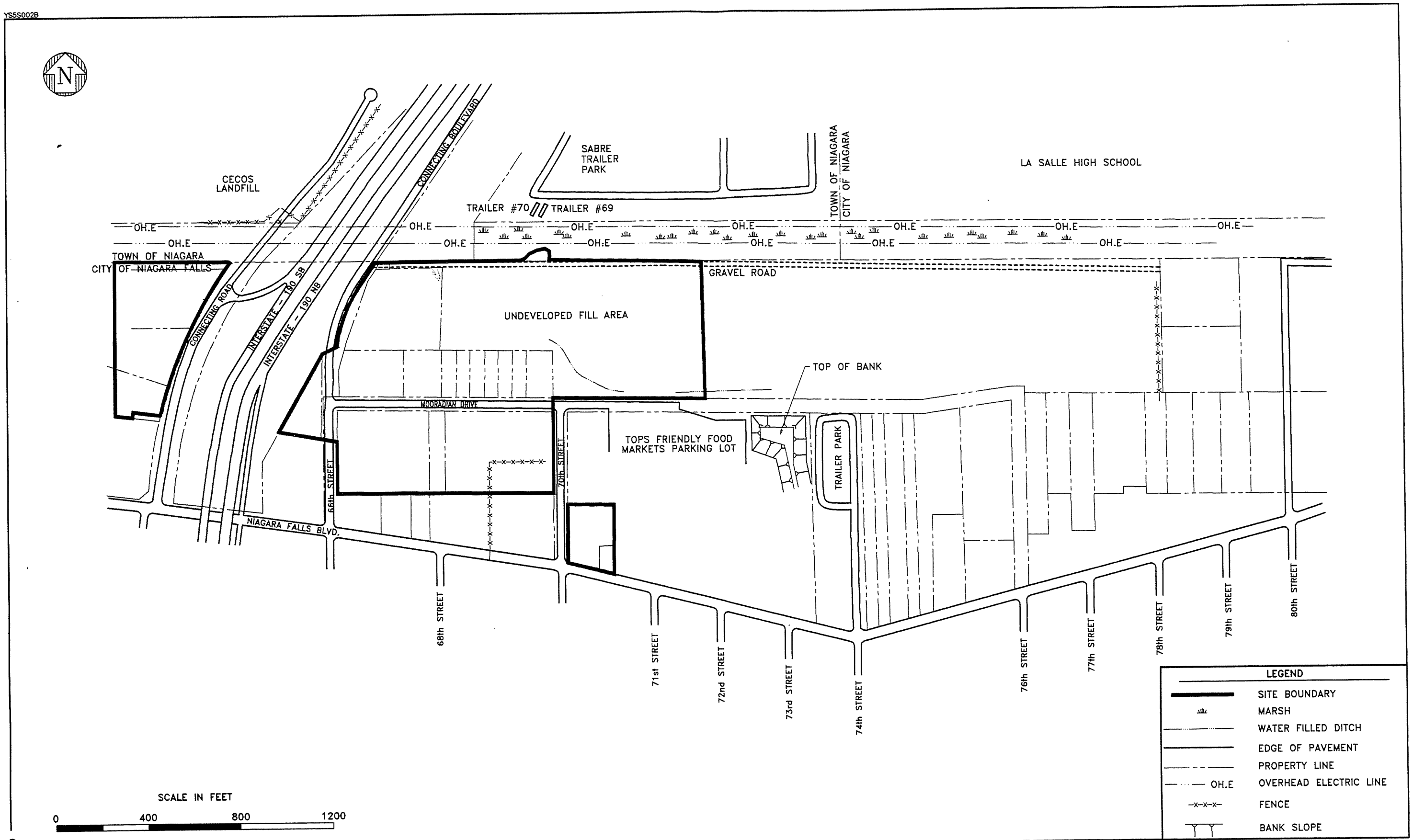

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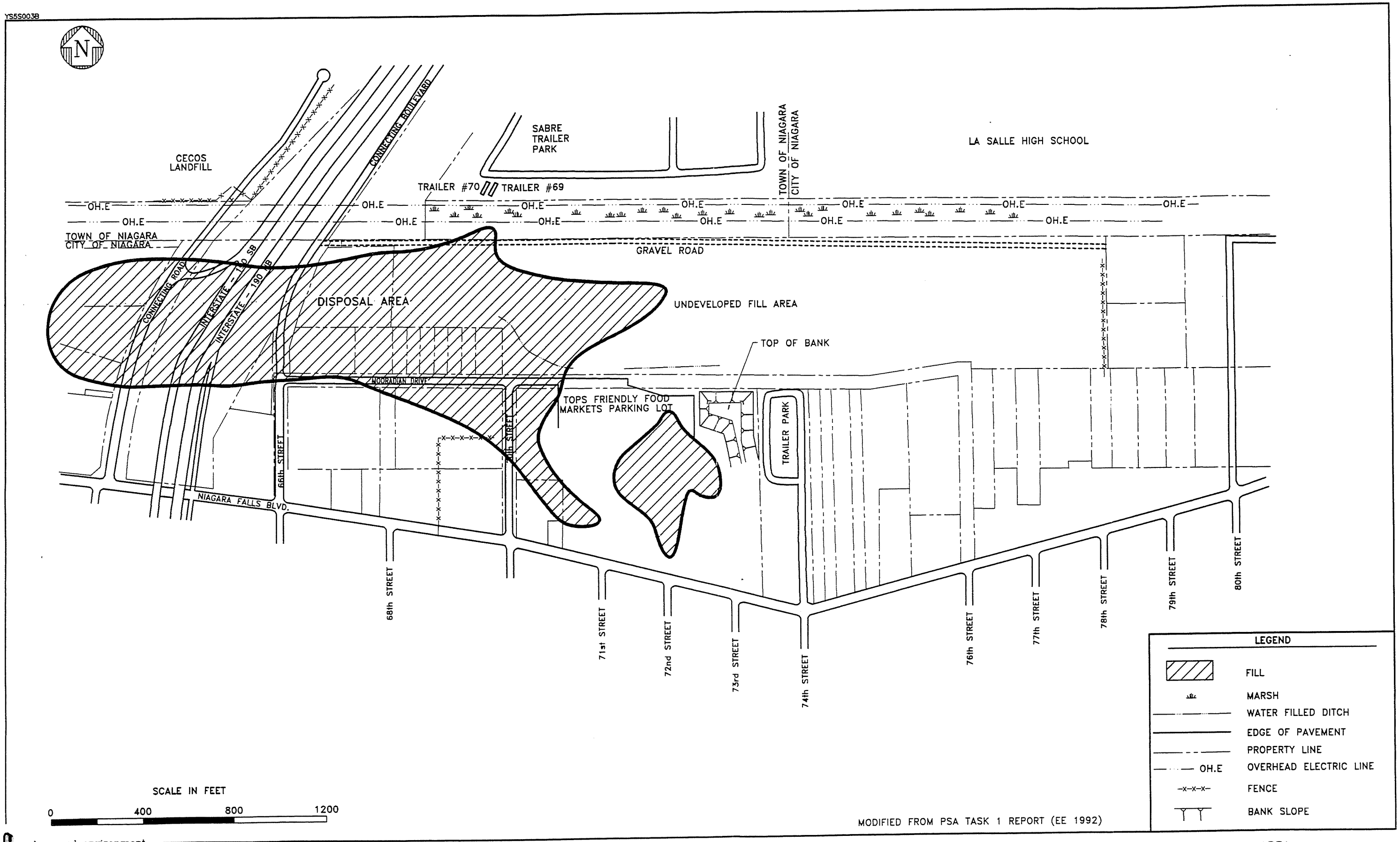
Figure 1–2 SITE MAP
64TH STREET–NORTH SITE

YS5S003B



MODIFIED FROM PSA TASK 1 REPORT (EE 1992)

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Figure 1–3 DISPOSAL AREA
64TH STREET–NORTH SITE

New York State Department of Environmental Conservation
Division of Hazardous Waste Remediation

REGISTRY SITE CLASSIFICATION DECISION

1. Site Name: 64th Street-North	2. Site No. 932085A	3. Town/City/Village: Niagara Falls	4. County: Niagara
5. Region 9	6. Classification Current: 2a	Proposed: D1	Modify: Yes

7. Location of Site (see Figure 1-1 for site location)
a. Quadrangle: Tonawanda West
b. Site Latitude: 43°05'32"N Longitude: 78°59'29"W
c. Tax Map Number: 160.07, 160.12, 160.08

8. Briefly Describe the Site (see Figure 3-1 for site plan)

This site encompasses approximately 40 acres north of Niagara Falls Boulevard (Pine Avenue) and is bisected just west of the north-south centerline by Interstate I-190. This site is bounded on the north by the Niagara Mohawk easement, Sabre Park Trailer Court and CECOS (NECCO) landfill. The site extends several hundred feet west of Connecting Road and more than 1,000 feet east of Interstate I-190. A number of commercial and industrial businesses exist on or near the site, and trailer courts exist to the north and east of the site. Large relatively flat open fields compose much of the undeveloped portions of the site. Some of this is NYSDEC classified level II wetlands.

a. Area 20 acres b. EPA ID Number _____
c. Completed ☒ Phase I ☐ Phase II ☒ PSA ☐ RI/FS ☐ PA/SI ☒ Other

9. Hazardous Wastes Disposed

The history of the site is uncertain. Disposed wastes include: domestic and commercial wastes from 1930s to 1950s; and industrial waste, including incinerator ash and waste lime. Hazardous wastes were alleged to have been disposed of on site between 1955 and the early 1970s.

10. Analytical Data Available
a. ☐ Air ☒ Groundwater ☒ Surface Water ☒ Soil ☒ Waste ☒ EPTox ☐ TCLP
b. Contravention of Standards or Guidance Values

See Attachment A.

11. JUSTIFICATION FOR CLASSIFICATION DECISION

The presence of a consequential amount hazardous waste at the site has not been confirmed by sampling of on site subsurface soils (fills). Although analytical results indicate that significant concentrations of hazardous substances are present in surface and subsurface soils at the site the NYSDEC has determined that the hazardous waste disposed does not, and would not in the reasonably foreseeable future, constitute a significant threat to the environment.

12. Site Impact Data
a. Nearest surface water: Distance 0 ft. Direction on site Classification Wetland II
b. Nearest groundwater: Depth 1.5 ft. Flow Direction south ☐ Sole Source ☐ Primary ☐ Principal
c. Nearest water supply: Distance >25,000 ft. Direction southwest Active? ☒ Yes ☐ No
d. Nearest building: Distance 0 ft. Direction on site Use commercial/residential
e. In State Economic Development Zone? ☐ Yes ☒ No i. Controlled site access? ☐ Yes ☒ No
f. Crops or livestock on site? ☐ Yes ☒ No j. Exposed hazardous waste? ☐ Yes ☒ No
g. Documented fish or wildlife mortality? ☐ Yes ☒ No k. PA Score 8
h. Impact on special status fish or wildlife resource? ☐ Yes ☒ No l. For Class 2: Priority Category _____

13. Site Owner's Name See Attachment B	14. Address See Attachment B	15. Telephone Number

16. Preparer	17. Approved
_____ Signature Date	_____ Signature Date
_____ Name, Title, Organization	_____ Name, Title, Organization

Attachment A

SUMMARY OF ANALYTES IN EXCEEDANCE OF STANDARDS OR GUIDANCE VALUES

Surface Soils (mg/kg)	
Antimony	35.2
Calcium	25,600 - 98,900
Chromium	118 - 315
Cobalt	23.4
Copper	49.6 - 3,520
Lead	45.8 - 613
Magnesium	10,800 - 47,200
Mercury	0.57 - 19.6
Nickel	38.8 - 92.8
Zinc	104 - 845
Subsurface Soils (mg/kg)	
Barium	1,270
Calcium	15,300 - 74,500
Chromium	128 - 138
Copper	59.2 - 107
Lead	35.7 - 129
Magnesium	11,700 - 42,300
Mercury	0.35 - 4.3
Nickel	66.1
Zinc	106 - 565
Surface Water (µg/L)	
Iron	716 - 1,300
Cyanide	52.0
Sediment (mg/kg)	
Calcium	20,500 - 88,900
Chromium	191
Copper	68.3
Lead	239
Magnesium	33,400 - 11,300
Mercury	2.1 - 4.6
Nickel	43
Zinc	268 - 404
Subsurface Soils EP Toxicity Metals (mg/L)	
Lead	11.7

