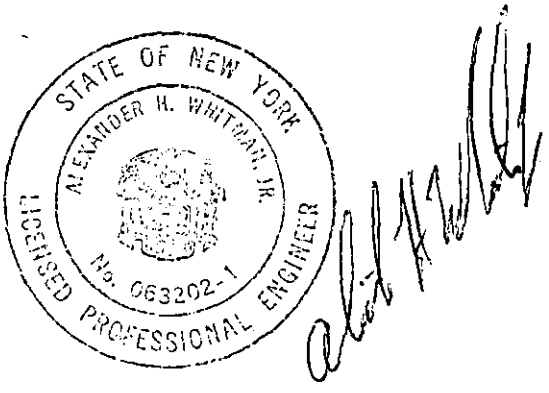
ENGINEERING INVESTIGATIONS AT INACTIVE HAZARDOUS WASTE SITES

PHASE I INVESTIGATION

LSB WAREHOUSING, SITE NUMBER: 915132
TOWN OF HAMBURG, ERIE COUNTY

September 1989



Prepared for:

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TABLE OF CONTENTS

Table of Contents (Cont.)

LIST OF ILLUSTRATIONS

LIST OF TABLES

1. EXECUTIVE SUMMARY

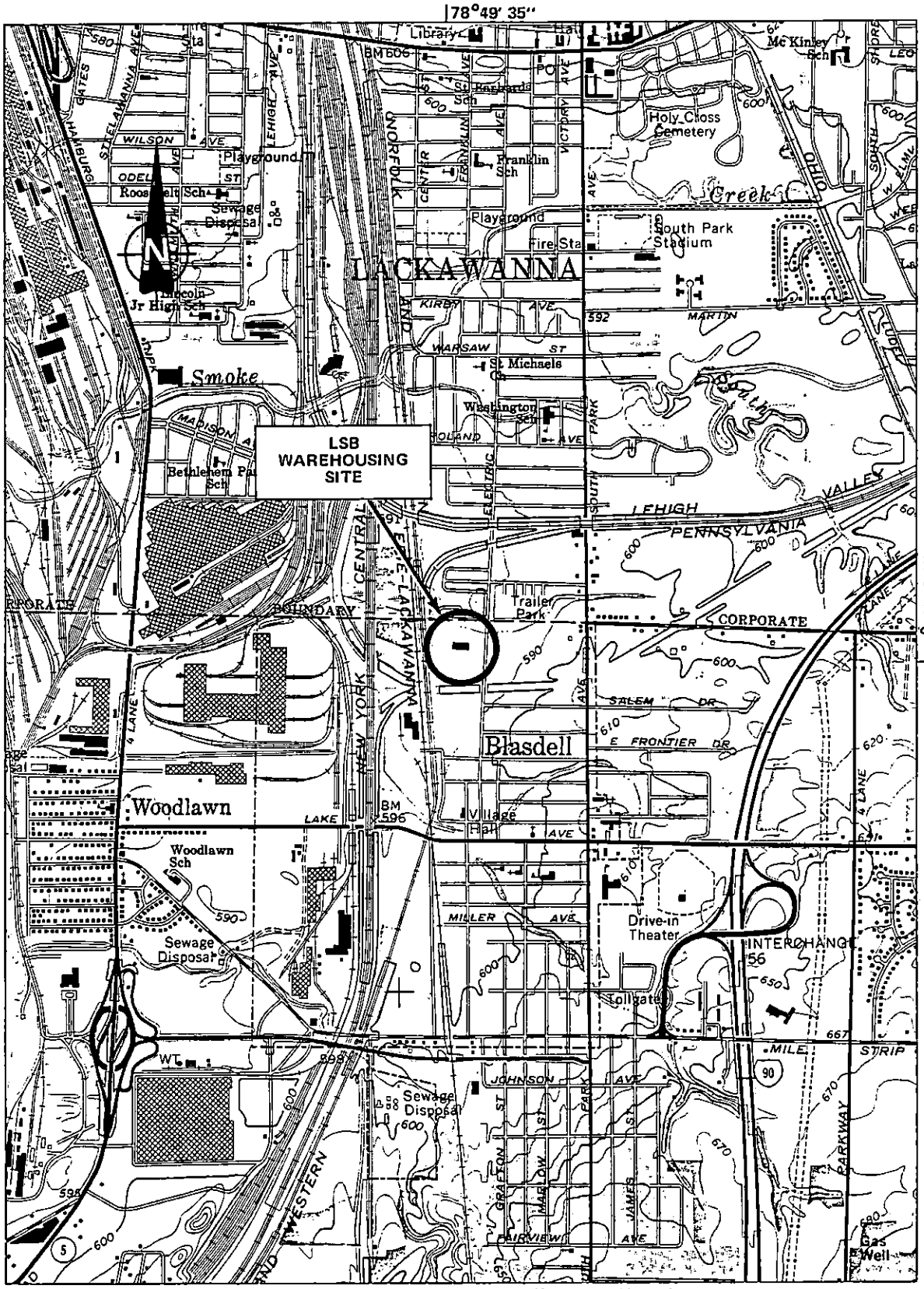
1.1 SITE BACKGROUND

The LSB Warehousing site is a 1.7-acre commercial property in the Town of Hamburg that is located south of and immediately adjacent to the town boundary of Lackawanna (see Figures 1-1 and 1-2). The site was identified by the Erie County Department of Environment and Planning (ECDEP), Division of Environmental Control on July 16, 1986 when employees responded to a neighbor's complaint about an overturned tanker at the site, and his concern about contamination of the surrounding area. ECDEP inspected the site and surmised that it may have been previously used as a temporary landfill and may contain hazardous wastes. ECDEP looked inside the overturned tanker through an ajar main hatch and observed only residue of tar.

1.2 PHASE I EFFORTS

On July 29, 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;



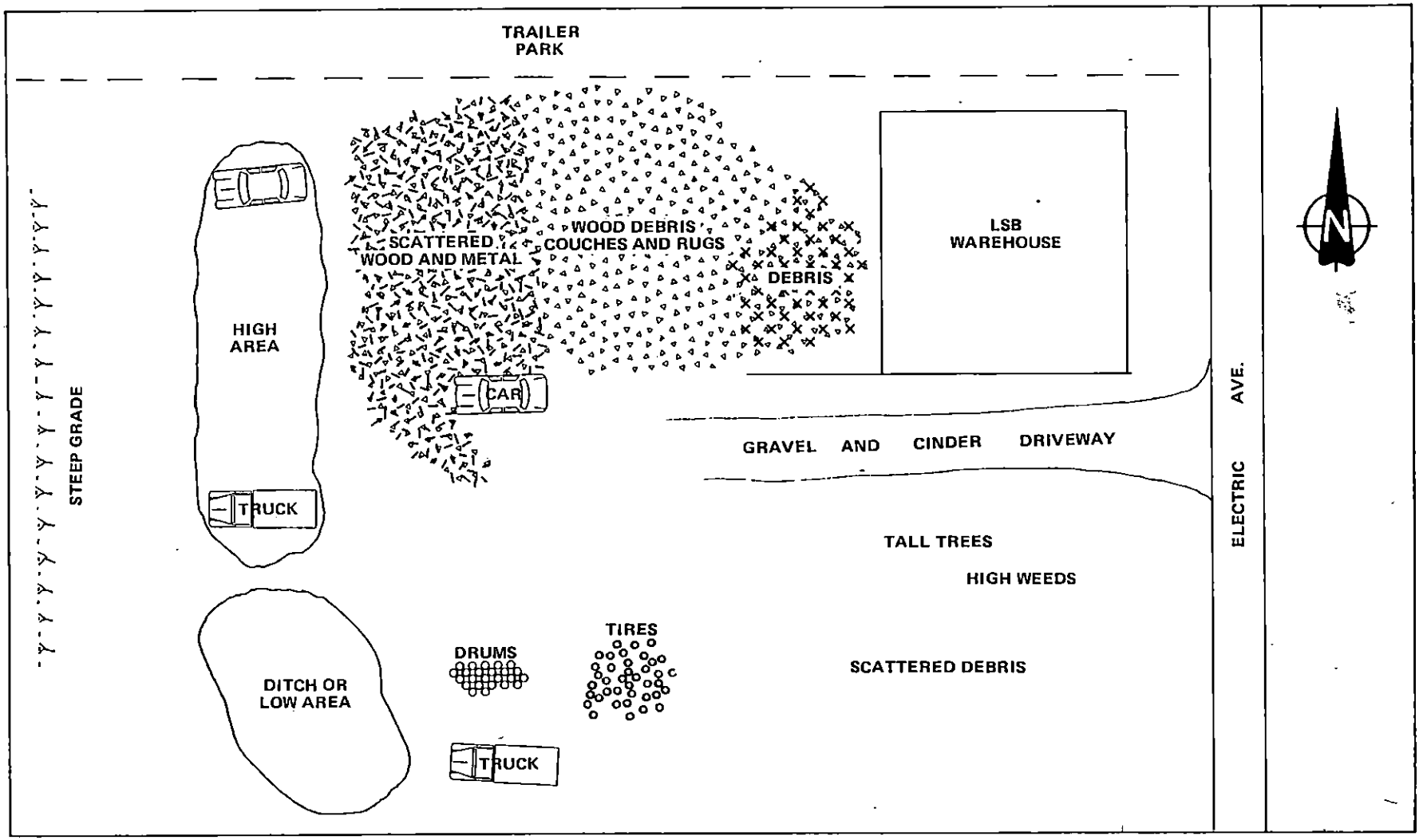
SOURCE: U.S.G.S. 7.5 Minute Series (Topographic) Quadrangle, Buffalo SE, N.Y., 1965.

SCALE

0 ½ 1 MILE

0 .5 1 KILOMETER

Figure 1–1 LOCATION MAP



SOURCE: Ecology and Environment, Inc., 1987.

NOT TO SCALE

Figure 1–2 SITE MAP - LSB WAREHOUSING

- Distance to nearest residence;
- A description of the surrounding environment;
- Visual delineation of former waste disposal areas;
- Air quality survey using an HNu photoionizer; and
- Photodocumentation of the site.

All observations were recorded in a field logbook and in the United States Environmental Protection Agency (EPA) Site Inspection Report form.

1.3 ASSESSMENT

Two drums and household debris were observed by E & E employees during the site inspection of the LSB Warehousing site. The two drums were labeled Elastigun Roof Coating (not considered to be toxic). The warehouse was abandoned and empty except for small scattered debris. Furniture, wood, metal trash, used tires, and abandoned cars were found behind the onsite warehouse. There was a steep embankment at the far eastern end of the property site that was not investigated because of safety reasons. This area was overgrown with weeds and wetland vegetation up to 5 feet in height. The tanker previously seen by ECDEP in 1986 was not observed by E & E, nor was it located by employees of Manufacturers Hanover Trust Company (current owner) who conducted an independent walk-over of the site during summer 1987. There was no visual observation of hazardous materials on site.

1.4 HAZARD RANKING SYSTEM SCORE

A preliminary application of the Hazard Ranking System (HRS) was completed to quantify risks associated with the site. A detailed environmental site assessment to fully evaluate the site was not conducted because the Phase I investigation is limited in scope.

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 described below:

- S_M reflects the potential for harm to humans or the environment from migration of a hazardous substance away from the facility via 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:

$S_M = 0$ ($S_{gw} = 0$; $S_{sw} = 0$; $S_a = 0$)
S_{FE} = not scored
$S_{DC} = 0$

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. See Appendix A for Photographic Record.

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 LSB WAREHOUSING

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: 5/20/87
Information Gathered: File search for LSB Warehousing.

New York State Department of Environmental Conservation
Division of Hazardous Waste Remediation
50 Wolf Road
Albany, New York 12233-0001
Contact: Raymond Lupe
Telephone No.: (518) 457-9538
Date: 6/22/87
Information Gathered: File search for LSB Warehousing.

New York State Department of Environmental Conservation, Region 9
Hazardous Waste Remediation Division and Permitting Division
600 Delaware Avenue
Buffalo, New York 14202
Contact: Lawrence Clare, Paul Eismann
Telephone No.: (716) 847-4585
Date: 4/29/87
Information Gathered: File search for LSB Warehousing file.

Erie County Department of Environment and Planning
Division of Environmental Control
95 Franklin Street
Buffalo, New York 14202
Contact: John Opalko
Telephone No.: (716) 846-6370
Date: 6/8/87
Information Gathered: File search for LSB Warehousing--file obtained and xeroxed.

New York State Department of Environmental Conservation
Fish and Wildlife Division
600 Delaware Avenue
Buffalo, New York 14202
Contact: Jim Farguar
Telephone No.: (716) 847-4550
Date: 8/26/87
Information Gathered: Significant habitats, fisheries resources, plant species of concern, wetlands in the vicinity of LSB Warehousing site.

New York State Department of Health
Corning Tower
The Governor Nelson A. Rockefeller Empire State Plaza
Albany, New York 12237
Contact: Lani Rafferty
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 and Cameron O'Connor
Telephone No.: (716) 847-4365
Dates Contacted: May 5 and June 4, 1987; and April 13, 1989

Table 3-1 (Cont.)

Information: Contact with NYSDOH on May 5, 1987, indicated that that files were being transferred from Albany to Buffalo. The files were not accessible. Further correspondence in June 1987 indicated that that 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 April 13, 1989.

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: 6/87
Information Gathered: Flood insurance rate maps.

United States Department of Agriculture (USDA)
Soil Conservation Service
21 S. Grove Road
East Aurora, New York 14731
Contact: John Whitney
Telephone No.: (716) 699-2326
Date: 8/25/87
Information Gathered: Agricultural district lands, distance to productive prime agricultural lands, and aerial photos.

National Weather Service
Buffalo Airport, East Terminal
Buffalo, New York 14225
Contact: Donald Wuerch
Telephone No.: (716) 632-1319
Date: 7/7/87
Information Gathered: Weather statistics.

Hamburg Water District
Engineering Division
6100 S. Park Avenue
Hamburg, New York 14075
Contact: Jack Gilbert, Town Engineer
Telephone No.: (716) 649-6111
Date: 9/2/87
Information Gathered: Location and information on municipal and private wells.

Lackawanna Water District
Engineering Division
714 Ridge Road
Lackawanna, New York 14218
Contact: Allen Strycharz, Senior Engineering Aide
Telephone No.: (716) 827-6425
Date: 9/2/87
Information Gathered: Location and information on municipal and private wells.

Interviews

Manufacturers Hanover Trust Company
P.O. Box 1914
Rochester, New York
Contact: James Prattico, Assistant Secretary.
Telephone No.: (716) 987-6600
Date: 9/3/87
Information Gathered: Site history of LSB Warehousing.

4. SITE ASSESSMENT

4.1 SITE HISTORY

John Losey Enterprises purchased the 1.7-acre LSB Warehousing site on September 9, 1976. The property was mainly used for local steel transfer trucking operations (Prattico 1987). Mr. Losey secured a real estate loan through Manufacturers Hanover Trust Company. The title to the property was transferred in 1982 from Mr. Losey to LSB Warehousing, the title of Mr. Losey's trucking firm. Mr. Losey subsequently became delinquent on his property loan and declared bankruptcy in 1984. Manufacturers Hanover repossessed the property in January 1987 (Prattico 1987).

Aerial photos of the site (Soil Conservation Service 1987) show that the site was maintained as a pasture in 1939. The surrounding area was rural. In 1958 much of the vegetation was removed with exposed bare ground surface, and a trailer court was adjacent to the site. The eastern portion of the property was being developed, and the property extended south beyond its present boundaries. During July of 1976, the DEP investigated the site and determined that it had been used as a landfill. By 1978 the aerial photographs showed that the site was condensed into its present boundaries and there was a warehouse on site with considerable activity along the western periphery of the property. Two trailers were present. By 1982 a warehouse was present, and a trailer is again visible behind the warehouse along the western periphery of the property. Cars were parked alongside the southern periphery of the site.

Aerial photos from 1983 show an additional red trailer or a truck located near the original trailer. The photo shows the west end of the landfill to be overgrown with vegetation, and a large dark object

is visible within the vegetation. Aerial photos taken in 1986 and 1987 show considerable vegetation throughout the property, and no cars or trailers (Soil Conservation Service 1987).

On July 16, 1986, employees of ECDEP inspected the site in response to a complaint filed by a neighbor, Mr. Barnes. Mr. Barnes observed an abandoned, overturned tanker at the property and was worried about contamination of the surrounding area. ECDEP employees observed the tanker to be partially filled with tar residue. No samples were collected. They also noted that the area was used as a major residential dumping ground as evidenced by scattered household debris and abandoned cars, and observed a steep embankment on the property that they suspected was the result of former landfill operations. An unreported number of abandoned 55-gallon drums were also observed. The warehouse on site was abandoned and empty. No remedial action was undertaken but ECDEP recommended that the site be placed on the suspected inactive hazardous waste site list for the State of New York (NYSDEC 1987a, ECDEP 1987).

4.2 SITE TOPOGRAPHY

The LSB Warehousing site is oriented toward Electric Avenue just 1.5 blocks north of the Village of Blasdell. It is at an elevation of 580 feet oriented west with a 1% average slope. The site is 1.5 miles east of Lake Erie, and 0.6 mile south of the South Branch of Smoke Creek. The site is within the Township of Hamburg, Erie County, New York, although the north property boundary abuts the Lackawanna corporate boundary line. There is an unnamed intermittent stream on site that flows into Lake Erie.

4.2.1 Soils

The soils of the site are urban land at the eastern half of the property site and Niagara silt loam at the western half of the property. Urban land describes areas that have 80% or more of the surface area covered by asphalt, concrete, and/or buildings. The subsoil has not been described. Niagara silt loam is level, deep silty soil that is poorly drained. The soil has a surface layer of dark brown silt loam 11 inches thick. The substratum is dark brown silt loam to a depth of 60 inches. Below the substratum is coarse silt and fine sand. Depth to bedrock is 5 feet or more. During the first half of

the year the soil has a high water table that rises to the upper portion of the subsoil. Permeability is moderately slow in the subsoil and substratum. Soil permeability is 0.6- to 2.0-inches per hour (Owens et al. 1986).

4.2.2 Wetlands

A state-designated wetland, BU-14, is located 500 feet west of the site. It is a Class II wetland that is 60% emergent marsh, 15% deciduous swamp, and 25% floating submergent vegetation in standing water. The total area of the wetland is 50 acres. It is divided into eight isolated parts separated by the LeHigh, Penn Central, and Western Lackawanna railroad tracks. No endangered, threatened, or rare species are known to occur within the wetland (NYSDEC 1987b).

Federal wetlands are delineated on National Wetland Inventory maps and may be as small as 0.5 acre. There are two small federal wetlands within the wetland boundaries of the BU-14 state wetland. Both wetlands are 0.5 miles west and southwest of the site. One of the wetlands is classified as a palustrine forested hyperhaline seasonally saturated wetland. The remaining wetland is a palustrine emergent mesohaline seasonal wetland (NYSDEC 1987b).

4.2.3 Surface Waters

There is an unnamed intermittent unclassified perennial stream located on site that flows into Lake Erie. The closest source of perennial surface water is the south branch of Smoke Creek located 0.6 mile north of the site. It is classified by NYSDEC as a C stream although it is not a protected stream. The creek stratum is not considered conducive for fish spawning, however, walleye (Stizostedion vitreum) and other fish frequent the creek temporarily during spring (Mooradian 1987). Class C inland waters are otherwise suitable for fish and wildlife habitat, recreational boating, and certain industrial purposes. These streams have good aesthetic value. The site is not within a 100-year floodplain (Federal Emergency Management Agency 1982).

4.2.4 Land Use

The LSB Warehousing site is located in an urbanized, mostly residential, area. The closest residents are located in a trailer park adjacent to the northern boundary of the site. The LSB Warehousing property is immediately east of the Norfolk and Western and New York Central railroad tracks and large manufacturing industries. East of the site is vacant land. Total population within a 3-mile radius of the site is 73,425 people (General Sciences Corporation 1986). Prime agricultural land is greater than 2 miles from the site (Whitney 1987).

4.2.5 Critical and Sensitive Habitats

The Tifft Farm Wetland, 2.7 miles north of the LSB Warehousing site, is the closest critical habitat to the site. It is considered a significant coastal fish and wildlife habitat by NYSDEC (1987b). It is 95 acres in size and is considered a Class I wetland. There are no buildings in the area that are included on the National Register of Historic Places (New York State Office of Parks, Recreation, and Historic Preservation, 1986; Murtagh 1976).

4.3 SITE HYDROLOGY

4.3.1 Regional Geology and Hydrology

The LSB Warehousing site lies within the Erie-Niagara basin and the Erie-Ontario lowland physiographic province. The overburden 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.

The bedrock in the region is exclusively sedimentary. The shale, limestone, and dolostone 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.

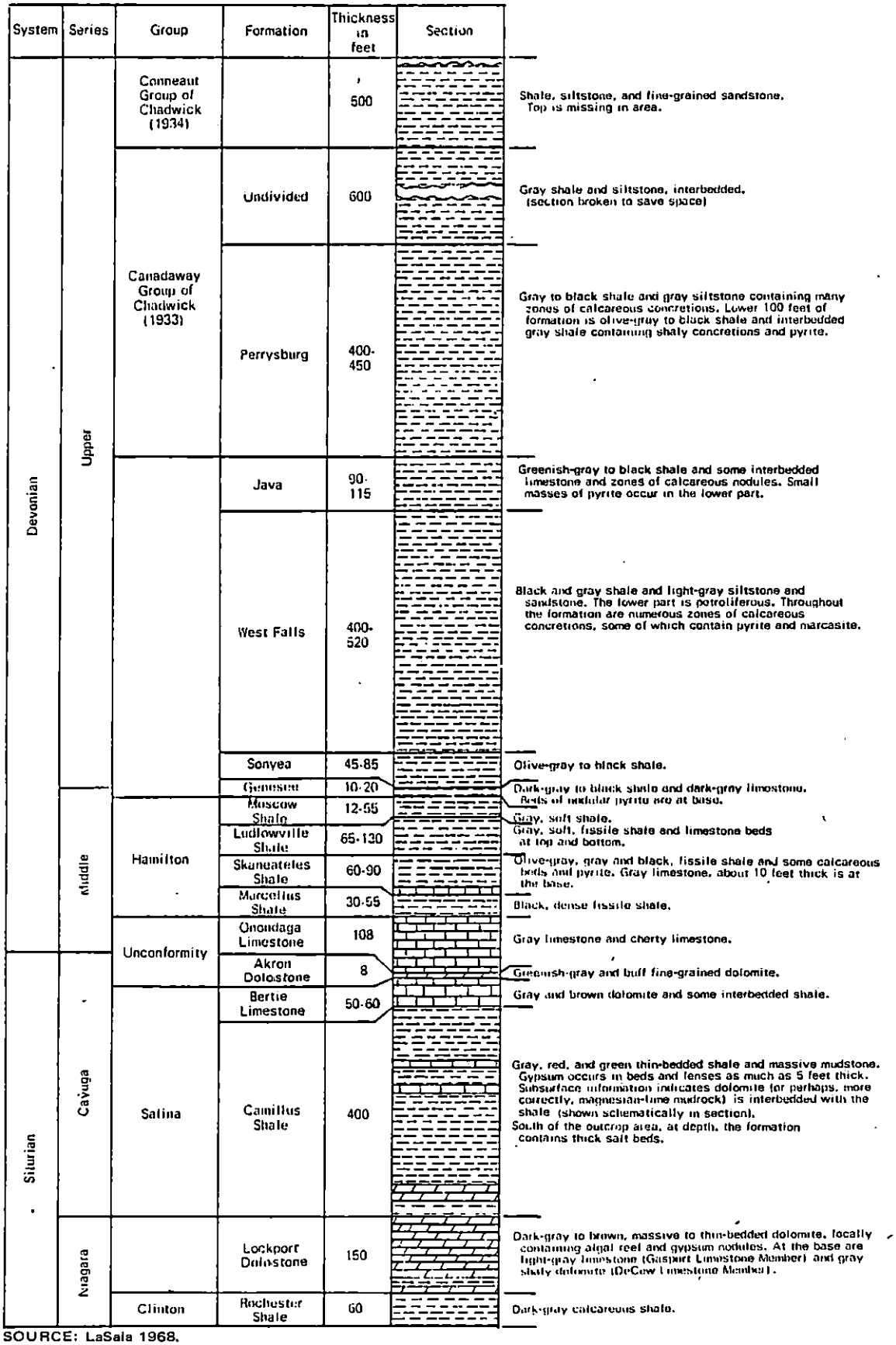
Up to 32 distinct bedrock members have been identified in Erie County (see Figure 4-1). The oldest unit, Silurian in age, underlying the northern part of the county is the Camillus Shale. This member, which is 30 to 100 feet thick, contains significant reserves of groundwater in cavities formed by the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

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 Dolostone, 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 uncomformably overlying the Akron Dolostone. The unit comprises three distinct members that cumulatively are approximately 140 feet thick.

