ND2900 D1712

ENGINEERING INVESTIGATIONS AT INACTIVE HAZARDOUS WASTE SITES

PHASE I INVESTIGATION

REPUBLIC STEEL, SITE NUMBER: 915047
CITY OF BUFFALO, ERIE COUNTY

June 1989

STATE OF NEW YORK
ALEXANDER H. WHITMAN, JR.
No. 063202-1
LICENSED PROFESSIONAL ENGINEER

Prepared for:

New York State Department of Environmental Conservation

50 Wolf Road, Albany, New York 12233
Thomas C. Jorling, Commissioner

Division of Hazardous Waste Remediation
Michael J. O'Toole, Jr., P.E., Director

Prepared by:

ecology and environment engineering, p.c.
BUFFALO CORPORATE CENTER
368 PLEASANTVIEW DRIVE, LANCASTER, NEW YORK 14086, TEL. 716/684-8060

TABLE OF CONTENTS

Table of Contents (Cont.)

LIST OF ILLUSTRATIONS

LIST OF TABLES

1. EXECUTIVE SUMMARY

1.1 SITE BACKGROUND

Republic Steel operated a facility known as the Marilla Street landfill (the Republic Steel site) to dispose of wastes generated by the plant (i.e., slag, precipitator dust, clarifier sludge, railroad ties, checker bricks, scrap wood, tool scale, blast furnace dust, Basic Oxygen Furnace (BOF) brick, and construction debris from 1930 to 1981. The site is located near the intersection of Marilla Street and Hopkins Street in the City of Buffalo (see Figures 1-1 and 1-2). There was minimal segregation of wastes prior to Resource Conservation and Recovery Act (RCRA) regulations. However, in November 1980, BOF precipitator dust generated at the Buffalo District Plant was classified as an EP-Toxic hazardous waste due to lead leachability. The dust was then placed in a segregated fill area in November 1980 until steel making ceased in 1981. A RCRA Part A permit application was filed for the BOF dust area in November 1980. The landfill site has been used primarily for waste material reclamation and disposal of construction debris since the plant shutdown. All wastes disposed of at the landfill site since November 1980 have been kept segregated. The site has been investigated by the New York State Department of Environmental Conservation (NYSDEC) and the United States Environmental Protection Agency (EPA) and groundwater has been sampled periodically since 1979 through various monitoring wells throughout the site. Analytical results of samples collected indicated a higher pH and elevated levels of phenols, lead, cadmium, arsenic, manganese, sulfate, iron, and tetrachloroethylene.

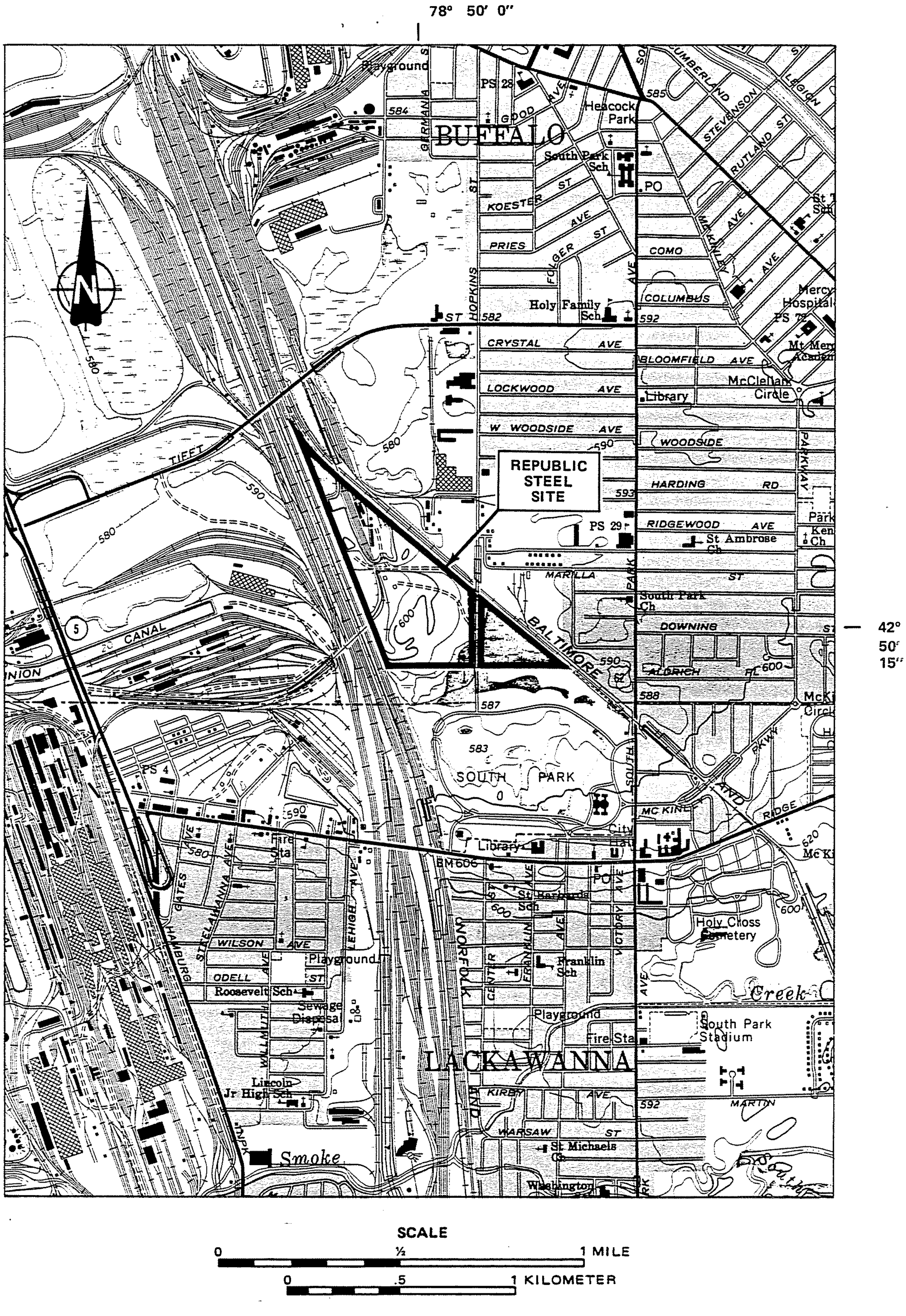
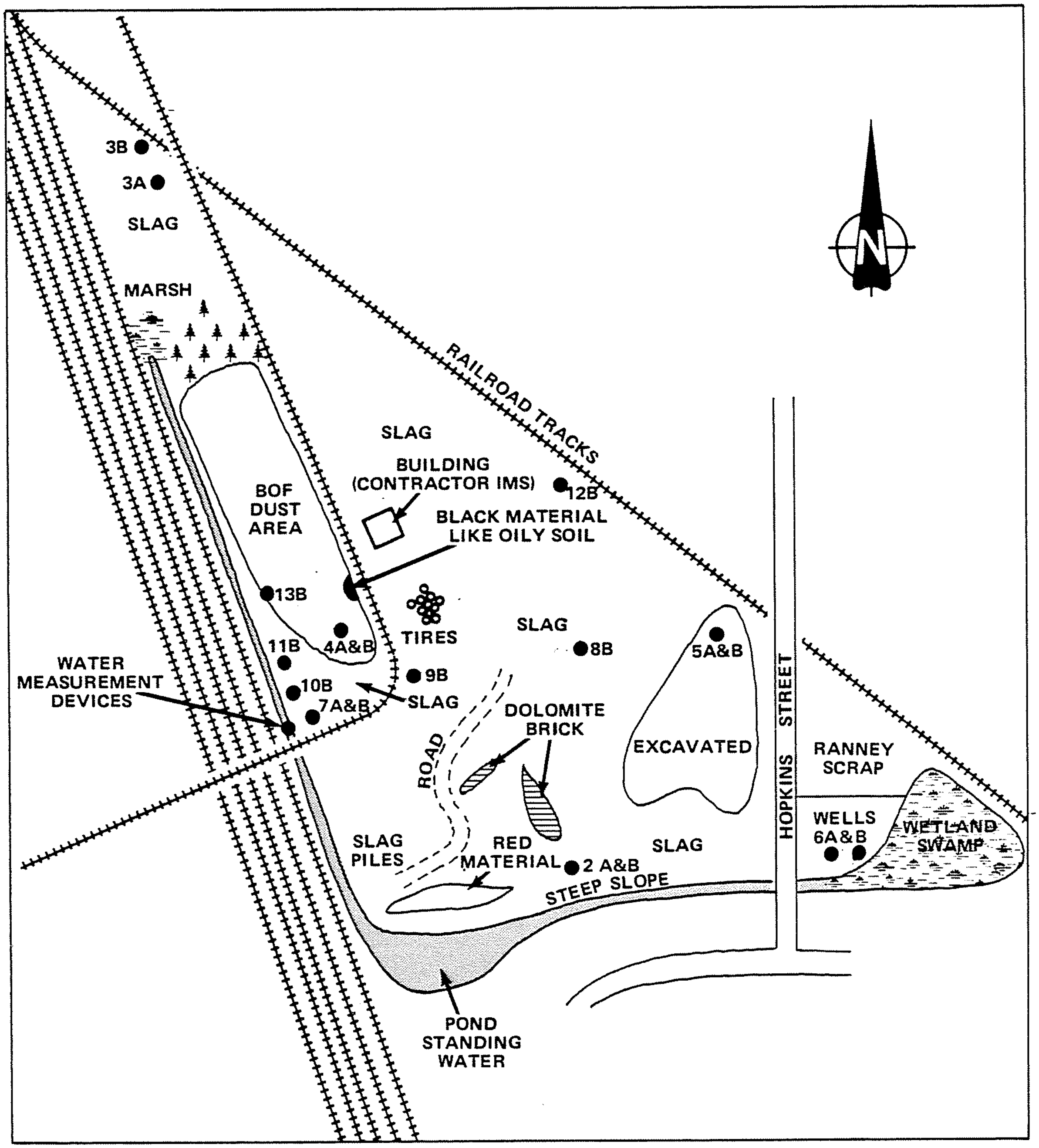


Figure 1—1 LOCATION MAP



SOURCE: Ecology and Environment, Inc., 1987.

NOT TO SCALE

Figure 1–2 SITE MAP - REPUBLIC STEEL

1.2 PHASE I EFFORTS

On July 15, 1987, Ecology and Environment, Inc. (E & E) conducted a site inspection in support of this investigation. Prior to the inspection, available federal, state, county, and municipal files were reviewed. The site inspection consisted of a visual survey of the property that included:

- Overall site conditions;
- Description of vegetation and a survey for stressed vegetation;
- Presence of structures on the site;
- Distance to nearest residence;
- Location of nearest agricultural land;
- Location of nearest surface water and wells, and type of use;
- Visual delineation of waste disposal areas;
- Air quality survey using an HNu photoionizer; and
- Photodocumentation of the site.

All observations were recorded in a field logbook and reported in the EPA Site Inspection Report form.

1.3 ASSESSMENT

Although disposal of wastes at the Marilla Street landfill ceased in 1981, the site remains active through the excavation of brick, slag, and metal debris. The site is also easily accessible due to the lack of fences about the perimeter. This creates the potential for direct contact to the disposal wastes. The wastes have been mixed and covered with rubble/slag to prevent dispersion by wind; however, the site currently is not capped. This creates the potential of contaminants migrating off site through the groundwater system and surface water runoff. Analytical results from quarterly sampling of onsite monitoring wells have indicated the introduction of hazardous waste into the groundwater system from the landfill in addition to contaminants present from upgradient offsite sources. The contaminants from the site have a very high potential for offsite migration.

1.4 HRS SCORE

A preliminary application of the Hazard Ranking System (HRS) has been made to quantify the risk associated with this site. As the Phase I investigation is limited in scope, not all the information needed to fully evaluate the site is available. An HRS score was completed on the basis of the available data. Absence of necessary data may result in an unrealistically low HRS score.

Under the HRS, three numerical scores are computed to express the site's relative risk or damage to the population and the environment. The three scores are:

- S_M reflects the potential for harm to humans or the environment from migration of a hazardous substance away from the facility by routes involving groundwater, surface water, or air. It is a composite of separate scores for each of the three routes (S_{GW} = groundwater route score, S_{SW} = surface water route score, and S_A = air route score).

- S_{FE} reflects the potential for harm from substances that can explode or cause fires.

- S_{DC} reflects the potential for harm from direct contact with hazardous substances at the facility (i.e., no migration need be involved).

The preliminary HRS score was:

S_M = 11.09 (S_{GW} = 6.12; S_{SW} = 18.18; S_A = 0)
S_{FE} = Not scored
S_{DC} = 62.5

2. PURPOSE

This Phase I investigation was conducted under contract to the NYSDEC Superfund Program. The purpose of the investigation was to provide a preliminary evaluation of the potential hazardous waste present at the site, to estimate the potential pollutant migration pathways leading off site, and to determine the natural resources or extent of the human population that might be affected by the pollutants. This initial investigation consisted of conducting a detailed file review of available information and a site inspection. The evaluation includes preparation of a narrative site description, initial characterization of the hazardous substances on site, and calculation of a preliminary HRS score. This assessment will be used to determine what additional actions, if any, should be conducted at the site.

3. SCOPE OF WORK

The Phase I effort involved the following tasks:

- A review of available information from state, county, municipal, and private files;
- Interviews with individuals knowledgeable of the site; and
- Physical inspection of the site that included review of USGS 7.5-minute topographic maps. No samples were collected, although air monitoring was performed using an HNu photoionizing organic vapor detector. No readings above background were obtained with the HNU.

Photographs were taken during the site inspection and are included in Appendix A. Table 3-1 lists sources contacted for the Phase I investigation. References are included in Section 7.

Table 3-1

SOURCES CONTACTED FOR THE NYSDEC PHASE I INVESTIGATION AT THE REPUBLIC STEEL SITE

Agencies Contacted

U.S. Environmental Protection Agency
Region II Office
26 Federal Plaza, Room 900
New York, New York 10278
Contact: Ben Conetta
Telephone No.: (212) 264-8677
Date: August 3, 1987
Information Gathered: Preliminary assessment.

New York State Department of Environmental Conservation, Region 9
Solid and Hazardous Waste Division and Permitting Division
600 Delaware Avenue
Buffalo, New York 14202
Contact: Lawrence Clare, Larry Thomas
Telephone No.: (716) 847-4585
Date: May and August 1987
Information Gathered: Closure plans and other file information.

New York State Department of Environmental Conservation
Fish and Wildlife Division
128 South Street
Olean, New York 14760
Contact: Joe Evans
Telephone No.: (716) 372-5636
Date: August 27, 1987
Information Gathered: Stream classification and fisheries information.

Federal Emergency Management Agency
Flood Map Distribution Center
6930(A-F) San Tomas Road
Baltimore, Maryland 21227
Contact: Not known
Telephone No.: (800) 333-1363
Date: June 1987
Information Gathered: Flood insurance rate maps.

New York State Department of Environmental Conservation
Fish and Wildlife Habitats Division
600 Delaware Avenue
Buffalo, New York 14202
Contact: Jim Farquar
Telephone No.: (716) 847-4550
Date: August 26, 1987
Information Gathered: Wetlands in Erie County, significant habitats, and floodplains.

New York State Department of Environmental Conservation
Water Division
600 Delaware Avenue
Buffalo, New York 14202
Contact: Rebecca Anderson
Telephone No.: (716) 847-4590
Date Contacted: August 1987
Information Gathered: Floodplain locations.

County of Erie Department of Environment and Planning
Environmental Control Division
95 Franklin Street
Buffalo, New York 14202
Contact: Kermit Studley, John Opalko
Telephone No.: (716) 846-6370
Date: May 1987
Information Gathered: File information, FEMA FIRM maps.

Table 3-1
(Cont'd)

Agencies Contacted

United States Department of Agriculture (USDA)
Soil Conservation Service
21 South Grove Street
East Aurora, New York 14731
Contact: John Whitney
Telephone No.: (716) 655-1210
Date: August 25, 1987
Information Gathered: Agricultural district lands and distance to productive prime agricultural lands.

State of New York Department of Health
Corning Tower
The Governor Nelson A. Rockefeller Empire State Plaza
Albany, New York 12237
Contact: Lani Raffery
Telephone No.: (518)458-6310
Date Contacted: April 5,6, 1989
Information: File search for site history, correspondence, background information.

New York State Department of Health
Regional Toxic Program Office
584 Delaware Avenue
Buffalo, New York 14202
Contact: Linda Rusin, Cameron O'Connor
Telephone No.: (716) 847-4365
Dates Contacted: May 5 and June 4, 1987, April 13, 1989
Information: Contact with NYSDOH on May 5, 1987, indicated that files were being transferred from Albany to Buffalo so the files were not accessible. Further correspondence in June 1987 indicated that the office was newly established and file information was extremely limited; therefore, the county health departments were visited in lieu of NYSDOH. NYSDOH files were searched on April 13, 1989.

4. SITE ASSESSMENT

4.1 SITE HISTORY

The Republic Steel site, which is currently owned by LTV Steel Company, has been in operation since 1930. On December 19, 1984, LTV Corporation acquired Republic Corporation and merged Jones and Laughlin Steel, Inc. into Republic (Malcolm Pirnie 1985a). The site is approximately a 100-acre parcel, approximately 80 acres of which have been used as fill. It is bordered on the south by the South Park Recreational Facilities, on the west by the Norfolk and Western Railroad, and on the north and east by the Baltimore and Ohio Railroad. Hopkins Street, Marilla Street, and the railroads segregate the site into several fill areas.

Several types of waste have been disposed of at the Republic Steel site, including slag, precipitator dust, clarifier sludge, railroad ties, checker bricks, scrap wood, tool scale, BOF brick, construction debris, and blast furnace dust. Additionally, waste oils and acids were disposed of at this landfill. The landfill was operated as an above-grade fill operation with minimal segregation of wastes prior to the effective date (i.e., November 1980) of RCRA. In November 1980, BOF precipitator dust generated at the Buffalo District Plant was classified as an EP-Toxic hazardous waste due to lead leachability, and therefore was placed in a segregated fill area from November 1980 until steelmaking operations were suspended at the Buffalo plant in approximately July 1981 (Malcolm Pirnie 1985b).

Currently, various areas of the plant are engaged in recycle/reuse operations (E & E 1987). Brick materials were being reprocessed on site, slag was being screened and separated for sale to cement block manufacturers, and metallic materials were being reclaimed for eventual sale or reprocessing at LTV's central alloy steelmaking facility in Canton, Ohio.(Szuhay 1984).

4.2 SITE TOPOGRAPHY

The Republic Steel site is located on the Erie-Ontario lowland province in the City of Buffalo, New York. This province encompasses the relatively low, flat areas lying south of Lake Erie and Lake Ontario and extends up the Black River Valley in central New York. From Lake Erie and Ontario levels of 570 feet and 244 feet, respectively, the land rises gently eastward and southward. The topography has also been modified substantially by glacial desposition of drumlin fields, recessional moraines, and shoreline deposits (Broughton _et al_. 1973).

The landfill is in Zones B and C of the Flood Insurance Rate Maps (FIRM) prepared by the Federal Emergency Management Agency (FERM). Zone C represents areas of minimal flooding, and Zone B represents the area between limits of the 100-year and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one foot or where the contributing drainage area is less than one square mile or the area protected by levees from the base flood (FERM 1982).

4.2.1 _Soils_

Soil types at the 100-acre site are mainly classified as udorthents, smoothed, with a small percentage of urban land (Owens _et al_. 1986). Udorthents, smoothed is soil formed in deep manmade cuts or fills. They consist of various kinds of excavated earthy material that has been stockpiled for use as fill or topdressing, soil and rock material that has been trucked from other areas and leveled, or soil deposits that are left in areas that have been excavated. Urban land is a miscellaneous area in which 80% or more of the soil surface is covered by asphalt, concrete, buildings, or other impervious structures.

The fill at the Republic Steel Site is mainly slag mixed with brick, cinders, dust, wood, and metal debris. The area on the east side of Hopkins Street is relatively flat and densely vegetated. The area west of Hopkins Street is composed of several mounds of slag approximately 40 to 50 feet above grade with scattered vegetation. The site is underlain by a layer of lacustrine sediments ranging in thickness from 8 to more than 20 feet overlying a dense silty till that in turn overlies shale bedrock (Koszalka et al. 1985).

Areas of prime agricultural land in production since 1982 are greater than 2 miles from the site (Whitney 1987).

4.2.2 Wetlands

Wetlands are classified by NYSDEC into four ranked groups based on the relative value and the degree of benefits supplied by the wetland. A Class I wetland is considered the most valuable wetland type while a Class IV wetland lacks the characteristics justifying a higher classification (e.g., habitat for endangered species, proximity to reservoirs, etc.); however, a Class IV wetland still qualifies as a regulated wetland.

There are three state-designated wetlands located in close proximity to the Republic Steel site (NYSDEC 1987):

- The Republic Steel Wetland is a 58-acre Class I wetland located along the western and southern perimeter of the site;

- The Tifft Street Wetland is a 20-acre Class II wetland located approximately 1,000 feet west of the northern section of the site; and

- The Tifft Farm Wetland is a 95-acre Class I wetland located approximately 3,000 feet northwest of the site. This wetland is also classified as a significant coastal fish and wildlife habitat.

There are also several federally designated wetlands within a 1-mile radius of the site. These wetlands are classified as:

- Palustrine, open water/unknown bottom, intermittently exposed/permanent, excavated;

- Palustrine, open water/unknown bottom, permanent;

- Palustrine, shrub, broad-leaved deciduous, seasonal saturated;

- Palustrine, forested, broad-leaved deciduous, seasonal saturated;

- Palustrine, emergent, narrow-leaved persistent, seasonal saturated; and

- Lacustrine, limnetic, open water/unknown bottom, permanent, excavated.

4.2.3 Surface Waters

There are several streams in close proximity to the site. The closest river is the Buffalo River, approximately 6,000 feet north of the site, Cazenovia Creek approximately 1.5 miles northeast of the site, and Smoke Creek 1.5 miles south of the site. These streams are classified as Class D in the vicinity of the site. Only the east branch of Cazenovia Creek is stocked with fish. It receives 2,500 brown trout yearly in the area of Wales and Holland (Evans 1987). Class D waters are suitable for secondary contact recreation, but not conducive to propagation of game fishery or any fish, depending upon streambed conditions and intermittency of flow (Official Codes, Rules, and Regulations of New York State 1985).

Lake Erie is approximately 1.5 miles west of the site. The closest Lake Erie surface water intakes to the site are:

- Buffalo City Division of Water approximately 5 miles to the northwest, serving a population of about 357,870; and

- Wanakah Water Company approximately 6.5 miles to the southwest, serving a population of about 10,750 (New York State Department of Health [NYSDOH] 1982).

4.2.4 Land Use

The site is within an urban district of the City of Buffalo. Northeast of the site is the Tifft Farm Preserve, to the west is the Bethlehem Steel facility, immediately south is South Park and residential areas, and to the east and northeast are residential areas. Distance to the nearest house is approximately 1,500 feet to the east of the site (USGS 1965). The total population within a 1-mile radius of the site is approximately 16,378, and approximately 105,153 within a 3-mile radius based upon the 1983 census (General Sciences Corporation 1986). There are no historical sites within view of the site, according to the National Register of Historical Places (Murtagh 1976).

4.2.5 Critical and Sensitive Habitats

The Tifft Farm wetland has been designated as a significant coastal fish and wildlife habitat. It is located approximately 3,000 feet northwest of the Republic Steel site. Its approximately 95 acres consist of 95% herbaceous emergent marsh and 5% woody deciduous swamp. This wetland is in the Tifft Farm Nature Preserve (NYSDEC 1987).

There are two other sensitive habitats approximately 5 miles northwest of the site:

- Times Beach. This is a very valuable littoral zone for local and migratory birds. A total of 186 species of birds, including waterfowl and shorebirds, have been identified in this area; and

- Donnelley's Pies and the North End Light Breakwater. These provide the only two major gull and tern nesting sites in the Buffalo area.

4.3 SITE HYDROLOGY

4.3.1 Regional Geology and Hydrogeology

The Republic Steel site lies within the Erie-Niagara basin and the Erie-Ontario lowland physiographic province. The overburden in Erie County consists mainly of glacial till, an unconsolidated poorly sorted mix of clay, silt, and/or sand. It forms a thin mantle over the bedrock and exhibits low permeability. The region between the

Onondaga Escarpment to the north and the hilly areas to the south also received lacustrine clay and silt deposits during late Pleistocene time from the larger ancestral Great Lakes. These deposits exhibit very low permeabilities. As the ancestral lakes retreated, sandy beach sediments were also deposited in this region. These deposits exhibit relatively high permeabilities (Buehler and Tesmer 1963).

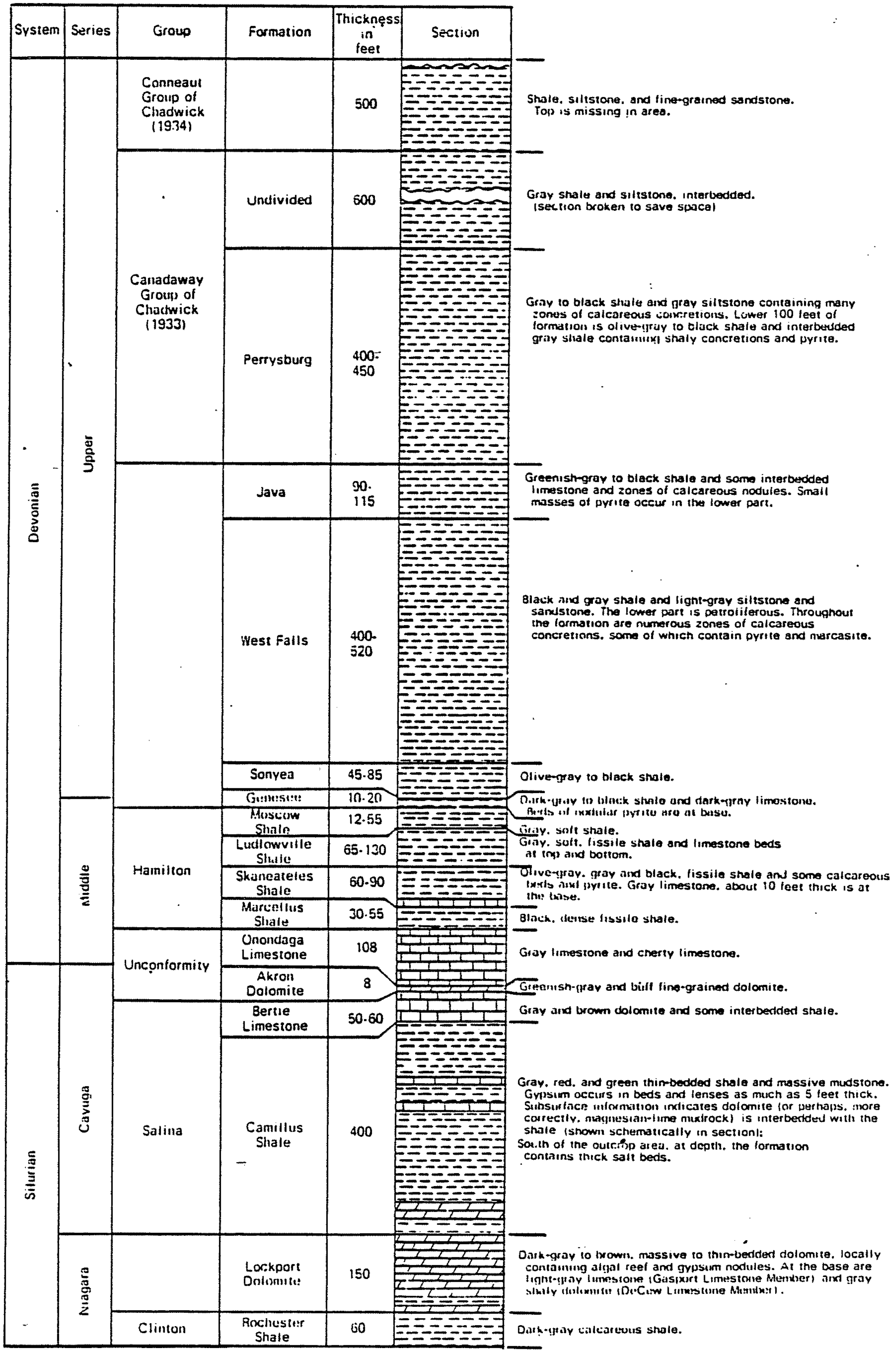
The bedrock in the region is exclusively sedimentary. The shale, limestone, and dolomite units dip gently southward approximately 40 feet per mile. Although the bedrock dips southward, the land surface is flat or actually increases in elevation to the south. Therefore, the further south the location, the younger the underlying bedrock (LaSala 1968).

Up to 32 distinct bedrock members have been identified in Erie County (see Figure 4-1). The oldest unit, Silurian in age, underlying the northern part of the county is the Camillus Shale. This member, which is 30 to 100 feet thick, contains significant reserves of groundwater in cavities formed by the dissolution of gypsum (LaSala 1968).

Several limestone members also of Silurian age overlie the Camillus Shale. The Bertie limestone, approximately 50 feet thick, overlies the Camillus Shale and is in turn overlain by the Akron Dolomite, which is about 8 feet thick. Little record of latest Silurian or Early Devonian history is preserved in Western New York. However, the Middle and Late Devonian record is well preserved beginning with the Onondaga Limestone unconformably overlying the Akron Dolomite. The unit comprises three distinct members that cumulatively are approximately 140 feet thick (Buehler 1966).

The Marcellus Shale member overlies the limestone units. This dense, black, fissile shale is approximately 30 to 55 feet thick. This shale, unlike the Camillus Shale, is impermeable. It confines the limestone and Camillus Shale aquifers below (LaSala 1968).

The Skaneateles Formation overlies the Marcellus Shale. This 60- to 90-foot-thick formation is represented by the Stafford Limestone and Levanna Shale. The black, fissile shale is expected to be impermeable and will therefore confine groundwater found in the lower limestone units (Buehler 1966).



System	Series	Group	Formation	Thickness in feet	Section	
Devonian	Upper	Conneaut Group of Chadwick (1934)		500		Shale, siltstone, and fine-grained sandstone. Top is missing in area.
		Canadaway Group of Chadwick (1933)	Undivided	600		Gray shale and siltstone, interbedded. (section broken to save space)
			Perrysburg	400-450		Gray to black shale and gray siltstone containing many zones of calcareous concretions. Lower 100 feet of formation is olive-gray to black shale and interbedded gray shale containing shaly concretions and pyrite.
			Java	90-115		Greenish-gray to black shale and some interbedded limestone and zones of calcareous nodules. Small masses of pyrite occur in the lower part.
			West Falls	400-520		Black and gray shale and light-gray siltstone and sandstone. The lower part is petroliferous. Throughout the formation are numerous zones of calcareous concretions, some of which contain pyrite and marcasite.
			Sonyea	45-85		Olive-gray to black shale.
			Genesee	10-20		Dark-gray to black shale and dark-gray limestone. Beds of nodular pyrite are at base.
	Middle	Hamilton	Moscow Shale	12-55		Gray, soft shale.
			Ludlowville Shale	65-130		Gray, soft, fissile shale and limestone beds at top and bottom.
			Skaneateles Shale	60-90		Olive-gray, gray and black, fissile shale and some calcareous beds and pyrite. Gray limestone, about 10 feet thick is at the base.
			Marcellus Shale	30-55		Black, dense fissile shale.
		Unconformity	Onondaga Limestone	108		Gray limestone and cherty limestone.
Silurian	Cayuga		Akron Dolomite	8		Greenish-gray and buff fine-grained dolomite.
		Salina	Bertie Limestone	50-60		Gray and brown dolomite and some interbedded shale.
			Camillus Shale	400		Gray, red, and green thin-bedded shale and massive mudstone. Gypsum occurs in beds and lenses as much as 5 feet thick. Subsurface information indicates dolomite (or perhaps, more correctly, magnesian-lime mudrock) is interbedded with the shale (shown schematically in section); South of the outcrop area, at depth, the formation contains thick salt beds.
	Niagara		Lockport Dolomite	150		Dark-gray to brown, massive to thin-bedded dolomite, locally containing algal reef and gypsum nodules. At the base are light-gray limestone (Gasport Limestone Member) and gray shaly dolomite (DeCew Limestone Member).
		Clinton	Rochester Shale	60		Dark-gray calcareous shale.

SOURCE: LaSala 1968

Figure 4—1 BEDROCK UNITS OF THE ERIE-NIAGARA BASIN

Overlying the Skaneateles is the Ludlowville formation represented by the Centerfield Limestone, Ledyard Shale, Wanakah Shale, and Tichenor Limestone members. The shale members contain numerous limestone beds. The Ludlowville Formation is followed by the Moscow Formation represented by the Kashong shale and Windom shale. The Moscow Formation is followed by 2,500 feet of upper Devonian rocks in southwestern New York State consisting of the Genesee, Sonyea, West Falls, Java, Canadaway, Chodakoin, and Cattaraugus formations. These consist almost exclusively of shale members. The Canadaway formation is by far the thickest (up to 1,000 feet) and underlies the southern third of Erie County (LaSala 1968).

Significant amounts of groundwater occur only in the overburden and in the lower bedrock units. The Camillus shale contains numerous cavities formed by the dissolution of gypsum and is thus a very productive aquifer. The Onondaga, Akron, and Bertie Dolomite and limestones contain water in bedding joints widened by dissolution. Vertical fractures in the limestone provide hydraulic connections among the many bedding planes (LaSala 1968).

Very little groundwater is found in the formations above the limestone unit. These formations, principally shale, are impermeable. Some water transmission occurs in small fractures in the bedrock, but no wells of significant yield are found in these units. Groundwater in these regions is obtained mainly from glacial overburden deposits (LaSala 1968).

4.3.2 Site Hydrogeology

Based upon site investigations by Malcolm Pirnie in 1985, the site geology from surface to bedrock can be characterized in the following manner (see References 1 and 9 for boring logs) (Malcolm Pirnie 1985a, 1985b):

- Fill: Surface to greater than 20 feet;
- Topsoil: Surface to 2 feet in some areas;
- Sandy-silt: Surface to 15 feet;

- Clayey-silt: 7 feet to greater than 18 feet;

- Glacial till: 1 foot to 2 feet; and

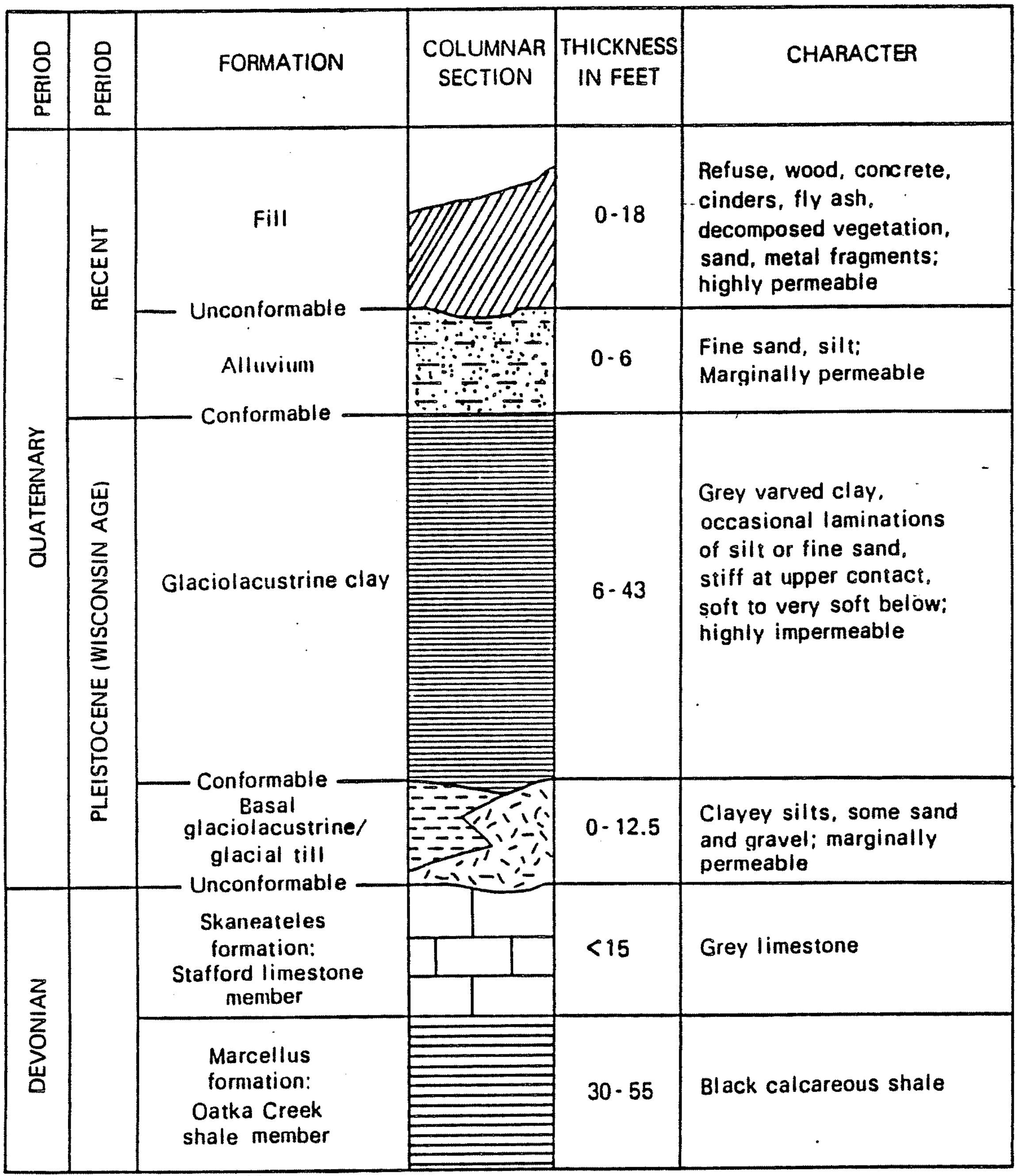
- Shale Bedrock: Range from depth of greater than 25 feet on the east side of the site to less than 14 feet at the northwest corner of the site.

Additional subsurface information is available from 8 borings at the Alltift landfill less than 2,000 feet north of the Republic Steel site. Figure 4-2 provides a generalized geologic column of the underlying deposits at this site which is similar to conditions at the Republic Steel site (Koszalka _et al_. 1985).

Since the site is uncapped, permeability of the surface material is a function of the type of material deposited and the degree of compaction. Malcolm Pirnie performed five _in situ_ permeability tests on the surface material and found that the permeability of the landfill surface ranges from 1.60 x 10^{-3} to 1.19 x 10^{-4} cm/sec and averages 4.85 x 10^{-4} cm/sec. Bailer permeability tests were also performed on several monitoring wells. Permeability of the deep saturated zone ranges between 5.16 x 10^{-6} and 7.8 x 10^{-5} cm/sec and the permeability of the shallow saturated zone ranges between 3.16 x 10^{-5} and 6.68 x 10^{-5} cm/sec. These permeabilities suggest that there is a very low hydraulic conductivity in both the shallow and deep material underlying the site.

Permeability tests on two samples of the glacio-lacustrine clay by Wehran and Recra (1978) indicated permeabilities of 5.8 x 10^{-8} and 6.4 x 10^{-8} cm/sec. The report concluded that the permeability of the clay was sufficiently low to prevent vertical migration of contaminants from the upper unconsolidated water-bearing zone to the lower aquifers (Koszalka _et al_. 1985).

Malcolm Pirnie also determined that the groundwater exists in both perched and confined conditions. The perched groundwater occurs in the sandy-silt deposits and/or the topsoil and fill materials which overlie the clayey-silt layer. The confined groundwater system occurs in the bedrock and to a lesser extent in the immediate overburden beneath the site. Groundwater isopotential maps illustrating the



PERIOD	PERIOD	FORMATION	COLUMNAR SECTION	THICKNESS IN FEET	CHARACTER
QUATERNARY	RECENT	Fill		0-18	Refuse, wood, concrete, cinders, fly ash, decomposed vegetation, sand, metal fragments; highly permeable
		Unconformable			
		Alluvium		0-6	Fine sand, silt; Marginally permeable
		Conformable			
	PLEISTOCENE (WISCONSIN AGE)	Glaciolacustrine clay		6-43	Grey varved clay, occasional laminations of silt or fine sand, stiff at upper contact, soft to very soft below; highly impermeable
		Conformable			
		Basal glaciolacustrine/ glacial till		0-12.5	Clayey silts, some sand and gravel; marginally permeable
		Unconformable			
DEVONIAN		Skaneateles formation: Stafford limestone member		<15	Grey limestone
		Marcellus formation: Oatka Creek shale member		30-55	Black calcareous shale

SOURCE: Koszalka *et al.* 1985.

Figure 4—2 GENERALIZED GEOLOGIC COLUMN OF FORMATIONS UNDERLYING THE ALLTIFT LANDFILL, BUFFALO general direction of flow in both the shallow and deep groundwater systems based upon groundwater elevations measured on October 21, 1985 indicate that the direction of flow in the shallow groundwater system appears to be radially outward from the landfill where it is intercepted by peripheral ditches which flow toward the pond at the northern end of the site (see Figure 4-3). The direction of flow in the deep groundwater system (see Figure 4-4) is westward toward Lake Erie (Malcolm Pirnie 1985b).

There are no municipal or nonmunicipal groundwater wells within a 3-mile radius of the site (NYSDOH 1982 and Strycharz 1987).

4.3.3 Hydraulic Connections

No specific information regarding hydraulic connections was discussed in the reports by Malcolm Pirnie or in the NYSDEC and EPA files. However, it is possible that the shallow groundwater system may be separated from the deeper groundwater system by clayey glaciolacustrine deposits. The bedrock underlying these deposits is mainly impermeable shale 90 to 145 feet thick (Skaneateles and Marcellus formations) separated by a thin layer of limestone 8 to 15 feet thick (Stafford Limestone Member).

4.4 SITE CONTAMINATION

The landfill has been segregated into five fill areas (see Figure 4-5) by the owner's consultant, Malcolm Pirnie:

- The BOF Dust Area contains approximately 6,000 tons of BOF dust mixed with BOF slag to prevent dust dispersion by wind. The total volume of dust and slag in this area has been estimated to be 136,600 cubic yards. Also included in this area is approximately 33,300 cubic yards of rubble/slag used in the construction of railroad berm and the western retaining berm;

- The Clarifier Sludge Area contains approximately 531,000 cubic yards clarifer sludge generated by the plant's wastewater treatment system, BOF slag, blast furnace slag, and rubble/slag used in the construction of the railroad berm;

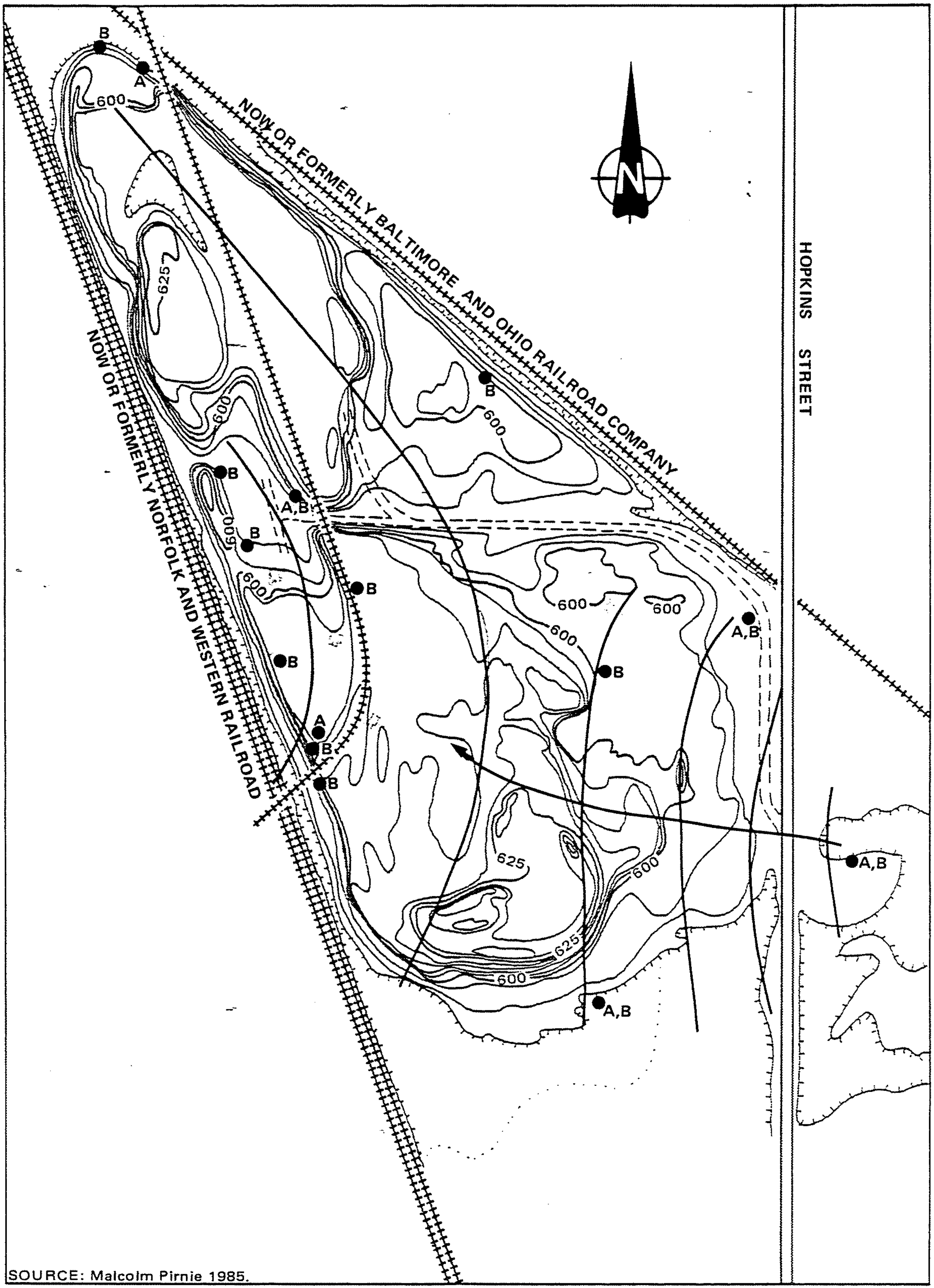
SOURCE: Malcolm Pirnie 1985.

KEY:

● Approximate Location of Monitoring Wells
Note: A- Designates Deep
B- Designates Shallow

——— Direction of Groundwater Flow
←—— Groundwater Contour

Figure 4–3 GROUNDWATER ISOPOTENTIAL MAP FOR SHALLOW WELLS: THE REPUBLIC STEEL SITE



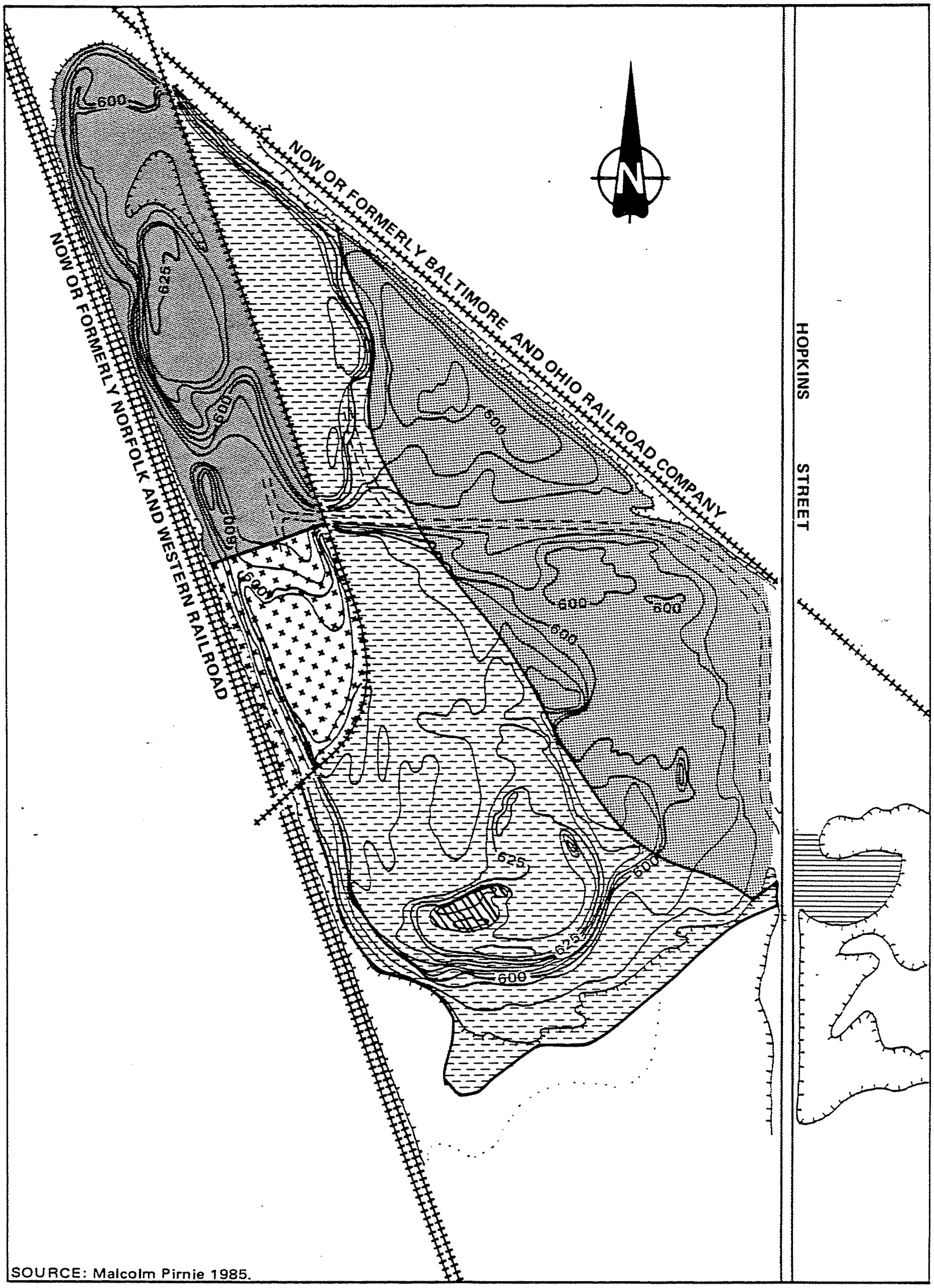
SOURCE: Malcolm Pirnie 1985.

KEY:

● Approximate Location of Monitoring Wells
Note: A- Designates Deep
B- Designates Shallow

——— Direction of Groundwater Flow
←—— Groundwater Contour

Figure 4—4 GROUNDWATER ISOPOTENTIAL MAP FOR DEEP WELLS: THE REPUBLIC STEEL SITE



SOURCE: Malcolm Pirnie 1985.

KEY:

▨ Fine Refuse Area

▤ Misc. Debris and Fine Refuse Area

⁑ BOF Dust Area

▧ Material to be Excavated Down to Elevation 635 and Removed for Use Off-Site

▩ Clarifer Sludge Area

☰ Railroad Fill Area

Figure 4—5 FILL AREA BOUNDARIES

- The Miscellaneous Debris and Fine Refuse Area contains approximately 1,550,000 cubic yards of plant construction debris, railroad ties, bricks, minus minus fines (i.e., BOF slag less than 1/4-inch in size), minus fines (i.e., BOF slag 1/4-inch to 5/8-inch in size), BOF slag, and blast furnace slag;

- The Fine Refuse Area contains approximately 712,000 cubic yards of minus minus fines, minus fines, BOF slag, and blast furnace slag; and

- The Railroad Fill Area contains approximately 14,500 cubic yards of slag deposited during construction of a railroad on the east side of Hopkins Street.

In addition, used oil was applied to site roadways to control dust (Malcolm Pirnie 1985b).

The installation of a groundwater monitoring system for the entire Republic Steel site was completed in October 1985. The system is composed of six deep (designated by the suffix "A") and twelve shallow (designated by the suffix "B") groundwater monitoring wells as shown in Figure 4-3. With the exception of MW3A, the deep wells extend approximately 20 feet into original soil. MW3A was completed at bedrock encountered at 14 feet. The shallow wells extend approximately 5 feet into the original soil, except for MW8B which extends approximately 22 feet into the fill materials. Several sets of water samples have been collected and analyzed since July 1979. The wells have been sampled quarterly since November 1985. Comparison of the analytical results with water quality standards and guidelines indicates the following:

- Elevated levels of arsenic, MBA (foaming agents), fecal coliform, phenols, sulfate, and pH in wells sampled in July 1979;

- Elevated levels of cadmium, chromium, iron, manganese, lead, phenols, sulfate, and tetrachloroethylene in wells sampled in October 1986; and

- Consistent analytical results with previous monitoring data from samples collected on April and November 1986.

According to tests conducted by URS and Malcolm Pirnie for NYSDEC from 1979 to 1987, adjacent surface water also was found to be contaminated with phenol, lead, cadmium, arsenic, manganese, sulfate, iron, and tetrachloroethylene.

5. PRELIMINARY APPLICATION OF THE HAZARD RANKING SYSTEM

5.1 NARRATIVE SUMMARY

The Republic Steel site is an 80-acre parcel located in the City of Buffalo, Erie County, New York (see Figure 5-1). The site was previously owned and used by Republic Steel to dispose of steelmaking byproducts from 1930 to 1981. Currently, the site is being used for reclamation of slag and other debris by its new owner, LTV Steel Company. LTV Steel is waiting for approval of a RCRA Part A permit to close the Basic Oxygen Furnace (BOF) precipitation dust area.

Republic Steel disposed of approximately 224,500 tons/year of clarifier sludge, slag, mill scale, iron oxide dust, flue dust, and carbon dust; 10,600 gallons/year of pickle liquor; and 20,000 gallons/year of oil used for dust control (NYSDEC 1986 and Neal 1983). The wastes were mixed with slag and landfilled. According to tests conducted by URS and Malcolm Pirnie for NYSDEC from 1979 to 1987, the groundwater and adjacent surface water is contaminated with elevated levels of phenols, lead, cadmium, arsenic, manganese, sulfate, iron, and tetrachloroethylene. The site is adjacent to state wetlands, and is 3,000 feet southeast of a significant coastal fish and wildlife habitat, the Tifft Farm Wetland. About 105,153 people live within 3 miles of the site; however, the groundwater is not used for domestic purposes and the site is greater than 5 miles from water intakes along Lake Erie.

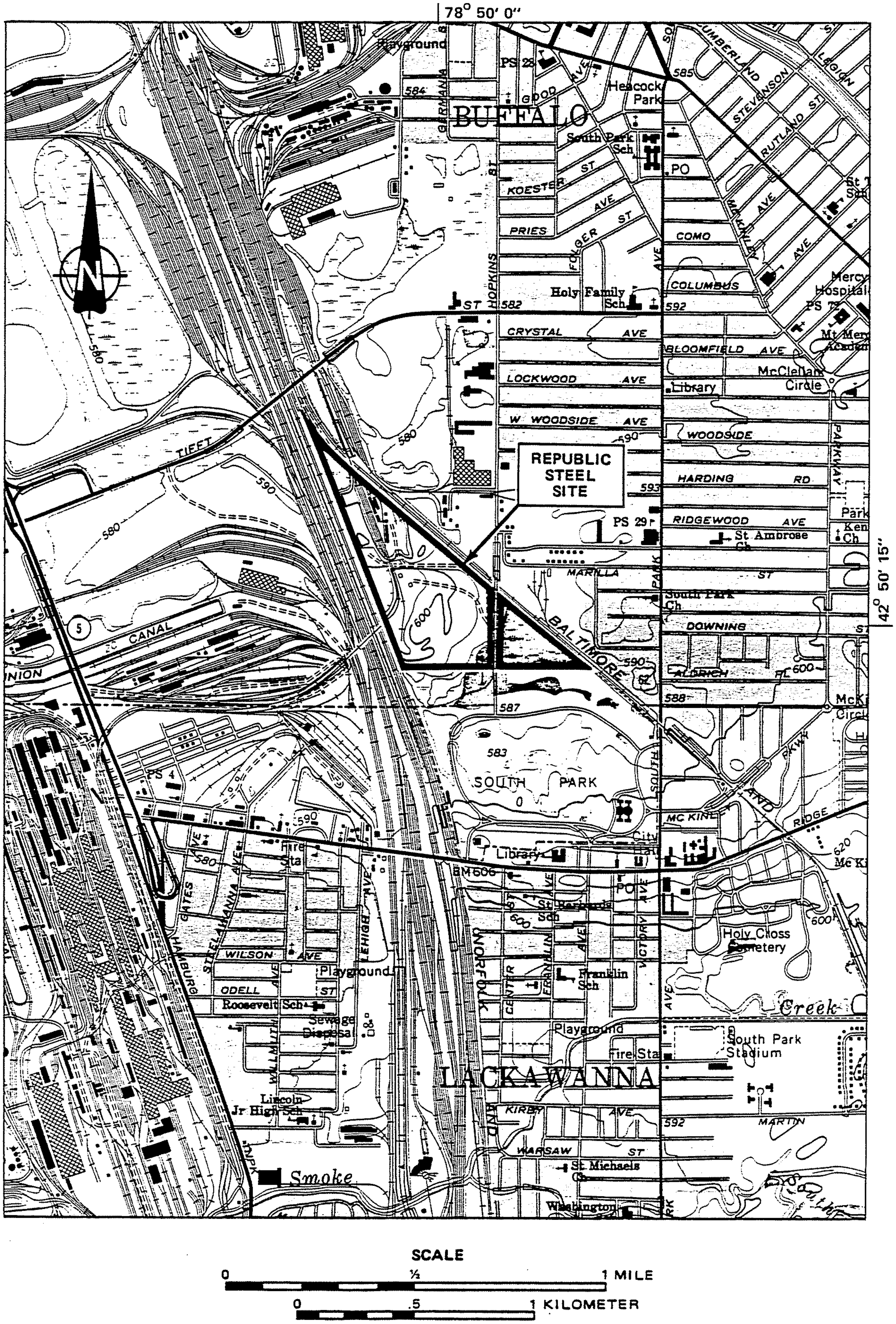


Figure 5—1 LOCATION MAP

HRS Worksheets

5.3

FIGURE 1

HRS COVER SHEET

Facility Name: Republic Steel

Location: Marilla Street and Hopkins Street, Buffalo

EPA Region: II

Person(s) in Charge of Facility: Don Nemec, General Manager, Buffalo District

LTV Steel Company, 1175 S. Park Ave., Buffalo, NY

716-826-2008

Name of Reviewer: Gene Florentino Date: 7/27/87

General Description of the Facility:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action; etc.)

The site consists of a landfill containing: clarifier sludge; pickle liquor; slag; mill scale; iron oxide dust; flue dust; and carbon dust, of which the surface of this waste averages approximately 30 feet above undisturbed grade. The contamination route of major concern is groundwater and surface water.

Scores: S_M = 11.09 (S_{gw} = 6.12 S_{sw} = 18.18 S_a = 0)

S_{FE} = Not scored

S_{DC} = 62.5

D1712

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
$\boxed{1}$ Observed Release	0 [✓ 45]	1	45	45	3.1
If observed release is given a score of 45, proceed to line $\boxed{4}$. If observed release is given a score of 0, proceed to line $\boxed{2}$.					
$\boxed{2}$ Route Characteristics					3.2
Depth to Aquifer of Concern	0 1 2 3	2		6	
Net Precipitation	0 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 3	1		3	
Physical State	0 1 2 3	1		3	
Total Route Characteristics Score				15	
$\boxed{3}$ Containment	0 1 2 3	1		3	3.3
$\boxed{4}$ Waste Characteristics					3.4
Toxicity/Persistence	0 3 6 9 12 15 [✓ 18]	1	18	18	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 [✓ 8]	1	8	8	
Total Waste Characteristics Score			26	26	
$\boxed{5}$ Targets					3.5
Ground Water Use	0 [✓ 1] 2 3	3	3	9	
Distance to Nearest Well/Population Served	[✓ 0] 4 6 8 10 12 16 18 20 24 30 32 35 40	1	0	40	
Total Targets Score			3	49	
$\boxed{6}$ If line $\boxed{1}$ is 45, multiply $\boxed{1}$ x $\boxed{4}$ x $\boxed{5}$ If line $\boxed{1}$ is 0, multiply $\boxed{2}$ x $\boxed{3}$ x $\boxed{4}$ x $\boxed{5}$			3,510	57,330	
$\boxed{7}$ Divide line $\boxed{6}$ by 57,330 and multiply by 100		S_{gw} =	6.12		

FIGURE 2
GROUND WATER ROUTE WORK SHEET

Surface Water Route Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
1 Observed Release	0 [✓ 45]	1	45	45	4.1
If observed release is given a value of 45, proceed to line 4. If observed release is given a value of 0, proceed to line 2.					
2 Route Characteristics					4.2
Facility Slope and Intervening Terrain	0 1 2 3	1		3	
1-yr. 24-hr. Rainfall	0 1 2 3	1		3	
Distance to Nearest Surface Water	0 1 2 3	2		6	
Physical State	0 1 2 3	1		3	
	Total Route Characteristics Score			15	
3 Containment	0 1 2 3	1		3	4.3
4 Waste Characteristics					4.4
Toxicity/Persistence	0 3 6 9 12 15 [✓ 18]	1	18	18	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 [✓ 8]	1	8	8	
	Total Waste Characteristics Score		26	26	
5 Targets					4.5
Surface Water Use	0 1 [✓ 2] 3	3	6	9	
Distance to a Sensitive Environment	0 1 [✓ 2] 3	2	4	6	
Population Served/Distance to Water Intake Downstream	[✓ 0] 4 6 8 10 12 16 18 20 24 30 32 35 40	1	0	40	
	Total Targets Score		10	55	
6 If line 1 is 45, multiply 1 x 4 x 5 If line 1 is 0, multiply 2 x 3 x 4 x 5			11,700	64,350	
7 Divide line 6 by 64,350 and multiply by 100		S_{sw} = 18.18			

FIGURE 7
SURFACE WATER ROUTE WORK SHEET

Air Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
$\boxed{1}$ Observed Release	[✓ 0] 45	1	0	45	5.1
Date and Location:					
Sampling Protocol:					
If line $\boxed{1}$ is 0, the S_a = 0. Enter on line $\boxed{5}$. If line $\boxed{1}$ is 45, then proceed to line $\boxed{2}$.					
$\boxed{2}$ Waste Characteristics					5.2
Reactivity and Incompatibility	0 1 2 3	1		3	
Toxicity	0 1 2 3	3		9	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1		8	
	Total Waste Characteristics Score		0	20	
$\boxed{3}$ Targets					5.3
Population Within 4-Mile Radius	0 9 12 15 18 21 24 27 30	1		30	
Distance to Sensitive Environment	0 1 2 3	2		6	
Land Use	0 1 2 3	1		3	
	Total Targets Score		0	39	
$\boxed{4}$ Multiply $\boxed{1}$ x $\boxed{2}$ x $\boxed{3}$			0	35,100	
$\boxed{5}$ Divide line $\boxed{4}$ by 35,100 and multiply by 100		S_a =	0		

FIGURE 9
AIR ROUTE WORK SHEET

	s	s^2
Groundwater Route Score (S_{gw})	6.12	37.45
Surface Water Route Score (S_{sw})	18.18	330.51
Air Route Score (S_a)	0	0
$S^2_{gw} + S^2_{sw} + S^2_a$	▨	367.96
$\sqrt{S^2_{gw} + S^2_{sw} + S^2_a}$	▨	19.18
$\sqrt{S^2_{gw} + S^2_{sw} + S^2_a} \Big/ 1.73 = S_M =$	▨	11.09

FIGURE 10
WORKSHEET FOR COMPUTING S_M

Fire and Explosion Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
$\boxed{1}$ Containment	1 3	1		3	7.1
$\boxed{2}$ Waste Characteristics					7.2
Direct Evidence	0 3	1		3	
Ignitability	0 1 2 3	1		3	
Reactivity	0 1 2 3	1		3	
Incompatibility	0 1 2 3	1		3	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1		8	
	Total Waste Characteristics Score			20	
$\boxed{3}$ Targets					7.3
Distance to Nearest Population	0 1 2 3 4 5	1		5	
Distance to Nearest Building	0 1 2 3	1		3	
Distance to Sensitive Environment	0 1 2 3	1		3	
Land Use	0 1 2 3	1		3	
Population Within 2-Mile Radius	0 1 2 3 4 5	1		5	
Buildings Within 2-Mile Radius	0 1 2 3 4 5	1		5	
	Total Targets Score			24	
$\boxed{4}$ Multiply $\boxed{1}$ x $\boxed{2}$ x $\boxed{3}$				1,440	
$\boxed{5}$ Divide line $\boxed{4}$ by 1,440 and multiply by 100		S_{FE} =	Not scored		

FIGURE 11
FIRE AND EXPLOSION WORK SHEET

Direct Contact Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
1 Observed Incident	[✓ 0] 45	1	0	45	8.1
If line 1 is 45, proceed to line 4 If line 1 is 0, proceed to line 2					
2 Accessibility	0 1 2 [✓ 3]	1	3	3	8.2
3 Containment	0 [✓ 15]	1	15	15	8.3
4 Waste Characteristics Toxicity	0 1 2 [✓ 3]	5	15	15	8.4
5 Targets					8.5
Population Within a 1-Mile Radius	0 1 2 3 4 [✓ 5]	4	20	20	
Distance to a Critical Habitat	[✓ 0] 1 2 3.	4	0	12	
Total Targets Score			·20	32	
6 If line 1 is 45, multiply 1 x 4 x 5 If line 1 is 0, multiply 2 x 3 x 4 x 5			13,500	21,600	
7 Divide line 6 by 21,600 and multiply by 100	S_{DC} = 62.50				

FIGURE 12
DIRECT CONTACT WORK SHEET

5.4

HRS Documentation
Records

DOCUMENTATION RECORDS
FOR
HAZARD RANKING SYSTEM

Instructions: As briefly as possible summarize the information you used to assign the score for each factor (e.g., "Waste quantity = 4,230 drums plus 800 cubic yards of sludges"). The source of information should be provided for each entry and should be a bibliographic-type reference. Include the location of the document.

Facility Name: Republic Steel

Location: — Marilla Street and Hopkins Street, Buffalo

Date Scored: 7/20/87

Person Scoring: Gene Florentino

Primary Source(s) of Information (e.g., EPA region, state, FIT, etc.):

NYSDEC Region 9 File Information
Erie County Department of Environment and Planning File Information
United States Environmental Protection Agency, Region II File Information
E & E Site Inspection, July 15, 1987

Factors Not Scored Due to Insufficient Information:

Comments or Qualifications:

Fire and explosion score not computed as site has not been declared a fire hazard by a fire marshal.

GROUNDWATER ROUTE

1. OBSERVED RELEASE

Contaminants detected (3 maximum):

Phenols - detected in all ground and surface water samples.
Lead - MW7A and west drainage ditch showed total concentration in excess of standards.
Sulfate - MW5B, 6B, and west pond exceeded standards.
Ref. No. 1

Rationale for attributing the contaminants to the facility:

BOF dust area contains lead.
Other sources of waste: Clarifier sludge, pickle liquor, slag, mill scale.
Ref. Nos. 1, 2

* * *

2. ROUTE CHARACTERISTICS

Depth to Aquifer of Concern

Name/description of aquifer(s) of concern:

Perched and confined aquifers
Ref. No. 9

Depth(s) from the ground surface to the highest seasonal level of the saturated zone [water table(s)] of the aquifer of concern:

10 feet
Ref. Nos. 1, 9

Depth from the ground surface to the lowest point of waste disposal/storage:

10 feet
Ref Nos. 1,9

Net Precipitation

Mean annual or seasonal precipitation (list months for seasonal):

36 in/year
Ref. No. 7

Mean annual lake or seasonal evaporation (list months for seasonal):

27 in/year
Ref. No. 7

Net precipitation (subtract the above figures):

36-27 = 9 in/year
Ref. No. 7

Permeability of Unsaturated Zone

Soil type in unsaturated zone:

Udorthents and urban land
Ref. Nos. 1, 9

Permeability associated with soil type:

10^{-4} to 10^{-3} cm/sec
Ref Nos. 1, 9

Physical State

Physical state of substances at time of disposal (or at present time for generated gases):

powder, fines, sludge, slurry, liquid
Ref. Nos. 1, 9

* * *

3. CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

Landfill -- no containment provisions
Ref. Nos. 1, 9

Method with highest score:

Landfill
Ref. No. 7

4. WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated:

Phenols, lead, sulfate, iron, arsenic, cadmium, other metals
Ref. No. 9

Compound with highest score:

Lead
Ref. No. 7

Hazardous Waste Quantity

Total quantity of hazardous substances at the facility, excluding those with a containment score of 0 (give a reasonable estimate even if quantity is above maximum):

>2,500 tons

Basis of estimating and/or computing waste quantity:

Ref. No. 2

* * *

5. TARGETS

Groundwater Use

Use(s) of aquifer(s) of concern within a 3-mile radius of the facility:

Not used
Ref. No. 3

Distance to Nearest Well

Location of nearest well drawing from aquifer of concern or occupied building not served by a public water supply:

>3 miles
Ref. No. 3

Distance to above well or building:

>3 miles
Ref. No. 3

Population Served by Groundwater Wells Within a 3-Mile Radius

Identified water-supply well(s) drawing from aquifer(s) of concern within a 3-mile radius and populations served by each:

None
Ref. No. 3

Computation of land area irrigated by supply well(s) drawing from aquifer(s) of concern within a 3-mile radius, and conversion to population (1.5 people per acre):

0
Ref. No. 3

Total population served by groundwater within a 3-mile radius:

0
Ref. No. 3

SURFACE WATER ROUTE

1. OBSERVED RELEASE

Contaminants detected in surface water at the facility or downhill from it (5 maximum):

Phenols, sulfate, lead, iron, cadmium

Rationale for attributing the contaminants to the facility:

BOF dust contains lead.
Other sources: Clarifier sludge, pickle liquor, slag, mill scale
Ref. Nos. 1, 2

* * *

2. ROUTE CHARACTERISTICS

Facility Slope and Intervening Terrain

Average slope of facility in percent:

2 to 10%
Ref. No. 4

Name/description of nearest downslope surface water:

Wetland to the west
Ref. No. 4

Average slope of terrain between facility and above-cited surface water body in percent:

20%
Ref. Nos. 1, 4

Is the facility located either totally or partially in surface water?

Yes, partially
Ref. Nos. 4, 6

Is the facility completely surrounded by areas of higher elevation?

No
Ref. No. 4

1-Year 24-Hour Rainfall in Inches

2.1 inches
Ref. No. 7

Distance to Nearest Downslope Surface Water

Adjacent
Ref. No. 4

Physical State of Waste

Powder, fines, sludge, slurry, liquid
Ref. Nos. 1, 9

3. CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

Landfill -- no containment provisions
Ref. Nos. 1, 9

Method with highest score:

Landfill
Ref. No. 4

4. WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated:

Phenols, lead, sulfate, iron, other metals
Ref. No. 9

Compound with highest score:

Lead
Ref. No. 7

Hazardous Waste Quantity

Total quantity of hazardous substances at the facility, excluding those with a containment score of 0 (give a reasonable estimate even if quantity is above maximum):

>2,500 tons

Basis of estimating and/or computing waste quantity:

Ref. No. 2

* * *

5. TARGETS

Surface Water Use

Use(s) of surface water within 3 miles downstream of the hazardous substance:

Wetlands - natural habitats
Lake Erie - boating and recreation
Ref. No. 4

Is there tidal influence?

No

Distance to a Sensitive Environment

Distance to 5-acre (minimum) coastal wetland, if 2 miles or less:

1.5 miles
Ref. Nos. 4, 5

Distance to 5-acre (minimum) fresh-water wetland, if 1 mile or less:

100 ft. - 1/4 mile
Ref. Nos. 4, 5

Distance to critical habitat of an endangered species or national wildlife refuge, if 1 mile or less:

3,000 ft.
Ref. No. 5

Population Served by Surface Water

Location(s) of water-supply intake(s) within 3 miles (free-flowing bodies) or 1 mile (static water bodies) downstream of the hazardous substance and population served by each intake:

None within 3 miles
Ref. No. 3

Computation of land area irrigated by above-cited intake(s) and conversion to population (1.5 people per acre):

NA

Total population served:

NA

Name/description of nearest of above water bodies:

NA

Distance to above-cited intakes, measured in stream miles:

NA

AIR ROUTE

1. OBSERVED RELEASE

Contaminants detected:

No observed release
Ref. No. 6

Date and location of detection of contaminants:

NA

Methods used to detect the contaminants:

NA

Rationale for attributing the contaminants to the site:

NA

* * *

2. WASTE CHARACTERISTICS

Reactivity and Incompatibility

Most reactive compound:

NA

Most incompatible pair of compounds:

NA

Toxicity

Most toxic compound:

Lead
Ref. No. 7

Hazardous Waste Quantity

Total quantity of hazardous waste:

>2,500 tons

Basis of estimating and/or computing waste quantity:

Ref. No. 2

* * *

3. TARGETS

Population Within 4-Mile Radius

Circle radius used, give population, and indicate how determined:

0 to 4 mi	0 to 1 mi	0 to 1/2 mi	0 to 1/4 mi
16,378 Ref. No. 10			

Distance to a Sensitive Environment

Distance to 5-acre (minimum) coastal wetland, if 2 miles or less:

1.5 miles
Ref. Nos. 4, 5

Distance to 5-acre (minimum) fresh-water wetland, if 1 mile or less:

100 feet to 1/4 mile
Ref. Nos. 4, 5

Distance to critical habitat of an endangered species, if 1 mile or less:

3,000 feet
Ref. No. 5

Land Use

Distance to commercial/industrial area, if 1 mile or less:

Adjacent
Ref. No. 4

Distance to national or state park, forest, or wildlife reserve, if 2 miles or less:

0.5 mile
Ref. Nos. 4,5

Distance to residential area, if 2 miles or less:

1,500 feet
Ref. No. 4

Distance to agricultural land in production within past 5 years, if 1 mile or less:

>2.0 miles
Ref. No. 12

Distance to prime agricultural land in production within past 5 years, if 2 miles or less:

>2.0 miles
Ref. No. 12

Is a historic or landmark site (National Register of Historic Places and National Natural Landmarks) within the view of the site?

No
Ref. No. 13

FIRE AND EXPLOSION

1. CONTAINMENT

Hazardous substances present:

Phenols, lead
Ref. No. 1

Type of containment, if applicable

Landfill -- no provisions for containment
Ref. Nos. 1, 9

* * *

2. WASTE CHARACTERISTICS

Direct Evidence

Type of instrument and measurements:

NA

Ignitability

Compound used:

NA

Reactivity

Most reactive compound:

NA

Incompatibility

Most incompatible pair of compounds:

NA

Hazardous Waste Quantity

Total quantity of hazardous substances at the facility:

>2,500 tons

Basis of estimating and/or computing waste quantity:

Ref. No. 2

* * *

3. TARGETS

Distance to Nearest Population

<1.0 mile
Ref. Nos. 4, 6

Distance to Nearest Building

<1.0 mile
Ref. Nos. 4, 6

Distance to a Sensitive Environment

Distance to wetlands:

1.5 miles
Ref. Nos. 4, 5

Distance to critical habitat:

3,000 feet
Ref. No. 5

Land Use

Distance to commercial/industrial area, if 1 mile or less:

Adjacent
Ref. Nos. 4, 6

Distance to national or state park, forest, or wildlife reserve, if 2 miles or less:

0.5 mile
Ref. Nos. 4, 5

Distance to residential area, if 2 miles or less:

1,500 feet
Ref. No. 4

Distance to agricultural land in production within past 5 years, if 1 mile or less:

>2.0 miles
Ref. No. 12

Distance to prime agricultural land in production within past 5 years, if 2 miles or less:

>2.0 miles
Ref. No. 12

Is a historic or landmark site (National Register of Historic Places and National Natural Landmarks) within the view of the site?

No
Ref. No. 13

Population Within 2-Mile Radius

61,817
Ref. No. 10

Buildings Within 2-Mile Radius

23,451
Ref. No. 10

DIRECT CONTACT

1. OBSERVED INCIDENT

- Date, location, and pertinent details of incident:

  None reported
  Ref. Nos. 6, 8

* * *

2. ACCESSIBILITY

Describe type of barrier(s):

  No barriers
  Ref. No. 6

* * *

3. CONTAINMENT

Type of containment, if applicable:

  No containment provisions employed
  Ref. Nos. 1, 9

* * *

4. WASTE CHARACTERISTICS

Toxicity

Compounds evaluated:

  Phenols, lead
  Ref. No. 1

Compound with highest score:

  Lead
  Ref. No. 7

* * *

5. TARGETS

Population within one-mile radius

  16,378
  Ref. No. 10

Distance to critical habitat (of endangered species)

  3,000 ft.
  Ref. Nos. 4, 11

REFERENCES

If the entire reference is not available for public review in the EPA regional files on this site, indicate where the reference may be found:

Reference Number	Description of the Reference
1	Malcolm Pirnie, September 1985, Marilla Street Landfill Conceptual Site Closure Plan, Engineering Report, prepared for the LTV Steel Company, Buffalo, New York. Document location: Republic Steel file, NYSDEC Region 9, Buffalo, New York.
2	New York State Department of Environmental Conservation, 1986, Inactive Hazardous Waste Disposal Sites in New York State, Volume 9, December 1986, Division of Solid and Hazardous Waste, Albany, New York. Document location: E & E, Buffalo, New York.
3	New York State Department of Health, 1982, New York State Atlas of Community Water System Sources, 1982, Division of Environmental Protection, Bureau of Public Water Supply Protection, Albany, New York. Document location: E & E, Buffalo, New York.
4	United States Geological Survey, 1965, Buffalo SE Quadrangle, Erie County, New York, 7.5 Minute Series (Topographic). Document location: E & E, Buffalo, New York.
5	New York State Department of Environmental Conservation, 1987, State and Federal Regulated Wetland Maps, Division of Regulatory Affairs, Buffalo, New York. Document location: NYSDEC, Region 9, Buffalo, New York.
6	Ecology and Environment, Inc., July 15, 1987, Site Inspection, Buffalo, New York. Document location: E & E, Buffalo, New York.
7	United States Environmental Protection Agency, 1984, Uncontrolled Hazardous Waste Site Ranking System; A Users Manual, National Oil and Hazardous Substances Contingency Plan, Appendix A (40 CFR 300) (47 FR 31219).
8	NUS Corporation, 1983, Edison, New Jersey, Potential Hazardous Waste Site Preliminary Assessment for the United States Environmental Protection Agency, Region II, Edison, New Jersey.
9	Malcolm Pirnie, November 1985, Closure Plan for the Marilla Street BOF Dust Area, Prepared for the LTV Steel Company, Buffalo, New York. Document location: Republic Steel file, NYSDEC Region 9, Buffalo, New York.
10	General Sciences Corporation, 1986, Graphical Exposure Modeling System, Vol. 3, Graphs and Geodata Handling, Prepared for USEPA Office of Pesticides and Toxic Substances Exposure Evaluation Division. Document location: E & E, Buffalo, New York.
11	New York State Department of Environmental Conservation, 1987, Sensitive Habitat Maps, Division of Fish and Wildlife Habitats, Buffalo, New York. Document location: NYSDEC, Region 9, Buffalo, New York.
12	Whitney, J., August 25, 1987, personal communication, United States Department of Agriculture, Soil Conservation Service, East Aurora, New York. Document location: Ecology and Environment, Inc., Buffalo, New York.
13	Murtagh, W.J., 1976, The National Register of Historic Places with updates from the Federal Registers of 1979, 1980, 1981, and 1982, USDI National Park Service, Washington, D.C.