Attachment B

SITE PROPERTY OWNERS

Section-Block-Lot Number	Site Owners
160.07-3-1-1	UREN Sound and Power Systems, Inc. 1120 Connecting Road Niagara Falls, New York 14304
160.07-3-6	Realty Development-West, Inc. 570 Delaware Avenue Buffalo, New York 14202
160.08-1-3 160.07-1-4	Niagara Mohawk Power Corp. 300 Erie Boulevard West Syracuse, New York 13202
160.07-3-10	MAE, Inc. 4194 Lower River Road Lewiston, New York 14092
160.07-3-9 160.07-3-31 160.07-3-32 160.07-3-33	Richard W. and Christine F. Johnson P.O. Box 688 Niagara Falls, New York 14302
160.07-3-11	Frank A. Delia 535 Main Street East Aurora, New York 14052 and 6325 Cole Road Orchard Park, New York 14127
160.07-3-2	Joseph W. and Mary E. Orszutak 8417 West Rivershore Drive Niagara Falls, New York 14304
160.07-3-14 160.07-3-19 160.07-3-20 160.07-3-21	James A. Whitworth 4489 Lower River Road Lewiston, New York 14092
160.07-3-18	Jan R. and Barbara Krupa 491 82nd Street Niagara Falls, New York 14304
160.07-3-12 160.07-3-13	Lamnerts Cadillac Corp. 838 66th Street Niagara Falls, New York 14304
160.07-3-8 160.07-3-3.11 160.07-3-34 160.07-3-35 160.07-3-36 160.07-3-37	Jack B. and Dorothy Johnson P.O. Box 688 Niagara Falls, New York 14302
160.07-3-3	Melvin F. Tompkins Basic Carbon Site #932004 4829 Wilton Avenue Niagara Falls, New York 14304

CLASSIFICATION WORKSHEET

Site: 64th Street-North County: Niagara Region: 9

1. Hazardous waste disposed? ☒ Yes (to 2) ☐ No (Stop) ☐ Unknown (Stop)

2. Consequential amount of hazardous waste? ☐ Yes (to 3) ☒ No (Stop) ☐ Unknown (to 3)

3. Part 375-1.4(a)(1) applies? ☐ No (to 4) ☐ Unknown (to 4)

☐ Yes (as checked below; Class 2; to 5)

☐ a. endangered or threatened species
☐ b. streams, wetlands, or coastal zones
☐ c. bioaccumulation
☐ d. fish, shellfish, crustacea, or wildlife
☐ e. fire, spill, explosion, or toxic reaction
☐ f. proximity to people or water supplies

4. Part 375-1.4(a)(2) applies? ☒ No (Class 3; Stop) ☐ Unknown (Class 2a; Stop)

☐ Yes (Class 2; to 5)

5. Factor(s) considered in making this determination:

The presence of hazardous waste at the site has not been confirmed by additional sampling of on site subsurface soils (fills). Although analytical results indicate that significant concentrations of hazardous substances are present in surface and subsurface soils at the site, disposal of a consequential amount of hazardous waste was not confirmed.

SUMMARY

Consequential Hazardous Waste ☐ Yes ☒ No ☐ Unknown

Significant Threat ☐ Yes ☒ No ☐ Unknown

Proposed Classification D1 Site Number 932085A

Date Signature and Title

2 Site History

Based on previous aerial photo reviews, there is no evidence of waste disposal activity on site prior to 1937. At that time, much of the surrounding area was cultivated. Wetlands existed at or adjacent to the site and a series of forked drainage swales crossed the site (NCHD 1988).

During the 1940s and 1950s, the City of Niagara Falls operated a municipal landfill on the site, accepting mainly domestic and commercial solid wastes. It is possible that industrial wastes were also disposed of on site during this time period (NCHD 1982).

During World War II, the area south of Niagara Falls Boulevard was developed as a Department of Defense civilian housing complex for aircraft construction workers. This development was demolished in the early 1950s. It is alleged that debris from this facility was disposed of in the forked drainage swale from the center of the 64th Street-North site to Niagara Falls Boulevard (NCHD 1988a). It has also been reported that the site may have received municipal refuse or incinerator ash from the housing complex.

During the 1950s, the remainder of the swales, including a large east-west oriented swale, were filled with municipal wastes. Adjoining low-lying wetland areas were also filled during this time. By 1958, the site area had been filled essentially to grade (NCHD 1988).

Interstate I-190, which runs north-south through the western portion of the site, was constructed in the late 1950s to early 1960s. The highway was elevated approximately 5 to 12 feet above grade with clean fill materials. The site was developed to near its present state by the mid-1960s.

Ownership of the 64th Street-North Site during the late 1930s through the 1950s is unknown. Currently, portions of the site are owned by several owners, including Jack Johnson of Walter S. Johnson Company. The Johnson family purchased the eastern portion of the site in 1955 for use in their construction business. Prior to 1955, this property was owned by Niagara Mohawk (Engineering-Science 1988). LaSalle Steele owns the property west of I-190. Property adjacent to the southeastern corner of the site is owned by Tops

Market and P.J. Schmitt. This area was investigated by Waste Resource Associates, Inc. in 1991 and delisted. This property is not included as part of the 64th Street-North site.

In the late 1980s municipal refuse was uncovered during excavation along the Niagara Mohawk right-of-way north of the site for construction of a brine pipeline for the Texas Brine Company. Based on the analytical results from three soil samples collected along the pipeline, north of the site, no hazardous waste was detected at that time (Woodward-Clyde 1986).

In 1985, NYSDEC received a letter from a resident of the site area stating that a portion of the drainage swale near her home, between 66th Street and 71st Street, had been used for the disposal of "chemical or hazardous waste products" in the early 1940s. A known local waste hauler, Walter Kozdranski, was alleged in the letter to be involved in this waste disposal (Reed 1985). In a deposition by a former employee, Mr. Kozdranski was also alleged to be involved in waste disposal on the part of the 64th Street-North site owned by the Johnson family. As stated in the deposition, wastes from International Paper and Goodyear Tire and Rubber Company were disposed of the site from 1955 to the early 1970s (May 1990).

Aerial photographs have been used in the past to determine approximate site boundaries. These photos indicate landfilling throughout the site in addition to within the drainage swales (NCHD 1988). The total amount of fill materials disposed of at the site is unknown. It has been estimated that 75% of the land in a 1-mile-square quadrant in the northeast portion of the site has been used for landfilling or used for waste disposal or treatment (NCHD 1982).

Numerous investigations have been performed at the site. In 1982, subsurface soil samples were collected by the western portion of the site (EPA 1985). Sample analyses included selected organic priority and nonpriority pollutants, hydrocarbons, and iron.

In 1985, soil samples were collected along the Niagara Mohawk right-of-way as part of the Soil Excavation and Disposal Plan prior to installation of a brine pipeline (Woodward-Clyde 1986). Samples were collected in the areas south of CECOS Landfill and Sabre Trailer Park and analyzed for priority pollutant volatiles, semivolatiles, pesticides/PCBs, metals, and cyanide. EP toxicity extracts for these samples were also analyzed for isomers of benzene hexachloride (BHC) and metals. Volatile organic compounds (VOCs) detected in these samples included low levels of tetrachloroethene. Semivolatiles detected included predominantly polynuclear aromatic hydrocarbons (PAHs). Elevated levels of lead were detected; however, lead was not detected in the EP Toxicity extract. Alpha-

BHC was detected in the EP Toxicity extract, but the concentration was below regulatory levels.

Also, in 1985, NUS collected soil samples at various depths throughout the site (NUS 1986). Sixteen samples were collected from the eastern part of the site, and five samples were collected from the western part of the site. VOCs detected included trichloroethene, toluene, 1,1,1,-trichloroethane, and chlorobenzene. Semivolatiles detected included predominantly PAHs. Four pesticides including alpha-BHC, chlordane, aldrin, and 1,4-DDE were detected. Low levels of PCBs were detected in two samples. Elevated levels of mercury, lead, and zinc were also detected.

A portion of property along Niagara Falls Boulevard west of the unnamed trailer park, that was originally considered part of the 64th Street-North site, was recently delisted from the New York State Registry of Inactive Hazardous Waste Disposal Sites. This property is now the site of the Tops supermarket. Elevated levels of metals, especially mercury and lead, were found in soils in this area (Waste Resource Associates 1991). In addition, areas of fill containing waste lime were also discovered during environmental investigations on this property (Waste Resource Associates 1990).

Groundwater monitoring in the vicinity of the site has been conducted by the United States Geologic Survey (USGS), NUS Corporation, and NECCO. NECCO samples were collected as part of a monitoring program for the CECOS Landfill. Two of the NECCO monitoring stations are located north (upgradient) of the site and one station is located south (downgradient) of the site. There is one NUS and two USGS groundwater monitoring wells located downgradient of the site. The results from the USGS wells indicated the presence of cadmium, lead, methylene chloride, and toluene in concentrations that exceeded the New York State Class GA groundwater standards. The presence of these contaminants in groundwater cannot be attributed to the site because analytical results for hydraulically upgradient well locations are not available.

In 1989, a Phase I investigation was performed for NYSDEC by Engineering-Science, Inc., that included a review of available records, interviews, and a site inspection. A preliminary Hazard Ranking System (HRS) score calculated for the site included a migration score (S_m) of 11.24 and a direct contact score (S_{dc}) of 50.00.

3 PSA Task Discussion

Task 1 of the PSA was completed in 1992 by E & E under contract to NYSDEC and included a record search and site inspection. The PSA was continued by E & E at the 64th Street-North Site with fieldwork performed in December 1993 and December 1994. The scope of work for the PSA was prepared by NYSDEC and included sampling and analysis of surface and subsurface soil from 13 test pit locations and surface water/sediment from site drainage ditches.

The EPA Site Inspection Form 2070-13 is presented in Appendix A. During the December 1993 site inspection, no physical signs of hazardous waste disposal were observed. The PSA Task 1 report concluded that the threat to human health and the environment posed by the site was unknown and additional investigation including sampling and analysis of soil, groundwater, surface water, and sediment was recommended (E & E 1992).

With minor exceptions, all PSA field tasks were performed in accordance with the scope of work. With prior approval from NYSDEC, three additional surface soil samples (SS-14, SS-15, and SS-16) not included in the revised scope of work were collected from the eastern portion of the site where no fill was encountered during the excavation of test pits 10B, 12B, and 13C. These surface soil samples were analyzed for full Target Compound List (TCL) parameters (see Section 3.3). Upon review of groundwater and hydrogeologic data from the vicinity of the site, it was decided by NYSDEC that groundwater monitoring wells would not be installed at the site as part of the PSA investigation. This decision was made based on the lack of public use of groundwater in the area and the potential difficulties in assessing groundwater analytical data due to the complexity of local hydrogeology and the presence of other possible sources of groundwater contamination in the area.

3.1 PSA Task 1 Report

Task 1 of the PSA for the 64th Street-North Site was performed by E & E in 1991 and 1992. This task included a file review, site inspection, and preparation of a PSA Task 1 report.

A file search and review was conducted utilizing state, county, municipal, and site-specific sources. This information was compiled from existing data as well as new sources. A preliminary characterization of the site was developed after reviewing the compiled information.

A site inspection was conducted on April 30, 1991 to assess the surface characteristics of the site and vicinity, observe evidence, if any, of hazardous substances or wastes present, photograph the site, conduct preliminary air monitoring using a photoionization detector (PID) and a radiation meter, and confirm information obtained from the initial data search. At the time of the inspection, there was no physical evidence of hazardous waste disposal.