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.

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.

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.



SOURCE: LaSala 1968.

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

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 Dolostone and limestones contain water in bedding joints widened by dissolution. Vertical fractures in the limestone provide hydraulic connections among the many bedding planes.

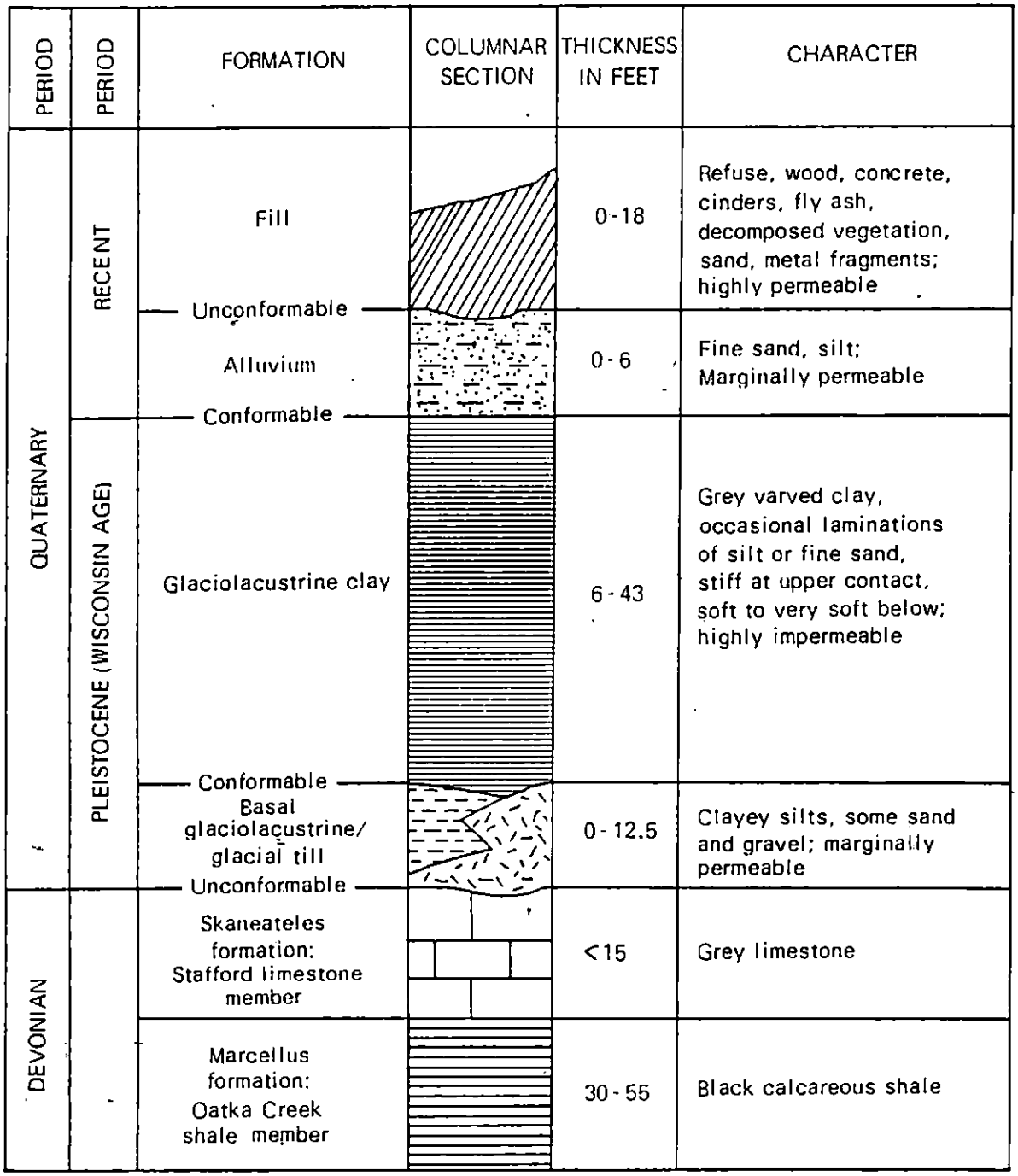
Very little groundwater is found in the formations above the limestone unit. These formations, principally shale, are impermeable. Some water transmission occurs in small fractures in the bedrock, but no wells of significant yield are found in these units. Groundwater in these regions is obtained mainly from glacial overburden deposits (Buehler and Tesmer 1963; LaSala 1968; Buehler 1966).

4.3.2 Site Hydrogeology

The geology at the LSB Warehousing site cannot be specifically defined due to the lack of borings in the immediate area. However, detailed information is available from 18 monitoring wells at the Republic Steel Marilla Street Landfill (Malcolm Pirnie 1985a), and 8 borings at the Alltift Landfill (Koszalka et al. 1985) approximately 2 miles north of the LSB Warehouse site. Thicknesses of overburden materials and depth to bedrock may vary from site to site, but based on these borings, the undisturbed overburden consists of alluvium, glacio-lacustrine clay, and glacial till. Bedrock consists of the Skaneateles Formation: Stafford Limestone member, followed by the Marcellus Formation: Oatka Creek Shale member (see Figure 4-2). The shale bedrock ranged in depth from 14 to 25 feet at the Republic Steel site.

Groundwater systems existed in both the overburden and bedrock. Direction of groundwater flow was variable in the overburden, and westward toward Lake Erie in the bedrock (Malcolm Pirnie 1985b).

Permeability tests on two samples of the glacio-lacustrine clay by Wehran and Recra (1978) indicated permeabilities of 5.8×10^{-8} cm/sec and 6.4×10^{-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).



SOURCE: Koszalka et al., 1985.

Figure 4–2 GENERALIZED GEOLOGIC COLUMN OF FORMATIONS UNDERLYING THE ALLTIFT LINDFILL SITE, BUFFALO, NEW YORK

Groundwater in the LSB Warehousing area is not used for a municipal drinking water supply (Gilbert 1987, Strycharz 1987). The Town of Lackawanna uses municipal water supply from Lake Erie (Strycharz 1987), and most of the Town of Hamburg uses municipal wells. The closest private well is near Mile Strip Road and South Park Avenue, 1 mile south of the site (Gilbert 1987). Municipal water is obtained from Lake Erie at Sturgeon Point Intake located 15 miles south of the site (Strycharz 1987).

4.3.3 Hydraulic Connections

The shallow groundwater system may be separated from the deeper groundwater system by clayey glacio-lacustrine deposits. The bedrock underlying these deposits is mainly impermeable shale 90 to 145 feet thick (i.e., Skaneateles and Marcellus formations) separated by a thin layer of limestone 8 to 15 feet thick (i.e., Stafford Limestone member). Isopotential maps from Malcolm Pirnie seem to indicate different flow patterns in the overburden and bedrock; therefore, there is a good chance there is little vertical movement (Malcolm Pirnie 1985b). These conditions may be similar at the LSB Warehousing site.

4.4 SITE CONTAMINATION

No sampling programs have been previously conducted at this site, with the exception of an air quality survey conducted by E & E using an HNu photoionizer during E & E's site investigation on July 27, 1987. No readings above background were noted.

The ECDEP inspection report indicates that drums have been stored at the site, and that these drums may contain hazardous materials. E & E employees conducting the LSB Warehousing site inspection observed two drums that were labeled "Elastigum Roof Coating." The product label for this substance includes asphalt, hardened fibers, selected fillers, and petroleum solvents. Asphalt is composed primarily of petroleum byproducts. Roofing material is not considered to be a toxic material and is accepted at local landfills (Anthony 1987).

An overturned tanker reportedly containing tar, which was observed on site on July 16, 1986 by ECDEP, was not witnessed by E & E employees on July 27, 1987, nor by employees of Manufacturers Hanover, who also conducted a walk-over survey of the site in 1987 (Prattico 1987).

Other objects on site consisted mainly of household debris possibly discarded from nearby trailer homes, including furniture, wood, metal debris, tires, and four abandoned cars/trucks.

ECDEP suspected that the west end of the site was previously used as an unauthorized landfill. They surmised that hazardous materials may have been dumped onto the property (NYSDEC 1987a). There is no documentation for this allegation. E & E employees observed no hazardous materials on site during the site inspection in July 1987.

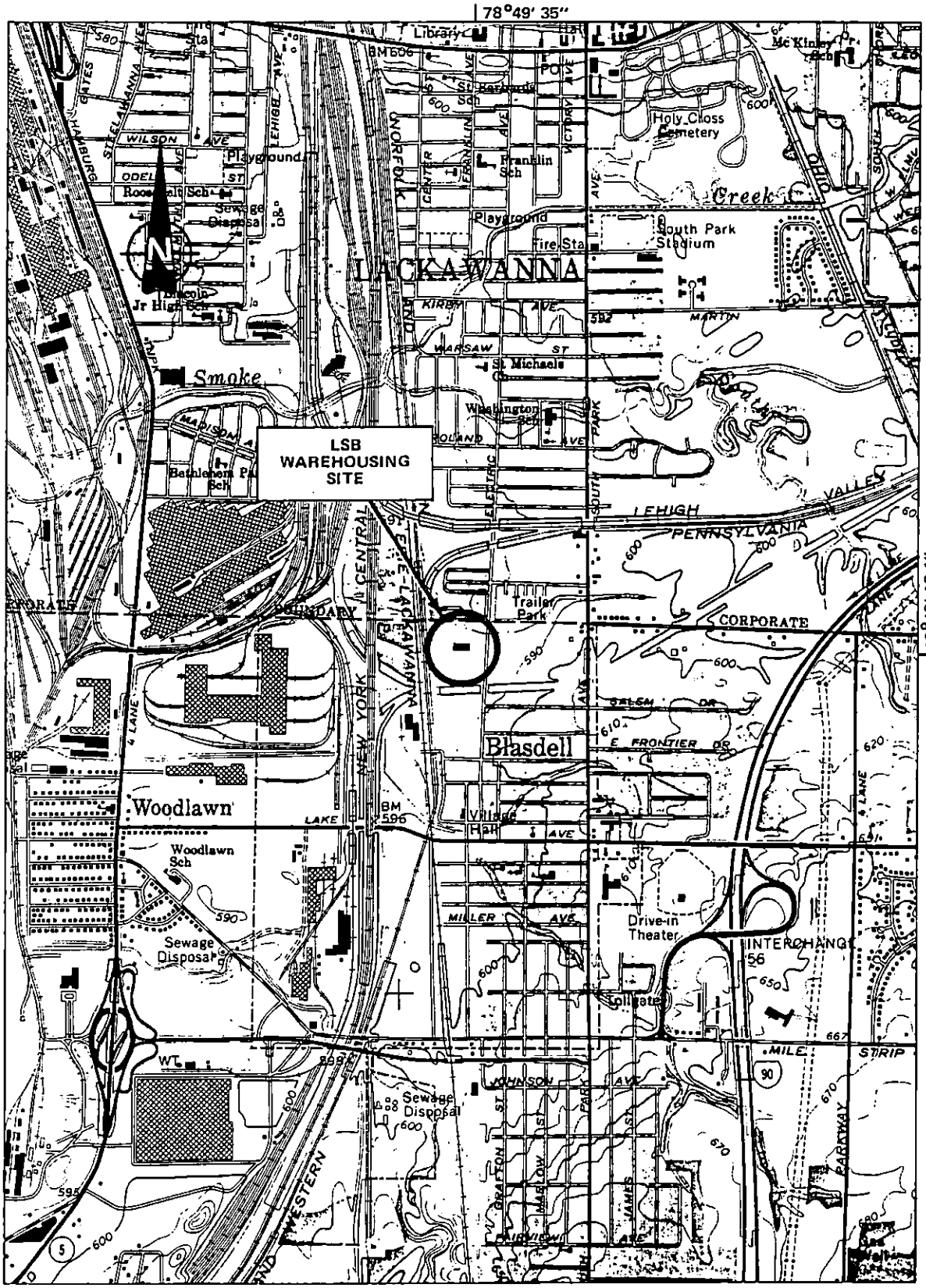
5. PRELIMINARY APPLICATION OF THE HRS

5.1 NARRATIVE SUMMARY

The LSB Warehousing site is located at 1995 Electric Avenue within the Village of Blasdell, Township of Hamburg, County of Erie, New York (see Figure 5-1). The site is at an elevation of 580 feet oriented west with a 1% average slope. The site is 1.5 miles east of Lake Erie and 0.6 mile south of the South Branch of Smoke Creek. There is an unnamed intermittent stream on site that flows into Lake Erie.

The site is located in an urbanized, mostly residential area. The closest residents are located in a trailer park adjacent to the northern boundary of the site. The total population within a 3-mile radius of the site is 73,425 (General Sciences Corporation 1986).

The site covers 1.7 acres. The former owner, John Losey, used the property for storing trucks for his local steel transportation firm. He declared bankruptcy by 1984, and the property was foreclosed by Manufacturers Hanover in 1987. ECDEP suspects that hazardous material may be on site; however, no hazardous materials were observed by E & E employees during the site inspection, nor is there documentation of hazardous material ever being on site.



SOURCE: U.S.G.S. 7.5 Minute Series (Topographic) Quadrangle, Buffalo SE, N.Y., 1965.

SCALE

0 ½ 1 MILE

0 .5 1 KILOMETER

Figure 5–1 LOCATION MAP

FIGURE 1

HRS COVER SHEET

Facility Name: LSB Warehousing

Location: 1995 Electric Avenue, Blasdell, New York

EPA Region: II

Person(s) in Charge of Facility: Manufacturers Hanover Trust Company

P.O. Box 1914

Rochester, New York

Name of Reviewer: Pamela Gunther Date: 9/10/87

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, 1.7 acres in size, was occupied by commercial trucking transportation firm that went bankrupt by 1984. The site was then abandoned, and neighbors began depositing their household debris at the site. After receiving a complaint of an overturned tanker at the site, Erie County employees (ECDEP) inspected the property in July 1986 and suspected an unauthorized landfill. E & E employees completed inspection In July 1987, but found no visual evidence of hazardous waste.

Scores: $S_M = 0$ ($S_{gw} = 0$ $S_{sw} = 0$ $S_a = 0$)

S_{FE} = Not scored

$S_{DC} = 0$

D1708

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

FIGURE 2
GROUND WATER ROUTE WORK SHEET

Surface Water Route Work Sheet						
Rating Factor	Assigned Value (Circle One)		Multi-plier	Score	Max. Score	Ref. (Section)
[1] Observed Release	(0)	45	1	0	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	0	3	
1-yr. 24-hr. Rainfall	0 1 (2) 3		1	2	3	
Distance to Nearest Surface Water	0 1 2 (3)		2	6	6	
Physical State	(0) 1 2 3		1	0	3	
Total Route Characteristics Score				8	15	
[3] Containment	0 (1) 2 3		1	1	3	4.3
[4] Waste Characteristics						4.4
Toxicity/Persistence	(0) 3 6 9 12 15 18		1	0	18	
Hazardous Waste Quantity	(0) 1 2 3 4 5 6 7 8		1	0	8	
Total Waste Characteristics Score				0	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	2	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				8	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]				0	64,350	
[7] Divide line [6] by 64,350 and multiply by 100			S_{SW} =	0		

FIGURE 7
SURFACE WATER ROUTE WORK SHEET

Air Route Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
[1] Observed Release	(0) 45	1	0	45	5.1
Date and Location:					
Sampling Protocol:					
If line [1] is 0, the S_a = 0. Enter on line [5]. If line [1] is 45, then proceed to line [2].					
[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			20	
[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			39	
[4] Multiply [1] x [2] x [3]				35,100	
[5] Divide line [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})	0	0
Surface Water Route Score (S_{sw})	0	0
Air Route Score (S_a)	0	0
$S_{gw}^2 + S_{sw}^2 + S_a^2$		0
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2}$		0
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2} \,/\, 1.73 = S_M =$		0

FIGURE 10
WORKSHEET FOR COMPUTING S_M

Fire and Explosion Work Sheet						NOT SCORED
Rating Factor	Assigned Value (Circle One)		Multi-plier	Score	Max. Score	Ref. (Section)
1 Containment	1	3	1		3	7.1
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	
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	
4 Multiply 1 x 2 x 3					1,440	
5 Divide line 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)	Multi-plier	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	0	15	8.3
4 Waste Characteristics Toxicity	(0) 1 2 3	5	0	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			0	21,600	
7 Divide line 6 by 21,600 and multiply by 100	S_{DC} = 0				

FIGURE 12
DIRECT CONTACT WORK SHEET

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: LSB Warehousing

Location: 1995 Electric Avenue

Date Scored: September 10, 1987

Person Scoring: Pamela Gunther

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

NYSDEC File Information
ECDEP File Information
Aerial Photos
Site Inspection

Factors Not Scored Due to Insufficient Information:

There has been no observed hazardous waste on site, thus toxicity, quantity, and containment cannot be scored.

Comments or Qualifications:

Fire and Explosion score not computed as a fire marshal has not declared a fire or explosion threat. There has been no documentation of hazardous waste disposed of on site.

GROUNDWATER ROUTE

1. OBSERVED RELEASE

Contaminants detected (3 maximum):

None

Rationale for attributing the contaminants to the facility:

* * *

2. ROUTE CHARACTERISTICS

Depth to Aquifer of Concern

Name/description of aquifer(s) of concern:

Perched aquifer in unconsolidated deposits. Bedrock aquifer is not utilized for drinking water or irrigation.
Ref. No. 1

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. 16, 17

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

Unknown

Net Precipitation

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

36 in/yr
Ref. No. 2

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

27 in/yr
Ref. No. 2

Net precipitation (subtract the above figures):

9 in/yr

Permeability of Unsaturated Zone

Soil type in unsaturated zone:

Niagara silt loam and urban land
Ref. No. 3

Permeability associated with soil type:

0.2 - 2.0 in/hr
1.41×10^{-4} - 1.41×10^{-3} cm/sec
Ref. No. 3

Physical State

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

It is not known if hazardous wastes are on site, thus no physical state could be evaluated. A score of 0 was given.
Ref. Nos. 4, 5, 14

* * *

3. CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

Unknown, score set at zero, given a one for only factor in a category
Ref. Nos. 4, 5, 14

Method with highest score:

NA

4. WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated:

Unknown
Ref. Nos. 4, 5, 14

Compound with highest score:

NA

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):

Unknown
Ref. Nos. 4, 5, 14

Basis of estimating and/or computing waste quantity:

NA

* * *

5. TARGETS

Groundwater Use

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

Generally not used except for one private well.
Ref. Nos. 6, 7

Distance to Nearest Well

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

There is one private well located one mile south of the site.
Ref. Nos. 6, 7

Distance to above well or building:

One mile south of site.
Ref. Nos. 6, 7

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:

One well supplies one family of 6.
Ref. Nos. 6, 7

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):

NA

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

NA

SURFACE WATER ROUTE

1. OBSERVED RELEASE

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

No contaminants detected.
Ref. Nos. 4, 5, 14

Rationale for attributing the contaminants to the facility:

* * *

2. ROUTE CHARACTERISTICS

Facility Slope and Intervening Terrain

Average slope of facility in percent:

<3%
Ref. No. 13

Name/description of nearest downslope surface water:

Intermittent stream on site flows into Lake Erie. Lake Erie is 1.5 miles from the site. Intakes are 15 miles south of Lackawanna.
Ref. No. 13

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

<3%
Ref. No. 13

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

No, although there is an intermittent stream on the property site which flows into Lake Erie.
Ref. No. 14

Is the facility completely surrounded by areas of higher elevation?

No
Ref. No. 14

1-Year 24-Hour Rainfall in Inches

2.1 in/yr
Ref. No. 2

Distance to Nearest Downslope Surface Water

Intermittent stream on site
Ref. No. 14

Physical State of Waste

Unknown
Ref. Nos. 4, 5, 14

* * *

3. CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

Unknown, score set at zero, given a one for only factor in a category.
Ref. Nos. 4, 5, 14

Method with highest score:

NA

4. WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated:

Unknown
Ref. Nos. 4, 5, 14

Compound with highest score:

Unknown

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):

Unknown
Ref. Nos. 4, 5, 14

Basis of estimating and/or computing waste quantity:

NA

* * *

5. TARGETS

Surface Water Use

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

Lake Erie is used for recreation and boating near the site.
Ref. Nos. 7, 9

Is there tidal influence?

No.

Distance to a Sensitive Environment

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

None
Ref. Nos. 9, 12

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

0.5 miles to a freshwater wetland
Ref. Nos. 9, 12

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

None
Ref. Nos. 9, 12

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:

Lake Erie is not used for drinking water within 3 miles of site.
Ref. Nos. 7, 8

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

NA - No farms within 2 miles of site.
Ref. No. 10

Total population served:

NA

Name/description of nearest of above water bodies:

Lake Erie not used for drinking water within 3 miles of site.
Ref. No. 7

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

NA

AIR ROUTE

1. OBSERVED RELEASE

Contaminants detected:

None
Ref. No. 14

Date and location of detection of contaminants:

NA

Methods used to detect the contaminants:

HNu organic vapor analyzer
Ref. No. 14

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:

Unknown
Ref. Nos. 4, 5, 14

Hazardous Waste Quantity

Total quantity of hazardous waste:

Unknown
Ref. Nos. 4, 5, 14

Basis of estimating and/or computing waste quantity:

NA

* * *

D1708

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

16,854
Ref. No. 11

Distance to a Sensitive Environment

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

NA
Ref. Nos. 9, 12

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

0.5 mile
Ref. Nos. 9, 12

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

None
Ref. Nos. 9, 12

Land Use

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

Onsite
Ref. Nos. 13, 14

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

NA
Ref. Nos. 13, 14

Distance to residential area, if 2 miles or less:

Trailer Park is adjacent to the site
Ref. Nos. 13, 14

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

NA
Ref. Nos. 3, 10

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

NA
Ref. Nos. 3, 10

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

No
Ref. No. 15

FIRE AND EXPLOSION

1. CONTAINMENT

Hazardous substances present:

Unknown
Ref. Nos. 4, 5, 14

Type of containment, if applicable

Unknown
Ref. Nos. 4, 5, 14

* * *

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:

Unknown
Ref. Nos. 4, 5, 14

Basis of estimating and/or computing waste quantity:

NA

* * *

3. TARGETS

Distance to Nearest Population

Adjacent
Ref. No. 13

Distance to Nearest Building

0.1 mile
Ref. No. 13

Distance to a Sensitive Environment

Distance to wetlands:

0.5 mile
Ref. Nos. 9, 12

Distance to critical habitat:

2.7
Ref. Nos. 9, 12

Land Use

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

Onsite
Ref. Nos. 13, 14

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

NA
Ref. Nos. 13, 14

Distance to residential area, if 2 miles or less:

Trailer park is adjacent to the site
Ref. Nos. 13, 14

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

NA
Ref. Nos. 3, 10

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

NA
Ref. Nos. 3, 10

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

No
Ref. No. 15

Population Within 2-Mile Radius

38,961
Ref. No. 11

Buildings Within 2-Mile Radius

23,451
Ref. No. 11

DIRECT CONTACT

1. OBSERVED INCIDENT

Date, location, and pertinent details of incident:

No observed incident of direct contact.
Ref. Nos. 4, 5, 14

* * *

2. ACCESSIBILITY

Describe type of barrier(s):

None
Ref. No. 14

* * *

3. CONTAINMENT

Type of containment, if applicable:

Unknown
Ref. Nos. 4, 5, 14

* * *

4. WASTE CHARACTERISTICS

Toxicity

Compounds evaluated:

Unknown
Ref. Nos. 4, 5, 14

Compound with highest score:

Unknown

* * *

5. TARGETS

Population within one-mile radius

16,854 people
Ref. No. 11

Distance to critical habitat (of endangered species)

2.7 miles
Ref. Nos. 9, 12

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	Buehler, E.J., and I.H. Tesmer, 1963, Geology of Erie County, New York, Buffalo Society of Natural Sciences Bulletin, Buffalo, New York. Document location: E & E, Buffalo, New York.
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3	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, Cornell, New York. Document location: E & E, Buffalo, New York.
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6	Gilbert, J., September 1987, personal communication concerning location of private wells in Hamburg, Hamburg Town Engineer, Hamburg, New York. Document location: E & E, Buffalo, New York.
7	Strycharz, A., September 1987, Lackawanna Senior Engineering Aide, personal communication concerning location of private wells in Lackawanna, Lackawanna, New York. Document location: E & E, Buffalo, New York.
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9	New York State Department of Environmental Conservation, 1987, Classification of streams, wetlands, and critical habitats in vicinity of LSB Warehousing, Floodplain, Fish, and Wildlife Division. Document location: NYSDEC Region 9 offices, Buffalo, New York.
10	Whitney, J., August 1987, personal communication concerning location of prime agricultural lands in vicinity of LSB Warehousing, Soil Conservation Service, East Aurora, New York. Document location: E & E, Buffalo, New York.