REFERENCE NO. 1

Engineering Report

MARILLA STREET LANDFILL CONCEPTUAL SITE CLOSURE PLAN

LTV Steel Company
Buffalo, New York

September 1985
Project: 848-02-1

MALCOLM
PIRNIE

ENVIRONMENTAL ENGINEERS, SCIENTISTS & PLANNERS

SECTION 1.0
INTRODUCTION

1.1 General

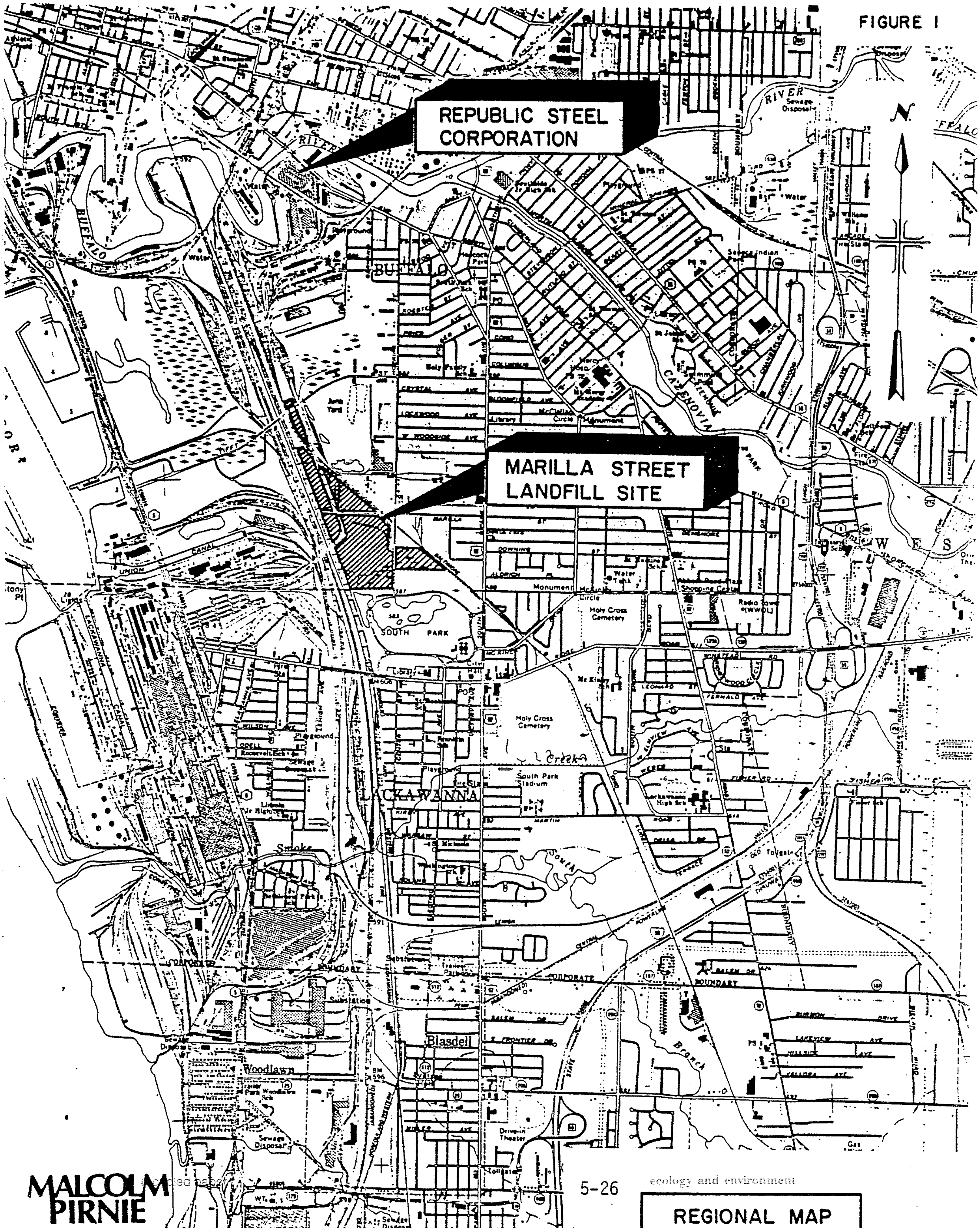
The Marilla Street Landfill site, which is currently owned by LTV Steel Company, has been in operation since 1930. Regional and Vicinity maps illustrating the location of the approximately 100-acre parcel (approximately 80 acres of which have been used as a landfill) are presented as Figures 1 and 2, respectively. The site is bordered on the south by the South Park Recreational Facilities, on the west by the Penn-Central Railroad and on the north and east by the Baltimore and Ohio Railroad. Hopkins Street, Marilla Street and the South Buffalo Railroad segregate the site into several fill areas.

1.2 Background

A variety of wastes have been disposed of at the site including: slag, precipitator dust, clarifier sludge, railroad ties, checker bricks, scrap wood, tool scale, blast furnace dust, BOF brick and construction debris. The landfill was operated as an above-grade fill operation with minimal segregation of wastes prior to the effective date (viz. November, 1980) of the Resource Conservation and Recovery Act (RCRA). In November 1980, Basic Oxygen Furnace (BOF) precipitator dust generated at the Buffalo District Plant was classified as an "EP Toxic" hazardous waste due to lead leachability and therefore, was placed in a segregated fill area (see Figure 2 for location) from November, 1980 until steel making operations were suspended at the Buffalo Plant in June/July 1981. A RCRA Part A permit application was filed for the BOF Dust Area in mid-November, 1980 (See Appendix A).

The landfill site has been used primarily for material reclamation and disposal of construction debris since the plant

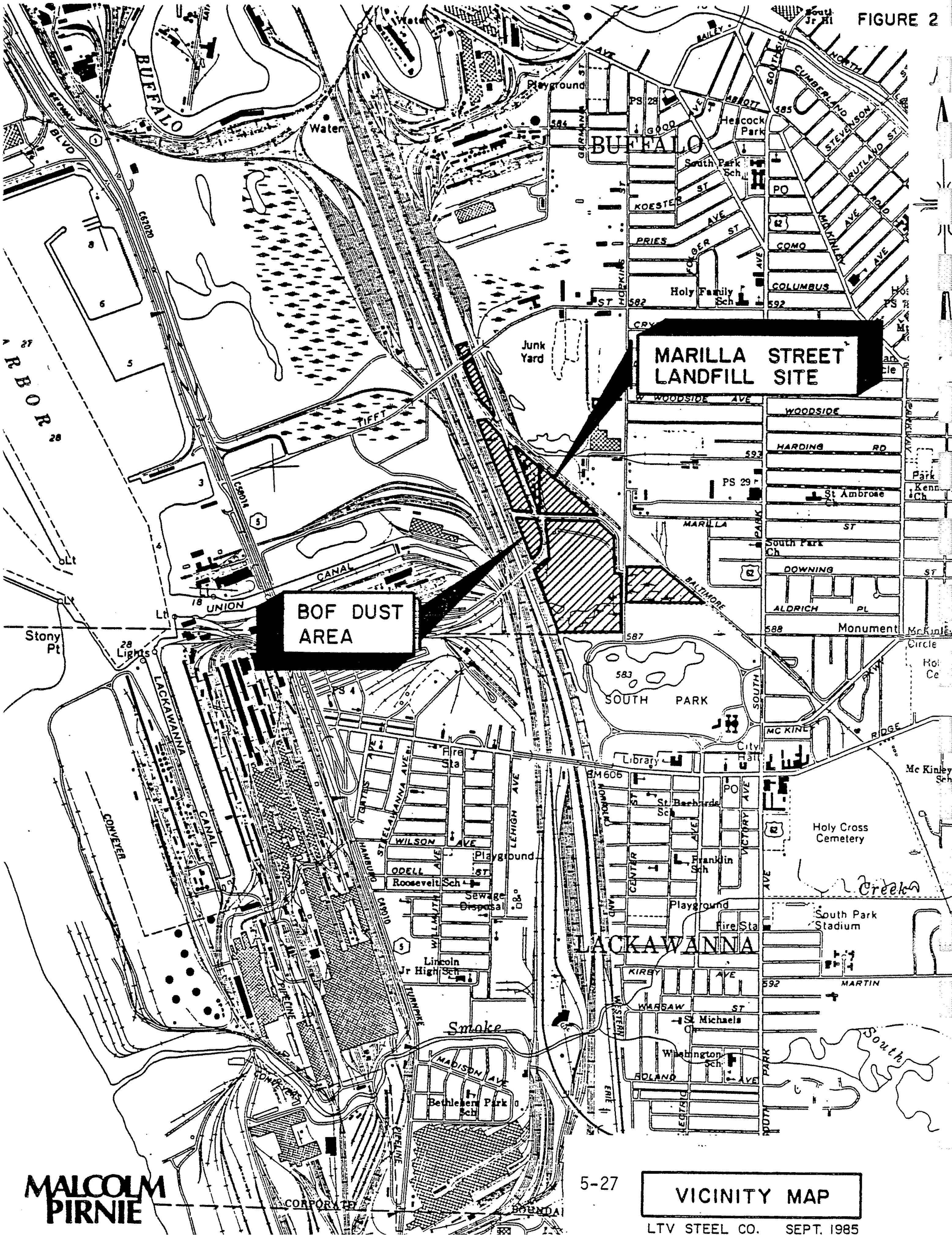
FIGURE I



MALCOLM PIRNIE

REGIONAL MAP

FIGURE 2



MALCOLM PIRNIE

5-27

VICINITY MAP

LTV STEEL CO. SEPT. 1985

shutdown. All wastes disposed of at the landfill site since November, 1980 have been kept segregated.

An engineering report summarizing the hydrogeologic characteristics of the site was completed in September, 1984. This investigation confirmed the presence of two groundwater systems (viz. shallow and deep) and concluded that the site might be contributing to an increase in the pH, iron and phenol concentrations of the groundwater. The groundwater quality standards for phenol and iron were exceeded in both upgradient and downgradient groundwater monitoring wells.

1.3 Purpose and Scope

Malcolm Pirnie has been retained by LTV to investigate alternatives for closure of the landfill site in accordance with applicable solid and hazardous waste regulations.

SECTION 2.0
FIELD INVESTIGATION

2.1 General

A field investigation of the Marilla Street Landfill was considered necessary to supplement information obtained during the hydrogeologic investigation and to determine final closure requirements. The field investigation consisted of the following:

- Performance of an aerial topographic survey.
- Performance of borings in the fill areas; installation of two additional groundwater monitoring wells.
- Interviews with LTV personnel regarding past landfill operations including site walkovers.
- Development of groundwater isopotential maps for both groundwater systems.

2.2 Topographic Survey

An aerial photograph of the site was taken on April 18, 1985 by McIntosh and McIntosh, Inc. (Licensed Land Surveyors) of Lockport, New York (See Figure 3). This aerial photograph was used by McIntosh to develop a topographic map with 5-foot contours (See Plate 1) for the site.

2.3 Boring and Monitoring Well Installations

Fourteen borings were completed in the fill areas and two of the borings were completed as groundwater monitoring wells by Earth Dimensions, Inc. Plate 2 shows the approximate location of all existing and new borings and groundwater monitoring

FIGURE 3

AERIAL PHOTOGRAPH OF
MARILLA STREET LANDFILL SITE

LTV STEEL COMPANY SEPTEMBER 1985

wells. Each of the wells was constructed of 2-inch diameter PVC casing with a 2-foot length of machine-slotted PVC well screen. The deep well (viz. 7A) extended approximately 41 feet to bedrock and the shallow well (viz. 8B) extended approximately 21 feet into the fill. The boring logs describing and classifying the fill materials encountered and presenting details of the monitoring well installations are presented in Appendix A.

2.4 Fill Characteristics

The landfill site has been segregated into five fill areas based on information obtained from the borings and conversations with LTV personnel familiar with previous landfill operations. The five areas are shown on Plate 3 and discussed below:

- BOF Dust Area - The BOF (Basic Oxygen Furnace) Dust Area consists of a mixture of BOF dust and BOF slag. The slag was used to prevent the dust particles from being dispersed by the wind. LTV personnel estimate that approximately 6000 tons of BOF dust, which is considered an "EP Toxic" characteristic hazardous waste due to lead leachability, were disposed of in the BOF Dust Area from November, 1980 until June/July 1981. As indicated on Plate 3, the total volume of wastes (slag and dust) in the BOF Dust Area has been estimated to be 136,600 cubic yards. The BOF Dust Area also contains approximately 33,300 cubic yards of rubble/slag used in the construction of the railroad berm and the western retaining berm.

- Clarifier Sludge Area - The Clarifier Sludge Area consists primarily of a mixture of clarifier sludge (viz. sludge generated by the plant's wastewater treatment system), BOF slag, and blast furnace slag. The slag was used to prevent the sludge from being dispersed by the wind. As indicated on Plate 3, the total volume of waste in the Clarifier Sludge Area has been estimated to be 531,000 cubic yards which includes the rubble/slag used in the construction of the railroad berm.

- Miscellaneous Debris and Fine Refuse Area - The Miscellaneous Debris and Fine Refuse Area consists primarily of a mixture of plant construction debris, railroad ties, bricks, minus minus fines (viz. BOF slag less than 1/4 inch in size), minus fines (viz. BOF slag 1/4-inch to 5/8-inch in size), BOF slag, and blast furnace slag. As indicated on Plate 3, the volume of waste in this area has been estimated to be 1,550,000 cubic yards.

- Fine Refuse Area - The Fine Refuse Area consists primarily of a mixture of minus minus fines, minus fines, BOF slag and blast furnace slag. As indicated on Plate 3, the volume of waste in this area has been estimated to be 712,000 cubic yards.

- Railroad Fill Area - The Railroad Fill Area consists primarily of slag deposited during construction of a railroad on the east side of Hopkins Road. As indicated on Plate 3, the volume of waste in this area has been estimated to be 14,500 cubic yards.

2.5 Groundwater Quality

Groundwater samples were collected on July 23, 1985 from the west drainage ditch near the BOF Dust Area and the new deep monitoring well (viz. 7A) as part of the routine quarterly groundwater monitoring performed at the site. The samples were analyzed for total lead and total chromium in addition to the routine groundwater quality parameters (viz. pH, conductivity, total dissolved solids, chlorides, sulfates, phenols and total iron). The analytical results for all of the samples collected on July 23, 1985 are summarized in Table 1. Comparison of these results to the groundwater quality standards in Table 2 indicates the following:

- Iron was not detected in monitoring wells 6A and 2B. The iron concentrations of all the remaining samples exceeded the groundwater quality standard of 0.3 mg/l. The highest iron concentration (viz. 20.15 mg/l was detected in well 5B.

- Sulfate concentrations in wells 5B, 6B, the west pond and the west drainage ditch were 719.1, 1230, 345.3 and 399.5 mg/l, respectively, which are in excess of the 250 mg/l groundwater quality standard.

- Phenols were detected in all ground and surface water samples in excess of the .001 mg/l groundwater quality standard. The phenol concentrations ranged from 0.112 mg/l to 0.244 mg/l.

- Lead was sampled in monitoring well 7A and the west drainage ditch. Both samples showed total lead concentrations in excess of the groundwater quality standards of 0.025 mg/l. Monitoring Well 7A and the west drainage ditch were resampled on 8/21/85. The results of this sampling are shown in Table 3. Examination of Table 3 indicates that total lead was detected in monitoring well 7A in excess of the groundwater quality standard; however, lead was not detected in the west drainage ditch in either total or

TABLE 1

MARILLA STREET LANDFILL
SUMMARY OF ANALYTICAL RESULTS FOR ROUTINE WATER QUALITY PARAMETERS FOR SAMPLES TAKEN 7/23/85

PARAMETER	pH (units)	CONDUCTIVITY (umhos/cm)	TOTAL ORGANIC CARBON (Mg/1)	TOTAL DISSOLVED SOLIDS (Mg/1)	TOTAL IRON (mg/1)	CHLORIDES (mg/1)	SULFATES (mg/1)	PHENOLS (mg/1)	TOTAL LEAD (mg/1)	TOTAL CHROMIUM (mg/1)
SAMPLE LOCATION										
EAST POND	7.6	750	8.3	318	1.02	28.1	75.9	0.142	*	*
2A	8.8	990	2.4	633	0.48	98.2	6.8	0.124	*	*
2B	8.4	2,000	11.3	746	BDL	123	79.2	0.162	*	*
3A	7.7	1,380	2.5	8,132	1.85	3.5	198.6	0.224	*	*
WEST POND	8.1	1,430	7.5	930	0.60	141	345.3	0.133	*	*
4A	7.6	700	3.1	364	0.49	35	121.1	0.112	*	*
5A	7.4	995	1.7	677	0.78	6.5	162.7	0.115	*	*
5B	6.9	2,950	8.7	2,679	20.15	7.8	719.1	0.127	*	*
6A	7.2	1,240	1.9	3,640	BDL	34.6	225.3	0.126	*	*
6B	6.6	2,400	2.9	2,176	2.26	7.0	1,230	0.133	*	*
7A$^+$	7.8	1,060	6.5	521	2.03	77.8	112.6	0.204	0.037	BDL
WEST DRAINAGE DITCH	7.8	2,600	7.3	2,924	2.59	144.9	299.5	0.139	0.083	0.017
DETECTION LIMIT	-	-	0.1	1	0.3	1	1	0.005	0.005	0.005

NOTES:

1. A - designates deep well, B - designates shallow well
2. BDL - Below Detection Limit

* Not Analyzed

\+ Sample contained high sediment content

TABLE 2
GROUNDWATER QUALITY STANDARDS

	Maximum Concentration (mg/l)[1]	
Substance	New York State Water Quality Standards For Class "GA" Water	Interim Primary Drinking Water Standards
Arsenic	0.025	0.05
Barium	1.00	1.00
Cadmium	0.01	0.01
Chloride	250.00	-
Chromium	0.05[2]	0.05[3]
Copper	1.00	-
Cyanide	0.20	-
Flouride	1.50	-
Foaming Agents (MBAS)	0.50	-
Iron[4]	0.30	-
Lead	0.025	0.05
Manganese[4]	0.30	-
Mercury	0.002	0.002
Nitrate (as N)	10.00	10.00
Phenols	0.001	-
Selenium	0.02	0.01
Silver	0.05	0.05
Sulfate	250.00	-
Zinc	5.00	-
pH Range	6.5-8.5	-
Endrin	N.D.	0.0002
Lindane	N.D.	0.004
Methoxychlor	0.035	0.10
Toxaphene	N.D.	0.005
2, 4-D	0.0044	0.10
2,4, 5-TP (Silvex)	0.00026	0.01
Radium 226 and 228	-	5.00[6]
Gross Alpha Activity	-	15.00[6]
Coliform Bacteria[7]	-	4.00
Other[5]	(See Appendix)	-

NOTES:

- Not specified

N.D. Not Detectable

1. Except where exceeded due to natural conditions
2. Hexavalent chromium
3. Total chromium
4. Combined concentration of iron and manganese shall not exceed 0.3 mg/l
5. Specific organic substances as specified in Appendix B.
6. pCi/l
7. 1/100 ml. arithmetic mean not to exceed 1 per 100 ml.

TABLE 3

MARILLA STREET LANDFILL
SUMMARY OF ANALYTICAL RESULTS
FOR SAMPLES TAKEN 8/21/85

PARAMETER	MONITORING WELL 7A+	WEST DRAINAGE DITCH	DETECTION LIMIT
pH			
Conductivity (umhos/cm)			
Total Organic Carbon (mg/l)	6.7	11.6	1.0
Total Dissolved Solids (mg/l)	625	989	1.0
Total Iron (mg/l)	25.2	0.35	0.3
Chlorides (mg/l)	68.3	190	1.0
Sulfates (mg/l)	53	211	1.0
Phenols (mg/l)	BDL*	BDL*	0.005
Total Lead	0.114	BDL*	0.005
Soluble Lead	BDL*	BDL*	0.005
Total Chromium (mg/l)	0.032	0.008	0.005

* BDL - Below Detection Limit
\+ Sample contained high sediment content.

soluble form and soluble lead was not detected in monitoring well 7A. Therefore, the lead detected in well 7A may be the result of sediment contamination during installation. Since monitoring well 7A is a relatively new well, it has not been flushed on enough occasions to insure that all of the contaminated sediment (which entered the well during installation) has been removed. Total and soluble lead will be monitored on all upgradient and downgradient sampling locations during subsequent quarterly monitoring events.

With the exception of the detection of lead, the groundwater sampling results were consistent with previous groundwater quality monitoring results as summarized in the engineering report on site hydrogeology (see Section 1.2).

Examination of site topography indicates the possibility that the general direction of groundwater flow in the shallow groundwater system is radially outward from the center of the site. The new shallow groundwater monitoring well (viz. 8B) was installed to determine whether this radial direction of groundwater flow exists. A groundwater isopotential map illustrating the general direction of groundwater flow in both the deep and shallow groundwater systems based on groundwater elevations measured on July 22, 1985 is attached as Plate 4. Although there are an insufficient number of shallow wells to assess the shallow groundwater system for the entire site, the direction of flow on the eastern portion of the site appears to be towards the west pond with the east pond acting as a recharge area. In addition, the curvature of the isopotential lines indicates that the peripheral drainage ditches may also be acting as discharge areas for the shallow groundwater system. The general direction of groundwater flow in the deep groundwater system is consistent with previous determinations (viz. towards Lake Erie).

2.6 Additional Groundwater Monitoring Wells

The current groundwater monitoring system is considered adequate to monitor the overall groundwater quality impacts of the landfill site. Four additional shallow groundwater monitoring wells (one upgradient and three downgradient) will be installed in the vicinity of the BOF Dust Area to determine the groundwater quality impacts of the BOF dust. In addition, two other shallow groundwater monitoring wells will be installed on the landfill site to further define shallow groundwater movements.

d from Buffalo

Marilla Street Storage Area.

se print or type in the unshaded areas only
—in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved OMB No. 158-R0175

FORM 1 GENERAL

U.S. ENVIRONMENTAL PROTECTION AGENCY

GENERAL INFORMATION

Consolidated Permits Program
(Read the "General Instructions" before starting.)

I. EPA I.D. NUMBER

F NYD000813402

LABEL ITEMS

PA I.D. NUMBER

FACILITY NAME

FACILITY MAILING ADDRESS

FACILITY LOCATION

PLEASE PLACE LABEL IN THIS SPACE

GENERAL INSTRUCTIONS

If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cro through it and enter the correct data in t appropriate fill—in area below. Also, if any of the preprinted data is absent *(the area to the left of the label space lists the information that should appear)*, please provide it in the proper fill—in area(s) below. If the label complete and correct, you need not complete Items I, III, V, and VI *(except VI-B which must be completed regardless)*. Complete items if no label has been provided. Refer the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.

POLLUTANT CHARACTERISTICS

STRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any estions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of bold—faced terms.

SPECIFIC QUESTIONS	MARK 'X' YES	NO	FORM ATTACHED	SPECIFIC QUESTIONS	MARK 'X' YES	NO	FORM ATTAC
Is this facility a publicly owned treatment works which results in a discharge to waters of the U.S.? (FORM 2A)		X		B. Does or will this facility *(either existing or proposed)* include a concentrated animal feeding operation or aquatic animal production facility which results in a discharge to waters of the U.S.? (FORM 2B)		X	
Is this a facility which currently results in discharges to waters of the U.S. other than those described in A or B above? (FORM 2C)		X		D. Is this a proposed facility *(other than those described in A or B above)* which will result in a discharge to waters of the U.S.? (FORM 2D)		X	
Does or will this facility treat, store, or dispose of hazardous wastes? (FORM 3)	X		X	F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)		X	
Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)		X		H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)		X	
Is this facility a proposed stationary source which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X		J. Is this facility a proposed stationary source which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X	

NAME OF FACILITY

SKIP REPUBLIC STEEL BUFFALO DISTRICT

FACILITY CONTACT

A. NAME & TITLE *(last, first, & title)*: POTWORA JOHN SUPT ENVIR CONT

B. PHONE *(area code & no.)*: 716 821 5410

FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX: PO BOX 6

B. CITY OR TOWN: BUFFALO

C. STATE: NY

D. ZIP CODE: 14240

FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER: HOPKINS AND MARILLA STREETS

B. COUNTY NAME: RIE

C. CITY OR TOWN

D. STATE

E. ZIP CODE

F. COUNTY CODE *(if known)*

TINUED FROM THE FRONT

SIC CODES (4-digit, in order of priority)

A. FIRST
3312 (specify) IRON AND STEEL PLANT

B. SECOND
7 (specify)

C. THIRD
(specify)

D. FOURTH
7 (specify)

VIII. OPERATOR INFORMATION

A. NAME
CLARENCE A HACKETT INC

B. Is the name listed in Item VIII-A also the owner?
☐ YES ☒ NO

C. STATUS OF OPERATOR (Enter the appropriate letter into the answer box; if "Other", specify.)
F = FEDERAL
S = STATE
P = PRIVATE
M = PUBLIC (other than federal or state)
O = OTHER (specify)
P (specify)

D. PHONE (area code & no.)
A 716 692 8300

E. STREET OR P.O. BOX
PO BOX 130

F. CITY OR TOWN
TONAWANDA

G. STATE
NY

H. ZIP CODE
14150

IX. INDIAN LAND
Is the facility located on Indian lands?
☐ YES ☒ NO

X. EXISTING ENVIRONMENTAL PERMITS

A. NPDES (Discharges to Surface Water)
9 N

B. UIC (Underground Injection of Fluids)
9 U

C. RCRA (Hazardous Wastes)
9

D. PSD (Air Emissions from Proposed Sources)
9 P

E. OTHER (specify)
9 DEC#915010212 (specify) NY DEC Permit Applicat
for Solid Waste Mgmt Facilit

E. OTHER (specify)
9 (specify)

XI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property bounderies. The map must sh
the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous wa
treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surf
water bodies in the map area. See instructions for precise requirements.

XII. NATURE OF BUSINESS (provide a brief description)

Republic Steel's Buffalo District utilizes the facilities at the Hopkins and Marilla Streets site as a reclamation site for by-products of the steel making process. These items include dewatered sludge from waste water treatment, refractory brick, mill sca and blast furnace dust. These items are all sold or reclaimed.

XIII. CERTIFICATION (see instructions)

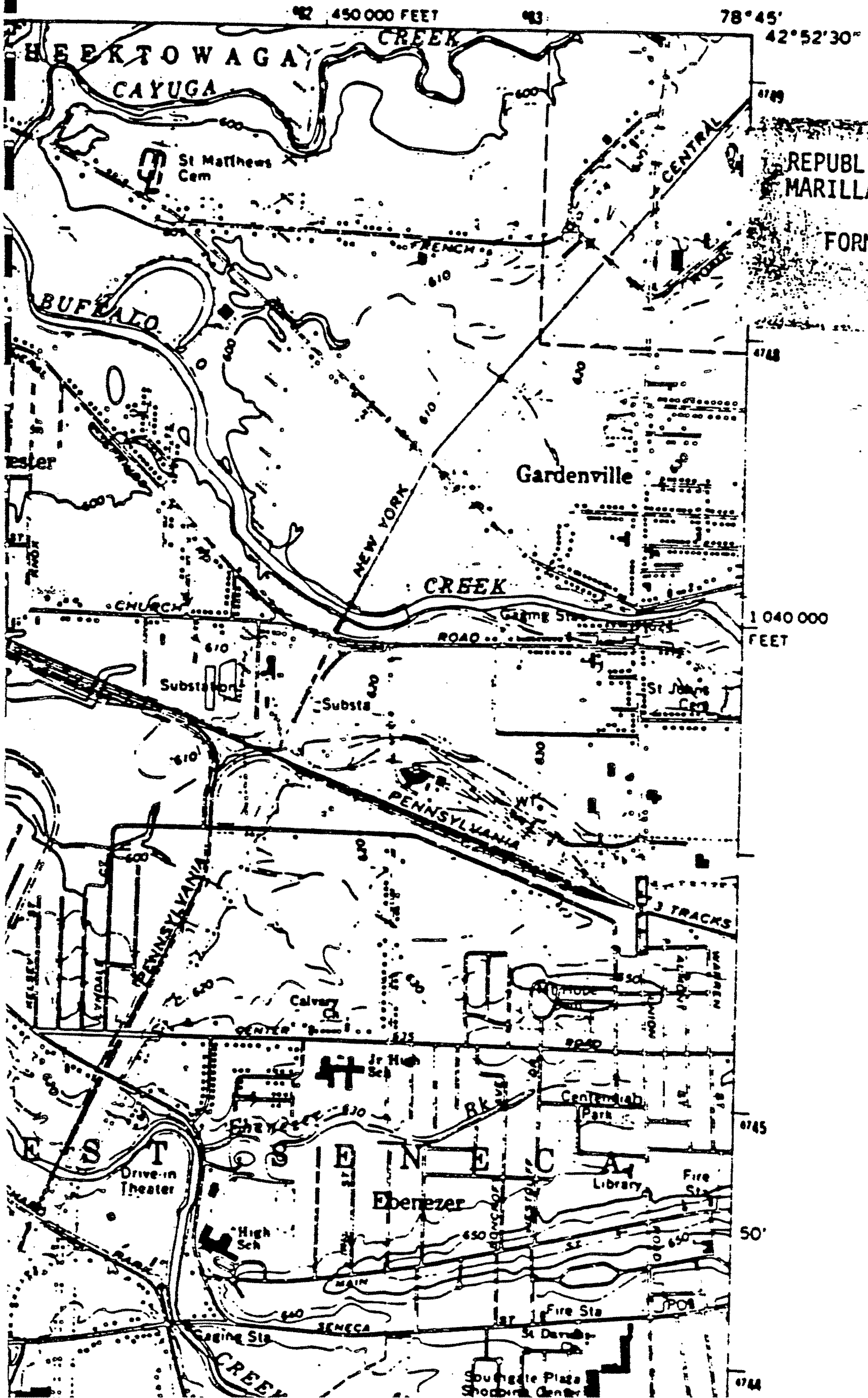
I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application
attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information containe
application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for sub
false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE (type or print)
P. N. WIGTON, Vice President
Steel Operations

B. SIGNATURE
P. N. Wigton

C. DATE SIGN
11-1

BUFFALO SE QUADRANGLE
NEW YORK–ERIE CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
SE/4 BUFFALO 15 QUADRANGLE



REPUBLIC STEEL BUFFALO DISTRICT
MARILLA STREET STORAGE AREA

FORM 1 ITEM XI 1 of 1

ase print or type in the unshaded areas only
ll—in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved OMB No. 158-S80004

ORM 3 RCRA

U.S. ENVIRONMENTAL PROTECTION AGENCY

HAZARDOUS WASTE PERMIT APPLICATION

Consolidated Permits Program

(This information is required under Section 3005 of RCRA.)

I. EPA I.D. NUMBER

F N Y D 0 0 0 8 1 3 4 0 2 1

OR OFFICIAL USE ONLY

PPLICATION APPROVED	DATE RECEIVED (yr., mo., & day)	COMMENTS

I. FIRST OR REVISED APPLICATION

lace an "X" in the appropriate box in A or B below *(mark one box only)* to indicate whether this is the first application you are submitting for your facility or a vised application. If this is your first application and you already know your facility's EPA I.D. Number, or if this is a revised application, enter your facility's PA I.D. Number in Item I above.

. FIRST APPLICATION *(place an "X" below and provide the appropriate date)*

☒ 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)*

YR.	MO.	DAY
80	11	19

FOR EXISTING FACILITIES, PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)*

☐ 2. NEW FACILITY *(Complete item below.)*

YR.	MO.	DAY

FOR NEW FACILITIES, PROVIDE THE DATE *(yr., mo., & day)* OPERATION BEGAN OR IS EXPECTED TO BEGIN

. REVISED APPLICATION *(place an "X" below and complete Item I above)*

☐ 1. FACILITY HAS INTERIM STATUS

☐ 2. FACILITY HAS A RCRA PERMIT

III. PROCESSES – CODES AND DESIGN CAPACITIES

A. PROCESS CODE – Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process *(including its design capacity)* in the space provided on the form *(Item III-C)*.

B. PROCESS DESIGN CAPACITY – For each code entered in column A enter the capacity of the process.

1. AMOUNT – Enter the amount.
2. UNIT OF MEASURE – For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER *(barrel, drum, etc.)*	S01	GALLONS OR LITERS
TANK	S02	GALLONS OR LITERS
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS
Disposal:		
INJECTION WELL	D79	GALLONS OR LITERS
LANDFILL	D80	ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER
LAND APPLICATION	D81	ACRES OR HECTARES
OCEAN DISPOSAL	D82	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D83	GALLONS OR LITERS

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Treatment:		
TANK	T01	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR
OTHER *(Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Item III-C.)*	T04	GALLONS PER DAY OR LITERS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G	LITERS PER DAY	V	ACRE-FEET	A
LITERS	L	TONS PER HOUR	D	HECTARE-METER	F
CUBIC YARDS	Y	METRIC TONS PER HOUR	W	ACRES	B
CUBIC METERS	C	GALLONS PER HOUR	E	HECTARES	Q
GALLONS PER DAY	U	LITERS PER HOUR	H		

EXAMPLE FOR COMPLETING ITEM III *(shown in line numbers X-1 and X-2 below)*: A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

C DUP T/A C 1

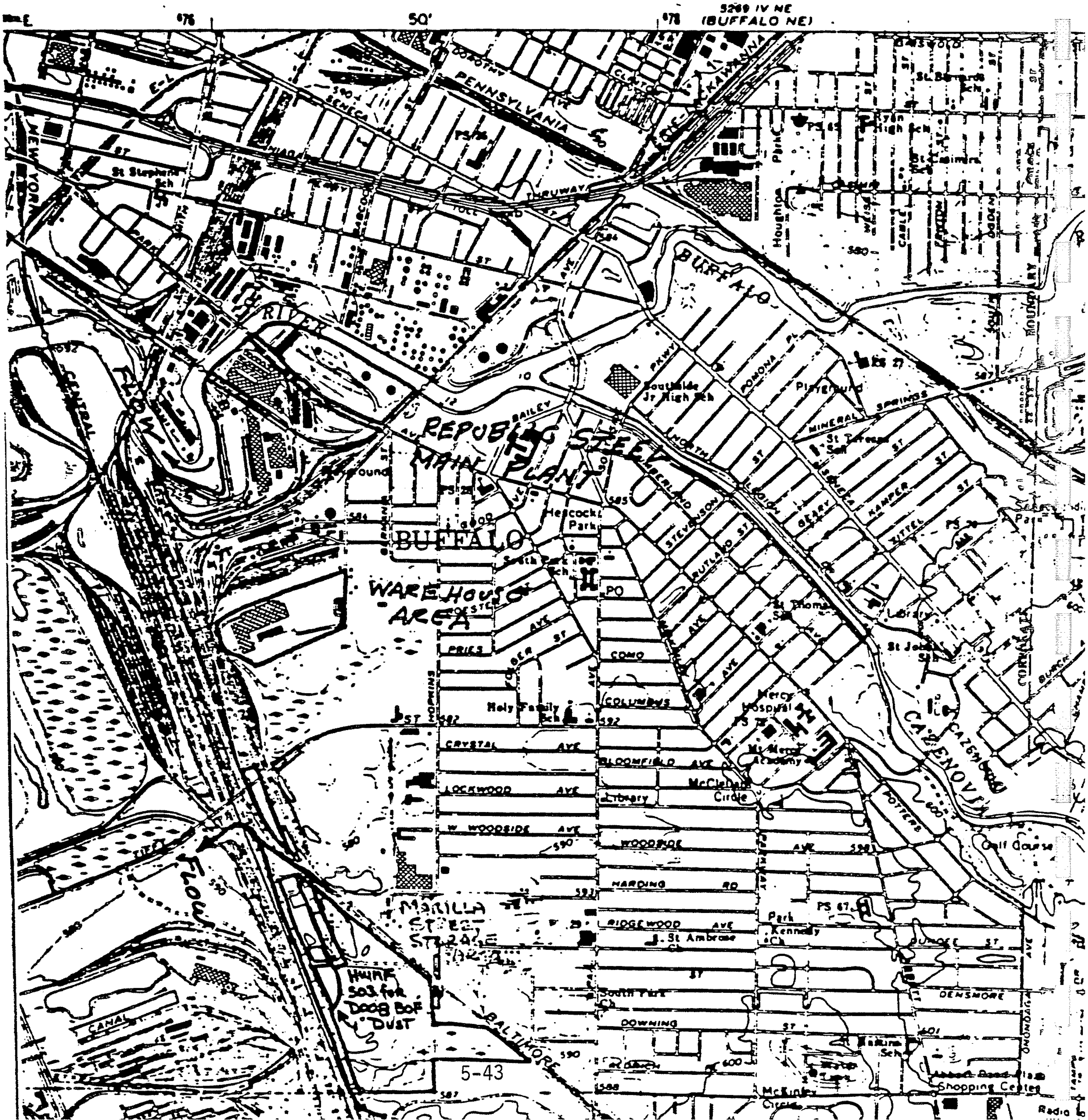
LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify)	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY	LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY
X-1	S 0 2	600	G		5				
X-2	T 0 3	20	E		6				
1	S 0 3	60,000	Y		7				
					8				
3					9				
4					10				

EPA Form 3510-3 (6-80)

CONTINUE ON REVERS


Orchard Park
OHIO
BARKER
ROAD

RIOR


5269 IV NE
(BUFFALO NE)
50'
NEW YORK
CENTRAL
PENNSYLVANIA
SENECA
DOROTHY
CLOTO
LACKAWANNA
THRUWAY
St Stephens Sch
RIVER
BUFFALO
St Bernards Sch
St Casimirs Sch
Houghton Park
Southside Jr High Sch
POMONA PL
Playground
MINERAL SPRINGS
St Teresas Sch
REPUBLIC STEEL MAIN PLANT
BUFFALO
Heacock Park
South Park Sch
WAREHOUSE AREA
PO
St Thomas Sch
St Johns Sch
Library
PRIES
COMO
COLUMBUS
Holy Family Sch
Mercy Hospital
Mt Mercy Academy
CRYSTAL AVE
BLOOMFIELD AVE
LOCKWOOD AVE
McClellan Circle
Library
W WOODSIDE AVE
WOODSIDE AVE
HARDING RD
RIDGEWOOD AVE
CAZENOVIA
Golf Course
MARILLA STREET STORAGE
HWRF 303 for D008 BOF DUST
FLOW
FLOW
St Ambrose Ch
Park Kennedy Ch
DENSMORE
South Park Ch
DOWNING
BALTIMORE
CANAL
McKinley Circle
Shopping Center
Radio

Continued from the front.

III. PROCESSES *(continued)*

C. SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESSES *(code "T04")*. **FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.**

IV. DESCRIPTION OF HAZARDOUS WASTES

A. EPA HAZARDOUS WASTE NUMBER – Enter the four–digit number from 40 CFR, Subpart D for each listed hazardous waste you will handle. If you handle hazardous wastes which are not listed in 40 CFR, Subpart D, enter the four–digit number*(s)* from 40 CFR, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.

B. ESTIMATED ANNUAL QUANTITY – For each listed waste entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity of all the non–listed waste*(s)* that will be handled which possess that characteristic or contaminant.

C. UNIT OF MEASURE – For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES

1. **PROCESS CODES:**

   For listed hazardous waste: For each listed hazardous waste entered in column A select the code*(s)* from the list of process codes contained in Item III to indicate how the waste will be stored, treated, and/or disposed of at the facility.

   For non–listed hazardous wastes: For each characteristic or toxic contaminant entered in column A, select the code*(s)* from the list of process codes contained in Item III to indicate all the processes that will be used to store, treat, and/or dispose of all the non–listed hazardous wastes that possess that characteristic or toxic contaminant.

   Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of Item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code*(s)*.

2. **PROCESS DESCRIPTION:** If a code is not listed for a process that will be used, describe the process in the space provided on the form.

NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER – Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

1. Select one of the EPA Hazardous Waste Numbers and enter it in column A. On the same line complete columns B,C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
2. In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In column D(2) on that line enter "included with above" and make no other entries on that line.
3. Repeat step 2 for each other EPA Hazardous Waste Number that can be used to describe the hazardous waste.

EXAMPLE FOR COMPLETING ITEM IV *(shown in line numbers X-1, X-2, X-3, and X-4 below)* – A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non–listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

LINE NO.	A. EPA HAZARD. WASTE NO *(enter code)*	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE *(enter code)*	D. PROCESSES 1. PROCESS CODES *(enter)*				D. PROCESSES 2. PROCESS DESCRIPTION *(if a code is not entered in D(1))*
X-1	K 0 5 4	900	P	T 0 3	D 8 0			
[illegible]	D 0 0 2	400	P	T 0 3	D 8 0			
X-3	D 0 0 1	100	P	T 0 3	D 8 0			
X-4	D 0 0 2							included with above

tinued from page 2.

TE: *Photocopy this page before completing if you have more than 26 wastes to list.*

Form Approved OMB No. 158-S80004

EPA I.D. NUMBER *(enter from page 1)*: NYD000813402   T/A   C: 1

FOR OFFICIAL USE ONLY

W   DUP   T/A   C: 2   DUP

DESCRIPTION OF HAZARDOUS WASTES *(continued)*

NO.	A. EPA HAZARD. WASTE NO. *(enter code)*	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE *(enter code)*	D. PROCESSES 1. PROCESS CODES *(enter)*				D. PROCESSES 2. PROCESS DESCRIPTION *(if a code is not entered in D(1))*
	D008	-11,000	T	S03				BOF Dust Storage Pile
0								
1								
3								
4								
5								
6								
7								
8								
9								
0								
1								
2								
3								
4								
5								
6								

nued from the front.

DESCRIPTION OF HAZARDOUS WASTES *(continued)*

SE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM ITEM D(1) ON PAGE 3.

EPA I.D. NO. *(enter from page 1)*

												T/A	C
N	Y	D	0	0	0	8	1	3	4	0	2		6

FACILITY DRAWING

l existing facilities must include in the space provided on page 5 a scale drawing of the facility *(see instructions for more detail).*

. PHOTOGRAPHS

ll existing facilities must include photographs *(aerial or ground—level)* that clearly delineate all existing structures; existing storage, eatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail).*

ACILITY GEOGRAPHIC LOCATION

LATITUDE *(degrees, minutes, & seconds)*	LONGITUDE *(degrees, minutes, & seconds)*
42 50 020	078 50 000

III. FACILITY OWNER

☐ **A. If the facility owner is also the facility operator as listed in Section VIII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.**

B. If the facility owner is not the facility operator as listed in Section VIII on Form 1, complete the following items:

1. NAME OF FACILITY'S LEGAL OWNER	2. PHONE NO. *(area code & no.)*
REPUBLIC STEEL CORPORATION	216-622-5000

3. STREET OR P.O. BOX		4. CITY OR TOWN	5. ST.	6. ZIP CODE
P.O. BOX 6778	G	CLEVELAND	OH	44101

X. OWNER CERTIFICATION

certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached locuments, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME *(print or type)*	B. SIGNATURE	C. DATE SIGNED
P.N. WIGTON, Vice President Steel Operations		11-17-80

X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME *(print or type)*	B. SIGNATURE	C. DATE SIGNED

BORING B-2

ROJECT: LTV MARILLA STREET LANDFILL
PROJECT NO: 848-02-1
ATE: JUNE 10, 1985
LOCATION: SOUTH BUFFALO, NEW YORK
RILLING CONTRACTOR: EARTH DIMENSIONS
INSPECTOR: J. WHITNEY
RILLING METHOD: 8" x 4 1/4" HOLLOW STEM AUGER
SAMPLING METHOD: 2" Ø SPLIT SPOON AT 5' INTERVALS
LEVATION:
DATUM:

SAMPLE				DEPTH	STRATA	SOIL DESCRIPTION density, color, SOIL, admixtures, moisture, other notes, ORIGIN	WELL CONST.	REMARKS
no.	depth	blows per 6"						
-1	0'-2'	6 10	6 8			MEDIUM DENSE DARK BROWN SAND AND GRAVEL SIZE FILL, DRY WITH REDDISH BROWN STAINING		
-2	4.5-6.5	15 13	9 13	5		DENSE DARK BROWN SAND AND GRAVEL SIZE FILL, DRY WITH REDDISH BROWN STAINING		
-3	9.5-11.5	5 36	2 5	10		MEDIUM DENSE BROWN SILT, SAND AND GRAVEL SIZE FILL, MOIST WITH REDDISH BROWN STAINING		
-4	14.5-16.5	40 20	8 8	15		VERY DENSE GREY-BLACK GRAVEL SIZE FILL, WITH TRACE OF BROWN STAINING, DRY		
-5	19.5-21.5	35 32	20 26	20		VERY DENSE DARK BROWN GRAVEL SIZE FILL WITH TRACE OF BROWN STAINING, DRY		
-6	24.5-26.5	60 6	12 68	25		VERY DENSE REDDISH-BROWN SAND GRAVEL SIZE FILL WITH SOME SILT SIZE PARTICLES, WET		
-7	29.5-31.5	4 4	1 4	30		TYPE SAME TO 29.9' SOFT BLACK SILT, WET (ORIGINAL POND BOTTOM) TO 30.5' LOOSE GREENISH BROWN VERY FINE TO FINE SAND, WET		
				35		BOTTOM OF BORING AT 31.5'		

TES:

BORING B-3

PROJECT: LTV MARILLA STREET LANDFILL
PROJECT NO: 848-02-1
DATE: JUNE 11, 1985
LOCATION: SOUTH BUFFALO, NEW YORK
DRILLING CONTRACTOR: EARTH DIMENSIONS
INSPECTOR: J. WHITNEY
DRILLING METHOD: 8" x 4 1/4" HOLLOW STEM AUGER
SAMPLING METHOD: 2" ø SPLIT SPOON AT 5' INTERVALS
ELEVATION:
DATUM:

SAMPLE				DEPTH	STRATA	SOIL DESCRIPTION density, color, SOIL, admixtures, moisture, other notes, ORIGIN	WELL CONST.	REMARK
no.	depth	blows per 6"						
S-1	0'-2'	7	14			MEDIUM DENSE GREY SAND AND GRAVEL SIZE FILL TO 1.5' TO MEDIUM DENSE BROWN STAINED SAND AND GRAVEL SIZE FILL TO 1.7' TO GREY TO 20'		
		16	17					
S-2	4.5-6.5		8			MEDIUM DENSE GREY COARSE SAND AND GRAVEL SIZE FILL WITH BROWN STAINING, MOIST TO 6.2' TO DRY AT 6.5'.		
		6	6	5				
		17						
S-3	9.5'-11.5		25	10		EXTREMELY DENSE LIGHT GREY TO BLACK COARSE SAND AND GRAVEL SIZE FILL W/ CEMENTED SLAG AND BRICK FRAGMENTS, DRY.		
		58	41					
		17						
						AUGER AND SAMPLER REFUSAL AT 13.0 - BOTTOM OF BORING		
				15				
				20				
				25				
				30				
				35				

NOTES:

BORING B-4

OJECT: LTV MARILLA STREET LANDFILL	PROJECT NO: 848-02-1
TE: JUNE 12, 1985	LOCATION: SOUTH BUFFALO, NEW YORK
ILLING CONTRACTOR: EARTH DIMENSIONS	INSPECTOR: J. WHITNEY
ILLING METHOD: 8" x 4 1/4" HOLLOW STEM AUGER	SAMPLING METHOD: 2" ø SPLIT SPOON AT 5' INTERVALS
LEVATION:	DATUM:

SAMPLE				DEPTH	STRATA	SOIL DESCRIPTION density, color, SOIL, admixtures, moisture, other notes, ORIGIN	WELL CONST.	REMARKS
NO.	depth	blows per 6"						
B-1	0'-1.5'	10	21			DENSE BROWN SAND AND GRAVEL SIZE INDUSTRIAL FILL, DRY FRIABLE - AUGER REFUSAL @ 1.5'		STEEL MAKING SLAG
		100						
B-2	4.5'-6.5'		17	5		VERY DENSE BROWN AND BLACK SAND TO COARSE GRAVEL INDUST. FILL, DRY LOOSE WHEN DISTURBED SLAG.		STEEL MAKING SLAG
		30	28					
		32						
B-3	9.5'-11.5		14	10		VERY DENSE GREY AND BLACK SAND TO COARSE GRAVEL W/ 1" SLAG FRAGMENTS, INDUSTRIAL FILL TO 11', LIGHT GREY FRACTURED SLAG W/ SAND AND GRAVEL SIZE FILL TO 11.5' AUGER REFUSAL AT 12.5'		STEEL MAKING SLAG AND LIME STONE.
		38	54					
		37						
				15				
				20				
				25				
				30				
				35				

OTES: INFORMATION IN REMARKS COLUMN IS BASED ON EXAMINATION OF SAMPLES BY LTV PERSONNEL

BORING B-5

PROJECT: LTV MARILLA STREET LANDFILL

PROJECT NO: 848-02-1

DATE: JUNE 11, 1985

LOCATION: SOUTH BUFFALO, NEW YORK

DRILLING CONTRACTOR: EARTH DIMENSIONS

INSPECTOR: J. WHITNEY

DRILLING METHOD: 8" x 4 1/4" HOLLOW STEM AUGER

SAMPLING METHOD: 2" ø SPLIT SPOON AT 5' INTERVALS

ELEVATION:

DATUM:

SAMPLE				DEPTH	STRATA	SOIL DESCRIPTION density, color, SOIL, admixtures, moisture, other notes, ORIGIN	WELL CONST.	REMARKS
no.	depth	blows per 6"						
S-1	0'-2'	9 25	15 15			VERY DENSE DARK BROWN MIXTURE OF GRAVEL AND SILT SIZE INDUSTRIAL FILL, DRY.		CLARIFIER SLUDGE AND STEEL MAKING SLA
S-2	4.5'-6.5'	 4 7	7 8	5		MEDIUM DENSE BROWN SAND AND GRAVEL SIZE FILL TO 5.0' TO MED. DENSE BLACK GRAVEL, SAND & SILT SIZE INDUSTRIAL FILL, MOIST.		CLARIFIER SLUDGE
S-3	10'-12'	3 3	3 2	10		LOOSE BLACK FINE SAND AND SILT SIZE W/ SOME GRAVEL SIZE FILL (INDUS.) SOME BROWN STAINING, MOIST		CLARIFIER SLUDGE
						SOFT BLACK SILT SIZE, SOME GRAVEL SIZE FILL TO 16.0', WET TO SOFT REDDISH BROWN SILT SIZE FILL, WET TO 16.33' TO SOFT BLACK SILT SIZE SOME GRAVEL TO 16.75', SOFT REDDISH BROWN SILT SIZE FILL @ 17.0'		BOF DUST
S-4	15'-17'	1 2	1 3	15				
S-5	20'-22'	10 8	6 16	20		MEDIUM DENSE REDDISH BROWN SILT SIZE W/ SOME GRAVEL SIZE FILL TO 21.5' TO GREYISH BLACK SILT SIZE BRICK FRAGMENTS, MOIST.		CLARIFIER SLUDGE, STEEL MAKIN SLAG AND BOF DUST
S-6	25'-27'	2 3	2 9	25		BRICK FRAGMENTS TO 25.5' TO SOFT BLACK SILT SIZE FILL, WET TO 26.5' TO LOOSE GREENISH BLUE FINE GRAVEL SIZE FILL, WET.		CLARIFIER SLUDGE A STEEL MAKING SLA
S-7	30'-32'	3 5	8 4	30		DENSE GREY ANNULAR CEMENTED SLAG FRAGMENTS WITH SOME GRAVEL AND SAND SIZE FILL, BROWN STAINING, WET.		STEEL MAKING SLA AND BLAST FURNACE SLAG.
S-8	—	50/2		35		SAMPLER REFUSAL AT 35'-2". WET GREY SILT AND FINE SAND W/ SHALE FRAGMENTS (FLOWED UP INTO SAMPLER) AUGER REFUSAL AT 35.4'.		

NOTES: INFORMATION IN REMARKS COLUMN IS BASED ON EXAMINATION OF SAMPLES BY LTV PERSONNEL.

BORING B-6

:LTV MARILLA STREET LANDFILL	PROJECT NO: 848-02-1
JUNE 12, 1985	LOCATION: SOUTH BUFFALO, NEW YORK
G: CONTRACTOR: EARTH DIMENSIONS	INSPECTOR: J. WHITNEY
G METHOD: 8" x 4 1/4" HOLLOW STEM AUGER	SAMPLING METHOD: 2" ø SPLIT SPOON AT 5' INTERVALS
ION:	DATUM:

SAMPLE			DEPTH	STRATA	SOIL DESCRIPTION	WELL CONST.	REMARKS
depth	blows per 6"				density, color, SOIL, admixtures, moisture, other notes, ORIGIN		
0'-2'	25	23			DENSE GREY GRAVEL AND SAND SIZE FILL BROWN STAINING, DRY TO 1' TO GREY SOLID SLAG FRAGMENTS TO 1.25' TO GREY GRAVEL AND SAND SIZE FILL SOME BRICK FRAGMENTS TO 2'		STEEL MAKING SLAG AND BRICK
	17	9		-			
4.5'-6.5'		24					
	20	17	5		MINIMAL RECOVERY SAMPLE - S-2 GRAY SLAG FRAGMENTS; PUSHED A PIECE OF SLAG AHEAD OF SAMPLER		STEEL MAKING SLAG
	24						
9.5'-10.3'		34					
	100/4"		10		VERY DENSE DARK BROWN TO DARK GREY GRAVEL AND COASRS SAND SIZE INDUSTRIAL FILL W/ SOME SLAG FRAGMENTS DRY. AUGER REFUSAL @ 12.5' (BOTTOM OF BORING)		STEEL MAKING SLAG
			15				
			20				
			25				
			30				
			35				

INFORMATION IN REMARKS COLUMN IS BASED ON EXAMINATION OF SAMPLES BY LTV PERSONNEL.

BORING B-7

PROJECT: LTV MARILLA STREET LANDFILL
PROJECT NO: 848-02-1
DATE: JUNE 20, 1985
LOCATION: SOUTH BUFFALO, NEW YORK
DRILLING CONTRACTOR: EARTH DIMENSIONS
INSPECTOR: J. WHITNEY
DRILLING METHOD: 8" x 4 1/4" HOLLOW STEM AUGER
SAMPLING METHOD: 2" ø SPLIT SPOON AT 5' INTERVALS
ELEVATION:
DATUM:

SAMPLE				DEPTH	STRATA	SOIL DESCRIPTION density, color, SOIL, admixtures, moisture, other notes, ORIGIN	WELL CONST.	REMARK
no.	depth	blows per 6"						
S-1	0'-2'	3 26	18 66			VERY DENSE BLACK FINE SAND AND GRAVEL SIZE CINDERY ASH AND SLAG FRAGMENTS FILL, DRY LOOSE WHEN DISTURBED.		STEEL MAKING S
S-2	4.5'-6.5'	21 23	13 23	5		VERY DENSE DARK BROWN SAND SIZE CINDERY ASH WITH SOME BRICK AND GRAVEL SIZE SLAG FRAGMENTS FILL, DRY, LOOSE WHEN DISTURBED.		STEEL MA SLAG AN SCARFIN FLASH
S-3	9.5'-11.5'	15 10	3 16	10		DENSE BROWN SAND AND GRAVEL SIZE INDUSTRIAL FILL, DRY W/ SOME SLAG FRAGMENTS, LOOSE WHEN DISTURBED.		STEEL MAKING
S-4	14.5'-16.5'	1	1 1/12"	15		SOFT REDDISH BROWN SILT AND FINE SAND SIZE FILL, WET		STEEL MAKIN DUST
S-5	19.5'-21.5'	31 22	7 24	20		VERY DENSE DARK BROWN SAND AND COARSE GRAVEL SIZE INDUSTRIAL FILL, DRY, W/ SOME BRICK AND SLAG FRAGMENTS		STEEL BLAST FURN SLAG
S-6	24.5'-26.5'	47 45	7 66	25		VERY DENSE DARK BROWN COARSE SAND AND GRAVEL SIZE INDUSTRIAL FILL, DRY W/ SOME SLAG AND DETERIORATED BRICK FRAGMENTS BOTTOM OF BORING AT 26.5'		
				30				
				35				

NOTES: AUGERS LOST IN HOLE, HOLE ABANDONED AT 26.5'
INFORMATION IN REMARKS COLUMN IS BASED ON EXAMINATION OF SAMP
BY LTV SAMPLES

BORING B-8

ROJECT: LTV MARILLA STREET LANDFILL	PROJECT NO: 848-02-1
ATE: JUNE 12, 1985	LOCATION: SOUTH BUFFALO, NEW YORK
ILLING CONTRACTOR: EARTH DIMENSIONS	INSPECTOR: J. WHITNEY
ILLING METHOD: 8" x 4 1/4" HOLLOW STEM AUGER	SAMPLING METHOD: 2" ø SPLIT SPOON AT 5' INTERVALS
LEVATION:	DATUM:

SAMPLE				DEPTH	STRATA	SOIL DESCRIPTION density, color, SOIL, admixtures, moisture, other notes, ORIGIN	WELL CONST.	REMARKS
O.	depth	blows per 6"						
S-1	0'-2'	61	55			VERY DENSE BROWN TO GREY BLUE TO BLACK SAND TO COARSE GRAVEL SIZE INDUSTRIAL FILL SOME BRICK FRAGMENTS, DRY		STEEL MAKING SLAG AND BRICK
		32	21					
			10					
S-2	4.5'-6.25'	7	8	5		MEDIUM DENSE BLACK/GREY COARSE SAND TO GRAVEL SIZE FILL W/ SOME SLAG FRAGMENTS		STEEL MAKING SLAG
		50/5"						
			55					
S-3	9.5'-11.33'	68	88	10		VERY DENSE BLACK/GREY/BROWN COARSE SAND TO GRAVEL SIZE FILL W/ SOME SLAG, BRICK AND WOOD FRAGMENTS AUGER REFUSAL @ 11.3' (BOTTOM OF BORING)		STEEL MAKING SLAG AND GRAVEL
		100/4"						
				15				
				20				
				25				
				30				
				35				

OTES: INFORMATION IN REMARKS COLUMN IS BASED ON EXAMINATION OF SAMPLES BY LTV PERSONNEL.

BORING B-9

PROJECT: LTV MARILLA STREET LANDFILL

PROJECT NO: 848-02-1

DATE: JULY 8, 1985

LOCATION: SOUTH BUFFALO, NEW YORK

DRILLING CONTRACTOR: EARTH DIMENSIONS

INSPECTOR: J. WHITNEY

DRILLING METHOD: 8" x 4 1/4" HOLLOW STEM AUGER

SAMPLING METHOD: 2" ø SPLIT SPOON AT 5' INTERVALS

ELEVATION:

DATUM:

SAMPLE				DEPTH	STRATA	SOIL DESCRIPTION density, color, SOIL, admixtures, moisture, other notes, ORIGIN	WELL CONST.	REMARKS
no.	depth	blows per 6"						
S-1	0'-2'	5 14	10 12			MEDIUM DENSE BLACK FINE SAND TO GRAVEL SIZE CINDERY ASH AND SLAG W/SOME BROWN STAINING FILL, MOIST.		CLARIFIER SLUDGE
S-2	5.0'-5.75'	50	100/3	5		EXTREMELY DENSE BLACK SAND TO GRAVEL SIZE FILL WITH SOME SLAG FRAGMENTS, DRY.		CLARIFIER SLUDGE AND SLAG
S-3	10'-12'	1 3	2 9	10		VERY SOFT BLACK SILT TO FINE SAND SIZE ASH FILL TO 19.5' TO BLACK SAND AND GRAVEL SIZE FILL TO 12' WET TO 11.5, DRY TO 12.0'		CLARIFIE SLUDGE
S-4	15'-17'	1 3	3 6	15		SOFT DARK BROWN TO BLACK SILT, SAND AND GRAVEL SIZE FILL, MOIST.		CLARIFIE SLUDGE
S-5	20'-22'	1 12	6 10	20		MEDIUM DENSE DARK BROWN TO BLACK SAND AND GRAVEL SIZE CINDERY ASH AND SLAG FILL WITH SOME SLAG FRAGMENTS, DRY.		CLARIFIE SLUDGE
S-6	25'-27'	5 5	5 4	25		MEDIUM DENSE DARK BROWN SAND AND GRAVEL SIZE FILL, DRY W/ SOME SLAG FRAGMENTS.		CLARIFI SLUDGE
S-7	30'-32'	2 7	5 5	30		STIFF DARK GREY SILT AND FINE SAND SIZE FILL, MOIST WITH SOME GRAVEL SIZED SLAG.		CLARIFI SLUDGI
S-8		3 4	6 3	35		MEDIUM DENSE DARK GREY FINE SAND SIZE FILL WITH GRAVEL SIZE SLAG PARTICLES.		CLARIF SLUDG

NOTES: SAMPLE S-6 NO RECOVERY (PUSHED A PIECE OF SLAG AHEAD OF SAMPLER) SAMPLER DROPPED WITH WEIGHT OF RODS FOR NEW RECOVERY.
INFORMATION IN REMARKS COLUMN BASED ON EXAMINATION OF SAMPLES

BORING B-9

PROJECT: LTV MARILLA STREET LANDFILL
PROJECT NO: 848-02-1

ATE: JULY 8, 1985
LOCATION: SOUTH BUFFALO, NEW YORK

RILLING CONTRACTOR: EARTH DIMENSIONS
INSPECTOR: J. WHITNEY

RILLING METHOD: 8" x 4 1/4" HOLLOW STEM AUGER
SAMPLING METHOD: 2" ø SPLIT SPOON AT 5' INTERVALS

LEVATION:
DATUM:

SAMPLE				DEPTH	STRATA	SOIL DESCRIPTION density, color, SOIL, admixtures, moisture, other notes, ORIGIN	WELL CONST.	REMARKS
no.	depth	blows per 6"						
S-9	40'-42'	33	48	40		VERY DENSE GREY COARSE SAND AND GRAVEL SIZE FILL, WET @ 41.0' W/ SOME SLAG FRAGMENTS.		BLAST FURNACE SLAG.
		21	9					
			60/.5"					
S-10	44.5'			45		BOTTOM OF BORING @ 44.5'		
				50				
				55				
				60				
				65				
				70				
				75				
				80				

TES: NO RECOVERY SAMPLE S-10 SOME SAND FLOWED UP INTO SAMPLER

INFORMATION IN REMARKS COLUMN IS BASED ON EXAMINATION OF SAMPLES BY LTV PERSONNEL

BORING B-10

PROJECT: LTV MARILLA STREET LANDFILL
PROJECT NO: 848-02-1

DATE: JUNE 11, 1985
LOCATION: SOUTH BUFFALO, NEW YORK

DRILLING CONTRACTOR: EARTH DIMENSIONS
INSPECTOR: J. WHITNEY

DRILLING METHOD: 8" x 4 1/4" HOLLOW STEM AUGER
SAMPLING METHOD: 2" ø SPLIT SPOON AT 5' INTERVALS

ELEVATION:
DATUM:

SAMPLE				DEPTH	STRATA	SOIL DESCRIPTION	WELL CONST.	REMARI
no.	depth	blows per 6"				density, color, SOIL, admixtures, moisture, other notes, ORIGIN		
S-1	0'-2'	5 8	6 8			MEDIUM DENSE BLACK GRAVEL SIZE FILL TO 6" TO BROWN SAND AND GRAVEL SIZE FILL TO 2' WITH SOME SEAMS OF BLACK SILT SIZE PARTICLES (FILL)		CLARIFIE SLUDGE SLAG
S-2	5'-7'	2 3	2 2	5		LOOSE BLACK CINDERY SAND DRY FILL.		BLAST FURNAC FLUEDU
S-3	10'-12'	2 3	2 2	10		VERY LOOSE BLACK CINDERY SAND SOME CINDER FRAGMENTS W/ SLIGHT BROWN STAINING DRY FILL		FLUEDU AND SL
S-4	15'-17'	1 1	2 1	15		SIMILAR		FLUEDU WITH S SLAG
S-5	20'-22'	2 10	10 11	20		MEDIUM DENSE GREENISH BLUE COARSE GRAVEL SIZE FILL WITH SOME SLAG FRAGMENTS, MOIST		BLAST FURNAC SLAG
S-6	25'-27'	1 5	2 10	25		LOOSE GRAVEL AND SAND SIZE GREY SLAG TO 25.5' TO SOFT BLACK PEAT SOME WOOD TO 26.0' TO LOOSE LIGHT BROWN FINE SAND TO 27' - BOTTOM OF BORING @ 27'		
				30				
				35				

NOTES: INFORMATION IN REMARKS COLUMN IS BASED ON EXAMINATION OF SAMPL
BY LTV PERSONNEL

BORING B-11

OJECT: LTV MARILLA STREET LANDFILL
PROJECT NO: 848-02-1

TE: JUNE 12, 1985
LOCATION: SOUTH BUFFALO, NEW YORK

ILLING CONTRACTOR: EARTH DIMENSIONS
INSPECTOR: J. WHITNEY

ILLING METHOD: 8" x 4 ¼" HOLLOW STEM AUGER
SAMPLING METHOD: 2" ø SPLIT SPOON AT 5' INTERVALS

EVATION:
DATUM:

SAMPLE								
IO.	depth	blows per 6"		DEPTH	STRATA	SOIL DESCRIPTION density, color, SOIL, admixtures, moisture, other notes, ORIGIN	WELL CONST.	REMARKS
-1	0'-2'	1 8	7 22			MEDIUM DENSE BROWN TO BLACK COARSE SAND TO GRAVEL SIZE FILL W/ SOME WOOD AND BRICK FRAGMENTS, DRY		HOT POURED SLAG FROM E-L RIGHT-OF-WAY
-2	4.5'-6.5'	8 6	7 8	5		MEDIUM DENSE DARK BROWN COARSE SAND TO COARSE GRAVEL SIZE FILL (SLAG) W/ SOME WOOD FRAGMENTS, DRY.		MISC. FILL
-3	9.5'-11.5'	6 10	7 8	10		FIRM LIGHT BROWN CLAYEY SILT, WET (LAKE SEDIMENT) LAMINATED. BOTTOM OF BORING @ 11.5'		
				15				
				20				
				25				
				30				
				35				

ES: INFORMATION IN REMARKS COLUMN IS BASED ON EXAMINATION OF SAMPLES BY LTV PERSONNEL.

BORING B-12

PROJECT: LTV MARILLA STREET LANDFILL
PROJECT NO: 848-02-1
DATE: JUNE 19, 1985
LOCATION: SOUTH BUFFALO, NEW YORK
DRILLING CONTRACTOR: EARTH DIMENSIONS
INSPECTOR: J. WHITNEY
DRILLING METHOD: 7"x 3¼" HOLLOW STEM AUGER 0'-30', REDRILLED W/ 8"x 3⅜" H.S.A.
SAMPLING METHOD: 2" ø SPLIT SPOON AT 5' INTERVALS
ELEVATION:
DATUM:

SAMPLE				DEPTH	STRATA	SOIL DESCRIPTION density, color, SOIL, admixtures, moisture, other notes, ORIGIN	WELL CONST.	REM
no.	depth	blows per 6"						
S-1	0'-1.17'	9 100/2"	32			VERY DENSE DARK BROWN SAND AND GRAVEL SIZE FILL, DRY LOOSE WHEN DISTURBED		STEEL SLAG BLAS FURN SLAG
S-2	4.5'-5.3'	100/4"	37	5		VERY DENSE DARK BROWN SAND AND GRAVEL SIZE FILL		STEEL SLAG BLAS FURN SLAG
S-3	9.5'-11.5'	43 30	95 30	10		SIMILAR		STEEL SLAG BLAS FURN SLAG
S-4	14.5'-16.5'	17 20	8 24	15		SIMILAR		STEE SLAG BLAS FURN SLAG
S-5	19.5'-21.5'	32 15	29 23	20		VERY DENSE OLIVE BROWN SAND, GRAVEL AND SILT SIZE FILL MOIST, SOME BRICK FRAGMENTS AND SLAG.		STEE SLAG FURN AND FRAG
S-6	24.5'-26.5'	40 40	14 33	25		VERY DENSE DARK BROWN SAND AND GRAVEL SIZE FILL, WET @ 25.5' to 25.7' SOME BRICK AND SLAG FRAGMENTS.		STEE SLAG
S-7	29.5'-31.3'	42 100/4"	16 50	30		VERY DENSE GREY/BLACK COARSE SAND AND GRAVEL SIZE FILL, DRY W/ SOME SLAG AND CINDER FRAGMENTS.		STEE SLA SOM PEA
S-8	34.5'-36.5'	37 100/4.5'	36 66	35		EXTREMELY DENSE GRAY/BLACK COARSE SAND AND GRAVEL SIZE FILL WET WITH SOME SLAG AND BRICK FRAGMENTS. AUGER REFUSAL@ 39' (BOTTOM OF BORING) AUGERS LOST IN HOLE, ABANDONED, MOVED TO MW-8B*		

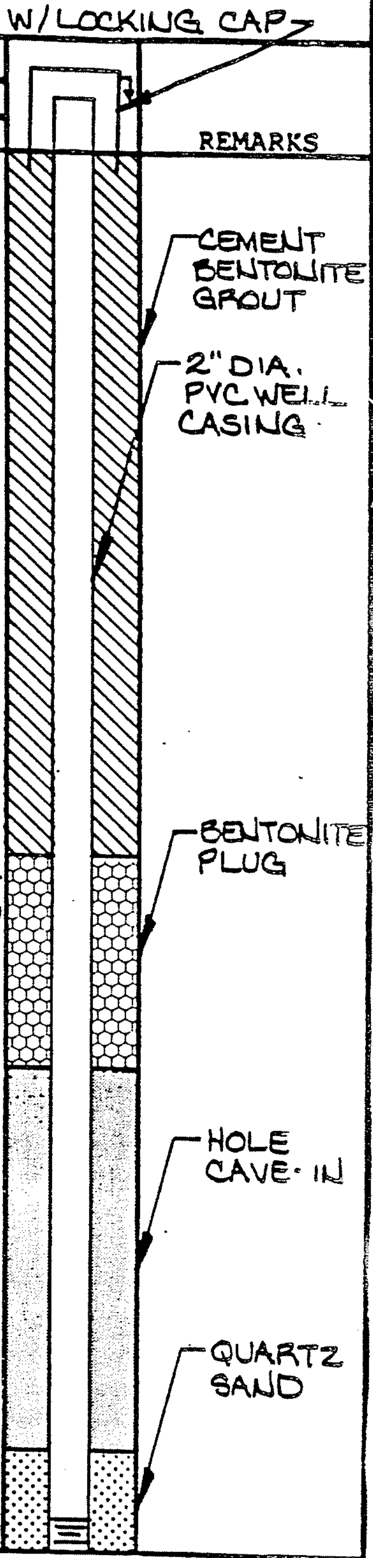
NOTES: EXTREMELY DIFFICULT AUGERING BETWEEN 17 + 19.5', 30' & DOWN AUGER REF
HAD TO HEAT THE AUGERS TO BREAK APART, LEFT AUGERS IN GROUND @ 1:30 (6
AUGERS LOST IN HOLE 7-3-85; INFORMATION IN REMARKS COLUMN IS BA
EXAMINATION OF SAMPLES BY LTV PERSONNEL.

BORING MW-7A

JECT: LTV MARILLA STREET LANDFILL	PROJECT NO: 848-02-1
TE: JUNE 18, 1985	LOCATION: SOUTH BUFFALO, NEW YORK
ILLING CONTRACTOR: EARTH DIMENSIONS	INSPECTOR: J. WHITNEY
ILLING METHOD: 8" x 4 1/4" HOLLOW STEM AUGER	SAMPLING METHOD: 2" ø SPLIT SPOON AT 5' INTERVALS
EVATION:	

SAMPLE						SOIL DESCRIPTION
o.	depth	blows per 6"		DEPTH	STRATA	density, color, SOIL, admixtures, moisture, other notes, ORIGIN
-1	0'-2'	7 8	5 9			MEDIUM DENSE DARK BROWN SAND AND GRAVEL SIZE FILL W/ SOME BRICK SILT SIZE PARTICLES
-2	4.5'-6.5'	 5 6	5 4	5		LOOSE BROWN SAND AND GRAVEL SILT SIZE FILL, MOIST
-3	9.5'-11.0'	 90	23 75	10		VERY DENSE DARK BROWN TO BLACK SAND AND GRAVEL SIZE FILL, DRY
-4	14.5'-16.5'	1	WOH/18"	15		NO RECOVERY SAMPLE S-4
-5	19.5'-20.08'	 100/1"	70	20		VERY DENSE BROWN SAND AND GRAVEL SIZE FILL W/ SOME SLAG FRAGMENTS, MOIST
-6	24.5'-26.5'	WOR 1	WOR 1	25		VERY SOFT BROWN SILT SIZE FILL, WET TO 26.25' TO BLACK FINE SAND SIZE FILL, WET TO 26.5'
-7	29.5'-31.5'	WOR 3	3 9	30		LOOSE LIGHT GREENISH-GREY FINE SILTY SAND TO 31', MOIST TO STIFF LIGHT GREENISH GREY CLAYEY SILT LAMINATED WITH A BROWN VERY FINE SAND, DRY TO 31.5'
-8	34.5'-36.5'	 6 9	3 9	35		FIRM GREY SILTY CLAY MOTTLED W/ BROWN OXIDATION LAYERS, LAKE SEDIMENTS
			WOR			

REMARKS



TES: WOR - WEIGHT OF RODS
WOH - WEIGHT OF HAMMERS

BORING MW-7A

PROJECT: LTV MARILLA STREET LANDFILL
PROJECT NO: 848-02-1
DATE: JUNE 18-19, 1985
LOCATION: SOUTH BUFFALO, NEW YORK
DRILLING CONTRACTOR: EARTH DIMENSIONS
INSPECTOR: J. WHITNEY
DRILLING METHOD: 8" x 3⅜" HOLLOW STEM AUGER
SAMPLING METHOD: 2" ø SPLIT SPOON AT 5' INTERVALS
ELEVATION:
DATUM:

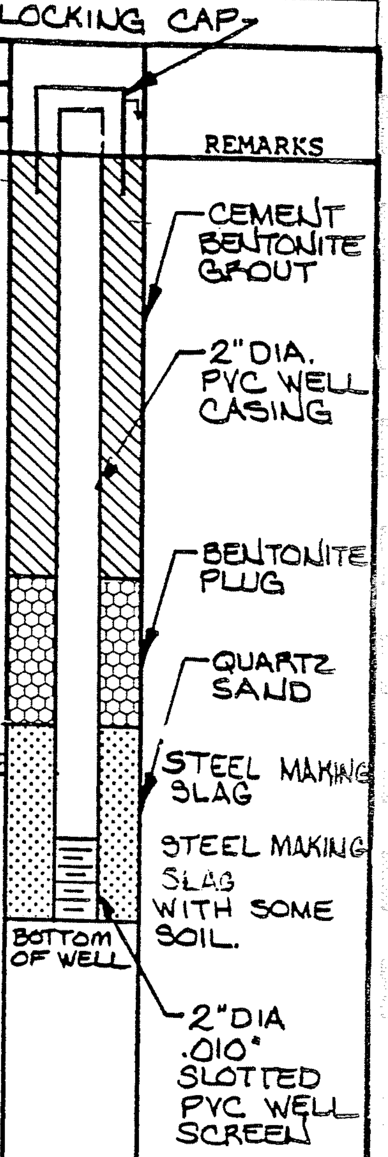
SAMPLE				DEPTH	STRATA	SOIL DESCRIPTION density, color, SOIL, admixtures, moisture, other notes, ORIGIN	WELL CONST.	REMARKS
no.	depth	blows per 6"						
S-9	39.5-41.2'	1	8	40		SOFT GREY SANDY SILT W/ SOME COARSE SAND AND GRAVEL, SOME SHALE FRAGMENTS, WET, GLACIAL TILL BOTTOM OF BORING @ 41.2'	 BOTTOM OF WELL	2" DIA. .010" SLOTTED PVC WEL SCREEN
		100/2"						
				45				
				50				
				55				
				60				
				65				
				70				
				75				

NOTES:

BORING MW-8B

OJECT: LTV MARILLA STREET LANDFILL	PROJECT NO: 848-02-1
TE: JULY 8-9, 1985	LOCATION: SOUTH BUFFALO, NEW YORK
ILLING CONTRACTOR: EARTH DIMENSIONS	INSPECTOR: J. WHITNEY
ILLING METHOD: 8" x 4 1/4" HOLLOW STEM AUGER	SAMPLING METHOD: 2" ø SPLIT SPOONS AT 5' INTERVALS
EVATION:	PROTECTIVE CASING W/ LOCKING CAP

SAMPLE				DEPTH	STRATA	SOIL DESCRIPTION density, color, SOIL, admixtures, moisture, other notes, ORIGIN	REMARKS
o.	depth	blows per 6"					
				5			
						SEE B-12	
				10			
				15			
-1	16.5'-18.1'	11	12			VERY DENSE DARK BROWN COARSE SAND AND GRAVEL SIZE FILL W/SOME BRICK AND SLAG FRAGMENTS	STEEL MAKING SLAG
		30	50/1"				
-2	20'-21.8'	66	45	20		EXTREMELY DENSE MOTTLED GREY GRAVEL SIZE FILL, MOIST W/ 40% SLAG FRAGMENTS	STEEL MAKING SLAG WITH SOME SOIL.
		33	100/3"			BOTTOM OF BORING @ 21.8' AUGER AND SAMPLER REFUSAL	
				25			
				30			
				35			



ES: INFORMATION IN REMARKS COLUMN BASED ON EXAMINATION OF SAMPLES BY LTV PERSONNEL.

REFERENCE NO. 2

Rec'd from
J. Pietraszek 4/24/87
DEC

DEC
PUBLICATION

Division of Solid and Hazardous Waste

Inactive Hazardous Waste Disposal Sites in New York State

Site List by Counties; Volume 9

- Allegeny
- Cattaraugus
- Chautauqua
- Erie
- Niagara
- Wyoming

December 1986

5-63

A Joint Report
of the New York State Department of Environmental Conservation and Health

New York State/Department of Environmental Conservatio

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SOLID AND HAZARDOUS WASTE
INACTIVE HAZARDOUS WASTE DISPOSAL REPORT

CLASSIFICATION CODE: 2a REGION: 9 SITE CODE: 915047
EPA ID:

NAME OF SITE : Republic Steel
STREET ADDRESS: Marilla Street & Hopkins St.
TOWN/CITY: Buffalo
COUNTY: Erie
ZIP:

SITE TYPE: Open Dump- Structure- Lagoon- Landfill-X Treatment Pond-
ESTIMATED SIZE: 215 Acres

SITE OWNER/OPERATOR INFORMATION:
CURRENT OWNER NAME....: Republic Steel
CURRENT OWNER ADDRESS.:
OWNER(S) DURING USE...: Republic Steel Co.
OPERATOR DURING USE...: Republic Steel Co.
OPERATOR ADDRESS......: 1175 South Park Ave, Buffalo, NY
PERIOD ASSOCIATED WITH HAZARDOUS WASTE: From Early 1900 To Aug.15,81

SITE DESCRIPTION:
The area surrounding this landfill would suggest that it was originally a swampy wetland. The surface of this waste would average about 30' above undistrubed grade. Phase I - Hydrogeologic investigation is completed and closure plan under review by DEC. EPA preliminary assessment has been completed.

HAZARDOUS WASTE DISPOSED: Confirmed- Suspected-X

TYPE	QUANTITY (units)
Clarified sludge	48,420 tons/yr
Pickle liquor	10,600 gal/yr
Slag	127,000 tons/yr
Mill scale	22,800 tons/yr
Iron oxide dust	11,200 tons/yr
Flue dust	15,500 tons/yr
Carbon dust	100 tons/yr

ANALYTICAL DATA AVAILABLE:
Air- Surface Water- Groundwater-X Soil- Sediment- None-

CONTRAVENTION OF STANDARDS:
Groundwater- Drinking Water- Surface Water- Air-

LEGAL ACTION:

TYPE..: State- Federal-
STATUS: Negotiation in Progress- Order Signed-

REMEDIAL ACTION:

Proposed- Under design- In Progress- Completed-
NATURE OF ACTION:

GEOTECHNICAL INFORMATION:
SOIL TYPE:
GROUNDWATER DEPTH: 4 to 6 feet below indisturbed grade

ASSESSMENT OF ENVIRONMENTAL PROBLEMS:

Inadequate data is available to assess environmental problems.