The PSA Task 1 report was submitted to NYSDEC in February 1992. This report concluded that the threat to human health and the environment posed by the site was unknown and additional studies were recommended.

3.2 Pre-field Investigation

Continuation of the PSA for the 64th Street-North Site involved several field tasks as described in the following sections. Prior to initiating field activities, E & E performed several other tasks. In June 1993, E & E submitted the Project Management Work Plan to NYSDEC for approval. This document included the abbreviated technical work plan prepared by NYSDEC for the site as well as the technical specifications for the management and performance of the field tasks, laboratory analyses, and report preparation.

In June 1993, E & E also submitted the General Health and Safety Plan (HASP) and Quality Assurance Project Plan (QAPjP) to NYSDEC for review. The HASP outlined the health and safety procedures and protocols to be followed during site characterization sampling and field activities. This document and information gathered during Task 1 of the PSA were used to generate a site-specific health and safety plan.

In August 1993, E & E submitted the QAPjP to NYSDEC for approval. The QAPjP presents the policies, organization, objectives, functional activities, and specific quality assurance (QA) and quality control (QC) activities implemented for this project. The QAPjP was designed in accordance with NYSDEC and United States Environmental Protection

Agency (EPA) guidance documents to ensure that all laboratory data generated by E & E's Analytical Services Center (ASC) meet specific data quality objectives.

In addition to preparation of these documents, tax map information was obtained and a site reconnaissance was performed. The site reconnaissance was conducted by E & E on August 4, 1993. No physical evidence of hazardous waste disposal was observed at this time.

3.3 Test Pit Excavation

On December 1, 2, and 3, 1993, as part of the PSA field investigation, 21 test pits were excavated by Environmental Products and Services, Inc. under the supervision of an E & E on-site geologist and site safety officer. The locations of the test pits are shown in Figure 3-1 and were selected with the concurrence of the NYSDEC field representative. The purpose of the test pit excavations was to collect samples of fill material for visual and analytical characterization (see Table 3-2). Eight test pits in the eastern portion of the site (10A, 10B, 11A, 12A, 12B, 13A, 13B, and 13C) were excavated to native soil, and no fill material was encountered. These test pits were backfilled and abandoned.

In addition to the samples described above which were collected in December 1993, samples were collected for EP Toxicity metals analysis in December 1994. Seven surface soil samples, six subsurface soil samples, and two sediment samples were collected in those areas that where high metals concentrations were detected in the 1993 investigation. These samples were collected to assist in the waste profile development and to help determine if the waste is leaching from the soil to groundwater.

All excavations were performed using a backhoe that was decontaminated with a high-pressure steam cleaner before and after use at each test pit location. A NYSDEC Region 9 site representative was present during most of the excavations. Table 3-2 is a summary of test pit excavation information. In general, fill material was encountered in only 13 test pits at or very near the ground surface. The thickness of fill encountered varied between test pits from 1.4 feet at TP-13 to 7 feet at TP-4. A general thinning of fill thickness was observed from west to east with a relatively abrupt north-south line of decrease in fill thickness passing through TP-13. This line is visible from the surface as a slight change in elevation and vegetation type. Soil samples were collected from the test pit excavations as described below in Section 3.4.2.

3.4 Sampling

On December 1, 2, and 3, 1993 as part of the PSA field investigation, 13 subsurface soil/waste samples, 16 surface soil samples, three surface water samples, and three sediment samples were collected (see Figure 3-1). On December 3, 1994, seven surface soil, six subsurface soil and two sediment samples were collected from previously sampled locations. Sample locations were chosen with the concurrence of the NYSDEC field representative and were based on information provided in NYSDEC's abbreviated work plan for the site. All sample collection, shipping, handling, and analytical procedures were performed in accordance with the NYSDEC-approved QAPjP (E & E 1993c). Additionally, field and sampling procedures were performed in accordance with the work plan (E & E 1993a), QAPjP, and HASP (E & E 1993b). Sample analysis was performed by E & E's ASC in accordance with NYSDEC's Analytical Services Protocol (ASP). All samples collected were analyzed for full TCL parameters including volatiles, semivolatiles, pesticides, polychlorinated biphenyls (PCBs), and inorganics including cyanide. The areas re-sampled in 1994 were analyzed for EP Toxicity metals (chromium, lead, and mercury only). Two soil and one water matrix spike/matrix spike duplicate (MS/MSD) sample sets were collected for QA/QC purposes.

Tables 3-3 through 3-10 present the results of the sampling and analyses performed during the PSA investigation. Data summary forms are presented in Appendix B. Tentatively identified compounds (TICs) detected in surface water and sediment samples are also presented in Appendix B.

The NYSDEC collected additional samples to determine whether a consequential amount of hazardous waste beyond the single EP Toxicity failure was present and to see whether the wetlands have been impacted by the hazardous waste purported to be on site. Four samples of waste (W-1 through W-4) (fill) were collected in the vicinity of the failed subsurface sample and analyzed for total metals and Toxicity Characteristic Leading Procedure (TCLP). Four sediment samples (SS-1 through SS-4) were collected in the wetland east of the waste and analyzed for BNAs, metals, and PCBs/pesticides. Figure 3-1 shows the approximate location of these samples.

3.4.1 Surface Soil

Sixteen surface soil samples, SS-1 through SS-16, were collected from the site during the 1993 investigation (see Figure 3-1). Samples SS-1 through SS-13 were collected from the areas where test pits TP-1 through TP-13 were excavated. Additional surface soil samples

SS-14, SS-15, and SS-16 were collected from the eastern portion of the site where no fill material was encountered during excavation of the test pits 10B, 12B, and 13C.

No volatile organic compounds, other than the common laboratory contaminants acetone and methylene chloride, were detected in surface soil samples. Semivolatile organic compounds detected in surface soil samples include N-nitrosodiphenylamine, hexachlorobenzene, PAHs and the related compounds dibenzofuran and carbazole, butylbenzylphthalate, and bis(2-ethylhexyl)phthalate (see Table 3-1). N-nitrosodiphenylamine was detected in five samples at concentrations ranging from an estimated 190 μg/kg in sample SS-4 to 41,000 μg/kg in SS-11. Hexachlorobenzene was detected in SS-4 at an estimated concentration of 65 μg/kg. Total PAHs were detected in all samples at estimated total concentrations ranging from 859 μg/kg in sample SS-16 to 217,040 μg/kg in sample SS-3. Dibenzofuran was detected in six samples at estimated concentrations ranging from 59 μg/kg in sample SS-2 to 720 μg/kg in sample SS-3. Carbazole was detected in eight samples at estimated concentrations ranging from 27 μg/kg in sample SS-1 to 1,500 μg/kg in sample SS-3. Phthalates were detected in all surface soil samples except SS-1 and SS-10. The presence of low concentrations of phthalates are likely the result of field and/or laboratory contamination because phthalate esters are constituents of the gloves used during sampling and analysis. bis(2-Ethylhexyl)phthalate was detected in sample SS-7 at 2,100 μg/kg, in sample SS-8 at 620 μg/kg, and in sample SS-11 at 2,000 μg/kg, and is considered site related. Butylbenzylphthalate detected in sample SS-3 at an estimated concentration of 2,600 μg/kg is also considered site related.

Thirteen pesticides were detected in surface soil samples (see Table 3-3). Ten of the 16 surface soil samples contained pesticides. Sample SS-3 contained 10 pesticides at concentrations ranging from an estimated 1.8 μg/kg to 310 μg/kg. Samples SS-6 and SS-7 contained the highest levels of pesticides with individual pesticide concentrations ranging from 15 to 1,700 μg/kg and 210 to 11,000 μg/kg, respectively. PCBs were detected in five surface soil samples at concentrations ranging from an estimated 40 μg/kg to 1,600 μg/kg (see Table 3-1).

Twenty-three inorganic analytes were detected in surface soil samples from the site (see Table 3-4). Results were compared to background concentrations detected in eastern United States soils and other surficial materials (Shacklette and Boerngen 1984). Concentrations of nine inorganics exceeded the upper limit of the 90th percentile of the common range for metals in at least one surface soil sample. The antimony concentration in SS-4 and the copper concentration in SS-13 exceeded the upper limit of the observed ranges in eastern United States soils. Concentrations of copper in three other samples exceeded the

upper limit of the 90th percentile, but not the observed range. The concentration of lead in SS-3 was above the observed range, and concentrations in 12 other samples exceeded the upper limit of 90th percentile. Mercury concentrations in SS-4, SS-6, SS-7, SS-11, and SS-13 exceeded the observed range, and concentrations in five other samples exceed the upper limit of the 90th percentile. Concentrations of calcium in 14 samples, chromium in three samples, cobalt in one sample, magnesium in 11 samples, nickel in two samples, and zinc in 13 samples exceeded the upper limits of the 90th percentile.

In December 1994, seven surface soil samples were collected in areas with the highest metals concentrations based on the 1993 surface soil sample results. Samples SS-2R, SS-3R, SS-4R, SS-5R, SS-6R, SS-7R, and SS-11R were analyzed for EP Toxicity metals chromium, lead and mercury (see Table 3-5). EP Toxicity chromium concentrations ranged from not detected to 0.013 mg/L, and EP Toxicity lead ranged from not detected to 0.17 mg/L. EP Toxicity mercury was not detected in any of the surface soil samples. None of these samples had concentrations in excess of the regulatory levels.

3.4.2 Subsurface Soil/Waste From Test Pits

Volatile organic compounds detected in subsurface soil/waste samples from test pits include carbon disulfide, 2-butanone, chlorobenzene, total xylenes, and the common laboratory contaminants acetone and methylene chloride (see Table 3-6). Semivolatile organic compounds detected include hexachlorobutadiene, N-nitrosodi-phenylamine, pentachlorophenol, three dichlorobenzenes, 1,2,4-trichlorobenzene, and PAHs and the related compounds dibenzofuran and carbazole. The low concentrations of phthalates detected were considered the result of field and/or laboratory contamination.

Hexachlorobutadiene was detected in sample TP-11 at an estimated concentration of 67 μg/kg. N-nitrosodiphenylamine was detected in six samples at concentrations ranging from an estimated 120 μg/kg to 260,000 μg/kg. Dichlorobenzenes and 1,2,4-trichlorobenzene were detected in sample TP-9 at concentrations ranging from an estimated 42 μg/kg to 1,900 μg/kg. PAHs were detected in 12 samples at total estimated concentrations ranging from 214 μg/kg to 13,178 μg/kg. Dibenzofuran (55 to 330 μg/kg) and carbazole were detected at low levels in four and seven samples, respectively.

Eleven pesticides were detected in subsurface soil/waste samples from test pits (see Table 3-6). Twelve samples contained low levels of one or more pesticides. TP-1 contained endrin ketone at 110 μg/kg. TP-2 contained beta-BHC at 320 μg/kg and alpha-BHC, delta-BHC, and gamma-BHC at lower estimated concentrations. TP-3 contained alpha-BHC and beta-BHC at concentrations of 1.2 μg/kg and 4 μg/kg, respectively. TP-4 contained

beta-BHC at an estimated concentration of 3.5 μg/kg. TP-5 contained alpha-BHC, beta-BHC, and delta-BHC at concentrations of 12 μg/kg, 16 μg/kg, and 2.9 μg/kg, respectively. Sample TP-5 also contained 4,4'-DOT at an estimated concentration of 5.8 μg/kg. Alpha-BHC and beta-BHC were detected at 100 μg/kg and 250 μg/kg, respectively, in sample TP-6. Delta-BHC and gamma-BHC also were detected in TP-6 at concentrations below 10 μg/kg. Methoxychlor was detected at an estimated concentration of 3,300 μg/kg in TP-7. Also in TP-7, beta-BHC was detected at 120 μg/kg, and alpha-BHC was detected at 53 μg/kg. Alpha-BHC and beta-BHC were detected in samples TP-8, TP-9, TP-11, and TP-13 at concentrations ranging from 9.3 μg/kg to 47 μg/kg and from 22 μg/kg to 69 μg/kg, respectively. TP-9 also contained aldrin at an estimated concentration of 27 μg/kg. TP-11 contained 4,4'-DDD and 4,4'-DDT at concentrations of 14 μg/kg and 60 μg/kg, respectively. Alpha-chlordane and gamma-chlordane were also detected in TP-11 at estimated concentrations of 4.4 μg/kg and 8.9 μg/kg, respectively. TP-12 contained 4,4'-DDT at an estimated concentration of 5.1 μg/kg. Methoxychlor was detected in TP-13 at an estimated concentration of 89 μg/kg.