D1708

Reference Number	Description of the Reference
11	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. Document location: E & E, Buffalo, New York.
12	Farquar, J., 1987, personal communication, regarding NYSDEC and federal wetlands maps and critical habitats, Fish and Wildlife Division, Buffalo, New York. Document location: E & E, Buffalo, New York.
13	USGS Topographical Map, 7.5-Minute Series, Buffalo SE Quadrangle. Document location: E & E, Buffalo, New York.
14	Ecology and Environment, Inc., 1987, Site Inspection. Document location: E & E, Buffalo, New York.
15	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 9182.
16	Malcolm Pirnie, 1985a, Closure Plan for Marilla Street Landfill BOF Dust Area, prepared for LTV Steel Company, Buffalo, New York. Document Location: E & E, Buffalo, New York.
17	Malcolm Pirnie, 1985b, Marilla Street Landfill Conceptual Site Closure Plan, prepared for LTV Steel Company, Buffalo, New York. Document Location: E & E, Buffalo, New York.

D1708

REFERENCE NO. 1

recycled paper

ecology and environment

GEOLOGY
OF
ERIE COUNTY
New York

By

EDWARD J. BUEHLER
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AND

IRVING H. TESMER
Professor of Geology
State University College at Buffalo

BUFFALO SOCIETY OF NATURAL SCIENCES
BULLETIN

Vol. 21, No. 3 Buffalo, 1963

5-25

Contents

ecology and environment

The Early Devonian sea
did not extend into the
lergoing erosion. Thus,
Devonian and part of

record in western New
of warm, clear salt water
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Kensington Avenue in

was replaced by muddy
Hamilton Group. This
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19.
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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

REFERENCE NO. 2

recycled paper

ecology and environment

(C.Y./M.S.)

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

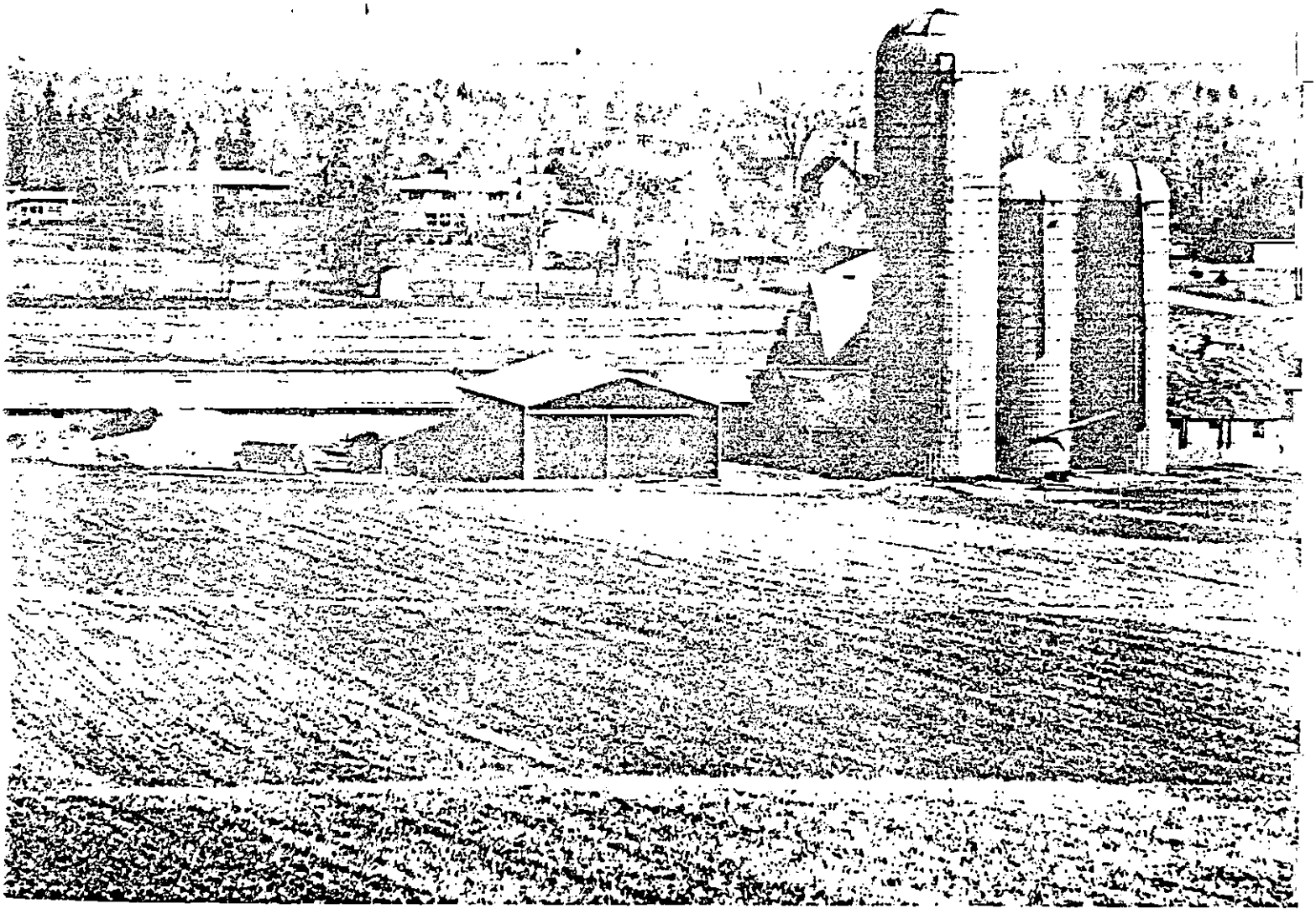
REFERENCE NO. 3

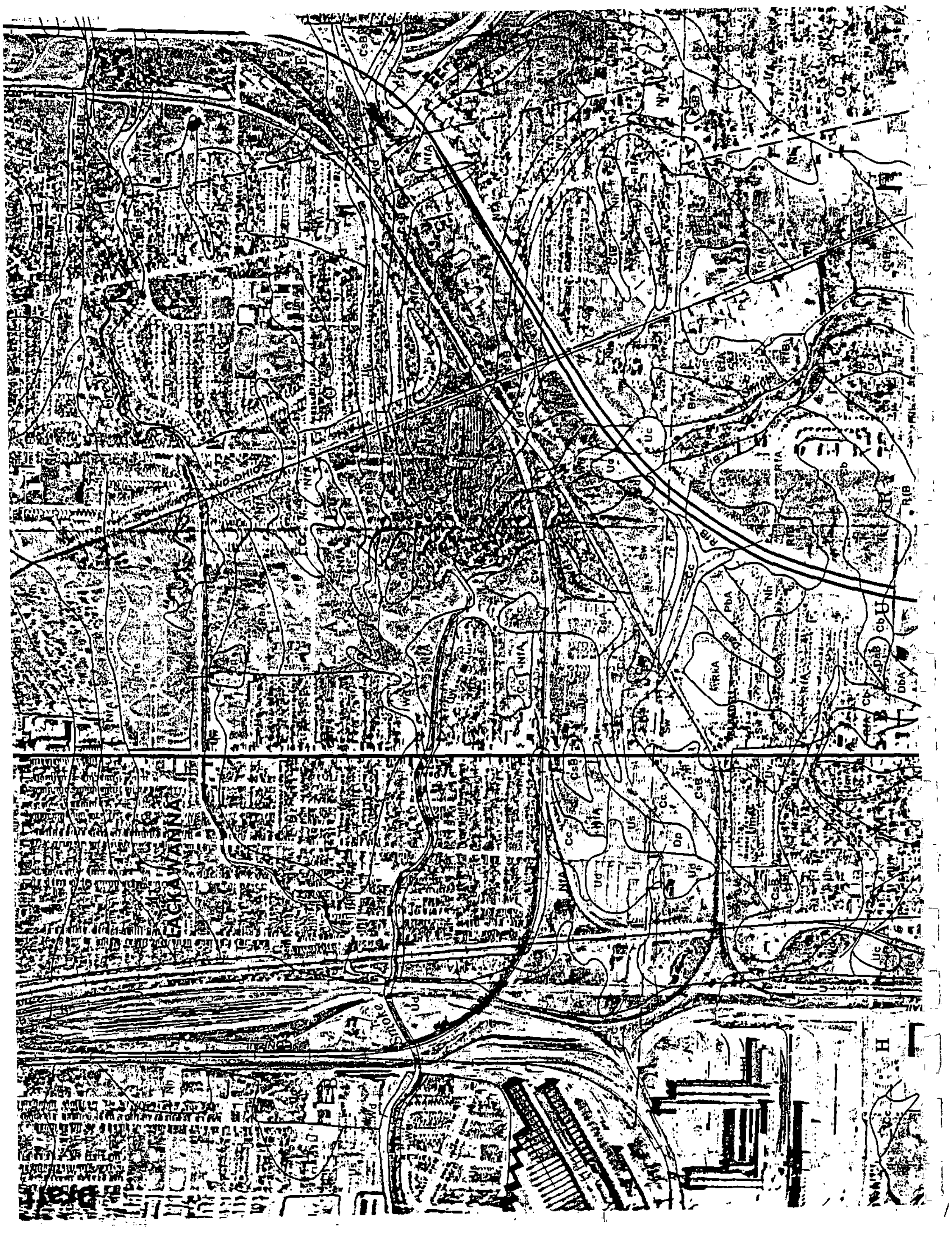
United States
Department of
Agriculture

Soil
Conservation
Service

In Cooperation with
the Cornell University
Agricultural
Experiment Station

Soil Survey of Erie County, New York





limestone. This soil is in low, flat areas at the northern edge of the upland plateau, just south of the limestone escarpment. Slope is 0 to 3 percent. Areas of this soil are irregular in shape and range from 5 to 100 acres, but areas of 5 to 20 acres are most common.

Typically, this soil has a surface layer of black loam about 10 inches thick. The subsurface layer is mottled, pale brown fine sandy loam about 3 inches thick. The subsoil, which extends to a depth of 21 inches, is mottled, dark brown loam. The substratum is mottled, reddish brown gravelly loam about 6 inches thick. Hard, gray limestone bedrock is at a depth of 27 inches.

Included with this soil in mapping are small intermingled areas of the Wassaic, Appleton, and Kendaia soils. The Wassaic soils are better drained than this Newstead soil and are on slightly elevated parts of the landscape. The somewhat poorly drained Appleton and Kendaia soils are underlain by bedrock at a depth of 5 feet or more. Also included are some areas where bedrock is less than 20 inches below the soil surface and a few areas where the soil is poorly drained. Areas of included soils range from 1/2 acre to 3 acres.

From December through May this Newstead soil has a perched seasonal high water table that rises into the upper part of the subsoil. Permeability is moderate throughout the soil. Runoff is slow. Gravel makes up 2 to 15 percent of the surface layer. Bedrock is at a depth of 20 to 40 inches. Reaction ranges from medium acid to mildly alkaline in the surface layer.

Because of seasonal wetness and depth to bedrock, this soil is poorly suited to most farm and urban uses. Most of the acreage is in woodland, or it is idle. Some areas of this soil are farmed, and a few areas are used for urban purposes.

This Newstead soil is poorly suited to cultivated crops, unless drained. Subsurface drainage is difficult to install because bedrock is at a moderate depth and the soil should be deeper to insure adequate installation. Where open drains can be installed, this soil is suited to many crops grown in the county. Keeping tillage to a minimum, using cover crops, incorporating crop residues into the soil, plowing at proper soil moisture level, and rotating crops improve tilth and help maintain the organic matter content. Because of seasonal wetness, this soil is poorly suited to pasture and hay. Surface drainage or land shaping is desirable for optimum production of forage crops.

Grazing when the soil is wet is the major concern of pasture management on this soil. Grazing during wet periods causes soil compaction and trampling of pasture plants, which reduce forage growth. Proper stocking, rotation of pastures, yearly mowing, and deferment of grazing during wet periods are the main management needs.

The potential of this soil for wood crops is poor because of seasonal wetness and moderate depth to bedrock, but many areas are wooded. Erosion is not a hazard, but limited use of equipment and seedling mortality are serious problems. Because of the restricted rooting depth, trees may uproot during windstorms.

The seasonally high water table and depth to bedrock are serious limitations for most urban uses of this soil. Where the soil is used for septic tank absorption fields, ground water may be contaminated because the fissured limestone bedrock is close to the soil surface. The bedrock is very hard and difficult to excavate; blasting is often required. Some areas have good potential for the development of wildlife habitat.

This Newstead soil is in capability subclass IIIw.

NfA—Niagara silt loam, 0 to 3 percent slopes. This nearly level, silty soil is deep and somewhat poorly drained. It is on broad, moderately low flats in the northern part of the county and in a few flat areas elsewhere. Areas of this soil are irregular in shape and range from 5 to 200 acres or more.

Typically, this soil has a surface layer of dark brown silt loam about 11 inches thick. The subsoil extends to a depth of 27 inches. The upper 5 inches is mottled, yellowish brown silt loam, and it is underlain by mottled, dark brown light silty clay loam grading to silt loam. The substratum is dark brown silt loam to a depth of 60 inches and olive brown coarse silt and very fine sand below 60 inches.

Included with this soil in mapping are small areas of the Niagara soils that have gravelly or stony deposits between depths of 40 and 60 inches. Also included are areas of the Cosad, Raynham, Collamer, and Canandaigua soils. The Cosad soils have a sandy surface mantle, the Raynham soils have a lower clay content than the Niagara soils, the Collamer soils are on slightly convex knolls and ridges, and the Canandaigua soils are in low depressions. In some areas, the surface layer is very fine sand or silty clay loam. Areas of included soils are 1/2 acre to 3 acres.

From December through May this Niagara soil has a seasonal high water table that rises into the upper part of the subsoil. Permeability is moderately slow in the subsoil and substratum. The available water capacity is high, and runoff and internal drainage are slow. Depth to bedrock is generally 5 feet or more. There are usually no gravel and stones in the soil. Reaction ranges from strongly acid to neutral in the surface layer and from medium acid to mildly alkaline in the subsoil.

Seasonal wetness, moderately slow permeability, and low soil strength limit many uses of this soil. This soil is used for various purposes, including residential and commercial development, farming, and woodland. Many areas of this soil are idle.

This Niagara soil is not well suited to farming, unless drained. Erosion is not a problem on this nearly level soil, but it may puddle and compact if tilled when wet. In some areas drainage is difficult to install because of the nearly level slopes, instability of cut banks, and lack of

suitable outlets. With adequate drainage and maintenance of tilth and fertility, this soil is suitable for most crops grown in the county except early-market and long-season varieties. Keeping tillage to a minimum, using cover crops, and including grasses and legumes in the cropping system help maintain good tilth.

Without adequate drainage, this soil is best suited to hay and pasture plants that can withstand seasonal wetness. Grazing when the soil is wet is the major concern of pasture management. It causes soil compaction, restricts growth, and can lead to the loss of the pasture grasses. Restricting grazing in wet periods, rotational grazing, and yearly mowing are desirable management practices.

The potential of this soil for wood crops is fair. The erosion hazard is slight, but seasonal wetness limits the use of planting and harvesting equipment and increases seedling mortality. Trees rooted in this soil are generally able to withstand excessive wind velocities. Trees that can withstand seasonal wetness are best suited to this soil.

The seasonal high water table, low soil strength, poor soil compaction, and moderately slow permeability are serious limitations for most urban uses of this Niagara soil. If storm sewers or other outlets are available, drains can be installed around foundations to minimize the seasonal wetness. Sidewalls of excavations tend to slump or cave, especially when the soil is saturated. Because this soil has a high silt content, frost may damage roads and dwellings without basements.

This Niagara soil is in capability subclass IIIw.

NfB—Niagara silt loam, 3 to 8 percent slopes. This gently sloping soil is deep and somewhat poorly drained. It formed in silty lake-laid deposits. This soil is in moderately low, undulating areas in the northern part of the county and in a few areas elsewhere. Areas of this soil are irregular in shape and range from 3 to 40 acres.

Typically, this soil has a surface layer of dark brown silt loam about 11 inches thick. The subsoil extends to a depth of 27 inches. The upper 5 inches is mottled, yellowish brown silt loam, and it is underlain by mottled, dark brown light silty clay loam grading to silt loam. The substratum is dark brown silt loam to a depth of 60 inches and olive brown coarse silt and very fine sand below 60 inches.

Included with this soil in mapping are small areas of Niagara soils that have gravelly or stony deposits at a depth of 40 to 60 inches and Niagara soils that are nearly level. Also included are areas of the Collamer, Canandaigua, and Rhinebeck soils. The Collamer soils are on slightly convex knolls and ridges, the Canandaigua soils are in low depressions, and the Rhinebeck soils are dominantly clayey. In some areas, the surface layer is very fine sand or silty clay loam; and in a few areas, the subsoil has strata of gravel. Areas of included soils range from 1/2 acre to 3 acres.

From December through May this Niagara soil has seasonal high water table that rises into the upper pa of the subsoil. Permeability is moderately slow in the subsoil and substratum. The available water capacity high, and runoff is medium. Depth to bedrock is generally 5 feet or more. There are usually no gravel stones in the soil. Reaction ranges from strongly aci neutral in the surface layer and from medium acid to mildly alkaline in the subsoil.

Seasonal wetness, moderately slow permeability, low soil strength limit many uses of this soil. Most of acreage is farmed, is in woodland, or is idle. A few a are urbanized.

This Niagara soil is not well suited to farming, unle drained. Erosion is a hazard in intensively cultivated areas and on long slopes. Puddling and compaction problems if the soil is tilled when wet. Interceptor dr which divert runoff and seepage from higher adjacer soils, usually need to be closely spaced because the subsoil is moderately slowly permeable. With adequ drainage and maintenance of tilth and fertility, this s suitable for many crops grown in the county except early-market and long-season varieties. Keeping tilla to a minimum, using cover crops, tilling across slope including grasses and legumes in the cropping syste and plowing at the proper soil moisture level help maintain good tilth and control erosion.

Without adequate drainage, this soil is best suited hay and pasture plants that can withstand wetness. Grazing when the soil is wet is the major concern o pasture management. It causes soil compaction, re plant growth, and can lead to the loss of the pastur grasses. The loss of the pasture seeding can cause serious erosion.

The potential of this soil for wood crops is fair. Seasonal wetness limits the use of planting and harvesting equipment and increases seedling morta Trees rooted in this soil are generally able to withst all but excessive windstorms. Placing logging trails the contour reduces the hazard of trail gullying.

The seasonal high water table, low soil strength, soil compaction, and moderately slow permeability, serious limitations for most urban uses of this Niag soil. If storm sewers or other outlets are available, around foundations and interceptor drains that dive runoff from higher adjacent soils minimize seasona wetness. Sidewalls of excavations tend to slump o especially when the soil is saturated. Because this has a high silt content, frost may damage roads an dwellings without basements. This silty soil is also subject to serious erosion when vegetative cover is removed during construction.

This Niagara soil is in capability subclass IIIw.

Ng—Niagara silt loam, fan. This nearly level, si is deep and somewhat poorly drained. It is on the of valley floors, mostly in the southern part of the

sod crops in the cropping system
ce from scour when flooding occurs.
soil is well suited to special crops that
and a stone-free plow layer.
o well suited to pasture and hay.
restrict plant growth and cause the loss
eeding. Proper stocking, rotation of
mowing, and deferment of grazing when
e the main management concerns.
ime are needed for optimum growth of

of this soil for wood crops is good. Only
is wooded. There are few limitations for
n. Trees that require acid conditions do

serious limitation for most urban uses of
the soil is used for septic tank
s, pollution of the water supply can occur
ding and because the substratum is
apidly permeable. Some areas are well
tional uses, such as athletic fields that
l- and stone-free, nearly level site. This
lent source of topsoil.
oil is in capability class I.

ents, smoothed. These soils formed in
e cuts or fills. Most of these areas are
sites, urban developments, or construction
oils consist of various kinds of excavated
l that has been stockpiled for use as fill or
oil and rock material that has been trucked
as and leveled, or soil deposits that are
at have been excavated or deeply
aterial is variable in composition, but
material is dominant. In some places, the
th slag or cinders around abandoned
In other places, the earthy fill contains up
concrete or asphalt and other trashy

nit is mainly nearly level or gently sloping.
re steeper, particularly at the edge of cuts
sides of mounded fill. The areas are
ape, depending mostly on ownership
hey range from 5 to 700 acres or more.
eas are in the city of Buffalo and adjacent
the larger industrial complexes.
are too variable to have a typical profile,
the more common profiles the surface layer
rayish brown very gravelly loamy sand to
n 1 to 8 inches thick. The substratum is
ht olive brown, brown, or dark yellowish
aries widely in texture from very gravelly
o silty clay.
s are idle and support scattered weeds and
w areas have reverted to brush and tree
ne areas, particularly around railroad yards,
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

REFERENCE NO. 4

recycled paper

ecology and environment

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LARRY,

THIS LOOKS LIKE A CANDIDATE SITE FOR THE REGISTRY ^UPDATE THIS FALL.

PLEASE HOLD ONTO THIS AND PREPARE AN INPUT SHEET TO THE REGISTRY (AHMAD SHOULD HAVE SOME FORMS). WE WILL SEND IT IN THIS FALL WHEN BUD O. ASKS FOR ADDITIONAL SITES.

Pete

REFERENCE NO. 5

New site
Added to ES
Registry

COUNTY OF ERIE
DEPARTMENT OF ENVIRONMENT & PLANNING
DIVISION OF ENVIRONMENTAL CONTROL

MEMORANDUM

FROM E. Joseph Sciascia DATE July 25, 1985

TO P. Buechi

SUBJECT Complaint Investigation 3531

We investigated the attached complaint and found what appears to be an abandoned landfill. It is our recommendation that this location be placed on your list for further investigation.

Joseph Sciascia

E. JOSEPH SCIASCIA, P.E.
Sr. Environmental Quality Engineer

EJS/bb

ERIE COUNTY ENVIRONMENTAL CONTROL - ENVIRONMENTAL ASSISTANCE

C3531

Name of Person, Company, or Institution Needing Action: UNKNOWN - Site behind LSB Warehouse

Address: Electric Ave Phone Number:

City/Town Jackamans Blasdell Activity Type

Month Date Year

Date: 07 16 85 Time: A.M. 1.30 P.M.

(X) Complaint
( ) Equipment Problems

Technical Assistance
( ) Industrial
( ) Commercial
( ) Governmental

Person Requesting Asst Mr Barnes.