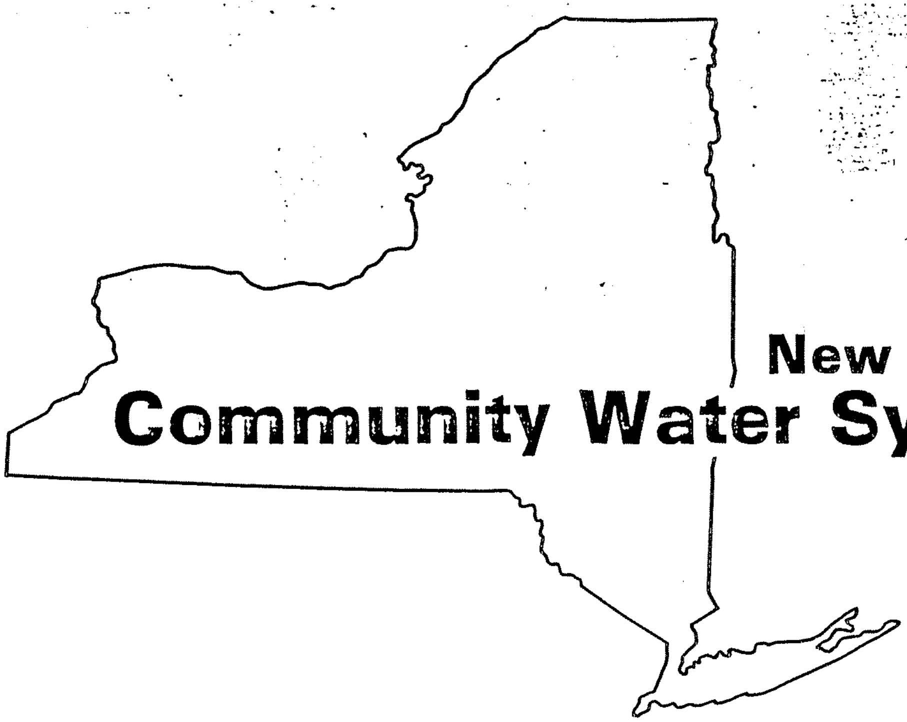
ASSESSMENT OF HEALTH PROBLEMS:

Medium	Contaminants Available	Migration Potential	Potentially Exposed Population	Need for Investigation
Air	Likely	Highly Likely	Yes	High
Surface Soil	Likely	Highly Likely	Yes	High
Groundwater	Identified	Highly Likely	Yes	High
Surface Water	Identified	Highly Likely	Yes	High

Health Department Site Inspection Date : 5/85

MUNICIPAL WASTE ID: 15-S-26

REFERENCE NO. 3



New York State Atlas of
Community Water System Sources
1982

NEW YORK STATE DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL PROTECTION
BUREAU OF PUBLIC WATER SUPPLY PROTECTION

EALTH

New York State Atlas of
munity Water System Sources
1982

recycled paper

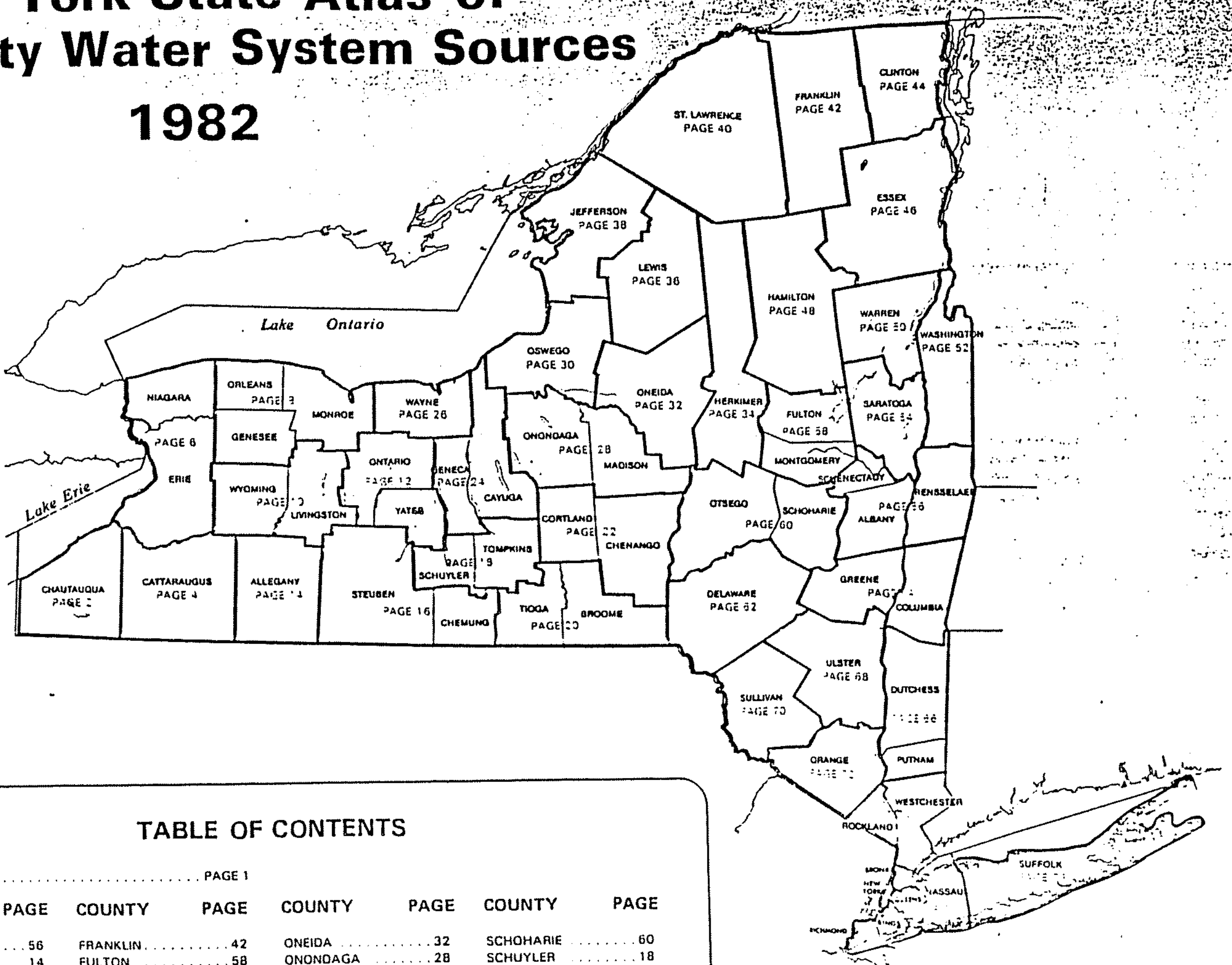


TABLE OF CONTENTS

ecology and environment

LEGEND

BOUNDARIES AND PLACES

International
State
County
Town
Indian Reservation
City
Village
Unincorporated Place ○
Federal Reservation
Built-up Area (Over 25,000 population including any contiguous city or village)

CLASSIFICATION OF POPULATED PLACES

100,000 or more .... YONKERS
50,000 to 100,000 .... Levittown
12,500 to 50,000 .... Poughkeepsie
2,500 to 12,500 .... Hampton Bays
250 to 2,500 .... Boiceville
250 or less .... Corbett

TRANSPORTATION

Highways
Divided Highways — UNDER CONSTRUCTION
Full Control of Access
Partial or No Control of Access
Undivided Highway
Interchange — 23 INTERCHANGE NUMBER — FULL — PARTIAL
Touring Route (State, U.S., Interstate) or State Parkway
Touring Route Markers
State; U.S.; Interstate — 17 9 81

Railroads
Operating Line — Service Discontinued
Operator ..... DELAWARE AND HUDSON
Owner (If Other than Operator) ..... PENN CENTRAL
Company Having Trackage Rights ..... (CONRAIL)

Airports (Open to the Public, Military)
Runway under 4000' — Runway over 4000'

Rest Areas
Food, Gas, Rest Rooms — Rest Rooms
Gas, Rest Rooms — Parking Only

RECREATION FACILITIES

State or National Recreation Area
State Campground
State Boat Launching Site ■
State Canal Park ●
State Fish Hatchery ○
Other State Recreation Site ●

FOREWARD

SOURCE LOCATIONS

tlas show the locations of surface water intakes and groundwater
:er systems in New York State. A community water system is defin-
(State Sanitary Code as a public water system which serves at least
ed by year round residents or regularly serves at least 25 year round
:ypes of water systems are therefore included. Community water
00 percent of their water and have no sources of their own are not

panied by a list of the county's community water systems, popula-
ies. Systems are separated into MUNICIPAL COMMUNITY (program
JNICIPAL COMMUNITY (all other program codes) and listed
MUNICIPAL COMMUNITY water systems are operated by a city,
ter authority or the water system may be a water district or privately
:OMMUNITY systems are primarily mobile home parks but also in-
niums, resident health care facilities, resident institutions, and

EXPLANATION OF SYMBOLS

Suface water intakes are designated on the county maps by a triangle (▲) accompanied by the corresponding water supply number.

Groundwater sources are designated by a dot (•) followed by the supply number. Multiple wells separated by less than 1000' and supplying the same water system are shown with one dot. Springs and infiltration galleries are shown as groundwater sources unless the local health unit has designated it a surface source. Therefore, springs and infiltration galleries are listed as wells (springs) or wells (infiltration galleries).

If a Community Water System has source(s) located outside the county, these sources are shown in the county list and show in parentheses the system number, county and page number. Conversely, when a county contains source(s) which supply community water systems located outside the county, the name of the system is also shown in that county's list of sources.

ACKNOWLEDGEMENT

Data compiled in this Atlas is based on location of community water system sources from visits, in 1979, to every county health unit in the State by technicians working for the Bureau of Public Water Supply Protection. This data was updated in 1982 through use of the Department of Health's SAFWATER computer inventory and through limited field review. The Bureau of Public Water Supply Protection wishes to acknowledge the following organizations who have made the Atlas possible:

To the United States Environmental Protection Agency for funding this Atlas as a part of the Underground Injection Control Program.

To the Cartography Section of the New York State Department of Transportation for providing the talent, time and effort in performing the necessary cartographic work to produce this Atlas.

To the engineers and technicians of the Bureau of Public Water Supply Protection of the New York State Department of Health for the painstaking work of gathering the basic data and cross-checking it, and for leading this project through to completion.

UNTY

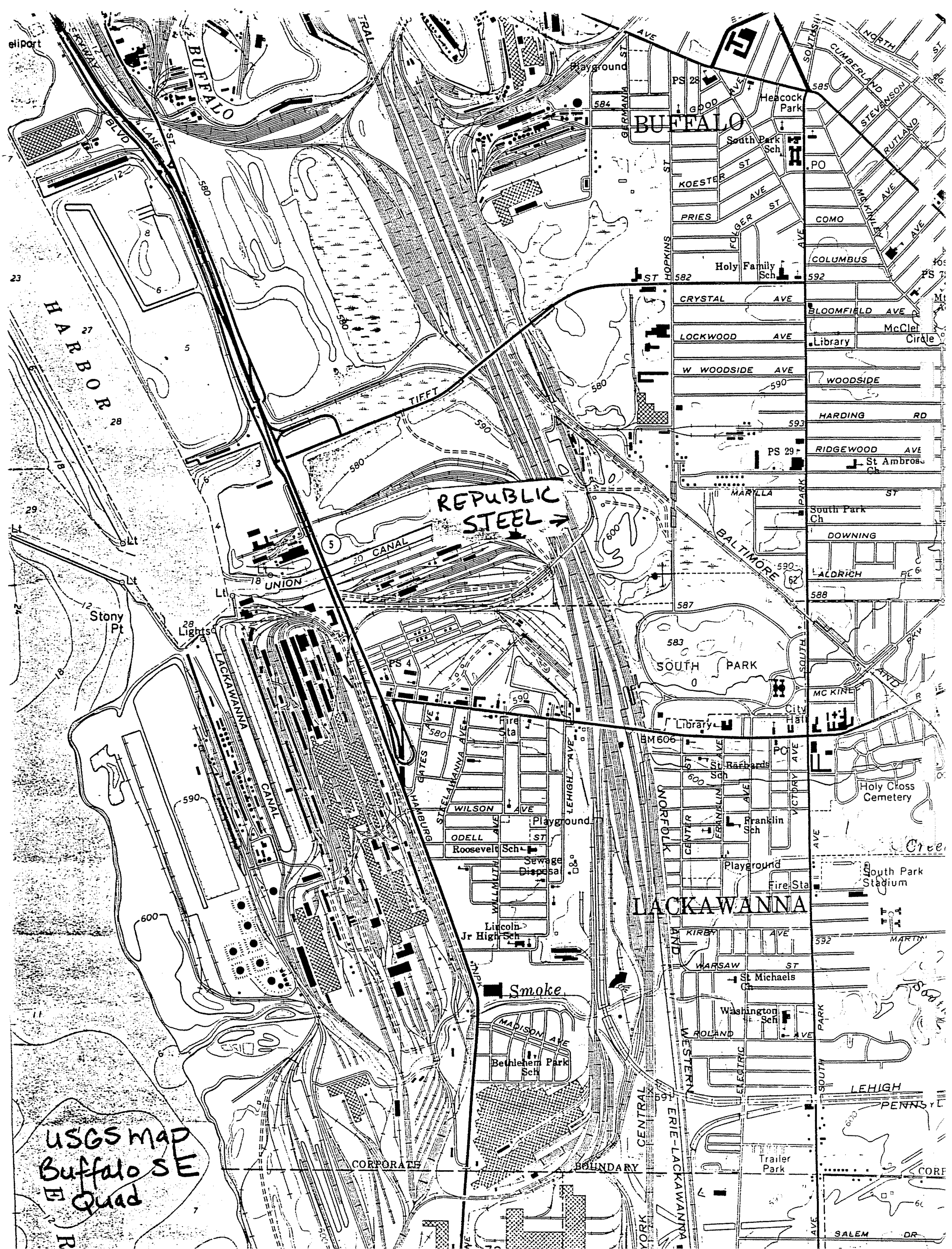
UNITY WATER SYSTEM	POPULATION	SOURCE
unity		
Village (See No 1 Wyoming Co,	3640	
10)	3460	Wells
Village	8500	Lake Erie
.Village		
o City Division of Water	357870	Lake Erie
Water Company	210	Wells
ns Water District #3	704	Wells
ns Water Districts #1 and #2	1384	Wells
County Water Authority urgeon Point Intake)	375000	Lake Erie
County Water Authority n DeWater Intake)	NA	Niagara River - East Branch
Island Water District #2	9390	Niagara River
nd Water District	1670	Wells
ns Water Company	138	Wells
ort City (Niagara Co)		Niagara River - East Branch
ra County Water District (Niagara Co)		Niagara River - West Branch
ra Falls City (Niagara Co)		Niagara River - West Branch
Collins Village	1500	Wells
Tonawanda City (Niagara Co)		Niagara River - West Branch
rd Park Village	3671	Pipe Creek Reservoir
gville Village	4169	Wells
anda City	18538	Niagara River - East Branch
anda Water District #1	91269	Niagara River
ah Water Company	10750	Lake Erie
Community		
a Mobile Park	125	Wells
Gardens Mobile Home Park	270	Wells
e 8 Trailer Court	50	Wells
le Court Mobile Park	125	Wells
kside Mobile Home Park	120	Wells
elly's Mobile Home Court	99	Wells
nda State Hospital	NA	Clear Lake
side Estates	160	Wells
ers Creek Mobile Home Park	150	Wells
Apartments	NA	Wells
e Grove Trailer Court	72	Wells
grove Mobile Park	100	Wells
ins Trailer Park	75	Wells
ry Hill Estates	400	Wells
ngville Mobile Park	114	Wells
ngwood Mobile Village	132	Wells
ors Grove Trailer Park	39	Wells
ey View Mobile Court	42	Wells
ager Apartments	NA	Wells

NIAGARA COUNTY

ID NO	COMMUNITY WATER SYSTEM	POPULATION	SOURCE
	Municipal Community		
	Lockport City (See No 12, Erie Co)	25000	
1	Middleport Village	2000	Wells (Springs)
	Niagara County Water District (See No 13, Erie Co)	48	
2	Niagara Falls City (See also No 14 Erie Co)	77384	Niagara River - East Branch
	North Tonawanda City (See No 16 Erie Co)	36000	
	Non-Municipal Community		
3	Country Estates Mobile Village	28	Wells

[illegible] SHEET [illegible] SCALE NEW YORK STATE MAP [illegible] THE NEW YORK STATE DEPARTMENT OF TRANSPORTATION

REFERENCE NO. 4



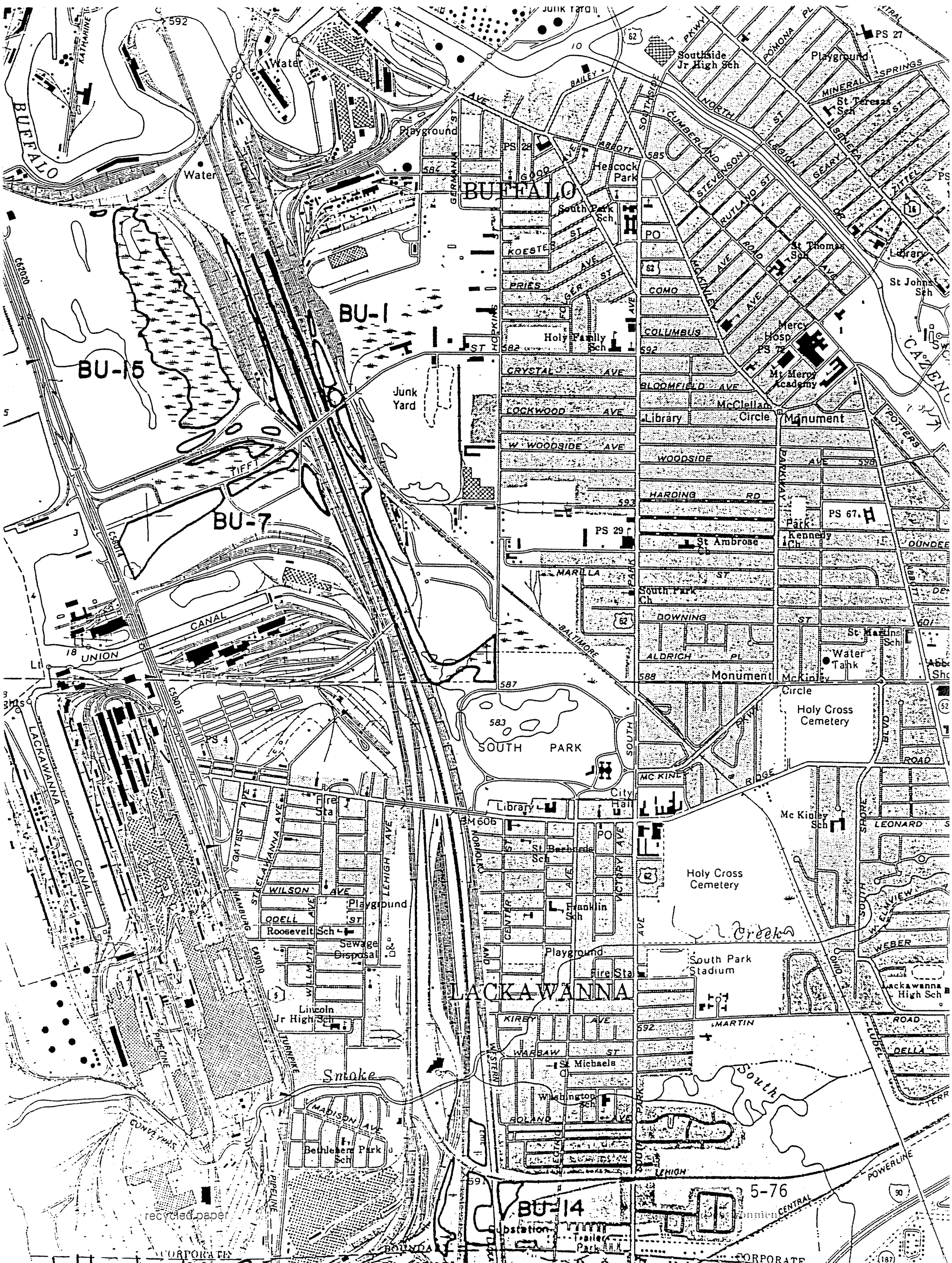
REPUBLIC STEEL →

USGS map Buffalo SE Quad

REFERENCE NO. 5

WETLANDS IN ERIE CO. NEAR DEC PHASE 1 SITES

Sites	Wetlands
Springville	AH-1, SP-11
Dupont	BW-6, BW-2
FMC	BW-6, BW-2
Whiting	AK-14, AK-7
HiView	BU-13
Clarence	CL-5, CL-2, CL-1, CL-11
Gutenkist	HP-15
Bern	BU-1, BU-15
Tift	BU-1, BU-15, BU-7
Republic	BU-1, BU-15, BU-7
Buf-Hop	BU-1, BU-7, BU-15
C. Auto	BU-1, BU-7, BU-15, BU-14
LSB	BU-14, BU-4
Snyder	BU-14, BU-4
Eden	ED-4, ED-7, ED-5, ED-11, ED-13
J. Fox	AN-5
Schreider	HB-12


BU-1
BU-15
BU-7
BU-14
5-76
BUFFALO
LACKAWANNA
Junk Yard
Water
Playground
Southside Jr High Sch
Playground
PS 27
PS 28
Hescock Park
South Park Sch
PO
St Teresas Sch
St Thomas Sch
Library
St Johns Sch
Mercy Hosp
PS 72
Mt Mercy Academy
Holy Family Sch
Junk Yard
McClellan Circle
Monument
Library
PS 29
St Ambrose Ch
Park
Kennedy Ch
PS 67
South Park Ch
St Martins Sch
Water Tank
Monument
McKinley Circle
Holy Cross Cemetery
SOUTH PARK
583
City Hall
Library
PS 4
Fire Sta
BM 606
St Barbaras Sch
PO
Mc Kinley Sch
Holy Cross Cemetery
Franklin Sch
Playground
Roosevelt Sch
Sewage Disposal
Creek
Playground
Fire Sta
South Park Stadium
Lackawanna High Sch
Lincoln Jr High Sch
St Michaels Ch
Washington Sch
Smoke
South
Bethlehem Park Sch
Substation
Trailer Park
BUFFALO
UNION CANAL
LACKAWANNA CANAL
TIFFT
BALTIMORE
MARILLA ST
DOWNING ST
ALDRICH PL
HARDING RD
WOODSIDE AVE
W WOODSIDE AVE
LOCKWOOD AVE
CRYSTAL AVE
BLOOMFIELD AVE
COLUMBUS
COMO
PRIES
KOESTER ST
GOOD
ABBOTT
BAILEY AVE
SOUTHSIDE PKWY
CUMBERLAND
STEVENSON
RUTLAND ST
NORTH LEGION DR
SENECA
GEARY
ZITTEL
POMONA PL
MINERAL SPRINGS
CAZENOVIA
POTTERS
DUNDEE
ABBOTT
RIDGE ROAD
LEONARD
SOUTH SHORE BLVD
W ELMVIEW
WEBER
ROAD
DELLA
MARTIN
KIRBY AVE
WARSAW ST
ROLAND AVE
LEHIGH
POWERLINE
CENTRAL
CORPORATE
BOUNDARY
CORPORATE
HAMBURG TURNPIKE
PIPELINE
CONVEYORS
MADISON AVE
WILSON AVE
ODELL ST
GATES AVE
STEELAWANNA AVE
LEHIGH AVE
WILLMUTH
NORFOLK
CENTER
VICTORY AVE
SOUTH PARK AVE
OHIO
KATHARINE
GERMANIA ST
HOPKINS
FOLGER ST
PARKWAY
McKINLEY PKWY
CS 1020
CS 8014
CS 8015
CS 9010
592
584
585
582
592
593
587
588
591
592
598
601
10
18
62
16
5
90
187

Republic
Buf-Hop

FRESHWATER WETLAND CLASSIFICATION

ructions: Circle numbers of applicable classification characteristics and place check next to appropriate class. Note
ber of species to which characteristics 13, 14 or 15 apply shall be identified in parentheses with species considered a
rate Class II characteristic in determining item 7. Complete information on reverse side of form to substantiate your
clusions. "A wetland with no Class I, II, or III characteristics is a Class IV wetland.

y, ~~Town~~, ~~Village~~) Buffalo
nty Erie
d. name Buffalo S.E.

Wetland name Tifft Street Wetland
Wetland no. BU-7 DEC no. 915-01-0235
UTM Coord. 4750000m N. 185200m E.

Inspection Dates 3/6/[illegible]
No. of sheets attached 1
Preparer [illegible] Date [illegible]

CLASS I

Classic kettlehole bog
Res. hab., thr./endg. anim. sp.
Thr./endg. plant sp.
Unus. abund./div. anim. sp. in region or state
Significant flood protection for substantially developed area
Adj./contig. to reservoir or public water supply or hydraulically connected to public water supply aquifer.
4 or more Class II characteristics

CLASS II X

[✓ 8.] Emgt. marsh: pur. loosestrife and/or phragmites max. 66% of covertype
[✓ 9.] 2 or more wetland structural groups
10. Contig. to tidal wetlands
11. Assoc. with ext. perm. open water
12. Adj./contig. C(t) or higher stream
13. ( ) mig. hab. thr./endg. anim. sp.
14. ( ) Res. hab. vuln. anim. sp.: state
15. ( ) Vuln. plant sp.: state
16. Unus. abund/dv. anim. sp.: county
17. Archeo./paleo. significance
18. Unusual geologic feature
19. Flood protection value: agr., light or planned development area
20. Hydraulically connected to aquifer
21. Tertiary treatment capacity for a sewage disposal system
[✓ 22.] Within urbanized area
23. 1 of 3 lgst. wetlands: city, town, NYC Borough
24. In publicly owned recreation area

CLASS III

25. Emgt. marsh, pur. loosestrife an or phragmites min. 66% of covert
26. Deciduous swamp
27. Shrub swamp
28. Floating and/or submergent veg.
29. Wetland open water
30. Contains island
31. Total alkalinity at least 50 PP
32. Adj. to fert. upland; high base soils
33. Res./mig. hab. of vuln. anim. sp Res. for region; mig. for regior or state
34. Vuln. plant sp.: region
35. Part of significantly polluted permanent open water system in which pollution reduction occurs
36. Visible and aesthetic/open spac value
[✓ 37.] 1 of 3 lgst. wetlands of same covertype within a town
38. Wetland acreage max. 1% of total town acreage
39. Publicly owned land open to public use

_____ % Herbaceous-emgt. marsh, wet meadow min. 25% of wetland.

1 % Woody - deciduous, coniferous, shrub swamp min. 25%.

5 % Water - submergent, floating veg., wetland open water min. 15%

LY? AREA COVERTYPE
COVERTYPE (min. 50% of area)

_____ % Wet Meadow
[illegible] % Emergent marsh
1 % Deciduous swamp
_____ % Coniferous swamp
_____ % Shrub swamp
_____ % Floating/submergent veg.
5 % Wetland open water

no single covertype is of at least 50% of the wetland a, add up all the separate covertype areas in each class assign the wetland to the class representing the largest portion of the wetland's area.

Class II
_____ % Emgt. marsh; pur. loosestrife and/or phragmite max. 66% of covertype
_____ % TOTAL Class II
Class III
_____ % Emgt. marsh; pur. loosestrife and/or phragmite min. 66% of covertype
_____ % Deciduous swamp
_____ % Shrub swamp
_____ % Floating/submergent veg.
_____ % Wetland open water
_____ % TOTAL Class III
Class IV
_____ % Wet meadow
_____ % Coniferous swamp
_____ % TOTAL Class IV

Wetland area is 20 acres. Size and covertype information from Field Inspection Report.

* Emergent marsh and deciduous covertype are very interspersed. Open water area may contain submergent vegetation.

Wetland is adjacent to Tifft Farm Nature Preserve.

2M3 covertype broken up according to instructions for using mixed covertype classification (Dominant covertype ≥50% but <66% of area)

UTM coordinates from tentative regulatory map.

WETLAND DATA

WETLAND NAME: Tifft Street Wetland

LOCATION: City of Buffalo

Quad: (USGS)(DOT) Buffalo SE

County: Erie

Town: City of Buffalo

Miles 1/8 Dir. S From Tifft Farm Nature Preserve

INVESTIGATOR(S): James Snider

DATE(S) OF FIELD INVESTIGATION:

Date(s)	Weather
3/6/80	Sunny - 30°

TYPE OF ANALYSIS:

a. Reconnaissance ✓

b. Releve' ____

c. Continuum ____

VEGETATION COMMUNITY:

a. Size of Wetland 20 acres

b. Covertypes (estimated percentage)

1.	Wet meadow	} 95 %
2.	Emergent Marsh	
3.	Deciduous Swamp	
4.	Coniferous Swamp	%
5.	Shrubs Swamp	%
6.	Submergent &/or floating	5 ?%
7.	Wetland open water	5 ?%

c. Remarks:

ECOLOGICAL ASSOCIATIONS

1. Covertype Groups

1. + 2. = 95% }

3 + 4 + 5 = ____%

6 + 7 = 5 %

2. Classic Kettlehole bog No

4. Associated with open water No

Water ____

5. Proximity to Mud Flats No

6. Island present No

7. Adjacent to Class C(T) or higher stream

None

SPECIAL FEATURES

~~Ex~~

Excellent interspersion of covertypes. Emergent vegetation and deciduous wetland combined through much of the wetland. Ice cover hindered ability to determine if the one portion was open water or had submergent vegetation,

HYDROLOGICAL + POLLUTION CONTROL FEATURES
(Reference information sources where appropriate)

OTHER NOTABLE FEATURES
(Reference Information Sources where appropriate)

1. Soils. No soils information available. It would appear that original soil types may have been modified by human activities.

2. Human influence-degradation

There is a present proposal for using the area adjacent to the wetland for landfill activities. Potential for complete loss of wetland if landfill should not be kept out of the wetland.

OTHER NOTABLE FEATURES (Cont.)

3. Description of Faunal Community

Cottontail Rabbit - Sylvilagus floridan

Ring-necked Pheasant - Phasianus colchicus

Muskrat - Ondatra zibethica

This wetland should have many additional forms of wildlife associated with it. It ~~wd~~ woul appear to be an excellent site for breeding waterfow plus use by waterfowl dur migration periods.

4. Others

This area is located withi 1/8 mile of Tifft Farm Nature Preserve. The area compliments the habitats associated with the nature center.

NOTE: Attach all supporting documents - Floristic & Faunal Lists, Engineer's reports, etc.

Drvn Republic C Auto
Tift Buf-tbp

FRESHWATER WETLAND CLASSIFICATION

structions: Circle numbers of applicable classification characteristics and place check next to appropriate class. Note
nber of species to which characteristics 13, 14 or 15 apply shall be identified in parentheses with species considered a
parate Class II characteristic in determining item 7. Complete information on reverse side of form to substantiate your
nclusions. A wetland with no Class I, II, or III characteristics is a Class IV wetland.

ity, ~~Town~~, ~~Village~~) Buffalo
unty Erie
ad. name Buffalo S.E.

Wetland name Tifft Farm Wetlands
Wetland no. BU-15 DEC no. 915-01-0165
UTM Coord. 47 51 000m N. 1 85 200m E.

Inspection Dates
No. of sheets attached 2
Preparer
Date

CLASS I X

Classic kettlehole bog
Res. hab., thr./endg. anim. sp.
Thr./endg. plant sp.
Unus. abund./div. anim. sp. in region or state
Significant flood protection for substantially developed area
Adj./contig. to reservoir or public water supply or hydraulically connected to public water supply aquifer.
4 or more Class II characteristics

5-81

CLASS II ____

[✓ 8.] Emgt. marsh: pur. loosestrife and/or phragmites max. 66% of covertype
9. 2 or more wetland structural groups
10. Contig. to tidal wetlands
~~11.~~ Assoc. with ext. perm. open water
12. Adj./contig. C(t) or higher stream
13. ( ) mig. hab. thr./endg. anim. sp.
14. ( ) Res. hab. vuln. anim. sp.: state
15. ( ) Vuln. plant sp.: state
16. Unus. abund/dv. anim. sp.; county
17. Archeo./paleo. significance
18. Unusual geologic feature
19. Flood protection value: agr., light or planned development area
20. Hydraulically connected to aquifer
21. Tertiary treatment capacity for a sewage disposal system
[✓ 22.] Within urbanized area
[✓ 23.] 1 of 3 lgst. wetlands: city, town, NYC Borough
[✓ 24.] In publicly owned recreation area

CLASS III ____

[✓ 25.] Emgt. marsh, pur. loosestrife an
or phragmites min. 66% of covert
26. Deciduous swamp
27. Shrub swamp
28. Floating and/or submergent veg.
29. Wetland open water
30. Contains island
31. Total alkalinity at least 50 PP
32. Adj. to fert. upland; high base soils
33. Res./mig. hab. of vuln. anim. s
Res. for region; mig. for regio
or state
34. Vuln. plant sp.; region
35. Part of significantly polluted permanent open water system in which pollution reduction occur
[✓ 36.] Visible and aesthetic/open spac
value
37. 1 of 3 lgst. wetlands of same covertype within a town
38. Wetland acreage max. 1% of tota
town acreage
[✓ 39.] Publicly owned land open to public use

STRUCTURAL GROUPS

PLY?	AREA	STRUCTURAL GROUPS
X	95%	Herbaceous-emgt. marsh, wet meadow min. 25% of wetland.
	5%	Woody - deciduous, coniferous, shrub swamp min. 25%.
	%	Water - submergent, floating veg., wetland open water min. 15%

PLY?	AREA	COVERTYPE COVERTYPE (min. 50% of area)
	%	Wet Meadow
X	95 %	Emergent marsh
	5 %	Deciduous swamp
	%	Coniferous swamp
	%	Shrub swamp
	%	Floating/submergent veg.
	%	Wetland open water

no single covertype is of at least 50% of the wetland ea, add up all the separate covertype areas in each class d assign the wetland to the class representing the largest oportion of the wetland's area.

		Class II
	%	Emgt. marsh; pur. loosestrife and/or phragmite max. 66% of covertype
	%	TOTAL Class II
		Class III
	%	Emgt. marsh; pur. loosestrife and/or phragmite min. 66% of covertype
	%	Deciduous swamp
	%	Shrub swamp
	%	Floating/submergent veg.
	%	Wetland open water
	%	TOTAL Class III
		Class IV
	%	Wet meadow
	%	Coniferous swamp
	%	TOTAL Class IV

Wetland area is 95± acres determined by using an acre grid overlay.

Covertype information from field Inspection Plan and covertype sheet enclosed in this form

This wetland is in the Tifft Farm Nature Preserve.

This wetland is associated with two deep-water ponds.

Urbanized Area boundary is from the 1970 Bureau of Commerce Census of Housing Block Statistics report.

NOTE NOTE

*********NOTICE*********

This wetland, FW No. BV-15, is also classified as a significant coastal fish and wildlife habitat. SEE TIFFT FARM NATURE PRESERVE file, under SIGNIFICANT COASTAL FISH AND WILDLIFE HABITATS, and habitat boundaries on coastal area maps.

NOTE NOTE

Tift Buf-HoP

FRESHWATER WETLAND CLASSIFICATION

ructions: Circle numbers of applicable classification characteristics and place check next to appropriate class. Note er of species to which characteristics 13, 14 or 15 apply shall be identified in parentheses with species considered a rate Class II characteristic in determining item 7. Complete information on reverse side of form to substantiate your lusions. A wetland with no Class I, II, or III characteristics is a Class IV wetland.

y, ~~Town~~, ~~Village~~) Buffalo
ty Erie
l. name Buffalo S.E.

Wetland name Republic Steel Wetland
Wetland no. BU-1 DEC no. 915-01-0212
UTM Coord. 4750100m N. 186100m E.

Inspection Dates 7/20/78 7/24/78
No. of sheets attached 1
Preparer Kevin Lynch Date 2

CLASS I X

Classic kettlehole bog
Res. hab., thr./endg. anim. sp.
Thr./endg. plant sp.
Unus. abund./div. anim. sp. in region or state
Significant flood protection for substantially developed area
Adj./contig. to reservoir or public water supply or hydraulically connected to public water supply aquifer.
4 or more Class II characteristics

CLASS II

[✓ 8.] Emgt. marsh: pur. loosestrife and/or phragmites max. 66% of covertype
[✓ 9.] 2 or more wetland structural groups
10. Contig. to tidal wetlands
11. Assoc. with ext. perm. open water
12. Adj./contig. C(t) or higher stream
13. ( ) mig. hab. thr./endg. anim. sp.
14. ( ) Res. hab. vuln. anim. sp.: state
15. ( ) Vuln. plant sp.: state
16. Unus. abund/dv. anim. sp.; county
17. Archeo./paleo. significance
18. Unusual geologic feature
19. Flood protection value: agr., light or planned development area
20. Hydraulically connected to aquifer
21. Tertiary treatment capacity for a sewage disposal system
[✓ 22.] Within urbanized area
[✓ 23.] 1 of 3 lgst. wetlands: city, town, NYC Borough
24. In publicly owned recreation area

CLASS III

25. Emgt. marsh, pur. loosestrife and or phragmites min. 66% of covertv
26. Deciduous swamp
27. Shrub swamp
28. Floating and/or submergent veg.
29. Wetland open water
30. Contains island
31. Total alkalinity at least 50 PPM
32. Adj. to fert. upland; high base soils
33. Res./mig. hab. of vuln. anim. sp. Res. for region; mig. for region or state
34. Vuln. plant sp.; region
35. Part of significantly polluted permanent open water system in which pollution reduction occurs
36. Visible and aesthetic/open space value
37. 1 of 3 lgst. wetlands of same covertype within a town
38. Wetland acreage max. 1% of total town acreage
39. Publicly owned land open to public use

STRUCTURAL GROUPS

PLY?	AREA	STRUCTURAL GROUPS
✕	65%	Herbaceous-emgt. marsh, wet meadow min. 25% of wetland.
	10%	Woody - deciduous, coniferous, shrub swamp min. 25%.
✕	25%	Water - submergent, floating veg., wetland open water min. 15%

COVERTYPE

PLY?	AREA	COVERTYPE (min. 50% of area)
	%	Wet Meadow
✕	65%	Emergent marsh
	10%	Deciduous swamp
	%	Coniferous swamp
	%	Shrub swamp
	25%	Floating/submergent veg.
	%	Wetland open water

f no single covertype is of at least 50% of the wetland rea, add up all the separate covertype areas in each class nd assign the wetland to the class representing the largest roportion of the wetland's area.

		Class II
	%	Emgt. marsh: pur. loosestrife and/or phragmite max. 66% of covertype
	%	TOTAL Class II
		Class III
	%	Emgt. marsh; pur. loosestrife and/or phragmite min. 66% of covertype
	%	Deciduous swamp
	%	Shrub swamp
	%	Floating/submergent veg.
	%	Wetland open water
	%	TOTAL Class III
		Class IV
	%	Wet meadow
	%	Coniferous swamp
	%	TOTAL Class IV

Wetland area is 58± acres determined by using acre grid overlay.

Covertype information is from field Investigation Report. Acreage in field report differs above acreage because 1 acre is included as part of another wetland and another area is no longer part of this wetland. (See enclosed map with report)

Wetland within urbanized Area using 1970 Bureau of Commerce and Housing Block Statistics report.

This wetland is near the Tifft Farm Nature Preserve.

UTM ___|___|___|___|___|___|___|___

WETLAND INVENTORY FIELD DATA SHEET

CLASSIFICATION

Name Republic Steel Wetland

Miles 1 dir NW from Lackawana

Topo quad Buffalo SE

County Erie

Town City of Buffalo

Region 9 ☑ Natural ☐ Artificial

Interspersion 6 Vegetative Cover 80 %

6-24" depth 30 %

WETLAND TYPES

Inland Fresh

1. Seasonally flooded basins/flats ____%
2. Fresh meadows 10 %
3. Shallow fresh marshes 50 %
4. Deep fresh marshes 10 %
5. Open fresh marshes 15 %
6. Shrub swamps ____%
7. Wooded swamps 10 %
8. Bogs ____%

Coastal Fresh

12. Shallow fresh marshes ____%
13. Deep fresh marshes ____%
14. Open fresh water ____%

Coastal Saline

15. Salt flats ____%
16. Salt meadows ____%
18. Regularly flooded salt marshes ____%
19. Sounds and bays ____%

VEGETATIVE CLASSES

Trees

1. Live deciduous trees 10 %
2. Live evergreen trees ____%
3. Dead trees ____%

Shrubs

4. Tall slender shrubs ____%
5. Bushy shrubs ____%
6. Low compact shrubs ____%

8. Aquatic shrubs ____%
9. Dead shrubs ____%

Emergents

10. Sub-shrubs ____%
11. Robust emergents 55 %
12. Tall meadow emergents 8 %
13. Short meadow emergents 10 %
14. Narrow-leaved marsh emergents ____%
15. Broad-leaved marsh emergents ____%

Surface Vegetation

16. Floating-leaved vegetation 10 %
17. Floating vegetation ____%

Submergents

18. Submergents 15 %

* * * * * * * * * * * * * * * * * * * *

If open water, proportion of submergents:

☐ 0-1/3 ☑ 1/3-2/3 ☐ 2/3-1

☐ Meadow portion grazed

Purple loosestrife: ☐ None ☐ Ind. plants

☑ Clumps < ½m. diam. ☐ Clumps > ½m. diam.

☐ Adjoining clumps through an area

☐ Solid, most of wetland

Green timber impoundment potential

☐ Mature or overmature trees ☐ Trees 80-100'

☐ 80% crown closure ☐ About 30"+ muck

☐ Red, Swamp Wh.Oak, Red Ash

☐ Understory: Sensitive Fern/Arrow Arum

Water

Total alkalinity (1)________ (2)________ (3)________

(4)________ (5)________ (6)________ (7)________

(8)________ (9)________ (10)________ mean:________

Water temp. (1)________ (2)________ (3)________

(4)________ (5)________ (6)________ (7)________

(8)________ (9)________ (10)________

☐ Not enough water to sample

Investigator: James Snider

Title: Sr. Wildlife Biologist

Date: 7/20/78 & 7/24/78 Time:________

Additional Comments

Wetland Size:

58 acres

INFLUENCES AND VALUES

Human influence	Min.	Mod.	Maj.
Several functioning	☒	☐	☐
railroad tracks	☐	☐	☐
Disposal site for	☒	☐	☐
materials from	☐	☐	☐
Republic Steel	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐

Prod. loss to degradation 10-20 %

Source: J. Snider

Vulnerability to destruction

----low-----------medium-----------high----

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☒ 4 ☐ 5

Reason for vulnerability classification

Portions of this wetland on both Republic Steel property & railroad property potential site for filling & storage of waste materials

Source: J. Snider

Enhancement possibility

☑ low ☐ medium ☐ high

Work needed:

Expected gain

Source:

Known ownership ☐ Federal ☐ State ☐ Local

☐ Conservation Organ. ☐ Sport ☑ Private

MISCELLANEOUS VALUES (use boxes to describe)

Unique Geology

Source:

Unique in Environs

Portions of this wetland near, Tifft Farm Nature Preserve

Source: J. Snider

Flood Control

Source:

Sediment Filtering

Source:

Potential Use

Source:

Aesthetic/Open Space

Source:

Historical Value

Source:

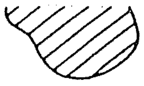
Migration Distribution flight lane

Source:

Source:

BUFFALO
LACKAWANNA
BUFFALO RIVER
POWZx
R2OWH
PEM5F
PEM5E
PFOIE
PSSIE
PEM5C
L1OWHx
R3OWH
SOUTH PARK
Cazenovia Creek
Smoke Creek
South Park Stadium
Holy Cross Cemetery
Mercy Hospital
Mt Mercy Academy
McClellan Circle
McKinley Circle
Southside Jr High Sch
Lackawanna High Sch
Lincoln Jr High Sch
City Hall
Abbott Road Plaza Shopping Center
5-88

ıl regulatory agencies with jurisdic-
define and describe wetlands in a
ıat used in this inventory. There is
e design or products of this inven-
s of proprietary jurisdiction of any
government or to establish the
he regulatory programs of govern-
intending to engage in activities in-
ithin or adjacent to wetland areas
ıl appropriate Federal, State or local
ecified agency regulatory programs
ons that may affect such activities.



CONTROLLED WATER REGIME

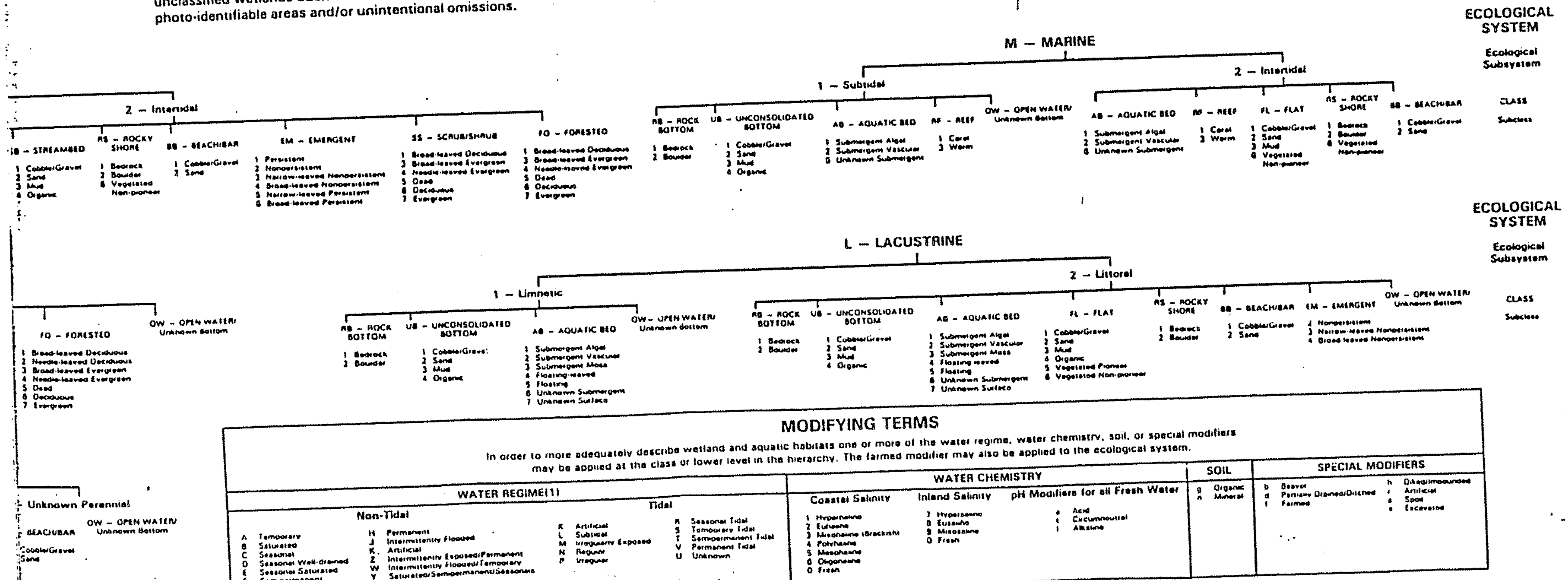
SCALE: ______
TYPE: B-W
DATE: __/__/__
SCALE: ______
TYPE: ______
DATE: __/__/__
SCALE: ______
TYPE: ______

FISH AND WILDLIFE SERVICE

Prepared by Office of Biological Services
for the National Wetlands Inventory

WETLAND LEGEND

U – Primarily represents upland areas, but may include unclassified wetlands such as man-modified areas, non photo-identifiable areas and/or unintentional omissions.



MODIFYING TERMS

In order to more adequately describe wetland and aquatic habitats one or more of the water regime, water chemistry, soil, or special modifiers may be applied at the class or lower level in the hierarchy. The farmed modifier may also be applied to the ecological system.

WATER REGIME(1)				WATER CHEMISTRY			SOIL	SPECIAL MODIFIERS	
Non-Tidal		Tidal		Coastal Salinity	Inland Salinity	pH Modifiers for all Fresh Water			
A Temporary	H Permanent	K Artificial	R Seasonal Tidal	1 Hyperhaline	7 Hypersaline	a Acid	g Organic	b Beaver	h Diked/Impounded
B Saturated	J Intermittently Flooded	L Subtidal	S Temporary Tidal	2 Euhaline	8 Eusaline	t Circumneutral	n Mineral	d Partially Drained/Ditched	r Artificial
C Seasonal	K Artificial	M Irregularly Exposed	T Semipermanent Tidal	3 Mixohaline (Brackish)	9 Mixosaline	i Alkaline		f Farmed	s Spoil
D Seasonal Well-drained	Z Intermittently Exposed/Permanent	N Regular	V Permanent Tidal	4 Polyhaline	0 Fresh				x Excavated
E Seasonal Saturated	W Intermittently Flooded/Temporary	P Irregular	U Unknown	5 Mesohaline					
F Semipermanent	Y Saturated/Semipermanent/Seasonal			6 Oligohaline					
G Intermittently Exposed	U Unknown			0 Fresh					

(1) Information on the water regime modifiers found on this legend, but not found in the classification system, may be bbtained from the above listed source.

U.S. Fish and Wildlife Service
1 Gateway Center, Suite 700
Newton Corner, Massachusetts 02158

Federal, State and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, State or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, State or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

CONTROLLED WATER REGI

WETLAND LEGEND

U — Primarily represents upland areas, but may include unclassified wetlands such as man-modified areas, non photo-identifiable areas and/or unintentional omissions.

ECOLOGICAL SYSTEM — E — ESTUARINE

Ecological Subsystem / CLASS / Subclass

- 1 — Subtidal
  - RB — ROCK BOTTOM
    - 1 Bedrock
    - 2 Boulder
  - UB — UNCONSOLIDATED BOTTOM
    - 1 Cobble/Gravel
    - 2 Sand
    - 3 Mud
    - 4 Organic
  - AB — AQUATIC BED
    - 1 Submergent Algal
    - 2 Submergent Vascular
    - 4 Floating-leaved
    - 5 Floating
    - 6 Unknown Submergent
    - 7 Unknown Surface
  - RF — REEF
    - 2 Mollusc
    - 3 Worm
  - OW — OPEN WATER/Unknown Bottom
- 2 — Intertidal
  - AB — AQUATIC BED
    - 1 Submergent Algal
    - 2 Submergent Vascular
    - 6 Unknown Submergent
    - 7 Unknown Surface
  - RF — REEF
    - 2 Mollusc
    - 3 Worm
  - FL — FLAT
    - 1 Cobble/Gravel
    - 2 Sand
    - 3 Mud
    - 4 Organic
    - 5 Vegetated Pioneer
    - 4 Vegetated Non-pioneer
  - SB — STREAMBED
    - 1 Cobble/Gravel
    - 2 Sand
    - 3 Mud
    - 4 Organic
  - RS — ROCKY SHORE
    - 1 Bedrock
    - 2 Boulder
    - 6 Vegetated Non-pioneer
  - BB — BEACH/BAR
    - 1 Cobble/Gravel
    - 2 Sand
  - EM — EMERGENT
    - 1 Persistent
    - 2 Nonpersistent
    - 3 Narrow-leaved Nonpersistent
    - 4 Broad-leaved Nonpersistent
    - Narrow-leaved Persistent
    - Broad-leaved Persistent
  - SS — SCRUB/SHRUB
    - 1 Broad-leaved Deciduous
    - 3 Broad-leaved Evergreen
    - 4 Needle-leaved Evergreen
    - 5 Dead
    - 6 Deciduous
    - 7 Evergreen
  - FO — FORESTED
    - 1 Broad-leaved Deciduous
    - 3 Broad-leaved Evergreen
    - 4 Needle-leaved Evergreen
    - 5 Dead
    - 6 Deciduous
    - 7 Evergreen

ECOLOGICAL SYSTEM — P — PALUSTRINE

No Subsystem / CLASS / Subclass

- RB — ROCK BOTTOM
  - 1 Bedrock
  - 2 Boulder
- UB — UNCONSOLIDATED BOTTOM
  - 1 Cobble/Gravel
  - 2 Sand
  - 3 Mud
  - 4 Organic
- AB — AQUATIC BED
  - 1 Submergent Algal
  - 2 Submergent Vascular
  - 3 Submergent Moss
  - 4 Floating-leaved
  - 5 Floating
  - 6 Unknown Submergent
  - 7 Unknown Surface
- FL — FLAT
  - 1 Cobble/Gravel
  - 2 Sand
  - 3 Mud
  - 4 Organic
  - 5 Vegetated Pioneer
  - 6 Vegetated Non-pioneer
- ML — MOSS/LICHEN
  - 1 Moss
  - 2 Lichen
- EM — EMERGENT
  - 1 Persistent
  - 2 Nonpersistent
  - 3 Narrow-leaved Nonpersistent
  - 4 Broad-leaved Nonpersistent
  - 5 Narrow-leaved Persistent
  - 6 Broad-leaved Persistent
- SS — SCRUB/SHRUB
  - 1 Broad-leaved Deciduous
  - 2 Needle-leaved Deciduous
  - 3 Broad-leaved Evergreen
  - 4 Needle-leaved Evergreen
  - 5 Dead
  - 6 Deciduous
  - 7 Evergreen
- FO — FORESTED
  - 1 Broad-leaved Deciduous
  - 2 Needle-leaved Deciduous
  - 3 Broad-leaved Evergreen
  - 4 Needle-leaved Evergreen
  - 5 Dead
  - 6 Deciduous
  - 7 Evergreen
- OW — OPEN WATER/Unknown Bottom

- 1 — Limnetic
  - RB — ROCK BOTTOM
    - 1 Bedrock
    - 2 Boulder
  - UB — UNCONSOLIDATED BOTTOM
    - 1 Cobble/Gravel
    - 2 Sand
    - 3 Mud
    - 4 Organic
  - AB — AQUATIC BED
    - 1 Submergent Algal
    - 2 Submergent Vascular
    - 3 Submergent Moss
    - 4 Floating-leaved
    - 5 Floating
    - 6 Unknown Submergent
    - 7 Unknown Surface
  - OW

ECOLOGICAL SYSTEM — R — RIVERINE

Ecological Subsystem: 1 — Tidal; 2 — Lower Perennial; 3 — Upper Perennial; 4 — Intermittent; 5 — Unknown Perennial

CLASS / Subclass

- EM — EMERGENT(1)
  - 2 Nonpersistent
  - 3 Narrow-leaved Nonpersistent
  - 4 Broad-leaved Nonpersistent
- RB — ROCK BOTTOM
  - 1 Bedrock
  - 2 Boulder
- UB — UNCONSOLIDATED BOTTOM
  - 1 Cobble/Gravel
  - 2 Sand
  - 3 Mud
  - 4 Organic
- AB — AQUATIC BED
  - 1 Submergent Algal
  - 2 Submergent Vascular
  - 3 Submergent Moss
  - 4 Floating-leaved
  - 5 Floating
  - 6 Unknown Submergent
  - Unknown Surface
- FL — FLAT
  - 1 Cobble/Gravel
  - 2 Sand
  - 3 Mud
  - 4 Organic
  - 5 Vegetated Pioneer
  - 6 Vegetated Non-pioneer
- SB — STREAMBED
  - 1 Cobble/Gravel
  - 2 Sand
  - 3 Mud
  - 4 Organic
- RS — ROCKY SHORE
  - 1 Bedrock
  - 2 Boulder
- BB — BEACH/BAR
  - 1 Cobble/Gravel
  - 2 Sand
- OW — OPEN WATER/Unknown Bottom

(1) EM — EMERGENTS are only found in the Riverine Tidal and Riverine Lower Perennial Ecological Subsystem. All other classes are found in all Riverine Ecological Subsystems.

In order to more adequately d
may be applied at the

WATER REGIME(1)

Non-Tidal

A	Temporary	H	Permanent	K	Artificial
B	Saturated	J	Intermittently Flooded	L	Subtidal
C	Seasonal	K	Artificial	M	Irregularly Exposed
D	Seasonal Well-drained	Z	Intermittently Exposed/Permanent	N	Regular
E	Seasonal Saturated	W	Intermittently Flooded/Temporary	P	Irregular
F	Semipermanent	Y	Saturated/Semipermanent/Seasonals		
G	Intermittently Exposed	U	Unknown		

(1) Information on the water regime modifiers found on this legend, but not fou

REFERENCE NO. 6

n Page No. 4

-15-87 LTV / REPUBLIC STEEL SITE INSPECTION

345 Gene Florentino + Mark Sienkiewicz arrive LTV gate. Security requests signature on release - refused. permission granted to access site.

35 Meeting with:

Don Nemec - Manager
Bud Murray - Security
Jim Farr -
Jim Meredith -

gave them overview of DEC phase I site investigation -

no closure efforts, Malcolm-Pirnie Closure Plan submitted State has no responded.

D. Nemec -

Slag, tires, wood has been removed - sold for fill. College kids hired to remove wood. Rubble is being removed. Some illegal access has been noted. Under bridge, is BOF dust + closure. Quarterly monitoring of wells by Malcolm-Piernie, last week was last time. Malcolm-Piernie is also monitoring surface water - Paula Tanner - Pond has been for years. Request photos, will do. An upgradient well that is acceptable has not been found.

for more information: through Malcolm-Pirnie

Larry Szuhay - Cleveland
Bob Vatco - Cleveland

G. Mark Sienkiewicz
7-15-87

TV Steel Company

onald G. Nemec
NERAL MANAGER
FFALO DISTRICT

MAIL ADDRESS P.O. BOX 6
BUFFALO, NEW YORK 14240
PLANT ADDRESS 1175 S. PARK AVENUE
BUFFALO, NEW YORK 14220
TELEPHONE (716) 826-2008

TV

recycled paper

Invented by

Date

Recorded by

Project No.

Book No.

TITLE

From Page No. 5

LTV Cont.

0945 On site - calibrated HNu - 58 ppm Benzene span 4.5

0955 Survey of approx. 10 acre landfill east of Hopkins, south of B+O railroad. Shrubs + weeds, a few trees large swamp at east side, ditch on south side Ranney scrap on North. No HNu readings detected above background Accompanied by Bud Murray + Jim Farr.

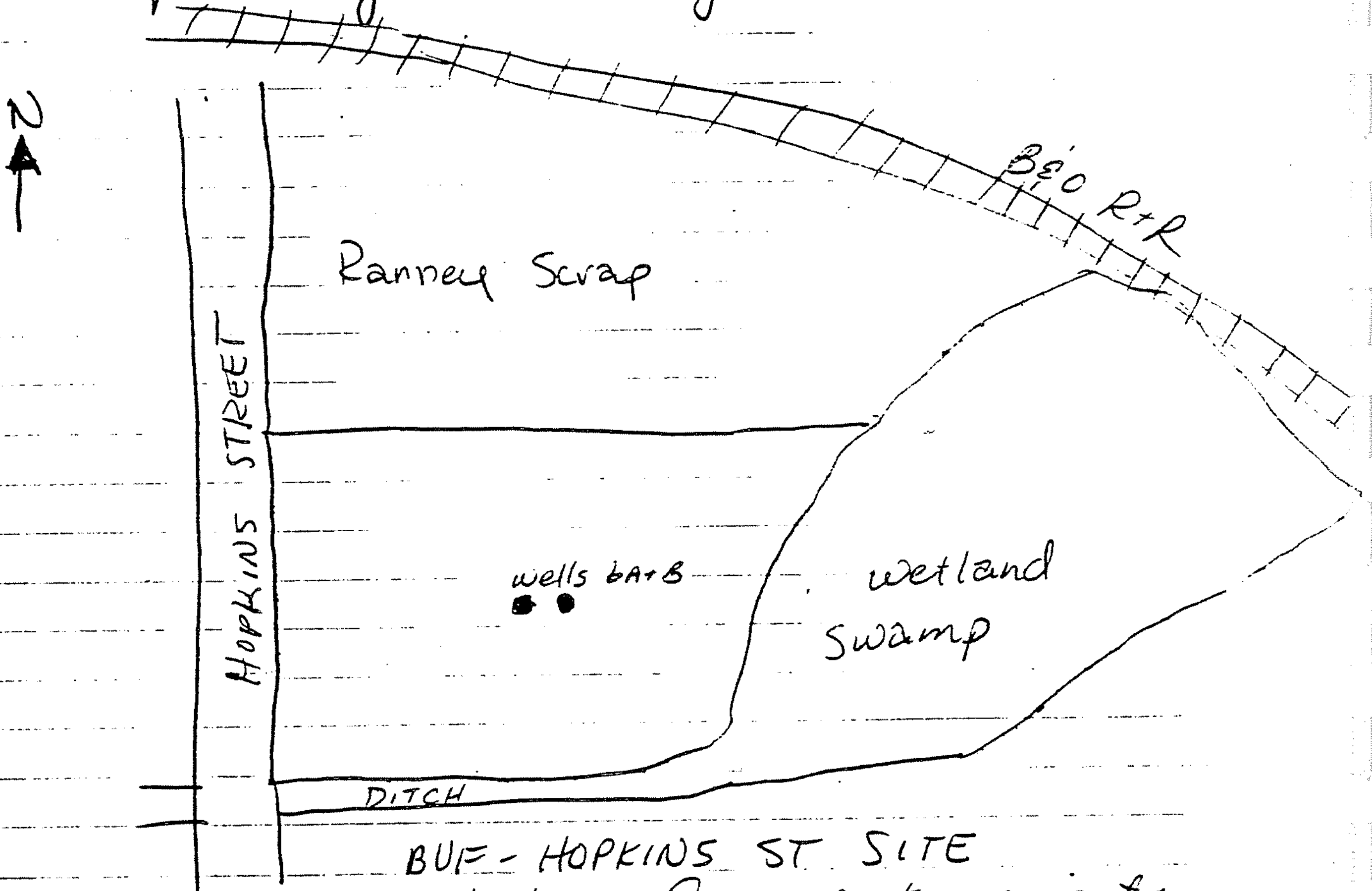


photo 20 - swamp, looking from west on site
photo 21 - site from road from south-west.

Site material approx - brick rubble, slag, cinders. No putrescible wastes, except for two bags of garbage in note of moskat in ditch - ditch

Mark Sienkiewicz
7-15-87

To Pa

Witnessed & Understood by me,	Date	Invented by	Date

Book No.______ TITLE ______________________

n Page No 6 LTV Cont-

010 Survey west of Hopkins

BOF Dust - covered by slag, grey-roan, black oil-like pile
No HNu readings - on site detected above background.

Photo 22 - BOF dust from South
23 - Standing water, west border, from bridge to North
24 - Standing water, west border, from bridge to South
25 - North from Contractor Bldg.

slag tested by Timmoney Technolcgy - Lackawanna for sale to customers

045 South end. Slag is 40-50' above lake grade, large wetland. noted fisherman, beaver hut. Red material/residue at south end site, evidence of removal.

26
27 } wetland + Swamp at south end site

8 Dolomite Brick from SW - grey pile of fines, 10-15' high, 100-150' x 30-50'
Site from South High Point Slag pile -

35 Stereo view from Hopkins St. of Excavated area. Note the front loaders + people working in slag.

1100 off. site, weather partly sunny 60-75°F.
wind from the South West, 0-5mph

7-15-87

To Page No.______

sed & Understood by me. | Date | Invented by | Date

recycled paper

ecology and environment

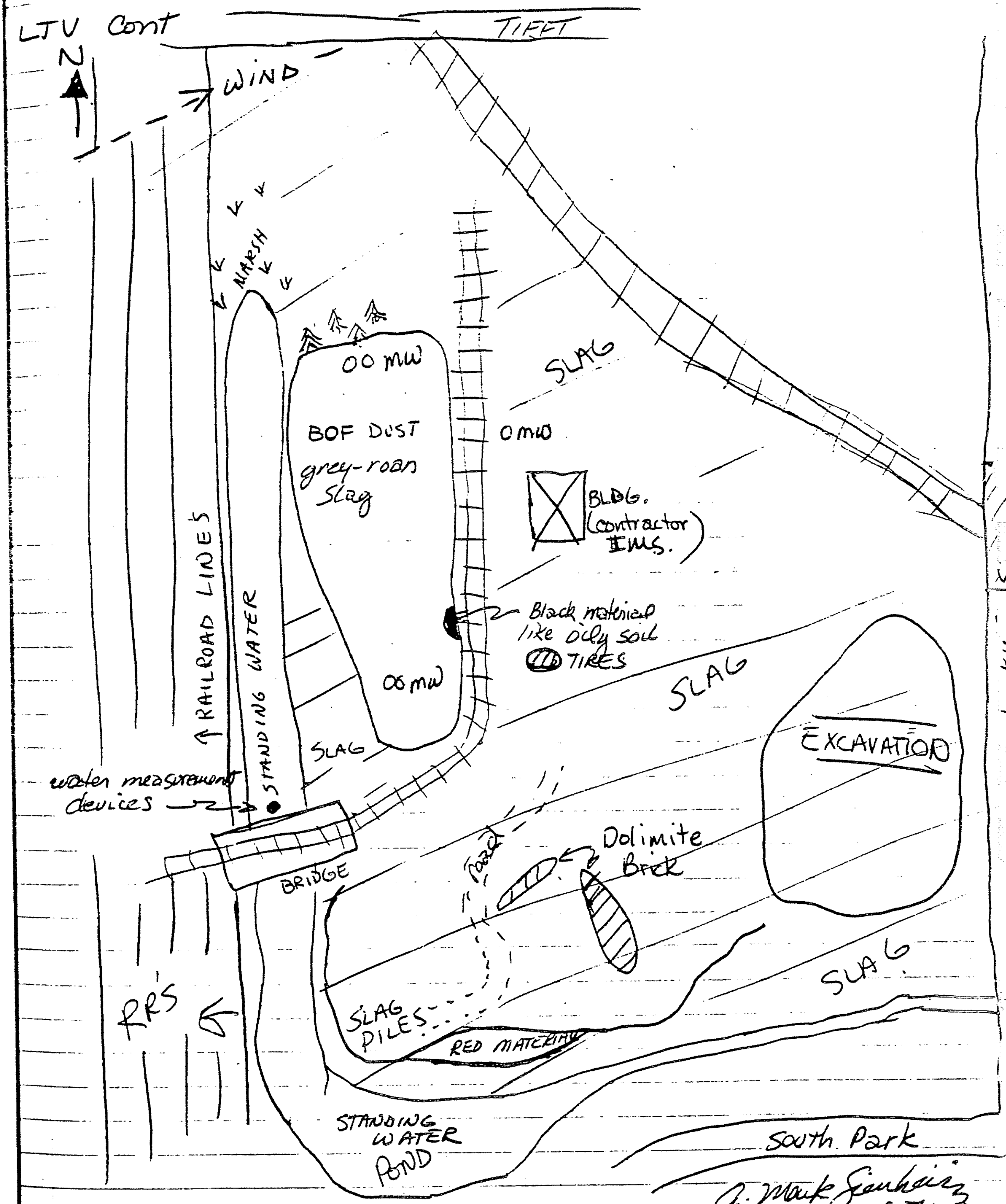
Recorded by

Project No.________

TITLE________________________________ Book No.________

From Page No. 7

LTV Cont



7-15-87

Witnessed & Understood by me,	Date	Invented by	Date
	5-95		

Aerial Photo's

Borings (14?)

- location map
- ~~Analytical Results~~
- how many MW (6)

1/15 Republic Steel Site Inspection

requested ← - Don Nemec — Bud Murray

copy of - Jim Farr — Jim Meredith

specs

- copy of HRS

- copy of pictures

- copy of rept.

- no closure
  - state - no response
- processing + selling slag
- removing tires + wood
- crushing foundations
- contouring
- red dust from electro static precip. (BOF Dust)
  - no clean-up
- monitoring
  - Quarterly
  - Available thru Malcolm Pirnie ←
  - new water level monitoring control
    - Paula Tanner

Authorization same #
to obtain info
from Malcolm P.

- Larry SZ~~tt~~hay - Cleveland
- Bob Voidco

Gene Florentino 7/15/87

REFERENCE NO. 7

Uncontrolled Hazardous Waste Site Ranking System

A Users Manual

Kris W. Barrett
S. Steven Chang
Stuart A. Haus
Andrew M. Platt

August 1982

MTR-82W111

SPONSOR:
U.S. Environmental Protection Agency
CONTRACT NO.:
68-01-6278

The MITRE Corporation
Metrek Division
1820 Dolley Madison Boulevard
McLean, Virginia 22102

[illegible] 202 : [illegible] -36

recycled paper recycled paper
ecology and environment

REFERENCE NO. 8

REF.
US EPA
Region II
26 Fed. Plaza
NY, NY 10278
Ben Conetta

NUS CORPORATION

POTENTIAL HAZARDOUS WASTE SITE

EXECUTIVE SUMMARY

Site Name: Republic Steel Corporation

EPA Site ID Number: NYD000813402

Address: Hopkins and Marilla Streets, Buffalo

TDD Number: 02-8306-23

Date of Site Visit: 9/30/83

SITE DESCRIPTION

The approximately 85 acre site accepts solid industrial waste from Republic Steel Corporation, an integrated steel mill. Material is transported from the steel mill to the site and dumped in segregated areas creating a huge landfill mound. Oil was spread on the roads throughout the landfill as a dust control measure. It is possible that the waste oils used for dust control may have contained PCBs. Some materials such as furnace brick and slag are reclaimed and sold or recycled. Spent pickle liquor from steel finishing operations was treated in a lagoon-type arrangement and carbonate reaction products have leached into an adjacent water channel and settled. There are four monitoring wells on the site.

PRIORITY FOR FURTHER ACTION: High____ Medium X Low____

RECOMMENDATIONS

The adjacent surface water body and monitoring well should be sampled for priority pollutants and PCBs.

Prepared by: William Neal
of NUS Corporation

Date: 10/19/83

EPA

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	D000813402

II. SITE NAME AND LOCATION

01 SITE NAME *(Legal, common, or descriptive name of site)*
Republic Steel Corporation

02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
Marilla and Hopkins Streets

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
Buffalo	NY	14220	Erie	029	3

09 COORDINATES LATITUDE 42° 51' 44". N LONGITUDE 78° 50' 38" W.

10 DIRECTIONS TO SITE *(Starting from nearest public road)*
From the downtown Buffalo area, travel South on Rt. 5 to Tifft St. exit. Travel east on Tifft St. to Hopkins St. Turn right on Hopkins St. Site is 3/4 miles on right.

III. RESPONSIBLE PARTIES

01 OWNER *(If known)*
Republic Steel Corporation

02 STREET *(Business, mailing, residential)*
1175 South Park Ave

03 CITY	04 STATE	05 ZIP CODE	06 TELEPHONE NUMBER
Buffalo	NY	14220	(716 821-5000

07 OPERATOR *(If known and different from owner)*
Same As Owner

08 STREET *(Business, mailing, residential)*

09 CITY	10 STATE	11 ZIP CODE	12 TELEPHONE NUMBER
			( )

13 TYPE OF OWNERSHIP *(Check one)*
☒ A. PRIVATE ☐ B. FEDERAL: ______ *(Agency name)* ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL
☐ F. OTHER: ______ *(Specify)* ☐ G. UNKNOWN

14 OWNER/OPERATOR NOTIFICATION ON FILE *(Check all that apply)*
☐ A. RCRA 3001 DATE RECEIVED: __/__/__ MONTH DAY YEAR ☒ B. UNCONTROLLED WASTE SITE *(CERCLA 103 c)* DATE RECEIVED: 6 / 8 / 81 MONTH DAY YEAR ☐ C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION
☒ YES DATE 9 / 30 / 83 MONTH DAY YEAR
☐ NO

BY *(Check all that apply)*
☐ A. EPA ☒ B. EPA CONTRACTOR ☐ C. STATE ☐ D. OTHER CONTRACTOR
☐ E. LOCAL HEALTH OFFICIAL ☐ F. OTHER: ______ *(Specify)*
CONTRACTOR NAME(S): NUS Corp.

02 SITE STATUS *(Check one)*
☒ A. ACTIVE ☐ B. INACTIVE ☐ C. UNKNOWN

03 YEARS OF OPERATION
1930's BEGINNING YEAR | Present ENDING YEAR ☐ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED
Blast furnace flue dust, clarifier sludge, furnace slag, iron oxide scale and dust, construction and demolition debris, spent pickle liquor from steel finishing operations, waste oil sprayed on roads for dust control.

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION
The site does not appear to be a serious threat to human health, but may pose a threat to the environment.

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION *(Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents)*
☐ A. HIGH *(Inspection required promptly)* ☐ B. MEDIUM *(Inspection required)* ☒ C. LOW *(Inspect on time available basis)* ☐ D. NONE *(No further action needed, complete current disposition form)*

VI. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF *(Agency/Organization)*	03 TELEPHONE NUMBE
MARK HAULENBEEK	USEPA Edison, NJ	(201) 321-6685

04 PERSON RESPONSIBLE FOR ASSESSMENT	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NUMBER	08 DATE
WILLIAM NEAL	USEPA	NUS Corp	(201) 225-6160	11 / 21 / 83 MONTH DAY YEAR

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	D000813402

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES *(Check all that apply)*

☒ A. SOLID
☒ B. POWDER, FINES
☐ C. SLUDGE
☐ D. OTHER ____________ *(Specify)*
☐ E. SLURRY
☒ F. LIQUID
☐ G. GAS

02 WASTE QUANTITY AT SITE *(Measures of waste quantities must be independent)*

TONS ____ Unknown
CUBIC YARDS ____
NO. OF DRUMS ____

03 WASTE CHARACTERISTICS *(Check all that apply)*

☒ A. TOXIC
☐ B. CORROSIVE
☐ C. RADIOACTIVE
☒ D. PERSISTENT
☐ E. SOLUBLE
☐ F. INFECTIOUS
☐ G. FLAMMABLE
☐ H. IGNITABLE
☐ I. HIGHLY VOLATILE
☐ J. EXPLOSIVE
☐ K. REACTIVE
☐ L. INCOMPATIBLE
☐ M. NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			Fill material includes: blast furnace
OLW	OILY WASTE	20,000	gal/yr.	flue dust, clarifier sludge, furnace
SOL	SOLVENTS			slag iron oxide scale and dust, con-
PSD	PESTICIDES			struction and demolition debris.
OCC	OTHER ORGANIC CHEMICALS			Used oil was applied to roads as a
IOC	INORGANIC CHEMICALS			dust control measure.
ACD	ACIDS	15 x 10^6	gallons	Spent pickle liquor from steel
BAS	BASES			finishing operations.
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES *(See Appendix for most frequently cited CAS Numbers)*

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
	Unknown			Unknown	

V. FEEDSTOCKS *(See Appendix for CAS Numbers)*

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS	Not applicable		FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION *(Cite specific references, e.g., state files, sample analysis, reports)*

N.Y. DEC Region 9 Files
NUS FIT II Site Inspection

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	D000813402

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☒ A. GROUNDWATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: 0
02 ☐ OBSERVED (DATE: ______) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

The potential exists for groundwater contamination.

01 ☒ B. SURFACE WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: 0
02 ☒ OBSERVED (DATE: 9/30/83) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

A water channel adjacent to the west boundary of the site is contaminated with carbonates formed in the reaction of waste pickle liquor and limestone used for treatment on site, according to Mr. Gubanc, the site representative.

01 ☒ C. CONTAMINATION OF AIR
03 POPULATION POTENTIALLY AFFECTED: 0
02 ☐ OBSERVED (DATE: ______) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Present activity at the site could generate a temporary dust condition.

01 ☒ D. FIRE/EXPLOSIVE CONDITIONS
03 POPULATION POTENTIALLY AFFECTED: 0
02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

No potential exists.

01 ☒ E. DIRECT CONTACT
03 POPULATION POTENTIALLY AFFECTED: 0
02 ☐ OBSERVED (DATE: ______) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Access to the site is restricted by several natural barriers and a locked gate across the access road. However, there is a potential for direct contact with the fill material.

01 ☒ F. CONTAMINATION OF SOIL
03 AREA POTENTIALLY AFFECTED: 0 (Acres)
02 ☐ OBSERVED (DATE: ______) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

The site consists of fill material from an integrated steel mill.

01 ☒ G. DRINKING WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: 0
02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

No potential exists.

01 ☒ H. WORKER EXPOSURE/INJURY
03 WORKERS POTENTIALLY AFFECTED: 0
02 ☐ OBSERVED (DATE: ______) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

No potential exists.

01 ☒ I. POPULATION EXPOSURE/INJURY
03 POPULATION POTENTIALLY AFFECTED: 0
02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

No potential exists.

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	D000813402

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☒ J. DAMAGE TO FLORA 02 ☐ OBSERVED (DATE: ________) ☑ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Due to the nature of the fill material, no flora thrives on the site.

01 ☒ K. DAMAGE TO FAUNA 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION (Include name(s) of species)

No potential exists.

01 ☒ L. CONTAMINATION OF FOOD CHAIN 02 ☐ OBSERVED (DATE: ________) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

The potential exists for the contamination of a water body adjacent, west. This in turn could potentially contaminate food chains associated with this water body.

01 ☒ M. UNSTABLE CONTAINMENT OF WASTES (Spills/Runoff/Standing liquids, Leaking drums) 02 ☒ OBSERVED (DATE: 9/30/83) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 0 04 NARRATIVE DESCRIPTION

Upon termination of acid disposal on site in 1979, the impoundment was packed with limestone and covered. However, during the 15 years the impoundment was used, a carbonate product of the reaction has leached into the water channel adjacent, west.

01 ☒ N. DAMAGE TO OFFSITE PROPERTY 02 ☐ OBSERVED (DATE ________) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

No potential exists.

01 ☒ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

No potential exists.

01 ☒ P. ILLEGAL/UNAUTHORIZED DUMPING 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

No potential exists.

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

Background information says that waste lubricating oil was spread on the roads at the landfill for dust control at a rate of 20,000 gal/year. During the site inspection, no oily areas were noted. It is possible that some waste oil was contaminated with PCBs.

III. TOTAL POPULATION POTENTIALLY AFFECTED: 0

IV. COMMENTS

Due to the nature of the fill materials on site, there is very little vegetation. Presently, on-site activities include the sale of brick, scale, and slag.

V. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis, reports)

Hazardous Waste Site Dossier February 29, 1980.

NUS FIT II Site Inspection 9/30/83

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	D000813402

II. SITE NAME AND LOCATION

01 SITE NAME *(Legal, common, or descriptive name of site)*	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
Republic Steel Corporation	Marilla and Hopkins Streets

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
Buffalo	NY	14220	Erie	029	37

09 COORDINATES LATITUDE 42° 51' 44". N LONGITUDE 78° 50' 38". W

10 TYPE OF OWNERSHIP *(Check one)*
☒ A. PRIVATE ☐ B. FEDERAL ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL
☐ F. OTHER ☐ G. UNKNOWN

III. INSPECTION INFORMATION

01 DATE OF INSPECTION	02 SITE STATUS	03 YEARS OF OPERATION
9 / 30 / 83 (MONTH DAY YEAR)	☒ ACTIVE ☐ INACTIVE	1930's (BEGINNING YEAR) | Present (ENDING YEAR) ___ UNKNOWN

04 AGENCY PERFORMING INSPECTION *(Check all that apply)*
☐ A. EPA ☒ B. EPA CONTRACTOR NUS Corporation *(Name of firm)* ☐ C. MUNICIPAL ☐ D. MUNICIPAL CONTRACTOR ______ *(Name of firm)*
☐ E. STATE ☐ F. STATE CONTRACTOR ______ *(Name of firm)* ☐ G. OTHER ______ *(Specify)*

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO.
William Neal	Environmental Scientist	NUS Corporation	(201) 225-6160

09 OTHER INSPECTORS	10 TITLE	11 ORGANIZATION	12 TELEPHONE NO.
Trudi Fancher	Environmental Scientist	NUS Corporation	(201) 225-6160
Tom Cosentino	Chemist	NUS Corporation	(201) 225-6160
			( )
			( )
			( )

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO
Mr. David M. Gubanc, PE	Assistant Director, SWM	Environmental Control Department	(216) 622-5916
		Republic Building PO Box 6778 Cleveland, OH 44106	( )
			( )
			( )
			( )
			( )

17 ACCESS GAINED BY *(Check one)*	18 TIME OF INSPECTION	19 WEATHER CONDITIONS
☒ PERMISSION ☐ WARRANT	1000 hrs.	Partly Sunny, 70°F

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF *(Agency/Organization)*	03 TELEPHONE NO.
Mark Haulenbeek	U.S. EPA, Edison, NJ	(201) 321-6685

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO.	08 DATE
William Neal	U.S. EPA	NUS Corporation	(201)225-6160	10 / 18 / 83 (MONTH DAY YEAR)

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	D000813402

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES *(Check all that apply)*

☒ A. SOLID
☒ B. POWDER, FINES
☐ C. SLUDGE
☐ D. OTHER ______ *(Specify)*
☐ E. SLURRY
☒ F. LIQUID
☐ G. GAS

02 WASTE QUANTITY AT SITE *(Measures of waste quantities must be independent)*

TONS Unknown
CUBIC YARDS ______
NO. OF DRUMS ______

03 WASTE CHARACTERISTICS *(Check all that apply)*

☒ A. TOXIC
☐ B. CORROSIVE
☐ C. RADIOACTIVE
☒ D. PERSISTENT
☐ E. SOLUBLE
☐ F. INFECTIOUS
☐ G. FLAMMABLE
☐ H. IGNITABLE
☐ I. HIGHLY VOLATILE
☐ J. EXPLOSIVE
☐ K. REACTIVE
☐ L. INCOMPATIBLE
☐ M. NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			Fill material includes: blast furnace
OLW	OILY WASTE	20,000	gal/yr.	flue dust, clarifier sludge, furnace
SOL	SOLVENTS			slag iron oxide scale and dust, con-
PSD	PESTICIDES			struction and demolition debris.
OCC	OTHER ORGANIC CHEMICALS			Used oil was applied to roads as a dust
IOC	INORGANIC CHEMICALS			control measure.
ACD	ACIDS	15×10^6	gallons	Spent pickle liquor from steel
BAS	BASES			finishing operations.
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES *(See Appendix for most frequently cited CAS Numbers)*

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
	Unknown			Unknown	

V. FEEDSTOCKS *(See Appendix for CAS Numbers)*

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS	Not applicable		FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION *(Cite specific references, e.g., state files, sample analysis, reports)*

N.Y. DEC Region 9 Files
NUS FIT II Site Inspection

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	D000813402

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☒ A. GROUNDWATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: 0
02 ☐ OBSERVED (DATE:) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

The potential exists for groundwater contamination.