PCBs were detected in four subsurface soil/waste samples at estimated concentrations ranging from 110 μg/kg to 690 μg/kg (see Table 3-6).

Twenty-one inorganic analytes were detected in subsurface soil/waste samples collected in 1993 from test pits (see Table 3-7). The concentrations of mercury in TP-5 and TP-10 exceed the observed range in eastern United States soils, and concentrations in six other samples exceed the upper limit of the 90th percentile. Concentrations of barium in one sample, calcium in 11 samples, chromium in two samples, copper in three samples, lead in 10 samples, magnesium in seven samples, nickel in one sample, and zinc in nine samples exceed the upper limit of the 90th percentiles (see Table 3-7).

Six subsurface soil samples were collected from test pits TP-4, TP-5, TP-7, TP-9, TP-11 and TP-13 in December 1994 (see Table 3-5). These samples were collected in the areas where metals were detected in the highest concentrations based on the 1993 subsurface soil analytical results. EP Toxicity chromium concentrations ranged from not detected to 0.011 mg/L, which is below the regulatory level of 5.0 mg/L. TP-9R contained an EP Toxicity lead concentration of 11.7 mg/L, which exceeds the regulatory level of 5.0 mg/L. The other EP Toxicity lead concentrations were below the regulatory level and ranged from not detected to 0.14 mg/L. No EP Toxicity mercury was detected in the subsurface soil samples.

Total metals analysis of the four waste samples (W-1, W-2, W-3 and W-4) collected by NYSDEC on November 22, 1995 as shown in Table 3-10 reveals numerous exeedances of

the upper limit of the 90th percentile of the observed range in eastern United States soils. One metal, lead, in sample W-1 exceeds the upper limit of the observed range. Full TCLP analysis of these samples did not reveal any concentrations above the regulatory threshold levels used to determine hazardous waste. These analytical results are consistent with those found at nonhazardous municipal landfills.

3.4.3 Surface Water and Sediment

Three surface water and three sediment samples (SW-1/SED-1 through SW-3/SED-3) were collected from surface drainages and ponded water at the site, as shown in Figure 3-1.

Analytical results for surface water samples were compared to NYSDEC Class D surface water standards (see Table 3-8). The best usage of Class D waters is fishing. These waters are suitable for fish survival and for primary and secondary contact recreation, although other factors may limit use for these purposes. Although surface water in drainage ditches at the site does not strictly meet the criteria of Class D waters, these standards are used as a conservative basis for comparison.

The only organic compound detected in surface water samples from the site is beta-BHC found at concentrations ranging from 0.052 μg/L to 0.18 μg/L. There is no Class D standard for this pesticide.

Thirteen inorganic analytes were detected in surface water samples collected in December 1993 from the site (see Table 3-8). The Class D standard for iron was exceeded in samples SW-2 and SW-3, and the standard for cyanide was exceeded in SW-2.

Analyses of the sediment samples collected in December 1993 showed that no volatile organic compounds were detected. Semivolatile organic compounds detected in sediment samples include N-nitrosodiphenylamine, hexachlorobenzene, and PAHs and the related compounds dibenzofuran and carbazole (see Table 3-9). N-nitrosodiphenylamine was detected in SED-1 and SED-3 at estimated concentrations of 71 μg/kg and 160 μg/kg, respectively. Hexachlorobenzene was detected in SED-3 at an estimated 59 μg/kg. PAHs were detected in all three sediment samples at total estimated concentrations ranging from 29 μg/kg to 7,819 μg/kg. Dibenzofuran was detected in SED-3 at an estimated concentration of 31 μg/kg, and carbazole was detected in both SED-1 and SED-3 at an estimated concentrations of 100 μg/kg.

Two pesticides, beta-BHC and 4,4'-DDT, were detected in SED-1 at estimated concentrations of 2.8 and 8.4 μg/kg, respectively (see Table 3-9). The two pesticides alpha-BHC and beta-BHC were present in SED-3 at concentrations of 51 and 310 μg/kg, respectively. The PCB Aroclor 1254 was detected in sample SED-1 at 260 μg/kg.

Nineteen inorganic analytes were detected in sediment samples collected in 1993 (see Table 3-10). Concentrations of calcium and magnesium in all three sediment samples exceeded the upper limit of the 90th percentile. Concentrations of lead, mercury, and zinc exceeded the upper limit of the 90th percentile in samples SED-1 and SED-3. Chromium and copper concentrations in SED-1 and the nickel concentration in SED-3 exceeded the upper limit of the 90th percentile.

Two additional sediment samples were collected for EP Toxicity metals analysis on December 1, 1994. Sediment samples SED-1R and SED-3 were analyzed for EP Toxicity chromium, lead and mercury (see Table 3-5). SED-1R contained EP Toxicity chromium and lead at concentrations of 0.029 mg/L and 0.49 mg/L, respectively. SED-3 contained EP Toxicity lead at a concentration of 0.13 mg/L. No EP Toxicity mercury was detected in either of the samples. All concentrations detected were below the regulatory levels.

Total metals analysis for the four sediment samples (SS-1, SS-2, SS-3, and SS-4) collected by NYSDEC on November 22, 1995 as shown in Table 3-11 reveals several samples that exceed the upper limit of the 90th percentile of the observed range in eastern United States soils. These exceedances correlate with those found during analyses of the waste samples taken at the same time (see Section 3.4.2) with the exception of the level of cobalt (60.1 mg/kg) in sample SS-2. This level is six to seven times higher than any of the other samples collected. These results are consistent with findings from other nonhazardous municipal landfills.

Semivolatile analysis of the above-mentioned four sediment samples revealed almost no contamination in two of the samples (SS-1 and SS-3) and no contamination in one sample (SS-2) (see Table 3-12). Sample SS-4, however, showed levels of 17 semivolatiles, two of which, phenanthene (800 mg/kg) and fluoranthene (960 mg/kg) exceeded sediment threshold levels.

3.5 Surveying

Following completion of the sampling activities, the site was surveyed by a licensed surveyor to a vertical accuracy of 0.05 feet and a horizontal precision of 1/10,000. The horizontal datum was magnetic north with assumed coordinates. The physical features of the site and all PSA sampling locations were surveyed and are shown on Figures 1-2 and 3-1 in this report. No property lines were surveyed. Instead, City of Niagara Falls and Town of Niagara tax maps were used to approximate the property boundaries shown in Figure 1-2.

3.6 PA Score

The purpose of the PA score is to assist in differentiating sites that pose little or no potential threat to human health and the environment from sites that warrant further investigation based on their potential threat. The PA score is a screening level compilation of existing information about a site and its surrounding environment, with an emphasis on obtaining comprehensive information on targets (i.e., populations and resources that might be threatened by a potential release from the site). The PA score is a simplified version of the Hazard Ranking System (HRS), which can be used to quantitatively assess a limited number of factors. A site with an HRS score or PA Score of 28.50 or greater is eligible for proposal to the National Priorities List of Hazardous Waste Sites.

The factors used to influence the PA score are likelihood of release, targets, and waste characteristics. Likelihood of release is the relative potential of a hazardous substance migrating from the site. Targets represent people, physical resources (drinking water wells or intakes), and environmental resources (sensitive environments) that may be threatened by a release from the site. Waste characteristics is an estimation of the type and quantity of hazardous waste at the site. These factors are then applied to the various exposure pathways (groundwater, surface water, soil, and air) to derive an overall site score.

The results of PA scoring (out of 100) for the 64th Street-North Site are as follows:

Overall site score:	8
Groundwater pathway score:	1
Surface water pathway score:	13
Soil pathway score:	2
Air pathway score:	7

PA scoresheets are included in Appendix C. A release to groundwater is suspected, but groundwater is not considered a major exposure route because there are no drinking water wells within the target distance limit. The surface water pathway is a major route of concern, primarily as an environmental threat, rather than a drinking water threat. A NYSDEC regulated wetland is present on site, and there is potential for contaminants to migrate to the Niagara River, a source of drinking water and a major sport and recreational fishery. The potential for exposure via the soil pathway is also of concern, as a number of individuals live, work or attend school close to the site. The air pathway is not considered a major exposure route at this site.

3.7 Prescore

The initial PA score completed for the 64th Street-North site resulted in a score of 71. Because this score is greater than 28.5, a PREscore package was completed for the site using PREscore version 3.0. PREscore is the computerized version of the Hazard Ranking System (HRS).

Like the PA score, PREscore is a means to differentiate sites that pose little or no threat to human health or the environment from sites that warrant further investigation based on their potential threat. The factors used to derive the PREscore, likelihood of release, waste characteristics, and targets are the same as for PA score. The exposure pathways, groundwater, surface water, soil, and air are also the same except the surface water exposure route has been expanded to include not only threats to surface water as a drinking water source, but also environmental and human food chain threats. Unlike PA score, PREscore is a more accurate and quantitative means of assessing the potential threats from a site. The assumptions made in the PA score are either proven or disproven based on sample analytical results, field surveys, or other reliable documentation.

The results of PREscoring (out of 100) for the 64th Street-North site are as follows:

- Overall site score: 2.82;
- Groundwater pathway score: 0.16;
- Surface water pathway score: 0.16;
- Soil exposure pathway score: 1.25; and
- Air exposure pathway score: 5.50.

PREscore sheets are included in Appendix E. There are no drinking water wells within the 4-mile target distance limit. The surface water pathway score is influenced by a potential threat to drinking water. There is a NYSDEC-regulated wetland adjacent to the site. The Niagara River, which is approximately 1 mile from the site, serves as a source of drinking water and a major sport and recreational fishery. However, no overland route for surface water flow from the site to the Niagara River has been determined. Potentially, contaminated groundwater, if present, could reach the river. However, no groundwater samples were collected and groundwater is not considered a major exposure route because no drinking water wells exist in the area.

The soil exposure pathway is important because of site accessibility to individuals who live in the vicinity of the site. Hazardous substances were identified in soil samples.

The air exposure pathway is not considered a major exposure route at this site. No air samples were collected.

Table 3-1

SAMPLING AND ANALYSIS SUMMARY

Sample Number	Target Compound List			Inorganics		
	Volatiles	Semivolatiles	Pesticides/ PCBs	Metals	Cyanide	EP Toxicity Metals
Surface Soil						
SS-1	X	X	X	X	X	—
SS-2	X	X	X	X	X	—
SS-3	X	X	X	X	X	—
SS-4	X	X	X	X	X	—
SS-5	X	X	X	X	X	—
SS-6	X	X	X	X	X	—
SS-7	X	X	X	X	X	—
SS-8	X	X	X	X	X	—
SS-9	X	X	X	X	X	—
SS-10	X	X	X	X	X	—
SS-11	X	X	X	X	X	—
SS-12	X	X	X	X	X	—
SS-13	X	X	X	X	X	—
SS-14	X	X	X	X	X	—
SS-15	X	X	X	X	X	—
SS-16	X	X	X	X	X	—
SS-2R	—	—	—	—	—	X
SS-3R	—	—	—	—	—	X
SS-4R	—	—	—	—	—	X
SS-5R	—	—	—	—	—	X
SS-6R	—	—	—	—	—	X
SS-7R	—	—	—	—	—	X
SS-11R	—	—	—	—	—	X
Subsurface Soil						
TP-1	X	X	X	X	X	—
TP-2	X	X	X	X	X	—
TP-3	X	X	X	X	X	—

Table 3-1

SAMPLING AND ANALYSIS SUMMARY

Sample Number	Target Compound List			Inorganics		
	Volatiles	Semivolatiles	Pesticides/ PCBs	Metals	Cyanide	EP Toxicity Metals
TP-4	X	X	X	X	X	—
TP-5	X	X	X	X	X	—
TP-6	X	X	X	X	X	—
TP-7	X	X	X	X	X	—
TP-8	X	X	X	X	X	—
TP-9	X	X	X	X	X	—
TP-10	X	X	X	X	X	—
TP-11	X	X	X	X	X	—
TP-12	X	X	X	X	X	—
TP-13	X	X	X	X	X	—
TP-4R	—	—	—	—	—	X
TP-5R	—	—	—	—	—	X
TP-7R	—	—	—	—	—	X
TP-9R	—	—	—	—	—	X
TP-11R	—	—	—	—	—	X
TP-13R	—	—	—	—	—	X
Surface Water						
SW-1	X	X	X	X	X	—
SW-2	X	X	X	X	X	—
SW-3	X	X	X	X	X	—
Sediment						
SED-1	X	X	X	X	X	—
SED-2	X	X	X	X	X	—
SED-3	X	X	X	X	X	—
SED-1R	—	—	—	—	—	X
SED-3	—	—	—	—	—	X

Table 3-1 (Cont.)