Address: 45 Myrtle Street Phone Number: 825-4710

City/Town Blasdell

DESCRIPTION OF COMPLAINT OR ASSISTANCE REQUEST

Happening Now: Yes (✓) No ( ) Emergency: Yes ( ) No (✓)

Abandoned lot adjacent to Standardized Steel
has containers halves in ditch - worried about chemicals

Facility Type

( ) 1. Open Burning
( ) 2. Fuel Burning
( ) 3. Incinerators
( ) 4. Process Equipment
( ) 5. Nuisance/Odors
( ) 6. Internal Combustion
( ) 7. Air Misc. _____
(✓) 8. Solid Waste
( ) 9. Surface Water (Spill)
( ) 10. Subsurface Water (Spill)
( ) 11. Nuisance/Water
( ) 12. Sewerage
( ) 13. Water Misc. _____

Person Taking Infor CAL

Person Handling Request CAL / PA

Assistance Type

( ) 1. None
( ) 2. Ambient Env. Quality Info
( ) 3. Env. Quality Assessment
( ) 4. Permit
( ) 5. Env. Control Facility Design
( ) 6. Waste Disposal
( ) 7. Inactive Haz. Waste Sites
( ) 8. Pollution Control O+M
( ) 9. Statute/Regulation
( ) 10. Planning
( ) 11. Misc. _____

Assistance By Other Sections
( ) 12. Financial Assistance (Referral)
( ) 13. Planning Information (Referral)
( ) 14. Sewerage Management (Referral)
( ) 15. Other

Return Call Date: 7/16/85 Time: 1:30 Field: YES ☑ NO ☐

Referral to:

REPORT: See attached Sheets

Called complainant on 7/16/85 and advised him of the results of the investigation results as noted on attached sheet. Mr Barnes indicated that he was satisfied with our investigation a approved ~~of the~~ of our plans to add to inactive waste-site list CAL

MANDATORY NOTIFICATION:

	DATE	TIME	PERSON/REASON
N.Y.S. DEC	NA		
U.S.C.G.	NA		
OTHER	NA		

STATUS:
( ) Abated
(✓) Resolved
( ) Referred – 7/23/85

Carmen A. O'Connor 7/16/85 / PA
Inspector's Signature

G P Kitas 7/23/85
Supervisor's Signature and Date

On 7/16/86, Cameron O'Connor and I responded to a complaint filed with the DEP by Mr. Baines of Blasdell, New York. The complaint concerned an abandoned tanker turned over in a ditch on the west side of Electric Avenue, behind an abandoned LSB warehouse. The tanker was approximately 8 feet up the bank of a tributary stream which drains the area. The tanker was old and well rusted. On the side of the tanker were the words ROLAND GETT. What appeared to be solidified tar was noted on the outside of the tanker. Upon further investigation, we noticed the main hatch was ajar, wo we looked inside and noticed only residue of tar. While investigating the surrounding area, we noticed construction debris in the form of old tires, wooden planks, broken cement blocks and old pipes on the slope and in the embankment. Upon further investigation we noted 55-gallon drums that had been covered by overgrown vegetation. These drums were sealed tight and some were bound together as if they were being transported. These 55-gallon drums seemed to be in several areas, some decayed and broken open and some with holes in them. After walking this area, it became apparent that the steep embankment was the result of former landfill operations. The landfill appears to be large in size. Surrounding the landfill area to the south is a semi to permanent wetland with all of the characteristic vegetation, i.e. willows, cottonwood, cattails and other forms of aquatic flora. As we walked throughout the area, we did not notice any odors or observe and leachate from the banks. A trailer park boarders the north slope of the fill area, R.R. tracks lay to the west and an abandoned LSB warehouse to the east.

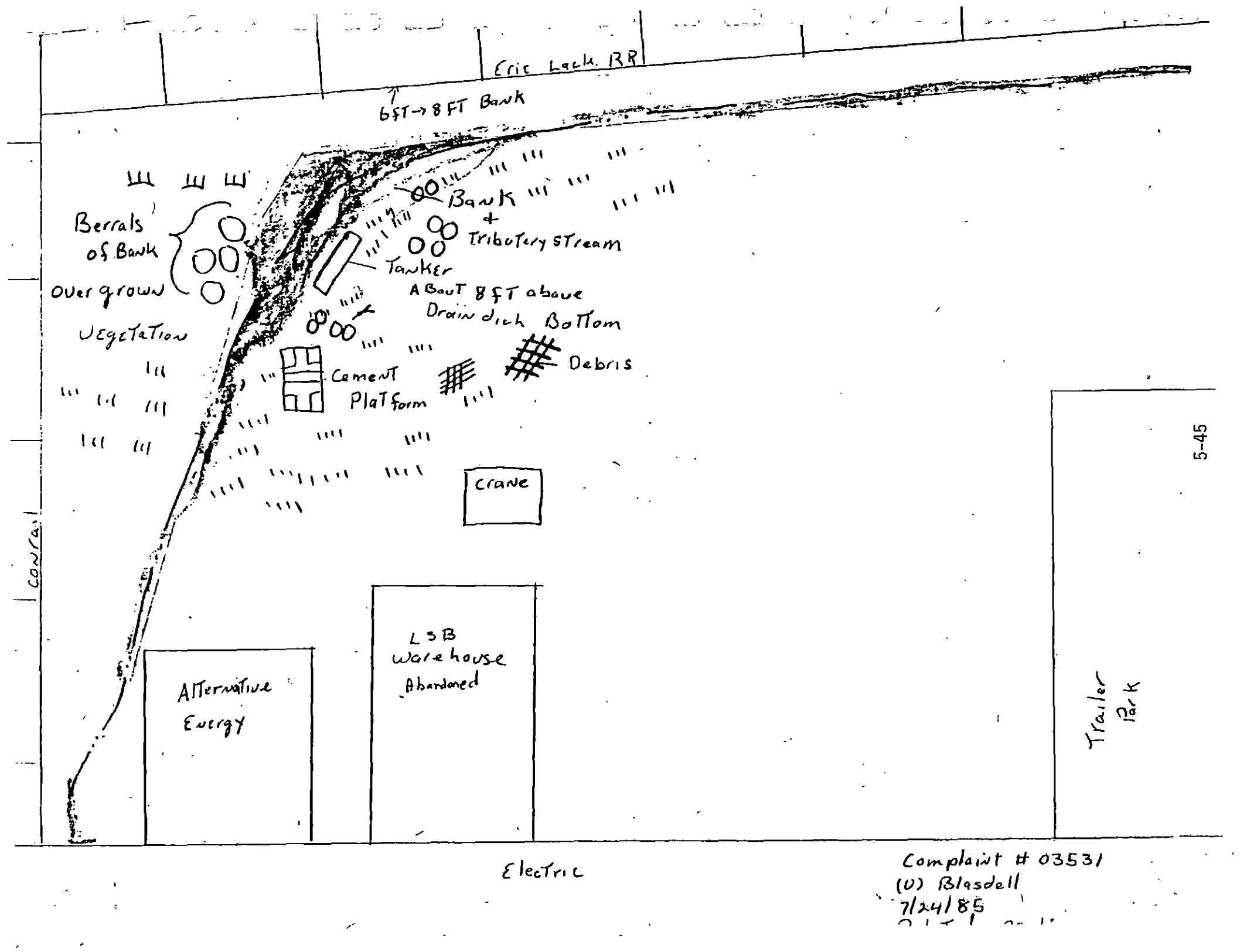
The warehouse in front of the area is abandoned. It is unknown if the warehouse utilized the landfill, but there were bound barrels, almost pallitized in the landfill and DOT signs for poisonous gas and combustible materials laying on the ground within the abandoned warehouse (all doors and windows were opened). It is possible however, that abandoned shipments were disposed of in the rear of the property.

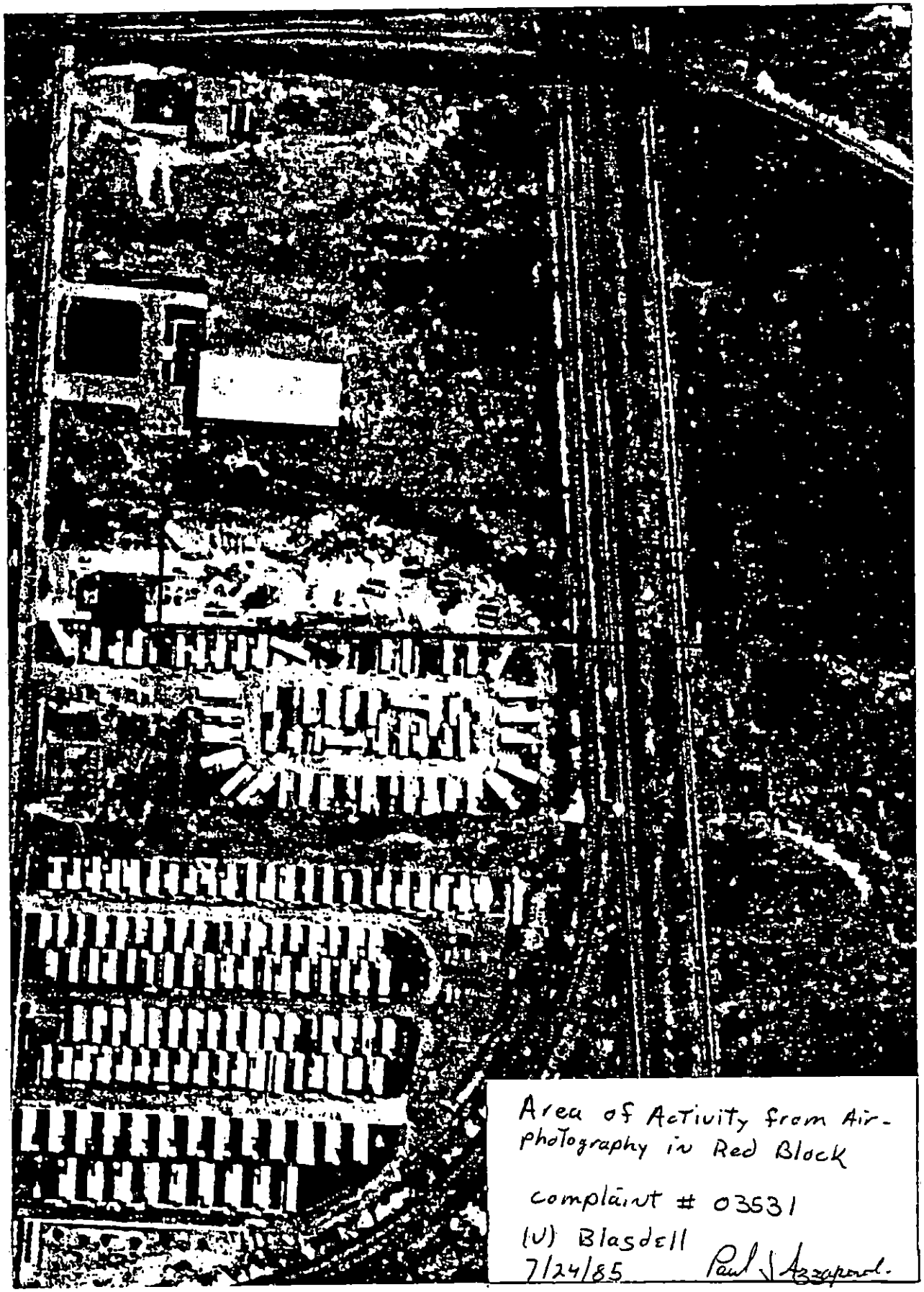
As to date, there are no records of landfilling activity on this site in our files or in IATF, but through air photos, we noticed in 1960 the area was complete with flora - no disturbance of land. By 1972, the land was very disturbed and was now being utilized by a trucking firm, the LSB abandoned warehouse.

We strongly recommend that this area be placed on the DEC list for further investigation, testing and classification to determine the landfill's status.

7/14/85

Complaint # 07808


Erie Lack. RR
6ft→8 FT Bank
Bank
+
Tributery stream
Berrals
of Bank
Over grown
Vegetation
Tanker
About 8 ft above
Drain dich Bottom
Debris
Cement
Platform
crane
Conrail
L S B
ware house
Abandoned
Alternative
Energy
Trailer
Park
5-45
Electric
Complaint # 03531
(U) Blasdell
7/24/85

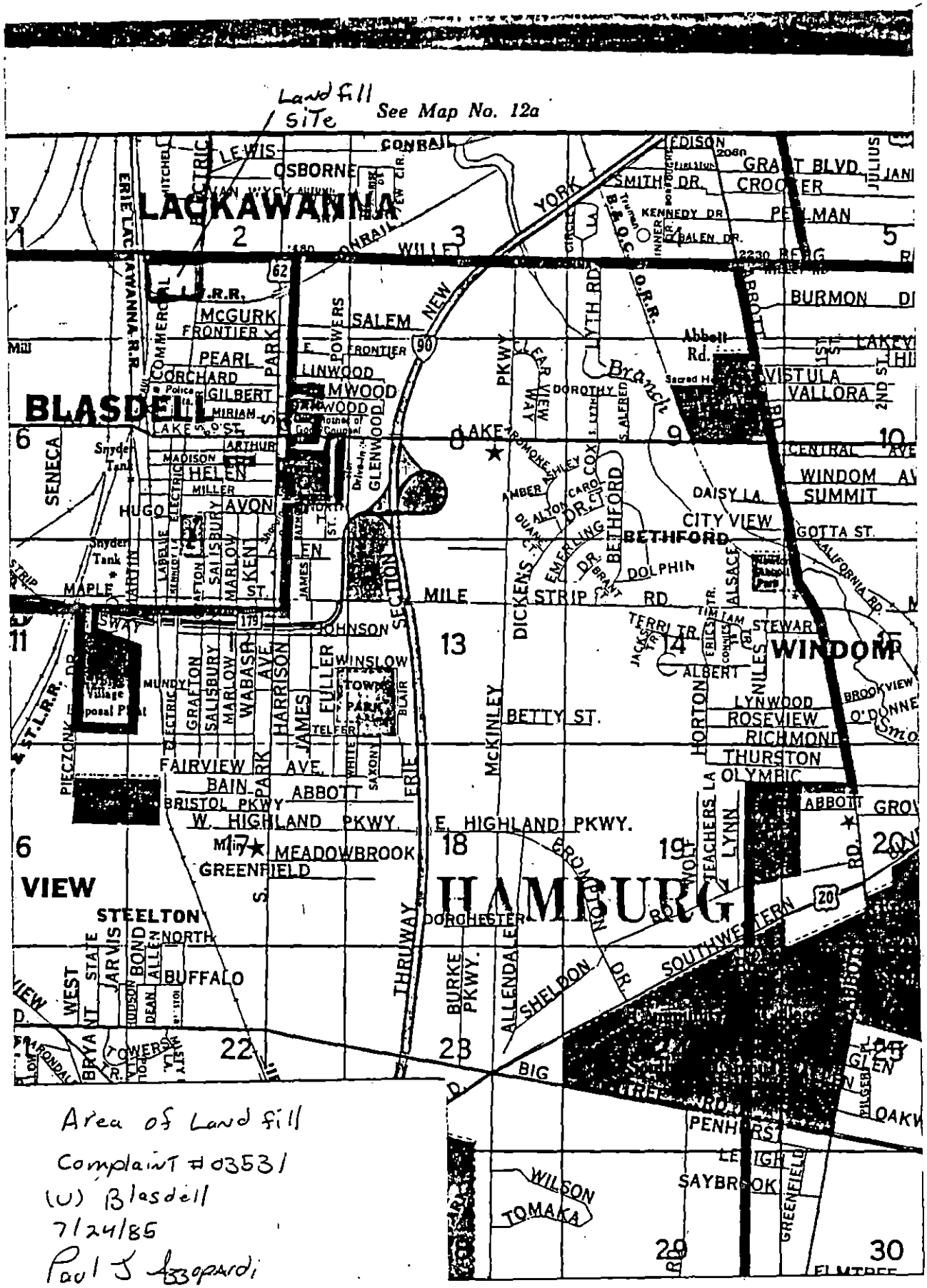


Area of Activity from Air-photography in Red Block

complaint # 03531

(U) Blasdell

7/24/85 Paul J Azzaporol.


Land fill
Site
See Map No. 12a
LACKAWANNA
BLASDELL
HAMBURG
WINDOM
CITY VIEW
BETHFORD
STEELTON
VIEW
CONRAIL
LEWIS
OSBORNE
McGURK
FRONTIER
SALEM
PEARL
CORCHARD
GILBERT
MIRIAM
LAKE
ARTHUR
MADISON
HELEN
MILLER
AVON
HUGO
SENECA
MAPLE
JOHNSON
MILE STRIP RD
SECTION
WINSLOW
TOWN PARK
FAIRVIEW AVE
BAIN
ABBOTT
BRISTOL PKWY
W. HIGHLAND PKWY.
E. HIGHLAND PKWY.
MEADOWBROOK
GREENFIELD
NORTH
BUFFALO
DOROTHY
ALBERT
BETTY ST.
ROSEVIEW
RICHMOND
THURSTON
OLYMPIC
LYNWOOD
DAISY LA.
SUMMIT
GOTTA ST.
DOLPHIN
DORCHESTER
SHELDON DR.
SOUTHWESTERN
PENHURST
SAYBROOK
WILSON
TOMAKA
OAKW
Area of Land fill
Complaint #03531
(U) Blasdell
7/24/85
Paul J Aggopardi

REFERENCE NO. 6

recycled paper ecology and environment

INTERVIEW ACKNOWLEDGEMENT FORM

SITE NAME	: LSB Warehouse	I.D. NUMBER	: 915132
PERSON CONTACTED	: Jack Gilbert Town Engineer	DATE	: 9/3/87
AFFILIATION	: Hamburg Water Dist.	PHONE NUMBER	: 649-6111
ADDRESS	: 5-6100 S. Park Ave., Hamburg, NY	CONTACT PERSON(S)	: P. Gunther
TYPE OF CONTACT	: Telephone		

INTERVIEW SUMMARY

Most everyone living in Blasdell and Hamburg utilizes ~~City of Buffalo municipal water.~~ water furnished by Erie County Water Authority The closest private well to either LSB Warehousing or Snyder Tank is a family residence at ~~the intersection of South Park Ave. and~~ 3742 Mile Strip Road.

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: J J Gilbert Jr Date: 9/3/87

REFERENCE NO. 7

recycled paper

ecology and environment

INTERVIEW ACKNOWLEDGEMENT FORM

SITE NAME	:	LSB Warehouse	I.D. NUMBER	:	915132
PERSON CONTACTED	:	Allen Strycharz Senior Engineering Aide	DATE	:	9/3/87
			PHONE NUMBER	:	827-6425
AFFILIATION	:	Lackawanna Water Dist.	CONTACT PERSON(S)	:	P. Gunther
ADDRESS	:	714 Ridge Rd. Lackawanna, NY 14218			
TYPE OF CONTACT	:	Telephone			

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: A. Allen Strycharz Date: 9/17/87

REFERENCE NO. 8

recycled paper ecology and environment

INTERVIEW ACKNOWLEDGEMENT FORM

SITE NAME	: LSB Warehouse Republic Steel	I.D. NUMBER	: 915132 915047
PERSON CONTACTED	: Joe Evans	DATE	: 8/27/87
AFFILIATION	: NYSDEC-Div. of Fish & Wildlife	PHONE NUMBER	: 716-372-0888
ADDRESS	: 128 South St., Olean, NY	CONTACT PERSON(S)	: Gene Florent
TYPE OF CONTACT	: Telephone		

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

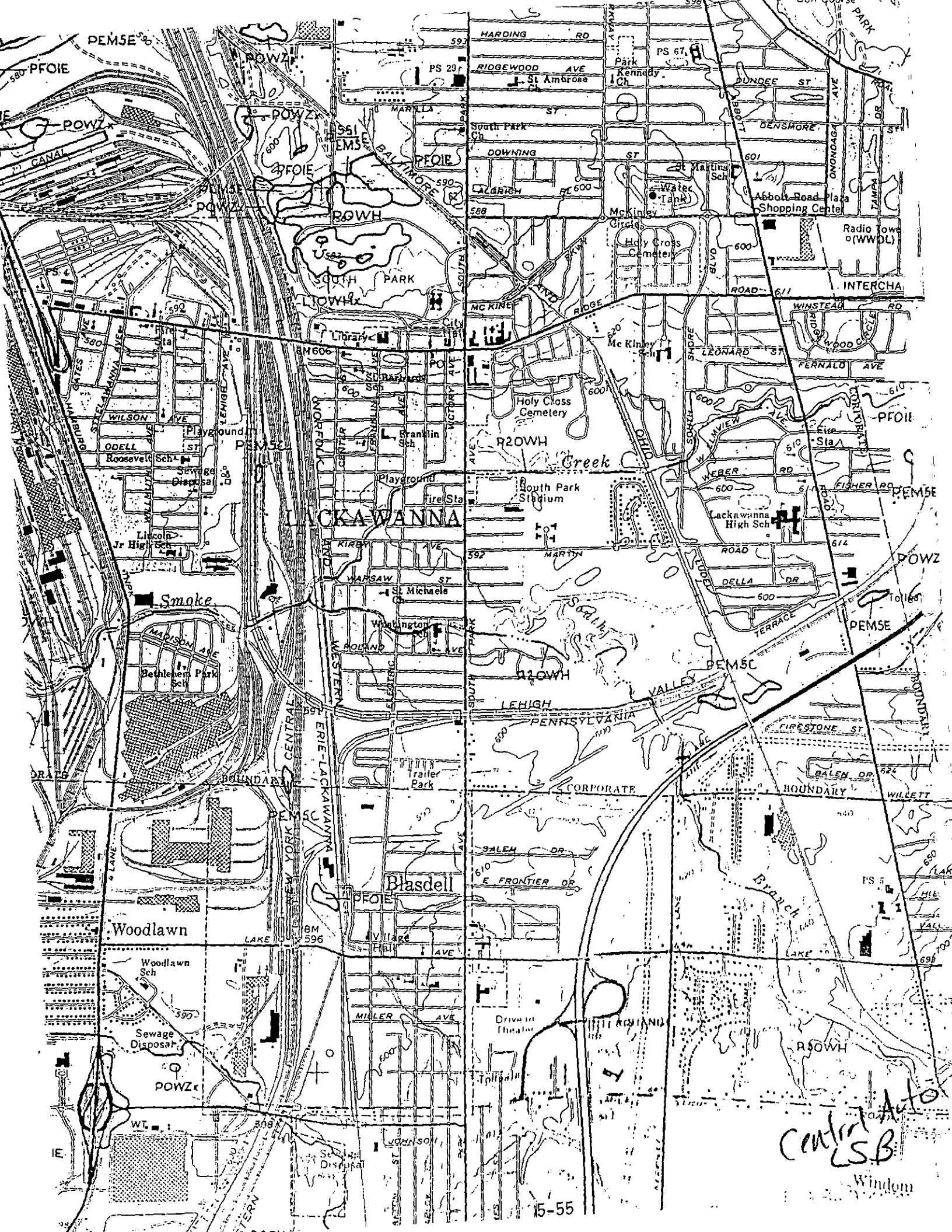
There has been no stocking in any of these streams in any section. Joe Evans also stated that it has been proposed to change all Class D streams to Class C.

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


LACKA-WANNA
Blasdell
Woodlawn
Smoke
South Park
Holy Cross Cemetery
Lackawanna High Sch
South Park Stadium
Abbott Road Plaza Shopping Center
Radio Tower (WWDL)
Water Tank
Trailer Park
Drive-in Theatre
Sewage Disposal
Roosevelt Sch
Lincoln Jr High Sch
Bethlehem Park Sch
Woodlawn Sch
Franklin Sch
St Barnard Sch
St Michaels
St Ambrose Ch
South Park Ch
Kennedy Park
McKinley Sch
Playground
Fire Sta
Library
Village Hall
Creek
LEHIGH VALLEY
PENNSYLVANIA
ERIE-LACKAWANNA
NEW YORK CENTRAL
WESTERN
BOUNDARY
CORPORATE
INTERCHA
R2OWH
POWZ
PEM5C
PEM5E
PFOIE
Control
SB
Windom

LSB, Snyder

FRESHWATER WETLAND CLASSIFICATION

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

~~City~~, ~~Town~~, Village) Blasdell (T) Hamburg) Wetland name _____ Inspection Dates _____

County Erie Wetland no. BII-4 DEC no. _____ No. of sheets attached _____

Quad. name Buffalo SE. UTM Coord. 4744700mN. 184600mE. Preparer _____ Date _____

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 ✓

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 X

25. Emgt. marsh, pur. loosestrife & or phragmites min. 66% of cover
(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 occu
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 tot town acreage
39. Publicly owned land open to public use

5-57

AREA STRUCTURAL GROUPS

___% Herbaceous-emgt. marsh, wet meadow min. 25% of wetland.
___% Woody - deciduous, coniferous, shrub swamp min. 25%.
___% Water - submergent, floating veg., wetland open water min. 15%

COVERTYPE

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

single covertype is of at least 50% of the wetland
add up all the separate covertype areas in each class
sign the wetland to the class representing the largest
tion 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 50± acres determined using an acre grid overlay.

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

Wetland within Urbanized Area as determined using 1970 Bureau of Commerce Census of Housing Block Statistics report.

This wetland is near the Tifft Farm Nature Preserve.

recycled paper

ecology and environment

STRUCTURAL GROUPS

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

COVERTYPE

LY?	AREA	COVERTYPE (min. 50% of area)
	___%	Wet Meadow
	___%	Emergent marsh
	___%	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.

5-69		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

COMMENTS

Wetland area is 17± acres. The most all other information is from Bureau of Wildlife Wetla Inventory Data (Air Photo Interpretation Sheet an Map portion are attached

Bureau of Wildlife Wetland Inventory Map and Tentative Regulatory Map show the sa boundary for this wetland.