01 ☒ B. SURFACE WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: 0
02 ☒ OBSERVED (DATE: 9/30/83) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

A water channel adjacent to the west boundary of the site is contaminated with carbonates formed in the reaction of waste pickle liquor and limestone used for treatment on site, according to Mr. Gubanc, the site representative.

01 ☒ C. CONTAMINATION OF AIR
03 POPULATION POTENTIALLY AFFECTED: 0
02 ☐ OBSERVED (DATE:) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Present activity at the site could generate a temporary dust condition.

01 ☒ D. FIRE/EXPLOSIVE CONDITIONS
03 POPULATION POTENTIALLY AFFECTED: 0
02 ☐ OBSERVED (DATE:) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

No potential exists.

01 ☒ E. DIRECT CONTACT
03 POPULATION POTENTIALLY AFFECTED: 0
02 ☐ OBSERVED (DATE:) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Access to the site is restricted by several natural barriers and a locked gate across the access road. However, there is a potential for direct contact with the fill material.

01 ☒ F. CONTAMINATION OF SOIL
03 AREA POTENTIALLY AFFECTED: 0 (Acres)
02 ☐ OBSERVED (DATE:) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

The site consists of fill material from an integrated steel mill.

01 ☒ G. DRINKING WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: 0
02 ☐ OBSERVED (DATE:) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

No potential exists.

01 ☒ H. WORKER EXPOSURE/INJURY
03 WORKERS POTENTIALLY AFFECTED: 0
02 ☐ OBSERVED (DATE:) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

No potential exists.

01 ☒ I. POPULATION EXPOSURE/INJURY
03 POPULATION POTENTIALLY AFFECTED: 0
02 ☐ OBSERVED (DATE:) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

No potential exists.

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE NY

02 SITE NUMBER D000813402

II. HAZARDOUS CONDITIONS AND INCIDENTS *(Continued)*

01 ☒ J. DAMAGE TO FLORA 02 ☐ OBSERVED (DATE: __________) ☑ POTENTIAL ☐ ALLEGED

04 NARRATIVE DESCRIPTION

Due to the nature of the fill material, no flora thrives on the site.

01 ☒ K. DAMAGE TO FAUNA 02 ☐ OBSERVED (DATE: __________) ☐ POTENTIAL ☐ ALLEGED

04 NARRATIVE DESCRIPTION *(Include name(s) of species)*

No potential exists.

01 ☒ L. CONTAMINATION OF FOOD CHAIN 02 ☐ OBSERVED (DATE: __________) ☒ POTENTIAL ☐ ALLEGED

04 NARRATIVE DESCRIPTION

The potential exists for the contamination of a water body adjacent, west. This in turn could potentially contaminate food chains associated with this water body.

01 ☒ M. UNSTABLE CONTAINMENT OF WASTES *(Spills/Runoff/Standing liquids, Leaking drums)* 02 ☒ OBSERVED (DATE: 9/30/83) ☐ POTENTIAL ☐ ALLEGED

03 POPULATION POTENTIALLY AFFECTED: 0

04 NARRATIVE DESCRIPTION

Upon termination of acid disposal on site in 1979, the impoundment was packed with limestone and covered. However, during the 15 years the impoundment was used, a carbonate product of the reaction has leached into the water channel adjacent, west.

01 ☒ N. DAMAGE TO OFFSITE PROPERTY 02 ☐ OBSERVED (DATE __________) ☐ POTENTIAL ☐ ALLEGED

04 NARRATIVE DESCRIPTION

No potential exists.

01 ☒ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs 02 ☐ OBSERVED (DATE: __________) ☐ POTENTIAL ☐ ALLEGED

04 NARRATIVE DESCRIPTION

No potential exists.

01 ☒ P. ILLEGAL/UNAUTHORIZED DUMPING 02 ☐ OBSERVED (DATE: __________) ☐ POTENTIAL ☐ ALLEGED

04 NARRATIVE DESCRIPTION

No potential exists.

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

Background information says that waste lubricating oil was spread on the roads at the landfill for dust control at a rate of 20,000 gal/year. During the site inspection, no oily areas were noted. It is possible that some waste oil was contaminated with PCBs.

III. TOTAL POPULATION POTENTIALLY AFFECTED: 0

IV. COMMENTS

Due to the nature of the fill materials on site, there is very little vegetation. Presently, on-site activities include the sale of brick, scale, and slag.

V. SOURCES OF INFORMATION *(Cite specific references, e.g. state files, sample analysis, reports)*

Hazardous Waste Site Dossier February 29, 1980.
NUS FIT II Site Inspection 9/30/83

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	D000813402

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
☐ A. NPDES				
☐ B. UIC				
☐ C. AIR				
☐ D. RCRA				
☐ E. RCRA INTERIM STATUS				
☐ F. SPCC PLAN				
☒ G. STATE (Specify) New York		Pending		Application for permit to operate
☐ H. LOCAL (Specify)				this solid waste management
☐ I. OTHER (Specify)				facility was submitted to NYDEC
☐ J. NONE				on 9/26/79.

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE
☒ A. SURFACE IMPOUNDMENT	No estimate	
☐ B. PILES		
☐ C. DRUMS, ABOVE GROUND		
☐ D. TANK, ABOVE GROUND		
☐ E. TANK, BELOW GROUND		
☐ F. LANDFILL		
☐ G. LANDFARM		
☐ H. OPEN DUMP		
☐ I. OTHER (Specify)		

04 TREATMENT (Check all that apply)

- ☐ A. INCENERATION
- ☐ B. UNDERGROUND INJECTION
- ☒ C. CHEMICAL/PHYSICAL
- ☐ D. BIOLOGICAL
- ☐ E. WASTE OIL PROCESSING
- ☐ F. SOLVENT RECOVERY
- ☐ G. OTHER RECYCLING/RECOVERY
- ☐ H. OTHER (Specify)

05 OTHER

☒ A. BUILDINGS ON SITE 1

06 AREA OF SITE

±85 (Acres)

07 COMMENTS

The materials listed in Part 2 - WASTE INFORMATION, are stored separately for recovery and recycling. Spend pickle liquor was treated in a lagoon-type arrangement. The material was worked down a 30 feet bank of limestone into a bed of lime for neutralization. This procedure was operational for 15 years and reported in detail to the Erie County Department of Environment and Planning. In 1979, upon termination of acid deposition on site, the impoundment was packed with limestone and covered.

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)

☐ A. ADEQUATE, SECURE ☐ B. MODERATE ☒ C. INADEQUATE, POOR ☐ D. INSECURE, UNSOUND, DANGEROUS

02 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC.

The site is not lined.

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE: ☐ YES ☒ NO

02 COMMENTS

Waste is accessible via access roads. However, a locked gate restricts entry.

VI. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis, reports)

EPA Notification of Hazardous Waste Site
NUS FIT II Site Inspection 9/30/83

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE: NY
02 SITE NUMBER: D000813402

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY (Check as applicable)

	SURFACE	WELL
COMMUNITY	A. ☒	B. ☐
NON-COMMUNITY	C. ☐	D. ☐

02 STATUS

ENDANGERED	AFFECTED	MONITORED
A. ☐	B. ☐	C. ☒
D. ☐	E. ☐	F. ☐

03 DISTANCE TO SITE

A. 3 (mi)
B. ______ (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)

☐ A. ONLY SOURCE FOR DRINKING
☐ B. DRINKING (Other sources available) COMMERCIAL, INDUSTRIAL, IRRIGATION (No other water sources available)
☒ C. COMMERCIAL, INDUSTRIAL, IRRIGATION (Limited other sources available)
☐ D. NOT USED, UNUSEABLE

02 POPULATION SERVED BY GROUND WATER 0

There are no drinking water wells in area.
03 DISTANCE TO NEAREST DRINKING WATER WELL N/A (mi)

04 DEPTH TO GROUNDWATER 20-40 (ft)

05 DIRECTION OF GROUNDWATER FLOW SW

06 DEPTH TO AQUIFER OF CONCERN 50-80 (ft)

07 POTENTIAL YIELD OF AQUIFER Unknown (gpd)

08 SOLE SOURCE AQUIFER ☐ YES ☒ NO

09 DESCRIPTION OF WELLS (including useage, depth, and location relative to population and buildings)

There are 4 peripheral monitoring wells located around the site. There are no wells on the huge landfill mound. Depth of Well #2 is 24.0 feet; Well #3 is 14 feet; Well #4 is 22.5 feet; Well #5 is 20 feet. All wells constructed of 2" pvc pipe, protective steel casings and locking caps.

10 RECHARGE AREA

☒ YES ☐ NO
COMMENTS: Up to 40 miles east and south of the site.

11 DISCHARGE AREA

☐ YES ☒ NO
COMMENTS

IV. SURFACE WATER

01 SURFACE WATER USE (Check one)

☐ A. RESERVOIR, RECREATION DRINKING WATER SOURCE
☐ B. IRRIGATION, ECONOMICALLY IMPORTANT RESOURCES
☐ C. COMMERCIAL, INDUSTRIAL
☒ D. NOT CURRENTLY USED

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

NAME:	AFFECTED	DISTANCE TO SITE
Unnamed body of water, adjacent, west.	☒	adjacent (mi)
South Park Lake	☐	adjacent (mi)
Lake Erie and Buffalo River	☐	±2.5 (mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN

ONE (1) MILE OF SITE A. 5,000 NO. OF PERSONS
TWO (2) MILES OF SITE B. 20,000 NO. OF PERSONS
THREE (3) MILES OF SITE C. 40,000 NO. OF PERSONS

02 DISTANCE TO NEAREST POPULATION 0.2 (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE >500

04 DISTANCE TO NEAREST OFF-SITE BUILDING 0.1 (mi)

05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicinity of site, e.g., rural, village, densely populated urban area)

The area surrounding the site can be described as a medium density urban area. It is characterized by commercial development and residential areas interspersed east of the site. West of the site there exists railroad yards and Lake Erie.

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION
01 STATE: NY
02 SITE NUMBER: D000813402

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE *(Check one)*

☐ A. $10^{-6} - 10^{-8}$ cm/sec ☐ B. $10^{-4} - 10^{-6}$ cm/sec ☒ C. $10^{-4} - 10^{-3}$ cm/sec ☐ D. GREATER THAN 10^{-3} cm/sec

02 PERMEABILITY OF BEDROCK *(Check one)*

☐ A. IMPERMEABLE *(Less than 10^{-6} cm/sec)* ☒ B. RELATIVELY IMPERMEABLE *($10^{-4} - 10^{-6}$ cm/sec)* ☐ C. RELATIVELY PERMEABLE *($10^{-2} - 10^{-4}$ cm/sec)* ☐ D. VERY PERMEABLE *(Greater than 10^{-2} cm/sec)*

03 DEPTH TO BEDROCK: 25-30 (ft)

04 DEPTH OF CONTAMINATED SOIL ZONE: Unknown (ft)

05 SOIL pH: ± 7-9

06 NET PRECIPITATION: 18.0 (in)

07 ONE YEAR 24 HOUR RAINFALL: 4.0 (in)

08 SLOPE
SITE SLOPE: 2-70 %
DIRECTION OF SITE SLOPE: Variable
TERRAIN AVERAGE SLOPE: Variable %

09 FLOOD POTENTIAL
SITE IS IN 100 YEAR FLOODPLAIN

10 ☐ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY
Not applicable

11 DISTANCE TO WETLANDS *(5 acre minimum)*
ESTUARINE A. N/A (mi)
OTHER B. Adjacent (mi)

12 DISTANCE TO CRITICAL HABITAT *(of endangered species)*
0.5 (mi)
ENDANGERED SPECIES: Some migratory species of threatened status.

13 LAND USE IN VICINITY

DISTANCE TO:

COMMERCIAL/INDUSTRIAL A. Adjacent (mi)

RESIDENTIAL AREAS; NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES B. 0.2 (mi)

AGRICULTURAL LANDS
None in area.
PRIME AG LAND C. ____ (mi)
AG LAND D. ____ (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

The site itself is a huge landfill mound with embankments approximately 60 feet high. South Park Lake and marsh area are adjacent, south. A water channel borders the west side of the site. The surrounding areas are generally flat. Railroads and heavy industry are located immediately North and We of the site. Residential areas begin approximately 0.2 mile east and south of the site. The Tifft Farm Nature Preserve is located 0.5 mile northwest.

VII. SOURCES OF INFORMATION *(Cite specific references, e.g., state files, sample analysis, reports)*

USGS 7.5' Topographic Map
Hazardous Waste Site Dossier, NYDEC Region 9, 2/29/80
NUS FIT II Site Inspection 9/30/83

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 6 - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	D000813402

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER		No samples taken.	
SURFACE WATER			
WASTE			
AIR			
RUNOFF			
SPILL			
SOIL			
VEGETATION			
OTHER			

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS
HNU	No readings above background were obtained.

IV. PHOTOGRAPHS AND MAPS

01 TYPE ☒ GROUND ☐ AERIAL

02 IN CUSTODY OF NUS Corporation, Edison, NJ
(Name of organization or individual)

03 MAPS ☒ YES ☐ NO

04 LOCATION OF MAPS Maps and photographs are attached as Appendix A.

V. OTHER FIELD DATA COLLECTED *(Provide narrative description)*

Field log book.

VI. SOURCES OF INFORMATION *(Cite specific references, e.g., state files, sample analysis, reports)*

NUS FIT II Site Inspection 9/30/83

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 7 - OWNER INFORMATION

I. IDENTIFICATION

01 STATE NY

02 SITE NUMBER D000813402

II. CURRENT OWNER(S)

01 NAME Republic Steel Corporation
02 D+B NUMBER 00-052-3126
03 STREET ADDRESS (P.O. Box, RFD #, etc.) 1175 South Park Avenue
04 SIC CODE 3312
05 CITY Buffalo
06 STATE NY
07 ZIP CODE 14220

01 NAME
02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)
04 SIC CODE
05 CITY
06 STATE
07 ZIP CODE

01 NAME
02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)
04 SIC CODE
05 CITY
06 STATE
07 ZIP CODE

01 NAME
02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)
04 SIC CODE
05 CITY
06 STATE
07 ZIP CODE

PARENT COMPANY (If applicable)

08 NAME Not applicable
09 D+B NUMBER
10 STREET ADDRESS (P.O. Box, RFD #, etc.)
11 SIC CODE
12 CITY
13 STATE
14 ZIP CODE

08 NAME
09 D+B NUMBER
10 STREET ADDRESS (P.O. Box, RFD #, etc.)
11 SIC CODE
12 CITY
13 STATE
14 ZIP CODE

08 NAME
09 D+B NUMBER
10 STREET ADDRESS (P.O. Box, RFD #, etc.)
11 SIC CODE
12 CITY
13 STATE
14 ZIP CODE

08 NAME
09 D+B NUMBER
10 STREET ADDRESS (P.O. Box, RFD #, etc.)
11 SIC CODE
12 CITY
13 STATE
14 ZIP CODE

III. PREVIOUS OWNER(S) (List most recent first)

01 NAME Not applicable
02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)
04 SIC CODE
05 CITY
06 STATE
07 ZIP CODE

01 NAME
02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)
04 SIC CODE
05 CITY
06 STATE
07 ZIP CODE

01 NAME
02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)
04 SIC CODE
05 CITY
06 STATE
07 ZIP CODE

IV. REALTY OWNER(S) (If applicable; list most recent first)

01 NAME Not applicable
02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)
04 SIC CODE
05 CITY
06 STATE
07 ZIP CODE

01 NAME
02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)
04 SIC CODE
05 CITY
06 STATE
07 ZIP CODE

01 NAME
02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)
04 SIC CODE
05 CITY
06 STATE
07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

NUS FIT II Site Inspection 9/30/83

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 8 - OPERATOR INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	D000813402

II. CURRENT OPERATOR *(Provide if different from owner)*

01 NAME Same as owner		02 D+B NUMBER	
03 STREET ADDRESS *(P.O. Box, RFD #, etc.)*		04 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE	
08 YEARS OF OPERATION	09 NAME OF OWNER		

OPERATOR'S PARENT COMPANY *(If applicable)*

10 NAME Not applicable		11 D+B NUMBER
12 STREET ADDRESS *(P.O. Box, RFD #, etc.)*		13 SIC CODE
14 CITY	15 STATE	16 ZIP CODE

III. PREVIOUS OPERATOR(S) *(List most recent first; provide only if different from owner)*

01 NAME Not applicable		02 D+B NUMBER	
03 STREET ADDRESS *(P.O. Box, RFD #, etc.)*		04 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE	
08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD		
01 NAME		02 D+B NUMBER	
03 STREET ADDRESS *(P.O. Box, RFD #, etc.)*		04 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE	
08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD		
01 NAME		02 D+B NUMBER	
03 STREET ADDRESS *(P.O. Box, RFD #, etc.)*		04 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE	
08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD		

PREVIOUS OPERATORS' PARENT COMPANIES *(If applicable)*

10 NAME Not applicable		11 D+B NUMBER
12 STREET ADDRESS *(P.O. Box, RFD #, etc.)*		13 SIC CODE
14 CITY	15 STATE	16 ZIP CODE
10 NAME		11 D+B NUMBER
12 STREET ADDRESS *(P.O. Box, RFD #, etc.)*		13 SIC CODE
14 CITY	15 STATE	16 ZIP CODE
10 NAME		11 D+B NUMBER
12 STREET ADDRESS *(P.O. Box, RFD #, etc.)*		13 SIC CODE
14 CITY	15 STATE	16 ZIP CODE

IV. SOURCES OF INFORMATION *(Cite specific references, e.g., state files, sample analysis, reports)*

NUS FIT II Site Inspection 9/30/83

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION
01 STATE: NY
02 SITE NUMBER: D000813402

II. ON-SITE GENERATOR

01 NAME: None
02 D+B NUMBER:
03 STREET ADDRESS (P.O. Box, RFD #, etc.):
04 SIC CODE:
05 CITY:
06 STATE:
07 ZIP CODE:

III. OFF-SITE GENERATOR(S)

01 NAME: Republic Steel Corporation
02 D+B NUMBER: 00-052-3126
03 STREET ADDRESS (P.O. Box, RFD #, etc.): 1175 South Park Avenue
04 SIC CODE: 3312
05 CITY: Buffalo
06 STATE: NY
07 ZIP CODE: 14220

01 NAME:
02 D+B NUMBER:
03 STREET ADDRESS (P.O. Box, RFD #, etc.):
04 SIC CODE:
05 CITY:
06 STATE:
07 ZIP CODE:

01 NAME:
02 D+B NUMBER:
03 STREET ADDRESS (P.O. Box, RFD #, etc.):
04 SIC CODE:
05 CITY:
06 STATE:
07 ZIP CODE:

01 NAME:
02 D+B NUMBER:
03 STREET ADDRESS (P.O. Box, RFD #, etc.):
04 SIC CODE:
05 CITY:
06 STATE:
07 ZIP CODE:

IV. TRANSPORTER(S)

01 NAME: Republic Steel Corporation
02 D+B NUMBER: 00-052-3126
03 STREET ADDRESS (P.O. Box, RFD #, etc.): 1175 South Park Avenue
04 SIC CODE: 3312
05 CITY: Buffalo
06 STATE: NY
07 ZIP CODE: 14220

01 NAME:
02 D+B NUMBER:
03 STREET ADDRESS (P.O. Box, RFD #, etc.):
04 SIC CODE:
05 CITY:
06 STATE:
07 ZIP CODE:

01 NAME:
02 D+B NUMBER:
03 STREET ADDRESS (P.O. Box, RFD #, etc.):
04 SIC CODE:
05 CITY:
06 STATE:
07 ZIP CODE:

01 NAME:
02 D+B NUMBER:
03 STREET ADDRESS (P.O. Box, RFD #, etc.):
04 SIC CODE:
05 CITY:
06 STATE:
07 ZIP CODE:

V. SOURCES OF INFORMATION *(Cite specific references, e.g., state files, sample analysis, reports)*

NUS FIT II Site Inspection

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	D000813402

II. PAST RESPONSE ACTIVITIES

01 ☐ A. WATER SUPPLY CLOSED — 02 DATE — 03 AGENCY
04 DESCRIPTION

No previous action.

01 ☐ B. TEMPORARY WATER SUPPLY PROVIDED — 02 DATE — 03 AGENCY
04 DESCRIPTION

No previous action.

01 ☐ C. PERMANENT WATER SUPPLY PROVIDED — 02 DATE — 03 AGENCY
04 DESCRIPTION

No previous action.

01 ☐ D. SPILLED MATERIAL REMOVED — 02 DATE — 03 AGENCY
04 DESCRIPTION

No previous action.

01 ☐ E. CONTAMINATED SOIL REMOVED — 02 DATE — 03 AGENCY
04 DESCRIPTION

No previous action.

01 ☐ F. WASTE REPACKAGED — 02 DATE — 03 AGENCY
04 DESCRIPTION

No previous action.

01 ☐ G. WASTE DISPOSED ELSEWHERE — 02 DATE — 03 AGENCY
04 DESCRIPTION

No previous action.

01 ☐ H. ON SITE BURIAL — 02 DATE — 03 AGENCY
04 DESCRIPTION

No previous action.

01 ☐ I. IN SITU CHEMICAL TREATMENT — 02 DATE — 03 AGENCY
04 DESCRIPTION

No previous action.

01 ☐ J. IN SITU BIOLOGICAL TREATMENT — 02 DATE — 03 AGENCY
04 DESCRIPTION

No previous action.

01 ☐ K. IN SITU PHYSICAL TREATMENT — 02 DATE — 03 AGENCY
04 DESCRIPTION

No previous action.

01 ☐ L. ENCAPSULATION — 02 DATE — 03 AGENCY
04 DESCRIPTION

No previous action.

01 ☐ M. EMERGENCY WASTE TREATMENT — 02 DATE — 03 AGENCY
04 DESCRIPTION

No previous action.

01 ☐ N. CUTOFF WALLS — 02 DATE — 03 AGENCY
04 DESCRIPTION

No previous action.

01 ☐ O. EMERGENCY DIKING/SURFACE WATER DIVERSION — 02 DATE — 03 AGENCY
04 DESCRIPTION

No previous action.

01 ☐ P. CUTOFF TRENCHES/SUMP — 02 DATE — 03 AGENCY
04 DESCRIPTION

No previous action.

01 ☐ Q. SUBSURFACE CUTOFF WALL — 02 DATE — 03 AGENCY
04 DESCRIPTION

No previous action.

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	D00081340

II PAST RESPONSE ACTIVITIES *(Continued)*

01 ☐ R. BARRIER WALLS CONSTRUCTED 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

No previous action.

01 ☐ S. CAPPING/COVERING 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

No previous action.

01 ☐ T. BULK TANKAGE REPAIRED 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

No previous action.

01 ☐ U. GROUT CURTAIN CONSTRUCTED 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

No previous action.

01 ☐ V. BOTTOM SEALED 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

No previous action.

01 ☐ W. GAS CONTROL 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

No previous action.

01 ☐ X. FIRE CONTROL 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

No previous action.

01 ☐ Y. LEACHATE TREATMENT 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

No previous action.

01 ☐ Z. AREA EVACUATED 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

No previous action.

01 ☐ 1. ACCESS TO SITE RESTRICTED 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

No previous action.

01 ☐ 2. POPULATION RELOCATED 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

No previous action.

01 ☐ 3. OTHER REMEDIAL ACTIVITIES 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

None

III. SOURCES OF INFORMATION *(Cite specific references, e.g., state files, sample analysis, reports)*

NUS FIT II Site Inspection 9/30/83
NYDEC Region 9 Files

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	D000813402

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION ☐ YES ☒ NO

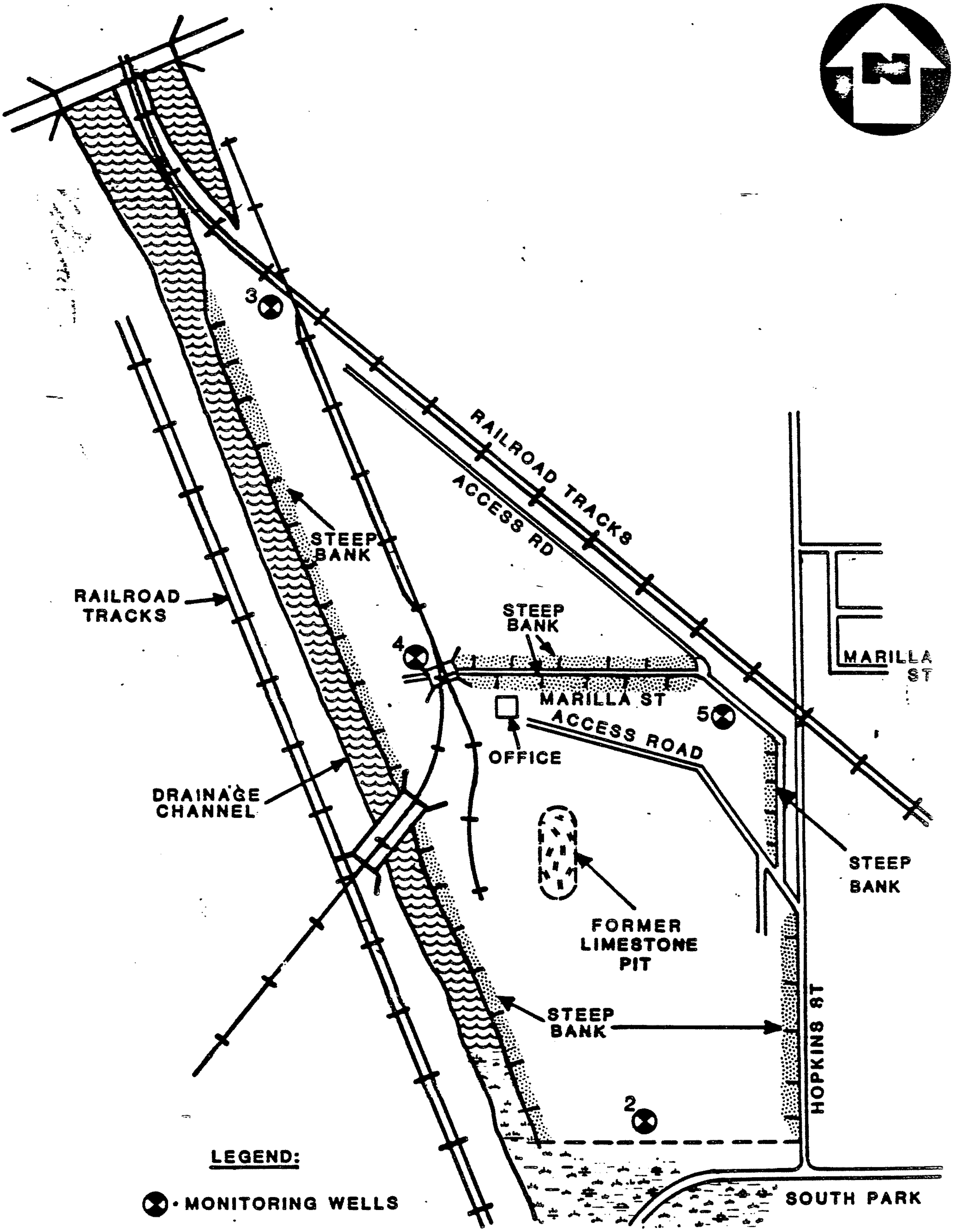
02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY/ENFORCEMENT ACTION

There are no known past or present Federal or State actions against the operator. The site has been visited by NY DEC personnel to discuss Part 360 Permit Application for operation of a solid waste management facility.

III. SOURCES OF INFORMATION *(Cite specific references, e.g., state files, sample analysis, reports)*

NUS FIT II Site Inspection 9/30/83

EPA FORM 2070-13 (7-81)



SITE MAP
REPUBLIC STEEL BUFFALO, N.Y.

(NOT TO SCALE)

FIGURE A-2

NUS CORPORATION
A Halliburton Company

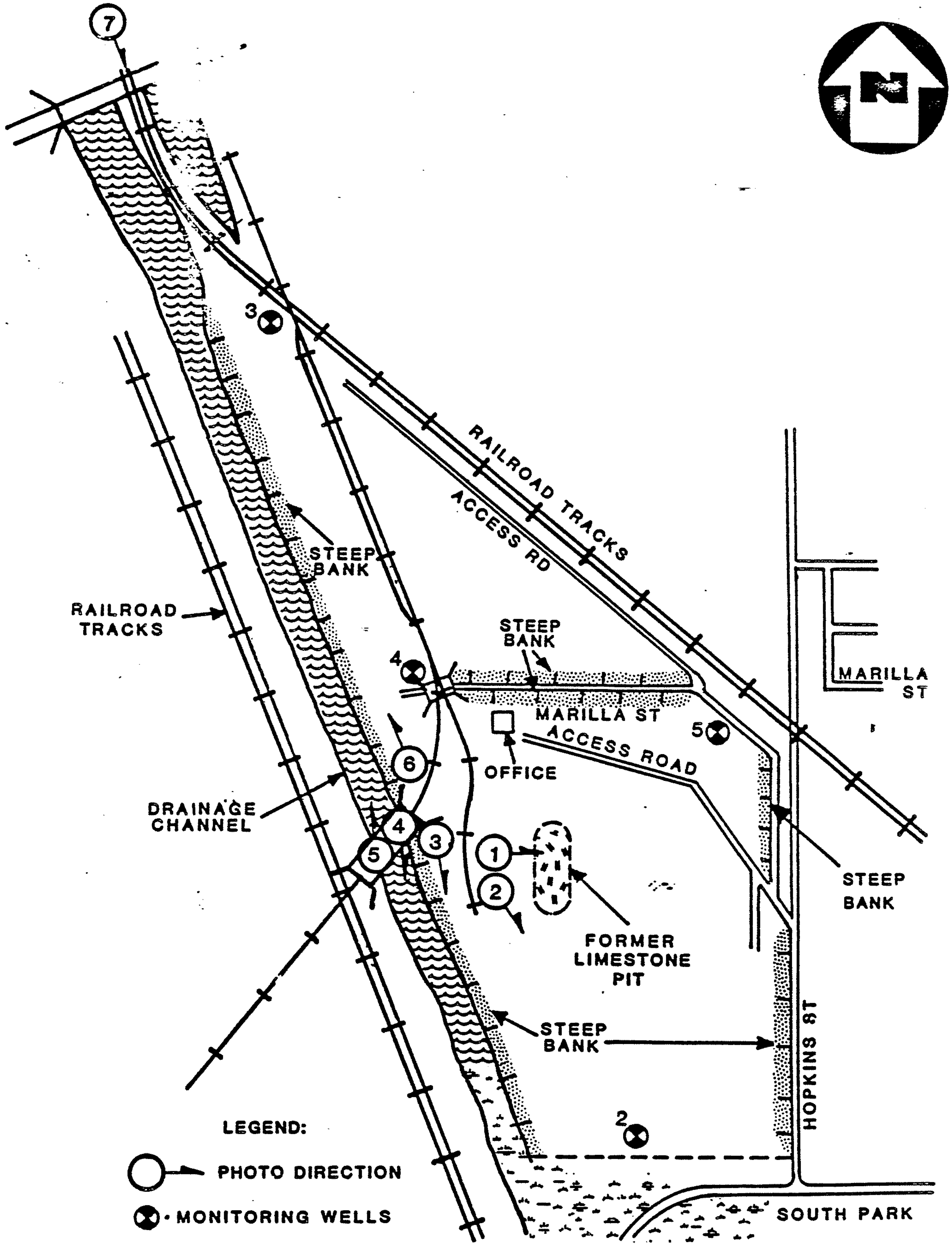


PHOTO LOCATION MAP
REPUBLIC STEEL BUFFALO, N.Y.
(NOT TO SCALE)

FIGURE A-3

NUS CORPORATION

A Halliburton Company

recycled paper

ecology and environment

REFERENCE NO. 9

LTV STEEL COMPANY
BUFFALO, NEW YORK
(EPA ID NYD000813402)

CLOSURE PLAN
FOR
THE MARILLA STREET LANDFILL BOF DUST AREA

NOVEMBER 7, 1985

1.0 FACILITY DESCRIPTION

The following information is submitted in accordance with the requirements for a general description of the facility as contained in 40 CFR 270.14(b)(1) and applicable 265 subparts of the Resource Conservation and Recovery Act (RCRA). LTV Steel Company's Marilla Street Landfill has not received hazardous wastes since suspension of steel-making operations at the Buffalo District Plant in June/July 1981. Since hazardous wastes are not currently generated at the Buffalo District Plant and the landfill is not currently receiving hazardous waste, LTV Steel Company is not required to obtain a RCRA Part B permit for current operations at the Buffalo District Plant. Furthermore, since only the Basic Oxygen Furnace (BOF) Dust Disposal Area has received a RCRA-regulated hazardous waste, as will be discussed in Section 1.2 of this Closure Plan, only that area of the site will be closed under RCRA. The remaining fill areas are being closed in accordance with Part 360 of the New York Code of Rules and Regulations (NYCRR). All information presented herein is submitted for use by State and Federal regulatory agencies in evaluating the proposed closure of the BOF Dust Area of LTV Steel Company's Marilla Street Landfill.

1.1 General Description

On December 19, 1984, LTV Corporation acquired Republic Steel Corporation and merged Jones and Laughlin Steel, Inc. into Republic. The name of the surviving corporation was changed to LTV Steel Company, Inc. (LTV Steel). As used herein, LTV Steel shall include Republic Steel Corporation as the context requires.

LTV Steel Company is the current owner of the Marilla Street Landfill. Steel-making operations were suspended at the Buffalo

District Plant with subsequent suspension of BOF Dust landfilling at the Marilla Street landfill in June/July 1981.

The address of the LTV Steel Company is:

LTV Steel Building
Post Office Box 6778
800 LTV Steel Building
25 West Prospect Street
Cleveland, Ohio 44115

The contact and party responsible for hazardous waste management activities at the Marilla Street Landfill is:

MR. L. A. SZUHAY
Environmental Control Department
LTV Steel Company
3100 East 45th Street
Cleveland, Ohio 44127

1.1.1 Site Description

The Marilla Street Landfill site, which is currently owned by LTV Steel Company, has been in operation since 1930. Regional and Vicinity maps illustrating the location of the approximately 100-acre parcel (approximately 80 acres of which have been used as a landfill) are presented as Figures 1-1 and 1-2, respectively. The site is bordered on the south by the South Park Recreational Facilities, on the west by the Penn-Central Railroad and on the north and east by the Baltimore and Ohio Railroad. Hopkins Street, Marilla Street and the South Buffalo Railroad segregate the site into several fill areas.

dispersed by the wind. As indicated on Plate 2, the total volume of waste in the Clarifier Sludge Area has been estimated to be 531,000 cubic yards, which includes the rubble/slag used in the construction of the railroad berm.

- Miscellaneous Debris and Fine Refuse Area - The Miscellaneous Debris and Fine Refuse Area consists primarily of a mixture of plant construction debris, railroad ties, bricks, minus minus fines (viz. BOF slag less than 1/4-inch in size), minus fines (viz. BOF slag 1/4-inch to 5/8-inch in size), BOF slag, and blast furnace slag. As indicated on Plate 2, the volume of waste in this area has been estimated to be 1,550,000 cubic yards.

- Fine Refuse Area - The Fine Refuse Area consists primarily of a mixture of minus minus fines, minus fines, BOF slag and blast furnace slag. As indicated on Plate 2, the volume of waste in this area has been estimated to be 712,000 cubic yards.

- Railroad Fill Area - The Railroad Fill Area consists primarily of slag deposited during construction of a railroad on the east side of Hopkins Road. As indicated on Plate 2, the volume of waste in this area has been estimated to be 14,500 cubic yards.

1.3 BOF Waste Characteristics

The basic oxygen furnace (BOF) is the major reactor for producing steel from hot metal (Environmental and Resource Conservation Considerations of Steel Industry Solid Waste, U.S. Environmental Protection Agency, EPA-600/2-79-074, SW-740, April 1979). During steel making, the furnace is charged with up to 30 percent scrap metal. The balance of material is hot metal from the blast furnace with some fluxing materials, as necessary. A lance is lowered to just above the surface of the metal and oxygen is blown at supersonic velocities. Eventually (12 min. to an hour, depending on furnace design) carbon, sulfur and silicon are burned out of the hot metal and steel is formed. Dust-laden air (viz. BOF dust), a consequence of this process, is collected in hoods and removed via electrostatic precipitators for ultimate disposal.

BOF Dust is not normally an EP toxic characteristic hazardous waste. However, leaded steel scrap was utilized by the Buffalo District Plant as a source of scrap steel to the Basic Oxygen Furnace. It is this lead source that is believed to have caused the BOF Dust to exhibit the EP toxic characteristic for lead.

In June of 1981, eight BOF Dust samples were obtained and analyzed for EP Toxicity (heavy metals only). The results of these analyses are included in Appendix 1-B. Examination of these results (testing was performed in accordance with Federal Register Vol. 45, No.98, May 1980) indicated the presence of lead in all of the extracts at concentrations in excess of the EP Toxicity maximum concentration limit of 5 mg/l.

Three composite samples of the in-place fill materials (i.e. slag and dust) were taken from the BOF Dust Area in July 1985 for EP toxicity testing (heavy metals only). These samples consisted of vertical composites of fill sampled at 5-foot intervals throughout the depth of the boring. One of the composites was split and analyzed by two independent laboratories. One lab reported extract levels of lead and chromium for all three composites in excess of the respective maximum concentration limits; however, the remaining lab did not detect lead or chromium in the duplicate extract. In order to clarify the discrepancy, two of the composites were re-analyzed by both labs. The second set of results were consistent, with both labs indicating that the composite fill material in the BOF Dust Area would not be considered an EP toxic characteristic hazardous waste. Furthermore, these results indicate that significant amounts of lead, chromium and other heavy metals will not leach from the BOF Dust Area provided that the buffering capacity of the fill material is not depleted. The laboratory reports for the four EP Toxicity tests are included in Appendix 1-B.

1.4 Topographic Map

Plate 1 is a topographic map for the entire landfill site with existing contours, site boundary lines, drainage, and the 100-year floodplain. Figure 1-1 is a regional location map showing land use and topography in the area of LTV Steel and the Marilla Street Landfill. Figure 1-2 is a vicinity map which shows the surrounding land use and topography on a larger scale and with greater detail. Figure 1-3 is an aerial photograph of the landfill site and vicinity.

A wind rose (Figure 1-4) of the prevailing winds at the Buffalo International Airport was provided by the National Weather Service (NWS). The NWS indicated that this wind rose would be applicable to any site, including the Marilla Street landfill site in the western New York State Region.

1.5 Facility Location Information

1.5.1 Seismic Standard

Because this is an existing rather than a new facility, the seismic standard of Part 270 does not apply. In addition, the facility is not located in a political jurisdiction listed in Appendix VI of Part 264.

1.5.2 Floodplain Standard

The limits of the floodplain shown on Plate 1 were developed from the Federal Insurance Administration (FIA) floodmap for the City of Buffalo, New York (Community Panel Numbers 360230-0020B and 360230-0010B, Effective date: November 18, 1981). Review of Plate 1 indicates that the BOF Dust Area lies between the upper limits of the 100-year flood elevation and the lower limits of the 500-year flood elevation.

1.5.3 Demonstration of Compliance (w/Floodplain Standard)

As discussed above, the entire landfill site is above the 100-year flood elevation. Therefore, no flooding and no release of hazardous waste would occur during a 100-year storm.

1.5.4 Plan for Future Compliance (w/Floodplain Standard)

LTV Steel Company believes that no hazardous wastes/constituents would be released during a 100-year flood. Therefore, no additional flood prevention work is considered necessary to comply with RCRA regulations.

1.6 Traffic Patterns

The BOF Dust Area will be restricted to vehicular traffic to prevent damage to the cap from utility vehicles. Authorized personnel will be able to access the BOF Dust Area of the site by using the Marilla Street Approach. As can be seen from Plate 5, Marilla Street bisects the landfill site from east to west. Marilla Street will be widened and improved with the addition of a bituminous seal coat. Marilla Street will facilitate access to

2.0 GROUNDWATER

2.1 General

As discussed in Section 1.1.1, the BOF Dust Area was identified as a waste pile regulated under 40 CFR Part 265, Subpart L in the RCRA Part A Application filed in 1980. Under Interim Status, the groundwater monitoring guidelines of 40 CFR Part 265, Subpart F only apply to surface impoundments, landfills and land treatment facilities. Therefore, an Interim Status groundwater monitoring program was not required for the BOF Dust Area.

The BOF Dust Area will be closed with the wastes left in place. Due to this approach for closure, the Part A application has been revised designating the BOF Dust Area as a landfill. As a landfill, the facility is subject to the Interim Status groundwater monitoring standards. A program complying with the requirements of 40 CFR 265, Subpart F has been initiated for the BOF Dust Area. This section of the closure/post-closure plan details the groundwater monitoring system developed for this facility.

Installation of a groundwater monitoring system for the entire Marilla Street Landfill site, including the BOF Dust Area, was completed on October 25, 1985. The system is composed of six (6) deep (designated by the suffix "A") and twelve (12) shallow (designated by the suffix "B") groundwater monitoring wells as shown on Plate 3. With the exception of Well No. 3A, the deep wells extend approximately 20 feet into the original soil. In Well No. 3A, the well was completed at bedrock which was encountered at 14 feet. The shallow wells extend approximately five (5) feet into the original soil. An exception is Well No. 8B which extends approximately 22 feet into the fill materials. For the BOF Dust Area, Well No. 7B will serve as the upgradient monitoring well and Wells No. 4B, 9B and 13B will serve as the downgradient monitoring points.

2.2 Hydrogeology

Based upon site investigations, the general geology of the Marilla Street Landfill has been determined. The site geology, including the BOF Dust Area, from the surface to bedrock is as follows:

- Fill: 0' to greater than 20'
- Topsoil: 0' to 2'
- Sandy-silt: 0' to 15'
- Clayey-silt: 7' to greater than 18'
- Glacial till: 1' to 2'
- Shale bedrock

Depths to bedrock range from over 25 feet on the east side of the site to less than 14 feet at the northwest corner of the site. A geologic fence diagram illustrating site geology is attached as Plate 8.

A total of 33 borings have been completed on and in the vicinity of the site. Twenty-two of these borings were completed as monitoring wells; however, four of these wells were abandoned due to vandalism. The boring logs which include details of the monitoring well constructions are presented in Appendix 2-B. Each of the wells is constructed of two-inch diameter PVC casing with a two-foot length of machine-slotted PVC well screen.

7
Jacko

Since cover material has not been applied to the site, the permeability of the surface material is a function of the type of material deposited and the degree of compaction. Five in-situ permeability tests (i.e. field percolation tests) were performed on the surface fill material including one in the BOF Dust Area.

The results of these tests indicate that the permeability of the landfill surface ranges from 1.60 x 10^{-3} to 1.19 x 10^{-4} cm/sec and averages 4.85 x 10^{-4} cm/sec.

Bailer permeability tests were performed on monitoring wells 2A, 3A, 6A, 2B and 6B. The results of these tests are summarized in Table 2-1. As indicated in Table 2-1, the permeability of the deep saturated zone ranges between 5.16 x 10^{-6} and 7.8 x 10^{-5} cm/sec and the permeability of the shallow saturated zone ranges between 3.16 x 10^{-5} and 6.68 x 10^{-5} cm/sec. Bailer permeability tests performed on wells 4A and 5B were unsuccessful due to the rapid recovery of the wells.

Groundwater at the landfill site exists in both perched and confined conditions. The perched groundwater system occurs in the sandy-silt deposits and/or the topsoil and fill materials which overlie the clayey-silt layer. Based on bailer permeability tests conducted on monitoring wells 2B and 6B, the permeability of the saturated zone is between 3.17 x 10^{-5} and 6.86 x 10^{-5} cm/sec. The new shallow groundwater monitoring well (viz. 8B) was installed to determine whether this radial direction of groundwater flow exists. A groundwater isopotential map illustrating the general direction of groundwater flow in both the deep and shallow groundwater systems based on groundwater elevations measured on October 21, 1985 is attached as Plate 4. The direction of flow in the shallow groundwater system appears to be toward the west pond, with South Park Lake acting as the recharge area. The confined groundwater system occurs in the bedrock and to a lesser extent in the immediate overburden beneath the site. Bailer permeability tests performed on wells completed in the immediate overburden indicate that the permeability of this clayey-silt layer ranges between 5.16 x 10^{-6} and 7.80 x 10^{-5} cm/sec. These permeabilities suggest that wells completed in the overburden would not yield sufficient quantities of water to be considered an aquifer.

Is this sampleable and connected to lower zones?

Direction of groundwater flow in the confined groundwater system is normal to isopotential contours and moves from points of higher elevation to points of lower elevation. As illustrated on Plate 4, the general direction of groundwater flow in the confined groundwater system in the vicinity of the site is toward Lake Erie to the west. This is consistent with previous determinations of the direction of groundwater flow in the confined groundwater system.

N.

2.3 Summary of Interim Groundwater Monitoring Data

Since waste piles are not subject to the requirements of 40 CFR Part 265, Subpart F, no Interim Status groundwater monitoring data has been generated for the BOF Dust Area. However, in anticipation of closing the facility as a landfill, background groundwater monitoring has been initiated. To comply with the guidelines of 40 CFR Part 265.92, quarterly monitoring will be conducted for one year. The first quarterly samples were collected in early November 1985. Groundwater monitoring data for the entire Marilla Street Landfill is summarized below. This information is intended to provide an overview of site groundwater quality.

In order to assess possible impacts of the Marilla Street Landfill on the quality of ground and surface water in the vicinity of the site, several sets of water samples have been collected and analyzed since July 1979. The results of the water quality analyses are attached in Appendix 2-A and summarized in Tables 2-2 (viz. background parameters) and 2-3 (viz. routine parameters). EPA interim primary drinking water limits and New York State DEC groundwater quality standards are presented in Table 2-4. Comparison of the background analytical results (in Table 2-2) to the State and Federal guidelines (in Table 2-4) indicates the following:

TABLE 2-1

LTV STEEL COMPANY

MARILLA STREET LANDFILL
BAILER PERMEABILITY TEST RESULTS

Well No.		Permeability (cm/sec)⁽¹⁾
2A	Deep	1.69×10^{-5}
3A	Deep	7.80×10^{-5}
4A	Deep	ND (2) —
6A	Deep	5.16×10^{-5}
2B	Ovb	6.86×10^{-5}
5B	Overburden	ND (2) —
6B	Ovb	3.17×10^{-5}

NOTES:

(1) Based on bailer permeability tests performed in field on 8/23/84.

(2) No Data - Wells recovered too quickly to complete bailer permeability test.

TABLE 2-2 (cont.)

LTV STEEL COMPANY
MARILLA STREET LANDFILL

BACKGROUND GROUNDWATER QUALITY⁽¹⁾

Well No.⁽²⁾: Sampling Date⁽³⁾	5A (8-2-79)	5A (8-13-79)	2B (7-31-79)	2B (8-13-79)	POND (7-31-79)	PO (8-1
Ammonia (as N)	0.33	0.35	12.60	4.10	1.64	1.
Nitrate (as N)	0.25	0.05	0.74	0.28	0.17	0.
TKN (as N)	1.44	1.83	18.48	15.30	1.64	2.
Biochemical Oxygen Demand (BOD_5)	11	15	84	9	2	9
Chemical Oxygen Demand	48.7	52.2	83.1	252	34.7	46.
Aluminum	<0.5	0.5	3.4	1.4	<0.5	0.
Arsenic	0.0121	0.0056	0.084	0.0268	<0.0005	0.
Chromium (HEX)	<0.03	<0.03	<0.03	<0.03	<0.03	<0.
Cadmium	-	-	-	-	-	-
Zinc	-	-	-	-	-	-
Selenium	-	-	-	-	-	-
Copper	<0.04	<0.04	<0.04	<0.04	<0.04	<0.
Mercury	0.0004	<0.0003	0.0004	0.0003	<0.0003	<0.
Sodium	109	123	431	432	201	214
MBAS	< 0.025	0.025	0.04	0.60	0.30	0.
Calcium	99	95	67	61	64	68
Silver	<0.03	<0.03	< 0.03	< 0.03	< 0.03	<0.
Manganese	-	-	-	-	-	-
Nickel	-	-	-	-	-	-
Total Solids	945	1036	1728	1602	956	994
Color (4)	15	20	> 70	-	20	20
Alkalinity	368.5	374.1	436.8	421.2	17.9	20.
Hardness	600	620	115	160	175	165
Odor (Threshold)	-	-	-	-	-	-
E Coli (#/100 ml)	> 2000	7700	< 1	800	>2000	16,000

NOTES:
(1) All units mg/l except where noted.
(2) A - designates deep well, B - designates shallow well
(3) 1979 samples collected by URS; 1982 samples collected by MPI
(4) 1979 samples measured in APHA-True units; 1982 samples measured in Pt-Co units

TABLE 2-2

LTV STEEL COMPANY
MARILLA STREET LANDFILL

BACKGROUND GROUNDWATER QUALITY(1)

Well No.(2): Sampling Date(3)	2A (5-4-82)	2A (5-18-82)	3A (8-2-79)	3A (8-13-79)	4A (5-4-82)	4A (5-18-8
Ammonia (as N)	0.06	0.14	0.98	0.52	0.45	1.12
Nitrate (as N)	0.11	0.07	0.13	0.05	0.18	0.09
TKN (as N)	0.07	0.18	1.92	1.36	0.48	1.20
Biochemical Oxygen Demand (BOD$_5$)	3.7	4.0	1	5	4.1	4.8
Chemical Oxygen Demand	36	20	25.1	30.3	30	20
Aluminum	0.2	0.1	0.8	0.5	0.6	0.6
Arsenic	<0.005	<0.005	0.0099	0.0098	<0.005	<0.005
Chromium (HEX)	<0.02	<0.02	<0.03	<0.03	<0.02	<0.02
Cadmium	<0.005	<0.005	-	-	<0.005	<0.005
Zinc	0.017	0.015	-	-	0.023	0.010
Selenium	<0.005	<0.005	-	-	<0.005	<0.005
Copper	<0.01	<0.01	<0.04	<0.04	<0.01	<0.01
Mercury	<0.001	<0.001	<0.0003	<0.0003	<0.001	<0.001
Sodium	36	58	54	56	43	66
MBAS	0.082	0.34	0.094	0.025	0.86	1.4
Calcium	80	36	231	188	140	61
Silver	<0.005	<0.005	<0.03	<0.03	<0.005	<0.005
Manganese	0.025	0.020	-	-	0.020	0.010
Nickel	<0.02	<0.02	-	-	<0.02	<0.02
Total Solids	-	-	1114	975	-	-
Color (4)	20	10	30	40	35	15
Alkalinity	52	87	500	517.4	93	128
Hardness	115	148	665	680	185	175
Odor (Threshold)	1 (detergent)	1 (detergent)	-	-	4 (musty)	4 (musty)
E Coli (#/100 ml)	40	<2	>2000	25,000	<2	<2

NOTES:
(1) All units mg/l except where noted.
(2) A - designates deep well, B - designates shallow well
(3) 1979 samples collected by URS; 1982 samples collected by MPI
(4) 1979 samples measured in APHA-True units; 1982 samples measured in Pt-Co units

- Arsenic concentrations exceeded EPA drinking water and DEC groundwater standards in only shallow well No. 2B.

- MBAS (Foaming Agents) were detected in the groundwater samples taken from shallow well No. 2B and deep well No. 4A at concentrations in excess of groundwater standard. The source of the MBAS is not known.

- Fecal coliform (E. Coli) has been detected in the samples collected from all the wells with the exception of deep well No. 4A. The fecal coliform is probably a result of contamination during well installation, which is a common phenomenon. However, this cause has not been confirmed.

Examination of the analytical results for the routine water quality parameters summarized in Table 2-3 indicates the following:

- The Marilla Street Landfill appears to be contributing to an increase in the pH of groundwater monitored by both the shallow and deep wells.

- Conductivity, total dissolved solids (TDS), and total organic carbon (TOC) levels in groundwater do not appear to be significantly affected by the landfill.

- Lead was detected at 0.10 mg/l in the groundwater sample collected from shallow well Nos. 2B and 5B during the initial sampling performed in 1979. However, these values are probably false positives which occurred as a result of the high detection limit (i.e. 0.10 mg/l) utilized during sample analysis. This conclusion is supported by the fact that lead was not detected in the samples collected from these wells two weeks later. Lead was sampled in monitoring well 7A and the west drainage ditch on 7/23/85. Both samples showed total lead concentrations in excess of the groundwater quality standards of 0.025 mg/l. Monitoring well 7A and the west drainage ditch were resampled on 8/21/85. Total lead was detected in monitoring well 7A in excess of the groundwater quality standard; however, lead was not detected in the west drainage ditch in either total or soluble form, and soluble lead was not detected in monitoring well 7A. Therefore, the lead detected in well 7A may be the result of sediment contamination during installation. Since monitoring well 7A is a relatively new well, it has not been flushed on enough occasions to insure that all of the contaminated sediment (which entered the well during installation) has been removed.

Additional testing?

- In general, iron concentrations, although displaying variability between sampling episodes, exceeded the DEC groundwater quality standards.
- Chloride concentrations did not exceed the DEC groundwater quality standards in any of the samples.
- Sulfate levels in deep wells 4A and 5A and shallow wells 5B and 6B exceeded DEC groundwater standards.
- Phenols were detected in all wells in excess of the DEC groundwater quality standards. However, the levels of phenol in upgradient deep well No. 6A and shallow well 2B were comparable to downgradient concentrations. Therefore, an off-site upgradient source of phenols is suggested. The potential off-site source(s) is not known.

Who is upstream?

When the results of the Interim status groundwater monitoring program become available, the impacts on groundwater specifically attributable to the BOF Dust Area will be evaluated. However, this analysis will consider the background groundwater quality of the entire Marilla Street Landfill. ?

What does this mean?

2.4 Point of Compliance

The following information can be determined by examining the topographic maps attached as Plates 3 and 4:

- o Location of the BOF Dust Area including bordering properties
- o The existing "point of compliance" (viz. the downgradient shallow groundwater monitoring wells).
- o The location and elevation of all existing groundwater monitoring wells
- o The general direction of groundwater flow in both the shallow and deep groundwater systems

2.5 Contamination Plume

Since interim groundwater monitoring data has not been collected, no determination regarding the presence of a plume of contamination from the BOF Dust Area can be made.

2.6 Groundwater Monitoring System

Part 265.91 of RCRA specifies that a minimum of one upgradient and three downgradient monitoring wells be utilized to monitor the uppermost groundwater system in the vicinity of the BOF Dust Area. LTV Steel believes that monitoring wells 7B (viz. upgradient) and 4B, 9B and 13B (viz. downgradient) comply with this requirement. Therefore, these wells will be utilized to monitor groundwater quality impacts of the BOF Dust Area. All of the monitoring wells on and in the vicinity of the Marilla Street Landfill site will be monitored for groundwater elevations to establish groundwater flow directions in both groundwater systems.

The Sampling and Analysis Plan presented in Appendix 2-C outlines the procedures and techniques which will be utilized for:

- Sample collection
- Sample preservation and treatment
- Analytical procedures
- Chain of Custody Control

2.7 Detection Monitoring Program

The detection monitoring program proposed in this section should be considered preliminary. The list of parameters to be analyzed, the frequency of sampling and analysis, and the proposed statistical evaluation procedures will be reviewed for adequacy following the establishment of background groundwater quality.

Monitoring Well Nos. 7B, 4B, 9B and 13B will be utilized to monitor the groundwater quality impacts of the BOF Dust Area. Groundwater samples will be collected semi-annually from these wells and analyzed for the following parameters:

- pH
- Conductivity
- Lead
- Iron
- Cadmium
- Total Suspended Solids
- Chromium

Each analysis will consist of four replicate measurements. Groundwater elevation data will be collected from all of the monitoring wells on and in the vicinity of the Marilla Street Landfill site prior to each sample collection (viz. before evacuating the wells) in order to determine the direction of groundwater flow in both groundwater systems. The frequency of groundwater sampling and analysis will continue throughout the post-closure period. The groundwater quality established during the interim groundwater monitoring period (see Section 2.2) will be utilized as background groundwater quality. It is estimated that 45 days per sampling event will be required to complete all of the sample analyses.

The Cochran's Approximation to the Behrens-Fisher Students t-test will be utilized at the 0.05 level of significance to statistically evaluate the results of groundwater monitoring. If a significant change in groundwater quality is determined, the Comprehensive Groundwater Quality Assessment Program outlined in Appendix 2-D will be implemented.

The aquifer flow rate will be determined for the shallow groundwater system in the vicinity of the BOF Dust Area annually using the following modification of Darcy's Law:

$$v = \frac{k\ dh/dl}{\theta}$$

where: v = average velocity (i.e. rate of migration)

k = hydraulic conductivity

dh/dl = slope of potentiometric or piezometric surface in direction of groundwater flow

θ = porosity of the soil

The porosity of the sandy-silt soils which predominate at the site can be assumed to be 0.45 (D.K.Todd; "Groundwater

Hydrology", 2nd Edition, John Wiley & Sons, C1980, pg.28.). The hydraulic conductivity of the soils beneath the facility will be measured annually utilizing the existing groundwater monitoring wells. Either the falling-head method or the well-recharge method will be utilized to determine hydraulic conductivity depending upon the groundwater elevations.

APPENDIX 1-B

BOF DUST AREA LABORATORY RESULTS EP TOXICITY TESTING

Republicsteel

General Office
District-Division-Subsidiary

Interoffice Correspondence

Environmental Control
Office

June 22, 1981

Mr. J. M. Potwora
Superintendent, Environmental Control
Buffalo District

Subject: Buffalo BOF Dust -
Hazardous Waste Toxicity Test Results

Attached are outside laboratory results of the U.S. EPA toxicity test (leachate test) for a representative sample of Buffalo District generated BOF dust. The eight(8) samples analyzed were from the set of sixteen(16) samples that were drawn for metallurgical analysis under AFE #7976, "Buffalo BOF Dust Pelletizer".

Each one of the eight(8) BOF dust samples failed the EPA toxicity limit for lead (Pb), which is five ppm. The lead concentrations analyzed in the leachate for the eight(8) samples are summarized below:

Buffalo Sample No.	Concentration of Lead (Pb) (ppm) in the Leachate
1	8.4
5	16.4
6	12.2
7	8.1
13	31.3
14	21.4
15	17.8
16	16.8

The individual laboratory certificates are attached.

Please contact this office for assistance in developing a proposal to comply with interim status standards.

Dave

D. M. Gubanc
Solid Waste Management Engineer

DMG/dh

Attachments

cc:	W. L. West	(w/o att.)	J. R. Berens	(w/o att.)
	D. E. Papajcik	"	D. Nemec	"
	J. A. McKinney	"	G. Seiner	"
	W. B. Bredbeck	"	I. Shetler	"
	D. Stroud	"		

ANALYSIS OF THREE (3) SOIL SAMPLES FOR EP TOXICITY METALS

Report Prepared For

MALCOLM-PIRNIE, INC.

By

ADVANCED ENVIRONMENTAL SYSTEMS, INC.

NOTE: Reanalysis of referenced composites indicate date presented in this report to be suspect (see page 1-6 of Closure Plan)

MALCOLM PIRNIE
October 30, 1985

W. Joseph McDougall for
Leonard Borzynski
Technical Evaluation

August 7, 1985
AES Report AXQ

EXTRACTION PROCEDURE (E.P.) TOXICITY - METALS
ADVANCED ENVIRONMENTAL SYSTEMS, INC.
LABORATORY REPORT

Type of Analysis: Metals
Client: MALCOLM-PIRNIE A.E.S. Job Code AXQ

(All results are in mg/l)

				A.E.S. Lab No.- Sample ID -		1790 MV-7A 6-18-85 COMP.	1791 B-2 6-10-85 COMP.	1792 B-3 6-11-85 COMP.
Analysis	Method No.	Ref No.	Maximum Conc. (mg/l)	Det. Limits	Analysis Date			
Arsenic	7060	5	5.0	0.005	7-30-85	0.081	0.097	0.091
Barium	7080	5	100.0	1.0	7-31-85	BDL	BDL	BDL
Cadmium	7130	5	1.0	0.05	7-26-85	BDL	0.05	BDL
Chromium	7190	5	5.0	0.50	7-26-85	8.8	9.5	7.7
Lead	7420	5	5.0	1.0	7-31-85	25.0	13.0	13.0
Mercury	7471	5	0.2	0.001	7-31-85	0.004	0.002	0.006
Selenium	7740	5	1.0	0.005	7-30-85	0.028	0.040	0.037
Silver	7760	5	5.0	0.1	7-26-85	0.1	0.3	0.2

NOTE: Reanalysis of referenced composites indicate data presented in this report to be suspect (see page 1-6 of Closure Plan)
MALCOLM PIRNIE
October 30, 1985

Janette L. Bingert

JANETTE L. BINGERT
ETALS DIVISION SUPERVISOR

ANALYSIS OF TWO (2) SOIL SAMPLES FOR TOTAL LEAD, AND EP TOXICITY METALS WITH STANDARD ADDITIONS.

Report Prepared For

MALCOLM-PIRNIE, INC.

By

ADVANCED ENVIRONMENTAL SYSTEMS, INC.

Leonard Borzynski
Technical Evaluation

October 8, 1985
AES Report BJQ

ADVANCED ENVIRONMENTAL SYSTEMS, INC.
LABORATORY REPORT

TYPE OF ANALYSIS: RESULTS - METALS
UNITS OF MEASURE: MILLIGRAMS/ KILOGRAM, OR PPM
CLIENT: MALCOLM-PIRNIE   A.E.S. JOB CODE BJQ

ANALYSIS	METHOD	REF	DETERMINABLE LIMITS	SAMPLE IDENTIFICATION	
				2688 7A 9/20/85 TOTAL	2689 B2 9/20/85 TOTAL
LEAD	7420	5	100.	800	2,000

Janette Bingert
JANETTE L. BINGERT
METALS SUPERVISOR

EXTRACTION PROCEDURE (E.P.) TOXICITY - METALS
ADVANCED ENVIRONMENTAL SYSTEMS, INC.
LABORATORY REPORT

Type of Analysis: Metals
Client: MALCOLM PERNIE A.E.S. Job Code 01BJQ

(All results are in mg/l)

nalysis	Method No.	Ref No.	Maximum Conc. (mg/l)	Det. Limits	Analysis Date	A.E.S. Lab No.- 2688 Sample ID - 7A 9/20/85	2689 B2 9/20/85
Arsenic	7060	5	5.0	0.005	10/2	BDL	BDL *
Barium	7080	5	100.0	1.0	9/27	1.0	BDL
Cadmium	7130	5	1.0	0.05	9/25	BDL	BDL
Chromium	7190	5	5.0	0.5	9/25	BDL	BDL
Lead	7420	5	5.0	1.0	9/25	BDL	BDL
Mercury	7471	5	0.2	0.001	10/3	BDL	BDL
Selenium	7740	5	1.0	0.005	10/1	BDL	BDL
Silver	7760	5	5.0	0.1	9/26	BDL	BDL

Below determinable limits.

Janette Bingert
JANETTE L. BINGERT
METALS DIVISION SUPERVISOR

NUS CORPORATION

Laboratory Services Division
5350 Campbells Run Road
Pittsburgh, PA 15205

REMIT TO:
Park West Two
Cliff Mine Road
Pittsburgh, PA 1527

412-788-1080

LAB ANALYSIS REPORT

CLIENT NAME: LTV STEEL COMPANY
ADDRESS: 3100 EAST 45TH STREET
CLEVELAND, OH 44127

REPORT DATE: 10/18/85

ATTENTION: MR. SOREN HANSON

NUS CLIENT NO: 330129
NUS SAMPLE NO: 15092195
VENDOR NO:
WORK ORDER NO: 55830
DATE RECEIVED: 09/30/85

SAMPLE IDENTIFICATION: #2688 TA II

09/20 LEACH

TEST	DETERMINATION	RESULTS	UNITS
M036	Arsenic by Std Add (As)	< 0.01	mg/l
M046	Barium by Std Add (Ba)	< 0.1	mg/l
M096	Cadmium by Std Add (Cd)	< 0.005	mg/l
M146	Chromium by Std Add (Cr)	0.11	mg/l
M206	Lead by Std Add (Pb)	< 0.03	mg/l
M256	Mercury by Std Add (Hg)	< 0.0002	mg/l
M296	Selenium by Std Add (Se)	< 0.04	mg/l
M306	Silver by Std Add (Ag)	0.02	mg/l
S910	EP Toxicity Extraction		

COMMENTS:

NUS CORPORATION

Laboratory Services Division
5350 Campbells Run Road
Pittsburgh, PA 15205
412-788-1080

REMIT TO:
Park West Two
Cliff Mine Road
Pittsburgh, PA 15275

LAB ANALYSIS REPORT

CLIENT NAME: LTV STEEL COMPANY
ADDRESS: 3100 EAST 45TH STREET
CLEVELAND, OH 44127

REPORT DATE: 10/18/85

ATTENTION: MR. SOREN HANSON

NUS CLIENT NO: 330129
NUS SAMPLE NO: 15092196L
VENDOR NO:
WORK ORDER NO: 55830
DATE RECEIVED: 09/30/85

SAMPLE IDENTIFICATION: #2689 #2 II 09/20.

TEST	DETERMINATION	RESULTS	UNITS
M036	Arsenic by Std Add (As)	0.06	mg/l
M046	Barium by Std Add (Ba)	0.2	mg/l
M096	Cadmium by Std Add (Cd)	< 0.005	mg/l
M146	Chromium by Std Add (Cr)	0.09	mg/l
M206	Lead by Std Add (Pb)	< 0.03	mg/l
M256	Mercury by Std Add (Hg)	< 0.0002	mg/l
M296	Selenium by Std Add (Se)	< 0.04	mg/l
M306	Silver by Std Add (Ag)	0.02	mg/l
S910	EP Toxicity Extraction		

COMMENTS:

APPENDIX 2-A

RESULTS OF WATER QUALITY ANALYSES

URS
AN INTERNATIONAL PROFESSIONAL SERVICES ORGANIZATION
McPHEE, SMITH, ROSENSTEIN ENGINEERS, P.C. — IN AFFILIATION WITH — GENERAL TESTING CORPORATI
Subsidiary of URS/MADIGAN-PRAEGER
ANALYTICAL SERVI
883-5525
625 DELAWARE AVENUE
BUFFALO, NEW YORK 14202
883-4

REPORT OF ANALYTICAL TESTING

Date of Report: August 23, 1979
Code Number: B1209

Requested By: Republic Steel
Raymond Zeuner

Parameter mg/l	Analytical Results			
Well Location	#2B Shallow	#3B Pond	#3A Deep	#5A Deep
Date Sampled	7/31/79	7/31/79	8/2/79	8/2/79
Date Received	7/31/79	7/31/79	8/2/79	8/2/79
Time	12:15 PM	9:30 AM	9:00 AM	9:30 AM
pH	11.5	7.9	7.3	7.3
Alkalinity, Total as $CaCO_3$	436.8	17.9	499.5	368.5
BOD_5	84	2	lt 1	11
Chlorides	217.4	244.9	64.9	47.5
COD	83.1	34.7	25.1	48.7
Coliform, Total MF*	lt 1	gt 2000	gt 2000	gt 2000
Color (APHA-True)	gt 70	20	30	15
Conductivity, Specific	2,110	1,430	1,340	1,430
Hardness, EPTA	115.0	175.0	665	600
Nitrogen, Ammonia as N	12.6	1.64	0.98	0.33
Nitrogen, Kjeldahl as N	18.48	1.64	1.92	1.44
Nitrogen, Nitrate as N	0.74	0.17	0.13	0.25
Nitrogen, Nitrite as N	0.46	0.06	lt 0.01	lt 0.01
Phenolics	0.008	0.100	0.001	0.023

* Coliform, Total MF are expressed in units of org./100 ml.

gt: greater than; lt: less than

Republic Steel
REPORT OF ANALYTICAL TESTING - page 2

URS
AN INTERNATIONAL PROFESSIONAL SERVICES ORGANIZATION
McPHEE, SMITH, ROSENSTEIN ENGINEERS, P.C. —— IN AFFILIATION WITH -- GENERAL TESTING CORPOR
Subsidiary of URS/MADIGAN-PRAEGER
ANALYTICAL S
883-4
883-5525
625 DELAWARE AVENUE
BUFFALO, NEW YORK 14202

Parameter mg/l	Analytical Results			
Well Location	#2B Shallow	#3B Pond	#3A Deep	#5A Deep
Date Sampled	7/31/79	7/31/79	8/2/79	8/2/79
Phosphate Total as P	0.36	0.06	0.13	lt 0.05
Solids, Total	1,728	956	1,114	945
Sulfates	125.0	140.0	115.0	330.0
Surfactant	0.400	0.300	0.094	lt 0.025
TOC	53	7	6	5
Aluminum	3.4	lt 0.5	0.8	lt 0.5
Arsenic	0.084	lt 0.0005	0.0099	0.0121
Calcium	67	64	231	99
Chromium, Total	lt 0.05	lt 0.05	lt 0.05	lt 0.05
Chromium, Hex	lt 0.03	lt 0.03	lt 0.03	lt 0.03
Copper	lt 0.04	lt 0.04	lt 0.04	lt 0.04
Iron	4.90	4.00	1.63	0.35
Lead	0.10	lt 0.10	0.10	0.10
Mercury	0.0004	lt 0.0003	lt 0.0003	0.0004
Potassium	42.0	12.5	19.0	4.1
Silver	lt 0.03	lt 0.03	lt 0.03	lt 0.03
Sodium	431	201	54	109

Republic Steel
REPORT OF ANALYTICAL TESTING - page 3

URS
AN INTERNATIONAL PROFESSIONAL SERVICES ORGANIZATION
McPHEE, SMITH, ROSENSTEIN ENGINEERS, P.C. — IN AFFILIATION WITH — GENERAL TESTING CORPORAT
Subsidiary of URS/MADIGAN-PRAEGER
ANALYTICAL SERV
883-5525
625 DELAWARE AVENUE
BUFFALO, NEW YORK 14202
883-

Code Number: B1209

Parameter mg/l	Analytical Results			
Well Location	#2B Shallow	#3B Pond	#3A Deep	#5A Deep
Date Sampled	8/13/79	8/13/79	8/13/79	8/13/79
Date Received	8/13/79	8/ 13/79	8/13/79	8/13/79
Time	11:00 AM	1:45 PM	2:00 PM	1:00 PM
pH	11.2	7.3	7.1	7.1
Alkalinity, Total as $CaCO_3$	421.2	20.2	517.4	374.1
BOD_5	9	9	5	15
Chlorides	174.9	244.9	65.0	42.5
COD	252	46.1	30.3	52.2
Coliform, Total MF*	800	1,600	25,000	7,700
Color (APHA-True)	Pink	20	40	20
Conductivity, Specific	2,600	1,140	1,360	1,360
Hardness, EDTA	160	165	680	620
Nitrogen, Ammonia as N	4.10	1.19	0.52	0.35
Nitrogen, Kjeldahl as N	15.30	2.01	1.36	1.83
Nitrogen, Nitrate as N	0.28	0.15	lt 0.05	lt 0.05
Nitrogen, Nitrite as N	0.02	0.04	lt 0.01	lt 0.01
Phenolics	0.184	0.024	0.047	0.119
Total as P	0.20	lt 0.05	0.10	0.05
tal	1,602	994	975	1,036

Phenolics ↑

*Coliform, Total MF are expressed in units of org./100 ml.

URS
AN INTERNATIONAL PROFESSIONAL SERVICES ORGANIZATION

McPHEE, SMITH, ROSENSTEIN ENGINEERS, P.C. —— IN AFFILIATION WITH —— **GENERAL TESTING CORPORAT**
Subsidiary of URS/MADIGAN-PRAEGER
ANALYTICAL R

883-5525
625 DELAWARE AVENUE
BUFFALO, NEW YORK 14202
8_3-

Parameter mg/l	Analytical Results			
Well Location	#2B Shallow	#3B Pond	#3A Deep	#5A Deep
Date Sampled	8/13/79	8/13/79	8/13/79	8/13/79
Sulfates	190	255	130	305
Surfactant	0.60	0.08	lt 0.025	lt 0.025
TOC	20	9	10	15
Aluminum	1.4	lt 0.5	lt 0.5	lt 0.5
Arsenic	0.0268	0.0011	0.0098	0.0056
Calcium	61	68	188	95
Chromium, Total	lt 0.05	lt 0.05	lt 0.05	lt 0.05
Chromium, Hex	lt 0.03	lt 0.03	lt 0.03	lt 0.03
Copper	lt 0.04	lt 0.04	lt 0.04	lt 0.04
Iron	1.20	2.90	1.79	0.16
Lead	lt 0.10	lt 0.10	lt 0.10	lt 0.10
Mercury	0.0003	0.0013	lt 0.0003	lt 0.0003
Potassium	44	118	17	4.2
Silver	lt 0.03	lt 0.03	lt 0.03	lt 0.03
Sodium	432	214	56	123

The analytical procedures are in accordance with "Methods for Chemical Analysis of Water and Wastes", 1974, EPA, and "Standard Methods for the Examination of Water and Wastewater", 14th edition.

Alfred C. Feuz

Alfred C. Feuz
Laboratory Manager

MALCOLM PIRNIE INC.
(Results in mg/l unless noted)

	2A (5-5-82)	2A (5-18-82)	4A (5-5-82)	4A (5-18-82)
Ammonia	0.06	0.14	0.45	1.12
Nitrate	0.11	0.07	0.18	0.09
TKN	0.07	0.18	0.48	1.20
BOD_5	3.7	4.0	4.1	4.8
COD	36	20	30	25
Sulfate	70	88	620	640
Aluminum	0.2	< 0.1	0.6	0.6
Arsenic	< 0.005	< 0.005	< 0.005	< 0.005
Chromium (Hex)	< 0.02	< 0.02	< 0.02	< 0.02
Chromium (T)	< 0.02	< 0.02	< 0.02	< 0.02
Cadmium	< 0.005	< 0.005	< 0.005	< 0.005
Zinc	0.017	0.015	0.023	0.010
Selenium	< 0.005	< 0.005	< 0.005	< 0.005
Copper	< 0.01	< 0.01	< 0.01	< 0.01
Lead	< 0.02	< 0.02	< 0.02	< 0.02
Mercury	< 0.001	< 0.001	< 0.001	< 0.001
Sodium	36	58	43	66
MBAS	0.082	0.34	0.86	1.4
Calcium	80	36	140	61
Silver	< 0.005	< 0.005	< 0.005	< 0.005
Manganese	0.025	0.020	0.020	< 0.010
Iron	0.07	0.43	0.03	0.14
Nickel	< 0.02	< 0.02	< 0.02	< 0.02
TDS	393	407	624	521
Color (Pt-Co)	20	10	35	15
Chloride	178	125	95	45
Alkalinity	52	87	93	128
Hardness	115	148	185	175
Cond (umhos)	520	625	950	1000
TOC	10	10	20	15
pH (units)	8.90	8.80	10.80	11.0
Odor (Threshold)	1-(detergent)	1-(detergent)	4-(musty)	4-(musty)
E Coli (#/100 ml)	40	< 2	< 2	< 2

MALCOLM PIRNIE INC.

(Results in mg/l unless indicated)

	#5A (5-5-82)	5A (5-18-82)	#3B (5-5-82)	3B (5-18-82)
pH (units)	7.45	7.70	9.30	8.80
Conductivity (umhos)	950	1100	1050	1100
TOC	< 2	< 2	< 2	< 8
Chloride	78	42	250	175
Iron	0.23	0.33	0.19	0.35
T DS	719	749	735	559

MALCOLM-PIRNIE INC.

(Results in ug/l)

Sample No.	Phenol (5-5-82)	Phenol (5-18-82)
2A	12	270
2B	110	39
3A	< 5	< 2
3B	< 5	10
4	15	4
5A	10	5
5B	< 5	3

NOTE: WELLS ABONDONED
DUE TO VANDALISM

EARTH DIMENSIONS, INC.

Test Borings and Logs
797 Center Street • East Aurora, New York 14052 • (716) 655-1717

4G79

HOLE NO. 1

SURF. ELEV. 586.77

PROJECT Republic Steel -
Monitoring well installation
South Buffalo, New York

LOCATION See survey

CLIENT McPhee, Smith, Rosenstein Engineers, PC

DATE STARTED 7/18/79 COMPLETED 7/18/

DEPTH (feet)	SAMPLE NO.	BLOWS ON SAMPLER					DESCRIPTION & CLASSIFICATION	WELL	WATER TABLE & REMARKS
	1	5	8	9	12	17	Slightly moist dark brown silt loam (SANDY-SILT) topsoil, granular 0.9	2 inch PVC pipe Bentonite	Sample #1 bridges contact.
							Moist distinctly mottled yellowish brown coarse silt loam (SANDY-SILT), friable, nonplastic		2.0
							3.0 ---- grades downward to -------		3.0
5	2	7	7	9		16	Moist to extremely ~~moist downwards.~~ ~~distinctly~~ mottled brown heavy silt loam (Clayey-SILT) medium consistance, slightly plastic		5.0
							6.5 ----- clear transition to ----		2 wells install both with 3 ft. sand followed b ft. of bentonit
10	3	8	12	15		27	Moist dark brownish gray silt loam (SANDY-SILT), firm, slightly plastic to nonplastic, massive structure		Mostly silty la sediments to en of boring.
15	4	8	22	20		42			
							16.0 ----- clear transition to ---		17.0 18.0 1-158
20	5	3	4	4		8	Extremely moist dark gray silty clay (CLAYEY-SILT), soft, plastic and cohesive 20.0	Well Screen Sand Pack	no water at comp

Bore completed at 20.0 feet.

2 12 140 WT. FALLING 30

EARTH DIMENSIONS, INC.

Test Borings and Logs
797 Center Street • East Aurora, New York 14052 • (716) 655-1717

HOLE NO 2

SURF. ELEV. 582.85

PROJECT Republic Steel - Monitoring well installation South Buffalo, New York

LOCATION See survey (Southern bore po

CLIENT McPhee, Smith, Rosenstein Engineeers,PC

DATE STARTED 7/16/79 COMPLETED 7/16

DEPTH (feet)	SAMPLE NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	N
	1	5	2	2		4
5						
	2	2	5	15		20
	3	7	12	15		27
	4	6	8	12		20
10						
	5	5	6	7		13
15						
20	6	4	3	3		6
	7	40	44			84
25						

DESCRIPTION & CLASSIFICATION	
Black extremely moist rubble and muck	0.4
Hardened slag fill	3.9
Extremely moist to wet black silty muck soil, soft with stem and root matter	7.5
Moist to extremely moist highly mottled greenish brown to brown silty clay loam (CLAYEY-SILT) with vertical desiccation cracks and thin to medium size silt lenses, firm, plastic	
- - - clear transition to - - - -	11.0
Extremely moist to wet dark brownish gray silty clay (CLAYEY-SILT), soft, plastic	20.0
Wet dark grayish brown silty clay loam (CLAYEY-SILT) with 10% firm and medium subangular dolomitic gravel, soft, plastic to slightly plastic	22.5
Moist dark grayish brown heavy silt loam (CLAYEY-SILT) with 15% dolomitic gravel, very firm in place, slightly plastic	
Boring completed at 24.0 feet.	