Key:

SED = Sediment Sample.
SW = Surface Water Sample.
SS = Surface Soil Sample.
TP = Test Pit Soil Sample.
X = Analysis performed.
— = Analysis not performed.

Table 3-2

TEST PIT EXCAVATION SUMMARY

Test Pit No.	Total Depth (feet BGS)	Total Length (feet)	Depth Sampled (feet BGS)	Descriptions of Excavated Materials
TP-1	5.8	12	2	0-3 feet: Fill - gravel, clayey sand, brick, ceramic chips, glass. 3-5 feet: Natural mottled tan/brown clayey silty sand.
TP-2	3.5	8	1.5	0-0.75 feet: Topsoil. 0.45-3 feet: Red brick fill and red clay from bricks. 3-3.5 feet: Native soil.
TP-3	6	8	3	0-0.75 feet: Topsoil. 0.45-3 feet: Fill - concrete rubble mixed with soil. 3-3.5 feet: Black clayey silt. 3.5-6 feet: Native soil.
TP-4	7	12	4	0-7 feet: Fill - disturbed soils with large rocks. At 7 feet: Native soil.
TP-5	3.5	11	2	0-0.75 feet: Clayey topsoil. 0.75-3 feet: Black ash fill. 3-3.5 feet: Native soil.
TP-6	5	18	2	0-1 foot: Topsoil with rock. 1-3 feet: Fill - construction and demolition debris, glass, brick, gravel. 2-3 feet: Dark brown/black silty sand layer. 3-5 feet: Native soil.
TP-7	5	13	2	0-3 feet: Fill - bricks, ceramic tile, white powder (lime), glass, tar paper. 3-5 feet: Native soil.
TP-8	4.2	20	2	0-0.5 feet: Topsoil. 0.5-3 feet: Fill - mostly concrete blocks from sidewalks and foundations, rebar, traces of brick and lumber.
TP-9	5	10	4	0-1 foot: Brown clay topsoil. 1-3.5 feet: Fill - red clay with some bricks and concrete slabs, rocks, ceramic tile. 3.5-4.5 feet: Black slick odoriferous layer.

Key at end of table.

Table 3-2

TEST PIT EXCAVATION SUMMARY

Test Pit No.	Total Depth (feet BGS)	Total Length (feet)	Depth Sampled (feet BGS)	Descriptions of Excavated Materials
				4.5-5 feet: Native soil.
TP-10	5.8	12	4.5	0-5 feet: Fill - dark brown disturbed soil with some boulders, traces of brick, concrete, and rubber. 5-5.8 feet: Native soil.
TP-10A	2.0	<3.0	NA	0-1 foot: topsoil >1.0 feet native soil/no fill.
TP-10B	2.0	<3.0	NA	0-1 foot: topsoil >1.0 foot: native soil/no fill.
TP-11	4	10	3.5	0-4 feet: Fill - mostly disturbed brown topsoil with wire, brick, metal, lumber, and cinder block. 4 feet: Native soil.
TP-11A	2.0	<3.0	NA	0-1 foot: topsoil >1 foot: native soil/no fill.
TP-12	2.5	8	2	0-0.5 feet: topsoil. 0.5-2.5 feet: Fill - bricks, clay drain tile.
TP-12A	2.0	<3.0	NA	0-1 foot: topsoil >1 foot: native soil/no fill.
TP-12B	3.0	<5.0	NA	0-3 feet: topsoil with traces of concrete and pottery >3 feet: native soil
TP-13	2-east 4-west	109	3 (east)	0-1.4 feet (east) and 0-3.4 feet (west): Fill - topsoil with traces of construction and demolition debris including brick, concrete, and clay tile pieces. 1.4-2 feet (east) and 3.4 feet (west): Native soil.
TP-13A	2.0	<3.0	NA	No topsoil cover-native soil at surface/no fill.
TP-13B	2.0	<3.0	NA	No topsoil cover-native soil at surface/no fill.
TP-13C	2.0	<3.0	NA	0-0.5 foot: topsoil >0.5 foot: native soil/no fill.

Key:

BGS = Below ground surface.

Table 3-3

ORGANIC COMPOUNDS DETECTED IN SURFACE SOIL SAMPLES
64TH STREET - NORTH SITE
DECEMBER 1-3, 1993
(µg/kg)

Compound	SS-1	SS-2	SS-3	SS-4
Semivolatiles				
N-Nitrosodiphenylamine	ND	ND	ND	190 J
Hexachlorobenzene	ND	ND	ND	65 J
Total PAHs	7,380 J	16,725 J	217,040 J	14,505 J
Dibenzofuran	ND	59 J	720 J	77 J
Carbazole	27 J	210 J	1,500 J	180 J
bis(2-Ethylhexyl) phthalate	ND	ND	ND	ND
Butylbenzylphthalate	ND	ND	2,600 J	ND
Pesticides				
alpha-BHC	ND	ND	6.2	16
beta-BHC	ND	5.8	9.0 J	57
delta-BHC	ND	ND	1.8 J	ND
gamma-BHC	ND	ND	2.6 J	ND
Aldrin	ND	ND	ND	ND
Dieldrin	ND	ND	310	ND
4,4'-DDE	ND	ND	15 J	ND
Endrin	ND	ND	10 J	ND
4,4'-DDD	ND	ND	ND	ND
4,4'-DDT	ND	ND	27 J	ND
Methoxychlor	ND	ND	ND	ND
alpha-Chlordane	ND	ND	74	ND
gamma-Chlordane	ND	ND	47 J	ND
PCBs				
Aroclor-1248	ND	ND	ND	ND
Aroclor-1254	ND	ND	ND	ND
Aroclor-1260	ND	98 J	ND	ND

Key at end of table.

Table 3-3

ORGANIC COMPOUNDS DETECTED IN SURFACE SOIL SAMPLES
64TH STREET - NORTH SITE
DECEMBER 1-3, 1993
(µg/kg)

Compound	SS-5	SS-6	SS-7	SS-8
Semivolatiles				
N-Nitrosodiphenylamine	250 J	ND	620 J	550
Hexachlorobenzene	ND	ND	ND	ND
Total PAHs	24,660 J	3,346 J	5,634 J	10,067 J
Dibenzofuran	140 J	ND	ND	96 J
Carbazole	510	ND	77 J	220 J
bis(2-Ethylhexyl) phthalate	ND	ND	2,100	620
Butylbenzylphthalate	ND	ND	ND	ND
Pesticides				
alpha-BHC	18	200 J	770 J	63
beta-BHC	32	1,700	11,000	150
delta-BHC	ND	15 J	ND	ND
gamma-BHC	ND	41	210	ND
Aldrin	14 J	ND	ND	20
Dieldrin	11 J	ND	ND	ND
4,4'-DDE	ND	ND	ND	ND
Endrin	ND	ND	ND	ND
4,4'-DDD	ND	ND	ND	ND
4,4'-DDT	15	ND	ND	ND
Methoxychlor	ND	ND	2,600	ND
alpha-Chlordane	ND	ND	ND	ND
gamma-Chlordane	ND	ND	ND	ND
PCBs				
Aroclor-1248	ND	ND	ND	ND
Aroclor-1254	430	ND	ND	300
Aroclor-1260	ND	ND	ND	ND

Key at end of table.

Table 3-3

ORGANIC COMPOUNDS DETECTED IN SURFACE SOIL SAMPLES
64TH STREET - NORTH SITE
DECEMBER 1-3, 1993
(µg/kg)

Compound	SS-9	SS-10	SS-11	SS-12
Semivolatiles				
N-Nitrosodiphenylamine	ND	ND	41,000	ND
Hexachlorobenzene	ND	ND	ND	ND
Total PAHs	4,717 J	4,161 J	14,990 J	2,773 J
Dibenzofuran	ND	ND	130 J	ND
Carbazole	39 J	ND	ND	ND
bis(2-ethylhexyl) phthalate	ND	ND	2,000	ND
Butylbenzylphthalate	ND	ND	ND	ND
Pesticides				
alpha-BHC	11	2.2 J	29	ND
beta-BHC	31	3.2	43 J	ND
delta-BHC	ND	ND	ND	ND
gamma-BHC	ND	ND	ND	ND
Aldrin	ND	ND	ND	ND
Dieldrin	ND	ND	ND	ND
4,4'-DDE	ND	ND	ND	ND
Endrin	ND	18 J	ND	ND
4,4'-DDD	ND	ND	26 J	ND
4,4'-DDT	4.0	ND	56	ND
Methoxychlor	ND	ND	ND	ND
alpha-Chlordane	ND	2.6	ND	ND
gamma-Chlordane	ND	2.5 J	ND	ND
PCBs				
Aroclor-1248	ND	ND	1,600	ND
Aroclor-1254	40 J	ND	ND	ND
Aroclor-1260	ND	ND	ND	ND

Key at end of table.

Table 3-3

ORGANIC COMPOUNDS DETECTED IN SURFACE SOIL SAMPLES
64TH STREET - NORTH SITE
DECEMBER 1-3, 1993
(µg/kg)

Compound	SS-13	SS-14	SS-15	SS-16
Semivolatiles				
N-Nitrosodiphenylamine	ND	ND	ND	ND
Hexachlorobenzene	ND	ND	ND	ND
Total PAHs	2,426 J	1,160 J	3,214 J	859 J
Dibenzofuran	ND	ND	ND	ND
Carbazole	ND	ND	ND	ND
bis(2-ethylhexyl) phthalate	ND	ND	ND	ND
Butylbenzylphthalate	ND	ND	ND	ND
Pesticides				
alpha-BHC	ND	ND	ND	ND
beta-BHC	ND	ND	ND	ND
delta-BHC	ND	ND	ND	ND
gamma-BHC	ND	ND	ND	ND
Aldrin	ND	ND	ND	ND
Dieldrin	ND	ND	ND	ND
4,4'-DDE	ND	ND	ND	ND
Endrin	ND	ND	ND	ND
4,4'-DDD	ND	ND	ND	ND
4,4'-DDT	ND	ND	ND	ND
Methoxychlor	ND	ND	ND	ND
alpha-Chlordane	ND	ND	ND	ND
gamma-Chlordane	ND	ND	ND	ND
PCBs				
Aroclor-1248	ND	ND	ND	ND
Aroclor-1254	ND	ND	ND	ND
Aroclor-1260	ND	ND	ND	ND

Key at end of table.

Table 3-3 (Cont.)

Note: Samples were collected on December 1, 2, and 3, 1993.

Key:

J = Reported value is estimated.
ND = Not detected.