Covertypes were broken up using instructio for mixture classification useage. (50% dominant covertype < 66%) Timed dominant covertype = 60%

WETLAND CLASSIFICATION FIELD DATA SHEET

etland Name Proctnal + Hatra Wetland

ad Buffalo SE

les ____ dir ____ from ~~Town~~ In City of Lackawanna

unty Erie

wn Lackawanna & Hamburg

reage 35

WETLAND VEGETATION COVERTYPES
(approximate percentage)

Wet meadow	____ %
Emergent marsh	55 %
Deciduous swamp	33 %
Coniferous swamp	____ %
Shrub swamp	12 %
Submergent &/or floating	____ %
Wetland open water	____ %

COVERTYPE GROUPS

& 2.	=	65 %
& 4. & 5.	=	35 %
& 7.	=	____ %

do not enter totals less than 15%)

OTHER CLASSICAL ASSOCIATIONS

___ Classic kettlehole bog

___ Associated with open water

(name) _____

___ _____

___ _____

___ _____

SOIL TYPES

Not determined at time of report

HUMAN INFLUENCE - DEGRADATION

- Conrail Tracks dissect the wetland
- Existing Landfill in a portion of the wetland

TOTAL ALKALINITY

(1) ____ (2) ____ (3) ____

(4) ____ (5) ____ mean ____

Test performed by _____

Not enough water to sample _____

iles: — dir — from In Lackawanna and Bleasdell

opo quad Buffalo SE

ounty Erie

own Hamburg & City of Lackawanna

egion 9 ☒ Natural ☐ Artificial

nterspersion 6 Vegetative Cover 95 %

-24" depth 40-50 %

ETLAND TYPES

Inland Fresh

- Seasonally flooded basins/flats ____%
- Fresh meadows ____%
- Shallow fresh marshes ____%
- Deep fresh marshes 55 %
- Open fresh marshes ____%
- Shrub swamps 12 %
- Wooded swamps 33 %
- Bogs ____%

Coastal Fresh

2. Shallow fresh marshes ____%
3. Deep fresh marshes ____%
4. Open fresh water ____%

Coastal Saline

5. Salt flats ____%
6. Salt meadows ____%
18. Regularly flooded salt marshes ____%
19. Sounds and bays ____%

EGETATIVE CLASSES

Trees

1. Live deciduous trees 33 %
2. Live evergreen trees ____%
3. Dead trees ____%

Shrubs

4. Tall slender shrubs 12 %
5. Bushy shrubs ____%
6. Low compact shrubs ____%
7. Low sparse shrubs ____%

9. Dead shrubs ____%

Emergents

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

Surface Vegetation

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

Submergents

18. Submergents ____%

* *

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: J. Snider

Title: Sr. Wildlife Biologist

Date: 9/13/79 Time: 9 a.m. - noon

35 acres

Wetland Soils: Info not obtain at time of report

REFERENCE NO. 10

recycled paper

ecology and environment

CONTACT REPORT

AGENCY	:	USDA SOIL CONSERVATION SERVICE
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 ASCS has fewer soil types classified as prime ag. lands than does the New York State classification system. New York State classifies all ASCS 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 ASCS. 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
Buffalo - Hopkins	> 2 miles	-
E.I. Dupont	> 2 miles	-
FMC Corp.	> 2 miles	-
Whiting Development Corp.	0	Collamer silt loam, Ag. land adjacent to site
Republic Steel	> 2 miles	-
Snyder Tank Co.	> 2 miles	Varysburg gravelly loam
Village of Springville	300 ft.	Varysburg gravelly loam
James Fox site	300 ft	Manlius shaly silt loam
Gutenkist State	1600 ft.	Farnham shaly silt loam
ASCS	6015 ft.	Blasdell shaly silt loam
Eden Sanitation Services	4950 ft.	Niagara silt loam (note: this land is only 2 a
George Schreiber	700 ft.	Palmyra gravelly loam
Clarence Ready Mix	1700 ft.	-
Central Auto Wrecking	> 2 miles	Hamlen silt loam
Hi View Terrace	5280 ft.	-
Tift and Hopkins	> 2 miles	-
LSB Warehouse	> 2 miles	-
Berns Metals	> 2 miles	

REFERENCE NO. 11

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. 68Ø23970
Project Officer: Russell Kinerson
Task Manager: Loren Hall

Prepared by:

GENERAL SCIENCES CORPORATION
8401 Corporate Drive
Landover, Maryland 20785

Submitted: December 1, 1986

SITE	Pop. (1 mile = 1.61 km)	# Δ's	Pop. (2 mile = 3.33 km)	# Δ's	Pop. (3 mile = 5 km)	# Δ's
FORMSO	3024	1190	0	0	2836	1737
MOENCH	0	0	1369	629	3973	1316
TERWILLINGER	~~825~~	~~810~~	1583	716	0	0
NORMAN RODGERS	~~220~~	~~50~~	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
64 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	11680	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 BRICK	2351	893	38415	15158	41041	17067
DUSSAULT FOUNDRY	16231	6856	12699	4525	7114	2367
SKW ALLOYS	5540	2157	28495	10667	24264	10503
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	5993	37186	12641
BERN METAL	21942	11711	62578	31979	105668	45344
FMC CORP	782	318	17331	6686	44012	17829

* POPULATION IS NOT ie. BOEHMER PROPERTY

0-1 mile = 1174

1-2 mile = 640

2-3 mile = 977

HAVE TO SUM FOR T... WITHIN ENTIRE RIN... INCREASES OUTWARD

5-67

POPULATION

SITE	1 mile Pop.	1 mile *⌂'s	2 mile Pop.	2 mile *⌂'s	3 mile Pop.	3 mile *⌂'s
CIREIBER	1994	597	2919	913	3558	1333
VENKIST	1151	346	4731	1532	6046	2012
YDER TANK	2998	1079	13524	4755	25942	9798
EN SANITATION	6	0	5679	1948	3909	1350
NES FOR	2292	854	1369	555	4763	2010
- HOPKINS LANDFILL	18596	6674	46674	18217	53208	23583
MND SHAMROCK	8308	3454	21526	7747	3668	1191
S STEEL	10995	4320	36207	14154	28361	10375

REFERENCE NO. 12

CONTACT REPORT

AGENCY:	NYSDEC Region 9 Fresh and Wildlife Habitats
ADDRESS:	60 Delaware 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, N [illegible]

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:

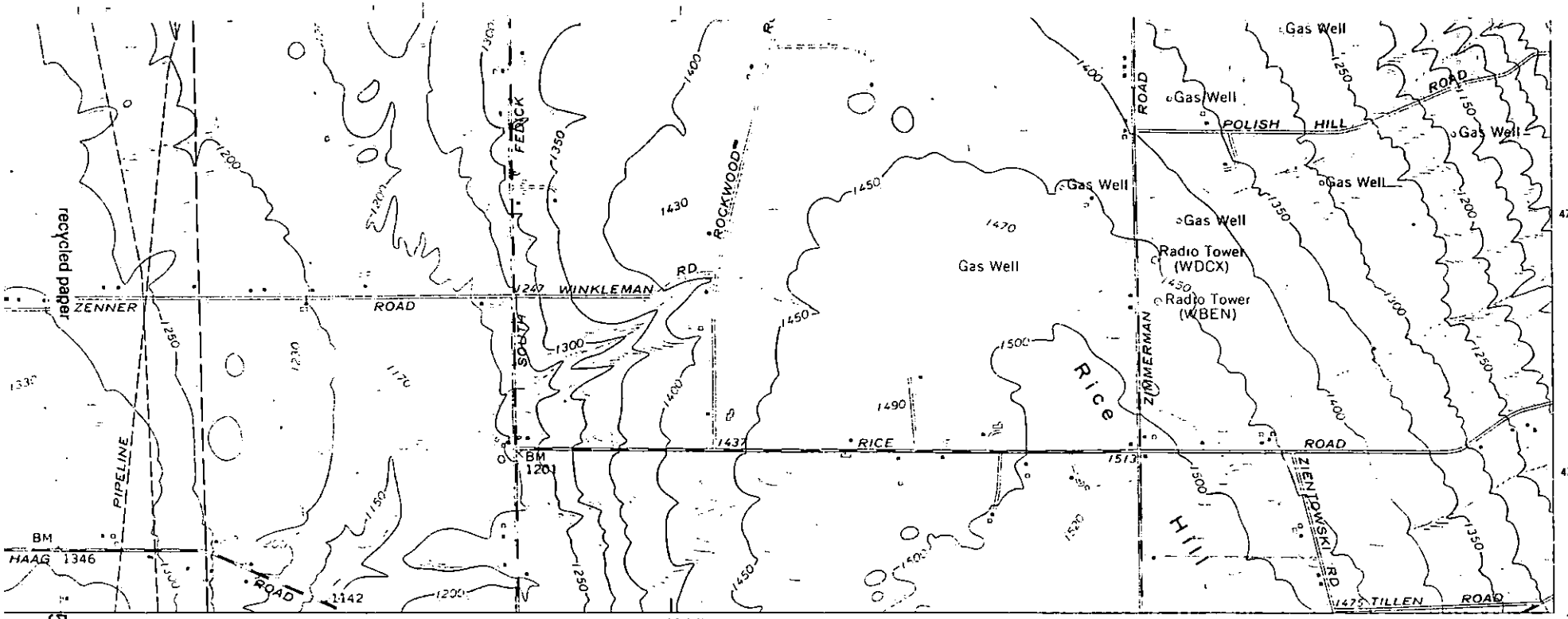
1) Snyder tank
2) Springville

All other sites are <u>not</u> in the 100 year floodplan.

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

REFERENCE NO. 13



SCALE 1:24000

1000 2000 3000 4000 5000 6000 7000 FEET

5 0 1 KILOMETER

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION

Heavy-duty — Light-duty

Medium-duty — Unimproved dirt

Interstate Route — U.S. Route — State Route

NEW YORK

QUADRANGLE LOCATION

HAMBURG, N. Y.

NE/4 EDEN 15' QUADRANGLE
N4237.5—W7845/7.5

1965

AMS 5269 III NE—SERIES V821

S MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
.E BY U. S. GEOLOGICAL SURVEY, WASHINGTON, D. C. 20242
CRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

REFERENCE NO. 14

LABORATORY NOTEBOOK

ECOLOGY & ENVIRONMENT, INC.

5-76

Project No.
Book No

7/29/87 LSB WAREHOUSE

Arrived onsite at 1525
Gene Florestal
Dennis Sutton

1529 Photo's
Frames 8, 9 Front of LSB warehouse

South side of driveway, scattered Debris (chairs, stove, wood

Behind warehouse
- Furniture debris
- wood debris
- metal debris
- tires
- cars

Warehouse is abandone
- empty with scat
debris

1540 Photo
Frame 10 Back of warehouse

other Debris
- 2 drums (ELASTIGUM ROOF COATING 54 GAL)
- oil Heating tank

1546 Photos
FRAMES 11, 12 Debris in back of LOT
Frame 13 Drums

Tall weeds on South side

Occupied Trail Park immediately to the North

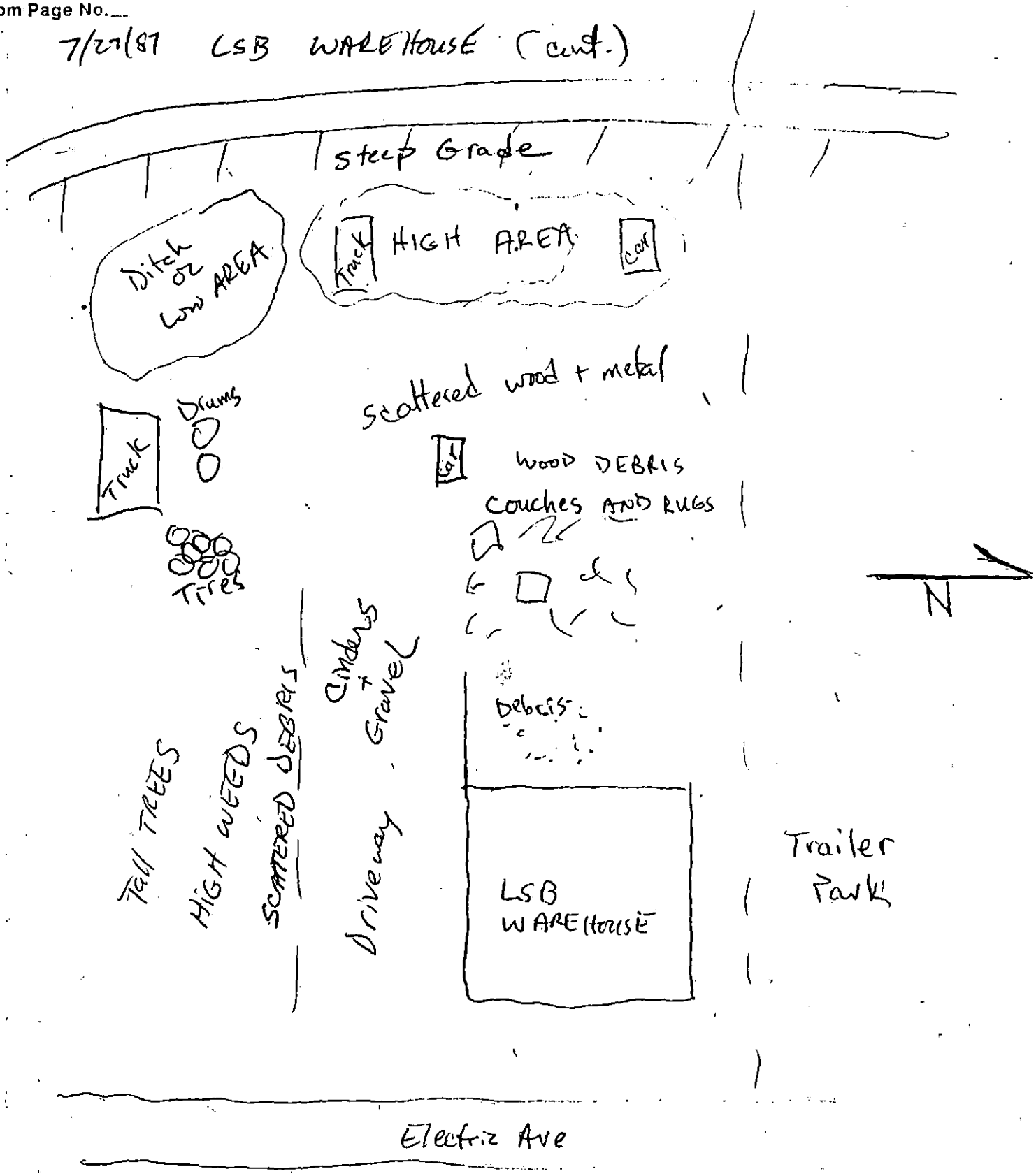
Site Not secured with fence

To Page N

Witnessed & Understood by me: Gene Florestal Date
Recorded by: 7/29/87 Date

From Page No.

7/27/87 LSB WAREHOUSE (cont.)



Departed Site at 1600

Witnessed & Understood by me. Date

Prepared by 7/27/87

The National Register of Historic Places

1976

William J. Murtagh *Keeper of the National Register*

Ronald M. Greenberg *Editor in Chief*

Sarah A. Marusin *Editor*

Maricca J. Lutz *Photo Editor*

U.S. Department of the Interior National Park Service Washington, D.C.

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5-80

Contents

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 t late-18th and early-19th C. *Private.*

Rhinebeck. **DELAMATER, HENRY, HOUS** 44 Montgomery St., 1844, Alexander Jacks Davis, architect. Frame, board-and-batten si ing; modified rectangle; hipped roof with cr gable, each end with finial; interior chimne carved scalloped bargeboards; 3 front Tud arched openings, 1-story 3-bay-wide porch wi carved flat posts and brackets forming Tud arches, balustraded deck; center 2nd story a attic, each with rectangular window under bli pointed arch with tracery; each side with b window; interior designed by architect to hi monize with exterior design; rear veranda e closed and extended; board-and-batten carria house. Excellent example of Gothic Revi cottage design advocated by Alexander Jacks Davis and Andrew Jackson Downing. *Private.*

Sylvan Lake vicinity. **SYLVAN LAKE ROC SHELTER,** 5000 B.C.–700 A.D.. Undisturb stratified rock shelter; served as winter car for Archaic hunters beginning c. 5000 B.C. E cavations between 1964 and 1966 revealed n merous remains of the Sylvan Lake Culture (2500 B.C.), elements of the Susquehan Tradition (c. 1500–1000 B.C.), and Middle a Late Woodland deposits. *Private.*

ERIE COUNTY

Buffalo. **ALBRIGHT-KNOX ART GALLER** 1285 Elmwood Ave., in Delaware Pa 1900–1905, Edward B. Green, architect. P tially marble faced, 2 stories, modified H shap gabled roof sections; E pedimented Ionic e trance portico flanked by colonnaded wi ending in pavilions, each with caryatids by 'A gustus Saint Gaudens; W semielliptical lo porch flanked by colonnaded sections; inter sculpture courtyard. Neo-Classical Reviv Built to permanently house the collections the Buffalo Fine Arts Academy. *Private.*

Buffalo. **BUFFALO STATE HOSPITAL,** 4 Forest Ave., 1871–1890, Henry Hobs Richardson, architect. Random rough ashl sandstone, brick; 3 1/2 stories above high ba ment, main block with 5 W wards and 2 wards, gabled and hipped roof sections, gabl and flared hipped dormers, front entran recessed under 3-bay arcade flanked by p jecting pavilion; 2 main-block towers w steeply hipped roofs, shed dormers, and cor turrets; machicolations, rectangular and s mental arched windows, wings with projecti cross-gable sections; 3 wards removed, 196 4 service buildings; site plan by Frederick L Olmsted. Richardsonian Romanesque elemen Early development example of Henry Hobs Richardson's work. *State:* HABS.

Buffalo. **DELAWARE AVENUE HISTOR DISTRICT,** W side of Delaware Ave. betwe North and Bryant Sts., 19th–20th C.. Rema ing section of elite residential area of predor nantly turn-of-the-century grand dwellin Era's Neo-Classical and Georgian Revival styl

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 Georgian Revival 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*

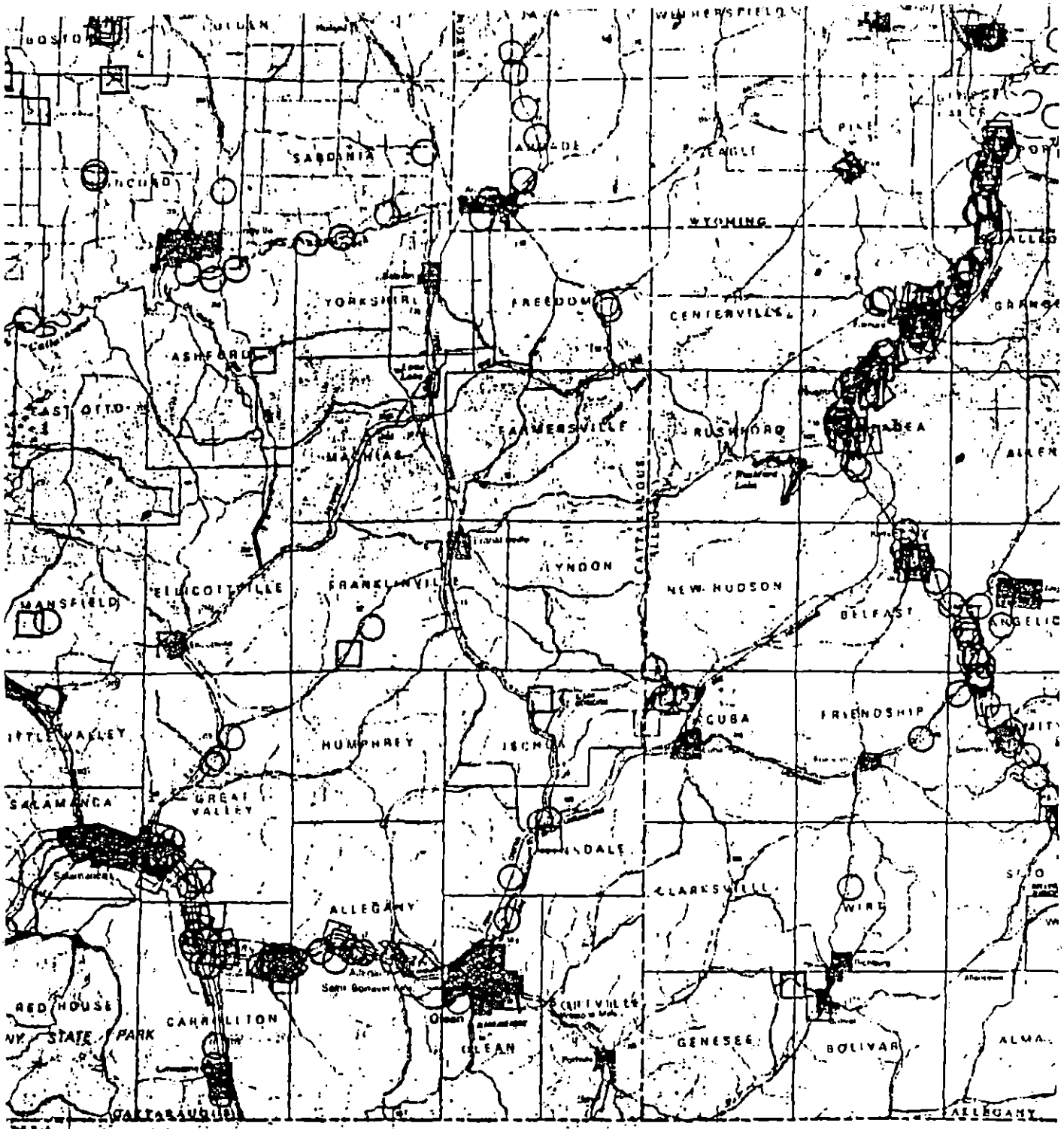
Crown Point. **FORT ST. FREDERIC,** Jct. of NY 8 and 9N, 1731. Limestone ruins of fort established by French to guard Lake Champlain route into Canada. Abandoned in 1759 after Lord Jeffrey Amherst captured nearby Fort Carillon, which the British renamed Fort Ticonderoga (see also Fort Ticonderoga, NY), 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.*



NEW YORK STATE ARCHAEOLOGICAL SITE LOCATIONS

☐ 1 mile diameter of NYS Museum Archaeological site file

○ NYS Historic Preservation archaeological site file

OVERLAY FOR NYS MAP 1:250,000
WEST SHEET

BASE MAP BY NYS DEPT. OF TRANSPORTATION
JULY 1981, UPDATED 3/86 by HARLGEN
ARCHAEOLOGICAL ASSOCIATES

SCALE 1:250,000

REFERENCE NO. 16

LTV STEEL COMPANY
BUFFALO, NEW YORK
(EPA ID NYDOOO813402)

CLOSURE PLAN
FOR

THE MARILLA STREET
LANDFILL
BOF DUST
AREA

NOVEMBER 7, 1985

NOTE: WELLS ABONDONED DUE TO VANDALISM

EARTH DIMENSIONS, INC.

Test Borings and Logs
797 Center Street • East Aurora, New York 14052 • (716) 655-1717

HOLE NO. 1 SURF. ELEV. 58(

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 7/1

DEPTH (feet)	SAMPLE NO.	BLOWS ON SAMPLER				N	DESCRIPTION & CLASSIFICATION	WELL	WATER TABLE & REMARKS
0	1	5	8	9	12	17	Slightly moist dark brown silt loam (SANDY-SILT) topsoil, granular 0.9		Sample #1 bridges con- tact. 2.0
							Moist distinctly mottled yellowish brown coarse silt loam (SANDY-SILT), friable, nonplastic		
							- - - - grades downward to - - - - - - 3.0		3
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
							- - - - - clear transition to - - - - 6.5		2 wells insta both with 3 sand follow ft. of benton
10	3	8	12	15		27	Moist dark brownish gray silt loam (SANDY-SILT), firm, slightly plastic to nonplastic, massive structure		Mostly silty sediments to of boring.
15	4	8	22	20		42			
							- - - - - clear transition to - - - 16.0		17.0
							5-87		18.0
20	5	3	4	4		8	Extremely moist dark gray silty clay (CLAYEY-SILT), soft, plastic and cohesive 20.0		No water enc

Bore completed at 20.0 feet.