WELL

2 inch PVC pipe

Well Screen

WELL	WATER TABLE & REMARKS	
Bentonite	2.0	2.0
		3.0
Sand	5.0	5.0
Bentonite	21.0	
	21.5	
Sand Pack	24.0	

Layer of harde slag appears t underly ponds southern side site.

Solidified sla fill to 3.9 ft over wet muck 7.5 ft. over s ty and clayey lake sediments 20.0 ft. over cial till (har

Water 0.5 ft. surface at com tion.

Boring com ted at 24. ft.

N = NUMBER OF BLOWS TO DRIVE 2 " SPOON 12 " WITH 140 lb. WT. FALLING 30 " PER BLO

5-159

EARTH DIMENSIONS, INC.
Test Borings and Logs
797 Center Street • East Aurora, New York 14052 • (716) 655-1717

HOLE NO. 3

SURF. ELEV. 580.64

PROJECT Republic Steel - Monitoring well installation South Buffalo, New York

LOCATION See survey (near southeast t of northern pond)

CLIENT McPhee, Smith, Rosenstein Engineers, PC

DATE STARTED 7/20/79

COMPLETED 7/20

eet)	SAMPLE NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	N	DESCRIPTION & CLASSIFICATION	WELL	WATER TABLE & REMARKS
							Wet mixed industrial fill including cindery flyash, slag and brick fragments, loose 3.5	2 inch PVC pipe Bentonite	
							Wet black organic rich silt loam (SANDY-SILT), soft, nonplastic 4.5		Original surfa zone.
	1	3	3	3		6	Wet greenish to yellowish brown coarse silt loam (SANDY-SILT), very friable, nonplastic 6.5		Industrial fil to 3.5 ft. ove silty lake sed ments to 12.0 over loamy den glacial till t 13.7 ft. over bedrock.
	2	5	7	9	12	16	Extremely moist to moist highly mottled grayish brown silty clay loam (CLAYEY-SILT) with finely laminated structure, medium to firm consistance, plastic 10.0		
	3	2	2	3	4	5	- - - - - grades downward to - - - - - Extremely moist reddish to grayish brown silty clay (CLAYEY-SILT) with thin silt lenses, soft to medium consistance, plastic, cohesive 12.0	11.0 12.0	Auger resist noted at 12. ft.
	4	3	4	79/3			Wet dark brownish gray gravelly loam (CLAY-SAND-SILT) till with 20-25% fine & medium gravel, soft, slightly plastic 13.7	Well Screen Sand Pack 14.0	
	5						Weathered gray fissile shale, thin bedded 14.0		
							Refusal at 14.0 feet.		Water at surfa at completion.

NOTE: WELLS ABANDONED DUE TO VANDALISM

EARTH DIMENSIONS, INC.
Test Borings and Logs
797 Center Street • East Aurora, New York 14052 • (716) 655-1717

HOLE NO. 4

SURF. ELEV 584.61

PROJECT Republic Steel - Monitoring well installation South Buffalo, New York

LOCATION See survey (westward flowing drainage ditch)

CLIENT McPhee, Smith, Rosenstein Engineers, PC

DATE STARTED 7/7/79 COMPLETED 7/7/7

SAMPLE NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	N	DESCRIPTION & CLASSIFICATION	WELL	WATER TABLE & REMARKS
1	1	1	2	3	5	Extremely moist to wet black cindery flyash fill, loose 2.0		
2	3	3	3		6	Extremely moist black organic silt loam (SANDY-SILT) topsoil, very friable, nonplastic ---- clear transition to ---- 3.5 Extremely moist yellowish brown fine sandy loam (SILTY-SAND), very friable, nonplastic ---- grades downward to ---- 6.0		4.0 5.0
3	11	11	11		22	Extremely moist to wet downward stratified yellowish brown fine SANDS, loose, nonplastic 9.5	2 inch PVC pipe Bentonite	7.0 7.5
4	5	6	7		13	Moist dark brownish gray silty clay loam (CLAYEY-SILT) with very thin silt lenses, medium to firm consistence, plastic ---- grades downward to ---- 15.0		Industrial fi 2.0 ft. over water sorted sands at 9.5 ft. over sil lake sedimen to 19.0 ft. c dense loamy cial till tc of boring.
5	2	2	3		5	Extremely moist dark brownish gray silty clay (CLAYEY-SILT), soft, plastic with occasional fine gravel fragments 19.0		Water 1.9 below surfac completion 19.0
6	2	15	56	42	71	Wet becoming moist downward dark grayish brown loam (CLAY-SAND-SILT) till with 15% fine and medium gravel, very firm in place, nonplastic 21.5	Well Screen Sand Pack	20.0
7	59	47						22.0
						Weathered shale bedrock, fissile, thin bedded 22.5		22.5
						Boring completed at 22.5 feet.		

W

2 inch PVC pi

Well

N = NUMBER OF BLOWS TO DRIVE 2 " SPOON 12 " WITH 140 lb. WT. FALLING 30 " PER BL

EARTH DIMENSIONS, INC.

Test Borings and Logs
797 Center Street • East Aurora, New York 14052 • (716) 655-1717

HOLE NO. 5

SURF. ELEV. 584.13

PROJECT Republic Steel -
Monitoring well installation
South Buffalo, New York

LOCATION See survey

CLIENT McPhee, Smith, Rosenstein Engineers, PC

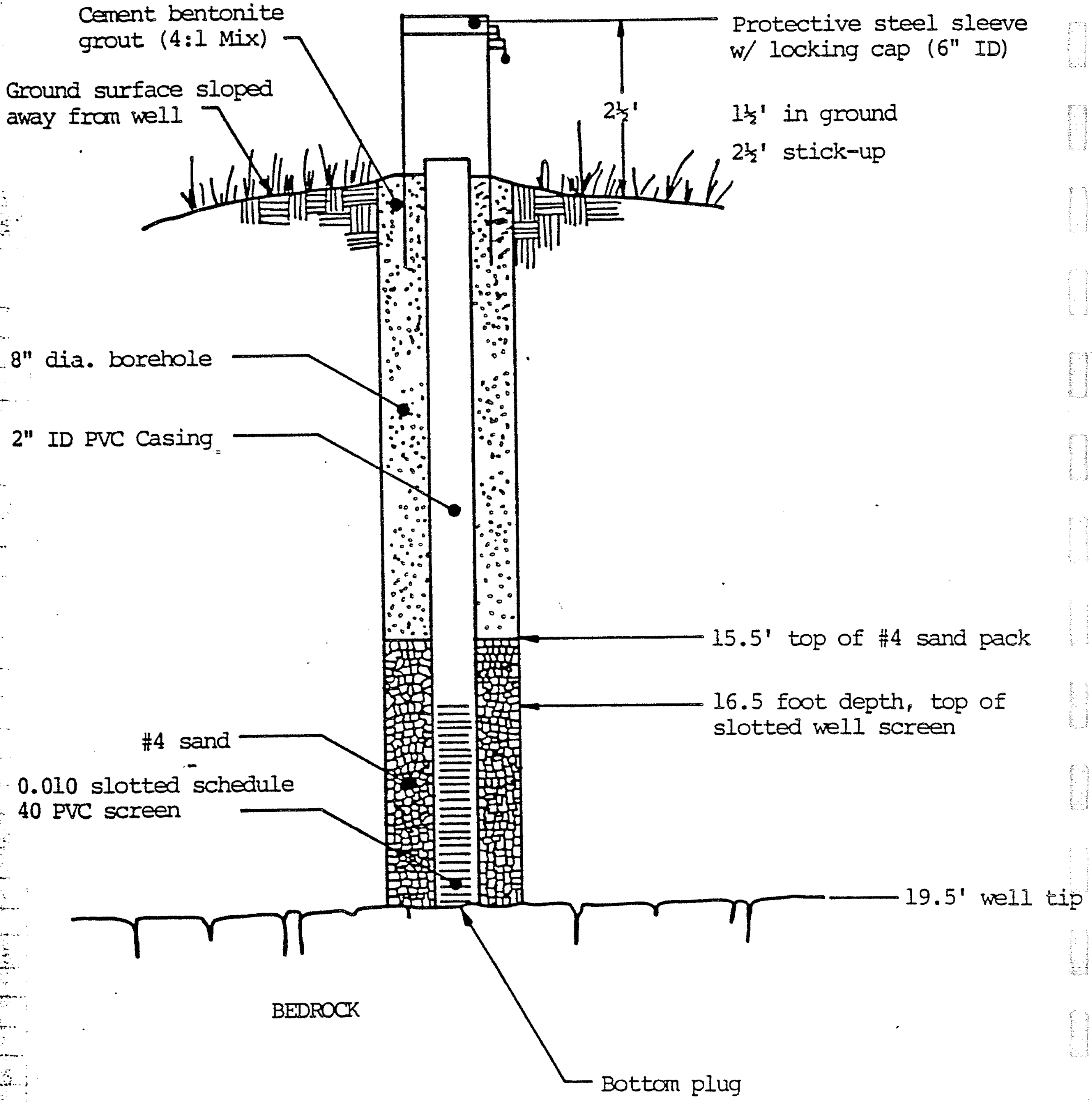
DATE STARTED 7/20/79 COMPLETED 7/20/

SAMPLE NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	N	DESCRIPTION & CLASSIFICATION	WELL	WATER TABLE & REMARKS
1	3	5	6	9	11	Extremely moist black organic rich silt loam (SANDY-SILT), granular 1.2		
						Extremely moist highly mottled yellowish brown coarse silt loam (SANDY-SILT), very friable, nonplastic		2.0
2	7	9	13		22	---- grades downward to ---- 2.5		3.0
						Moist to extremely moist distinctly mottled brown silty clay loam (CLAYEY-SILT), firm to medium consistance, slightly plastic, lamianted		5.0
						---- grades downward to ---- 6.5		
3	8	12	14		26	Extremely moist grayish brown heavy silt loam (CLAYEY-SILT), massive structure, slightly plastic, medium consistance	2 inch PVC pipe Bentonite	Original suri on edge of de pressional ai along Marilla Street. Silty lake se ments to the of bore.
4	5	6	8		14			
						---- grades downward to ---- 13.0		
						Extremely moist dark grayish brown silty clay loam (CLAYEY-SILT), soft, plastic, cohesive	15.0 16.0 Well Screen Sand Pack 18.0	
5	2	3	3	4	6	20.0		No water at completion.

2 inch PVC Well

Boring completed at 20.0 feet.

N = NUMBER OF BLOWS TO DRIVE — — — " SPOON — — — " WITH — — — lb. WT. FALLING — — — " PER BLO



MALCOLM
PIRNIE

MONITORING WELL DETAIL FOR WELL NO. 4A

EARTH DIMENSIONS, INC.
Test Borings and Logs
East Aurora, New York 14052 • (716) 655-1717

ITORING WELLS 6A & 6B

SURF. ELEV. ______

PROJECT 4G79b Monitoring well installation Republic Steel landfill, South Buffalo, N.Y.

CLIENT Malcolm Pirnie, Inc.

LOCATION Landfill area east side of Hopkins Road

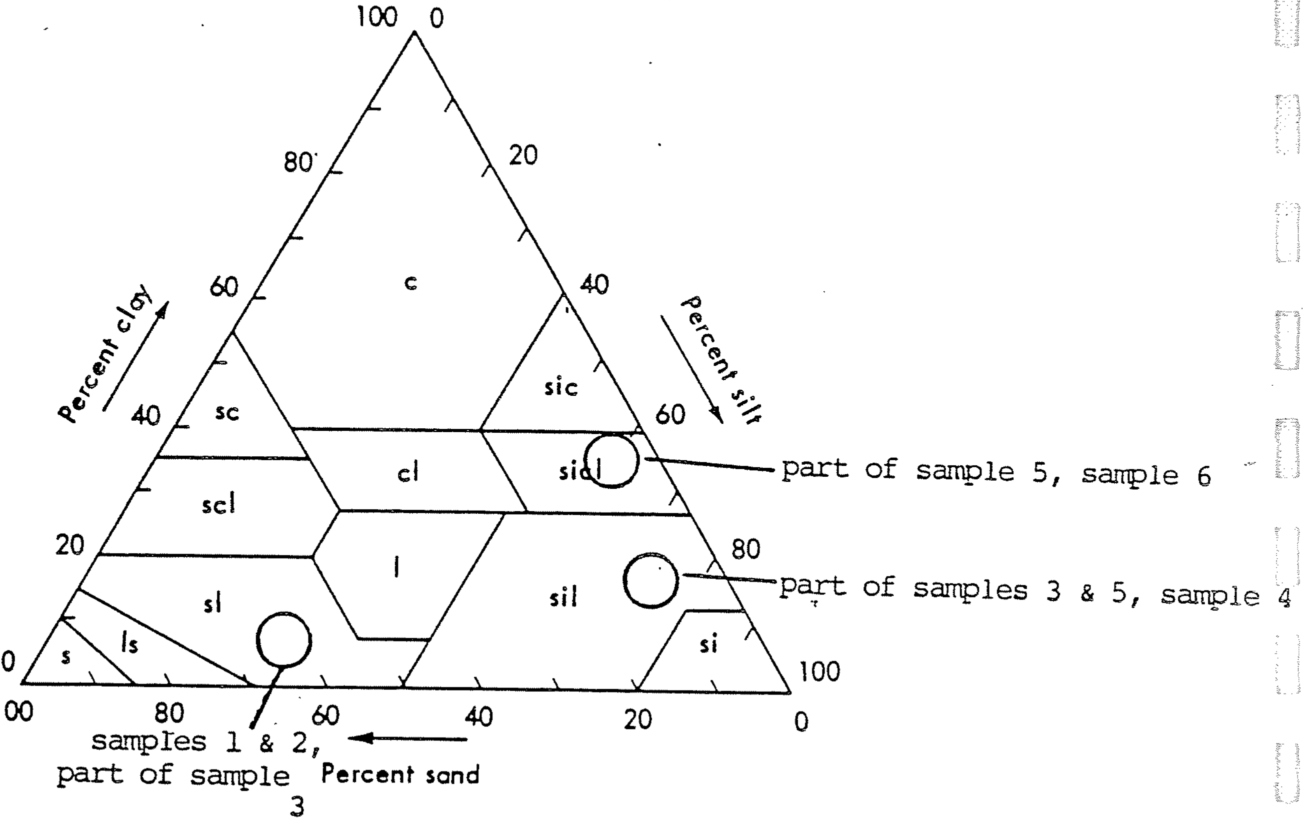
DATE STARTED 8/16/84 COMPLETED 8/16/84

DEPTH feet	SAMPLE NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	N	DESCRIPTION & CLASSIFICATION	WELL 6A		WATER TABLE & REMARKS	WEL 6E
	1	12	22	70		92	Moist black gravelly sandy loam (SILTY-SAND) fill with 15 to 40% slag and cindery fill, very dense 3.5	Two inch inside diameter PVC pipe	Cement/bentonite grout	Soil and slaggy fill to 7.0 feet over silty lake sediment to 12.0 feet over clayev lake sediment to end of boring.	2 inch inside diameter PVC pipe
5	2	9	14	23	34	37	Extremely moist black gravelly sandy loam (SILTY-SAND) fill with 15 to 40% slag and cindery fill, dense 7.0			(1) Granular bentonite	
	3	9	12	6	5	18	Moist to extremely moist black silt loam (CLAYEY-SILT) original topsoil, compact 9.0			8.5	
10	4	6	11	17	20	28	Moist to extremely moist distinctly mottled olive brown silt loam (CLAYEY-SILT), very stiff, thinly laminated with coarse silt-fine sand interlayers ¼ to 2" thick 12.0			9.5 11.0	(1
	5	2	9	16	23	25	- - - - - - clear transition to - - - - Extremely moist faintly mottled olive brown silty clay loam (CLAYEY-SILT), very stiff, thinly laminated with very thin coarse silt lenses - - - - clear transition to - - - 13.0			13.0	Screen #4 size sand
15	6	6	19	27	32	46	Moist faintly mottled olive brown silty clay loam (CLAYEY-SILT), hard, thinly laminated with occasional very thin coarse silt lenses		15.2 (1) 16.2 #4 sand		

Cont. on sheet 2...

4G79b

MONITORING WELLS 6A & 6B



c	Clay
si	Silt
s	Sand
l	Loam
sc	Sandy clay
sic	Silty clay
scl	Sandy clay loam
sicl	Silty clay loam
cl	Clay loam
sil	Silt loam
sl	Sandy loam
ls	Loamy sand

Textural triangle showing the percentages of clay (less than 0.002 mm), silt (0.002-0.05 mm), and sand (0.05-2.0 mm) in the basic soil textural classes (adapted from Soil Survey Staff, 1951).

ESTIMATED FIELD TEXTURES

MONITORING WELLS 6A & 6B continued

SURF. ELEV. ______

PROJECT 4G79b Monitoring well installation
Republic Steel landfill, South Buffalo, N.Y.

LOCATION Landfill area east side of Hopkins Road

CLIENT Malcolm Pirnie, Inc.

DATE STARTED 8/16/84 COMPLETED 8/16/84

DEPTH feet	SAMPLE NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	N	DESCRIPTION & CLASSIFICATION	WELL 6A		WATER TABLE & REMARKS
							Moist faintly mottled olive brown silty clay loam (CLAYEY-SILT), hard, thinly laminated with occasional very thin coarse silt lenses	2" ID PVC pipe	# 4 size sand	
							---- grades downward to ---- 19.0			
20	7	WR	5	8	11	13	Wet dark gray silty clay (CLAYEY-SILT), stiff, thinly laminated			WR - sampler penetration with weight c rods only.
										21.5
								Screen		23.5
							24.5	Soil backfill		24.5
25							Sampling completed at 21.5 feet. Augered to 24.5 feet. Hole collapsed to 23.5 feet after pulling augers back to 10.0 feet. Augered well 6B to 13.0 feet.	No water at completion.		
30										
35										

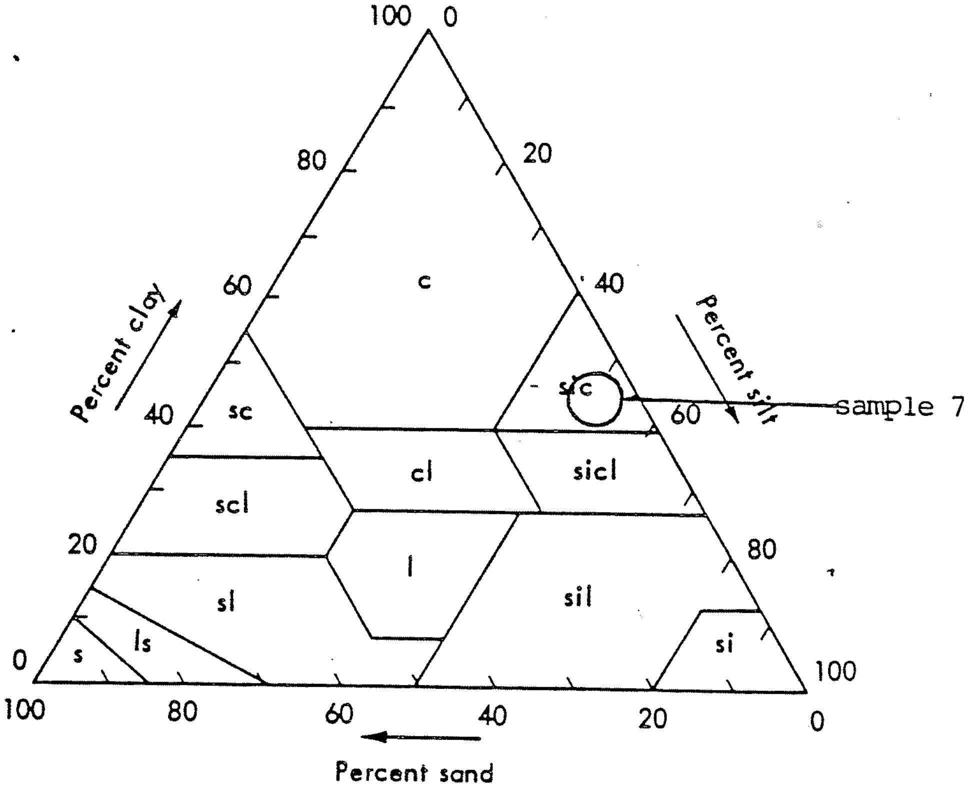
recycled paper

ecology and environment

NUMBER OF BLOWS

4G79b

MONITORING WELLS 6A & 6B continued



c	Clay
si	Silt
s	Sand
l	Loam
sc	Sandy clay
sic	Silty clay
scl	Sandy clay loam
sicl	Silty clay loam
cl	Clay loam
sil	Silt loam
sl	Sandy loam
ls	Loamy sand

Textural triangle showing the percentages of clay (less than 0.002 mm), silt (0.002-0.05 mm), and sand (0.05-2.0 mm) in the basic soil textural classes (adapted from Soil Survey Staff, 1951).

ESTIMATED FIELD TEXTURES

REFERENCE NO. 10

DRAFT

GRAPHICAL EXPOSURE MODELING SYSTEM

(GEMS)

USER'S GUIDE

VOLUME 3. GRAPHICS AND GEODATA HANDLING

Prepared for:

U.S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF PESTICIDES AND TOXIC SUBSTANCES
EXPOSURE EVALUATION DIVISION
Task No. 3-2
Contract No. 68023970
Project Officer: Russell Kinerson
Task Manager: Loren Hall

Prepared by:

GENERAL SCIENCES CORPORATION
8401 Corporate Drive
Landover, Maryland 20785

Submitted: December 1, 1986

POPULATION

SITE	1 mile : 1.67 km Pop.	#⌂'s	2 mile : 3.33 km Pop.	#⌂'s	3 mile : 5 km Pop.	#⌂'s
Formso	3024	1190	0	0	2836	1757
Moench	0	0	1369	629	3973	1316
Terwillinger	0	0	1583	716	0	0
Nizrin Rodgers	0	0	3014	1133	2022	845
Camp Arrowhead	228	98	1295	523	1999	979
Boehmer Property	1174	707	640	234	977	398
Machias Landfill	1174	707	640	234	977	398
Route 242 Site	126	50	1688	891	0	0
Michael Wolfer	1371	495	1236	501	2429	982
Walmore Road	0	0	2632	981	23581	8512
64th St South	2327	766	26954	10209	43007	17674
Town of Lockport	2154	672	7526	2979	14761	5807
Lasalle Expressway	11100	4229	16372	6092	10665	4016
Roblin Steel	11650	4425	22023	8501	34155	12307
Carborundum	18758	8661	21039	9049	18866	6945
Carborundum Globar	8790	3380	32103	12431	18061	7993
Stauffer Chemical	1273	405	5054	1839	8346	2254
Frontier Bronze	2351	893	38415	15158	41041	17067
Dussault Foundry	16231	6856	12699	4525	7114	2367
SKW Alloys	5540	2157	28495	10667	24264	16503
LSB Warehouse	16854	4247	22107	8548	34464	12119
Republic Steel	16378	6180	45439	17271	43336	16953
Bflo. Hopkins Landfill	14719	5507	49981	19153	41841	16444
Hi View Terrace	11261	3575	19409	5983	37186	12641
Bern Metal	21942	11711	62578	31979	105668	45344
FMC Corp	782	318	17331	6686	44012	17829
E.I. Dupont	9395	3777	36608	14882	64840	25523

* POPULATION I
CUMULATI
ie. BOEHMER PR

0-1 mile: 1174
1-2 mile: 640
2-3 mile: 977

HAVE TO SUM
TOTAL PO
WITHIN ENTIRE
RING AS I
INCREASES OUTWA

REFERENCE NO. 11

Critical Habitats

ERIE COUNTY (15)

* * *

)	1.	Huckleberry Swamp	
◪	~~1.~~	~~Lower Niagara River Duck Wintering Area~~	~~Aerial Survey~~
◪	2.	Grand Island & Vicinity of Upper River	Wayne Hadley
◪	3.	*Strawberry Island	Wayne Hadley & Robert F. An
■	4.	Tillman Road Swamp	Erie County EMC
◪	5.	Spring Brook	Gordon Deitrich III
⊙	6.	Spooner Creek Valley	Gordon Deitrich III
◪	7.	Times Beach Diked Dredge Disposal Site	Robert F. Andrle (Dr.)
◪	8.	Buckhorn Island Control Dike Gull and Tern Colony	Robert F. Andrle
◪	9.	Donnelley's Pier (North Breakwater) & North End Light Breakwater Gull and Tern Colonies	Robert F. Andrle
◪	10.	Source of the Niagara River Waterfowl, Gull and Tern Concentration Area (International)	Robert F. Andrle
◪	11.	Pinehurst Raptor Migration Observation Site	Robert F. Andrle
☐	12.	Dead Man's Lake Bog	Terry Moore (DEC) and Alan Seidman
◪	13.	Burnt Ship Creek Waterfowl and Marsh Bird Habitat	Dr. Robert F. Andrle
☐	14.	Hemstreet Road Site	Alan Seidman
☐	15.	Vail Road Site	Alan Seidman
◪	16.	Buffalo Bridge to Cattaraugus Creek Duck Wintering Area	Aerial Survey
)	17.	Onondaga Limestone Escarpment - Harris Hill - Clarence	

SIGNIFICANT HABITAT MAPS

The key below is to be used for interpreting significant habitat overlays at the scale of 1:250,000.

15-10 -

☐ Significant for plants

◩ Significant for wildlife

▣ Significant for both plants and wildlife

○ Potentially significant for plants

◎ Potentially significant for wildlife

◍ Potentially significant for both plants and wildlife

▲ Known deer concentration areas

△ Known deer concentration areas not in-use

⟁ Aerial survey yards - not field checked

✡ Other - such as unique geological formations

A potentially significant habitat is one that once was occupied, where the potential exists for reestablishing the species. It also applies to unconfirmed sightings in a given area.

The numbers identify significant habitats. The digits preceding the hyphen are county code numbers (with counties listed aplphabetically). A county code sheet is attached. Numbers following the hyphen ranging from 1 to 99 were assigned to significant habitats as reports were received for each county. Numbers of 101 or more denote deer concentration areas.

* * *

The significant habitat locations on this map represent initial reports of areas from a variety of people, but usually from those affiliated with a governmental agency (including Department of Environmental Conservation), university, local conservation organization, bird club, etc., and occasionally just knowledgeable individuals. Most locations have <u>not</u> been verified as to exact boundaries, confirmation of data reported, etc., and at this stage the map (overlay) is meant only as an early alert or "red-flag" system strictly for the purpose of identifying potential conflicts. If a potential conflict with a development project is determined from a map location, more information should be obtained from DEC, and a field check may be warranted to resolve the situation. As more accurate information is obtained, and/or locations are verified, the maps will be refined.

The map locations represent only information on hand and are by no means complete Because an area does not appear on a map, doesn't mean it isn't significant, it probably just hasn't been reported.

0/77 - New York State Department of Environmental Conservation
Bureau of Wildlife - Wildlife Habitat Section - Significant Habitat Program

7. <u>Hoopers Corners Bog - Towns of Machias and Yorkshire.</u> Bog contains at least two rare plant species.

C. <u>Chautauqua County:</u>

1. <u>Chautauqua Creek Gorge - Towns of Westfield and Chautauqua.</u> Scenic gorge with unusual geologic and vegetative interest. Also, historic nest sites for Ospreys and Eagles.

2. <u>Canadaway Creek Gorge - Towns of Arkwright and Pomfret.</u> Unique geologic area with several waterfalls. Also, historic nest sites of Endangered Raptors.

3. <u>Twenty Mile Gulf - Town of Ripley.</u> Scenic, unique geology and vegetation. Historic nest sites of Endangered Raptors.

D. <u>Erie County:</u>

15-3 1. <u>Strawberry Island - Town of Tonawanda.</u> This area provides a major waterfowl feeding and resting area, as well as important game fish spawning habitat. This horseshoe-shaped island has been degraded over the years by gravel removal. Although this activity has stopped, there is potential that natural erosion could continue to degradate the island.

15-1 2. <u>Huckleberry Swamp - Town of Holland.</u> This unique area (15 acres±) has rare plants such as Sphagnum Moss, and Larch. The area is part of Erie County Forest #5, so it has a certain degree of protection. The main potential problem is lack of appreciation on the part of Erie County; thereby, it may be improperly managed.

15-2 3. <u>Grand Island Shoreline - Town of Grand Island.</u> This shallow water habitat provides excellent fish habitat and is a major wintering habitat for 10-20,000 ducks. The major species of waterfowl are the rather uncommon Canvasback, common Merganser and Scaup. The shoreline is very vulnerable to degradation by dock and bulkhead construction.

15-7 4. <u>Times Beach - City of Buffalo.</u> This partially filled, shallow-diked disposal site provides an extensive littoral zone. Therefore, waterfowl and shorebirds utilize the area. A total of 186 species of birds have been identified here. The fact that it is located within walking distance of downtown Buffalo gives great potential for high human use. While the area is owned by the City and leased to the Army Corps of Engineers, the area is destined to be filled with dredge material. However, the area is very valuable to local and migratory birds and should be maintained in its present state. It has the potential of being lost if the Corps continues its plans to fill the site.

5. 15-8 Gull and Tern Colony - Buckhorn Island - Town of Grand Island. This man-made (rock) dike is the site of one of the few and largest Gull and Tern nesting colonies in the area. While the area itself will tend to remain, it is subject to visitation by humans. Disturbance during nesting could be disastrous to the reproduction of Gulls and Terns.

6. 15-9 Donnelley's Pier and North End Light Breakwater Gull and Tern Colonies - City of Buffalo. These breakwaters provide the only two major Gull and Tern nesting sites in the Buffalo area. Even though these piers are permanent, there is the chance of rehabilitation of the piers which would destroy the nest sites. Also, human disturbance during the nesting period could be detrimental to the reproduction of Gulls and Terns.

7. 15-13 Burnt Ship Canal and Buckhorn Island - Town of Grand Island. This large cattail, rush and marsh habitat supports a large variety of aquatic life which provides feeding and nesting habitat for a variety of waterfowl and shorebirds. The area also hosts a large number and variety of migratory waterfowl. In fact, the area serves as the southern terminus of a large number of diving ducks. Buckhorn Island is under control of the Niagara Frontier State Park Commission and should be relatively safe from degradation.

8. 15-14 Hempstead Road Site - Town of Marilla - 10 acres. This bog contains rare and unique flora characteristics of the boreal forest. Since the area is on private land, it is subject to filling or draining unless protected under the Freshwater Wetlands Protection Act. Also, the area could be subject to degradation by National Fuel Gas by the laying of a large diameter gas line.

9. 15-17 Onondaga Limestone Escarpment - Harris Hill - Clarence. This 27 acre calcareous rock outcrop provides a unique area for calciphilic plants. Due to the rare occurrence of such sites, the area is unique. The site could be degradated by removing rock and/or building sites for residences.

10. Eighteen Mile Creek - Towns of Evans and Hamburg. This scenic gorge area between Old Lake Shore Boulevard and Lake Erie has remained essentially undisturbed from human and commercial development. The only indiscriminate use is by fishermen. The land is protected by a restrictive clause in the deed to prevent any commercial development. The area has lush growth of ferns, and large Eastern Cottonwoods dominate the gorge. Eighteen Mile Creek diffuses into several channels at this delta. Large scale human use and/or pollutants could have a devastating effect on this pristine lakeshore habitat due to its close proximity to Metropolitan Buffalo. Details of the area can be found in the fishing rights acquisition file located in the Olean office.

11. Counterfeiters Ledge - Town of Newstead. This 27 acre area also extends into the County of Genesee. This area is similar to the Onondaga Limestone Escarpment. Calciphilic plants occur here. Wood cutting and residential development represent the only major threats to this area.

12. Newstead Sink - Town of Newstead. The area (200 acres±) is in two parcels located on either side of the New York State Thruway. The Spring flooding provides a stopover for several thousand ducks, geese and swans. It is probably the most highly used waterfowl area in Erie County. The area provides nesting habitat for some resident waterfowl. The most important threat is due to agricultural drainage and encroachment.

E. Niagara County:

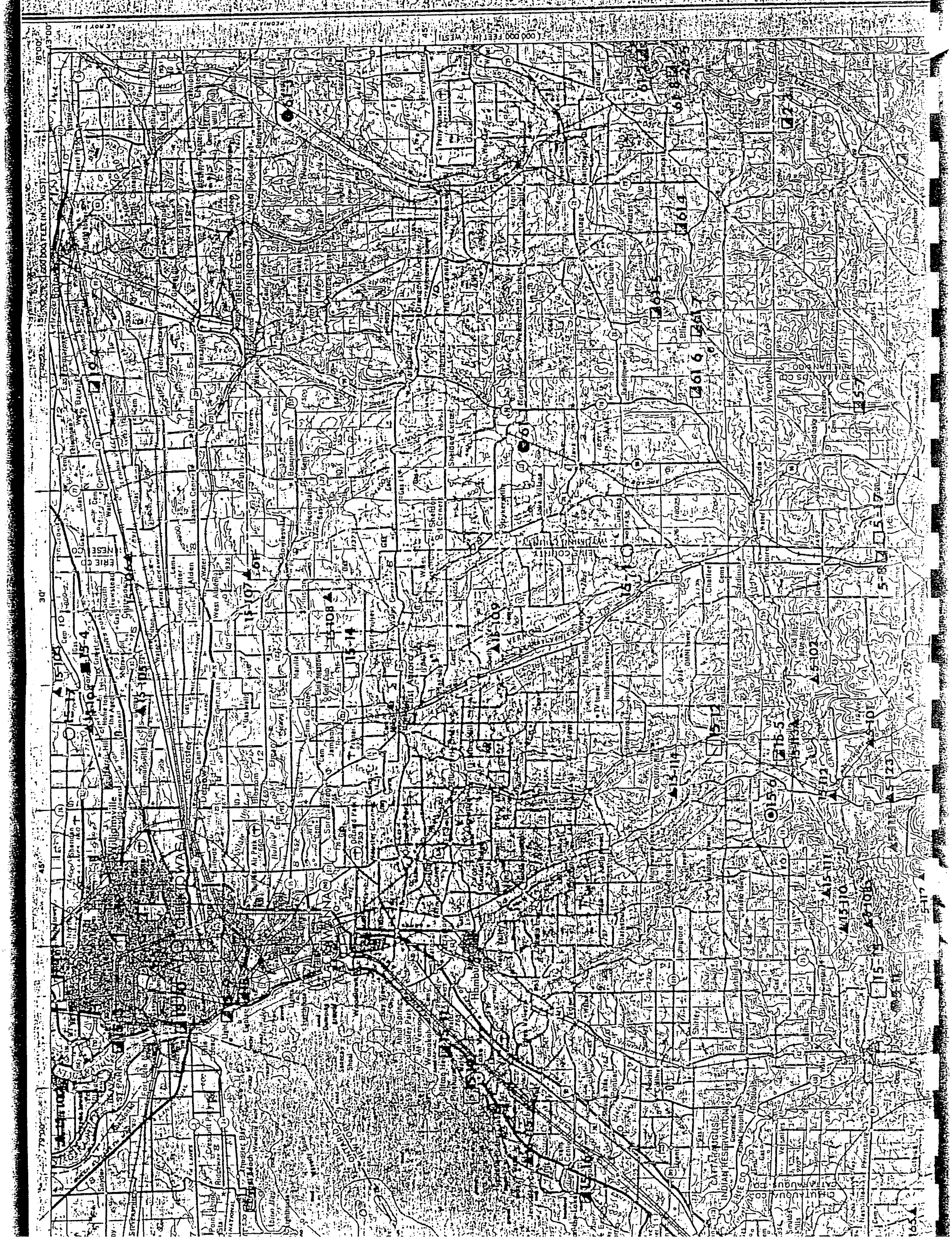
Niagara Gorge (Hydroelectric Gull Concentration Area) - Town of Lewiston, Town of Niagara on the Lake. This is one of the largest Gull concentration (10,000+) areas in the Region. They are attracted by the "chumming" of small fish at the hydroelectric plants. The rocky, nearly vertical walls are quite safe from disturbance, except a potential threat exists from additional expansion of power projects by the U.S. or Canada.

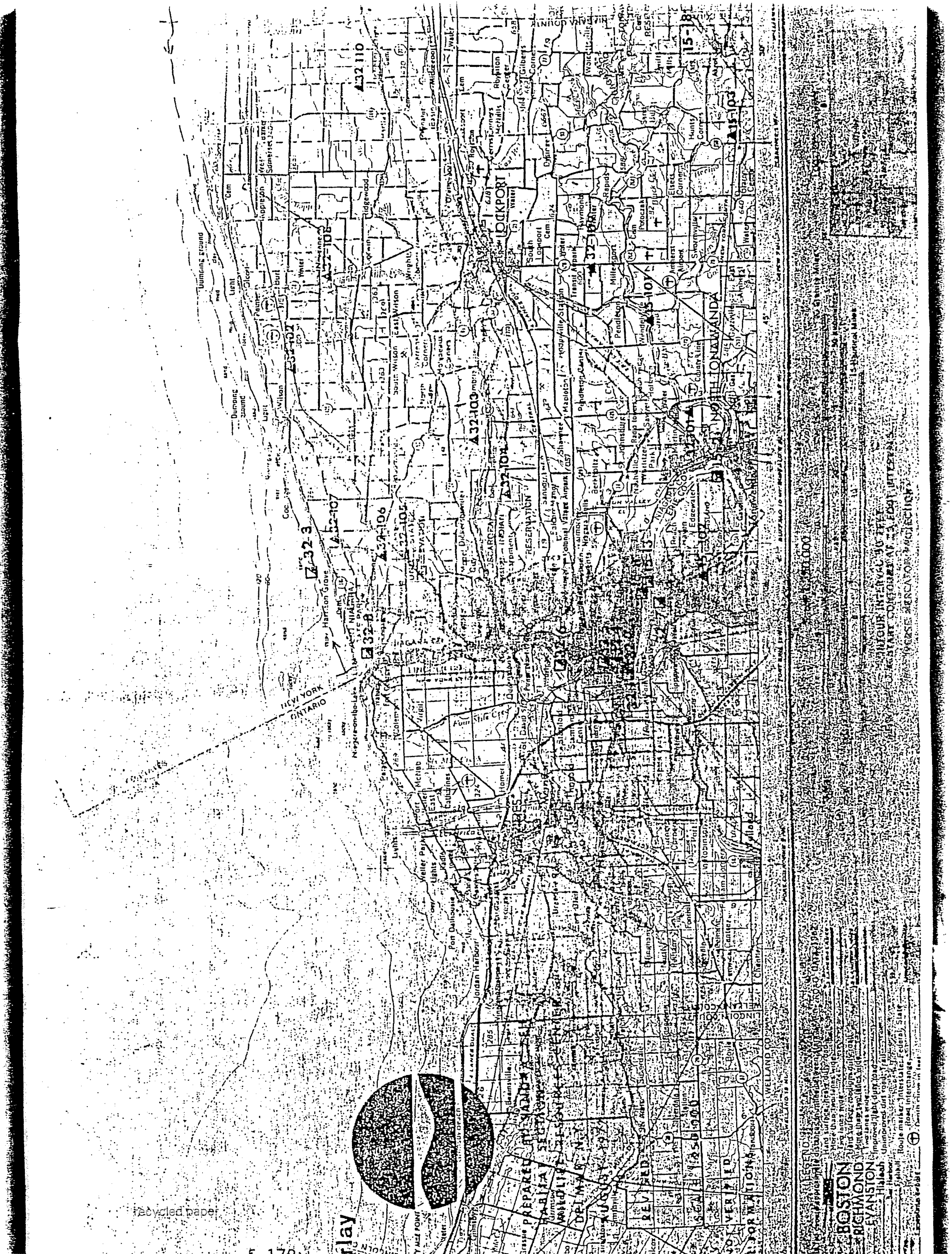
F. Wyoming County:

Beaver Meadows Nature Sanctuary - Town of Java. This 226 acre diverse, ecological area is owned by the Buffalo Audubon Society. The area is used as an outdoor laboratory and educational center. The area is unique in providing several diverse communities in close proximity to each other.

Terry L. Moore
Regional Wildlife Manager
Region 9

Attach

78°00'
30'
45'
79°00'
GENESEE CO
WYOMING CO
ERIE CO
CATTARAUGUS INDIAN RESERVATION
Alden
Lancaster
Williamsville
Bennington
Sheldon
Arcade
Java
Hamburg
Eden
Holland
Sardinia
Chaffee
Freedom
Sandusky
Yorkshire
Houghton
Perry Center
Strykersville
Springville
Colden
Pike
Castile


LOCKPORT
NORTH TONAWANDA
NEW YORK
ONTARIO
Niagara-on-the-Lake
Harrison Grove
Wilson
Olcott
Dumping ground
Port Dalhousie
Jordan Harbour
St Catharines
Four Mile Creek
TUSCARORA INDIAN RESERVATION
Pendleton
Millersport
Wendelville
Swormville
Hunts Corners
BOSTON
RICHMOND
EVANSTON
recycled paper

REFERENCE NO. 12

CONTACT REPORT

Meeting [ ]   Telephone [X]   Other [ ]

CLIENT: USDA Soil Conservation Service

ADDRESS: 21 South Grove Road
East Aurora

CONTACT: Mr. John Whitney

PHONE NO.: 652-8480

FROM: D. Sutton

TO: P. Farrell

DATE: 1/10/89

CC:

SUMMARY: Whiting Development, NYSDEC Phase 1

Mr. Whitney stated that he did not believe that any cropland was being irrigated by groundwater with a 3 mile radius of the Whiting site within Erie County.* He did indicate that it was possible that private garden plots were irrigated by groundwater and that the Dande Farms Golf Course was irrigated by groundwater.

wj/XA602

I have discussed this with Frank Newton, County Executive Director of the Agricultural Stabilization and Conservation Service. We looked at the maps and decided there might be some irrigation within a 3 mile radius of the Whiting site.

John Whitney
District Conservationist.

*ODELL Farms on Bloomingdale Road may occassionally irrigate.

*GERALD KARCHER on Carney Road might irrigate.

CONTACT REPORT

AGENCY : USDA SOIL CONSERVATION SERVICE (SCS)
ADDRESS : 21 S. GROVE RD., EAST AURORA, NY
TELEPHONE : (716) 652-8480
PERSON CONTACTED : JOHN WHITNEY
TO : FRED MCKOSKY
FROM : PAM GUNTHER
DATE : AUGUST 25, 1987
SUBJECT : PRIME AGRICULTURAL LANDS THAT HAVE BEEN IN PRODUCTION SINCE 1982 FOR DEC PHASE 1 INACTIVE HAZARDOUS WASTE SITES OF ERIE CO.
XC : M. SIENKIEWICZ, G. FLORENTINO, J. SUNDQUIST, P. FARRELL, FILE ND-2000

John Whitney can provide * aerial photos (slides) for all hazardous waste sites in Erie Co. for the following years: 1938, 1958, 1966, 1978, 1981-1987. They cost $1.00 each with a 2 week turnover time. Payment must be received in advance.

To obtain location on prime agricultural lands that have been in production over the past 5 years we looked at enlarged 1978 aerial photos that are updated annually from farmers that maintain crop records with the Agricultural Stabilization Conservation Service (ASCS). To receive federal subsidies the farmers must be in contact with ASCS. Therefore, the ASCS has a good record of who's growing what and where. Truck farmers do not receive federal subsidies and are excluded from ASCS records. Attached is a list of the distances to each prime agricultural farmland from the inactive hazardous waste site and the soil type that classifies the land as prime. Note that SCS has fewer soil types classified as prime ag. lands than does the New York State classification system. New York State classifies all SCS prime ag. lands as prime but also includes more soil types. Note this difference for the Gutenkist site. All other sites will have the same ag. land for both state and SCS. Note this distance was calculated for up to 2 miles away from the site.

Mr. Whitney has also provided me with a bibleography of ground water resources for Erie County which is attached. I have also ordered the attached USGS reports that were recently published.

		Distance	Soil Type
ffalo - Hopkins		> 2 miles	-
I. Dupont		> 2 miles	-
C Corp.		> 2 miles	-
iting Development Corp.		0	Collamer silt loam, Ag. land adjacent to site
public Steel		> 2 miles	-
yder Tank Co.		> 2 miles	Varysburg gravelly loam
llage of Springville		300 ft.	Varysburg gravelly loam
mes Fox site		300 ft	Manlius shaly silt loam
tankist	State	1600 ft.	Farnham shaly silt loam
	ASCS	6015 ft.	Blasdell shaly silt loam
en Sanitation Services		4950 ft.	Niagara silt loam (note: this land is only 2 acr
orge Schreiber		700 ft.	Palmyra gravelly loam
arence Ready Mix		1700 ft.	-
ntral Auto Wrecking		> 2 miles	Hamlen silt loam
View Terrace		5280 ft.	-
ft and Hopkins		> 2 miles	-
Warehouse		> 2 miles	-
as Metals		> 2 miles	*

* slides are actually available through the ASCS office not SCS, though we may provide technical assistance in identifying slides needed and in interpretation.

John R. Whitney
District Conservationist

REFERENCE NO. 13

Draft

The National Register of Historic Places

1976

dows set in almost round recesses, decorative brickwork and bargeboards, stone quoins and trim, 1st-story window with stained glass transom. Original L-shaped structure enlarged and redecorated with Queen Anne elements, late-19th C. *Private.*

Poughkeepsie. **LOCUST GROVE (SAMUEL F. B. MORSE HOUSE)** , 370 South St., 1830. Frame, clapboarding; 2 stories, modified T shape, gabled roof, interior chimneys, bracketed cornice, projecting octagonal wings, 4-story stuccoed end tower with round arched windows, porch with latticework fascia and posts, carriage house extension with large round arched openings; substantially expanded during Morse's ownership. Italianate. Home after 1847 of Samuel F. B. Morse, inventor of the telegraph and a noted artist who had studied and traveled in England and Europe. *Private; not accessible to the public:* NHL.

Poughkeepsie. **MAIN BUILDING, VASSAR COLLEGE**, Vassar College campus, Mid-19th C., James Renwick, architect. Brick, 4 stories with 5-story pavilions, U-shaped, mansard roof punctuated by towers and central convex mansard section. One of the earliest Second Empire buildings in the U.S.; reputedly designed after 16th C. Tuileries Palace. School founded by Matthew Vassar, Poughkeepsie philanthropist who pioneered higher education for women. *Private.*

POUGHKEEPSIE. MILL STREET-NORTH CLOVER STREET HISTORIC DISTRICT, 19th-20th C.. Residential area containing primarily 2-3-story brick houses from post-Civil War period in styles ranging from Greek Revival to those of the Victorian period; notable are the numerous Second Empire structures and the Queen Anne Italian Center (see also Italian Center, NY). Eastern section became city's civic and cultural center under direction of the Vassar family. *Multiple public/private.*

Poughkeepsie. **POUGHKEEPSIE CITY HALL,** 228 Main St., 1831. Brick, 2 stories, rectangular, gabled roof, denticulated cornice, front open balustraded frame belfry with hipped roof, rear cupola with pyramidal roof, front center entrance with transom and side lights; brownstone trim including wide belt course between stories, lintels, and sills; 2 brick additions; altered. Greek Revival. Built as market and village hall, presumably with open 1st-floor market area; served as post office, 1865-1886. *Municipal.*

Poughkeepsie. **SECOND BAPTIST CHURCH,** 36 Vassar St., Mid-19th C.. Brick base, frame, flush siding; 1 1/2 stories over high basement, rectangular temple-form, gabled roof, interior end chimneys, entablature surrounding building; front tetrastyle Doric pedimented portico with balustrade, oculus in tympanum, and 2 entrances with shouldered architraves; side pilasters; side rectangular windows, each with cornice and shouldered architrave; altered. Greek Revival. Property originally purchased from Matthew Vassar's family; building has been used for Protestant and Jewish worship. *Private.*

Poughkeepsie. **UNION STREET HISTORIC DISTRICT,** About 8 blocks in downtown Poughkeepsie centered around Union St., 19th C.. Working class urban neighborhood containing 173 historical commercial and residential structures; features numerous 2 1/2-story brick buildings in styles from Federal to those of the Victorian period, long narrow lots, and backyards. City's oldest section; settled largely by German, Irish, Italian, and Slavic immigrants, and by Blacks. *Multiple public/private.*

Poughkeepsie. **VASSAR HOME FOR AGED MEN,** 1 Vassar St., 1880. Brick, 3 stories over high basement, rectangular, low hipped roof with deck, interior end chimney, gabled section rises above cornice line on each side, bracketed cornice with narrow arched corbel tables below, stairway leads to front entrance with transom; 1-story balustraded porch with slender columns, similar side and rear porches with entrances; granite banding connects granite architraves and sills. Italianate. Built on the site of Matthew Vassar's town residence as home for men 65 and over, as established by Matthew Vassar, Jr., and John Guy Vassar. *Public.*

Poughkeepsie. **VASSAR INSTITUTE,** 12 Vassar St., 1882, J. A. Wood, architect. Brick, 2 1/2 stories, rectangular, convex mansard and hipped roof sections, interior chimney, round arched dormers with raised ridge, bracketed cornice with decorative frieze, front center 3-story tower, entrance porch with paired columns, recessed brick paneling, segmental arched openings, granite trim, rear lower wing with round arched windows houses auditorium; tower dome removed. High Victorian Italianate with Second Empire elements. Built for Matthew Vassar Jr. and John Guy Vassar; contained natural history museum and library. *Private.*

Poughkeepsie. **VASSAR, MATTHEW, ESTATE (SPRINGSIDE),** Academy and Livingston Sts., 1850-1852, Andrew Jackson Downing, architect. Rural estate containing a 2-story cottage with board-and-batten siding, gabled roof, bay windows, and decorative bargeboards, shutter trim, and bracketing; a gatehouse in similar style; and the remains of an L-shaped barn complex. Picturesque Gothic Revival. Home of Matthew Vassar, Poughkeepsie brewer and Vassar College founder (see also Main Building, Vassar College, NY). Grounds also designed by early landscape architect Andrew Jackson Downing. *Private; not accessible to the public:* NHL; HABS.

Red Hook. **MAIZEFIELD,** 75 W. Market St., 18th-19th C.. Brick, 3 stories, rectangular main block with later additions, flat roof, 4 interior end chimneys, 1-story front entrance portico with Palladian window above, heavy cornice with block modillions. Federal. Only extant dependency-2-story, hipped roof board-and-batten cottage designed by Alexander Jackson Davis. Residence of Gen. David Van Ness, prominent military and political leader in late-18th and early-19th C. *Private.*

Rhinebeck. **DELAMATER, HENRY, HOU** 44 Montgomery St., 1844, Alexander Jack Davis, architect. Frame, board-and-bat n ing; modified rectangle; hipped roof wi cr gable, each end with finial; interior ch carved scalloped bargeboards; 3 front Tu arched openings, 1-story 3-bay-wide porch carved flat posts and brackets formin Tu arches, balustraded deck; center 2nd st y attic, each with rectangular window under bl pointed arch with tracery; each side with window; interior designed by architect monize with exterior design; rear vera a closed and extended; board-and-batten carri house. Excellent example of Gothic Rev cottage design advocated by Alexander ck Davis and Andrew Jackson Downing. *Pr*

Sylvan Lake vicinity. **SYLVAN LAKE RO SHELTER,** 5000 B.C.-700 A.D.. Undisturb stratified rock shelter; served as winte ca for Archaic hunters beginning c. 5000 cavations between 1964 and 1966 reve d merous remains of the Sylvan Lake Culture 2500 B.C.), elements of the Susqueha Tradition (c. 1500-1000 B.C.), and Mic e Late Woodland deposits. *Private.*

ERIE COUNTY

Buffalo. **ALBRIGHT-KNOX ART GAL E** 1285 Elmwood Ave., in Delaware Pa 1900-1905, Edward B. Green, architect. tially marble faced, 2 stories, modified ha gabled roof sections; E pedimented Ic c trance portico flanked by colonnade wi ending in pavilions, each with caryatids by gustus Saint Gaudens; W semielliptic Ic porch flanked by colonnaded sections; te sculpture courtyard. Neo-Classical vi Built to permanently house the collections the Buffalo Fine Arts Academy. *Private.*

Buffalo. **BUFFALO STATE HOSPIT** Forest Ave., 1871-1890, Henry ob Richardson, architect. Random rough as sandstone, brick; 3 1/2 stories above hi ba ment, main block with 5 W wards a wards, gabled and hipped roof sections ab and flared hipped dormers, front entra recessed under 3-bay arcade flanked by jecting pavilion; 2 main-block towe steeply hipped roofs, shed dormers, an or turrets; machicolations, rectangular and mental arched windows, wings with project cross-gable sections; 3 wards removed, 96 4 service buildings; site plan by Freder Olmsted. Richardsonian Romanesque e ne Early development example of Henry Hob Richardson's work. *State:* HABS.

Buffalo. **DELAWARE AVENUE HIS O DISTRICT,** W side of Delaware Ave. betw North and Bryant Sts., 19th-20th C.. Rem ing section of elite residential area of p o nantly turn-of-the-century grand d li Era's Neo-Classical and Georgian Reviv st represented in designs by noted architects such as McKim, Mead, and White. Reflects overwhelmingly successful economic development stimulated by Pan-American Exposition, 1901. Prominent residents included Anson C. Goodyear and Millard Fillmore. *Multiple public/private.*

Buffalo. **GUARANTY BUILDING (PRUDENTIAL BUILDING)** , Church and Pearl Sts., 1894–1895, Louis Sullivan, architect. Steel frame, terra cotta sheathing; 12 1/2 stories, U-shaped, flat roof; front and side entrances, each with large lunette at 2nd-story level; first 2 stories topped by narrow cornice form base for upper levels, upper-story fenestration organized in vertical bands under round arches, oculi in coved section below cornice, decorative terra cotta ornament in low relief covers entire building; interior lobby with cast iron and leaded glass skylight, mosaic frieze and cast iron stairway; 1st-story store windows altered 1970 to form flat plane behind piers. Sullivanesque. A milestone in modern skyscraper development by Louis Sullivan, building successfully integrates structural clarity with ornamentation. *Private:* NHL; HABS.

Buffalo. **MACEDONIA BAPTIST CHURCH,** 511 Michigan Ave., 1845. Brick, 1 story, rectangular, gabled roof, enclosed entrance vestibule flanked by round arched windows in recessed rectangular panels, rounded and inscribed stone plaque above entrance; modified meetinghouse plan with apse; 20th C. alterations. Social and religious center for Black community for 125 years. Parish of Dr. J. Edward Nash, a founder of the Buffalo Urban League and the local branch of the NAACP. *Private.*

Buffalo. **PIERCE ARROW FACTORY COMPLEX,** Elmwood and Great Arrow Aves., 1906, Albert Kahn, architect. Factory complex containing 14 major buildings mainly of reinforced concrete steel with brick and glass curtain walls; saw-tooth roof sections, large spans up to 60′; some Arts and Crafts decorative elements on Administration Building front. Represents synthesis of trends foreshadowing developments in factory design; owned and operated by Pierce Arrow Co. until 1938; buildings later converted for diversified commercial use. *Multiple private.*

Buffalo. **ST. PAUL'S EPISCOPAL CATHEDRAL,** 125 Pearl St., 1850–1851, Richard Upjohn, architect. Sandstone ashlar, 1 story, irregular shape, gabled roof sections; cornice sections, some with modillions, some with trefoil arcading; front 3-stage tower with tall spire, entrance porch, transept chapel with entrance and adjacent 3-stage bell tower with spire, nave lancet windows with label molds, buttresses; towers completed 1870's; 1888 fire destroyed interior; new interiors designed by English architect, Robert Gibson; clerestory added. Fine example of Gothic Revival building adapted to unusual triangular site. *Private:* HABS.

Buffalo. **THEODORE ROOSEVELT INAUGURAL NATIONAL HISTORIC SITE,** Delaware Ave., 1838. Site includes Ansley Wilcox house: brick, 2 1/2 stories, modified rectangle; gabled roof sections, some with end returns; interior end chimney; front full-width 2-story pedimented portico, center entrance with fanlight, Palladian window in tympanum; 1863 remodeling, portico moved; 1890's additions; 20th C. interior alterations; restored. Greek Revival. Built for officers' quarters as part of Poinsett Barracks; site of Theodore Roosevelt's inauguration Sept. 14, 1901 after William McKinley's assassination. Museum. *Federal/NPS.*

Buffalo. **U.S. POST OFFICE,** 121 Ellicott St., 1897–1901, James Knox Taylor, architect. Rock-faced granited base, granite ashlar; 4 1/2 stories over high basement, modified rectangle, gabled and pyramidal roof sections, numerous gabled dormers, modillion cornice; front center tall tower with corner turrets, gargoyles, and spire with crockets and finial; front 3 entrances recessed under 3-bay entrance porch with elaborate Gothic detailing, each side with 3-bay entry and 1–3 entrances; rear cast iron porte-cochere, string courses, windows grouped under pointed arches; molded and carved detail including foliate capitals and buffalo heads; 4-story-high central courtyard above 1st floor with steel and glass roof surrounded by galleries with rectangular, segmental, and pointed arched openings; 1936 remodeling included roofing of 1st floor of courtyard and skylight. Later Gothic Revival. Excellent example of late-19th C. dual-nature architecture combining revivalist style with technological innovations; designed by James Knox Taylor, Supervising Architect of the U.S. Treasury. *Federal/GSA:* HABS.

East Aurora. **FILLMORE, MILLARD, HOUSE,** 24 Shearer Ave., 1826. Frame, clapboarding; 1 1/2 stories, modified L shape, gabled roof sections, exterior end chimneys, 1-story full-width front tetrastyle Doric porch, front center entrance; moved, 1915 and 1930; altered, c. 1930. Greek Revival elements. Built by Millard Fillmore, lawyer, state and U.S. representative, and U.S. Vice President who became President upon the death of Zachary Taylor in 1850. *Private; not accessible to the public:* NHL.

East Aurora. **ROYCROFT CAMPUS,** Main and W. Grove Sts., Late-19th C.–1938. Complex containing approximately 9 structures, the majority of which feature crenelated towers, half-timbered gables, and stone or shingled exteriors. Built as part of Arts and Crafts artistic community established in late-19th C. by writer Elbert Hubbard after visiting a similar English community organized by Arts and Crafts movement leader William Morris; utilized Medieval organization and building concepts as inspired by the writings of John Ruskin; in operation until 1938. *Multiple public/private.*

Irving. **THOMAS INDIAN SCHOOL,** NY 438 on Cattaraugus Reservation, 1900, Barney and Chapman, architects. Educational complex consisting of 9 principal brick Georgia[illegible] buildings and 25 dependencies; notable is the elaborate Administration Building with its ornate stone trim and decorative use of Indian related motifs and subject matter. Built by NY on reservation as a self-sufficient educational facility; school began, mid-18th C., as the Thomas Asylum of Orphan and Destitute Indian Children and developed into a successful, accredited educational institution; in operation until 1958 when closed as result of centralization of the public school system. *Tribal.*

ESSEX COUNTY

ADIRONDACK FOREST PRESERVE, *Reference—see Clinton County*

Crown Point. **FORT ST. FREDERIC,** Jct. of NY 8 and 9N, 1731. Limestone ruins of fort established by French to guard Lake Champlain route into Canada. Abandoned in 1759 after Lord Jeffrey Amherst captured nearby Fort Carillon, which the British renamed Fort Ticonderoga (see also Fort Ticonderoga, NY), during the French and Indian War. *State:* NHL.

Crown Point vicinity. **FORT CROWN POINT,** Crown Point Reservation, SW of Lake Champlain Bridge and NY 8, 1760. Limestone walls of 5-sided fort containing 6.5-acre parade ground and 2 of 3 original barracks, and surrounded by dry moat. Constructed by British as Fort Crown Point or Amherst after Lord Jeffrey Amherst who drove French from area during the French and Indian War. Damaged in 1773 when powder magazine exploded; reconstruction interrupted by Revolution was never completed. Occupied alternately by Americans and British during Revolution. *State:* NHL.

Essex vicinity. **CHURCH OF THE NAZARENE,** W of Essex on NY 22, 1855. Frame, board-and-batten siding; gabled roof with double pitch and end returns, front shoulder arched entrance, lancet windows, trefoil in gable; interior wooden arches spring from unengaged wooden posts to form primary roof support. Gothic Revival. Simple design apparently based upon small mission chapel prototype in Richard Upjohn's *Rural Architecture,* published 1852. *Private.*

Essex vicinity. **OCTAGONAL SCHOOLHOUSE,** On Rte. 22 in Bouquet, 1826, Benjamin Gilbert, builder. Rubble sandstone, 1 story, modified octagon, polygonal roof, octagonal open belfry with polygonal roof, front entrance with shed porch, rear entrance leads to frame vestibule addition; porch added. Octagon Mode. Probably state's oldest schoolhouse; served as school until 1952. *Municipal.*

Ironville. **IRONVILLE HISTORIC DISTRICT,** 19th C.. Rural residential area includes focal Penfield Homestead (1828), other houses, church, boardinghouse, Grange Hall, inn, schoolhouse, and ruinous remains of ironworks. Est. 1807; developed major iron industry; pioneered in industrial use of electricity. Museum. *Multiple private.*

recycled paper ecology and environment

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 1 - SITE LOCATION AND INSPECTION INFORMATION

I. IDENTIFICATION

01 State
NY

02 Site Number
915047

II. SITE NAME AND LOCATION

01 Site Name (Legal, common, or descriptive name of site)
Republic Steel

02 Street, Route No., or Specific Location Identifier
Marilla Street and Hopkins Street

03 City	04 State	05 Zip Code	06 County	07 County Code	08 Cong. Dist.
Buffalo	NY	14240	Erie	029	38

09 Coordinates
Latitude 42° 50' 15."
Longitude 78° 50' 00."

10 Type of Ownership (Check one)
[X] A. Private [ ] B. Federal ______ [ ] C. State [ ] D. County
[ ] E. Municipal [ ] F. Other ______ [ ] G. Unknown

III. INSPECTION INFORMATION

01 Date of Inspection
7 / 15 / 87
Month Day Year

02 Site Status
[ ] Active
[X] Inactive

03 Years of Operation
Early 1900 | 8/15/81
Beginning Year | Ending Year
[ ] Unknown

04 Agency Performing Inspection (Check all that apply)
[ ] A. EPA [ ] B. EPA Contractor ______ (Name of Firm) [ ] C. Municipal [ ] D. Municipal Contractor ______ (Name of Firm)
[ ] E. State [X] F. State Contractor E & E, Inc. (Name of Firm) [ ] G. Other ______ (Specify)

05 Chief Inspector	06 Title	07 Organization	08 Telephone No.
Mark Sienkiewicz	Env. Specialist	E & E	(716) 633-9881

09 Other Inspectors	10 Title	11 Organization	12 Telephone No.
Gene Florentino	Geologist	E & E	(716) 633-9881
			( )
			( )
			( )
			( )

13 Site Representatives Interviewed	14 Title	15 Address	16 Telephone No.
Don Nemec	Manager	Republic Steel, P.O. Box 6, Buffalo, New York 14240	(716) 826-2008
Bud Murray	Security		( )
Jim Farr			( )
Jim Meredith			( )
			( )

17 Access Gained By (Check one)
[X] Permission
[ ] Warrant

18 Time of Inspection
0900

19 Weather Conditions
Sunny, warm

IV. INFORMATION AVAILABLE FROM

01 Contact	02 Of (Agency/Organization)	03 Telephone No.
Walter Demick	NYSDEC	(518) 457-9538

04 Person Responsible for Site Inspection Form	05 Agency	06 Organization	07 Telephone No.	08 Date
M. Farrell		E & E	(716) 684-8060	7 / 15 / 87 Month Day Year

EPA Form 2070-13 (7-81)

D1712

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 State	02 Site Number
NY	915047

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 Physical States
(Check all that apply)

[ ] A. Solid
[X] B. Powder, Fines
[X] C. Sludge
[ ] D. Other ____________ (Specify)
[X] E. Slurry
[X] F. Liquid
[ ] G. Gas

02 Waste Quantity at Site
(Measure of waste quantities must be independent)

Tons ________
Cubic Yards ________
No. of Drums ________

100 acre landfill

03 Waste Characteristics (Check all that apply)

[ ] A. Toxic
[ ] B. Corrosive
[ ] C. Radioactive
[ ] D. Persistent
[ ] E. Soluble
[ ] F. Infectious
[ ] G. Flammable
[ ] H. Ignitable
[ ] I. Highly volatil
[ ] J. Explosive
[ ] K. Reactive
[ ] L. Incompatib
[ ] M. Not applicable

III. WASTE TYPE

Category	Substance Name	01 Gross Amount	02 Unit of Measure	03 Comments
SLU	Sludge	48,420	tons/yr	Fill material includes: Blast furnace flue dust, clarifier dust, furnace slag, iron oxide scale and dust, construction and demolition debris. Used oil was applied to roads as dust control measure. Spent pickle liquor from steel finishing operations.
OLW	Oily waste	20,000	gal/yr	
SOL	Solvents			
PSD	Pesticides			
OCC	Other organic chemicals			
IOC	Inorganic chemicals			
ACD	Acids	15×10^6	gallons	
BAS	Bases			
MES	Heavy Metals			

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 Category	02 Substance Name	03 CAS Number	04 Storage/Disposal Method	05 Concentration Range*	06 Measure of Concentratio
OCC	TOC		Landfill	<2 - 53	mg/l
MES	Iron		Landfill	0.03 - 20.15	mg/l
IOC	Chlorides		Landfill	3.5 - 178	mg/l
IOC	Sulfates		Landfill	6.8 - 1,230	mg/l
ACD	Phenols		Landfill	0.001 - 0.270	mg/l
MES	Lead		Landfill	0.01 - 0.083	mg/l
MES	Chromium		Landfill	0.017	mg/l
MES	Arsenic		Landfill	.0099 - 0.084	mg/l
IOC	Sodium		Landfill	54 - 432	mg/l

V. FEEDSTOCKS (See Appendix for CAS Numbers)

Category	01 Feedstock Name	02 CAS Number	Category	01 Feedstock Name	02 CAS Number
FDS	Not applicable		FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Malcolm Pirnie 9/85 and 11/7/85

---

*Concentrations as found in groundwater. Concentrations in wastes unknown.

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 State NY

02 Site Number 915047

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 [X] A. Groundwater Contamination
02 [X] Observed (Date 9/85) [ ] Potential [ ] Alleged
03 Population Potentially Affected 0
04 Narrative Description:

Contaminants found by Malcolm Pirnie 9/85.
Groundwater not used for domestic purposes.

01 [X] B. Surface Water Contamination
02 [X] Observed (Date 9/85) [ ] Potential [ ] Alleged
03 Population Potentially Affected 0
04 Narrative Description:

Surface water contaminated by landfilled wastes listed above.
The site is greater than 5 miles from water intakes along Lake Erie.

01 [X] C. Contamination of Air
02 [ ] Observed (Date ______) [X] Potential [ ] Alleged
03 Population Potentially Affected ______
04 Narrative Description:

Wind blown BOF dust.

01 [ ] D. Fire/Explosive Conditions
02 [ ] Observed (Date ______) [ ] Potential [ ] Alleged
03 Population Potentially Affected ______
04 Narrative Description:

01 [X] E. Direct Contact
02 [ ] Observed (Date ______) [X] Potential [ ] Alleged
03 Population Potentially Affected 5
04 Narrative Description:

Some areas of the site are currently being excavated for recycling of slag and other debris. Site is not secured with fences. Potential contact by work crews.

01 [X] F. Contamination of Soil
02 [X] Observed (Date 9/85) [ ] Potential [ ] Alleged
03 Area Potentially Affected 80 (Acres)
04 Narrative Description:

Analytical results indicate soil contamination (report by Malcolm Pirnie 9/85).

01 [ ] G. Drinking Water Contamination
02 [ ] Observed (Date ______) [ ] Potential [ ] Alleged
03 Population Potentially Affected ______
04 Narrative Description:

01 [ ] H. Worker Exposure/Injury
02 [ ] Observed (Date ______) [ ] Potential [ ] Alleged
03 Workers Potentially Affected ______
04 Narrative Description:

01 [ ] I. Population Exposure/Injury
02 [ ] Observed (Date ______) [ ] Potential [ ] Alleged
03 Population Potentially Affected ______
04 Narrative Description:

D1712

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 State	02 Site Number
NY	915047

II. HAZARDOUS CONDITIONS AND INCIDENTS (Cont.)

01 [X] J. Damage to Flora 02 [ ] Observed (Date ______) [X] Potential [ ] Alleged
04 Narrative Description:

Due to the nature of the fill material, no flora thrives on the site.

01 [X] K. Damage to Fauna 02 [ ] Observed (Date ______) [X] Potential [ ] Alleged
04 Narrative Description:

Due to potential migration of contamination off site to a water body located west of the site.

01 [X] L. Contamination of Food Chain 02 [ ] Observed (Date ______) [ ] Potential [ ] Alleged
04 Narrative Description:

The potential exists for the contamination of a water body to the west. This in turn could potentially contaminate food chain associated with this water body.

01 [X] M. Unstable Containment of Wastes (Spills/Runoff/Standing liquids, Leaking drums) 02 [X] Observed (Date 9/30/87) [ ] Potential [ ] Alleged
03 Population Potentially Affected 0
04 Narrative Description:
Upon termination of acid disposal on site in 1979, the impoundment was packed with limestone and covered. However, during the 15 years the impoundment was used, a carbonate product of the reaction leached into the adjacent water channel to the west.

01 [X] N. Damage to Offsite Property 02 [ ] Observed (Date ______) [X] Potential [ ] Alleged
04 Narrative Description:

Due to potential migration of contamination off site.

01 [ ] O. Contamination of Sewers, Storm Drains, WWTPs 02 [ ] Observed (Date ______) [ ] Potential [ ] Alleged
04 Narrative Description:

01 [X] P. Illegal/Unauthorized Dumping 02 [ ] Observed (Date ______) [X] Potential [ ] Alleged
04 Narrative Description:

Site not secured.

05 Description of Any Other Known, Potential, or Alleged Hazards
Background information indicated the spreading of waste lubricating oil on the roads at the landfill for dust control at a rate of 20,000 gal/yr. No oily areas were noted during the inspection. It is possible that the oil contained PCBs.

III. TOTAL POPULATION POTENTIALLY AFFECTED 0

IV. COMMENTS

Due to the nature of the fill, there is very little vegetation growth. Presently, on site activities include excavation of brick, scale, and slag for re-sale.

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Malcolm Pirnie, 9/85 and 11/7/85
Hazardous Waste Site Dossier, 2/29/80
NUS FIT II Site Inspection Report, 10/19/83
E & E Site Inspection, 7/87

POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT

PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION	
01 State NY	02 Site Number 915047

II. PERMIT INFORMATION

01 Type of Permit Issued (Check all that apply)	02 Permit Number	03 Date Issued	04 Expiration Date	05 Comments
☐ A. NPDES				
☐ B. UIC				
☐ C. AIR				
☐ D. RCRA				
☐ E. RCRA Interim Status				
☐ F. SPCC Plan				
☒ G. State (Specify) NY		Pending		Application for permit to operate this solid waste management facility was submitted to NYSDEC on 9/26/79.
☐ H. Local (Specify)				
☐ I. Other (Specify)				
☐ J. None				

III. SITE DESCRIPTION

01 Storage Disposal (Check all that apply)	02 Amount	03 Unit of Measure	04 Treatment (Check all that apply)	05 Other
☐ A. Surface Impoundment			☐ A. Incineration	☒ A. Buildings On Site
☐ B. Piles			☐ B. Underground Injection	
☐ C. Drums, Above Ground			☐ C. Chemical/Physical	
☐ D. Tank, Above Ground			☐ D. Biological	
☐ E. Tank, Below Ground			☐ E. Waste Oil Processing	1
☒ F. Landfill	80	Acres	☐ F. Solvent Recovery	06 Area of Site
☐ G. Landfarm			☐ G. Other Recycling Recovery	
☐ H. Open Dump			☐ H. Other ______ (Specify)	100 Acres
☐ I. Other ______ (Specify)				

07 Comments

The materials listed in Part 2 - Waste Information, are stored separately for recovery and recycling. Spent pickle liquor was treated in a lagoon-type arrangement. The material was worked down a 30-foot bank of limestone into a bed of lime for neutralization. This procedure was operational for 15 years and reported in detail to the Erie Co. DEP. In 1979, upon termination of acid deposition on site, the impoundment was packed with limestone and covered.

IV. CONTAINMENT

01 Containment of Wastes (Check one)

☐ A. Adequate, Secure ☐ B. Moderate ☒ C. Inadequate, Poor ☐ D. Insecure, Unsound, Dangerous

02 Description of Drums, Diking, Liners, Barriers, etc.

Landfill is unlined.

V. ACCESSIBILITY

01 Waste Easily Accessible: ☐ Yes ☐ No

02 Comments:

Waste is accessible via access roads.

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA Notification of Hazardous Waste Site
NUS FIT II Site Inspection 9/30/83

Malcolm Pirnie 9/85 and 11/7/85
E & E Site Inspection, July 1987

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 State	02 Site Number
NY	915047

II. DRINKING WATER SUPPLY

01 Type of Drinking Supply (Check as applicable)	Surface	Well	02 Status: Endangered	Affected	Monitored	03 Distance to Site
Community	A. [X]	B. [ ]	A. [ ]	B. [ ]	C. [X]	A 5 (mi)
Non-community	D. [ ]	D. [ ]	D. [ ]	E. [ ]	F. [ ]	B ______ (mi)

III. GROUNDWATER

01 Groundwater Use in Vicinity (Check one)

[ ] A. Only Source for Drinking

[ ] B. Drinking (Other sources available) Commercial, Industrial, Irrigation (No other water sources available)

[X] C. Commercial, Industrial, Irrigation (Limited other sources available)

[ ] D. Not Used, Unuseable

02 Population Served by Groundwater 0

03 Distance to Nearest Drinking Water well >3 (mi

04 Depth to Groundwater 10 (ft)

05 Direction of Groundwater Flow West - SW

06 Depth to Aquifer of Concern 50 - 80 (ft)

07 Potential Yield of Aquifer Unknown (gpd)

08 Sole Source Aquifer [ ] Yes [X]

09 Description of Wells (Including usage, depth, and location relative to population and buildings)

There are 18 monitoring wells throughout the site. Deep wells extend approximately 41 feet to bedrock, anc shallow wells extend approximately 21 feet into the fill. Water table elevations range between 579 and 585.5 feet.

10 Recharge Area

[X] Yes

[ ] No

Comments: Shallow aquifers recharged by precipitation

11 Discharge Area

[ ] Yes

[X] No

Comments:

IV. SURFACE WATER

01 Surface Water (Check one)

[X] A. Reservoir, Recreation, Drinking Water Source

[ ] B. Irrigation, Economically Important Resources

[ ] C. Commercial, Industrial

[ ] D. Not Currently Used

02 Affected/Potentially Affected Bodies of Water

Name:	Affected	Distance to Site
Lake Erie and Buffalo River	[ ]	1.5 (m
South Park Lake	[X]	Adjacent (
Wetland to the West	[X]	Adjacent (mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 Total Population Within

One (1) Mile of Site	Two (2) Miles of Site	Three (3) Miles of Site
A. 16,378 No. of Persons	B. 61,817 No. of Persons	C. 105,153 No. of Persons

02 Distance to Nearest Population <1.0 (mi)

03 Number of Buildings Within Two (2) Miles of Site 23,451

04 Distance to Nearest Off-Site Building <1.0 (mi)

05 Population Within Vicinity of Site (Provide narrative description of nature of population within vicinity of site, e.g., rural, village, densely populated urban area)

The area surrounding the site can be described as a medium density urban area. It is characterized by commercial development and residential areas interspersed east of the site. West of the site there exists railroad yards and Lake Erie.

POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT

PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 State	02 Site Number
NY	915047

VI. ENVIRONMENTAL INFORMATION

01 Permeability of Unsaturated Zone (Check one)

[ ] A. 10^{-6} - 10^{-8} cm/sec [ ] B. 10^{-4} - 10^{-6} cm/sec [X] C. 10^{-4} - 10^{-3} cm/sec [ ] D. Greater Than 10^{-3} cm/sec

02 Permeability of Bedrock (Check one)

[ ] A. Impermeable (Less than 10^{-6} cm/sec)
[X] B. Relatively Impermeable (10^{-4} - 10^{-6} cm/sec)
[ ] C. Relatively Permeable (10^{-2} - 10^{-4} cm/sec)
[ ] D. Very Permeable (Greater than 10^{-} cm/sec)

03 Depth to Bedrock: 25 - 30 (ft)

04 Depth of Contaminated Soil Zone: Unknown (ft)

05 Soil pH: 7 - 9

06 Net Precipitation: 9 (in)

07 One Year 24-Hour Rainfall: 2.1 (in)

08 Slope

Site Slope: 2 - 10 %

Direction of Site Slope: Variable

Terrain Average Slope: Variable %

09 Flood Potential

Site is in 100 Year Floodplain

10 [ ] Site is on Barrier Island, Coastal High Hazard Area, Riverine Floodway

11 Distance to Wetlands (5 acre minimum)

ESTUARINE A. NA (mi)

OTHER B. Adjacent (mi)

12 Distance to Critical Habitat (of Endangered Species)

0.6 (mi)

Endangered Species: Some migratory species of threatened status

13 Land Use in Vicinity

Distance to:

COMMERCIAL/INDUSTRIAL	RESIDENTIAL AREAS, NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES	AGRICULTURAL LANDS PRIME AG LAND	AGRICULTURAL LANDS AG LAND
(adjacent to) A. <1.0 (mi)	B. 0.5 (mi)	C. >2.0 (mi)	D. >2.0 (mi)

14 Description of Site in Relation to Surrounding Topography

The landfill is approximately 40-60 feet above undisturbed grade. South Park Lake and state wetlands are adjacent to the south, and the wetlands extend along the western border. The surrounding areas are generally flat. Railroads and heavy industry are located immediately north and west of the site. Residential areas begin approximately 0.2 mile east and south of the site. The Tifft Farm Nature Preserve is located 0.5 mile to the northwest.