Table 3-4

INORGANIC ANALYTES DETECTED IN SURFACE SOIL SAMPLES
64TH STREET - NORTH SITE
DECEMBER 1-3, 1993
(mg/kg)

Analyte	SS-1	SS-2	SS-3	SS-4	SS-5	SS-6	SS-7	SS-8	Background Concentrations in Eastern U.S. Soils[a]	
									Upper Limit of the 90th Percentile	Observed Range
Aluminum	6,610	23,700	12,800	4,180	9,450	9,020	10,500	9,260	128,000	7,000 - >100,000
Antimony	ND	ND	ND	35.2	ND	ND	ND	ND	1.58	<1 - 8.8
Arsenic	6.8	7.0	11.2	8.5	8.9	6.2	11.4	5.8	16.0	0.1 - 73
Barium	37.5	219	169	99.3	129	94.1	143	119	867	10 - 1,500
Beryllium	0.34	1.1	0.80	0.30	0.58	0.51	0.62	0.56	1.81	<1 - 7
Cadmium	ND	ND	4.2	ND	2.6	ND	ND	ND	NA	0.01 - 7.0[b]
Calcium	52,600	66,600	31,600	98,900	52,400	76,300	45,700	45,000	14,400	100 - 280,000
Chromium	11.3	129	118	56.4	40.4	35.5	315	48.9	112	1 - 1,000
Cobalt	9.1	23.4	19.0	8.3	15.7	10.9	13.2	13.2	19.8	<0.3 - 70
Copper	29.3	33.0	79.8	40.5	94.8	34.4	46.0	49.6	48.7	<1 - 700
Iron	17,700	27,600	23,800	15,200	25,200	15,400	20,200	19,900	54,100	100 - >100,000
Lead	18.5	80.3	613	185	166	104	194	137	33.0	<10 - 300
Magnesium	8,650	9,660	17,900	47,200	19,100	38,800	24,200	19,100	10,700	50 - 50,000
Manganese	563	539	1,030	449	460	528	504	530	1,450	<2 - 7,000
Mercury	ND	2.9	1.7	5.4	0.87	5.6	19.6	2.5	0.265	0.01 - 3.4
Nickel	19.6	34.5	92.8	21.3	32.2	20.9	29.6	31.9	38.2	<5 - 700
Potassium	914	4,330	1,750	755	1,430	1,960	1,940	2,400	23,500	50 - 37,000
Selenium	ND	0.71	0.73	ND	ND	ND	ND	ND	0.941	<0.1 - 3.9
Sodium	ND	ND	ND	ND	248	ND	460	ND	17,400	<500 - 50,000
Thallium	ND	ND	ND	ND	0.34	ND	ND	ND	13.8	2.2 - 23
Vanadium	17.7	53.4	52.5	21.3	30.1	29.0	31.7	30.4	140	<7 - 300
Zinc	106	162	598	302	845	299	272	218	104	<5 - 2,900
Cyanide	ND	ND	ND	ND	ND	ND	ND	0.77	NA	NA

Key at end of table.

Table 3-4

INORGANIC ANALYTES DETECTED IN SURFACE SOIL SAMPLES
64TH STREET - NORTH SITE
DECEMBER 1-3, 1993
(mg/kg)

Analyte	SS-9	SS-10	SS-11	SS-12	SS-13	SS-14	SS-15	SS-16	Background Concentrations in Eastern U.S. Soils[a]	
									Upper Limit of the 90th Percentile	Observed Range
Aluminum	9,520	4,860	5,570	9,890	7,580	14,600	11,100	11,600	128,000	7,000 - >100,000
Antimony	ND	ND	ND	ND	ND	ND	ND	ND	1.58	<1 - 8.8
Arsenic	5.6	3.3	5.3	5.0	7.6	4.7	6.7	5.5	16.0	0.1 - 73
Barium	104	46.0	69.2	72.3	164	105	85.6	65.8	867	10 - 1,500
Beryllium	0.55	0.40	0.46	0.60	0.59	0.78	0.63	0.56	1.81	<1 - 7
Cadmium	ND	ND	ND	ND	0.78	ND	ND	ND	NA	0.01 - 7.0[b]
Calcium	42,400	46,900	59,400	25,600	31,800	59,300	8,370	3,540	14,400	100 - 280,000
Chromium	74.0	21.1	35.2	28.6	47.3	35.6	35.4	24.7	112	1 - 1,000
Cobalt	11.6	14.0	8.7	12.3	15.6	16.4	14.7	13.2	19.8	<0.3 - 70
Copper	43.6	21.1	27.4	24.5	3,520	26.3	26.0	16.4	48.7	<1 - 700
Iron	18,300	12,600	13,900	18,800	23,400	26,400	17,200	18,200	54,100	100 - >100,000
Lead	72.0	28.3	92.5	45.8	231	29.7	54.6	37.9	33.0	<10 - 300
Magnesium	16,400	18,700	27,200	10,800	9,240	19,600	3,340	3,040	10,700	50 - 50,000
Manganese	573	336	465	381	542	646	277	219	1,450	<2 - 7,000
Mercury	ND	0.57	4.1	ND	6.5	ND	ND	ND	0.265	0.01 - 3.4
Nickel	38.8	15.8	15.1	22.9	37.8	27.4	28.9	24.4	38.2	<5 - 700
Potassium	1,270	756	584	737	1,440	4,080	ND	1,440	23,500	50 - 37,000
Selenium	ND	ND	ND	ND	0.41	ND	0.59	ND	0.941	<0.1 - 3.9
Sodium	213	ND	ND	249	ND	ND	788	ND	17,400	<500 - 50,000
Thallium	ND	0.33	ND	0.29	0.26	ND	ND	0.27	13.8	2.2 - 23
Vanadium	27.9	16.8	16.1	28.9	27.0	37.8	30.6	28.9	140	<7 - 300
Zinc	137	114	130	98.3	405	95.4	104	88.9	104	<5 - 2,900
Cyanide	ND	ND	ND	ND	1.5	ND	ND	ND	NA	NA

Key at end of table.

Table 3-4 (Cont.)

Note: Shaded values exceed the upper limit of the 90th percentile or background levels. Samples were collected on December 1, 2, and 3, 1993.

[a] Shacklette and Boerngen 1984, except as noted.
[b] Dragun 1988.

Key:

NA = Not available.
ND = Not detected.

Table 3-5

EP TOXICITY METALS ANALYTICAL RESULTS FOR SURFACE SOIL, SUBSURFACE SOIL, AND SEDIMENT SAMPLES 64TH STREET NORTH SITE DECEMBER 1, 1994 (mg/L)

Sample Number (Depth)	Chromium	Lead	Mercury
Surface Soil			
SS-2R	0.011	ND	ND
SS-3R	0.013	0.064	ND
SS-4R	ND	0.16	ND
SS-5R	0.0053	0.088	ND
SS-6R	ND	0.091	ND
SS-7R	0.0084	0.17	ND
SS-11R	ND	0.069	ND
Subsurface Soil			
TP-4R (2-4')	ND	0.14	ND
TP-5R (0-2')	0.0049	ND	ND
TP-7R (0-2')	0.0054	ND	ND
TP-9R (2-4')	0.0063	11.7	ND
TP-11R (2-4')	0.011	0.091	ND
TP-13R (2-4')	ND	0.035	ND
Sediment			
SED-1R	0.029	0.49	ND
SED-3	ND	0.13	ND
Regulatory Level[a]	5.0	5.0	0.2

Note: Samples collected December 1, 1994.
Shaded values exceed regulatory level.

a Regulatory level determined from Federal Register Vol. 55, No. 126, June 29, 1990.

Key:

ND = Not detected.

Table 3-6

ORGANIC COMPOUNDS DETECTED IN SUBSURFACE SOIL/WASTE SAMPLES FROM TEST PITS
64TH STREET - NORTH SITE
DECEMBER 1-3, 1993
(µg/kg)

Compound	TP-1	TP-2	TP-3	TP-4	TP-5	TP-6	TP-7
Volatiles							
Carbon disulfide	ND	ND	ND	8 J	ND	ND	ND
2-butanone	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND
Total xylenes	ND	ND	ND	ND	ND	ND	ND
Semivolatiles							
Hexachlorobutadiene	ND	ND	ND	ND	ND	ND	ND
N-Nitrosodiphenylamine	120 J	ND	ND	260 J	ND	ND	260,000
Pentachlorophenol	ND	ND	ND	120 J	120 J	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND
Total PAHs	2,000 J	1,893 J	4,901 J	214 J	2,796 J	599 J	ND
Dibenzofuran	58 J	58 J	ND	ND	ND	ND	ND
Carbazole	ND	33 J	98 J	ND	ND	ND	ND
Pesticides							
alpha-BHC	ND	53 J	1.2 J	ND	12	100	53
beta-BHC	ND	320	4.0	3.5 J	16 J	250	120
delta-BHC	ND	22 J	ND	ND	2.9 J	5.0 J	ND
gamma-BHC	ND	33 J	ND	ND	ND	7.1	ND
Aldrin	ND	ND	ND	ND	ND	ND	ND
4,4'-DDD	ND	ND	ND	ND	ND	ND	ND
4,4'-DDT	ND	ND	ND	ND	5.8 J	ND	ND
Methoxychlor	ND	ND	ND	ND	ND	ND	3,300 J
Endrin ketone	110	ND	ND	ND	ND	ND	ND
alpha-Chlordane	ND	ND	ND	ND	ND	ND	ND
gamma-Chlordane	ND	ND	ND	ND	ND	ND	ND
PCBs							
Aroclor-1248	ND	ND	ND	ND	ND	ND	ND
Aroclor-1254	ND	ND	ND	ND	160 J	ND	ND

Key at end of table.

Table 3-6

ORGANIC COMPOUNDS DETECTED IN SUBSURFACE SOIL/WASTE SAMPLES FROM TEST PITS
64TH STREET - NORTH SITE
DECEMBER 1-3, 1993
(µg/kg)

Compound	TP-8	TP-9	TP-10	TP-11	TP-12	TP-13
Volatiles						
Carbon disulfide	ND	6 J	ND	ND	ND	ND
2-butanone	ND	4 J	ND	ND	ND	ND
Chlorobenzene	ND	180	ND	3 J	ND	ND
Total xylenes	ND	2 J	ND	ND	ND	ND
Semivolatiles						
Hexachlorobutadiene	ND	ND	ND	67 J	ND	ND
N-Nitrosodiphenylamine	190 J	2,600	ND	220 J	ND	ND
Pentachlorophenol	240 J	1,700	ND	ND	790	ND
1,2-Dichlorobenzene	ND	42 J	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	460 J	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	110 J	ND	ND	ND	ND
1,2,4-Trichlorobenzene	ND	1,900	ND	ND	ND	ND
Total PAHs	2,175 J	10,240 J	6,958 J	13,178 J	7,319 J	6,908 J
Dibenzofuran	ND	330 J	ND	55 J	ND	ND
Carbazole	ND	ND	65 J	130 J	ND	100 J
Pesticides						
alpha-BHC	30	47	ND	9.3	ND	9.9
beta-BHC	69	55 J	ND	22	ND	23
delta-BHC	ND	ND	ND	ND	ND	ND
gamma-BHC	ND	ND	ND	ND	ND	ND
Aldrin	ND	27 J	ND	ND	ND	ND
4,4'-DDD	ND	ND	ND	14 J	ND	ND
4,4'-DDT	ND	ND	ND	60	5.1 J	ND
Methoxychlor	ND	ND	ND	ND	ND	89 J
Endrin ketone	ND	ND	ND	ND	ND	ND
alpha-Chlordane	ND	ND	ND	4.4 J	ND	ND
gamma-Chlordane	ND	ND	ND	8.9 J	ND	ND
PCBs						
Aroclor-1248	ND	ND	ND	380	ND	ND
Aroclor-1254	110 J	690 J	ND	ND	ND	ND

Key at end of table.

Table 3-6 (Cont.)

Note: Samples were collected on December 1, 2, and 3, 1993.

Key:

J = Reported value is estimated.
ND = Not detected.