2 inch PVC pipe
Bentonite
Well Screen
Sand Pack

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

SAMPLE NO.	BLOWS ON SAMPLER 0"/6"	6"/12"	12"/18"	18"/24"	N	DESCRIPTION & CLASSIFICATION	WELL	WATER TABLE & REMARKS
						Black extremely moist rubble and muck 0.4	Bentonite	
						Hardened slag fill		2.0 / 2.0
						3.9	Sand	3.0
1	5	2	2		4	Extremely moist to wet black silty muck soil, soft with stem and root matter		5.0 / 5.0
2	2	5	15		20			
3	7	12	15		27	7.5		
4	6	8	12		20	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	2 inch PVC pipe	
						- - - clear transition to - - - - 11.0		
5	5	6	7		13	Extremely moist to wet dark brownish gray silty clay (CLAYEY-SILT), soft, plastic 20.0	Bentonite	
						Wet dark grayish brown silty clay loam (CLAYEY-SILT) with 10% firm and medium subangular dolomitic gravel, soft, plastic to slightly plastic 22.5		
6	4	3	3		6	Moist dark grayish brown heavy silt loam (CLAYEY-SILT) with 15% dolomitic gravel, very firm in place, slightly plastic		21.0 / 21.5
7	40	44			84	5-88	Well screen / Sand Pack	24.0
						Boring completed at 24.0 feet.		

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 " WT. FALLING 30

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 of northern pond)

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
						Wet mixed industrial fill including cindery flyash, slag and brick fragments, loose 3.5		
						Wet black organic rich silt loam (SANDY-SILT), soft, nonplastic 4.5		Original sur zone.
1	3	3	3		6	Wet greenish to yellowish brown coarse silt loam (SANDY-SILT), very friable, nonplastic 6.5		Industrial f to 3.5 ft. ove silty lake se ments to 12.(over loamy den glacial till + 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	2 inch PVC pipe	
						- - - - - grades downward to - - - - -	Bentonite	
3	2	2	3	4	5	Extremely moist reddish to grayish brown silty clay (CLAYEY-SILT) with thin silt lenses, soft to medium consistance, plastic, cohesive 12.0		11.0
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	12.0 Auger resis noted at 12 ft.
5						Weathered gray fissile shale, thin bedded 14.0		14.0
						Refusal at 14.0 feet.		Water at surf 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					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		4.0
								5.0
						- - - - grades downward to - - - - - 6.0		
3	11	11	11		22	Extremely moist, poorly downward stratified yellowish brown fine SANDS, loose, nonplastic		7.0
								7.5
						9.5		
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		
5	2	2	3		5	Extremely moist dark brownish gray silty clay (CLAYEY-SILT), soft, plastic with occasional fine gravel fragments		
						19.0		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		20.0
						21.5		22.0
7	59	47				Weathered shale bedrock, fissile, thin bedded		22.5
						22.5		
						Boring completed at 22.5 feet		

WELL: 2 inch PVC pipe; Bentonite; Well Screen; Sand Pack

W: 2 inch PVC pipe; Well

Industrial fi
2.0 ft. over
water sorted
sands at 9.5
ft. over silt
lake sedimen
to 19.0 ft. o
dense loamy
cial till to
of boring.

Water
below surfac
completion

recycled paper ecology and environment

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		
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
5	2	3	3	4	6	5-91 20.0		18.0

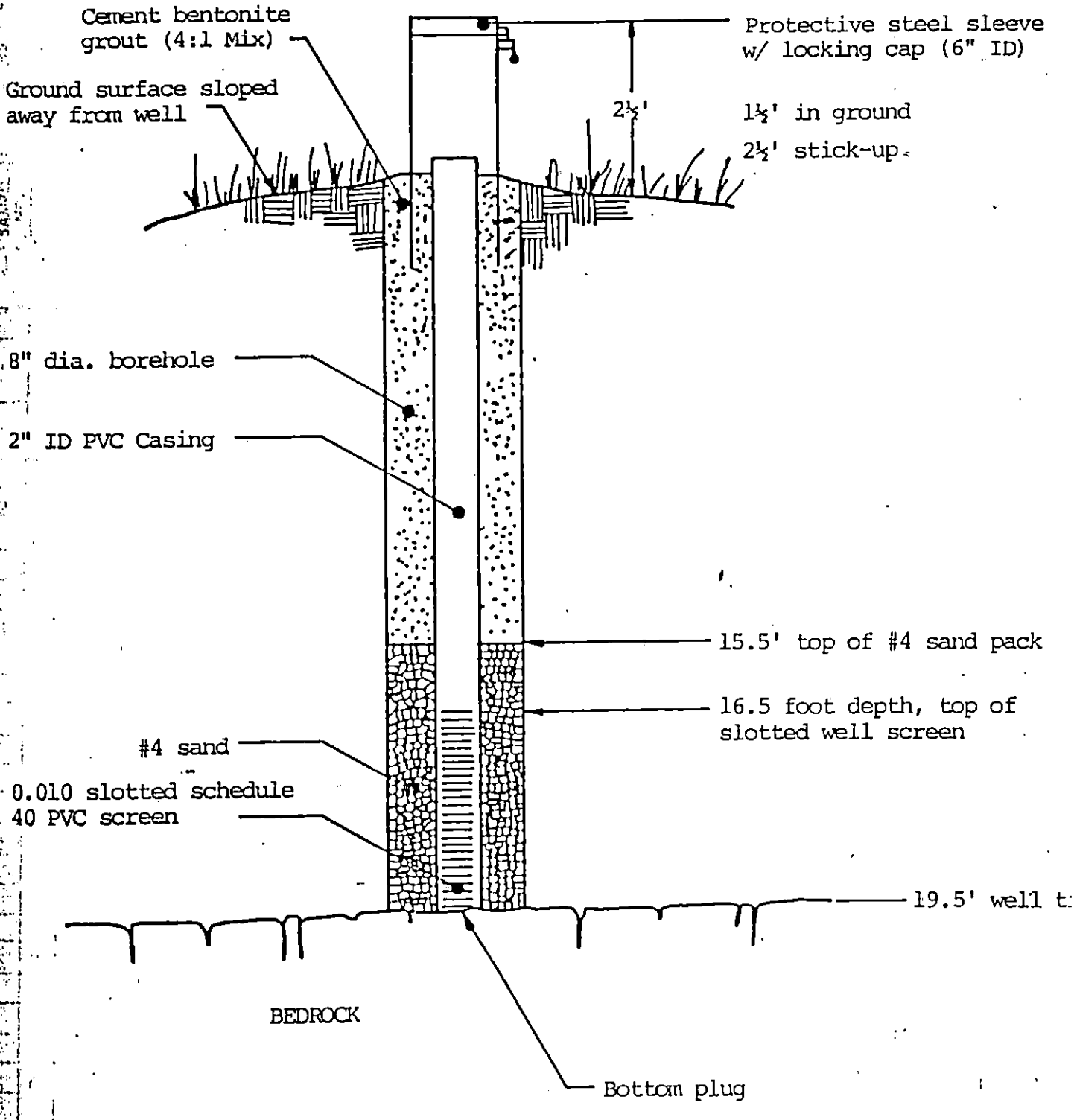
2 inch PVC pipe; Bentonite; Well Screen; Sand Pack

No water at completion.

Original sur... on edge of d... pressional ... along Marili... Street.

Silty lake s... ments to the ... of bore.

Boring completed at 20.0 feet.



MONITORING WELL DETAIL
FOR WELL NO. 4A

EARTH DIMENSIONS, INC.

Test Borings and Logs
East Aurora, New York 14052 • (716) 655-1717

MONITORING WELLS 6A & 6B — 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
	1	12				
			22			92
				70		
5	2	9				
			14			37
				23		
					34	
	3	9				
			12			18
				6		
					5	
10	4	6				
			11			28
				17		
					20	
	5	2				
			9			25
				16		
					23	
15	6	6				
			19			46
				27		
					32	

DESCRIPTION & CLASSIFICATION

Moist black gravelly sandy loam (SILTY-SAND) fill with 15 to 40% slag and cindery fill, very dense — 3.5

Extremely moist black gravelly sandy loam (SILTY-SAND) fill with 15 to 40% slag and cindery fill, dense — 7.0

Moist to extremely moist black silt loam (CLAYEY-SILT) original topsoil, compact — 9.0

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

- - - - - clear transition to - - - 12.0

Extremely moist faintly mottled olive brown silty clay loam (CLAYEY-SILT), very stiff, thinly laminated with very thin coarse silt lenses — 13.0

- - - clear transition to - - - 13.0

Moist faintly mottled olive brown silty clay loam (CLAYEY-SILT), hard, thinly laminated with occasional very thin coarse silt lenses

WELL 6A

Two inch inside diameter PVC pipe

Cement/bentonite grout — 8.5

(1) — 9.5 to 11.0

#4 sand — 11.0 to 13.0

15.2

16.2

WATER TABLE & REMA

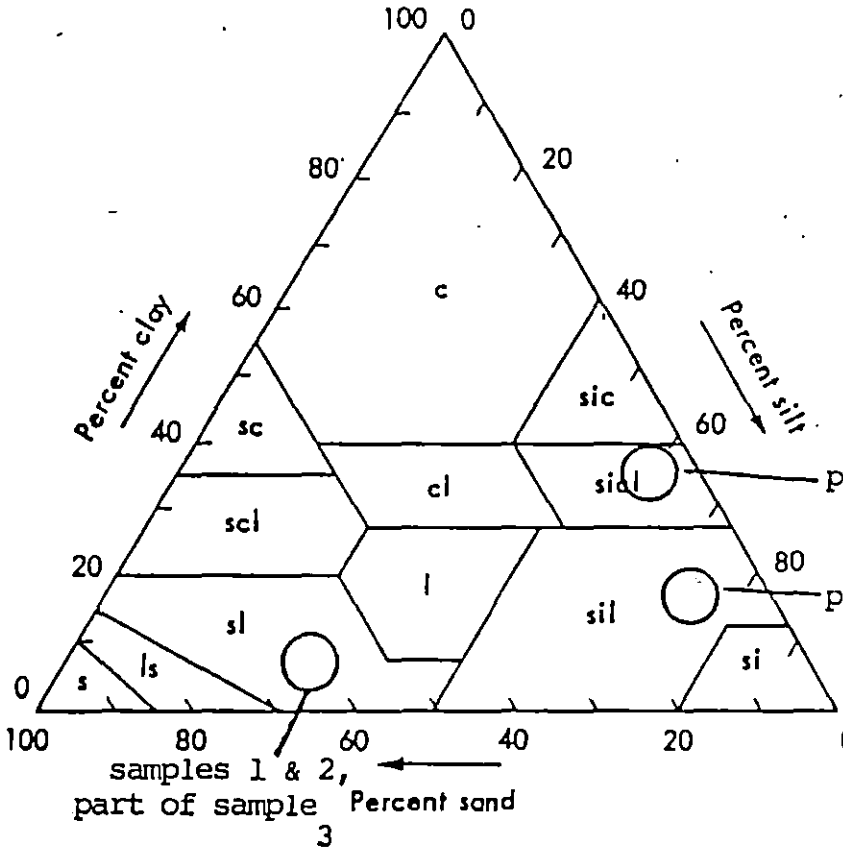
Soil and slaggy fill to 7.0 feet over silty lake sediment to 12.0 feet over clayey lake sediment to end of boring.

(1) Granular bentonite

Cont. on sheet 2..

4G79b

MONITORING WELLS 6A & 6B



c	Clay	scl	Sandy clay loam
si	Silt	sicl	Silty clay loam
s	Sand	cl	Clay loam
l	Loam	sil	Silt loam
sc	Sandy clay	sl	Sandy loam
sic	Silty clay	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

EARTH DIMENSIONS, INC.

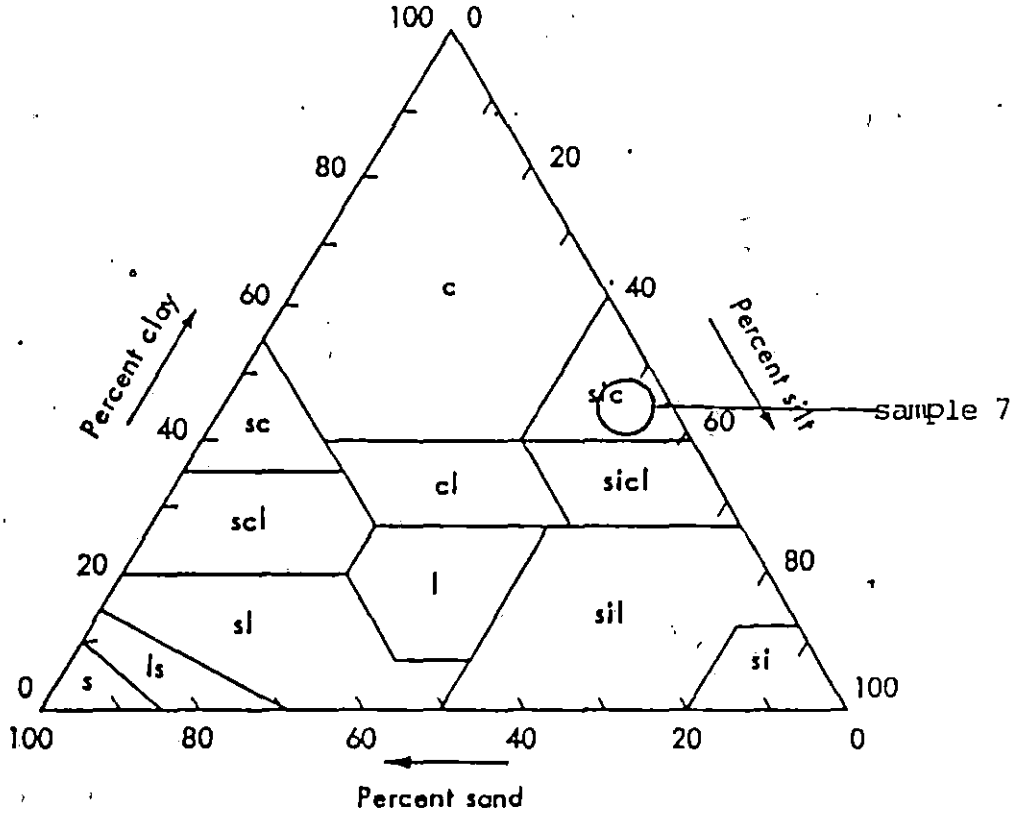
Test Borings and Logs
East Aurora, New York 14052 • (716) 655-1717

MONITORING WELLS 6A & 6B continued — SURF. ELEV. _____

PROJECT: Monitoring well installation — LOCATION: Landfill area east side of
4G79b: Republic Steel landfill, South Buffalo, N.Y. — Hopkins Road
CLIENT: Malcolm Pirnie, Inc. — DATE STARTED 8/16/84 COMPLETED 8/16/8

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		
20	7	WR					- - - - grades downward to - - - 19.0		WR - sampler penetration with weight rods only.
			5			13		2" ID PVC pipe	
				8					
					11		Wet dark gray silty clay (CLAYEY-SILT), stiff, thinly laminated	# 4 size sand	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									

MONITORING WELLS 6A & 6B continued



c	Clay	scl	Sandy clay loam
si	Silt	sicl	Silty clay loam
s	Sand	cl	Clay loam
l	Loam	sil	Silt loam
sc	Sandy clay	sl	Sandy loam
sic	Silty clay	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. 17

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
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: 915132

II. SITE NAME AND LOCATION

01 Site Name (Legal, common, or descriptive name of site)	02 Street, Route No., or Specific Location Identifier				
LSB Warehousing	1995 Electric Avenue				
03 City	**04 State**	**05 Zip Code**	**06 County**	**07 County Code**	**08 Cong. Dist.**
Blasdell	NY	14219	Erie	029	38

09 Coordinates Latitude	Longitude	10 Type of Ownership (Check one)
42 48 12.1	078 49 35.0	[X] 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
7 / 29 / 87 (Month Day Year)	[ ] Active [X] Inactive	1976 (Beginning Year) 1984 (Ending Year) [X] 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 (Name of Firm) [ ] G. Other _____ (Specify)

05 Chief Inspector	06 Title	07 Organization	08 Telephone No.
Gene Florentino	Geologist	E & E	(716) 684-8060
09 Other Inspectors	**10 Title**	**11 Organization**	**12 Telephone No.**
Dennis Sutton	Geologist	E & E	(716) 633-9881
			( )
			( )
			( )
			( )

13 Site Representatives Interviewed	14 Title	15 Address:	16 Telephone No.
James Prattico	Asst. Sec.	Manufacturers Hanover PO Box 1914, Rochester, New York	(716) 987-6749
			( )
			( )
			( )
			( )

17 Access Gained By (Check one)	18 Time of Inspection	19 Weather Conditions
[X] Permission [ ] Warrant	15:25	Sunny, temperatures in mid 80s

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.J. Farrell		E & E	(716) 684-8060	9 / 10 / 87 (Month Day Year)

POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT

PART 2 - WASTE INFORMATION

I. IDENTIFICATION	
01 State: NY	02 Site Number: 915132

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 Physical States (Check all that apply)

- [ ] A. Solid
- [ ] B. Powder, Fines
- [ ] C. Sludge
- [X] D. Other: Unknown (Specify)
- [ ] E. Slurry
- [ ] F. Liquid
- [ ] G. Gas

02 Waste Quantity at Site (Measure of waste quantities must be independent)

Tons: _____
Cubic Yards: _____
No. of Drums: _____

Unknown

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 volati
- [ ] J. Explosive
- [ ] K. Reactive
- [ ] L. Incompatible
- [ ] M. Not applicabl
- [X] Unknown

III. WASTE TYPE

Category	Substance Name	01 Gross Amount	02 Unit of Measure	03 Comments
SLU	Sludge			Unknown
OLW	Oily waste			
SOL	Solvents			
PSD	Pesticides			
OCC	Other organic chemicals			
IOC	Inorganic chemicals			
ACD	Acids			
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	06 Measure of Concentrati
	Unknown				

V. FEEDSTOCKS (See Appendix for CAS Numbers)

Category	01 Feedstock Name	02 CAS Number	Category	01 Feedstock Name	02 CAS Number
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

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

NYSDEC Region 9 files
Site Inspection

01708

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 State	02 Site Number
NY	915132

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 [ ] A. Groundwater Contamination
03 Population Potentially Affected _____
02 [ ] Observed (Date _____) [ ] Potential [ ] Alleged
04 Narrative Description:

Unknown; no sampling has been completed.

01 [ ] B. Surface Water Contamination
03 Population Potentially Affected _____
02 [ ] Observed (Date _____) [ ] Potential [ ] Alleged
04 Narrative Description:

Unknown

01 [ ] C. Contamination of Air
03 Population Potentially Affected _____
02 [ ] Observed (Date _____) [ ] Potential [ ] Alleged
04 Narrative Description:

No known contamination

01 [ ] D. Fire/Explosive Conditions
03 Population Potentially Affected _____
02 [ ] Observed (Date _____) [ ] Potential [ ] Alleged
04 Narrative Description:

No known fire or explosion hazard

01 [ ] E. Direct Contact
03 Population Potentially Affected _____
02 [ ] Observed (Date _____) [ ] Potential [ ] Alleged
04 Narrative Description:

No known direct contact

01 [ ] F. Contamination of Soil
03 Area Potentially Affected _____ (Acres)
02 [ ] Observed (Date _____) [ ] Potential [ ] Alleged
04 Narrative Description:

Unknown

01 [ ] G. Drinking Water Contamination
03 Population Potentially Affected _____
02 [ ] Observed (Date _____) [ ] Potential [ ] Alleged
04 Narrative Description:

Unknown

01 [ ] H. Worker Exposure/Injury
03 Workers Potentially Affected _____
02 [ ] Observed (Date _____) [ ] Potential [ ] Alleged
04 Narrative Description:

No known injuries

01 [ ] I. Population Exposure/Injury
03 Population Potentially Affected _____
02 [ ] Observed (Date _____) [ ] Potential [ ] Alleged
04 Narrative Description:

No known injuries

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 State NY	02 Site Number 915132

II. HAZARDOUS CONDITIONS AND INCIDENTS (Cont.)

01 [ ] J. Damage to Flora — 02 [ ] Observed (Date _____) [ ] Potential [ ] Alleg
04 Narrative Description:

No known damage to flora

01 [ ] K. Damage to Fauna — 02 [ ] Observed (Date _____) [ ] Potential [ ] Alleg
04 Narrative Description:

No known damage to fauna

01 [ ] L. Contamination of Food Chain — 02 [ ] Observed (Date _____) [ ] Potential [ ] Alleged
04 Narrative Description:

No known contamination of food chain

01 [ ] M. Unstable Containment of Wastes (Spills/Runoff/Standing liquids, Leaking drums) — 02 [ ] Observed (Date _____) [ ] Potential [ ] Alleg
03 Population Potentially Affected _____ — 04 Narrative Description:

Unknown

01 [ ] N. Damage to Offsite Property — 02 [ ] Observed (Date _____) [ ] Potential [ ] Alleg
04 Narrative Description:

No known damage to offsite property

01 [ ] O. Contamination of Sewers, Storm Drains, WWTPs — 02 [ ] Observed (Date _____) [ ] Potential [ ] Alleg
04 Narrative Description:

No known contamination

01 [X] P. Illegal/Unauthorized Dumping — 02 [ ] Observed (Date _____) [ ] Potential [ ] Alleged
04 Narrative Description:

Unauthorized dumping of hazardous waste suspected by Erie County employees as a result of an inspection conducted on 7/16/86.

05 Description of Any Other Known, Potential, or Alleged Hazards

III. TOTAL POPULATION POTENTIALLY AFFECTED Unknown

IV. COMMENTS

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

NYSDEC Region 9 files, site inspection, aerial photos

D1

POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT

PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION

01 State	02 Site Number
NY	915132

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)				
[ ] H. Local (Specify)				
[ ] I. Other (Specify)				
[X] 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	[X] A. Buildings On Site
[ ] B. Piles			[ ] B. Underground Injection	
[X] C. Drums, Above Ground	2	55 gal.	[ ] C. Chemical/Physical	
[ ] D. Tank, Above Ground			[ ] D. Biological	
[ ] E. Tank, Below Ground			[ ] E. Waste Oil Processing	
[ ] F. Landfill			[ ] F. Solvent Recovery	06 Area of Site
[ ] G. Landfarm			[ ] G. Other Recycling Recovery	
[ ] H. Open Dump			[ ] H. Other (Specify)	1.7 Acres
[ ] I. Other (Specify)				

07 Comments: There are 2 55-gallon drums on site, but these drums contain roofing material which is not considered hazardous waste. Erie County DEP employees suspect that a portion of the site may have been used as a temporary landfill.

IV. CONTAINMENT

01 Containment of Wastes (Check one): Unknown

[ ] A. Adequate, Secure [ ] B. Moderate [ ] C. Inadequate, Poor [ ] D. Insecure, Unsound, Dangerous

02 Description of Drums, Diking, Liners, Barriers, etc.

V. ACCESSIBILITY

01 Waste Easily Accessible: [ ] Yes [ ] No

02 Comments:

Unknown

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

NYSDEC regional files, site inspection, aerial photos

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION	
01 State: NY	02 Site Number: 915132

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. [ ]	B. [X]	A. [ ]	B. [ ]	C. [X]	A. 15 miles
Non-community	D. [ ]	D. [X]	D. [ ]	E. [ ]	F. [ ]	B. 1 mile

III. GROUNDWATER

01 Groundwater Use in Vicinity (Check one)

[ ] A. Only Source for Drinking
[X] B. Drinking (Other sources available) Commercial, Industrial, Irrigation (No other water sources available)
[ ] C. Commercial, Industrial, Irrigation (Limited other sources available)
[ ] D. Not Used, Unuseabl

02 Population Served by Groundwater	03 Distance to Nearest Drinking Water well
1 family	1 (

04 Depth to Groundwater	05 Direction of Groundwater Flow	06 Depth to Aquifer of Concern	07 Potential Yield of Aquifer	08 Sole Source Aquifer
10 (ft)	WSW	50-80 (ft)	Unknown (gpd)	[ ] Yes [X

09 Description of Wells (Including usage, depth, and location relative to population and buildings)

There is no information for the closest and only private well.