VII. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Malcolm Pirnie 11/7/85
NYSDEC Files
NUS FIT II Site Inspection Report 10/19/83
USGS 7.5 Minute Topographic Map

Hazardous Waste Site Dossier, NYSDEC Region 9, 2/29/80
USGS SCS
USEPA - GEMS

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 6 - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION	
01 State NY	02 Site Number 915047

II. SAMPLES TAKEN

Sample Type	01 Number of Samples Taken	02 Samples Sent to	03 Estimated Date Results Available
Groundwater		No samples taken	
Surface Water			
Waste			
Air			
Runoff			
Spill			
Soil			
Vegetation			
Other			

III. FIELD MEASUREMENTS TAKEN

01 Type	02 Comments
HNu	No readings above background were obtained with HNu.

IV. PHOTOGRAPHS AND MAPS

01 Type ☒ Ground ☐ Aerial

02 In Custody of Ecology and Environment, Inc.
(Name of organization or individual)

03 Maps
☒ Yes
☐ No

04 Location of Maps
Ecology and Environment, Inc. Site Inspection Logbook for Erie County

V. OTHER FIELD DATA COLLECTED (Provide narrative description of sampling activities)

None

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

E & E Site Inspection, 7/15/87

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 7 - OWNER INFORMATION

I. IDENTIFICATION

01 State
NY

02 Site Number
915047

II. CURRENT OWNER(S)

01 Name
LTV Steel

02 D+B Number

03 Street Address (P.O. Box, RFD #, etc.)
Marilla and Hopkins Street

04 SIC Code

05 City
Buffalo

06 State
NY

07 Zip Code

01 Name

02 D+B Number

03 Street Address (P.O. Box, RFD #, etc.)

04 SIC Code

05 City

06 State

07 Zip Code

01 Name

02 D+B Number

03 Street Address (P.O. Box, RFD #, etc.)

04 SIC Code

05 City

06 State

07 Zip Code

01 Name

02 D+B Number

03 Street Address (P.O. Box, RFD #, etc.)

04 SIC Code

05 City

06 State

07 Zip Code

PARENT COMPANY (If applicable)

08 Name
LTV Steel

09 D+B Number

10 Street Address (P.O. Box, RFD #, etc.)
P.O. Box 6778

11 SIC Code

12 City
Cleveland

13 State
OH

14 Zip Code
44115

08 Name

09 D+B Number

10 Street Address (P.O. Box, RFD #, etc.)

11 SIC Code

12 City

13 State

14 Zip Code

08 Name

09 D+B Number

10 Street Address (P.O. Box, RFD #, etc.)

11 SIC Code

12 City

13 State

14 Zip Code

08 Name

09 D+B Number

10 Street Address (P.O. Box, RFD #, etc.)

11 SIC Code

12 City

13 State

14 Zip Code

III. PREVIOUS OWNER(S) (List most recent first)

01 Name
Republic Steel

02 D+B Number
00-052-3126

03 Street Address (P.O. Box, RFD #, etc.)
1175 South Park Avenue

04 SIC Code
3312

05 City
Buffalo

06 State
NY

07 Zip Code
14220

01 Name

02 D+B Number

03 Street Address (P.O. Box, RFD #, etc.)

04 SIC Code

05 City

06 State

07 Zip Code

01 Name

02 D+B Number

03 Street Address (P.O. Box, RFD #, etc.)

04 SIC Code

05 City

06 State

07 Zip Code

IV. REALTY OWNER(S) (If applicable, list most recent first)

01 Name

02 D+B Number

03 Street Address (P.O. Box, RFD #, etc.)

04 SIC Code

05 City

06 State

07 Zip Code

01 Name

02 D+B Number

03 Street Address (P.O. Box, RFD #, etc.)

04 SIC Code

05 City

06 State

07 Zip Code

01 Name

02 D+B Number

03 Street Address (P.O. Box, RFD #, etc.)

04 SIC Code

05 City

06 State

07 Zip Code

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

E & E Site Inspection, 7/15/87

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 8 - OPERATOR INFORMATION

I. IDENTIFICATION

01 State
NY

02 Site Number
915047

II. CURRENT OPERATOR (Provide if different from owner)

01 Name

02 D+B Number

03 Street Address (P.O. Box, RFD #, etc.)

04 SIC Code

05 City

06 State

07 Zip Code

08 Years of Operation

09 Name of Owner

OPERATOR'S PARENT COMPANY (If applicable)

10 Name

11 D+B Number

12 Street Address (P.O. Box, RFD #, etc.)

13 SIC Code

14 City

15 State

16 Zip Code

III. PREVIOUS OPERATOR(s) (List most recent first; provide only if different from owner)

01 Name

02 D+B Number

03 Street Address (P.O. Box, RFD #, etc.)

04 SIC Code

05 City

06 State

07 Zip Code

08 Years of Operation

09 Name of Owner During This Period

01 Name

02 D+B Number

03 Street Address (P.O. Box, RFD #, etc.)

04 SIC Code

05 City

06 State

07 Zip Code

08 Years of Operation

09 Name of Owner During This Period

01 Name

02 D+B Number

03 Street Address (P.O. Box, RFD #, etc.)

04 SIC Code

05 City

06 State

07 Zip Code

08 Years of Operation

09 Name of Owner During This Period

PREVIOUS OPERATORS' PARENT COMPANIES (If applicable)

10 Name

11 D+B Number

12 Street Address (P.O. Box, RFD #, etc.)

13 SIC Code

14 City

15 State

16 Zip Code

10 Name

11 D+B Number

12 Street Address (P.O. Box, RFD #, etc.)

13 SIC Code

14 City

15 State

16 Zip Code

10 Name

11 D+B Number

12 Street Address (P.O. Box, RFD #, etc.)

13 SIC Code

14 City

15 State

16 Zip Code

IV. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION

01 State	02 Site Number
NY	915047

II. ON-SITE GENERATOR

01 Name		02 D+B Number
None		
03 Street Address (P.O. Box, RFD #, etc.)		04 SIC Code
05 City	06 State	07 Zip Code

III. OFF-SITE GENERATOR(S)

01 Name Republic Steel Corp.		02 D+B Number 00-052-3126	01 Name		02 D+B Number
03 Street Address (P.O. Box, RFD #, etc.) 1175 South Park Avenue		04 SIC Code 3312	03 Street Address (P.O. Box, RFD #, etc.)		04 SIC Code
05 City Buffalo	06 State NY	07 Zip Code 14220	05 City	06 State	07 Zip Code
01 Name		02 D+B Number	01 Name		02 D+B Number
03 Street Address (P.O. Box, RFD #, etc.)		04 SIC Code	03 Street Address (P.O. Box, RFD #, etc.)		04 SIC Code
05 City	06 State	07 Zip Code	05 City	06 State	07 Zip Code

IV. TRANSPORTER(S)

01 Name Republic Steel Corp.		02 D+B Number 00-052-3126	01 Name		02 D+B Number
03 Street Address (P.O. Box, RFD #, etc.) 1175 South Park Avenue		04 SIC Code 3312	03 Street Address (P.O. Box, RFD #, etc.)		04 SIC Code
05 City Buffalo	06 State NY	07 Zip Code 14220	05 City	06 State	07 Zip Code
01 Name		02 D+B Number	01 Name		02 D+B Number
03 Street Address (P.O. Box, RFD #, etc.)		04 SIC Code	03 Street Address (P.O. Box, RFD #, etc.)		04 SIC Code
05 City	06 State	07 Zip Code	05 City	06 State	07 Zip Code

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

E & E Site Inspection, 7/15/87

D1712

POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT

PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION

01 State	02 Site Number
NY	915047

II. PAST RESPONSE ACTIVITIES

01 [ ] A. Water Supply Closed 02 Date ______ 03 Agency ______
04 Description:

01 [ ] B. Temporary Water Supply Provided 02 Date ______ 03 Agency ______
04 Description:

01 [ ] C. Permanent Water Supply Provided 02 Date ______ 03 Agency ______
04 Description:

01 [ ] D. Spilled Material Removed 02 Date ______ 03 Agency ______
04 Description:

01 [ ] E. Contaminated Soil Removed 02 Date ______ 03 Agency ______
04 Description:

01 [ ] F. Waste Repackaged 02 Date ______ 03 Agency ______
04 Description:

01 [ ] G. Waste Disposed Elsewhere 02 Date ______ 03 Agency ______
04 Description:

01 [ ] H. On Site Burial 02 Date ______ 03 Agency ______
04 Description:

01 [ ] I. In Situ Chemical Treatment 02 Date ______ 03 Agency ______
04 Description:

01 [ ] J. In Situ Biological Treatment 02 Date ______ 03 Agency ______
04 Description:

01 [ ] K. In Situ Physical Treatment 02 Date ______ 03 Agency ______
04 Description:

01 [ ] L. Encapsulation 02 Date ______ 03 Agency ______
04 Description:

01 [ ] M. Emergency Waste Treatment 02 Date ______ 03 Agency ______
04 Description:

01 [ ] N. Cutoff Walls 02 Date ______ 03 Agency ______
04 Description:

01 [ ] O. Emergency Diking/Surface Water Diversion 02 Date ______ 03 Agency ______
04 Description:

01 [ ] P. Cutoff Trenches/Sump 02 Date ______ 03 Agency ______
04 Description:

01 [ ] Q. Subsurface Cutoff Wall 02 Date ______ 03 Agency ______
04 Description:

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION

01 State
NY

02 Site Number
915047

II. PAST RESPONSE ACTIVITIES (Cont.)

01 [ ] R. Barrier Walls Constructed 02 Date ____________ 03 Agency ____________
04 Description:

01 [ ] S. Capping/Covering 02 Date ____________ 03 Agency ____________
04 Description:

01 [ ] T. Bulk Tankage Repaired 02 Date ____________ 03 Agency ____________
04 Description:

01 [ ] U. Grout Curtain Constructed 02 Date ____________ 03 Agency ____________
04 Description:

01 [ ] V. Bottom Sealed 02 Date ____________ 03 Agency ____________
04 Description:

01 [ ] W. Gas Control 02 Date ____________ 03 Agency ____________
04 Description:

01 [ ] X. Fire Control 02 Date ____________ 03 Agency ____________
04 Description:

01 [ ] Y. Leachate Treatment 02 Date ____________ 03 Agency ____________
04 Description:

01 [ ] Z. Area Evacuated 02 Date ____________ 03 Agency ____________
04 Description:

01 [ ] 1. Access to Site Restricted 02 Date ____________ 03 Agency ____________
04 Description:

01 [ ] 2. Population Relocated 02 Date ____________ 03 Agency ____________
04 Description:

01 [ ] 3. Other Remedial Activities 02 Date ____________ 03 Agency ____________
04 Description:

None

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

E & E Site Inspection, 7/15/87
NYSDEC Region 9 Files

6

6. ASSESSMENT OF DATA ADEQUACY AND RECOMMENDATIONS

The Republic Steel site has been sampled extensively through a groundwater monitoring system completed in 1985. Results of analytical testing of various monitoring wells have indicated the site may be contributing to high pH, and elevated iron and phenol concentrations. Upgradient wells have indicated that groundwater entering the site exceeds groundwater quality standards of phenol and iron. Therefore, potential sources of offsite contamination need to be identified, and the degree of contamination of groundwater entering the site versus the contribution of contaminants from the Republic Steel site also needs to be established in order to properly assess the situation.

Republic Steel will close their BOF precipitator dust area and post-closure monitoring will assist in evaluating if this disposal area is a main source of contamination.

A Phase II investigation is recommended which includes the following:

- Monitoring of upgradient and downgradient wells to determine contamination from site;
- Soil sampling to determine extent and location of hazardous waste in the soil; and
- Surface water sample collection to monitor the effects of runoff from the site and leachate contamination of surface water.

7. REFERENCES

Broughton, J.G., D.W. Fisher, Y.W. Isachsen, and L.V. Rickard, 1973, Geology of New York, Educational Leaflet 20, The University of the State of New York/The State Education Department, New York State Museum and Science Services, Albany, New York.

Buehler, E.J., 1966, Geology of Western New York, Guide Book, Department of Geological Sciences, State University of New York at Buffalo, Buffalo, New York.

Buehler, E.J., and I.H. Tesmer, 1963, Geology of Erie County, New York, Buffalo Society of Natural Sciences Bulletin, Buffalo, New York.

Ecology and Environment Site Inspection, July 15, 1987, Site Inspection Logbook of Erie County, Ecology and Environment, Inc., Buffalo, New York.

Evans, J., August 27, 1987, personal communication, New York State Department of Environmental Conservation, Division of Fish and Wildlife, Olean, New York.

Federal Emergency Management Agency, 1982, Flood Insurance Rate Maps, National Flood Insurance Program, Baltimore, Maryland.

General Sciences Corporation, 1986, Graphical Exposure Modeling System (GEMS), Volume 3, Graphics and Geodata Handling, Prepared for USEPA Office of Pesticides and Toxic Substances Exposure Evaluation Division.

Koszalka, E.J., J.E. Paschal, Jr., T.S. Miller, and P.B. Duran, 1985, Preliminary Evaluation of Chemical Migration to Groundwater and the Niagara River from Selected Waste - Disposal Sites, Prepared by the United States Geological Survey, Washington, D.C., for the United States Environmental Protection Agency, Chicago, Illinois.

LaSala, A.M., 1968, Groundwater Resources of the Erie-Niagara Basin, New York, New York State Department of Conservation, Water Resources Commission, Albany, New York.

Malcolm Pirnie, 1985a, Closure Plan for Marilla Street Landfill BOF Dust Area, Prepared for LTV Steel Company, Buffalo, New York.

__________, 1985b, Marilla Street Landfill Conceptual Site Closure Plan, Prepared for LTV Steel Company, Buffalo, New York.

Murtagh, W.J., 1976, The National Register of Historic Places, USDI National Park Service, Washington, D.C., with updates from the Federal Register in 1979, 1980, 1981, and 1982.

Neal, W., October 19, 1983, Personal Communication, NUS Corporation, Edison, New Jersey, Potential Hazardous Waste Site Preliminary Assessment for the United States Environmental Protection Agency, Region II, Edison, New Jersey.

New York State Department of Environmental Conservation, 1986, Inactive Hazardous Waste Disposal Sites in New York State, Volume 9, Division of Solid and Hazardous Waste, Albany, New York.

New York State Department of Environmental Conservation, 1987, State and Federal Regulated Wetland Maps, Critical Habitats, and File Information, Buffalo, New York.

New York State Department of Health, 1982, New York State Atlas of Community Water System Sources 1982, Division of Environmental Protection, Bureau of Public Water Supply Protection, Albany, New York.

Official Codes, Rules, and Regulations of the State of New York, Chapter X, 1985, New York Water Classifications and Quality Standards, Division of Water Resources, Article 2, Part 609 and Parts 700 through 704, New York, New York.

Owens, D.W., W.L. Pittman, J.P. Wulforst, and W.E. Hanna, 1986, Soil Survey of Erie County, New York, United States Department of Agriculture Soil Conservation Service, Ithaca, New York.

Recra Research, Inc., 1982, Supplemental Hydrogeological Investigation, Buffalo, New York: Alltift Company, Inc., in <u>Preliminary Evaluation of Chemical Migration to Groundwater and the Niagara River from Selected Waste-Disposal Sites</u>, United States Environmental Protection Agency, 1985, Chicago, Illinois.

Strycharz, A., September 3, 1987, personal communication, Senior Engineering Aide, Lackawanna Water District, Lackawanna, New York.

Szuhay, L.A., May 30, 1984, personal communication, Manager of Solid and Hazardous Waste Environmental Control, Republic Steel Corporation, Cleveland, Ohio, Letter to Robert J. Mitrey, Associate Sanitary Engineer, New York State Department of Environmental Conservation, Region 9, Buffalo, New York.

United States Environmental Protection Agency, 1984, Uncontrolled Hazardous Waste Site Ranking System: A Users Manual, National Oil and Hazardous Substances Contingency Plan, Appendix A (40 CFR 300) (47 CFR 31219).

United States Geological Survey, 1965, Buffalo, SE Quadrangle, Erie County, New York, 7.5 Minute Series (Topographic), Washington, D.C.

Wehran Engineering and Recra Research, Inc., 1978, Hydrogeological Investigation of Alltift Landfill, Buffalo, New York, in _Preliminary Evaluation of Chemical Migration to Groundwater and the Niagara River from Selected Waste-Disposal Sites_, United States Environmental Protection Agency, 1985, Chicago, Illinois.

Whitney, J., August 25, 1987, personal communication, United States Department of Agriculture Soil Conservation Service, East Aurora, New York.

APPENDIX A

PHOTOGRAPHIC RECORD

ecology and environment, inc.

PHOTOGRAPHIC RECORD

Client: NYSDEC

E & E Job No.: ND-2021

Camera: Make Olympus OM-10

SN: 2387486

Photographer: A.M. Sienkiewicz

Date/Time: 7/15/87; 10:10

Lens: Type: 35-70 mm

SN: 301285

Frame No.: 22

Comments*: BOF dust from south.

Photographer: A.M. Sienkiewicz

Date/Time: 7/15/87; 10:00

Lens: Type: 35-70 mm

SN: 301285

Frame No.: 23

Comments*: State wetland, west border, from bridge looking north.

*Comments to include location

D1712

ecology and environment, inc.

PHOTOGRAPHIC RECORD

Client: NYSDEC E & E Job No.: ND-2021

Camera: Make Olympus OM-10 SN: 2387486

Photographer: A.M. Sienkiewicz

Date/Time: 7/15/87; 9:55

Lens: Type: 35-70 mm

SN: 301285

Frame No.: 20

Comments*: State wetland, looking from west on site.

Photographer: A.M. Sienkiewicz

Date/Time: 7/15/87; 10:00

Lens: Type: 35-70 mm

SN: 301285

Frame No.: 21

Comments*: Site from Hopkins Street from southwest.

*Comments to include location

D1712

ecology and environment, inc.

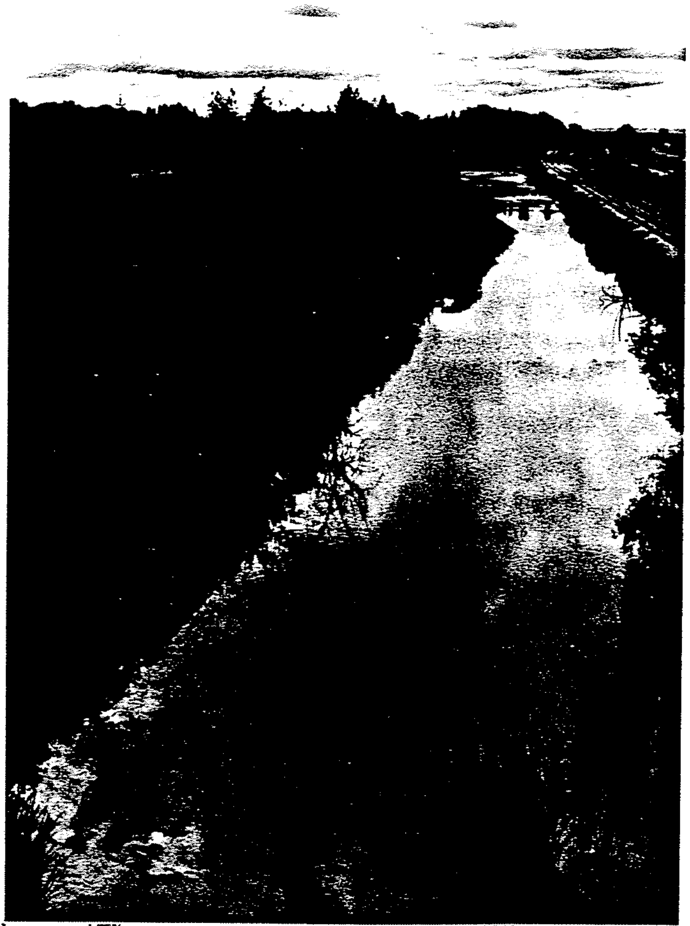
PHOTOGRAPHIC RECORD

Client: NYSDEC

E & E Job No.: ND-2021

Camera: Make Olympus OM-10

SN: 2387486



Photographer: A.M. Sienkiewicz

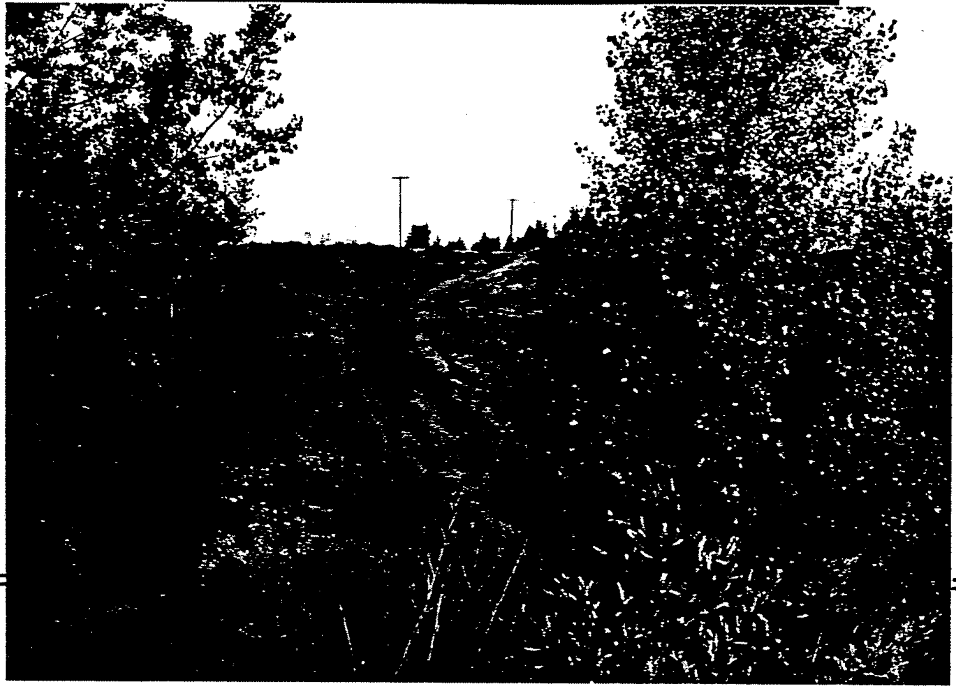
Date/Time: 7/15/87; 10:15

Lens: Type: 35-70 mm

SN: 301285

Frame No.: 24

Comments*: State wetland, west border, from bridge looking south.



Photographer: A.M. Sienkiewicz

Date/Time: 7/15/87; 10:00

Lens: Type: 35-70 mm

SN: 301285

Frame No.: 25

Comments*: Looking north from Contractor Building.

*Comments to include location

ecology and environment, inc.

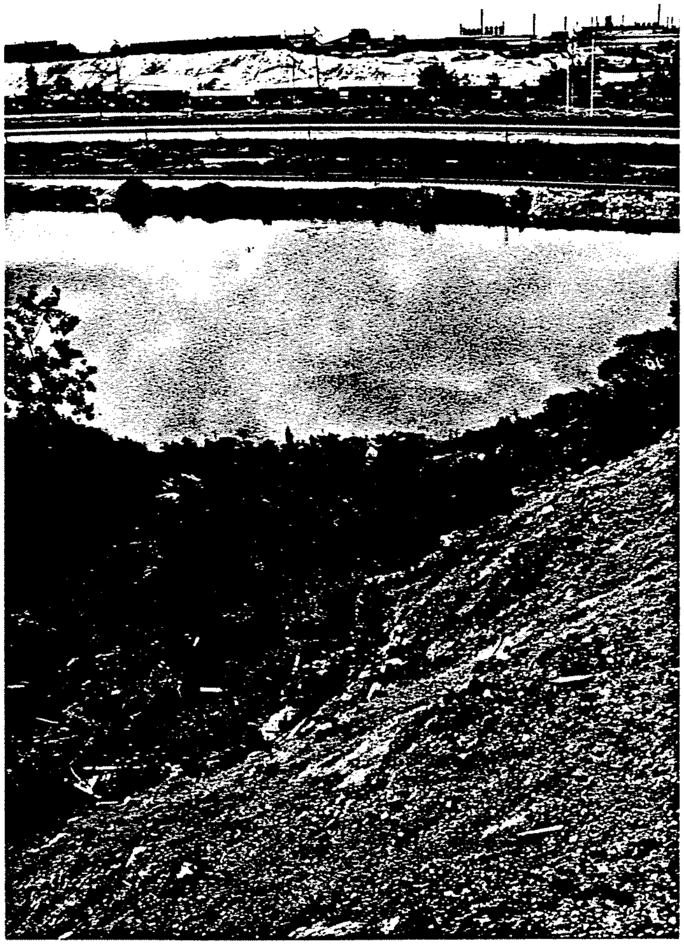
PHOTOGRAPHIC RECORD

Client: NYSDEC

E & E Job No.: ND-2021

Camera: Make Olympus OM-10

SN: 2387486



Photographer: A.M. Sienkiewicz

Date/Time: 7/15/87; 10:45

Lens: Type: 35-70 mm

SN: 301285

Frame No.: 26

Comments*: State wetland and swamp at south end of site.

Photographer: A.M. Sienkiewicz

Date/Time: 7/15/87; 10:45

Lens: Type: 35-70 mm

SN: 301285

Frame No.: 27

Comments*: State wetland and swamp at south end of site.

*Comments to include location

ecology and environment, inc.

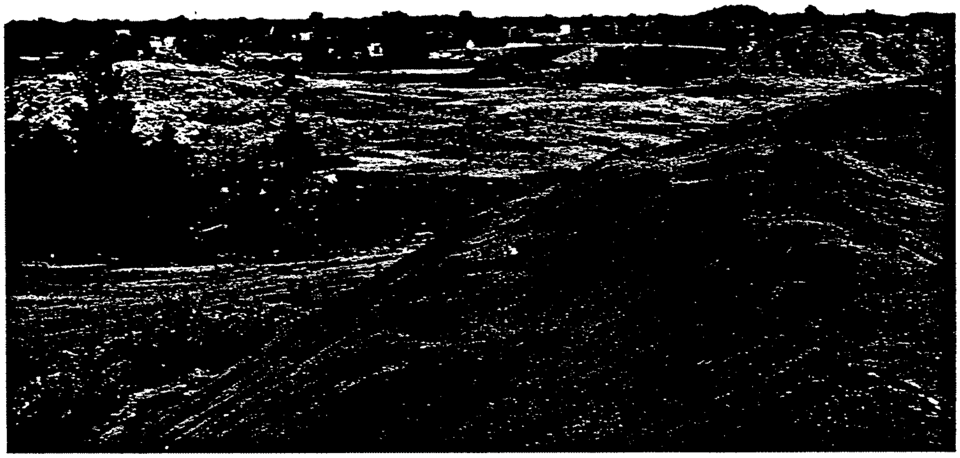
PHOTOGRAPHIC RECORD

Client: NYSDEC

E & E Job No.: ND-2021

Camera: Make Olympus OM-10

SN: 2387486



Photographer: A.M. Sienkiewicz

Date/Time: 7/15/87; 10:50

Lens: Type: 35-70 mm

SN: 301285

Frame No.: 28

Comments*: Dolomite brick from southwest - grey pile of fines, 10-15' high, 100-150' x 30-50'.

Photographer: A.M. Sienkiewicz

Date/Time: 7/15/87; 10:53

Lens: Type: 35-70 mm

SN: 301285

Frame No.: 29

Comments*: Site from south high point slag pile.

*Comments to include location

D1712

PHOTOGRAPHIC RECORD

Client: NYSDEC

E & E Job No.: ND-2021

Camera: Make Olympus OM-10

SN: 2387486

Photographer: A.M. Sienkiewicz

Date/Time: 7/15/87; 10:55

Lens: Type: 35-70 mm

SN: 301285

Frame No.: 30

Comments*: 1 of 5 panoramic view of excavated vacated area from Hopkins Street.

Photographer: A.M. Sienkiewicz

Date/Time: 7/15/87

Lens: Type: 35-70 mm

SN: 301285

Frame No.: 31

Comments*: 2 of 5 panoramic view of excavated vacated area from Hopkins Street.

*Comments to include location

PHOTOGRAPHIC RECORD

Client: NYSDEC

E & E Job No.: ND-2021

Camera: Make Olympus OM-10

SN: 2387486

Photographer: A.M. Sienkiewicz

Date/Time: 7/15/87; 10:55

Lens: Type: 35-70 mm

SN: 301285

Frame No.: 32

Comments*: 3 of 5 panoramic view of excavated vacated area from Hopkins Street.

Photographer: A.M. Sienkiewicz

Date/Time: 7/15/87

Lens: Type: 35-70 mm

SN: 301285

Frame No.: 33

Comments*: 4 of 5 panoramic view of excavated vacated area from Hopkins Street.

*Comments to include location

ecology and environment, inc.

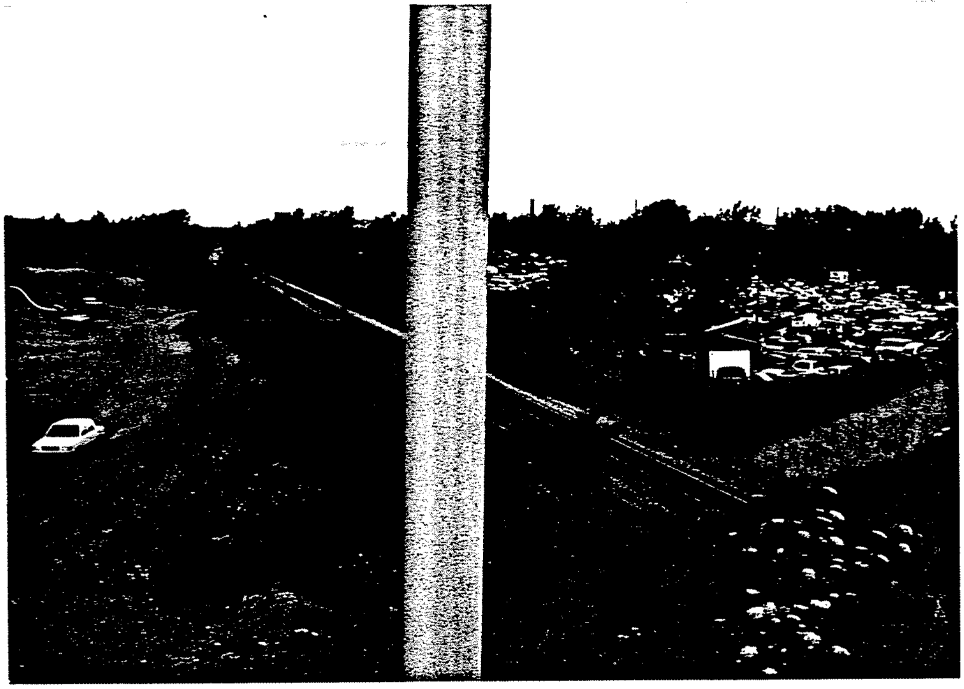
PHOTOGRAPHIC RECORD

Client: NYSDEC

E & E Job No.: ND-2021

Camera: Make Olympus OM-10

SN: 2387486



Photographer: A.M. Sienkiewicz

Date/Time: 7/15/87; 10:55

Lens: Type: 35-70 mm

SN: 301285

Frame No.: 34

Comments*: 5 of 5 panoramic view of excavated vacated area from Hopkins Street.

Photographer:

Date/Time:

Lens: Type:

SN:

Frame No.:

Comments*:

*Comments to include location

D1712

recycled paper

ecology and environment

APPENDIX B

UPDATED INACTIVE HAZARDOUS WASTE DISPOSAL SITE REGISTRY FORM

47-15-11 (10/83)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

DIVISION OF SOLID AND HAZARDOUS WASTE

INACTIVE HAZARDOUS WASTE
DISPOSAL SITE REPORT

Priority Code: 2a Site Code: 915047

Name of Site: Republic Steel Region: 9

Street Address: Marilla and Hopkins Streets

Town/City: Buffalo, New York County: Erie

Name of Current Owner of Site: LTV Steel Company, Inc.

Address of Current Owner of Site: P.O. Box 6778, 800 LTV Steel Bldg., 25 Prospect Street, Cleveland, OH 44115

Type of Site: [ ] Open Dump [ ] Structure [ ] Lagoon
[X] Landfill [ ] Treatment Pond

Estimated Size: 80 acre(s)

Site Description:

The site consists of a landfill containing: clarifier sludge, pickle liquor, slag, mill scale, iron oxide dust, flue dust, Basic Oxygen Furnace (BOF) precipitator dust, carbon dust, waste oil, and waste pickle liquor. The site has been segregated into 5 sections, one of which contains the BOF dust which has been determined EP Toxic due to the presence of lead.

Hazardous Waste Disposed: [X] Confirmed [ ] Suspected

Type and Quantity of Hazardous Wastes Disposed:

Type	Quantity (Pounds, Drums, Tons, Gallons)
Clarifier sludge	48,420 tons/yr
Pickle liquor	10,600 gal/yr
Slag	127,000 tons/yr
Mill scale	22,800 tons/yr
Iron oxide dust	11,200 tons/yr
Flue dust	15,500 tons/yr
carbon dust	100 tons/yr

Time Period Site was Used for Hazardous Waste Disposal:

______________, 19 30 To ______________, 19 81

Owner(s) During Period of Use: Republic Steel

Site.Operator During Period of Use: Republic Steel

Address of Site Operator: 1175 South Park Avenue, Buffalo, New York

Analytical Data Available: [ ] Air [X] Surface Water [X] Groundwater
[ ] Soil [ ] Sediment [ ] None

Contravention of Standards: [X] Groundwater [X] Drinking Water
[X] Surface Water [ ] Air

Soil Type: Slag underlain by glacio-lacustrine deposits

Depth to Groundwater Table: Approximately 10 feet

Legal Action: Type: ______________ [ ] State [ ] Federal

Status: [ ] In Progress [ ] Completed

Remedial Action: [X] Proposed [ ] Under Design
[ ] In Progress [ ] Completed

Nature of Action: Closure plan for BOF dust area

Assessment of Environmental Problems:

Contaminants at the Republic Steel site have a very high potential to migrate offsite.

Assessment of Health Problems:

Potential for direct contact because the site is not secured.

Person(s) Completing This Form:

NEW YORK STATE DEPARTMENT OF
ENVIRONMENTAL CONSERVATION

Name:
Title:
Name:
Title:
Date:

NEW YORK STATE DEPARTMENT OF HEALTH

Name:
Title:
Name:
Title:
Date:

APPENDIX C

REFERENCE MATERIAL

Geology of New York:
a short account

Adapted from the text of "Geologic Map of New York State"
by J. G. Broughton, D. W. Fisher, Y. W. Isachsen, and L. V. Rickard

EDUCATIONAL LEAFLET NO. 20

The University of the State of New York/The State Education Department
New York State Museum and Science Service/Albany 1966

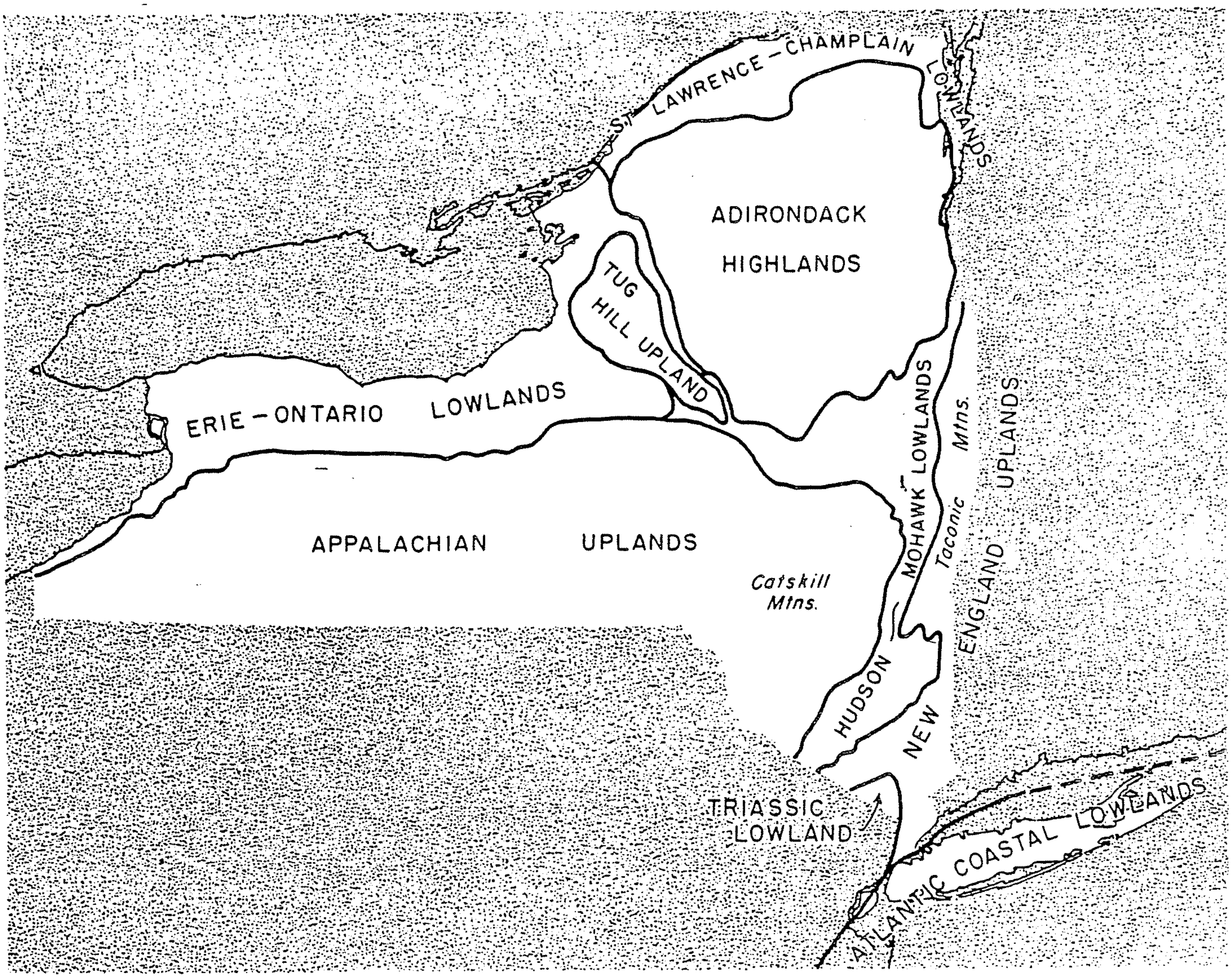


FIGURE 19. Physiographic provinces of New York, based on relief and geology (Modified after G. B. Cressey, 1952)

Cenozoic Era

PHYSIOGRAPHIC PROVINCES AND TERTIARY HISTORY

The physiographic provinces of New York are shown in figure 19. Modern landscapes of the State were shaped largely during the Cenozoic Era, the most recent 65 million years of geologic history. Although the overall features later would be modified and blurred by glaciation, the broad outlines of modern mountain, valley, and plain first were carved by the unrelenting rush of water to the earlier Cenozoic seas.

The long sequence of erosion presumably began with the arching of the Jurassic Fall Zone erosion surface in mid-Cretaceous time. As its eastern flank dipped beneath the encroaching Atlantic Ocean to receive Coastal Plain deposits, the axis domed sufficiently to initiate the sculpture of the Appalachians and Adirondacks. Few, if any of today's land forms can be traced so far back, however. Most researchers believe that all the exposed remnants of the dissected Fall Zone surface were obliterated by subsequent erosion.

South of New York, at least a partial record of Tertiary geology persists in the Coastal Plain deposits. In addition to a sedimentary record, datable igneous intrusions cut rocks of varying degrees of deformation in the western states. But in New York, no such tangible evidence of Cenozoic events exists. The Coastal Plains sediments derived from the long-continued degradation of New York and New England now rest on the Continental

Shelf, beneath many fathoms of water. Because of a relatively recent tilting of the coastline about a northwest-southeast axis near New York City, the Coastal Plain has been raised south of New York; east and north of the city, all but the Long Island Cretaceous has been depressed below sea level.

Since exposed Tertiary sedimentary deposits are absent in New York, its geological history must be reconstructed from the only data available, the present physiographic features of the State. In an area as small as New York, where climate does not vary significantly, land forms have been determined primarily by geology. Characteristic differences between the physiographic provinces have resulted from the ways in which rocks of differing lithologies and structures have reacted to the erosional force of the Cenozoic. Thus, while many authorities have classified New York's physiographic provinces in various ways, all are more or less in agreement as to the outlines of the major provinces; they differ mainly in the names applied to the provinces. Those used here were proposed by George B. Cressey (1952, personal communication, J.G. B.). From north to south, the physiographic provinces of New York are:

St. Lawrence-Champlain Lowlands

New York's northernmost province includes the St. Lawrence River Valley (northeast of the Thousand Islands), the low hills south of the river valley, and the Lake Champlain Valley (figure 19). The underlying rocks —Cambrian and Ordovician sandstones, dolomites, and limestones—dip gently away from the Adirondacks. Relief is approximately 100 feet. Streams draining the northern and eastern slopes of the Adirondacks flow across the province. The shoreline of Lake Champlain is largely controlled by north-south and east-west faults which have chopped the Paleozoic sandstones and carbonates into large blocks.

Adirondack Highlands

The highest mountains in New York occur in the Adirondack Highlands, especially in the High Peaks region; the High Peaks, in the east-central part of the province, are underlain by anorthosite, which is highly resistant to erosion. Two peaks—Mt. Marcy and Mt. Algonquin—are over 5,000 feet in elevation, and many exceed 4,000 feet. Average relief in the Adirondack Highlands is 2,000 feet. North, west, and south of the High Peaks area, elevations decrease gradually; east to the Champlain Lowland, the slope is more abrupt.

The Adirondacks are transected by long, northeast-southwest lineaments, representing shear zones or major faults. The lineaments frequently control drainage and the shape of land forms. Many lakes follow geologic contacts, or are confined to valleys along weak metasedimentary rocks. Because glacial deposits have clogged the normal radial drainage, lower areas are dotted with lakes, ponds, and swamps.

Tug Hill Upland

The Tug Hill, an isolated upland in the eastern part of the Erie-Ontario Lowlands, is probably the most desolate area of the State. Elevation is 1,800 to 2,000 feet, and relief is very low. The Tug Hill results from a resistant cap rock of Oswego Sandstone (an Ordovician sedimentary quartzite), resting on a thick series of sandy shales. These, in turn, overlie Trenton and Black River limestones, which form a flight of rock terraces along the west side of the Black River Valley. The low slope of the cap rock and the thin cover of glacial deposits have caused poor drainage and many swamps.

Erie-Ontario Lowlands

This province encompasses the relatively low, flat areas lying south of Lake Erie and Lake Ontario and extending up the Black River Valley. From the lake levels of 570 feet and 244 feet, respectively, the land rises gently eastward and southward. The maximum elevation (1,000-1,500 feet) occurs along the Portage Escarpment, the boundary with the Appalachian Uplands to the south. Particularly in the Ontario Lowland, east-west escarpments are formed by the Onondaga Limestone and Lockport Dolomite. (The Lockport is the cap rock of Niagara Falls and the falls of the Genesee River at Rochester.) The simple erosional topography has been modified substantially by glacial deposition of drumlin fields, recessional moraines, and shoreline deposits.

Hudson-Mohawk Lowlands

The general topography of the Hudson-Mohawk Lowlands resulted from erosion along outcrop belts of weak rocks. In the Mohawk Lowlands, the outcrop belts lie between the Adirondacks and the Helderberg Escarpment; for the Hudson, they lie between the Catskills and the metamorphosed shale hills of the Taconics. Most of the province has low elevation and relief. It is underlain primarily by Ordovician shales which have been exposed by the southward and westward stripping off of Silurian and Devonian limestones.

Appalachian Uplands

The Appalachian Uplands (the northern extreme of the Appalachian Plateau) were formed by dissection of the uplifted but flat lying sandstones and shales of the Middle and Upper Devonian Catskill Delta (figure 17). The southeastern border of the province, between Kingston and Port Jervis, is formed by the Silurian Shawangunk Conglomerate. Relief is high to moderate. Maximum dissection is in the Catskill Mountain area, where only the mountain peaks approximate the original plateau surface. (Slide Mountain, at 4,202 feet, is the highest peak.) Farther west, the plateau surface is represented by flat-topped divides. Except for Cattaraugus Creek, the Genesee River, the Finger Lakes, and minor streams along the Catskill front, drainage generally is southwest into the Allegheny, Susquehanna, and Delaware River systems.

The northern edge of the province is cut by the Finger Lake troughs, which are glacially modified valleys of preglacial rivers (figure 20). At least two of the lakes (Cayuga and Seneca) have bedrock floors below sea level. Glacial cover generally is thin, although deposits in some north-south valleys are so thick that they are completely buried. The major eastwest drainage divide of central New York, the Valley Heads Moraine, is a recessional moraine south of the present Finger Lakes. Only the Alleghany State Park area has escaped glaciation (figure 21).

New England Uplands

Another diverse and geologically complex province is the New England Uplands. To the south it includes the Hudson Highlands and the area underlain by the New York City Group; farther north it encompasses the hilly country (Taconic Mountains) between the Hudson River and the Connecticut, Massachusetts, and Vermont borders. Rocks in the New England Uplands are either metamorphic or igneous, and land forms are closely related to their durability.

Maximum relief is in the Hudson Highlands, where elevations range from 800 feet below sea level (bedrock of the Hudson River Valley) to more than 1,500 feet. Strong topographic linearity characterizes the Hudson Highlands; most of the ridges and valleys follow the northeast-southwest strike of the metamorphosed rocks.

Although the rocks of the New York City Group do not show a similar regularity of trend, here, too, the geology and topography are closely related.

The general north-south trend of the Taconic Mountains depends on the strike of the schist (which forms the hills) and the limestone in the valleys. The Rensselaer Plateau, which is held up by the resistant Rensselaer Graywacke, is an exception. Its rolling surface, with a relief of about 500 feet, is approximately 20 miles long (north-south) by 9 miles wide (east-west). The Taconic Mountains generally are considered to be bounded on the west by the Chatham thrust and on the east by the limestone valley lying just west of the Green Mountains and the Berkshires.

The entire province has been glaciated.

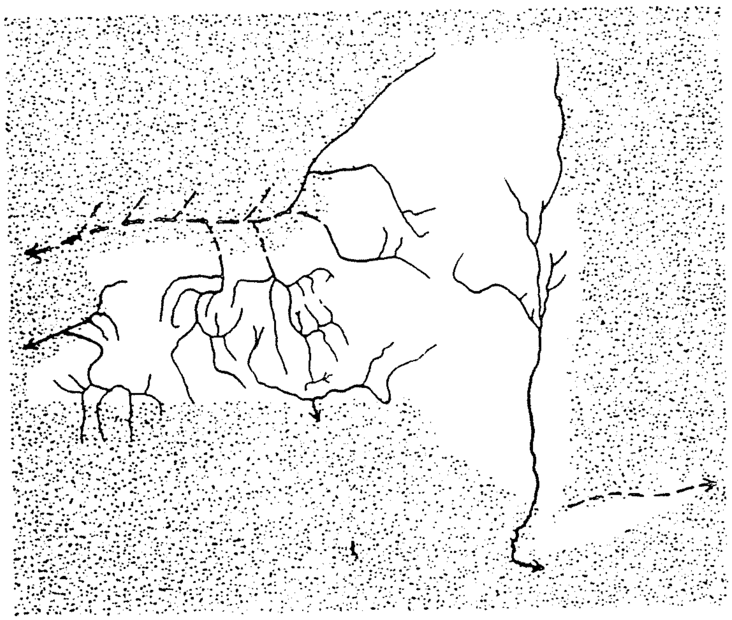


FIGURE 20. Hypothetical Tertiary drainage systems

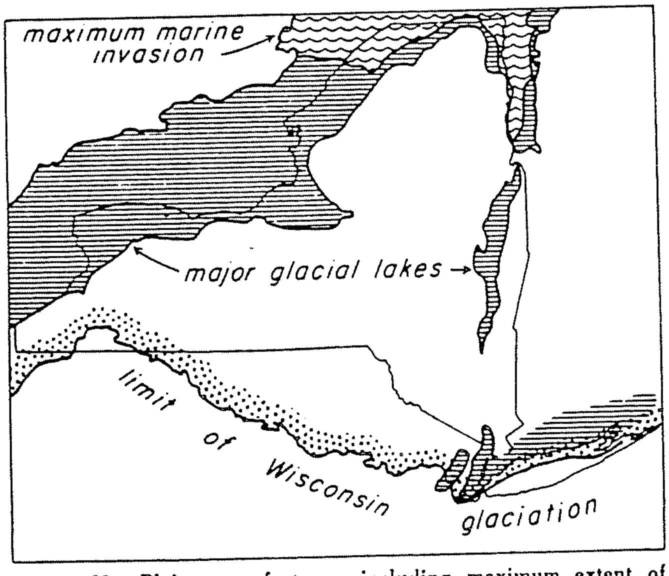


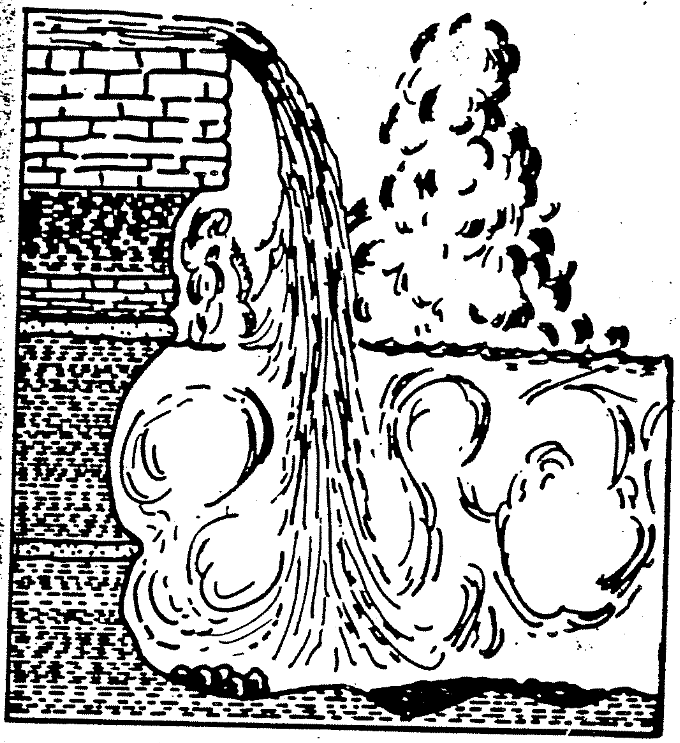
FIGURE 21. Pleistocene features, including maximum extent of Wisconsin glaciation, areas inundated by major lakes and by marine invasions

[redacted]

L21B

GEOLOGY OF WESTERN NEW YORK

GUIDE BOOK



NEW YORK STATE GEOLOGICAL ASSN.
38th ANNUAL MEETING
1966

DEPARTMENT OF GEOLOGICAL SCIENCES
STATE UNIVERSITY OF NEW YORK AT BUFFALO
BUFFALO, N. Y.

E. J. Buehler, Editor

Throughout most of the subsurface and presumably along the outcrop belt as well, the Vernon may be subdivided into three parts. Significant facies changes occur. In all three divisions these changes involve the lateral replacement of red shale in the east by mixed red and green shale, then green or gray shale and dolomites, and finally dolomites with anhydrite and halite in the west.

Syracuse Formation

The Syracuse Formation of Clarke, 1903, has recently been redefined, described and traced along the Silurian outcrop belt by Leutze (1955, 1959). The name originally was proposed for the subsurface salt beds of the Salina Group, but it is now also applied to the associated dolomites, anhydrites and shales. Thus the formation can be recognized along the outcrop belt where the salt beds have been dissolved by ground water.

In Onondaga County, Leutze subdivided the Syracuse into five members, some of which are exposed in the standard reference section, a railroad cut near Manlius Center. These consist of gray shales and gray or brown dolomites with interbedded clay (leached salt beds) and gypsum. The formation is about 160 feet thick. Leutze discovered fossils in several horizons within the formation and assembled a collection of brachiopods, pelecypods, ostracodes, gastropods, cephalopods, and eurypterids. He was able to map the Syracuse Formation and to recognize its subdivisions eastward into southernmost Herkimer County but was unable to carry his detailed work west of Cayuga Lake where the formation is virtually unexposed.

In the vicinity of Buffalo, the Syracuse consists of dolomites and anhydrite but lacks significant beds of salt. It is about 100 feet thick and is not known to be exposed in the Niagara Frontier.

In the subsurface the Syracuse is a readily recognizable portion of the Salina Group but it cannot be subdivided into the five members distinguished by Leutze along the outcrop. The majority of the halite and anhydrite beds of the subsurface Salina Group occur in the Syracuse Formation. Thicknesses in excess of 1000 feet are attained in the center of the Salina basin.

Camillus Shale

The upper portion of the Salina Group in Onondaga County and eastward consists of a chunky green shale, unfossiliferous, with some red beds in southernmost Herkimer County. Leutze (1959) restricted the application of the name Camillus (Clarke, 1903) to this portion of the Salina. It is about 200 feet thick in the type area, somewhat thinner both east and west of there.

In the Niagara Frontier the Camillus is 80-100 feet thick and includes the O-atka beds of Chadwick (1917), formerly assigned to the overlying Bertie Formation. The Predominate lithology is a green shale, but dolomite, anhydrite and siltstone, also occur. Eurypterids have been reported from a dolomite bed near the top of the formation in

Chadwick's O-atka beds. This uppermost portion of the Camillus is exposed at Akron Falls, Indian Falls, Morganville and Oatka Falls. Another exposure of the Camillus is a small section along Murder Creek north of Akron.

At several localities along the Silurian outcrop belt there are underground mines for gypsum formed by conversion of the subsurface anhydrite of the Salina Group to gypsum through hydration by ground water. The National Gypsum Company has a mine at Clarence Center, the Bestwall Gypsum Company at Akron and the United State Gypsum Company at Oakfield. The stratigraphic position of the gypsum beds mined by these companies has, in the past, been assigned to the Camillus. They are located about 200 feet below the base of the Onondaga Limestone. In nearby gas wells, the Camillus is anhydritic but significant beds of anhydrite occur only in the Syracuse Formation, 150 to 200 feet below the Onondaga. Further study is needed but it appears that the gypsum mines may be in the Syracuse rather than the Camillus. The thickness of the Camillus in the subsurface appears to be quite uniform but the formation has several facies. Dolomite and anhydrite comprise significant portions of the Camillus in the center of the Salina basin; red shales become predominate in the east.

Bertie Formation

The type section of the Bertie Formation (Chapman, 1864) is located in Bertie township, Welland County, Ontario. In an abstract Chadwick (1917) subdivided the Bertie of western New York into four members, in descending order: Buffalo cement bed, Scajaquada shale and dolomite, Falkirk dolomite and O-atka shale (here included in the underlying Camillus). Chadwick later (see Clarke, 1918, p. 42) renamed the upper member Williamsville as the term Buffalo was preoccupied. The Bertie of western New York is everywhere underlain by the Camillus Shale and overlain, where complete sections are found, by the Akron Dolomite. Owing to the relief of a pre-Onondaga unconformity, however, exposures are found where the Onondaga Limestone directly overlies the Williamsville Member of the Bertie or some lower member. Chadwick was first to point this out.

The thickness of the Bertie Formation in western New York is uncertain because few exposures continue downward into the underlying Camillus Shale. It is believed to be about 50 feet thick where all members are present. Its thickness will, of course, vary from place to place depending upon the amount removed by erosion prior to deposition of the Onondaga Limestone. The contact of the Bertie with the overlying Akron Dolomite is gradational. Its contact with the underlying Camillus is much less clearly understood because of the lack of good exposures. Some authors (Grabau, 1901, p. 115) and Alling (1928, pp. 27-28) have suggested that this contact possibly is disconformable.

The Falkirk Member of the Bertie is composed of massive beds of dark gray dolomite, weathering yellowish brown, which are characterized by coarse conchoidal fracturing, a small marine fauna and a basal eurypterid horizon. Owing to its greater resistance the Falkirk commonly produces a waterfall where exposed in streambeds. Its thickness varies from 18 to 25 feet. The overlying Scajaquada Member consists of dark shales or blocky waterlimes, less resistant than the Williamsville above or the Falkirk below, and presumably contains more argillaceous material than those two members. It varies from 3 to 10 feet in thickness and, in southern Ontario, eurypterids occur near its base ("Bridgeburg horizon").

The Williamsville Dolomite, because it formerly was mined for natural cement in the vicinity of Buffalo, is perhaps the best known member of the Bertie. It consists of laminated, fine-grained dolomite, up to 5 or 8 feet thick, which weathers light gray. Its pronounced conchoidal fracture, among other criteria, serves to distinguish it from the overlying Akron Dolomite which has an irregular fracture. According to Monahan (1931, p. 379) most of the fossils, especially the eurypterids, of the Bertie Formation cited by Ruedemann (1925) and others have been obtained from the Williamsville Member.

The Bertie Formation is noted for its abundance of well-preserved eurypterids, most of which apparently were obtained from the upper or Williamsville Member. In addition to these, bryozoans, brachiopods, gastropods, cephalopods, ostracodes, and graptolites also have been found.

Exposures of the Bertie Formation and the overlying Akron Dolomite are fairly common in the Niagara Frontier region. Outcrops in Buffalo are located near the Main Street entrance to Forest Lawn Cemetery, in the storm sewer on East Amherst (old Bennett quarry), and in a New York Central Railroad cut between Kensington and Morris Avenues. East of the city important localities are in Ellicott Creek at Williamsville, in the Louisville Cement quarry near Clarence, at the falls in Akron Falls Park, at Indian Falls, at Morganville and along Route 19 and in Oatka Creek at North LeRoy.

Akron Dolomite

The highest rock unit of the Silurian in the Niagara Frontier is the Akron Dolomite (Lane and others, 1908). The type section is an outcrop in Murder Creek, at Akron, New York, where the formation is about 8 feet thick. Other exposures are cited in the discussion of the Bertie (except Indian Falls, Morganville and North LeRoy).

The Akron consists of gray to buff, mottled and banded dolomite, fine-grained and often pitted by the solution of fossil corals. The lower contact with the Bertie is gradational and difficult to identify. The upper contact with the Onondaga Limestone is a conspicuous disconformity broadly undulating, with occasional channels or "dikes" of sandstone or arenaceous limestone extending down into the underlying Akron (or Bertie where the Akron is absent). Although not an abundantly fossiliferous rock, the Akron is the most fossiliferous portion of the entire Cayugan Series in western New York. Its fauna includes corals, brachiopods, gastropods, cephalopods, and ostracodes. Eurypterids and graptolites also have been reported but are relatively rare.

The Akron Dolomite of western New York appears to be a continuation of the Cobleskill Limestone of Eastern New York. Doubts regarding the tracing and correlation of these units, particularly the Akron, across Ontario, Monroe and Genesee Counties persist despite the efforts of several stratigraphers (Schuchert, 1903; Hartnagel, 1903; Alling, 1928; Hoffman, 1949; Rickard, 1953; Leutze, 1959). In the subsurface it frequently is not possible to separate the Akron-Cobleskill from the underlying Bertie in sample logs because the lighologic differences are slight. However, where the Cobleskill is a fossiliferous limestone, the separation is more easily made. Radioactivity logs provide an additional means of differentiating these formations in some parts of the subsurface.

THE HAMILTON GROUP IN WESTERN NEW YORK

By Edward J. Buehler

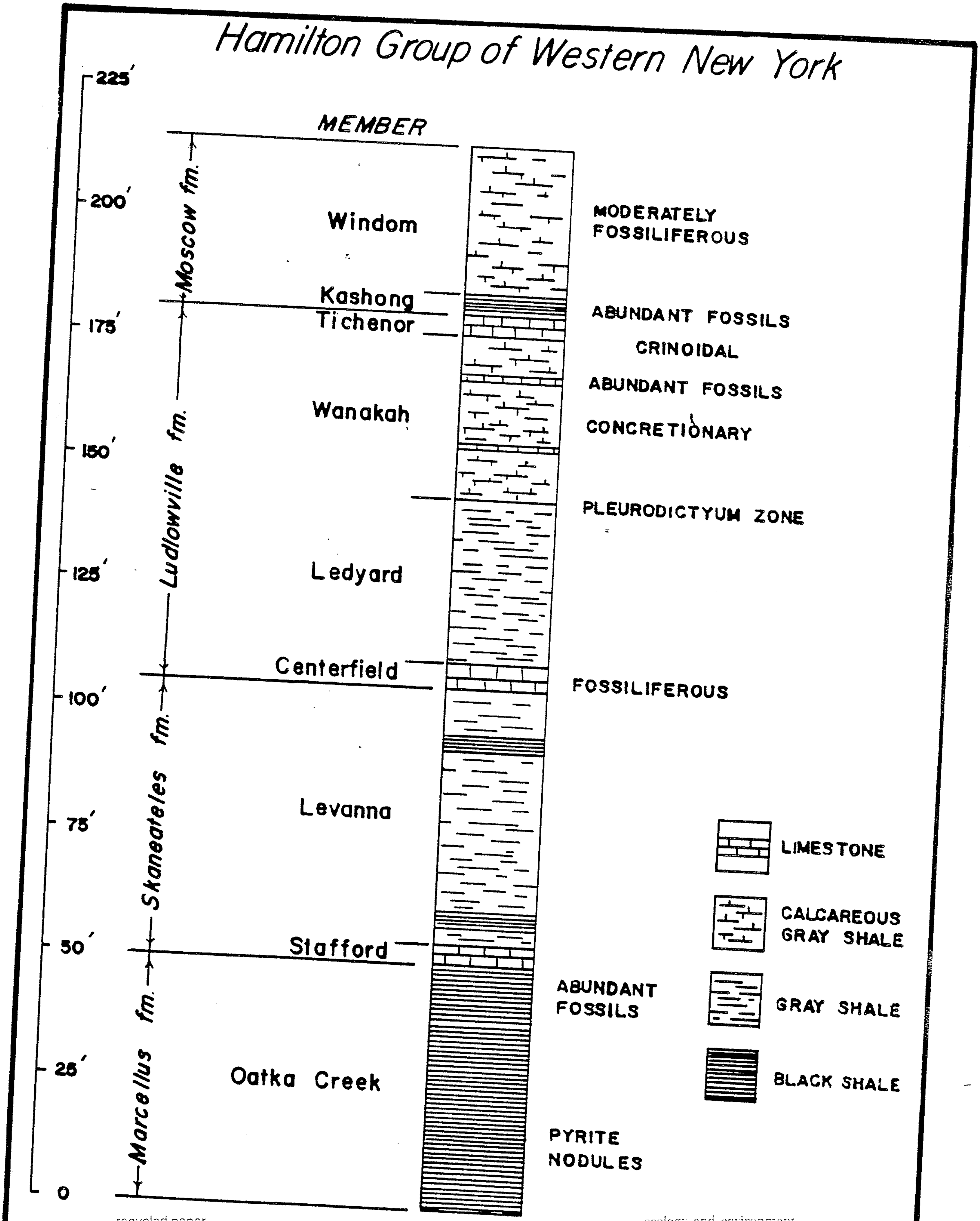
State University of New York at Buffalo

Circumstances which developed at the last minute left us without a paper on the Hamilton Group of Western New York. There was, of course, no intent to slight this most interesting and richly fossiliferous section of rock. Therefore, a column (fig. 1) a few notes and references are inserted here.

The two post-Hall classical works on the Hamilton are Grabau's (1898) Geology and Paleontology of Eighteen Mile Creek, and Cooper's (1930) Stratigraphy of the Hamilton Group of New York. deWitt (1956) describes the upper Hamilton of the Eden quadrangle. Buehler and Tesmer (1963) summarize the data on the paleontology and stratigraphy of the Hamilton group in Erie County. The chart "Correlation of the Devonian in New York State" by Rickard (1964) gives correlation across the state and the depositional phases as well as other stratigraphic information.

The Hamilton sediment of western New York was deposited at the western, seaward extremity of the Catskill Delta. This facies situation is described, with varying degrees of accuracy, in every textbook on stratigraphy and historical geology and should be familiar to all. The Marcellus and Skaneateles Formations are black and bluish-gray shale with thin limestone beds. They are separated by the Stafford Limestone, regarded as the base of the Skaneateles. Large pyrite nodules are common near the base of the Oatka Creek Shale and the brachiopod *Leiorhynchus limitare* is abundant near the top. Portions of these units, especially near the top of the Oatka Creek, are fossiliferous; other are not.

The Ludlowville and Moscow Formations consist of calcareous gray shale which may weather to a clayey consistency. Concretionary layers and thin limestone beds are common. Two of these limestones, the Centerfield and Tichenor are used as key beds in correlation and subdivision of the Hamilton Group. The upper Hamilton, especially the upper part of the Ludlowville, is richly fossiliferous. The fauna is predominantly one of corals, bryozoans, and brachiopods. Some of the particularly abundant species are *Stereolasma rectum, Athyris spiriferoides, Mucrospirifer mucronatus,* and *Favosites, hamiltoniae.* The tabulate *Pleurodictyum americanum* is common at the base of the Wanakah shale and the brachiopod *Ambocoelia umbonata* is abundant at the base of the Moscow shale. Some beds contain common specimens of the trilobite *Phacops rana.* The Tichenor is a crinoidal limestone. Molluscs, ostracodes and tentaculitids are also common in the upper Hamilton and there is a modest amount of plant material. Many of the fossils are extremely delicate and show little or no evidence of transportation. The fossiliferous pyrite (?) concretions occur in the Ledyard member. The Middle Devonian is separated from the Upper Devonian by the lensatic Leicester Pyrite.



Hamilton Group of Western New York

Buehler Figure

UPPER DEVONIAN STRATIGRAPHY AND PALEONTOLOGY OF SOUTHWESTERN NEW YORK STATE (ERIE, CHAUTAUQUA AND CATTARAUGUS COUNTIES)

by Dr. Irving H. Tesmer

State University of New York College at Buffalo

Upper Devonian rocks in southwestern New York State consist of about 2500 feet of largely detrital material associated with the Catskill Clastic Wedge. During Late Devonian time, clastic sediment gradually spread westward and northwestward across New York State and Pennsylvania, eventually filling the epeiric seas that occupied the Appalachian Trough and adjacent areas.

There is some disagreement as to the exact boundaries that mark the base and top of the Upper Devonian in southwestern New York State but the present writer includes all strata from the base of the Geneseo Member of Genesee Formation to the top of the Cattaraugus Formation (Cooper et al., 1942; Rickard, 1964). The overlying Knapp Conglomerate is considered to be Lower Mississippian (Holland, 1959).

Some authors have subdivided Upper Devonian strata into two series, an earlier Senecan and a later Chautauquan. Although there may be some paleontological evidence (especially cephalopods) to suggest this, the present writer does not see strong justification for such a division in southwestern New York State and therefore assigns all Upper Devonian units to a single series, the Chautauquan.

Within the Chautauquan Series, three groups are recognized (Tesmer, 1955), in ascending order the Seneca (600 feet), Arkwright (1250 feet) and Conewango (650 feet). The boundaries between these groups are based upon lithologic changes and facies differences that are persistent throughout the three counties of southwestern New York, namely Erie (Buehler and Tesmer, 1963), Chautauqua (Tesmer, 1963) and Cattaraugus. The Seneca Group extends from the base of the Geneseo Member of the Genesee Formation to the top of the Hanover Member of the Java Formation. The Arkwright Group includes strata from the base of the Dunkirk Member of the Canadaway Formation to the top of the Ellicott Member of the Chadakoin Formation. Locally assigned to the Conewango Group is the Cattaraugus Formation. It includes redbeds, conglomerates and coarse buff sandstones interbedded with marine siltstones and shales.

The Seneca Group includes in ascending order the Genesee, Sonyea, West Falls, and Java Formations. These units are largely gray and black shales although a few limestone and siltstone beds also occur. Although the Genesee Formation varies only from about 10 to 20 feet in thickness, various members have been recognized including the Geneseo Shale (2 inches to 2 feet of black shale), Penn Yan Shale (9 inches of dark gray shale) [deWitt and Colton, 1959], Genundewa Limestone (2 inches to 2 feet of light to dark gray limestone) and West River Shale (8 to 14) feet of gray shale. The Genundewa and West River Members include numerous species of conodonts and fish but the faunal content of the thin Geneseo and Penn Yan Members is less well known in Erie County.

The Sonyea Formation (Colton and deWitt, 1958) is divided into an older Middlesex Shale and younger Cashaqua Shale Member. The 6 to 8 feet of black Middlesex shales contain some conodonts and the 35 to 75 feet of gray Cashaqua shales have a modest molluscan fauna including several species of the cephalopod *Manticoceras*.

The next youngest unit is the West Falls Formation (Colton, 1956; de Witt, 1956; Pepper, de Witt and Colton, 1956) consisting of an older Rhinestreet Shale (150 to 195 feet of black shale), Angola Shale (220 to 340 feet of mostly light gray shale with some interbedded dark gray shale, thin limestones and calcareous siltstones) and younger Nunda Siltstone (0 to 25 feet of light gray siltstone) Member. The Rhinestreet has a very rich conodont (Youngquist, Hibbard and Reimann, 1948) and fish (Carter, 1945) fauna, including several species of *Dinichthys* while the gray Angola shales have an entirely different faunal assemblage, almost all mollusks (Clarke, 1904). The faunal content of the Nunda Siltstone Member, limited to eastern Erie County, is as yet unknown locally.

The Java Formation (Pepper and deWitt, 1950; deWitt and Colton, 1953; deWitt, 1960) is divided into an older Pipe Creek and a younger Hanover Member. The Pipe Creek contains from one to two feet of black shale with some carbonized plant remains and conodonts. In the 85 to 95 feet of Hanover, some conodonts and mollusks have been collected. The Hanover is largely composed of gray shales but also includes some interbedded dark gray shales and thin limestones, as well as several zones of calcareous nodules. It is similar in appearance to the older Angola Shale Member of the West Falls Formation.

The Arkwright Group (Tesmer, 1955) includes an older Canadaway and younger Chadakoin Formations. These units consist of black and gray shales interbedded with an increasing percentage of gray siltstone toward the top of the group. Seven members are recognized in the Canadaway Formation of Chautauqua County, the Dunkirk (oldest), South Wales (Pepper and deWitt, 1951), Gowanda, Laona, Westfield, Shumla and Northeast (youngest). The Dunkirk Shale is composed of about 40 feet of black shale containing a few carbonized plants and conodonts. The overlying South Wales Member includes from 60 to 80 feet of interbedded gray and black shales with a limited faunal and floral content similar to the underlying Dunkirk Shale Member. Above the South Wales are found from 120 to 230 feet of mostly gray shales and siltstones with some black shale beds, assigned to the Gowanda Member. Although Gowanda fossils are not numerous nor widely distributed stratigraphically, a considerable number of species have been collected, largely mollusks and conodonts. The faunal assemblage and accompanying lithologies are quite like the older Angola Member of the West Falls Formation and the Hanover Member of the Java Formation. This marks the last appearance of the "Naples Fauna" of Clarke (1904).

The Laona Siltstone Member of the Canadaway Formation contains many species introduced for the first time in southwestern New York State. These include the brachiopods *Ambocoelia gregaria, Athyris angelica, Camarotoechia contracta* and *Tylothyris mesacostalis* as well as the pelecypod *Mytilarca chemungensis*. The Laona attains a maximum thickness of about 25 feet of mostly gray siltstone and is essentially confined to Chautauqua County.

Above the Laona Siltstone one finds the Westfield Shale Member of the Canadaway Formation, comprised of 100 to 220 feet of gray shales with a few interbedded gray siltstones. These strata are largely barren of megafossils but a few brachiopods, plant stems and conodonts have been collected. The next youngest Shumla Siltstone Member has a nearly identical appearance to the older Laona Siltstone but is almost always barren except for scattered conodonts (Hass, 1958). The Shumla lenses as did the Laona, reaching a maximum thickness of about 35 feet. It is also essentially limited to Chautauqua County.

The thickest member of the Canadaway Formation is the uppermost Northeast Shale Member, varying from about 400 to 600 feet, and containing gray shales with considerable percentages of interbedded gray siltstones, particularly toward the top of the unit and in an eastward direction. In Cattaraugus County, where the Laona and Shumla Siltstone Members are not present, the nearly identical Gowanda, Westfield and Northeast Shale Members merge to form a very thick, undifferentiated sequence of gray shale beds with a fair percentage of interbedded gray siltstones. The Northeast Shale Member is often quite barren near the base of the unit, but the upper part of the member contains numerous specimens of *Ambocoelia gregaria*, *Camarotoechia contracta*, *Chonetes* spp., *Cyrtospirifer* spp., bryozoans and crinoid columnals.

In Chautauqua County, the Chadakoin Formation (Caster, 1934) contains an older Dexterville and a younger Ellicott Member. Both members are interbedded gray shales and siltstones, often nearly identical in appearance. The Dexterville Member, however, can be recognized by the presence of an index fossil, the brachiopod *Pugnoides duplicatus*, which is confined to this unit. In Cattaraugus County where *Pugnoides duplicatus* is nearly completely absent, the Chadakoin Formation is not differentiated into members. The Chadakoin Formation is about 250 feet thick, the Dexterville including the lower 100 feet, where recognized. Fossils are quite abundant in the Chadakoin (Caster, 1934) and various groups are represented, particularly bryozoans, brachiopods, pelecypods and conodonts. Many of the species were first introduced to the area during Laona times when a similar environment must have prevailed.

Much work remains to be done on the Conewango Group, which is locally the Cattaraugus Formation. This formation exhibits great variations in lithology, ranging from typical marine gray shales and siltstones through near-shore coarse buff sandstones and conglomerates to non-marine red shales, siltstones and sandstones. Total thickness is about 650 feet, within which there are many sandstone-conglomerate lenses. These lenses cannot be distinguished from one another in the field and must be separated by careful plotting as to geographic location and elevation. It is hoped that eventually the Cattaraugus Formation may be divided into an appropriate number of formal members (Tesmer, 1958) but presently the Cattaraugus is largely undifferentiated, particularly in Cattaraugus County, its type locality. Faunal content is somewhat similar to the underlying Chadakoin Formation but several new genera are introduced, notably the pelecypod *Ptychopteria* (Butts, 1903; Chadwick, 1935). Some of the conglomerate lenses likely to be retained as members include the Panama, Pope Hollow, Salamanca and Wolf Creek.

GONIATITE ZONATION OF THE NEW YORK STATE DEVONIAN

by M. R. House

Department of Geology and Mineralogy
University Museum
Parks Road
Oxford, England

Goniatites are not uncommon in calcareous shales concretions, shales and siltstones in western New York and typically horizons bearing them tongue eastwards towards the more littoral deposits of the Catskills. Earlier goniatite horizons, in general, tongue farther east than the later horizons. Thus the Cherry Valley agoniatitid fauna is known almost to the Helderbergs, whilst the latest Famennian faunas, of the Gowanda and Ellicot Shales, have not been traced farther east than Chautauqua County. Faunas lack generic diversity when compared with corresponding European faunas, but they have a value far exceeding this apparent poverty since the horizons may be placed within successions which are known with greater stratigraphic precision than those of Europe. Their importance in establishing a zonal standard and for evolutionary studies generally cannot be over emphasized.

The most striking absentees from the New York goniatite faunas are, from the Middle Devonian, *Maenioceras, Sobolewia* (both known in Virginia), *Wedekindella* (known with *Maenioceras* in Canada), *Anarcestes* and *Pinacites*. The Senecan shows greater European affinity, but the probable absence of *Koenenites* (known in Michigan) and *Timanites* (known in Canada) and the rarity of *Beloceras* is striking. Only three genera of Famennian goniatites are known and clymenids are apparently absent. Future collecting may nevertheless yield more records. Elsewhere the author has related the unusual features of the goniatite faunas to a possible migration route from Europe and European Russia via the Arctic, around the northern borders of the Old Red Sandstone continent (House 1964).

ONONDAGA FORMATION

The earliest certain goniatite occurence in the state is *Foordites* cf. *Buttsi* (Miller) from the Nedrow member (Oliver 1956). This genus is not known before the Eifelian in Europe. No indubitably Lower Devonian goniaties are known.

HAMILTON GROUP

The first probable Givetian indicator is *Cabrieroceras plebeiforme* (Hall) from the Werneroceras Bed (Rickard 1952) just below the Cherry Valley Limestone: it occurs with *Parodiceras* sp. and *Subanarcestes* cf. *micromphalus* (Roemer). Shales immediately above the Werneroceras Bed contain *Agoniatites nodiferus* (Hall) (*fide* Rickard).

The Cherry Valley Limestone has yielded the types of *Agoniatites vanuxemi* (Hall), *A. intermedius* Flower, and *A. floweri* Miller, but it has been suggested (House 1962, p. 254) that these may be synonyms. In view of the importance of its descendants, *Parodiceras discoideum* (Hall) may be used as the zonal index. The succession given here for the higher Hamilton is substantially more detailed than an earlier generalized statement by the author in 1962. This results from study of the Tornoceratidae (House 1965). Skaneateles tornoceratids, *T. (T.) arkonense* etc., (better known from the Ontario contemporaries) are characterised by a shallower lateral lobe than those of the Ludlowville [*T. (T.) uniangulare widderi*], and this trend, essentially towards an increasingly steep ventrad face to the lateroumbilical saddle continues in the Moscow with the genotype from the Leicester Pyrite, *T. (T.) uniangulare uniangulare* (Conrad). A distinct ribbed form first noted by Professor J. W. Wells, from the King Ferry Shale on Cayuga Lake has been named *T. (T.) amuletum*. It is probable, but not certain, that this species is younger than *T. (T.) uniangulare aldenense* from the Alden Marcasite. Agoniatitids are also not uncommon in the Hamilton, but these have not, as yet, been studied in detail. The highest agoniatitid known is *Sellagoniatites unilobatus* (Hall) from Norton's Landing, Cayuga Lake. This genus occurs in the Canadian N. W. T. and in Europe is restricted to the upper Givetian (House and Pedder 1963, p. 512).

GENESEE GROUP

The earliest occurrence of Frasnian goniatites is in the Tully where *Pharciceras amplexum* occurs. Tornoceratids are common including forms comparable to *T. (T.) arcuatum* (House) from the Koenenites-bearing Squaw Bay Limestone of Michigan.

Typical lowest Frasnian ponticeratids occur in the Geneseo Shale, especially *P. perlatum* (Hall), and others, also *Epitornoceras peracutum* (Hall), the latter a rare genus also known in the European low Frasnian. From the Genundewa Limestone come the types of *Probeloceras genundewa, Manticoceras apprimatum, M. contractum, M. fasciculatum* and *M. styliophylum*. At Bethany Center *T. (T.) uniangulare compressum* is abundant. The record of a *Koenenites* from the West River Shale may be based on a *Manticoceras*.

SONYEA GROUP

From The Middlesex shale there are several records of noded goniatites probably referable to *Sandbergeroceras*. Goniatites are rare at this level and all so far found are crushed.

The fauna of the Cashaqua Shale is rich and varied. This is the source of *Probeloceras lutheri, P. (?) accelerans, Manticoceras sinuosum, M. tardum, M. neapolitanum* (formerly thought to be a clymenid), *Neomanticoceras naplesense, Eobeloceras* and probably also *Sandbergeroceras*. The fauna is at present being studied by Mr. W.T. Kirchgasser of Cornell. Particularly famous is the horizon of concretions with barytic replacements which lies some six feet below the top of the formation in the gullies between Conesus and Honeoye Lake and especially in Shurtleff's Gully, 2.75 miles S. E. of Livonia.

WEST FALLS GROUP

There are singularly few records from the Rhinestreet Shale. At the top of the Unit *Manticoceras* and *Tornoceras* occur in concretionary horizons just below the 'Scraggy Bed' on Big Sister Creek and thereabouts. Large manticoceratids occur in giant concretions around the northern promontory of Grandview Bay. From the Angola Shale, however, many fine specimens are known. Recent work by the author has shown that Clarke's Big Sister Creek localities lie in the lower part of the Angola Shale where cyclothemic units of black shale, worm burrowed shale, grey shale and shale with concretions are repeated many times. A succession of the lowest six of these has been traced bed-for-bed as far east as the Warsaw Valley. The Gibson's Glen goniatite horizon is higher than these. The concretionary horizons almost invariably yield goniatites, but these become rarer to the east. Manticoceratids are chiefly of the *M. rhynchostoma* group and oxyconic groups: *Aulatornoceras* and *Tornoceras* are also common. Scattered records are known from the Gardeau, and farther east the records of *Beloceras* by Wells (1956) and of *Shindewolfoceras* are of interest in that they have not yet been found in supposed equivalent rock in the west.

JAVA GROUP

Goniatites are extremely rare in the Pipe Creek Shale, but from the Hanover Shale, especially from nodules in the lower fifteen feet, they are not uncommon. This is probably the source of the types of *M. cataphractum* and *Aulatornoceras rhysum*.

CANADAWAY GROUP

No goniatites are yet known from the Dunkirk Shale or South Wales Shale. From the Gowanda Shale at Corell's Point on Lake Erie shore 250 yards S.W. of the outlet of Walker Creek, 2.85 miles west of Brocton, Chatauqua Co. (House 1962) the *Cheiloceras* fauna is known. The same horizon, with *Cheiloceras amblylobum, Tornoceras (T.) concentricum* and *Aulatornoceras bicostatum* has now been located, in an identical concretionary layer, in Little Canadaway Creek below Lamberton, 2,200 feet N.W. of the junction of Lake Road and Rt. 20 at an altitude of about 630 feet, and again in Walnut Creek, below Forestville, about 200 yards upstream of the railroad culvert and at an altitude of about 847 feet. It is now clear that the horizon which yielded the types of *Aulatornoceras clarkei* is lower than this and occurs three feet above a 2 inch siltstone in the creek floor below the Sheridan Road bridge over Walnut Creek at Forestville. Both horizons are in the upper part of the Gowanda Shale.