Table 3-7

INORGANIC ANALYTES DETECTED IN SUBSURFACE SOIL/WASTE SAMPLES FROM TEST PITS
64TH STREET - NORTH SITE
DECEMBER 1-3, 1993
(mg/kg)

Analyte	TP-1	TP-2	TP-3	TP-4	TP-5	TP-6	TP-7	Background Concentrations in Eastern U.S. Soils[a]	
								Upper Limit of the 90th Percentile	Observed Range
Aluminum	10,800	11,700	11,600	14,200	11,000	10,900	10,800	128,000	7,000 - 100,000
Arsenic	4.2	6.6	4.7	6.1	12.3	4.8	6.5	16.0	0.1 - 73
Barium	59.7	85.7	62.4	111	273	79.6	1,270	867	10 - 1,500
Beryllium	0.55	0.58	0.57	0.80	0.97	0.58	0.61	1.81	<1 - 7
Calcium	19,800	42,400	8,100	74,500	71,900	20,700	41,300	14,400	100 - 280,000
Chromium	17.9	16.5	28.6	128	36.1	36.9	75.6	112	1 - 1,000
Cobalt	11.8	10.5	15.1	19.5	16.7	12.3	19.1	19.8	<0.3 - 70
Copper	19.7	31.6	14.5	31.8	107	29.5	59.2	48.7	<1 - 700
Iron	18,600	18,000	17,900	24,400	34,400	18,600	38,400	54,100	100 - >100,000
Lead	18.4	52.6	18.2	56.3	129	46	110	33.0	<10 - 300
Magnesium	7,890	23,400	3,770	42,300	11,700	6,000	11,700	10,700	50 - 50,000
Manganese	256	560	243	747	379	246	504	1,450	<2 - 7,000
Mercury	ND	ND	ND	ND	3.5	0.39	2.6	0.265	0.01 - 3.4
Nickel	19.9	19.5	19.8	28.5	33.8	22.1	36.9	38.2	<5 - 700
Potassium	1,760	2,130	943	1,890	2,320	1,190	1,840	23,500	50 - 37,000
Selenium	0.34	ND	0.49	ND	0.65	0.42	ND	0.941	<0.1 - 3.9
Sodium	ND	ND	1,000	344	302	ND	258	17,400	<500 - 50,000
Thallium	ND	ND	ND	ND	0.48	ND	ND	13.8	2.2 - 23
Vanadium	29.0	28.7	30.7	38.5	36.2	29.6	40.2	140	<7 - 300
Zinc	88.7	232	73.7	199	271	106	407	104	<5 - 2,900
Cyanide	ND	ND	ND	ND	ND	ND	ND	NA	NA

Key at end of table.

Table 3-7

INORGANIC ANALYTES DETECTED IN SUBSURFACE SOIL/WASTE SAMPLES FROM TEST PITS
64TH STREET - NORTH SITE
DECEMBER 1-3, 1993
(mg/kg)

Analyte	TP-8	TP-9	TP-10	TP-11	TP-12	TP-13	Background Concentrations in Eastern U.S. Soils[a]	
							Upper Limit of the 90th Percentile	Observed Range
Aluminum	8,570	11,200	7,570	6,220	9,570	8,750	128,000	7,000 - 100,000
Arsenic	8.6	9.1	5.0	4.4	5.3	4.3	16.0	0.1 - 73
Barium	86.9	167	189	64.2	64.3	82.2	867	10 - 1,500
Beryllium	0.47	0.66	0.49	0.54	0.59	0.63	1.81	<1 - 7
Calcium	11,900	38,500	45,600	34,200	15,300	53,300	14,400	100 - 280,000
Chromium	24.2	39.1	76.1	32.5	21.3	138	112	1 - 1,000
Cobalt	13.3	16.9	11.0	10.9	12.3	14.0	19.8	<0.3 - 70
Copper	37.7	75.7	43.1	27.9	24.0	25.9	48.7	<1 - 700
Iron	19,800	27,400	15,300	14,500	19,300	18,700	54,100	100 - >100,000
Lead	86.1	128	135	59.8	31.3	35.7	33.0	<10 - 300
Magnesium	5,650	10,400	12,300	14,400	6,790	16,900	10,700	50 - 50,000
Manganese	322	410	334	355	296	440	1,450	<2 - 7,000
Mercury	0.29	0.71	4.3	0.84	ND	0.35	0.265	0.01 - 3.4
Nickel	26.5	66.1	22.4	20.7	21.7	22.8	38.2	<5 - 700
Potassium	672	2,110	802	637	568	699	23,500	50 - 37,000
Selenium	ND	0.31	ND	ND	ND	ND	0.941	<0.1 - 3.9
Sodium	257	682	242	ND	204	ND	17,400	<500 - 50,000
Thallium	ND	ND	0.29	ND	ND	ND	13.8	2.2 - 23
Vanadium	24.1	32.9	21.4	20.0	24.6	27.9	140	<7 - 300
Zinc	203	565	335	102	91.0	106	104	<5 - 2,900
Cyanide	ND	1.0	ND	ND	ND	ND	NA	NA

Key at end of table.

Table 3-7 (Cont.)

Note: Shaded values exceed upper limit of the 90th percentile and/or background levels. Samples were collected on December 1, 2, and 3, 1993.

[a] Schacklette and Boerngen 1984, except as noted.
[b] Dragun 1988.

Key:

NA = Not available.
ND = Not detected.

Key at end of table.

Table 3-8

INORGANIC ANALYTES DETECTED IN SURFACE WATER SAMPLES 64TH STREET - NORTH SITE DECEMBER 3, 1993 (µg/L)

Analyte	SW-1	SW-2	SW-3	NYSDEC Class D Surface Water Standard[a]
Aluminum	267	614	345	NA
Barium	43.0	59.2	61.8	NA
Calcium	50,600	165,000	136,000	NA
Copper	16.8	8.0	13.7	30.5/87.6/73.1[c]
Iron	291	1,300	716	300
Lead	2.4	2.4	9.4	171/707/555[c]
Magnesium	12,600	32,200	26,900	NA
Manganese	89.8	307	397	NA
Mercury	ND	ND	0.22	NA
Potassium	12,000	5,920	12,900	NA
Sodium	15,500	17,600	20,200	NA
Zinc	276	229	183	518/1,310/1,120[c]
Cyanide	ND	52.0	ND	22[d]
Hardness	178	545	450	NA

Note: Samples were collected on December 3, 1993. Shaded values exceed the Class D surface water standard.

a NYSDEC 1993.
b Dissolved form.
c Standard is a function of hardness as respectively shown.
d Standard is for free cyanide ($HCN + CN^-$) expressed as CN.

Key:

NA = No standard available.
ND = Not detected.

Table 3-9

ORGANIC COMPOUNDS DETECTED IN SEDIMENT SAMPLES
64TH STREET - NORTH SITE
DECEMBER 3, 1993
(µg/kg)

Compound	SED-1	SED-2	SED-3
Semivolatiles			
N-Nitrosodiphenylamine	71 J	ND	160 J
Hexachlorobenzene	ND	ND	59 J
Total PAHs	7,819 J	29 J	6,392 J
Dibenzofuran	ND	ND	31 J
Carbazole	100 J	ND	100 J
Pesticides			
alpha-BHC	ND	ND	51 J
beta-BHC	2.8 J	ND	310
4,4'-DDT	8.4 J	ND	ND
PCBs			
Aroclor 1254	260	ND	ND

Note: Samples were collected on December 3, 1993.

Key:

J = Reported value is estimated.
ND = Not detected.

Table 3-10

INORGANIC ANALYTES DETECTED IN SEDIMENT SAMPLES
64TH STREET - NORTH SITE
DECEMBER 3, 1993
(mg/kg)

Analyte	SED-1	SED-2	SED-3	Background Concentrations in Eastern U.S. Soils and other Surficial Materials[a]	
				Upper Limit of the 90th Percentile	Observed Range
Aluminum	6,690	6,950	5,520	128,000	7,000 - 100,000
Arsenic	6.2	3.2	4.9	16.0	0.1 - 73
Barium	108	92	94.3	867	10 - 1,500
Beryllium	0.50	ND	0.43	1.81	<1 - 7
Calcium	88,900	20,500	66,600	14,400	100 - 280,000
Chromium	191	14.4	28.5	112	1 - 1,000
Cobalt	10.8	13.0	10.5	19.8	<0.3 - 70
Copper	68.3	15.1	47.2	48.7	<1 - 700
Iron	14,300	14,900	12,600	54,100	100 - >100,000
Lead	239	17.5	140	33.0	<10 - 300
Magnesium	37,600	11,300	33,400	10,700	50 - 50,000
Manganese	500	248	644	1,450	<2 - 7,000
Mercury	4.6	ND	2.1	0.265	0.01 - 3.4
Nickel	36.3	18.5	43	38.2	<5 - 700
Potassium	664	711	504	23,500	50 - 37,000
Sodium	292	ND	271	17,400	<500 - 50,000
Thallium	ND	0.31	0.36	13.8	2.2 - 23
Vanadium	22.6	18.7	19.9	140	<7 - 300
Zinc	268	70.5	404	104	<5 - 2,900

Note: Samples were collected on December 3, 1993. Shaded values exceed the upper limit of the 90th percentile and/or the observed range.

[a] Shacklette and Boerngen 1984.

Key:

NA = Not available.
ND = Not detected.

Table 3-11

INORGANIC ANALYTES DETECTED IN WASTE AND SEDIMENT SAMPLES FROM 64TH STREET - NORTH SITE NOVEMBER 22, 1995 (mg/kg)

Analyte	W-1	W-2	W-3	W-4	SS-1	SS-2	SS-3	Background Concentrations in Eastern U.S. Soils[a]	
								Upper Limit of the 90th Percentile	Observed Range
Aluminum	12,800	10,600	9,080	9,720	9,000	21,200	8,500	128,000	7,000 - 100,000
Antimony	ND	1.9 B	2.3 B	ND	ND	ND	ND		
Arsenic	8	8	9.3	7	5.3	18	6.6	16.0	0.1 - 73
Barium	370	265	127	116	54.4	139	45.5 B	867	10 - 1,500
Beryllium	0.56 B	0.3 B	0.16 B	0.16 B	0.14 B	0.85 B	0.08 B	1.81	<1 - 7
Cadmium	1.6	0.2 B	2.7	ND	ND	ND	ND	NA	NA
Calcium	67,300	59,100	42,100	42,600	3,140	3,960	19,700	14,400	100 - 280,000
Chromium	55.8	38.6	38.4	29.8	14.4	30.5	13.6	112	1 - 1,000
Cobalt	10.8 B	9.4 B	11.2 B	9.1 B	9.1 B	60.1	8 B	19.8	<0.3 - 70
Copper	83.3	78.1	90.4	55	17.7	35.6	21.1	48.7	<1 - 700
Iron	19,400	22,000	17,700	17,700	16,000	35,600	17,900	54,100	100 - >100,000
Lead	447	144	147	58.5	11.7	23	8.9	33.0	<10 - 300
Magnesium	14,500	20,100	9,970	16,400	3,410	6,900	8,190	10,700	50 - 50,000
Manganese	613	587	366	680	247	954	192	1,450	<2 - 7,000
Mercury	1	1	1.2	0.46	ND	ND	ND	0.265	0.01 - 3.4
Nickel	165	104	633	26.2	23.2	43.5	22.1	38.2	<5 - 700
Potassium	3,030	1,770	1,200 B	1,160 B	565 B	2,110	702 B	23,500	50 - 37,000
Selenium	2.6	1.9	1.3	2.1	2.7	5.1	ND	0.941	<0.1 - 3.9
Sodium	708 B	698 B	292 B	257 B	254 B	349	278 B	17,400	<500 - 50,000
Thallium	ND	ND	ND	ND	ND	2.9	ND	13.8	2.2 - 23
Vanadium	35.5	27	19.8	21.7	19.6	45.3	16.9	140	<7 - 300
Zinc	578	256	239	179	66	113	94	104	<5 - 2,900

Key at end of table.