10 Recharge Area		11 Discharge Area	
[X] Yes	Comments:	[ ] Yes	Comments:
[ ] No	Site is within a recharge area	[X] No	

IV. SURFACE WATER

01 Surface Water (Check one)

[ ] A. Reservoir, Recreation, Drinking Water Source,
[ ] B. Irrigation, Economically Important Resources
[ ] C. Commercial, Industrial
[X] D. Not Currently Used

02 Affected/Potentially Affected Bodies of Water

Name:	Affected	Distance to Si
Lake Erie	[ ]	1.5 (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. 16,854 No. of Persons	B. 38,961 No. of Persons	C. 73,425 No. of Persons

02 Distance to Nearest Populatic: adjacent (mi)

03 Number of Buildings Within Two (2) Miles of Site	04 Distance to Nearest Off-Site Building
23,451	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): There is an adjacent trailer court.

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 State	02 Site Number
NY	915132

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^{-2} cm/sec)

03 Depth to Bedrock	04 Depth of Contaminated Soil Zone	05 Soil pH
25-30 (ft)	Unknown (ft)	7-9

06 Net Precipitation	07 One Year 24-Hour Rainfall	08 Slope Site Slope	Direction of Site Slope	Terrain Average Slope
9 (in)	2.1 (in)	<3 %	East	<3 %

09 Flood Potential

Site is not in 100 Year Floodplain

10

[ ] Site is on Barrier Island, Coastal High Hazard Area, Riverine Floodway

11 Distance to Wetlands (5 acre minimum)

ESTUARINE	OTHER
A. NA (mi)	B. 0.5 (mi)

12 Distance to Critical Habitat (of Endangered Species)

2.7 (mi)

Endangered Species: Class I wetland, significant coastal fish and wildlife habitat

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
A. On-site (mi)	B. 2.8 (mi)	C. >2 (mi)	D. >2 (mi)

14 Description of Site in Relation to Surrounding Topography

Site was a commercial industry, now bankrupt, within residential (north and south), undeveloped (east) and industrial (west) transitional zones. Site is located on a lacustrine plain 1.5 miles from Lake Erie.

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

USGS topographical maps
NYSDEC Region 9 files
Site inspection
Soil Survey of Erie County
LaSala, A.M., 1968, Groundwater Resources of the Erie-Niagara Basin, New York

D1708

POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT

PART 6 - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION	
01 State NY	02 Site Numb 915132

II. SAMPLES TAKEN: None

Sample Type	01 Number of Samples Taken	02 Samples Sent to	03 Estimated Date Results Availa
Groundwater			
Surface Water			
Waste			
Air			
Runoff			
Spill			
Soil			
Vegetation			
Other			

III. FIELD MEASUREMENTS TAKEN

01 Type	02 Comments
HNu	No readings observed that were above background

IV. PHOTOGRAPHS AND MAPS

01 Type [X] Ground [ ] Aerial

02 In Custody of E & E, Inc. (Name of organization or individual)

03 Maps [X] Yes [ ] No

04 Location of Maps: Sketch map in E & E logbook

V. OTHER FIELD DATA COLLECTED (Provide narrative description of sampling activities)

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

E & E Site Inspection

D17

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 7 - OWNER INFORMATION

I. IDENTIFICATION	
01 State	02 Site Number
NY	915132

II. CURRENT OWNER(S)

01 Name	02 D+B Number
Manufacturers Hanover Trust Co.	

03 Street Address (P.O. Box, RFD #, etc.)	04 SIC Code
P. O. Box 1914	

05 City	06 State	07 Zip Code
Rochester	NY	14603

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	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	02 D+B Number
LSB Warehousing Corp.	

03 Street Address (P.O. Box, RFD #, etc.)	04 SIC Code
1995 Electric Avenue	

05 City	06 State	07 Zip Code
Blasdell	NY	14219

01 Name	02 D+B Number
John Losey Enterprises, Inc.	

03 Street Address (P.O. Box, RFD #, etc.)	04 SIC Code
1995 Electric Avenue	

05 City	06 State	07 Zip Code
Blasdell	NY	14219

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)

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 8 - OPERATOR INFORMATION

I. IDENTIFICATION	
01 State NY	02 Site Numb 915132

II. CURRENT OPERATOR (Provide if different from owner)				OPERATOR'S PARENT COMPANY (If applicable)			
01 Name No current operator		02 D+B Number		10 Name		11 D+B Number	
03 Street Address (P.O. Box, RFD #, etc.)		04 SIC Code		12 Street Address (P.O. Box, RFD #, etc.)		13 SIC Code	
05 City	06 State	07 Zip Code		14 City	15 State	16 Zip Code	
08 Years of Operation	09 Name of Owner						

III. PREVIOUS OPERATOR(s) (List most recent first; provide only if different from owner)				PREVIOUS OPERATORS' PARENT COMPANIES (If applicable)			
01 Name LSB Warehousing		02 D+B Number		10 Name		11 D+B Number	
03 Street Address (P.O. Box, RFD #, etc.) 1995 Electric Avenue		04 SIC Code		12 Street Address (P.O. Box, RFD #, etc.)		13 SIC Code	
05 City Blasdell, NY	06 State 14219	07 Zip Code		14 City	15 State	16 Zip Code	
08 Years of Operation	09 Name of Owner During This Period						
01 Name John Losey Enterprises		02 D+B Number		10 Name		11 D+B Number	
03 Street Address (P.O. Box, RFD #, etc.) 1995 Electric Avenue		04 SIC Code		12 Street Address (P.O. Box, RFD #, etc.)		13 SIC Code	
05 City Blasdell, NY	06 State 14219	07 Zip Code		14 City	15 State	16 Zip Code	
08 Years of Operation	09 Name of Owner During This Period						
01 Name		02 D+B Number		10 Name		11 D+B Number	
03 Street Address (P.O. Box, RFD #, etc.)		04 SIC Code		12 Street Address (P.O. Box, RFD #, etc.)		13 SIC Code	
05 City	06 State	07 Zip Code		14 City	15 State	16 Zip Code	
08 Years of Operation	09 Name of Owner During This Period						

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

D1708

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION	
01 State: NY	02 Site Number: 915132

II. ON-SITE GENERATOR

01 Name	02 D+B Number
No current operator	
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	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
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	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
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)

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 State NY	02 Site Number 915132

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	02 Site Number
NY	915132

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:

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

NYSDEC Region 9 files, aerial photos, site inspection

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION

01 State	02 Site Numb
NY	915132

II. ENFORCEMENT INFORMATION

01 Past Regulatory/Enforcement Action [ ] Yes [ ] No

02 Description of Federal, State, Local Regulatory/Enforcement Action

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

NYSDEC Region 9 files

6. ASSESSMENT OF DATA ADEQUACY AND RECOMMENDATIONS

The Erie County Department of Environmental and Planning, Division of Environmental Control, suspects that the western embankment of the LSB Warehousing site was used as a landfill. E & E observed no hazardous waste at this site during a site inspection, although E & E did not walk over the embankment or the wetland where ECDEP believes a landfill might be located. The vegetation in this area was nearly impenetrable, obscures ground exposure, and is up to 5 feet in height. It is suggested that to confirm the presence or absence of hazardous waste, soil and sediment samples should be collected from this area and be analyzed for priority pollutants and hazardous waste characteristics. Water from the intermittent stream on site should also be sampled upstream of and downstream from the site.

7. REFERENCES

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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.

Gilbert, J., 1987, personal communication concerning use of ground- and surface waters in Hamburg Water District, Hamburg Town Engineer, Hamburg, New York.

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.

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APPENDIX A

PHOTOGRAPHIC RECORD

ecology and environment, inc.

PHOTOGRAPHIC RECORD

Client: NYSDEC E & E Job No.: ND-2021

Camera: Make Minolta XG1 SN: 7042661

Photographer: G. Florentino
Date/Time: 7/29/87/ 15:29
Lens: Type: 50 mm; 1:1.7
SN: 2792181
Frame No.: 8
Comments*: Front of abandoned LSB Warehouse on Electric Avenue.

Photographer: G. Florentino
Date/Time: 7/29/87; 15:40
Lens: Type: 50 mm; 1:1.7
SN: 2792181
Frame No.: 10
Comments*: Back of LSB Warehouse. Note: Household debris in foreground.

*Comments to include location

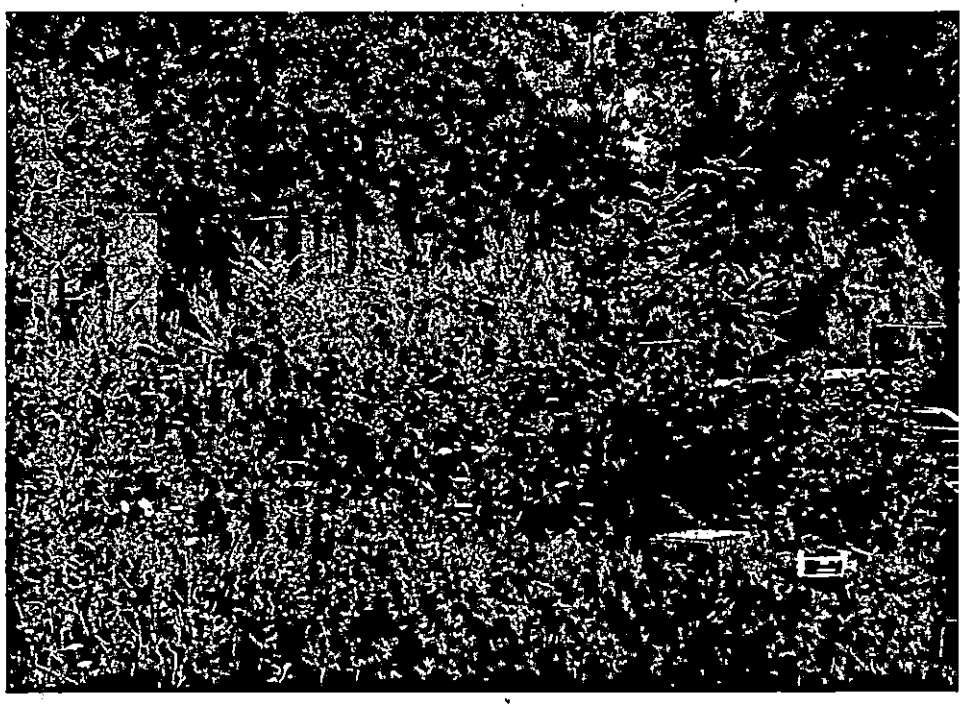
D1708

ecology and environment, Inc.

PHOTOGRAPHIC RECORD

Client: NYSDEC E & E Job No.: ND-2021

Camera: Make: Minolta XG1 SN: 7042661



Photographer: G. Florentino
Date/Time: 7/29/87/ 15:46
Lens: Type: 50 mm; 1:1.7
SN: 2792181
Frame No.: 11
Comments*: Debris in back of lot. Note: High vegetation and cement foundation on left side.

Photographer: G. Florentino
Date/Time: 7/29/87; 15:46
Lens: Type: 50 mm; 1:1.7
SN: 2792181
Frame No.: 12
Comments*: Debris in back of lot. Note: Wood scrap, stone pile, and abandoned truck.

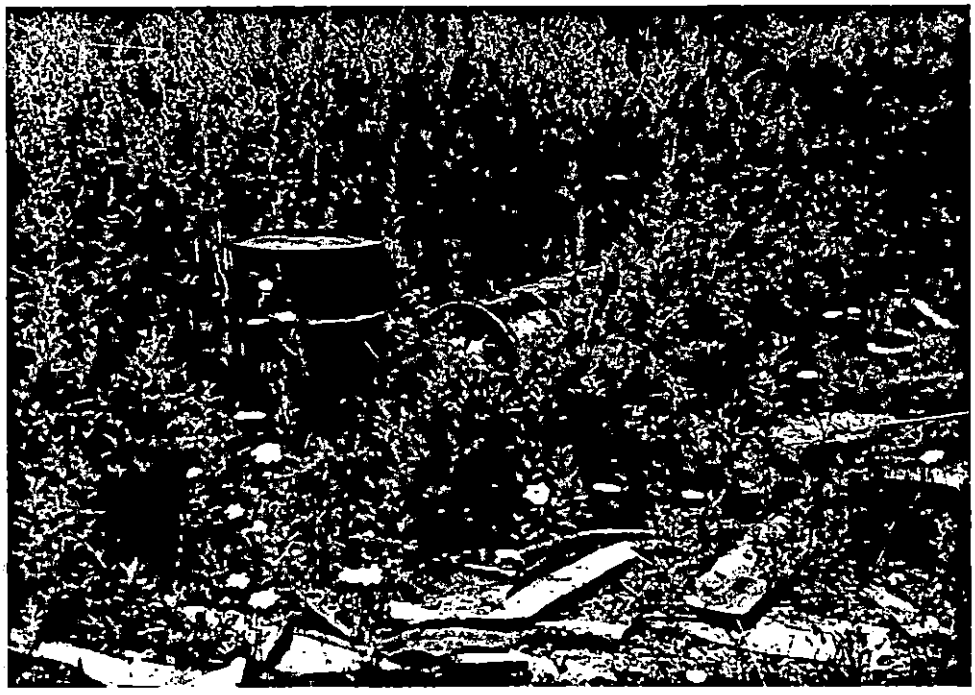
*Comments to include location

ecology and environment, inc.

PHOTOGRAPHIC RECORD

Client: NYSDEC E & E Job No.: ND-2021

Camera: Make Minolta XG1 SN: 7042661



Photographer: G. Florentino

Date/Time: 7/29/87/ 15:46

Lens: Type: 50 mm; 1:1.7

SN: 2792181

Frame No.: 13

Comments*: Two drums labeled "Elastigum Roof Coating 54 gal," and metal debris.

Photographer:

Date/Time:

Lens: Type:

SN:

Frame No.:

Comments*:

*Comments to include location

D1708

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: 915132

Name of Site: LSB Warehousing Region: 9

Street Address: 1995 Electric Avenue

Town/City: Blasdell County: Erie

Name of Current Owner of Site: Manufacturers Hanover Trust Company

Address of Current Owner of Site: P. O. Box 1914, Rochester, New York

Type of Site: [ ] Open Dump [ ] Structure [ ] Lagoon
[ ] Landfill [ ] Treatment Pond

Estimated Size: 1.7 acre(s)

Site Description:

Site is a commercial property whose owner declared bankruptcy in 1984. Two drums of roofing material, piles of household debris, scrap wood and metal, and abandoned automobiles and furniture are disposed of on this site.

Hazardous Waste Disposed: [ ] Confirmed [X] Suspected by Erie County employees

Type and Quantity of Hazardous Wastes Disposed:

Type	Quantity (Pounds, Drums, Tons, Gallons)
Unknown	Unknown

Time Period Site was Used for Hazardous Waste Disposal:

Unknown, 19___ To _____, 19___

Owner(s) During Period of Use: Unknown

Site Operator During Period of Use: Unknown

Address of Site Operator: Unknown

Analytical Data Available: [ ] Air [ ] Surface Water [ ] Groundwater
[ ] Soil [ ] Sediment [X] None

Contravention of Standards: [ ] Groundwater [ ] Drinking Water
[ ] Surface Water [ ] Air

Soil Type: Niagara silt loam and urban land

Depth to Groundwater Table: Maximum of 20 feet

Legal Action: Type: None [ ] State [ ] Federal

Status: [ ] In Progress [ ] Completed

Remedial Action: [ ] Proposed [ ] Under Design
[ ] In Progress [ ] Completed

Nature of Action: _____

_____

Assessment of Environmental Problems:

No known environmental problems. Presence or absence of hazardous waste has not been verified.

Assessment of Health Problems:

No known health problems. Presence or absence of hazardous waste has not been verified.

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

PHOTOCOPIED REFERENCES

CONTACT REPORT
(TELEPHONE)

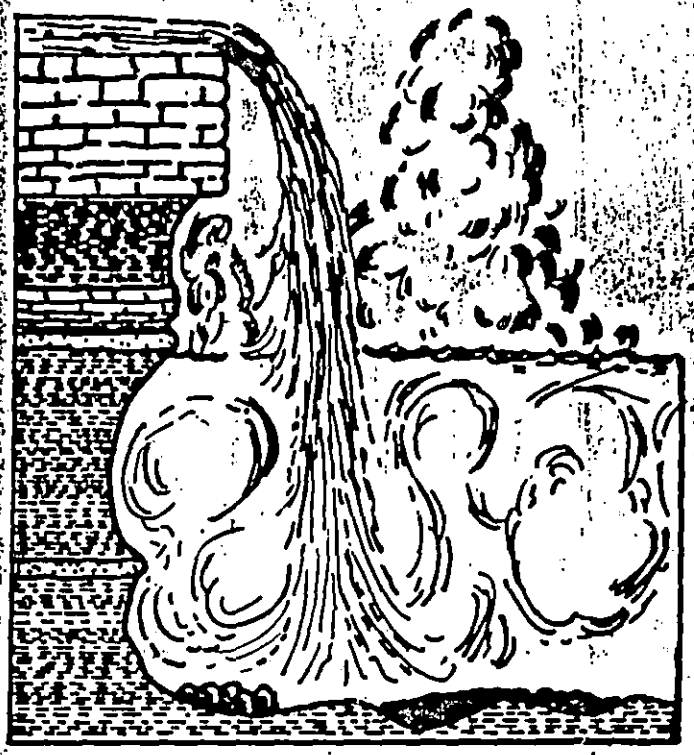
AGENCY	:	BROWNING FERRIS INDUSTRIES (LANDFILL OPERATIONS)
ADDRESS	:	2321 KENMORE AVE., KENMORE, NEW YORK
PHONE NO.	:	873-7500
PERSON CONTACTED	:	ROBERT ANTHONY
TO	:	F. MCKOSKY
FROM	:	P. GUNTHER
DATE	:	9/4/87
SUBJECT	:	ACCEPTANCE OF 2 55-GALLON DRUMS OF ELASTIGUM ROOF COATING
CC	:	ND-2021

Mr. Anthony stated that the landfill will accept the drums of Roof Coating that have been stored in the vacant lot at LSB Warehousing. They are not considered to be of hazardous material.

db

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.

recycled paper

E. J. Buehler, Editor

ecology and environment

NEW YORK STATE GEOLOGICAL ASSOCIATION

38th Annual Meeting

April 29 - May 1, 1966

GUIDEBOOK

Geology of Western New York

Edward J. Buehler, Editor

Department of Geological Sciences
State University of New York at Buffalo

Additional copies are available from the permanent secretary of the New York State Geological Association: Dr. Kurt E. Lowe, Department of Geology, City College of the City University of New York, 139th St. at Convent Ave., New York, N. Y.

TABLE OF CONTENTS

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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.

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THE HAMILTON GROUP IN WESTERN NEW YORK

By Edward J. Buehler

State University of New York at Buffalo

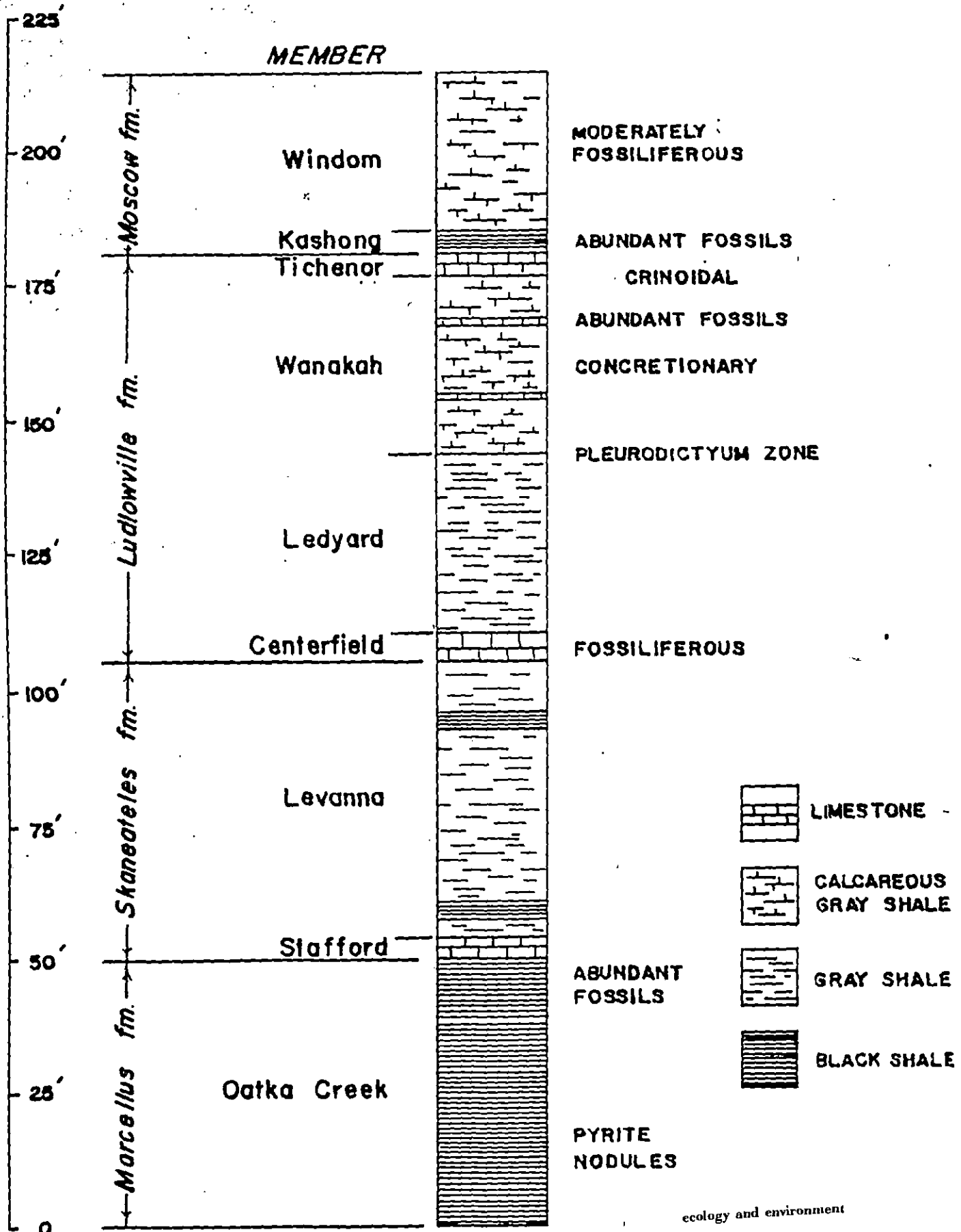
Circumstances which developed at the last minute left us without a paper on the Hamilton Group of Western New York. There was, of course, no intent to slight this most interesting and richly fossiliferous section of rock. Therefore, a column (fig. 1) a few notes and references are inserted here.

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



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.

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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.

Erie-Niagara Basin

Ground-Water Resources

ERIE-NIAGARA BASIN REGIONAL WATER
RESOURCES PLANNING BOARD

THE NEW YORK STATE WATER RESOURCES COMMISSION

CONSERVATION DEPARTMENT • DIVISION OF WATER RESOURCES

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

CONTENTS

CONTENTS (Continued)

ILLUSTRATIONS

(Plates are in pocket)

Page

recycled paper

ecology and environment

ILLUSTRATIONS(Continued)

TABLES

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.