GEOLOGY

OF

ERIE COUNTY

New York

By

Edward J. Buehler
Professor of Geology
State University of New York at Buffalo

and

Irving H. Tesmer
Professor of Geology
State University College at Buffalo

ORGANIZED DEC. 5 1861

BUFFALO SOCIETY OF NATURAL SCIENCES
BULLETIN

Vol. 21. No. 3 Buffalo, 1963

The Early Devonian sea
l did not extend into the
dergoing erosion. Thus,
y Devonian and part of

record in western New
of warm, clear salt water
ceptionally fine reef was
Kensington Avenue in

was replaced by muddy
. Hamilton Group. This
/ere uplifted during the
rogeny. They constitute
19.
the Marcellus Formation
This was followed by
beds are quite barren of
nes, record a sea bottom
other Paleozoic marine
present brief clearing of
st have formed immense
nents are an important
ı shale is succeeded by a
'he remarkable dwarfed
ıant water environment

le deposition in western
ɜ through a thickness of
ronment to the west and
k and forth with time,
are relatively scarce in
ely inhabited by certain
ed fish. The uppermost
siltstone. This coarsen-
migration of the Devo-

ıll of the Mesozoic and
stern New York. This
f that time, and subject
the Pleistocene Epoch.
scribed in the following

Surficial Geology

PHYSIOGRAPHY

Both the altitude and relief of the land surface tend to increase from north to south. The lowest elevation is 565 feet above sea level at the northern tip of Grand Island and the highest, 1,945 feet above sea level, is in Sardinia township, southeastern Erie County. On the basis of physiography the county may be divided into three parts: the flat Lake Tonawanda plain in the north, followed by the Lake Erie plain, and the Allegheny plateau in the south.

The Onondaga escarpment is a conspicuous topographic feature. This north-facing cliff, formed by the outcropping northern edge of the resistant Onondaga Limestone and Upper Silurian dolostone, can be traced from Buffalo eastward through Akron. In Erie County it seldom exceeds 40 feet in height. Some of the streams which cross the escarpment form waterfalls, but many of the smaller streams disappear in fissures and caves and reappear on the plain to the north.

Between the Onondaga escarpment and the parallel Niagara escarpment to the north is the Lake Tonawanda plain, so named because in late Pleistocene time it was occupied by now extinct Lake Tonawanda. This plain actually is a shallow east-west trending trough, 10 to 15 miles in width, which is drained along its axis by Tonawanda Creek.

The Lake Erie plain, so called because it was covered by glacial lakes ancestral to the present Lake Erie, is an area 6 to 12 miles in width between the Onondaga escarpment and the hilly region to the south. This plain is smooth or gently rolling and rises in elevation toward its southern border where much of it is 900 to 1,000 feet above sea level.

The southern third of the county lies within the maturely dissected Allegheny plateau, the northern border of which is sometimes referred to as the Lake Erie or Portage escarpment. The hilly topography of this region appears to be largely the result of stream erosion for there are no appreciable folds or faults. Glacial erosion has modified the shape of some of the larger valleys and has produced a general rounding of the topography. The amount of glacial drift is commonly so great as to obscure the topography of the underlying bedrock.

Erie County has no large lakes other than bordering Lake Erie. The major streams, all of which flow west or northwest into Lake Erie, are Tonawanda, Ellicott, Cayuga, Buffalo, Cazenovia, Eighteenmile, and Cattaraugus Creeks. Tonawanda Creek, part of which coincides with the Erie Barge Canal, flows over the flat bottom of extinct Lake Tonawanda. Ellicott Creek crosses the Onondaga escarpment at Williamsville where it forms a waterfall, as does Murder Creek at Akron. Cayuga, Buffalo, Cazenovia, and Eighteenmile Creeks flow northwest from the hills of the Allegheny plateau to the Lake Erie plain and cut post-glacial gorges which expose thick sections of Middle and Upper Devonian rock. Cattaraugus Creek flows essentially westward, part of it through the picturesque gorge known locally as Zoar Valley.

PLEISTOCENE GEOLOGY

INTRODUCTION

The surficial geology of Erie County consists largely of the effects of the Pleistocene glaciation (Fig. 2). The Pleistocene geology of western New York provides a fertile field for research, not only from the scientific viewpoint of understanding more of this last phase of geologic history, but also from the practical aspect of engineering geology and sand and gravel resources.

Following is a list of the glacial and interglacial stages of the Pleistocene Epoch. Although erosion by earlier glacial stages undoubtedly played a role in shaping the topography of Erie County, all the identified features date from the Wisconsin Stage, and a more detailed breakdown of that stage is provided. The most conspicuous of these features are the moraines deposited by the retreating ice sheet and the strand lines of the late Wisconsin lakes. Hough (1958, pp. 90 - 109) describes the subdivisions given below:

Wisconsin Glacial Stage
    Valders Substage
    Two Creeks Interval
    Mankato (Port Huron) Substage
    Cary Substage
    Tazewell Substage
    Iowan Substage
    Farmdale Substage
        Sangamon Interglacial Stage
Illinoian Glacial Stage
        Yarmouth Interglacial Stage
Kansan Glacial Stage
        Aftonian Interglacial Stage
Nebraskan Glacial Stage

INTERVIEW ACKNOWLEDGEMENT FORM

SITE NAME : Republic Steel
PERSON CONTACTED : Joe Evans
AFFILIATION : NYSDEC-Div. of Fish & Wildlife
ADDRESS : 128 South St., Olean, NY
TYPE OF CONTACT : Telephone

I.D. NUMBER : 915047
DATE : 8/27/87
PHONE NUMBER : 716-372-0888
CONTACT PERSON(S) GF : Gene Florentin

Joe Evans also suggested to try:
Floyd Cornelius
716-366-0228
and
Mike Wilkinson-Bflo.

INTERVIEW SUMMARY

Requested Stream information

Buffalo River
- From Lake Erie to Buffalo - West Seneca border Class D
- From Buf-W. Sen. border to where Cazenovia Creek enters Bflo. River Class D
- From Cazenovia Creek to Tributary 18 Class B
- From Tributary 19 to source Class A

Cazenovia Creek
- From mouth to Cazenovia Street Bridge Class D
- From Bridge East-West Branch Class B

Smokes Creek
- From mouth to source Class D

There has been no stocking in any of these streams in any section. Joe Evans also stated that it has been proposed to change all Class D streams to Class C.

ACKNOWLEDGEMENT

I have read the above transcript and I agree that it is an accurate summary of the information verbally conveyed to Ecology and Environment, Inc. interviewer(s) (as revised below, if necessary).

Revisions (please write in any corrections needed to above transcript)

Signature: Joseph T Evans

Date: 9-18-87

New York State Department of Environmental Conservation

MEMORANDUM

TO: Mr. Gene Florentino
FROM: Mr. Joseph Evans
SUBJECT: CORRECTIONS/ADDITIONS TO INTERVIEW SUMMARIES
DATE: September 18, 1987

Eighteenmile Creek - the dam in Hamburg is no longer there. However there is a natural barrier about 1 mile downstream of the Rt. 62 bridge which prevents most fish migration from Lake Erie.

Cattaraugus Creek - There are no salmon above the Springville Dam. The Yorkshire area is stocked with about 4000 brown trout yearly.

Cazenovia Creek - The East Branch is stocked with 2500 Brown trout yearly in the area of Wales and Holland.

Stream Reclassifications - Although it has been proposed that all streams in the Erie-Niagara drainage that are class D be upgraded to class C the law has not been passed yet. Although it looks good that most D streams will be upgraded to C, a few undoubtedly may be left as class D.

Phone number - The Fisheries phone number is (716) 372-8676.

Joseph T Evans
Joseph T. Evans
Fish and Wildlife Tech.
Region 9 - Olean

JTE/ded

"Preliminary Evaluation of Chemical Migration to Groundwater and the Niagara River from Selected Waste-Disposal Sites"

By

Edward J. Koszalka, James E. Paschal, Jr.,

Todd S. Miller and Philip B. Duran

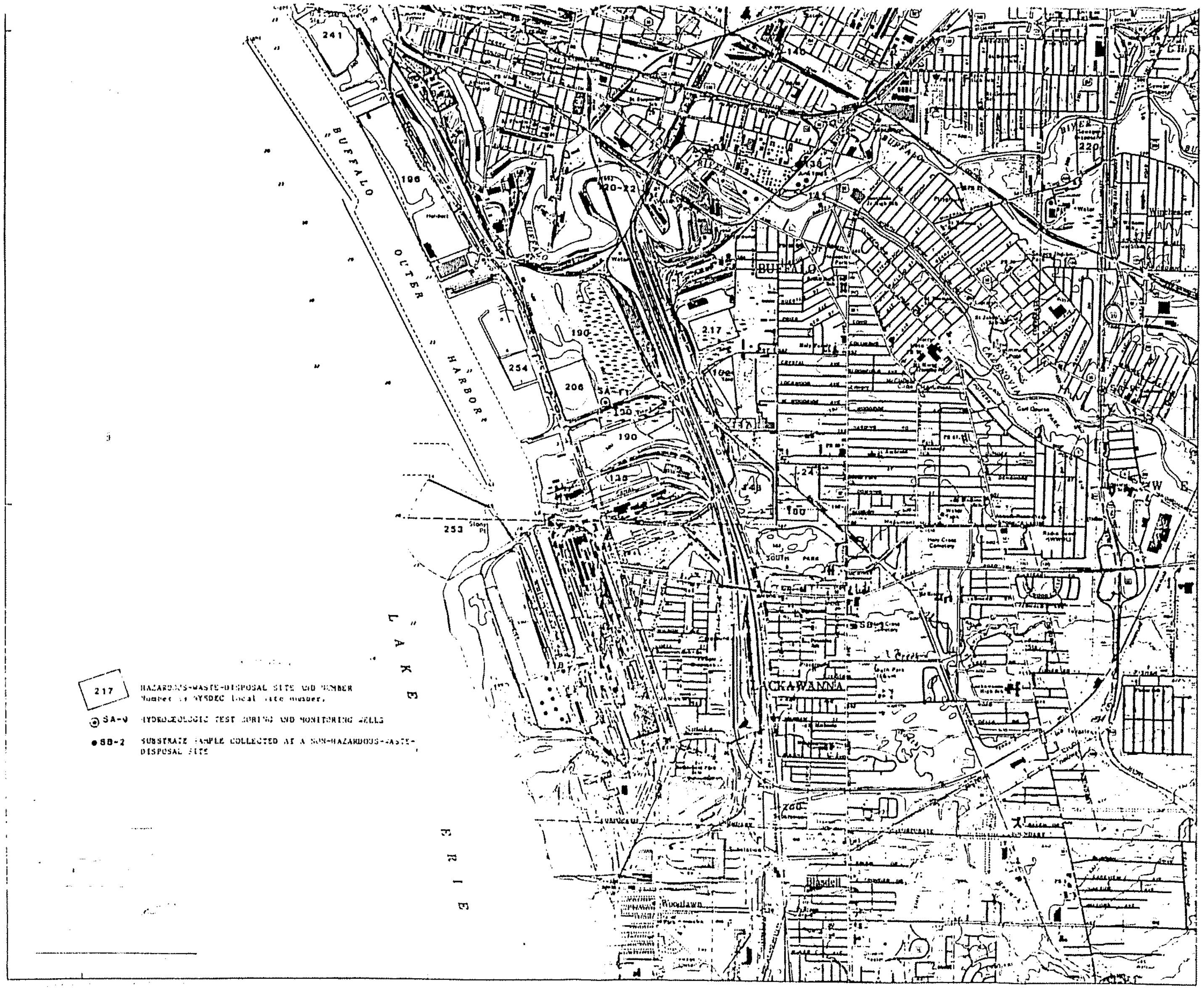
Prepared by the U.S. Geological Survey

in cooperation with the

New York State Department of Environmental Conservation

for the

U.S. ENVIRONMENTAL PROTECTION AGENCY



LOCATION OF HAZARDOUS–WASTE–DISPOSAL SITES IN THE BUFFALO AREA, NY

PRELIMINARY EVALUATION OF HYDROGEOLOGY AND CHEMICAL MIGRATION TO GROUND WATER
AT SELECTED WASTE-DISPOSAL SITES WITHIN 3 MILES
OF THE NIAGARA RIVER IN ERIE AND NIAGARA COUNTIES, NEW YORK

PLATE 1

PREPARED BY UNITED STATES GEOLOGICAL SURVEY
IN COOPERATION WITH
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

LIST OF SITES STUDIED

Page

Buffalo Area (Appendix A)

Tonawanda Area (Appendix B)

NYSDEC 915047

148. REPUBLIC STEEL (USGS field reconnaissance)

General information and contaminant-migration potential.--The Republic Steel landfill, in the southern part of the city of Buffalo, has been used since 1930 for disposal and storage of precipitator dust, clarifier sludge, railroad ties, checker bricks, scrap wood, roll scale, blast-furnace dust, BOF brick, refuse, and miscellaneous debris.

Geologic and preliminary chemical data collected by the U.S. Geological Survey indicate a limited potential for contaminant migration. One water sample indicates contamination by ethylbenzene and phenol. The potential for contaminant migration is indeterminable.

[illegible]

Geologic information.--The site is underlain by a layer of lacustrine sediments ranging in thickness from 8 to more than 20 ft overlying a dense silty till that overlies shale bedrock. ✓

Hydrologic information.--Water levels in five deep monitoring wells during August 1979 and February 1982 are shown in table A-12. The potentiometric surface at those times is depicted in figure A-11; both maps show the general direction of ground-water flow to be westward toward the Niagara River.

Chemical information.--The U.S. Geological Survey collected six ground-water samples from two shallow wells and from four deep wells on the site and a surface-water sample from a drainage ditch. All ground-water samples were analyzed for USEPA priority pollutants; results are given in table A-13. Concentrations of iron in the samples were higher than the USEPA criterion for drinking water or the New York State standard for ground water. Lead was higher than the New York State standard in all samples, and manganese in sample 3A was higher than the standard. Phenol in sample 2A was much higher than the State standard. The samples contained two organic priority pollutants, six organic nonpriority pollutants, and three organic compounds potentially of natural origin.

Table A-12.--Water levels in five deep monitoring wells on Republic Steel, site 148, Buffalo, N.Y.[1]
[Well locations are shown in fig. A-11.]

Well number	Water level (feet above sea level)	
	August 1979	February 1982
1	dry	dry
2	579.56	dry
3	580.49	581.57
4	dry	579.93
5	583.10	582.86

[1] August 1979 data from McPhee, Smith, Rosenstein Engineers, P.C. February 1982 data from Malcolm Pirnie Associates.

Table A-13.--Analyses of ground-water and surface-water samples from Republic Steel, site 148, Buffalo, N.Y., July 22-23, 1982.
[Locations shown in fig. A-11. Concentrations are in μg/L; dashes indicate that constituent or compound was not found, LT indicates it was found but below the quantifiable detection limit.]

	Sample number and depth below land surface (ft)			
	Surface water	Ground water		
	1	2 (24.8)	2A (4.3)	3A (14.9)
pH	7.8	9.2	11.4	8.0
Specific conductance (umho/cm)	1,430	608	2,125	900
Temperature (°C)	27.0	10.2	17.0	10.5
Inorganic constituents				
Aluminum	--	357	662	--
Antimony	--	--	--	--
Arsenic	--	--	14†	--
Barium	224	--	--	532
Beryllium	--	--	--	--
Cadmium	--	--	--	--
Chromium	30	17	37	46
Cobalt	--	--	--	--
Copper	--	--	--	--
Iron	373†	1,080†	829†	2,220†
Lead	53†	51†	36†	40†
Manganese	24	90	72	1,000†
Mercury	--	--	--	--
Nickel	--	--	--	--
Selenium	--	--	--	--
Silver	--	--	--	--
Tin	--	--	--	--
Tellurium	--	--	--	--
Vanadium	--	--	--	--
Zinc	--	26	18	46
Organic compounds				
Priority pollutants				
Ethylbenzene**	--	--	LT	--
Phenol	--	--	40†	--

[1] Tentative identification based on comparison with the National Bureau of Standards (NBS) library. No external standard was available. Concentration reported is semiquantitative and is based only on an internal standard. GC/MS spectra were examined and interpreted by GC/MS analysts.

† Exceeds USEPA criterion for maximum permissible concentration in drinking water or the NYS standard for maximum concentration in ground water.

** Volatile found in GC/MS extractions. Concentration probably higher than that detected.

recycled paper
ecology and environment

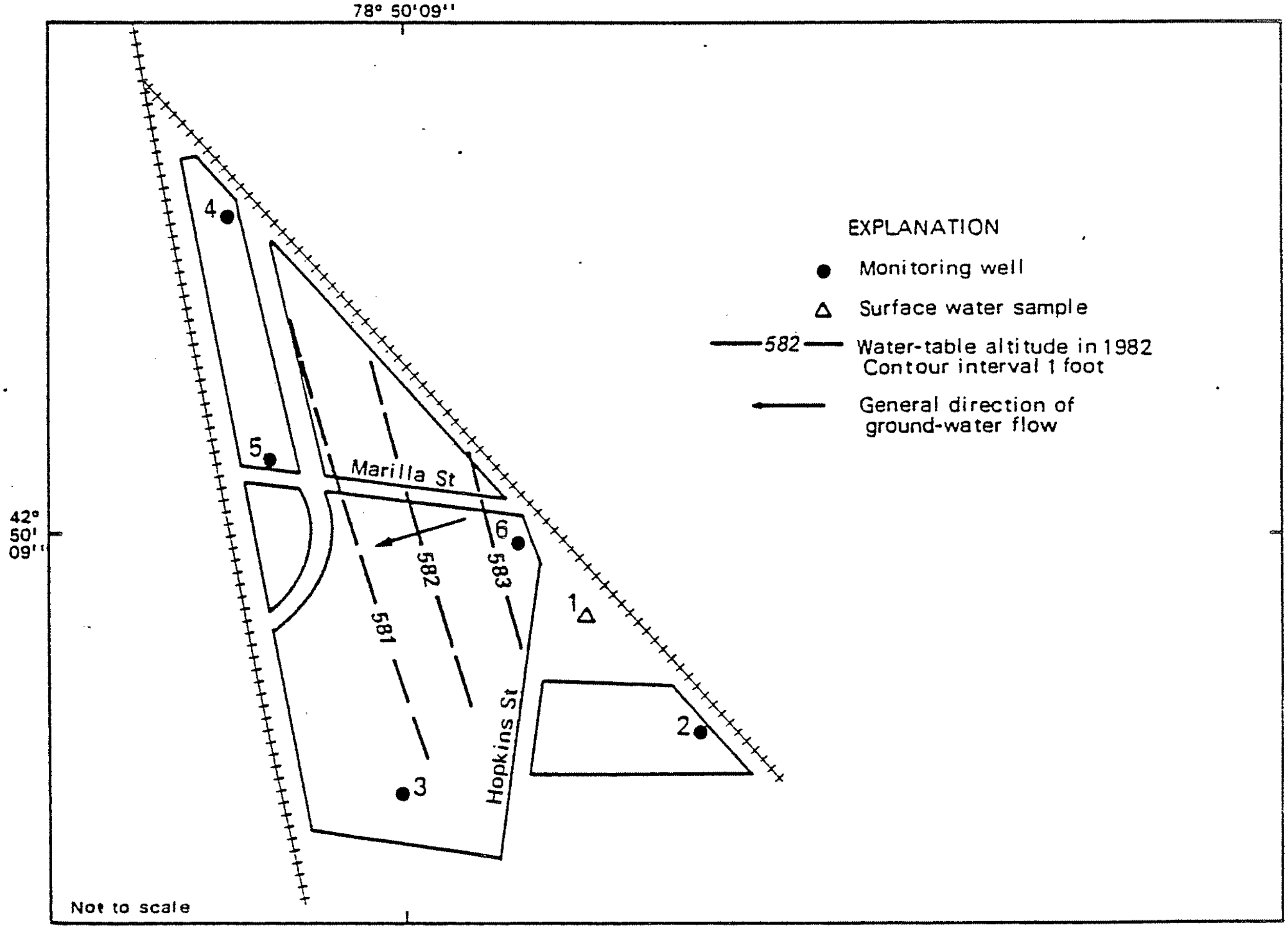
Table A-13.--Analyses of ground-water and surface-water samples from Republic Steel, site 148, Buffalo N.Y., July 22-23, 1982 (continued)
[Locations shown in fig. A-11. Concentrations are in μg/L; dashes indicate that constituent or compound was not found, LT indicates it was found but below the quantifiable detection limit.]

	Sample number and depth below land surface (ft)			
	Surface water	Ground water		
	1	2 (24.8)	2A (4.3)	3A (14.9)
Organic compounds (continued)				
Nonpriority pollutants				
2,3-Dichloro-2-methyl butane[1]	LT	14	--	--
1,3-Dimethylbenzene[1]	--	24	--	20
3-Hexanol[1]	--	24	--	--
4-Methyl-2-pentanol[1]	--	13	--	--
1-(2-butoxyethoxy)-ethanol[1]	52	370	--	650

	Ground water		
	4 (19.7)	5 (17.7)	5A (4.6)
pH	11.2	7.5	7
Specific conductance (umho/cm)	710	1,025	3,625
Temperature (°C)	10.0	10.5	14.5
Inorganic constituents			
Aluminum	--	--	--
Antimony	--	--	--
Arsenic	--	--	--
Barium	158	--	--
Beryllium	--	--	--
Cadmium	--	--	4
Chromium	39	52	37
Cobalt	--	--	--
Copper	--	--	--
Iron	264	276,000†	23,400†
Lead	20	17	19
Manganese	26	574†	8,520†
Mercury	--	--	--
Nickel	--	--	--
Selenium	--	--	--
Silver	--	--	--
Tin	--	--	--
Tullerium	--	--	--
Vanadium	--	--	--
Zinc	--	17	33

Table A-13.--Analyses of ground-water and surface-water samples from Republic Steel, site 148, Buffalo N.Y., July 22-23, 1982 (continued) [Locations shown in fig. A-11. Concentrations are in µg/L; dashes indicate that constituent or compound was not found, LT indicates it was found but below the quantifiable detection limit.]

	Sample number and depth below land surface (ft)		
	Ground water		
	4 (19.7)	5 (17.7)	5A (4.6)
Organic compounds			
Nonpriority pollutants			
1,3-Dimethylbenzene[1]	--	5.6	--
Cyclohexanol[1]	16	LT	--
Hexahydro-2H-azepho-2-one[1]	25	--	--
1-(2-butoxyethoxy)-ethanol[1]	--	150	--
Cyclohexanone[1]	78	--	--
2-Hexanone[1]	--	LT	--



Base from Republic Steel Corporation, 1982

Figure A-11. Potentiometric surface and location of sampling holes at Republic Steel, site 148, Buffalo, August 1979 and February 1982.

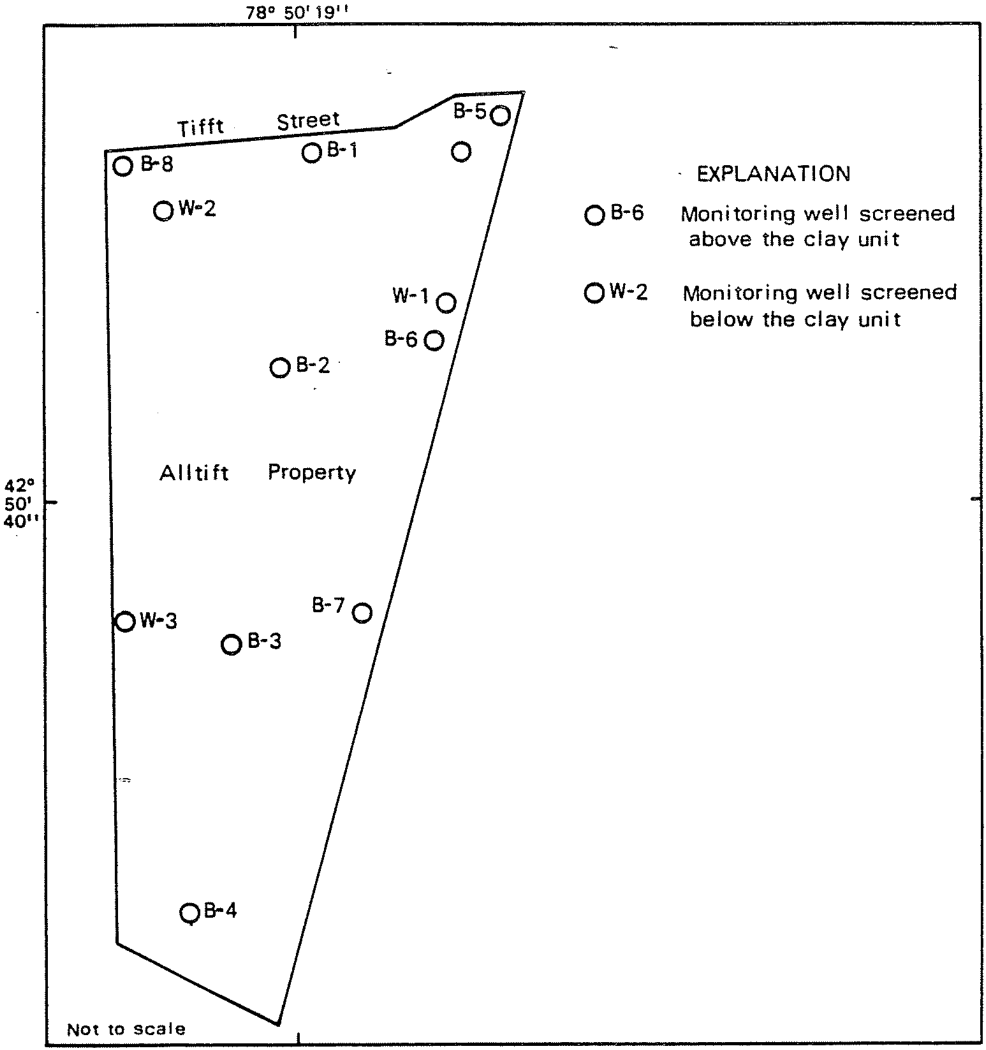
recycled paper
ecology and environment

162. ALLTIFT LANDFILL (Literature review) NYSDEC 915054

General information and contaminant-migration potential.--The Alltift Landfill, a 25-acre area south of the city of Buffalo, has been a disposal site since the 1950's. From the 1950's to the early 1970's, the site was used to dispose of bulk loads of dye, oil sludges, phenolic compounds, chrome sludge, copper sulfate, nitrobenzene, monochlorobenzene, and naphthalene. The amount of material deposited is unknown.

The landfill was inactive from the early 1970's to the late 1970's. Since then it has been used for the disposal of auto-demolition shredder waste, core sands, fly ash, and sand waste at a rate of 40,000 to 60,000 yd^3/yr. The disposal area is now in the northern third of the site (fig. A-12).

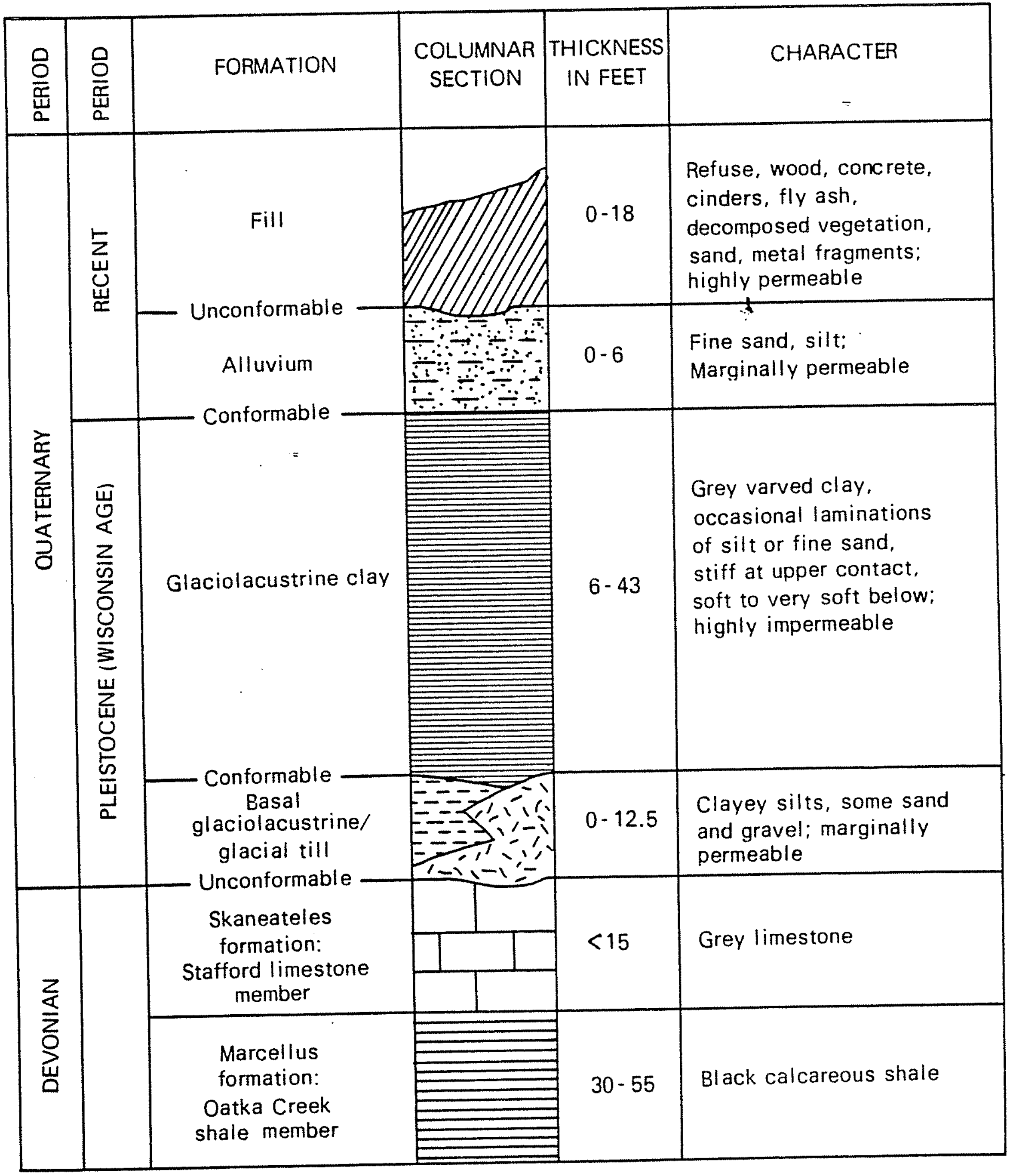
Chemical data suggest that inorganic contaminants are migrating through the clay unit. The concentration of phenols, arsenic, mercury, chlorides, and sulfates in the zone above the clay greatly exceed ground-water standards; therefore, the potential for contaminant migration would become major if the contaminants were to move through the clay and into the lower aquifer.



Base from Recra Research, 1982

Figure A-12. Location of sampling holes at Alltift Landfill, site 162, Buffalo.

Geologic information.--The site consists of alluvium and fill of recent age underlain by till and lacustrine clay, which are in turn underlain by limestone and shale of Devonian age. Two consulting reports--Wehran Engineering and Recra Research (1978) and Recra Research (1982)--discuss these units in detail and include geologic cross sections. A generalized geologic column is shown in figure A-13.



PERIOD	PERIOD	FORMATION	COLUMNAR SECTION	THICKNESS IN FEET	CHARACTER
QUATERNARY	RECENT	Fill		0-18	Refuse, wood, concrete, cinders, fly ash, decomposed vegetation, sand, metal fragments; highly permeable
		Unconformable			
		Alluvium		0-6	Fine sand, silt; Marginally permeable
		Conformable			
	PLEISTOCENE (WISCONSIN AGE)	Glaciolacustrine clay		6-43	Grey varved clay, occasional laminations of silt or fine sand, stiff at upper contact, soft to very soft below; highly impermeable
		Conformable			
		Basal glaciolacustrine/ glacial till		0-12.5	Clayey silts, some sand and gravel; marginally permeable
		Unconformable			
DEVONIAN		Skaneateles formation: Stafford limestone member		<15	Grey limestone
		Marcellus formation: Oatka Creek shale member		30-55	Black calcareous shale

Figure A-13. Generalized geologic column of formations underlying the Alltift Landfill, site 162, Buffalo. (Site location is shown in fig. A-12. Modified from Recra Research, Inc., 1982.)

Hydrologic information.--A water-table map of the shallow fill and alluvium by Wehran and Recra (1978) indicates a ground-water mound near the eastern boundary of the site. Water levels in the eight borings used to construct the map ranged from 580.8 to 584.8 ft above NGVD. This mound is probably the result of the relatively impermeable glaciolacustrine clay, which inhibits vertical flow and causes water infiltrating from the surface soils and alluvium to move laterally away from the site.

Permeability tests on two samples of the glaciolacustrine clay by Wehran and Recra (1978) indicated permeabilities of 5.8×10^{-8} cm/s and 6.4×10^{-8} cm/s. The report concluded that the permeability of the clay was sufficiently low to prevent vertical migration of contaminants from the upper unconsolidated water-bearing zone to the lower aquifers.

In 1982, the site owner drilled four borings to the upper part of the bedrock aquifer, collected water-level data, and constructed a potentiometric-contour map. The potentiometric surface slopes gently northward and ranges from 576.3 ft to a low of 574.9 ft above NGVD. Comparison of the water-table and potentiometric-surface maps indicates that the heads beneath the clay are lower and that a vertical flow component is present; however, the rate of movement through the unit would be slow. Additional data would be needed to define the vertical ground-water gradients at the site.

Chemical information.--In 1978, the site owner collected seven ground-water samples from wells screened above the glaciolacustrine clay for inorganic constituent analysis; results are given in table A-14.

In 1982, the site owner drilled four wells screened below the clay and collected water samples for chemical analysis. Well locations are shown in fig. A-12. The samples were analyzed by Recra Research; results are given in table A-15.

Sources of data

Wehran Engineering and Recra Research, Inc., 1978, Hydrogeological investigation of Alltift Landfill, Buffalo, N.Y.: 50 p., 1 appendix, 2 maps, 5 figs., 10 tables.

Recra Research Inc. and Sodarholm Engineering, 1980, Part 360 application for permit to operate a solid waste management facility; Buffalo, N.Y.: Alltift Company, Inc., 22 p., 1 appendix.

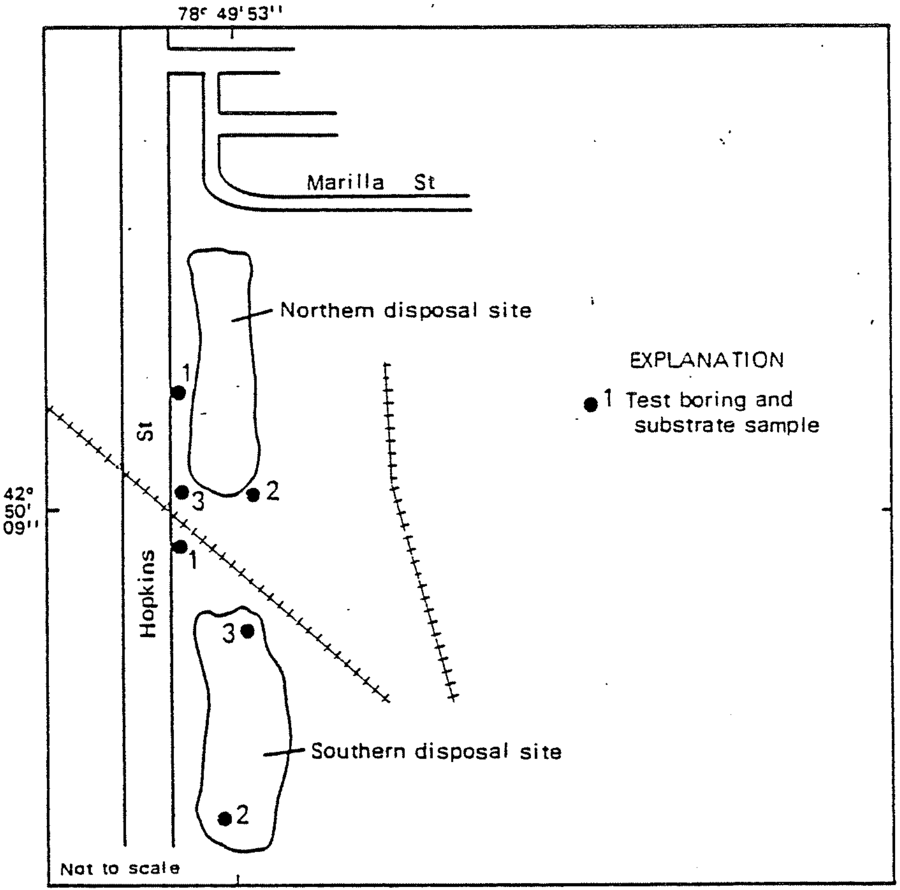
Recra Research Inc., 1982, Supplemental hydrogeological investigation, Buffalo, N.Y.: Alltift Company, Inc., 17 p., 1 appendix, 3 tables, 1 fig., 3 prints.

249. ALLIED CHEMICAL (HURWITZ-RANNE) HOPKINS STREET (USGS field reconnaissance) NYSDEC 915120

General information and chemical-migration potential.--The Hopkins Street site, in the southern part of the city of Buffalo, consists of two parcels of land having different owners. Site information indicates that neither area was used for disposal or lagooning, but NYSDEC received information that burial trenches had been operated on both areas.

Geologic data indicate a limited potential for contaminant migration from the northern property. Vertical migration of contaminants on the southern property is unlikely because the site is underlain by clay. Organic priority pollutants and a high chromium concentration suggest a possibility of contaminant migration, but the potential is indeterminable at this time.

Geologic information.--The two sites consist of 3 to 4 ft of fill and debris underlain by extensive clay. The U.S. Geological Survey drilled six test holes in August 1982 and another six in May 1983. Locations are shown in figure A-23. The geologic logs are as follows:



Base from USGS field sketch, 1982

Figure A-23. Location of sampling holes at Allied Chemical, Hurwitz-Ranne Hopkins Street, site 249, Buffalo.

South Property

Boring no.	Depth (ft)	Description
1	0 - 3.5	Topsoil, dark brown.
	3.5 - 4.0	Clay, sand, with oily fluid.
		SAMPLE: 3.5 ft.
2	0 - 3.0	Fill, slag.
	3.0 - 5.0	Clay, dark green to yellow, wet.
		SAMPLE: 4 ft.
3	0 - 2.5	Topsoil, gray, gravel, turning. green at 1.0 ft.
	2.5 - 3.0	Clay, greenish, gray.
		SAMPLE: 2.5 ft.

North Property

Boring no.	Depth (ft)	Description
1	0 - 2.5	Topsoil and fill.
	2.5 - 3.0	Clay, green, tight.
	3.0 - 4.0	Clay, greenish-gray, wet.
		SAMPLE: 3 ft.
2	0 - 4.0	Fill, debris.
	4.0 - 5.0	Clay, green, wet.
	5.0 - 6.5	Clay, yellow, wet.
		SAMPLE: 4 ft.
3	0 - 3.0	Fill, debris, black.
	3.0 - 3.5	Hard zone, rock, and gravel.
	3.5 - 4.5	Clay, green, wet.
	4.5 - 6.5	Clay, yellow.
		SAMPLE: 3.5 ft.

Hydrologic information.--Test-boring data indicate a perched water table within the clay unit 3 to 4 ft below land surface. The altitude of this water table is approximately 580 ft above NGVD.

Chemical information.--The U.S. Geological Survey collected a soil sample from each test boring for chromium, iron, and organic compound analysis; results are given in table A-26. The samples contained 28 organic priority pollutants. The Erie County Department of Environment and Planning sampled the site; PCB's were detected in surface soils.

Table A-26.--Analyses of substrate samples from Allied Chemical (Hurwitz-Ranne), site 249, Hopkins Street, Buffalo, N.Y.
[Locations shown in fig. A-23. Concentrations are in µg/kg; dashes indicate that constituent or compound was not found, LT indicates it was found but below the quantifiable detection limit.]

	Sample number and depth below land surface (ft)		
	North Property		
First sampling (8-11-82)	1 (3.0)	2 (4.0)	3 (3.5)
Inorganic constituents			
Chromium	30,000	180,000††	340,000††
Iron	10,000,000	28,000,000	29,000,000

	South Property			
	1 (3.5)	Duplicate sample	2 (4.0)	3 (2.5)
Chromium	30,000	(20,000)	180,000††	3,000
Iron	10,000,000	(10,000,000)	21,000,000	3,700,000

	Sample number (depths are same as in first sampling)					
	North Property			South Property		
Second sampling (5-18-83)	1A	2A	3A	1A	2A	3A
Organic compounds						
Priority pollutants						
Benzene	LT	19.1**	22.6	3.4	27.9	10.6
Methylene chloride	--	314**	538	--	313	--
Toluene	--	--	LT	--	2.8	--
Heptachlor	--	--	LT	--	--	--
2,4-Dimethylphenol	--	--	--	*	--	--
Phenol	--	--	--	*	--	--
Pentachlorophenol	--	--	--	--	--	* **
Acenaphthene	*	*	*	*	*	*
1,2-Diphenylhydrazine as azobenzene	--	--	--	--	--	*
Fluoranthene	*	* **	*	*	*	*

[1] Tentative identification based on comparison with the National Bureau of Standards (NBS) library. No external standard was available. Concentration reported is semiquantitative and is based only on an internal standard. GC/MS spectra were examined and interpreted by GC/MS analysts.

†† Exceeds concentrations in samples from undisturbed soils in the Buffalo area. Undisturbed soils were not analyzed for iron.

* Compounds detected but not quantified--Holding time exceeded before GC/MS acid- and base-neutral extractable compounds were extracted.

** Surrogate recoveries were outside the acceptance limits.

Table A-26.--Analyses of substrate samples from Allied Chemical (Hurwitz-Ranne), site 249, Hopkins Street, Buffalo, N.Y. (continued)
[Locations shown in fig. A-23. Concentrations are in µg/kg; dashes indicate that constituent or compound was not found, LT indicates it was found but below the quantifiable detection limit.]

	Sample number (depths are same as in first sampling)					
	North Property			South Property		
Second sampling (continued)	1A	2A	3A	1A	2A	3A
Organic compounds (continued)						
Priority pollutants (continued)						
Naphthalene	*	*	*	*	*	*
Bis(2-ethylhexl) phthalate	*	—	—	—	*	—
Di-n-butyl/phthalate	*	* **	*	*	*	*
Diethyl/phthalate	*	—	—	—	—	*
Di-n-octyl/phthalate	—	—	—	*	—	—
Benzo(a)anthracene	*	* **	*	*	*	*
Benzo(a)pyrene	*	* **	*	*	*	*
Benzo(b)fluoranthene and benzo(k)fluoranthene	*	* **	*	*	*	*
Chrysene	*	* **	*	*	*	*
Acenaphthylene	*	*	*	*	—	—
Anthracene	—	—	—	*	—	—
Benzo(ghi)perylene	*	* **	*	*	*	—
Fluorene	—	*	*	*	—	—
Phenanthrene	—	—	—	*	—	—
Dibenzo(a,h)anthracene	*	* **	*	*	—	—
Indeno(1,2,3-cd)pyrene	*	* **	*	*	*	*
Pyrene	—	* **	*	*	*	*
N-nitrosodiphenyl-amine	—	—	—	*	—	—
Nonpriority pollutants						
Acetone	—	328**	696	—	—	—
2-Butanone	—	—	165	—	—	—
Carbon disulfide	—	55.5**	100	13.4	121	—
O-xylene	—	31.2**	—	—	—	—
4-Methylphenol	—	—	—	*	*	—
Dibenzofuran	*	*	*	*	*	*
2-Methylnaphthalene	*	*	*	*	*	*
2-Hexanone	—	—	—	—	*	*
4-Methyl-2-pentanone	—	—	—	—	*	*
Tetrahydrofuran[1]	—	*	*	—	*	—
3,2,1-Bicyclooctane[1]	—	*	—	—	—	—
2-Methylphenol	—	—	—	*	—	—
Cis-octahydropentelene[1]	—	*	—	—	—	—
Cis-1,2-dimethylcyclo-hexane[1]	—	*	—	—	—	—
Ethylcyclohexane[1]	—	*	—	—	—	—
2,6,6-Trimethyl-(3.1.1) bicyclo-hept-2-ene[1]	—	*	—	—	—	*

Table A-26.--Analyses of substrate samples from Allied Chemical (Hurwitz-Ranne), site 249, Hopkins Street, Buffalo, N.Y. (continued)
[Locations shown in fig. A-23. Concentrations are in ug/kg; dashes indicate that constituent or compound was not found, LT indicates it was found but below the quantifiable detection limit.]

	Sample number (depths are same as in first sampling)					
	North Property			South Property		
Second sampling (continued)	1A	2A	3A	1A	2A	3A
Organic compounds (continued)						
Nonpriority pollutants (continued)						
6,6-Dimethyl-2-methylene-bicyclo-(3.1.1)-heptane[1]	--	*	--	--	--	--
1,2,3-Trimethycyclo-hexane[1]	--	*	--	--	--	--
2-Methylnaphthalene[1]	--	--	--	*	--	--
1,8-Dimethyl-naphthalene[1]	--	--	--	*	--	--
Carbazole[1]	--	--	--	*	--	--
3-Methylphenanthrene[1]	--	--	--	*	--	--
9-Methylphenanthrene[1]	--	--	--	*	--	--
2-Phenylnaphthalene[1]	--	--	--	*	--	--
1-Methylpyrene[1]	--	--	--	*	--	--
7-Methyl-benzo(a)-anthracene[1]	--	--	--	*	--	--

253. SMALL BOAT HARBOR CONTAINMENT SITE (USGS field reconnaissance)

General information and contaminant-migration potential.--This site lies along Lake Erie south of the Small Boat Harbor in the city of Buffalo and is operated by the Niagara Frontier Transportation Authority. The site was used for disposal of dredge spoils from the Buffalo River, Buffalo Harbor, and the Black Rock Canal (fig. A-24). This site was the first of three containment sites constructed and was a prototype for other containment sites--Times Beach (site 241) and Buffalo Harbor (site 254).

If the barrier is similar to the one at the Times Beach containment site (site 241), it would not prevent water from entering or leaving the site, and any leachate produced within the site would readily enter Buffalo Harbor. Therefore, this site has potential for contaminant migration. Additional water-quality monitoring would be needed to define the rate of contaminant migration.

Geologic information.--The dredged sediments on the area consist of sand, silt, and clay. The underlying bedrock is Onondaga Limestone overlain by natural lake deposits of silt and clay.

Hydrologic information.--The U.S. Geological Survey installed three monitoring wells in the area in 1982. The well data and geologic logs are as follows:

GROUND-WATER RESOURCES OF THE ERIE-NIAGARA BASIN, NEW YORK

Prepared for the
Erie-Niagara Basin Regional Water Resources
Planning Board

by

A. M. La Sala, Jr.

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
in cooperation with
THE NEW YORK STATE CONSERVATION DEPARTMENT
DIVISION OF WATER RESOURCES

STATE OF NEW YORK
CONSERVATION DEPARTMENT
WATER RESOURCES COMMISSION

Basin Planning Report ENB-3
1968

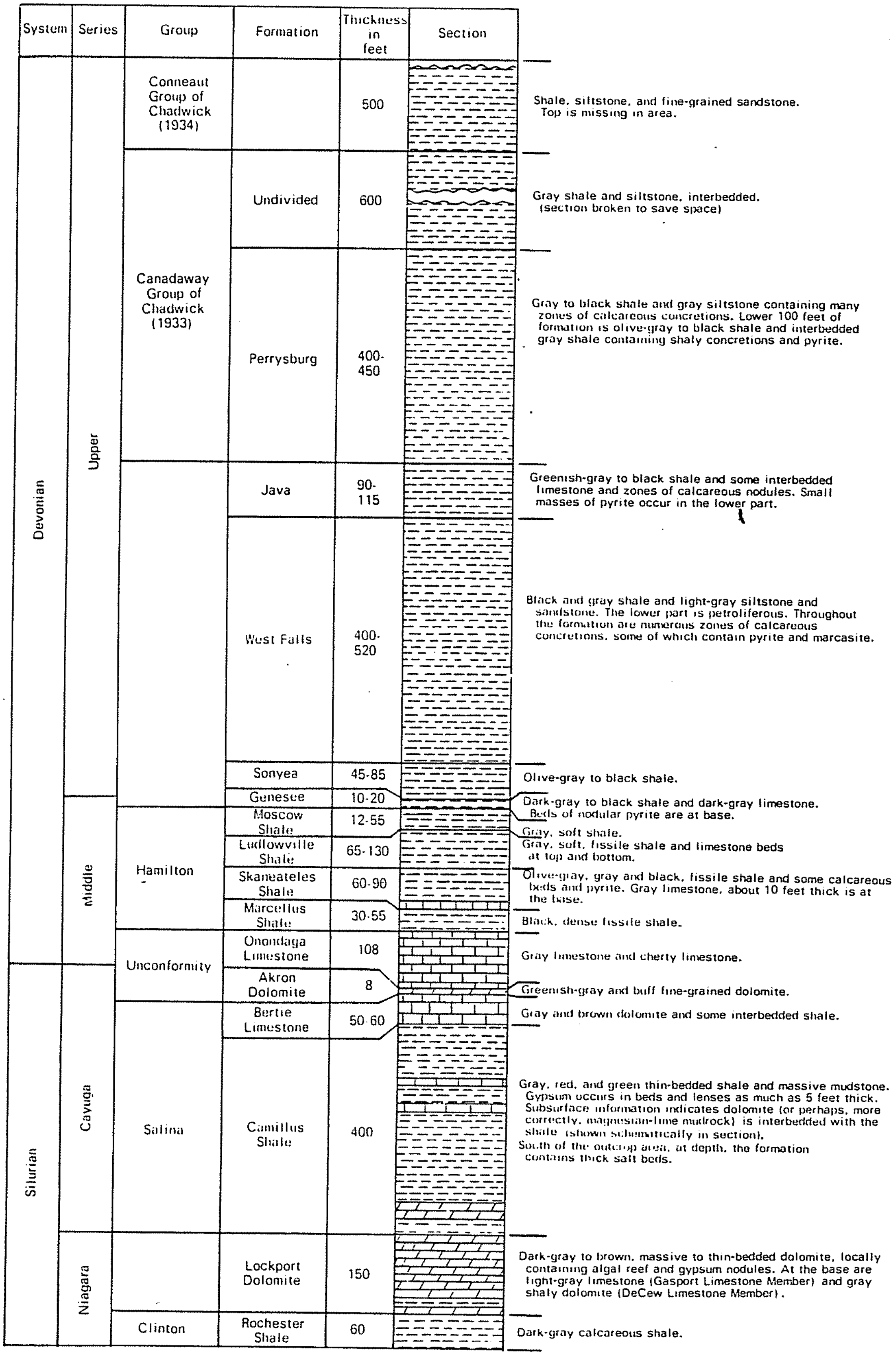
GEOLOGY AND TOPOGRAPHY

The Erie-Niagara basin is underlain by layers of sedimentary bedrock which are largely covered with unconsolidated deposits. Descriptions of the various bedrock units are given in figure 2. The bedrock consists mainly of shale, limestone, and dolomite; the Camillus Shale contains a large amount of interbedded gypsum. All the bedrock units were built up by fine-grained sediments deposited in ancient seas during the Silurian and Devonian Periods and, therefore, are bedded or layered. The dip of the rocks (inclination of the bedding planes) is gently southward at from 20 to 60 feet per mile, but the average dip is between 30 and 40 feet per mile. The dip is so gentle that it is hardly perceptible in outcrops.

The unconsolidated deposits are mostly glacial deposits formed during Pleistocene time about 10,000-15,000 years ago when an ice sheet covered the area. The glacial deposits consist of: (1) till, which is a nonsorted mixture of clay, silt, sand, and stones deposited directly from the ice sheet; (2) lake deposits, which are bedded clay, silt, and sand that settled out in lakes fed by the melting ice; and (3) sand and gravel deposits, which were laid down in glacial streams. The glacial sand and gravel deposits are of both the ice-contact and outwash types, as will be explained later in the report. The glacial deposits generally are less than 50 feet thick in the northern part of the basin. They are considerably thicker in some valleys in the southern part and reach a maximum known thickness of 600 feet near Chaffee. Other unconsolidated deposits are alluvium formed by streams in Recent times and swamp deposits formed by accumulation of decayed plant matter in poorly drained areas.

Relief of the present land surface is due to preglacial erosion of the bedrock and subsequent topographic modification by glaciation. In contrast to the southward dip of the rocks, the land surface rises to the south largely because preglacial erosion was more vigorous in the northern part of the basin. The shale in the southern part of the basin is somewhat more resistant to erosion than the rocks in the northern part of the basin but not significantly so. Figure 3 shows the relationship of the topography and rock structure and delineates the two topographic provinces of the basin: the Erie-Ontario Lowlands and the Appalachian Uplands. The rocks crop out in belts which trend generally east-west. The bedrock geologic map, plate 2, shows that the outcrop belts bend around to the southwest near Lake Erie. They assume this direction mainly because relatively intense erosion in the Erie-Ontario Lowland near Lake Erie has exposed the rock at lower elevations than farther east. The Lockport Dolomite and the Onondaga Limestone, because they are relatively resistant to erosion, form low ridges in the northern part of the basin. Tonawanda, Murder, and Ellicott Creeks descend the escarpment of the Onondaga at falls and cataracts.

In the hilly southern half of the basin (the Appalachian Uplands), preglacial valleys, deepened by glacial erosion, are cut into the shale. The valleys are partly filled with glacial deposits so that some of the present streams flow 200 to 600 feet above the bedrock floors of the valleys as shown in figure 3.



System	Series	Group	Formation	Thickness in feet	
Devonian	Upper	Conneaut Group of Chadwick (1934)		500	Shale, siltstone, and fine-grained sandstone. Top is missing in area.
		Canadaway Group of Chadwick (1933)	Undivided	600	Gray shale and siltstone, interbedded. (section broken to save space)
			Perrysburg	400-450	Gray to black shale and gray siltstone containing many zones of calcareous concretions. Lower 100 feet of formation is olive-gray to black shale and interbedded gray shale containing shaly concretions and pyrite.
			Java	90-115	Greenish-gray to black shale and some interbedded limestone and zones of calcareous nodules. Small masses of pyrite occur in the lower part.
			West Falls	400-520	Black and gray shale and light-gray siltstone and sandstone. The lower part is petroliferous. Throughout the formation are numerous zones of calcareous concretions, some of which contain pyrite and marcasite.
			Sonyea	45-85	Olive-gray to black shale.
			Genesee	10-20	Dark-gray to black shale and dark-gray limestone. Beds of nodular pyrite are at base.
	Middle	Hamilton	Moscow Shale	12-55	Gray, soft shale.
			Ludlowville Shale	65-130	Gray, soft, fissile shale and limestone beds at top and bottom.
			Skaneateles Shale	60-90	Olive-gray, gray and black, fissile shale and some calcareous beds and pyrite. Gray limestone, about 10 feet thick is at the base.
			Marcellus Shale	30-55	Black, dense fissile shale.
		Unconformity	Onondaga Limestone	108	Gray limestone and cherty limestone.
Silurian	Cayuga		Akron Dolomite	8	Greenish-gray and buff fine-grained dolomite.
		Salina	Bertie Limestone	50-60	Gray and brown dolomite and some interbedded shale.
			Camillus Shale	400	Gray, red, and green thin-bedded shale and massive mudstone. Gypsum occurs in beds and lenses as much as 5 feet thick. Subsurface information indicates dolomite (or perhaps, more correctly, magnesian-lime mudrock) is interbedded with the shale (shown schematically in section). South of the outcrop area, at depth, the formation contains thick salt beds.
	Niagara		Lockport Dolomite	150	Dark-gray to brown, massive to thin-bedded dolomite, locally containing algal reef and gypsum nodules. At the base are light-gray limestone (Gasport Limestone Member) and gray shaly dolomite (DeCew Limestone Member).
		Clinton	Rochester Shale	60	Dark-gray calcareous shale.

Figure 2.--Bedrock units of the Erie-Niagara basin.

CONTACT REPORT

AGENCY: NYSDEC Region 9 Fresh and Wildlife Habitats
ADDRESS: 600Delaware Ave., Buffalo, New York 14202
TELEPHONE: 847-4550
PERSON CONTACTED: Jim Farquar
TO: F. Mc Kosky
FROM: P. Gunther
DATE: 8/26/87
SUBJECT: Wetlands in Erie Co., Significant Habitats, & Floodplains for DEC Phase 1 Investigations

xc: M. Sienkiewicz, G. Florentino, J. Sundquist, P. Farrell, ND2000

Jim Farquar has provided us with state and federal wetland maps along with wetland descriptions for wetlands that are closest to each site. Attached is a list of sites and the wetlands that are closest to the site. Using the site assignments we settled on at the Erie Co. group meeting on 8/25/87; I have enclosed for each project member the state wetlands that he/she will need. Use the wetland information for the following:

1) Wetland Classification
2) Wetland Size
3) Wetland Cover Type (swamp, meadow, etc.)
4) Look for endangered, threatened, or rare species.
5) Determine if there is anything special about the wetland (i.e. it no longer exists, it has an extensive management plan, it is considered a significant habitat, etc.)
6) Wetland Common Name

Enclose wetland information for documentation.

Also attached are soil sheets for some sites. These should be kept in with file documentation.

Federal wetland maps are also attached. State wetlands are 12.4 acres or more in size, while federal wetlands may be as small as 0.5 acre. Each federal wetland has a code that describes the wetland type. Use the attached wetland legend sheets to determine the Federal wetland type (i.e. PFOIE is a palustrine, forested, fresh water, alkaline, seasonally saturated wetland). Note that several sites are on or very close to federal wetlands.

Also attached are significant habitats for Erie Co. and a description for each site. It'll be necessary to obtain a full scale quad sheet for your hazardous waste site, plot the closest significant habitats using the enclosed map, and determine if there is a significant habitat within 3 miles. Enclosed is a short description for each significant habitat and its common name.

The sites within a 100 year floodplan are:

1) Snyder tank Republic steel - borderline
2) Springville

All other sites are <u>not</u> in the 100 year floodplan.

NEW YORK WATER CLASSIFICATIONS AND QUALITY STANDARDS

(Official Codes, Rules, and Regulations of the State of New York, Chapter X—Division of Water Resources, Article 2, Part 609 and Parts 700 through 704; Adopted April 28, 1972; Amended February 25, 1974; September 20, 1974; August 2, 1978; Effective September 1, 1978; November 5, 1984; July 3, 1985, Effective August 3, 1985; July 5, 1985)

Quality Standards for Fresh Surface Waters

Item: 1. Turbidity.

Specifications: No increase except from natural sources that will cause a substantial visible contrast to natural conditions. In cases of naturally turbid waters, the contrast will be due to increased turbidity.

Item: 2. Color.

Specifications: None from man-made sources that will be detrimental to anticipated best usage of waters.

Item: 3. Suspended, colloidal or settleable solids.

Specifications: None from sewage, industrial wastes or other wastes which will cause deposition or be deleterious for any best usage determined for the specific waters which are assigned to each class.

Items: 4. Oil and floating substances.

Specifications: No residue attributable to sewage, industrial wastes or other wastes nor visible oil film nor globules of grease.

Items: 5. Taste and odor-producing substances, toxic wastes and deleterious substances.

Specifications: None in amounts that will be injurious to fishlife or which in any manner shall adversely affect the flavor, color or odor thereof, or impair the waters for any best usage as determined for the specific waters which are assigned to each class.

Item: 6. Thermal discharges.

Class AA

Best usage of waters. Source of water supply for drinking, culinary or food processing purposes and any other usages.

Conditions related to best usage of waters. The waters, if subjected to approved disinfection treatment, with additional treatment if necessary to remove naturally present impurities, will meet New York State Department of Health drinking water standards and will be considered safe and satisfactory for drinking water purposes.

Quality Standards for Class AA Waters

Item: 1. Coliform.

Specifications: The monthly median coliform value for 100 ml of sample shall not exceed 50 from a minimum of five examinations and provided that not more than 20 percent of the samples shall exceed a coliform value of 240 for 100 ml of sample.

Item: 2. pH.

Specifications: Shall be between 6.5 and 8.5.

Item: 3. Total dissolved solids.

Specifications: Shall be kept as low as practicable to maintain the best usage of waters, but in no case shall it exceed 500 milligrams per liter.

Item: 4. Dissolved oxygen.

Specifications: For cold waters suitable for trout spawning, the DO concentration shall not be less than 7.0 mg/l from other than natural conditions. For trout waters, the minimum daily average shall not be less than 6.0 mg/l. At no time shall the DO concentration be less than 5.0 mg/l. For nontrout waters, the minimum daily average shall not be less than 5.0 mg/l. At no time shall the DO concentration be less than 4.0 mg/l.

Item: 5. [Repealed]

Item: 6. [Repealed]

Note 1: [Repealed]

CLASS A

Best usage of waters. Source of water supply for drinking, culinary or food processing purposes and any other usages.

Conditions related to best usage of waters. The waters, if subjected to approved treatment equal to coagulation, sedimentation, filtration and disinfection, with additional treatment if necessary to reduce naturally present impurities will meet New York State Department of Health drinking water standards and will be considered safe and satisfactory for drinking water purposes.

Quality Standards for Class A Waters

Item: 1. Coliform.

Specifications: The monthly median coliform value for 100 ml of sample shall not exceed 5,000 from a minimum of five examinations and provided that not more than 20 percent of the samples shall exceed a coliform value of 20,000 for 100 ml of sample and the monthly geometric mean fecal coliform value for 100 ml of sample shall not exceed 200 from a minimum of five examinations.

Item: 2. pH.

Specifications: Shall be between 6.5 and 8.5.

Item: 3. Total dissolved solids.

Specifications: Shall be kept as low as practicable to maintain the best usage of waters, but in no case shall it exceed 500 milligrams per liter.

Item: 4. Dissolved oxygen.

Specifications: For cold waers suitable for trout spawning, the DO concentration shall not less than 7.0 mg/l from other than natural conditions. For trout waters, the minimum daily average shall not be less than 6.0 mg/l. At no time shall the DO concentration be less than 5.0 mg/l. For nontrout waters, the minimum daily average shall not be less than 5.0 mg/l. At no time shall the DO concentration be less than 4.0 mg/l.

Item: 5. [Repealed]

Item: 6. [Repealed]

Note 1: [Repealed]

CLASS B

Best usage of waters. Primary contact recreation and any other uses except as a source of water supply for drinking, culinary or food processing purposes.

Quality Standards for Class B Waters

Item: 1. Coliform.

Specifications: The monthly median coliform value for 100 ml of sample shall not exceed 2,400 from a minimum of five examinations and provided that not more than 20 percent of the samples shall exceed a coliform value of 5,000 for 100 ml of sample and the monthly geometric mean fecal coliform value for 100 ml of sample shall not exceed 200 from a minimum of five examinations. This standard shall be met during all periods when disinfection is practiced.

Item: 2. pH.

Specifications: Shall be between 6.5 and 8.5.

Item: 3. Total dissolved solids.

Specifications: None at concentrations which will be detrimental to the growth and propagation of aquatic life. Waters having present levels less than 500 milligrams per liter shall be kept below this limit.

Item: 4. Dissolved oxygen.

*Specifications:*For cold waters suitable for trout spawning, the DO concentration shall not be less than 7.0 mg/l from other than natural conditions. For trout waters, the minimum daily average shall not be less than 6.0 mg/l. At no time shall the DO concentration be less than 5.0 mg/l. For nontrout waters, the minimum daily average shall not be less than 5.0 mg/l. At no time shall the DO concentration be less than 4.0 mg/l.

Note 1: [Repealed]

CLASS C

Best usage of waters. Suitable for fishing and all other uses except as a source of water supply for drinking, culinary or food processing purposes and primary contact recreation.

Quality Standards for Class C Waters

Item: 1. Coliform.

Specifications: The monthly geometric mean total coliform value for 100 ml of sample shall not exceed 10,000 and the monthly geometric mean fecal coliform value for 100 ml of sample shall not exceed 2,000 from a minimum of five examinations. This standard shall be met during all periods when disinfection is practiced.

Item: 2. pH.

Specifications: Shall be between 6.5 and 8.5.

Item: 3. Total dissolved solids.

Specifications: None at concentrations which will b detrimental to the growth and propagation of aquati life. Waters having present levels less than 500 milligrams per liter shall be kept below this limit.

Item: 4. Dissolved oxygen.

Specifications: For cold waters suitable for trou spawning, the DO concentration shall not be less than 7.0 mg/l from other than natural conditions. For trou waters, the minimum daily average shall not be less tha 6.0 mg/l. At no time shall the DO concentration be less than 5.0 mg/l. For nontrout waters, the minimum daily average shall not be less than 5.0 mg/l. At no time shal the DO concentration be less than 4.0 mg/l.

Note 1: [Repealed]

CLASS D

Best usage of waters. These waters are suitable for secondary contact recreation, but due to such natura conditions as intermittency of flow, water conditions no conducive to propagation of game fishery or stream bed conditions, the waters will not support the propagation of fish.

Conditions related to best usage of waters. The water must be suitable for fish survival.

Quality Standards for Class D Waters

Item: 1. pH.

Specifications: Shall be between 6.0 and 9.5.

Item: 2. Dissolved oxygen.

Specifications: Shall not be less than three milligrams per liter at any time.

Note 1: [Repealed]

Quality Standards for Saline Surface Waters

Items: 1. Garbage, cinders, ashes, oils, sludge or other refuse.

Specifications: None in any waters of the marine district as defined by Environmental Conservation Law (§17-0105).

Item: 2. pH.

Specifications: The normal range shall not be extended by more than 0.1 pH unit.

Item: 3. Turbidity.

Specifications: No increase except from natural sources that will cause a substantial visible contrast to natural conditions. In cases of naturally turbid waters, the contrast will be due to increased turbidity.

Item: 4. Color.

Specifications: None from man-made sources that will be detrimental to anticipated best usage of waters.

Item: 5. Suspended, colloidal or settleable solids

Specifications: None from sewage, industrial wastes or other wastes which will cause deposition or be deleterious for any best usage determined for the specific waters which are assigned to each class.

Items: 6. Oil and floating substances.

Specifications: No residue attributable to sewage, industrial wastes or other wastes, nor visible oil film nor globules of grease.

Item: 7. Thermal discharges.

Specifications: (See Part 704 of this Title.)

CLASS SA

Best usage of waters. The waters shall be suitable for shellfishing for market purposes and primary and secondary contact recreation.

Quality Standards for Class SA Waters

Item: 1. Coliform.

Specifications: The median MPN value in any series of samples representative of waters in the shellfish growing area shall not be in excess of 70 per 100 ml.

Item: 2. Dissolved oxygen.

Specifications: Shall not be less than 5.0 mg/l at any time.

Items: 3. Toxic wastes and deleterious substances.

Specifications: None in amounts that will interfere with use for primary contact recreation or that will be injurous to edible fish or shellfish or the culture or propagation thereof, or which in any manner shall adversely affect the flavor, color, odor or sanitary condition thereof or impair the waters for any other best usage as determined for the specific waters which are assigned to this class.

CLASS SB

Best usage of waters. The waters shall be suitable for primary and secondary contact recreation and any other use except for the taking of shellfish for market purposes.

Quality Standards for Class SB Waters

Item: 1. Coliform

Specifications: The monthly median coliform value for 100 ml of sample shall not exceed 2,400 from a minimum of five examinations and provided that not more than 20 percent of the samples shall exceed a coliform value of 5,000 for 100 ml of sample and the monthly geometric mean fecal coliform value for 100 ml of sample shall not exceed 200 from a minimum of five examinations. This standard shall be met during all periods when disinfection is practiced.

Item: 2. Dissolved oxygen.

Specifications: Shall not be less than 5.0 mg/l at any time.

Item: 3. Toxic wastes and deleterious substances.

Specifications: None in amounts that will interfere with use for primary contact recreation or that will be injurious to edible fish or shellfish or the culture or propagation thereof. or which in any manner shall adversely affect the flavor, color, odor or sanitary condition thereof, or impair the waters for any other best usage as determined for the specific waters which are assigned to this class.

CLASS SC

Best usage of waters. The waters shall be suitable for fishing and all other uses except for primary contact recreation and for the taking of shellfish for market pruposes.

Quality Standards for Class SC Waters

Item: 1. Coliform

Specifications: The monthly geometric mean total coliform value for 100 ml of sample shall not exceed 10,000 and the monthly geometric mean fecal coliform value for 100 ml of sample shall not exceed 2,000 from a minimum of five examinations. This standard shall be met during all periods when disinfection in practiced.

Item: 2. Dissolved oxygen.

Specifications: Shall not be less than 5.0 mg/l at any time.

Item: 3. Toxic wastes and deleterious substances.

Specifications: None in amounts that will interfere with use for secondary contract recreation or that will be injurious to edible fish or shellfish or the culture or propagation thereof, or which in any manner shall adversely affect the flavor, color, odor or sanitary condition thereof or impair the waters for any other best usage as determined for the specific waters which are assigned to this class.

CLASS SD

Best usage of waters. All waters not primarily for recreational purposes, shellfish culture or the development of fish life and because of natural or man-made conditions cannot meet the requirements of these uses.

Quality Standards for Class SD Waters

Item: 1. Dissolved oxygen.

Specifications: Shall not be less than 3.0 mg/l at any time.

Item: 2. Toxic wastes and deleterious substances.

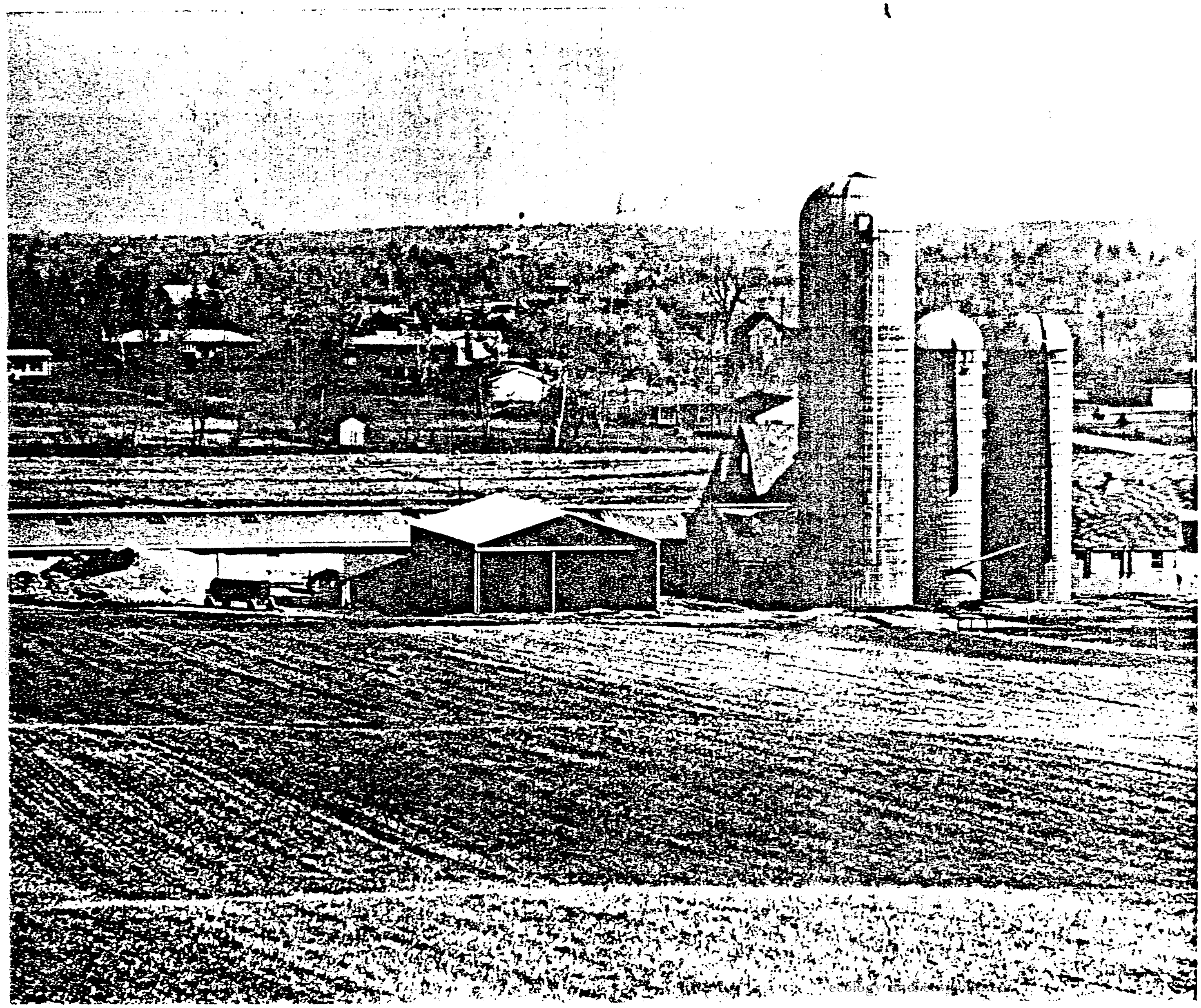
Specifications: None alone or in combination with other substances or wastes in sufficient amounts to prevent survival of fish life or impair the waters for any other best usage as determined for the specific waters which are assigned to this class.

United States
Department of
Agriculture

Soil
Conservation
Service

In Cooperation with
the Cornell University
Agricultural
Experiment Station

Soil Survey of Erie County, New York



cover crops and sod crops in the cropping system protect the surface from scour when flooding occurs. This nearly level soil is well suited to special crops that require irrigation and a stone-free plow layer.

This soil is also well suited to pasture and hay. Overgrazing can restrict plant growth and cause the loss of the pasture seeding. Proper stocking, rotation of pastures, yearly mowing, and deferment of grazing when the soil is wet are the main management concerns. Applications of lime are needed for optimum growth of pasture grasses.

The potential of this soil for wood crops is good. Only small acreage is wooded. There are few limitations for imber production. Trees that require acid conditions do ell on this soil.

Flooding is a serious limitation for most urban uses of is soil. Where the soil is used for septic tank bsorption fields, pollution of the water supply can occur ecause of flooding and because the substratum is oderately to rapidly permeable. Some areas are well uited to recreational uses, such as athletic fields that quire a gravel- and stone-free, nearly level site. This oil is an excellent source of topsoil.

This Tioga soil is in capability class I.

Uc—Udorthents, smoothed. These soils formed in ep manmade cuts or fills. Most of these areas are ar industrial sites, urban developments, or construction es. These soils consist of various kinds of excavated rthy material that has been stockpiled for use as fill or dressing, soil and rock material that has been trucked m other areas and leveled, or soil deposits that are in areas that have been excavated or deeply lped. Fill material is variable in composition, but my, earthy material is dominant. In some places, the s mixed with slag or cinders around abandoned oad yards. In other places, the earthy fill contains up 0 percent concrete or asphalt and other trashy tes.

This map unit is mainly nearly level or gently sloping. ne areas are steeper, particularly at the edge of cuts along the sides of mounded fill. The areas are able in shape, depending mostly on ownership ndaries. They range from 5 to 700 acres or more. larger areas are in the city of Buffalo and adjacent urbs near the larger industrial complexes.

dorthents are too variable to have a typical profile, n one of the more common profiles the surface layer own or grayish brown very gravelly loamy sand to clay loam 1 to 8 inches thick. The substratum is monly light olive brown, brown, or dark yellowish n and varies widely in texture from very gravelly y sand to silty clay.

st areas are idle and support scattered weeds and es. A few areas have reverted to brush and tree ngs. Some areas, particularly around railroad yards, sed for urban development.

These Udorthents are mostly excessively drained to moderately well drained. Often the fill has been placed on very poorly drained to moderately well drained soils. Texture, stone content, soil reaction, and depth to bedrock vary considerably from one area to another. Bedrock, however, is usually at a depth of more than 5 feet. Depth to the seasonal high water table and permeability are variable and depend on topography, degree of compaction, soil texture, and other related factors.

These cut and fill areas are usually poorly suited to farm or recreational uses. Onsite investigation is essential to determine the feasibility of using areas for any purpose.

These Udorthents have not been assigned a capability subclass.

Ud—Urban land. This map unit is a miscellaneous area in which 80 percent or more of the soil surface is covered by asphalt, concrete, buildings, or other impervious structures. It includes parking lots, shopping and business centers, and industrial parks—in the cities of Buffalo and Lackawanna but also the business districts and adjacent shopping centers of villages in the suburban area near Buffalo. These areas generally range from 3 to 500 acres or more and are mostly nearly level to sloping.

Included in mapping are some landfills that have not been built upon or covered with asphalt. In many of these, several feet of fill has been placed over marshes and flood plains. The included areas range up to 3 acres.

It was not practical to examine and identify the soils underlying these impervious Urban land areas. Careful onsite investigation is necessary to determine the suitability and limitations of any abandoned areas for any proposed use. Some abandoned areas are suitable for asphalt-covered playgrounds or other recreation uses requiring a hard, impervious surface.

These Urban lands have not been assigned a capability subclass.

UeB—Urban land-Benson complex, 3 to 6 percent slopes. This complex is made up of gently sloping areas of Urban land and excessively drained and somewhat excessively drained Benson soils. Some areas of the Benson soils have been graded, scalped, or filled during urbanization. This complex is underlain by shallow limestone bedrock. These areas are generally about 5 to 100 acres. Slopes are long and gradual and are occasionally interrupted by ledges of rock outcrop.

A typical area of this complex is about 60 percent Urban land that is covered by concrete, asphalt, buildings, or other impervious surfaces; about 25 percent undisturbed Benson soils; and 15 percent other soils. Urban land and Benson soils occur together in such an


BUFFALO
B U F F A L O
W E
CREEK
CONRAIL
CONRAIL
BALTIMORE AND OHIO
240
62
water
Us
Ud
Uh
Up
Uk
Uc
Uo
Uw
Ug
UmA
UrA
UmB
Ca
CtB
Cd
AoA
NfA
Nh
Te
Hm
Hn
RgA
RaA
HoB
GbB
Dp
Od

INTERVIEW ACKNOWLEDGEMENT FORM

SITE NAME : Republic Steel

PERSON CONTACTED : Allen Strycharz
Senior Engineering Aide

AFFILIATION : Lackawanna Water Dist.

ADDRESS : 714 Ridge Rd.
Lackawanna, NY 14218

TYPE OF CONTACT : Telephone

I.D. NUMBER : 915047

DATE : 9/3/87

PHONE NUMBER : 827-6425

CONTACT PERSON(S) : P. Gunther

INTERVIEW SUMMARY

Everyone in the City of Lackawanna utilizes municipal water. The water source is Lake Erie at Sturgen Point - 15 miles south of Lackawanna.

ACKNOWLEDGEMENT

I have read the above transcript and I agree that it is an accurate summary of the information verbally conveyed to Ecology and Environment, Inc. interviewer(s) (as revised below, if necessary).

Revisions (please write in any corrections needed to above transcript)

Signature:

Date: 9/17/87

15532

(MVL)

Republicsteel

Republic Steel Corporation
General Offices: Republic Building
Environmental Control
PO Box 6778
Cleveland OH 44101

May 30, 1984

WL West
Director

Return Receipt Requested

New York Department of Environmental Conservation
600 Delaware Avenue
Buffalo, New York 14202-1073

Attn: Mr. Robert J. Mitrey, P.E.
Associate Sanitary Engineer

Re: Republic Steel Corporation
Buffalo Plant and Marilla at Hopkins Street Landfill

Dear Mr. Mitrey:

This letter is in response to your correspondence dated May 4, 1984 and the meeting held on May 1, 1984 between yourself, Republic Steel representatives and Mr. Ronald Koczaja of Erie County.

As requested, Mr. Koczaja performed a walk-through inspection of the plant and landfill on May 16, 1984. At that time, various areas of the plant were engaged in recycle/reuse operations. Brick materials were being reprocessed on site, slag was being screened and separated for sale to cement block manufacturers, and metallic materials were being reclaimed for eventual sale or reprocessing at our Central Alloy Steelmaking Facility in Canton, Ohio. Also, areas of the plant previously used for the storage of scrap material were noted to have been cleaned up. At this time, over 60 employees are busily engaged in reclamation efforts and as support personnel. Although the plant has suspended steelmaking operations, cleanup efforts, beneficial recycling of materials, and efforts to keep the plant operable for a potential sale are now such as to retain personnel at the plant.

The Marilla Street Landfill was also inspected by Mr. Koczaja. Areas of the landfill have beneficial recycle/reuse value. Over 750 tons of bricked materials have been reclaimed from the landfill in the past month, reprocessed and sold. In addition, slag materials deposited in the landfill may be reclaimed and sold as construction material. Sevenson Construction Company has sent samples of the slag to Pittsburgh Testing Laboratories for analysis and has applied for permitting to use this material in construction. The firm has conservatively estimated that approximately two hundred thousand tons of material will be needed to complete the construction job. Attached is a letter dated May 23, 1984 outlining this firm's current intentions.