Table 3-11

INORGANIC ANALYTES DETECTED IN WASTE AND SEDIMENT SAMPLES FROM 64TH STREET - NORTH SITE NOVEMBER 22, 1995 (mg/kg)

Analyte	SS-4	Background Concentrations in Eastern U.S. Soils[a]	
		Upper Limit of the 90th Percentile	Observed Range
Aluminum	10,500	128,000	7,000 - 100,000
Antimony	1.3 B		
Arsenic	6.9	16.0	0.1 - 73
Barium	115	867	10 - 1,500
Beryllium	0.22 B	1.81	<1 - 7
Cadmium	ND	NA	NA
Calcium	47,800	14,400	100 - 280,000
Chromium	36.5	112	1 - 1,000
Cobalt	10.8 B	19.8	<0.3 - 70
Copper	22.3	48.7	<1 - 700
Iron	20,300	54,100	100 - >100,000
Lead	28.4	33.0	<10 - 300
Magnesium	18,700	10,700	50 - 50,000
Manganese	887	1,450	<2 - 7,000
Mercury	ND	0.265	0.01 - 3.4
Nickel	24.4	38.2	<5 - 700
Potassium	1,770	23,500	50 - 37,000
Selenium	2.2	0.941	<0.1 - 3.9
Sodium	283 B	17,400	<500 - 50,000
Thallium	ND	13.8	2.2 - 23
Vanadium	22.5	140	<7 - 300
Zinc	111	104	<5 - 2,900

Key at end of table.

Table 3-11 (Cont.)

Note: Shaded values exceed upper limit of the 90th percentile and/or background levels. Samples were collected on December 1, 2, and 3, 1993.

[a] Schacklette and Boerngen 1984, except as noted.
[b] Dragun 1988.

Key:

NA = Not available.
ND = Not detected.

Table 3-12

SEMIVOLATILE COMPOUNDS DETECTED IN SEDIMENT SAMPLES FROM 64TH STREET - NORTH SITE NOVEMBER 22, 1995 (mg/kg)

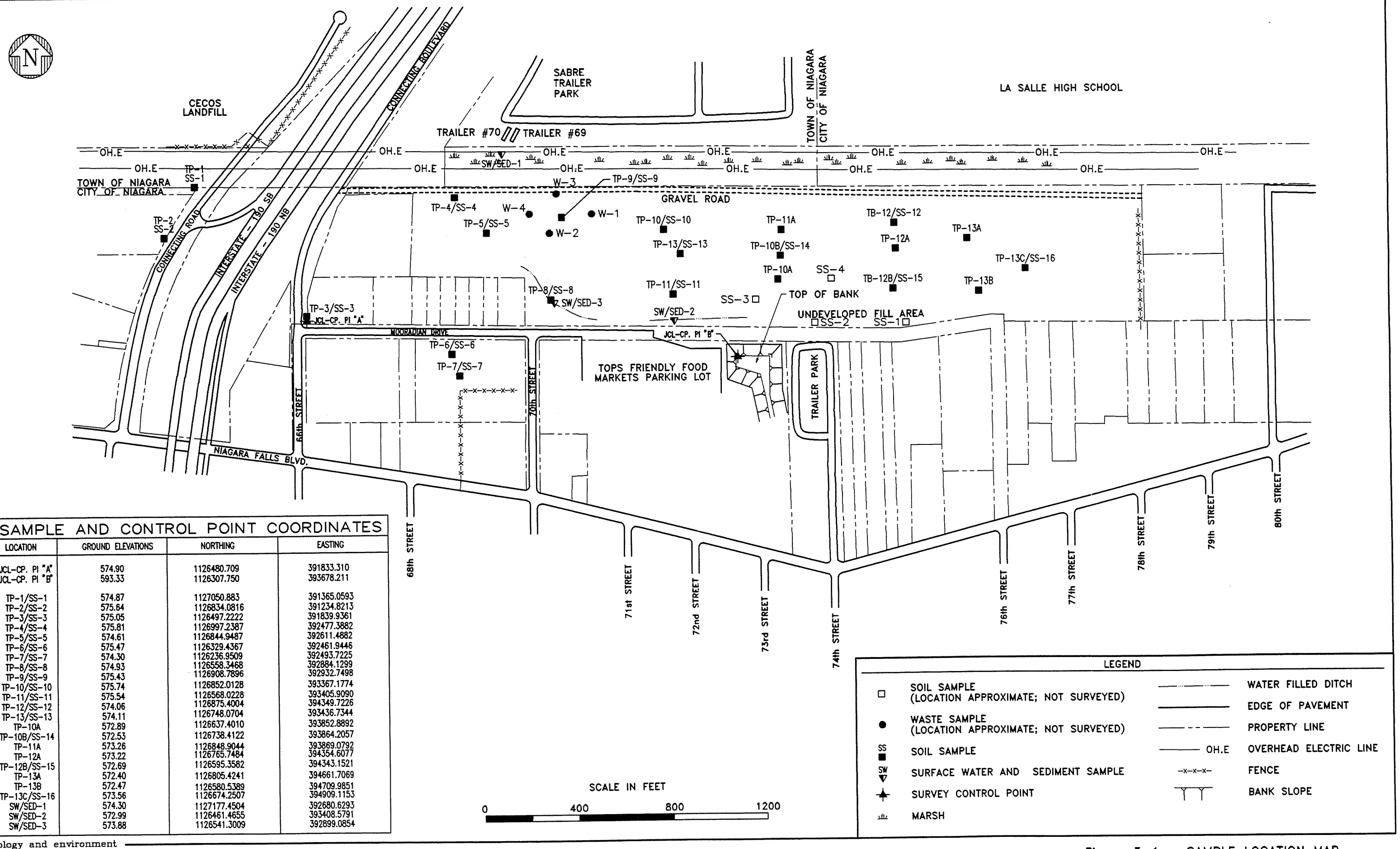
Analyte Sample No.	SS-1	SS-2	SS-3	SS-4
2-Butanone	ND	ND	ND	ND y
1,4-Dichlorobenzene	ND	ND	ND	ND
Acenaphthylene	ND	ND	ND	100 J
Acenaphthene	ND	ND	ND	60 J
Fluorene	ND	ND	ND	79 J
Phenanthrene	ND	ND	ND	800 J
Anthracene	ND	ND	ND	180 J
Carbazole	ND	ND	ND	64 J
Fluoranthene	ND	ND	ND	960
Pyrene	ND	ND	ND	700
Benzo(a)anthracene	ND	ND	ND	460
Bis(2-ethylhexyl)phthalate	57 J	97 J	55 J	47 J
Di-n-octylphthalate	ND	87	ND	ND
Chrysene	ND	ND	ND	390 J
Benzo(b)fluoranthene	ND	ND	ND	590
Benzo(k)fluoranthene	ND	ND	ND	520
Benzo(a)pyrene	ND	ND	ND	340 J
Indeno(1,2,3-cd)pyrene	ND	ND	ND	310 J
Dibenz(a,h)anthracene	ND	ND	ND	68 J
Benzo(g,h,i)perylene	ND	ND	ND	230 J

Note: Shaded concentrations are above sediment threshold levels.

Key:

SS = Sediment.
W = Waste.

YS5S001B



SAMPLE AND CONTROL POINT COORDINATES

LOCATION	GROUND ELEVATIONS	NORTHING	EASTING
JCL-CP. PI "A"	574.90	1126480.709	391833.310
JCL-CP. PI "B"	593.33	1126307.750	393678.211
TP-1/SS-1	574.87	1127050.883	391365.0593
TP-2/SS-2	575.64	1126834.0816	391234.8213
TP-3/SS-3	575.05	1126497.2222	391839.9361
TP-4/SS-4	575.81	1126997.2387	392477.3882
TP-5/SS-5	574.61	1126844.9487	392611.4682
TP-6/SS-6	575.47	1126329.4367	392461.9446
TP-7/SS-7	574.30	1126236.9509	392493.7225
TP-8/SS-8	574.93	1126558.3468	392884.1299
TP-9/SS-9	575.43	1126908.7896	392932.7498
TP-10/SS-10	575.74	1126852.0128	393367.1774
TP-11/SS-11	575.54	1126568.0228	393405.9090
TP-12/SS-12	574.06	1126875.4004	394349.7226
TP-13/SS-13	574.11	1126748.0704	393436.7344
TP-10A	572.89	1126637.4010	393852.8892
TP-10B/SS-14	572.53	1126738.4122	393864.2057
TP-11A	573.26	1126848.9044	393869.0792
TP-12A	573.22	1126765.7484	394354.6077
TP-12B/SS-15	572.69	1126595.3582	394343.1521
TP-13A	572.40	1126805.4241	394661.7069
TP-13B	572.47	1126580.5389	394709.9851
TP-13C/SS-16	573.56	1126674.2507	394909.1153
SW/SED-1	574.30	1127177.4504	392680.6293
SW/SED-2	572.99	1126461.4655	393408.5791
SW/SED-3	573.88	1126541.3009	392899.0854

ecology and environment

Figure 3-1 SAMPLE LOCATION MAP
64TH STREET-NORTH SITE

4 Conclusions and Recommendations

4.1 Conclusions

Semivolatile organics were detected at elevated concentrations in surface soil, subsurface soil (waste), and sediment samples from the 64th Street-North site. N-nitrosodiphenylamine and various chlorinated benzene-based compounds were detected in waste samples at up to 260,000 μg/kg and 2,500 μg/kg, respectively. Also, hexachlorobutadiene (67 μg/kg) and pentachlorophenol (1,700 μg/kg) were detected in waste samples. Numerous pesticides were detected in surface soil, waste, and sediment samples. Concentrations were highest in surface soil samples, with totals up to 15,000 μg/kg. PCBs were detected in surface soil, waste, and sediment, with the highest concentration, 1,600 μg/kg, in surface soil. Metals detected at elevated concentrations in surface soil, waste, and sediment samples include chromium, lead, mercury, nickel, and zinc. EP Toxicity lead was detected above regulatory levels in one subsurface soil sample collected at 2 to 4 feet BGS from TP-9. Additional subsurface sampling around the location of that sampling did not replicate these results. The NYSDEC has determined that the one sample's failure represents a *de minimus* amount of hazardous waste so disposal of a consequential amount of hazardous waste was not substantiated.

There is no historical documentation of hazardous waste disposal at the site, although hazardous substance disposal is documented. This evidence includes the deposition of a former employee of a local waste hauler stating that wastes from Goodyear and International Paper were dumped at the site. As stated in a NCHD memo (NCHD 1993), the Walter Kozdranski Company has been implicated as a hauler of hazardous waste to several sites in the area including Forest Glen, 1865 Connecting Road (Site No. 932103), and the Kozdranski site in the Town of Wheatfield. The Kozdranski site, which has never been listed as a hazardous waste site, is located approximately 4,000 feet northeast of the 64th Street-North site at the location of the Kozdranski Company's former base of operations. Connections between the Kozdranski site and the 64th Street-North site include claims of disposal of

Goodyear wastes and the detection of N-nitrosodiphenylamine. N-nitrosodiphenylamine is thought to be an indicator of the presence of other chemicals of concern at the Connecting Road site. One of these compounds of concern, diphenylamine, could not be separated from N-nitrosodiphenylamine during analysis of 64th Street-North samples. Therefore, its presence or absence could not be determined.

The presence of pentachlorophenol (PCP) in waste samples TP-4, TP-5, TP-8, TP-9, and TP-12 also supports the contention of industrial waste disposal at the site. In addition, the detection of PCP at the site may indicate the presence of other industrial waste and impurities in commercial PCP include other polychlorinated phenols, polychlorinated dioxins, polychlorinated dibenzofurans, and in some cases, hexachlorobenzene (ASTDR 1993). Dioxins and polychlorinated dibenzofurans are not included on the Target Compound List (TCL). Hexachlorobenzene and polychlorinated phenols were detected in this and previous sampling at the site.

The presence of hazardous waste at the site has not been confirmed by the sampling of on-site subsurface soils (fill.) Analytical results indicate that significant concentrations of hazardous substances are present in surface and subsurface soils at the site.

4.2 Recommendations

In conclusion, it has been determined that despite the presence of hazardous substances on site, the inconsequential amount of hazardous waste does not constitute a significant threat, despite unrestricted access to the site.

For the above-stated reasons, it is recommended that the 64th Street-North site be delisted. Because access to the site is unrestriced, it is recommended that the site's cover be improved to reduce the potential for direct contact to the hazardous substances in the site's surface soils.

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