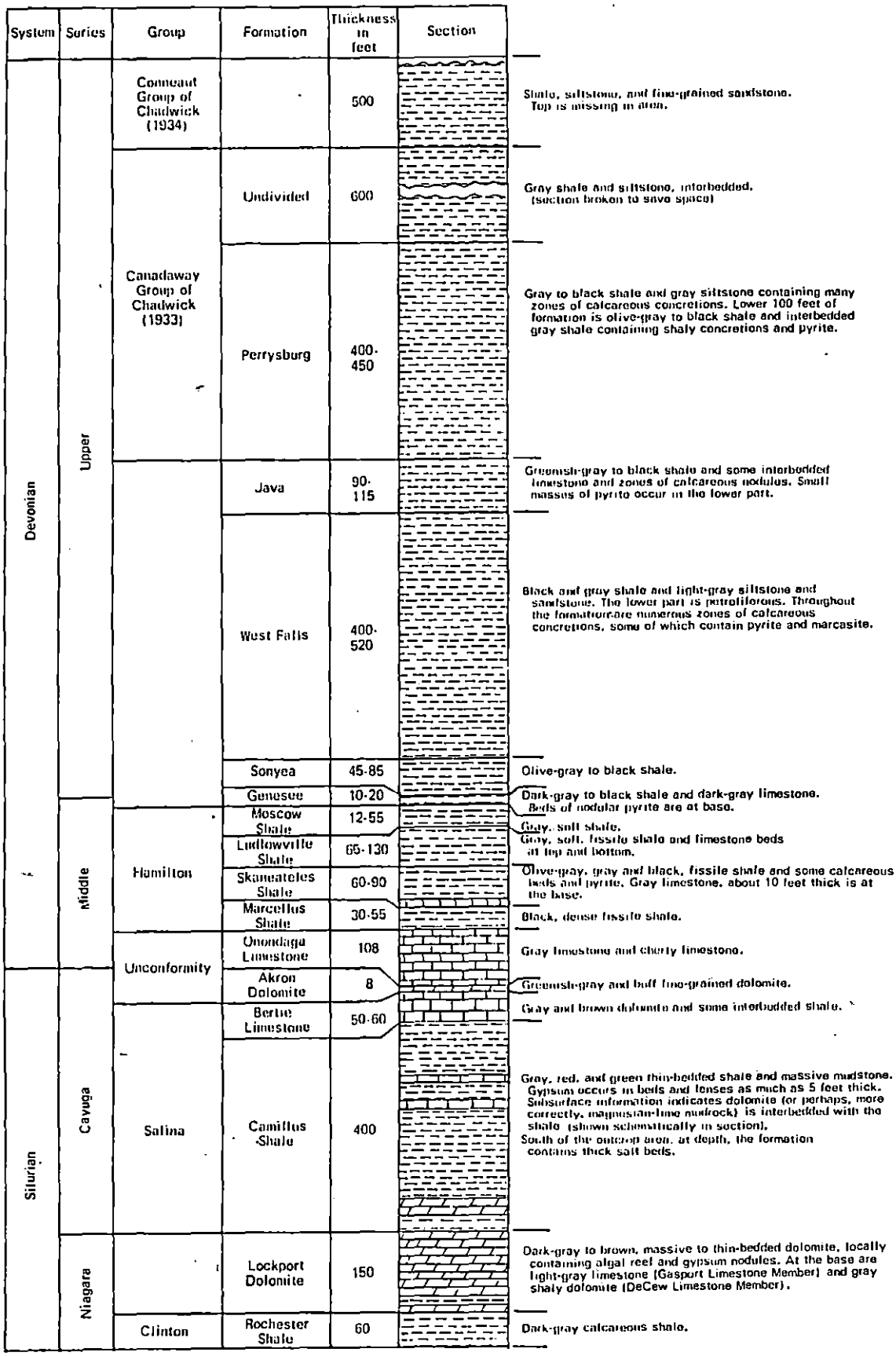


Figure 2.--Bedrock units of the Erie-Niagara basin.

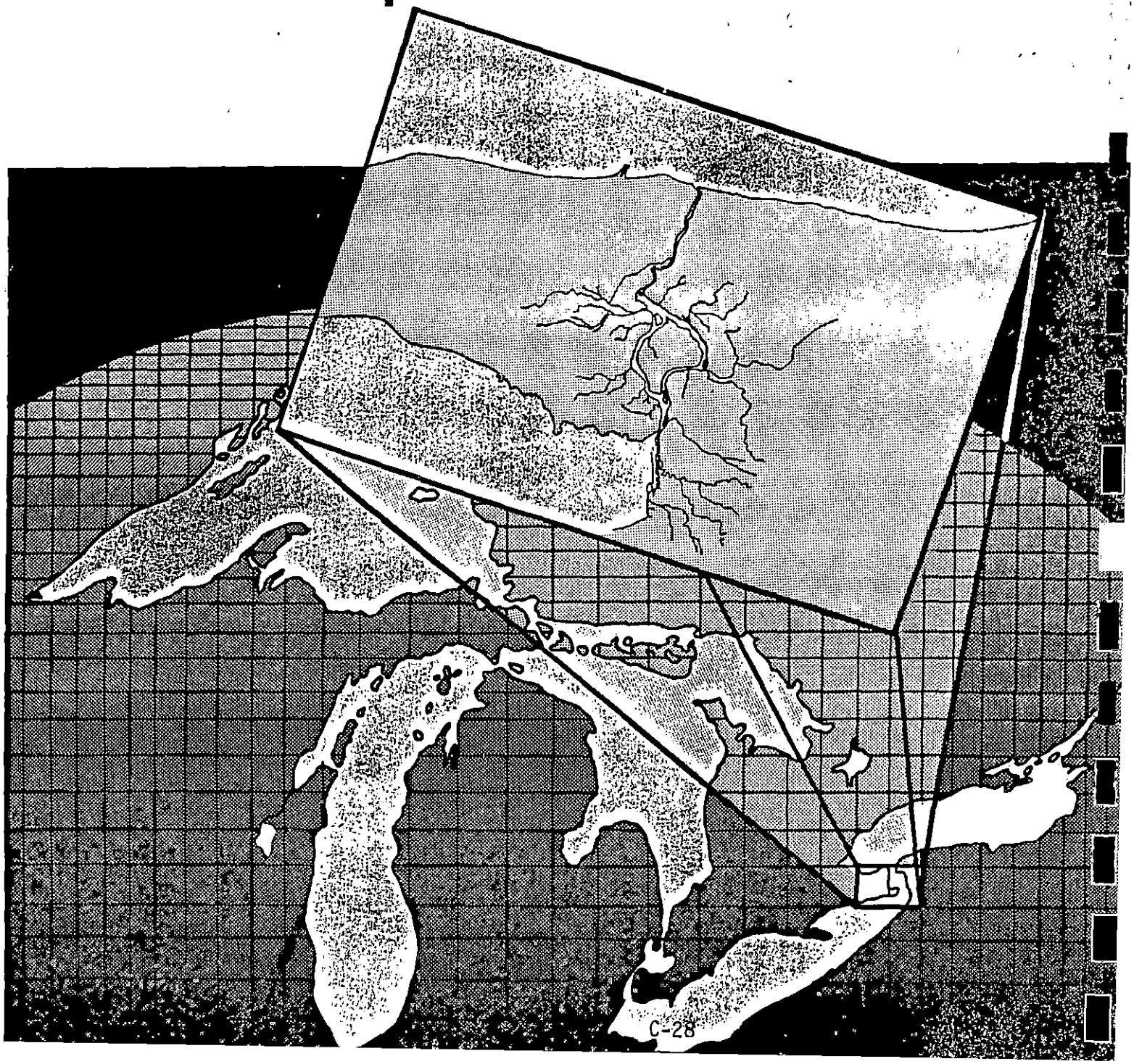
United States
Environmental Protection
Agency

Great Lakes National
Program Office
536 South Clark Street
Chicago, Illinois 60605

EPA-905/4-85-001
March 1985

EPA

Preliminary Evaluation Of Chemical Migration To Groundwater and The Niagara River from Selected Waste-Disposal Sites



"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

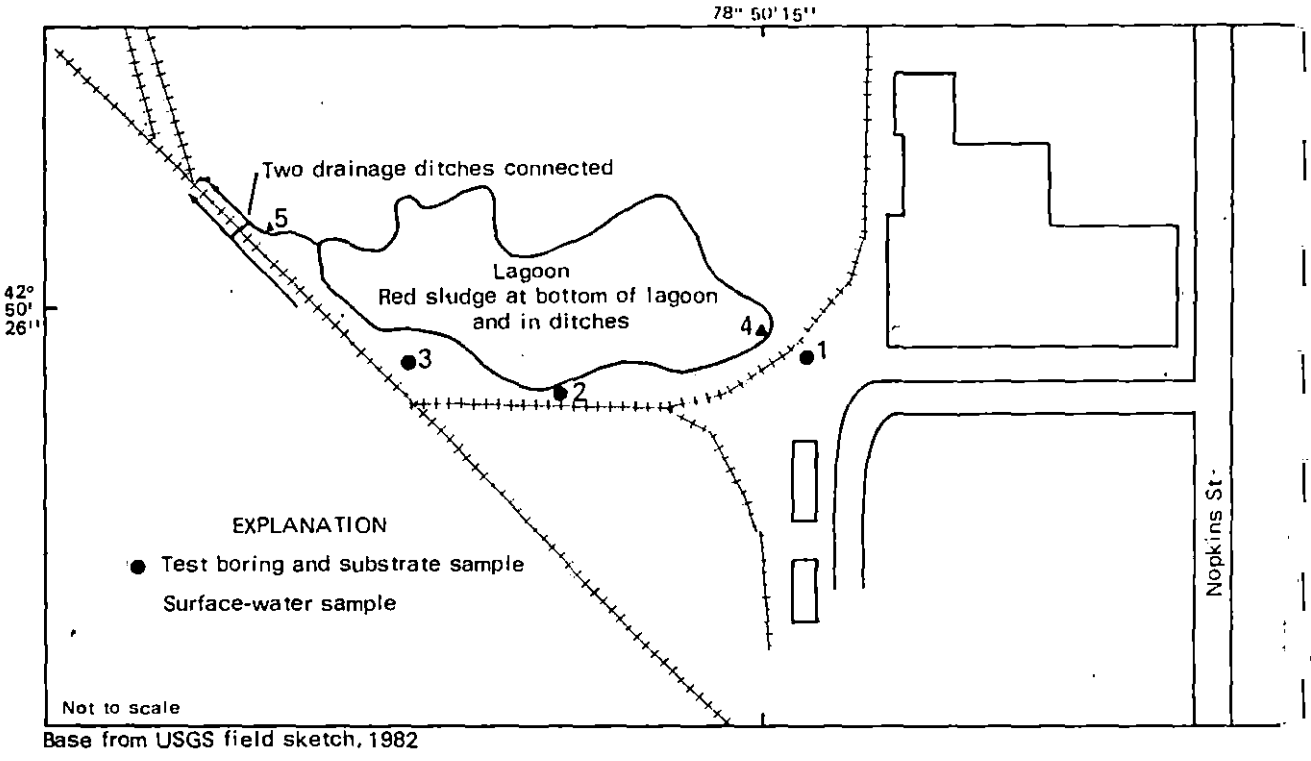
for the

U.S. ENVIRONMENTAL PROTECTION AGENCY

Table A-11.--Analyses of substrate and surface-water samples from Ramco Steel, site 147, Buffalo, N.Y., July 22, 1982.
[Locations shown in fig. A-10. Concentrations are in µg/kg and µg/L; dashes indicate that constituent or compound was not found. Blank space indicates not measured.]

	Substrate sample number and depth below land surface (ft)				Surface-water sample number	
	1 (7.0)	(Split)	2 (4.0)	3 (5.0)	4	5
Specific conductance (µmho/cm)					720	3,980
Temperature (°C)					23.0	24.0
Inorganic Constituents						
Chromium	10,000	(10,000)	--	3,000	1	--
Copper	21,000	(9,000)	6,000	53,000††	19	24
Iron	6,500,000	(7,600,000)	6,500,000	9,360,000	7,400†	17,000†
Lead	30,000	(40,000)	--	--	6	270†

† Exceeds USEPA criterion for maximum permissible concentration in drinking water.
†† Exceeds concentrations in samples taken from undisturbed soils in the Buffalo area. Undisturbed soils were not analyzed for iron.



Base from USGS field sketch, 1982

Figure A-10. Location of sampling holes at Ramco Steel, site 147, Buffal

148. REPUBLIC STEEL (USGS field reconnaissance) NYSDEC 915047

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.

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.

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	--

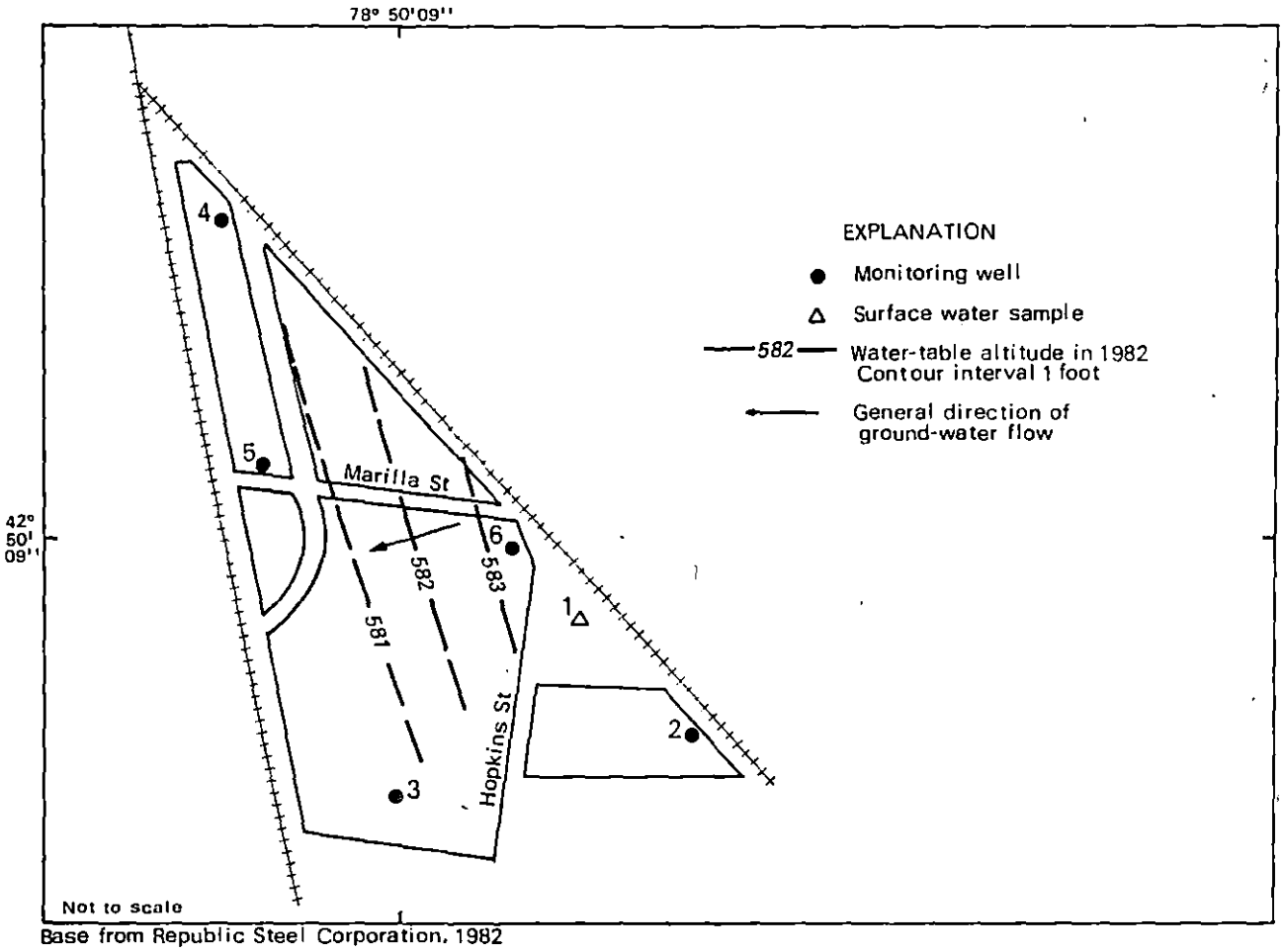


Figure A-11. Potentiometric surface and location of sampling holes at Republic Steel, site 148, Buffalo, August 1979 and February 1982

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.

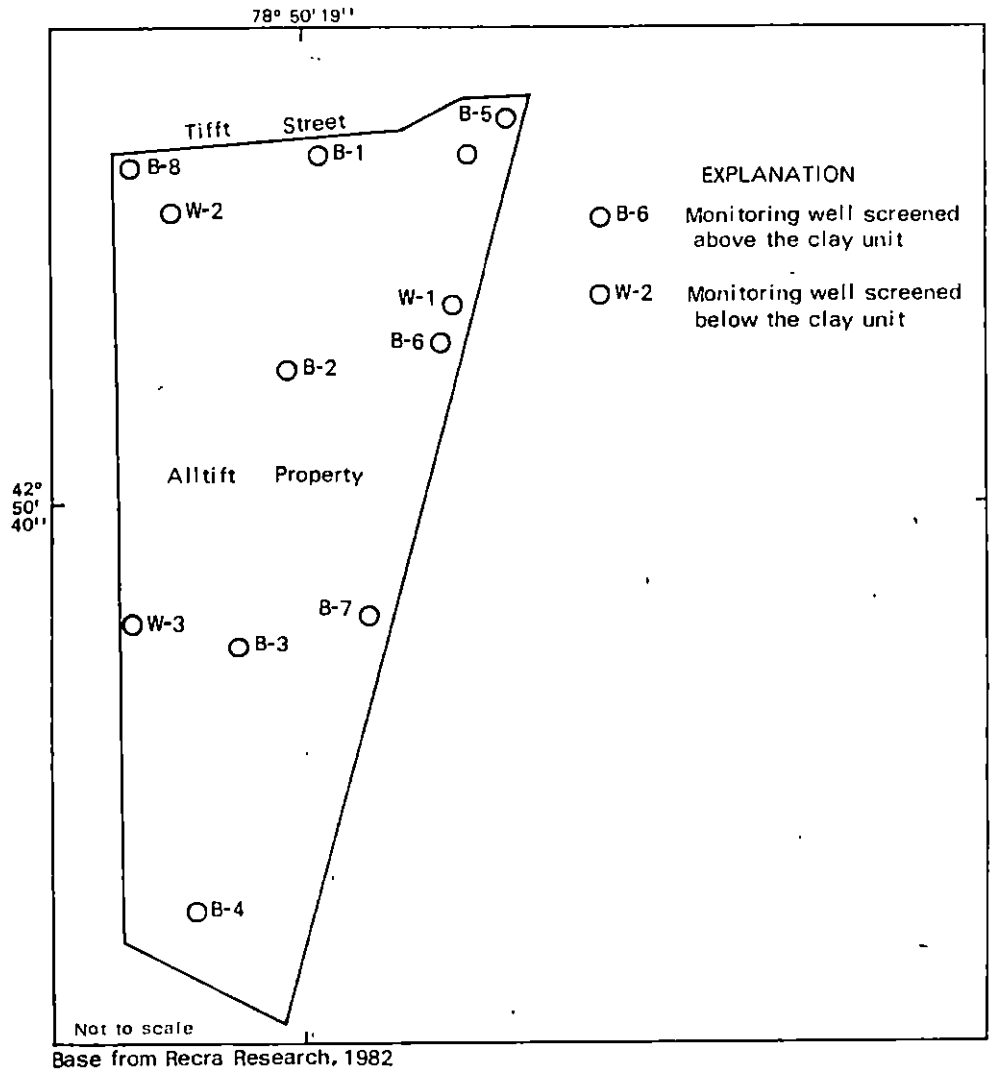


Figure A-12. Location of sampling holes at Alltift Landfill, site 162, Buffalo.

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.

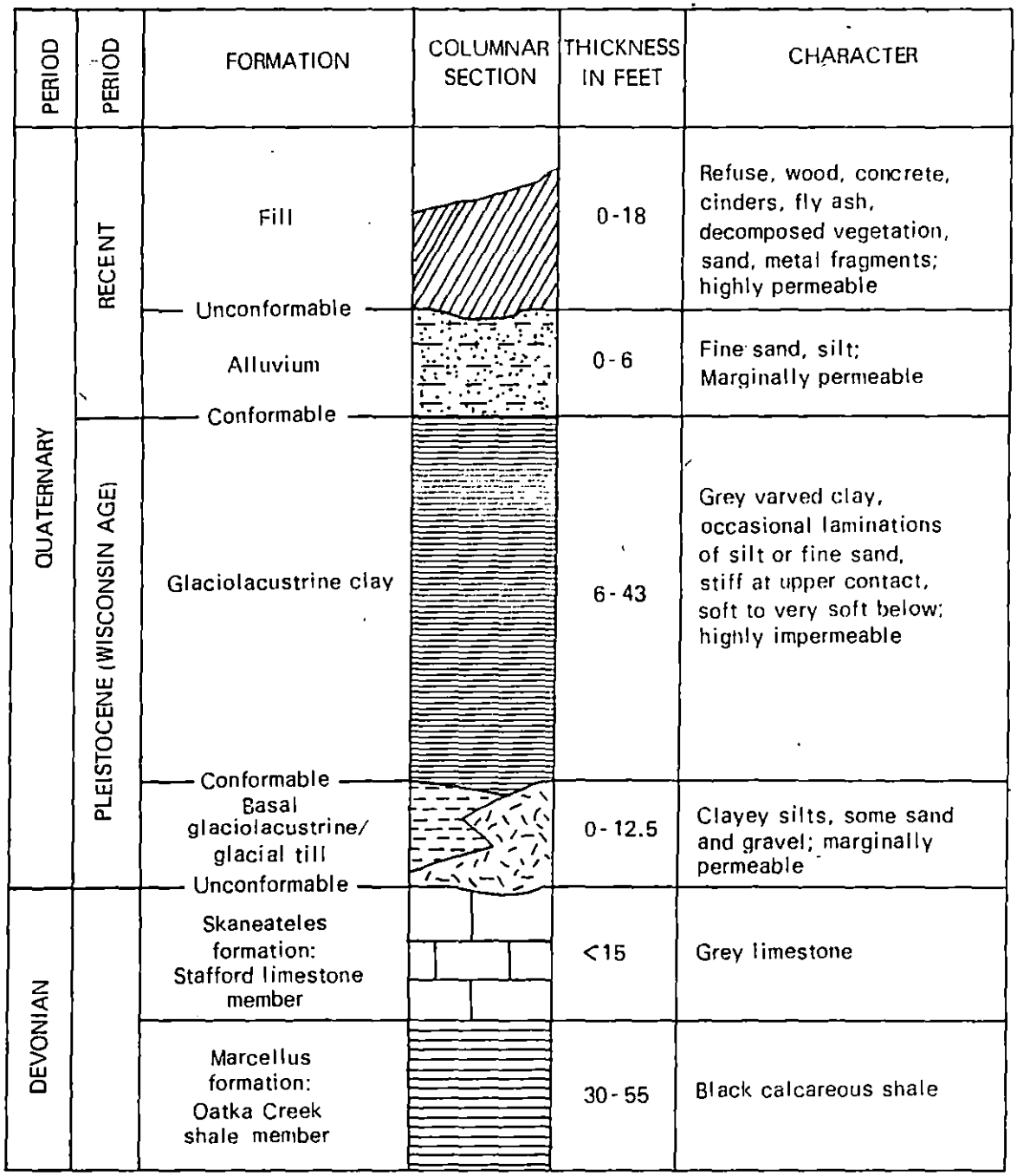


Figure A-13. Generalized geologic column of formations underlying the Alltift Landfill, site 162, Buffalo.
(Site location is shown in fig. A-12. Modified from Recra Research, Inc., 1982.)

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.

CONTACT REPORT
(TELEPHONE)

AGENCY	:	NYSDEC LANDS AND FOREST DIVISION
ADDRESS	:	128 SOUTH ST., OLEAN, NY
PHONE NO.	:	372-0888
PERSON CONTACTED	:	STEVE MOORADIAN, REGIONAL FISHERIES MANAGER
TO	:	F. MCKOSKY
FROM	:	P. GUNTHER
DATE	:	SEPTEMBER 2, 1987
SUBJECT	:	STATUS OF SMOKE CREEK
CC	:	CENTRAL AUTO WRECKING FILE, LSB WAREHOUSING FILE, ND-2000

Smoke Creek is classified as Class C Creek. Walleye and other fish species temporarily utilize the creek during the spring, but the substrate is not presently conducive for fish spawning.

db

CONTACT REPORT
(TELEPHONE)

AGENCY	:	MANUFACTURERS HANOVER, NA
ADDRESS	:	P. O. BOX 1914, ROCHESTER, NY
PHONE NO.	:	(716) 987-6749
PERSON CONTACTED	:	JAMES PRATTICO
TO	:	F. MCKOSKY
FROM	:	P. GUNTHER
DATE	:	9/2/87
SUBJECT	:	SITE HISTORY OF LSB WAREHOUSING CORP.
CC	:	

John Losey bought the property on September 8, 1976 through a bank loan from Manufacturers of Hanover. The intent of use for the property was as a local transportation firm. John Losey owned LSB Warehousing Inc. which was mainly a steel transfer trucking company although Mr. Losey was also an agent for several other truck lines. Beginning in December 1982 the ownership of the property was transferred from John Losey to LSB Warehousin Corporation. Thereafter, the firm became delinquent on loan payments. In January 1984, LSB Warehousing declared bankruptcy. In January 1987 Manufacture of Hanover foreclosed on the loan. They have attempted to sell the property since then, but to no avail. Manufacturers of Hanover may return the land to the state for nonpayment of taxes.

db