The tour of the plant with Mr. Koczaja was very interesting and informative. I would like to extend a similar invitation to you also for a tour of the facility should your schedule permit.

Republic Steel believes that permanent closure of the entire Marilla Street Landfill is premature at this time. Should the plant not be sold, dismantlement of buildings and equipment could necessitate a landfill facility. If the plant would start up, some materials would also need be stored or disposed of and the Marilla Street Landfill could be utilized.

Republic Steel, however, in responding to your May 1, 1984 request for a plan for the landfill, is proposing the following course of action:

> Republic Steel will retain an engineering firm to perform groundwater studies of the Marilla Street Landfill. A groundwater evaluation and monitoring study (Phase I) will be performed in accordance with the requirements of applicable regulations. If practical, Republic may establish additional up-gradient wells to confirm the results of the 1982 study at a location on Republic property across Hopkins Street. Parameters to be monitored are: pH, conductivity, total organic carbon, chlorides, total iron, total dissolved solids, sulfates and total phenols. These groundwater studies can be assembled and submitted to the Department of Environmental Conservation no later than August 31, 1984.
>
> The engineering firm has also submitted a proposal to do an extensive evaluation (Phase II) of the site. This evaluation would include an updated mapping of the facility, estimation of quantities of materials and some on-site permeability testing. The work product of this evaluation would be such that a plan for different areas of the landfill could be developed. Because of the aforementioned activity at the landfill, Republic will start on this Phase II as soon as practical. Current plans are to continue with Phase II upon completion of Phase I.

We trust the program outlined above meets with your approval and if you have any questions, please call me at 216-622-5088.

Lawrence A Szuhay

Lawrence A. Szuhay
Manager - Waste Management
Environmental Control

LAS/fh

Attachment

cc: Mr. Ronald Koczaja ✓
County of Erie
Erie County Office Building
95 Franklin Street
Buffalo, New York 14202

Call K. Hintz Re: permeability requirements (DOT letter Re Beth Steel BOF slag) and Bob's concern over slag use at the landfill

Some confusion = slag may be used at Niagara L.F K. Hintz 6/1

MCM

LTV Steel Company

April 6, 1987

LIM [illegible]
LT
RO
file RCRA

New York Department of Environmental
Conservation
Bureau of Hazardous Waste Technology
Room 401
50 Wolf Road
Albany, New York 12233

Attention: Mr. Paul Counterman, Chief

Subject: LTV Steel Company, Inc.
(Republic Steel Corporation)
Marilla Street Landfill
Buffalo, New York

Dear Mr. Counterman:

Attached are the analytical data for the RCRA quarterly and Part 360 groundwater monitoring samples taken on January 8, 1987 at the subject facility. Isopotential maps indicating groundwater contours and general direction of groundwater flow for the shallow and deep systems are included as Plates 1 and 2. The analytical data and isopotential maps represent the fourth quarterly RCRA and NYSDEC Part 360 routine groundwater monitoring events for this facility.

Groundwater samples were taken and analyzed according to procedures set out in "Marilla Street Landfill Groundwater Sampling and Analysis Plan," August, 1985.

The recent data indicates that new well 14B may not represent background conditions and that the area groundwater could be recharged by the adjacent stream. Future monitoring will include water level measurements of the stream.

Should you have any questions or require additional information, please contact John M. Potwora at 216/429-6536.

L A Szuhay
L. A. Szuhay
Manager-Solid and Hazardous Waste
Environmental Control

LAS/fh
Attachment
cc: (see next page)

LTV STEEL COMPANY • CORPORATE ENVIRONMENTAL CONTROL DEPARTMENT • 3100 EAST 45TH STREET • CLEVELAND, OHIO 44127 • TELEPHONE (216) 429-6471

cc: Robert J. Mitrey, P.E.
Associate Sanitary Engineer
and
Mary E. McIntosh ✓ (letter & data summary)
Senior Engineering Geologist
New York State Dept. of Environmental Conservation
600 Delaware Avenue
Buffalo, NY 14202-1073

cc: William G. Stelz
Hydrologist
U. S. Environmental Protection Agency
Region II
Solid Waste Branch, Room 1043
26 Federal Plaza
New York, NY 10278

2867a

MALCOLM PIRNIE

TABLE 1

MARILLA STREET LANDFILL
SUMMARY OF ANALYTICAL RESULTS FOR RCRA GROUNDWATER PARAMETERS
ROUTINE WATER QUALITY SAMPLING (1/9/87)**

PARAMETER (Units as mg/l except as noted)	SAMPLE IDENTIFICATION			
	MONITORING WELL NUMBER			
	4B	9B	13B	14B
pH (units)***	8.0	5.8	6.5	8.8
Total Organic Carbon*	18,14,17,12	11,13,16,25	65,51,31,34	30,35,40,21
Chloride	54	41	155	82
Fluoride	1.23	0.42	1.00	1.23
Nitrate (NO$_3$-N)	0.12	0.12	0.15	0.14
Total Recoverable Phenolics	<0.01	<0.01	<0.01	0.016
Sulfate	314	1150	146	650
Conductivity (umhos/cm)***	1469	3125	2000	1050
TOTAL METALS				
Total Arsenic	0.008	0.038	0.011	0.253
Total Barium	0.08	0.37	0.24	1.2
Total Cadmium	0.028	0.012	0.005	0.017
Total Chromium	<0.005	0.271	0.008	0.359
Total Iron	6.3	81	19	173
Total Lead	<0.005	0.180	0.013	0.175
Total Manganese	0.71	3.4	3.2	11.0
Total Mercury	<0.0005	<0.0005	<0.0005	<0.0029
Total Selenium	<0.005	<0.005	<0.005	<0.005
Total Silver	<0.005	<0.005	<0.005	<0.005
Total Sodium	50	47	190	170
SOLUBLE METALS				
Soluble Arsenic	<0.005	<0.005	<0.005	<0.005
Soluble Barium	<0.05	0.10	0.16	<0.14
Soluble Cadmium	0.006	<0.005	<0.005	<0.005
Soluble Chromium	<0.005	<0.005	<0.005	<0.005
Soluble Iron	<0.02	<0.87	<0.02	0.24
Soluble Lead	<0.005	<0.005	<0.005	<0.005
Soluble Manganese	0.61	1.3	2.8	<0.01
Soluble Mercury	<0.0005	<0.0005	<0.0005	<0.0005
Soluble Selenium	<0.005	<0.005	<0.005	<0.005
Soluble Silver	<0.005	<0.005	<0.005	<0.005
Soluble Sodium	45	47	190	160

(continued)

TABLE 1 (continued)

MARILLA STREET LANDFILL
SUMMARY OF ANALYTICAL RESULTS FOR RCRA GROUNDWATER PARAMETERS
ROUTINE WATER QUALITY SAMPLING (1/9/87)

PARAMETER (Units as mg/l except as noted)	SAMPLE IDENTIFICATION			
	MONITORING WELL NUMBER			
	4B	9B	13B	14B
PESTICIDES/HERBICIDES				
Endrin	<0.00001	<0.00001	<0.00001	<0.00001
Lindane	<0.00001	<0.0002	<0.00002	<0.00002
Methoxychlor	<0.00005	<0.00005	<0.00005	<0.00005
Toxaphene	<0.0005	<0.0005	<0.0005	<0.0005
2,4-D	<0.0002	<0.00025	0.0015	0.00089
2,4,5-TP	<0.00003	<0.0002	<0.00008	<0.0002
MISCELLANEOUS				
Gross Alpha Radiation (pCi/l)	<4	<5	<5	<5
Gross Beta Radiation (pCi/l)	5.5 ± 0.4	1.1 ± 0.1	6.2 ± 0.5	1.8 ± 0.3
Total Radium (pCi/l)	1.6 ± 1.3	6.8 ± 3.0	3.0 ± 1.5	1.6 ± 1.2
Fecal Coliform (Colonies/100 ml)	<1	<4	<4	<2
Total Organic Halide* (ug/l)	<10	<10	<10	109

NOTES:
- * Represents four replicate samples as reported in Attachment A.
- ** All analyses by RECRA Research Inc. unless otherwise noted.
- *** Field measurements by Malcolm Pirnie, Inc.

TABLE 2

LTV STEEL COMPANY
MARILLA STREET LANDFILL

FIELD TEST RESULTS
RCRA INDICATOR PARAMETERS (REPLICATE)*

Replicate No.	Well 4B	Well 9B	Well 13B	Well 14B
		pH (Standard Units)		
1	8.0	5.8	6.5	8.8
2	8.0	5.8	6.5	8.7
3	8.0	5.8	6.4	8.8
4	8.0	5.7	6.5	8.8
		Conductivity (umhos/cm)		
1	1500	3000	2000	1000
2	1500	3000	2000	1100
3	1425	3000	2000	1100
4	1450	3500	2000	1000

* Measurements taken from four separate samples per well collected on 1/9/87.

TABLE 1

MARILLA STREET LANDFILL
SUMMARY OF ANALYTICAL RESULTS FROM SHALLOW WELL SAMPLING (1/9/87)
ROUTINE WATER QUALITY PARAMETERS **

PARAMETER (Units as mg/l except as noted)	SAMPLE IDENTIFICATION			
	MONITORING WELL NUMBER			
	2B	5B	6B	7B
pH (units)*	10.8	7.8	7.1	11.6
Total Organic Carbon	18	7.5	7.0	230
Chloride	68	731	28	407
Total Recoverable Phenolics	0.018	<0.01	<0.01	1.01
Sulfate	106	1400	464	129
Filterable Residue (180 C)	628	3050	1120	3720
Conductivity (umhos/cm)**	2500	6500	2000	12000
TOTAL METALS				
Total Chromium	<0.005	0.077	0.018	0.237
Total Iron	0.24	99	7.6	178
Total Lead	<0.005	<0.008	<0.005	2.23
SOLUBLE METALS				
Soluble Chromium	<0.007	<0.005	<0.005	<0.006
Soluble Iron	<0.04	<0.04	<0.04	<0.04
Soluble Lead	<0.005	<0.005	<0.005	0.014

NOTES:

* Measured in the field by Malcolm Pirnie, Inc.

** Analytical work by RECRA Research unless otherwise noted.

MALCOLM PIRNIE

TABLE 2

MARILLA STREET LANDFILL
SUMMARY OF ANALYTICAL RESULTS FROM DEEP WELL AND POND SAMPLING (1/9/87)
ROUTINE WATER QUALITY PARAMETERS*

PARAMETER	SAMPLE IDENTIFICATION						
	MONITORING WELL NUMBER						
(Units: mg/l)	2A	3A	4A	5A	6A	7A	West Pond
pH (units)**	8.7	7.4	7.3	7.7	7.8	8.5	11.4
Total Organic Carbon	45	3.5	7.5	11	4.0	43	11
Chloride	120	65	41	30	47	225	46
Total Recoverable Phenolics	<0.01	<0.01	<0.01	<0.01	<0.01	<0.034	<0.01
Sulfate	24	191	78	139	220	133	253
Filterable Residue (180 C)	427	824	397	555	696	1330	547
Conductivity (umhos/cm)**	1000	1700	900	1500	1400	2000	1200
TOTAL METALS							
Total Chromium	0.117	<0.005	<0.005	0.005	<0.005	0.098	<0.009
Total Iron	135	3.8	3.3	1.0	1.3	6.4	7.1
Total Lead	0.081	<0.005	0.007	0.005	<0.005	0.038	0.054
SOLUBLE METALS							
Soluble Chromium	<0.005	<0.005	<0.005	<0.005	<0.005	0.058	<0.005
Soluble Iron	0.04	0.07	<0.04	<0.04	<0.04	0.60	<0.04
Soluble Lead	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

NOTES:

* Analytical work by RECRA Research unless otherwise noted.

** Measured in the field by Malcolm Pirnie, Inc.

MALCOLM
PIRNIE

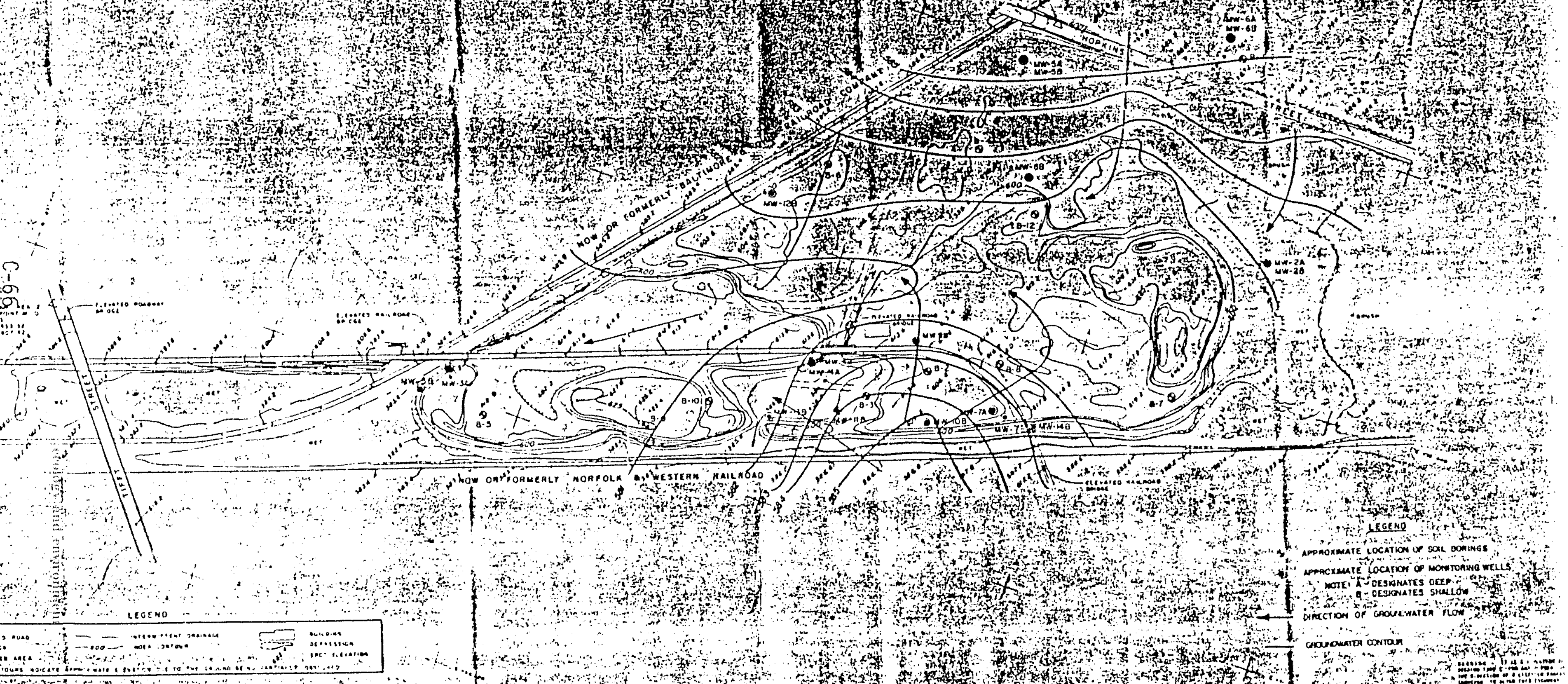
TABLE 4

SUMMARY OF GROUNDWATER ELEVATIONS VS TIME

WELL	3/31/86	10/16/86	1/8/87
2A	581.96	582.0	582.09
2B	582.20	582.05	582.20
3A	580.91	581.21	581.15
3B	580.21	580.41	580.37
4A	579.68	580.18	581.73
4B	582.16	582.26	582.26
5A	583.52	583.62	583.92
5B	583.95	585.87	585.89
6A	585.21	585.61	585.15
6B	585.46	585.94	585.46
7A	579.69	ND	580.03
7B	583.94	584.62	583.75
8B	582.83	582.93	582.82
9B	582.50	582.92	582.44
10B	583.74	584.08	585.68
11B	582.57	582.87	584.17
12B	582.54	582.61	582.31
13B	581.55	582.23	581.97
14B	ND	581.55	582.84

ND = No Data obtained

WELL NUMBER	TOP OF PVC ELEV. (FT)	GROUNDWATER ELEV. (FT)
2A	585.50	582.09
2B	585.85	582.20
3A	583.51	581.15
3B	582.81	580.37
4A	586.08	581.73
4B	586.56	582.26
5A	586.02	583.92
5B	589.47	585.89
6A	595.11	585.15
6B	595.44	585.46
7A	605.43	580.03
7B	604.82	583.75
8B	602.85	582.82
9B	613.68	582.44
10B	609.58	585.68
11B	596.97	584.17
12B	602.31	582.31
13B	588.33	581.97
14B	613.68	582.84



LEGEND

APPROXIMATE LOCATION OF SOIL BORINGS

APPROXIMATE LOCATION OF MONITORING WELLS

NOTE: A - DESIGNATES DEEP
B - DESIGNATES SHALLOW

DIRECTION OF GROUNDWATER FLOW

GROUNDWATER CONTOUR

LEGEND

D ROAD
INTERMITTENT DRAINAGE
INDEX CONTOUR
BUILDING
DEPRESSION
SPOT ELEVATION

RAMMETRIC COMPILATION BY EL-COM DATA SYSTEMS DIVISION OF
H & McINTOSH, NC JOB NO 2187
Y PHOTOGRAPHY APRIL 19, 1983
INTERVAL 5 FEET, USGS DATUM, NEW YORK STATE WEST ZONE COORDINATE SYSTEMS

OLM
IIE

REVISIONS

REMARKS

ADDED AND RELOCATED WELLS

DES

DWN

LTV STEEL COMPANY
CLEVELAND, OHIO

MARILLA STREET LANDFILL BUFFALO, NEW YORK

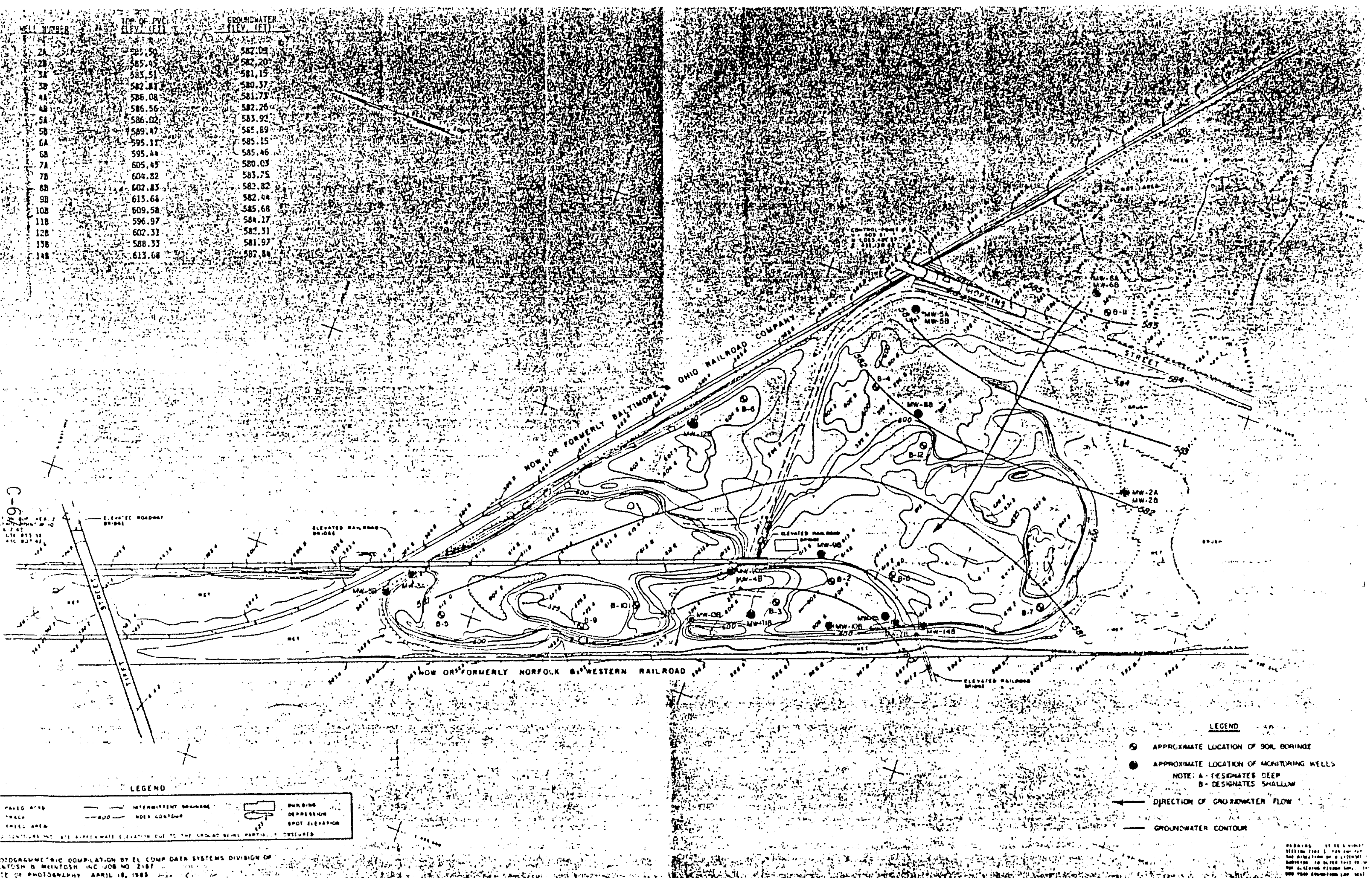
GROUNDWATER ISOPOTENTIAL MAP FOR
SHALLOW WELLS 1/8/87

MALCOLM

DATE MARC

SHEET

WELL NUMBER	TOP OF PVC ELEV. (FT)	GROUNDWATER ELEV. (FT)
2A	585.50	582.09
2B	585.45	582.20
3A	583.51	581.15
3B	582.41	580.37
4A	586.08	581.73
4B	586.56	582.26
5A	586.02	583.92
5B	589.47	585.89
6A	595.11	585.15
6B	595.44	585.46
7A	605.45	580.03
7B	604.82	583.75
8B	602.83	582.82
9B	613.68	582.44
10B	609.58	585.68
11B	596.97	584.17
12B	602.31	582.31
13B	588.33	581.97
14B	613.68	582.84



OTOGRAMMETRIC COMPILATION BY EL COMP DATA SYSTEMS DIVISION OF
NTOSH & MCINTOSH INC JOB NO. 2187
TE OF PHOTOGRAPHY APRIL 18, 1985
NTOUR INTERVAL 5 FEET, USGS DATUM, NEW YORK STATE WEST ZONE COORDINATE SYSTEMS

COLM
RNIE

REVISIONS

NO	BY	DATE	REMARKS
		6/26/86	SPOT ELEVATIONS ADDED ON RAILROADS
		6/23/85	WET AREAS ADDED

LTV STEEL COMPANY
CLEVELAND, OHIO

MARILLA STREET LANDFILL, BUFFALO, NEW YORK

GROUNDWATER ISOPOTENTIAL MAP FOR DEEP WELLS 1/8/87

MALCO
DATE
DWG NO.

Mary

LTV Steel Company

February 10, 1987

GW data in [illegible]?
OK - in next letter

MM ✓
LA ✓
NO
file RCRA

New York Department of Environmental
Conservation
Bureau of Hazardous Waste Technology
Room 401
50 Wolf Road
Albany, New York 12233

Attn: Mr. Paul Counterman, Chief

Re: LTV Steel Company, Inc.
(Republic Steel Corporation)
Marilla Street Landfill
Buffalo, NY

Dear Mr. Counterman:

Attached are the analytical data for the RCRA quarterly and Part 360 groundwater monitoring samples obtained on October 16, 1986 at the above referenced facility. An isopotential map indicating groundwater contours and general direction of groundwater flow for the shallow system is included as Plate 1. The analytical data and isopotential map represent the third quarterly RCRA monitoring and NYSDEC Part 360 routine groundwater monitoring requirements for this facility. The results appear to be generally consistent with previous monitoring events.

Groundwater samples were taken and analyzed following the procedures detailed in "Marilla Street Landfill Groundwater Sampling and Analysis Plan," August 1985.

Since earlier data indicated the Well 7B was not representative of background water quality, LTV Steel installed Well 14B which, based on groundwater contours, was believed to be upgradient of the BOF dust area. Most recent data, however, appears to indicate new Well 14B also may not be representative of background conditions due possibly to a local hydrological condition. This situation will be further evaluated with future monitoring data.

Should you have any questions or require additional information, please contact John M. Potwora at 216/429-6536.

Sincerely,

L A Szuhay

L. A. Szuhay
Manager-Solid and Hazardous Waste
Environmental Control

LAS/JMP/fh
Attachment
cc: (next page)

LTV STEEL COMPANY • CORPORATE ENVIRONMENTAL CONTROL DEPARTMENT • 3100 EAST 45TH STREET • CLEVELAND, OHIO 44127 • TELEPHONE (216) 429-6471

cc: Robert J. Mitrey, P.E.
Associate Sanitary Engineer
and
Mary E. McIntosh (letter & data summary) ✓
Senior Engineering Geologist
New York State Department of Environmental Conservation
600 Delaware Avenue
Buffalo, NY 14202-1073

cc: William G. Stelz
Hydrologist
U. S. Environmental Protection Agency
Region II
Solid Waste Branch, Room 1043
26 Federal Plaza
Ne York, NY 10278

2711a

MALCOLM PIRNIE

MALCOLM PIRNIE, INC.
ENVIRONMENTAL ENGINEERS, SCIENTISTS & PLANNERS

January 30, 1987

LTV Steel Company
Corporate Environmental Control Department
3100 East 45th Street
Cleveland, Ohio 44127

Attention: Mr. John Potwora

Re: Purchase Order No. 505605
Marilla Street Landfill
Quarterly RCRA Groundwater Sampling

Gentlemen:

In accordance with Purchase Order No. 505605, we have prepared the following quarterly RCRA goundwater sampling report. Plate 1 is an isopotential map which shows the general direction of groundwater flow and groundwater elevations for the shallow groundwater system based on groundwater elevations recorded October 16, 1986.

Field sampling was performed by Malcolm Pirnie, Inc. (see Attachment B). Groundwater samples were collected from monitoring wells MW4B, MW9B, MW13B and MW14B on October 16, 1986. Samples were turned over to RECRA Environmental, Inc. for laboratory analyses (see Attachment A for laboratory report). Table 1 summarizes the analytical results for RCRA groundwater parameters, and Table 2 summarizes the analytical results of sampling for volatile organic chemicals and the respective Class "GA" Groundwater Standards. Table 3 is a compilation of field test results for replicate RCRA indicator parameters.

Table 4 is a compilation of appropriate New York State Water Quality Standards and guidelines for Class "GA" groundwater and drinking water. Comparison of the analytical results with the water quality standards and guidelines indicates the following:

- The total cadmium concentration in MW4B was 0.241 mg/l, which exceeds the class "GA" Groundwater Standard of 0.01 mg/l. The soluble cadmium concentration in MW4B (viz. 0.057 mg/l) was also in excess of the standard.
- The total chromium concentration in MW9B was 0.129 mg/l; which exceeds the associated drinking water standard of 0.05 mg/l. Soluble chromium was not detected in MW9B.

S. 3515 ABBOTT ROAD P.O. BOX 1938 BUFFALO, NY 14219 716-828-1300 TELEX 137364

- Total iron exceeded the class "GA" Groundwater Standard of 0.3 mg/l in all wells sampled. A maximum of 41 mg/l was observed in MW9B. Soluble iron concentrations were below the 0.3 mg/l standard with the exception of wells MW13B and MW14B. The maximum concentration of soluble iron was 1.7 mg/l in MW13B.

- Total manganese concentrations in wells MW4B, MW9B and MW13B were 0.42 mg/l, 2.4 mg/l and 3.2 mg/l, respectively. The class "GA" Groundwater Standard for manganese is 0.3 mg/l. The soluble manganese concentrations in these wells were 0.18, 1.2 and 3.0 mg/l, respectively.

- Total lead was measured in MW9B at a concentration of 0.041 mg/l. This exceeds the class "GA" Groundwater Standard of 0.025 mg/l. Soluble lead was not detected.

- Phenol in MW14B was measured at 0.042 mg/l, which exceeds the "GA" Groundwater Standard of 0.001 mg/l. The remaining samples did not contain phenols above the detection limit of 0.01 mg/l. The RECRA reported method detection limit of 0.01 mg/l for recoverable phenolics using EPA Method 420.1 is a function of the cell size of the spectrophotometer used by the laboratory. Some laboratories do achieve a 0.001 mg/l detection limit using this method. The Class "GA" standard for phenols is 0.001 mg/l, therefore, an absolute determination of whether the standard has been met cannot be made. The best way to achieve the desired detection limit is an extraction process using gas chromatography (GC) which is able to achieve the desired detection limit of 0.001 mg/l, however, analytical costs would be greater for GC analysis.

- Sulfate concentrations in wells MW4B, MW9B and MW14B exceeded the class "GA" Groundwater Standard of 250 mg/l. Concentrations ranged from 309 mg/l to 1040 mg/l.

- One guidance limit for volatile organic chemicals was exceeded; tetrachloroethylene in MW14B was measured at 64 mg/l, which exceeds the guidance limit of 0.7 mg/l.

A copy of the sampling results contained herein should be forwarded to the regulatory agencies within 15 days.

If you have any questions in regard to this matter, please contact me.

Very truly yours,

MALCOLM PIRNIE, INC.

Kent R McManus by PJD

Kent R. McManus, P.E.
Project Engineer

/plb
Enclosures

cc: D. Nemic, LTV (Bflo) w/attachment
M. S. Wilcox, (Cleveland) w/attachment
File: 0848-04-9

MALCOLM PIRNIE

TABLE 1

MARILLA STREET LANDFILL
SUMMARY OF ANALYTICAL RESULTS FOR RCRA GROUNDWATER PARAMETERS
· ROUTINE WATER QUALITY SAMPLING (10/16/86)**

[illegible]

PARAMETER (Units as mg/l except as noted)	SAMPLE IDENTIFICATION MONITORING WELL NUMBER 4B	9B	13B	14B
Temperature (C)***	14	10	13	11
pH (units)***	7.4	6.7	6.8	7.8
Total Organic Carbon*	33	126	43	22
Chloride	51	34	204	83
Fluoride	1.3	0.33	0.90	1.0
Nitrate (NO_3-N)	<0.05	0.05	0.10	0.07
Total Recoverable Phenolics	<0.01	<0.01	<0.01	0.042
Sulfate	309	1040	180	598
Conductivity (umhos/cm)***	700	1700	1400	900
TOTAL METALS				
Total Arsenic	0.008	0.013	0.005	<0.005
Total Barium	<0.07	<0.07	0.20	0.10
Total Cadmium	-0.241	<0.007	0.009	<0.007
Total Chromium	0.007	0.129	<0.006	<0.006
Total Iron	4.9	41	7.8	1.2
Total Lead	<0.005	0.041	<0.005	<0.005
Total Manganese	0.42	2.4	3.2	0.11
Total Mercury	<0.0005	<0.0005	<0.0005	<0.0005
Total Selenium	<0.005	<0.005	<0.005	<0.005
Total Silver	<0.006	<0.006	<0.006	<0.006
Total Sodium	60	59	240	110
SOLUBLE METALS				
Soluble Arsenic	0.008	<0.005	<0.005	<0.005
Soluble Barium	<0.07	<0.07	0.09	<0.07
Soluble Cadmium	— 0.057	<0.007	<0.007	<0.007
Soluble Chromium	<0.006	<0.006	<0.006	<0.006
Soluble Iron	0.06	<0.03	1.7	0.44
Soluble Lead	<0.005	<0.005	<0.006	<0.006
Soluble Manganese	0.18	1.2	3.0	<0.04
Soluble Mercury	<0.0005	<0.0005	<0.0005	<0.0005
Soluble Selenium	<0.005	<0.005	<0.005	<0.005
Soluble Silver	<0.006	<0.006	<0.006	<0.006
Soluble Sodium	60	58	220	100

(continued)

TABLE 1 (continued)

MARILLA STREET LANDFILL
SUMMARY OF ANALYTICAL RESULTS FOR RCRA GROUNDWATER PARAMETERS
ROUTINE WATER QUALITY SAMPLING (10/16/86)

PARAMETER (Units as mg/l except as noted)	SAMPLE IDENTIFICATION			
	MONITORING WELL NUMBER			
	4B	9B	13B	14B
PESTICIDES/HERBICIDES				
Endrin	<0.0002	<0.0002	<0.0002	<0.0003
Lindane	<0.00006	<0.00006	<0.00006	<0.0002
Methoxychlor	<0.0004	<0.0004	<0.0004	<0.0007
Toxaphene	<0.0009	<0.0009	<0.002	<0.002
2,4-D	<0.0002	<0.0002	0.00032	0.0012
2,4,5-TP	<0.00005	<0.00005	<0.00005	<0.0002
MISCELLANEOUS				
Gross Alpha Radiation (pCi/l)	<3	<1	<7	<4
Gross Beta Radiation (pCi/l)	9.7 ± 0.3	2.5 ± 0.2	1.5 ± 0.1	1.1 ± 0.1
Total Radium (pCi/l)	<1	3.0 ± 1.4	<9	1.5 ± 1.0
Fecal Coliform (Colonies/100 ml)	<2	<20	<1	<2
Total Organic Halide* (ug/l)	125	195	68	112

NOTES:

* Represents an average of four replicate samples as reported in Table 3 and Attachment A.

** All analyses by RECRA Research Inc. unless otherwise noted.

*** Field measurements by Malcolm Pirnie, Inc.

MALCOLM PIRNIE

TABLE 2

MARILLA STREET LANDFILL
ANALYTICAL RESULTS - VOLATILE ORGANIC CHEMICALS

[illegible]

COMPOUND (Units of Measure = ug/l)	MONITORING WELL NUMBER				New York State Class "GA"	
	4B	9B	13B	14B	Guidance Values	Standard
Acrolein	<400	<400	<400	<400	-	-
Acrylonitrile	<400	<400	<400	<400	0.07	-
Benzene	<4.4	<4.4	<4.4	<4.4	-	ND
Bromodichloromethane	<2.2	<2.2	<2.2	<2.2	50	-
Bromoform	<4.7	<4.7	<4.7	<4.7	50	-
Bromomethane	<10	<10	<10	<10	-	-
Carbon Tetrachloride	<2.8	<2.8	<2.8	<2.8	-	5
Chlorobenzene	<6.0	<6.0	<6.0	<6.0	20	-
Chloroethane	<10	<10	<10	<10	-	-
2-Chloroethylvinyl ether	<10	<10	<10	<10	-	-
Chloroform	<1.6	<1.6	<1.6	<1.6	-	100
Chloromethane	<10	<10	<10	<10	-	-
Dibromochloromethane	<3.1	<3.1	<3.1	<3.1	50	-
1,2-Dichlorobenzene	<2.2	<2.2	<2.2	<2.2	-	
1,3-Dichlorobenzene	<2.1	<2.1	<2.1	<2.1	20	4.7*
1,4-Dichlorobenzene	<2.5	<2.5	<2.5	<2.5	-	
1,1-Dichloroethane	<4.7	<4.7	<4.7	<4.7	50	-
1,2-Dichloroethane	<2.8	<2.8	<2.8	<2.8	0.8	-
1,1-Dichloroethylene	<2.8	<2.8	<2.8	<2.8	0.07	-
trans-1,2-Dichloroethylene	<1.6	<1.6	<1.6	<1.6	50	-
1,2-Dichloropropane	<6.0	<6.0	<6.0	<6.0	50	-
cis-1,3-Dichloropropene	<5.0	<5.0	<5.0	<5.0	-	-
trans-1,3-Dichloropropene	<5.0	<5.0	<5.0	<5.0	-	-
Ethylbenzene	<7.2	<7.2	<7.2	<7.2	50	-
Methylene chloride	<2.8	<2.8	<2.8	<2.8	50	-
1,1,2,2-Tetrachloroethane	<6.9	<6.9	<6.9	<6.9	0.2	-
Tetrachloroethylene	<4.1	<4.1	<4.1	64	0.7	-
Toluene	<6.0	<6.0	<6.0	<6.0	50	-
1,1,1-Trichloroethane	<3.8	<3.8	<3.8	<3.8	50	-
1,1,2-Trichloroethane	<5.0	<5.0	<5.0	<5.0	0.6	-
Trichloroethylene	<1.9	<1.9	<1.9	<1.9	-	10
Trichlorofluoromethane	<2.8	<2.8	<2.8	<2.8	50	-
Vinyl chloride	<10	<10	<10	<10	-	5.0

NOTE: - indicates "not specified"
* 4.7 ug/l as total of dichlorobenzene isomers

TABLE 3

LTV STEEL COMPANY
MARILLA STREET LANDFILL

FIELD TEST RESULTS
RCRA INDICATOR PARAMETERS (REPLICATE)*

Replicate No.	Well 4B	Well 9B	Well 13B	Well 14B
		pH (Standard Units)		
1	7.5	6.7	6.8	7.8
2	7.4	6.7	6.8	7.8
3	7.4	6.7	6.7	7.8
4	7.5	6.7	6.8	7.8
		Conductivity (umhos/cm)		
1	700	1700	1400	900
2	700	1700	1400	900
3	700	1700	1400	900
4	700	1700	1400	900

* Measurements taken from four separate samples per well collected on 10/16/86.

MALCOLM PIRNIE

MALCOLM PIRNIE, INC.
ENVIRONMENTAL ENGINEERS, SCIENTISTS & PLANNERS

January 30, 1987

LTV Steel Company
Corporate Environmental Control Department
3100 East 45th Street
Cleveland, Ohio 44127

Attention: Mr. John Potwora

Re: Purchase Order No. 505605
Marilla Street Landfill
Quarterly Part 360 Groundwater Sampling

Gentlemen:

In accordance with Purchase Order No.505605, we have prepared the following quarterly Part 360 groundwater sampling report for sampling that took place October 16, 1986. Plate 1 is an isopotential map which shows the general direction of groundwater flow and groundwater elevations for the shallow groundwater system based on groundwater elevations recorded October 16, 1986. Plate 2 provides similar information for the deep groundwater system.

Field sampling and measurements were performed by Malcolm Pirnie, Inc. (see Attachment B). A check of field notes indicated that samples collected from MW7B were inadvertently labeled as "MW7A" on the chain-of-custody forms. Therefore, all references to MW7A on the chain-of-custody forms and in the laboratory report should be changed to MW7B. No samples were collected from MW7A because tubing was dropped in the well during excavation. The tubing was subsequently removed from the well.

Laboratory analysis of the field-preserved, field-filtered sample from MW5B indicated a soluble iron concentration at 5.9 mg/l, which exceeds the total iron concentration of 0.43 mg/l. A subsample from an unpreserved sample from MW5B was filtered, preserved and analyzed by the laboratory. Total iron concentration in the subsample was less than 0.4 mg/l. The field-preserved sample may have been contaminated; the laboratory reported the sample was colored darker than would be expected.

Analytical services were provided by RECRA Environmental, Inc. (see Attachment A for laboratory report). Table 1 summarizes the analytical results for the shallow monitoring well samples (viz. 2B, 5B, 6B, 7B). Table 2 summarizes the results for the deep monitoring well samples (viz. 2A, 3A, 4A, 5A, 6A) and for the

West Pond. Table 3 is a compilation of New York State Water Quality Standards and guidelines for Class "GA" groundwater and drinking water. Comparison of the analytical results with the water quality standards and guidelines indicates the following:

- The chloride concentration in MW7B was 446 mg/l, which exceeds the drinking water standard of 250 mg/l.

- The total chromium concentration in MW5A was 0.063 mg/l, which is slightly above the associated drinking water standard of 0.05 mg/l.

- Total iron exceeded the class "GA" standard of 0.3 mg/l in all wells sampled and in the West Pond. A maximum of 89 mg/l was observed in MW5A. Soluble iron in wells MW3A and MW6A also exceeded 0.3 mg/l.

- The total lead concentration measured in MW5A was 0.080 mg/l. This exceeds the class "GA" Groundwater Standard of 0.025 mg/l.

- Total recoverable phenols in MW7A were measured at 0.877 mg/l which exceeds the Class "GA" Groundwater Standard of 0.001 mg/l. Concentrations in the remaining samples did not exceed the detection limit of 0.01 mg/l. The RECRA reported method detection limit of 0.01 mg/l for recoverable phenolics using EPA method 420.1 is a function of the cell size of the spectrophotometer used by the laboratory. Some laboratories do achieve a 0.001 mg/l detection limit using this method. The class "GA" Groundwater Standard for phenols is 0.001 mg/l, therefore, an absolute determination of whether the standard has been met cannot be made. An extraction process using gas chromatography (GC) is capable of achieving the desired detection limit of 0.001 mg/l, however, analytical costs would be far greater for the GC analysis.

- Sulfate concentrations in wells MW6B and MW5A exceeded the class "GA" Groundwater Standard of 250 mg/l. Concentrations were 439 mg/l and 995 mg/l, respectively.

- The pH in the West Pond was measured at 11.6 which is outside the acceptable pH range of 6.5 to 8.5 for Class "GA" Groundwater.

In summary, the results of this quarterly sampling were consistent with previous quarterly sampling results. A copy of the sampling results contained herein should be forwarded to the NYSDEC. If you have any questions concerning this matter, please contact us.

Very truly yours,

MALCOLM PIRNIE, INC.

Kent R. McManus

Kent McManus, P.E. by DJD
Project Engineer

/plb
Enclosures

cc: D. Nemic, LTV (Bflo) w/attachment
M. S. Wilcox, LTV (Cleveland) w/attachment
File: 0848-04-9; C-1

TABLE 1

MARILLA STREET LANDFILL
SUMMARY OF ANALYTICAL RESULTS FROM SHALLOW WELL SAMPLING (10/16/86)
ROUTINE WATER QUALITY PARAMETERS ***

PARAMETER (Units as mg/l except as noted)	SAMPLE IDENTIFICATION			
	MONITORING WELL NUMBER			
	2B	5B	6B	7B
Temperature (C)	13	14	14	9
pH (units)**	11.4	7.2	7.5	7.9
Total Organic Carbon	28	30	37	218
Chloride	74	38	26	446
Total Recoverable Phenolics	<0.01	<0.01	<0.02	0.877
Sulfate	76	109	439	93
Filterable Residue (180 C)	626	629	1220	3550
Conductivity (umhos/cm)**	1100	3070	1100	800
TOTAL METALS				
Total Chromium	<0.006	<0.006	<0.006	<0.006
Total Iron	3.4	0.43	2.8	8.2
Total Lead	0.023	<0.005	0.010	0.021
SOLUBLE METALS				
Soluble Chromium	<0.006	<0.006	<0.006	<0.006
Soluble Iron	0.13	5.9*	<0.03	0.27
Soluble Lead	<0.005	<0.005	<0.005	<0.005

NOTES:

* Field-preserved, field-filtered sample may have been contaminated; analysis indicated a concentration of 5.9 mg/l. Laboratory analysis on a subsample of a previously unfiltered, unpreserved sample from MW5B yielded total iron <0.4 mg/l.

** Measured in the field by Malcolm Pirnie, Inc.

*** Analytical work by RECRA Research unless otherwise noted.

TABLE 2

MARILLA STREET LANDFILL
SUMMARY OF ANALYTICAL RESULTS FROM DEEP WELL AND POND SAMPLING (10/16/86)
ROUTINE WATER QUALITY PARAMETERS*

PARAMETER	SAMPLE IDENTIFICATION					
	MONITORING WELL NUMBER					
(Units: mg/l)	2A	3A	4A	5A	6A	West Pond
Temperature (C)	11	9	13	12	11	10
pH (units)**	7.6	7.9	8.5	6.8	7.9	11.6
Total Organic Carbon	10	14	9.5	71	22	13
Chloride	105	51	41	13	37	75
Total Recoverable Phenolics	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sulfate	8.3	197	149	995	206	138
Filterable Residue (180 C)	406	762	385	2990	656	445
Conductivity (umhos/cm)**	600	800	500	730	800	500
TOTAL METALS						
Total Chromium	<0.006	<0.006	<0.006	0.063	<0.006	<0.006
Total Iron	0.97	4.1	1.0	89	3.1	0.49
Total Lead	0.016	0.017	0.019	0.080	0.006	0.007
SOLUBLE METALS						
Soluble Chromium	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
Soluble Iron	0.12	1.3	0.08	0.17	2.2	0.06
Soluble Lead	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

NOTES:

* Analytical work by RECRA Research unless otherwise noted.

** Measured in the field by Malcolm Pirnie, Inc.

MALCOLM PIRNIE

MALCOLM PIRNIE, INC.

BY PJT DATE 10/16/86 SHEET NO. 1 OF 6

CHKD. BY KAJM DATE

JOB NO. 0848-C4-9

SUBJECT LTV Steel Sampling Data

ATTACHMENT B

ON-SITE 9:00 AM
DATE 10/16/86
SAMPLES COLLECTED BY: PJT (Niag. Falls)
SPS (Niag. Falls)
EB (Paramus)

Weather: westerly winds, overcast, rain, low 40's(F°).

MW 2A temp 11°C
conductivity 600 μmhos/cm
pH 7.6
depth to water 6.75'

MW2B temp 13°C
conductivity 1100 μmhos/cm
pH 11.4
depth to water 3.95'

MW3A temp 9°C
conductivity 800 μmh
pH - 7.85
depth to water 2.3'

MW4A temp 13°C
conductivity 500 μmhos/cm
pH 8.5
depth to water 6.55'

MW4B temp 14°C, 14°C, 14°C, 14°C
conductivity 700, 700, 700, 700 μmhos/cm
pH 7.5, 7.4, 7.4, 7.5
depth to water 4.21'

MW5A temp 12°C, 12°C, 11.9°C, 11.8°C
conductivity 750, 690, 725, 750 μmhos/cm
pH 6.8, 6.8, 6.8, 6.8
depth to water 9.2'

MALCOLM PIRNIE

MALCOLM PIRNIE, INC.

BY PJ DATE 10/16/86 SHEET NO. 2 OF 6

CHKD. BY KM DATE

JOB NO. 0848-049

SUBJECT LTV Steel Sampling

MW5B temp 14°C, 13.5°C, 14.1°C, 14.2°C
conductivity 3000, 3100, 3100, 3075 µmhos/cm
pH 6.9, 7.4, 7.4, 6.9
depth to water 4.3'

MW6A temp 11°C
conductivity 800 µmhos/cm
pH 7.9
depth to water 11'

MW6B temp 14°C
conductivity 1100 µmhos/cm
pH 7.5
depth to water 9.3'

MW7B temp 9°C 1:25 pm
conductivity 800 µmhos/cm
pH 7.9
depth to water 21.3'

MW9B temp 11°C, 10°C, 11°C, 10°C 10:41 am
conductivity 1700, 1700, 1700, 1700 µmhos/cm
pH 6.7, 6.7, 6.7, 6.7
depth to water 31.3'

MW13B temp 13°C, 13°C, 13°C, 13°C 11:46 am
conductivity 1900, 1400, 1900, 1900 µmhos/cm
pH 6.8, 6.8, 6.7, 6.8
depth to water 6.7'

MALCOLM PIRNIE

MALCOLM PIRNIE, INC.

BY BJ DATE 10/16/86 SHEET NO. 3 OF 6

CHKD. BY KHM DATE JOB NO. 0848-04-9

SUBJECT LTV Steel Sampling

MW14B

temp 11°C, 12°C, 11°C, 11°C 10^{16} am

conductivity 900, 900, 900, 900 µmhos/cm

pH 7.8, 7.8, 7.8, 7.8

depth to water 30.73'

West POND

temp 10°C 1^{27} pm

conductivity 500 µmhos/cm

pH 11.6

BY RJT DATE 10/16/86 SHEET NO. 4 OF 6
CHKD. BY KCM DATE
JOB NO. 0848-04-9
SUBJECT LTV Steel Sampling

Notes:

- Samples directly dropped off on 10/16/86 to Recra Research Lab by SPS. (NPI / Nia. Falls)
- Samples appropriately preserved and filtered in the field, then cooled to 4°C.
- Samples collected with teflon bailers.
- pH, temperature and conductivity measurements in the field.

MALCOLM
PIRNIE

MALCOLM PIRNIE, INC.

BY PJT DATE 10/15/86 SHEET NO. 5 OF 6

CHKD. BY RM DATE JOB NO.

SUBJECT WELLS EVACUATED ON 10/15/86
AT LTV STEEL MARILLA ST. LANDFILL

WELL #	ONE WELL VOLUME CALCULATED (GALLONS)	AMT BAILED (GALLONS)
MW-2A	7.6	BAILED DRY
MW-2B	2.6	BAILED DRY
MW-3A	4.2	BAILED DRY
MW-4A	6.2	19
MW-4B	5.2	16
MW-5A	5.0	BAILED DRY
MW-5B	2.9	9
MW-6A	10.6	BAILED DRY
MW-6B	32	BAILED DRY
MW-7A	LOST TUBING IN WELL	-
MW-7B	6.0	18
MW-9B	6.5	20
MW-10B	NOT SAMPLED	-
MW-11B	NOT SAMPLED	-
MW-12B	NOT SAMPLED	-
MW-13B	5.4	17
MW-14B	6.4	20

MALCOLM PIRNIE

MALCOLM PIRNIE, INC.

BY PJT DATE 10/15/86 SHEET NO. 6 OF 6

CHKD. BY KRM DATE JOB NO.

SUBJECT

WELL #	TOTAL DEPTH OF WELL
2A	27.0'
2B	6.6'
3A	17.0'
3B	9.1'
4A	21.35'
4B	13.3'
5A	20.2'
5B	8.5'
6A	26.8'
6B	15.9'
7A	NA'
7B	30.9'
8B	24.0'
9B	35.6'
10B	36.0'
11B	23.95'
12B	26.8'
13B	13.1'

Note: NA, not available due to well inaccessability (LOST TUBING IN WELL)

LTV Steel Company

May 2, 1986

1. RJ – FYI, check w/ MMcI re results
2. File: ~~RS~~ Republic Steel ~~RCRA~~ file regular

NO logged into computer

New York State Department of
Environmental Conservation
600 Delaware Avenue
Buffalo, New York 14202-1073

Attn: Robert J. Mitrey, P.E.
Associate Sanitary Engineer

Re: LTV Steel Company, Inc.
Marilla Street Landfill
Quarterly Groundwater Monitoring

Dear Mr. Mitrey:

Attached are the analytical results for groundwater samples collected in November 1985 at the above referenced facility. In addition, groundwater isopotential maps showing groundwater elevations and the general direction of groundwater flow in the shallow and deep systems are provided as Plates 1 and 2. These data and maps constitute the third quarterly monitoring report submitted to NYDEC.

The groundwater samples were obtained and analyzed according to the "Marilla Street Landfill Groundwater Sampling and Analysis Plan," August 1985. This plan was included as an appendix to the RCRA closure plan for the BOF dust area submitted to the Department on November 6, 1985. As indicated in our "Conceptual Site Closure Plan," September 1985, all the samples collected were analyzed for total and dissolved iron, chromium and lead. Due to a problem at the analytical laboratory, the detection limit for chromium was 0.5 mg/l. All future samples will be analyzed to a level below the 0.05 mg/l standard. The East Pond location was not sampled because this area had been drained.

The analytical data appear to indicate results consistent with previous monitoring data. Should you have any questions or require additional information, please contact J. J. Chizzonite at 216/429-6537.

Very truly yours,

L A Szuhay

L. A. Szuhay
Manager-Solid and Hazardous Waste
Environmental Control

LAS/fh
Attachment

cc: Mary E. McIntosh (letter & data summary)
Senior Engineering Geologist
NYDEC

1875a

TABLE 1

MARILLA STREET LANDFILL
SUMMARY OF ANALYTICAL RESULTS FOR ROUTINE WATER QUALITY PARAMETERS
FOR SAMPLES TAKEN 11/6/85

PARAMETER	pH (units)	CONDUCTIVITY (umhos/cm)	TOTAL ORGANIC CARBON (mg/1)	TOTAL DISSOLVED SOLIDS (mg/1)	CHLORIDES (mg/1)	SULFATES (mg/1)	PHENOLS (mg/1)
SAMPLE LOCATION							
2A	8.00	850	10.8	468	123	9.5	BDL
2B	9.76	1,450	24.9	660	70.8	123	BDL
3A	7.91	1,280	15.6	760	68.4	188	BDL
West Pond	7.41	510	14.8	464	32.7	1566	BDL
4A	7.97	660	162.9	320	19.4	106	BDL
5A	*	*	*	*	*	*	*
5B	7.02	2,400	49.4	1630	408	339	BDL
6A	7.74	1,280	16.7	840	61.4	249	BDL
6B	7.78	2,000	52.4	2000	71.3	914	BDL
7A	7.52	2,200	70.1	890	307	105	BDL
DETERMINABLE LIMIT			0.1	1	1	1	0.02

BDL - Below Determinable Limits
* - Well not accessible for sampling

TABLE 1 (cont.)

MARILLA STREET LANDFILL
SUMMARY OF ANALYTICAL RESULTS FOR ROUTINE WATER QUALITY PARAMETERS
FOR SAMPLES TAKEN 11/6/85

PARAMETER	TOTAL IRON (mg/1)	SOLUBLE IRON (mg/1)	TOTAL CHROMIUM (mg/1)	SOLUBLE CHROMIUM (mg/1)	TOTAL LEAD (mg/1)	SOLUBLE LEAD (mg/1)
SAMPLE LOCATION						
✓2A	1.41✓	BDL	BDL	BDL	0.013	BDL
✓2B	8.05	BDL	BDL	BDL	0.016	BDL
✓3A	2.79	BDL	BDL	BDL	0.007	BDL
✓West Pond	0.32	BDL	BDL	BDL	0.005	BDL
✓4A	1.07	BDL	BDL	BDL	0.007	BDL
✓5A	*	*	*	*	*	*
✓5B	5.43	BDL	BDL	BDL	BDL	BDL
✓6A	0.92	BDL	BDL	BDL	0.006	BDL
✓6B	4.03	BDL	BDL	BDL	0.012	BDL
✓7A	3.43	BDL	BDL	BDL	0.020	BDL
DETERMINABLE LIMIT	0.3	0.3	0.5	0.5	0.005	0.005

BDL - Below Determinable Limits
* - Well not accessible for sampling

ADVANCED ENVIRONMENTAL SYSTEM, INC.
LABORATORY REPORT

Client: MALCOLM PIRNIE A.E.S. Job Code BKV

(All results are in mg/l)

			AES Lab No. -	3495	3496	3497	3498
			Sample ID -	WEST POND	2A	2B	3A
				11/6/85	11/6/85	11//6/85	11/6/85
Analytical Parameter(s)	Method No.	Ref No.	Det. Limits				
TOTAL RECOVERABLE PHENOLS	420.2	3	0.02	BDL*	BDL	BDL	BDL
TOTAL DISSOLVED SOLIDS	160.1	3	1	464	468	660	760
CHLORIDES	407B	6	1	32.7	123	70.8	68.4
SULFATES	426C	6	1	1566	9.5	123	188
TOTAL ORGANIC CARBON	415.1	3	0.1	14.8	10.8	24.9	15.6

Margaret L. Skowron

MARGARET L. SKOWRON
W. C. DIVISION SUPERVISOR

---

*Below determinable limits.

ADVANCED ENVIRONMENTAL SYSTEM, INC.
LABORATORY REPORT

Client: MALCOLM PIRNIE A.E.S. Job Code BKV

(All results are in mg/1)

Analytical Parameter(s)	Method No.	Ref No.	Det. Limits	3499	3500	3501	3502
AES Lab No. -				3499	3500	3501	3502
Sample ID -				4A	6A	6B	7A
				11/6/85	11/6/85	11/6/85	11/6/85
TOTAL RECOVERABLE PHENOLS	420.2	3	0.02	BDL *	BDL	BDL	0.20
TOTAL DISSOLVED SOLIDS	160.1	3	1	320	840	2000	890
CHLORIDES	407B	6	1	19.4	61.4	71.3	307
SULFATES	426C	6	1	106	249	914	105
TOTAL ORGANIC CARBON	415.1	3	0.1	162.9	16.7	52.4	70.1

---

*Below determinable limits.

Margaret L. Skowron

MARGARET L. SKOWRON
W. C. DIVISION SUPERVISOR

ADVANCED ENVIRONMENTAL SYSTEMS, INC.
LABORATORY REPORT

TYPE OF ANALYSIS: WET CHEMISTRY DUPLICATE
UNITS OF MEASURE: MILLIGRAMS/LITER, OR PPM
CLIENT: MALCOLM PIRNIE A.E.S. JOB CODE BKV

ANALYSIS	SAMPLE	ORIGINAL CONC.	DUPL. CONC.	AVERAGE CONC.	RANGE	REL. % DIFF.
PHENOLS	3500	BDL *	BDL	N/AP**	N/AP	N/AP
CHLORIDES	3500	67.9	54.8	61.4	13.1	21.3
SULFATES	3500	242	256	249	14	5.6
TOC	3500	16.5	16.8	16.7	0.3	1.8
TDS	3502	888	874	881	14	1.6

Relative Percent Difference =
Range/Average X 100
*Below determinable limit.

ADVANCED ENVIRONMENTAL SYSTEMS, INC.
LABORATORY REPORT

Type of Analysis: Quality Control - Spikes
Client: MALCOLM PIRNIE   A.E.S. Job Code:BKV

(Units: mg/l or ppm)

ANALYSIS	TYPE	SAMPLE NO.	ORIGINAL CONC.	ADDED CONC.	EXPECTED CONC.	REPORTED CONC.	PERCENT RECOVERY
PHENOLS	SPK	3500	BDL *	0.20	0.20	0.20	100.0
PHENOLS	EPA		0.30	---	0.30	0.29	96.8
CHLORIDES	EPA		11.5	---	11.5	12.7	110.7
SULFATES	SPK	3500	124.5	46.9	171.4	221.1	129.0
SULFATES	EPA	882-1	93.8	---	93.8	86.3	92.0
TOC	SPK	3500	8.3	5.0	13.3	14.0	105.3
TOC	STD		10	---	10	10.12	101.2

ADVANCED ENVIRONMENTAL SYSTEM, INC.
LABORATORY REPORT

Client: MALCOLM PIRNIE A.E.S. Job Code BKV

(All results are in mg/1)

Analytical Parameter(s)	Method No.	Ref No.	Det. Limits	AES Lab No. - 3592 Sample ID - WELL 5-B 11/13/85
TOTAL RECOVERABLE PHENOLS	420.2	3	0.02	BDL*
CHLORIDES	407B	6	1	408
SULFATES	426C	6	1	339
TOTAL ORGANIC CARBON	415.1	3	0.1	49.4
TOTAL DISSOLVED SOLIDS	160.1	3	1	1630

Margaret L. Skowron
MARGARET L. SKOWRON
[illegible]

---

*Below determinable limits.

ADVANCED ENVIRONMENTAL SYSTEMS, INC.
LABORATORY REPORT

TYPE OF ANALYSIS: WET CHEMISTRY DUPLICATE
UNITS OF MEASURE: MILLIGRAMS/LITER, OR PPM
CLIENT: MALCOLM PIRNIE   A.E.S. JOB CODE BKV

ANALYSIS	SAMPLE	ORIGINAL CONC.	DUPL. CONC.	AVERAGE CONC.	RANGE	REL. % DIFF.
PHENOLS	3592	BDL*	BDL	N/AP**	N/AP	N/AP
SULFATES	3592	338	340	339	2	0

Relative Percent Difference =
Range/Average X 100
*Below determinable limits.

ADVANCED ENVIRONMENTAL SYSTEMS, INC.
LABORATORY REPORT

Type of Analysis: Quality Control - Spikes
Client: MALCOLM PIRNIE   A.E.S. Job Code:BKV

(Units: mg/l or ppm)

ANALYSIS	TYPE	SAMPLE NO.	ORIGINAL CONC.	ADDED CONC.	EXPECTED CONC.	REPORTED CONC.	PERCENT RECOVERY
PHENOLS	SPK		BDL*	0.2	0.2	0.2	100.0
PHENOLS	EPA		0.30	---	0.30	0.29	96.8
CHLORIDES	EPA		11.5	---	11.5	12.7	110.7
SULFATES	EPA		93.8	---	93.8	86.3	92.0
SULFATES	SPK		169.5	46.9	216.4	256	118.3
TOC	STD		10	---	10	10.12	101.2

---

*Below determinable limits.

ADVANCED ENVIRONMENTAL SYSTEMS, INC.
LABORATORY REPORT

TYPE OF ANALYSIS: RESULTS - METALS
UNITS OF MEASURE: MILLIGRAMS/LITER, OR PPM
CLIENT: MALCOLM PIRNIE A.E.S. JOB CODE BKV

ANALYSIS	METHOD	REF	DETERMINABLE LIMITS	SAMPLE IDENTIFICATION			
				3495 WEST POND 11/6/85	3496 2A 11/6/85	3497 2B 11/6/85	3498 3A 11/6/85
OTAL CHROMIUM	218.1	3	0.5	BDL *	BDL	BDL	BDL
OTAL IRON	236.1	3	0.3	0.32	1.41	8.05	2.79
OTAL LEAD	239.2	3	0.005	0.005	0.013	0.016	0.007

Janette Bingert
JANETTE L. BINGERT

---

*Below determinable limits.

ADVANCED ENVIRONMENTAL SYSTEMS, INC.
LABORATORY REPORT

TYPE OF ANALYSIS: RESULTS - METALS
UNITS OF MEASURE: MILLIGRAMS/LITER, OR PPM
CLIENT: MALCOLM PIRNIE   A.E.S. JOB CODE BKV

ANALYSIS	METHOD	REF	DETERMINABLE LIMITS	SAMPLE IDENTIFICATION			
				3499 4A 11/6/85	3500 6A 11/6/85	3501 6B 11/6/85	3502 7A 11/6/85
TAL CHROMIUM	218.1	3	0.5	BDL *	BDL	BDL	BDL
TAL IRON	236.1	3	0.3	1.07	0.92	4.03	3.43
TAL LEAD	239.2	3	0.005	0.007	0.006	0.012	0.020

Janette Bingest
ANE L. ING

---

*Below determinable limits

ADVANCED ENVIRONMENTAL SYSTEMS, INC.
LABORATORY REPORT

TYPE OF ANALYSIS: METALS DUPLICATE
UNITS OF MEASURE: MILLIGRAMS/LITER, OR PPM
CLIENT: MALCOLM PIRNIE   A.E.S. JOB CODE BKV

ANALYSIS	SAMPLE	ORIGINAL CONC.	DUPL. CONC.	AVERAGE CONC.	RANGE	REL. % DIFF.
IROMIUM	3500	BDL *	BDL	NA **	NA	NR ***
ON	3500	0.94	0.90	0.92	0.04	4.3
AD	3500	0.006	0.009	0.0075	0.003	40

---

elative Percent Difference =
ange/Average X 100
Below determinable limits.
*Not applicable.

ADVANCED ENVIRONMENTAL SYSTEMS, INC.
LABORATORY REPORT

TYPE OF ANALYSIS: TEST CONTROL METALS
UNITS OF MEASURE: MILLIGRAMS/LITER, OR PPM
CLIENT: MALCOLM PIRNIE A.E.S. JOB CODE BKV

ANALYSIS	TYPE	ORIGINAL CONC.	ADDED CONC.	EXPECTED CONC.	REPORTED CONC.	PERCENT RECOVERY	95% CONFIDENCE INTERVAL
ROMIUM	3500	BDL *	10.0	10.0	9.0	90.0	** NA
A STANDARD (Cr)	283-1	1.25	---	1.25	1.26	100.8	NA
RON	3500	0.92	10.0	10.92	10.5	96.2	NA
A STANDARD (Fe)	481-2	0.797	---	0.797	0.74	92.8	0.695-0.881
AD	3500	0.006	0.025	0.031	0.029	94.0	NA
A STANDARD (Pb)	378-2	0.028	---	0.028	0.0238	85.0	0.0223-0.0343

---

* Below determinable limits.
**Not available.

ADVANCED ENVIRONMENTAL SYSTEMS, INC.
LABORATORY REPORT

TYPE OF ANALYSIS: RESULTS - METALS
UNITS OF MEASURE: MILLIGRAMS/LITER, OR PPM
CLIENT: MALCOLM PIRNIE A.E.S. JOB CODE BKV

ANALYSIS	METHOD	REF	DETERMINABLE LIMITS	SAMPLE IDENTIFICATION			
				3495 WEST POND 11/6/85	3496 2A 11/6/85	3497 2B 11/6/85	3498 3A 11/6/85
LUBLE CHROMIUM	218.1	3	0.5	BDL *	BDL	BDL	BDL
LUBLE IRON	236.1	3	0.3	BDL	BDL	BDL	BDL
LUBLE LEAD	239.2	3	0.005	BDL	BDL	BDL	BDL

Janette Bingert
JANETTE L. BINGERT

Below determinable limits.

ADVANCED ENVIRONMENTAL SYSTEMS, INC.
LABORATORY REPORT

TYPE OF ANALYSIS: RESULTS - METALS
UNITS OF MEASURE: MILLIGRAMS/LITER, OR PPM
CLIENT: MALCOLM PIRNIE   A.E.S. JOB CODE BKV

ANALYSIS	METHOD	REF	DETERMINABLE LIMITS	SAMPLE IDENTIFICATION			
				3499 4A 11/6/85	3500 6A 11/6/85	3501 6B 11/6/85	3502 7A 11/6/85
LUBLE CHROMIUM	218.1	3	0.5	BDL*	BDL	BDL	BDL
LUBLE IRON	236.1	3	0.3	BDL	BDL	BDL	BDL
LUBLE LEAD	239.2	3	0.005	BDL	BDL	BDL	BDL

Below determinable limits.

Janette Burgert
ANE L ING
METALS SUPERVISOR

ADVANCED ENVIRONMENTAL SYSTEMS, INC.
LABORATORY REPORT

TYPE OF ANALYSIS: METALS DUPLICATE
UNITS OF MEASURE: MILLIGRAMS/LITER, OR PPM
CLIENT: MALCOLM PIRNIE A.E.S. JOB CODE BKV

ANALYSIS	SAMPLE	ORIGINAL CONC.	DUPL. CONC.	AVERAGE CONC.	RANGE	REL. % DIFF.
LUBLE CHROMIUM	3500	BDL *	BDL	NA **	NA	NR***
LUBLE IRON	3500	BDL	BDL	NA	NA	NR
LUBLE LEAD	3500	BDL	BDL	NA	NA	NR

---

lative Percent Difference =
nge/Average X 100
Below determinable limits.
*Not applicable.

ADVANCED ENVIRONMENTAL SYSTEMS, INC.
LABORATORY REPORT

TYPE OF ANALYSIS: TEST CONTROL METALS
UNITS OF MEASURE: MILLIGRAMS/LITER, OR PPM
CLIENT: MALCOLM PIRNIE A.E.S. JOB CODE BKV

ANALYSIS	TYPE	ORIGINAL CONC.	ADDED CONC.	EXPECTED CONC.	REPORTED CONC.	PERCENT RECOVERY	95% CONFIDENCE INTERVAL
OLUBLE CHROMIUM	3500	BDL *	10.0	10.0	11.0	110.0	**NA
A STANDARD (Cr)	283-1	1.25	---	1.25	1.26	100.8	NA
OLUBLE IRON	3500	BDL	10.0	10.0	9.28	92.8	NA
A STANDARD (Fe)	481-2	0.797	---	0.797	0.74	92.8	0.695-0.881
OLUBLE LEAD	3500	BDL	0.025	0.025	0.0207	83.0	NA
A STANDARD (Pb)	378-2	0.028	---	0.028	0.024	86.0	0.0223-0.0343

---

*Be[illegible] d[illegible]rmi[illegible]le [illegible]mit
**Not available.

ADVANCED ENVIRONMENTAL SYSTEMS, INC.
LABORATORY REPORT

TYPE OF ANALYSIS: RESULTS - METALS
UNITS OF MEASURE: MILLIGRAMS/LITER, OR PPM
CLIENT: MALCOLM PIRNIE   A.E.S. JOB CODE BKV

ANALYSIS	METHOD	REF	DETERMINABLE LIMITS	SAMPLE IDENTIFICATION	
				3592 WELL 5-B TOTAL 11/13/85	3592 WELL 5-B SOLUBLE 11/13/85
EAD	239.1	3	1.0	BDL *	BDL
IROMIUM	218.1	3	0.5	BDL	BDL
RON	236.1	3	0.3	5.43	BDL

Janette Bingert
JANETTE L. BINGERT
METALS SUPERVISOR

Below determinable limits.

ADVANCED ENVIRONMENTAL SYSTEMS, INC.
LABORATORY REPORT
=====================================

TYPE OF ANALYSIS: METALS DUPLICATE
UNITS OF MEASURE: MILLIGRAMS/LITER, OR PPM
CLIENT: MALCOLM PIRNIE   A.E.S. JOB CODE BKV

ANALYSIS	SAMPLE	ORIGINAL CONC.	DUPL. CONC.	AVERAGE CONC.	RANGE	REL. % DIFF.
EAD TOTAL	3592	BDL *	BDL	NA **	NA	NR ***
EAD SOLUBLE	3592	BDL	BDL	NA	NA	NR
HROMIUM TOTAL	3592	BDL	BDL	NA	NA	NR
HROMIUM SOLUBLE	3592	BDL	BDL	NA	NA	NR
RON TOTAL	3592	5.38	5.48	5.43	0.1	1.8
RON SOLUBLE	3592	BDL	BDL	NA	NA	NR

---

elative Percent Difference =
ange/Average X 100
Below determinable limits
*Not applicable.

ADVANCED ENVIRONMENTAL SYSTEMS, INC.
LABORATORY REPORT

TYPE OF ANALYSIS: TEST CONTROL METALS
UNITS OF MEASURE: MILLIGRAMS/LITER, OR PPM
CLIENT: MALCOLM PIRNIE A.E.S. JOB CODE BKV

ANALYSIS	TYPE	ORIGINAL CONC.	ADDED CONC.	EXPECTED CONC.	REPORTED CONC.	PERCENT RECOVERY	95% CONFIDENCE INTERVAL
EAD TOTAL	3592	BDL *	20.0	20.0	22.0	110.0	**NA
EAD SOLUBLE	3592	BDL	20.0	20.0	21.0	105.0	NA
PA standard (Pb)	283-1	2.0	---	2.0	2.1	105.0	NA
HROMIUM TOTAL	3592	BDL	20.0	20.0	18.0	90.0	NA
HROMIUM SOLUBLE	3592	BDL	20.0	20.0	17.0	85.0	NA
PA standard (Cr)	283-1	1.25	---	1.25	1.25	100.0	NA
RON TOTAL	3592	5.43	10.0	15.43	15.18	98.4	NA
RON SOLUBLE	3592	BDL	10.0	10.0	9.32	93.2	NA
PA standard (Fe)	481-2	0.797	---	0.797	0.74	92.3	0.695-0.881

3elow determinable limits.

LTV Steel Company

August 15, 1986

New York State Department of
Environmental Conservation
Bureau of Hazardous Waste Technology
Room 401
50 Wolf Road
Albany, New York 12233

Attn: Mr. Paul R. Counterman, Chief

Re: LTV Steel Company, Inc.
(Republic Steel Corporation)
Marilla Street Landfill
Buffalo, NY

Dear Mr. Counterman:

Attached are the analytical results for groundwater samples collected on April 1, 1986 at the above referenced facility. In addition, groundwater isopotential maps showing groundwater elevations and the general direction of groundwater flow in the shallow and deep systems are provided as Plates 1 and 2. These data and maps constitute the fourth quarterly routine groundwater monitoring report submitted to NYDEC.

The groundwater samples were obtained and analyzed according to the "Marilla Street Landfill Groundwater Sampling and Analysis Plan," August 1985. This plan was included as an appendix to the RCRA closure plan for the BOF dust area submitted to the Department on November 6, 1985. As indicated in our "Conceptual Site Closure Plan," September 1985, all the samples collected were analyzed for total and dissolved iron, chromium and lead.

The analytical data appear to indicate results consistent with previous monitoring data. Should you have any questions or require additional information, please contact J. J. Chizzonite at 216/429-6537.

Very truly yours,

LA Szuhay

L. A. Szuhay
Manager-Solid and Hazardous Waste
Environmental Control

LAS/JJC/fh
Attachment

cc: Robert J. Mitrey, P.E. ✓
Associate Sanitary Engineer, NYDEC Buffalo

Mary E. McIntosh (letter & data summary)
Senior Engineering Geologist, NYDEC Buffalo

2206a

LTV STEEL COMPANY • CORPORATE ENVIRONMENTAL CONTROL DEPARTMENT • 3100 EAST 45TH STREET • CLEVELAND OHIO 44127 • TELEPHONE (216) 429-6471

LIFE SUPPORT PRODUCTS DIVISION
THE ARO CORPORATION
3695 BROADWAY, BUFFALO, N.Y 14227

ARO

TELEPHONE 683-0440
AREA CODE 716
TELEX 315078

Page 2 of 2

ANALYTICAL RESULTS

Attn: John Whitney

JSTOMER Malcolm Pirnie Inc., S3515 Abbott Rd., Orchard Park, NY 14219

ATE COLLECTED: ? RECEIVED: 4/1/86 COMPLETED: 5/5/86

.O. NO. ARO W.O. 22,132W-13143-1/10

TEST	5B	6A	6B	7A	West Pond
H	6.61	7.13	6.54	6.89	8.84
otal Organic arbon, mg/L	23.1	10.5	8.78	11.3	10.3
ulfates, ppm	80.9	116.	671.	90.4	230.
henols, ppm	0.001	<0.001	<0.001	<0.001	<0.001
hloride, ppm	577.	49.8	49.8	78.7	118.
otal Dissolved olids, mg/L	2,760.	708.	1,532.	556.	547.
ron, ppm (Sol)	0.620	<0.025	<0.025	<0.025	<0.025
ead, ppm (Sol)	<0.010	<0.010	<0.010	<0.010	<0.010
hromium, ppm (Sol)	<0.010	<0.010	<0.010	<0.010	<0.010
ron, ppm (Total)	505.	<0.025	0.047	0.192	<0.025
ead, ppm (Total)	0.286	<0.010	0.025	0.017	0.012
hromium, ppm (Total)	0.295	<0.010	<0.010	<0.010	0.010

EXHIBIT A

LIFE SUPPORT PRODUCTS DIVISION
THE ARO CORPORATION
3695 BROADWAY, BUFFALO, N.Y 14227
ARO
TELEPHONE 683-0440
AREA CODE 716
TELEX 315078

ANALYTICAL RESULTS

Attn: John Whitney

USTOMER Malcolm Pirnie Inc., S3515 Abbott Rd., Orchard Park, NY 14219

ATE COLLECTED: ? RECEIVED: 4/1/86 COMPLETED: 5/5/86

.O. NO. ARO W.O. 22,132W-13143-1/10

TEST	2A	2B	3A	4A	5A
pH	7.28	10.51	6.64	7.34	6.92
Total Organic Carbon, mg/L	22.8	20.5	10.8	11.1	8.95
Sulfates, ppm	3.3	100.	214.	80.9	104.
Phenols, ppm	0.001	0.040	0.001	<0.001	<0.001
Chloride, ppm	125.	70.8	68.2	41.9	36.7
Total Dissolved Solids, mg/L	456.	640.	850.	332.	645.
Iron, ppm (Sol)	<0.025	<0.025	<0.025	<0.025	<0.025
Lead, ppm (Sol)	<0.010	<0.010	<0.010	<0.010	<0.010
Chromium (Sol), ppm	<0.010	<0.010	<0.010	<0.010	<0.010
Iron, ppm (Total)	<0.025	0.373	0.161	<0.025	<0.025
Lead, ppm (Total)	0.011	0.018	<0.010	<0.010	<0.010
Chromium, ppm (Total)	<0.010	0.020	<0.010	<0.010	<0.010

[illegible]

TABLE 2

COMPREHENSIVE GROUNDWATER QUALITY ASSESSMENT PROGRAM
GROUNDWATER QUALITY STANDARDS

Substance	Maximum concentration (mg/l)[1] New York State Water Quality Standards For Class "GA" Water	Interim Primary Drinking Water Standards
Arsenic	0.025	0.05
Barium	1.00	1.00
Cadmium	0.01	0.01
Chloride	250.00	--
Chromium	0.05[2]	0.05[3]
Copper	1.00	--
Cyanide	0.20	--
Fluoride	1.50	--
Foaming Agents (MBAS)	0.50	--
Iron[4]	0.30	--
Lead	0.025	0.05
Manganese[4]	0.30	--
Mercury	0.002	0.002
Nitrate (as N)	10.00	10.00
Phenols	0.001	--
Selenium	0.02	0.01
Silver	0.05	0.05
Sulfate	250.00	--
Zinc	5.00	--
pH Range	6.5-8.5	--
Endrin	N.D.	0.0002
Lindane	N.D.	0.004
Methoxychlor	0.035	0.10
Toxaphene	N.D.	0.005
2, 4-D	0.0044	0.10
2, 4, 5-TP (Silvex)	0.00026	0.01
Radium 226 and 228	--	5.00[6]
Gross Alpha Activity	--	15.00[6]
Coliform Bacteria[7]	--	4.00
		--

NOTES:

- Not specified
N.D. Not Detectable
1. Except where exceeded due to natural conditions
2. Hexavalent chromium
3. Total chromium
4. Combined concentration of iron and manganese shall not exceed 0.3 mg/l
5. Specific organic substances as specified in Appendix
6. PCi/l
7. #/100ml, arithmetic mean not to exceed 1 per 100 ml

TABLE 1 (cont.)

MARILLA STREET LANDFILL
SUMMARY OF ANALYTICAL RESULTS FOR ROUTINE WATER QUALITY PARAMETERS
FOR SAMPLES TAKEN 4/1/86

PARAMETER	TOTAL IRON (mg/1)	SOLUBLE IRON (mg/1)	TOTAL CHROMIUM (mg/1)	SOLUBLE CHROMIUM (mg/1)	TOTAL LEAD (mg/1)	SOLUBLE LEAD (mg/1)
SAMPLE LOCATION						
2A	< 0.025	< 0.025	< 0.010	< 0.010	0.011	< 0.010
2B	0.373	< 0.025	0.020	< 0.010	0.018	< 0.010
3A	0.161	< 0.025	< 0.010	< 0.010	< 0.010	< 0.010
West Pond	< 0.025	< 0.025	0.010	< 0.010	0.012	< 0.010
4A	< 0.025	< 0.025	< 0.010	< 0.010	< 0.010	< 0.010
5A	< 0.025	< 0.025	< 0.010	< 0.010	< 0.010	< 0.010
5B	505	< 0.620	0.295	< 0.010	0.286	< 0.010
6A	< 0.025	< 0.025	< 0.010	< 0.010	< 0.010	< 0.010
6B	0.047	< 0.025	< 0.010	< 0.010	0.025	< 0.010
7A	0.192	< 0.025	< 0.010	< 0.010	0.017	< 0.010

TABLE 1

MARILLA STREET LANDFILL
SUMMARY OF ANALYTICAL RESULTS FOR ROUTINE WATER QUALITY PARAMETERS*
FOR SAMPLES TAKEN 4/1/86

PARAMETER	pH (units)	CONDUCTIVITY** (umhos/cm)	TOTAL ORGANIC CARBON (mg/1)	TOTAL DISSOLVED SOLIDS (mg/1)	CHLORIDES (mg/1)	SULFATES (mg/1)	PHENOLS (mg/1)
SAMPLE LOCATION							
2A	7.28	830	22.8	456	125	3.3	.001
2B	10.51	2000	20.5	640	70.8	100	.040
3A	6.64	1440	10.8	850	68.2	214	.001
West Pond	8.84	1040	10.3	547	118	230	< 0.001
4A	7.34	440	11.1	332	41.9	80.9	< 0.001
5A	6.92	1025	8.95	645	36.7	104	< 0.001
5B	6.61	3500	23.1	2760	577	80.9	0.001
6A	7.13	1170	10.5	708	49.8	116	< 0.001
6B	6.54	1975	8.78	1532	49.8	671	< 0.001
7A	6.89	1050	11.3	556	78.7	90.4	< 0.001

* - Analytical Work by ARO Corp.

** - Field Measurement by Malcolm Pirnie.